



US 20070025864A1

(19) **United States**(12) **Patent Application Publication**
Cho(10) **Pub. No.: US 2007/0025864 A1**(43) **Pub. Date: Feb. 1, 2007**(54) **HERMETIC COMPRESSOR****Publication Classification**(75) Inventor: **Yong Hyeon Cho**, Gimpso-si (KR)(51) **Int. Cl.**
F04B 35/04 (2006.01)(52) **U.S. Cl.** **417/415**

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Jul. 27, 2005 (KR) 2005-68589

(57) **ABSTRACT**

A hermetic compressor includes: a hermetic container having an oil sump defined in a bottom thereof; a frame arranged in the hermetic container and including a hollow portion; a rotating shaft rotatably inserted in the frame to penetrate through the hollow portion, the rotating shaft having an oil channel array to guide oil upward from the oil sump; and a thrust bearing inserted in a bearing installation groove, which is formed around an upper end of the hollow portion of the frame. The thrust bearing is configured to come into rolling contact with the rotating shaft, and the oil channel array is configured to supply at least a portion of the oil to the thrust bearing.

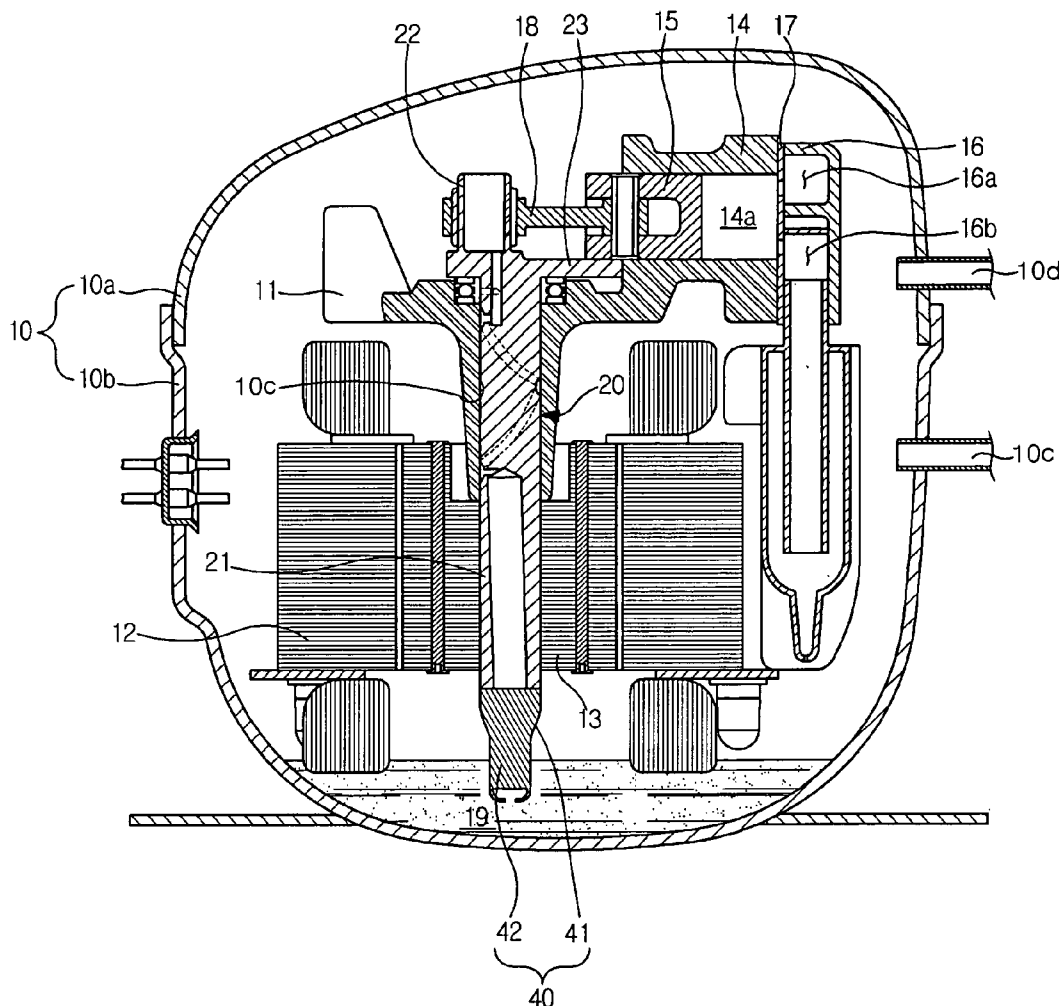


Fig.1

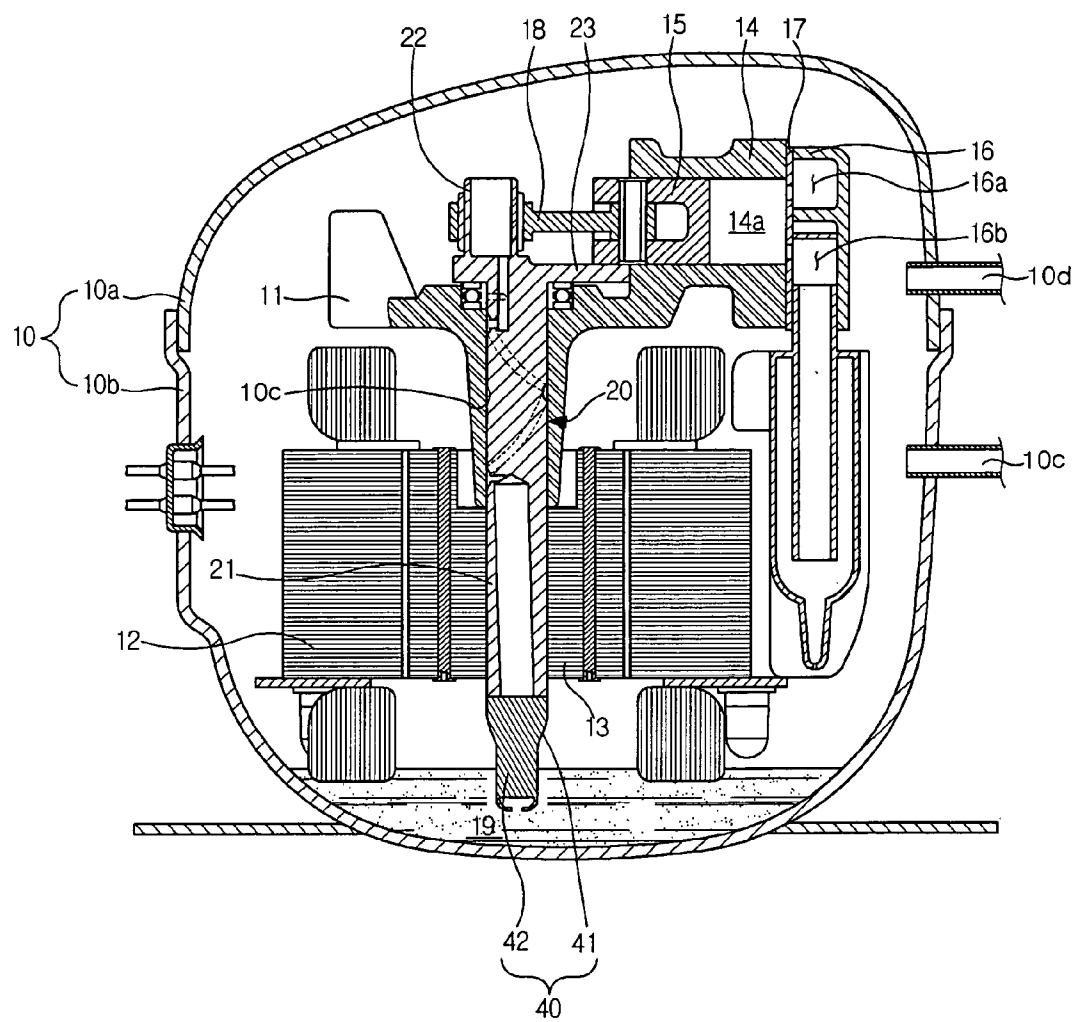


Fig.2

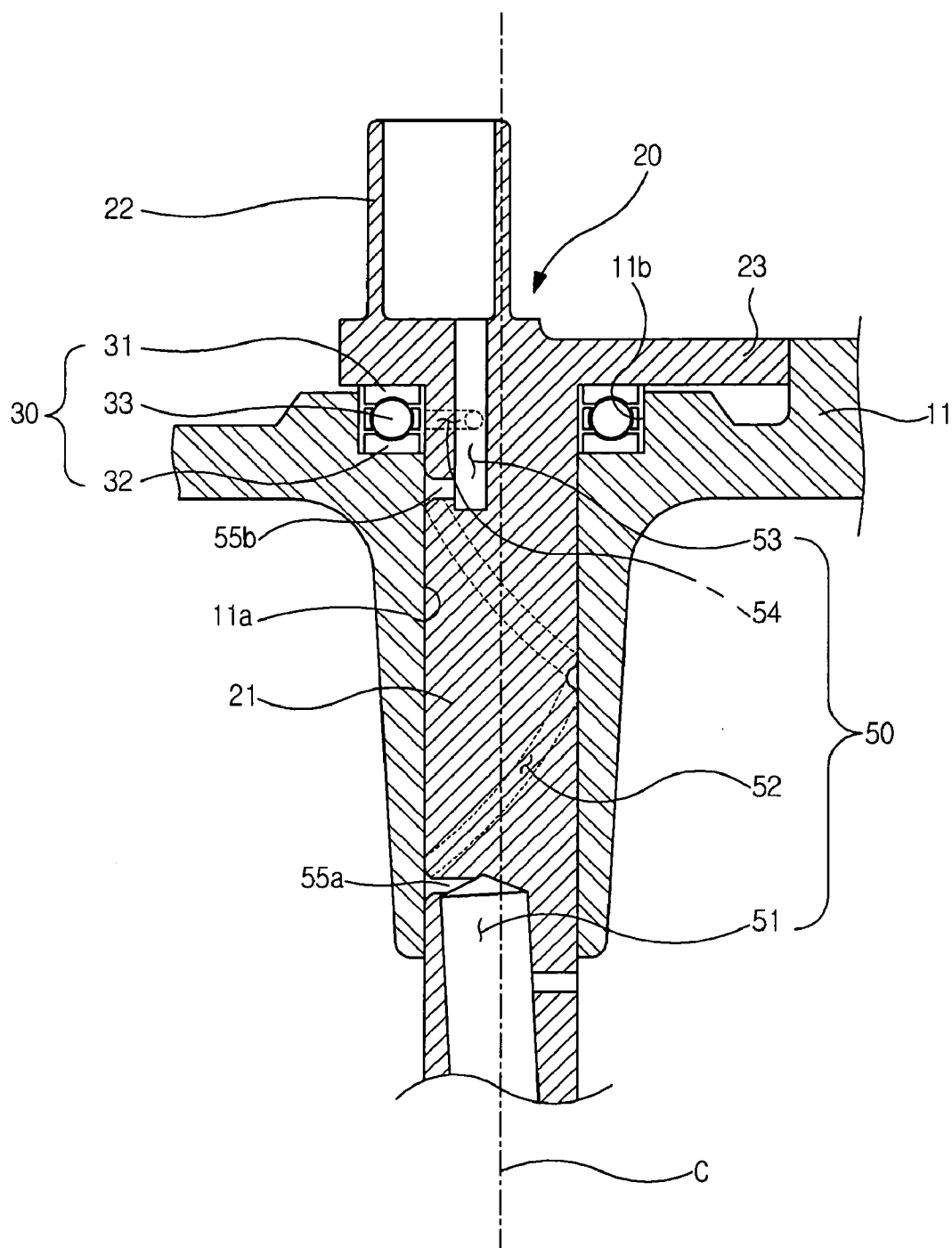


Fig.3

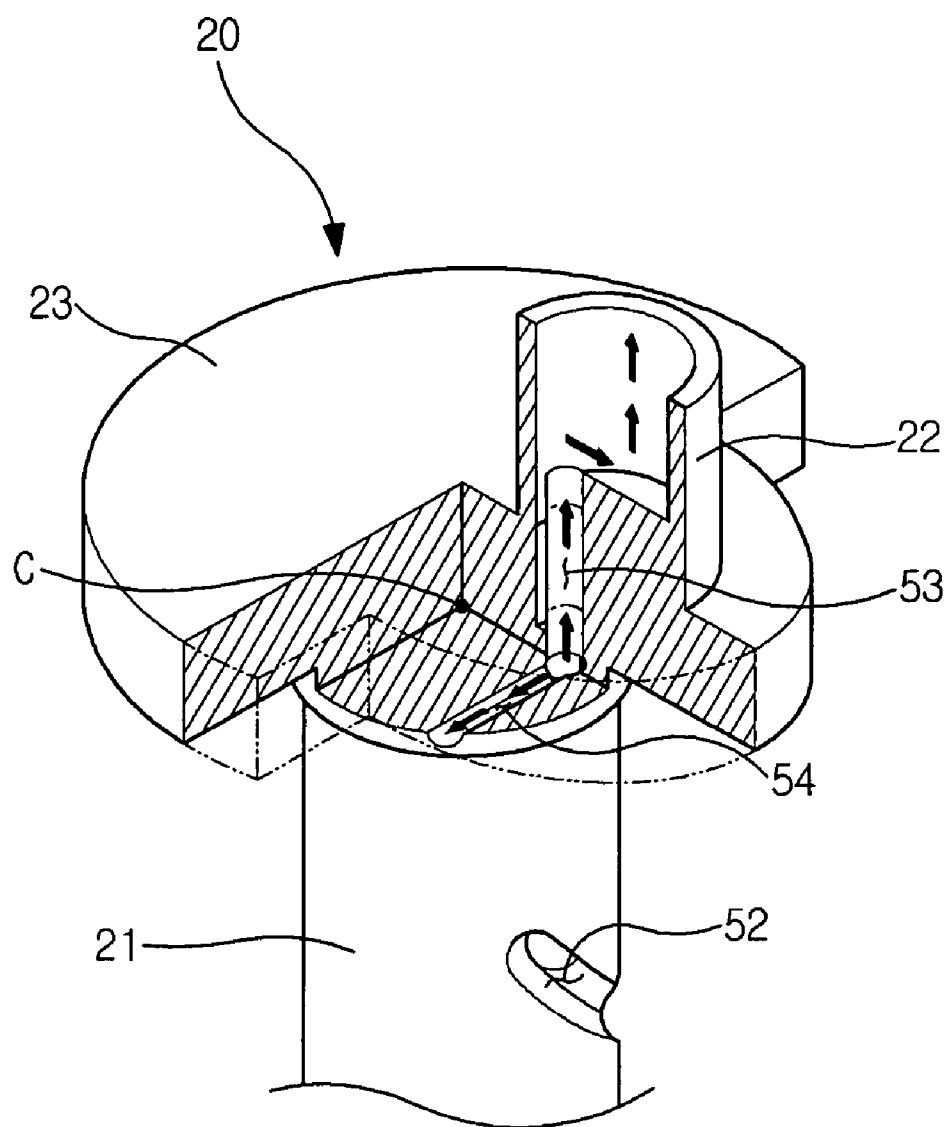


Fig.4

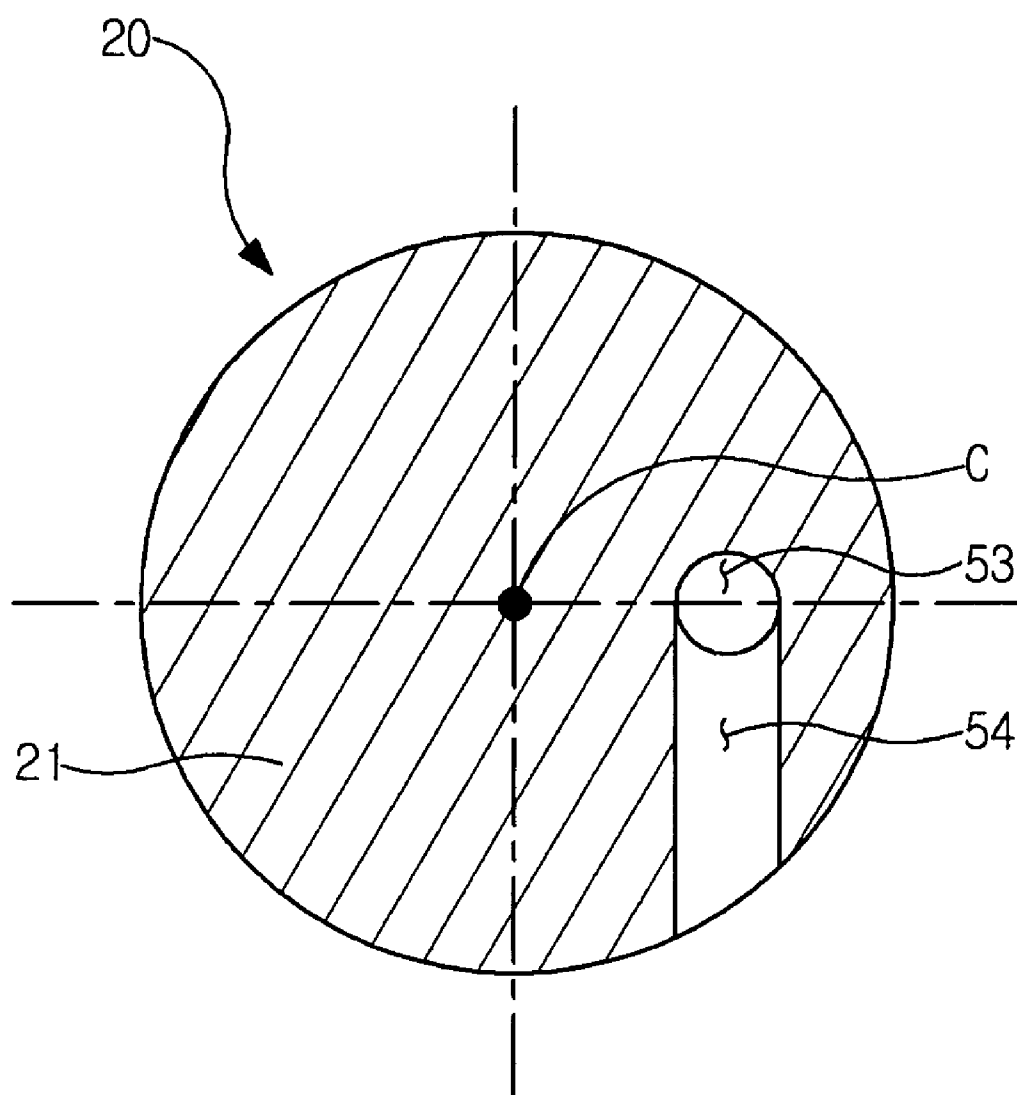


Fig.5

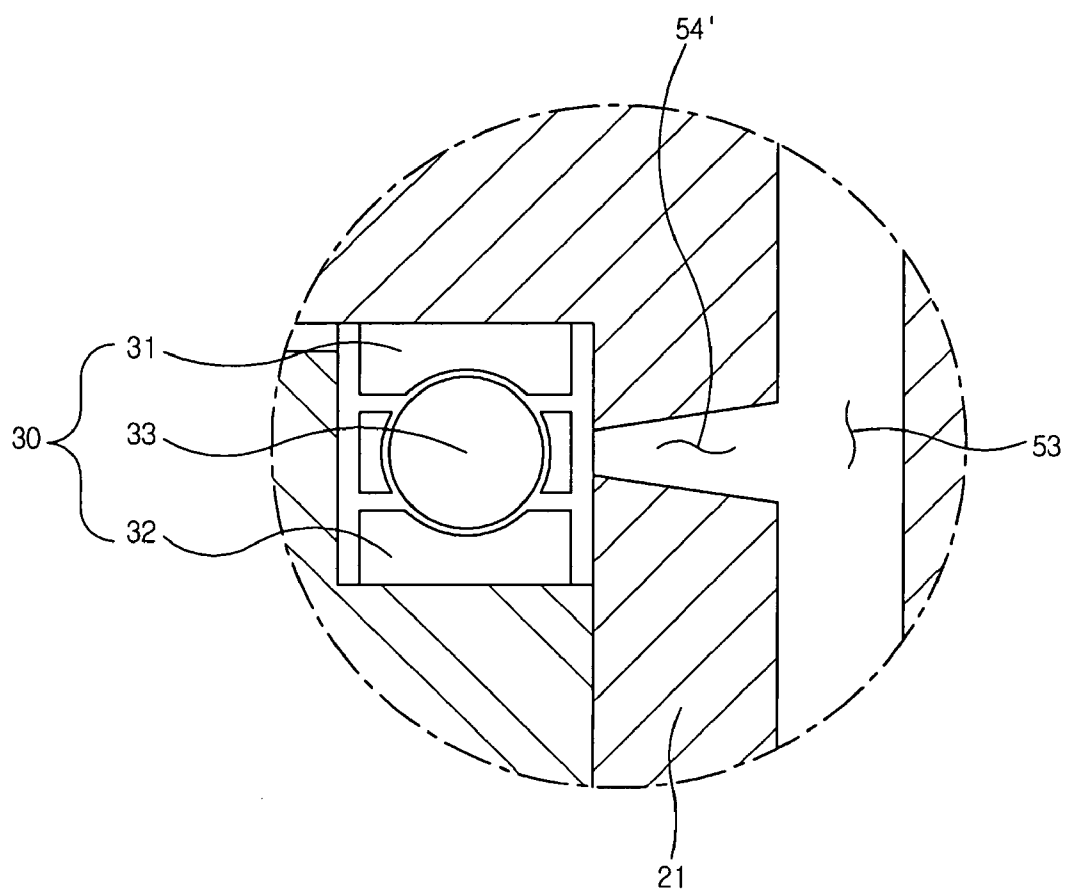
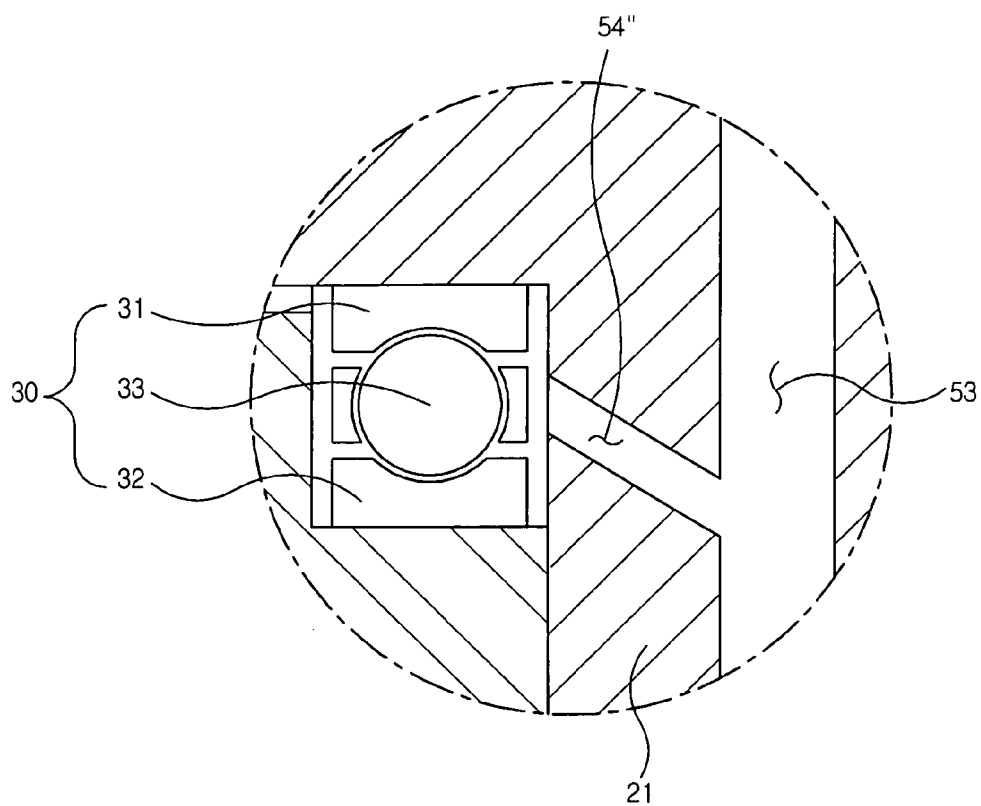


Fig.6



HERMETIC COMPRESSOR

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims the benefit of priority under 35 U.S.C. § 119 to Korean Patent Application No. 2005-68589, filed Jul. 27, 2005, the entire contents of which are incorporated herein by reference. This application may be related to commonly owned U.S. patent application Ser. No. 11/199,170, filed Aug. 9, 2005, and commonly owned U.S. patent application Ser. No. 11/232,936, filed Sep. 23, 2005, the contents of each of which are herein incorporated by reference.

BACKGROUND OF THE INVENTION

[0002] 1. Field of the Invention

[0003] The present invention relates to a hermetic compressor, and, more particularly, to a hermetic compressor in which a thrust bearing is in rolling contact with a rotating shaft to support an axial load of the rotating shaft.

[0004] 2. Description of the Related Art

[0005] In general, a hermetic compressor is an apparatus that enables a refrigeration cycle of an air conditioner or refrigerator by compressing and supplying fluid, such as refrigerant. The hermetic compressor includes a hermetic container forming the outer area of the compressor, a compression unit for compressing a refrigerant, and a drive unit for providing a refrigerant compression power, the compression unit and the drive unit being arranged in the hermetic container.

[0006] The conventional hermetic compressor can supply oil to particular regions, such as a gap between rotating shaft and a hollow portion of a frame beneath a thrust bearing and frictional regions of the compression unit, by use of an oil supply configuration. However, the conventional hermetic compressor provides an insufficient oil supply to the thrust bearing, despite the fact that the load of the rotating shaft is substantially applied to the thrust bearing. As a result, after the compressor is used for a long time, upper and lower thrust washers and balls of the thrust bearing become worn, thereby inhibiting smooth rotation of the rotating shaft. Also, if dust (generally caused by wear) accumulates in the thrust bearing, it compromises the friction reducing efficiency of the thrust bearing, which results in degradation of the reliability of the compressor.

SUMMARY OF THE INVENTION

[0007] Therefore, the present invention has been made in order to solve the above problems, and it is an aspect of the invention to provide a hermetic compressor having an improved configuration for lubricating a thrust bearing which is in rolling contact with a rotating shaft to support an axial load of the rotating shaft, resulting in an improvement in the reliability of products.

[0008] To this end, one non-limiting aspect of the present invention provides a hermetic compressor, the hermetic compressor including: a hermetic container having an oil sump defined in a bottom thereof; a frame arranged in the hermetic container and including a hollow portion; a rotating shaft rotatably inserted in the frame to penetrate through the

hollow portion, the rotating shaft having an oil channel array to guide oil upward from the oil sump; and a thrust bearing inserted in a bearing installation groove, which is formed around an upper end of the hollow portion of the frame, the thrust bearing coming into rolling contact with the rotating shaft to support an axial load of the rotating shaft, wherein the oil channel array is configured to directly supply at least a portion of the oil to the thrust bearing.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] These and other aspects and advantages of the invention will become apparent and more readily appreciated from the following description of the embodiments, taken in conjunction with the accompanying drawings, of which:

[0010] FIG. 1 is a side elevational view of a hermetic compressor in section according to a non-limiting aspect of the present invention;

[0011] FIG. 2 is a partial side elevational view of a rotating shaft in section of the hermetic compressor according to another non-limiting aspect of the present invention;

[0012] FIG. 3 is an enlarged perspective view of a non-limiting example of the rotating shaft of the hermetic compressor, showing the rotating shaft in partial section;

[0013] FIG. 4 is a plan view of a branch channel in section of the rotating shaft of the hermetic compressor according to a non-limiting embodiment of the present invention;

[0014] FIG. 5 is a side elevational view of the branch channel in section of the hermetic compressor according to another non-limiting embodiment of the present invention; and

[0015] FIG. 6 is a side elevational view of the branch channel in section of the hermetic compressor according to another non-limiting embodiment of the present invention.

DETAILED DESCRIPTION OF THE EMBODIMENTS

[0016] Reference will now be made in detail to non-limiting embodiments of the present invention, examples of which are illustrated in the accompanying drawings, wherein like reference numerals refer to like elements throughout. The embodiments are described below to explain the present invention by referring to the figures.

[0017] By way of explanation, in the hermetic compressor, the compression unit and the drive unit may be located at upper and lower sides of a frame 11, respectively. The compression unit may include a cylinder and a piston 15. The cylinder may be arranged at a lateral location of an upper end of the frame 11 and may internally define a compression chamber. The piston 15 may be configured to linearly reciprocate in the compression chamber to compress a refrigerant. The drive unit may include a stator 12 connected to a lower end of the frame 11 and a rotor 13 located inside the stator 12 to electrically interact with the stator 12.

[0018] A rotating shaft 20 may be mounted in the frame to transmit a driving force of the drive unit to the compression unit. The rotating shaft 20 may be rotatably inserted in a hollow portion 11a of the frame 11.

[0019] A lower end portion of the rotating shaft 20 may protrude downward from the hollow portion of the frame so that it is press fitted into the rotor 13 to simultaneously rotate with the rotor 13. An upper end portion of the rotating shaft 20 may be laterally deviated to form an eccentric portion 22. The eccentric portion 22 of the rotating shaft 20 may be connected to the piston by interposing a connecting rod 18, so that a rotating motion of the rotating shaft 20 is converted into a linear reciprocating motion of the piston 15.

[0020] A thrust bearing 30 may be fitted around the rotating shaft 20 between the eccentric portion 22 of the rotating shaft 20 and the frame 11. The thrust bearing 30 may include ring-shaped upper and lower thrust washers 31 and 32, which may be in rolling contact with the rotating shaft to support an axial load of the rotating shaft, and balls 33 interposed between the upper and lower thrust washers 31 and 32. For the insertion of the thrust bearing 30, the frame 11 may include a ring-shaped bearing insertion groove 11b formed around an upper end of the hollow portion 11a.

[0021] With the above-described non-limiting configuration, if the rotating shaft 20 rotates in accordance with electric interaction between the stator 12 and the rotor 13, the piston 15, which is connected to the eccentric portion of the rotating shaft 20 via the connecting rod 18, linearly reciprocates in the compression chamber 14a of the cylinder to compress a refrigerant. During such a refrigerant compression operation, the axial load of the rotating shaft 20 is supported by use of the thrust bearing 30 that is in rolling contact with the rotating shaft.

[0022] The compressor may also be provided with an oil supply configuration to supply oil to frictional regions of the rotating shaft 20 and the compression unit during the refrigerant compression operation for the sake of lubrication and cooling. The oil supply configuration may include an oil sump 19 defined in the bottom of the hermetic container 10 to store a predetermined amount of oil, oil pickup means 40 coupled to a lower end of the rotating shaft 20 to draw the oil upward from the oil sump 19, and an oil channel array to guide the oil, drawn upward by the oil pickup means 40, into a gap between the rotating shaft 20 and the hollow portion of the frame 11a and to the compression unit.

[0023] The oil channel array may include a first oil channel formed in a lower portion of the rotating shaft around a lower end of the hollow portion of the frame, a second oil channel formed at an outer circumferential surface of the rotating shaft beneath the thrust bearing to communicate with the first oil channel, the second oil channel being provided for the lubrication of the gap between the rotating shaft and the hollow portion of the frame and having a spiral groove shape, and a third oil channel formed in the rotating shaft to communicate with the second oil channel, the third oil channel extending to an upper end of the rotating shaft.

[0024] With the above-described, non-limiting oil supply configuration, when the rotating shaft rotates during the refrigerant compression operation, the oil, stored in the oil sump, is drawn into the first oil channel via the oil pickup means. Subsequently, the drawn oil passes through the second oil channel to lubricate and cool the gap between the rotating shaft and the hollow portion of the frame. Then, the oil, having passed through the second oil channel, is pushed upward to the upper end of the rotating shaft by way of the third oil channel, so that it is delivered to the compression

unit. Thereby, the oil is used to lubricate and cool coupling regions between the piston 15 and the connecting rod 18 and finally, is returned to the oil sump 19. The returned oil is repeatedly usable to lubricate and cool frictional regions of the rotating shaft 20 and the compression unit while passing through the plurality of oil channels.

[0025] Referring to FIG. 1, the hermetic compressor according to the present invention includes the hermetic container 10, which may be divided into upper and lower containers 10a and 10b coupled to each other.

[0026] The hermetic container 10 may be provided at a location with a suction pipe 10c to introduce a refrigerant, supplied from an external station, into the hermetic container 10 and at another location with a discharge pipe 10d to discharge a compressed refrigerant to the outside of the hermetic container 10. The frame 11 may be mounted in the hermetic container 10, so that a compression unit to compress a refrigerant and a drive unit to provide a refrigerant compression power may be mounted in upper and lower locations of the frame 11, respectively.

[0027] The drive unit may include the fixed stator 12 configured to generate an electromagnetic force upon receiving an electric current, and the rotor 13 located inside the stator 12 to electrically interact with the stator 12. The compression unit may include a cylinder block 14, a piston 15, a cylinder head 16, and a valve device 17. The cylinder block 14 may be integrally formed at a lateral location of an upper end of the frame 11 and may internally define the compression chamber 14a. The piston 15 may be received in the cylinder block 14 to linearly reciprocate in the compression chamber 14a to compress a refrigerant. The cylinder head 16 may be coupled to an end of the cylinder block 14 to hermetically seal the compression chamber 14a. The cylinder head 16 may internally define a refrigerant discharge chamber 16a and a refrigerant suction chamber 16b. The valve device 17 may be interposed between the cylinder block 14 and the cylinder head 16. The valve device 17 may control the flow of a refrigerant, so that the refrigerant is introduced from the refrigerant suction chamber 16b into the compression chamber 14a or is discharged from the compression chamber 14a into the refrigerant discharge chamber 16a. The frame 11 may include the central hollow portion 11a, so that a rotating shaft 20 may be rotatably inserted in the hollow portion 11a to transmit a driving force of the drive unit to the compression unit.

[0028] Referring to FIG. 2, the rotating shaft 20 may include a main shaft section 21, an eccentric shaft section 22, and a weight balance section 23 between the main shaft section 21 and the eccentric shaft section 22. An upper portion of the main shaft section 21 may be rotatably supported in the hollow portion 11a of the frame 11, and a lower portion of the main shaft section 21 may be press fitted in the center of the rotor 13 of the drive unit, so that the rotating shaft 20 simultaneously rotates with the rotor 13. The eccentric shaft section 22 may be located at the top of the main shaft section 21 to form an eccentric upper end of the rotating shaft 20. The weight balance section 23 may compensate for an unbalanced rotating motion of the rotating shaft 20 due to the eccentric shaft section 22. Both the eccentric shaft section 22 and the weight balance section 23 form an eccentric part of the rotating shaft 20. A connecting rod 18 may be interposed between the eccentric shaft section

22 and the piston **15** of the compression unit. The connecting rod **18** may convert a rotating motion of the rotating shaft **20** into a linear reciprocating motion of the piston **15**, so that the piston **15** linearly reciprocates in the compression chamber **14a**.

[0029] A thrust bearing **30** may be fitted around an upper end of the main shaft section **21** at a location between the eccentric part of the rotating shaft **20** and the frame **11**. The thrust bearing **30** may include ring-shaped upper and lower thrust washers **31** and **32**, which may be in rolling contact with the rotating shaft **20** to support an axial load of the rotating shaft **20**, and balls **33** interposed between the upper and lower thrust washers **31** and **32**. For the insertion of the thrust bearing **30**, the frame **11** may include the ring-shaped bearing insertion groove **11b** formed around an upper end of the hollow portion **11a**.

[0030] With the above-described configuration, if electric current is applied, the rotating shaft **20** rotates along with the rotor **13** in accordance with electric interaction between the stator **12** and the rotor **13**. As a result, piston **15**, which may be connected to the eccentric shaft section **22** of the rotating shaft **20** via the connecting rod **18**, linearly reciprocates in the compression chamber **14a**. With such a linear reciprocating motion of the piston **15**, a refrigerant may be introduced into the compression chamber **14a** by way of the suction pipe **10c** and the refrigerant suction chamber **16b**. The introduced refrigerant is compressed in the compression chamber **14a**, and subsequently, may be discharged to the outside of the hermetic container **10** by way of the refrigerant discharge chamber **16a** and the discharge pipe **10d**. During rotation of the rotating shaft **20**, the axial load of the rotating shaft **20** may be supported by use of the thrust bearing **30** (which is in rolling contact with the rotating shaft **20**).

[0031] The hermetic compressor according to another non-limiting aspect of the present invention may be provided with an oil supply configuration to supply oil to frictional regions of the rotating shaft **20** and the compression unit, and the thrust bearing **30** during the refrigerant compression operation for the sake of lubrication and cooling. The oil supply configuration may include an oil sump **19** defined in the bottom of the hermetic container **10** and configured to store a predetermined amount of oil, and oil pickup means **40** coupled to a lower end of the rotating shaft **20** and configured to suction the oil upward from the oil sump **19**.

[0032] The oil pickup means **40** may include a cylindrical oil pickup member **41** having open upper and lower ends, the lower end of the oil pickup member **41** being immersed in the oil stored in the oil sump **19**, and an oil pickup blade **42** inserted in the oil pickup member **41** to draw the oil upward from the oil sump **19** when the rotating shaft **20** rotates. The oil supply unit may further include an oil channel array **50** to guide the oil, drawn upward by the oil pickup means **40**, to frictional regions of the rotating shaft **20** and the compression unit and the thrust bearing **30**.

[0033] The oil channel array **50** may include first to third oil channels **51**, **52**, **53**, and a branch channel **54**. The first oil channel **51** is defined in the main shaft section **21** of the rotating shaft **20** around a lower end of the hollow portion **11a**. The second oil channel **52** is formed at an outer circumferential surface of the main shaft section **21** beneath the

the thrust bearing **30** for lubrication of the gap between the main shaft section **21** and the hollow portion **11a**. The second oil channel **52** has a spiral groove shape and is configured to communicate with the first oil channel **51**. The third oil channel **53** may be defined in the rotating shaft **20** to communicate with the second oil channel **52**. The third oil channel **53** may extend from an upper end of the second oil channel **52** on the main shaft section **21** to an upper end of the eccentric shaft section **22**. The branch channel **54** may include a linear hole radially branched from the third oil channel **53** to a location of the outer circumferential surface of the main shaft section **21** to communicate with the thrust bearing **30**.

[0034] To guide continuous smooth movement of oil between the oil channels, a first communication path **55a** may be formed between an upper end of the first oil channel **51** and a lower end of the second oil channel **52**, and a second communication path **55b** may be formed between the upper end of the second oil channel **52** and a lower end of the third oil channel **53**. Also, to enable oil to be more effectively drawn upward upon receiving a rotational centrifugal force of the rotating shaft **20**, the first oil channel **51** may be inclined to the eccentric part so that the upper end thereof is deviated from a center axis **C** of the main shaft section **21**. Also, the third oil channel **53** may be positioned eccentric to the center axis **C** of the main shaft section to be located close to the eccentric part.

[0035] Accordingly, the third oil channel **53**, which is eccentric to the center axis **C** of the main shaft section **21**, may be positioned close to the outer circumferential surface of the main shaft section **21**. This enables a simple punching of the branch channel **54**. In other words, the branch channel **54** branched from the third oil channel **53** can be easily punched from the outer circumferential surface of the main shaft section **21**.

[0036] With the above-described oil supply configuration, when the rotating shaft **20** rotates during the refrigerant compression operation, the oil, stored in the oil sump **19**, may be drawn upward into the first oil channel **51** by use of a pumping force of the oil pickup means **40**. Subsequently, the drawn oil passes through the second oil channel **52** to lubricate and cool the gap between the hollow portion **11a** of the frame **11** and the main shaft section **21** beneath the thrust bearing **30**. Part of the oil, having passed through the second oil channel **52**, may be continuously pushed upward to the upper end of the eccentric shaft section **22** along the third oil channel **53**, so that it is delivered to the compression unit to lubricate and cool coupling regions between the piston **15** and the connecting rod **18**. The remaining oil, passing through the third oil channel **53**, may be directly delivered to the thrust bearing **30** via the branch channel **54** to lubricate and cool the thrust bearing **30**.

[0037] Because the oil, which is guided upward along the oil channel array **50**, may be directly delivered to the thrust bearing **30**, the hermetic compressor is able to greatly minimize wear of the upper and lower thrust washers **31** and **32** and the balls **33** of the thrust bearing **30** even after the compressor has been in use for a long time. Thus, the thrust bearing **30** continuously enables smooth rotation of the rotating shaft **20**. Also, even if the upper and lower thrust washers **31** and **32** and the balls **33** are worn to some extent (thereby generating a slight amount of dust), the oil, directly

delivered to the thrust bearing 30, effectively prevents the dust from being accumulated on the thrust bearing 30. This minimizes a reduction in rotational force of the thrust bearing 30 due to wear caused by dust.

[0038] After being discharged from the branch channel 54 or an upper end of the third oil channel 53, the used oil may be returned to the oil sump 19, so that the oil is repeatedly usable to lubricate and cool the rotating shaft 20, the compression unit, and the thrust bearing 30 while passing through the oil channel array 50.

[0039] In another non-limiting aspect of the present invention, it is beneficial that the branch channel 54 may extend from the third oil channel 53 in a direction opposite to the center axis C of the main shaft section 21. This configuration allows the branch channel 54 to receive the maximum centrifugal force when the rotating shaft 20 rotates, resulting in an increase in the amount of oil to be supplied to the thrust bearing 30 via the branch channel 54.

[0040] However, if an excessive amount of oil enters the branch channel 54, so that almost all of the oil guided from the second oil channel 52 into the third oil channel 53 is supplied to the thrust bearing 30, substantially no oil will reach the upper end of the third oil channel 53. This prevents the oil from being delivered from the upper end of the third oil channel 53 to the compression unit, inhibiting the effective lubrication and cooling of the compression unit. Accordingly, the branch channel 54 preferably extends in a direction intersecting with a line that connects the center axis C of the main shaft section 21 and the third oil channel 53 to each other, so that the oil may be supplied to the thrust bearing 30 without exerting an unfavorable effect on the supply of oil to the compression unit.

[0041] Even when the branch channel 54 extends in the direction intersecting with the connection line between the center axis C of the main shaft section 21 and the third oil channel 53, it may be impossible to effectively prevent the oil from being concentrated to the branch channel 54 if the branch channel 54 is branched from a location of the third oil channel 53 opposite to the center axis C of the main shaft section 21. By contrast, if the branch channel 54 is branched from a location of the third oil channel 53 facing the center axis C of the main shaft section 21, this may prevent the oil from being supplied into the branch channel 54. For this reason, more preferably, the branch channel 54 may be branched from the third oil channel 53 in an approximately intermediate location of the third oil channel 53 between the location opposite to the center axis C of the main shaft section 21 and the location facing the center axis C, as shown in FIGS. 3 and 4.

[0042] Of course, it can be easily understood that, although the concentration of oil into the branch channel 54 is restricted, it is advantageous to allow the oil that has been introduced into the branch channel 54 to be effectively delivered to the thrust bearing 30 for achieving an improvement in the lubrication of the thrust bearing 30.

[0043] Accordingly, as shown in FIG. 5 (which illustrates another non-limiting embodiment of the present invention), a branch channel 54' may be tapered based on Bernoulli's theorem, which provides that the flow rate of a fluid increases as a passage becomes more narrow. Specifically, if the branch channel 54' is tapered so that the diameter thereof

gradually decreases from an entrance on the third oil channel 53 to an exit on the outer circumferential surface of the main shaft section 21, the flow rate of the oil increases when it passes through the exit of the branch channel 54'. This enables a smoother supply of the oil to the thrust bearing 30.

[0044] Alternatively, as shown in FIG. 6 (which illustrates yet another non-limiting embodiment of the present invention), a branch channel 54'' may be inclined so that an exit thereof is located higher than an entrance thereof. This configuration allows the oil, guided upward along the third oil channel 53, to smoothly enter the branch channel 54'' without sudden direction change. This effectively reduces the flow resistance of the oil when the oil moves along the branch channel 54''.

[0045] As apparent from the above description, the present invention provides a hermetic compressor in which oil, which is guided upward along an oil channel array formed at a rotating shaft, can be directly delivered to a thrust bearing that supports an axial load of the rotating shaft, thereby achieving a great improvement in the lubrication of the thrust bearing. As a result, the thrust bearing can operate to continuously maintain smooth rotation of the rotating shaft for a long time, resulting in an improvement in the reliability of the hermetic compressor.

[0046] Although embodiments of the present invention have been shown and described, it would be appreciated by those skilled in the art that changes may be made in this embodiment without departing from the principles and spirit of the invention, the scope of which is defined in the claims and their equivalents.

What is claimed is:

1. A hermetic compressor, comprising:

- a hermetic container having an oil sump defined in a bottom thereof;
- a frame arranged in the hermetic container and including a hollow portion;
- a rotating shaft rotatably inserted in the frame to penetrate through the hollow portion, the rotating shaft having an oil channel array configured to guide oil upward from the oil sump; and
- a thrust bearing inserted in a bearing installation groove, which is formed around an upper end of the hollow portion, the thrust bearing coming into rolling contact with the rotating shaft to support an axial load of the rotating shaft,

wherein the oil channel array is configured to supply at least a portion of the oil to the thrust bearing.

2. The hermetic compressor according to claim 1, wherein:

the rotating shaft includes,

- a main shaft section penetrating through the hollow portion to protrude downward from the hollow portion,
- an eccentric shaft section formed above the main shaft section and aligned eccentric to the main shaft section, and
- a weight balance section interposed between the eccentric shaft section and the main shaft section to

compensate for an unbalanced rotating motion of the rotating shaft due to the eccentric shaft section, both the eccentric shaft section and the weight balance section forming an eccentric part of the rotating shaft, and the oil channel array includes,

- a first oil channel formed in a lower end portion of the main shaft section around a lower end of the hollow portion,
- a second oil channel formed at an outer circumferential surface of the main shaft section facing the hollow portion beneath the thrust bearing to communicate with the first oil channel,
- a third oil channel extending in an upper end portion of the main shaft section and the eccentric part at a location adjacent to the thrust bearing, and
- a branch channel radially extending from the third oil channel to the outer circumferential surface of the main shaft section to deliver at least a first quantity of the at least a first portion of the oil passing through the third oil channel to the thrust bearing.

3. The hermetic compressor according to claim 2, wherein:

the branch channel has a linear hole shape,

the third oil channel is eccentric to a center axis of the main shaft section, and

the branch channel extends in a direction intersecting with a line that connects a center axis of the main shaft section and the third oil channel to each other.

4. The hermetic compressor according to claim 3, wherein the branch channel is inclined so that an entrance of the branch channel located at the third oil channel is lower than an exit of the branch channel located at the outer circumferential surface of the main shaft section.

5. The hermetic compressor according to claim 3, wherein the branch channel is tapered so that a diameter of the branch channel decreases from an entrance of the branch channel located at the third oil channel to an exit of the branch channel located at the outer circumferential surface of the main shaft section.

6. The hermetic compressor according to claim 2, wherein:

the branch channel has a linear hole shape,

the third oil channel is eccentric to a center axis of the main shaft section, and

the branch channel is formed from the outer circumferential surface of the main shaft section via a punching process.

7. A hermetic compressor, comprising:

a hermetic container in which an oil sump is located;

a frame arranged at the hermetic container, the frame including a hollow portion;

a rotating shaft configured to be inserted into the frame;

at least one oil channel configured to guide oil from the oil sump;

a thrust bearing configured to contact the rotating shaft to support a load of the rotating shaft,

wherein the at least one oil channel is configured to supply at least a portion of the oil to the thrust bearing.

8. The hermetic compressor according to claim 7, wherein the rotating shaft is configured to penetrate through at least a part of the hollow portion.

9. The hermetic compressor according to claim 7, wherein the at least one oil channel includes a plurality of oil channels which form an oil channel array.

10. The hermetic compressor according to claim 7, wherein the rotating shaft includes:

a main shaft section configured to penetrate through at least a part of the hollow portion;

an eccentric shaft section configured to be positioned above the main shaft section in an eccentric alignment with the main shaft section; and

a weight balance section configured to compensate for an unbalanced rotating motion of the rotating shaft.

* * * * *