Appeal Decision

Appeal No. 2019-15570

Appellant Guangdong Meizhi Compressor Ltd.

Patent Attorney UEDA, Kunio

The case of appeal against the examiner's decision of refusal of Japanese Patent Application No. 2017-516080, entitled "ROTARY COMPRESSOR" [International Publication No. WO 2017/049545 published on March 30, 2017, National Publication of International Patent Application No. 2017-531755 published on October 26, 2017] 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 was filed on September 24, 2015 as an International Patent Application. The history of the procedures thereof is as follows.

dated February 26, 2018	Notice of reasons for refusal
June 4, 2018	Submission of written opinion
dated November 28, 2018	Notice of reasons for refusal
February 28,2019	Submission of written opinion
dated July 11, 2019	Examiner's decision of refusal
November 20, 2019	Submission of written appeal
dated September 18, 2020	Notice of reasons for refusal
December 17, 2020	Submission of written opinion and written amendment

(The amendment made by the written amendment is hereinafter referred to as "the Amendment".)

No. 2 The Invention

The inventions according to claims of the present application are as specified by the matters recited in Claims 1 to 10 of the scope of claims amended by the Amendment.

The invention according to Claim 1 (hereinafter referred to as "the Invention") is as follows as specified by the matters recited in Claim 1.

"A rotary compressor comprising:

a housing having a first end wall and a second end wall formed at both ends in an axial direction;

a motor placed in the housing and comprising a stator core and a rotor core, wherein in the axial direction of the housing, the largest distance between a side end face of the stator core adjacent to the first end wall and the first end wall is denoted by Dst; and

a compression mechanism placed in the housing and located at one side of the motor far away from the first end wall, the compression mechanism comprising a cylinder assembly and a main bearing, the main bearing being connected to a side end face of the cylinder assembly adjacent to the electric motor, wherein in the axial direction of the housing, the smallest distance between a side end face of the rotor core adjacent to the first end wall and a side end face of a flange portion of the main bearing adjacent to the first end wall is denoted by Drt,

wherein, Dst and Drt satisfy a relationship: $0.335 \leq Dst/Drt \leq 0.838$."

No. 3 Reasons for refusal

Reasons 1, and 3 to 5 in the notice of the reasons for refusal issued by the body on September 18, 2020 are as follows.

Regarding Reason 1 (Support requirement)

Claim 1 of the present application exceeds the scope of the description in the detailed description of the invention that allows a person skilled in the art to recognize that the problem to be solved by the invention can be solved. It cannot be said that the Invention is described in the detailed description of the invention. Thus, the recitation of the scope of claims of the present application does not satisfy the requirements stipulated in Article 36(6)(i) of the Patent Act.

Regarding Reason 3 (Enablement requirement, Ministerial Ordinance requirement)

The detailed description of the invention of the present application is not clear and sufficient to enable a person skilled in the art to carry out, regarding the Invention, and does not include matters necessary for a person skilled in the art to understand the technical significance of the Invention. Thus, the description of the detailed

description of the invention does not satisfy the requirements stipulated in Article 36(4)(i) of the Patent Act.

Regarding Reason 4 (Novelty) and Reason 5 (Inventive step)

The Invention, which is identical with the invention described in the following Cited Document 1 which was distributed or made publicly available through an electric telecommunication line in Japan or a foreign country prior to the filing of the present application, falls under the provisions of Article 29(1)(iii) of the Patent Act. Thus, the Appellant should not be granted a patent for the invention.

The Invention, which could have been easily made by a person ordinarily skilled in the art of the invention before the filing of the application on the basis of the following Cited Document 1 which was distributed or made publicly available through an electric telecommunication line in Japan or a foreign country prior to the filing of the present application, falls under the provisions of Article 29(2) of the Patent Act. Thus, the Appellant should not be granted a patent for the invention.

Cited Document 1: International publication No. 2013/065706

No. 4 Judgment by the body on Support requirement

The problem to be solved by the Invention is to provide a rotary compressor which has low noise in the range of 1000 Hz-1250 Hz frequency band, simple and reasonable structure, the noise being produced in the middle cavity and the upper cavity when high pressure gas refrigerant is discharged from a compression pump to the middle cavity ([0002] [0003]).

To solve the above problem, the Invention includes a constituent component, "Dst and Drt satisfy a relationship: $0.335 \leq Dst/Drt \leq 0.838$".

Regarding the matter that a value of the "ratio" "Dst/Drt" falls within a predetermined numerical range, both Drt and Dst may be varied, in the case where Dst is adjusted based on fixed Drt so that the ratio may fall within the predetermined numerical range, as well as the case where Drt is adjusted based on fixed Dst are possible. The technical significance for the value of the "ratio" "Dst/Drt" falling within the predetermined range is unclear.

A natural frequency having a deep relationship with noise relates to a wavelength of noise, and depends on a dimension (diameter or volume) of a noise source, which is known as a matter of common general technical knowledge, "Dst/Drt" is a

dimensionless value which does not reflect the noise source dimension per se, and it is not a well-known dimensionless number in the technical field of machinery related to noise.

Paragraph [0028] in the detailed description of the invention and FIG. 5 show one example about a relationship between the value of Dst/Drt and a noise OA value α when the rotary compressor is in operation. However, there is no definition about the noise OA value α, and a unit of the noise OA value α and a frequency band of the noise are unclear. There is no other description about a technical relationship between "Dst/Drt" and the noise in the detailed description of the invention. Thus, a person skilled in the art cannot understand a relationship between the above ratio and the noise in the range of 1000 Hz-1250 Hz frequency band.

Even if there is a technical relationship between "Dst/Drt" and the noise, at the time of filing the application it had been known as a matter of common general technical knowledge that the magnitude or frequency of noise is affected by multiple factors, such as a structure of a noise source, characteristics of a fluid flow path, characteristics of a fluid, and operation conditions when the fluid flows. However, the detailed description of the invention includes no grounds on which the noise in the range of 1000 Hz – 1250 Hz frequency band can be reduced as long as only the value of "Dst/Drt" falls within a specific range regardless of the above multiple factors (concrete examples are shown below). Thus, it should be said that the result of the above example is low in reliability.

(Example)

· Characteristics of a fluid flow path of a high pressure gas refrigerant which is discharged from a compression mechanism into a housing then discharged to the outside of the housing (shape, cross-sectional area, representative length, structure, or the like of an outlet to the inside of the housing from the compression mechanism, a vent hole passing through a rotor core, a gap between a rotor and a stator, and an outlet to the outside of the housing from an upper cavity)

· Shape, volume, or the like of cavities in a housing

· Discharge pressure, flow velocity, flow rate, concentration, viscosity coefficient, or the like of a compression refrigerant

· Rotation speed or the like of a compression mechanism

In addition, even if a rotary compressor to be used for compressing refrigerant gas in an air conditioning system has a common-sense range for parameters, the

Invention does not even specify that a compressed fluid is refrigerant gas or that the rotary compressor is used in an air conditioning system.

The results shown in [0028] of the detailed description of the invention and FIG. 5 are results obtained under specific conditions, and they are only results under the specific conditions. It cannot be said that the results show an example so that a person skilled in the art can recognize that the Invention can solve the above problem under all preconditions where factors other than Dst/Drt may be changed. Thus, it cannot be said that the Invention is within the range such that a person skilled in the art can recognize that the problem to be solved by the Invention can be solved in view of the common general technical knowledge at the time of filing of the application.

Accordingly, the Invention is not described in the detailed description of the invention. Thus, the recitation of the scope of claims in the present application does not satisfy the requirements stipulated in Article 36(6)(i) of the Patent Act.

No. 5 Judgment by the body on Enablement requirement and Ministerial Ordinance requirement

Paragraphs [0025] to [0029] of the detailed description of the invention describe that Dst and Drt satisfying a relationship "0.335≤Dst/Drt≤0.838" can effectively reduce operation noise of the rotary compressor 100.

Paragraph [0028] and FIG. 5 show one example as evidence. However, as examined in "No. 4 Judgment by the body on Support requirement", a person skilled in the art cannot understand a substantial relationship between the problem to be solved by the Invention and the matter that the value of the "ratio"; i.e., "Dst/Drt", falls within a predetermined numerical range, on the basis of the specification and common general technical knowledge at the time of filing of the application. The technical significance for specifying the value of "Dst/Drt" is unclear.

As examined in "No. 4 Judgment by the body on Support requirement", it had been known as a matter of common general technical knowledge at the filing of the application that the magnitude or frequency of noise is affected by multiple factors. There is no technical description in the detailed description of the invention about effectively reducing operation noise with arbitrary values of parameters other than Dst/Drt. The above example also does not describe a case where parameters other than Dst/Drt are changed. Thus, a person skilled in the art cannot understand a condition (how to set parameters other than Dst/Drt) to obtain the results in FIG. 5 and effectively reduce operation noise.

Accordingly, the detailed description of the invention is not clear and sufficient to enable a person skilled in the art to carry out, regarding the Invention, and does not include matters necessary for a person skilled in the art to understand the technical significance of the Invention. Thus, the description of the detailed description of the invention does not satisfy the requirements stipulated in Article 36(4)(i) of the Patent Act.

No. 6 Judgment by the body on Novelty and Inventive step

1 Description in Cited Document and Cited Invention

(1) Description in Cite Document 1

A Cited Document 1 describes the following matters. (The underlines were added by the body.)

"[0011] This embodiment will be described with drawings.

FIG. 1 illustrates a vertical cross-sectional view and a refrigeration cycle diagram of a sealed rotary compressor 1 and an accumulator 5 to be used in a refrigeration cycle device R."

"[0013] The compressor 1 will be described below.

The compressor 1 includes a sealed case 10. The sealed case 10 contains an electric motor part 11 in an upper part and a compression mechanism part 12 in a lower part. The electric motor part 11 and the compression mechanism part 12 are integrally connected via a rotary shaft 13."

"[0015] The electric motor part 11 comprises a rotor fixed to the rotary shaft 13 and a stator 16. The stator 16 has an inner circumferential wall facing an outer circumferential wall of the rotor 15 with a small gap, and an outer circumferential wall fixed to an inner circumferential wall of the sealed case 10.

[0016] The compression mechanism part 12 is of 2-cylinder type.

A first cylinder 17A has an inner diameter part along a central axis. The first cylinder 17A has an outer circumferential wall which is inserted and fitted into the inner circumferential wall of the sealed case 10, and fixed by partial welding, for example. A main bearing 18 is mounted on an upper surface part of the first cylinder 17A. The main bearing 18 closes an upper-surface side of the inner diameter part of the first cylinder 17A."

"[0043] A high-temperature high-pressure gas refrigerant in the sealed case 10 is introduced to an upper part of the sealed case 10 through a gas guide path arranged along an axial direction of the electric motor part 11 and discharged to a refrigerant pipe

P. The gas refrigerant is introduced to a condenser 2 and exchanges heat with the outside air or water to be condensed, resulting in a liquid refrigerant. The liquid refrigerant is adiabatically expanded by an expansion valve, and exchanges heat with atmosphere to be evaporated in an evaporator 4."

"[0045] FIG. 2 illustrates a vertical cross-sectional view of a sealed rotary compressor 1A of 1-cylinder type and a refrigeration cycle diagram of a refrigeration cycle device R. The same numbers are assigned to the same components as those of the sealed rotary compressor 1 of 2-cylinder type and the refrigeration cycle device R shown in FIG. 1, to omit repetitive explanation.

[0046] A difference from the sealed rotary compressor 1 of 2-cylinder type is that one cylinder 17 is used and that an inner-diameter part thereof is closed by a main bearing 18 from the top surface and by a sub-bearing 21 from the bottom surface to form a cylinder chamber D. Discharge notches are formed in the same position on the top surface and the bottom surface of the cylinder chamber D."

"[0059] As shown in FIG. 1 and FIG. 2, in both compressors 1 and 1A of 2-cylinder type and 1-cylinder type, the following expression (1) is satisfied when the dimension from a top end surface, which is one end surface, of a stator core 16a to one end surface of the sealed case 10 with respect to an axial length H of the stator core 16a of the stator 16 in the electric motor part 11 is A and a distance from a lower end surface, which is the other end surface, of the stator core 16a to an end surface of a member that fixes the compression mechanism part 12 to the sealed case 10; i.e., a first cylinder 17A in the 2-cylinder type or a cylinder 17 in the 1-cylinder type, is B.

$$0.5<B/A<1 \quad \ldots\ldots \quad (1)"$$

FIG. 2 shows the sealed case 10 having an upper end surface and a lower end surface formed at both axial ends.

B Cited Invention

According to A, it is recognized that the following invention (hereinafter referred to as "Cited Invention") is described in Cited Document 1.

"A sealed rotary compressor 1A comprising:

a sealed case 10 having an upper end surface and a lower end surface formed at both axial ends;

an electric motor part 11 housed in an upper part of the sealed case 10 and having a stator core 16a and a rotor 15; and

compression mechanism part 12 housed in a lower part of the sealed case 10,

having a cylinder 17 and a main bearing 18, the main bearing 18 closing the cylinder 17 from the top surface."

2 Comparison

(1) The Invention and the Cited Invention are compared below.

A The "upper end surface" in the Cited Invention corresponds to the "first end wall" in the Invention. The same applies hereinafter as follows:

the "lower end surface" corresponds to the "second end wall";

the "sealed case 10" corresponds to the "housing";

the description "housed in an upper part of the sealed case 10" corresponds to the description "placed in the housing".

B It is obvious that the rotor 15 in the Cited Invention includes an iron core, the description in the Cited Invention "an electric motor part 11 having a stator core 16a and a rotor 15" corresponds to the "motor" "comprising a stator core and a rotor core" in the Invention.

C The matter in the Cited Invention "housed in a lower part of the sealed case 10" corresponds to the matter in the Invention "placed in the housing and located at one side of the motor far away from the first end wall". The same applies hereinafter as follows:

the "cylinder 17" corresponds to the "cylinder assembly";

the "main bearing 18" corresponds to the "main bearing";

the matter "the main bearing 18 closing the cylinder 17 from the top surface" corresponds to the matter "connected to a side end face of the cylinder assembly adjacent to the electric motor";

the "compression mechanism part 12" corresponds to the "compression mechanism";

the "sealed rotary compressor 1A" corresponds to the "rotary compressor".

(2) Corresponding Feature and Different Feature

According to the above, the Invention and the Cited Invention have the following corresponding feature and different feature.

<Corresponding Feature>

"A rotary compressor comprising:

a housing having a first end wall and a second end wall formed at both ends in an axial direction;

a motor placed in the housing and comprising a stator core and a rotor core; and

a compression mechanism placed in the housing and located at one side of the motor far away from the first end wall, the compression mechanism comprising a cylinder assembly and a main bearing, the main bearing being connected to a side end face of the cylinder assembly adjacent to the electric motor."

<Different Feature>

In the Invention, "in the axial direction of the housing, the largest distance between a side end face of the stator core adjacent to the first end wall and the first end wall is denoted by Dst", and when "the smallest distance between a side end face of the rotor core adjacent to the first end wall and a side end face of a flange portion of the main bearing adjacent to the first end wall is denoted by Drt", "Dst and Drt satisfy a relationship: $0.335 \leq Dst/Drt \leq 0.838$", whereas in the Cited Invention, the above relationship is unclear.

3 Judgment

The Different Feature is examined below.

Even considering the detailed description of the Invention, technical significance of the dimensions Dst and Drt is unclear.

Based on common general technical knowledge at the time of filing of the application, it is recognized that Dst indicates a height of a space part located above the electric motor part in the sealed case of the compressor, and Drt indicates a height obtained by adding a height of an intermediate space part located between the compression mechanism upper part and the electric motor part to a height of the electric motor part.

There is no technical reason for securing the height of the space part above the electric motor part larger than the height obtained by adding the height of the intermediated space part located between the compression mechanism upper part and the electric motor part to the height of the electric motor part. Considering a general problem, such as downsizing of a compressor, it is rational to reduce the height of the space part located above the electric motor part to the extent that a wiring space for the electric motor part or a space for a discharge mechanism to the outside of the sealed case can be secured or that a clearance between a wiring or a rotation element of the electric motor part and the sealed case can be secured. Thus, it is common that Dst is smaller than Drt and falls within a predetermined range.

Even though it is generally difficult to know an accurate dimension from

drawings of a patent document, that the length of A is slightly smaller than the lengths of B and H is understandable from FIG. 2 of Cited Document 1, and that a value of Dst/Drt falls within the range of the Invention at least.

Accordingly, the above Different Feature is not a substantial different feature. There is no difference between the Invention and the Cited Invention. The Invention is identical with the Cited Invention.

Even if there is a difference between them, a person skilled in the art could have easily conceived that the value of Dst/Drt falls within the range of the Invention as a result, under the above general problem, in setting the dimension of the electric motor part 11, etc. of the Cited Invention appropriately.

4 Summary

As above, the Invention, which is identical with the Cited Invention, falls under the provisions of Article 29(1)(iii) of the Patent Act, or the Invention, which could have been easily made by a person skilled in the art on the basis of the Cited Invention, falls under the provisions of Article 29(2) of the Patent Act. Thus, the Appellant should not be granted a patent for the invention.

No. 7 Appellant's allegation

The Appellant alleges in the written opinion submitted on December 17, 2020 as follows: "A noise value is determined by a structure which responds to an excitation source (environment of use or operation condition) and a frequency band derived from the excitation source. However, the frequency band derived from the excitation source is wide. Thus, the noise value is determined based on a structure per se corresponding to a frequency band of the noise mainly. The Invention is an invention for reducing noise in a specific frequency band (1000 Hz-1250 Hz). Therefore, under the same environment of use or operation condition, noise in the specific frequency band (1000 Hz-1250 Hz) is minimized by the configuration of a compressor described in the present application. Specifically, FIG. 5 and FIG. 6 of the present application show that noise is varied when Dst/Drt or only D is changed.

Accordingly, when a person skilled in the art refers to the specification of the present application, it is inferred noise can be reduced in an actual environment (e.g., outdoor temperature: 7°C, indoor temperature: 20°C) by using the technique in the present application."

However, Claim 1 of the present application does not specify the environment of use or structure described in the detailed description of the invention (even the matters

that the compressed fluid is refrigerant gas and that the rotary compressor is used in an air conditioning system). Even by limited interpretation, general air conditioning systems, such as for small rooms or for buildings, vary in configuration, size, or operation condition. Thus, an environment of use, operation condition, and configuration for the Appellant's allegation "under the same environment of use or operation condition, the configuration of a compressor described in the present application" cannot be specified.

As examined in "No. 4 Judgment by the body on Support requirement" and "No. 5 Judgment by the body on Enablement requirement and Ministerial Ordinance requirement", a noise value and a frequency band of noise are dependent on these factors. Therefore, the above Appellant's allegation cannot be accepted.

The Appellant also alleges in the written opinion as follows: "Cited Document 1 does not disclose definitions of 'Drt' and 'Dst' or a ratio thereof, which are specified in Claim 1 of the present application. Accordingly, even considering common general technical knowledge, it is unclear that a ratio of 'Drt' and 'Dst' is associated with a magnitude of noise. Therefore, there is no motivation for limitation to a dimension corresponding to 'Drt' or 'Dst' even when a person skilled in the art refers to Cited Document 1.

Cited Document 1 presents various means for reducing noise, for example, S2 is larger than S1 (S2>S1) when a total cross-sectional area of a communication path is S1 and a total area of a discharge part in the sealed case arranged in a first muffler is S2, or 0.5<B/A<1 when the dimension from a top end surface of a stator core to one end surface of the sealed case is A and a distance from a lower end surface of the stator core to an end surface of a member that fixes the compression mechanism part to the sealed case is B (Claim 1). Therefore, there is no motivation for a person skilled in the art not to affect the advantageous effect of Cited Document 1 and further to modify the configuration of Cited Document 1."

However, even under the conditions "S1<S2" or "0.5<B/A<1" described in Cited Document 1, as examined in " No. 6 Judgment by the body on Novelty and Inventive step", the Invention is not substantially different from the Cited Invention.

Even if there is a difference, the range $0.335 \leq Dst/Drt \leq 0.838$ is a general numerical range which can be satisfied by considering a general problem, such as downsizing of a compressor or securing a necessary clearance between members, and it can be easily conceived by a person skilled in the art. Therefore, the above Appellant's allegation also cannot be accepted.

No. 8 Closing

As above, the present application, for which the recitation of the scope of claims does not satisfy the requirements stipulated in Article 36(6)(i) of the Patent Act, should be rejected.

The present application, for which the description of the detailed description of the invention does not satisfy the requirements stipulated in Article 36(4)(i) of the Patent Act, should be rejected.

Furthermore, the Invention falls under the provisions of Article 29(1)(iii) of the Patent Act or falls under the provisions of Article 29(2) of the Patent Act. Thus, the Appellant should not be granted a patent for the Invention. The present application should be rejected without examining other inventions according to other claims.

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

March 3, 2021

Chief administrative judge: KUBOTA, Haruhiko
Administrative judge: OGAWA, Kyoji
Administrative judge: YAMAMOTO, Takeharu