Trial decision

Invalidation No. 2011-800130

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The trial decision was handed down as follows on the case of the patent invalidation trial between the above parties on Japanese Patent No. 4725533, entitled "Scintillator Panel".

Conclusion

The correction by the written demand for correction dated October 4, 2011 shall be approved.

The demand for trial of the case was groundless.

The costs in connection with the trial shall be borne by the demandant.

Reason

1. History of the procedures

(1) February 23, 2007

Patent application (Patent Application No. 2007-43555)

(2) April 22, 2011

Registration of the establishment of the patent right (Japanese Patent No. 4725533: hereinafter referred to as “the Patent”)

(3) July 13, 2011

The publication of the Gazette containing the patent (Japanese Patent Publication No. 4725533)

(4) July 20, 2011 (date of submission)

Submission of written demand for trial

(5) October 4, 2011 (date of submission)

Submission of written reply for trial case (hereinafter referred to as “Written Reply”)

(6) October 4, 2011 (date of submission)

Submission of written correction request (hereinafter referred to as “Written Correction Request”)

(7) November 15, 2011 (date of submission)

Submission of written refutation

(8) January 13, 2012 (date of submission)

Submission of written procedures for statement in oral proceeding (on demandee's side) (hereinafter referred to as “Written Procedures for Statement 1”)

(9) January 13 , 2012(date of submission)

Submission of written procedures for statement in oral hearing (on demandant's side) (hereinafter referred to as “Written Procedures for Statement 2”)

(10) January 27 , 2012

The first oral proceeding and the conclusion of proceedings.

2. Request by Written Correction Request

(1) The object of the request

As described above, the correction is requested for the Patent by the Written Correction Request dated October 4, 2011 (hereinafter referred to as “Request for Correction”). The object is "to correct the Description and the scope of claims of Japanese Patent No. 4725533 as described in the corrected Description and scope of claims attached to the Written Correction Request of the case".

(2) Matters to be corrected by Request for Correction

All the matters of correction by the request for correction mentioned above pertain to Claim 1 of the scope of claims, and the following corrections 1 to 4 are the content of the correction (Note by the body: the underlined parts show the corrected parts).

A Correction 1

To correct "the scintillator layer formed by a gaseous phase method by making into raw material an additive agent containing cesium iodide and one or more kinds of thallium" to "the scintillator layer having a columnar crystal structure formed by deposition process by making into raw material an additive agent containing cesium iodide and one or more kinds of thallium. "

B Correction 2

To correct "the aforementioned reflection layer" to "the aforementioned reflection layer that exists between the aforementioned substrate and the aforementioned scintillator layer having the columnar crystal structure".

C Correction 3

To correct "made of at least one type of white pigments chosen from alumina, yttrium oxide, zirconium oxide, and titanium oxide and binder resin" to "made of at least one type of white pigments chosen from alumina, yttrium oxide, zirconium oxide, and titanium oxide and binder resin, and the aforementioned scintillator layer having the columnar crystal structure is formed by growing columnar crystal body on the surface of the aforementioned reflection layer".

D Correction 4

To add the description of "the aforementioned scintillator panel absorbing the energy of incident radiation and emitting electromagnetic wave according to its strength composes an imaging panel together with an output substrate absorbing the aforementioned electromagnetic wave and outputting an image signal, and the aforementioned output substrate is provided with a photoelectric conversion element" to "scintillator panel".

(3) The judgment by the body for the request for correction

A Correction 1

Correction 1 restricts and defines the "scintillator layer" in Claim 1 before the correction by correcting it into the scintillator layer which is formed "by deposition process" having the "columnar crystal structure". Further, such correction is based on the description of paragraph [0040] in the Description attached to the application of the Patent "Although various publicly known phosphor materials can be used as a material which forms a scintillator layer (also called a "phosphor layer".), since the change rate over the visible light from X-rays is comparatively high and can form a phosphor in columnar crystal structure easily by evaporation, since it is possible for dispersion of the emission light within a crystal to be suppressed by the lightguide effect, and to thicken thickness of a scintillator layer (phosphor layer), cesium iodide (CsI) is preferable" and the description of paragraph [0074] "In this state, current is sent through the boat 63 from an electrode, the mixture containing cesium iodide and a thallium iodide is heated for a predetermined period at 700 degrees C to about 800 degrees C, and that mixture is evaporated. As a result, the countless columnar crystal body 2a grows up to be the surface of the substrate 1 sequentially, and the scintillator layer 2 of desired thickness is formed in it (deposition process)".

B Correction 2

Correction 2 restricts and defines the "reflection layer" in Claim 1 before the correction by correcting it into the reflection layer "that exists between the aforementioned substrate and the aforementioned scintillator layer having the columnar crystal structure". Also, the correction in question is based on the fact that it is known from the description of paragraph [0031] in the Description attached to the application of the Patent "As for the reflection layer concerning the present invention, ... exist between a substrate and a scintillator layer" and [Fig. 3] that the reflection layer exists between the substrate and the scintillator layer having the columnar structure.

C Correction 3

Correction 3 restricts and defines the "scintillator layer" in Claim 1 before the correction by correcting it into the scintillator layer which is "formed by growing columnar crystal body on the surface of the aforementioned reflection layer" and has "the columnar crystal structure". Moreover, the correction in question is based on the description of paragraph [0071] "<<Formation of a reflection layer>> The

reflection layer 3 applies and dries and forms the constituent which distributed and dissolved the white pigment and binder resin which were mentioned above to the above-mentioned organic solvent. As binder resin, hydrophobic resin, such as polyester resin and polyurethane resin, is preferable in an adhesive viewpoint" and the description of paragraphs [0072] to [0074] "The boat 63 is filled up with the powdered mixture containing cesium iodide and a thallium iodide while attaching to the holder 64 the substrate 1 which provided the reflection layer 3 as mentioned above (preparation process). Next, the heater of the holder 64 and the motor of the rolling mechanism 65 are made to drive, and it is made to rotate, heating in the state where attached it is to the holder 64 and makes the substrate 1 of ending oppose to the boat 63. In this state, current is sent through the boat 63 from an electrode, the mixture containing cesium iodide and a thallium iodide is heated for a predetermined period at 700 degrees C to about 800 degrees C, and that mixture is evaporated. As a result, the countless columnar crystal body 2a grows up to be the surface of the substrate 1 sequentially, and the scintillator layer 2 of desired thickness is formed in it (deposition process)" in the Description attached to the application of the Patent.

D Correction 4

Correction 4 restricts and defines the "scintillator panel" in Claim 1 before the correction by correcting it into the scintillator panel "which absorbs the energy of incident radiation, emits electromagnetic wave according to its strength and composes an imaging panel together with an output substrate absorbing the aforementioned electromagnetic wave and outputting an image signal, and the aforementioned output substrate is provided with an optoelectric transducer". Moreover, the correction in question is based on the fact that it is known from the description of paragraphs [0078] to [0080] in the Description attached to the application of the Patent "As shown in Fig. 5, the imaging panel 51 comprises the scintillator panel 10 for radioactive rays, and the output substrate 20 which absorbs the electromagnetic waves from the scintillator panel 10 for radioactive rays, and outputs an image signal. The scintillator panel 10 for radioactive rays is arranged at the radioactive ray irradiation surface side, and it is constituted so that electromagnetic waves are emitted at strength according to the strength of the radioactive ray which entered. The output substrate 20 is provided in the opposite side of the radioactive ray irradiation surface of the scintillator panel 10 for radioactive rays and is provided with the barrier membrane 20a, the optoelectric transducer 20b, the image signal output layer 20c, and the substrate 20d sequentially from the scintillator panel 10 side for radioactive rays" and

[Fig. 5] that the scintillator panel absorbs the energy of incident radiation, emits electromagnetic wave according to its strength, and composes an imaging panel together with an output substrate absorbing the aforementioned electromagnetic wave and outputting an image signal, and the aforementioned output substrate is provided with an optoelectric transducer.

E The judgment by the body for the allegation of the demandant on the correction

As the demandant alleges that the correction 4 substantially changes the scope of claims as it substantially changes the Patent Invention relating to Claim 1 from an invention of "scintillator panel" to an invention of "imaging panel" and that, therefore, the correction of the case does not comply with the provisions of Article 126 (4) of the Patent Act which is mutatis mutandis applied in Article 134-2 (5) of the Patent Act (See "6. 6-1" of the Written Refutation), the body examines the allegation as follows.

As the invention relating to Claim 1 after the correction by the corrections 1 to 4 is the invention of the "scintillator panel", it cannot be said that the "scintillator panel", which is the invention relating to Claim 1 prior to the correction, has been changed to the invention of the "imaging panel" by the corrections 1 to 4.

In addition, the usage of the "scintillator panel", which is the invention relating to Claim 1 prior to the correction, is not defined in Claim 1. However, as paragraph [0001] of the Description of the Invention describes that "the present invention relates to the scintillator panel used when forming the radiation image of a body", it is obvious that the usage of the "scintillator panel" contains the one when forming the radiation image of a body. Moreover, as it can be said that such usage is restricted by the correction 4 to the one which "absorbs the energy of incident radiation, emits electromagnetic wave according to its strength and composes an imaging panel together with an output substrate absorbing the aforementioned electromagnetic wave and outputting an image signal", the correction 4 does not substantially change the Invention relating to Claim 1 after the correction by the corrections 1 to 4 to an invention of "imaging panel".

As aforesaid, the corrections 1 to 4 do not substantially change the Patent Invention relating to Claim 1, and the allegation of the demandant that the aforementioned correction 4 is illegal has no reasons.

F Summary on corrections

As examined in the foregoing, as all of the corrections 1 to 4 restrict and define

matters specifying the invention of the invention relating to Claim 1 of the Patent, they are made within the scope of description of the Description, the scope of claims or drawings attached to the application for the purpose of restricting the scope of claims. In addition, as the Description after the correction by the request for correction has the same description as the Description before the correction, it is obvious that the corrections 1 to 4 do not expand or change the scope of claims substantially.

Therefore, the correction of Claim 1 by the corrections 1 to 4 falls under Article 134-2 (1)(i) of the Patent Act, and it is obvious that said correction complies with the provisions of paragraphs 3 and 4 of Article 126 of the Patent Act which are mutatis mutandis applied in Article 134-2 (5) of the Patent Act and is lawful.

In addition, as the descriptions of Claims 2 to 7 are not corrected directly and are substantially corrected by the correction of Claim 1, the correction of Claims 2 to 7 is lawful for the same reason.

(4) Conclusion

As examined in the foregoing, the correction by the Written Correction Request dated October 4, 2011 is approved.

3. Regarding the Invention

As mentioned in the foregoing "2. (4)", since the correction by the request for correction is approved, the inventions relating to Claims 1 to 7 of the Patent are inventions relating to Claims 1 to 7 described in the scope of claims attached to the Written Correction Request dated October 4, 2011 (hereinafter referred to as "the Invention 1" to "the Invention 7").

"[Claim 1]

A scintillator panel which is a scintillator panel which has a reflection layer and a scintillator layer having a columnar crystal structure formed by deposition process by making into raw material an additive agent containing cesium iodide and one or more kinds of thallium on a substrate, wherein the aforementioned reflection layer exists between the aforementioned substrate and the aforementioned scintillator layer having the columnar crystal structure and is made of at least one type of white pigments chosen from alumina, yttrium oxide, zirconium oxide, and titanium oxide and binder resin, and the aforementioned scintillator layer having the columnar crystal structure is formed by growing columnar crystal body on the surface of the aforementioned light reflection layer, and the aforementioned scintillator panel

absorbing the energy of incident radiation and emitting electromagnetic wave according to its strength composes an imaging panel together with an output substrate absorbing the aforementioned electromagnetic wave and outputting an image signal, and the aforementioned output substrate is provided with a photoelectric conversion element.

[Claim 2]

The scintillator panel according to Claim 1, wherein the surface of the aforementioned reflection layer is smoothed by a calendar process.

[Claim 3]

The scintillator panel according to Claim 1 or 2, wherein the aforementioned white pigment is a white pigment with a mean particle diameter of 0.1 to 3.0 micrometers.

[Claim 4]

The scintillator panel according to Claim 3, wherein a white pigment with an aforementioned mean particle diameter of 0.1 to 3.0 micrometers is a titanium dioxide.

[Claim 5]

A scintillator panel according to any one of Claims 1 to 4 description, wherein the aforementioned substrate consists of a high polymer film which has flexibility with thickness of 50 micrometer or more and 500 micrometer or less.

[Claim 6]

The scintillator panel according to Claim 5, wherein the aforementioned high polymer film is polyimide (PI) or a polyethylene naphthalate (PEN) film.

[Claim 7]

A scintillator panel according to any one of Claims 1 to 6, wherein thickness of the aforementioned reflection layer is 0.2 to 3.0 micrometers."

4. Allegation by the demandant

(1) The object of the request

The object of the demandant's request is "The demandant demands the decision to the effect that the patent for the inventions according to Claims 1 to 7 in the scope of claims of Patent No. 4725533 is invalid and that the costs in connection with the trial shall be borne by the demandee" as stated in the written demand for trial.

(2) Reasons for demand

The demandant alleges that the patent relating to the Inventions 1 to 7 should be invalidated for reasons Nos. 1 to 3 as summarized below. The demandant also

alleges that it will withdraw its allegation of the violation of Article 29(1)(iii) of the Patent Act in the reason for invalidation 1 (See "6. 6-1" of Written Procedures for Statement 2) if the correction is approved. As stated in "2. (4)" in the foregoing, since the correction by the request for correction has been approved, the reason for invalidation shall not be accepted.

A Reason for invalidation 1 (Violation of Article 29(2) of the Patent Act)

The Invention 1 could have been easily conceived by a person skilled in the art by applying well-known arts to A1 Invention. Therefore, as the patent relating to the Invention 1 was granted in violation of the provisions of Article 29(2) of the Patent Act and falls under Article 123 (1)(ii) of the Patent Act, that patent should be invalidated.

In addition, the Inventions 2 to 7 could have been easily conceived by a person skilled in the art by applying well-known arts and arts described in publications of the Evidences A No. 2 to A No. 6, which were distributed prior to the application of the Patent to A1 Invention. Therefore, as the patent relating to the Inventions 2 to 7 was granted in violation of the provisions of Article 29(2) of the Patent Act and falls under Article 123 (1)(ii) of the Patent Act, that patent should be invalidated.

B Reason for invalidation 2 (Violation of Article 29(2) of the Patent Act)

The Invention 1 could be easily invented by a person skilled in the art based on the A6, A1 and A7 Inventions. Therefore, as the patent relating to the Invention 1 was granted in violation of the provisions of Article 29(2) of the Patent Act and falls under Article 123 (1)(ii) of the Patent Act, that patent should be invalidated.

In addition, the Inventions 2 to 7 could be easily invented by a person skilled in the art based on the A6, A1 and A7 Inventions and inventions described in Evidences A No. 2 to A No. 5. Therefore, as the patent relating to the Inventions 2 to 7 was granted in violation of the provisions of Article 29(2) of the Patent Act and falls under Article 123 (1)(ii) of the Patent Act, that patent should be invalidated.

C Reason for invalidation 3 (Violation of Article 29(2) of the Patent Act)

The Invention 1 could be easily invented by a person skilled in the art based on the A8, A1 and A7 Inventions. Therefore, as the patent relating to the Invention 1 was granted in violation of the provisions of Article 29(2) of the Patent Act and falls under Article 123 (1)(ii) of the Patent Act, that patent should be invalidated.

In addition, the Inventions 2 to 7 could be easily invented by a person skilled in the art based on the A8, A1 and A7 Inventions and inventions described in Evidences

A No. 2 to A No. 6. Therefore, as the patent relating to the Inventions 2 to 7 was granted in violation of the provisions of Article 29(2) of the Patent Act and falls under Article 123 (1)(ii) of the Patent Act, that patent should be invalidated.

(3) Means of proof (documentary evidence) submitted by the demandant
Means of proof submitted by the demandant is as follows:

Evidence A No. 1: Japanese Unexamined Patent Application Publication No. 2001-255610
(Date of publication: September 21, 2001)

Evidence A No. 2: Japanese Unexamined Patent Application Publication No. 2006-194860
(Date of publication: July 27, 2006)

Evidence A No. 3: Japanese Unexamined Patent Application Publication No. 2001-59898
(Date of publication: March 6, 2001)

Evidence A No. 4: Japanese Unexamined Patent Application Publication No. 2006-52980
(Date of publication: February 23, 2006)

Evidence A No. 5: Japanese Unexamined Patent Application Publication No. 2005-283483
(Date of publication: October 13, 2005)

Evidence A No. 6: Japanese Unexamined Patent Application Publication No. H10-90498
(Date of publication: April 10, 1998)

Evidence A No. 7: Japanese Unexamined Patent Application Publication No. 2001-183464
(Date of publication: July 6, 2001)

Evidence A No. 8: Japanese Unexamined Patent Application Publication No. 2003-207862
(Date of publication: July 25, 2003)

Evidence A No. 9: Japanese Unexamined Patent Application Publication No. 2002-243859
(Date of publication: August 28, 2002)

Evidence A No. 10: Japanese Unexamined Patent Application Publication No. 2006-335887
(Date of publication: December 14, 2006)

Evidence A No. 11:	Japanese Unexamined Patent Application Publication No. 2002-303947 (Date of publication: October 18, 2002)
Evidence A No. 12:	Domestic Re-Publication of PCT international Publication for Patent Applications No. WO2002/023220 (Date of issue: January 22, 2004)
Evidence A No. 13:	Japanese Unexamined Patent Application Publication No. 2004-340933 (Date of publication: December 2, 2004)

(4) Details of Allegation by Demandant

A Details of Reason for Invalidation against the Invention 1

(A) Details of Reason for Invalidation 1 (Violation of Article 29(2) of the Patent Act)

Based on the descriptions in paragraphs [0028], [0032] to [0035], [0049], [0051], [0053], [0084] to [0085], [0087] and [0088] in Evidence A No. 1 which is the publication distributed prior to the application of the Patent, it can be said that there is described in Evidence A No. 1 "a fluorescent screen having a diffuse reflection layer and a radiation absorptive phosphor layer, which is a vapor deposition film made of a needle-like crystal film of CsI or TI, on a support wherein the diffuse reflection layer is made of light reflective materials, such as a titanium dioxide, yttrium oxide, zirconium oxide, and an aluminum oxide (alumina) and a binder (hereinafter referred to as Evidence A No. 1 Invention)".

When the Invention 1 and Evidence A No. 1 Invention are compared, they are common in that they are "a scintillator panel which is a scintillator panel which has a reflection layer and a scintillator layer having a columnar crystal structure formed by deposition process by making into raw material an additive agent containing cesium iodide and one or more kinds of thallium on a substrate, wherein the aforementioned reflection layer exists between the aforementioned substrate and the aforementioned scintillator layer having the columnar crystal structure and is made of at least one type of white pigments chosen from alumina, yttrium oxide, zirconium oxide, and titanium oxide and binder resin" and are different in the following points.

<The different feature A>

While the Invention 1 is a scintillator panel used for FPD system which is "the aforementioned scintillator panel absorbing the energy of incident radiation and emitting electromagnetic wave according to its strength ... absorbing the

aforementioned electromagnetic wave and outputting an image signal", "having a photoelectric conversion element" and "composes an imaging panel together with an output substrate", Evidence A No. 1 Invention is a scintillator panel used for a CR system which receives X-ray penetrating a subject by an imaging plate made of a photostimulable phosphor, stores a latent image, then converts a photostimulable emission of light into an electrical signal by exciting the photostimulable emission while irradiating a laser light and scanning in a transverse direction using a readout system and further converts the electrical signal into a digital signal using an analog-digital converter.

<The different feature B>

In the Invention 1, the "scintillator layer having columnar crystal structure" "is formed by growing a columnar crystal body on a reflection layer" "that exists between the aforementioned substrate and the aforementioned scintillator layer having columnar crystal structure and is made of at least one kind of a white pigment chosen from alumina, yttrium oxide, zirconium oxide, and titanium oxide and a binder resin". However, Evidence A No. 1 Invention is not provided with the aforementioned matters specifying the invention.

However, in the different feature A, the technical field of the scintillator panel of the Invention 1 relates to that of the fluorescent screen of Evidence A No. 1 Invention as a matter of course, and their effect and function is same in that they absorb radiation and emit light (instantaneous emission of light) to obtain a radiological image, and their problem to be solved by the scintillator panel of the Invention 1 and the fluorescent screen of Evidence A No. 1 Invention is common in that both of them are required to improve emission taking out ratio (sensitivity) and sharpness (See, for example, paragraphs [0084] to [0088] of Evidence A No. 1). Further, the constitution to improve the sharpness is naturally studied for the storage phosphor sheet itself used for the CR system (See paragraphs [0020], [0044] of Evidence A No. 11). Moreover, in the field of a scintillator panel, a fluorescent screen of another system is commonly used as a scintillator panel for the FPD system (See paragraph [0011] of the Description of the Patent), and the technical field of the FPD system and the CR system are closely related, and the exchange of technology is done between the two systems are (See line 4 on page 7 to line 48 on page 8, line 49 on page 8 to line 18 on page 9, lines 1 to 4 on page 9 of Evidence A No. 12, and paragraphs [0001], [0010], [0073] of Evidence A No. 13). Based on the foregoing, the different feature

B is a matter that could be easily conceived by a person skilled in the art by using the fluorescent screen of Evidence A No. 1 Invention for the FPD system.

With respect to the different feature B, as Evidence A No. 1 describes a radiation absorptive phosphor layer, which is a vapor deposition film made of a needle-like crystal film of CsI or TI, and a diffuse reflection layer containing reflective substances, such as a titanium dioxide, yttrium oxide, zirconium oxide, and an aluminum oxide (alumina) and a binder, there is no difference between the constitution of the scintillator layer and that of reflection layer, and growing the scintillator layer made of CsI of Ti dope on the surface of the reflection layer by evaporation method is a well-known art (See paragraph [0013] of Evidence A No. 7) and a combination of a specific scintillator layer and a specific light reflection layer in the Invention 1 are not unique. Therefore, the different feature B is a matter that could be easily conceived by a person skilled in the art based on Evidence A No. 1 Invention and the well-known art (Evidence A No. 7).

(B) Details of Reason for Invalidation 2 (Violation of Article 29(2) of the Patent Act)

Based on the descriptions of Claim 1 and paragraphs [0037] to [0038] of Evidence A No. 6, which is a publication distributed prior to the application of the Patent, it can be said that Evidence A No. 6 describes "a radiation sensitizing screen which has a light reflection layer and a phosphor layer containing CsI: TI on a support wherein the light reflection layer forms many gaps into resin" (hereinafter referred to as the "Evidence A No. 6 Invention").

When the Invention 1 and Evidence A No. 6 Invention are compared, they are common in that "a scintillator panel which has a reflection layer and a scintillator layer ... formed ... by making into raw material an additive agent containing cesium iodide and at least one or more kinds of thallium on a substrate" and are different in the following points.

<The different feature C>

While the reflection layer of the Invention 1 "is made of at least one type of white pigments chosen from alumina, yttrium oxide, zirconium oxide, and titanium oxide and binder resin", the reflection layer of Evidence A No. 6 Invention forms many gaps into resin.

<The different feature D>

While the Invention 1 is a scintillator panel used for FPD system which is "the

aforementioned scintillator panel absorbing the energy of incident radiation and emitting electromagnetic wave according to its strength ... absorbing the aforementioned electromagnetic wave and outputting an image signal ", "having a photoelectric conversion element " and "composes an imaging panel together with an output substrate", Evidence A No. 6 Invention is a radiation sensitizing screen used for sensitizing paper - film system.

<The different feature E>

In the Invention 1, the scintillator layer is a scintillator layer "having the columnar crystal structure formed by deposition process by making into raw material an additive agent containing cesium iodide and at least one or more kinds of thallium", "which is made of at least one type of white pigments chosen from alumina, yttrium oxide, zirconium oxide, and titanium oxide and binder resin" and "formed by growing a columnar crystal body on the surface of the reflection layer". However, in Evidence A No. 6 Invention, "a phosphor layer made of iodide system phosphor of CsI: TI" is not provided with the aforementioned matters specifying the invention.

However, with respect to the different feature C, as Evidence A No. 1 describes the diffuse reflection layer that has the same matters specifying the invention as those of the reflection layer of the Invention 1 (See 4 (4) A (A)"), and the radiation sensitizing screen of Evidence A No. 6 Invention is used for the sensitizing paper - film system, and, although the fluorescent screen of Evidence A No. 1 Invention is used for the CR system, as the reflection layer of Evidence A No. 6 Invention and the diffuse reflection layer of Evidence A No. 1 Invention have the same function and effect that reflect the light emitted from the phosphor layer to the side of contact subject (that means, film or radiological image conversion panel), there exists a motivation to use the diffuse reflection layer in Evidence A No. 6 Invention described in Evidence A No. 1 replacing with the light reflection layer forming many gaps into resin. Moreover, as Evidence A No. 6 describes that a light scattering layer which carried out distributed content of the white pigment into resin may be provided between a light reflection layer forming many gaps into resin and a phosphor layer (See Claim 2 and paragraphs [0029] to [0033] of Evidence A No. 6), it cannot be said that the use of white pigment as a reflection layer is interfered with in Evidence A No. 6 Invention, the different feature C is a matter that could easily be conceived by a person skilled in the art by applying the diffuse reflection layer described in Evidence A No. 1 replacing with the light reflection layer forming many gaps into resin in

Evidence A No. 6 Invention.

Moreover, with respect to the different feature D, the technical field of the FPD system and the sensitizing paper - film system is closely related, and the exchange of technology is obviously done between the two systems (See paragraph [0011] of the Description of the Patent), and the scintillator panel of the Invention 1 and the radiation sensitizing screen of Evidence A No. 6 Invention have the same effect and function in that they absorb radiation and emit light (instantaneous emission of light) to obtain a radiological image, and their problem to be solved by the scintillator panel of the Invention 1 and the radiation sensitizing screen of Evidence A No. 6 Invention is common in that both of them are required to improve the emission taking out ratio (sensitivity) and sharpness (degree of sharpness) (See paragraph [0020] of Evidence A No. 6). Therefore, the different feature D is a matter that could easily be conceived by a person skilled in the art by using the radiation sensitizing screen of Evidence A No. 6 Invention for the FPD system.

In addition, with respect to the different feature E, as Evidence A No. 1 describes "radiation absorptive phosphor layer, which is a vapor deposition film made of a needle-like crystal film of CsI:TI" and Evidence A No. 7 describes "scintillator for which CsI of Ti dope grown by the deposition process is used" (See "4. (4) A (A)" in the foregoing). Moreover, as the radiation sensitizing screen of Evidence A No. 6 Invention is used for the sensitizing paper - film system, and, although the fluorescent screen described in Evidence A No. 1 is used for the CR system, the radiation sensitizing screen and the fluorescent screen have the same effect and function in that they absorb radiation and emit light (instantaneous emission of light) to obtain a radiological image. Further, the radiation sensitizing screen of Evidence A No. 6 Invention is used for the sensitizing paper - film system, and, although the fluorescent screen described in Evidence A No. 7 is used for the FPD system, the radiation sensitizing screen and the fluorescent screen have the same effect and function in that they absorb radiation and emit light (instantaneous emission of light) to obtain a radiological image, and the combination of a specific scintillator layer and a specific reflection layer of the Invention 1 are not unique. Therefore, the different feature D is a matter that could be easily conceived by a person skilled in the art by using the radiation absorptive phosphor layer described in Evidence A No. 1 or the scintillator described in Evidence A No. 7 for the fluorescent body layer in Evidence A No. 6 Invention.

(C) Details of Reason for Invalidation 3 (Violation of Article 29(2) of the Patent Act)

Based on the descriptions in paragraphs [0062] to [0063], [0094] to [0117], [0121], and [0171] of Evidence A No. 8 which is a publication distributed prior to the application of the Patent, it can be said that "a radiological image conversion panel having a reflection layer and a photostimulable phosphor layer formed by a vapor growth system on a support wherein the reflection layer has the white pigment for which titanium oxide, aluminum oxide, and zirconium oxide are distributed and dissolved in the resin" (hereinafter referred to as the Evidence A No. 8 Invention") is described in Evidence A No. 8.

When the Invention 1 and Evidence A No. 8 Invention are compared, they are common in that they are "a radiological image conversion panel having a reflection layer and a phosphor layer formed by deposition process of one or more kinds of thallium on a substrate, wherein the reflection layer is made of at least one type of white pigments chosen from alumina, zirconium oxide, and titanium oxide and binder resin" and are different in the following points.

<The different feature F>

While the scintillator layer of the Invention 1 is a scintillator layer "which has a columnar crystal structure formed" by deposition process "by making into raw material an additive agent containing cesium iodide and one or more kinds of thallium" and which is formed "by growing columnar crystal body on the surface of the reflection layer" and "is made of at least one type of white pigments chosen from alumina, yttrium oxide, zirconium oxide, and titanium oxide and binder resin", the phosphor layer of Evidence A No. 8 Invention which is formed by the deposition process does not have the aforementioned matters specifying the invention.

<The different feature G>

While the Invention 1 is a scintillator panel used for FPD system which is "the aforementioned scintillator panel absorbing the energy of incident radiation and emitting electromagnetic wave according to its strength, ... absorbing the aforementioned electromagnetic wave and outputting an image signal", "having a photoelectric conversion element" and "composes an imaging panel together with an output substrate", Evidence A No. 8 Invention is a radiological image conversion panel used for a CR system which receives X-ray penetrating a subject by an imaging plate made of a photostimulable phosphor, stores a latent image, then converts a photostimulable emission of light into an electrical signal by exciting the photostimulable emission while irradiating a laser light and scanning in a transverse direction using a readout system and further converts the electrical signal into a

digital signal using an analog-digital converter.

However, with respect to the different feature F, as stated in "4. (4) A (A)" in the foregoing, the technical field of the FPD system and the CR system is closely related, and the exchange of technology is done between the two systems. Moreover, if the scintillator panel is used for FPD system, a phosphor layer of instantaneous light emission type such as CsI:TI is formed, and if the radiological image conversion panel is used for CR system, a phosphor layer of photostimulable light emission type such as CsBr:Eu is formed as appropriate. Further, Evidence A No. 1 describes a radiation absorptive phosphor layer, which is a vapor deposition film made of a needle-like crystal film of CsI:TI, wherein the diffuse reflection layer is made of light reflective materials, such as a titanium dioxide, yttrium oxide, zirconium oxide, and an aluminum oxide and a binder, and Evidence A No. 7 describes "a scintillator for which CsI of TI dope grown by evaporation method is used", and a combination of a specific scintillator layer and a specific light reflection layer in the Invention 1 is not unique. Therefore, the different feature F is a matter that could be easily conceived by a person skilled in the art by using the diffuse reflection layer described in Evidence A No. 1 as the reflection layer and applying a radiation absorptive phosphor layer described in Evidence A No. 1 or a scintillator described in Evidence A No. 7 replacing with a photostimulable phosphor layer in Evidence A No. 8 Invention.

In addition, with respect to the different feature G, as stated in "4. (4) A (A)" in the foregoing, the technical field of the FPD system and the CR system is closely related, and the exchange of technology is done between the two systems. The different feature G is a matter that could be easily conceived by a person skilled in the art by applying a phosphor layer of instantaneous light emission type (a radiation absorptive phosphor layer described in Evidence A No. 1 or a scintillator described in Evidence A No. 7) replacing with a photostimulable phosphor layer in the radiological image conversion panel of Evidence A No. 8 Invention and by using it for the FPD system.

C Details of Reason for Invalidation 1 to Reason for Invalidation 3 for the Invention 2 to the Invention 7

(A) Details of Reason for Invalidation 1 to Reason for Invalidation 3 for the Invention 2

Evidence A No. 2 describes "smoothing the surface of a substrate for forming a phosphor layer by deposition process" as a well-known problem to be solved, and

Evidence A No. 3 describes "smoothing processing by calendar roll" as a well-known means for smoothing, and Evidence A No. 4 describes that the surface of a reflection layer is smoothed in the FPD system. Moreover, as the technical field of the FPD system and the CR system are closely related, the smoothing of the surface of a reflection layer by calendar processing when a person intends to form a scintillator layer on the surface of a reflection layer by deposition process is a matter that could be easily conceived by a person skilled in the art.

(B) Details of Reason for Invalidation 1 to Reason for Invalidation 3 for the Invention 3 to the Invention 4

Evidence A No. 4 describing the technology of the FPD system describes "a phosphor protective layer" that is positioned at the opposite side of a photodetector to a phosphor layer and reflects light emitted from the phosphor layer to the side of the photodetector and "fine titanium oxide particles having a mean particle diameter of 0.2 micrometers which are mixed in a hot melt resin that becomes the phosphor protective layer as light reflective fine particles", and Evidence A No. 5 describing the technology of the FPD system describes" a "protection film" that is positioned in the opposite side of an optoelectric transducer to a scintillator layer and reflects light emitted from the scintillator layer to the side of the optoelectric transducer and a "fine titanium dioxide particle having the mean particle diameter of 1 micrometer contained as in the protection film formed in the upper position of a scintillator layer which is a cesium iodide: thallium film as light reflection fine articles".

On the other hand, although a reflection layer of the Invention 3 and the Invention 4 exists between a substrate and a scintillator layer, if it is used for the FPD system, as it is positioned at the opposite side of an output substrate (surface of a plane light-receiving element) to the scintillator layer and reflects light emitted from the scintillator layer to the side of the output substrate, the reflection layer of the Invention 3 and the Invention 4 and the phosphor protective layer described in Evidence A No. 4 and the protection film described in Evidence A No. 5 have the same effect and function in that both of them reflect light emitted from the scintillator layer to the side of the output substrate.

Therefore, a constitution that uses the white pigment having the mean particle diameter of 0.1 to 3.0 micrometers and uses a titanium dioxide having the mean particle diameter of 0.1 to 3.0 micrometers as the white pigment is a matter that could be easily conceived by a person skilled in the art based on the aforementioned descriptions of Evidence A No. 4 and Evidence A No. 5.

(C) Details of Reason for Invalidation 1 to Reason for Invalidation 3 for the Invention 5 to the Invention 6

Evidence A No. 1 describes "a support which is a sheet or film having the thickness of 50 micrometers to 1 mm made of resin materials such as polyethylene naphthalate or polyimide resin", and Evidence A No. 6 describes "a support which is formed, including a flexible sheet made of plastic film such as polyethylene naphthalate film or polyimide film, so that the thickness is 250 micrometers and a support having the thickness of 200 micrometers that contains black PET containing carbon black". And, as a fluorescent screen described in Evidence A No. 1 is superposed with a radiological image conversion panel having a light-receiving surface in closely-attached condition and a radiation sensitizing screen described in Evidence A No. 6 is superposed with a film having a light-receiving surface in closely-attached condition, the substrate of the Invention 5 and the Invention 6 and the support (film) described in Evidence A No. 1 and the support (sheet) described in Evidence A No. 6 have the same effect and function in that the substrate and the support change their form into a shape which is in line with the light-receiving surface of the subject of close attachment.

Moreover, the technical field of the FPD system and that of the CR system are closely related, and the exchange of technology is done between the two systems. Similarly, the technical field of the FPD system and the sensitizing paper - film system are closely related, and the exchange of technology is done between the two systems. Therefore, a constitution that uses an elastic polymer film having a thickness of 50 micrometers or greater and 500 micrometers or less as the substrate and uses polyimide (PI) film or polyethylene naphthalate (PEN) film as the polymer film is a matter that could be easily conceived by a person skilled in the art based on the descriptions of Evidence A No. 1 and Evidence A No. 6.

(D) Details of Reason for Invalidation 1 to Reason for Invalidation 3 for the Invention 7

As Evidence A No. 1 describes a diffuse reflection layer containing light reflective materials made of titanium dioxide, yttrium oxide, zirconium oxide, and an aluminum oxide and a binder" and also that "it is desirable that the diffuse reflection layer has as much thin layer thickness as possible and achieves high optical reflectivity" from the viewpoint of sensitivity and sharpness, making the thickness of the reflection layer to 0.2 to 3.0 micrometers is just an effort to achieve optimum or

desirable numeric scope to solve a certain problem.

Moreover, Evidence A No. 4 describes "a reflection layer made of an aluminum thin metal film having a thickness of about 0.2 micrometers which is laminated on a phosphor layer by way of a phosphor protective layer" and describes the technology relating to the FPD system. Further, although the reflection layer described therein is an aluminum thin metal film, the reflection layer and a reflection layer of the Invention 7 have the same effect and function in that both of them reflect light emitted from the phosphor layer to the photodetector side.

Therefore, a constitution that makes the thickness of the reflection layer 0.2 to 3.0 micrometers is a matter that could be easily conceived by a person skilled in the art based on the descriptions of Evidence A No. 4

C Summary of Reason for Invalidation 1 to Reason for Invalidation 3 for the Inventions 1 to 7

As described above, the Invention 1 to the Invention 7 could be easily invented by a person skilled in the art prior to their application by applying inventions described in Evidence A No. 2 to Evidence A No. 7 to Evidence A No. 1 Invention. Therefore, the Inventions 1 to 7 should not obtain the patent pursuant to the provisions of Article 29(2) of the Patent Act, and the patent falls under Article 123 (1)(ii) of the Patent Act and should be invalidated (Reason for Invalidation 1).

Moreover, the Inventions 1 to 7 could have been easily invented by a person skilled in the art prior to their application by applying inventions described in Evidence A No. 1 to Evidence A No. 5, and Evidence A No. 7 to the Evidence A No. 6 Invention. Therefore, the Inventions 1 to 7 should not obtain the patent pursuant to the provisions of Article 29(2) of the Patent Act, and the patent falls under Article 123 (1)(iii) of the Patent Act and should be invalidated (Reason for Invalidation 2).

In addition, the Inventions 1 to 7 could have been easily invented by a person skilled in the art prior to their application by applying inventions described in Evidence A No. 1 to Evidence A No. 7 to the Evidence A No. 8 Invention. Therefore, the Inventions 1 to 7 should not obtain the patent pursuant to the provisions of Article 29(2) of the Patent Act, and the patent falls under Article 123 (1)(ii) of the Patent Act and should be invalidated (Reason for Invalidation 3).

D Rebuttal against the allegation by the demandee on the effect of the Invention 1 to the Invention 7 (to be stated later)

(A) Regarding the Invention 1

a. Regarding film-to-film adhesion of evaporation crystal, it is only described in paragraph [0035] of the Description of the Patent that "It is preferable that it is polymer whose glass-transition temperature (Tg) is 30 to 100 degrees C as a binder with respect to the film-to-film adhesion between an evaporation crystal and a substrate, and it is preferable that it is particularly polyester resin" and in paragraph [0038] of the Description that "Usually, in forming the scintillator by evaporation, substrate temperature is maintained at 150 degrees C to 250 degrees C, but a light reflection layer comes to function effectively also as an adhesive layer because glass-transition temperature falls within 30 to 100 degrees C in a reflection layer", and nowhere in the Description of the Patent is it described that "as the disorder at the root section of columnar crystal is eliminated and columnar crystal of the scintillator layer is grown neatly, concave and convex on the surface of scintillator layer become good and the contact with the plane light-receiving element is improved".

Rather, as paragraph [0027] of the Description describes that "It was found out by inventors of the present invention that sharpness was improved by leaps and bounds, by forming a reflecting layer with a white pigment and binder resin, and without reducing the highest luminescence extraction efficiency by the above-mentioned characteristic arts means as a result of adding examination intensively, in order to attain an aforementioned problem", and a constitution in which a reflection layer is not formed by a white pigment and a binder resin is described in [Table 1] of paragraph [0116] of the Description as a comparative example, which is the evaluation result on the sharpness (See also paragraph [0107] of the Description), it can be said that the Invention 1 is an invention that improves the sharpness by leaps and bounds without reducing the highest luminescence extraction efficiency by forming the reflection layer by the white pigment and the binder resin.

Therefore, the allegation of the demandee is not based on the description of the Description of the Patent and has no ground.

b. Further, based on the descriptions of paragraphs [0035] and [0038] of the Description of the Patent, it is known that a reflection layer functions as an adhesive layer effectively in the case where the reflection layer contains polymer whose glass-transition temperature (Tg) is 30 to 100 degrees C as a binder and the formation of the scintillator layer is carried out by evaporation at substrate temperature being maintained at 150 degrees C to 250 degrees C. However, such constitution is not defined in the Invention 1 at all.

Therefore, the allegation of the demandee is not based on the descriptions in the

scope of claims of the Patent and has no ground.

c. Further, even if the reflection layer functions as an adhesive layer effectively in the Invention 1, it cannot be said that concave and convex on the surface of scintillator layer become good and the contact with the plane light-receiving element is improved for the following reasons.

That is to say, if the scintillator layer having columnar crystal structure is formed by evaporation, regardless of whether the reflection layer functions as an adhesive layer effectively, the columnar crystal is grown abnormally by the splash at the time of evaporation, and concave and convex may arise on the surface of scintillator layer (See, for example, paragraph [0010] of Evidence A No. 4, paragraph [0049] of Evidence A No. 9, paragraphs [0014] and[0015] of Evidence A No. 10).

Therefore, the allegation of the demandee lacks in technical ground.

(B) Regarding the Invention 2

Evidence A No. 12 describes that when a dielectric multilayer mirror is formed on a glass substrate as a light reflection film and a phosphor layer is formed on the dielectric multilayer mirror, a phosphor layer of instantaneous light emission type such as CsI:TI is formed if they are used for the FPD system (See line 4 on page 7 to line 48 on page 8 of Evidence A No. 12) and a photostimulable phosphor layer such as CsBr : Eu is formed if they are used for the CR system (See line 49 on page 8 to line 18 on page 9 of Evidence A No. 12). Further, Evidence A No. 12 describes that the constitution of the dielectric multilayer mirror may be changed as appropriate if it is used for the FPD system or for the CR system (See lines 1 to 4 on page 9 of Evidence A No. 12).

In addition, Evidence A No. 13 describes that when a phosphor layer is formed on an elastic support by evaporation, a photostimulable phosphor layer such as CsBr : Eu is formed if it is used for the CR system and a phosphor layer of instantaneous light emission type such as CsI:TI is formed if it is used for the DR (FPD) system (See paragraphs [0001], [0010] and [0073]of Evidence A No. 13).

As mentioned in the foregoing, the technical field of the FPD system and the CR system are closely related, and the exchange of technology is done between the two systems.

Therefore, the allegation of the demandee has no ground and cannot be accepted.

(C) Regarding the Invention 3 and the Invention 4

As the thickness of the reflection layer is not defined at all in the Invention 3 and

the Invention 4, samples having different thicknesses of the reflection layer should be compared. Then, although the particle diameter of the white pigment in samples of No. 6, No. 7, and Nos. 10 to 12 is within the range of 0.1 to 3.0 micrometers, they are inferior to samples of Nos. 2 and 5 in terms of MTF.

Therefore, the allegation of the demandee has no ground and cannot be accepted.

(D) Regarding the Invention 5 and the Invention 6

Samples of No. 12 (substrate: polyimide film / reflection layer: white pigment + binder resin) contained in the Invention 5 and the Invention 6 are inferior to sample of No. 11 in terms of MTF.

Therefore, the allegation of the demandee has no ground and cannot be accepted.

(E) Regarding the Invention 7

As the particle diameter of the white pigment is not defined in the Invention 7 except in Claim 4, samples having different particle diameters of the white pigment should be compared. Then, although the thickness of the reflection layer in samples of Nos. 11 and 12 is within the range of 0.2 to 3.0 micrometers, they are inferior to samples of Nos. 7 and 10 in terms of MTF.

Therefore, the allegation of the demandee has no ground and cannot be accepted.

5. The demandee's allegation

(1) Regarding the Reason for Invalidation 1 to the Reason for Invalidation 3

The Invention 1 does not fall under an invention that could easily be conceived by a person skilled in the art based on the invention described in Evidence A No. 1 and the well-known art. Moreover, the Invention 1 does not fall under an invention that could easily be conceived by a person skilled in the art based on the invention described in Evidence A No. 6, Evidence A No. 1, and Evidence A No. 7. Further, the Invention 1 does not fall under an invention that could easily be conceived by a person skilled in the art based on Evidence A No. 8, Evidence A No. 1, and Evidence A No. 7. Further, the Invention 2 to the Invention 7 citing the Invention 1 do not fall under inventions that could easily be conceived by a person skilled in the art similarly as stated in the foregoing.

Therefore, the Reason for Invalidation 1 to the Reason for Invalidation 3 alleged by the demandant have no ground.

(2) Means of proof (documentary evidence) submitted by the demandee

Means of proof submitted by the demandee are as follows.

Evidence B No. 1: "Standard Digital X-ray Image Measurement" Edited by Katsuhiro Ichikawa, Takayuki Ishida
Issued by Ohmsha, Ltd.
Issued on October 10, 2010
p.25-26, p.36, p.39, p.41-42

Evidence B No. 2: Japanese Unexamined Patent Application Publication No. S63-313100
(Date of publication: December 21, 1988)

Evidence B No. 3: "New Edition: Study on Radiation Equipment (1) - Diagnostic Imaging Equipment"
Authored by Taiji Aoyagi and 3 other persons
Issued by Corona Publishing Co., Ltd.
Issued on November 30, 2010
p.177, p.180, p.183-184

Evidence B No. 4: Japanese Unexamined Patent Application Publication No. 2005-148060
(Date of publication: June 9, 2005)

Evidence B No. 5: Written report signed and sealed by Takehiko Shoji of Konica Minolta MG Inc. dated January 13, 2012 (total 1 page)

Evidence B No. 6: Japanese Unexamined Patent Application Publication No. 2000-180597
(Date of publication: June 30, 2000)

Evidence B No. 7: Japanese Unexamined Patent Application Publication No. H06-36714
(Date of publication: February 10, 1994)

Evidence B No. 8: Japanese Unexamined Patent Application Publication No. 2004-117347
(Date of publication: April 15, 2004)

Evidence B No. 9: Catalogue of "Vylon" of Toyobo Co., Ltd. (total 8 pages)

Evidence B No. 10: Japanese Unexamined Patent Application Publication No. H10-283925
(Date of publication: October 23, 1998)

Evidence B No. 11: Japanese Unexamined Patent Application Publication No.

2008-139156
(Date of publication: June 19, 2008)

Evidence B No. 12: Japanese Patent Publication No. S59-23400
(Date of publication: June 1, 1984)

Evidence B No. 13: Japanese Unexamined Patent Application Publication No. 2002-357698 (Date of publication: December 13, 2002)

Evidence B No. 14: Japanese Unexamined Patent Application Publication No. 2002-131493 (Date of publication: May 9, 2002)

Evidence B No. 15-1: Notification of Reasons for Refusal drafted on March 31, 2011 in the examination of Japanese Patent Application No. 2010-225851 (total 2 pages)

Evidence B No. 15-2: Written opinion dated May 31, 2011 in the examination of Japanese Patent Application No. 2010-225851 (total 4 pages)

Evidence B No. 16: Japanese Patent Publication No. 3276614 (Date of issue: April 22, 2002)

(3) Details of allegation by the demandee

A Regarding the Reason for Invalidation 1

A fluorescent screen of Evidence A No. 1 Invention is used for the CR system, and the use of the fluorescent screen for the FPD system could not be easily conceived by a person skilled in the art based on Evidence A No. 1 to Evidence A No. 13, and the formation of a scintillator layer by growing a columnar crystal body on the surface of a reflection layer made of at least one kind of white pigment chosen from alumina, yttrium oxide, zirconium oxide, and titanium oxide and binder resin could not also be easily conceived by a person skilled in the art based on Evidence A No. 1 to Evidence A No. 13.

B Regarding the Reason for Invalidation 2

No motivation exists to use the reflection layer made of the white pigment and binder resin described in Evidence A No. 1 replacing with a light reflection layer described in the Evidence A No. 6 Invention, and a radiation sensitizing screen of the Evidence A No. 6 Invention is used for the sensitizing paper - film system, and the use of fluorescent screen for the FPD system could not be easily conceived by a person skilled in the art based on Evidence A No. 1 to Evidence A No. 13, and the formation of a scintillator layer by growing a columnar crystal body on the surface of

a reflection layer made of at least one kind of white pigment chosen from alumina, yttrium oxide, zirconium oxide, and titanium oxide and binder resin also could not be easily conceived by a person skilled in the art based on Evidence A No. 1 to Evidence A No. 13.

C Regarding the Reason for Invalidation 3

A radiological image conversion panel of Evidence A No. 8 Invention is used for the CR system, and the use of the fluorescent screen for the FPD system could not be easily conceived by a person skilled in the art based on Evidence A No. 1 to Evidence A No. 13, and the formation of a scintillator layer by growing a columnar crystal body on the surface of a reflection layer made of at least one kind of white pigment chosen from alumina, yttrium oxide, zirconium oxide, and titanium oxide and binder resin could not also be easily conceived by a person skilled in the art based on Evidence A No. 1 to Evidence A No. 13.

D Effect of the Invention 1 to the Invention 7

(A) Regarding the Invention 1

Even if there are concave and convex or irregularities on a substrate, as they are covered over by a reflection layer made of the white pigment and binder resin by growing a scintillator layer having a columnar crystal structure on the surface of the reflection layer made of the white pigment and binder resin, the influence of variability of roughness of the surface of the substrate can be eliminated, and a surface having good smoothness (surface nature) can be obtained easily. This process can prevent abnormal growth of the columnar crystal structure and can have the crystal grow neatly from the bottom.

Further, as the binder resin in the reflection layer is softened at the time of evaporation and it becomes quite easy for a seed crystal of an evaporated crystal to take root, irregularities at the bottom of the columnar crystal are eliminated, and the columnar crystal of the scintillator layer grows neatly.

Such characteristic feature of the Invention 1 and excellent effect arising therefrom cannot be easily conceived by a person skilled in the art based on the prior art.

(B) Regarding the Invention 2

As Evidence A No. 2 and Evidence A No. 3 describe the technology of the CR system, the smoothing of the surface of the reflection layer by calendar processing in

the FPD system cannot be easily conceived by a person skilled in the art even if the person makes access to these Evidences.

(C) Regarding the Invention 3 and the Invention 4

In the embodiment of the Description of the Patent (See [Table 1] of paragraph [0116]), the particle diameter of the white pigment is in the range of 0.1 to 3.0 micrometers as compared with the cases of sample No. 2 (particle diameter of the white pigment is 0.08 micrometers) and sample No. 5 (particle diameter of the white pigment is 3.5 micrometers), and samples No. 1, No. 3 and No. 4, which have the same thickness of the reflection layer, are superior in terms of MTF. Such advantageous effect cannot be expected by a person skilled in the art based on Evidence A No. 1, Evidence A No. 4 and Evidence A No. 5.

(D) Regarding the Invention 5 and the Invention 6

In the embodiment of the Description of the Patent, sample No. 1 contained in the Corrected Inventions 5 and 6 (substrate: polyimide film / reflection layer: white pigment + binder resin) is superior in terms of MTF as compared with sample No. 11 (substrate: aluminum plate / reflection layer: white pigment + binder resin) and sample No. 13 (substrate: polyimide film / reflection layer: Al sputter). Such advantageous effect cannot be expected by a person skilled in the art based on Evidence A No. 1 and Evidence A No. 6.

(E) Regarding the Invention 7

In the embodiment of the Description of the Patent, if the white pigment of the same particle diameter (0.2 micrometers) is used, sample No. 1 (thickness of reflection layer being 1.0 micrometer), sample No. 8 (-do- 0.2 micrometer) and sample No. 9 (-do- 3.0 micrometers) having the thickness of reflection layer in the range of 0.2 to 3.0 micrometers are superior in terms of MTF as compared with samples No. 7 (-do- 0.1 micrometer) and sample No. 10 (-do- 3.5 micrometers) having the thickness of reflection layer outside the above-mentioned range. Such advantageous effect cannot be expected by a person skilled in the art based on Evidence A No. 1 and Evidence A No. 4.

6. Judgment on the body

(1) Regarding the Reason for Invalidation 1 for the Invention 1 (Violation of Article 29(2) of the Patent Act)

A Acknowledgment of inventions described in Evidence A No. 1

Evidence A No. 1, which was in the public domain prior to the application of the Patent, describes the following technical matters together with drawings.

a. "[0001]
[Technical field of the Invention] The present invention relates to a radiation image forming method that utilizes a storage phosphor, and a radiation image forming material advantageously used in the method."

b. "[0027] An example of a configuration of the radiation image forming material of the present invention is described with reference to attached drawings. FIGS. 1-5 are respectively schematic sectional views illustrating a representative example of the configuration of the radiation image forming material of the present invention. An arrow is a radiating direction of the radiation such as X-rays."

c. "[0032] In FIG. 2, a radiation image forming material 20 is formed of a front side fluorescent screen 20b, a back side fluorescent screen 20c, and a center radiation image conversion panel 20a between them. The front side fluorescent screen 20b is configured in order from a support 21b, a radiation absorptive phosphor layer 22b, and a protective layer 24b. The back side screen 20c is configured in order from a support 21c, a radiation absorptive phosphor layer 22c, and a protective layer 24c. The center panel 20a is configured in order from a protective layer 24a, a storage phosphor layer 23, and a protective layer 24'a."

d. "[0047] [A manufacturing method of a radiation image forming material]
(Radiation image conversion panel) Next, in the manufacturing method of the radiation image forming material of the present invention, the radiation image conversion panel 10a of the radiation image forming material shown in Fig. 1 is taken for an example, and it describes about the case where an storage phosphor layer and a radiation absorptive phosphor layer consist of a phosphor particle and a binder which carries out content support of this by a dispersed state, respectively. Each phosphor layer can be formed in order, for example on a support by the following publicly known methods.
[0048] (Support) The support is normally a sheet or a film which is formed of a flexible resin material and whose thickness is 50 μm to 1 mm. The support may be transparent, or the support may be filled with a light reflective material (examples: alumina particles, titanium dioxide particles, barium sulfate particles) for reflecting

excitation light (primary, secondary) or simulated emission light, or may be provided with a gap. Or, a light absorptive material (example: carbon black) may be filled in order to make the support absorb the excitation light or the stimulated emission light. Examples of a resin material that can be used for forming the support are various kinds of resin materials such as polyethylene-telephthalate, polyethylene naphthalate, aramid resin, or polyimide resin. As needed, the support may be a metal sheet, a ceramic sheet, a glass sheet or a quartz sheet.

[0049] (Radiation absorptive phosphor layer) First, the radiation absorptive phosphor particles and a binder are added to a solvent, they are sufficiently mixed, and a coating liquid for which the radiation absorptive phosphor particles are uniformly dispersed in the binder solvent is prepared. Various kinds of resin materials are known for the binder that disperses and supports the phosphor particles, and a selection can be appropriately made and used from optional resin materials featuring these well-known binder resins also in manufacture of the radiation image conversion panel of the present invention. While a mixing ratio of the binder and the phosphor in the coating liquid is different depending on characteristics of a target radiation image conversion panel and a kind of the phosphor or the like, generally the mixing ratio (binder/phosphor) of the binder and the phosphor is selected from the range of 1 to 0.01 (weight ratio). Note that, to the coating liquid, various kinds of additive agents such as a dispersant for improving dispersibility of the phosphor in the coating liquid, a plasticizer for improving binding force between the binder and the phosphor in a phosphor layer after formation, a yellowing inhibitor for preventing discoloration of the phosphor layer, a hardener, a crosslinking agent may be mixed further.

[0050] By uniformly applying the coating liquid prepared in this way to a surface of the support next, a coating film is formed. An applying operation can be performed by a method of using normal application means, a doctor blade, a roll coater, a knife coater or the like for example. The coating film is dried, and the formation of the radiation absorptive phosphor layer onto the support is completed. Note that the phosphor layer is not necessarily needed to be formed by directly applying the coating liquid onto the support as described above, and for example, a method of separately forming the phosphor layer by applying the coating liquid onto a temporary support such as a glass plate, a metal plate or a plastic sheet and drying it, and then pressurizing it onto the support or using an adhesive or the like and joining the phosphor layer onto the support may be utilized. Or, the phosphor layer for which a needle-like phosphor is oriented and made anisotropic as described in Japanese Patent Application No. 2000-158213 description may be also used.

[0051] The radiation absorptive phosphor layer according to the present invention may be not only the one formed of the radiation absorptive phosphor and the binder that contains and supports it in a dispersed state but also the one configured only from aggregate of the radiation absorptive phosphor without including the binder or the phosphor layer for which a polymer material is impregnated in a vapor deposition film or the aggregate of the radiation absorptive phosphor or the like.

[0052] (Partition) Also, the radiation absorptive phosphor layer may be provided with partitions that finely section the phosphor layer along a planar direction for the purpose of preventing scattering of the emission light and improving image quality of the images to be obtained. Since the layer thickness of the radiation absorptive phosphor layer is relatively thick, by providing the partitions, diffusion of the emission light can be effectively prevented. The partition can be provided in an optional shape such as a stripe shape or a grid shape, or may be formed so that the partition surrounds a region filled with the radiation absorptive phosphor in an optional shape such as a circular shape or a hexagonal shape. Also, a peak part and a bottom part of the partition may be both exposed to both surfaces of the phosphor layer, or both or one of the peak part and the bottom part may be buried in the phosphor layer.

[0053] The partition can be formed by performing suitable etching treatment to a plate made of a metal such as aluminum, titanium or stainless steel, a sheet made of ceramics such as an aluminum oxide or aluminum silicate, or a sheet composed of an organic polymer material such as a photosensitive resin for example to prepare a honeycomb-like sheet where many recesses (holes) or through-holes are formed, and by mounting the phosphor layer onto the honeycomb-like sheet and then heating and compressing it to push the honeycomb-like sheet into the phosphor layer. Or, it can be also formed by a lamination slice method of forming many phosphor sheets in a thin film shape formed of the binder that disperses and contains fluorescent particles and many sheets for the partition in the thin film shape formed of the polymer material respectively, alternately laminating many of the phosphor sheets and the sheets for the partition, and then vertically cutting them in a lamination direction. Or, in the case that the phosphor layer is formed of the aggregate of the radiation absorptive phosphor like the vapor deposition film or the like as described above, the partition can be attained by forming a crack. Examples of such a phosphor layer are needle-like crystal films of CsI:Na, CsI:Tl, CsBr:Tl or the like. In the partition, lowly light absorptive minute particles such as aluminum oxide or titanium dioxide may be dispersed and contained, or it may be colored with a coloring agent that

selectively absorbs the emission light from the radiation absorptive phosphor.

[0054] Or, the partition may be formed of a phosphor layer material (however, the ratio of the binder:the phosphor and/or a particle size is changed from that in the case of forming the phosphor layer). Since the radiation absorptive phosphor generally has a high refractive index, scattering in the planar direction can be effectively prevented. Also, the images with high sharpness can be obtained while maintaining high radiation absorption."

e. "[0084] (Diffuse reflection layer) Also, in the case that the radiation image conversion panel is on the front side, it is preferable to provide a diffuse reflection layer as illustrated in FIG. 14 between the support and the radiation absorptive phosphor layer. The diffuse reflection layer that can be used in the image forming material of the present invention is a layer having a function of reflecting the emission light from the radiation absorptive phosphor. By installation of the diffuse reflection layer, a light quantity of the emission light (primary excitation light) from the radiation absorptive phosphor made incident on the storage phosphor layer can be increased and the highly sensitive radiation image conversion panel can be attained. In FIG. 14, a radiation image conversion panel 10a" is configured in order from the support 11a, a diffuse reflection layer 16, the radiation absorptive phosphor layer 12a, the storage phosphor layer 13, and the protective layer 14a.

[0085] The diffuse reflection layer is the layer including a light reflective material such as titanium dioxide, yttrium oxide, zirconium oxide, or aluminum oxide (alumina). For the light reflective material, considering that the diffuse reflection layer is provided on the front side panel or screen, absorption of the radiation such as X rays needs to be small and it is desirable that a refractive index is high from a point of sharpness of reflection. Therefore, the titanium dioxide is preferable as the light reflective material, and in particular a rutile type of the higher refractive index is preferable. However, since the titanium dioxide indicates high reflectance in a region of a wavelength longer than about 430 nm, it is suitable in the case that the radiation absorptive phosphor is Gd_2O_2S:Tb or the like. In the case that a light emission wavelength of the radiation absorptive phosphor is shorter than about 430 nm, a material without the absorption in the light emission wavelength region such as the aluminum oxide, the yttrium oxide or the zirconium oxide needs to be selected.

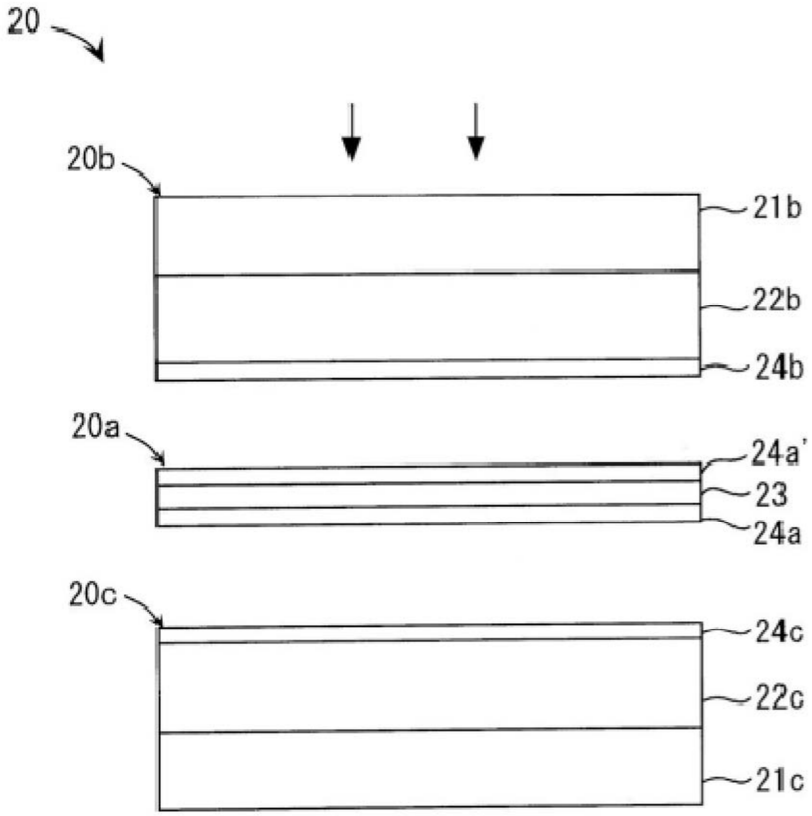
[0086] For the diffuse reflection layer, from the point of sensitivity and sharpness, it is desirable to achieve high light reflectance with a layer thickness as thin as possible. In the case that the diffuse reflection layer exists alone, it is preferable that a relation between the layer thickness and the diffuse reflectance is in a region indicated by

diagonal lines in FIG. 15. Here, the diffuse reflectance is, as described in detail in Japanese Unexamined Patent Application Publication No. H09-21899, the reflectance obtained for a standard white board using an integrating sphere for which $BaSO_4$ powder is uniformly applied on the entire surface. For that, an average particle diameter of the light reflective material is generally in the range of 0.1 to 0.5 μm, and is preferably in the range of 0.1 to 0.4 μm. A volume filling ration in the diffuse reflection layer of the light reflective material is generally in the range of 25 to 75%, and is preferably 40% or greater. The layer thickness of the diffuse reflection layer is generally in the range of 15 to 100 μm.

[0087] The diffuse reflection layer can be formed by preparing a coating liquid by mixing and dispersing the light reflective material in a minute particle shape and the binder in the solvent and then applying and drying it on the support. The binder and the solvent can be appropriately selected from the ones that can be used for the phosphor layer and used.

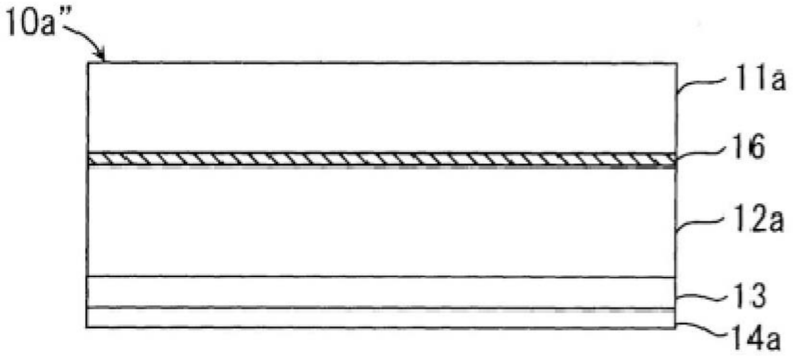
[0088] Instead of providing the diffuse reflection layer on the support, the light reflective material as described above may be dispersed and contained in the support itself to attain the support having a diffuse reflection function. Also, as described later, the diffuse reflection layer and/or the support may be colored. Note that it is desirable to provide the diffuse reflection layer or the support having the diffuse reflection function also in the case of using the fluorescent screen on the front side. Also, when used for the panel or the screen used on the back side, it is easy to design the one with excellent sensitivity."

f. "[Fig. 2]



g. Taking the description of paragraph [0032] into account, it can be read out from [Fig. 2] that "the front-side fluorescent screen 20b forms the radiation image forming material 20 with the back-side fluorescent screen 20c and the radiation image conversion panel 20a of a center between them".

h. "[Fig. 14]



Taking matters describes in the aforementioned Evidence A No. 1 and drawings into account generally, it is recognized that Evidence A No. 1 describes the following inventions (hereinafter referred to as "A1 Invention").

"the front-side fluorescent screen 20b forms the radiation image forming material 20 with the back-side fluorescent screen 20c and the radiation image conversion panel 20a of a center between them,

the front-side fluorescent screen 20b comprises the support 21b, the radiation absorptive phosphor layer 22b, and the protective layer 24b in order,

the support 21b is a sheet or a film made of polyimide resin having a thickness of 50 micrometers to 1 mm

the radiation absorptive phosphor layer 22b consists of a vapor deposition film which is a needle-like crystal film of CsI:TI

a diffuse reflection layer is provided between the support 21b and the radiation absorptive phosphor layer 22b

the diffuse reflection layer is formed on a support by carrying out application drying of coating liquid prepared after carrying out mixing and dispersing of titanium dioxide and binder into a solvent."

B Comparison of the Invention 1 with A1 Invention

"Support 21b" in A1 Invention corresponds to the "substrate" in the Invention 1.

As the "radiation absorptive phosphor layer 22b" in A1 Invention comprises "a vapor deposition film made of a needle-like crystal film of CsI:TI", the "radiation absorptive phosphor layer 22b" corresponds to the "scintillator layer having the columnar crystal structure formed by deposition process by making into raw material an additive agent containing cesium iodide and one or more kinds of thallium" in the Invention 1.

As the "diffuse reflection layer" of A1 Invention is "provided" "between the support 21b and the radiation absorptive phosphor layer 22b" and is "formed on a support by carrying out application drying of coating liquid prepared after carrying out mixing and dispersing of titanium dioxide and binder into a solvent", it corresponds to the "reflection layer" of the Invention 1 that "exists between the substrate and the scintillator layer having the columnar crystal structure" and comprise "the white pigment", which is the "titanium oxide", and "binder resin".

The "radiation image forming material 20" of A1 Invention corresponds to the

"imaging panel" of the Invention 1.

As "the front-side fluorescent screen 20b" of A1 Invention "comprises the support 21b, the radiation absorptive phosphor layer 22b, and the protective layer 24b in order" for which "the diffuse reflection layer is provided between the support 21b and the radiation absorptive phosphor layer 22b" and "forms the radiation image forming material 20 with the back-side fluorescent screen 20c and the radiation image conversion panel 20a of a center between them, the front-side fluorescent screen 20b" of A1 Invention corresponds to "the scintillator panel" of the Invention 1 that has "the reflection layer on the substrate" and "the scintillator layer" and "comprises the imaging panel".

In A1 Invention, as it is the common general knowledge for a person skilled in the art that "CsI:TI" receives the radiation and emits light, "the front-side fluorescent screen 20b" of A1 Invention that comprises "the vapor deposition film which is the needle-like crystal film of CsI:TI" for which has "the radiation absorptive phosphor layer 22b" corresponds to "the scintillator panel" of the Invention 1 in that "absorbing the energy of incident radiation and emitting electromagnetic wave according to its strength".

C Acknowledgment of corresponding features and different features

Generalizing the foregoing, it is acknowledged that the Invention 1 and A1 Invention have corresponding features in that "the scintillator panel having a reflection layer and a scintillator layer of the columnar crystal structure formed by deposition process by making into raw material an additive agent containing cesium iodide and at least one or more kinds of thallium on a substrate wherein

the reflection layer exists between the substrate and the scintillator layer of the columnar crystal structure and comprises the white pigment of titanium oxide and binder resin, and

the scintillator panel absorbs the energy of incident radiation and emits electromagnetic wave according to its strength and forms the imaging panel" and that they have different features in the following points.

<The different feature 1>

While the scintillator layer of the Invention 1 having the columnar crystal structure "is formed by growing the columnar crystal structure body on the surface of the reflection layer" "comprises the white pigment of titanium oxide and binder resin", "the radiation absorptive phosphor layer 22b" "that comprises the vapor deposition

film which is a needle-like crystal film of CsI:TI" of A1 Invention does not have the aforementioned matter specifying the invention.

<The different feature 2>

While the scintillator panel of the Invention 1 "constitutes an imaging panel together with an output substrate absorbing the aforementioned electromagnetic wave and outputting an image signal, and the aforementioned output substrate is provided with a photoelectric conversion element", "the front-side fluorescent screen 20b" of A1 Invention constituting "the radiation image forming material 20" but does not have the aforementioned matter specifying the invention.

D Examination and judgment on different features

(A) Regarding different feature 1

As the demandant alleges that "As Evidence A No. 1 describes a radiation absorptive phosphor layer, which is a vapor deposition film made of a needle-like crystal film of CsI:TI, and a diffuse reflection layer containing light reflective materials, such as a titanium dioxide, yttrium oxide, zirconium oxide, and an aluminum oxide and a binder, there is no difference in the Invention 1 and the fluorescent screen described in Evidence A No. 1 between the constitution of the scintillator layer and that of light reflection layer, and growing the scintillator layer made of CsI of Ti dope on the surface of the reflection layer by an evaporation method is a well-known art (See paragraph [0013] of Evidence A No. 7) and a combination of a specific scintillator layer and a specific reflection layer are not unique of the Invention 1. Therefore, the different feature B is a matter that could be easily conceived by a person skilled in the art based on Evidence A No. 1 Invention and the well-known art (Evidence A No. 7). (See "4. (4) A (A)"), the body examines the aforementioned allegation by the demandant.

Paragraphs [0051] and [0053] of Evidence A No. 1 disclose that the radiation absorptive phosphor layer may be a vapor deposition film, and that the example of a case where the phosphor layer consists of the aggregate of the absorption-of-radiation phosphor such as the vapor deposition film is the needle-like crystal film including CsI:TI (See the aforementioned "6. (1) A d"), and paragraphs [0084] to [0088] of Evidence A No. 1 disclose that the diffuse reflection layer is provided between a support and a radiation absorptive phosphor layer and can be formed on a support by carrying out application drying of coating liquid prepared after carrying out mixing and dispersing of fine particle such as titanium dioxide, the light reflective material

and binder into a solvent, (See the aforementioned "6. (1) A e") but do not disclose that the radiation absorptive phosphor layer is formed by growing the columnar crystal body by evaporation on the surface of the diffuse reflection layer that is formed on a support by carrying out application drying of coating liquid prepared after carrying out mixing and dispersing of fine particle such as titanium dioxide, the light reflective material and binder into a solvent.

Further, paragraph [0013] of Evidence A No. 7 describes that "[0013] The radiation image sensor concerning a 1st embodiment pastes an image sensor together to a scintillator panel, and is constituted. It describes about a scintillator panel first. As shown in Fig. 1, the scintillator panel 8 is provided with the glass substrates 26 which have planar shape, and an Al film 13 serving as a reflecting film formed to a thickness of 100 nm by the vacuum evaporation method is formed in the surface of one of these. The scintillator 16 of the columnar structure which converts the radioactive ray which entered as visible light is formed in the surface of this Al film 13 by the thickness which is 250 micrometers. CsI of TI dope grown up with vacuum deposition is used for this scintillator 16". However, although it can be read out from the foregoing description that the scintillator 16 of the columnar structure by CsI of TI dope by deposition system is formed on the surface of the Al film 13 as the reflection film which is formed by vacuum evaporation on the glass substrates 26, it is not disclosed that the scintillator 16 of the columnar structure by CsI of TI doped by a deposition system is formed on the surface of the reflection layer comprising the white pigment of titanium oxide and binder resin.

Further, when a film is formed by the deposition system, as a person skilled in the art commonly knows that whether or not the growth of a film is successful depends on the quality and structure of the surface of material which is the subject of deposition system, it is not a matter that could be easily conceived by a person skilled in the art from the aforementioned technology disclosed in Evidence A No. 7 that a needle-like crystal film of CsI:TI formed on the diffuse reflection layer of A1 invention is formed by direct deposition method on the diffuse reflection layer that is formed on a support by carrying out application drying of coating liquid prepared after carrying out mixing and dispersing of fine particle such as titanium dioxide and binder into a solvent. Further, if the aforementioned technology disclosed in Evidence A No. 7 is applied to A1 Invention, the diffuse reflection layer of A1 invention is used as Al vapor deposition film, and the scintillator 16 of the columnar structure of CsI of TI dope by deposition system is formed on the surface of the Al vapor deposition film. Then, it is not a matter easily conceived by a person skilled

in the art to "form the needle-like crystal film of CsI:TI by a direct deposition system to be formed on the reflection layer" "made of the white pigment of titanium oxide and binder resin", which is the matter specifying the Invention 1.

Although the body examined carefully the content of disclosure in Evidences A No. 1 to A No. 13 submitted by the demandant, nothing discloses the technology that forms "the reflection layer and the scintillator layer having the columnar structure formed by a deposition process by making into raw material additive agent containing cesium iodide and thallium" on "the surface of the reflection layer" made of "one or more kinds of white pigment chosen from alumina, yttrium oxide, zirconium oxide and titanium oxide and binder resin" on the "substrate" "by growing the columnar crystal body on the reflection layer".

As the result of the aforementioned examination, the allegation of the demandant cannot be accepted, and the matter specifying the invention pertaining to the aforementioned different feature 1 cannot easily be conceived from the content of disclosure in Evidences A No. 1 to A No. 13 even by a person skilled in the art.

(B) Regarding different feature 2

A1 Invention has "a radiation absorptive phosphor layer 22b" comprising "a vapor deposition film made of a needle-like crystal film of CsI:TI", and describes that "CI:TI" receives radiation and emit light is a common general knowledge for a person skilled in the art.

Further, A No. 7 discloses that Al film 13 as a reflecting film is formed by evaporation on a glass substrate 26, and a scintillator panel 8 is provided with a scintillator 16 having CsI of TI dope grown with evaporation on the AI film and a radiation image sensor is constituted by placing the scintillator panel 8 at the point side of the scintillator 16 opposing an image sensor 20 (See paragraphs [0013] to [0016] and [Fig. 2]) and that the radioactive ray is converted to light by scintillator 16 and detected by the image sensor 20 (See paragraph [0016]). That means that Evidence A No. 7 discloses the specific matter pertaining to the aforementioned different feature 2.

Here, as the technical field of A1 Invention and the scintillator panel described in Evidence A No. 7 is same in that both of them convert radioactive ray to light by the scintillator, the constitution which adopts the image sensor 20 and its layout disclosed by the aforementioned Evidence A No. 7 as the system to detect light by the scintillator layer of A1 Invention and arrives at the matter specifying the invention pertaining to the aforementioned different feature 2 could be easily conceived by a

person skilled in the art.

The demandee alleges that the invention of the case relates to the FPD system and A1 Invention relates to the CR system and that "as the method to take out images is different in the FPD system and the CR system, properties required for a light reflection film and problems are different. Therefore, it is the common knowledge in the industry that the constitution of the light reflection film in the respective system cannot be changed flexibly and the scintillator panel of the FPD system and the CR system cannot be simply transferred". (See line 14 to 18 on page 12 of the "Written Procedures for Statement 1"). However, A1 Invention relates to "the front-side fluorescent screen 20b" provided with "the radiation absorptive phosphor layer 22b" which converts incident radioactive rays into light, and it is obvious for a person skilled in the art that they can be commonly used in the CR system and the FR system as a member to convert incident radioactive ray into light. Therefore, the allegation of the demandee cannot be adopted.

(C) Regarding the effect of the Invention 1

The demandant alleges that "based on the descriptions of paragraphs [0035] and [0038] of the Description, it is known that a reflection layer functions as an adhesive layer effectively is the case where the reflection layer contains polymer whose glass-transition temperature (Tg) is 30-100 degrees C as a binder and the formation of the scintillator layer is carried out by evaporation at substrate temperature being at 150 degrees C - 250 degrees C. However, such constitution is not defined in the Invention 1 at all (See "4. (4) D (A) b.") However, the fact that the glass-transition temperature of the binder resin becomes lower than the substrate temperature when the scintillator layer having columnar crystal structure is formed by a deposition system by making into raw material an additive agent containing cesium iodide and one or more kinds of thallium was the common general knowledge for a person skilled in the art at the time of application of the Patent, and, even if the restriction by specific matters of "the reflection layer contains polymer whose glass-transition temperature (Tg) is 30 to 100 degrees C as a binder" and "the formation of the scintillator layer is carried out by evaporation at substrate temperature being at 150 degrees C to 250 degrees C" are not described in the Invention 1, the Invention 1 has an effect that the "contact between the scintillator layer having the columnar crystal structure and the reflection layer is improved". Therefore, the aforementioned allegation of the demandant cannot be accepted.

Further, the demandant alleges that "even if the reflection layer functions as an

adhesive layer effectively in the Invention, it cannot be said that concave and convex on the surface of scintillator layer become good and the contact with the plane light-receiving element is improved for the following reasons. That is to say, if the scintillator layer having columnar crystal structure is formed by evaporation, regardless of whether the reflection layer functions as an adhesive layer effectively, the columnar crystal is grown abnormally by the splash at the time of evaporation, and concave and convex may arise on the surface of scintillator layer (See "4. (4) D (A) c."). However, as the concave and convex on the surface of scintillator layer by splash at the time of deposition system for the scintillator layer having the columnar crystal structure is not the problem to be solved of the Invention 1, the aforementioned allegation of the demandant cannot be accepted.

On the other hand, the effect alleged by the demandee that "even if there are concave and convex or irregularities on a substrate, as they are covered over by a reflection layer made of the white pigment and binder resin by growing a scintillator layer having a columnar crystal structure on the surface of the reflection layer made of the white pigment and binder resin, the influence of variability of roughness of the surface of the substrate can be eliminated, and a surface having a good smoothness (surface nature) can be obtained easily. This process can prevent an abnormal growth of the columnar crystal structure and can have the crystal grow neatly from the bottom. (See the aforesaid "5. (3) D (A)") is not described in the Description, scope of claims and drawings of the Patent and it cannot be recognized as inherently obvious and thus cannot be accepted.

However, as it is explicitly described in paragraphs [0035], [0038] and [0071] of the Description of the Patent that a reflection layer exists between a substrate and a scintillator layer having the columnar crystal structure, and the scintillator layer having the columnar crystal structure is formed by growing a columnar crystal body on the surface of the reflection layer made of at least one kind of white pigment chosen from alumina, yttrium oxide, zirconium oxide and titanium oxide and binder resin and the contact between the scintillator layer having the columnar crystal structure and the reflection layer is improved, it is obvious that the Invention 1 has the effect to improve the contact between the scintillator layer having the columnar crystal structure and the reflection layer and improve the sharpness thereby. Therefore, the Invention 1 exercises a special effect that cannot be expected by a person skilled in the art from the content of disclosure in Evidences A No. 1 to A No. 13.

E Summary of Reason for Invalidation 1 to Invention 1

As stated in the foregoing, it cannot be said that the Invention 1 can be easily conceived by a person skilled in the art from matters disclosed in A1 Invention and Evidences A No. 1 to A No. 13.

(2) Regarding Reason for Invalidation 2 to Invention 1 (Violation of Article 29 (2) of the Patent Act)

A Acknowledgment of inventions described in Evidence A No. 6

Evidence A No. 6 which was in the public domain prior to the application of the Patent describes the following technical matters together with drawings.

a. " [Claim 1]In a radiation sensitizing screen which has a light reflection layer and a phosphor layer sequentially from the support side on a support, the light reflection layer forms many gaps into resin, and an interface of a gap and resin is a plate-like gap which has a surface mainly substantially parallel to a surface of the support, and a radiation sensitizing screen, wherein 5 vol% or more and 80 vol% or less of gaps are contained into a light reflection layer, averages of a major axis of a gap are 1 micrometer or more and 30 micrometers or less and thickness of a light reflection layer is 30 micrometers or more."

b."[0001]
[Technical field of the Invention] The present invention relates to a radiation sensitizing screen and a radiation image conversion panel, has a light reflection layer in the support side of a phosphor layer or a photostimulable phosphor layer in more detail, or relates to the radiation sensitizing screen and radiation image conversion panel in which the support itself has light reflective ability.

c. "[0037] What is shown below is mentioned as a preferable phosphor used for the radiation sensitizing screen of the present invention. [0038] _____(omitted) iodide system phosphor (CsI: Na, CsI:Tl, NaI, KI:TI, etc.),_____(omitted) The phosphor used for the present invention is not limited to these, and, the phosphors in which visible or luminescence of an intravital ultraviolet range is shown by the exposure of a radioactive ray can be used".

Taking into account matters described in the aforementioned Evidence A No. 6 and drawings into account generally, it is recognized that Evidence A No. 6 describes the following inventions (hereinafter referred to as "A6 Invention").

"In a radiation sensitizing screen which has a light reflection layer and a phosphor layer sequentially from the support side on a support, the light reflection layer forms many gaps into resin, and an interface of a gap and resin is a plate-like gap which has a surface mainly substantially parallel to a surface of the support, and a radiation sensitizing screen, wherein 5 vol% or more and 80 vol% or less of gaps are contained into a light reflection layer, averages of a major axis of a gap are 1 micrometer or more and 30 micrometers or less and thickness of a light reflection layer is 30 micrometers or more wherein the phosphor of the phosphor layer is CsI:TI."

B Comparison of Invention 1 with A6 Invention

"Support" of A6 Invention corresponds to the "substrate" in the Invention 1

As the "phosphor layer" of A6 Invention is "the phosphor of the phosphor layer is CsI:TI", this corresponds to "scintillator layer" "formed" "by making into raw material an additive agent containing cesium iodide and one or more kinds of thallium" in the Invention 1.

As the "light reflection layer" of A6 Invention is the light reflection layer of "In a radiation sensitizing screen which has a light reflection layer and a phosphor layer sequentially from the support side on a support", this corresponds to "reflection layer" that "exists between" the "substrate" and "scintillator layer" in the Invention 1.

"Radiation sensitizing screen" of A6 Invention corresponds to the "scintillator panel" in the Invention 1.

C Acknowledgment of corresponding features and different features

Generalizing the foregoing, it is acknowledged that the Invention 1 and A6 Invention have corresponding features in that

"scintillator panel having a reflection layer and a scintillator layer formed by making into raw material an additive agent containing cesium iodide and one or more kinds of thallium on a substrate wherein the reflection layer exists between the substrate and the scintillator layer" and that they have the following different features.

<The different feature 3>

While the scintillator layer of the Invention 1 has "the columnar crystal structure formed by deposition process" "formed by growing the columnar crystal body on the surface of the reflection layer" made of "at least one kind of the white pigment chosen from alumina, yttrium oxide, zirconium oxide and titanium oxide and binder resin",

the "phosphor layer" of A6 Invention which "the phosphor of the phosphor layer is CsI:TI" does not have the aforementioned matter specifying the invention.

<The different feature 4>

While the reflection layer of the Invention 1 is made of "at least one kind of the white pigment chosen from alumina, yttrium oxide, zirconium oxide and titanium oxide and binder resin", "light reflection layer" of A6 Invention "forms many gaps into resin" and does not have the aforementioned matter specifying the invention.

<The different feature 5>

While the scintillator panel of the Invention 1 "is a scintillator panel absorbing the energy of incident radiation and emitting electromagnetic wave according to its strength composes an imaging panel together with an output substrate absorbing the aforementioned electromagnetic wave and outputting an image signal, and the aforementioned output substrate is provided with a photoelectric conversion element", "a radiation sensitizing screen" of A6 Invention does not have the aforementioned matter specifying the invention.

D Examination and judgment on different features

As already examined in the aforementioned "6. (1) D (A)", the different feature 3 cannot easily be conceived even by a person skilled in the art from the content of disclosure in Evidences A No. 1 to A No. 13. Further, in the Invention 1, a reflection layer exists between a substrate and a scintillator layer having the columnar crystal structure, and the scintillator layer having the columnar crystal structure is formed by growing columnar crystal body on the surface of the reflection layer made of at least one kind of white pigment chosen from alumina, yttrium oxide, zirconium oxide and titanium oxide and binder resin. Therefore, the Invention 1 has the effect to improve the contact between the scintillator layer having the columnar structure and the reflection layer and improve the sharpness thereby. Therefore, the Invention 1 exercises special effect that cannot be expected by a person skilled in the art from the content of disclosure in Evidences A No. 1 to A No. 13.

E Summary of Reason for Invalidation 2 to Invention 1

As the result of the aforesaid examination, similarly as examined in "6. (1) D (A)" in the foregoing, it cannot be said that the Invention 1 is an invention that can be easily conceived by a person skilled in the art from matters disclosed in A6 Invention

and Evidences A No. 1 to A No. 13.

(3) Regarding Reason for Invalidation 3 to Invention 1 (Violation of Article 29 (2) of the Patent Act)
A Acknowledgment of inventions described in Evidence A No. 8

Evidence A No. 8 which was in the public domain prior to the application of the Patent describes the following technical matters together with drawings.

a. "[0001]
[Technical field of the Invention] The present invention relates to a radiological image conversion panel, an image reading method, and an image reader."

b. "[0062] The radiological image conversion panel of the present invention consists of the stratum functional and phosphor layers, such as an undercoat layer provided by a support and its surface if needed, generally, and the protection film for protecting the surface of a phosphor layer physically and chemically is further provided.
[0063] The phosphor layers are roughly divided into one which is formed by applying on a support the coating liquid which comprises a phosphor and polymer resin which carries out distributed holding of this (this is also hereafter called coating type phosphor layer) and one which is formed by a vapor growth system (this is also hereafter called vapor-deposited type phosphor layer)."

c. "[0094] <<Vapor-deposited type phosphor layer>> Next, it describes about a vapor-deposited type phosphor layer.
[0095] As a photostimulable phosphor which can be used by a vapor-deposited type phosphor layer, for example, the phosphors denoted by $BaSO_4$:Ax currently described in JP48-80487A, the phosphors denoted by $MgSO_4$:Ax currently described in JP48-80488A, the phosphors denoted by $SrSO_4$:Ax currently described in JP48-80489A, the phosphors which added at least one type in Mn, Dy, and Tb to Na_2SO_4, $CaSO_4$, $BaSO_4$, etc., currently described in JP51-29889A, the phosphors such as BeO, LiF, $MgSO_4$, and CaF_2, etc., currently described in JP52-30487A, the phosphors, such as $Li_2B_4O_7$:Cu, Ag, etc. currently described in JP53-39277A, the phosphors such as Li_2O - (Be_2O_2) x:Cu, and Ag, currently described in JP54-47883A, the phosphors denoted by SrS:Ce, Sm, SrS:Eu, Sm, La_2O_2S:Eu, Sm, and (Zn, Cd) S:Mnx described in US3,859,527B, are raised. ZnS:Cu, Pb phosphors described in

JP55-12142A, the ulmin acid barium phosphors by which a general formula is raised with BaO - xAl_2O_3:Eu, and the alkaline-earth-metals silicate system phosphors by which a general formula is expressed with M(II)O - $xSiO_2$:A are raised.

[0096] The alkaline earth fluoridation halogenide phosphors by which the general formula currently described in JP55-12143A is expressed with $(Ba_{1-x-y}Mg_xCa_y)F_x:Eu^{2+}$, the phosphors by which the general formula currently described in JP55-12144A is expressed with LnOX:xA, the phosphors by which the general formula currently described in JP55-12145A is expressed with $(Ba_{1-x}M(II)_x)F_x:yA$, the phosphors by which the general formula currently described in JP55-84389A is expressed with BaFX:xCe, yA, the rare earth element activation divalent metal fluoro halide phosphors by which the general formula currently described in JP55-160078A is expressed with M(II)FX - xA:yLn, the phosphors denoted by general formula ZnS:A, CdS:A, (Zn, Cd) S:A, X, the phosphors denoted by one of following general formula $xM_3(PO_4)_2$ - NX_2:yA or $xM_3(PO_4)_2$:yA currently described in JP59-38278A, the phosphors denoted by one of following general formula $nReX_3$ - mAX'_2:xEu or $nReX_3$ - mAX'_2:xEu, ySm currently described in JP59-155487A, and, the alkali halide phosphors denoted by following general formula M(I)X - aM(II)X'$_2$ - bM(III)X"$_3$:cA currently described in JP61-72087A, and the bismuth activation alkali halide phosphors denoted by general formula M(I)X:xBi currently described in JP61-228400A, etc. are raised.

[0097] Especially, an alkali halide phosphor is preferable, in that it is easy to make a pillar-shaped photostimulable phosphor layer form by methods such as vacuum evaporation and sputtering.

[0098] It is preferable that RbBr and a CsBr system phosphor are high-intensity and high definition also in an alkali halide phosphor as mentioned above and especially a CsBr system phosphor is particularly preferable."

d. "[0114]<<Support>> The support used for the radiological image conversion panel of the present invention is now described.

[0115] As a support used for the radiological image conversion panel of the present invention, various polymer materials, glass, metal, etc. are used and, for example, it is preferable to use sheet glass, such as quartz, boro-silicated glass, and chemical tempered glass, or plastic films, such as a cellulose acetate film, polyester film, a polyethylene terephthalate film, a polyamide film, a polyimide film, a triacetate film and a polycarbonate film, the metal sheets, such as aluminum, iron, copper, and chromium, or the metal sheet which has a coating layer of hydrophilic fine particles.

The surface of these supports may be a glide plane, and it is good also as a mat face in order to improve an adhesive property with a photostimulable phosphor layer. In the present invention, in order to improve the adhesive property of a support and a photostimulable phosphor layer, an adhesive layer may be preliminarily provided on the surface of a support if needed."

e. "[0117] The reflection layer may be provided between a support and a photostimulable phosphor layer. <<Reflection layer>> Although what carried out distributed content of the white pigment into resin is used as a reflection layer, for example, thereby, sensitivity can be improved. As a manufacturing method of this reflection layer, the following methods are mentioned, for example.
[0118](1) To distribute resin and a white pigment in an organic solvent, carry out application drying on a support, and consider it as a reflection layer.
[0119](2) To distribute a white pigment in molten resin, roll to film state by co-extrusion in resin for supports and/or extend and provide a pigment dispersion layer on a support"

f." [0121] As a white pigment, titanium oxide, a zinc oxide, an aluminum oxide, calcium carbonate, barium sulfate, etc. are mentioned. Titanium oxide and calcium carbonate are especially preferable. As resin which distributes pigment, for example, they are polyurethane and polyester, (for example, polyethylene terephthalate, polyethylene naphthalate), a vinyl chloride copolymer (for example, a polyvinyl chloride acetate copolymer and a vinyl chloride vinylidene chloride copolymer, vinyl chloride acrylonitrile copolymer), butadiene acrylonitrile copolymer, Polyamide resin, a polyvinyl butyral, a cellulosic (nitrocellulose etc.), a styrene butadiene copolymer, various kinds of synthetic rubber system resin, phenol resin, an epoxy resin, melamine resin, phenoxy resin, silicon resin, acrylic system resin, urea formamide resin, etc. are mentioned. It is particularly preferable to use polyurethane, polyester, a VCM/PVC system copolymer, a polyvinyl butyral, or a nitrocellulose".

Taking into account matters described in the aforementioned Evidence A No. 8 and drawings, it is recognized that Evidence A No. 8 describes the following inventions (hereinafter referred to as "A8 Inventions.").

"A radiological image conversion panel comprising stratum functional and phosphor layers, such as an undercoat layer provided by a support and its surface if needed, and

the protection film for protecting the surface of a phosphor layer physically and chemically is provided further wherein, and

the polyimide film is preferable for the support,

the phosphor layer is a columnar photostimulable phosphor layer formed by a vapor growth system,

a reflection layer may be provided between the support and the photostimulable phosphor layer, which is formed by distributing resin and titanium oxide in an organic solvent, carrying out application drying on the support"

B Comparison of Invention 1 with A8 Invention

"Support" of A8 Invention corresponds to the "substrate" of the Invention 1.

As "phosphor layer" of A8 Invention is "a columnar photostimulable phosphor layer formed by a vapor growth system, which corresponds to "the scintillator layer having the columnar crystal structure formed by deposition system" of the Invention 1.

As "a reflection layer" of A8 Invention is "provided between the support and the photostimulable phosphor layer, which is formed by distributing resin and titanium oxide in an organic solvent, carrying out application drying on the support", which corresponds to "the reflection layer "that exists between the substrate and the scintillator layer having the columnar crystal structure" and is made of " "white pigment and binder resin" of "titanium oxide" of the Invention 1.

The "radiological image conversion panel" of A8 Invention corresponds to the "scintillator panel" of the Invention 1.

C Acknowledgment of corresponding features and different features

Generalizing the foregoing, it is acknowledged that the Invention 1 and A8 Invention have corresponding features in that they have

"a scintillator panel having a reflection layer and a scintillator layer having the columnar crystal structure formed by the deposition system on the substrate wherein the reflection layer exists between the substrate and the scintillator layer having the columnar crystal structure and is made of the white resin of titanium oxide and binder resin" and that they have the following different features.

<The different feature 6>

While the scintillator layer of the Invention 1 has "the columnar crystal structure formed by deposition system by making into raw material an additive agent containing cesium iodide and one or more kinds of thallium" and "is formed on the

surface of the reflection layer" made of "at least one kind of the white pigment chosen from alumina, yttrium oxide, zirconium oxide and titanium oxide and binder resin the white pigment and binder resin" "by growing the columnar crystal body on the surface of the reflection layer", the phosphor layer which is "columnar photostimulable phosphor layer" of A8 Invention which is "formed by a vapor growth system" does not have the aforementioned matter specifying the invention.

<The different feature 7>

While the scintillator panel of the Invention 1 "is a scintillator panel absorbing the energy of incident radiation and emitting electromagnetic wave according to its strength composes an imaging panel together with an output substrate absorbing the aforementioned electromagnetic wave and outputting an image signal, and the aforementioned output substrate is provided with a photoelectric conversion element", the "radiological image conversion panel" of A8 Invention does not have the aforementioned matter specifying the invention.

D Examination and judgment on different features

As already examined in the aforementioned "6. (1) D (A)", the different feature 6 cannot easily be conceived even by a person skilled in the art from the content of disclosure in Evidences A No. 1 to A No. 13. Further, in the Invention 1 as aforementioned in "6. (1) D (C)", a reflection layer exists between a substrate and a scintillator layer having the columnar crystal structure, and the scintillator layer having the columnar crystal structure is formed by growing columnar crystal body on the surface of the reflection layer made of at least one kind of white pigment chosen from alumina, yttrium oxide, zirconium oxide and titanium oxide and binder resin. Therefore, the Invention 1 has the effect to improve the contact between the scintillator layer having the columnar crystal structure and the reflection layer and improve the sharpness thereby. Therefore, the Invention 1 exercises a special effect that cannot be expected by a person skilled in the art from the content of disclosure in Evidences A No. 1 to A No. 13.

E Summary of Reason for Invalidation 3 to Invention 1

As the result of the aforesaid examination, similarly as examined in "6. (1) D (A)" in the foregoing, it cannot be said that the Invention 1 is an invention that can be easily conceived by a person skilled in the art from matters disclosed in A8 Invention and Evidences A No. 1 to A No. 13.

(4) Regarding Reason for Invalidation 1 to Reason for Invalidation 3 to Invention 2 to Invention 7

As the Invention 2 to the Invention 7 are inventions that cite and further restrict the Invention 1, similarly in the case of aforementioned "6. (1) to (3)", it cannot be said that Invention 2 to the Invention 7 are inventions that can easily be conceived by those skill in the art from matters disclosed in A1 Invention and Evidence A No. 1 to Evidence A No. 13, or from matters disclosed in A6 Invention and Evidence A No. 1 to Evidence A No. 13 or from matters disclosed in A8 Invention and Evidence A No. 1 to Evidence A No. 13.

7. Conclusion

As examined in the foregoing, the patent relating to inventions pertaining to Claims 1 to 7 of the Patent cannot be invalidated by the allegation and means of proof by the demandant.

The cost required for the trial shall be borne by the demandant pursuant to the provisions of Article 61 of the Code of Civil Procedure which is mutatis mutandis applied in Article 169(2) of the Patent Act.

Therefore, the trial decision shall be made as described in the conclusion.

February 16, 2012

Chief administrative judge: MURATA, Naohide
Administrative judge: ITO, Yoshihito
Administrative judge: KITAGAWA, Kiyonobu