

(19)



(11)

EP 2 169 232 B1

(12)

EUROPEAN PATENT SPECIFICATION

(45) Date of publication and mention
of the grant of the patent:
15.03.2017 Bulletin 2017/11

(51) Int Cl.:
F04C 29/02 ^(2006.01) **F04C 18/356** ^(2006.01)
F04C 23/00 ^(2006.01)

(21) Application number: **08710540.9**

(86) International application number:
PCT/JP2008/050097

(22) Date of filing: **09.01.2008**

(87) International publication number:
WO 2008/096560 (14.08.2008 Gazette 2008/33)

(54) **ROTARY COMPRESSOR**
ROTATIONSVERDICHTER
COMPRESSEUR ROTATIF

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR
HR HU IE IS IT LI LT LU LV MC MT NL NO PL PT
RO SE SI SK TR

(30) Priority: **06.02.2007 JP 2007027235**

(43) Date of publication of application:
31.03.2010 Bulletin 2010/13

(73) Proprietor: **Mitsubishi Heavy Industries, Ltd.**
Tokyo 108-8215 (JP)

(72) Inventors:
• **GOTO, Toshiyuki**
Nagoya-shi
Aichi 453-8515 (JP)
• **MATSUDA, Susumu**
Nagoya-shi
Aichi 453-8515 (JP)

- **MIURA, Shigeki**
Kiyosu-shi
Aichi 452-8561 (JP)
- **FUJITA, Yoshizumi**
Kiyosu-shi
Aichi 452-8561 (JP)
- **AKITA, Jun**
Kiyosu-shi
Aichi 452-8561 (JP)
- **ESAKI, Ikuo**
Kiyosu-shi
Aichi 452-8561 (JP)

(74) Representative: **Henkel, Breuer & Partner**
Patentanwälte
Maximiliansplatz 21
80333 München (DE)

(56) References cited:
EP-A1- 1 712 793 JP-A- 2006 336 463
JP-U- 60 187 377 JP-U- 60 187 377

Note: Within nine months of the publication of the mention of the grant of the European patent in the European Patent Bulletin, any person may give notice to the European Patent Office of opposition to that patent, in accordance with the Implementing Regulations. Notice of opposition shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European Patent Convention).

EP 2 169 232 B1

Description

Technical Field

[0001] The present invention relates to a rotary compressor.

Background Art

[0002] A rotary compressor is used for compressing a gas refrigerant in a refrigerant circuit in an air conditioning system such as a room air conditioner or a packaged air conditioner.

[0003] As such a rotary compressor, for example, a rotary compressor disclosed in JP 2005-337210 A is known.

[0004] EP 1712793 A1 discloses the basic features of a rotary compressor including a housing, a compression mechanism section in a lower side of the housing, and a drive part accommodated in an upper side of the housing. The drive part of the compressor according has a rotator that is fixed around a crank shaft and a stator that is disposed at an outer circumferential side of the rotator and is fixed to the housing. An oil separator plate is attached to an upper end face of a rotor core of the rotator and covers the upper end face of the rotor core and is situated in a concave portion formed by the crossover portion projecting from an upper end face of the stator core. A gap between the crossover portion and the stator core is closed in the compressor by a separate element and the upper end face of the rotor core is located higher than the closed gap.

Disclosure of Invention

[0005] In the rotary compressor disclosed in JP 2005-337210 A, a plurality of communicating channels are formed in a proximal end of a crossover portion of a stator core situated in the upside, each of which extends along a direction perpendicular to a rotation axis of a crank shaft, and communicates between the inside of a concave portion formed by the crossover portion of the stator core situated in the upside, and the inside of a barrel of a housing. Therefore, there has been a problem that a part of a mixture of a lubricant and a refrigerant gas, the mixture being introduced into the concave portion through a plurality of passages extending in a vertical direction along an axial hole of a rotor core, is discharged from the rotary compressor through the communicating channels, consequently the part of the mixture outflows into a refrigerant circuit at a downstream side.

[0006] The invention was made in the light of the above circumstance, and an object of the invention is to provide a rotary compressor that can improve oil separation efficiency.

[0007] The invention employs the following means for solving the problem.

[0008] A rotary compressor according to the invention

has the features of claim 1. The rotary compressor includes a rotary compressor having a housing, a compression mechanism section accommodated in a lower side of the housing, and a drive part accommodated in an upper side of the housing, in which the drive part has a rotator that is fitly fixed around a crank shaft, and rotates with the crank shaft, and a stator that is disposed at an outer circumferential side of the rotator and fixed to the housing, an oil separator plate is attached to an upper end face of a rotor core of the rotator such that the separator plate covers the upper end face, and is situated in a concave portion formed by a crossover portion projecting from an upper end face of a stator core of the stator, and a plurality of communicating channels, which communicate between the inside of the concave portion and the inside of a barrel of the housing, are formed at a proximal end of the crossover portion; wherein the rotator is fixed to the crank shaft such that the upper end face of the rotor core is situated at a position upper than the upper end face of the stator core, and when an open end situated at an entrance side of a communicating channel is seen from an open end situated at an exit side of the relevant communicating channel, a covering ratio of the open end, which is situated at the entrance side of the communicating channel, by a side face of the rotor core is 30% to 80%.

[0009] According to the rotary compressor according to the invention, when the open end situated at the entrance side of the communicating channel is seen from the open end situated at the exit side of the same communicating channel, a covering ratio of the open end, which is situated at the entrance side of the communicating channel, by the side face of the rotor core (stator-coil gap shielding ratio) is 30% to 80%, thereby the amount of mixture leaking (escaping) into the barrel of the housing through the communicating channels can be reduced, and the amount of mixture colliding with the crossover portion can be increased, consequently separation efficiency of oil particles can be improved.

[0010] Moreover, oil can be prevented from outflowing to the outside of the housing, so that a lubricant can be avoided from being insufficiently supplied to respective components within the housing, consequently life of the rotary compressor can be increased.

[0011] In an air conditioning system according to a further aspect of the invention, since a rotary compressor having improved oil separation efficiency is provided, a refrigerant gas containing oil can be prevented from outflowing into a refrigerant circuit, consequently system COP of the refrigerant circuit as a whole can be extremely improved.

[0012] According to the invention, an advantage that oil separation efficiency can be improved is obtained.

Brief Description of Drawings

[0013]

Fig. 1 shows a schematic, vertical section diagram of a rotary compressor according to a first embodiment of the invention.

Fig. 2 shows an enlarged vertical section diagram of a relevant part of Fig. 1.

Fig. 3 shows a graph showing a relationship between compressor efficiency and a stator-coil gap shielding ratio, and a relationship between system COP and the stator-coil gap shielding ratio in the rotary compressor according to the first embodiment of the invention.

Fig. 4 shows a schematic, vertical section diagram of a rotary compressor according to a first example.

Explanation of Reference:

[0014]

- 1: rotary compressor
- 2: housing
- 2a: barrel
- 3: compression mechanism section
- 4: drive part
- 16: crank shaft
- 21: rotator
- 22: stator
- 23: rotor core
- 23a: upper end face
- 23b: side face
- 28: oil separator plate
- 30: stator core
- 30a: upper end face
- 32: crossover portion
- 33: concave portion
- 35: communicating channel
- 40: rotary compressor
- 41: band member (closing member)

Best Mode for Carrying Out the Invention

[0015] Hereinafter, an embodiment of a rotary compressor according to the invention is described according to Figs. 1 to 3.

[0016] Fig. 1 shows a schematic, vertical section diagram of a rotary compressor according to the embodiment, Fig. 2 shows an enlarged vertical section diagram of a relevant part of Fig. 1, and Fig. 3 shows a graph showing a relationship between compressor efficiency and a stator-coil gap shielding ratio, and a relationship between system COP and the stator-coil gap shielding ratio in the rotary compressor according to the embodiment.

[0017] A rotary compressor 1 according to the embodiment is provided on a refrigerant circuit of an air conditioning system such as a room air conditioner or packaged air conditioner, and used for compressing a gas refrigerant circulating through the refrigerant circuit.

[0018] As shown in Fig. 1, the rotary compressor 1 has

a housing 2 being a closed vessel, and a compression mechanism section 3 for compressing a gas refrigerant supplied from the refrigerant circuit, and a drive part 4 for driving the compression mechanism section 3 are accommodated in the housing 2.

[0019] In the embodiment, the housing 2 is formed as an approximately cylindrical, closed vessel being closed at both ends, and installed with an approximately vertical axis. The compression mechanism section 3 is disposed in a lower side of the housing 2, and the drive part 4 is disposed above the compression mechanism section 3.

[0020] A lower side-face of the housing 2 is inserted with refrigerant pipes P1 and P2 of the refrigerant circuit from the outside, and the gas refrigerant is supplied from the refrigerant circuit to the compression mechanism section 3 through the refrigerant pipes P1 and P2.

Here, while not shown, an oil reservoir room is provided in a bottom of the housing 2, and a lubricant used for lubrication of the compression mechanism section 3 and the like is reserved in the oil reservoir room.

[0021] The compression mechanism section 3 compresses the gas refrigerant supplied through the refrigerant pipes P1 and P2 into a high-pressure compressed gas, then sends out the gas into the housing 2.

Here, a top of the housing 2 is inserted with a refrigerant pipe P3 from the outside, and the compressed gas being temporarily reserved in the housing 2 is sent to a downstream side of the refrigerant circuit through the refrigerant pipe P3.

[0022] The compression mechanism section 3 has a plurality of cylinders 11 each having a cylindrical inner-face 12, and the cylinders 11 are adjacently disposed in an axial direction in a manner that respective cylindrical inner-faces 12 are approximately coaxial with each other, and a separator 13 is interposed between the cylinders. A cylindrical rotor 14 having a smaller diameter than that of each cylindrical inner-face 12 is provided within each of the cylinders 11 with its axis being approximately parallel to an axis of each cylindrical inner-face 12.

[0023] A crank shaft 16 is inserted through the cylinders 11, separator 13, and rotors 14. The crank shaft 16 is provided with its axis being approximately parallel to an axial direction of the cylinders 11, and inserted into the compression mechanism section 3 at a lower-end side. Here, the crank shaft 16 is supported at an upper-end side by the drive part 4, and rotationally driven about the axis by the drive part 4. In the embodiment, the drive part 4 includes an electromotive motor having a rotor holding the upper-end side of the crank shaft 16, and the rotor is rotated to rotationally drive the crank shaft 16.

[0024] The crank shaft 16 has a region to be inserted into respective cylinders 11, in which approximately cylindrical, eccentric shafts 17 are provided, the shafts being engaged with inner circumferential faces of the rotors 14 respectively, and the crank shaft 16 is rotationally driven about the axis, thereby each rotor 14 is eccentrically rotated in a manner of rolling on the cylindrical inner surface 12 of each cylinder 11.

[0025] Here, the eccentric shafts 17 are provided while eccentric directions thereof are shifted approximately 180 degrees from each other about the axis of the crank shaft 16 (that is, phases are shifted about 180 degrees from each other about the axis). Thus, when the crank shaft 16 is rotationally driven, inertia moment produced in one eccentric shaft 17 and inertia moment produced in the other eccentric shaft 17 are cancelled by each other, so that rotation of the crank shaft 16 is stabilized.

Moreover, an array of the cylinders 11 is mounted with end bearings 18 at one end side and at the other end side respectively, and the crank shaft 16 is supported by the end bearings 18 while it can be rotated about the axis.

[0026] The drive part 4 has a rotator 21 being fitly fixed around the crank shaft 16, and a stator 22 arranged at an outer circumferential side of the rotator 21.

[0027] The rotator 21 includes a core (hereinafter, called "rotor core") 23 formed by stacking a plurality of thin materials such as silicon steel sheets formed in a certain shape, and the rotor core 23 has a plurality of through-holes (hereinafter, called "passages") 25 extending in a vertical direction along an axial hole 24 of the rotor core. Each of the passages 25 has a lower end being an open end, and a mixture of a lubricant, which is for smoothly driving the compression mechanism section 3 and the drive part 4, and the refrigerant gas flows into the passages 25 through the open ends. It is also acceptable that a cylindrical body is fitted in the axial hole 24 of the rotor core 23, and the crank shaft 16 is pressed into the cylindrical body.

[0028] On the other hand, as shown in Fig. 2, a disk-like oil separator plate 28 is mounted on an upper end face 23a of the rotor core 23 via an attachment stage 26 and fastening members (for example, bolts and nuts) 27 such that the plate 28 covers the upper end face 23a. In the attachment stage 26, a plurality of through-holes 29 are provided, which penetrate the stage 26 in a thickness direction, and are adjusted to open ends provided at upsides of the passages 25 respectively. The mixture of the lubricant and the refrigerant gas flowing into the passages 25 through the open ends provided at the lower side of the passages 25 outflows to the outside of the rotor core 23 (into a space formed between the upper end face 23a of the rotor core 23 and the oil separator plate 28) through the open ends provided at the upsides of the passages 25 and the through-holes 29 as shown in arrows in full line of Fig. 2.

[0029] As shown in Fig. 1, the stator 22 includes a core (hereinafter, called "stator core") 30 formed by stacking a plurality of thin materials such as silicon steel sheets formed in a certain shape, and coil ends (crossover portions) 31 wind on teeth of the stator core 30. In this case, crossover portions 32 of the coil ends 31 project from either of end faces 30a and 30b of the stator core 30, and thus form upper and lower concave portions 33 and 34 in the compression mechanism section 3. In the concave portion 33, the attachment stage 26 and the oil separator plate 28 are accommodated. The stator core 30

is fixed by pressing in a barrel 2a of the housing 2 (shrinkage fit).

[0030] As shown in Fig. 2, at a proximal end of the crossover portion 32 (end situated at a side of the stator core 30), a plurality of communicating channels 35 are formed, each of which extends in a direction perpendicular to the rotation axis of the crank shaft 16, and communicates between the inside of the concave portion 33 and the inside of the barrel 2a of the housing 2.

[0031] In the embodiment, the rotator 21 is fixed to the crank shaft 16 such that an upper end face 23a of the rotor core 23 is situated at a position upper than the upper end face 30a situated at an upside of the stator core 30, and when an open end situated at an entrance side (inside in a radial direction) of a communicating channel 35 is seen from an open end situated at an exit side (outside in a radial direction) of the same communicating channel 35, a covering (closing) ratio of the open end, which is situated at the entrance side of the communicating channel 35, by a side face 23b of the rotor core 23 (stator-coil gap shielding ratio) is 30% to 80% (most preferably, about 50%).

[0032] In the rotary compressor 1 configured in this way, the mixture (mixture of the refrigerant gas and the lubricant) rising through the passage 25 outflows into a space formed between the upper end face 23a of the rotor core 23 and the oil separator plate 28. Then, the outflowing mixture is radially scattered (dispersed) to a crossover portion 32 side due to centrifugal force caused by rotation of the oil separator plate 28, and collides with the crossover portion 32. When the mixture collides with the crossover portion in this way, oil in the mixture adheres on a side face of the crossover portion 32, so that the oil is separated from the refrigerant gas. The separated oil is returned to the oil reservoir room provided in the lower side of the housing 2 along the stator 22. On the other hand, the separated refrigerant gas is discharged to the outside of the housing 2 via the refrigerant pipe P3 provided in a top of the housing 2.

[0033] According to the rotary compressor 1 according to the embodiment, the stator-coil gap shielding ratio is designed to be 30% to 80%, thereby the amount of mixture leaking (escaping) into the barrel 2a of the housing 2 through the communicating channel 35 can be reduced, and the amount of mixture colliding with the crossover portion 32 can be increased, consequently separation efficiency of oil particles can be improved. As a result, as shown in Fig. 3, while compression efficiency is somewhat reduced (because the amount of flux is reduced, and a motor current is increased, thereby motor efficiency is reduced, and magnet pull force is increased, and accordingly thrust loss is increased, leading to increase in mechanical loss), the refrigerant gas containing oil can be prevented from outflowing into a refrigerant circuit using the rotary compressor 1, consequently system COP of the refrigerant circuit as a whole can be extremely improved. Moreover, oil can be prevented from outflowing to the outside of the housing 2, so that the lubricant can

be avoided from being insufficiently supplied to respective components in the housing 2, consequently life of the rotary compressor 1 can be increased.

[0034] A first example of another rotary compressor is described according to Fig. 4. Fig. 4 shows a schematic, vertical section diagram of the rotary compressor according to the first example.

[0035] A rotary compressor 40 according to the first example is different from the rotary compressor of the described embodiment in that the rotator 21 is fixed to the crank shaft 16 such that the stator-coil gap shielding ratio is 0% (that is, the upper end face 23a of the rotor core 23 and the upper end face 30a situated at the upside of the stator core 30 are situated on the same plane), and the open ends situated at the exit sides of the communicating channels 35 are closed by a band member (closing member) 41.

Since other components are the same as those in the embodiment, description of them is omitted here. In Fig. 4, the same members as in the embodiment are marked with the same references respectively.

[0036] The band member 41 is a belt-like (film-like) or wire-like member including a heat-resistant and refrigerant-resistant material (polyester series material), and wind so as to close the open ends situated at the exit sides of the communicating channels 35. The band member 41 prevents the mixture, which has flown into the communicating channels 35 through the open ends situated at the entrance sides of the communicating channels 35, from leaking (escaping) into the barrel 2a of the housing 2 through the open ends situated at the exit sides of the communicating channels 35.

[0037] According to the rotary compressor 40 according to the first example, the band member 41 is simply used to close the open ends situated at the exit sides of the communicating channels 35, thereby the amount of mixture leaking (escaping) into the barrel 2a of the housing 2 through the communicating channels 35 can be made zero (or extremely reduced), and the amount of the mixture colliding with the crossover portion 32 can be increased, consequently separation efficiency of oil particles can be improved. As a result, the refrigerant gas containing oil can be prevented from outflowing into a refrigerant circuit using the rotary compressor 40, consequently system COP of the refrigerant circuit as a whole can be improved. Moreover, oil can be prevented from outflowing to the outside of the housing 2, so that the lubricant can be avoided from being insufficiently supplied to respective components in the housing 2, consequently life of the rotary compressor 40 can be increased.

[0038] While description was made on a configuration where the band member 41 was used to close the open ends situated at the exit sides of the communicating channels 35 in the embodiment, the invention is not limited to such a configuration, and a configuration where the band member 41 is used to close the open ends situated at the entrance sides of the communicating channels 35 may be used, or a configuration where the band

member 41 is used to close the open ends situated at both of the entrance sides and the exit sides of the communicating channels 35 may be used.

[0039] A second example of the rotary compressor according to the invention is described.

[0040] A rotary compressor according to the second example is different from the rotary compressor of the described embodiment and first example in that the rotator 21 is fixed to the crank shaft 16 such that the stator-coil gap shielding ratio is 0% (that is, the upper end face 23a of the rotor core 23 and the upper end face 30a situated at the upside of the stator core 30 are situated on the same plane), and the crossover portion 32 is formed such that the communicating channels 35 are not formed, or each communicating channel 35 is formed such that inner diameter of the communicating channel 35 is smaller than that in each of the described embodiment and first example.

[0041] According to the rotary compressor according to the second example, the amount of the mixture leaking (escaping) into the barrel 2a of the housing 2 through the communicating channels 35 can be zero or extremely reduced (minimized), and the amount of the mixture colliding with the crossover portion 32 can be increased, consequently separation efficiency of oil particles can be improved. As a result, the refrigerant gas containing oil can be prevented from outflowing into a refrigerant circuit using the rotary compressor, consequently system COP of the refrigerant circuit as a whole can be improved. Moreover, oil can be prevented from outflowing to the outside of the housing 2, so that the lubricant can be avoided from being insufficiently supplied to respective components in the housing 2, consequently life of the rotary compressor can be increased.

[0042] The invention is not limited to the above embodiment, and can be carried out with being appropriately modified or altered. For example, the embodiment and the first example may be carried out in a combined manner, or the embodiment and the second example may be carried out in a combined manner.

Claims

1. A rotary compressor (1), comprising
 - a housing (2),
 - a compression mechanism section (3) accommodated in a lower side of the housing (2), and
 - a drive part (4) accommodated in an upper side of the housing (2),
 wherein the drive part (4) has a rotator (21) that is fitly fixed around a crank shaft (16), and rotates with the crank shaft (16), and a stator (22) that is disposed at an outer circumferential side of the rotator (21) and is fixed to the housing (2),
 - wherein an oil separator plate (28) is attached to an upper end face (23a) of a rotor core (23) of the rotator (21) such that the oil separator plate (28) covers the

upper end face (23a), and is situated in a concave portion (33) formed by a crossover portion (32) projecting from an upper end face (30a) of a stator core (30) of the stator (22), and wherein the rotator (21) is fixed to the crank shaft (16) such that the upper end face (23a) of the rotor core (23) is situated at a position upper than the upper end face (30a) of the stator core (30), the rotary compressor being **characterised in that:**

a plurality of communicating channels (35), which communicates between the inside of the concave portion (33) and the inside of a barrel (2a) of the housing (2), are formed at a proximal end of the crossover portion (32), and when an open end situated at an entrance side of a communicating channel (35) is seen from an open end situated at an exit side of the same communicating channel (35), a covering ratio of the open end, which is situated at the entrance side of the communicating channel (35), by a side face (23b) of the rotor core (23) is 30% to 80%.

2. The rotary compressor (1) according to claim 1, wherein the covering ratio of the open end is about 50%.
3. An air conditioning system comprising the rotary compressor (1) according to claim 1 or 2.

Patentansprüche

1. Ein Rotationskompressor (1) mit einem Gehäuse (2), einem Kompressionsmechanismusabschnitt (3), der in einer unteren Seite des Gehäuses (2) aufgenommen ist, und einem Antriebsteil (4), das in einer oberen Seite des Gehäuses (2) aufgenommen ist, wobei das Antriebsteil (4) einen Rotator (21), der durch Einsetzen um eine Kurbelwelle (16) herum befestigt ist und sich mit der Kurbelwelle (16) dreht, und einen Stator (22), der an einer Außenumfangsseite des Rotators (21) angeordnet ist und an dem Gehäuse (2) befestigt ist, besitzt, wobei eine Öl-Separatorplatte (28) an einer oberen Endfläche (23a) eines Rotorkerns (23) des Rotators (21) so angebracht ist, dass die Öl-Separatorplatte (28) die obere Endfläche (23a) abdeckt und sich in einem konkaven Abschnitt (33) befindet, der durch einen Übergangsabschnitt (32) gebildet ist, der von einer oberen Endfläche (30a) eines Statorkerns (30) des Stators (22) vorsteht, und wobei der Rotator (21) an der Kurbelwelle (16) so befestigt ist, dass die obere Endfläche (23a) des Rotorkerns (23) sich an einer Position befindet, die über der oberen Endfläche (30a) des Statorkerns (30) ist,

wobei der Rotationskompressor **dadurch gekennzeichnet ist, dass:**

eine Vielzahl von Verbindungskanälen (35), die zwischen der Innenseite des konkaven Abschnitts (33) und der Innenseite eines Zylindermantels (2a) des Gehäuses (2) kommuniziert, an einem proximalen Ende des Übergangsabschnitts (32) ausgebildet sind, und, wenn ein offenes Ende, das sich an einer Eingangsseite eines Verbindungskanals (35) befindet, von einem offenen Ende her betrachtet wird, das sich an einer Ausgangsseite desselben Verbindungskanals (35) befindet, ein Abdeckverhältnis des offenen Endes, das sich an der Eingangsseite des Verbindungskanals (35) befindet, durch eine Seitenfläche (23b) des Rotorkerns (23) 30% bis 80% beträgt.

2. Der Rotationskompressor (1) gemäß Anspruch 1, wobei das Abdeckverhältnis des offenen Endes etwa 50% beträgt.
3. Ein Klimatisierungssystem mit dem Rotationskompressor (1) gemäß Anspruch 1 oder 2.

Revendications

1. Compresseur (1) rotatif comprenant un carter (2), une section (3) de mécanisme de compression logée dans un côté inférieur du carter (2) et une partie (4) d'entraînement logée dans un côté supérieur du carter (2), dans lequel la partie (4) d'entraînement a un rotateur (21) qui est fixé à ajustement autour d'un arbre (16) à manivelle et tourne avec l'arbre (16) à manivelle et un stator (22) qui est disposé à un côté circonférentiel extérieur du rotateur (21) et est fixé au carter (2), dans lequel une plaque (28) formant séparateur d'huile est fixée à une face (23a) d'extrémité supérieure d'un noyau (23) du rotateur (21), de manière à ce que la plaque (28) formant séparateur d'huile recouvre la face (23a) d'extrémité supérieure et est située dans une partie (33) concave formée par une partie (32) de traversée faisant saillie d'une face (30a) d'extrémité supérieure d'un noyau (30) du stator (22) et dans lequel le rotateur (21) est fixé à l'arbre (16) à manivelle, de manière à ce que la face (23a) d'extrémité supérieure du noyau (23) du rotor soit située en une position plus haute que la face (30a) d'extrémité supérieure du noyau (30) du stator, le compresseur rotatif étant **caractérisé en ce que :**

une pluralité de conduits (35) de communica-

tion, qui assurent la communication entre l'intérieur de la partie (33) concave et l'intérieur d'une virole (2a) du carter (2), sont formés à une extrémité proximale de la partie (32) de traversée et,

5

lorsqu'une extrémité ouverte située à un côté d'entrée d'un conduit (35) de communication est vue à partir d'une extrémité ouverte située à un côté de sortie du même conduit (35) de communication, un rapport de recouvrement de l'extrémité ouverte, qui est située au côté d'entrée du conduit (35) de communication, à une face (23b) latérale du noyau (23) du rotor, va de 30 % à 80 %.

10

15

2. Compresseur (1) rotatif suivant la revendication 1, dans lequel le rapport de recouvrement de l'extrémité ouverte est d'environ 50 %.

20

3. Système de conditionnement d'air comprenant le compresseur (1) rotatif suivant la revendication 1 ou 2.

25

30

35

40

45

50

55

FIG. 1

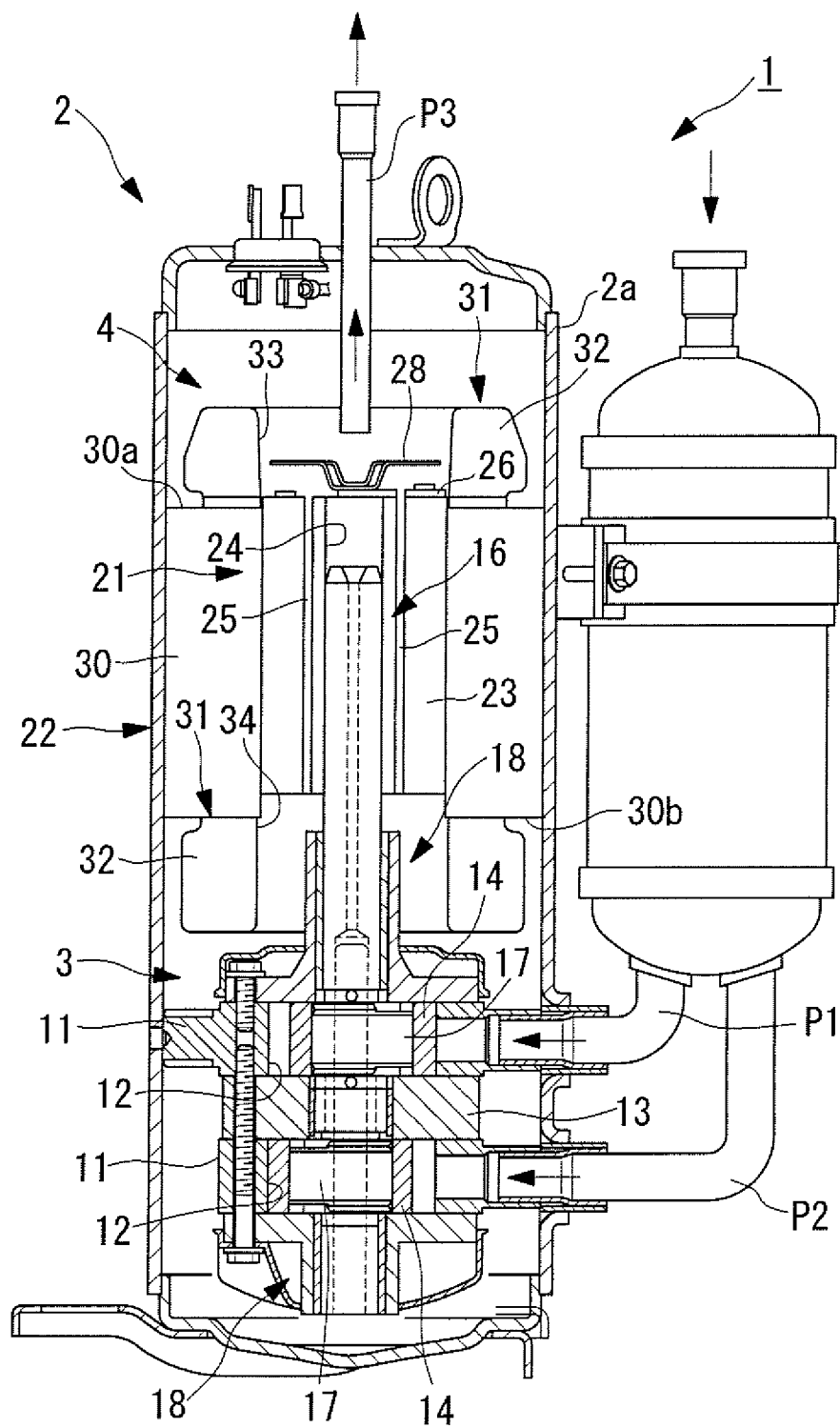


FIG. 2

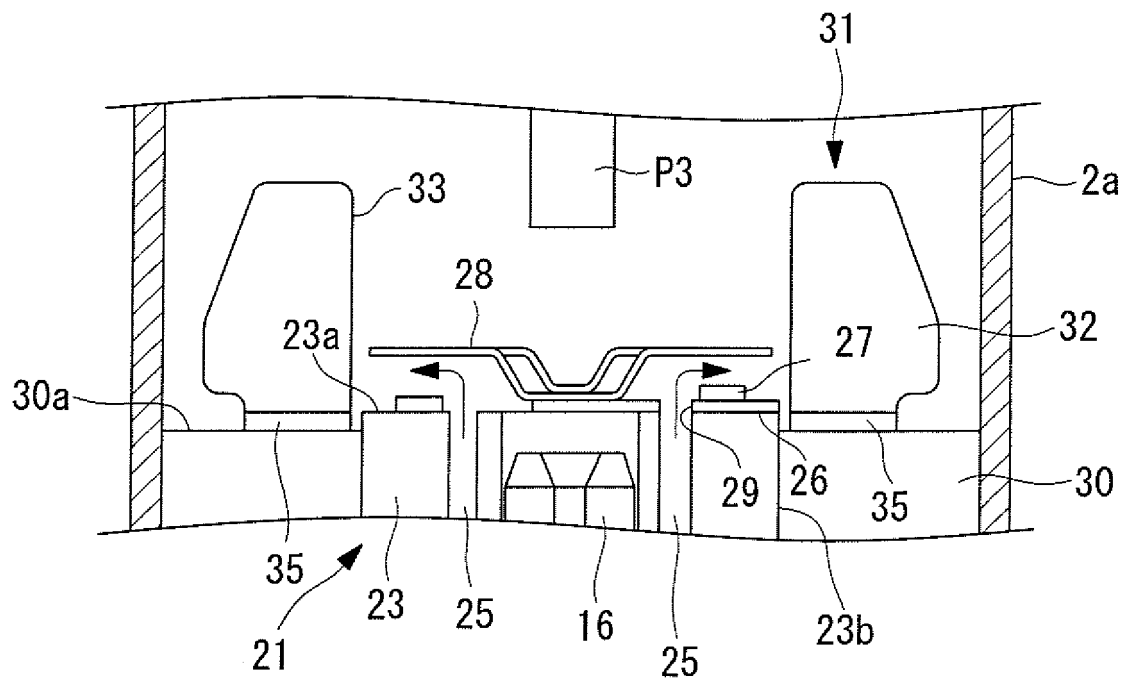


FIG. 3

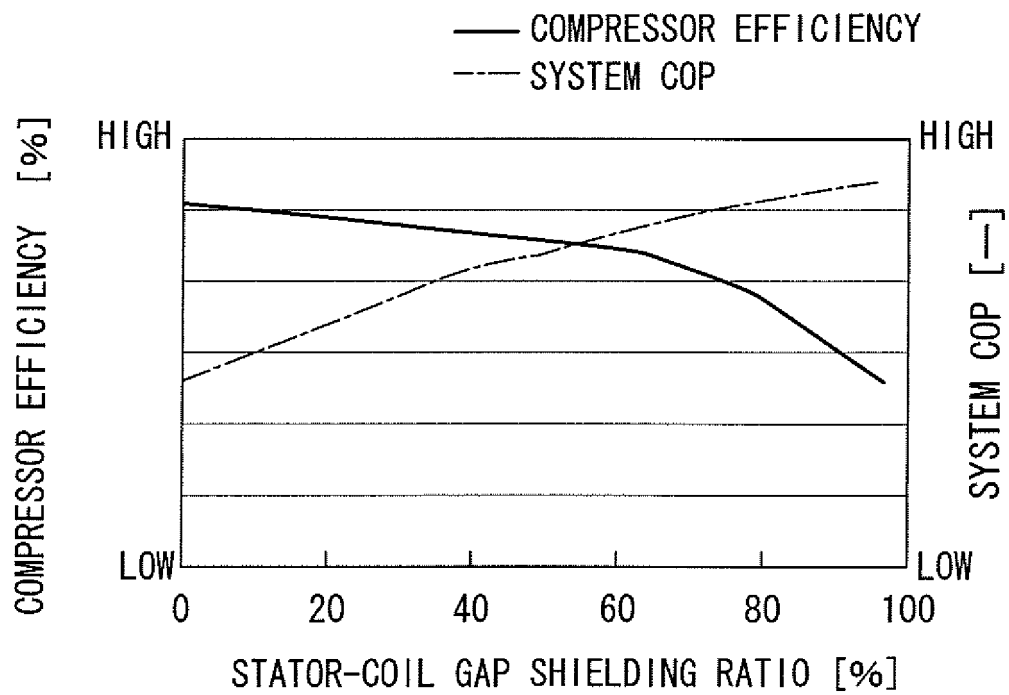
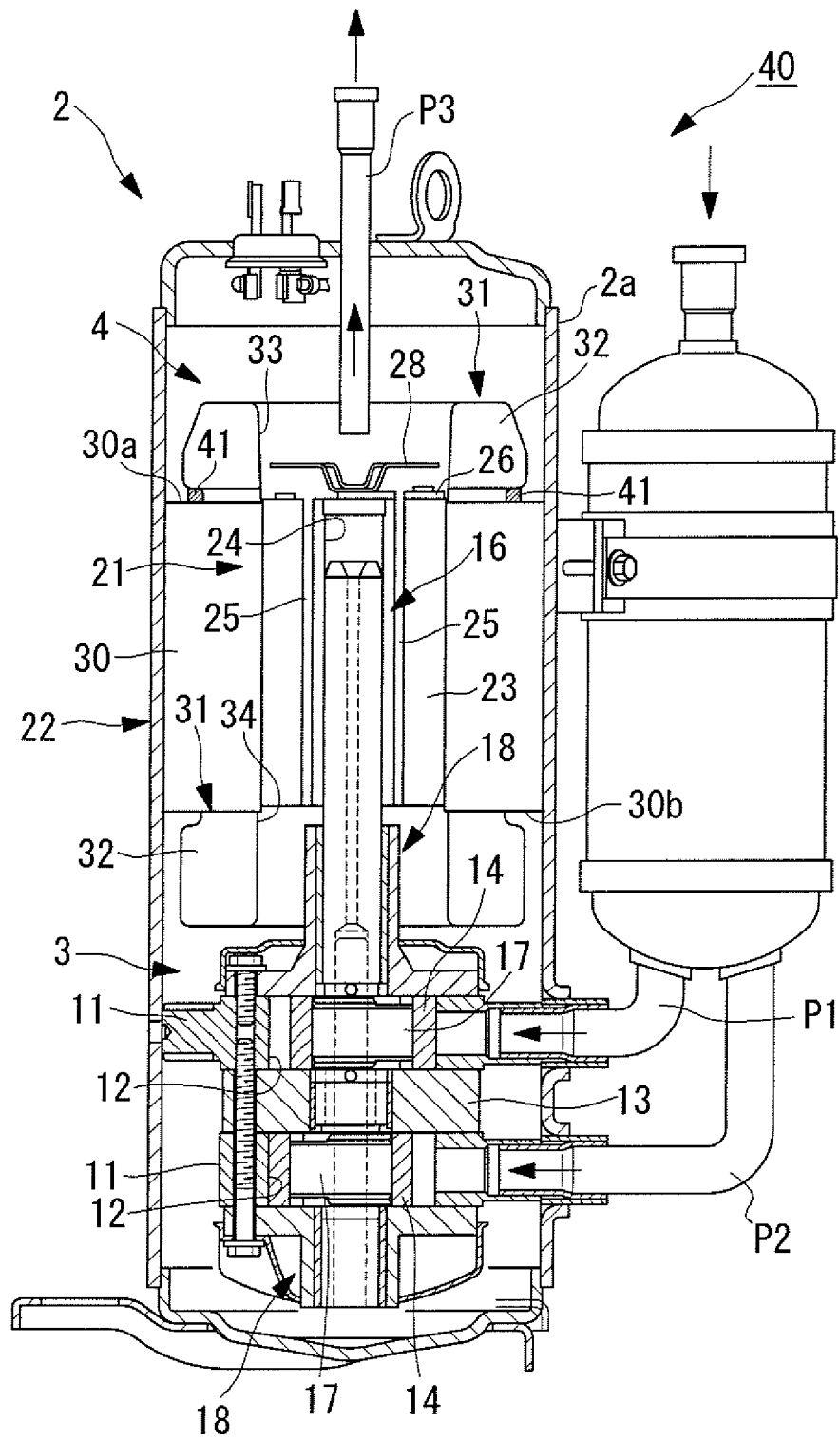


FIG. 4



REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- JP 2005337210 A [0003] [0005]
- EP 1712793 A1 [0004]