Note: When any ambiguity of interpretation is found in this provisional translation, the Japanese text shall prevail.

5. Cases pertinent to Inventive Step (Article 29(2) of the Patent Act)

In order to make clear the examination practice in relation to the inventive step, the outline of the determination thereon, as well as the measures of the applicant is explained below based on specific examples.

(Points to Note)

These cases have been prepared with an aim to describe the examination practice. Therefore, it should be noted that modification such as clarification is added to the claims etc. in the above cases to ease explanation.

Further, the cited documents and common general technical knowledge in these Case Examples are only a premise for explanation of inventive step determination, and not the prior art or common general technical knowledge at the time when each of Case Examples was added to Examination Handbook for Patent and Utility Model.

List of Cases

(In the list, "○" means involving inventive step. In contrast, "×" means not involving inventive step. Besides, in the column of Point of View Specifically Considered Motivation, "(a)" means "Relation of technical fields", "(b)" means "Similarity of problems to be solved", "(c)" means " Similarity of operations or functions", and "(d)" means "Suggestion in Prior art".)

	Case No.	Title of Invention	Motivation	Particularly considered motivation	Remarks	Whether to Involve Inventive Step
Cases on Motivation	Case 1	Method for manufacturing a substrate having periodical polarization inversion region	Yes	(a), (b)	Obstructive factors	○
	Case 2	Current sensor	No	(a), (b)	Obstructive factors	○
	Case 3	Lenticular sheet	Yes	(a), (b)		×
	Case 4	Printer	Yes	(b)		×

	Case 5	Dehydrating tub of washing machine	No	(a)-(d)		○
	Case 6	Intervertebral disc implant (Difference 1)	Yes	(a)		×
		(Difference 2)	Yes	(d)		
	Case 7	Stainless steel	Yes	(a), (b)	Obstructive factors	○
	Case 8	Surface treating agent for copper	Yes	(a), (b)	- Obstructive factors - Advantageous and Remarkable Effect	○
	Case 9	Photocatalytic decontamination system	Yes	(a)-(c)	No Advantageous and Remarkable Effect	×
	Case 10	Azo compound	No	(a)-(c)		○
	Case 11	A method for manufacturing a tricyclic aryl compound	Yes	(a), (b)		×
	Case 12	Layered product for paper container	No	(a)-(c)		○
	Case 13	Belt for shoe press belt	Yes	(b), (c)	No Advantageous and Remarkable Effect	×
	Case 14	Detergent composition	Yes	(a), (b)	Obstacle Factor	○
	Case 15	Vulcanized rubber composition and pneumatic tire	Yes	(a), (c), (d)	No Advantageous and Remarkable Effect	×
	Case 16	Tuner for musical instruments	No	(a)-(c)	Obstacle Factor	○
	Case 17	Recommended contents delivery system	No	(a)-(c)	Obstacle Factor	○
	Case 18	A server	Yes	(a), (b)		×
	Case 19	A settlement propriety judgment system using prepaid electronic money	Yes	(a), (c)		×
	Case 20	An admission acceptance system using mobile communication	Yes	(a)-(c)		×

		terminals				
	Case 21	Sugar beet sherbet for removing bad breath	Yes	(a)-(d)	Use invention of foods	×
	Case 22	Beverage containing ginger juice for improving shadows under the eyes	Yes	(a), (d)	Use invention of foods	×
	Case 23	Squid ink spaghetti for excreting metal ions	Yes	(a), (d)	Use invention of foods	×
	Case 24	Food composition for muscle-building	No	(a)	Use invention of foods	○
	Case 25	Agent for decreasing harsh taste of coffee	Yes	(a), (d)	Use invention of foods	×
	Case 26	Supply Chain Management Method	No	(a),(b)	IoT related technology	○
	Case 27	Running Supporting System	No	(b)	IoT related technology	○
	Case 28	Heavy Rain Point Specifying System	No	(a)-(c)	IoT related technology	○
	Case 29	Medical Device Maintenance Server	-	-	IoT related technology	○
	Case 30	Construction Machine Maintenance Server	Yes	(a)-(c)	IoT related technology	×
	Case 31	Learning System Comprising On-vehicle Devices and a Server	Yes	(b), (c)	IoT, AI related technology	×
	Case 32	Quality management program of manufacturing lines	Yes	(b), (c)	IoT, AI related technology	×
	Case 33	Cancer level calculation apparatus	Yes	(b)	AI related technology	×
	Case 34	Estimation system of hydroelectric power generating capacity (Claim 1)	Yes	(c)	AI related technology	×
		(Claim 2)	-	-	AI related technology - Advantageous and Remarkable Effect	○

	Case 35	Screw clamping quality estimation apparatus	Yes	(a), (b)	AI related technology	×
	Case 36	Dementia stage estimation apparatus	-	-	AI related technology	○
	Case 37	Automatic response generator for customer service centers	Yes	(b)	AI related technology	×
	Case 38	Method for generating texts for prompt for input into large language models (Claim 1)	Yes	(b)	AI related technology	×
		(Claim 2)	—	—	AI related technology - Advantageous and Remarkable Effect	○
	Case 39	Method for learning trained models for radiographic image brightness adjustment	—	—	AI related technology - Advantageous and Remarkable Effect	○
	Case 40	Laser beam processing device (Claim 1)	Yes	(b)	AI related technology	×
		(Claim 2)	—	—	AI related technology - Advantageous and Remarkable Effect	○

[Case 1] (Invention involves an inventive step)

Title of Invention

Method for manufacturing a substrate having periodical polarization inversion region

What is claimed is:

[Claim 1]

A method for manufacturing a substrate having a periodical polarization inversion region, wherein the substrate (1) comprises a lithium tantalite single crystal having 0.495 or more and less than 0.505 in a molar fraction of $Li_2O/(Ta_2O_5+Li_2O)$ and doped with MgO, a periodical electrode (4) and a solid electrode (5) are provided on the surface of the substrate (1), the periodical polarization inversion region is formed in the substrate by applying a direct current electric field between the periodical electrode and the solid electrode.

Overview of the description

[Background Art]

The conventional technique has been known that a periodical electrode is formed on the surface of the lithium tantalite substrate having a similar stoichiometric composition (the molar fraction of $Li_2O/(Ta_2O_5+Li_2O)$ being 0.5), and the pulse voltage is applied to obtain a periodical polarization inversion structure.

[Problem to be Solved by the Invention]

To provide a method for manufacturing a substrate having a periodical polarization inversion region, without a complicated arrangement for applying pulse voltage or a complicated arrangement for applying strong electric field.

[Solution for the Problem to be Solved]

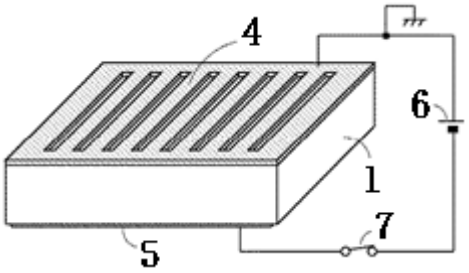
The periodical electrode is formed on the substrate comprising the lithium tantalite single crystal having a similar stoichiometric composition doped with MgO, and the direct current electric filed is applied to form the periodical polarization inversion region on the substrate.

[Effect of Invention]

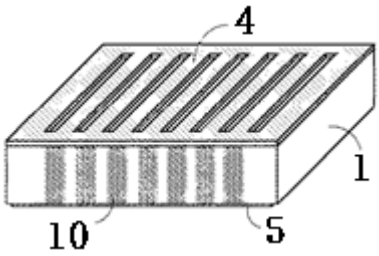
As the result as keenly researched by the present inventor, it was found that a speed of spreading the polarization inversion region in the crosswise direction in the substrate comprising the lithium tantalite single crystal having the similar stoichiometric composition is remarkably slower than which has been considered, and that the substrate having the periodical polarization inversion region can be preferably manufactured only by applying the direct current electric field. In addition, by doping MgO, electric field intensity necessary for obtaining the periodical polarization inversion region can be lowered.　As the result, the substrate having the periodical polarization inversion region can be manufactured without the complicated arrangement for applying the pulse voltage or without the complicated arrangement for applying the strong electric field.

Drawings

[Fig. 1]



[Fig. 2]



1 Substrate
4 Periodic electrode
5 Solid electrode
6 DC power source
7 Switch circuit
10 Polarization inversion region

[State of the art (Prior art, well-known art, etc.)]

Prior art:

The prior art discloses a method for manufacturing a substrate having a periodical polarization inversion region by applying an electric field on a lithium tantalite single crystal having the similar stoichiometric composition (molar fraction of $Li_2O/(Ta_2O_5+Li_2O)$ being 0.500 to 0.505) with excess of Li.

The prior art has pointed out that an additive such as MgO has been added in the method for manufacturing the periodical polarization inversion structure using the lithium tantalite single crystal substrate having the similar stoichiometric composition (molar fraction of $Li_2O/(Ta_2O_5+Li_2O)$ is 0.495 to 0.500) with excess of Ta which has been conventionally known for improving the threshold for the optical damage-resistant property. In addition, the prior art discloses that when MgO is added, there is a problem that it is difficult to manufacture such a substrate with good reproducibility in comparison with a crystal with no addition, since the controllability of the polarization inversion depends on the concentration of MgO. The prior art solve the above-mentioned problem by manufacturing the substrate having the periodical polarization inversion region using the lithium tantalite single crystal having the similar stoichiometric composition with excess of Li, as treating the above-mentioned problem as a problem to be solved, and provide an operation and effect that the threshold of the optical damage-resistant property is high without adding the additive such as MgO and that an element which is superior in the controllability of the polarization inversion can be achieved.

Well-known art:

Upon manufacturing the substrate having the periodical polarization inversion structure

comprising the lithium tantalite single crystal, to add MgO to improve the light transmittance or to add MgO to obtain the small polarization inversion voltage without decreasing the nonlinear optical constant and the electrooptical characteristics is the well-known art.

In addition, it is also the well-known art to use the direct current electric field as an electric field as applied for forming the periodical polarization inversion region in the lithium tantalite single crystal.

[Conclusion]

The invention of claim 1 involves an inventive step.

[Explanation]

(Considered motivation)

(1) Relation of technical fields

The prior art and the well-known art both belong to an element having a periodical polarization inversion structure.

(2) Similarity of problems to be solved

Since to improve the light transmittance or to decrease the voltage to be applied is an obvious problem to be solved in the technical art of the optical element, the prior art and the well-known art are common on this point.

(Explanation for no reason for refusal)

(Identical features and differences)

The claimed invention and the prior art are coincident as a method for manufacturing the substrate that is provided with the periodical polarization inversion structure by applying the electric field to the lithium tantalite single crystal having the similar stoichiometric composition. On the other hand, the claimed invention and the prior art are different each other, in whether or not MgO is doped in the lithium tantalite single crystal and whether or not the direct current electric field is used as the electric field.

(Motivation)

Here, since the prior art and the well-known art belong to the same technical art and have the common problem to be solved, there is a motivation to apply the well-known art to the the prior art.

(Obstructive factors)

However, since the prior art has a problem for solving the problem which is created by the addition of MgO, to apply the well-known art is opposite to the object of the prior art, not to be appropriate.

It can be recognized that the above-mentioned inhibitory factor has an extent to impede to apply the well-known art to the prior art even though the above-mentioned motivation is considered.

Therefore, to apply the above-mentioned well-known art to the prior art is not conceivable for a person skilled in the art.

[Case 2] (Invention involves an inventive step)

Title of Invention

Current sensor

What is claimed is:

[Claim 1]

A current sensor comprising current components (32a-32d) that are connected between a power source and a load provided in an electrical circuit and have a function of a primary coil; secondary coils (30a-30d) that are arranged near the current components and coupled magnetically to the current components, and output terminals (A-H) that are connected to the secondary coils, the current sensor detecting a current supplied to the load by outputting a signal from the output terminal according to a current through the current components, wherein the current components and secondary coils are formed on a multilayer board.

Overview of the description

[Background Art]

Conventionally, it is well-known that a current sensor comprises current components (32a-32d) that are connected between a power source and a load provided in an electrical circuit and have a function of a primary coil, secondary coils (30a-30d) that are arranged near the current components and coupled magnetically to the current components, and output terminals (A-H) that are connected to the secondary coils, the current sensor detects a current supplied to the load by outputting a signal from the output terminal according to a current through the current components.

[Problem to be Solved by the Invention]

An AC current detector is provided with small size and high accuracy without significantly affecting impedance in current path.

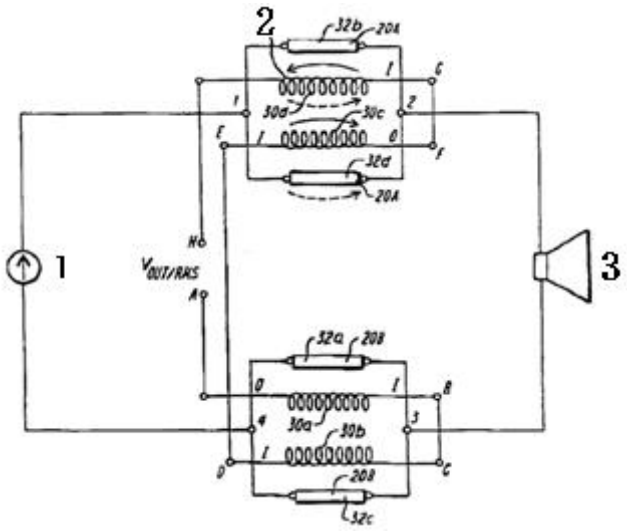
[Solution for the Problem to be Solved]

Current components and secondary coils are formed on a multilayer board.

[Effect of Invention]

It is specifically useful for detecting current with low frequency domain.

Drawings



1　Power source
2　Sensor
3　Load impedance

[State of the art (Prior art, well-known art, etc.)]
Prior art:

Conventionally, it is well-known that a current sensor provides a conductor in which one end is connected to a terminal connected to an AC power source and the other end is connected to a terminal connected to an AC load respectively, and that operates as a single winding primary winding, a cylindrical sleeve that is attached surrounding the conductor, and a pair of circular coil that is attached surrounding the sleeve at an intermediate point of the sleeve, and cancels the effect to each circular coil by the external magnetic field and detects a current through a load resistance by adding a generated signal output to each circular coil coupled to each conductor via air gap.

However, it is necessary for a pair of circular coil to have good symmetry in order to compensate the external magnetic field. But, it is difficult to maintain the symmetry due to dispersion such as defect by coil winding.

The prior art cancels variation due to defect by coil winding in each circular coil, thereby can obtain good symmetry by forming compensation turns in a part of the circular coil and adjusting each compensation turn respectively.

Well-known art:

The primary coil and secondary coil consisting of the transformation circuit are formed on the multilayer board by arranging the primary coil as primary conductor on a surface of the first insulated substrate, arranging the secondary coil as secondary conductor on a surface of the second insulated substrate, and laminating the first and second insulated substrates.

[Conclusion]

The invention of claim 1 involves an inventive step.

[Explanation]

(Considered motivation)

(1) Relation of technical fields

The prior art relates to the technique for an alternating current sensor utilizing the transformation circuit, and the well-known art relates to the common technique for the transformation circuit.

Therefore, the prior art and the well-known art have the relevancy in terms of the transformation circuit.

(2) Similarity of problems to be solved

The problem of the prior art is to compensate the external magnetic field of the circular coil that consists of the transformation circuit of the secondary coil. The problem of the well-known art is to provide the transformation circuit enabling sufficient magnetic coupling between the coils even when arranged on the substrate. Thus, both problems are different.

(Explanation for no reason for refusal)

(Identical features and differences)

Comparing the invention of claim 1 and the prior art, both have the commonality in that "the current sensor comprising current components that are connected between a power source and a load provided in an electrical circuit and have a function of a primary coil; secondary coils that are arranged near the current components and coupled magnetically to the current components, and output terminals that are connected to the secondary coils, the current sensor detects a current supplied to the load by outputting a signal from the output terminal according to a current through the current components." There is difference in that, in the invention of claim 1, "the current components and secondary coils are formed on the multilayer board, " and the prior art does not have such structure.

(Motivation)

The prior art has the problem in which a pair of circular coil is required to have the symmetry to compensate the external magnetic field. To solve the problem, the circular coil has the predetermined structure.

In contrast, the problem of the well-known art to provide the transformation circuit enabling sufficient magnetic coupling between the coils even when arranged on the substrate, thus does not solve the problem of the prior art.

Besides, the prior art does not suggest the probability for using one other than the circular coil as secondary coil.

Therefore, the prior art and well-known art belong to relevant technical field of transformation circuit. However, the problems of the prior art and well-known art are different. Thus, it cannot be said that there is motivation to apply the well-known art to the prior art and

form the current components and secondary coils on the multilayer board.
(Obstructive factors)

Moreover, in prior art, when replacing the conductor and circular coil consisting of mutual inductance with the primary coil and secondary coil consisting of mutual inductance like the well-known example, the condition is not established to compensate the external magnetic field. Thus, there is an obstacle factor to apply the well-known exemplary structure to the prior art.

Therefore, there is no motivation to apply the well-known art to the prior art, and it can be said that it has been obvious for a person skilled in the art to conceive the present invention by applying the well-known art to the prior art.

[Case 3] (Invention lacks an inventive step)

Title of Invention

Lenticular sheet

What is claimed is:

[Claim 1]

A lenticular sheet used for a transmission type screen, wherein

a lens unit is formed with cylindrical lens arranged in parallel on one surface of a transparent support body, and

a transfer light shielding pattern is formed at a position of adhesion part except for non-adhesion part based on light collection effect of each cylindrical lens on a surface of an ultraviolet ray-sensitive resin layer, via the ultraviolet ray-sensitive resin layer having adhesion before ultraviolet exposure on the other surface with flat of the transparent support body.

Overview of the description

[Background Art]

The transmission type screen consists of combination of the Fresnel lens sheet and lenticular sheet, in the lenticular sheet, the cylindrical lens surface is formed on one surface, and the light shielding pattern (black stripe with light absorption) at the border of each cylindrical lens on the other surface, which, in general, results in increased brightness and contrast in projecting the image from projector on the transmission type screen. Besides, conventionally forming the light shielding pattern is performed by the common scheme such as printing.

[Problem to be Solved by the Invention]

However, when forming the light shielding pattern at the border of the cylindrical lens, it is difficult to adjust accurately the position of border and the position for printing the light shielding pattern. If the positions are displaced, sufficient brightness and contrast cannot be obtained when using as the transmission type screen. This invention is to provide the lenticular sheet capable of obtain sufficient brightness and contrast.

[Solution for the Problem to be Solved]

As show in Fig. 1, the invention of claim 1 relates to the lenticular sheet used for a transmission type screen, a lens unit (21) is formed with cylindrical lens arranged in parallel on one surface of a transparent support body (22), a transfer light shielding pattern striped by transferring (23) is formed at a position except for non-adhesion part based on light collection effect of each cylindrical lens on the other surface with flat of the transparent support body (22), via the ultraviolet ray-sensitive resin layer having adhesion before ultraviolet exposure.

Fig. 2 shows the manufacturing device for manufacturing the lenticular sheet of the present invention. In the present invention, the light shielding pattern is formed in the following processes.

After the cylindrical lens is formed on one surface of the transparent support body (1), the

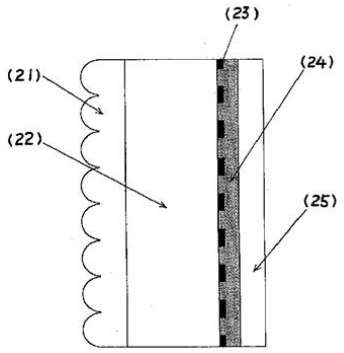
ultraviolet ray-sensitive resin film with adhesion (6) is laminated on the other surface of the transparent support body (1). The ultraviolet irradiating device (9) irradiates ultraviolet from the direction of lens surface, thereby, on the ultraviolet ray-sensitive resin film (6), the non-adhesion part is formed on the light collection part based on light collection effect pf lens, and the non-light collection part becomes the adhesion part with adhesion. After that, the surface protection film is detached from the film (6) (not shown), the surface on which the ultraviolet ray-sensitive resin film (6) is laminated and transfer paper (11) is through the roll pair for lamination (10, 10') with superimposed condition, thereby the black transfer layer is transferred from the transfer paper (11) only to the adhesion part, and the light shielding pattern is formed.

[Effect of Invention]

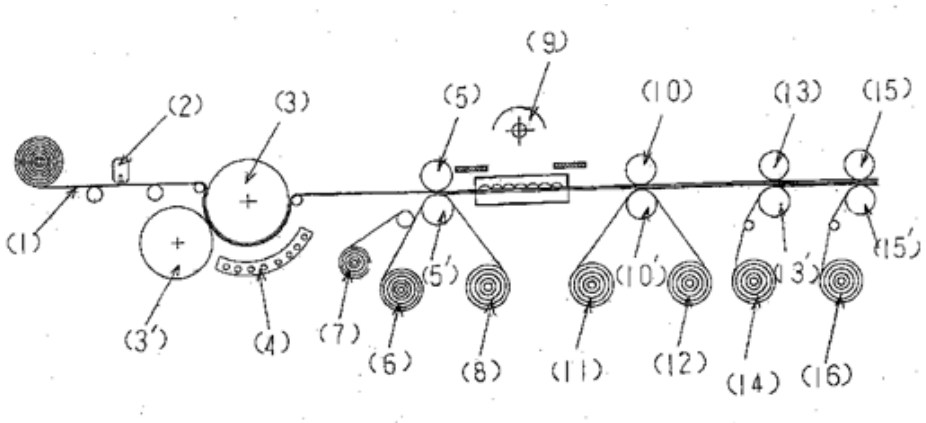
In the present invention, the light shielding pattern is formed accurately at the position corresponding to the border of lens, thereby the lenticular sheet is provided capable of obtaining sufficient brightness and contrast when using as the transmission type screen.

Drawings

[Fig. 1]



[Fig. 2]

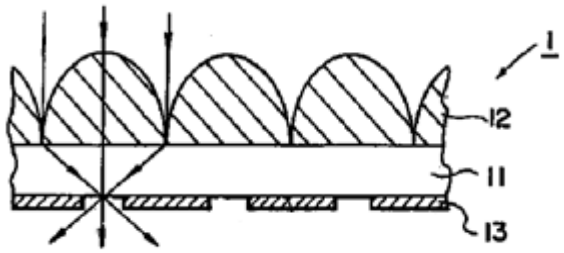


[State of the art (Prior art, well-known art etc.)]

Prior art 1:

The prior art 1 discloses the lenticular sheet (1) in which the lens unit (12) is formed with cylindrical lens arranged in parallel on one surface of the transparent support body (11), and the light shielding pattern (13) is printed with black ink on the position corresponding to the border of each cylindrical lens on the other surface of the transparent support body (11) as shown in Fig. 1.

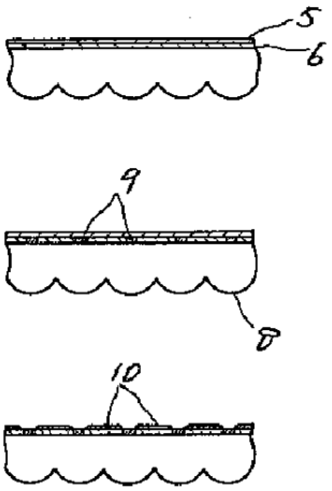
[Fig. 1]



Prior art 2:

The prior art 2 discloses the lenticular sheet in which the light shielding pattern on the reverse surface of the screen, the cylindrical lens is formed on the reverse surface, the ultraviolet ray-sensitive resin film (6) is attached on the reverse surface of the screen in which the lens is formed, after the adhesion part and non-adhesion part (9) are formed on the ultraviolet ray-sensitive resin film (6) using the light collection effect of lens, toner (10) is dispersed on the ultraviolet ray-sensitive resin film, and the non-adhered toner is removed, thereby the light shielding pattern is formed at the border of lens as shown in Fig. 1.

[Fig. 1]



Well-known art:

In the technical field of the transmission type screen, it is well-known for a person skilled in the art that the light shielding pattern is formed by dispersing black materials and that the light shielding pattern is formed by transferring black materials in forming the light shielding pattern of the lenticular sheet.

[Conclusion]

The invention of claim 1 lacks an inventive step.

[Overview of Reason for Refusal]

Comparing the invention of claim 1 and the prior art 1, both has the commonalities in terms of "the lenticular sheet used for the transmission type screen the lens unit is formed with cylindrical lens arranged in parallel on one surface of the transparent support body, the transfer light shielding pattern is formed only at the position corresponding to the border of each cylindrical lens on the other surface with flat of the transparent support body."

Also there is difference between them in that, in the invention of claim 1, the light shielding pattern is formed by transferring only at the position of adhesion part except for non-adhesion part based on light collection effect of each cylindrical lens via the ultraviolet ray-sensitive resin layer having adhesion before ultraviolet exposure, and, in the prior art 1, the light shielding pattern is formed by printing.

The above differences are reviewed.

The prior art 2 discloses the lenticular sheet in which the adhesion part and the non-adhesion part are formed on the ultraviolet ray-sensitive resin film by light collection effect of the cylindrical lens, and the light shielding pattern is formed by sticking toner only to the adhesion part.

The prior arts 1 and 2 belong to the common technical field of the transmission type screen, and have the common problem in that the light shielding pattern is formed at the border of the cylindrical lens. Besides, in the technical field of the transmission type screen, it is well-known art to form the light shielding pattern of the lenticular sheet by dispersing and transferring black materials, and it has been selectable for a person skilled in the art to adopt what technique as appropriate.

It has been conceivable for a person skilled in the art to configure the invention of claim 1 by applying the prior art 2 to the prior art 1 and add design modification based on a well-known art.

[Explanation]

(Considered motivation)

(1) Relation of technical fields

The prior arts 1 and 2, and the well-known art set forth in a notice of reasons for refusal all belong to the technical field of the transmission type screen.

(2) Similarity of problems to be solved

The prior arts 1 and 2 have the common problem in that the light shielding pattern is formed at the border of the cylindrical lens.

(Design variation of primary prior art)

The claimed element of claim 1 cannot be derived of the "light shielding pattern by transferring" by applying the prior art 2 to the prior art 1.

However, design modification etc. is taken into consideration corresponding to ordinary creative activity of a person skilled in the art to apply the secondary prior art to the primary prior art.

In the technical field of the transmission type screen, it is well-known arts to form the light shielding pattern of the lenticular sheet by dispersing and transferring black materials. Thus, it can be said that it is an ordinary creative activity for a person skilled in the art to select one of these techniques. Therefore, it has been easily conceivable for a person skilled in the art to modify and configure the design in which the light shielding pattern is formed by transferring black materials on the adhesion part in place of forming the light shielding pattern by dispersing toner on the adhesion part shown in the prior art 2 in applying the prior art 2 to the prior art 1.

[Case 4] (Invention lacks an inventive step)

Title of Invention

Printer

What is claimed is:

[Claim 1]

A printer comprising a controlling part for setting an operating mode of a printer main body to either of a normal mode or a power saving mode, wherein

the controlling part determines that a normal mode request or a power saving mode request is valid only when it is confirmed that the normal mode request or the power saving mode request is maintained for a predetermined time consistently.

Overview of the description

[Background Art]

When the edge of signals according to the normal mode request and power saving mode request is detected and determined, the signals are detected erroneously in case that noise is superimposed in these signals.

[Problem to be Solved by the Invention]

Error detection for the signals is avoided according to the normal mode request and power saving mode request.

[Solution for the problem to be solved]

It is determined that the normal mode request or the power saving mode request is valid only when it is confirmed that the normal mode request or the power saving mode request is maintained for a predetermined time consistently.

[State of the art (Prior art, well-known art, etc.)]

Prior art 1:

A printer comprises a controlling part for setting an operating mode of a printer main body to either of a normal mode or a power saving mode (The prior art discloses that the signals are exchanged according to a normal mode request and a power saving mode request, but does not disclose the probability to detect erroneously for the signals due to noise mixture.).

Well-known art:

The signal is regarded as valid only when the signals continue for a predetermined time consistently in order to avoid error operation due to noise mixture (each prior art for explaining well-known art does not specify that the disclosed techniques relates to the technical field of printer, but it can be recognized implicitly to adopt the well-known art as means against the error operation due to noise with respect to exchanging electrical signals from each prior art.).

[Conclusion]

The invention of claim 1 lacks an inventive step.

[Overview of Reason for Refusal]

Comparing the invention of claim 1 and the prior art 1, both have the commonality in terms of the "printer for setting an operating mode of a printer main body to either of a normal mode or a power saving mode.", and have the difference in that, in the invention of claim 1, "the controlling part determines that a normal mode request or a power saving mode request is valid only when it is confirmed that the normal mode request or the power saving mode request is maintained for a predetermined time consistently", and the prior art 1 does not disclose such controlling part.

The above difference is reviewed.

It is obvious for a person skilled in the art that noise may be mixed in the signals according to the normal mode request and power saving mode request as long as these signals are electrical signals. In addition, it can be said that the problem is underlying to avoid error operation due to noise mixture in the prior art 1, and it has been obvious for a person skilled in the art.

It is well-known that, in those for exchanging electrical signals in addition to the printer, the signals are regarded as valid when the signals continue for a predetermined time as means against error operation due to noise.

Therefore, it has been easily conceivable for a person skilled in the art to apply the controlling part that determines that a normal mode request or a power saving mode request is valid only when it is confirmed that the normal operating state request or the power saving operating state request is maintained for a predetermined time consistently based on well-known art.

[Explanation]

(Considered motivation)

- Similarity of problems to be solved

The prior art 1 does not disclose the problem in which error operation occurs due to that noise is mixed with signals. However, as long as the normal operating state request and the power saving operating state request are exchange of electrical signals in the prior art 1, it is obvious for a person skilled in the art that noise may be mixed and error operation may occur. Besides, the problem is underlying to avoid error operation due to noise mixture in the prior art 1.

Therefore, the prior art 1 and the well-known art have the common problem.

[Case 5] (Invention involves an inventive step)

Title of Invention

Dehydrating tub of washing machine

What is claimed is:

[Claim 1]

A dehydrating tub of a washing machine comprising a body consisting of cylindrical metal plates in which both ends are press-joined, a bottom plate coupled to a lower edge of the body, a balance ring fixed at an upper edge of the body, and a filter member provided with a plastic cover and a filter attached removably to the cover, wherein the filter member has an extending member extending within the dehydrating tub at an upper end part to cover a joint part of the body from inside allowing a gap between the upper end part of the filter member and the balance ring.

Overview of the description

The body of dehydrating tub of washing machine is formed by bending metal plates cylindrically and press-joining the both ends.

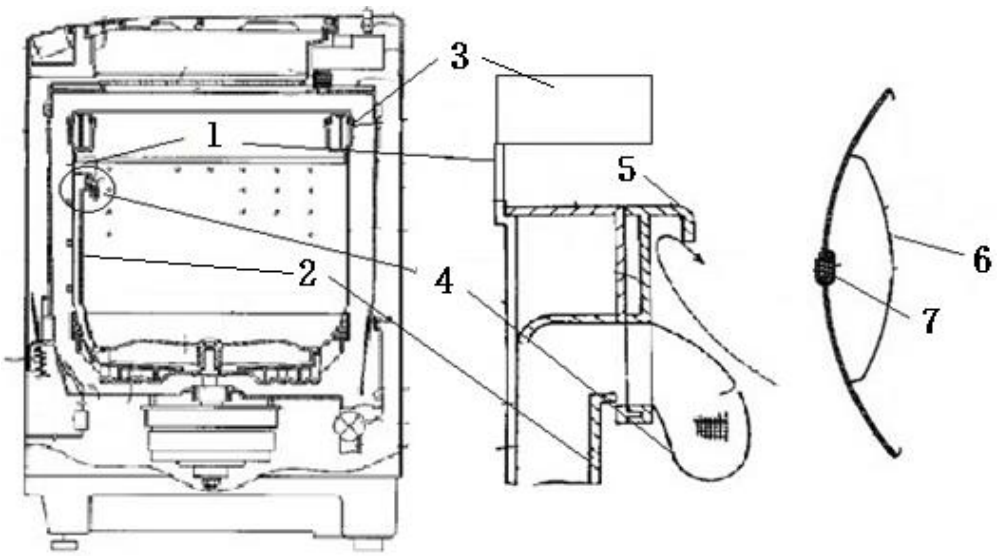
Such dehydrating tub is visually unattractive since the joining part of body can be seen for a user when watching inside the tub. Besides, the laundry is hooked at the press joining part of the body thereby causing damage on the laundry. Thus, the dehydrating tub exists in which the joining part of body is covered from inside with the plastic circulation path forming member.

For such conventional dehydrating tub, the circulation path forming member is attached vertically from the bottom plate to the balance ring without any gap, it is different in the coefficient of thermal expansion between the plastic circulation path forming member and the body of dehydrating tub consisting of metal plates, and a thermal contraction amount of the circulation path forming member is larger than a thermal contraction amount of the body of dehydrating tub, thereby forming a slight gap between the upper end part of the circulation path forming member and the balance ring specifically in winter, which causes a problem in which the launry is stuck in the gap and damaged.

The present invention is to conceal the press joining part of body consisting of metal plates by covering the press joining part by the filter member, avoid the laundry from being hooked and make the appearance good, attach the filter member to the press joining part of body allowing gap between the balance ring and the upper end part of the filter member, maintain space avoiding the laundry from being stuck irrespective the difference in thermal contraction amount between the body and the filter member by providing the extending member in the upper end part of the filter member, and to have the extending member to function as a hindering plate avoiding the extending member from closing to the gap, thereby avoids the ;.. laundry from being stuck between the balance ring and the filter member and damaged.

Drawings

[Fig. 1]　　[Fig. 2]　　[Fig. 3]



1　Gap
2　Filter member (Cover)
3　Balance ring
4　Filter
5　Extending member
6　Filter member (Cover)
7　Joining part (Press joining part)

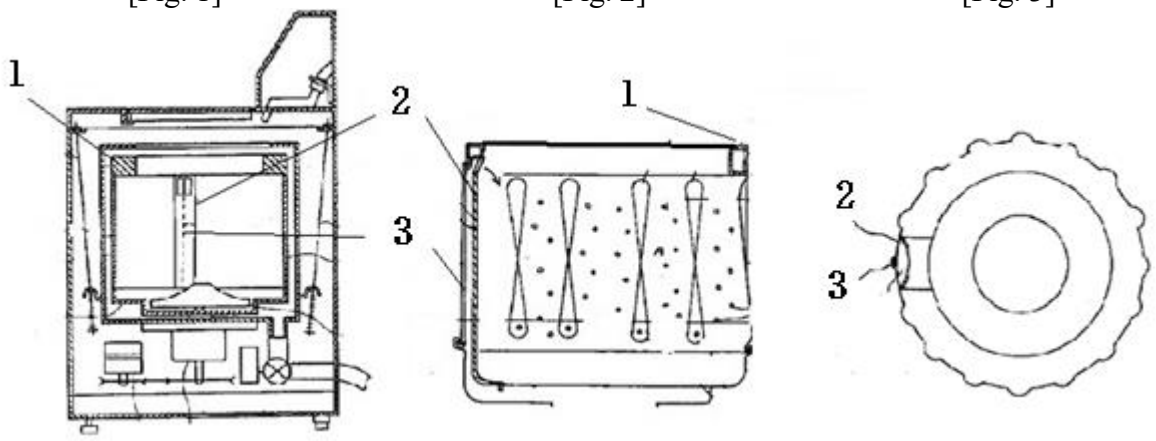
[State of the art (Prior art, well-known art, etc.)]
Prior art 1:

A washing machine having a dehydrating tub comprising a body formed by bending a stainless steel plates cylindrically and press-joining a seam, a bottom plate coupled to a lower end part of the body, a balance ring coupled to an upper end part of the body, a pivoted vane fixed within the bottom plate, and a resin circulation path body circulating water upward by the pumping action of the pivoted vane and forming a circulation path for sparging water for an upper part of the laundry wherein the resin circulation path body has a filter removably attached to a sparging nozzle of the upper end part thereof, and is fixed to an internal wall surface of the dehydrating tub such that a seam of the body can be covered across the bottom plate and the balance ring.

The prior art 1 is to save water for washing and facilitate dissolution of cleanser, and solve the problems in which the laundry is hooked at the press joining part as joining part of body and damaged and the appearance is bad, by covering the seam of body formed by bending cylindrically stainless steel plates and press-joining the seam by the resin circulation path body circulating water upward and forming the circulation path for sparging for the upper part of the

laundry.

[Fig. 1] [Fig. 2] [Fig. 3]



1 Balance ring
2 Resin circulation path body
3 Seam

Prior art 2:

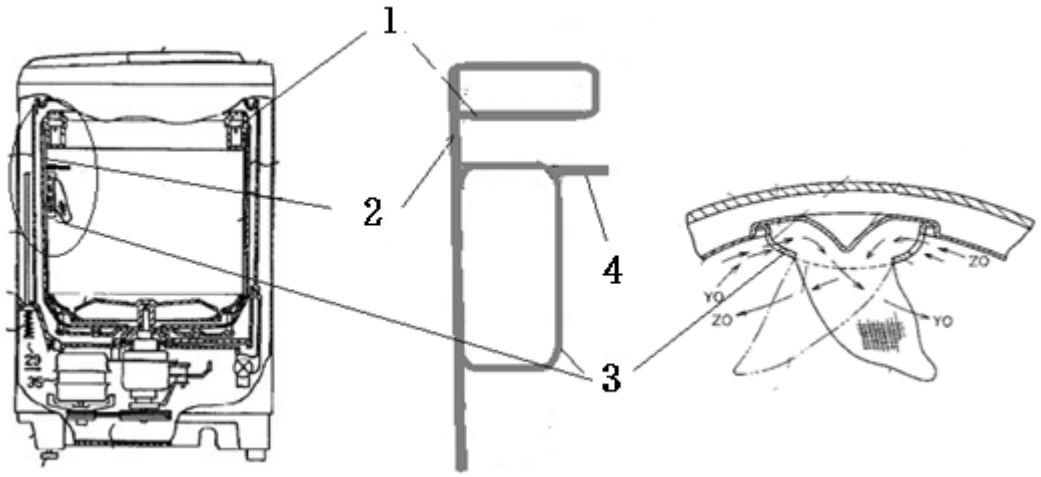
A dehydrating tub of a washing machine having a balance ring, a resin body, and a filter member provided removably at side wall of the resin body, wherein a cover of the filter member has an extending member extending toward the dehydrating tub at an upper end, a plurality of inflow ports formed at both edges, an outflow port in a center of front surface, and a filter attached to the outflow port, and formed with the same resin materials as the dehydrating tub, and wherein the filter member is attached removably allowing gap between the upper end part of the filter member and the balance ring such that an angle guide formed at an upper part of the dehydrating tub can be covered.

The prior art 2 is to solve the problem in which water flow goes through the inflow ports provided at both edges of the cover and shortcuts the filter attached at outflow port of the center of front surface in the case of rotating reversely washing water horizontally in a washing process, foreign particles cannot collected sufficiently, and since the dehydrating tub and filter member are shaped with different resin materials, the filter member cannot be removed from the dehydrating tub due to the difference in both thermal expansions depending on water temperature and air temperature.

The detailed description of invention states that, in shaping integrally the dehydrating tub with synthetic resin, water flow from side edge to filter member is guided certainly to the outflow port of center of front surface, by providing an angle guide at the filter attaching position of the dehydrating tub, and the filter member is easily removable by shaping the dehydrating tub and filter member with the same resin materials, providing the extending member at the cover of filter member, and allowing a finger-sized gap between the upper end part of filter member and the

balance ring to make it easy to grasp the extending member.

[Fig. 1] [Fig. 2] [Fig. 3]



1 Balance ring
2 Gap
3 Extending member
4 Filter member (Cover)

[Conclusion]

The invention of claim 1 involves an inventive step.

[Explanation]

(Considered motivation)

(1) Relation of technical fields

The prior arts 1 and 2 relate to the "washing machine comprising the filter member in the dehydrating tub", and both belong to the same technical field.

(2) Similarity of problems to be solved

The prior art 1 is to "save water for washing and facilitate dissolution of cleanser, and solve the problems in which laundry is hooked at the press joining part as joining part of body and damaged and such joining part does not have good appearance." In contrast, the prior art 2 is to solve the problem in which "water flow goes through the inflow ports provided at both edges of the cover and shortcuts the filter attached at the outflow port of the center of the front surface, thereby foreign particles cannot be collected sufficiently by the filter, and further since the dehydrating tub and the filter member are formed with different resin materials, the filter member cannot be removed from the dehydrating tub due to the different thermal expansion for both materials depending on the water or air temperature. Thus, the prior arts 1 and 2 do not have the common problems.

Since the dehydrating tub of the prior art 2 is integrally molded with synthetic resin and

does not have any seam, it cannot anticipate the problems in which laundry is hooked at a seam of the body that is formed by bending cylindrically stainless steel plates and press-joining the seam and damaged, and such seam does not have good appearance.

(3) Similarity of operations or functions

It can be said that the "resin circulation path body" of the prior art 1 and the "filter member" of the prior art 2 have the common functionality in terms of the "filter mechanism".

However, the "resin circulation path body" of the prior art 1 is to circulate water upward from the bottom part, and sparge for the upper part of the laundry. The "filter member" of the prior art 2 to flow water flow that comes from the inflow ports provided at the wall edge, from the outflow port provided at the front surface, thus the water flow in the filter member is different from one in the prior art 1. Therefore, It cannot be said that both have common effect and functionality.

Moreover, the "resin circulation path body" of the prior art 1 is fixed at the internal wall surface of the dehydrating tub and not removable from the body, and in addition the resin circulation path body and the body are made of different materials. On the other hand, the "filter member" of the prior art 2 is formed based on the same materials as the dehydrating tub. It is not reasoned to adopt the "filter member" of the prior art 2 in place of the resin circulation path body of the prior art 1, the body being made of stainless steel.

(4) Suggestion of the prior art

The prior art 1 does not suggest that the resin circulation path body is removable or the configuration except for the circulation path for circulating water upward from the bottom part.

The prior art 2 does not suggest the following configuration of the filter member that the circulation path for circulating water upward from the bottom part and the dehydrating tub is shaped with metal other than resin.

(Explanation for no reason for refusal)

(Identical features and differences)

Comparing the invention of claim 1 and the prior art 1, both have the commonality and difference as below.

- Identical features

"A dehydrating tub of a washing machine comprising a body consisting of cylindrical metal plates in which both ends are press-joined, a bottom plate coupled to a lower edge of the body, a balance ring fixed at an upper edge of the body, and a filter member comprising a plastic cover and a filter attached removably to the cover, in which the filter member covers the joining part of the body from inside of the tub."

- Differences

The "filter member" of the invention of claim 1 is provided with "the extending member extending at the upper end part within the dehydrating tub" and attached "between the upper end part of the filter member and the balance ring allowing a gap." The prior art 1 does not have the "extending member" and "gap".

(Motivation)

Reviewing whether the inventive step can be denied by applying the "filter member" of the prior art 2 in place of the "resin circulation path body" of the prior art 1, it cannot be said that there is motivation to apply the prior art 2 to the prior art 1 from the total consideration on the above (1) to (4).

Therefore, it has not been easily conceivable for a person skilled in the art to apply the prior art 2 to the prior art 1.

[Case 6] (Invention lacks an inventive step)

Title of Invention

Intervertebral disc implant

What is claimed is:

[Claim 1]

An intervertebral disc implant, comprising a radiolucent polymer material, comprising: an upper surface; a lower surface, and a hole for receiving artificial bone pieces, wherein the hole passes through the upper surface and the lower surface, and has a shape to taper toward the upper or lower surface.

Overview of the description

[Background Art]

When an intervertebral disc is affected or damaged, an operation is carried out to remove the affected or damaged intervertebral disc, and insert an intervertebral disc implant into the space after the removal.

It has been known that Intervertebral disc implants comprising biocompatible metallic material such as titanium and titanium alloy, and the intervertebral disc implants has a hole for accommodating artificial bone pieces and is configured to expedite fusion between neighboring vertebrae so that artificial bone pieces are replaced with bone texture.

[Problem to be Solved by the Invention]

In the conventional intervertebral disc implants, since artificial bone pieces are not secured in the hole of the intervertebral disc implant, the artificial bone pieces sometimes come off from the intervertebral disc implant in the inserting process.

Furthermore, if the intervertebral disc implant is made of metallic materials, it is difficult to observe the degree of fusion of vertebrae in a follow-up after the operation.

[Solution for the Problem to be Solved]

In the present invention, a hole to receive the artificial bone pieces is formed to have a shape tapered toward the upper or lower surface of the intervertebral disc implant, so that the intervertebral disc implant and the artificial bone pieces can be secured by press fitting. By doing so, it is possible to prevent the artificial bone pieces from coming off from the intervertebral disc implant.

In addition, the intervertebral disc implant of the present invention is formed with a radiolucent polymer material. By doing so, it becomes possible to observe the status of the bone texture entered into the hole of the intervertebral disc implant when the affected area is roentgenographed after the operation.

[State of the art (Prior art, well-known art, etc.)]

Prior art:

An intervertebral disc implant, comprising a polymer material, having an upper surface and a lower surface, as well as a hole for receiving artificial bone pieces passing through the upper surface and the lower surface, and securing the artificial bone pieces.

In addition, the prior art states that the intervertebral disc implant and the artificial bone pieces may be secured by press fitting.

Well-known art 1:

To manufacture intervertebral disc implants from a radiolucent polymer material so that fusion of vertebrae with each other after operation can be observed

Well-known art 2:

With respect to bone implants and artificial joints, to secure members with each other by press fitting by their shapes such as complementary tapered, cone or conical body

[Conclusion]

The invention of claim 1 lacks an inventive step.

[Overview of Reason for Refusal]

(Identical features and differences)

According to comparison between the invention of claim 1 and the prior art, both of them agree with each other in that they are "an intervertebral disc implant, comprising a polymer material, comprising: an upper surface; a lower surface; and a hole for receiving artificial bone pieces, wherein the hole passes through the upper surface and the lower surface" and differ with each other in the following points.

(Difference 1)

With respect to the polymer material, while the former has "radiolucent" one, the latter is not specified in this regard.

(Difference 2)

With respect to the hole, while the hole of the former "tapers toward the upper or lower surface", the hole of the latter is for securing the "artificial bone pieces".

With respect to the above-mentioned difference 1, it is a well-known art to manufacture intervertebral disc implants with a radiolucent polymer material so that fusion of bones after plant can be observed, and, since the prior art relates to an intervertebral disc implant, the feature according to the difference 1 of the claimed invention is a matter at which a person skilled in the art could have easily arrived.

With respect to the above-mentioned difference 2, it is a well-known art with respect to bone implants and artificial joints, to secure members with each other by press fitting by their shapes such as complementary tapered, and, since the prior art describes that the intervertebral

disc implant and the artificial bone pieces may be secured with each other by press fitting, the configuration according to the difference 2 of the claimed invention is a matter at which a persons skilled in the art could have easily arrived.

[Explanation]
(Considered motivation)
(Difference 1)
- Relation of technical fields

The prior art and the well-known art 1 belong to the same technical field, an intervertebral disc implant which expedites fusion of bones.

(Difference 2)
- Suggestions shown in the content of prior art

The description in the prior art that an artificial bone pieces may be secured to the intervertebral disc implant by press fitting into the artificial bone pieces suggests the application of the well-known art 2.

[Case 7] (Invention involves an inventive step)

Title of Invention

Stainless steel

What is claimed is:

[Claim 1]

A stainless steel consisting of, by mass percent, C: ○○ to ●●%, Si: △△ to ▲▲%, Mn: ▽▽ to ▼▼%, Cr: □□ to ■■%, P: 0.02% or less, S: 0.01% or less, ••• and the balance Fe and inevitable impurities.

Overview of the description

[Background Art]

It is disclosed that a stainless steel having mechanical properties and corrosion resistance in accordance with the purpose of use has been developed by controlling the chemical composition of the stainless steel.

[Problem to be Solved by the Invention]

It is disclosed to provide a stainless steel having high mechanical properties and corrosion resistance suitable for a turbine member as the problem to be solved by the present invention.

[Solution for the Problem to be Solved]

It is disclosed that a stainless steel comprising the mechanical properties and corrosion resistance required for a turbine member can be provided by determining the chemical composition of the stainless steel within the range described in claim 1.

[Effect of Invention]

Concrete experimental results, etc. show that the stainless steel of the present invention would have the desired mechanical properties by determining the contents of C, Si, Mn, Cr and P, etc., each within the range described in claim 1.

Meanwhile, it has also shown that if the content of S in the stainless steel exceeds 0.01 mass percent, the stainless steel will not have sufficient corrosion resistance required for the turbine member.

[State of the art (Prior art, well-known art, etc.)]

Prior art 1:

A free-cutting stainless steel consisting of C, Si, Mn, Cr, P, etc., each within the range described in claim 1 of the present application, and further consisting of 0.1 to 0.2 mass percent of S and the balance Fe and inevitable impurities.

The prior art 1 involves a problem of providing a stainless steel that fits to the predetermined standard for both corrosion resistance and machinability.

In addition, in the prior art 1, the desired machinability is obtained by consisting of a

defined amount of S in stainless steel to form sulfides in the steel, and if the content of S is insufficient, the machinability will not conform to the predetermined standard.

Well-known art:

In general, since S is an element that decreases corrosion resistance in steels, it is well-known art in the technical field that it is preferable to reduce its content, usually by approximately 0.01 mass percent or less.

[Conclusion]

The invention of claim 1 involves an inventive step.

[Explanation]

(Considered motivation)

(1) Relation of technical fields

The prior art 1 and the well-known art are common in their technical field as they relate to steels.

(2) Similarity of problems to be solved

The prior art 1 and the well-known art have the common problem in that they have the problem to be solved to provide a steel having corrosion resistance.

(Explanation for no reason for refusal)

(Identical features and differences)

The invention of claim 1 and the prior art 1 are identical in that they are stainless steels having overlapping range of chemical composition except for S and differ in that the former is 0.01 mass percent or less and the latter is between 0.1 and 0.2 mass percent regarding the content of S.

(Motivation)

In consideration of the aforementioned (1) and (2) (Considered motivation), it can be said that there is the motivation to reduce the content of S in the stainless steel of the prior art 1 for increasing its corrosion resistance.

(Obstructive factors)

However, the free-cutting stainless steel of the prior art 1 does not fit the predetermined standard in terms of machinability when the content of S is insufficient. Therefore, it is not appropriate to apply the well-known art of reducing the content to the prior art 1, which requires machinability.

Therefore, it is not easily conceivable for a person skilled in the art to apply the well-known art to the prior art 1.

[Case 8] (Invention involves an inventive step)

Title of Invention

Surface treating agent for copper

What is claimed is:

[Claim 1]

A surface treating agent for copper consisting of an aqueous solution comprising an imidazole compound, ethylenediaminetetraacetic acid and iron ions.

Overview of the description

[Background Art]

The invention relates to a surface treating agent forming a chemical film for protecting the surface of the copper wiring on the printed board comprising an exogenous metal such as gold and solder in a part of the copper wiring.

[Problem to be Solved by the Invention]

While a method for selectively forming a chemical film only on the surface of copper by a surface treating agent containing an imidazole compound and ethylenediaminetetraacetic acid as a complexing agent has been known, there is a problem to be solved for this method that the film-formability of the chemical film is inferior and that the time for treating the surface is prolonged.

[Solution for the Problem to be Solved]

The invention is to provide the surface treating agent containing the imidazole compound and ethylenediaminetetraacetic acid and containing iron ions as an indispensable component, thereby selectively forming the chemical film only on the surface of copper and being good in the film-formability of the chemical film and being short in the time for treating the surface.

[Effect of Invention]

According to the surface treating agent of the invention, an effect is exerted that the selectivity of forming the chemical film only on the surface of copper is maintained and that the film-formability of the chemical film is good and the time for treating the surface is short.

[State of the art (Prior art, well-known art, etc.)]

Prior art 1:

[Claim 1]

A surface treating agent for copper consisting of an aqueous solution comprising an imidazole compound and ethylenediaminetetraacetic acid.

(Overview of the Invention)

When the surface of the copper wiring on the printed board is treated with the surface treating agent consisting of the aqueous solution comprising the imidazole compound, there are problems that the copper is dissolved out to increase the concentration of copper ion in the treating

agent and that the chemical film is precipitated not only on the surface of the copper wiring but also on the surface of the exogenous metal such as gold, solder and the like.

In the invention, when the printed board is treated with the surface treating agent in which ethylenediaminetetraacetic acid is added, an increase of the concentration of the copper ions can be suppressed by forming a complex upon capturing ethylenediaminetetraacetic acid with the copper ions which is dissolved out in the surface treating agent and the chemical film can be selectively formed only on the surface of the copper wiring.

Prior art 2

[Claim 1]

A surface treating agent for copper, consisting of an aqueous solution comprising an imidazole compound and iron ions.

(Overview of the Invention)

When the surface of copper wiring on the printed board is treated with the surface treating agent in which iron ions are added to the aqueous solution containing the imidazole compound, the heat resistance of the chemical film is improved, due to the presence of the iron ions in the aqueous solution.

(Supplementary Explanation)

It is the common general knowledge that ethylenediaminetetraacetic acid is a complexing agent which captures various metal ions such as copper, iron and the like to form a complex.

In addition, it is a general problem to be solved in the technical art of the surface treating agent for the copper wiring on the printed board that the heat resistance of the coat is improved.

[Conclusion]

The invention of claim 1 involves an inventive step.

[Explanation]

(Considered motivation)

(1) Relation of technical fields

The prior arts 1 and 2 belong to the same technical field of the surface treating agent for the copper wiring on the printed board.

(2) Similarity of problems to be solved

It can be said to be a general problem to be solved in the technical field of the surface treating agent for the copper wiring on the printed board that the heat resistance of the coat is improved. Hence, the prior arts 1 and 2 are similar in the problem to be solved for improving the heat resistance of the coat.

(Explanation for no reason for refusal)

(Identical features and differences)

Comparing the claimed invention and the prior art 1, the surface treating agent in the prior art 1 can be changed into the claimed invention by further adding iron ions.

(Motivation)

Here, upon examining whether there is a motivation for further adding iron ions in the prior art 2 to the surface treating agent in the prior art 1, it can be said that there is the motivation that iron ions are further added to the surface treating agent in the prior art 1, in comprehensive consideration of the circumstances shown in the above (Considered motivation) (1) and (2).

(Obstructive factors)

In consideration of the common general knowledge that ethylenediaminetetraacetic acid forms a complex with various metal ions such as copper, iron and the like, it can be recognized that a person skilled in the art would consider, when the iron ions are added to the surface treating agent of the prior art 1, a complex is formed between ethylenediaminetetraacetic acid, which is added to form a complex with copper ions, and iron ions, and that the function of ethylenediaminetetraacetic acid, which forms a chemical film only on the surface of copper, is not sufficiently exerted. In addition, if the complex between iron ions and ethylenediaminetetraacetic acid is formed, it can be recognized that a person skilled in the art would consider that the function of iron ions, which are added to improve the heat resistance of the coat, is also not sufficiently exerted. Therefore, there is the obstructive factor for adding iron ions to the surface treating agent of the prior art 1.

(Advantageous effects)

The effect, that when iron ions are added to the surface treating agent for copper consisting of the aqueous solution comprising the imidazole compound and ethylenediaminetetraacetic acid, while the selectivity of forming the chemical film only on the surface of copper is maintained, the formability of the chemical film is good and the time for treating the surface is short, is not predicted from the prior arts 1 and 2, and is an advantageous effect.

As mentioned above, there is the obstructive factor in further adding iron ions to the surface treating agent of the prior art 1. In addition, it is recognized that the claimed invention provides an advantageous effect against the prior arts 1 and 2. Since it is recognized that the obstructive factor and the circumferences for the advantageous effect has a degree to obstruct that the prior art 2 is applied to the prior art 1, even in consideration of the above motivation, the claimed invention has an inventive step.

[Case 9] (Invention lacks an inventive step)

Title of Invention

Photocatalytic decontamination system

What is claimed is:

[Claim 1]

A photocatalytic decontamination system, comprising means for mixing a photocatalyst with contaminated liquid to form a suspension, means for irradiating an ultraviolet ray to the suspension to decontaminate a contaminated substance by photocatalytic reaction, means for filtering the decontaminated suspension with a ceramic filter which is an ultrafiltration membrane to separate the photocatalyst and the decontaminated liquid, and means for washing to remove the photocatalyst attached on the ceramic filter by back washing upon spraying a compressed air in a pulsed form to the ceramic filter.

Overview of the description

[Background Art]

The decontaminative treatment using an ultraviolet ray has an advantage of effectively decontaminating without any effect against the environment, unlike with a treatment using a chemical substance.　In addition, when a fine particle such as titanium dioxide is suspended into the liquid to be treated in the decontamination by an ultraviolet ray, it has been known that the decontamination can be further effectively performed by photocatalytic reaction.

[Problem to be Solved by the Invention]

Where the photocatalyst is mixed with the contaminated liquid for the decontamination by irradiating an ultraviolet ray, an ultrafiltration membrane comprising a polymer membrane has been used in order to separate the decontaminated liquid and the photocatalyst after irradiation. In addition, it is necessary to periodically wash the membrane, since the photocatalyst is deposited on the surface of the ultrafiltration membrane in continuous use. In consideration of the strength of the polymer membrane, the photocatalyst has been removed by back washing in which the washing liquid is gently supplied from the reverse direction of the membrane. However, since the polymer membrane does not stand a use at high pressure, back washing at high pressure cannot be performed and too much time is required for washing. Therefore, the treatment of the contaminated liquid cannot be performed during washing time and decontamination efficiency was worse.

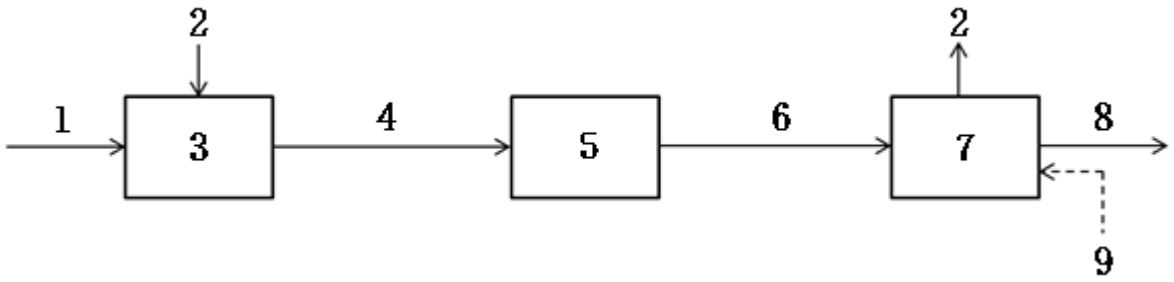
[Solution for the Problem to be Solved]

The present invention utilizes a ceramic filter which is an ultrafiltration membrane as means for separating the photocatalyst from the suspension in the photocatalytic decontamination system, and constitutes to use back washing by spraying the compressed air to the ceramic filter in pulsed form.

[Effect of Invention]

By utilizing a ceramic filter which is an ultrafiltration membrane, it is possible to wash at high pressure by the compressed air in the pulsed form. It follows that the washing time is shortened and the decontamination efficacy is improved greatly.

Drawings
[Fig. 1]



1 Contaminated liquid
2 Photocatalyst
3 Means for mixing the photocatalyst
4 Suspension (photocatalyst and contaminated liquid)
5 Means for irradiating an ultraviolet ray
6 Suspension (photocatalyst and decontaminated liquid)
7 Means for filtering (ceramic filter)
8 Decontaminated liquid
9 Compressed air in the pulsed form (means for washing)

[State of the art (Prior art, well-known art, etc.)]
Prior art 1:

photocatalytic decontamination system, comprising means for mixing a photocatalyst such as titanium dioxide with contaminated water to form a suspension, means for irradiating an ultraviolet ray to the suspension to perform decontamination such as degradation of an organic matter in the suspension by photocatalytic reaction, sterilization and the like, means for filtering the decontaminated suspension with a ceramic filter which is an ultrafiltration membrane to separate the photocatalyst and the decontaminated water, and means for washing to remove a fine particle of catalyst attached on the ceramic filter by back washing with feeding water to the ceramic filter in a direction opposite to the decontaminated water."

Prior art 2:

"A system of washing to regenerate an ultrafiltration membrane: said system comprises means for removing fine solids attached on a surface of an ultrafiltration membrane which comprises a ceramic filter, said means for removing provide a strong impact to the solids on the membrane by spraying a compressed air in a pulsed form from its backside to remove the solids

in a short time, which are stacked and attached too strongly on the opening of the membrane to eliminate by back washing with water, a strong impact when the solids are staked on the inner surface of the ceramic filter to decrease the filterability."

(Supplementary Explanation)

The "fine solid" means a fine particle and the like contained in the sludge in the prior art 2, the washing system of the prior art 2 is used for washing the ultrafiltration membrane to separate various kinds of fine solids. In addition, the size of the "fine solids" is somewhat larger than the pore of the ultrafiltration membrane, and is the same degree with those of the photocatalyst particle of the prior art 1.

[Conclusion]

The invention of claim 1 lacks an inventive step.

[Overview of Reason for Refusal]

Upon comparing the invention claimed in claim 1 and the prior art 1, both are identical in that:

"A photocatalytic decontamination system, comprising means for mixing a photocatalyst with contaminated liquid to form a suspension, means for irradiating an ultraviolet ray to the suspension to decontaminate a contaminated substance by photocatalytic reaction, means for filtering the decontaminated suspension with a ceramic filter which is an ultrafiltration membrane to separate the photocatalyst and the decontaminated liquid, and means for washing to remove the photocatalyst attached on the ceramic filter by back washing."

and the invention claimed in claim 1 and the prior art 1 are different in that while in the invention claimed in claim 1, the back washing is performed by "spraying a compressed air in a pulsed form", in the prior art 1, the back washing is performed by "feeding a washing water".

Upon examining the aforementioned different point, it has been known in the prior art 2 that the impact is provided to the solid on the membrane by the back washing upon spraying the compressed air in a pulsed form to the ceramic filter which is the ultrafiltration membrane and the fine solid which is difficult to remove by the back washing with the washing water and which is stacked on the surface of the membrane can be removed with short time. In addition, since the prior art 2 does not specify the types of "fine solids" and relates to a general technique for washing to remove the fine solids which are attached on the ultrafiltration membrane, it is obvious that if it is used as a washing apparatus of a system having a washing step of the ultrafiltration membrane, a higher washing efficiency in washing can be obtained than those with the back washing by the washing water and the whole system can be effectively operated.

In addition, the prior art 1 and the prior art 2 are in the same technical field in that the ceramic filter which is the ultrafiltration membrane is utilized in the filtration treatment of liquid, and the prior art 1 and the prior art 2 are common in the problem to be solved in that the solid

attached on the ceramic filter which is the ultrafiltration membrane is removed from the membrane. In addition, since the improvement of washability and the shortening of washing time are obvious problems in the general washing of the filtering membrane for a person skilled in the art, the prior art 1 and the prior art 2 are also common in the problem to be solved. Further, the washing means of the prior art 1 and the prior art 2 has a common function in that the ceramic filter which is the ultrafiltration membrane is back washed.

Therefore, it is easily conceivable for a person skilled in the art that in the prior art 1, means for washing is substituted with means for "spraying a compressed air in a pulsed form".

invention claimed in claim 1, shortening washing time improves the decontamination efficiency in the whole system, is predictable for a person skilled in the art.

[Explanation]
(Considered motivation)
(1) Relation of technical fields

The prior art 1 and the prior art 2 are in the same technical field in that the solid and the liquid are separated in the filtering treatment of liquid using the ceramic filter which is the ultrafiltration membrane.

(2) Similarity of problems to be solved

prior art 1 and the prior art 2 have the common technical problem that the solid attached on the ceramic filter which is the ultrafiltration membrane is to be removed from the membrane. In addition, while the prior art 2 discloses a superior means in the washability and the washing time, in comparison with the other, it is obvious for a person skilled in the art that the improvement of the washability and the shortening of washing time are preferred in the general washing of the filtering membrane.

(3) Similarity of operations or functions

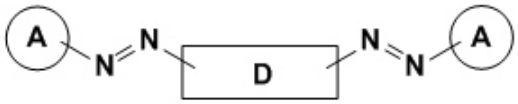
The means for washing of the prior art 1 and the prior art 2 have a common function that the ceramic filter which is the ultrafiltration membrane is back washed.

(Advantageous effects)

claimed in claim 1 provides an effect that washing time can be shortened and the decontamination efficiency can be largely improved, the prior art 2 provides higher washing effect with shorter time than those in the back washing with the washing water to the ceramic filter which is the ultrafiltration membrane. Accordingly, it can be predicted for a person skilled in the art that the washing time can be shortened and the decontamination efficiency in the whole system can be improved where the means for washing of the prior art 2 are applied to the prior art 1.

[Case 10] (Invention involves an inventive step)
Title of Invention
　　Azo compound

What is claimed is:
[Claim 1]
　　A compound represented by the following formula (I).



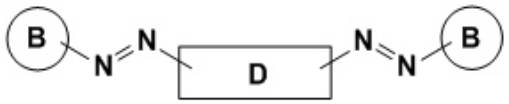
(I)

(Ring A is a ring having a specific structure.　The group D has a specific structure.)

[Claim 2]
　　An azo dye composition for synthetic polyamide fiber, containing the compound represented by the formula (I) stated in claim 1.

Overview of the description
[Background Art]
　　The compound containing azo group has been publicly known as a dye for synthetic polyamide fiber (for example, prior art 1).
[Problem to be Solved by the Invention]
　　To provide an azo dye compound for synthetic polyamide fiber.

[State of the art (Prior art, well-known art, etc.)]
Prior art 1:
　　A compound represented by formula (II) and an azo dye composition for synthetic polyamide fiber containing the compound are disclosed.



(II)

(Ring B is a ring having a specific structure, and is greatly different from the structure of the ring A of the claimed invention and prior art 2, and there is no common general knowledge that the ring B and the ring A are interchangeable.　The group D has a specific structure and is identical to the group D of the claimed invention.　In addition, it is not clear which portion of the compound of formula (II) is responsible for the problem to be solved, the operation or the function in prior art 1.)

Prior art 2:
　　A compound of formula (III) and an azo dye composition for synthetic polyamide fiber containing the compound are disclosed.

(III)

(Ring A is identical to the ring A in the claimed invention.　While the group E has a specific structure,　it is greatly different from the structure of the D of the claimed invention, and there is no common general knowledge that the groups D and E are interchangeable.　In addition, it is not clear which portion of the compound of formula (III) is responsible for the problem to be solved, the operation or the function in prior art 2.)

[Conclusion]

The invention of claim 1 and 2 involves an inventive step.

[Explanation]

(Considered motivation)

(1) Relation of technical fields

Document 1 and prior art 2 are common in the technical field of "azo dye for synthetic polyamide fiber".

(2) Similarity of problems to be solved, and similarity of operations or functions

However, even when the compound of formula (III) is useful as an azo dye for synthetic polyamide fiber in prior art 2, it is not clear which portion in the compound of formula (III) is responsible for the problem to be solved, the operation or the function in prior art 2. Furthermore, since the ring A is merely a partial structure at the end in the compound of formula (III), and the operation or the function only in the ring A is unknown, it cannot be said that the ring A can solve any problem to be solved and it cannot be also said that the ring A has any operation or function in prior art 2.

According to the aforementioned matters, it cannot be said that the ring B in prior art 1 and the ring A in prior art 2 are common in the problem to be solved, it also cannot be said they are common in the operation or the function.

(Explanation for no reason for refusal)

(Identical features and differences)

If the ring A in the compound of formula (III) disclosed in prior art 2 is utilized instead of the ring B in the compound of formula (II) disclosed in prior art 1, it will make the claimed invention.

(Motivation)

In comprehensive consideration of the aforementioned (Considered motivation) (1) and (2), it cannot be said that there is a motivation to utilize the ring A in prior art 2, instead of the ring B in prior art 1.

Therefore, it is not easily conceivable for a person skilled in the art to utilize the ring A in

the compound of formula (III) disclosed in prior art 2 instead of the ring B in the compound of formula (II) disclosed in prior art 1.

[Case 11] (Invention lacks an inventive step)

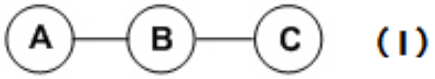
Title of Invention

A method for manufacturing a tricyclic aryl compound

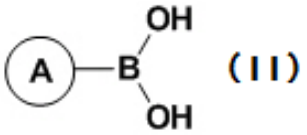
What is claimed is:

[Claim 1]

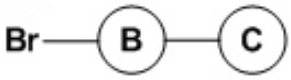
A method for manufacturing a compound of formula (I), wherein an arylboronic acid of formula (II) and an aryl bromide of formula (III) are coupled under the presence of a palladium catalyst.



(I)



(II)



(III)

[Claim 2]

The method according to claim 1, wherein the palladium catalyst is a palladium catalyst α.

Overview of the description

[Background Art]

The compound of formula (I) is a publicly-known compound.

[Problem to be Solved by the Invention]

To provide a new method for manufacturing the compound of formula (I).

[Solution for the Problem to be Solved]

The arylboronic acid of formula (II) and the aryl bromide of formula (III) are coupled (Suzuki coupling reaction) under the presence of the palladium catalyst to manufacture the compound of formula (I).

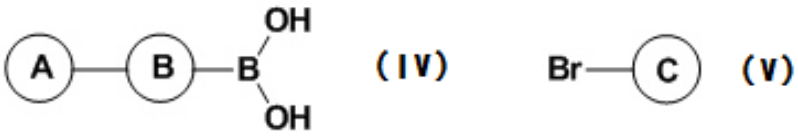
[Effect of Invention]

By utilizing the method of claimed invention, the compound of formula (I) can be effectively obtained.

[State of the art (Prior art, well-known art, etc.)]

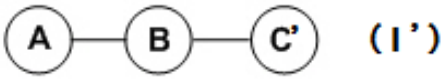
Prior art 1:

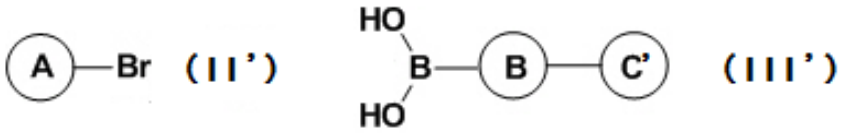
As the method for manufacturing the compound of formula (I), a method of coupling an arylboronic acid of formula (IV) and an aryl bromide of formula (V) under the presence of a palladium catalyst β is disclosed.



Prior art 2:

As the method for manufacturing the compound of formula (I'), a method of coupling an aryl bromide of formula (II') and an arylboronic acid of formula (III') under the presence of a palladium catalyst Y is disclosed.





[Conclusion]

The invention of claim 1 and 2 lacks an inventive step.

[Overview of Reason for Refusal]

- Claim 1

Upon comparing the invention according to claim 1 and the invention disclosed in prior art 1, both are the method for manufacturing of formula (I) by the Suzuki coupling reaction, and both are different in that the former reacts formula (II) and formula (III), and the latter reacts formula (IV) and formula (V), that is, the bond which is formed is between the ring A and the ring B in the former and that the bond which is formed is between the ring B and the ring C in the latter.

Upon examining the aforementioned different point, prior art 2 disclosed the method reacting formula (II') and formula (III') as a method for manufacturing a tricyclic aryl compound having similar chemical structure with formula (I), that is, a method in which the bond as formed is between the ring A and the ring B.

The invention disclosed in prior art 1 and the invention disclosed in prior art 2 are common in the technical art as the method for manufacturing the tricyclic aryl compound by the Suzuki coupling reaction, and are common in the problem to be solved as providing the method for manufacturing.　In addition, since a person skilled in the art would appropriately determine what bond in the several bonds is selected to be formed in the Suzuki coupling reaction, it is easily conceivable for a person skilled in the art that the bond to be formed is to be between the ring A and the ring B as disclosed in prior art 2 in the method for manufacturing the compound of formula (I) disclosed in prior art 1, instead of one between the ring B and the ring C.

In addition, the boronic acid and the bromide are leaving groups and do not affect a

structure of a product at all. Accordingly, it is generally arbitrarily what compound in the two aryl compounds is substituted with the boronic acid or the bromide, and it is merely a design change with the specific application of techniques that the boronic acid is substituted in the ring A and the bromide is substituted in the ring B, as the leaving group.

Further, it cannot be said that the claimed invention provides a particularly remarkable effect which cannot be predicted from the disclosure of prior art 1 and 2.

- Claim 2

Upon comparing the invention according to claim 2 and the invention disclosed in prior art 1, both are also different from each other in that the catalyst in use is the catalyst α in the former and the catalyst β in the latter, in addition to the aforementioned different point.

However, since the catalyst α is one of the generic catalysts which are equivalently used as the catalyst β in the Suzuki coupling reaction, no particular difficulty is found to select the catalyst α.

In addition, it cannot be said from the statement in the description of the present application that to use the catalyst α provides a particularly remarkable effect which cannot be predicted from the disclosure of prior art 1 and 2.

[Explanation]
- Claims 1 and 2
(Considered motivation)
(1) Relation of technical fields

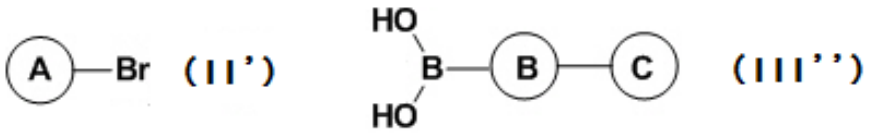
The invention disclosed in prior art 1 and the invention disclosed in prior art 2 belong to the common technical art of “the method for manufacturing a tricyclic aryl compound by the Suzuki coupling reaction”.

(2) Similarity of problems to be solved

The invention disclosed in prior art 1 and the invention disclosed in prior art 2 both have a problem to be solved “to provide a method for manufacturing a tricyclic aryl compound by the Suzuki coupling reaction”.

Design variation of primary prior art

a) When the method disclosed in prior art 2 is applied into the invention disclosed in prior art 1, the method of coupling reaction of a compound of the following formula (II’) and the compound of formula (III’’) will be constituted.



However, since the boronic acid and the bromide are the leaving groups and do not affect the structure of the product in the Suzuki coupling reaction at all, it is merely design change with

the specific application of techniques which compound in the two aryl compounds is substituted with the bromide or with the boronic acid.

b) Upon comparing the invention according to claim 2 and the invention disclosed in prior art 1, both are different from each other in that the palladium catalyst in use is the catalyst α in the former and the catalyst β in the latter. However, since the catalysts α and β are both generally used in the Suzuki coupling reaction and are equivalently used, to appropriately select catalysts and use the catalyst α in the invention disclosed in prior art 1 is merely a substitution of equivalents for solving a certain problem to be solved, which can be said only as an exertion of ordinal creativity by a person skilled in the art.

[Measures of the applicant]
- Claim 1

For example, an advantageous effect (such as improvement of yield and the like) by selecting as the bond to be formed between the ring A and the ring B, which is not disclosed in prior art 1 and 2, are argued and/or proved within the range of the statement in the description and the like of the present application or within the range which can be presumed from the statement.

- Claim 2

For example, an advantageous effect by using the catalyst α, which is not disclosed in prior art 1 and 2, are argued and/or proved within the range of the statement in the description and the like of the present application or within the range which can be presumed from the statement.

[Case 12] (Invention involves an inventive step)

Title of Invention

Layered product for paper container

What is claimed is:

[Claim 1]

A layered product for paper container, comprising a paper substrate, a metal deposited film in which a metal deposited layer is provided on a substrate film, and a high frequency seal layer comprising polyethylene, which are layered at least in this order, wherein the metal deposited layer produces heat by high-frequency induction heating to be heat sealed by spreading the heat to the high frequency seal layer.

Overview of the description

[Problem to be Solved by the Invention]

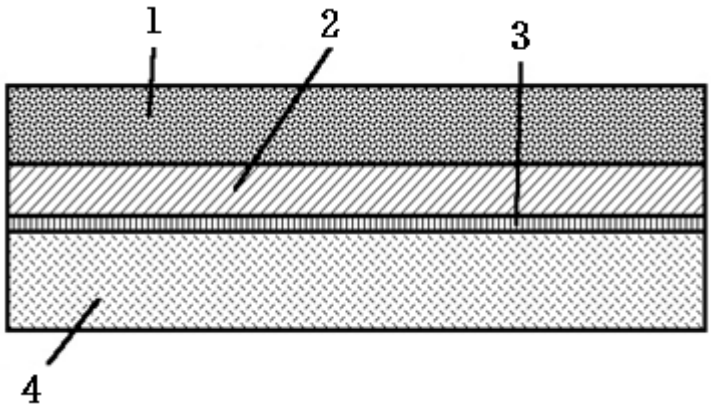
To provide a layered product for paper container which can be surely sealed with high-frequency and which is low in cost.

[Effect of Invention]

By arranging the layered product for paper container, comprising the paper substrate, the metal deposited film, and the high-frequency seal layer of polyethylene, which are layered at least in this order, the high-frequency sealing can be surely obtained, and its cost is advantageous since the expensive aluminum foil is not used.

Drawings

[Fig. 1]



1　Paper substrate
2　Substrate film
3　Metal deposited layer
4　High-frequency seal layer

[State of the art (Prior art, well-known art, etc.)]
The prior art 1
What is claimed is:
[Claim 1]

A apparatus for manufacturing a paper container, for forming a sheet for paper container into a tubular form and filing a fluidable content within the tubular form to manufacture a packaged container , comprising the following (1) to (3):
(1) a heating component for sealing a portion of the tubular body;
(2) a strain gauge adhered to the heating member; and
(3) a controller for monitoring a status of sealing based on the data from the strain gauge.

Overview of the description
[Problem to be Solved by the Invention]

To provide an apparatus for manufacturing a paper container, which can directly monitor the status of sealing at the time of manufacturing the paper container and in which defective in sealing can be detected in real-time.
[Example]

The embodiment of the apparatus for manufacturing the paper container is stated, and it explains that the status of sealing of the paper container could be monitored in real-time by the actions of the “strain gauge” adhered on the “heating member”, and of the “controller” while manufacturing the paper container with high speed, and that when the product is the defective in sealing, such a product could be detected as a defective product and could be excluded from the manufacturing line.
[The explanation states as a sheet for paper vessel for forming it into the tubular form, utilizing:
- a commercial layered sheet for paper container (a layered sheet comprising a polyethylene outer layer / a paper / a polyethylene seal layer)
- a commercial layered sheet for gas-barrier paper container (a layered sheet comprising a paper / an aluminum foil / a polyethylene seal layer)]

The prior art 2

It states that the heat for using when forming and processing thermoplastic resin such as polyethylene is produced, and states that there are resistive heating / high-frequency induction heating / high-frequency dielectric heating / ultrasonic heating and the like as an energy source for producing the heat.

In addition, it states that, in the case of the high-frequency induction heating, the heat is produced by the metal deposited layer of metal deposited film and conductor such as metal foil.

(Supplementary Explanation)

It is the common general knowledge for a person skilled in the art that, in the layered sheet for gas barrier paper container comprising a paper / an aluminum foil / a polyethylene seal layer,

which is stated in the prior art 1, the gas barrier is provided on the layered sheet by the aluminum foil.

[Conclusion]

The invention of claim 1 involves an inventive step.

[Explanation]

(Considered motivation)

(1) Relation of technical fields

The invention stated in the prior art 1 and the invention stated in the prior art 2 correlate in the technical art, each other, in that the polyethylene is heated to produce a form.

(2) Similarity of problems to be solved

The prior art 1 states that the "strain gauge" adhered to the "heating component" and the "controller" for monitoring the status of sealing based on the data from the strain gauge are provided to the apparatus, for solving the problem to provide an apparatus for manufacturing a paper container which directly monitors the status of sealing at the time of manufacturing the paper container and in which the defective in sealing can be detected in real-time.

In addition, upon explaining the apparatus, it states that two types of the commercial layered sheets for paper container were used, and it only states that one of the sheets was the layered sheet for gas barrier paper container comprising paper / aluminum foil / polyethylene seal layer (prior art 1).

On the other hand, the prior art 2 explains the production of heat when forming and processing thermoplastic resin. In addition, the explanation merely states that there is the high-frequency induction heating as one of the energy sources for producing the heat and that the heat is produced by the conductor from the metal deposited layer and the like in the case of the high-frequency induction heating.

Therefore, it cannot be said that the invention stated in the prior art 1 and the invention stated in the prior art 2 are common in the problem to be solved.

(3) Similarity of operations or functions

It is the common general knowledge for a person skilled in the art that the aluminum foil in the prior art 1 plays a role of gas barrier of the layered sheet for gas barrier paper container.

In addition, as the energy source when heat sealing, the prior art 1 does not state the type of the energy sources. Rather, upon considering that the prior art 1 also lists a layered sheet for paper container not having the conductor such as aluminum foil as an example of the other sheet for paper container, it can be construed that the energy source not requiring the conductor, that is, a heating means except the high-frequency induction heating was used.

Therefore, it can be said that the aluminum foil (metal layer) used in the layered sheet for paper container stated in the prior art 1 was exclusively used for providing the gas barrier to the

layered sheet for paper container.

On the other hand, the invention stated in the prior art 2 is of using the metal deposited film (metal layer) as the conductor for the high-frequency induction heating. Regarding the metal layer, it cannot be also said that the invention stated in the prior art 1 and the invention stated in the prior art 2 are common in the action and the function.

(Explanation for no reason for refusal)
(Identical features and differences)

The prior art 1 states "a layered sheet for gas barrier paper container comprising a paper / an aluminum foil / a polyethylene seal layer, wherein the sheet is heat sealed" (prior art 1).

In addition, the coincident point and the different point between the invention according to claim 1 and the prior art 1 are as follows:

- Identical features

"A layered product for paper container, comprising a paper substrate, a metal layer and a seal layer comprising polyethylene, which are layered at least in this order, wherein the sheet is heat sealed."

- Differences

While in the invention according to claim 1, the metal layer is of "the metal deposited film in which the metal deposited layer is provided to the substrate film" and that the heat seal is performed in that "the metal deposited layer produces heat by high-frequency induction heating to be heat sealed by spreading the heat to the high frequency seal layer", the invention stated in the prior art 1 is not specified on these matters.

(Motivation)

In comprehensive consideration of the aforementioned (1) to (3) (Considered motivation), even though the prior art 2 states the high-frequency induction heating and states the metal deposited film as the conductor used for the high-frequency induction heating, it cannot be said that there is such motivation that, in the invention stated in the prior art 1, the "high-frequency induction heating" is selected from each energy source as the means for producing the heat from the heat seal layer and that the aluminum foil used for exclusively providing the gas barrier is changed into "the metal deposited film in which the metal deposited layer is provided to the substrate film" with a purpose of providing the heat which is produced by the high-frequency induction heating to the high-frequency seal layer, which is the different in the purpose with the gas barrier.

Therefore, it could not be easily conceivable for a person skilled in the art to apply the invention stated in the prior art 2 to the invention stated in the prior art 1.

[Case 13] (Invention lacks an inventive step)

Title of Invention

Belt for shoe press belt

What is claimed is:

[Claim 1]

A shoe press belt, comprising a reinforcing substrate integrally embedded in a thermosetting polyurethane, wherein the thermosetting polyurethane comprises a composition containing urethane prepolymer and a dimethyl thiotoluene diamine curing agent.

Overview of the description

[Background Art]

It has been known that to use a shoe press in a pressing part of the papermaking step can largely expand a pressing zone compared with those in the conventional roll press, and the resulting paper has superior water squeezing property and smoother surface.

In addition, As a belt used for the shoe pressing (shoe press belt), thermosetting polyurethane using 3,3'-dichloro-4,4'-diamino diphenyl methane and the like as a curing agent has been conventionally used.

On the other hand, the 3,3'-dichloro-4,4'-diamino diphenyl methane has been already reported to do harm to human and there is concern that it affects to the environment.

However, the effect and the like of 3,3'-dichloro-4,4'-diamino diphenyl methane to human upon manufacturing the shoe press belt had not been especially examined.

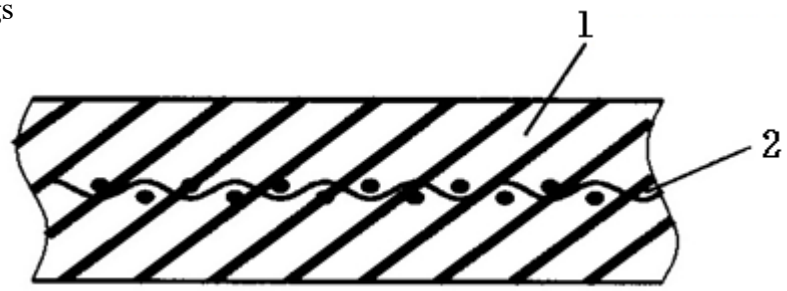
[Problem to be Solved by the Invention] and [Solution for the Problem to be Solved]

To suppress the effect on human at the time of manufacturing the shoe press belt is the problem to be solved, and the use of dimethyl thiotoluene diamine as the curing agent of thermosetting polyurethane is a solution for that.

[Examples]

It states that the shoe press belt was manufactured by thermosetting polyurethane using the dimethyl thiotoluene diamine as a curing agent. Further, it states that when the tests of bending resistance, crack resistance and wear resistance were carried out for the belt, the result in each test was assigned as 4 which is good in second place in five places for evaluation (no comparative example is stated).

Drawings
[Fig. 1]



1　Thermosetting polyurethane
2　Reinforcing substrate

[State of the art (Prior art, well-known art, etc.)]
The prior art 1:

It states that, in the shoe press belt comprising a reinforcing substrate integrally embedded in thermosetting polyurethane which containing urethane prepolymer and a diamine curing agent, and further states the list of the diamine curing agent.　In addition, it states in the Example that 3,3'-dichloro-4,4'-diamino diphenyl methane curing agent was used as the diamine curing agent.

The prior art 2 (catalog, pamphlet, review for product, etc.):

It states that dimethyl thiotoluene diamine, 3,3'-dichloro-4,4'-diamino diphenyl methane and the like can be used as the curing agent of thermosetting polyurethane and that the dimethyl thiotoluene diamine curing agent can suppress the effect on human, compared with the conventional curing agent.

[Conclusion]

The invention of claim 1 lacks an inventive step.

[Overview of Reason for Refusal]

Upon comparing the invention according to claim 1 and the invention stated in the prior art 1, both are different from each other in that while the invention according to claim 1 uses "dimethyl thiotoluene diamine", the invention stated in the prior art 1 uses "3,3'-dicholro-4,4'-diamine diphenyl methane".

Upon examining the aforementioned different point, the prior art 2 states that to use "dimethyl thiotoluene diamine" as the curing agent of thermosetting polyurethane can suppress the effect on human.　In addition, the prior art 1 also states that the diamine curing agent except the 3,3'-dicholoro-4,4'-diamino diphenyl methane curing agent is used.

Since to suppress the effect on human upon manufacturing an industrial product is an obvious problem to be solved for a person skilled in the art, it is easily conceivable for a person skilled in the art to use "dimethyl thiotoluene diamine" as the curing agent, instead of "3,3'-

dicholoro-4,4'-diamino diphenyl methane", in consideration of the effect on human at the time of manufacturing the shoe press belt.

In addition, the effect of the invention according to claim 1 that to use the dimethyl thiotoluene diamine curing agent can suppress the effect on human is stated in the prior art 2, not going beyond an predictable range by a person skilled in the art.

Furthermore, while Example states for the effect relating to the bending resistance, the crack resistance and the wear resistance to assign as 4 which is good in the second place in five places for evaluation, there is no statement for any comparative example in the detailed description of the invention in the present application and it cannot be said that these effect in the invention according to claim 1 are a remarkable effect which goes beyond the range predicted from the state of the art.

[Explanation]
(Considered motivation)
(1) Similarity of problems to be solved

While the prior art 1 does not state to suppress the effect on human at the time of manufacturing the shoe press belt, to suppress the effect on human in consideration of the health for a person in charge of operation upon manufacturing an industrial product is an obvious problem for a person skilled in the art.

Therefore, the problem stated in the prior art 1 and the problem to be solved by the invention as stated in the prior art 2 are common.

(2) Similarity of operations or functions

"3,3'-dicholoro-4,4'-diamino diphenyl methane" stated in the prior art 1 and "dimethyl thiotoluene diamine" stated in the prior art 2 are common in acting and functioning as the diamine curing agent of thermosetting polyurethane.

(Advantageous effects)

The effect of the invention according to claim 1 that to use the dimethyl thiotoluene diamine curing agent suppresses the effect on human is stated in the prior art 2, and is not of going beyond a predictable effect for a person skilled in the art.

In addition, while the effect relating to the bending resistance, the crack resistance and the wear resistance is stated in the Example to assign as 4 which is good in the second place in five places for evaluation, there is no statement for any comparative examples, and it cannot be said that these effect are remarkable which goes beyond a range predicted from the state of the art, compared with those in the invention stated in the prior art 1.

[Measures of the applicant]

The reason for refusal due to not involving an inventive step will be overcame when it is argued and/or proved, in the written opinion within a range which is stated in the description and the like of the present application or which can be predicted from such a statement, that the shoe

press belt (claimed invention) using the dimethyl thiotoluene diamine curing agent has an advantageous effect than the invention stated in the prior art 1 in the bending resistance, the crack resistance and the wear resistance.

It will be overcame specifically when it is argued and/or proved that by clarifying an experimental result of the shoe press belt stated in the prior art 1 using the 3,3'-dicholoro-4,4'-diamino diphenyl methane curing agent under the same condition with those in the Example of the present application, the effect of the claimed invention is remarkable compared with the invention stated in the prior art 1 and goes beyond a range as predicted from the state of the art. .

[Case 14] (Invention involves an inventive step)

Title of Invention

Detergent composition

What is claimed is:

[Claim 1]

A detergent composition, containing sodium hydroxide, glutamic acid diacetic acid salt and sodium glycolate.

Overview of the description

[Background Art]

A detergent containing EDTA (ethylene diamine tetraacetic acid) salt, which is a chelating agent, as a main component has been widely used in food industries to remove the staining of an apparatus by alkaline earth metal salt and organic substance present in liquids. However, since the EDTA salt and its chelate complex compound contained in treated wastewater is hard to decompose by microorganism, to discard the treated wastewater as it is to rivers or seas will cause a serious problem in the viewpoint of environmental preservation. Accordingly, glutamic acid diacetic acid salt has been used as an alternative chelating agent for EDTA.

[Solution for the Problem to be Solved]

While the glutamic acid diacetic acid salt is a substance which is superior in chelating ability and is good in biodegradability, where it is used as the detergent, it is general to be used as a composition in which various components are mixed and compounded in order to secure the washability similar to those in the detergent containing EDTA salt.

The present invention relates to the detergent composition containing glutamic acid diacetic acid salt and is to provide the detergent composition which is superior in washability and biodegradability.

[Solution for the Problem to be Solved]

It was found that the effect of washing which is provided by the detergent containing sodium hydroxide, glutamic acid diacetic acid salt and sodium glycolate is equivalent to those of the detergent containing EDTA salt as the main component. In addition, it was discovered that it is superior in biodegradability, can be easily decomposed by microorganism and is effective for environmental preservation.

Sodium hydroxide among the three components adjusts pH to that of high alkalinity at which it can cause glutamic acid diacetic acid salt to have a substantial chelating activity, decomposes the organic substance in the staining, and further, improves the effect of washing by alkaline earth metal salt.

In addition, it is considered that when glutamic acid diacetic acid salt forms a chelate complex with alkaline earth metal in the staining, sodium glycolate exerts an effect such that the complex is stably present in the detergent.

[Effect of Invention]

The detergent composition according to the present invention shows the equivalent effect of washing with the detergent containing EDTA, and its treated wastewater can be easily biodegraded by microorganism.

[State of the art (Prior art, well-known art, etc.)]

The prior art 1:

- A detergent composition containing sodium glutamic acid diacetic acid which is obtained by reacting disodium salt of glutamic acid and monochloro acetic acid in an aqueous solution of sodium hydroxide.　([What is claimed])
- The present invention is to provide the detergent composition having biological degradability which can be used in the food industries.　([Problem to be solved by the invention])
- Besides a main reaction that disodium salt of glutamic acid, monochloro acetic acid and sodium hydroxide are reacted to create sodium glutamic acid diacetic acid, a side reaction, that sodium hydroxide and monochloro acetic acid are reacted when the concentration of sodium hydroxide in the aqueous solution becomes high, occurs to create sodium glycolate.　Since the yield of sodium glutamic acid diacetic acid is decreased upon creating sodium glycolate during the reaction, it is desirable that the side reaction does not occur as possible.　It is preferable that sodium glycolate as created is removed by the purification as possible, from the viewpoint that the content of the detergent component (sodium glutamic acid diacetic acid) in the composition is increased.　([Mode for carrying out the invention])
- Upon analyzing the detergent composition in the Example, sodium glutamic acid diacetic acid, monochloro acetate and sodium glycolate were detected.　([Example])

Therefore, prior art 1 discloses the “detergent composition containing glutamic acid diacetic acid salt, monochloro acetate and sodium glycolate” (hereinafter, referred to as “prior art 1”).

The prior art 2:

It discloses that, in the detergent composition, which is good in biodegradability, containing glutamic acid diacetic acid salt, sodium hydroxide is added for adjusting pH into high alkalinity.

[Conclusion]

The invention of claim 1 involves an inventive step.

[Explanation]

(Considered motivation)

(1) Relation of technical fields

The techniques disclosed in the prior art 1 and prior art 2 are common in the technical field

of “detergent composition containing glutamic acid diacetic acid salt”.
(2) Similarity of problems to be solved

In addition, both are common in the problem to be solved “to provide the detergent composition having biological degradability".

(Explanation for no reason for refusal)
(Identical features and differences)

Upon comparing the invention according to claim 1 and the prior art 1, both are identical to each other as the detergent composition containing glutamic acid diacetic acid salt and sodium glycolate, and are different from each other in whether or not sodium hydroxide is contained.

Upon examining the aforementioned difference, since the invention according to claim 1 can be constituted if the technique disclosed in prior art 2 is applied to the prior art 1 such that sodium hydroxide can be further contained, whether or not there is a motivation that the technique disclosed in prior art 2 is applied to the prior art 1 is considered.
(Motivation)

In consideration of the aforementioned (1) and (2) (Considered motivation), it can be said that there is the motivation that the technique disclosed in prior art 2 is applied to the prior art 1.
(Obstructive factors)

Cited dDocument 2 discloses that sodium hydroxide is added in the detergent composition containing sodium glutamic acid diacetic acid. However, if this is applied to the detergent composition of the prior art 1 such that sodium hydroxide will be added thereto, monochloro acetic acid contained in the detergent composition is reacted with sodium hydroxide to create sodium glycolate which is said as “preferable to remove” in the detergent composition of the prior art 1, resulting in increasing the component. Therefore, it can be said that there is the inhibitory factor that the technique disclosed in prior art 2 is applied to the prior art 1.

disclosed in prior art 2 is combined based on the statement of the detergent composition in prior art 1 in which sodium glycolate created by the side reaction is accidentally contaminated, even though there is the aforementioned inhibitory factor.

Therefore, the technique disclosed in prior art 2 cannot be combined to the prior art 1 and it cannot be said that such a combination could not be easily conceivable for a person skilled in the art.

[Case 15] (Invention lacks an inventive step)

Title of Invention

Vulcanized rubber composition and pneumatic tire

What is claimed is:

[Claim 1]

A vulcanized rubber composition, containing a natural rubber, a chemically modified microfibrillar cellulose and silica.

Overview of the description

[Background Art] and [Problem to be Solved by the Invention]

Where un-modified microfibrillar cellulose is compounded as a vulcanized rubber composition containing a natural rubber, there were several problems that the rupture property is worse due to poor compatibility between the natural rubber and microfibrillar cellulose and that the loss in energy is large.

[Solution for the Problem to be Solved]

In order to solve such a conventional problem, the vulcanized rubber composition of the claimed invention contains the chemically modified microfibrillar cellulose and silica upon using the natural rubber as a rubber component and shows superior rupture property and low energy loss.

(There is no comparative example that any rubber except the natural rubber as the rubber component are used.).

[State of the art (Prior art, well-known art etc.)]

The prior art 1:

Document 1 describes a microfibrillar cellulose in which a hydroxyl functional group present on the surface of the microfibril is chemically modified by an organic compound. In addition, it states that the affinity to a hydrophobic material is improved by chemically modifying the hydroxyl functional group present on the surface of the microfibrillar cellulose with an organic compound, lists a rubber as the hydrophobic material, and also states the use for tire. In addition, Example 8 states a vulcanized rubber composition containing stylene-butadiene rubber (SBR), a modified microfibrillar cellulose in which the microfibril is chemically modified with chloro dimethyl isopropyl silane, and silica.

(Supplementary Explanation)

1. The prior art 1 does not state a specific list of rubbers, and only states stylene-butadiene rubber (SBR) in Example 8.

2. The “modified microfibrillar cellulose in which the microfibril is chemically modified with

chloro dimethyl isopropyl silane" stated in prior art 1 corresponds to the "chemically-modified microfibrillar cellulose" recited in claim 1 of the present application.

The prior art 2:

It states a vulcanized rubber composition for tire containing a rubber component and microfibrillar cellulose. In addition, it states stylene-butadiene rubber (SBR) as a rubber component, and also states a natural rubber.

(Supplementary Explanation)

There is no statement of chemical modification for microfibrillar cellulose in prior art 2.

[Conclusion]

The invention of claim 1 lacks an inventive step.

[Overview of Reason for Refusal]

The prior art 1 states the vulcanized rubber composition containing the rubber component and microfibrillar cellulose in which hydroxyl functional group present on the surface of the microfibrillar cellulose is chemically modified with the organic compound. In addition, it states that the vulcanized rubber composition can be used for the tire. Further, Example 8 states the vulcanized rubber composition containing stylene-butadiene rubber (SBR), the modified microfibrillar cellulose in which the microfibril is chemically modified with chloro dimethyl isopropyl silane, and silica, as its specific example.

Here, upon comparing the invention according to claim 1 and the invention stated in prior art 1, both are the same as vulcanized rubber compositions containing a rubber component, a chemically-modified microfibrillar cellulose, and silica. The two inventions are different in that the rubber component of the present application is the natural rubber.

Upon examining the aforementioned different point, to use stylene-butadiene rubber (SBR) and the natural rubber as an equivalent to the rubber component in the vulcanized rubber composition for tire containing microfibrillar cellulose has been a publicly-known technique by prior art 2. The invention stated in prior art 1 and the invention stated in prior art 2 belong to the common technical field as the vulcanized rubber composition for tire containing microfibrillar cellulose. In addition, stylene-butadiene rubber (SBR) stated in prior art 1 and the natural rubber stated in prior art 2 are common in its action and function in that both plays the role as the rubber component in the vulcanized rubber composition for tire containing microfibrillar cellulose.

Therefore, to use the natural rubber as the rubber component in the invention stated in prior art 1 based on the statement of prior art 2 could be easily conceivable for a person skilled in the art.

In addition, the effect obtained therefrom is not a particularly remarkable.

[Explanation]

(Considered motivation)

(1) Relation of technical fields

The invention stated in prior art 1 and the invention stated in prior art 2 belong to the common technical field of the vulcanized rubber composition for tire containing microfibrillar cellulose.

(2) Similarity of operations or functions

The rubber stated in prior art 1 and the rubber stated in prior art 2 are common in its operation and function in that both play a role as the rubber component in the vulcanized rubber composition for tire containing microfibrillar cellulose.

(3) Suggestions shown in the content of prior art

The prior art 1 suggests that generic rubbers can be used as the hydrophobic material containing microfibrillar cellulose which is chemically modified with the organic compound.

In addition, prior art 2 suggests that stylene-butadiene rubber (SBR) and the natural rubber are used as an equivalent to the rubber component in the vulcanized rubber composition for tire, containing microfibrillar cellulose.

(Advantageous effects)

There is no statement of any comparative examples in which any rubbers except the natural rubber are used as the rubber component. It cannot be said that the effects satisfying superior rupture property and low energy loss are remarkable which goes beyond the predicted range from the state of the art.

[Measures of the applicant]

If it is argued and/or proved (for example, proved upon indicating any experimental results) in the written opinion (the argument should be within the range of the statement in the description and the like of the present application or within the range which can be presumed from the statement) that in a case that the natural rubber is used as the rubber component of the vulcanized rubber composition containing the chemically-modified microfibrillar cellulose and silica, a remarkable effect is achieved satisfying superior rupture property and low energy loss compared to cases in which another rubber component (SBR) is used.

[Case 16] (Invention involves an inventive step)

Title of Invention

Tuner for musical instruments

What is claimed is:

[Claim 1]

A tuner for musical instrument having a chassis and a supporting member which supports said chassis, wherein

said chassis having a clip and a rotation restriction section on the back side,

said clip having a pair of opposed plain plates and being rotatably supported so that the axis of rotation is positioned above the center of said chassis, and

said rotation restriction section sets the relative angle between said chassis and said clip to approximately right angle by restricting the rotation of said clip toward said back side

Overview of the description

[Background Art]

A tuners is used when playing a musical instrument.　In that case, the player often uses a tuner placing it together with a musical score on a music stand.

[Problem to be Solved by the Invention]

When a tuner is used placing it on a music stand, there are problems to be solved that it blocks to turn over the score, and that there is a risk of dropping of the tuner from the music stand.

[Solution for the Problem to be Solved]

A tuner for musical instrument having a chassis and a supporting member which supports said chassis, wherein

said chassis having a clip and a rotation restriction section on the back side,

said clip having a pair of opposed plain plates and being rotatably supported so that the axis of rotation is positioned above the center of said chassis, and

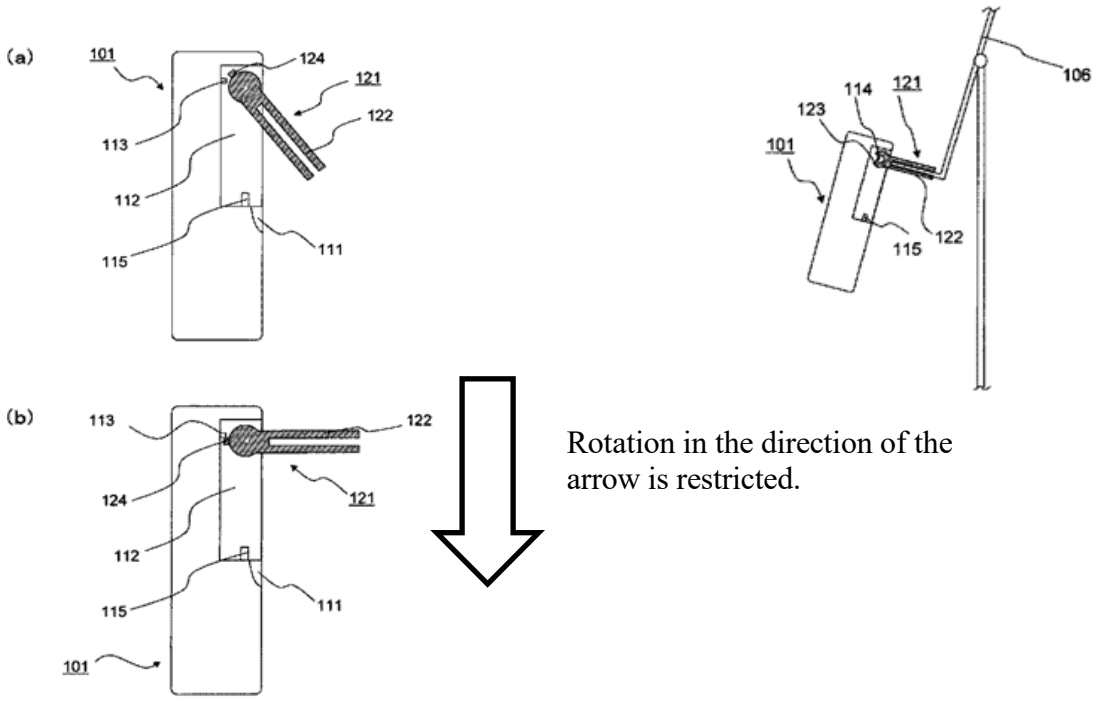
said rotation restriction section setting the relative angle between said chassis and said clip to approximately right angle by restricting the rotation of said clip toward said back side

[Effect of Invention]

With the above structure, the clip can be drawn out from the back side of the tuner by rotating it and secured at an approximately right angle to the back side of the tuner, as shown in Fig. 1.　By doing so, it can be secured on the musical score stopper of the music stand, as shown in Fig. 2.　In so doing, as the axis of rotation of the clip exists above the center of the back side, a portion of the chassis which runs off from the musical score stopper becomes smaller, and obstacle for turning over the score becomes smaller.　Furthermore, since the tuner can be secured to the musical score stopper using the clip, the tuner is hard to be dropped from the music stand.

Drawings

[Fig. 1] Clip 122, rotation restriction section 113 [Fig. 2]



[State of the art (Prior art, well-known art, etc.)]

Prior art 1:

A tuner for musical instrument having a chassis and a supporting member which supports said chassis, wherein

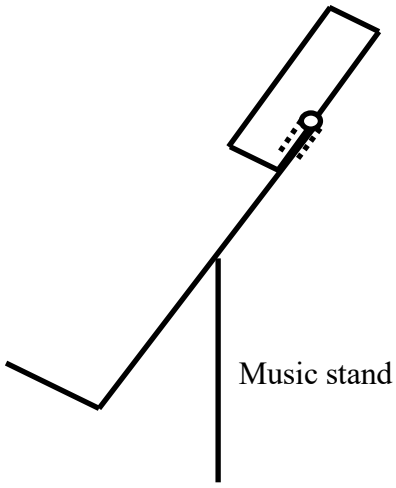
said chassis having a clip and a rotation restriction section on the back side,

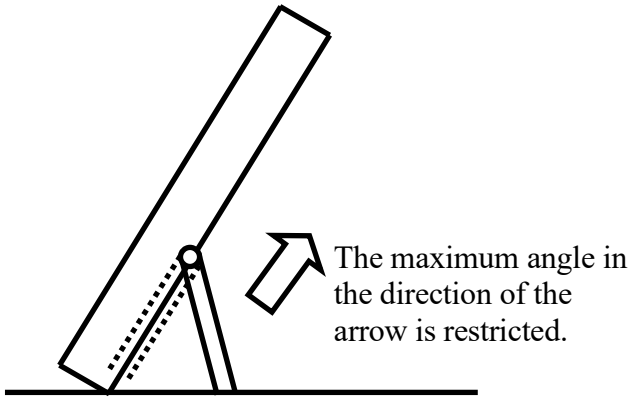
said clip having a pair of opposed plain plates and being rotatably supported so that the axis of rotation is positioned below the center of said chassis, and

said rotation restriction section restricts the maximum angle of said clip for the direction to depart from the back side to make the tuner self-standing

(Problem to be solved)

By using a clip, the tuner can be secured, for example, to the upper part of the music stand by clipping.　On this occasion, since the axis of rotation is positioned below the center of the chassis, the portion of the chassis which covers the upper part of the musical score becomes smaller, and obstacle for turning over the score becomes smaller.　In addition, the tuner can be made self-standing by opening the main body of the chassis and the clip at the maximum angle (for example, approximately 60 degrees) and placing them on a desk, etc.





Prior art 2:

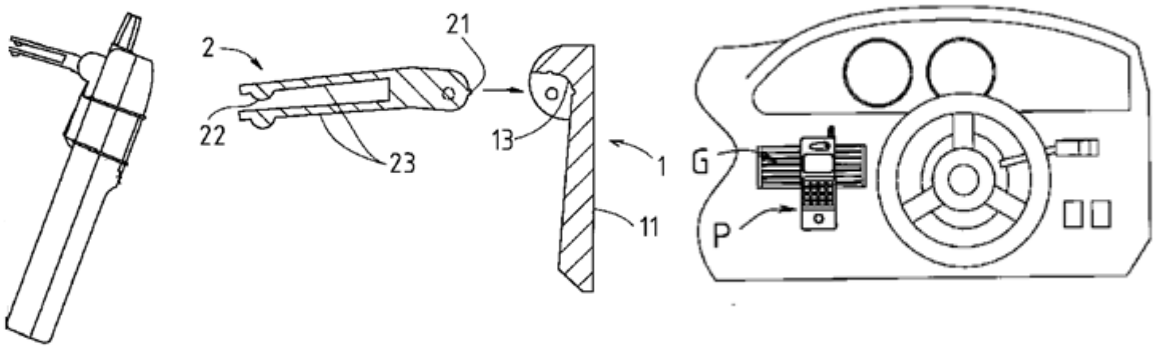
A mobile-phone holder mountable to a mobile phone, wherein

said mobile-phone holder having a clip and a rotation restriction section,

said clip having a pair of opposed plain plates and being rotatably supported on the back of said mobile phone so that the axis of rotation is positioned above the center of said chassis of said mobile phone, and

said rotation restriction section sets the relative angle between said chassis and said clip to approximately right angle by restricting the rotation of said clip toward said back side

(Mobile-phone holder with a clip which can be used to secure the mobile phone to the air conditioner section of a car)



[Conclusion]

The invention of claim 1 involves an inventive step.

[Explanation]

(Considered motivation)

(1) Relation of technical fields

Since the prior art 1 relates to a tuner for musical instrument, and the prior art 2 relates to a mobile-phone holder, the technical field is different.

(2) Similarity of problems to be solved

The problem to be solved by the prior art 1 is to make a tuner securable to a music stand in a form which is less obstructive to turn over the score or to make the tuner self-standing. On the other hand, the problem to be solved by the prior art 2 is to secure a mobile phone to an air conditioning section of a car, etc. Therefore, they don't have a common problem to be solved

(3) Similarity of operations or functions

The prior arts 1 and 2 have a common function in that both of them make it possible to mount a portable device to another device by providing a rotatable clip.

(Explanation for no reason for refusal)

(Identical features and differences)

According to comparison between the invention according to claim 1 and the prior art 1, both of them have identical features in that they are "a tuner for musical instrument having a chassis and a supporting member for supporting said chassis, wherein

said chassis having a clip and a rotation restriction section on the back side, and

said clip having a pair of opposed plain plates and being rotatably supported."

On the other hand, the invention of claim 1 and the prior art 1 are different in the following points.

(Difference 1)

With respect to the axis of rotation of the clip, while it is positioned above the center of the chassis in the invention of claim 1, it is positioned below the center of the chassis in the prior art 1.

(Difference 2)

With respect to the rotation restriction section, while the invention of claim 1 sets the relative angle between said chassis and said clip to approximately right angle by restricting the rotation of said clip toward said back side, the prior art 1 restricts the maximum angle in the direction in which the clip departs from the back side.

(Motivation)

The prior art 2 has a structure relating to the differences 1 and 2. Accordingly, motivation for combining the prior art 1 and the prior art 2 is examined below.

(1) Relation of technical fields

Since the prior art 1 related to a tuner for musical instrument, and the prior art 2 relates to a mobile-phone holder, they belong to different technical fields.

(2) Similarity of operations or functions

The prior arts 1 and 2 have a common function in that both of them make it possible to mount a portable device to another device by providing a rotatable clip. The features according to the above differences 1 and 2 are not features inherent to the function as a tuner for musical instrument (indication of tone pitch of the musical instrument), but a feature that relates to a function of rotatable clip. Accordingly, it should not necessarily be determined that there is no motivation for combining because of the reason that the technical fields of the prior arts 1 and 2 are different.

(3) Similarity of problems to be solved

Under the circumstances, looking into problems to be solved by the prior arts 1 and 2, the problem to be solved by the prior art 1 is to make a tuner securable to a music stand in a form which is less obstructive to turn over the score or to make the tuner self-standing. On the other hand, the problem to be solved by the prior art 2 is to secure a mobile phone to an air conditioning section of a car, etc. Therefore, the problems to be solved by the prior art 1 and the prior art 2 are different.

Taking such situations comprehensively into consideration, it cannot be said that there is motivation to apply the prior art 2 to the prior art 1.

(Obstructive factors)

In addition, with respect to the difference 1, if the prior art 2 is combined with the prior art 1 and the axis of rotation of the clip is shifted to the position above the center of the chassis, the effect of the prior art 1 that "the portion of the chassis covering the upper part of the musical score board becomes small, and obstruction to turn over the score becomes smaller" cannot be obtained.

Accordingly, with respect to the difference 1, combination of the prior art 1 and the prior art 2 has an obstructive factor.

Judging from the above situations, it cannot be determined that a person skilled in the art would have easily arrived at the invention of claim 1 by applying the prior art 2 to the prior art 1.

[Case 17] (Invention involves an inventive step)

Title of Invention

Recommended contents delivery system

What is claimed is:

[Claim 1]

A system comprising multiple user terminals constituting a group and a delivery server delivering recommended contents to said multiple user terminals, wherein

said delivery server comprising

a holding means for holding preference information received from each user terminal,

a selecting means for selecting recommended contents based on said preference information to each of user terminals constituting the group, and

a delivering means for delivering a bundle of recommended contents containing multiple pairs of a temporary identifier identifying a user and recommended contents for the user corresponding to the temporary identifier to the multiple user terminals simultaneously by using a mailing list of the group, and

each user terminal comprising

a receiving means for receiving the bundle of recommended contents from said delivery server and an extracting means for extracting only recommended contents to which the temporary identifier corresponding to the user using the terminal is attached from the received bundle of recommended contents.

Overview of the description

[Background Art]

A recommended contents delivery system in which, referring to hobbies and concerns registered by the user (hereinafter, referred to as "preference information"), a delivery server selects recommended contents which meets the preference of the user and deliver to the terminal of the user is known.

[Problem to be Solved by the Invention]

Here, there has been a problem to be solved that, even if each user belongs to a same group, instantaneous service cannot be provided as it takes time if the delivery server selects recommended contents for each user and deliver to each user by a separate mail.

[Solution for the Problem to be Solved]

In the present application, the delivery server selects recommended contents based on users' preference information and the selected recommended contents are gathered together to form a bundle of recommended contents common to each user and delivered to the terminal of each user simultaneously. Information to identify the user is included in the bundle of recommended contents and the terminal of each user extracts only recommended contents to which information to identify the user using the terminal is attached from the bundle and reproduces it.

To identify the user, no e-mail address is used, but a temporary identifier is used from privacy protection point of view.　Specifically, the user logs in the delivery server using the group name, the terminal of each user generates a temporary identifier (random alphanumeric characters) and preference information is transmitted together with the temporary identifier to the delivery server.　The delivery server stores the temporary identifier and preference information in the database of the delivery server.-

Also, the delivery server holds the e-mail address of each user constituting the group by recording it in the mailing list of the group.　Since users log in to the delivery server with the group name, the delivery server does not need to store the user's e-mail address and temporary identifier correlating them with each other, and, therefore, privacy protection becomes securer than in the case in which the e-mail address and the temporary identifier are stored correlating them with each other.

Then, when the delivery server delivers recommended contents to user terminals, the corresponding temporary identifier is attached to each recommended contents and a bundle of the recommended contents is delivered to multiple user terminals simultaneously.　When delivering simultaneously, the mailing list of the group is used.

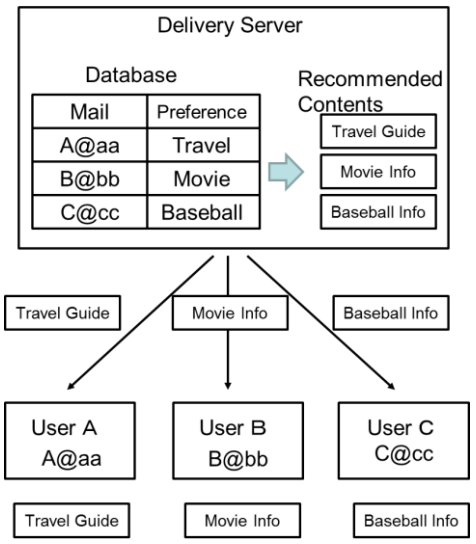
When each user terminal receives a bundle of recommended contents, the user terminal extracts recommended contents attached with the temporary identifier corresponding to the user using the terminal from the bundle and reproduces them.

[Effects of Invention]

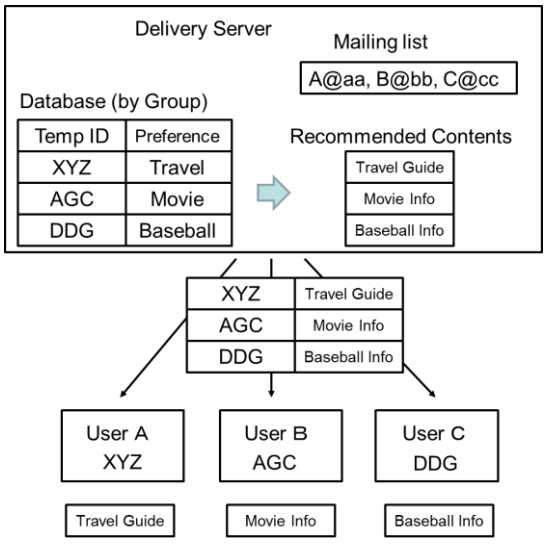
As the delivery server delivers a bundle of recommended contents to each user simultaneously in the present application, instantaneous service can be provided.

In addition, since a temporary identifier that is not correlated with the e-mail address is used when extracting recommended contents for each users from the bundle of recommended contents, privacy can be protected.

Drawings



Background art



Claimed invention

[State of the art (Prior art, well-known art, etc.)]

Prior art 1:

A system comprising multiple user terminals constituting a group and a delivery server delivering recommended contents to said multiple user terminals, wherein

said delivery server comprising

a holding means for holding preference information received from each user terminal,

a selecting means for selecting recommended contents based on said preference information to each of user terminals constituting the group, and

a delivering means for delivering a bundle of recommended contents comprising multiple pairs of an e-mail address and recommended contents for the user corresponding to the e-mail address to the multiple user terminals simultaneously by using the mailing list of the group, and

each user terminal comprising

a receiving means receiving the bundle of recommended contents from said delivery server and an extracting means extracting only recommended contents to which the e-mail address corresponding to the user using the terminal is attached from the received bundle of recommended contents.

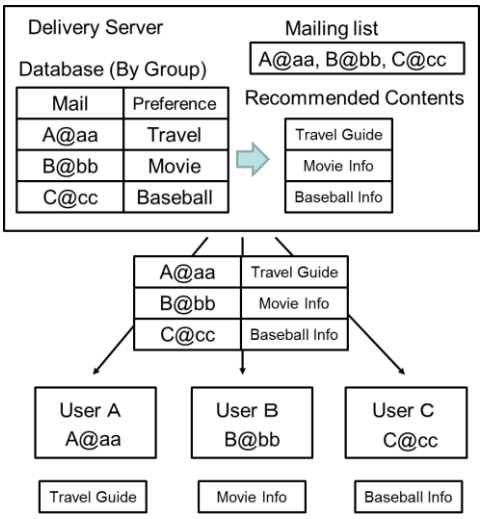
(Problem to be solved)

When transmitting recommended contents to users belonging to a specific community, the time for transmission is shortened by transmitting simultaneously without generating a separate mail for each user terminal.

In addition, it is made possible to extract by a low costed and simple way by extracting from a bundle of recommended contents based on an existing e-mail address in each user terminal.

By doing so, the provider of recommended contents can deliver recommended contents

effectively, and the user can watch recommended contents to other users in the community by using the e-mail address of the other users, if necessary.



Prior art 2:

A system comprising multiple user terminals and a delivery server for delivering recommended contents to said multiple user terminals, wherein

said delivery server comprising

a holding means for holding preference information received from each user terminal and temporary identifier in one-to-one correspondence,

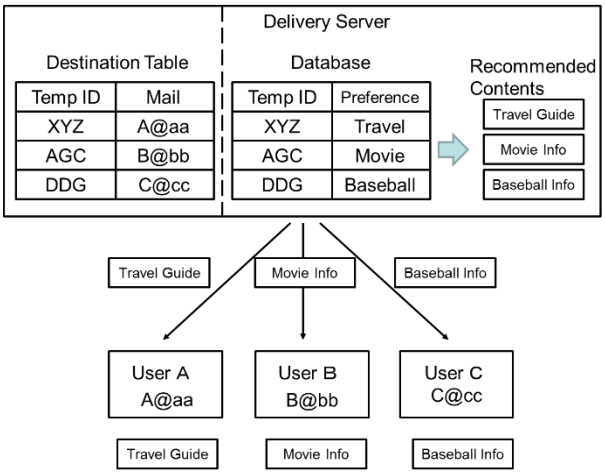
a selecting means for selecting recommended contents based on said preference information for each user terminals individually, and

a delivering means for delivering said selected recommended contents to each user terminals individually, and

each user terminal plays back the received recommended contents.

(Problem to be solved)

Each user's privacy is protected by managing preference information of each user and a temporary identifier in one-to-one correspondence in the delivery server.　Even if preference information is leaked, as the information is managed with the temporary identifier, each user cannot be identified.



[Conclusion]

The invention of claim 1 involves an inventive step.

[Explanation]

(Considered motivation)

(1) Relation of technical fields

Since both of the prior art 1 and the prior art 2 are inventions which relate to delivery of recommended contents by using e-mail, they have a common technical field.

(2) Similarity of problems to be solved

The problem to be solved by the prior art 1 is to shorten the time for transmission by transmitting simultaneously without generating a separate mail for the user terminal of each user. The problem to be solved by the prior art 2 is to protect privacy of each user by managing preference information of each and the temporary identifier in one-to-one correspondence in the delivery server.　Accordingly, the problems to be solved by the prior art 1 and the prior art 2 are different.

(3) Similarity of operations or functions

Operation and function of e-mail address in the prior art 1 and the temporary identifier in the prior art 2 are related in that both of them identify users, but, since e-mail address in the prior art 1 is included in the bundle of recommended contents and used for extraction in the user terminal, while the temporary identifier in the prior art 2 is used for corresponding to preference information exclusively in the delivery server, and, therefore, their concrete operations and functions are different.

(Explanation for no reason for refusal)

(Identical features and differences)

According to comparison between the invention of claim 1 and the prior art 1, both of them

have identical features in that:

"A system comprising multiple user terminals constituting a group and a delivery server delivering recommended contents to said multiple user terminals, wherein

said delivery server comprising

a holding means for holding preference information received from each user terminal,

a selecting means for selecting recommended contents based on said preference information to each of the user terminals constituting the group, and

a delivering means for delivering a bundle of recommended contents to the multiple user terminals simultaneously by using the mailing list of the group, and

each user terminal comprising

a receiving means for receiving the bundle of recommended contents from said delivery server and an extracting means for extracting recommended contents.

The invention of claim 1 and the prior art 1 are different in the following point:

(Differences)

In the invention of claim 1, a temporary identifier is paired with the recommended contents in the bundle of recommended contents delivered simultaneously by the delivering means, and the extracting means provided in each user terminal extracts only recommended contents attached to the temporary identifier corresponding to the user using the terminal from the received bundle of recommended contents. On the other hand, in the prior art 1, an e-mail address is paired with the recommended contents in a bundle of recommended contents delivered simultaneously by the delivering means, and the extracting means provided in each user terminal extracts only recommended contents attached to the e-mail address corresponding to the user using the terminal from the received bundle of recommended contents.

With respect to the above difference, in the prior art 2, a temporary identifier is used as information for identifying the user and user's preference information.

Under the circumstance, it is examined whether or not a person skilled in the art would have easily conceived the idea to combine the prior art 1 and the prior art 2.

(Motivation)

Since both of the prior art 1 and the prior art 2 relate to an invention related to delivery of recommended contents using e-mail, they belong to a common technical field.

However, while the problem to be solved by the prior art 1 is to shorten the time for transmission by transmitting simultaneously without generating a separate mail for the user terminal of each user, the problem to be solved by the prior art 2 is to protect privacy of each user by managing preference information of each user and a temporary identifier in one-to-ne correspondence in the delivery server. Thus, the problems to be solved by the prior art 1 and the prior art 2 are different.

Furthermore, since e-mail address in the prior art 1 is included in the bundle of

recommended contents and used for extraction in the user terminal, while the temporary identifier in the prior art 2 is used for corresponding to preference information exclusively in the delivery server, concrete operations and functions are different between the prior art 1 and the prior art 2.

Accordingly, it cannot be said that there is motivation to apply the prior art 2 to the prior art 1.

(Obstructive factors)

Examining furthermore, since the prior art 1 is for users belonging to a specific community and it is possible to watch recommended contents addressed to other users, if necessary, by using e-mail address of other users in the community, there is no need of privacy protection to hide e-mail addresses among users. In addition, since it is aimed to achieve low-costed and simple extraction from a bundle of recommended contents which is a characterizing feature compared to the background art based on the existing e-mail address, it is against the objective of the prior art 1 to replace e-mail address with temporary identifier which requires more complicated system compared to e-mail address for the purpose of privacy protection. Accordingly, there are obstructive factors for applying the prior art 2 to the prior art 1.

Taking such situations comprehensively into consideration, it cannot be said that a person skilled in the art would have easily conceive the invention of claim 1 by applying the prior art 2 to the prior art 1.

[Case 18] (Invention lacks an inventive step)

Title of Invention

A server

What is claimed is:

[Claim 1]

A server comprising

a means to acquire the display screen size of a client device from said client device in advance, and store it in a storage means after corresponding it to the identifier of said client device,

a means to retrieve the display screen size corresponding to the identifier of said client device from said storage means when an acquisition request for web contents is received from said client device together with the identifier of said client device,

a means to transform said web contents into a form which fits said client device utilizing the display screen size retrieved, and

a means to generate a hash value from said web contents after transformation using the identifier of said client device as a parameter, and deliver said hash value together with said transformed web contents　to said client device.

Overview of the description

[Background Art]

A system in which a server holding web contents delivers, in response to request from the client device, requested web contents to said client device is known.

As the above-mentioned client device, devices with a small display screen (mobile phones, smartphones, etc.) are used, other than devices with a rather large display screen (personal computer, etc.).

[Problem to be Solved by the Invention]

Web contents held by the server are often generated corresponding to the screen size of the personal computer.　Therefore, there is a problem that, when a device with a small display screen is used as the client device, the sizes of characters or images do not correspond to the screen size, and received web contents are not displayed appropriately.

[Solution for the Problem to be Solved]

The server acquires the display screen size of the client device in advance and stores it in the storage means.　And, when web contents acquisition request is received from said client device, referring to said display screen size, it transforms web contents to a form which fits to the display screen of said client device, and delivers the transformed web contents to said client device.

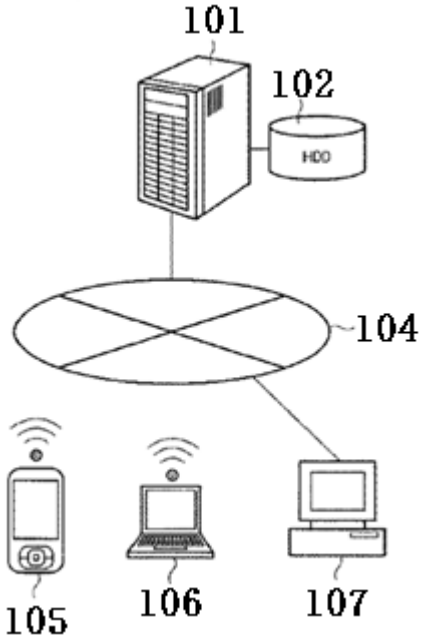
In order to prevent tampering of web contents to be delivered, the server generates a hash value based on the web contents to be delivered and delivers the hash value together with the web contents to the client device.　The client device can check whether or not the received web contents have been tampered utilizing the hash value.

Here, in order to improve safety, it can be arranged so that the hash value is generated using the identifier of the client device as a parameter.

[Effect of Invention]

Even when the display screen of the client device is small, web contents can be displayed appropriately on said client device.

Drawings



Identifier	Screen size
PC 1	Type A
Mobile phone 2	Type B
Smartphone 3	Type C

101　Web server
104　Internet
105　Smartphone
106　Mobile terminal
107　Desktop terminal

[State of the art (Prior art, well-known art, etc.)]

Prior art 1:

A server comprising

a means to acquire the display screen size of a client device from said client device in advance, and store it in a storage means after corresponding it to the identifier of said client device,

a means to retrieve the display screen size corresponding to the identifier of said client device from said storage means when an acquisition request for web contents is received from said client device together with the identifier of said client device,

a means to transform said web contents into a form which fits said client device utilizing the display screen size retrieved, and

a means to deliver the transformed web contents to said client device.

(Problem to be solved)

There has been a problem that, when displaying web contents on a small display screen, web contents cannot be appropriately displayed.

Prior art 2:

A server comprising

a means to generate a hash value from web contents to be delivered and deliver said hash value together with said web contents, wherein

said means generating a hash value from said web contents to be delivered using the identifier of said client device as a parameter.

(Problem to be solved)

The objective is prevention of tampering web contents to be delivered.

Common general knowledge:

In the field of web contents delivery, it was a self-evident problem which a person skilled in the art normally takes into consideration to prevent tampering of web contents to be delivered, and it is well-known art to generate a hash value from web contents and deliver the hash value together with the web contents as a solution for the problem.

[Conclusion]

The invention of claim 1 lacks an inventive step.

[Overview of Reason for Refusal]

Comparing the invention of claim 1 and the prior art 1, they have identical features in that:

"A server comprising a means to acquire the display screen size of a client device from said client device in advance, and store it in a storage means after corresponding it to the identifier of said client device,

a means to retrieve the display screen size corresponding to the identifier of said client device from said storage means, when an acquisition request for web contents is received from said client device together with the identifier of said client device,

a means to transform said web contents into a form which fits said client device utilizing the display screen size retrieved."

The invention of claim 1 and the prior art 1 are different in that, while the invention of claim 1 has "a means to generate a hash value from said web contents after transformation using the identifier of the client device as a parameter, and deliver said hash value together with said transformed web contents to said client device," the prior art 1 does not have such means.

The above difference is examined below.

The prior art 2 relates to a server for the purpose of preventing tampering of web contents to be delivered, having a means to generate a hash value from web contents to be delivered using the identifier of the client device as a parameter, and deliver it together with the web contents to the

client device.

Then, since it is a mere self-evident problem, which a person skilled in the art normally takes into consideration in the field of delivering web contents, to prevent tampering of web contents to be delivered, and it would be taken into consideration in the prior art 1 also.

Since the prior art 1 and the prior art 2 have commonly the above self-evident problem to prevent tampering of web contents to be delivered, a person skilled in the art would have easily adapted the server to provide a means which generates a hash value from web contents after transformation to be delivered using the identifier of the client device as a parameter and delivers it together with the transformed web contents to the client device by applying the prior art 2 to the prior art 1.

[Explanation]
(Considered motivation)
(1) Relation of technical fields

The prior art 1 and the prior art 2 commonly relate to a server for delivering web contents to client deices.

(2) Similarity of problems to be solved

The problem to be solved by the prior art 2 is to prevent tampering of web contents to be delivered.

On the other hand, the problem to be solved by the prior art 1 is to solve the problem that web contents are not appropriately displayed when the web contents are displayed on a small display screen, and the problem to be solved to prevent tampering of web contents is not expressly shown.

Since it is a mere self-evident problem, which a person skilled in the art normally takes into consideration in the field of delivering web contents, to prevent tampering of web contents to be delivered, however, the problem to be solved of the prior art 1 and the prior art 2 is common.

[Case 19] (Invention lacks an inventive step)

Title of Invention

A settlement propriety judgment system using prepaid electronic money

What is claimed is:

[Claim 1]

A system connected from a mobile communication terminal through a network for judging propriety of settlement using prepaid electronic money when payment for goods for which the user made an offer to purchase is made, comprising

a means for receiving offer to purchase to receive the transaction amount of the goods for which the user made an offer to purchase, and the terminal specific information of mobile communication terminal used when the offer to purchase is made,

a means for storing the balance to store the electronic money ID and the balance of electronic money of said electronic money ID correlating them with each other in the terminal specific information of the mobile communication terminal registered in advance,

a means for acquiring the balance to acquire the balance of electronic money of all electronic money IDs corresponding to the terminal specific information received by said means for receiving offer to purchase from said means to store the balance,

a means for calculating the total balance to calculate the total balance of electronic money of multiple electronic money IDs when said means to acquire the balance has acquired the balance of electronic money of multiple electronic money IDs correlated with the same terminal specific information, and

a settlement propriety judgment means for judging that settlement is possible when the total balance calculated by said means for calculating the total balance is not smaller than said transaction amount.

Overview of the description

[Background Art]

It relates to a prepaid electronic money of the type to purchase electronic money to which an electronic money ID is given in exchange of advance payment of a certain amount (500 yen, 1,000 yen, etc.).

As a method to control the balance for such prepaid electronic money, a method of the type in which control is carried out by the database of the electronic money management company through a network (hereinafter, referred to as "network type") has been known.

[Problem to be Solved by the Invention]

Since replenishing is not possible for the prepaid electronic money, if the balance corresponding to an electronic money ID becomes less than the price of goods, settlement cannot be made. Therefore, it was required to purchase another electronic money for which a new electronic money ID is given.

Even in that case, however, the necessary amount might be satisfied by combining the balance of other electronic money IDs already purchased. But, even in that case in the past, it was required to purchase a new electronic money giving an additional burden to the user.

[Solution for the Problem to be Solved]

In the network-type prepaid electronic money, name-based aggregation of multiple electronic money IDs is made possible utilizing the fact that multiple electronic money IDs owned by a person are controlled on the common database, etc. To be more precise, it is carried out in the following manner.

At first, the user purchases electronic money from a convenience store, etc., and receives a card or receipt carrying a bar code representing the electronic money ID which is the information to identify the electronic money.

Then, the user transmits the terminal specific information of the mobile phone and the electronic money ID to the electronic money management company by reading the bar code with user's own mobile phone, and the terminal specific information, the electronic money ID and the amount for purchasing said electronic money ID are registered correlating them with each other to the database controlling the balance of electronic money.

After that, if an offer to purchase is made after accessing the goods selling site with a mobile phone and specifying goods, the balance of electronic money of all electronic money IDs corresponding to the terminal specific information are extracted and aggregated, and if the aggregated balance of electronic money is not less than the price of goods, it is informed that settlement is possible even if the balance of electronic money of a specific electronic money ID is insufficient for payment for goods.

Drawings

[Fig. 1]

Terminal specific information	Electronic money ID	Electronic money balance
AAA1111	MMM1234	350
AAA1111	MMM5678	150
BBB1212	MMM1111	1000
BBB1212	MMM2222	210
BBB1212	NNN3333	50

When the price of goods ≤ 500

Settlement is possible.

[State of the art (Prior art, well-known art, etc.)]

Prior art 1:

A system connected from a mobile communication terminal through a network for judging propriety of settlement using prepaid electronic money when payment for goods for which the user makes an offer to purchase is made, comprising

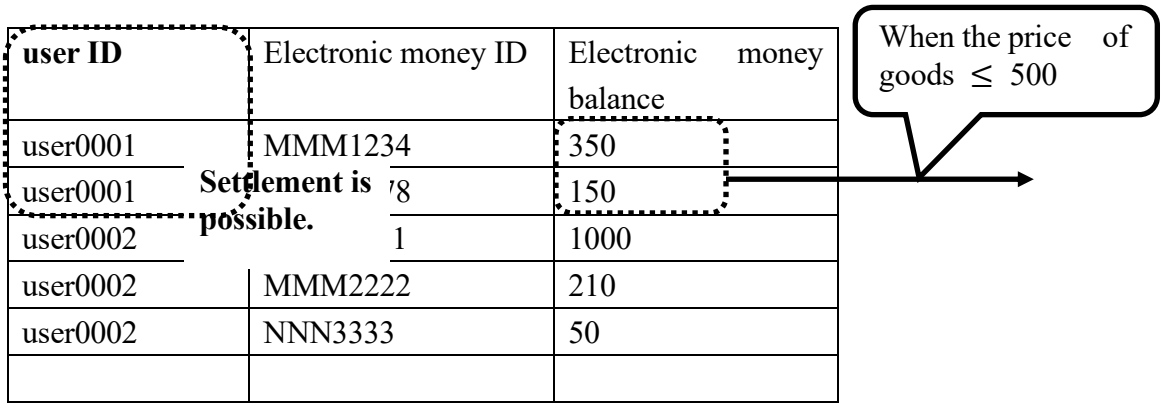
a means for receiving offer to purchase to receive the transaction amount of the goods for which the user made an offer to purchase and the user ID entered when the offer to purchase is made,

a means for storing the balance to store the electronic money ID and the balance of electronic money of said electronic money ID correlating them with each other in the user ID registered in advance,

a means for acquiring the balance to acquire the balance of electronic money of all electronic money IDs corresponding to the user ID received by said means for receiving offer to purchase from said means for storing the balance,

a means for calculating the total balance to calculate the total balance of electronic money of multiple electronic money IDs when said means for acquiring the balance has acquired the balance of electronic money of multiple electronic money IDs correlated with the same user ID, and

a settlement propriety judgment means for judging that settlement is possible when the total amount of the balance of electronic money calculated by said means for calculating the total balance is not smaller than said transaction amount.



user ID	Electronic money ID	Electronic money balance
user0001	MMM1234	350
user0001	[illegible]8	150
user0002	[illegible]1	1000
user0002	MMM2222	210
user0002	NNN3333	50

Prior art 2:

In the charging system of electronic money using mobile phone, an art to register the electronic money ID and the balance of electronic money correlated with the terminal specific number of handheld terminal used when registering for the use of electronic money service, and identify and control the user of electronic money by said terminal specific number.

[Conclusion]

The invention of claim 1 lacks an inventive step.

[Overview of Reason for Refusal]

According to the comparison between the invention of claim 1 and the prior art 1, both of them are identical except the following difference.

(Differences)

While the user identification information correlated with the electronic money ID and the balance of electronic money of said electronic money ID is "terminal specific number of handheld terminal" in the claimed invention, it is "user ID" for the prior art.

Above difference is examined below. The prior art 2 is "an art to register the electronic money ID and the balance of electronic money correlated with the terminal specific number of handheld terminal used when registering for the use of electronic money service, and identify and control the user of electronic money by said terminal specific number" as discussed above.

Then, "user ID" in the prior art 1 and "terminal specific number of handheld terminal" in the prior art 2 have a common function in that both are information to identify the user of the electronic money and control the electronic money.

Accordingly, it is a matter at which a person skilled in the art would have easily arrived to adopt feature according to the above difference by controlling the terminal specific number of handheld terminal in the prior art 2 instead of controlling the balance of electronic money of the electronic money ID with "user ID" in the prior art 1.

[Explanation]
(Considered motivation)
(1) Relation of technical fields

Both of the prior art 1 and the prior art 2 belong to the technical field related to electronic money.

(2) Similarity of operations or functions

"User ID" in the prior art 1 and "terminal specific number of handheld terminal" stated in the prior art 2 have a common function in that both of them are information for identifying the user of electronic money and controlling electronic money.

[Case 20] (Invention lacks an inventive step)

Title of Invention

An admission acceptance system using mobile communication terminals

What is claimed is:

[Claim 1]

An admission acceptance system using mobile communication terminals, comprising

an authentication device for issuing a two-dimensional bar code generated based on the visitor specific authentication code to a mobile communication terminal of a visitor, and

an admission acceptance device for carrying out authentication using said two-dimensional bar code, wherein

said authentication device comprising

a judgment part for receiving two-dimensional bar code request signal including the caller ID from the mobile communication terminal of the visitor, and searching through the pre-registered visitor database based on the received caller ID to make a judgement whether or not pre-registered visitor data of the visitor has been registered,

a two-dimensional bar code transmission part for generating a two-dimensional bar code based on said visitor specific authentication code when said pre-registered visitor data of the visitor has been registered, and transmitting the two-dimensional bar code to said mobile communication terminal of the visitor, and

an authentication part for receiving authentication request signal from the admission acceptance device, and

said admission acceptance device comprising

an admission acceptance part including a means to read two-dimensional bar code displayed on the display screen of the mobile communication terminal, and

an authentication request part for transmitting authentication request signal including two-dimensional bar code read by the admission acceptance part to said authentication part of said authentication device, and

said authentication device making a judgment whether or not the signal acquired by decoding the two-dimensional bar code read by the admission acceptance part coincides with the visitor specific authentication code given to said visitor based on the authentication request signal received by said authentication part, and transmitting a signal to the effect that said visitor is authenticated to the admission acceptance device when the signal acquired by decoding the two-dimensional bar code read by the admission acceptance part coincides with the two-dimensional bar code given to said visitor.

Overview of the description

[Background Art]

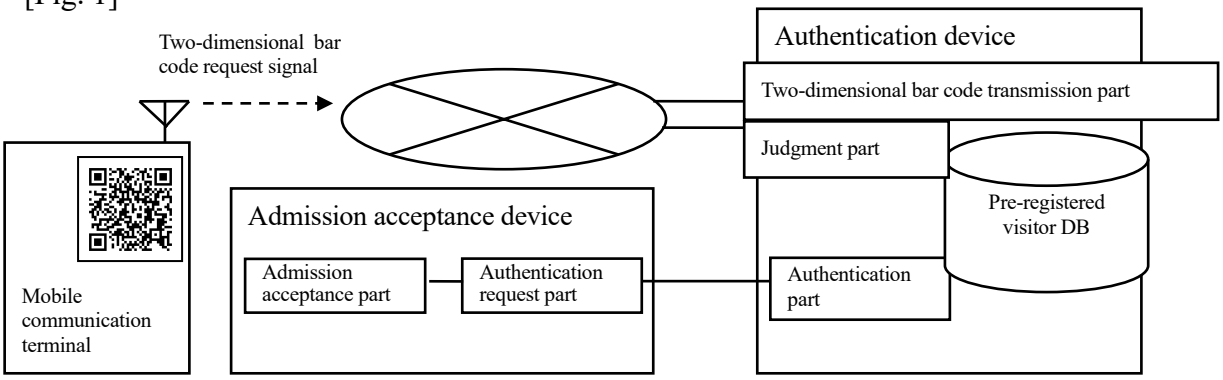
It relates to an admission acceptance system used in a concert hall, etc.

[Problem to be Solved by the Invention]

To provide a simple admission acceptance system that requires no advance delivery of paper ticket by using mobile communication terminals such as mobile phone for accepting admission.

Drawings

[Fig. 1]



[State of the art (Prior art, well-known art, etc.)]

Prior art 1:

An admission acceptance system using mobile communication terminals, comprising

an authentication device for issuing a password as the visitor specific authentication code to a mobile communication terminal of a visitor, and

an admission acceptance device for carrying out authentication using said password, wherein

said authentication device comprising

a judgment part for receiving password request signal including the caller ID from the mobile communication terminal of the visitor, and searching through the pre-registered visitor database based on the received caller ID to make a judgement whether or not pre-registered visitor data of the visitor has been registered,

a password transmission part for generating a password based on said visitor specific authentication code when said pre-registered visitor data of the visitor has been registered, and transmitting the password to said mobile communication terminal of the visitor, and

an authentication part for receiving authentication request signal from the admission acceptance device, and

said admission acceptance device comprising

an admission acceptance part including a means to enter password, and

an authentication request part transmitting authentication request signal including password read by the admission acceptance part to said authentication part of said authentication device, and

said authentication device making a judgment whether or not the password entered into the admission acceptance part coincides with the visitor specific password given to said visitor based on the authentication request signal received by said authentication part, and transmitting a signal to the effect that said visitor is authenticated to the admission acceptance device when the password entered into the admission acceptance part coincides with the password given to said visitor.

(Problem to be solved)

To save costs required for sending paper entrance tickets in advance

Prior art 2:

In a paperless point card system using mobile communication terminals, an art to make authentication whether or not the person in question is a point card member in which a two-dimensional bar code generated based on the authentication code is transmitted to a mobile communication terminal of a point card member in advance, the point card member displays said two-dimensional bar code on the screen of the mobile communication terminal and makes this screen read by the two-dimensional bar code reader when purchasing a goods, and authentication to judge whether or not the person in question is a point card member is made by judging on coincidence of the signal acquired by decoding the read two-dimensional bar code with the authentication code.

[Conclusion]

The invention of claim 1 lacks an inventive step.

[Overview of Reason for Refusal]

According to comparison between the invention of claim 1 and the prior art 1, both are identical except the following difference.

(Differences)

While "two-dimensional bar code generated based on authentication code" is issued, and the admission acceptance part has a "means for reading two-dimensional bar code displayed on the display screen of mobile communication terminal," and the authentication device makes a "judgment whether or not the signal acquired by decoding the two-dimensional bar code read by the admission acceptance part coincides with the visitor specific authentication code given to said visitor" in the claimed invention, "password as an authentication code" is issued, the admission acceptance part has a "means to enter password," and the authentication device makes a "judgment whether or not the password entered into the admission acceptance part coincides with the visitor specific password given to said visitor" in the prior art 1.

Examining the above difference, the prior art 2 is "an art to make authentication whether or not the person in question is a point card member in which a two-dimensional bar code generated based on the authentication code is transmitted to a mobile communication terminal of a point card member in advance, the point card member displays said two-dimensional bar code on the screen of the mobile communication terminal and makes this screen read by the two-dimensional bar code reader when purchasing a goods, and authentication to judge whether or not the person in question is a point card member is made by judging on coincidence of the signal acquired by decoding the

read two-dimensional bar code with the authentication code" as discussed above.

Then, the prior art 1 and the prior art 2 belong to a common technical field of user authentication art using mobile communication terminals. And, they have a common problem to be solved to make authentication without issuing any medium for authentication (tickets, cards, etc.) possible by using mobile communication terminals. In addition, "password" in the prior art 1 and "two-dimensional bar code" in the prior art 2 have common operation and function in that both can realize authentication.

Accordingly, it is a matter at which a person skilled in the art would have easily arrived to devise a feature according to the above difference by adopting two-dimensional bar code generated based on authentication code instead of password, and adopting a means for reading two-dimensional bar code in the admission acceptance part, and, at the same time, displaying the two-dimensional bar code on the screen of the mobile communication terminal and making this screen read by the admission acceptance part by adopting authentication of coincidence of the signal which is decoded two-dimensional bar code and the authentication code by the authentication device.

[Explanation]
(Considered motivation)
(1) Relation of technical fields

The prior art 1 and the prior art 2 belong to a common technical field of user authentication art using mobile communication terminals.

(2) Similarity of problems to be solved

The prior art 1 and the prior art 2 have a common problem to be solved to make authentication without issuing any medium for authentication (tickets, cards, etc.) possible by using mobile communication terminals.

(3) Similarity of operations or functions

"Password" in the prior art 1 and "two-dimensional bar code" in the prior art 2 have common operations and functions in that both can realize authentication.

[Case 21] (Invention lacks an inventive step)

Title of Invention

Sugar beet sherbet for removing bad breath

What is claimed is:

[Claim 1]

Sugar beet sherbet for removing bad breath.

Overview of the description

[Background Art]

It is known that sugar beet has an effect of removing bad breath, and sugar beet sherbet is also known.　However, it is not known to use the sugar beet sherbet for removing bad breath.

[Problems to be Solved by the Invention]

In the meeting, etc. after the meal including smelling materials such as garlic, bad breath is a concern.　The purpose of the invention is that in order to eliminate this concern, a person takes dessert after the meal to remove the bad breath, i.e., to remove unpleasant smell.

[Solution for the Problem to be Solved]

To remove bad breath and unpleasant smell by taking the sugar beet sherbet as a dessert after meal.

[Example]

(Preparation of sugar beet sherbet) A tea bag of sugar beet (3 g) which was commercially available was dipped in 200 ml of boiled water for five minutes.　30 g of saccharose was dissolved in the solution, followed by freezing in the freezer after removing the heat therefrom. Then, thus frozen solution was processed in a mixer to prepare sherbet.

(Preparation of green tea sherbet) Green tea sherbet was prepared in the manner identical to the method for preparing the sugar beet sherbet except that a tea bag of green tea (3 g) which was commercially available was used instead of the tea bag of sugar beet.

(Testing method) All the amount of the sugar beet sherbet or the green tea sherbet prepared above was placed in a sealed container, 1 ml of trimethylamine solution (0.03%) as odorant was added thereto, and an effect of suppressing the unpleasant smell caused by trimethylamine was measured.　As a result thereof, the sugar beet sherbet had better effect of suppressing unpleasant smell caused by trimethylamine than the green tea sherbet.

[State of Art (Prior art, well-known art etc.)]

Prior art 1:

The prior art 1 discloses that a person eats green tea sherbet as a dessert for removing bad breath.

Prior art 2:

The prior art 2 discloses that the intake of sugar beet shows stronger effect of suppressing bad breath than the intake of green tea.

[Conclusion]

The invention of claim 1 lacks an inventive step.

[Overview of Reasons for Refusal]

The invention according to claim 1 and the invention disclosed in the prior art 1 are common to each other in that the both inventions are directed to "sherbet containing tea ingredient for removing bad breath". However, the invention according to claim 1 differs from the invention disclosed in the prior art 1 in that the former employs "sugar beet" as the tea ingredient, and the latter employs "green tea" as the tea ingredient.

The above described difference will be studied below. The invention disclosed in the prior art 1 and the invention disclosed in the prior art 2 belong to the same technical field such as "food which contains tea ingredient for removing bad breath". The invention disclosed in the prior art 1 and the invention disclosed in the prior art 2 address the same problem of "enabling removal of bad breath by an intake of food". Further, the "green tea" disclosed in the prior art 1 and the "sugar beet" disclosed in the prior art 2 are common to each other in effect and function in that the both take a roll of removal of bad breath. Still further, the prior art 2 discloses that the intake of sugar beet achieves a stronger effect of suppressing the bad breath than the intake of green tea.

Under the circumstances, in the green tea sherbet of the prior art 1, a person skilled in the art could have easily arrived at changing the tea ingredient from green tea to sugar beet for the purpose of enhancing the effect of suppressing bad breath.

The effect of the invention according to claim 1, i.e., the sugar beet sherbet has a better effect of suppressing the bad breath than the green tea sherbet, is at a level foreseeable by a person skilled in the art based on the disclosure of the prior art 2.

[Explanation]

(Matters referred to for motivation)

(1) Relation of technical field

The invention disclosed in the prior art 1 and the invention disclosed in the prior art 2 belong to the same technical field such as "food containing tea ingredient for removing bad breath".

(2) Similarity of problems to be solved

Both of the invention disclosed in the prior art 1 and the invention disclosed in the prior art 2 address a problem of "enabling removal of bad breath by an intake of food".

(3) Similarity of operations or functions

The "green tea" disclosed in the prior art 1 and the "sugar beet" disclosed in the prior art 2 are common to each other in effect and function in that the both take a roll of removal of bad breath.

(4) Suggestions shown in the content of prior art

The prior art 2 discloses that the intake of sugar beet achieves a stronger effect of suppressing bad breath than the intake of green tea.　This disclosure suggests that replacement of the green tea disclosed in the prior art 1 with the sugar beet enables enhancement of the effect of suppressing bad breath.

(Regarding Advantageous Effect)

The invention according to claim 1 produces a better effect of suppressing bad breath than the green tea sherbet.　However, the prior art 2 discloses that the intake of sugar beet achieves a stronger effect of suppressing bad breath than the intake of green tea.　Therefore, the effect of the invention according to claim 1 is foreseeable by a person skilled in the art.

[Case 22] (Invention lacks an inventive step)

Title of Invention

Beverage containing ginger juice for improving shadows under the eyes

What is claimed is:

[Claim 1]

Beverage for improving shadows under the eyes comprising ginger juice.

Overview of the description

[Background art]

It is popular that poor health due to bad blood circulation is improved by causing a person to take an ingredient having an effect of increasing blood circulation.

[Problems to be Solved by the Invention]

To improve shadows under the eyes by a simple means such as the intake of beverage.

[Solution for the Problem to be Solved]

To achieve improvement of shadows under the eyes by taking beverage which contains ginger juice.

[Example]

Ginger juice is mixed with grapefruit juice, tea, and eggnog, respectively, to thereby prepare Beverage A, Beverage B, and Beverage C.

18 test subjects were forced to have three hour-sleep every day for one week. The test subjects were caused to take 300 cc of the beverage three times every day after meals.

Nine of the test subjects were caused to take the beverage containing ginger juice (Beverage A, Beverage B, and Beverage C), and the other nine test subjects were caused to take beverage without containing ginger juice (grapefruit juice, tea, and eggnog).

After one week, color around the eyes was measured by using a complexion measuring apparatus for sensing color of skin. As a result thereof, significant suppression of pigmentation was recognized among the test subjects of the group who were caused to take the beverage containing ginger juice.

[State of Art (Prior art, well-known art, etc.)]

Prior art 1:

The prior art 1 discloses that the blood circulation is improved and shadows under the eyes are suppressed by taking beverage containing gingerol.

Prior art 2:

The prior art 2 discloses that ginger juice contains gingerol.

[Conclusion]

The invention of claim 1 lacks an inventive step.

[Overview of Reasons for Refusal]

When the invention according to claim 1 and the invention disclosed in the prior art 1 are compered to each other, the both inventions are common to each other in that the both inventions are directed to “beverage for improving shadows under the eyes”.

The invention according to claim 1 differs from the invention disclosed in the prior art 1 in that the former contains “ginger juice” as an ingredient for suppressing shadows under the eyes, whereas the latter contains “gingerol” as an ingredient for suppressing shadows under the eyes.

The above described difference will be studied below. The invention disclosed in the prior art 1 and the invention disclosed in the prior art 2 belong to the same technical field such as “food containing gingerol”. Further, the prior art 1 discloses that the intake of beverage containing gingerol improves blood circulation and suppresses shadows under the eyes.

In view of the above, in the prior art 1, a person skilled in the art could have easily arrived at employing ginger juice as an ingredient containing gingerol for the purpose of suppressing shadows under the eyes.

[Explanation]

(Matters referred to for motivation)

(1) Relation of technical field

The invention disclosed in the prior art 1 and the invention disclosed in the prior art 2 belong to the same technical field such as “food containing gingerol”.

(2) Suggestions shown in the content of prior art

The prior art 1 discloses that the intake of beverage which contains gingerol improves blood circulation and suppresses shadows under the eyes. The disclosure suggests mixing of ginger juice containing gingerol disclosed in the prior art 2 with beverage for the purpose of suppressing shadows under the eyes.

[Case 23] (Invention lacks an inventive step)

Title of Invention

Squid ink spaghetti for excreting metal ions

What is claimed is:

[Claim 1]

Squid ink spaghetti for excreting metal ions.

Overview of the description

[Background Art]

Ions of metals, e.g., ions of barium, lead, aluminum, etc., are stored in the body through daily meals, which adversely affects nerves and muscles.

It is known that various kinds of chelating agents are used for excreting metal ions from the body.

It is, however, not known that squid ink spaghetti is used for excreting metal ions from the body.

[Problems to be solved by the Invention]

Ions of metals, e.g., ions of barium, lead, aluminum, etc., are stored in the body through daily meals, which adversely affects nerves and muscles.　This raises a problem, i.e., the metal ions are to be effectively excreted from the body.

[Solution for the Problem to be Solved]

The present invention solved the problem by taking squid ink spaghetti.

[Example]

(Preparation of spaghetti X)

Squid ink spaghetti was cooked by using 200 g of spaghetti, 5 g of olive oil, and 10 g of squid ink as raw materials.

(Preparation of spaghetti Y)

Spaghetti Y was cooked by using the same raw materials as used in cooking the spaghetti X, except for no use of 10 g of squid ink, and by the same cooking method when cooking the spaghetti X.

(Preparation of mouse for testing)

An aqueous solution was prepared in the manner that 100 g of distilled water contains 5% of hydrate of barium hydroxide, 5% of lead acetate, 5% of aluminum sulfate, and phosphoric acid as pH adjuster.　Then, a mouse to which 0.25 ml/day of the aqueous solution was directly administered into the stomach for three straight days was prepared.

(Testing method)

The mouse for testing was forced to eat up the spaghetti X or the spaghetti Y every day by the amount of 5 g/day, and amounts of barium ions, lead ions, and aluminum ions in its excrement were measured every day.　As a result thereof, an amount of ions of each metal in the excrement

of the mouse which took the spaghetti X every day was larger than an amount of ions of each metal in the excrement of the mouse which took the spaghetti Y every day. Therefore, it is recognized that the squid ink spaghetti has an effect of excreting metal ions.

[State of Art (Prior art, well-known art, etc.)]
Prior art 1:

The Prior art 1 discloses that the intake of a food composition composed of eumelanin as a main ingredient enables excreting of ions of metals, e.g., ions of barium, lead, aluminum, etc., from the body. The Prior art 1 also discloses, as an example of the food composition, a supplement containing eumelanin as an active ingredient.

Prior art 2:

The Prior art 2 discloses that a main ingredient of pigment of the squid ink in the squid ink spaghetti is eumelanin.

[Conclusion]

The invention of claim 1 lacks an inventive step.

[Overview of Reasons for Refusal]

When the invention according to claim 1 is compared with the invention disclosed in the Prior art 1, both inventions are common to each other in that both inventions are directed to “food composition for excreting ions of metals”.

On the other hand, the invention according to claim 1 differs from the invention disclosed in the Prior art 1 in that the food composition of the former invention is “squid ink spaghetti”, whereas the latter invention does not include limitation of food composition.

The above described difference will be studied below. The invention disclosed in the Prior art 1 and the invention disclosed in the Prior art 2 belong to the same technical field such as “food composition containing eumelanin”. Further, the Prior art 1 discloses that the intake of the food composition containing eumelanin as a main ingredient enables excreting of ions of metals, e.g., ions of barium, lead, aluminum, etc., from the body.

When taking the above into consideration, a person skilled in the art could have easily arrived at using the squid ink spaghetti as the food composition containing eumelanin as a main ingredient in the Prior art 1.

[Explanation]
(Matters referred to for motivation)
(1) Relation of technical field

The invention disclosed in the Prior art 1 and the invention disclosed in the Prior art 2 belong to the same technical field such as “food composition containing eumelanin”.

(2) Suggestions shown in the content of prior art

The Prior art 1 discloses that the intake of the food composition containing eumelanin as a main ingredient enables excreting of ions of metals, e.g., ions of barium, lead, aluminum, etc., from the body.　The disclosure suggests application of squid ink spaghetti containing eumelanin as a main ingredient, which is disclosed in the Prior art 2, to the use of excreting of the ions of metals.

[Case 24] (Invention involves an inventive step)

Title of Invention

Food composition for muscle-building

What is claimed is:

[Claim 1]

A food composition for muscle-building comprising an extract from leaves of a plant P as an active ingredient.

[Claim 2]

A food composition for muscle-building according to claim 1, wherein the food composition is konjac.

Overview of the description

[Background Art]

When an athlete, etc. receives injury of, for example, ligament ruptures, both of the dietary cure and the rehabilitation are employed for the sake of recovery of the reduced muscle mass. Incidentally, it is known that, in order to give refreshing flavor of an appropriate level, the extract from leaves of a plant P is mixed with a food composition, specifically, with a konjac.

[Problems to be Solved by the Invention]

To provide food effective for increasing the muscle mass in rehabilitation for an athlete, etc. who received injury of, for example, ligament ruptures.

[Solution for the Problem to be Solved]

To build up muscles by taking the konjac containing the extract from leaves of the plant P as an active ingredient.

[Example]

In order to confirm an effect of the present invention, a test was performed to 40 athletes who were injured from anterocrucial ligament.

The test subjects went into training (seven times a week) of bending and extension movement of the leg sections for 20 weeks and took 100 g of konjac containing the extract from leaves of the plant P every time immediately after the training.

The test subjects were grouped into four groups, in the following manner, according to test articles to be taken:

Group A (Working Example): konjac containing the extract from leaves of the plant P as an active ingredient

Group B (Comparison Example 1): normal konjac

Group C (Comparison Example 2): konjac containing extract from leaves of a plant Q as an active ingredient

Group D (Comparison Example 3): konjac containing extract from leaves of a plant R as an active ingredient

Incidentally, an extract from leaves of a plant is prepared in the manner that 500 g (dried weight) of leaves are immersed in 1 L of water for a day and, after filtered, was subjected to freeze drying to remove moisture. A konjac is made in the manner that the extract becomes 2 g per every 100 g of konjac.

The test subjects were subjected to measurement of a transversal area of muscle of a femoral region as an index of the muscle mass (proximal segment: a point 10 cm away from the site of injury) before starting the training and after completing the training of 20 weeks.

The transversal area of muscle was obtained in the manner that an area of muscle section was calculated via computer processing by using an image obtained by the MRI method.

The increasing rate of the transversal area of muscle section by the training was about 10% in Groups of B to D, whereas about 45% in Group A.

[State of Art (Prior art, well-known Art, etc.)]
Prior art 1:

The Prior art 1 discloses that the extract from leaves of the plant P is mixed with a food composition, specifically, with a konjac, in order to give refreshing flavor. The Prior art 1 also discloses that the extract from leaves of the plant was prepared in the manner that 500 g of leaves (dried weight) was immersed in 1 L of water for one day and, after filtered, was subjected to freeze drying to remove moisture.

Well-known Art:

It is popular to employ, when an athlete, etc. receives injury of, for example, ligament ruptures, both of the dietary cure and the rehabilitation for the sake of recovery of the reduced muscle mass.

[Conclusion]

The inventions of claim 1 and 2 involve an inventive step.

[Explanation]
(Matters referred to for motivation)
- Relation of technical field

The invention disclosed in the Prior art 1 and the well-known art belong to the same technical field such as “food”.

(Reasons why no reasons for refusal was found)
(Regarding common point and different point)

The inventions according to claim 1 and claim 2 and the invention disclosed in the Prior art 1 are common to one another in that all the inventions are directed to a food composition containing the extract from leaves of the plant P (konjac containing the extract from leaves of the plant P). However, the inventions according to claim 1 and claim 2 include the limitation of use

of “for muscle-building”, whereas the invention disclosed in the Prior art 1 does not include such limitation of use.　Therefore, the inventions according to claim 1 and claim 2 differ from the invention disclosed in the Prior art 1 in this point.

(Regarding motivation)

Here, the invention disclosed in the Prior art 1 and the well-known art belong to the same field relating to food.　However, neither the Prior art 1 nor the well-known art discloses or suggests the use of the extract from leaves of the plant P for muscle-building or the use of the konjac for muscle-building.　It would be impossible to say there was the motivation to apply the “food composition containing the extract from leaves of the plant P” disclosed in the Prior art 1 to the use of muscle-building.

As described above, it would be impossible to say that the invention according to claim 1 is obtainable based on the motivation to apply the well-known art to the invention disclosed in the Prior art 1.　Therefore, the inventions of claim 1 and 2 involve an inventive step.

[Case 25] (Invention lacks an inventive step)

Title of Invention

Agent for decreasing harsh taste of coffee

What is claimed is:

[Claim 1]

An agent for decreasing a harsh taste of coffee comprising an ingredient A as an active ingredient.

Overview of the description

[Background Art]

There are lots of consumers who are not good at a harsh taste of coffee, and thus decrease of a harsh taste of coffee is demanded.

[Problems to be Solved by the Invention]

To provide an agent for decreasing a harsh taste of coffee by being mixed with coffee.

[Solution for the Problem to be Solved]

Addition of an ingredient A to coffee enables decrease of the harsh taste of coffee.

[Example]

Coffee was extracted by using an aqueous solution containing the ingredient A by 2%. The aqueous solution was heated to 100 °C. When 10 professional panelists performed a sensory evaluation, all the 10 professional panelists responded that a harsh taste decreased in comparison with a case where coffee was extracted by using water without containing the ingredient A.

[State of Art (Prior art, well-known art, etc.)]

Prior art 1:

The Prior art 1 discloses that mixture of an antioxidant with coffee can decrease a harsh taste of coffee.

Prior art 2:

The Prior art 2 discloses the ingredient A as the antioxidant to be mixed with a food composition.

[Conclusion]

The invention of claim 1 lacks an inventive step.

[Overview of Reasons for Refusal]

The invention according to claim 1 and the invention disclosed in the Prior art 1 are common to each other in that the both inventions are directed to “agent for decreasing a harsh

taste of coffee".

The invention according to claim 1 differs from the invention disclosed in the Prior art 1 in that the "ingredient A" is mixed for the purpose of decreasing a harsh taste in the former invention, whereas the "antioxidant" was mixed for the purpose of decreasing a harsh taste in the latter invention.

The above described difference will be studied below. The invention disclosed in the Prior art 1 and the invention disclosed in the Prior art 2 belong to the same technical field such as "antioxidant for a food composition". The Prior art 1 discloses that mixture of an antioxidant with coffee enables decrease of a harsh taste of coffee.

In view of the above, in the Prior art 1, a person skilled in the art could have easily arrived at using the ingredient A as the antioxidant to be mixed with coffee for the purpose of decreasing a harsh taste of coffee.

[Explanation]
(Matters referred to for motivation)
(1) Relation of technical field

The invention disclosed in the Prior art 1 and the invention disclosed in the Prior art 2 belong to the same technical field such as "antioxidant of a food composition".

(2) Suggestions shown in the content of prior art

The Prior art 1 discloses that mixture of an antioxidant with coffee enables decrease of a harsh taste of coffee. This disclosure suggests the use of the ingredient A as the antioxidant disclosed in the Prior art 2 for the purpose of decreasing a harsh taste of coffee.

[Measurement of the Applicant]

The applicant opines and proves (e.g., proves with a test result) in Written Opinion that the ingredient A remarkably decreases a harsh taste of coffee in comparison with the antioxidant disclosed in the Prior art 1 and the other various antioxidants used in food compositions.

[Case 26] (Invention involves an inventive step)

Title of Invention

Supply Chain Management Method

What is claimed is:

[Claim 1]

A computer implemented method for managing a supply chain, comprising the steps of:

receiving a demand for a product;

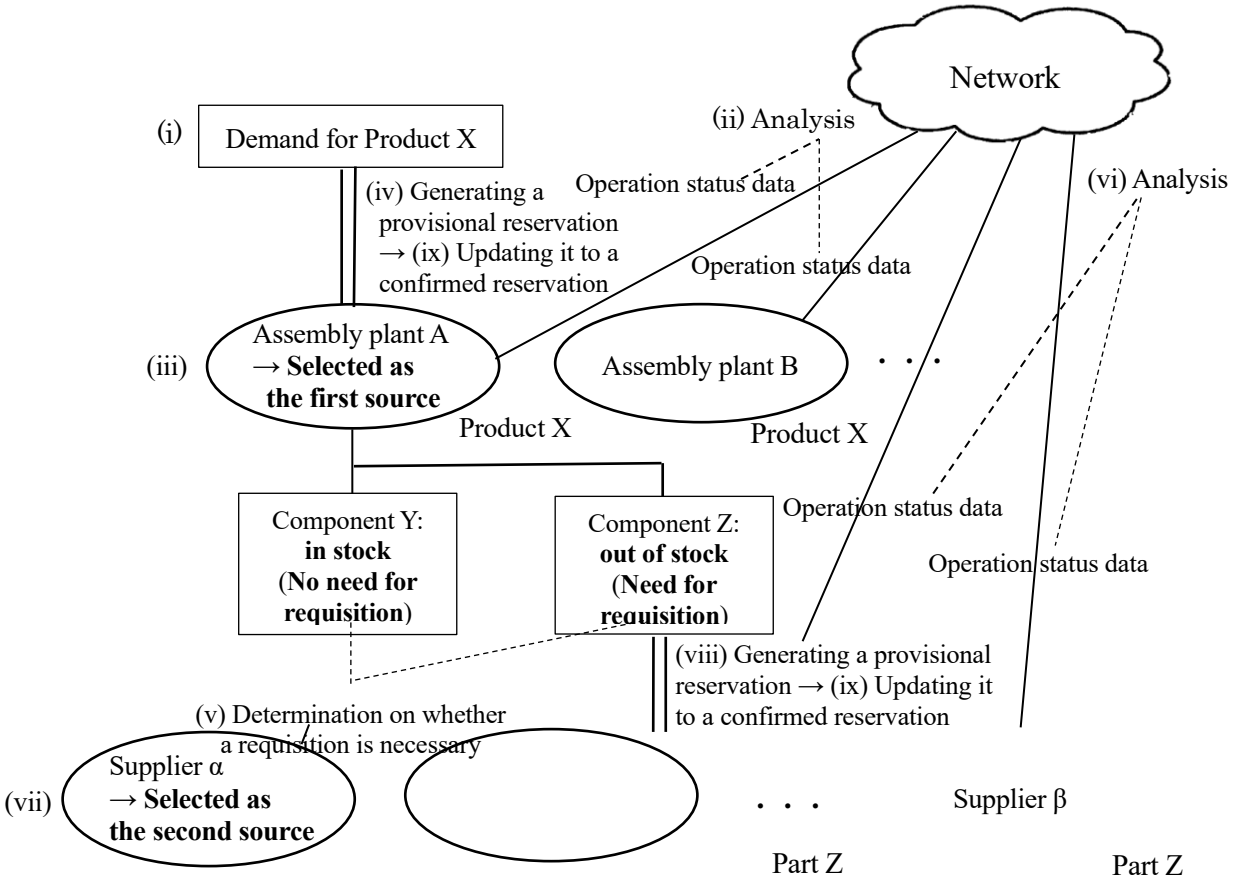
selecting at least one first source(s) to satisfy the said demand, based on information including operation status data at a plurality of sources of the said product, and generating a provisional reservation for a supply from the selected source(s);

determining whether there is a need for a requisition for any component part or material of the said product for the first source(s) to implement the said reservation;

selecting, where it is determined that there is a need for the said requisition, at least one second source(s), from among a plurality of sources of the component part or material, to satisfy the requisition as a demand, based on information including operation status data at the sources, and generating a provisional reservation for a supply from the selected source(s); and

updating the provisional reservations generated so far to confirmed reservations where, for each component part or material of the said product, it has been determined that the requisition is not necessary or the provisional reservation has been generated.

[Drawing in the present application]



Overview of the description

[Problems to be Solved by the Invention]

The present invention addresses the problem, in relation to the supply chain management, of determining whether there is a need for a requisition for any component part or material of a product, and generating automatically by a computer a provisional reservation and a confirmed reservation in response to, inter alia, operational status at a supply source, where the requisition is necessary.

[Solution for the Problem to be Solved]

The method of the present invention selects at least one first source(s) to satisfy a demand for a product in a supply chain, based on information including operation status data at a plurality of sources of the product. The operation status data may include real-time data at a production facility of a supplier (as a supply source) such as machine tool operation data and the amount of works waiting for processing, and the operation status data are utilized through communication via a network such as the Internet. Analysis of the operation status data enables the selection of supply source(s) to reflect properly the supply capacity of each source moment by moment. Upon selection of at least one first source(s) to satisfy the demand, the method generates, at this stage, “provisional reservation(s)” for supply from the selected source(s).

Next, the method determines whether there is a need for a requisition for any component

part or material of the product. Where it is determined that there is a need for the requisition, at least one second source(s) is/are selected, from among a plurality of sources of the component part or material, to satisfy the requisition as a demand, based on information including operation status data. Such a process is reiterated as necessary. Where, as a result, for each component part or material of the said product, it has been determined that the requisition is not necessary or otherwise the provisional reservation has been generated, the provisional reservations generated so far will be updated to confirmed reservations.

Accordingly, the method of the present invention is able to generate promptly provisional reservation(s) even in the case of a complicated supply chain with a number of tiers, and to find the status of insufficient supply in the supply chain, based on the existence of remaining provisional reservation(s) without being updated to confirmed reservation(s), if any.

[State of Art (Prior art, well-known art, etc.)]

Cited invention 1 (Invention disclosed in the cited document 1 (D1)):

A computer implemented method for managing the supply and demand of a product, comprising the steps of:

receiving a demand for a product;

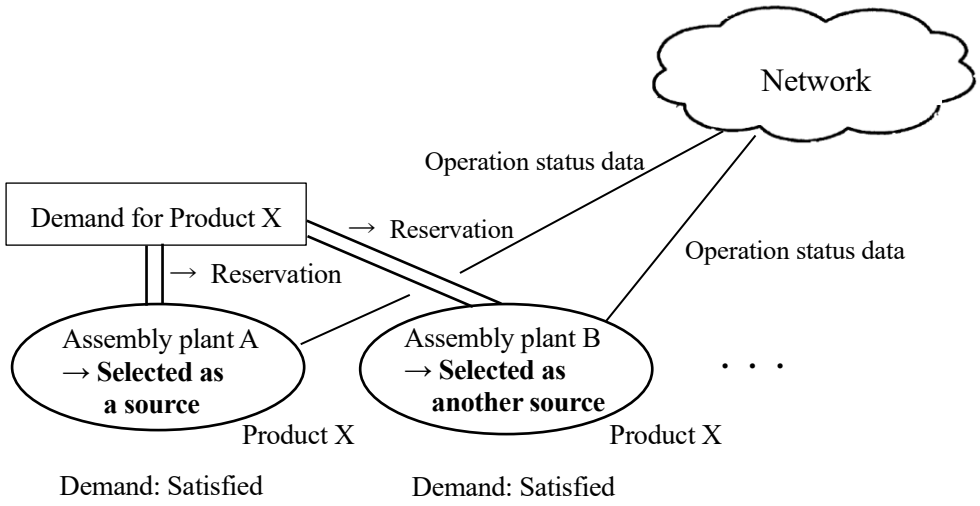
selecting a source to satisfy the said demand, based on information including operation status data at a plurality of sources of the said product;

determining whether the said demand is satisfied by the supply from the said source; and

selecting, where it is determined that the demand is not satisfied, another source to satisfy the unsatisfied demand, from among a plurality of sources of the said product, based on information including operation status data at the sources, or

generating, where it is determined that the demand is satisfied, reservations for supply from the sources selected so far.

[Drawing in D1]



Cited invention 2 (Invention disclosed in the cited document 2 (D2)):

A computer implemented method for assisting the inventory management of parts at a production facility, comprising the steps of:

receiving a demand for a product;

identifying component parts necessary for manufacturing the said product;

determining whether the stock of each component part is sufficient to satisfy the said demand;

indicating, where it is determined that the stock is insufficient, possible source(s) of the said component part to satisfy the said demand and their supply capacity, based on information including operation status data at a plurality of sources of the said part, or

indicating, where it is determined that the stock is sufficient, information regarding the said stock.

[Conclusion]

The invention of claim 1 involves an inventive step.

[Explanation]

(Considered motivation)

(1) Relation of technical fields

Both D1 and D2 are directed to the method regarding the supply and demand management of a product, and therefore each field of technology is mutually related.

(2) Similarity of problems to be solved

Both D1 and D2 address the same problem of providing a computer implemented method for the supply and demand management of a product, based on information including operation status data at a plurality of supply sources.

(Explanation on the non-existence of an inventive step objection)

The invention of claim 1 differs from the cited invention 1 in the following aspects:

(Difference 1)

While claim 1 recites a method for managing a supply chain comprising a step of determining whether there is a need for a requisition for any component part or material of a product, for the selected source(s) to implement the supply of the product, wherein the method selects, where it is determined that there is a need for the said requisition for the component part or material, at least one second source(s), from among a plurality of sources of the component part or material, to satisfy the requisition as a demand, based on information including operation status data at the sources,

the cited invention 1 is a method for managing the supply and demand of a product and does not take into account a requisition for any component part or material of the product.

(Difference 2)

While the method of claim 1 generates a "provisional reservation" for a supply from the selected source(s) and updates the "provisional reservations" generated so far to confirmed reservations where, for each component part or material of the said product, it has been determined that the requisition is not necessary or the "provisional reservation" has been generated,

the method of the cited invention 1 lacks features regarding the generation of a "provisional reservation" and the updating of such a "provisional reservation" to a confirmed reservation, although it generates reservations for supply from the selected sources.

First, analysis is made with regard to Difference 1.

Both D1 and D2 are directed to the method regarding the supply and demand management of a product, and therefore each field of technology is mutually related.

Furthermore, both D1 and D2 address the same problem of providing a computer implemented method for the supply and demand management of a product, based on information including operation status data at a plurality of supply sources.

In this light, it would have been obvious to one of ordinary skill in the art to apply D2 to D1, to take into account, further than the supply and demand management of a product itself, a requisition for a component part or material of the product for better supply and demand management, so as to manage a supply chain by incorporating in the method the steps of determining whether there is a need for a requisition for any component part of a product and selecting, where it is determined that there is a need for the requisition for the component part, at least one second source(s), from among a plurality of sources of the component part, to satisfy the requisition as a demand, based on information including operation status data at the sources.

Now, Difference 2 is considered.

D2, as well as D1, is silent about the features of claim 1 regarding the generation of a "provisional reservation" and the updating of such a "provisional reservation" to a confirmed reservation.

The method of claim 1 generates, upon the selection of one or more source(s) to satisfy the said demand for a product in the supply chain, a provisional reservation for a supply from the selected source(s), and then updates the generated provisional reservations to confirmed reservations where all the necessary provisional reservations for the supply chain have been generated. This enables the method of claim 1 to generate promptly provisional reservation(s) even in the case of a complicated supply chain with a number of tiers, and to find the status of insufficient supply in the supply chain, based on the existence of remaining provisional reservation(s) without being updated to confirmed reservation(s), if any. The present functionality is considered to constitute an advantageous effect, which is not readily expected from D1 and D2.

As seen from the above analysis, the features of claim 1 regarding the generation of a "provisional reservation" and the updating of such a "provisional reservation" to a confirmed

reservation cannot be deemed to be design variation etc. (namely, design variation or design choice associated with an application of specific techniques to solve certain problems) practicable upon the application of D2 to D1.

Hence, claim 1 recites features disclosed neither in D1 nor D2 with an advantageous effect not readily expected from D1 and D2, from which it is concluded that the claimed invention involves an inventive step over D1 and D2.

[Case 27] (Invention involves an inventive step)

Title of Invention

Running Supporting System

What is claimed is:

[Claim 1]

A running supporting system comprising a wrist watch type device having a screen interface and a GPS function, and an information distributing server communicative with the wrist watch type device through a network,

wherein the wrist watch type device has:

course information receiving means for receiving specification of course information from a user through the screen interface; and

transmitting means for transmitting the course information to the information distributing server, and continuously transmitting running information including position information and time information which are acquired by the GPS function to the information distributing server while the user performs the running,

the information distributing server has:

recording means for producing first lap time information corresponding to the course information based on the course information and the running information which are received from the wrist watch type device, and recording the resulting first lap time information in a running history database within the information distributing server;

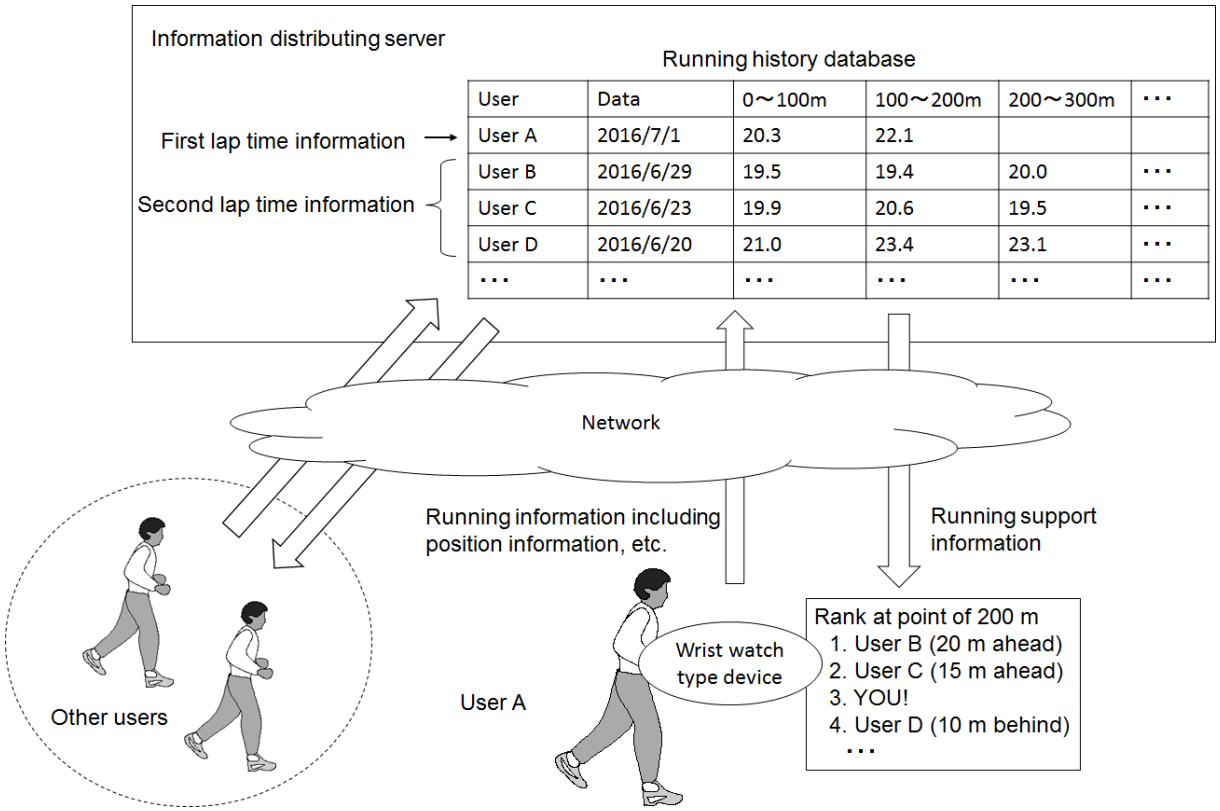
acquiring means for acquiring a plurality of second lap time information previously recorded in the running history database, and corresponding to the course information; and

transmitting means for producing running support information which supports the running of the user based on comparison of the first lap time information with a plurality of second lap time information, and transmitting the resulting running support information to the wrist watch type device,

the wrist watch type device further has a displaying means for receiving the running support information from the information distributing server and displaying the running support information on the screen interface, and

the plurality of second lap time information is lap time information which is produced based on the newest running information transmitted from the wrist watch type device which a user different from the user has.

Drawing in the present application



Overview of the description

[Background Art]

There is a known user wearable wrist watch type device which presents comparison of his/her past running history with information on current running.

[Problem to be Solved by the Invention]

However, when the user performed the running alone using the wrist watch type device concerned, since although reference could be made to the comparison with the past himself/herself, the sense of the competition with other persons could not be obtained. Therefore, it was difficult to keep the motivation of the running.

[Solution for the Problem to be Solved]

The user performs the running while he/she wears the wrist watch type device including the screen interface and the GPS function (hereinafter referred to as “the device” in this section). The user manipulates the device before start of the running, and specifies a course along which he/she will perform the running from now. The information on the course thus specified and the user is transmitted to the information distributing server. The information distributing server recognizes that the user starts to perform the running along the specified course. During the running, the running information including both the position information and the time information of the user which are acquired by the GPS function is continuously transmitted from the device to the information distributing server.

In the information distributing server, the lap time information (first lap time information) for each predetermined distance interval of the user is produced based on the running information transmitted from the device, and stored in the running history database within the information distributing server. Here, the information distributing server holds the past lap time information on a plurality of users for each course in the running history database. It is to be noted that in the running history database, only up to one piece of the lap time information of the same user is stored with respect to the same course, and when new lap time information is produced with respect to the same user, the new lap time information is overwritten on the old lap time information.

The information distributing server produces running support information involving a virtual rank of the user, and virtual distances to other users by comparing the first lap time information with the past lap time information (second lap time information) on a plurality of other users stored in the running history database. The information distributing server transmits the running support information thus produced to the device of the user. Since the first lap time information is suitably updated when the running information transmitted from the device is stored, the running support information is also updated each time, and transmitted to the device.

In the device of the user, the running support information transmitted from the information distributing server is displayed on the screen interface.

[Effect of Invention]

During the running, the user can refer to the running support information including the virtual rank of the user, and the virtual distances to other users on the wrist watch type device. Therefore, the user can obtain the sense of the competition with other users, and can hold the motivation of the running.

[State of the art (Prior art, well-known art, etc.)]

Cited invention 1 (Invention disclosed in the cited document 1 (D1)):

A wrist watch type device having a screen interface and a GPS function, having:

course information receiving means for receiving specification of course information from a user through the screen interface;

recording means for producing first time information corresponding to the course information based on running information including position information and time information which are acquired by the GPS function while the user performs running, and recording the resulting first lap time information in a running history database within the wrist watch type device;

acquiring means for acquiring a plurality of second lap time information which is previously recorded in the running history database, and corresponds to the course information; and

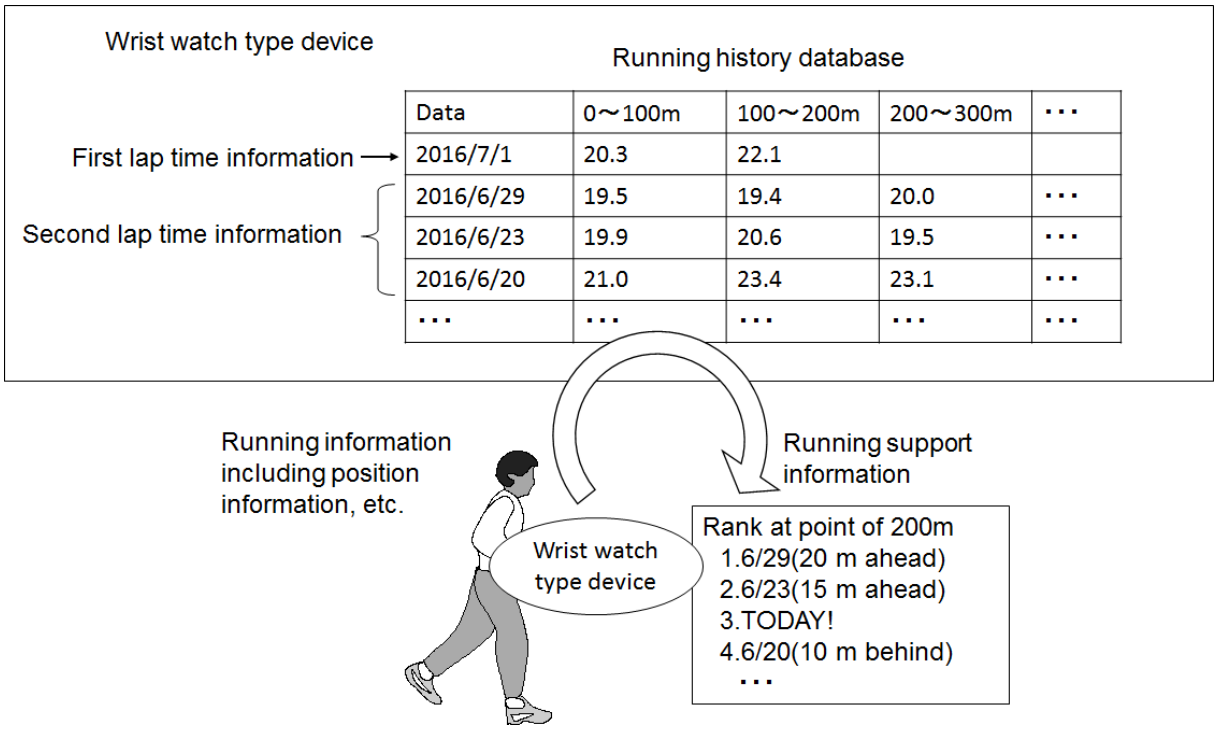
displaying means for producing running support information which supports the running of the user by comparing the first lap time information with the second lap time information, and displaying the resulting running support information on the screen interface.

(Problem to be solved)

By presenting the information obtained based on the current lap time information, and the

past lap time information recorded in the wrist watch type device as the running support information, the user can perform the running while he/she refers to the information on the comparison with the past lap time information of himself/herself.

Drawing in D1



Well-known art:

The technique that in the system in which the server and the terminal can communicate with each other, due to the storage capacity, and the processing burden reduction on the terminal side, the data required at the terminal is transmitted to the server, the processing is executed based on the data concerned in the server, and the processing result is transmitted from the server to the terminal.

[Conclusion]

The invention of claim 1 involves an inventive step.

[Explanation]

(Considered motivation)

- Similarity of problems to be solved

Although the cited invention 1 does not describe the problem about the storage capacity and the processing load of the terminal, since the wrist watch type device of the cited invention 1 is also the terminal on the user side, it is an obvious problem to a person skilled in the art that there is a limit in the throughput and the storage capacity.

Therefore, the cited invention 1 and the well-known art are common in problem to each

other.

(Explanation for no reason for refusal)

When the invention of claim 1 is compared with the cited invention 1, both of them are different from each other in the following points.

(Difference 1)

A point that in the invention of claim 1, which is a system comprising a wrist watch type device and an information distributing server, the running information acquired in the wrist watch type device is transmitted to the information distributing server, and in the information distributing server, the running support information is produced by comparing the first lap time information with a plurality of second lap time information, and transmitted to the wrist watch type device, whereas in the cited invention 1, which is a wrist type device, the comparison of the first lap time information with a plurality of lap time information, and the production of the running support information are performed in the wrist watch type device.

(Difference 2)

A point that in the invention of claim 1, the second lap time information is produced based on the newest running information transmitted from the wrist watch type device which the user different from the user of the first lap time information has, whereas in the cited invention 1, with respect to the second lap time information, such specification is not performed.

The difference 1 will be examined.

The wrist watch type device of the cited invention 1 is the terminal on the user side, and thus it is an obvious problem to a person skilled in the art that there is a limit in the throughput and the storage capacity.

On the other hand, the technique with which in the system in which the server and the terminal can communicate with each other, due to the storage capacity and the processing load reduction on the terminal side, the data acquired in the terminal is transmitted to the server, the processing is executed based on the data concerned in the server, and the processing result is transmitted from the server to the terminal is known as the well-known art.

Therefore, a person skilled in the art could have easily conceived of applying the above well-known art, managing the running history database which the wrist watch type device has on the server side from a viewpoint of the storage capacity and the processing load, and the running information acquired in the wrist watch type device is transmitted to the information distributing server, and in the information distributing server, the running support information is produced by comparing the first lap time information with a plurality of second lap time information, and transmitted to the wrist watch type device.

The difference 2 will be examined.

The cited information 1 involves a problem that the running can be performed while the information on the comparison with the past lap time information on the user himself/herself is referred, and does not disclose the matter about the comparison with other users.　In addition, that matter is not conceived easily by a person skilled in the art.　From this reason, performing the comparison with the second lap time information based on the newest running information transmitted from the wrist watch type device which the different user has cannot be said a design variation, etc. (design variation or design choice associated with an application of specific techniques to solve certain problems) which may be performed when the well-known art is applied to the cited invention 1.

Moreover, the invention of claim 1 has the advantageous effect, relative to the cited invention 1, that even when the user performs the running alone, he/she can obtain the sense of the competition with other users by producing the running support information based on the comparison with the lap time information of the different user.

In general consideration of the above circumferences, it could not be said that a person skilled in the art could have easily arrived at the invention of claim 1 by applying the well-known art to the cited invention 1.

[Case 28] (Invention involves an inventive step)

Title of Invention

Heavy Rain Point Specifying System

What is claimed is:

[Claim 1]

A heavy rain point specifying system comprising windshield wiper operation sensors attached to windshield wipers which a plurality of vehicles equip, and an analyzing server connected to the windshield wiper operation sensors through a network,

wherein the windshield wiper operation sensor comprises:

a detecting unit for detecting operation information including acceleration information of the windshield wiper;

an acquiring unit for acquiring current position information on the sensor; and

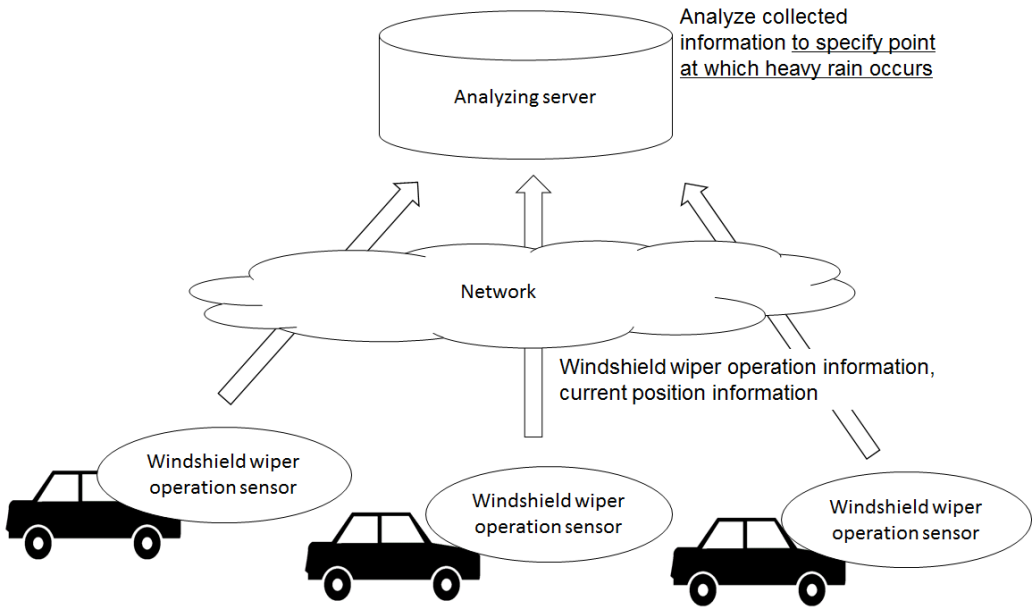
a transmitting unit for transmitting the current position information made to correspond to the operation information to the analyzing server,

the analyzing server comprises:

a collecting unit for collecting the operation information and the current position information from the plurality of windshield wiper operation sensors; and

an analyzing unit for statistically analyzing the current position information made to correspond to the operation information, exhibiting that the windshield wiper is operated at a high speed, of a plurality of collected operation information, thereby specifying a point at which heavy rain occurs.

Drawing in the present application



Overview of the description

[Problems to be Solved by the Invention]

A technique for specifying a point at which heavy rain occurs in detail is desired.

[Solution for the Problem to be Solved]

In order to specify the heavy rain point, the sensor attached to the windshield wiper which the vehicle includes is utilized. The sensor detects the operation information including the acceleration information of the windshield wiper, and transmits the operation information made to correspond to the current position information on the sensor to the analyzing sensor.

The analyzing server collects the operation information and the current position information from the sensors attached to the windshield wipers of a large number of vehicles. In addition, the analyzing server extracts the operation information concerned to only the operation information representing that the windshield wiper is operated at a given speed or more, and analyzes the current position information made to correspond to the operation information obtained by the limitation, thereby specifying the point at which the heavy rain occurs. Specifically, the geographical space is divided into meshes each having a particular distance square, and when the number of current position information corresponding to the extracted operation information included in a certain mesh is a given number or more, the mesh concerned is specified as the heavy rain occurring point.

[State of Art (Prior art, well-known art, etc.)]

Cited invention 1 (Invention disclosed in the cited document 1 (D1)):

A windshield wiper failure detecting system comprising windshield wiper operation sensors attached to windshield wipers which a plurality of vehicles equips, and an analyzing server connected to the windshield wiper operation sensors through a network,

wherein the windshield wiper operation sensor comprises:

a detecting unit for detecting operation information including acceleration information of the windshield wiper;

an acquiring unit for acquiring current position information on the sensor; and

a transmitting unit for transmitting the operation information with the current position information being made to correspond to the operation information to the analyzing server,

the analyzing server comprises:

a collecting unit for collecting the operation information from the plurality of windshield wiper operation sensors;

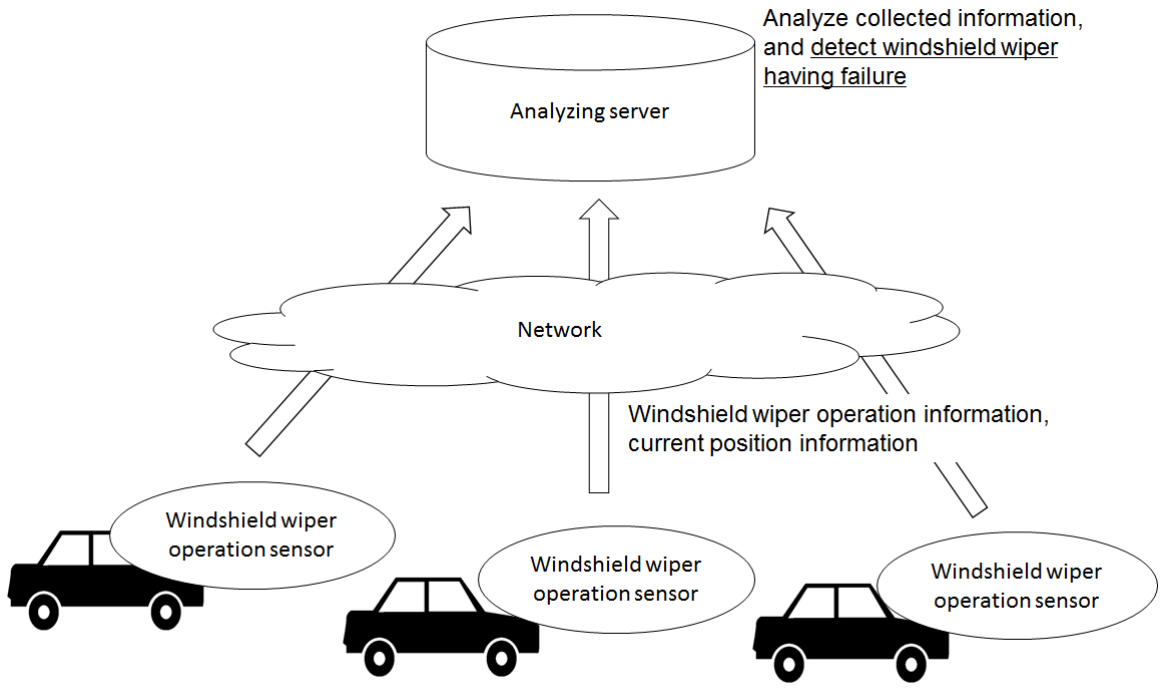
an analyzing unit for specifying the windshield wiper in which a failure was caused based on comparison of the collected operation information with the past operation information having the failure; and

a notifying unit for notifying an administrator of the specified windshield wiper, and current position information thereof.

(Problem to be solved)

To collect the operation information on the windshield wipers from the windshield wiper operation sensors attached to the vehicles, and specify the windshield wiper in which the failure is caused based on the comparison with the past failure history.

Drawing in D1



Cited invention 2 (Invention disclosed in the cited document 2 (D2)):

A heavy rain point specifying system comprising a plurality of portable terminals, and an analyzing server connected to the plurality of portable terminals through a network,

wherein the portable terminal comprises:

a receiving unit for receiving an input of a message to the network by a user;

an acquiring unit for acquiring current position information on the terminal; and

a transmitting unit for transmitting the message and the current position information to the analyzing server,

the analyzing server comprises:

a collecting unit for collecting the messages and current position information from the plurality of portable terminals; and

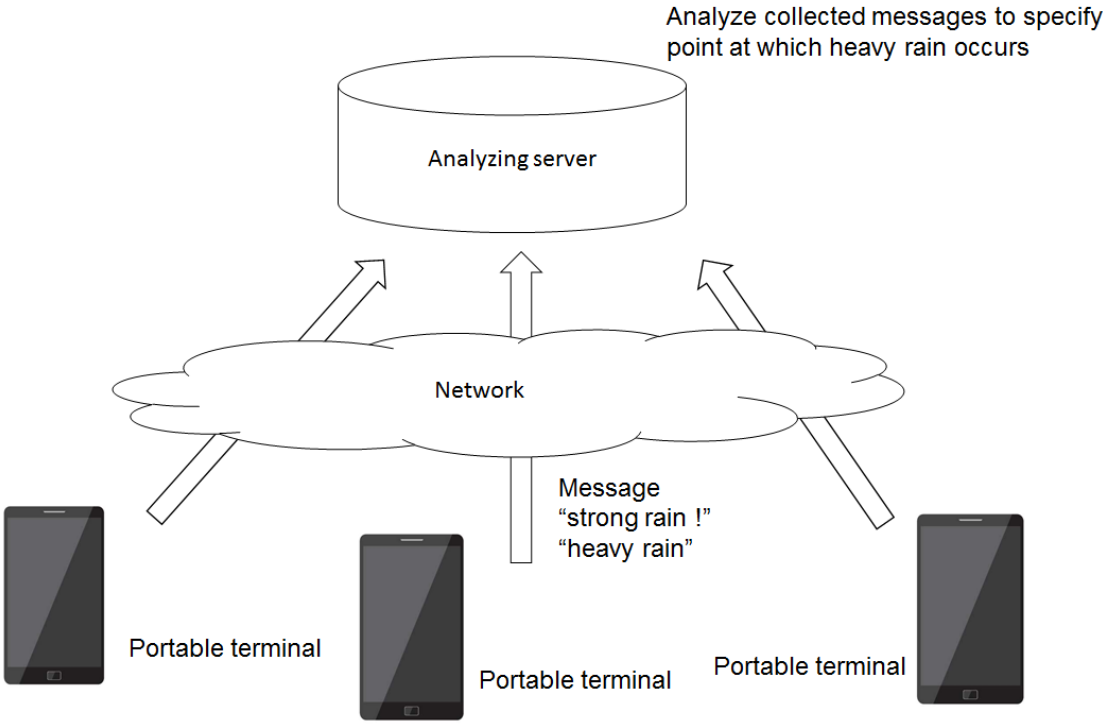
an analyzing unit for statistically analyzing the current position information correspond to the message including words about the heavy rain of the plurality of messages collected, thereby specifying a point at which the heavy rain occurs.

(Problem to be solved)

To statistically analyze the messages, including the position information, which are posted on a Social Networking Service (SNS) from the portable terminals of the users, thereby specifying

the point at which the heavy rain occurs.

Drawing in D2



(Supplementary explanation)

The cited invention 2 limits the collected messages to the message including the words about the heavy rain, and analyzes the current position information made to correspond to the message obtained through the limitation, thereby specifying the heavy rain point. Specifically, the geographical space is divided into meshes each having a particular distance square, and when the number of current position information corresponding to the limited messages included in a certain mesh is a given number or more, the mesh concerned is specified as the heavy rain occurring point.

In addition, it is the common general knowledge that in the point at which the heavy rain occurs, a large number of vehicles operates the windshield wipers at the high speeds.

[Conclusion]

The invention of claim 1 involves an inventive step.

[Explanation]

(Considered motivation)

(1) Relation of technical fields

Since the cited invention 1 is the invention relating to the detection of the failure of the windshield wiper, and the cited invention 2 is the invention relating to the specification of the heavy

rain point using the message, they are different in technical field from each other.

(2) Similarity of problems to be solved

The cited invention 1 involves the problem that the operation information on the windshield wipers is collected, and the windshield wiper in which the failure is caused is specified by the comparison with the past failure history. On the other hand, the cited invention 2 involves the problem that the heavy rain point is specified by utilizing the messages including the words about the heavy rain. Therefore, the problems of the both are different from each other.

(3) Similarity of operations or functions

The cited invention 1 compares the collected operation information on the windshield wipers with the past operation information, whereas the cited invention 2 statistically analyzes the messages including the position information, thereby specifying the heavy rain point. Therefore, they are different in operations and functions from each other.

(Explanation for no reason for refusal)

When the invention of claim 1 is compared with the cited invention 1, both of them are different in following point from each other.

(Difference)

A point that in the invention of claim 1, the analyzing server statistically analyzes the current position information which is made to correspond to the operation information and which indicates that the windshield wipers are operated at the high speeds of a plurality of collected operation information, thereby specifying the point at which the heavy rain occurs, whereas in the cited invention 1, the analyzing server specifies the windshield wiper in which the failure is caused based on the comparison of the collected operation information with the past operation information on the windshield wiper in which a failure was caused.

(Motivation)

In the failure detecting system of the cited invention 1, the cited invention 2 is applied, the common general knowledge is taken into consideration, and the position information made to correspond to the operation information indicating that the windshield wiper is operated at the high speed is analyzed, thereby examining whether or not a person skilled in the art could easily conceive of specifying the heavy rain point.

When up to (1) to (3) of the considered motivation are comprehensively taken into consideration, it is not said that there is the motivation in which the cited invention 2 is applied to the cited invention 1.

In the light of the above circumstances, it is impossible to say that a person skilled in the art could have easily conceived of configuring the invention of claim 1 by applying the cited invention 2 to the cited invention 1, and taking the common general knowledge into consideration.

[Case 29] (Invention involves an inventive step)

Title of Invention

Medical Device Maintenance Server

What is claimed is:

[Claim 1]

A medical device maintenance server for producing a maintenance plan pertaining to implementation of maintenance for a plurality of medical devices which a business operator possesses, having:

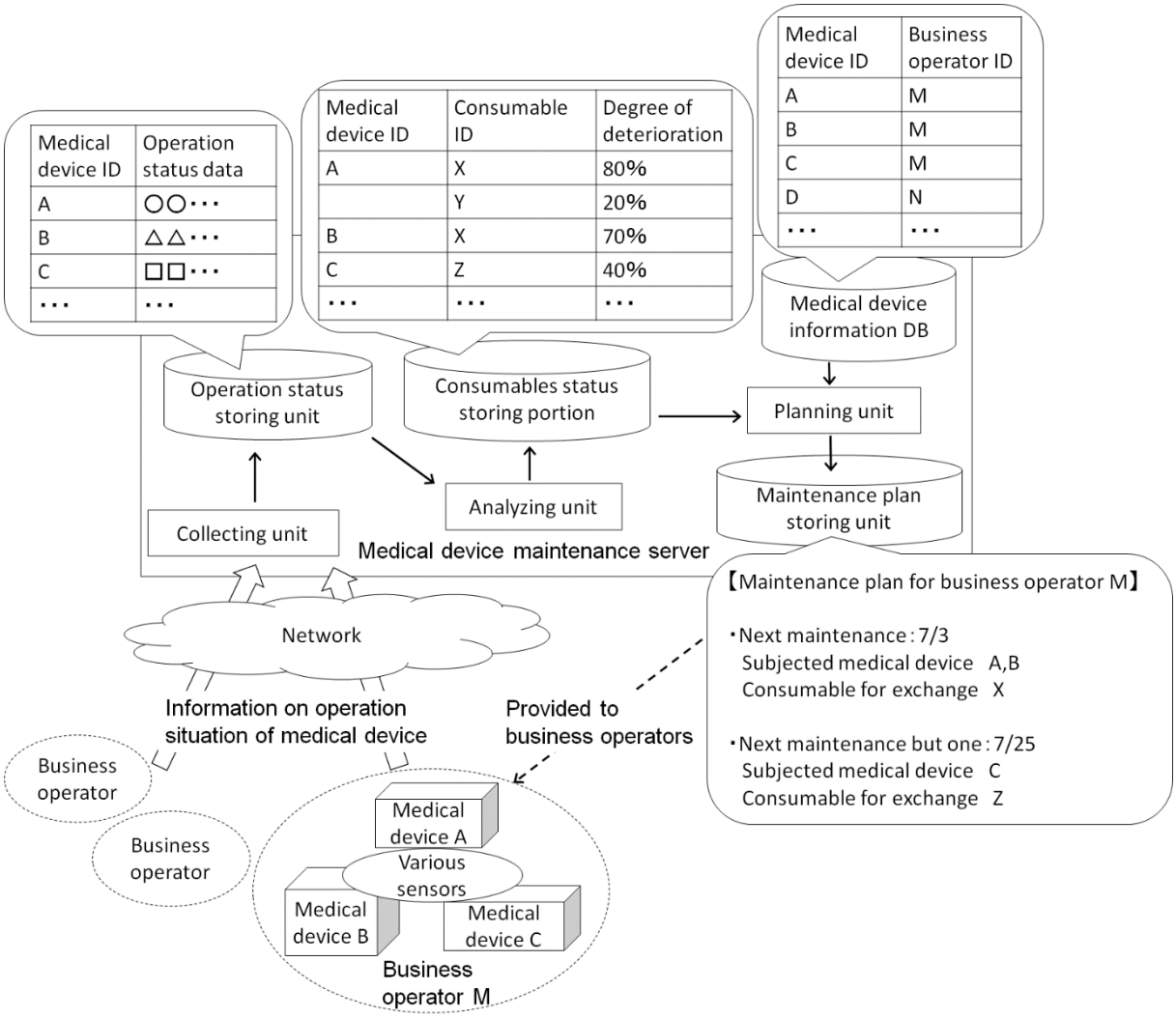
a collecting unit for collecting information on an operation status of a medical device, collected from a sensor mounted to the medical device through a network, and recording the operation status in an operation status storing unit;

an analyzing unit for calculating degrees of deterioration of consumables which the medical device includes by analyzing the operation status recorded in the operation status storing unit, and recoding the degrees of deterioration in a consumables status storing unit;

a medical device information database for storing information on a business operation, and information on the medical devices which the business operator possesses correspond to each other; and

a planning unit for producing a maintenance plan in which timing of the maintenance for a plurality of medical devices, and information on a consumables as an object of exchange are summarized for every business operator based on the degrees of deterioration of the consumables recorded in the consumables status storing unit, and the information recorded in the medical device information database, and recording the maintenance plan in a maintenance plan storing unit.

Drawing in the present application



Overview of the description

[Background Art]

How efficiently the maintenance of the medical devices possessed is performed was the important problem for the business operators of medical institutions, etc. Heretofore, there has been known the technique of collecting the data on the operation status of the medical device from the sensors mounted to the medical device, and analyzing the collected data, thereby estimating the deterioration status of the consumables which the medical device includes, and the medical device is notified of the maintenance deadline within which the maintenance is suitably performed before the medical device gets out of order.

[Problem to be Solved by the Invention]

However, the business operator possesses a large number of medical devices in many cases, and thus it is complicated to manage the maintenance deadline of all the medical devices. Then, it is desirable for the business operator to receive the maintenance plan in which the information on

the maintenance for all the medical devices which he/she possesses is gathered.

[Solution for the Problem to be Solved]

In the present invention, the maintenance plan about the medical devices which the business operator possesses is produced for every business operator based on the data, on the operation status of the medical devices, which is collected from the sensors mounted to each of the medical devices, and the information on the medical devices which the business operator possesses.

A concrete embodiment will be described.

The business operator possesses a plurality of kinds of medical devices such as an MRI, and the various sensors are mounted to each of the medical devices. The medical device maintenance server collects the data, on the operation status of the medical devices, which the sensors acquire through the network, and stores the collected data as the operation status data on the operation status storing unit.

The medical device maintenance server includes the medical device information database in which the information on the business operator, and the information on the medical devices which the business operator possesses are made to correspond to each other.

In addition, the medical device maintenance server calculates the degree of deterioration of the consumables which the medical devices include by analyzing the collected operation status data, and records the degree of deterioration of the consumables in the consumables status storing unit. The known technique is use for the method of calculating the degree of deterioration of the consumables from the operation status data on the medical devices.

Subsequently, a planning unit produces the maintenance plan including the timing of the maintenance of the possessed medical devices, and the information on the consumables as the object of the exchange for every business operator based on the degree of deterioration of the consumables, recorded in the consumables status storing unit, and the information recorded in the medical device information database, and records the resulting maintenance plan in the maintenance plan storing unit. The maintenance plan includes the information on when the next maintenance will be performed, and in this case, which consumables of which medical device possessed by the business operator should be exchanged, and the consumables whose exchange time is approaching are collectively exchanged at the same timing, and so forth. Thus, the maintenance plan is produced so that the maintenance efficient for the business operator can be performed.

The maintenance plan thus produced is provided from the medical device maintenance server to the business operator. The business operator requests the maintenance operator to carry out the maintenance plan as it is, or to carry out the maintenance plan after suitably carrying out a change thereof.

[Effect of Invention]

The present invention produces the maintenance plan including the information on the maintenance timing and consumables as the object of the exchange of a plurality of medical devices possessed by the business operator for each of the business operators based on the operation status data, on the medical devices collected from the sensors, and provide the resulting maintenance plan

to the business operator. Therefore, for the business operator who possesses a large number of medical devices, the burden exerted on the examination about the plan of the maintenance is reduced.

(Supplementary explanation)

Information processing for producing the maintenance plan for every business operator at the planning unit is concretely described using flowchart, etc. in the description and drawings.

[State of the art (Prior art, well-known art, etc.)]

Cited invention 1 (Invention disclosed in the cited document 1 (D1)):

A medical device maintenance server for judging necessity of maintenance of a specific medical device, having:

a collecting unit for collecting information, on an operation status of a medical device, collected from sensors mounted to the medical device through a network, and recording the information on the operation status in an operation status storing unit;

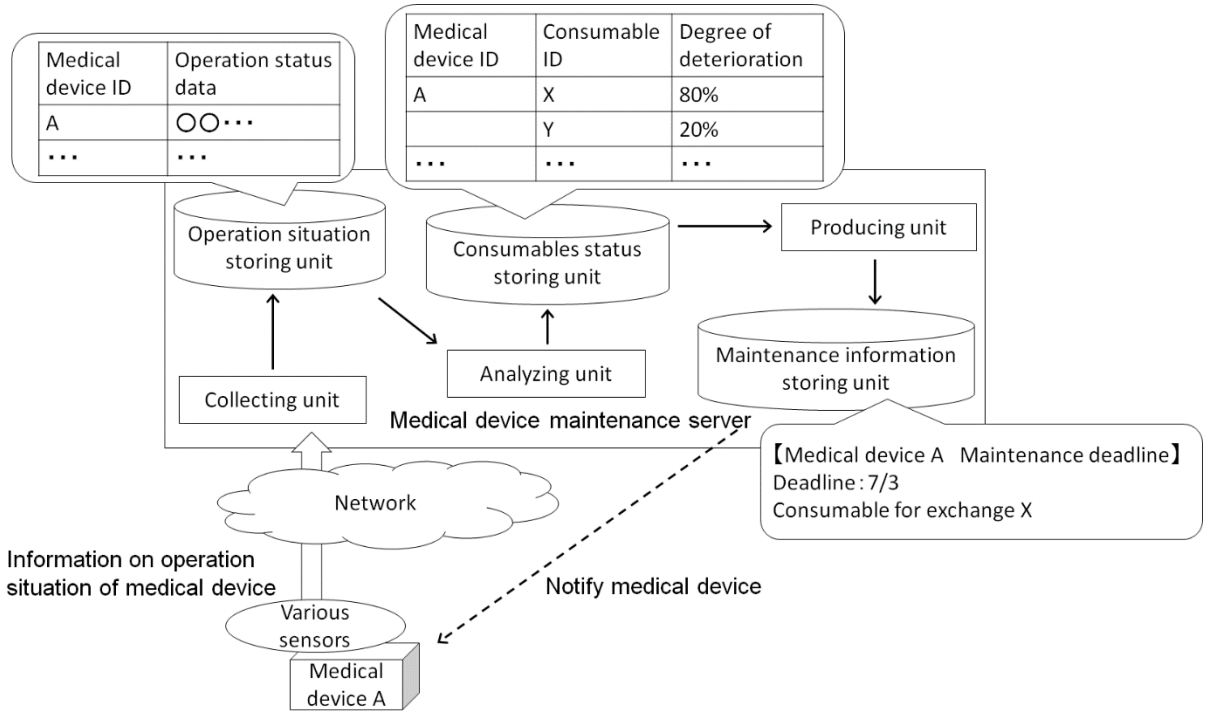
an analyzing unit for calculating degrees of deterioration of a plurality of consumables which the medical device includes by analyzing the operation status recorded in the operation status storing unit, and recording the degrees of deterioration in a consumables status storing unit; and

a producing unit for producing maintenance information including information on a deadline of the maintenance of the medical device, and the consumables as an object of exchange based on the degree of deterioration, of the consumables, recorded in the consumables status storing unit, and recording the resulting maintenance information in a maintenance information storing unit.

(Problem to be solved)

To estimate the deterioration status of the consumables consisting the medical device based on the information collected from the sensors mounted to the medical device, and determine the deadline of the maintenance which should be implemented before the medical device gets out of order based on the estimation.

Drawing in D1



[Conclusion]

The invention of claim 1 involves an inventive step.

[Explanation]

(Explanation for no reason for refusal)

When the invention of claim 1 is compared with the cited invention 1, both of them are different in following point from each other.

(Difference)

In the invention of claim 1, the medical device maintenance server has the medical device information database in which the information on the business operator is made to correspond to the information on the medical devices which the business operator possesses, and the maintenance plan is produced for every business operator which has plurality of medical devices, whereas the cited invention 1 produces the maintenance information on the specific medical device, but does not produce the maintenance plan for each business operator which has plurality of medical devices.

The above difference will be examined.

The cited invention 1 involves the problem that the deadline of the maintenance which should be implemented before the medical device gets out of order is determined.　In addition, producing the maintenance plan for each business operator is different from the problem of cited invention 1 and also is not conceived easily by a person skilled in the art. Therefore, it cannot be said as a design variation, etc. (design variation or design choice associated with an application of

specific techniques to solve certain problems) from the cited invention 1 to have the medical device information database in which the information on the business operator is made to correspond to the information on the medical devices which the business operator concerned possesses, and produce the maintenance plan summarized for every business operator.

Moreover, the invention of claim 1 has the effect, advantageous relative to the cited invention 1, that the invention of claim 1 has the matter pertaining to the difference, thereby reducing the burden of the consideration about the plan of the maintenance for the business operator who possesses a large number of medical devices.

Comprehensively assessing of the above circumstances, it cannot be said that a person skilled in the art would not have easily conceived of configuring the invention of claim 1 based on the cited invention 1.

[Case 30] (Invention lacks an inventive step)

Title of Invention

Construction Machine Maintenance Server

What is claimed is:

[Claim 1]

A construction machine maintenance server, having:

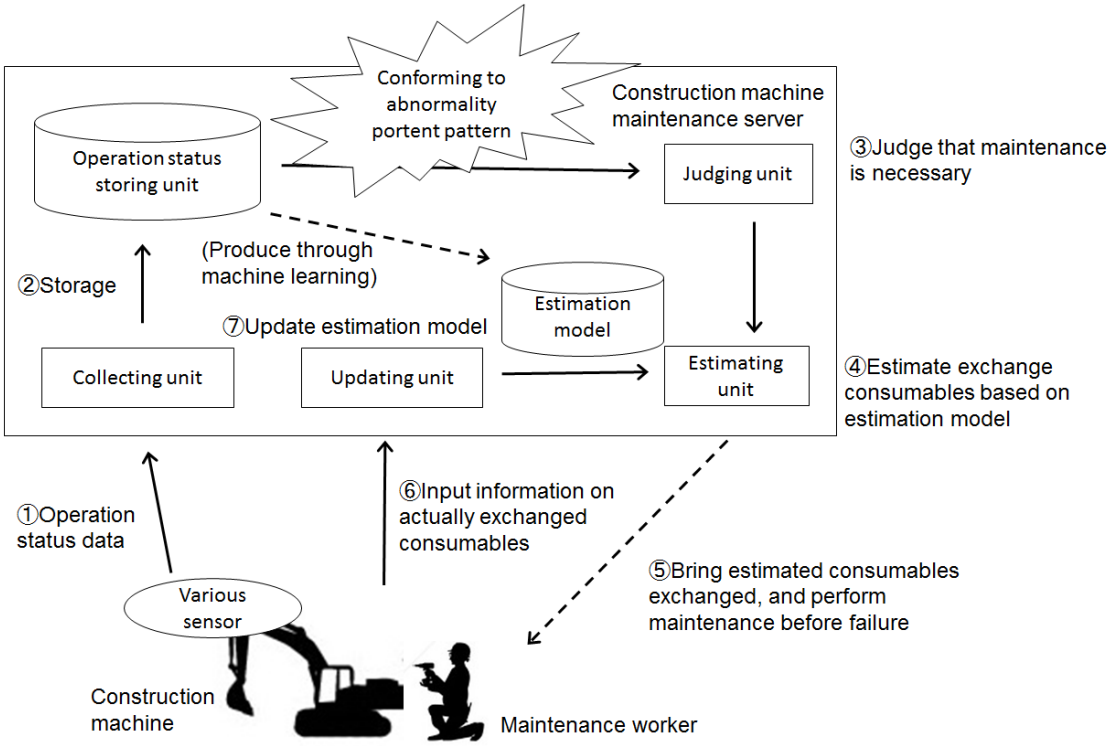
a collecting unit for collecting operation status data on a construction machine from sensors mounted to the construction machine through a network, and recording the operation status data in an operation status storing unit;

a judging unit for judging that maintenance of the construction machine is necessary when it is detected that a specific abnormality portent pattern is included in the collected operation status data;

an estimating unit for estimating consumables which are necessary for exchange by applying an estimation model which is created through machine learning to the operation status data for a predetermined period of time when the maintenance of the construction machine is necessary; and

an updating unit for receiving an input of information on the consumables which are actually exchanged at the time of a maintenance work, and updating the estimation model based on information.

Drawing in the present application



Overview of the description

[Background Art]

There was a technique by which the failure is detected in advance, and the maintenance is performed before the actual failure occurs by collecting the operation status data on a construction machine, and analyzing the operation status data.

[Problem to be Solved by the Invention]

It is important to reduce a total cost of maintenance by conducting inspections or maintenances of construction machines efficiently and effectively. In the maintenance of the construction machine, a plurality of consumables composing the construction machine needed to be exchanged. In particular, for the construction machine including a large number of consumables, a maintenance worker did not understand which consumables should be exchanged until the maintenance worker performed the actual maintenance work. Thus, the previous preparation was complicated.

[Solution for the Problem to be Solved]

Means for detecting failures of a construction machine in advance, and estimating and providing information on the consumables which should be exchanged at the time of the maintenance.

A plurality of various sensors are mounted to the construction machine requiring maintenance. The various sensors transmit the operation status data as information on the operation status of the construction machine concerned to the construction machine maintenance server through the network. As for the operation status data, there is the various data on the operation, the operation time, the power consumption, the temperature, the vibration, and the like of the construction machine.

The construction machine maintenance server previously holds the specific abnormality portent pattern for the previous detection of the failure. In addition, when discovering the pattern conforming to the abnormality portent pattern in the collected operation status data, the judging unit judges that the maintenance of the construction machine is necessary.

When the judgement is made, an estimating unit estimates the consumables necessary for the exchange by applying the estimation model to the operation status data on the construction machine for which the judgement is made. Based on the estimation model, in response to the input of operation status data on the construction machine, data on the consumables estimated to be necessary for the exchange is outputted. Operation status data on the construction machine, when it is judged that the maintenance is required, and the history data on the consumables which are actually exchanged are subjected to the machine learning, thereby producing the estimation model.

Moreover, whenever the exchange of the consumables is performed, information on the actually exchanged consumables is received as the feedback to the estimation model. Therefore, the maintenance work is repetitively performed, thereby enhancing the precision of the estimation.

Furthermore, a report on the operation status based on the analysis of the operation status data on the construction machine is produced and provided to the users of the construction machine. The report includes log information of the operation status of the construction machine, guidance

on usage and preventive measures against the failure for the user.

[Effect of Invention]

According to the invention of the present application, failures of the construction machine can be detected in advance, and information on the consumables necessary for the exchange at the time of the maintenance can be estimated and provided to the maintenance worker.

(Supplementary explanation)

Information processing for producing the estimation model at the estimating unit is concretely described using flowchart, etc. in the description and drawings.

[State of the art (Prior art, well-known art, etc.)]

Cited invention 1 (Invention disclosed in the cited document 1 (D1)):

A construction machine maintenance server, having:

a collecting unit for collecting operation status data on a construction machine from sensors mounted to the construction machine through a network, and recording the operation status data in an operation status storing unit;

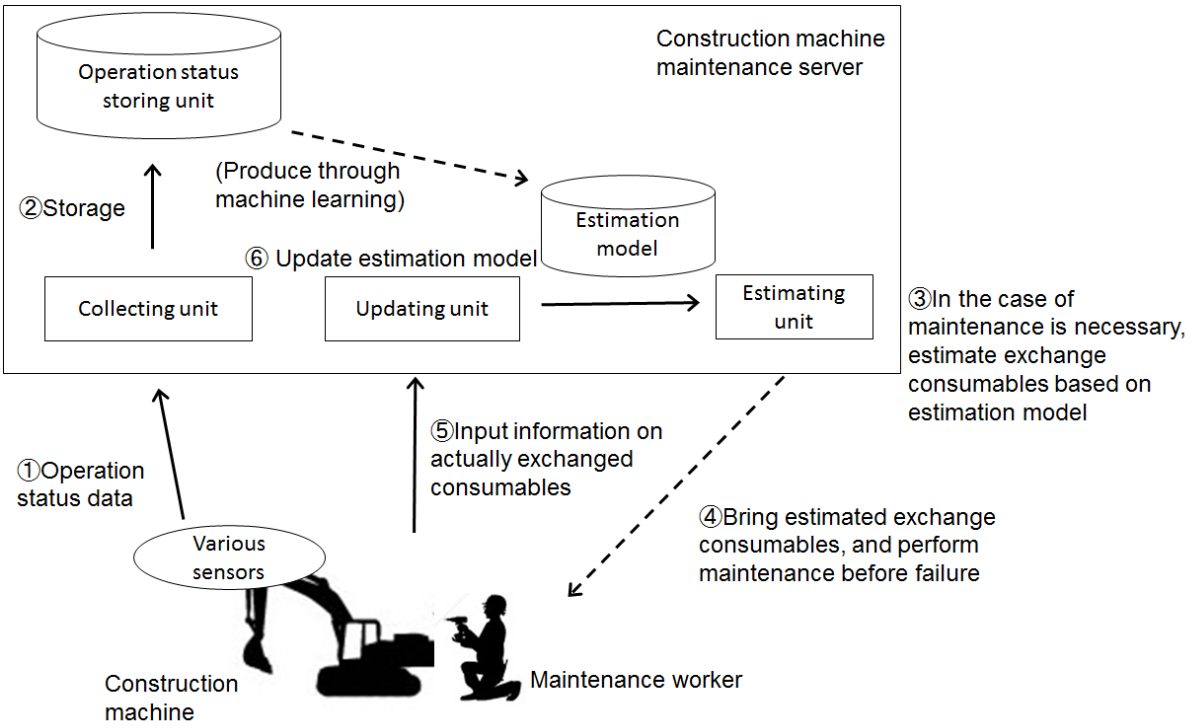
an estimating unit for estimating consumables necessary to be exchanged by applying an estimation model created through machine learning for the operation status data for a predetermined period of time when maintenance of the construction machine is necessary; and

an updating unit for receiving an input of information on the consumables which are actually exchanged at the time of maintenance work, and updating the estimation model based on information.

(Problem to be solved)

To promote the convenience for a maintenance worker by estimating the consumables necessary to be exchanged by using the estimation model in the maintenance which is to be performed before the failure occurs in the construction machine.

Drawing in D1



Cited invention 2 (Invention disclosed in the cited document 2 (D2)):

A server which collects operation status data on a construction machine from sensors mounted to the construction machine through a network; records the operation status data in a storing unit; judges that maintenance of the construction machine is necessary when it is detected that a specific abnormality portent pattern is included in the collected operation status data; and notifies the specific person of that.

(Problem to be solved)

To detect the portent of the failure through monitoring the operation status data on the construction machine, and perform the maintenance before the failure actually occurs.

[Conclusion]

The invention of claim 1 lacks an inventive step.

[Overview of Reason for Refusal]

When the invention of claim 1 is compared with the cited invention 1, both of them are different in following point from each other.

(Differences)

The invention of claim 1 has a judging unit for judging that maintenance of the construction machine is necessary when it is detected that a specific abnormality portent pattern is included in the collected operation status data, whereas the cited invention 1 does not have the judging unit.

The above difference will be examined.

The cited invention 2, as described above, is the server which collects operation status data on a construction machine from sensors mounted to the construction machine through a network; records the operation status data in a storing unit; judges that maintenance of the construction machine is necessary when it is detected that a specific abnormality portent pattern is included in the collected operation status data; and notifies the specific person of that. Thus, D2 describes the method for performing the judgment by detecting the specific abnormality portent pattern within the operation status data as the method for judging the necessity for the maintenance of the construction machine.

Both the cited invention 1 and the cited invention 2 relate to the maintenance of the construction machine, and thus they are common in technical field to each other. In addition, both the inventions have the common problem in that the maintenance of the construction machine is suitably performed before the actual failure occurs. Moreover, both the inventions collect and analyze the operation status data on the construction machine, thereby outputting information for the maintenance of the constitution machine. Thus both the inventions have the common function.

When the above circumstances are comprehensively assessed, a person skilled in the art could have easily conceived of having a judgement unit for judging that the maintenance of the construction machine is necessary when it is detected that the specific abnormality portent pattern is included in the operation status data by applying the cited invention 2 to the cited invention 1.

[Explanation]
(Considered motivation)
(1) Relation of technical fields

The cited invention 1 and the cited invention 2 have the common technical fields in that the maintenance of the construction machine is performed.

(2) Similarity of problems to be solved

The cited invention 1 and the cited invention 2 have the common problem in that the maintenance of the construction machine is appropriately performed before the actual failure is generated.

(3) Similarity of functions

The cited invention 1 and the cited invention 2 are common in function to each other in that the operation status data on the construction machine is collected from sensors and analyzed, thereby outputting information for the maintenance of the construction machine.

[Measures of the applicant]

In claim 1, by adding “providing unit for producing a report on the operation status based on the analysis of the operation status data on the construction machine and providing the report to the users of the construction machine”, the above reason for refusal is overcome.

[Case 31] (Invention lacks an inventive step)

Title of Invention

Learning System Comprising On-vehicle Devices and a Server

What is claimed is:

[Claim 1]

A learning system comprising a plurality of on-vehicle devices mounted on a plurality of vehicles respectively and a server that communicates with the said plurality of on-vehicle devices via a network,

wherein the said plurality of on-vehicle devices is comprised of:

an image recognition unit that executes image recognition, based on specific parameters, using image data around the vehicle taken by an on-vehicle camera;

a provision unit that provides the said server with the image data used for the said image recognition as data for learning;

an acquisition unit that acquires data to update the said parameters provided from the said server; and

an updating unit that updates the said parameters based on the said acquired data,

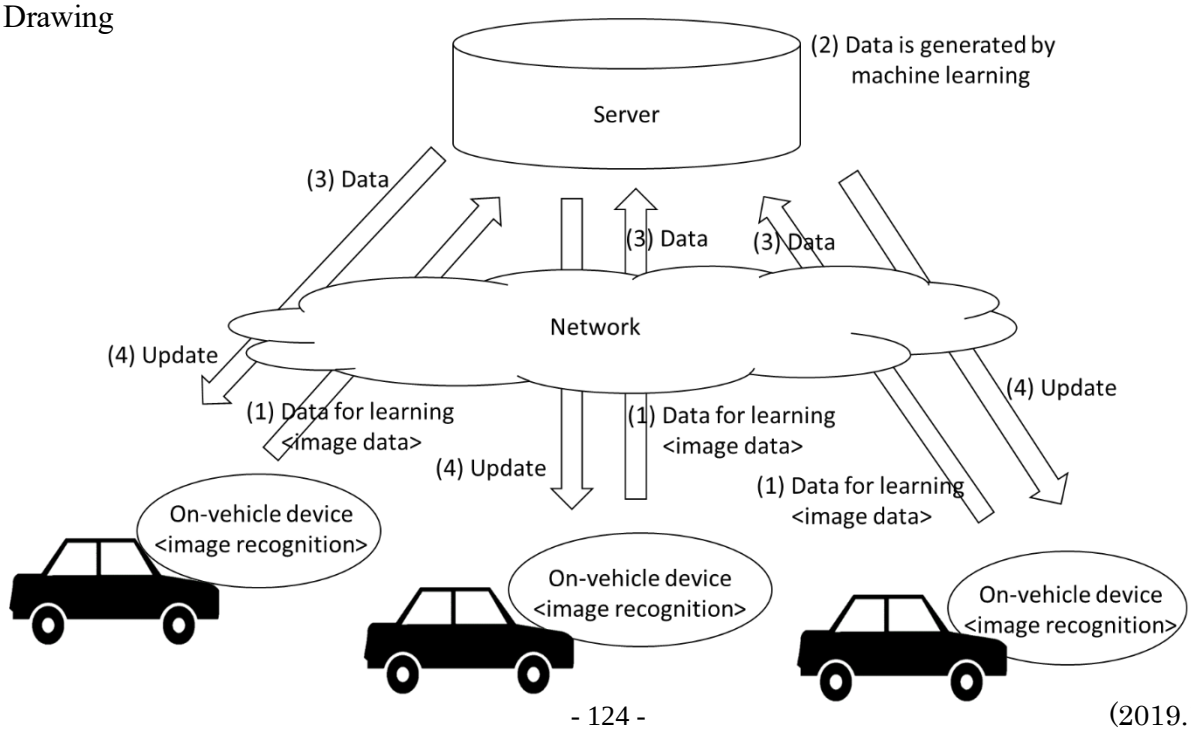
wherein, the said server is comprised of:

an acquisition unit that acquires the said data for learning provided from the said plurality of on-vehicle devices:

a learning unit that carries out machine learning based on the said data for learning and generates data for updating the said parameters; and

a provision unit that provides the said plurality of on-vehicle devices with the said data for updating.

Drawing



Overview of the description

[Background Art]

An on-vehicle device performs image recognition to recognize vehicles, pedestrians and white lines drawn on roads around own vehicle.

[Problems to be solved by the invention]

In the development stage of these on-vehicle devices, it has been tried to improve image recognition performance by machine learning. However, after products are shipped, no effort for improving image recognition performance has been made.

The present invention has been conceived in view of the above problem and aims to provide a learning system that allows image recognition performance to be improved after the on-vehicle devices are shipped.

[Solution for the Problem to be solved]

An on-vehicle device is equipped with an image recognition unit and performs image recognition of vehicles, pedestrians and white lines drawn on roads around the vehicle based on image data around the vehicle taken by an on-vehicle camera. Image recognition is performed by algorithms such as support vector machines and neural networks that have specific parameters. Weights of these support vector machines and neural networks are updated by machine learning described later.

The on-vehicle device is equipped with a provision unit that, when it performs image recognition, provides a server with image data used for the image recognition as data for learning via a network. The frequency of provision can be set by a person skilled in the art as appropriate. The on-vehicle device provides image data, for example, every time when a certain amount of image data is accumulated.

On the other hand, the server is equipped with an acquisition unit and a learning unit that acquire data for learning provided from a plurality of the on-vehicle devices, perform machine learning to improve image recognition performance based on the data for learning and generate data to update parameters for image recognition. Machine learning is performed by means of unsupervised learning or supervised learning. In the case of unsupervised learning, a large amount of data collected from the on-vehicle devices (unsupervised data) is used to learn unsupervised features. Features refer to expressions that can express unsupervised data in the best mode (for example, linear combination of image pixels). In the case of supervised learning, it is necessary to create supervised data corresponding to each data for learning (for example, labels indicating the existence of pedestrians and the positions of white lines recognized by image recognition). Such work is carried out by operators who operate the server.

The server is equipped with a provision unit to provide each of the on-vehicle devices with data to update the said parameters via the network. The frequency of provision can be set by a person skilled in the art as appropriate. The server provides data on a regular basis, for example every week or every month.

The on-vehicle device is equipped with an acquisition unit and an updating unit to acquire data for parameters provided from the server, update parameters for image recognition based on

the data and perform image recognition based on updated parameters.

Moreover, the provision unit of the on-vehicle device may generate data indicating running conditions of own vehicle such as the vehicle's speed, steering angle and turn signal control as data on running conditions and provide the server with the data on running conditions when image recognition is performed together with image data as data for learning.

In this case, the learning unit of the server classifies data for learning based on the data on running conditions and generates data for updating parameters by performing machine learning depending on each running condition. By this way, high-precision image recognition is realized in accordance with running conditions. Specifically, when the vehicle is running at high speed, changes in positions of vehicles and pedestrians therearound (principally changes in positions in image in the vertical directions) become large among images taken continuously compared to the time when the vehicle is running at low speed. Similarly, when a steering angle is large, that is, a vehicle is turning around, changes in positions of vehicles and pedestrians therearound (principally changes in positions in image in the lateral directions) become large among images taken continuously compared to the time when a vehicle is running straight. Furthermore, when a turn signal is controlled during high-speed running, that is, a vehicle is changing a driving lane, changes in positions of white lines become large among images taken continuously. Therefore, it is not appropriate to perform uniform image recognition without taking into account running conditions such as that the vehicle is running at high speed or low speed, turning around or running straight and/or changing a driving lane. In the present invention, in order to realize high-precision image recognition depending on running conditions, the learning unit of the server carries out the machine learning and generates data for updating parameters depending on each running condition while the acquisition unit of the on-vehicle device acquires the data and the updating unit updates parameters based on the data.

As described above, machine learning depending on each running condition has a particularly-advantageous effect in a system comprising a plurality of on-vehicle devices and a server compared to a system that performs machine learning in one on-vehicle device. That is, in the system comprising a plurality of on-vehicle devices and a server, a large amount of data for learning is provided to the server, and sufficient data for learning exists even when it is classified for each running condition. Therefore, in order to realize high-precision image recognition even in a rare running condition for some vehicles, for example, in a running condition that a vehicle that does not usually run on a highway actually runs on a highway and changes a driving lane, such a system can appropriately update parameters of image recognition parameters by means of effective machine learning.

[State of the art (Prior art, well-known art, etc.)]

Cited invention 1 (Invention disclosed in the cited document 1 (D1)):

A learning system comprising an on-vehicle device mounted on a vehicle,

wherein the on-vehicle device is comprised of:

an image recognition unit that executes image recognition, based on specific parameters, using image data around the vehicle taken by an on-vehicle camera;

a provision unit that provides image data used for the said image recognition as data for learning;

an acquisition unit that acquires the said data for learning provided;

a learning unit that performs machine learning based on the said data for learning to update the said parameters;

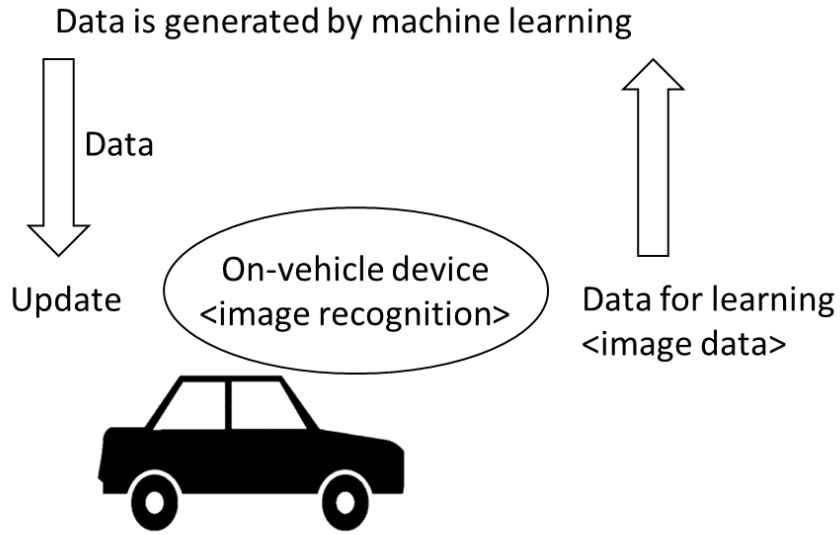
a provision unit that provides data to update the said parameters;

an acquisition unit that acquires data to update the said parameters;

an updating unit that updates the said parameters based on the said acquired data.

(Problems to be solved)

Image recognition performance is improved by updating parameters used for executing image recognition, after on-vehicle devices are shipped.



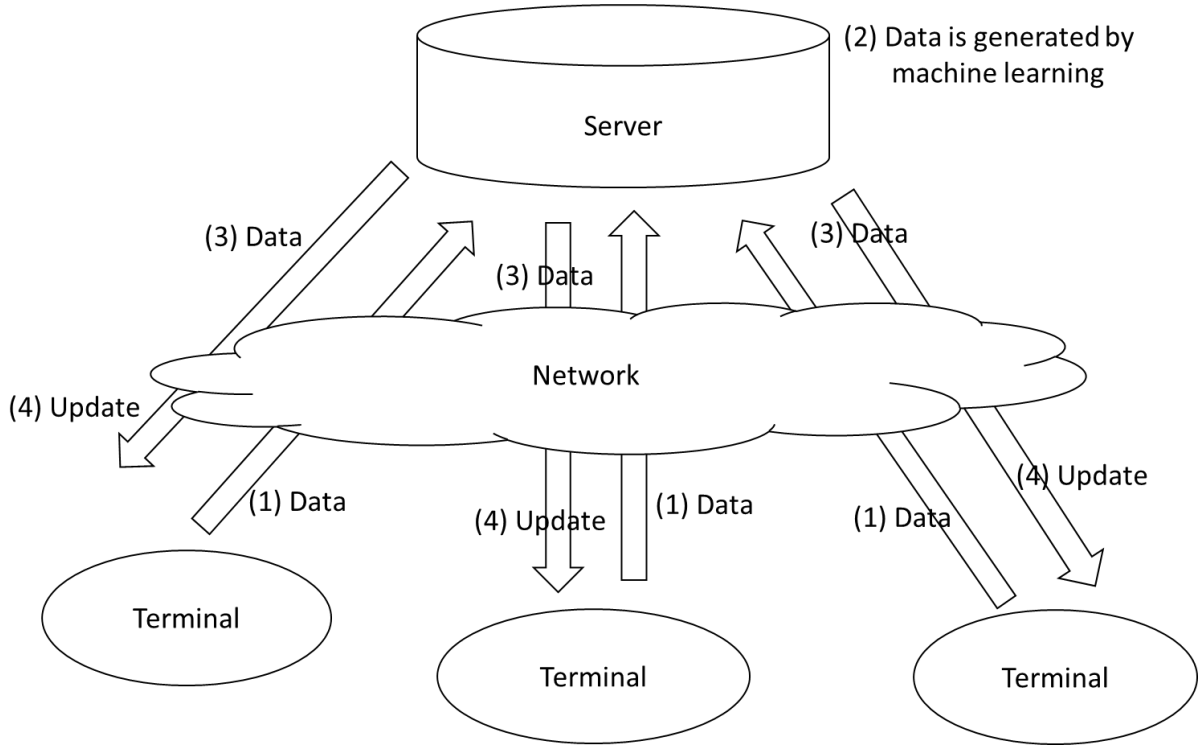
Well-known art:

For improving functions of various terminals including mobile type terminals,

a server generates data for updating the computer programs or the setting values of the computer programs collectively and provides a plurality of terminals therewith by making an analysis based on data that were used for processing of the programs and were provided from the plurality of terminal devices to the server via a network.

(Problems to be solved)

Functions of computer programs are improved after terminals are shipped.



[Conclusion]

The invention of claim 1 lacks an inventive step.

[Overview of Reason for Refusal]

- Claim 1

When the invention of Claim 1 and the cited invention 1 are compared, they are different in the following point.

(Difference)

The invention of Claim 1 is a learning system comprising a plurality of on-vehicle devices mounted on a plurality of vehicles respectively and a server that communicates with the said plurality of on-vehicle devices via a network, wherein, the said plurality of on-vehicle devices are comprised of a provision unit that provides the said server with data for learning and an acquisition unit that acquires data for updating parameters provided from the said server, and the said server is comprised of an acquisition unit that acquires data for learning provided from the said plurality of on-vehicle devices, a learning unit that carries out machine learning based on the said data for learning and generates data for updating the said parameters and a provision unit that provides the said plurality of on-vehicle devices with the said data for updating. On the other hand, the cited invention 1 is a learning system comprising an on-vehicle device, wherein, the said on-vehicle device is comprised of a learning unit that carries out machine learning based on data for learning and generates data for updating parameters, but the on-vehicle device is not a plurality of vehicles that are mounted on a plurality of vehicles respectively and the said on-vehicle device and a server are not comprised of a provision unit and an acquisition unit to provide

data each other and acquire data.

The above difference is now considered.

It is a well-known art that, for improving functions of various terminals including mobile type terminals, a server generates data for updating the computer programs or the setting values of the computer programs collectively and provides a plurality of terminals therewith by making an analysis based on data that were used for processing of the programs and were provided from the plurality of terminal devices to the server via a network.

The cited invention 1 and the well-known art have a common problem to be solved in that processing performance and functions of the computer software are improved after mobile-type devices on which the computer software is installed are shipped. Moreover, they have a common function that they generate data for updating the computer software based on data used for the processing thereof and update it based on the said generated data.

When the above-mentioned circumstances are considered comprehensively, a person skilled in the art could have easily conceived of applying the well-known art to the cited invention 1 and conceived of a configuration of the learning system comprising a plurality of on-vehicle devices mounted on a plurality of vehicles respectively and a server that communicates with the said plurality of on-vehicle devices via a network, wherein, the said plurality of on-vehicle devices are comprised of a provision unit that provides the said server with data for learning and an acquisition unit that acquires data for updating parameters provided from the said server, and the said server is comprised of an acquisition unit that acquires data for learning provided from the said plurality of on-vehicle devices, a learning unit that carries out machine learning based on the said data for learning and generates data for updating the said parameters and a provision unit that provides the said plurality of on-vehicle devices with the said data for updating.

Furthermore, an effect of the invention of Claim 1 that the image recognition performance can be improved after shipment is also to the extent that a person skilled in the art can predict.

[Explanation]
(Considered motivation)
(1) Similarity of problems to be solved

The cited invention 1 and the well-known art have a common problem to be solved in that processing performance and functions of the computer software are improved after mobile-type devices on which the computer software is installed are shipped.

(3) Similarity of functions

The cited invention 1 and the well-known art have a common function that they generate data for updating the computer software based on data used for the processing thereof and update it based on the said generated data.

[Measures of the applicant]

In Claim 1, the applicant makes an amendment to add the following points: the provision unit of the on-vehicle devices provides the server with data on running conditions together with image data as data for learning, and the learning unit of the server classifies data for learning into a plurality of groups based on the said data on running conditions, carries out machine learning and generates data for updating parameters depending on each running condition.

In addition, the applicant argues in the written opinion that high-precision image recognition can be realized depending on running conditions such as that a vehicle is at high speed or low speed, turning around or running straight and/or changing a driving lane, even in a rare running condition for some vehicles, for example, in a running condition that a vehicle that does not usually run on a highway actually runs on a highway and changes a driving lane.

By these measures, the above reasons for refusal are overcome.

[Case 32] (Invention lacks an inventive step)

Title of Invention

Quality management program of manufacturing lines

What is claimed is:

[Claim 1]

A quality management program of manufacturing lines causing a computer to realize:

a function of receiving data on inspection results of products that went through predetermined manufacturing processes and were inspected with regard to each of predetermined inspection items from inspection devices via a network and of storing it in a database;

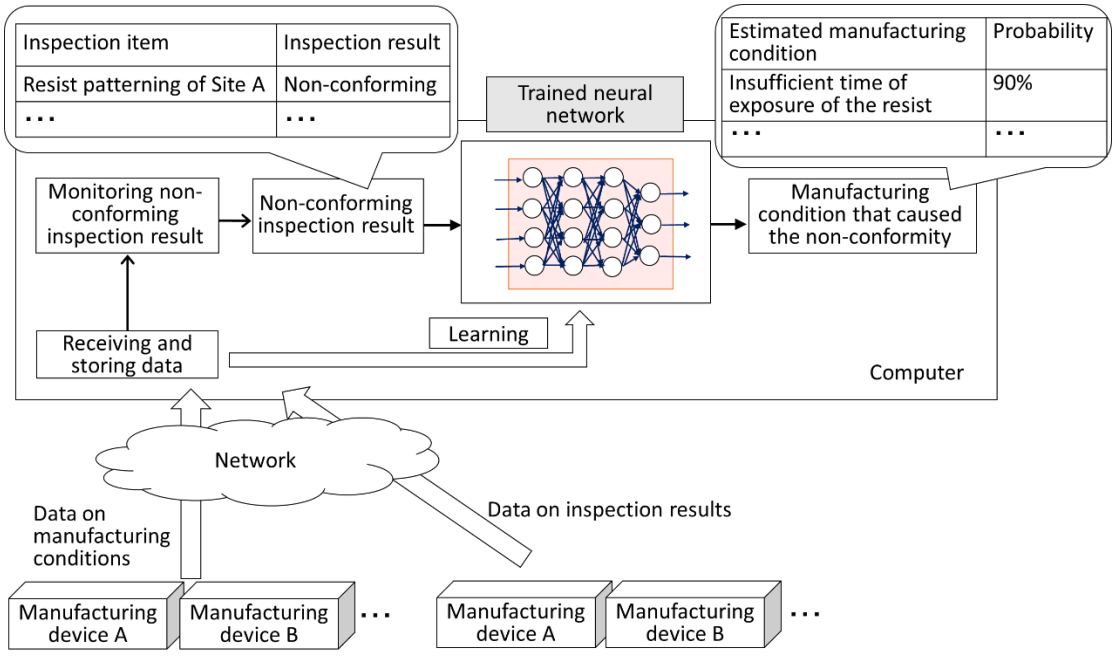
a function of receiving data on manufacturing conditions when the products were manufactured from manufacturing devices via a network and of storing it in the said database after associating it with the said data on inspection results;

a function of training a neural network by means of deep learning about a relationship between inspection results of the said data on inspection results stored in the said database and manufacturing conditions that caused non-conformity among the said data on manufacturing conditions;

a function of monitoring test results data stored in the said database; and

a function of estimating manufacturing conditions that caused the non-conformity using the said trained neural network when the non-conforming test result is found as a result of the said monitoring.

Drawing



Overview of the description

[Background Art]

Quality management of products in manufacturing lines of a variety of products is performed by sampling data of a small number of products from a large number of products manufactured and examine a relationship between their manufacturing conditions and their quality based on overall distribution and a degree of variations of sampled data of a small number of products. Currently, technologies such as monitoring network database have progressed so that it is relatively easy to integrally accumulate data on manufacturing conditions and inspection results of all products that have gone through manufacturing lines using barcodes or another type of data.

[Problems to be solved by the invention]

Though it will become possible to perform more advanced quality management by effectively using an enormous quantity of data on manufacturing histories, the data processing capabilities of humans are limited. Moreover, an analysis of non-conforming using detailed data relies largely on judgment or hunch of humans who have specific rules of thumb and skills for improvement. This inhibits effective utilization of data. Therefore, it is difficult to realize quality management through effective utilization of a large quantity of data on manufacturing histories by conventional methods relying on humans.

The present invention has been conceived in view of the above problems and aims to provide a quality management program of manufacturing lines capable of overcoming ambiguity caused by reliance on data processing capabilities, rules of thumb and hunch of humans, effectively using a large quantity of data and making highly-precise estimations.

[Solution for the Problem to be solved]

In a manufacturing line, products are manufactured based on specific manufacturing conditions. For example, in case of manufacture of semiconductor devices, the time of exposure, materials and amount of resists as well as materials, flow and pressure of process gas. Moreover, an inspection is carried out at an appropriate stage, such as after a predetermined manufacturing process completes. For example, in case of manufacture of semiconductor devices, such inspection items as patterning of the resists and the thickness of coated films are inspected.

A computer on which the quality management program of the present invention is executed receives data on inspection results of manufactured products from inspection devices and data on manufacturing conditions when the products were manufactured from manufacturing devices via a network, respectively, and they are associated to be stored in a database.

A neural network is trained by means of deep learning about a relationship between the stored data on inspection results and manufacturing conditions that caused non-conformity among data on manufacturing conditions. As the neural network is trained, weights between layers thereof are updated.

In the present invention, it is possible to multiply a variable forgetting coefficient γ by the said weights at the time of learning. A forgetting coefficient γ is set in the range of $0<\gamma<1$, and the closer this coefficient is to 0, the higher a degree that data is to be forgotten. A forgetting

coefficient γ is set by a bivariable function of γ=f(k, t1), wherein k quantitatively indicates the degree of change in characteristics of manufacturing devices across the ages and t1 indicates the time elapsed from the previous maintenance. The said degree of change k is set by a bivariable function of k=g(α, t2), wherein α indicates a type of manufacturing devices and t2 indicates the total operating time thereof, since k varies depending on a type of manufacturing devices and the total operating time thereof (for example, characteristics of some manufacturing devices start to deteriorate rapidly, as the total operating time increases). The use of such a forgetting coefficient γ makes it possible to learn reflecting recent data to a necessary degree in accordance with the degree of change in the characteristics of devices, with regard to manufacturing devices whose characteristics are prone to change across the ages. Moreover, it makes it possible to strongly forget data before the maintenance and principally learn data after the maintenance, with regard to manufacturing devices that are shortly after maintenance. By this way, it becomes possible to establish a trained neural network closer to the current condition and make a highly-precise estimation. ((Note) It is assumed that concrete function formulas of f(k, t1) and g(α, t2) are described in the description.)

On the other hand, data on inspection results is monitored and, in cases where any non-conforming inspection result is found, the trained neural network is used to estimate a manufacturing condition that caused the non-conformity.

[Effect of Invention]

Since the present invention estimate a manufacturing condition that caused non-conformity using the trained neural network that is trained by means of deep learning, a highly-precise estimation can be made.

[State of the art (Prior art, well-known art, etc.)]

Cited invention 1 (Invention disclosed in the cited document 1 (D1)):

A quality management program of manufacturing lines causing a computer to realize:

a function of receiving data on inspection results of products that went through predetermined manufacturing processes and were inspected with regard to each of predetermined inspection items from inspection devices via a network and of storing it in a database;

a function of receiving data on manufacturing conditions when the products were manufactured from manufacturing devices via a network and of storing it in the said databased after associating it with the said data on inspection results;

a function of machine learning about a relationship between inspection results of the said data on inspection results stored in the said database and manufacturing conditions that caused non-conformity among the said data on manufacturing conditions;

a function of monitoring test results data stored in the said database; and

a function of estimating manufacturing conditions that caused the non-conformity using the said machine learning result when the non-conforming test result is found as a result of the said monitoring.

(Problems to be solved)

Making a highly-precise estimation of manufacturing conditions that caused non-conformity.

Well-known art:

In the technical field of machine learning, training a neural network by means of deep learning and making an estimation using this trained neural network.

(Problems to be solved)

Making a highly-precise estimation.

[Conclusion]

The invention of claim 1 lacks an inventive step.

[Overview of Reason for Refusal]

When the invention of Claim 1 and the cited invention 1 are compared, they are different in the following point.

(Difference)

The invention of claim 1 trains a neural network by means of deep learning and estimates manufacturing conditions that caused the non-conformity using the said trained neural network, while the cited invention 1 performs machine learning and estimates manufacturing conditions that caused the non-conformity using the said machine learning result, but is not clear whether the machine learning has a neural network be trained by means of deep learning.

The above difference is now considered.

In the technical field of machine learning, training a neural network by means of deep learning and making an estimation using this trained neural network is a well-known art. The cited invention 1 and the well-known art have a common problem of making a highly-precise estimation using machine learning results. Moreover, they have a common function that they perform machine learning to make an estimation using the machine learning results.

When the above circumstances are taken into consideration comprehensively, a person skilled in the art could have easily conceived of applying the well-known art to the cited invention 1 and conceived of training a neural network by means of deep learning and estimating manufacturing conditions that caused non-conformity using the trained neural network.

Furthermore, an effect of the invention of Claim 1 that it becomes possible to make a highly-precise estimation, because manufacturing conditions that caused non-conformity are estimated by using a trained neural network by means of deep learning, is also to the extent that a person skilled in the art can predict.

[Explanation]

(Considered motivation)
(1) Similarity of problems to be solved

The cited invention 1 and the well-known art have a common problem that they make a highly-precise estimation using machine learning results.

(3) Similarity of functions

The cited invention 1 and the well-known art have a common function that they perform machine learning and make an estimation using the machine learning results.

[Measures of the applicant]

In Claim 1, the applicant makes an amendment to add the following points: a variable forgetting coefficient γ is multiplied by the weights of the neural network at the time of learning, the said forgetting coefficient γ is set by a bivariable function of γ=f(k, t1), wherein k quantitatively indicates the degree of change in characteristics of manufacturing devices across the ages and t1 indicates the time elapsed from the previous maintenance, and the said degree of change k is set by a bivariable function of k=g(α, t2), wherein α indicates a type of manufacturing devices and t2 indicates the total operating time thereof.

In addition, the applicant argues in the written opinion the following effect of the present invention: the use of such a forgetting coefficient γ makes it possible to learn reflecting recent data to a necessary degree in accordance with the degree of change in the characteristics of devices, with regard to manufacturing devices whose characteristics are prone to change across the ages. Moreover, it makes it possible to strongly forget data before the maintenance and principally learn data after the maintenance, with regard to manufacturing devices that are shortly after maintenance. By this way, it becomes possible to establish a trained neural network closer to the current condition and make a highly-precise estimation.

By these measures, the above reason for refusal is overcome.

[Case 33] (Invention lacks an inventive step)

Title of Invention

Cancer level calculation apparatus

What is claimed is:

[Claim 1]

A cancer level calculation apparatus that calculates a possibility that a subject person has cancer, using a blood sample of the subject person comprising

a cancer level calculation unit that calculates a possibility that a subject person has cancer, in response to an input of measured values of A marker and B marker that have been obtained through blood analysis of the subject person,

the cancer level calculation unit including a neural network that has been trained through machine learning using training data to calculate an estimated cancer level in response to the input of the measured values of A marker and B marker.

Overview of the description

[Background Art]

A possibility that a subject person has cancer is determined by a doctor, using measured values of specific markers obtained through blood analysis of the subject person.

[Problem to be Solved by the Invention]

To provide an apparatus that supports determination of a possibility that a subject person has cancer, regardless of a doctor's level of experience.

[Means for Solving the Problem]

(Omitted)

[Effects of the Invention]

(Omitted)

[State of the art (Prior art, well-known art, etc.)]

Cited invention 1 (Invention disclosed in the cited document 1 (D1)):

A cancer level calculation method of calculating a possibility that a subject person has cancer carried out by a doctor, using a blood sample of the subject person comprising

a step of cancer level calculation, wherein a possibility that a subject person has cancer is calculated, using measured values of A marker and B marker that have been obtained through blood analysis of the subject person.

Well-known art:

It is well-known, in the field of machine learning, to calculate an output data representing a possibility that a subject person has a certain disease based on a prescribed set of input data on the subject person, using a trained neural network, which has been trained through machine

learning with training data. The training data contains an input data that has been collected from multiple people, each of which consists of a prescribed set of input data (biological data etc.) on each person, and an output data representing a possibility that the person has the disease.

[Conclusion]

The invention of Claim 1 does not have an inventive step.

[Overview of Reason for Refusal]

The invention of Claim 1 and Cited Invention 1 are different from each other at the point below.

(Difference)

The invention of Claim 1 is a cancer level calculation apparatus that calculates a possibility that a subject person has cancer in response to an input of measured values of A marker and B marker, using a trained neural network through machine learning with training data. Meanwhile, Cited Invention 1 discloses a cancer level calculation method through which a doctor calculates a possibility that a subject person has cancer based on measured values of A marker and B marker.

The difference is assessed as follows.

It is well-known, in the field of machine learning, to calculate an output data representing a possibility that a subject person has a certain disease, based on a prescribed set of input data on the subject person, using a trained neural network, which is trained through machine learning with training data that have been collected from multiple people, each of which consists of a prescribed set of input data on each person and an output data representing a possibility that the person has the disease.

Both Cited Invention 1 and the well-known art relate to estimation of the possibility of illness, and they share a common problem to be solved. It is mere the exercise of the ordinary creativity of a person skilled in the art to systemize an estimation method carried out by a doctor in the medical field using a computer or the like.

In view of the factors above, a person skilled in the art can easily conceive of systemizing a calculation method of a possibility that a subject person has cancer, which has been carried out by a doctor, by applying the well-known art to Cited Invention 1, and calculating a possibility that a subject person has cancer in response to an input of measured values of A marker and B marker using a trained neural network through machine learning with training data.

Further, a person skilled in the art can readily anticipate the effects of the invention of Claim 1. Also, there are no obstructive factors found to apply the well-known art to Cited Invention 1.

[Explanation]

(Considered Motivation)

(1) Similarity of the problem to be solved

Both Cited Invention 1 and the well-known art aim at estimating a possibility that a subject person has a disease, and are common in the problem to be solved.

[Case 34] (Invention lacks an inventive step / Invention involves an inventive step)

Title of Invention

Estimation system of hydroelectric generating capacity

What is claimed is:

[Claim 1]

An estimation system of a hydroelectric power generating capacity of a dam comprising:

a neural network that is built by means of an information processor, the neural network having an input layer and an output layer, in which an input data to the input layer containing a precipitation amount of the upper stream of a river, a water flow rate of the upper stream of the river, and a water inflow rate into a dam during a predetermined period between a reference time and a predetermined time before the reference time, and an output data from the output layer containing a hydroelectric power generating capacity in the future after the reference time;

a machine learning unit that trains the neural network using a training data corresponding to actual values of the input data and the output data; and

an estimation unit that inputs the input data to the neural network that has been trained by the machine learning unit with setting a current time as the reference time, and then calculates an estimated value of a future hydroelectric power generating capacity based on the output data of which reference time is the current time.

[Claim 2]

The estimation system of a hydroelectric power generating capacity as in Claim 1, wherein the input data to the input layer further contains a temperature of the upper stream of the river during the predetermined period between the reference time and the predetermined time before the reference time.

Overview of the description

[Background Art]

A hydroelectric power generating capacity in the future is estimated by a dam operator by estimating a water inflow rate into a dam in the future based on a previous precipitation amount of the upper stream of the river, a water flow rate of the upper stream of the river and the like, and then converting the estimated water inflow rate into a hydroelectric power generating capacity.

[Problem to be Solved by the Invention]

Generally, a hydroelectric power generating capacity in the future is estimated based on a precipitation amount of the upper stream of the river, a water flow rate of the upper stream of the river, and an actual water inflow rate into a dam within the past few weeks. In many cases, dam operators make a function to calculate a water inflow rate in the future based on such data, input data that were obtained at certain times within the past few weeks to the function, and then convert the estimated water inflow rate into a hydroelectric power generating capacity.

In this method, however, operators have to make a function for each dam. Then, a water

inflow rate in the future should be calculated using this function and converted into a hydroelectric power generating capacity in an approximate way. As a result, a hydroelectric power generating capacity cannot be estimated with a high accuracy even if operators precisely modify a function itself.

In view of such a problem, it is an object of the present invention to provide an estimation system of a hydroelectric power generating capacity that can directly estimate a hydroelectric power generating capacity with a high accuracy.

[Means for Solving the Problem]

According to the invention of Claim 1, a neural network is trained through supervised machine learning using a training data. The training data includes an input data containing a precipitation amount of the upper stream of a river, a water flow rate of the upper stream of the river, and a water inflow rate into a dam during a predeteremined period between a reference time and a predetermined time before the reference time; and an output data containing a hydroelectric power generating capacity in the future after the reference time. In response to an input of a precipitation amount of the upper stream of a river, a water flow rate of the upper stream of the river, and a water inflow rate into a dam before the current time to the trained neural network, a hydroelectric power generating capacity in the future is estimated.

According to the invention of Claim 2, the input data further includes a temperature of the upper stream of the river during a predetermined period between a reference time and a predetermined time before the reference time.

[Effects of the Invention]

According to the invention of Claim 1, a hydroelectric power generating capacity in the future can directly be estimated with a high accuracy using a trained neural network.

According to the invention of Claim 2, a temperature of the upper stream of the river is added to the input data. It allows a highly accurate estimation of an actual hydroelectric power generating capacity all year round, including the spring with a low precipitation. It has not been considered that there is a correlation between a hydroelectric power generating capacity and a temperature of the upper stream of the river, so far. However, it is possible to achieve a more accurate estimation taking an increase of inflow rate due to meltwater into consideration, with the use of an input data further containing a temperature.

[State of the art (Prior art, well-known art, etc.)]

Cited invention 1 (Invention disclosed in the cited document 1 (D1)):

An estimation system of a hydroelectric power generating capacity that carries out a multiple regression analysis by an information processor, comprising:

a regression equation model, in which explanatory variables are a precipitation amount of the upper stream of a river, a water flow rate of the upper stream of the river, and a water inflow rate into a dam during a predetermined period between a reference time and a predetermined time before the reference time, and an objective variable is a hydroelectric power generating capacity in the future after the reference time;

an analysis unit that calculates a partial regression coefficient of the regression equation model based on actual values corresponding to the explanatory variables and the objective variable; and

an estimation unit that, into the regression equation model to which the partial regression coefficient that has been calculated by the analysis unit is set, inputs data of the explanatory variables with setting a current time as the reference time, and then, calculates an estimated value of a future hydroelectric power generating capacity based on an output data from the objective variable setting a current time as the reference time.

Well-known art:

In the technical field of machine learning, it is well-known that an estimation process of an output in the future is carried out based on an input of time series data in the past, by using a trained neural network which has been trained with a training data containing an input of time series data in the past and a certain output in the future.

[Conclusion]

The invention of Claim 1 does not have an inventive step.

The invention of Claim 2 has an inventive step.

[Overview of Reason for Refusal]

The invention of Claim 1 and Cited Invention 1 are different from each other at the point below.

(Difference)

The invention of Claim 1 realizes an estimation of a hydroelectric power generating capacity by means of a neural network having an input layer and output layer. Meanwhile, Cited Invention 1 realizes an estimation of a hydroelectric power generating capacity by means of a regression equation model.

The difference is assessed as follows.

It is well known that an estimation process of an output in the future is carried out based on an input of time series data in the past, using a trained neural network. The neural network has been trained with a training data containing an input of time series data in the past and a certain output in the future. Cited Invention 1 and the well-known art are common with each other in estimating a certain output in the future based on an input of time series data in the past, with reference to a correlation among data.

Therefore, a person skilled in the art could easily derive a configuration that enables estimation of a hydroelectric power generating capacity, by applying the well-known art to Cited Invention 1 and adopting a trained neural network in substitution of a regression equation model.

Further, a person skilled in the art would expect the effect of the invention of Claim 1, and there is no obstructive factor found in applying the well-known art to Cited Invention 1.

[Explanation]
(Considered Motivation)
(1) Identical Operation or Function

Both Cited Invention 1 and the well-known art are common in an estimation of an output in the future through an input of time series data in the past based on a correlation among data, and are common in the function with each other.

(Explanation for no reason for refusal)

The invention of Claim 2 and Cited Invention 1 are different from each other at the point below.

(Difference)

The invention of Claim 2 contains, in an input data into an input layer, a temperature of the upperstream of the river during a predetermined period between a reference time and a predetermined time before the reference time. Meanwhile, Cited Invention 1 does not have such a configuration.

The difference is assessed as follows.

The invention of Claim 2 uses a temperature of the upperstream of the river for estimation of a hydroelectric power generating capacity. There is no prior art found disclosing such use of a temperature of the upperstream of the river. Accordingly, it is not a common general technical knowledge that there is a correlation between a temperature and a hydroelectric power generating capacity.

Generally, an input of data of which correlation is unknown may cause a noise in machine learning. However, the invention of Claim 2 uses an input data containing a temperature of the upperstream of the river during a predetermined period between a reference time and a predetermined time before the reference time. This enables a highly accurate estimation of a hydroelectric power generating capacity, taking an increase of inflow rate due to meltwater in the spring into consideration. It is a significant effect that a person skilled in the art cannot expect.

Accordingly, it does not considered to be a mere workshop modification that can be carried out in application of the well-known art to Cited Invention 1 by a person skilled in the art to contain, in an input data in an estimation of a hydroelectric power generating capacity, a temperature of the upperstream of the river during a predetermined period between a reference time and a predetermined time before the reference time.

Therefore, the invention of Claim 2 has an inventive step.

[Case 35] (Invention lacks an inventive step)

Title of Invention

Screw clamping quality estimation apparatus

What is claimed is:

[Claim 1]

A screw clamping quality estimation apparatus that assesses a screw clamping quality at the time of automatic screw clamping operation by means of a screwdriver comprising:

a condition measurement unit that measures a set of condition variables containing a rotation speed, angular acceleration, position, and inclination of the screwdriver;

a machine learning unit that trains a neural network through machine learning by associating, with each other, the set of condition variables measured by the condition measurement unit and the screw clamping quality at the time of automatic screw clamping operation with the use of the set of condition variables; and

a screw clamping quality estimation unit that estimates a screw clamping quality in response to an input, to the neural network that has been trained by the machine learning unit, of the set of condition variables that have been measured at the time of automatic screw clamping operation by means of a screwdriver.

Overview of the description

[Background Art]

An automatic screw clamping operation is carried out by means of a screwdriver.

[Problem to be Solved by the Invention]

A product that has been assembled through automatic screw clamping operation is inspected by an operator to check whether a screw clamping quality meets a predetermined standard. This inspection burden the operator with a load and is a bottleneck for the whole process.

Inventors of the present invention found that a behavior of a screwdriver used in automatic screw clamping operation affects a screw clamping quality. In view of this, it is an object of the present invention to provide an apparatus that estimates a screw clamping quality based on a behavior of a screwdriver, in order to achieve a time-saving quality inspection.

[Means for Solving the Problem]

A set of state variables is obtained by measuring a combination of rotation speed, angular acceleration, position, and inclination of a screwdriver used in an automatic screw clamping operation. Assessment results by an operator is obtained as a screw clamping quality on a product that has been assembled through the automatic screw clamping operation. Then, a neural network is trained by using a training data containing (i) an input data of the set of state variables and (ii) an output data of a screw clamping quality at the time of the automatic screw clamping using the set of state variables. The screw clamping quality of a product is estimated

through an input of rotation speed, angular acceleration, position, and inclination of the screwdriver at the time of automatic screw clamping operation. A product of which screw clamping quality does not meet a predetermined standard, if any, is sorted to go on to a re-inspection process of a screw clamping quality by an operator or disposal.

[Effects of the Invention]

An apparatus of the present invention assesses a screw clamping quality of a product that has been assembled through an automatic screw clamping operation. Conventionally, an inspection by an operator is needed after an automatic screw clamping process, and it burdened an operator with a load. However, the present invention enables a time-saving inspection by using an estimated screw clamping quality.

[State of the art (Prior art, well-known art, etc.)]

Cited invention 1 (Invention disclosed in the cited document 1 (D1)):

A screw clamping quality estimation apparatus that assesses a screw clamping quality at the time of automatic screw clamping operation by means of a screwdriver comprising:

a condition measurement unit that measures a set of condition variables containing a rotation speed and angular acceleration of the screwdriver;

a machine learning unit that trains a neural network through machine learning by associating, with each other, the set of condition variables measured by the condition measurement unit and the screw clamping quality at the time of automatic screw clamping operation with the use of the set of condition variables; and

a screw clamping quality estimation unit that estimates a screw clamping quality in response to an input, to the neural network that has been trained by the machine learning unit, of the set of condition variables that have been measured at the time of automatic screw clamping operation by means of a screwdriver.

Cited invention 2 (Invention disclosed in the cited document 2 (D2)):

A screw clamping quality assessment method comprising:

measuring a position and inclination of a screwdriver; and

assessing a screw-clamping quality based on the measured position and inclination of the screwdriver.

Well-known art:

It is a common general technical knowledge in the technical field of machine learning to adopt, as an input to a machine learning device, variables that may have a correlation with an output with high possibility, in order to enhance a reliability and accuracy of an output from the machine learning device.

[Conclusion]

The invention of Claim 1 does not have an inventive step.

[Overview of Reason for Refusal]

The invention of Claim 1 and Cited Invention 1 are different with each other at the point below.

(Difference)

According to the invention of Claim 1, a condition measurement unit measures a set of condition variables containing a rotation speed, angular acceleration, position, and inclination of a screwdriver. Using the set of condition variables containing these four types of variable, a machine learning of a neural network is carried out and a screw clamping quality is estimated. Meanwhile, according to Cited Invention 1, a condition measurement unit measures a set of condition variables containing a rotation speed and angular acceleration of a screwdriver. Using the set of condition variables containing these two types of variable, a machine learning of a neural network is carried out and a screw clamping quality is estimated.

The difference is assessed as follows.

Cited Invention 2, in which a screw clamping quality is assessed based on a position and inclination of a screw driver, discloses that there is a correlation between a position and inclination of a screw driver and it affects the assessment. Both Cited Invention 1 and Cited Invention 2 assess a screw clamping quality based on several conditions of a screw driver, and have a common object. Further, it is a common general technical knowledge in the technical field of machine learning to adopt, as an input to a machine learning device, variables that may have a correlation with an output with high possibility, in order to enhance a reliability and accuracy of an output from the machine learning device.

In view of the above, a person skilled in the art can easily derive a configuration that enables a machine learning of a neural network and an estimation of screw clamping quality using a set of condition variables containing four types of variable (in addition to a rotation speed and angular acceleration of a screwdriver in Cited Invention 1, a position and inclination of a screwdriver having a correlation with a screw clamping quality in Cited Invention 2 are adopted), in order to enhance a reliability and accuracy of an output from a machine learning device.

Further, a person skilled in the art can expect the effect of the invention of Claim 1, and thus, there is no obstructive factor found to apply Cited Invention 2 to Cited Invention 1.

[Explanation]

(Considered Motivation)

(1) Relation of technical fields

Both Cited Invention 1 and Cited Invention 2 aim at estimating a screw clampimg quality, and are common with each other in the technical field.

(2) Similarity of the problem to be solved

Both Cited Invention 1 and Cited Invention 2 aim at assessing a screw clamping quality

based on several conditions of a screw driver, and are common with each other in the problem to be solved.

[Case 36] (Invention involves an inventive step)

Title of Invention

Dementia stage estimation apparatus

What is claimed is:

[Claim 1]

A dementia stage estimation apparatus comprising:

a speech information obtainment means for obtaining a speech information on a conversation between a questioner and a respondent;

a speech information analysis means for analyzing the speech information, and then specifying a speech section by the questioner and a speech section by the respondent;

a speech recognition means for converting, through speech recognition, the speech information on the speech section by the questioner and the speech section by the respondent into text and then outputting a character string;

a question topic specification means for specifying a question topic by the questioner based on the result of the speech recognition; and

a dementia stage determination means for inputting, to a trained neural network, the question topic by the questioner and the character string of the speech section by the respondent to the question topic in an associated manner with each other, and then determining a dementia stage of the respondent,

wherein the neural network is trained through machine learning using training data so as to output an estimated dementia stage, in response to an input of the character string of the speech section by the respondent in an associated manner with the question topic by the questioner.

Overview of the description

[Background Art]

It is well-known that　a doctor asks questions to a subject person and observes the way the person responds to the question, to make a diagnosis of the degree of dementia (dementia stage).

[Problem to be Solved by the Invention]

A dementia stage diagnosis greatly depends on a doctor’s experience and needs expertise. There is a pressing need for medical specialists in the field of dementia.　It is a possible solution to solve such a problem to provide a diagnosis support for relatively inexperienced doctors taking advantage of a machine learning technique, by training a neural network with know-how of well-experienced doctors and then using the trained network.

However, a conversation for dementia diagnosis between a questioner and a respondent varies every time.　Thus, it does not seem that only an input to a neural network using machine learning brings about such results that can readily be used at the site.

It is an object to provide an apparatus that enables a highly accurate estimation of dementia stage by extracting a significant information from a speech information on a conversation for dementia diagnosis between a questioner and a respondent.

[Means for Solving the Problem]

The inventor of the present invention found that an information on a conversation between a questioner and respondent for dementia stage diagnosis as well as know-how of a well-experienced doctor specializing in dementia and a subject person can effectively be updated in a trained neural network through machine learning with a training data. A question topic by the questioner (food, weather, and family etc.) and a response by the respondent to the question (a character string obtained through conversion into text) are extracted through a speech recognition technique in an associated manner with each other. The training data contains question topics and corresponding responses to each topic as well as diagnosis (on a dementia stage of a subject person) by a well-experienced doctor.

With the above-mentioned trained neural network, a dementia stage estimation apparatus of the present invention is configured to estimate a dementia stage with a high accuracy.

[Effects of the Invention]

A support for a highly accurate dementia stage diagnosis can be realized through a dementia stage estimation with the above-mentioned trained neural network based on an input containing a question topic by a well-experienced doctor and a response by a subject person to the question that have been extracted from a speech information.

[State of the art (Prior art, well-known art, etc.)]

Cited invention 1 (Invention disclosed in the cited document 1 (D1)):

A dementia stage estimation apparatus comprising:

a speech information obtainment means for obtaining a speech information on a conversation between a questioner and a respondent;

a speech recognition means for converting the speech information into text through speech recognition and outputting a character string; and

a dementia stage determination means for inputting, to a trained neural network, the character string that has been converted into text by the speech recognition means, and then determining a dementia stage of the respondent,

wherein the neural network is trained through machine learning using training data so as to output an estimated dementia stage in response to an input of the character string.

(Cited Document 1 discloses that the dementia stage estimation apparatus can estimate a dementia stage of a respondent with a certain accuracy.)

[Conclusion]

The invention of Claim 1 has an inventive step.

[Explanation]
(Basis for Determination that there is No Reason for Refusal found)

The invention of Clam 1 and Cited Invention 1 are different from each other at the point below.

(Difference)

According to the invention of Claim 1, a speech information on a conversation between a questioner and a respondent is analyzed, and then a speech section by the questioner and a speech section by the respondent are specified, respectively. The speech information on a speech section by a questioner and a speech section by a respondent is converted into text through speech recognition, and a character string is obtained. Based on the result of the speech recognition of the speech section by the questioner, a question topic by the questioner is specified. The question topic by the questioner and a character string of the speech section by the respondent to the question topic are input to a neural network in an associated manner with each other. The neural network is configured to carry out machine learning and output a dementia stage. Meanwhile, according to Cited Invention 1, a neural network is configured to output a dementia stage, based on an input of a character string that has been converted into text through a speech recognition without a classification between a speech section by a questioner and a speech section by a respondent.

The difference is assessed as follows.

A person skilled in the art would conceive a modification of a training data, which is an input to a neural network for machine learning, through a certain pre-processing in order to improve an accuracy of estimation by the neural network.

However, there is no prior art found that discloses a specific technique related to dementia stage assessment, in which a speech information on a conversation between a questioner and a respondent is converted into text, a question topic by the questioner is specified in a character string in the text, the specified question topic and a response to the question by the respondent is associated with each other to assess a dementia stage. Further, it is not a common general technical knowledge at the time of filing.

Accordingly, a person skilled in the art cannot easily conceive training a neural network with a training data that has been obtained by specifying a question topic by a questioner and associating the specified question topic and a response to the question by a respondent with each other, to train the neural network in Cited Invention 1 with a speech information on a conversation between a questioner and a respondent. Further, it does not seem to be a mere design modification or matter of design choice of an identifier for improving an estimation accuracy in Cited Invention 1.

Furthermore, the invention of Claim 1 brings about a significant effect, that is, a highly accurate dementia stage estimation by specifying a question topic by a questioner and a response by a respondent (corresponding character string) to the question topic in an associated manner

with each other. It is because a neural network can effectively learn know-how of a well-trained doctor from a training data.

Therefore, the invention of Claim 1 has an inventive step.

[Case 37] (Invention lacks an inventive step)

Title of Invention
　　Automatic Response Generator for Customer Service Centers

What is claimed is:
[Claim 1] (Claim involving no inventive step)
　　An automatic response generator for a customer service center for receiving a question text of an inquiry about a financial product from an inquirer and automatically generating a response text to the question text;
wherein a response text is generated by inputting the question text into large language models.

Overview of the description
[Background Art]
　　Employees in a customer service center for financial products manually prepare a response text to an external question text based on examples from past inquiries.

[Problems to be Solved by the Invention]
　　At present, responding to such inquiries is a problem that places a heavy burden on employees, as response texts are generated manually.
　　It also creates a problem in providing consistent customer service to the inquirer, as the skills of the employees vary.
　　To solve these problems, an automatic response generator for a customer service center is provided, which automatically outputs a response text to a question text of an inquiry, regardless of the skill of the employee.

[Means for Solving the Problem]
(Omitted)

[Effect of Invention]
(Omitted)

(Supplementary Explanation)
　　The detailed description of the invention discloses the use of the large language models (learning model, learning data and learning method, etc.) of the claimed invention to the extent that it can be carried out by a person skilled in the art.

[State of the art (Prior art, well-known art, etc.)]
Cited invention 1 (Invention disclosed in the cited document 1):
　　A method of preparing a response text for receiving a question text of an inquiry about a

financial product from an inquirer and preparing a response text to the question text by a customer service center employee;

wherein a response text is prepared by searching a database of accumulated examples of past inquiries and referring to examples matching the question text.

Commonly Used Art:

In the technical field of information processing, the process of inputting question texts into large language models to obtain response texts is commonly used to improve the efficiency of human tasks.

[Conclusion]

The invention of claim 1 lacks an inventive step.

[Overview of Reason for Refusal]

The invention of claim 1 differs from the cited invention 1 in the following aspects.

(Difference)

While the invention of claim 1 is an automatic response generator for a customer service center that receives a question text of an inquiry about a financial product from an inquirer and automatically generates a response text by inputting the question text into large language models, the cited invention 1 is a method for preparing a response text, in which a customer service center employee receives an inquiry about a financial product from an inquirer, searches a database of accumulated examples of past inquiries, and refers to examples that match the question text to prepare a response text.

The above difference will be examined.

In many business fields, including customer service, it is a self-evident problem that a person skilled in the art normally takes into consideration to improve efficiency by automating human tasks with computers, and it would also be taken into consideration in the cited invention 1.

In addition, in the technical field of information processing, the process of inputting question texts into large language models to obtain response texts is commonly used to improve the efficiency of human tasks.

Therefore, it has been easily conceivable for a person skilled in the art to provide an "automatic response generator for a customer service center for automatically generating a response text to a question text by inputting the question text into large language models" by applying the commonly used art of "inputting question texts into large language models to obtain response texts," which is the solution for this problem, to the cited invention 1 in order to solve the problem of improving efficiency by automating human tasks with a computer for automatically generating response texts in the cited invention 1.

In addition, with respect to the task of an automatic response generator receiving inquiries about a financial product from an inquirer, automating such a task by using the automatic response generator is an ordinary creative activity of a person skilled in the art and it could have been appropriately performed by a person skilled in the art.

Further, a person skilled in the art can readily anticipate the effects of the invention of claim 1, and there are no obstructive factors found to apply the commonly used art to the cited Invention 1.

[Explanation]
(Matters of consideration for motivation)
・Self-evident problems

In many business fields, including customer service, it is a self-evident problem that a person skilled in the art normally takes into consideration to improve efficiency by automating human tasks and business methods with computers, and it would also be taken into consideration in the cited invention 1.

[Case 38] (Invention lacks an inventive step / Invention involves an inventive step)

Title of Invention

Method for Generating Texts for Prompt for Input into Large Language Models

What is claimed is:

[Claim 1] (Lacking inventive step)

A method for generating texts for prompts, which are generated by a computer for input into large language models by adding reference information to an input question texts,

wherein the large language models have a character limit, which is the maximum number of characters in a prompt that can be input, and when a prompt containing a question text is input, the large language models output an answer text relating to the question text,

and wherein the method for generating texts for prompts executes

an additional text generation step of generating an additional text related to the question text based on the input question text so that the total number of characters including the number of characters of the question text is equal to or less than the character limit,

and a prompt generation step of generating the prompt by adding the additional texts generated by the additional text generation step to the input question text as reference information.

[Claim 2] (Involving inventive step)

The method for generating texts for prompts according to claim 1, wherein the additional text generation step is a step of obtaining a plurality of related texts related to the question text based on the input question text, extracting a plurality of keywords suitable as reference information from the obtained related sentences, and generating the additional text in which the total number of characters does not exceed the character limit using the plurality of keywords.

Overview of the description

[Background Art]

Recently, the use of large language models (LLMs), which perform natural language processing to be used for question and answer, has been advanced, but there is a problem of incorrect answers being output by Large Language Models.

As a means of solving this problem, a process has been carried out in which a prompt is generated by adding reference information to a question text, and the prompt is fed into large language models to increase the likelihood of obtaining an appropriate response text that takes the reference information into account.

In the detailed description of the invention, large language models refer to a language model that is trained on large amounts of text data and that performs natural language processing.

[Problems to be Solved by the Invention]

However, large language models sometimes have an input character limit when in use, and

there is a problem that reference information cannot be added to an input question text indefinitely. To solve such a problem, the invention is to provide a method for generating texts for prompts within a predetermined character limit by adding valid reference information to a question text.

[Means for Solving the Problem]

According to the invention of claim 1, a method is provided for generating texts for prompts performed by a computer. An input question text is used as a base to generate an additional text related to the question text so that the total number of characters including the number of characters of the question text is equal to or less than the character limit. The generated additional text is then added to the input question text to generate a prompt.

Further according to the invention of claim 2, in the additional text generation step, a plurality of related texts related to the question text are obtained based on the input question text, a plurality of keywords suitable as reference information are extracted from the plurality of related texts obtained, and an additional text in which the total number of characters does not exceed the character limit is generated by using the plurality of keywords.

As for obtaining related texts, a database may be provided in which, for example, the question history, action history, and purchase history of the questioner are accumulated, and a plurality of related texts may be generated by extracting information highly relevant to the question text from the database.

[Effect of Invention]

According to the invention of claim 1, when generating a prompt by adding additional texts related to the input question text, even if there is a character limit, which is the maximum number of characters that can be input into large language models as a prompt, the additional texts are generated with the number of characters not exceeding the character limit, so that a prompt can be generated within the prescribed character limit with valid additional texts as reference information for the input question text.

According to the invention of claim 2, prompts with additional texts highly relevant to the question text and suitable as reference information can be generated within a predetermined character limit, thereby providing an effect of obtaining more reliable and appropriate answer texts.

(Supplementary Explanation)

As for the additional text generation step of the invention of claim 2, [Means for solving the problem] includes, in addition to the above description, a plurality of concrete examples of methods for obtaining a plurality of related texts related to the question text based on the input question text, extracting a plurality of suitable keywords as reference information from the obtained related texts, and generating additional texts in which the total number of characters does not exceed the character limit by using the plurality of keywords; and those skilled in the art can understand from the detailed description of the invention the effect of the methods by which

prompts with additional texts that are highly relevant to the question text and suitable as reference information can be generated within a predetermined character limit, thereby obtaining more reliable and appropriate answer texts.

Also for the invention of claim 1, a method other than the invention of claim 2 by which the total number of characters of the question text and the additional texts does not exceed the character limit is specifically disclosed in the detailed description of the invention.

[State of the art (Prior art, well-known art, etc.)]
Cited invention 1 (Invention disclosed in the cited document 1):

A method for generating texts for prompts which are generated by a computer for input to large language models by adding reference information to the input question texts,

wherein the large language models, upon input of a prompt containing a question text, output an answer text related to the question text;

and the computer

executes an additional text generation step of generating additional texts related to the question text based on the input question text,

and a prompt generation step of generating the prompt by adding the additional texts generated by the additional text generation step to the input question text as the reference information.

(Supplementary Explanation)

The cited invention 1 is characterized by the method for learning large language models, and the prior art 1 does not mention the problem of having a character limit that can be input to large language models, or disclose any means for solving this problem.

Common general knowledge:

In the technical field of language processing, it is a self-evident problem that a person skilled in the art normally takes into consideration to reduce the volume of information processing, and it is well-known art at the time of filing to set a character limit, which is the maximum number of characters that can be input, and if a text exceeds the character limit, the part of the text that exceeds the character limit is discarded so that the actual text input is less than or equal to the character limit as a solution for the problem.

[Conclusion]

The invention of claim 1 lacks an inventive step.

The invention of claim 2 involves an inventive step.

[Overview of Reason for Refusal]

When the invention of claim 1 is compared with the cited invention 1, they differ in the following aspects.

(Difference)

In the large language models of the invention of claim 1, a character limit, which is the maximum number of characters of a prompt that can be input, is set, and additional texts related to the question text are generated such that the total number of characters including the number of characters of the question text is equal to or less than the character limit in the additional text generation step, whereas it is unclear whether or not a character limit, which is the maximum number of characters in a prompt that can be input, is set in the large language models of the cited invention 1, and it is unclear whether or not additional texts are generated in the additional text generation step as described above.

The above difference will be examined.

In the technical field of language processing, it is a self-evident problem that a person skilled in the art normally takes into consideration to reduce the volume of information processing, and it is well-known art at the time of filing to set a character limit, which is the maximum number of characters that can be input, and if a text exceeds the character limit, the part of the text that exceeds the character limit is discarded so that the actual text input is less than or equal to the character limit as a solution for the problem.

Therefore, a person skilled in the art could have easily arrived at the invention in which a character limit, which is the maximum number of characters of a prompt that can be input, is set, and in the additional text generation step, when the number of characters of the prompt exceeds the character limit, the part of the text that exceeds the character limit is discarded, and additional texts related to the question text are generated such that the total number of characters, including the number of characters of the question text is equal to or less than the character limit, and the actual prompt input is generated such that the number of characters is less than or equal to the character limit, in implementing the large language models of the cited invention 1 by applying the well-known art to the cited invention 1.

[Explanation]

(Explanation for no reason for refusal in Claim 2)

When the invention of claim 2 is compared with the cited invention 1, they also differ in the following aspects.

(Difference)

In the additional text generation step of the invention of claim 2, a plurality of related texts related to the question text are obtained based on the input question text, a plurality of keywords suitable as reference information are extracted from the plurality of related texts obtained, and additional texts in which the total number of characters does not exceed the character limit are generated using the plurality of keywords,

whereas, the additional text generation step of the cited invention 1 does not specify any of the above.

The above difference will be examined.

In the invention of claim 2, a plurality of related texts related to the question text are obtained based on the input question text, a plurality of keywords suitable as reference information are extracted from the plurality of related texts obtained, and additional texts in which the total number of characters does not exceed the character limit are generated using the plurality of keywords, thereby generating a prompt with the number of characters not exceeding the limit of characters that can be input to the trained language models. However, no prior art is found disclosing such a configuration, or it is not common general technical knowledge at the time of filing.

The invention of claim 2 can generate prompts with additional texts that are highly relevant to the question text and suitable as reference information within a predetermined character limit, thereby obtaining more reliable and appropriate answer texts due to the configuration, which provides an advantageous effect over the cited invention 1, and the above-mentioned configuration cannot be said to be a design variation, etc., which may be performed when the well-known art is applied to the cited invention 1.

Therefore, the invention of claim 2 involves an inventive step.

[Case 39] (Invention involves an inventive step)

Title of Invention Method for Learning Trained Models for Radiographic Image Brightness Adjustment

What is claimed is:

[Claim 1]

A method for learning a trained model by a machine learning process, wherein a radiographic image of the human body is input to output a brightness adjustment parameter of the radiographic image,

the method comprising

a step of obtaining training data including a learning radiographic image and a training image in which the learning radiographic image is adjusted in brightness,

a step of inputting the learning radiographic image contained in the training data and outputting the brightness adjustment parameter of the learning radiographic image by the learning model which is learning,

a step of obtaining a value for the loss function using the brightness adjustment parameter output by the learning model,

and a step of optimizing the learning model so that the value of the loss function is reduced, which are executed by a computer,

wherein the loss function is a function based on the error between the pixel values of the training image and the pixel values of the brightness adjusted image, in which the learning radiographic image is adjusted in brightness based on the brightness adjustment parameter output by the learning model

and the loss function is configured to bias the learning to suppress the occurrence of pixel value saturation by integrating a predetermined weight for the error such that the value for the loss function is estimated to be relatively large.

Overview of the description

[Background Art]

For radiographic images of the human body taken for diagnostic purposes, the brightness is adjusted so that the brightness is appropriate for diagnosis.

[Problems to be Solved by the Invention]

One method of adjusting the brightness of such radiographic images is to convert the brightness value of each pixel in an input image of the human body according to a predetermined algorithm. The problem is that visibility is degraded if the range of brightness adjustment is inappropriate, or the algorithm cannot handle images that deviate from the assumed distribution of pixels, making them inappropriate for diagnosis.

Another method is to estimate brightness adjustment parameter directly from the input image using a trained model that has been machine-trained using a large number of learning data.

However, if a trained model is used that is simply trained to output optimal values, the output brightness adjustment parameter will be biased toward increasing or decreasing the brightness relative to the optimal values. Therefore, the bias of brightness to increase or decrease brightness relative to the optimal values causes the problem of saturation of pixel values, such as overexposure or underexposure.

A problem to be solved by the invention is to provide a method for learning a trained model by a machine learning process used for adjusting the brightness of radiographic images that can prevent pixel value saturation and improve visibility.

[Means for Solving the Problem]

According to the invention of claim 1, a method is provided for learning a trained model by a machine learning process in which a radiographic image of the human body is input to output the brightness adjustment parameter of the input radiographic image.

The method comprises a step of obtaining training data including a learning radiographic image and a training image in which the learning radiographic image is adjusted in brightness, a step of inputting the learning radiographic image included in the training data and outputting a brightness adjustment parameter of the learning radiographic image by a learning model which is learning, a step of obtaining a value of a loss function using the brightness adjustment parameter output by the learning model, and a step of optimizing the learning model so that the value of the loss function is reduced, which are executed by a computer.

Here, the loss function is a function based on the error between the pixel values of the training image and the pixel values of the brightness adjusted image, in which the learning radiographic image is adjusted in brightness based on the brightness adjustment parameter output by the learning model, and the loss function is configured to bias the learning to suppress the occurrence of pixel value saturation in pixels where pixel value saturation occurs in the brightness adjusted image, by integrating a predetermined weight for the error such that the value for the loss function is estimated to be relatively large.

[Effect of Invention]

According to the invention of claim 1, the learning is biased to suppress the occurrence of pixel value saturation in pixels where pixel value saturation occurs in the brightness adjusted image, in which the learning radiographic image is adjusted in brightness based on the brightness adjustment parameter output by the learning model by integrating a predetermined weight for the error such that the value for the loss function is estimated to be relatively large, and thereby enabling the trained model used for brightness adjustment of radiographic images to prevent pixel value saturation and improve visibility.

[State of the art (Prior art, well-known art, etc.)]

Cited invention 1 (Invention disclosed in the cited document 1):

A method for learning a trained model by a machine learning process, wherein a

radiographic image of the human body is input to output a brightness adjustment parameter of the radiographic image,
the method comprising

a step of obtaining training data including a learning radiographic image and a training image in which the learning radiographic image is adjusted in brightness,

a step of inputting the learning radiographic image contained in the training data and outputting the brightness adjustment parameter of the learning radiographic image by the learning model which is learning,

a step of obtaining a value for the loss function using the brightness adjustment parameter output by the learning model,

and a step of optimizing the learning model so that the value of the loss function is reduced, which are executed by a computer,

wherein the loss function is a function based on the error between the pixel values of the training image and the pixel values of the brightness adjusted image, in which the learning radiographic image is adjusted in brightness based on the brightness adjustment parameter output by the learning model.

(Problems to be solved)

A highly accurate brightness adjustment parameter can be estimated by a machine learning process using a loss function with training data, including input images and training images, to train the learning model.

[Conclusion]

The invention of claim 1 involves an inventive step.

[Explanation]

(Explanation for no reason for refusal)

When the invention of claim 1 is compared with the cited invention 1, they differ in the following aspects.

(Difference)

The invention of claim 1 is configured to bias the learning to suppress the occurrence of pixel value saturation in pixels where pixel value saturation occurs in the brightness adjusted image by integrating a predetermined weight for the error between the pixel values of the training image and the pixel values of the brightness adjusted image such that the value for the loss function is estimated to be relatively large, whereas there is no such configuration in the cited invention 1.

The above difference will be examined.

A person skilled in the art would conceive changing the configuration of the loss function

to improve the estimation accuracy of the trained model created by the machine learning process when performing the machine learning process using the loss function, and thus it is a mere design modification or matter of design choice.

However, there is no prior art documents found disclosing a specific feature according to the difference with respect to a learning method of a trained model used for image processing of radiographic images, and such a loss function is not a common general technical knowledge at the time of filing.

In the configuration according to the above difference, the learning is biased to suppress the occurrence of pixel value saturation, thereby providing an effect of being able to train a trained model used for adjusting the brightness of a radiographic image that can prevent pixel value saturation and improve visibility, which is an advantageous effect over the cited invention 1 that is difficult to predict from the cited invention 1, which focuses merely on the general issue of improving the accuracy of the machine learning process.

When the above circumstances are taken into consideration comprehensively, the reasoning is not possible that a person skilled in the art could have easily conceived the configuration according to the difference from the cited invention 1.

Therefore, the invention of claim 1 involves an inventive step.

[Case 40] (Invention lacks an inventive step / Invention involves an inventive step)

Title of Invention

Laser Beam Processing Device

What is claimed is:

[Claim 1]

A laser beam processing device for welding by irradiating a laser beam onto a workpiece, comprising

a control unit that controls the laser beam processing device based on a plurality of processing parameters related to laser beam processing;

a light intensity detection unit that detects the light intensity in a predetermined wavelength band of reflected light generated from the workpiece by irradiation of the laser beam as a light intensity signal;

an average value extraction unit that extracts the average value obtained from the time-series signal of the light intensity signal;

a machine learning unit that performs a machine learning process of a learning model using the input data as the average value and the output data as the adjustment amount of the plurality of processing parameters, and the past actual values of the input data and the output data as the training data;

and a processing parameter adjustment unit that inputs the input data to the trained model obtained by the machine learning process in the machine learning unit, outputs the adjustment amount of the plurality of processing parameters as the output data, and inputs the adjustment amount of the plurality of processing parameters to the control unit.

[Claim 2]

The laser beam processing device according to claim 1, comprising an accumulated usage time storage unit which stores the accumulated usage time of a laser oscillator,

wherein the input data further includes the accumulated usage time of the laser oscillator.

Overview of the description

[Background Art]

In laser beam welding, processing parameters are preset according to various conditions. Furthermore, in laser beam welding, the above-mentioned preset processing parameters are adjusted by the operator by setting compensation amounts according to the conditions during processing.

[Problems to be Solved by the Invention]

In laser beam welding, examples of processing parameters include laser power, processing head motion speed, laser focus position, and shielding gas pressure. When the operator adjusts

the processing parameters, several processing parameters should be searched at the same time, so it requires a very large number of trials, and there is a problem of having a long working time to complete the adjustment.

[Means for Solving the Problem]
(Omitted)

[Effect of Invention]

The invention of claim 1 can improve the efficiency of the adjustment work of a plurality of processing parameters by the operator.

The invention of claim 2 can significantly improve the accuracy of estimating the adjustment amount of a plurality of processing parameters by using the "accumulated usage time of the laser oscillator" as input data, which is usually not considered by the operator.

(Supplementary Explanation)

With respect to claim 2, the detailed description of the invention fully explains or verifies that the accuracy of estimating the adjustment amount of a plurality of processing parameters by a trained model can be improved by adding the "accumulated usage time of the laser oscillator" to the input data.

[State of the art (Prior art, well-known art, etc.)]
Cited invention 1 (Invention disclosed in the cited document 1):

A method for laser beam processing performed by an operator using a laser beam processing device for welding by irradiating a laser beam onto a workpiece,

wherein the laser beam processing device comprises a control unit that controls the laser beam processing device based on a plurality of processing parameters related to laser beam processing;

a light intensity detection unit that detects the light intensity in a predetermined wavelength band of reflected light generated from the workpiece by irradiation of the laser beam as a light intensity signal;

and an average value extraction unit that extracts the average value obtained from the time-series signal of the light intensity signal,

wherein the operator determines the adjustment amount of the plurality of processing parameters to be input based on the average value and inputs the adjustment amount of the plurality of processing parameters to the control unit.

Commonly Used Art:

In the technical field of information processing, machine-trained models are commonly used for human decisions as an alternative to improve the efficiency of the human task.

[Conclusion]

The invention of claim 1 lacks an inventive step.

The invention of claim 2 involves an inventive step.

[Overview of Reason for Refusal]

When the invention of claim 1 is compared with the cited invention 1, they differ in the following aspects.

(Difference)

The invention of claim 1 is a laser beam processing device comprising a machine learning unit that performs a machine learning process of a learning model using the input data as an average value obtained from the time-series signal of light intensity signals and the output data as the adjustment amount of a plurality of processing parameters, and the past actual values of the input data and the output data as the training data, and a processing parameter adjustment unit that inputs the input data to the trained model obtained by the machine learning process in the machine learning unit, outputs the adjustment amount of the plurality of processing parameters as the output data, and inputs the adjustment amount of the plurality of processing parameters to the control unit, whereas the cited invention 1 is a method for laser beam processing, in which the operator determines the adjustment amount of the plurality of processing parameters to be input based on an average value obtained from the time-series of light intensity signals, and inputs the adjustment amount of the plurality of processing parameters to the control unit.

The above difference will be examined.

In many technical fields, including machine processing, it is a self-evident problem that a person skilled in the art normally takes into consideration to systematize the service or method for doing business performed by humans so that it can be implemented by a computer to improve the efficiency, which is also considered in the cited invention 1.

In the technical field of information processing, machine-trained models are commonly used for human decisions as an alternative to improve the efficiency of the human task.

Therefore, in the cited invention 1, a person skilled in the art could have been easily conceived to apply the commonly used art of "using machine-trained models for human decisions as an alternative," which is the solution for the problem, to the cited invention 1, in order to solve the problem of improving efficiency by systematizing the service or method for doing business performed by humans so that it can be implemented by a computer and to systematize the method for laser beam processing to determine the adjustment amount of a plurality of processing parameters to be input based on the average value obtained from the time-series signal of light intensity signals, which was performed by the operator, and to input the adjustment amount of the plurality of processing parameters to the control unit,

and to configure the laser beam processing device to comprise a machine learning unit that performs a machine learning process of a learning model using the input data as average values

obtained from the time-series signals of light intensity signals and the output data as the adjustment amount of a plurality of processing parameters, and the past actual values of the input data and the output data as the training data, and a processing parameter adjustment unit that inputs the input data to the trained model obtained by the machine learning process in the machine learning unit, outputs adjustment amount of the plurality of processing parameters as the output data, and inputs the adjustment amount for the plurality of processing parameters to the control unit.

[Explanation]
(Considered motivation)
・Self-evident problems

In many technical fields, including machine processing, it is a self-evident problem that a person skilled in the art normally takes into consideration to systematize the service or method for doing business performed by humans so that it can be implemented by a computer to improve the efficiency, which is also considered in the cited invention 1.

(Explanation for no reason for refusal in Claim 2)

When the invention of claim 2 is compared with the cited invention 1, they also differ in the following aspects.

(Difference)

In the invention of the laser beam processing device of claim 2, the laser beam processing device comprises an accumulated usage time storage unit which stores the accumulated usage time of the laser oscillator and the input data includes the accumulated usage time of the laser oscillator, whereas the cited invention 1 is a laser beam processing method, and the laser beam processing device does not comprise an accumulated usage time storage unit which stores the accumulated usage time of the laser oscillator, and the determination of the adjustment amount of a plurality of processing parameters is not based on the accumulated usage time of the laser oscillator.

The above difference will be examined.

In the invention of claim 2, the laser beam processing device comprises an accumulated usage time storage unit which stores the accumulated usage time of the laser oscillator, and the input data includes the accumulated usage time of the laser oscillator, but there is no prior art found that discloses such configuration, and it is not a common general technical knowledge at the time of filing.

In addition, in the technical field of laser beam processing device, there is no prior art found that discloses the laser beam processing device comprising an accumulated usage time storage unit which stores the accumulated usage time of the laser oscillator, wherein the accumulated usage time of the laser oscillator is taken into account when the processing parameters are

adjusted by the operator, and it is not a common general technical knowledge at the time of filing.

The invention of claim 2 achieves the advantageous effect over the cited invention 1 that the estimation accuracy of the adjustment amount of a plurality of processing parameters is significantly improved by the configuration according to the difference, and cannot be said to be a design variation, etc., which may be performed when the commonly used art is applied to the cited invention 1.

Therefore, the invention of claim 2 has an inventive step.