Appeal decision

Appeal No. 2019-10589

Appellant Mitsubishi Heavy Industries Air-Conditioning & Refrigeration Corporation

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The case of appeal against the examiner's decision of refusal of Japanese Patent Application No. 2017-6259, entitled "SNOWFALL SYSTEM OF CRYSTAL SNOW" [the application published on July 26, 2018: Japanese Unexamined Patent Application Publication No. 2018-115794] has resulted in the following appeal decision:

Conclusion

The appeal of the case was groundless.

Reason

No. 1 History of the procedures

The present application is an application filed on January 17, 2017, reasons for refusal were notified as of November 1, 2018, a written opinion and a written amendment were submitted on December 19, 2018, and a decision of refusal was issued as of May 14, 2019 (date of dispatch: May 16, 2019); against this, an appeal against the examiner's decision of refusal was made on August 8, 2019, and simultaneously a written amendment was submitted.

No. 2 Decision to dismiss amendment on the amendment filed on August 8, 2019

[Conclusion of Decision to Dismiss Amendment]

The amendment filed on August 8, 2019 (hereinafter, referred to as "the Amendment") shall be dismissed.

[Reason]

1 Details of Amendment

(1) Claims before the Amendment

The recitation of Claim 1 of the scope of claims amended by the written amendment submitted on December 19, 2018 before the Amendment is as follows.

"[Claim 1]

A snowfall system of crystal snow, comprising, within spaces divided vertically by a partition extending in a horizontal direction: a crystal snow manufacturing part in an upper part; and a crystal snow snowfall part in a lower part, wherein

the crystal snow manufacturing part comprises a rotary air-permeable-film device including a mesh-like film body endlessly laid between an upper roller and a lower roller, at least one of the rollers being capable of rotary drive, and a crystal snow dropping body having a front end edge spaced apart from an outer surface of the mesh-like film body in the proximity to the lower roller, and generates crystal snow on an outer surface of the mesh-like film body by wet air including water vapor under the freezing point and above ice saturation, wherein

the crystal snow snowfall part comprises a snow moistening device to moisten crystal snow during snowfall of crystal snow manufactured by the crystal snow manufacturing part, and a temperature and humidity adjustment device to adjust temperature and humidity within the space of the crystal snow snowfall part, wherein

the partition is a plurality of rollers that are arranged in a manner being separated at predetermined intervals in such a way that outer peripheral surfaces are made to face each other in parallel, and are capable of rotating in a direction toward a narrowest portion between adjacent rollers from an upper side, the plurality of rollers being arranged in such a way that the rollers can receive crystal snow dropping on a space above the narrowest portion, and wherein

each of the rollers constitutes a rotary brush body hair-transplanted on the outer peripheral surface, and, in a narrowest portion between adjacent rollers, a partition is formed without consolidation of crystal snow by overlapping the brushes."

(2) Claims after the Amendment

By the Amendment, the recitation of Claim 1 of the scope of claims was amended as follows.

"[Claim 1]

A snowfall system of crystal snow, comprising, within spaces divided vertically by a partition extending in a horizontal direction: a crystal snow manufacturing part in an upper part; and a crystal snow snowfall part in a lower part, wherein

the crystal snow manufacturing part comprises a rotary air-permeable-film device including a mesh-like film body endlessly laid between an upper roller and a lower roller, at least one of the rollers being capable of rotary drive, and a crystal snow dropping body having a front end edge spaced apart from an outer surface of the mesh-like film body in the proximity to the lower roller, and generates crystal snow on an outer surface

of the mesh-like film body by wet air including water vapor under the freezing point and above ice saturation, wherein

the crystal snow snowfall part comprises a snow moistening device to moisten crystal snow during snowfall of crystal snow manufactured by the crystal snow manufacturing part, and a temperature and humidity adjustment device to adjust temperature and humidity within the space of the crystal snow snowfall part, wherein

the partition is a plurality of rollers that are arranged in a manner being separated at predetermined intervals in such a way that outer peripheral surfaces are made to face each other in parallel, and are capable of rotating in a direction toward a narrowest portion between adjacent rollers from an upper side, the plurality of rollers being arranged in such a way that the rollers can receive crystal snow dropping on a space above the narrowest portion, wherein

each of the rollers constitutes a rotary brush body hair-transplanted on the outer peripheral surface, and, in a narrowest portion between adjacent rollers, a partition is formed without consolidation of crystal snow by overlapping the brushes, and wherein

the each number of revolutions of the plurality of rollers is set so as not to generate large snowflakes caused by branches of each piece of new crystal snow intertangling with each other by corresponding the rotary air-permeable-film device rotating once with respect to crystal snow dropped by the crystal snow dropping body of the corresponding rotary air-permeable-film device in a space above the corresponding narrowest portion."

(The underlined portions are the amended portions.)

2 Propriety of amendment

2-1 Regarding purpose of amendment

The above-mentioned amendment is one that performs amendment, regarding "a plurality of rollers" that is a matter necessary for specifying the invention recited in Claim 1 before amendment, as "the each number of revolutions of the plurality of rollers is set so as not to generate large snowflakes caused by branches of each piece of new crystal snow intertangling with each other by corresponding the rotary air-permeable-film device rotating once with respect to crystal snow dropped by the crystal snow dropping body of the corresponding rotary air-permeable-film device in a space above the corresponding narrowest portion".

However, in the recitation of "is set so as not to generate large snowflakes caused by branches of each piece of new crystal snow intertangling with each other by corresponding the rotary air-permeable-film device rotating once" in the above-

mentioned amendment, the relation between "rotary air-permeable-film device rotating once" and "branches of each piece of new crystal snow intertangling with each other" is unclear, and, therefore, the technological content is unclear also as an invention recited in Claim 1.

Therefore, it cannot be said that the above-mentioned amendment is one for the purpose of any of cancellation of claims, restriction of the scope of claims, correction of errors, or the clarification of an ambiguous description.

The Appellant alleges, in the written request for appeal, to the effect that the Amendment is one for the purpose of so-called restriction in a limited way.

However, to say that an amendment is for the purpose of restriction of the scope of claims (Article 17-2(5)(ii) of the Patent Act), it is necessary, as a premise to discuss the widths of the scope of claims before and after amendment, that each of the recitations of the scope of claims is technically clear before and after amendment. However, as described above, the technological content of the invention recited in Claim 1 after amendment is unclear, and the above-mentioned premise is lacking, and thus the above Appellant's allegation cannot be adopted.

2-2 Regarding whether or not new matter exists

As examined in the above-mentioned (1), although, in the recitation of "is set so as not to generate large snowflakes caused by branches of each piece of new crystal snow intertangling with each other by corresponding the rotary air-permeable-film device rotating once", the relation between "rotary air-permeable-film device rotating once" and "branches of each piece of new crystal snow intertangling with each other" is unclear, examination will be made hereinafter supposing that this means that, with respect to crystal snow dropped before, new crystal snow to be dropped after one rotation of the rotary air-permeable-film device intertangles.

In paragraph [0032] of the description or the drawings originally attached to the application (hereinafter, referred to as "Originally attached description and the like"), it is described that "the rotational speed of the plurality of rollers 306 may be set to 1 RPM to 2 RPM if the diameter of the rotary brush 314 is 50φ to 60φ, for example, to prevent large snowflakes from being generated by, on crystal snow dropped on the rotary brush 314, the next crystal snow falling from the same the rotary air-permeable-film device 10, causing branches of the crystal snow to intertangle with each other.".

That is, in Originally attached description and the like, although it is described that the rotational speeds of a plurality of rollers are set to prevent large snowflakes from being generated by, on crystal snow dropped on the rotary brush 314, the next crystal

snow falling from the same the rotary air-permeable-film device 10, causing branches of the crystal snow to intertangle with each other, the point that "the rotational speeds of a plurality of rollers" "are set so as not to generate large snowflakes caused by branches of each piece of new crystal snow intertangling with each other by corresponding the rotary air-permeable-film device rotating once" that is recited in the above-mentioned amendment is not described, and it cannot be said that this point is a matter that is obvious from Originally attached description and the like, either.

The Appellant alleges, in the written request for appeal, that "in the above-mentioned description, it is obvious that 'on crystal snow dropped on the rotary brush 314, the next crystal snow falling from the same the rotary air-permeable-film device 10' means that, by the rotary air-permeable-film device 10 rotating and passing the crystal snow dropping body provided adjacent to the lower roller, crystal snow generated on the film surface is dropped off, then crystal snow is generated on the film surface during one rotation and is dropped off again by the crystal snow dropping body, and the new crystal snow falls on the already dropped crystal snow.".

However, since, as also indicated in [FIG. 2] of the present application, the frost M is generated one piece right after the other on the surface of the mesh-like film body 12 of the rotary air-permeable-film device 10, and then falls to become the snow S, it is recognized that, without the rotary air-permeable-film device 10 rotating once, the snow S falls one piece right after the other. Then, "on crystal snow dropped on the rotary brush 314, the next crystal snow falling from the same the rotary air-permeable-film device 10" of paragraph [0032] is understood in such a way that it means that, without the rotary air-permeable-film device rotating once, the snow S falls from the mesh-like film body 12 one piece right after the other, and thus it cannot be understood as it means that, with respect to crystal snow dropped in advance, new crystal snow is dropped out after the rotary air-permeable-film device performs one rotation; therefore, the above-mentioned Appellant's allegation cannot be adopted.

Therefore, the Amendment is one that introduces a new technical matter in relation to the technical matters led by integrating all of Originally attached description and the like, and is not one which was made within the matters described in Originally attached description and the like.

2-3 Consideration on requirement for independent patentability

Assuming that the Amendment is one for the purpose of restriction of the scope of claims of Article 17-2(5)(ii) of the Patent Act, examination will be made hereinafter regarding whether or not the invention recited in Claim 1 after the Amendment

(hereinafter, referred to as "the Amended Invention") is one for which the Appellant can be granted a patent independently at the time of filing of the patent application (whether it complies with the provisions of Article 126(7) of the Patent Act as applied mutatis mutandis pursuant to the provisions of Article 17-2(6) of the same Act) (underlines were given by the body, and the same applies hereafter).

(1) Cited Document 1

In Japanese Unexamined Patent Application Publication No. 2016-6362 cited as Cited Document 1 in the reasons for refusal stated in the examiner's decision (hereinafter, referred to as "Cited Document 1"), there are described the following matters together with drawings.

(1-a) [Problem to be solved by the invention]
[0010]
In view of the above technical problems, an object of the present invention is to provide a method of generating a snowflake capable of changing the quality of snow as desired by forming snow grains into snowflakes.
In view of the above technical problems, it is an object of the present invention to provide a snowflake generating device which can be installed in an existing test room in an environmental test using snow, and has improved flexibility of test conditions in the test room.
In view of the above technical problems, it is an object of the present invention to provide a method of generating a snowflake in which a snow producing process and a snowfall process are separated, and, between these, snow grains made by the snow producing process are converted into snowflakes, and which can make the generated snowflakes fall as desired."

(1-b) "[0019]
Hereinafter, an environmental test method and an environmental test apparatus according to a first embodiment of the present invention will be described in detail with reference to the drawings.
First, when a snow environment test system is described, as shown in FIG. 1, the snow environment test system 10 utilizes artificial snow consisting of ice particles, and is configured to simulate snowfall to the vehicle V which is the test sample by the artificial snow, and, for that purpose, the snow environment test system 10 includes a snow producing part that produces artificial snow, a transport part that transports the snow

grains that have been produced, a diffusion part that diffuses the transported snow grains, a snowflake generation part that generates snowflakes from diffused snow grains, and a snowfall part that makes the generated snowflakes fall. Among these, a part of the transport part, the diffusion part, the snowflake generation part, and the snowfall part are arranged in the test room in which the vehicle V is arranged, and the snow producing part and the transport part are disposed outside the test room."

(1-c) "[0024]
The ice crusher (not shown) used to crush flake-like ice pieces into ice particles in the snow producing part mainly consists of a rotary feeder (not shown) placed at the top and a pair of ice-crushing drums (not shown) placed at the bottom; the supplied ice pieces are quantified by a rotary feeder, supplied to a pair of ice-crushing drums, crushed by a pair of the ice-crushing drums, and supplied to the snow supply pipe 40 as ice particles of predetermined particle diameters.
[0025]
When, in the diffusion part, the artificial snow diffusion device 34 is described, the artificial snow diffusion device 34 is used to diffuse transported ice particles over a desired diffusion range."

(1-d) "[0036]
In the narrowest portion 304, the adjacent rollers 306 are engaged with each other via the convexoconcave 310, and the upper space and the lower space of the test room 308 are substantially partitioned by the plurality of rollers 306. Therefore, this overcomes a problem that conventionally it is technically difficult to make snowflakes wet in the snowfall part, because, for example, in the upper part of the test room 308, it is necessary to maintain the temperature in the test room 308 below zero to produce artificial snow, and, in the lower part of the test room 308, the space of the snowfall part also has a similar temperature as a result of the upper and lower spaces being communicated with each other. In order to separate produced snow from the roller to simulate snowfall, the roller may be separately vibrated as a separation means, or air may be jetted from the inside of each roller 306 through the through hole 316 to cause the generated snowflakes be peeled off the surface of the carrier means.
[0037]
As a modification, as shown in FIGS. 11 and 12, the plurality of rollers 306 are arranged in the upper side in the test room 308 so as to divide the test room 308, each of the rollers 306 constitutes the rotary brush 314 hair-transplanted on the outer peripheral surface 312,

the outer peripheral surface 312 may be provided with a large number of through holes 316, and the separation means may eject air from the inside of the respective rollers 306 through the through holes 316.

The rotary brush 314 is made of, for example, a resin-made flexible material, and unlike the case of the rubber rollers 306, the tip may have a length of a degree that it contacts the outer peripheral surface 312 of the opposing roller 306. The diameter of the rotary brush 314 and the density of the rotary brush 314 on the outer peripheral surface 312 of the roller 306 may be appropriately determined from the viewpoint of the area on which the snow grains can adhere in the outer peripheral surface 312 of the roller 306 excluding the rotary brush 314.

The air may be ejected in a pulsed manner, and by setting the temperature of the air to cold air of -1°C. or less, it is possible to prevent the produced snowflake from melting by, even if the temperature in the test room 308 is zero or above, avoiding direct contact of this atmosphere with the rotary brush 314 and the roller 306. The density of the air through holes 316 may be determined from such a viewpoint.

[0038]

In the case of the rubber rollers 306, since the adhered snow grains are compacted in the narrowest portion 304 of the adjacent rollers 306, it is suitable for simulating hardened snowflakes, and in the case of the rollers 306 with the rotary brush 314 in contrast to the rubber rollers 306, the rollers do not consolidate the attached snow grains and the crystal snow is separated from the roller 306 by the rotary brush 314, and thus it is suitable for simulating snowfall. In any case, in both the case of the rubber rollers 306 and the rollers 306 with the rotary brush 314, in particular, by making the rotary brush 314 dense and making the length be a length extending to the outer peripheral surface 312 of the opposing roller 306, and by making the roller 306 be aligned horizontally, it is possible to divide the inside of the test room 308. As a result, it is possible to make, in the test room 308, the snow producing space and the snowfall space be areas of different temperature independently. For example, the upper space of the test room 308 is made to be less than zero degrees and is used as a snow producing space, while the lower space of the test room 308 is used as snowfall space, and when snow has been produced and snowfall simulation is performed using the generated snowflakes, it is also possible to make the snowfall space be more than zero degrees to make snow wet during snowfall.

As shown in FIG. 13, as a further modification, a plurality of rubber rollers 306 and the rollers 306 with the rotary brush 314 may be combined, and the rollers 306 with the rotary brush 314 are disposed above the plurality of rubber rollers 306 to generate snowflakes from snow grains by the rollers 306 with the rotary brush 314 first, and further to

consolidate the snowflakes by the plurality of rubber rollers 306.

In addition, the rollers 306 serving as the carrier means may be made of a chargeable material to attract charged snow grains to be conveyed toward the rollers 306 as the carrier by electrostatic force. In this case, the snow grains are charged with positive or negative charge according to the grain size while being transported towards the carrier, thereby forming in the carrier means snowflakes mixed with snow grains of different particle sizes and enabling to change the quality of snow.

[0039]

About the snow environment test system 10 which has the above constitution, the operation is demonstrated below, including the generation method of a snowflake.

First, the temperature and/or humidity in the test room 308 in which the carrier is disposed are set to predetermined values, and the plurality of rollers 306 are kept rotating continuously. The number of revolutions is, for example, 10 RPM.

Next, ice pieces are produced by a reamer-type ice making machine 22, and the ice pieces are broken by an ice crushing machine 26 to produce ice particles, which are pressure-fed through the snow supply pipe 40 to the diffusion device 34, and, in cooperation with the diffusion plate 74, snow grains are diffused downward toward the upper surface 320 of the rubber roller 306 (see A in FIG. 9).

Then, snow grains diffused by the diffusion device accumulate on the tops of the plurality of rollers 306.

Then, the accumulated snow grains are consolidated at the narrowest portion 304 between the adjacent rollers 306 so that a large number of snow grains adhere to each other and become snowflakes of from 3 mm to 10 mm, for example, although these are irregular shaped. That is, in the narrowest portion 304, the snow grains are consolidated by a concave portion of one of the adjacent rollers 306 and a convex portion of the other adjacent roller 306.

[0040]

Then, in a gap between the adjacent rollers 306, downward feeding is performed in every other gap, and the generated snowflakes are sent downward by the rotation of the rollers 306, fall downward as they are, and simulate snowfall and are deposited on the upper part of the vehicle V which is the test body (see B in FIG. 9).

The snowflake generation stage by the plurality of rollers 306 and the snow grain diffusion stage by the diffusion device 34 may be performed in the manner of batch processing. That is, at the time when snow grains are diffused by the diffusion device, the driving roller 306 is stopped to make the plurality of rollers 306 be in a not-rotating state, and, by this, snow grains to be diffused are accumulated on the upper portions of

the plurality of rollers 306. Next, at the stage of snow having been accumulated to a desired height, the driving roller 306 is driven to rotate the plurality of rollers 306, and snowflakes are generated to simulate snowfall until the snow layer on the plurality of rollers 306 disappears.

[0041]

According to the method of generating snowflakes having the above configuration, without using snow grains that have been generated as they are, the snow grains that have been generated in advance are transported toward the carrier after setting the ambient temperature and/or the ambient humidity at which the carrier is disposed at predetermined values, the transported snow grains are captured on the surface of the carrier, and the snow grains are adhered to and grown on the carrier surface to generate snowflakes, and the generated snowflakes are peeled from the carrier surface. By this, it is possible, in the case where snowflakes separated from the carrier surface are to fall as snow, for example, to change the size of snow grains to fall as snow through the formation of snowflakes from the produced snow grains. Or, by separating the snow producing process from the snowfall process, it is also possible to make snowfall in an environment (temperature condition, humidity condition) different from the snow producing environment to make the snow wet during snowfall. As a whole, it is possible to change snow quality as desired.

Moreover, since it is possible to separate the snow producing process and the snowfall process, it is possible to temporarily store artificial snow that has been made in the snow producing process, and, at the time of testing, to transport the stored snow and use it for snowfall."

(1-e) "[0047]

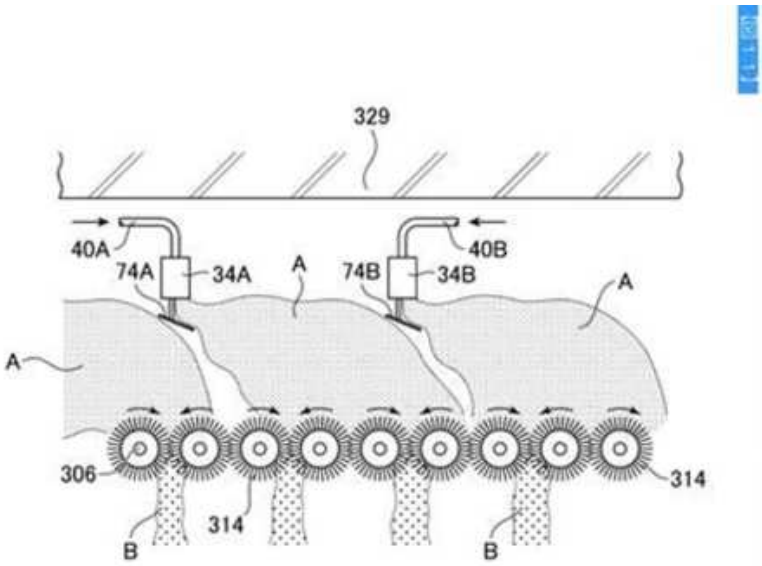
Although the embodiments of the present invention have been described in detail, various modifications or changes can be made by those skilled in the art without departing from the scope of the present invention.

For example, in the present embodiment, snow for simulating snowfall has been described as being artificial snow formed by crushing ice pieces, but is not limited thereto and may be natural snow or artificial crystal snow generated by using cold wind of a predetermined temperature and a predetermined humidity, and such snow is not necessarily wet snow.

For example, although in the present embodiment, as an aspect of generating snowflakes, and as a carrier means for capturing snow grains, a plurality of rollers, a movable wire mesh, a blind structure, and a rotating belt type ventilation film have been described in each of the first to fifth embodiments as a single carrier means to be utilized, the carrier

means may be used in any combination as appropriate without being limited thereto, such as dividing, in a test room, an area in which a plurality of rollers are employed and an area in which a movable wire mesh is employed."

(1-f) "[FIG. 11]



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(1-g) In FIG. 11, there is shown a point that the plurality of rollers 306 are a plurality of rollers arranged in parallel to each other with their outer peripheral surfaces facing each other and separated at a predetermined interval, which are capable of rotating in a direction toward the narrowest portion between adjacent rollers from the upper side, and the plurality of rollers 306 are arranged in such a way that the rollers 306 can receive snow dropping on a space above the narrowest portion.

When the matters of the above-mentioned (1-a) to (1-g) are integrated, it is recognized that, in Cited Document 1, there is described the following invention (hereinafter, referred to as "Cited Invention").

"A snow environment test system 10 that uses artificial snow made of ice particles and that is constituted to simulate snowfall by the artificial snow, the snow environment test system 10 comprising:

a snow producing part to produce artificial snow; a transport part to transport

produced snow grains; a diffusion part to diffuse the transported snow grains; a snowflake generation part to generate snowflakes from the diffused snow grains; and a snowfall part to make the generated snowflakes fall, wherein a part of the transport part, the diffusion part, the snowflake generation part, and the snowfall part are arranged within the test room 308, and the snow producing part and the transport part are arranged outside the test room 308, wherein

a plurality of rollers 306 are arranged so as to separate the test room 308 in an upper side in the test room 308, and each of the rollers 306 constitutes the rotary brush 314 hair-transplanted on the outer peripheral surface 312,

the rollers 306 with the rotary brush 314 are ones, unlike the rubber rollers 306, that do not consolidate attached snow grains,

it is possible to separate in the test room 308 by making the rotary brush 314 have a high density and have a length to reach the outer peripheral surface 312 of the opposite roller 306, and by making the rollers 306 be arranged in a line in a horizontal direction,

the plurality of rollers 306 are a plurality of rollers arranged in parallel to each other with their outer peripheral surfaces facing each other and separated at a predetermined interval, which are capable of rotating in a direction toward the narrowest portion between adjacent rollers from the upper side, and the plurality of rollers 306 are arranged in such a way that the rollers 306 can receive snow dropping on a space above the narrowest portion,

in the test room 308, by making the snow producing space and the snowfall space be different temperature areas independently, and making the upper space of the test room 308 be less than zero degrees and be used as snow producing space, while making the lower space of the test room 308 be used as snowfall space, when snow has been produced and snowfall simulation is performed using generated snowflakes, it is possible to make the snowfall space be more than zero degrees to make snow wet during snowfall, and wherein,

by separating the snow producing process from the snowfall process, snowfall is made in an environment (temperature condition, humidity condition) different from the snow producing environment."

(2) Cited Document 2

In Japanese Unexamined Patent Application Publication No. H9-329380 cited as Cited Document 2 in the reasons for refusal stated in the examiner's decision (hereinafter, referred to as "Cited Document 2"), there are described the following matters

together with drawings.

(2-a) "[0009]
[Problem to be solved by the invention] To solve the above problem, it is an object of the present invention to make crystal snow of single crystal continuously in a large amount over a wide area and cause a fall of the snow.
[0010]
[Means for solving the problem] In order to achieve the above object, an artificial crystal snow producing apparatus according to the present invention includes a cooler for producing a temperature below a predetermined freezing point, a blower for circulating the cold air, a humidifier for producing a saturated atmosphere of an ice saturation or more, and a large number of rotary ventilation membrane devices having a membrane body of a fine mesh fabric and installed at predetermined intervals, and a defrosting device provided at one end of the membrane body, and, in addition, the humidifier is constituted by arranging a low temperature humidification pan by evaporation of a low water temperature in multistage, and the humidification pan has a structure of a flowing water type in which surfaces other than the evaporating surface are insulated."

(2-b) "[0014]
[Examples] Hereinafter, embodiments of the present invention will be described with reference to the accompanying drawings. In the snowfall apparatus shown in FIG. 1, air cooled to a predetermined temperature by a cooler 2 installed in a thermally insulated snow making machine room 1 is sent to a humidifier 4 by a blower 3.
[0015] In the humidifier, water vapor is supplied to bring air of low humidity to an air of humidity higher than ice saturation so that frost can grow. The humidifier which is most suitable for this condition is a humidification pan, in particular a low temperature humidification pan with a low water temperature, in particular a water temperature setting of 40°C or less, rather than a boiling type humidification in which the water temperature is used for normal air-conditioning.
[0016] In order to uniformly make the entire flow path be more than ice saturation, a humidification pan 5 is provided in multiple stages as shown in FIG. 4 so as to humidify the whole flow path little by little, and water of the tank 7 is supplied by a pump P from the feed header 6a to each of the humidification pans, and water from the humidification pans is returned from the return header 6b to the tank 7.
[0017] Further important is to keep the humidification water temperature constant. This is because, since the humidifying water temperature also leads to an increase in the

sensible heat of air, if the water temperature is not kept constant, distribution unevenness is also caused in the air temperature, and frost under the condition of different temperature grows. Therefore, as shown in FIG. 4, the humidifier is made to be a water-flowing humidification pan 5, and the humidifying water temperature is controlled by a heater 8 arranged in the tank 7. In addition, since surfaces other than the humidifying surface of the humidifier become a sensible heat load of air, it is also necessary to insulate the surfaces thermally.

[0018] It is also possible to adopt other humidification methods if a condition above the ice saturation as described above can be created. For example, it is a supersonic humidifier. It goes without saying that, even in a supersonic humidifier, it is necessary to dispose ultrasonic humidifiers so as to uniformly humidify the flow path as described above. Air from the humidifier is fed into the snow making unit from the feed duct D1.

[0019] The snow making unit is constituted of a rotary ventilation film device 10 provided at a prescribed interval in a snow making chamber 9 opened at a lower part. This device 10 is formed by bridging a ventilation membrane 12 to a pair of upper and lower rotating bodies 11a and 11b, and one of the upper and lower rotating bodies is used for driving and the other is used as a driven rotating body.

[0020] Preferably, the membrane is a flat membrane, and it is preferable that the density of the membrane be fine as much as possible. For example, it is preferable to use a plain woven membrane of synthetic resin fibers having a mesh of about 5 to 300 mesh. Further, although the number of revolutions of the membrane is determined in accordance with the time of growth of frost, it is preferable that the number of revolutions of the membrane is 0.2 to 5 rph.

[0021] A device 13 for removing the frost M is provided at a part corresponding to the lowermost part of the membrane, and the frost M is made to fall down from the membrane, and the falling frost becomes a falling snow S. There are various means for the defrosting device 13, so that it may be a mechanical type, such as a scraper, a rotating brush, or the like, or may be a device that blows frost by air blow, but is not limited thereto in particular.

[0022] The frost on the surface of the membrane 12 starts to grow after passing through the defrosting device 13, moves upward by the rotation of the membrane 12, reaches the rotating body 11a, and descends to the rotating body 11b. During the rotation of the membrane, the frost M grows gradually as a result of vapor of above ice saturation being supplied from the humidified air continuously, and is dropped by the defrosting device 13 in a state that it reaches the lowermost stage and it has grown most."

When the matters of the above-mentioned (2-a) and (2-b) are integrated, it is recognized that, in Cited Document 2, there are described the following matters (hereinafter, referred to as "Matters described in Cited Document 2").

"An artificial crystal snow producing apparatus, wherein

by the cooler 2 to create temperature of a predetermined temperature of freezing point or below, air cooled to the predetermined temperature is sent to the humidifier 4 by the blower 3, and air from humidifier 4 is fed into the snow making unit from the feed duct D1,

the snow making unit is constituted of the rotary ventilation film device 10 provided at a prescribed interval in the snow making chamber 9 opened at a lower part, and the device 10 is formed by bridging a ventilation membrane 12 to a pair of upper and lower rotating bodies 11a and 11b,

the ventilation membrane 12 is preferably a flat membrane as far as possible, and is a plain woven membrane of synthetic resin fibers having a mesh of about 5 to 300 mesh,

the device 13 for removing the frost M is provided at a part corresponding to the lowermost part of the ventilation membrane 12, and wherein,

during the rotation of the ventilation membrane 12, the frost M grows gradually as a result of vapor of above ice saturation being supplied from the humidified air continuously, and is dropped by the defrosting device 13 in a state that it reaches the lowermost stage and it has grown most."

(3) Comparison

The Amended Invention and Cited Invention will be compared.

A Since Cited Invention is one in which, "it is possible to separate in the test room 308" "by making the rollers 306 be arranged in a line in a horizontal direction", and "in the test room 308, by making the snow producing space and the snowfall space be different temperature areas independently, and making the upper space of the test room 308 be less than zero degrees and be used as snow producing space, while making the lower space of the test room 308 be used as snowfall space", it can be said that the test room 308 is divided into upper and lower areas.

Therefore, the above-mentioned constitution of Cited Invention and the point of the Amended Invention of "comprising, within spaces divided vertically by a partition extending in a horizontal direction: a crystal snow manufacturing part in an upper part;

and a crystal snow snowfall part in a lower part" are common in a point of "comprising, within spaces divided vertically by a partition extending in a horizontal direction: a snow producing part in an upper part; and a snowfall part in a lower part".

B Since, in Cited Invention, "making the lower space of the test room 308 be used as snowfall space, when snow has been produced and snowfall simulation is performed using generated snowflakes, it is possible to make the snowfall space be more than zero degrees to make snow wet during snowfall", and "by separating the snow producing process from the snowfall process, snowfall is made in an environment (temperature condition, humidity condition) different from the snow producing environment", it can be said that it has a device to moisten snowfall and a device to adjust temperature and humidity.

Therefore, the above constitution of Cited Invention and the point of the Amended Invention that "the crystal snow snowfall part comprises a snow moistening device to moisten crystal snow during snowfall of crystal snow manufactured by the crystal snow manufacturing part, and a temperature and humidity adjustment device to adjust temperature and humidity within the space of the crystal snow snowfall part" are common in a point of "the snowfall part comprises a snow moistening device to moisten snow during snowfall of snow manufactured by the snow producing part, and a temperature and humidity adjustment device to adjust temperature and humidity within the space of the snowfall part".

C The point of Cited Invention that "the plurality of rollers 306 are a plurality of rollers arranged in parallel to each other with their outer peripheral surfaces facing each other and separated at a predetermined interval, which are capable of rotating in a direction toward the narrowest portion between adjacent rollers from the upper side, and the plurality of rollers 306 are arranged in such a way that the rollers 306 can receive snow dropping on a space above the narrowest portion" and the point of the Amended Invention that "the partition is a plurality of rollers that are arranged in a manner being separated at predetermined intervals in such a way that outer peripheral surfaces are made to face in parallel to each other, and are capable of rotating in a direction toward a narrowest portion between adjacent rollers from an upper side, the plurality of rollers being arranged in such a way that the rollers can receive crystal snow dropping on a space above the narrowest portion" are common in a point that "the partition is a plurality of rollers that are arranged in parallel to each other with their outer peripheral surfaces facing each other and separated at a predetermined interval, which are capable of rotating in a direction toward

the narrowest portion between adjacent rollers from the upper side, and the plurality of rollers are arranged in such a way that the rollers can receive snow dropping on a space above the narrowest portion".

D The point of Cited Invention that "each of the rollers 306 constitutes the rotary brush 314 hair-transplanted on the outer peripheral surface 312", and "it is possible to separate in the test room 308 by making the rotary brush 314 have a high density and have a length to reach the outer peripheral surface 312 of the opposite roller 306, and by making the rollers 306 be arranged in a line in a horizontal direction", and "the rollers 306 with the rotary brush 314 are ones, unlike the rubber rollers 306, that do not consolidate attached snow grains" and the point of the Amended Invention that "each of the rollers constitutes a rotary brush body hair-transplanted on the outer peripheral surface, and, in a narrowest portion between adjacent rollers, a partition is formed without consolidation of crystal snow by overlapping the brushes each other" are common in a point that "each of the rollers constitutes a rotary brush body hair-transplanted on the outer peripheral surface, and, in a narrowest portion between adjacent rollers, a partition is formed without consolidation of snow by overlapping the brushes".

E "The snow environment test system 10, wherein snowfall is made" of Cited Invention and "the snowfall system of crystal snow" of the Amended Invention are common in a point of "snowfall system".

Therefore, the Amended Invention and Cited Invention are identical in a point of

"A snowfall system, comprising, within spaces divided vertically by a partition extending in a horizontal direction: a snow producing part in an upper part; and a snowfall part in a lower part, wherein

the snowfall part comprises a snow moistening device to moisten snow during snowfall of snow manufactured by the snow producing part, and a temperature and humidity adjustment device to adjust temperature and humidity within the space of the snowfall part,

the partition is a plurality of rollers that are arranged in parallel to each other with their outer peripheral surfaces facing each other and separated at a predetermined interval, which are capable of rotating in a direction toward the narrowest portion between adjacent rollers from the upper side, and the plurality of rollers are arranged in such a way that the rollers can receive snow dropping on a space above the narrowest portion, and

wherein,

each of the rollers constitutes a rotary brush body hair-transplanted on the outer peripheral surface, and, in a narrowest portion between adjacent rollers, a partition is formed without consolidation of snow by overlapping the brushes.",

and are different in the following points.

[Different Feature 1]

A point that, regarding "snow producing part", "snowfall part", and "snow", those in the Amended Invention are "crystal snow manufacturing part", "crystal snow snowfall part" and "crystal snow", and, in addition, the Amended Invention has the constitution that "the crystal snow manufacturing part comprises a rotary air-permeable-film device including a mesh-like film body endlessly laid between an upper roller and a lower roller, at least one of the rollers being capable of rotary drive, and a crystal snow dropping body having a front end edge spaced apart from an outer surface of the mesh-like film body in the proximity to the lower roller, and generates crystal snow on an outer surface of the mesh-like film body by wet air including water vapor under the freezing point and above ice saturation", whereas, in Cited Invention, these are "snow producing space", "snowfall space" and "snowflakes" generated from snow grains, and, in addition, Cited Invention does not have constitution like the crystal snow manufacturing part of the Amended Invention.

[Different Feature 2]

A point that, in the Amended Invention, "the each number of revolutions of a plurality of rollers is set so as not to generate large snowflakes caused by branches of each piece of new crystal snow intertangling with each other by corresponding rotary air-permeable-film device rotating once with respect to crystal snow dropped by a crystal snow dropping body of the corresponding rotary air-permeable-film device in spaces above the corresponding narrowest portion", whereas, in Cited Invention, the each number of revolutions of a plurality of rollers is not specified.

(4) Judgment

A The above-mentioned [Different Feature 1] will now be discussed below.

In paragraph [0047] of Cited Document 1, it is described that "in the present embodiment, snow for simulating snowfall has been described as being artificial snow formed by crushing ice pieces, but is not limited thereto and may be natural snow or artificial crystal snow generated by using cold wind of a predetermined temperature and

a predetermined humidity", and this description suggests that, in Cited Invention, "crystal snow" may be used instead of "snowflakes" generated from snow grains.

On the other hand, Matters described in Cited Document 2 correspond to the constitution that "the crystal snow manufacturing part comprises a rotary air-permeable-film device including a mesh-like film body endlessly laid between an upper roller and a lower roller, at least one of the rollers being capable of rotary drive, and a crystal snow dropping body having a front end edge spaced apart from an outer surface of the mesh-like film body in the proximity to the lower roller, and generates crystal snow on an outer surface of the mesh-like film body by wet air including water vapor under freezing point and above ice saturation" which is the constitution of the Invention concerning Different Feature 1 mentioned above.

Therefore, in light of the suggestion of the above-mentioned Cited Document 1, it would have been achieved by a person skilled in the art with ease to apply Matters described in Cited Document 2 to Cited Invention, constitute "snow producing space" and "snowfall space" as "crystal snow manufacturing part" and "crystal snow snowfall part", and make "crystal snow manufacturing part" be configured like the Amended Invention to manufacture "crystal snow".

B The above-mentioned [Different Feature 2] will now be discussed below.

Examination will be promoted supposing that the constitution of the Amended Invention concerning Different Feature 2 mentioned above means the technological content to be perceived from paragraph [0032] and [FIG. 2] of the description of the present application examined in the above-mentioned "2-2 Regarding whether or not a new matter exists".

In Cited Invention, "the plurality of rollers 306" are "arranged in parallel to each other with their outer peripheral surfaces facing each other and separated at a predetermined interval, which are capable of rotating in a direction toward the narrowest portion between adjacent rollers from the upper side, and the plurality of rollers 306 are arranged in such a way that the rollers 306 can receive snow dropping on a space above the narrowest portion", and it is natural to set, in order to make snowfall on the snowfall space of the lower portion, a predetermined rotational speed to rotate the rollers; then, when a roller is rotating, it is obvious that drop positions of already produced snow and newly produced snow differ from each other in the rotary brush 314 of the roller, and therefore dropped snow does not overlap if the rotational speed of the roller is set extremely low.

Then, in Cited Document 1, it is described that, the roller 306 with the rotary

brush 314 does not consolidate the attached snow grains, and the crystal snow is separated from the roller 306 by the rotary brush 314, and thus it is suitable for simulating snowfall ([0038]), and that the size of snow grains to fall is changed, or quality of snow is changed as desired ([0041]); on the other hand, in Matters described in Cited Document 2, crystal snow grown on the ventilation membrane 12 is one that drops (snowfall) without branches of crystal snow intertangling with each other.

Then, when simulating snowfall of crystal snow by applying the artificial crystal snow producing apparatus having the rotary air-permeable-film device of Matters described in Cited Document 2 to Cited Invention, it can be said that it is hard to imagine setting the rotating speed of the plurality of rollers 306 of Cited Invention low to a degree that branches of crystal snow intertangle with each other. In addition, if snow of large snowflakes is not desired, it can be also said that it is a design matter that should be taken into consideration by a person skilled in the art as a matter of course to set the rotational speed of the rollers 306 to the extent that dropped snow does not overlap.

Furthermore, there is described, in the description of the present application, "1 RPM to 2 RPM" as a specific example of the rotational speed of the roller 306 ([0032]), whereas, in Cited Document 1, there is described an example of "10 RPM" ([0039]) although it is an example of the rubber rollers 306 and the roller diameter is not clear, and, therefore, it cannot be said that the rotational speed of the rollers of the Amended Invention is a speed that has been set especially high.

Then, in Cited Invention, it could have been conceived with ease by a person skilled in the art without requiring particular inventive ideas to set the rotational speed of a plurality of rollers so as not to generate large snowflakes caused by branches of new crystal snow intertangling with each other.

In this connection, even if the relation between "rotary air-permeable-film device rotating once" and "branches of each piece of new crystal snow intertangling with each other" of the constitution of the Amended Invention concerning Different Feature 2 means that, with respect to crystal snow dropped in advance, new crystal snow to be dropped after one rotation of the rotary air-permeable-film device intertangles, the above-mentioned examination result is not influenced, because only the lower limit value of the rotational speed of the rollers is smaller than that of the case examined above.

C Regarding effects exerted by the Amended Invention

Effects exerted by the Amended Invention are of a degree predictable by a person skilled in the art from the matters described in Cited Invention and Cited Document 2, and are not remarkable.

D Appellant's allegation

The Appellant alleges, in the written request for appeal, that "although, in Cited Document 1, there is disclosed a snowfall system of crystal snow in which a crystal snow manufacturing part and a crystal snow snowfall part are separated, and, in Cited Document 2, there is disclosed a point that, as the embodiment of the crystal snow manufacturing part, the defrosting device 13 is a scraper, there is no disclosure or even suggestion in any of Cited Document 1 to 3 about the point to set the rotational speed of a plurality of rollers as a partition from the viewpoint of preventing generation of large snowflakes of crystal snow attributed to manufacturing the crystal snow by rotation of the rotary air-permeable-film device." (page 6, line 21 to the last line).

However, as examined in above B, in Cited Invention, it could have been conceived with ease by a person skilled in the art without requiring particular inventive ideas to set the rotational speed of a plurality of rollers so as not to generate large snowflakes caused by branches of new crystal snow intertangling with each other.

Therefore, the Appellant's allegation cannot be adopted.

(5) Summary

Since the Amended Invention could have been invented by a person skilled in the art with ease based on the matters described in Cited Invention and Cited Document 2 as above, the Appellant should not be granted a patent for that independently at the time of patent application under the provisions of Article 29(2) of the Patent Act.

3 Closing

Therefore, the Amendment is not one for the purpose of any of Article 17-2(5)(i) to (ix) of the Patent Act, and, in addition, it violates the provision of Article 17-2(3) of the Patent Act, and, furthermore, violates the provisions of Article 126(7) of the Patent Act as applied mutatis mutandis pursuant to the provisions of Article 17-2(6) of the same Act.

Accordingly, the Amendment should be dismissed under the provisions of Article 53(1) of the same Act which is applied mutatis mutandis by replacing certain terms pursuant to the provisions of Article 159(1) of the same Act.

No. 3 Regarding the Invention

1 The Invention

As the Amendment has been dismissed as above, the inventions according to

Claims 1-4 of the present application are ones that are specified by the matters recited in Claim 1 to Claim 4 of the scope of claims amended by the written amendment dated December 19, 2018, and the invention according to Claim 1 thereof (hereinafter, referred to as "the Invention") is as described in "No. 2 [Reason] 1(1)".

2 Reasons for refusal stated in the examiner's decision

The reasons for refusal stated in the examiner's decision are as follows.

(1) The inventions according to Claims 1 and 2 of this application could have been invented with ease by a person ordinarily skilled in the art in the technical field to which the Invention belongs before the application was filed based on the inventions described in the following Publications 1 and 2 distributed in Japan before the application was filed, and, therefore, the Appellant should not be granted a patent for these in accordance with the provisions of Article 29(2) of the Patent Act.

(2) The inventions according to Claim 3 and 4 of this application could have been invented with ease by a person ordinarily skilled in the art in the technical field to which the Invention belongs before the application was filed based on the inventions described in the following Publications 1 to 3 distributed in Japan before the application was filed, and, therefore, the Appellant should not be granted a patent for these in accordance with the provisions of Article 29(2) of the Patent Act.

Cited Document 1: Japanese Unexamined Patent Application Publication No. 2016-6362

Cited Document 2: Japanese Unexamined Patent Application Publication No. H9-329380

Cited Document 3: A microfilm of Japanese Utility Model Application No. S63-30686 (Japanese Unexamined Utility Model Application Publication No. H2-13959)

3 Cited Documents

Cited Documents 1 and 2 and the described matters thereof are the same as Cited Documents 1 and 2 and the described matters thereof having been described in "No. 2 [Reason]2-3(1)" and "No. 2 [Reason]2-3(2)".

4 Comparison / Judgment

The Invention is an invention made by eliminating the matter that "the each number of revolutions of the plurality of rollers is set so as not to generate large snowflakes caused by branches of each piece of new crystal snow intertangling with each

other by corresponding the rotary air-permeable-film device rotating once with respect to crystal snow dropped by the crystal snow dropping body of the corresponding rotary air-permeable-film device in a space above the corresponding narrowest portion" from the Amended Invention examined in "No. 2 [Reason] 2-3" mentioned above.

Then, when the Invention and Cited Invention are compared, since these are different in a point similar to Different Feature 1 in "No. 2 [Reason]2-3(3)" mentioned above, the Invention is one that could have been invented by a person skilled in the art with ease based on the matters described in Cited Invention and Cited Document 2 for the similar reason as examined in "No. 2 [Reason] 2-3(4)" above.

No. 4 Closing

As described above, the Invention is an invention for which the Appellant should not be granted a patent in accordance with the provisions of Article 29(2) of the Patent Act.

Accordingly, without examining the other claims, the present application should be rejected.

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

June 26, 2020

Chief administrative judge: KIMOTO, Takashi
Administrative judge: HIRAJO, Toshimasa
Administrative judge: MAKIHARA, Susumu