Appeal decision

Appeal No. 2015-9072

Tokyo, Japan
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The case of appeal against the examiner's decision of refusal of Japanese Patent Application No. 2012-70074, entitled "Thermoelectric Generation Device and Thermoelectric Generation System" (the application published on October 03, 2013, Japanese Unexamined Patent Application Publication No. 2013-201873), has resulted in

the following appeal decision.

Conclusion

The appeal of the case was groundless.

Reason

No. 1 History of the procedures

The application related to the appeal of the case (hereinafter, referred to as the "Application") was filed on March 26, 2012, and despite submission of a written opinion and written amendment on November 25, 2014 to a notice of reasons for refusal issued on September 16, 2014, a decision for refusal was issued on February 13, 2015 (the date of delivery is February 17, 2015). Against this, the appeal of the case was demanded on May 15, 2015, and a written amendment was submitted on the same date.

No. 2 Decision to dismiss amendment by the written amendment dated May 15, 2015

[Conclusion of Decision to Dismiss Amendment]

The amendment by the written amendment dated May 15, 2015 shall be dismissed.

[Reason]

1. The description in Claim 1 of the scope of claims for patent is amended as follows, according the amendment (hereinafter, referred to as the "Amendment") by the written amendment dated May 15, 2015.

(1) Before the Amendment

"A thermoelectric generation system comprising:

a thermoelectric generation device which is equipped with a thermoelectric conversion module generating power by temperature difference between two surfaces, and respectively disposes a first flow path and a second flow path carrying fluids with temperatures different from each other on respective surfaces of the thermoelectric generation module;

a first supply path which supplies a first fluid flowing in the first flow path and including hot spring gas to the first flow path by using the pressure of the first fluid or difference in level; and

a second supply path which supplies a second fluid flowing in the second flow path and having a temperature lower than that of the first fluid to the second flow path by using difference in level." (refer to the written amendment dated November 25, 2014)

(2) After the Amendment

"A thermoelectric generation system comprising:

a thermoelectric generation device which is equipped with a thermoelectric conversion module generating power by temperature difference between two surfaces, and respectively disposes a first flow path and a second flow path carrying fluids with temperatures different from each other on respective surfaces of the thermoelectric generation module;

a first supply path which supplies a first fluid flowing in the first flow path and including hot spring gas spouting from a heat source to the first flow path by using the pressure of the first fluid or difference in level; and

a second supply path which supplies a second fluid flowing in the second flow path and having a temperature lower than that of the first fluid to the second flow path by using difference in level."

2. Purpose requirements for amendment

The Amendment adds matters for limiting "hot spring gas" described in Claim 1 to "spouting from a heat source", so that it can be said that the Amendment is to aim at the restriction of the scope of claims for patent stipulated in Article 17-2(5)(ii) of the Patent Act.

Then, we will examine whether or not the invention according to Claim 1 after the Amendment (hereinafter, referred to as the "Amended Invention") can be granted a patent for it independently at the time of patent application (whether or not the Amended Invention falls under the provisions of Article 126(7) of the Patent Act which is applied mutatis mutandis pursuant to the provisions of Article 17-2(6) of the Patent Act).

3. Independent requirements for patentability of the Amended Invention

(1) Publication

Japanese Unexamined Patent Application Publication No. H11-247753 (hereinafter, referred to as the "Publication"), which is shown in the original examiner's decision of refusal, describes the following matters with drawings, concerning "Temperature Difference Power Generation Device and Method Using Thermoelectric Conversion Element".

A. Described matters

(A) "[The scope of claims for patent]

[Claim 1] A temperature difference power generation system comprising:

a hot water taking-in path for taking in hot water from a hot spring by using difference in level or self-spouting force of the hot spring;

a cold water taking-in path for taking in cold water from a river by using difference in level or flowing power of the river;

a hot water flow path which takes in the hot water from a hot water taking-in port, and drains the hot water from a hot water draining port;

a cold water flow path which takes in the cold water from a cold water taking-in port, and drains the cold water from a cold water draining port; and

a thermoelectric conversion element which is thermally connected to the hot water flow path at one end portion, and is thermally connected to the cold water flow path at the other end portion."

(B) "[0006]

[Means for solving problem and effect of the invention] The temperature difference power generation system of Claim 1 and the temperature difference power generation method of Claim 7 are made to generate power by giving temperature difference between a hot water flow and a cold water flow to a thermoelectric conversion element. Therefore, new hot water and cold water are always supplied for power generation, and the temperature difference at respective ends of the thermoelectric conversion element is maintained to obtain high power generation efficiency.

[0007] Furthermore, by using difference in level, self-spouting force, or difference in level, the hot water flow and the cold water flow are formed. Therefore, a power generation device which does not need a driving source such as a pump can be obtained."

(C) "[0032]

[Mode for carrying out the invention]

In Fig. 1, the temperature difference power generation system of one embodiment of the present invention is shown. From a hot spring well 2, hot water containing steam spouts out by itself. The hot water containing the steam is separated into hot water and the steam in a separator 4. The hot water is sent to a hot spring water receiving tank 8, and the steam is diluted with water in a river 10, in the hot water preparing tower 6, and then sent to the hot spring water receiving tank 8. From the hot spring water receiving tank 8, the steam is supplied to each user for hot spring hotels or heating.

[0033] The hot water of the separator 4 is led to a temperature difference power generation device 14 by a hot water taking-in path 12. The cold water of the river 10 is led to the temperature difference power generation device 14 by a cold water taking-in

path 16.

[0034] For the hot water taking-in path 12 and the cold water taking-in path 16, flexible pipes (such as vinyl chloride hoses) or metallic pipes may be used. In order to prevent a temperature drop of the hot water and a temperature rise of the cold water due to outside air temperature, heat insulation material such as styrene foam or glass wool may be provided on an outer periphery. Furthermore, in order to avoid influences of changes in the outside air temperature, the pipes may be embedded in the earth after being subjected to heat-insulation processing.

[0035] According to this embodiment, by difference in level, the hot water and the cold water are taken in the temperature difference power generation device 14. They may be taken in by the self-spouting force of the hot spring, or a flow (flowing force) of water in the river. In any cases, a driving source for taking-in is not required."

(D) "[0038] In Fig. 2, the appearance of the temperature difference power generation device 14 is shown. The temperature difference power generation device 14 is equipped with a hot fluid chamber 22, a thermoelectric conversion element 24 attached to an outer wall on an upper surface of the hot fluid chamber, and a cold fluid chamber 26 provided on the thermoelectric conversion element 24.

[0039] In the hot fluid chamber 22, a hot water taking-in port and a hot water draining port are provided, and are respectively connected with a pipe 30 and a pipe 32. The hot water taking-in path 12 is connected to the pipe 30, and the hot water draining path 18 is connected to the pipe 32.

[0040] In the cold fluid chamber 26, a cold water taking-in port and a cold water draining port are provided, and are respectively connected with a pipe 34 and a pipe 36. The cold water taking-in path 16 is connected to the pipe 34, and the cold water draining path 20 is connected to the pipe 36.

[0041] Furthermore, on a lower surface of the hot fluid chamber 22, supporting members 38 and 40 are provided. The supporting member 40 is configured to be higher than the supporting member 38, so that an inclination is formed so as to make the draining port side higher than the taking-in port side."

(E) "[0045] In Fig. 6, a cross section of the temperature difference power generation device 14 is shown. The hot water taking-in port 42 is provided near a lower end portion of the hot fluid chamber 22, and a hot water draining port 44 is provided near an upper end portion of the hot fluid chamber 22. In the same way, a cold water taking-in port 46 is provided near a lower end portion of the cold fluid chamber 26, and a cold water draining port 48 is provided near an upper end portion of the cold fluid chamber 26....

[0046].....
[0047].....
[0048] The hot water taking-in path 12 (for example, a vinyl pipe) is connected to the pipe 30, and the cold water taking-in path 16 is connected to the pipe 34. Therefore, hot water is taken in the hot fluid chamber 22 through the hot water taking-in port 42, and is discharged from the hot water draining port 44. Namely, a hot water flow is formed in the hot fluid chamber 22, and forms a hot water flow path. At that time, the hot water draining port 44 is formed near the upper end portion, so that, without generating air parts in the hot fluid chamber 22, the hot water flow can be obtained. Therefore, the high temperature of the hot water can be efficiently transmitted to the thermoelectric conversion element 24.
[0049] Also, from a temperature distribution, a side of an upper wall attains high temperature, and heat can be effectively transmitted to the thermoelectric conversion element 24 provided on an upper part.
[0050] Furthermore, the inclination is provided so as to make a side of the hot water draining port 44 become high, so that air bubbles in the hot fluid chamber 22 go toward the hot water draining port 44 not only by the flow of the hot water, but also by buoyancy. Therefore, the air bubbles which may obstruct heat transmission to the thermoelectric conversion element 24 can be smoothly eliminated from the hot fluid chamber 22.
[0051] On the other hand, the cold water taking-in path 16 is connected to the pipe 34, and the cold water draining path 20 is connected to the pipe 36. Therefore, cold water is taken in the cold fluid chamber 26 through the cold water taking-in port 46, and discharged from the cold water draining port 48. Namely, a cold water flow is formed in the cold fluid chamber 26, and forms a cold water flow path. At that time, the cold water draining port 48 is formed near the upper end portion, so that, without generating air parts in the cold fluid chamber 26, the cold water flow can be obtained. Therefore, the low temperature of the cold water can be efficiently transmitted to the thermoelectric conversion element 24."
(F) "[0084] Furthermore, instead of the hot water, another hot fluid such as hot gas may be used, and instead of the cold water, another cold fluid such as cold gas may be used."
B. According to described matters of (D), (E) and described contents of Figs. 2, 6 and the like, it can be understood that the hot fluid chamber and the cold fluid chamber carrying fluids with temperatures different from each other are respectively disposed on the two surfaces of the thermoelectric conversion element.
C. The embodiment (refer to (C)-(E)) explained by using Claim 1 (refer to (A) and

(B))and Fig. 1 and the like describes that hot water from a hot spring is taken into the temperature difference power generation device, by using the self-spouting force of the hot spring.

In the embodiment explained by using Fig. 1 and the like, concerning the hot water, the hot water separated through the separator 4 is led to the temperature difference power generation device 14, and the steam separated through the separator 4 is supplied to each user for hot spring hotels or heating through the hot water preparing tower 6 and the hot spring water receiving tank (refer to Paragraph [0032] (above (C))).

By the way, in Paragraph [0084], in addition, it is described that a hot fluid such as hot gas may be used instead of the hot water.

Then, to begin with, in the Publication, there is disclosed a temperature difference power generation system which takes in hot water from a hot spring by using the self-spouting force of the hot spring, and it is obvious that such a hot spring includes the hot water and steam. The steam can be also recognized as "hot gas", so that it should be said the fact that temperature difference power generation may be carried out by using such "hot gas" is a matter within a range which can be recognized by a person skilled in the art contacting with the described matters in Cited Publication.

Therefore, it can be said that the Publication also describes that the hot gas is supplied to the hot fluid chamber of the thermoelectric conversion element by using the self-spouting force of the hot spring.

Furthermore, a flow path for such supplying can be thought of as "a supply path".

D. According to the embodiment (refer to (C)-(E)) explained by using Claim 1 (refer to (A) and (B)) and Fig. 1 and the like, it can be grasped that cold water is supplied into the cold fluid chamber of the thermoelectric conversion element by using difference in level. Also, the flow path for such supplying can be thought of as "a supply path".

E. Consequently, summarizing according to expressions of the Amended Invention, it can be recognized that a cited document describes the following invention (hereinafter, referred to as the "Invention described in the Publication").

"A temperature difference power generation system comprising:

a thermoelectric generation device which is equipped with a thermoelectric conversion module, and respectively disposes a hot fluid chamber and a cold fluid chamber carrying fluids with temperatures different from each other on the respective surfaces of the thermoelectric generation module;

a supply path which supplies hot gas flowing in the hot fluid chamber to the hot fluid chamber by using self-spouting force of a hot spring; and

a supply path which supplies cold water flowing in the cold fluid chamber to the

cold fluid chamber by using difference in level."

(2) Comparison / Judgment

A. The Amended Invention and the Invention described in the Publication are compared.

(A) In "a hot fluid chamber" and "a cold fluid chamber" in the Invention described in the Publication, fluids flow, so that those respectively correspond to "a first flow path" and "a second flow path" in the Amended Invention.

Therefore, "a thermoelectric generation device which is equipped with a thermoelectric conversion module, and respectively disposes a hot fluid chamber and a cold fluid chamber carrying fluids with temperatures different from each other on the respective surfaces of the thermoelectric generation module" in the Invention described in the Publication corresponds to "a thermoelectric generation device which is equipped with a thermoelectric conversion module generating power by temperature difference between two surfaces, and respectively disposes a first flow path and a second flow path carrying fluids with temperatures different from each other on respective surfaces of the thermoelectric generation module" in the Amended Invention.

(B) The "hot gas" in the Invention described in the Publication is one self-spouting from the hot spring, so that it corresponds to "hot spring gas spouting from a heat source" in the Amended Invention, and also corresponds to "a first fluid including hot spring gas spouting from a heat source" or "the first fluid" in the Amended Invention.

"Supplies hot gas, to the hot fluid chamber by using the self-spouting force of a hot spring" in the Invention described in the Publication corresponds to "supplies a first fluid, to the first flow path by using the pressure of the first fluid" in the Amended Invention.

Then, "a supply path" of "hot gas" in the Invention described in the Publication corresponds to "a first supply path" of "a first fluid" in the Amended Invention.

(C) "Cold water" in the Invention described in the Publication corresponds to "a second fluid" in the Amended Invention.

Even in the Invention described in the Publication, "cold water" corresponding to "a second fluid" in the Amended Invention has a temperature lower than that of "hot gas" similarly corresponding to "a first fluid" in the Amended Invention.

"Supplies cold water, to the cold fluid chamber by using difference in level" in the Invention described in the Publication corresponds to "supplies a second fluid, to the second flow path by using difference in level" in the Amended Invention.

Also, "a supply path" of "cold water" in the Invention described in the Publication corresponds to "a second supply path" of "a second fluid" in the Amended

Invention.
(E) "A temperature difference power generation system" in the Invention described in the Publication corresponds to "a thermoelectric generation system" in the Amended Invention.
B. Summarizing the above, the Amended Invention and the Invention described in the Publication have no difference in their matters specifying the invention.

That is, the Amended Invention and the Invention described in the Publication are identical.
C. Therefore, the Amended Invention is identical to the Invention described in the Publication, so that the appellant should not be granted a patent for it under the provisions of Article 29(1)(iii) of the Patent Act.

(3) Summary

The Amendment violates the provisions of Article 126(7) of the Patent Act which is applied mutatis mutandis pursuant to the provisions of Article 17-2(6) of the Patent Act, so that it should be dismissed under the provisions of Article 53(1) of the Patent Act which is applied mutatis mutandis by replacing certain terms pursuant to Article 159 (1) of the Patent Act.

No. 3 Concerning the Invention
1. The Invention

As the Amendment was dismissed as above, the invention relating to Claim 1 of the present application is recognized as described in Claim 1 of the scope of claims for patent amended in the written amendment dated November 25, 2014 (refer to "No. 2. 1. (1)", hereinafter, referred to as the "Invention").

2. Novelty of the Invention
(1) The Publication and the Invention described in the Publication are as described in "No. 2. 3. (1)".
(2) In comparison of the Invention with the Invention described in the Publication, the Invention omits the matters specifying the invention which are "spouting from a heat source" concerning "hot spring gas" from the Amended Invention, so that, on the basis of the matters described in "No. 2. 3. (2)", the two have no difference in the matters specifying the invention.
(3) Therefore, the Invention is the invention described in the Publication, and falls under the provisions of Article 29(1)(iii) of the Patent Act, so that appellant should not be

granted a patent.

4. Closing

As mentioned above, the Invention is the Invention described in the Publication, and falls under the provisions of Article 29(1)(iii) of the Patent Act, so that appellant should not be granted a patent.

Hence, the application should be rejected.

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

March 1, 2016

Chief administrative judge: FUJII, Noboru
Administrative judge: NIINOMI, Takeshi
Administrative judge: MAEDA, Hiroshi