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(54) **SCROLL-TYPE COMPRESSOR**

(57) The present invention provides a scroll-type compressor capable of reducing noise of any arbitrary frequency band occurring in the scroll-type compressor. This scroll-type compressor (1) is provided with: a revolving scroll (30) rotatably connected to an eccentric shaft portion of a main shaft (17); a stationary scroll (20) facing the revolving scroll (30) to form a compression chamber (PR) compressing refrigerant, and having an ejection port (23) in a stationary end plate (21), the ejection port ejecting compressed refrigerant toward a high-pressure chamber (10B); and a discharge cover (25) covering the ejection port (23). The ejection port (23) includes an upstream port section (23A) provided on the upstream side in the inflow direction of the refrigerant, and a downstream port section (23B) provided on the downstream side in the inflow direction of the refrigerant, the downstream port section having a greater volume than the upstream port section. Moreover, the downstream port section (23B) includes a partitioning wall (40) partitioning the interior of the downstream port section (23B) into a plurality of areas, and a refrigerant passage passing the refrigerant through the plurality of areas.

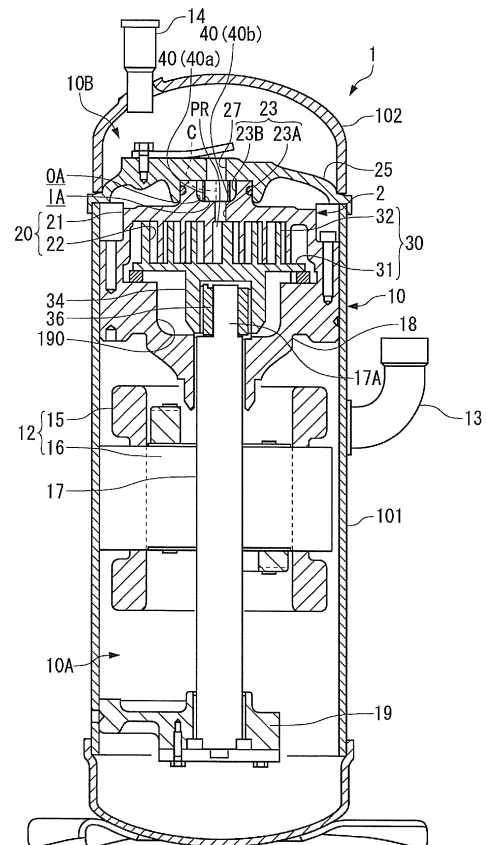


FIG. 1

Description

TECHNICAL FIELD

[0001] The present invention relates to a scroll-type compressor configuring an air conditioning device for indoor use, for example.

BACKGROUND ART

[0002] A scroll-type compressor used in a refrigerating cycle of an air conditioning device, a refrigerating device, and the like is provided with a stationary scroll and a revolving scroll. The stationary scroll and the revolving scroll are each formed by a spiral-shaped wrap wall being integrally formed with one surface of an end plate having a round shape. Such a stationary scroll and revolving scroll are made to face each other with the wrap walls mutually engaged, and the revolving scroll is revolved with respect to the stationary scroll by an electric motor or the like. Then, a compression chamber formed between the two wrap walls is displaced from an outer circumferential side to an inner circumferential side while decreasing in volume. As such, a refrigerant gas within the compression chamber is compressed.

[0003] The refrigerant gas compressed in the compression chamber passes through to an ejection port formed in the end plate of the stationary scroll, flows into a high-pressure chamber between a discharge cover and a housing, and is further ejected from an ejection pipe provided in the housing toward a refrigerant circuit.

[0004] The ejection port formed in the stationary scroll has an influence on the performance or noise of the scroll-type compressor. As such, various ejection ports have been proposed.

[0005] For example, in Patent Document 1, in order to suppress vibrations and noise due to ejection of fluid compressed by the revolving motion of the scroll, fitting a collar having a hollow tube shape to the ejection port is proposed. Providing such a collar enables the vibration force of pressure pulses within the tube to be reduced, and an increase in compressor noise to be suppressed.

CITATION LIST

Patent Literature(s)

[0006] Patent Document 1: Japanese Unexamined utility Model Application Publication No. H4-82391U

SUMMARY OF INVENTION

Technical Problem

[0007] However, the vibrations and noise produced by the scroll-type compressor occur across a wide range of frequency. Accordingly, reducing noises in the entire frequency range using a single noise reduction measure is

difficult. As such, there is a need to apply a countermeasure corresponding to a target frequency for noise reduction. For example, in Patent Document 1, the volume of the ejection port provided with a collar is limited, which makes it difficult to reduce the noise of a low-frequency range is difficult.

[0008] The present invention has been made in view of this technological problem, and thus an object thereof is to provide a scroll-type compressor enabling reduction in the noise of a desired frequency band produced by the scroll-type compressor.

Solution to Problem

[0009] The resonance frequency in the ejection port may be changed by changing the length and volume (hereinafter termed specifications) of the ejection port. However, given restrictions on the dimensions of the scroll-type compressor, the specifications of the ejection port cannot be largely changed. As such, the resonance frequency cannot be changed either.

[0010] Therefore, in the present invention, the ejection port provided in the stationary scroll is partitioned into an upstream port section and a downstream port section and the volume of the downstream port section is increased, thereby the ejection port functioning as a muffler. In addition, the downstream port section is partitioned in order to have a plurality of compartments, thereby realizing a different resonance frequency than is obtained with a non-partitioned downstream port section. As such, noise reduction of a desired frequency band is made possible. However, there is a need for the plurality of partitioned compartments to function as a passage for the refrigerant in order for the refrigerant to pass through the downstream port section without waste.

[0011] That is, the scroll-type compressor of the present invention is provided with a revolving scroll rotatably connected to an eccentric shaft portion of a main shaft, a stationary scroll facing the revolving scroll to form a compression chamber compressing a refrigerant, and having an ejection port on an end plate, the ejection port ejecting the compressed refrigerant toward a high-pressure chamber, and a discharge cover covering the ejection port.

[0012] The scroll-type compressor of the present invention has the ejection port formed by an upstream port section provided on an upstream side in an inflow direction of the refrigerant, and a downstream port section provided on a downstream side in the inflow direction of the refrigerant, the downstream port section having a greater volume than the upstream port section. Moreover, the downstream port section is provided with partitioning wall(s) partitioning the interior of the downstream port section into a plurality of areas, and with a refrigerant passage passing the refrigerant through the plurality of areas.

[0013] In the scroll-type compressor of the present invention, the partitioning wall is provided in the down-

stream port section of the ejection port, and the specifications of the partitioning wall, such as the length and height, can be set as desired. That is, tuning of the partitioning wall is made possible. As a result, sound reduction in a desired frequency band is enabled by tuning the partitioning wall in correspondence with the target scroll-type compressor.

[0014] Typically, the ejection port including the downstream port section has a round internal space (cavity) formed therein. Taking this as a given, the partitioning wall preferably has a horizontal cross-section in an arc shape. This serves to minimize turbulence in the flow of refrigerant passing through the downstream port section. The arc-shaped partitioning wall may be provided in one of singularity and plurality along the circumferential direction of the downstream port section. In a case where the partitioning wall is provided in plurality, symmetrically positioning the partitioning walls is preferable in order to minimize the turbulence in the flow of the refrigerant.

[0015] In the present invention, any means may be used to provide the partitioning wall. However, forming the partitioning wall integrally with the discharge cover is preferable. The discharge cover is manufactured by casting, similarly to the revolving scroll and the stationary scroll. However, integrally forming the partitioning wall by casting reduces the number of manufacturing processes in comparison to fixing a separately manufactured partitioning wall. The partitioning wall with a rib is preferably formed integrally with the discharge cover in order to increase the rigidity.

Advantageous Effects of Invention

[0016] According to the present invention, a partitioning wall is provided in a downstream port section of a scroll-type compressor and tuning is applied to the partitioning wall. This produces sound reduction in a desired frequency band and suppresses noise.

Brief Description of Drawing(s)

[0017]

FIG. 1 is a vertical cross-sectional view of a scroll-type compressor of an embodiment.

FIG. 2A is a partial enlarged view of a vicinity of an ejection port of a stationary scroll of FIG. 1, and FIG. 2B is a perspective view schematically illustrating the vicinity of the ejection port of FIG. 2A.

FIGS. 3A to 3F are horizontal cross-sectional views for explaining various states of arrangement of a partitioning wall.

FIGS. 4A to 4C are horizontal cross-sectional views for explaining measures of improving rigidity of the partitioning wall.

FIG. 5 shows a sound reduction effect of the embodiment.

Description of Embodiments

[0018] The invention is described in detail below on the basis of embodiments illustrated in the accompanying drawings.

[0019] As illustrated in FIG. 1, a scroll-type compressor 1 of the present embodiment includes a housing 10 housing an electric motor 12 and a scroll-type compressor mechanism 2 driven by the electric motor 12. The scroll-type compressor 1 compresses a refrigerant such as R410C or R407C and, for example, supplies the refrigerant to a refrigerant circuit such as that of an air conditioning device or a refrigerator. The configuration of the scroll-type compressor 1 is described below.

[0020] The housing 10 is provided with a housing body 101 shaped as a bottomed cylinder open at a top end, and a housing top 102 covering an opening at the top end of the housing body 101.

[0021] An intake pipe 13 is provided on a side face of the housing body 101, introducing the refrigerant from an accumulator (not illustrated) into the housing body 101.

[0022] An ejection pipe 14 is provided on the housing top 102, ejecting the refrigerant compressed by the scroll-type compressor mechanism 2. The interior of the housing 10 is partitioned by a discharge cover 25 into a low-pressure chamber 10A and a high-pressure chamber 10B.

[0023] The electric motor 12 is provided with a stator 15 and a rotor 16.

[0024] The stator 15 is provided with a coil generating a magnetic field upon being supplied with electric power from a power supply unit (not illustrated) that is affixed to the side face of the housing body 101. The rotor 16 is provided with a permanent magnet and a yoke as main components, and further joined integrally with a main shaft 17 at the center.

[0025] An upper bearing 18 and a lower bearing 19 are provided at both ends of the main shaft 17 so as to interpose the electric motor 12, rotatably supporting the main shaft 17.

[0026] An accommodating space 190 is formed in the upper bearing 18. An eccentric pin 17A provided on the top end of the main shaft 17 protrudes and is accommodated by the accommodating space 190.

[0027] The scroll-type compressor mechanism 2 is provided with a stationary scroll 20 and a revolving scroll 30 configured to revolve with respect to the stationary scroll 20.

[0028] The stationary scroll 20 is provided with a stationary end plate 21 and a wrap 22 having a spiral shape originating from one face of the stationary end plate 21. The stationary scroll 20 also includes an ejection port 23 provided on the stationary end plate 21.

[0029] As illustrated in FIG. 2A, the ejection port 23 includes an upstream port section 23A and a downstream port section 23B that communicates with the upstream port section 23A and has a greater volume than the up-

stream port section 23A. Both the upstream port section 23A and the downstream port section 23B have round-shaped openings (cavities). The upstream port section 23A is disposed on an upstream side in a direction A of the flow of the refrigerant, and the downstream port section 23B is disposed on a downstream side thereof. Enlarging an opening surface area of the downstream port section 23B, positioned on the downstream side in the direction A, enables a reduction in pressure loss for the refrigerant in that section. Here, FIG. 2B only illustrates the surrounding vicinity of the downstream port section 23B with the discharge cover 25 removed, relating to the stationary end plate 21. The same applies to FIGS. 3A to 3F, described later.

[0030] The upstream side of the upstream port section 23A communicates with a compression chamber PR formed between the stationary scroll 20 and the revolving scroll 30. In addition, the downstream side of the downstream port section 23B communicates with an ejection port 27 of the discharge cover 25 covering the top of the stationary scroll 20.

[0031] A partitioning wall 40 is provided in the downstream port section 23B. The partitioning wall 40 is formed of partitioning walls 40a, 40b having identical shapes and identical dimensions, each having a horizontal cross-section in an arc shape.

[0032] The partitioning wall 40 partitions the downstream port section 23B into an outside area OA and an inside area IA, thus changing the natural frequency of the downstream port section 23B. The partitioning walls 40a, 40b are symmetrically disposed centered on the center C of the downstream port section 23B. Symmetrically disposing the partitioning wall 40 enables turbulence in the flow of the refrigerant in the downstream port section 23B to be minimized. A gap G is provided between end portions E, E of the partitioning walls 40a, 40b in the circumferential direction. This gap G is provided across the entirety of the partitioning walls 40a, 40b in the height direction, and makes the outside area OA communicate with the inside area IA in the radial direction. The refrigerant flowing into the downstream port section 23B passes through the refrigerant passage connecting the outside area OA, the gap G, and the inside area IA, and flows into the ejection port 27 of the discharge cover 25.

[0033] The partitioning wall 40 is integrally formed with the discharge cover 25 and is provided so that a tip of the partitioning wall 40 is in contact with a surface of the stationary end plate 21.

[0034] The action and effect obtained by providing the partitioning wall 40 are described later.

[0035] The revolving scroll 30 is likewise provided with a revolving end plate 31 having a round shape, and a wrap 32 having a spiral shape originating from one face of the revolving end plate 31.

[0036] A boss 34 is provided on a back face of the revolving end plate 31 of the revolving scroll 30, and a drive bush 36 is assembled on the boss 34 through a

bearing. The eccentric pin 17A is fit into the drive bush 36. As a result, the revolving scroll 30 is eccentrically joined to a shaft center of the main shaft 17. As such, upon rotation of the main shaft 17, the revolving scroll 30 rotates (revolves) with an eccentric distance from the shaft center of the main shaft 17 as a radius of revolution.

[0037] Here, an Oldham's ring (not illustrated) is provided between the revolving scroll 30 and the main shaft 17 in order to restrain the rotation of the revolving scroll 30 so that the revolving scroll 30 does not rotate upon itself while revolving.

[0038] The wraps 22, 32 have a predetermined amount of eccentricity with respect to each other, engage with each other with a phase offset of 180°, and are in contact with each other at a plurality of positions according to a rotation angle of the revolving scroll 30. Then, the compression chamber PR is formed with point symmetry with respect to a central portion (innermost circumferential portion) of the spirals of the wraps 22, 32. Also, as the revolving scroll 30 revolves, the compression chamber is displaced gradually toward the inner circumferential side while decreasing in volume. Then, the refrigerant is maximally compressed at the central portion of the spirals. The compression chamber PR illustrated in FIG. 1 depicts this portion.

[0039] In the scroll-type compressor mechanism 2, the volume of the compression chamber PR formed between the two scrolls 20, 30 is also reduced in the height direction of the wraps in the middle of the spirals. To this end, the height of the wrap in both of the stationary scroll 20 and the revolving scroll 30 is less on the inner circumferential side than the outer circumferential side. Also, an end plate on an opposite side of the stepwise wraps is made to protrude inward to a greater extent at the inner circumferential side than the outer circumferential side.

[0040] The scroll-type compressor 1 provided with the above-described configuration is subject to excitation of the electric motor 12 and introduction of the refrigerant into the housing 10 through the intake pipe 13.

[0041] Upon excitation of the electric motor 12, the main shaft 17 rotates, thereby revolving the revolving scroll 30 with respect to the stationary scroll 20. Then, the refrigerant is compressed in the compression chamber PR between the revolving scroll 30 and the stationary scroll 20, and the refrigerant introduced into the low-pressure chamber 10A within the housing 10 from the intake pipe 13 is taken in between the revolving scroll 30 and the stationary scroll 20. Afterward, the refrigerant compressed in the compression chamber PR passes through the ejection port 23 of the stationary end plate 21 and the ejection port 27 of the discharge cover 25 in the stated order and is ejected into the high-pressure chamber 10B, and is then further ejected to the outside from the ejection pipe 14. As such, the intake, compression, and ejection of the refrigerant are continuously performed.

[Action and Effects]

[0042] Next, the actions and effects obtained by providing the partitioning wall 40 in the downstream port section 23B are described.

[0043] The refrigerant compressed by the stationary scroll 20 and the revolving scroll 30 is ejected from the compression chamber PR to the upstream port section 23A, and passes through the upstream port section 23A and the downstream port section 23B in the stated order. The refrigerant having passed through the downstream port section 23B is ejected from the ejection port 27 into the high-pressure chamber 10B.

[0044] The refrigerant ejected into the high-pressure chamber 10B through this pathway produces a resonance at a frequency corresponding to each of the ejection ports. The production of this resonance causes a dramatic increase in amplitude of vibration of the ejection port, resulting in noise being increased.

[0045] As such, in the present embodiment, the internal space of the downstream port section 23B is partitioned into the outside area OA and the inside area IA by providing the partitioning wall 40 in the downstream port section 23B. Doing so changes the natural frequency of the downstream port section 23B relative to a case where the partitioning wall 40 is not provided. Changing the natural frequency in this manner enables a reduction in sound of a desired frequency band.

[0046] Here, in the present embodiment, the reduction in sound may be applied to a desired frequency band by setting a length L of the partitioning wall 40 to 1/2 the wavelength λ of the sound to be reduced.

[0047] The principles of sound reduction applied to the sound of a desired frequency are as follows.

[0048] Typically, the following relationship (Expression 1) holds for a sound velocity c, a frequency f, and a wavelength λ .

$$c = f \times \lambda \quad (\text{Expression 1})$$

where c is a sound velocity in m/s; f is a frequency in Hz; and λ is a wavelength in m.

[0049] Determining the frequency f of the sound to be reduced enables the wavelength λ to be calculated from Expression 1. Then, the length L of the partitioning wall 40 is set to 1/2 of the wavelength λ thus calculated.

[0050] Here, there is a tendency such that the longer the length L of the partitioning wall 40, the lower the frequency of the sound reduced, and conversely, the shorter the length of the partitioning wall 40, the higher the frequency of the sound reduced. Moreover, not only the length L but also the height T of the partitioning wall 40 may be subject to the tuning of the partitioning wall 40.

[0051] In order to confirm the effect of the present embodiment, the relationship between frequency and amount of sound reduction was investigated using both

a compressor provided with the partitioning wall 40 and a compressor not provided with the partitioning wall 40. The results are given in FIG. 5. The amount of sound reduction is indicated on the vertical axis. A larger value indicates a greater amount of sound reduction.

[0052] As shown in FIG. 5, providing the partitioning wall 40 for a frequency band of 1.6 kHz, for example, was found to reduce sounds by approximately 25 dB. Similarly, providing the partitioning wall 40 was found to enable the promotion of sound reduction in the frequency band of from 4.0 kHz to 5.0 kHz.

[0053] Given the above results, providing the partitioning wall 40 in the downstream port section 23B was confirmed as being able to reduce sounds corresponding to 1.6 kHz and 4.1 kHz, which are sources of noise.

[Examples of Partitioning Wall Shape]

[0054] The embodiment has been described above as symmetrically providing the two partitioning walls 40a, 40b having identical shapes and identical dimensions. However, the present invention is not limited in this manner. Various modifications to the shape pattern of the partitioning wall 40 may be added. Several examples are illustrated, with reference to FIGS. 3A to 3F.

[0055] For example, the partitioning walls 40a, 40b may be connected by a portion at one of the gaps G, thus forming the partitioning wall 40 in a C shape as illustrated in FIG. 3A. As such, the length L of the arc of the partitioning wall 40 is increased, thus enabling a reduction in sound of a lower frequency.

[0056] In addition, as illustrated in FIG. 3B, a center of symmetry C' of the partitioning wall 40 (40a, 40b) may be provided at a position having eccentricity with respect to the center C of the downstream port section 23B.

[0057] In addition, as illustrated in FIG. 3C, the partitioning walls 40a, 40b having different arc lengths may be used. Doing so enables sounds of different frequency bands to be reduced. In such a situation, as illustrated in FIG. 3C, the respective distances from the center C to the partitioning walls 40a, 40b may be different from each other.

[0058] In addition, as illustrated in FIG. 3D, the partitioning wall 40 may be provided as divided into three or more pieces (three in FIG. 3D). Providing the partitioning wall 40 in plurality enables the sound reduction effect to be increased.

[0059] In addition, as illustrated in FIG. 3E, partitioning walls 40A, 40C, 40B, 40D may be doubly provided with spacing in the radial direction. In such a case, the downstream port section 23B is partitioned into a plurality of areas. That is, each of the partitioning walls 40A to 40D partitions the downstream port section 23B into an inside area and an outside area in terms of the radial direction.

[0060] The overall length L of the arc of the partitioning wall 40 is increased, which is effective in a case where an increase in the sound reduction effect is desired. The partitioning walls 40 are not limited to being provided dou-

bly, and may also be provided triply or more.

[0061] Furthermore, as illustrated in FIG. 3F, the partitioning wall 40 may have a spiral shape. The partitioning wall 40 having the spiral shape partitions the downstream port section 23B into an inside area surrounded by the partitioning wall 40 in the radial direction and an outside area of the outermost circumference of the partitioning wall 40.

[0062] The length L of the partitioning wall 40 may be increased with the partitioning wall 40 having the spiral shape. As such, this configuration is effective for reducing sound of a lower frequency.

[0063] Here, the refrigerant flowing in from the upstream port section 23A passes through the downstream port section 23B while flowing in a spiral along the partitioning wall 40, and is ejected to the ejection port 27.

[0064] The shapes illustrated in FIGS. 3A to 3F may be combined as appropriate.

[0065] In addition, no limitation is intended to the arc shape (or oval arc shape) of the horizontal cross-section. For example, the partitioning wall 40 may have any of various shapes, including a linear shape, a U shape, and the like. Furthermore, in a case where a plurality, for example, two, of the partitioning walls 40a, 40b are provided, a non-symmetric arrangement may also be applied. In essence, any shape may be used for the partitioning wall provided that tuning of the partitioning wall in accordance with a frequency band of sound to be reduced is possible.

[Rigidity Improvement Example]

[0066] Next, there is a need to provide the partitioning wall 40 with rigidity in order to withstand the pressure from the refrigerant passing through the ejection port 23. Here, the term rigidity is used entirely in reference to a joining portion with the discharge cover 25.

[0067] In the present embodiment, as illustrated in FIG. 4A, the end portions E, E of the partitioning walls 40a, 40b each may be provided with a rib 41 extending toward the outside in the radial direction. Providing these ribs 41 improves the rigidity of the partitioning walls 40a, 40b with respect to the pressure of the refrigerant from the inside area 1A to the outside in the radial direction. The ribs 41 have the same height as the partitioning wall 40, and equal thickness in the height direction. However, no such limitation is intended provided that the effect of rigidity improvement is obtained.

[0068] The ribs 41 serve to form a throttle, in addition to serving the function of rigidity improvement. That is, providing the ribs 41 causes a port 44 of the refrigerant from the inside area 1A to the outside area OA to be throttled. As such, the effect of sound reduction is increased.

[0069] In addition to the rib 41, as illustrated in FIG. 4B, a rib 42 may also be provided at any position between the end portions E, E, for example at a median position. Doing so provides further improvement to the rigidity of the partitioning wall 40, and also forms a partitioning wall

50 having a length of $1/2 L$ between the rib 41 and the rib 42. As such, sound of a high frequency may also be reduced.

[0070] In order to improve the rigidity, as illustrated in FIG. 4C, a partitioning wall 43 having a wave-shaped horizontal cross-section may be applied. The partitioning wall 43 has portions corresponding to peaks and troughs of the wave shape producing a similar effect to the rib 41. Further, these portions are present in plurality, resulting in the partitioning wall 43 having higher rigidity.

[0071] The embodiments have been described above. However, as long as there is no departure from the spirit and scope of the present invention, configurations described in the above embodiments can be selected as desired, or can be changed to other configurations as necessary.

[0072] For example, provided that the downstream port section 23B is partitioned into the outside area OA and the inside area 1A, the partitioning wall 40 is not limited to being integrally formed with the discharge cover 25. For example, the partitioning wall 40 may also be integrally formed with the stationary end plate 21, or may be separately manufactured from the stationary end plate 21 and the discharge cover 25 and fixed to the downstream port section 23B at a predetermined position using an appropriate approach.

[0073] Furthermore, the tip of the partitioning wall 40 do not have to be in contact with the stationary end plate 21. The tip of the partitioning wall 40 may be separated from the stationary end plate 21, provided that the effect of noise reduction is obtained by the partitioning wall.

Reference Signs List

[0074]

- 1 Scroll-type compressor
- 2 Scroll-type compressor mechanism
- 10 Housing
- 10A Low-pressure chamber
- 10B High-pressure chamber
- 12 Electric motor
- 13 Intake pipe
- 14 Ejection pipe
- 15 Stator
- 16 Rotor
- 17A Main shaft
- 17A Eccentric pin
- 18 Upper bearing
- 19 Lower bearing
- 20 Stationary scroll
- 21 Stationary end plate
- 22, 32 Wrap
- 23 Ejection port
- 23A Upstream port section
- 23B Downstream port section
- 25 Discharge cover
- 27 Ejection port

30 Revolving scroll
 31 Revolving end plate
 34 Boss
 36 Drive bush
 40, 40a to 40d, 43 Partitioning wall
 41, 42 Rib
 44 Port
 101 Housing body
 102 Housing top
 190 Accommodating space
 A Direction
 OA Outside area
 IA Inside area
 C, C' Center
 G Gap
 PR Compression chamber

Claims

1. A scroll-type compressor comprising:

a revolving scroll rotatably connected to an eccentric shaft portion of a main shaft;
 a stationary scroll facing the revolving scroll to form a compression chamber compressing a refrigerant, and having an ejection port on an end plate, the ejection port ejecting the compressed refrigerant toward a high-pressure chamber;
 and
 a discharge cover covering the ejection port;
 the ejection port including:

an upstream port section provided on an upstream side in an inflow direction of the refrigerant; and
 a downstream port section provided on a downstream side in the inflow direction of the refrigerant, the downstream port section having a greater volume than the upstream port section;

the downstream port section including:

a partitioning wall partitioning an interior of the downstream port section into a plurality of areas; and
 a refrigerant passage passing the refrigerant through the plurality of areas.

2. The scroll-type compressor according to claim 1, wherein the downstream port section has a round cavity formed therein, and the partitioning wall having a horizontal cross-section in an arc shape is provided in one of singularity and plurality along a circumferential direction of the downstream port section.

3. The scroll-type compressor according to claim 1 or 2, wherein
 the partitioning wall is integrally formed with the discharge cover.

4. The scroll-type compressor according to any one of claims 1 to 3, wherein
 the partitioning wall with a rib is integrally formed with the discharge cover.

5. The scroll-type compressor according to any one of claims 1 to 4, wherein
 the partitioning wall is provided so as to have a tip in contact with a surface of the end plate.

6. The scroll-type compressor according to any one of claims 1 to 5, wherein
 the partitioning wall is symmetrically arranged with respect to a central portion of the downstream port section serving as a center.

7. The scroll-type compressor according to any one of claims 1 to 5, wherein
 the partitioning wall is symmetrically arranged with respect to a position having eccentricity relative to a central portion of the downstream port section serving as a center.

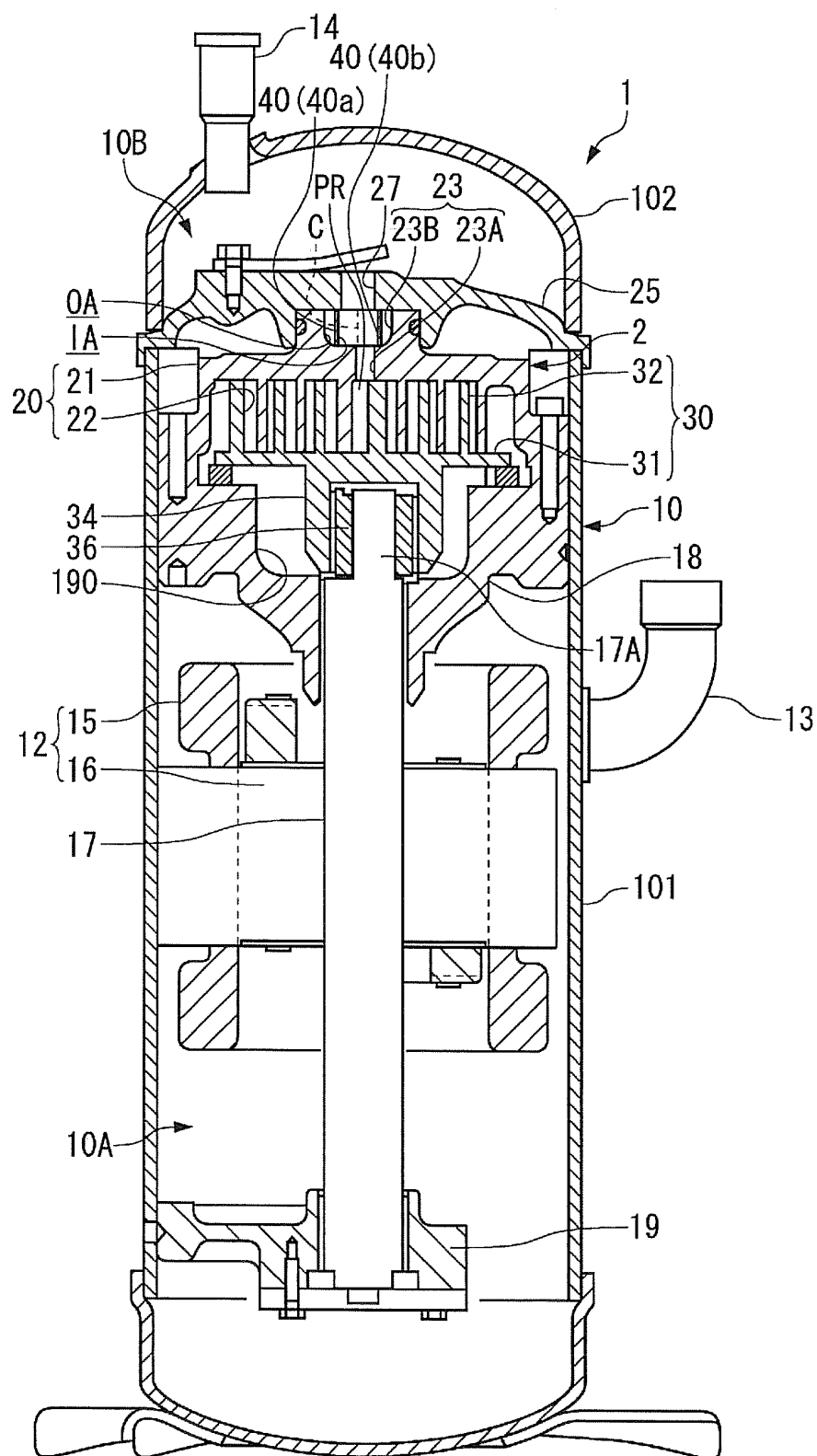


FIG. 1

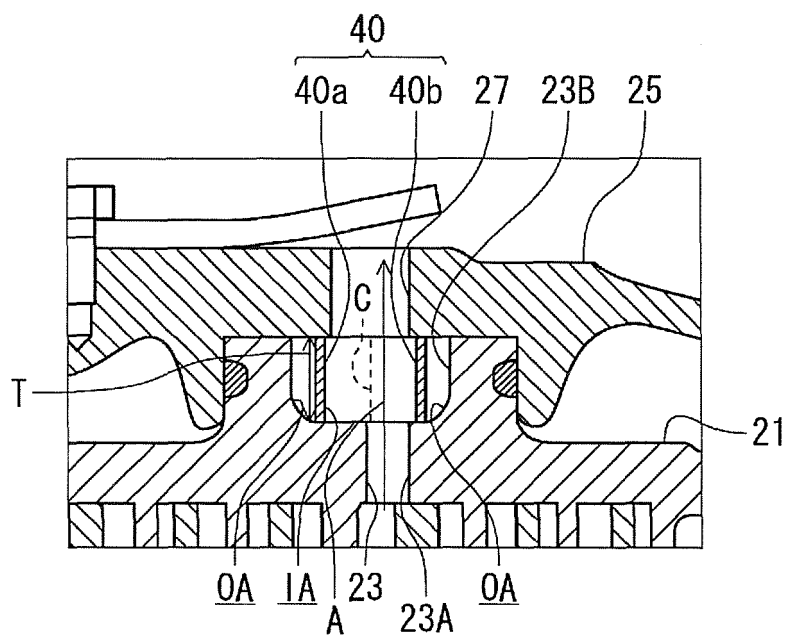


FIG. 2A

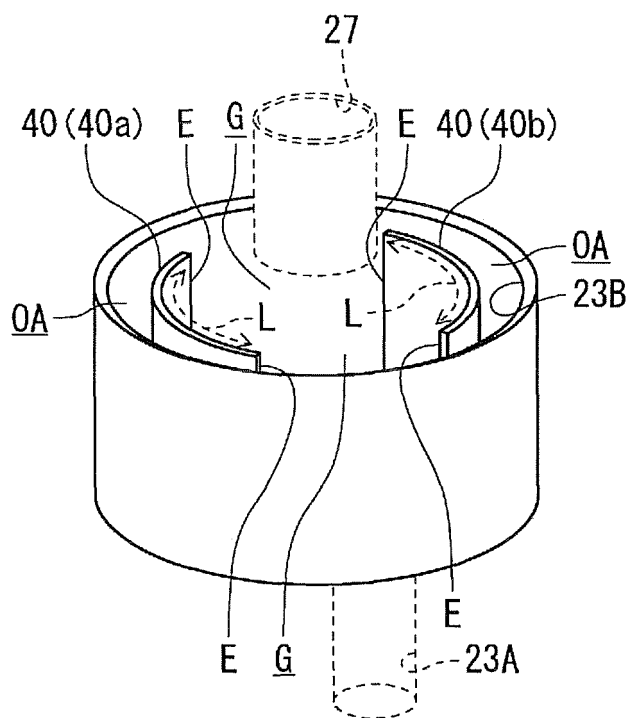


FIG. 2B

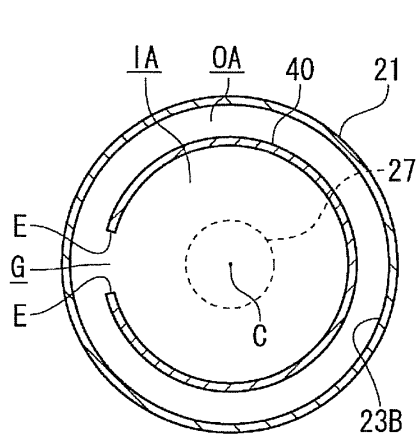


FIG. 3A

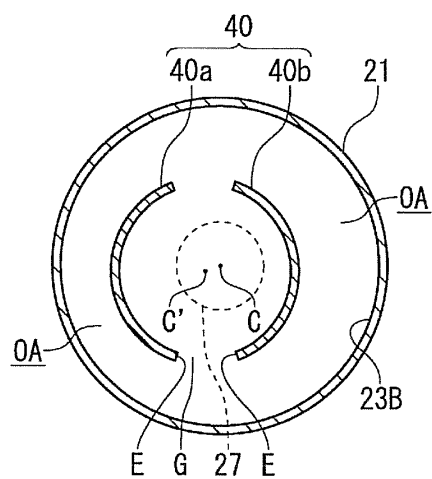


FIG. 3B

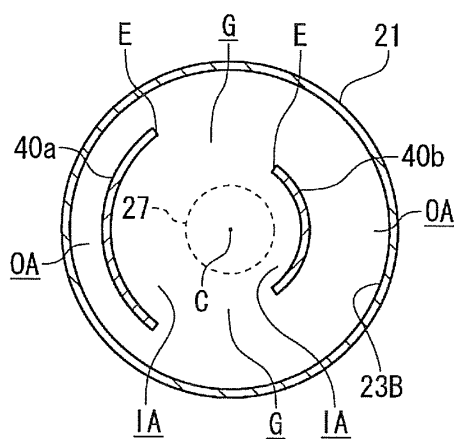


FIG. 3C

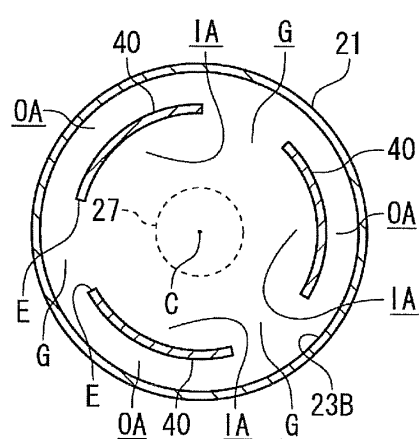


FIG. 3D

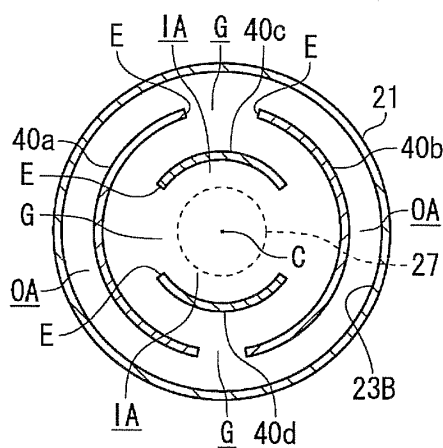


FIG. 3E

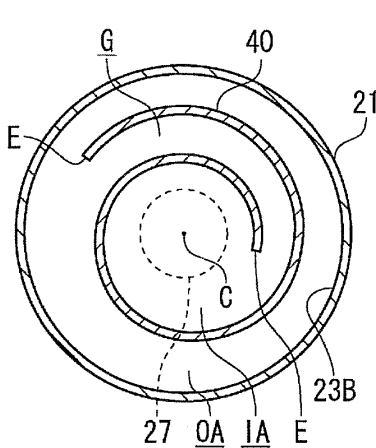


FIG. 3F

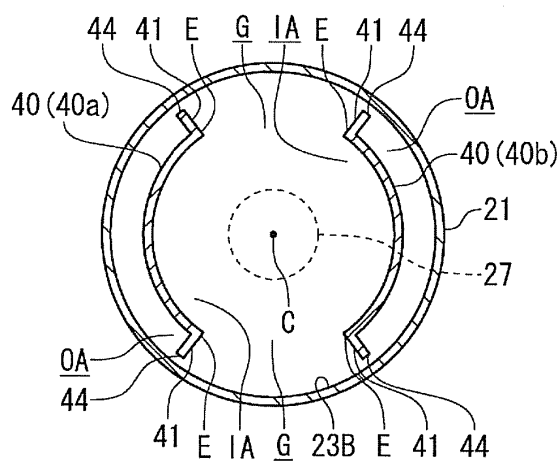


FIG. 4A

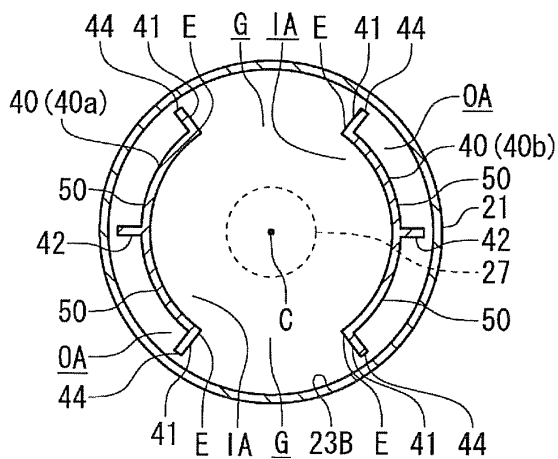


FIG. 4B

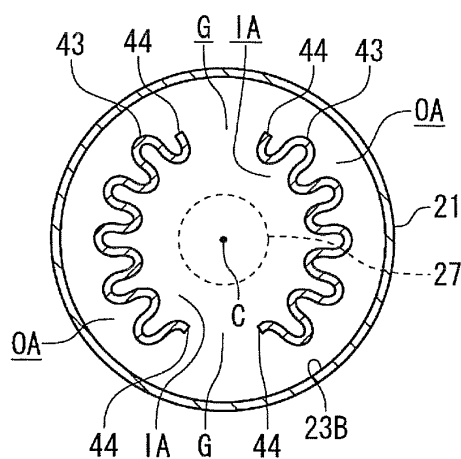


FIG. 4C

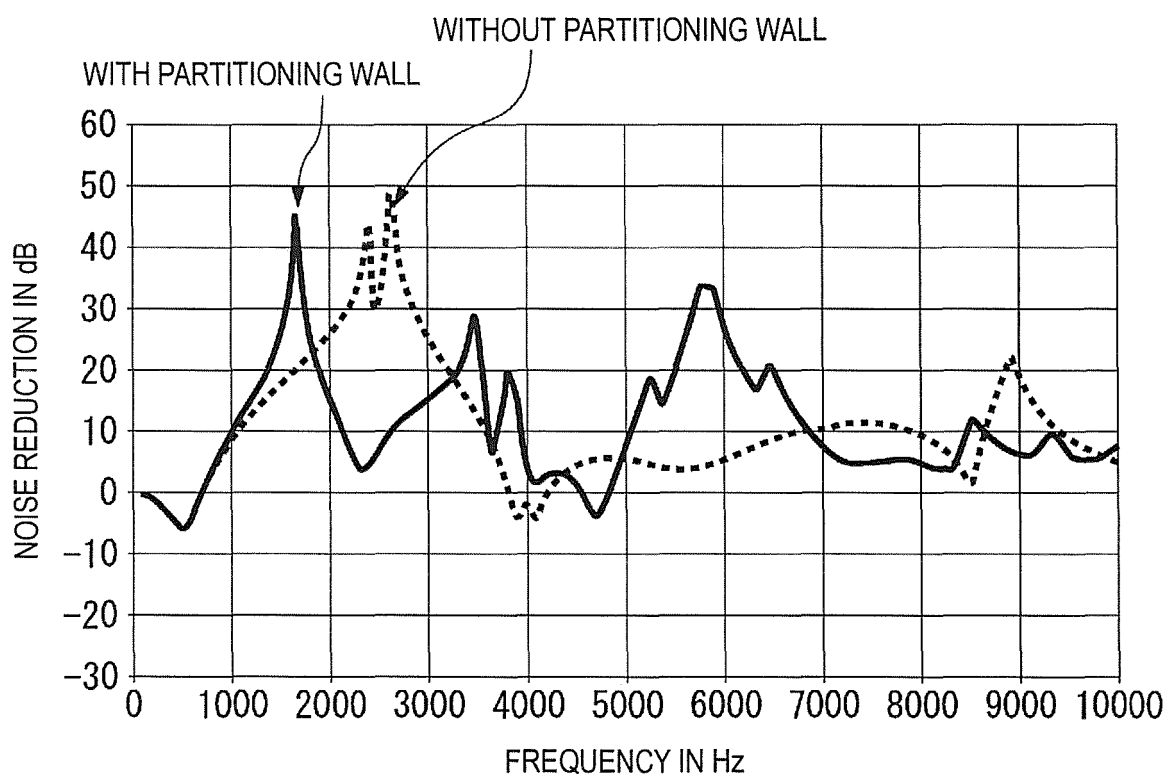


FIG. 5

INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2014/003106

A. CLASSIFICATION OF SUBJECT MATTER

F04C18/02(2006.01)i, F04C29/06(2006.01)i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

F04C18/02, F04C29/06

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Jitsuyo Shinan Koho 1922-1996 Jitsuyo Shinan Toroku Koho 1996-2014

Kokai Jitsuyo Shinan Koho 1971-2014 Toroku Jitsuyo Shinan Koho 1994-2014

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	JP 2012-122376 A (Mitsubishi Heavy Industries, Ltd.), 28 June 2012 (28.06.2012), entire text; all drawings (Family: none)	1-7
A	Microfilm of the specification and drawings annexed to the request of Japanese Utility Model Application No. 127179/1990 (Laid-open No. 82391/1992) (Mitsubishi Heavy Industries, Ltd.), 17 July 1992 (17.07.1992), entire text; all drawings (Family: none)	1-7

☒ Further documents are listed in the continuation of Box C.☐ See patent family annex.

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"&" document member of the same patent family

Date of the actual completion of the international search
09 September, 2014 (09.09.14)Date of mailing of the international search report
16 September, 2014 (16.09.14)Name and mailing address of the ISA/
Japanese Patent Office

Authorized officer

Facsimile No.

Telephone No.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2014/003106

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	JP 6-307356 A (Matsushita Electric Industrial Co., Ltd.), 01 November 1994 (01.11.1994), entire text; all drawings (Family: none)	1-7
A	US 5921761 A (Richard Edgar ECKELS), 13 July 1999 (13.07.1999), entire text; all drawings & EP 872642 A1 & CN 1197893 A	1-7
A	US 2009/0232670 A1 (Heng-Yi LAI), 17 September 2009 (17.09.2009), entire text; all drawings & WO 2007/027168 A1	1-7
A	JP 2001-132666 A (Hitachi, Ltd.), 18 May 2001 (18.05.2001), entire text; all drawings (Family: none)	1-7

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REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- JP H482391 U [0006]