(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
10 May 2007 (10.05.2007)

PCT

(10) International Publication Number
WO 2007/052905 A1

(51) International Patent Classification:
F04B 39/00 (2006.01)

(21) International Application Number:
PCT/KR2006/004143

(22) International Filing Date: 13 October 2006 (13.10.2006)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
10-2005-0105880
7 November 2005 (07.11.2005) KR

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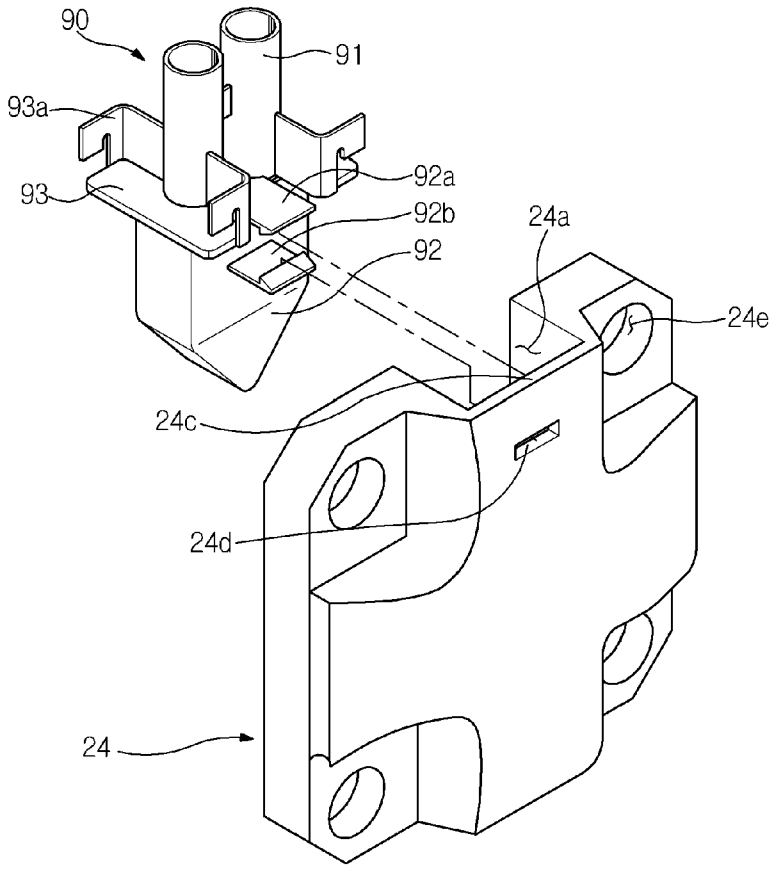
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(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KZ, LA, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI,

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(54) Title: HERMETIC COMPRESSOR



(57) Abstract: A hermetic compressor capable of allowing a muffler base(90) to be easily secured to a cylinder(23) along with a cylinder head(24) and preventing a suction muffler(70) from being separated from the cylinder head during a refrigerant compressing operation. The cylinder has a refrigerant compression chamber(23a), and the cylinder head internally defines refrigerant suction and discharge chambers(24a and 24b) separated from each other. The suction muffler serves to reduce flow noise of the refrigerant to be introduced into the refrigerant suction chamber, and includes a muffler body(80) having inlet and outlet passages and a resonance chamber(81a) defined therebetween, and the muffler base(90) having entrance and exit portions inserted into an outlet passage(81c) of the muffler body and the refrigerant suction chamber, respectively. The muffler base and cylinder head are integrally formed with a first fixture and second fixture, respectively, which are configured to engage with each other.

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FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— *with international search report*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

Description

HERMETIC COMPRESSOR

Technical Field

[1] The present invention relates to a hermetic compressor, and more particularly, to a hermetic compressor in which a muffler base can be easily coupled to a cylinder head even under the absence of an oil supply capillary tube.

Background Art

[2] In general, a hermetic compressor comprises a hermetic container, a compression unit disposed in the hermetic container and adapted to compress a refrigerant, and a drive unit disposed in the hermetic container and adapted to offer a drive force required for the compression of the refrigerant.

[3] The hermetic container is provided with a refrigerant suction pipe to introduce a refrigerant from an external station into the hermetic container and a refrigerant discharge pipe to guide the refrigerant compressed by the compression unit inside the hermetic container to the outside.

[4] The drive unit includes a stator, a rotor located in the stator and adapted to rotate via an electrical interaction with the stator, and a rotary shaft press-fitted in the center of the rotor and adapted to rotate along with the rotor, the rotary shaft having an eccentric portion formed at one end thereof.

[5] The compression unit includes a connecting rod coupled to the eccentric portion of the rotary shaft of the drive unit and adapted to convert a rotating motion of the rotary shaft into a rectilinear reciprocating motion, a piston coupled to one end of the connecting rod, a cylinder having a compression chamber configured to receive a piston in a rectilinearly reciprocable manner, a cylinder head fastened to an opening of the cylinder by use of bolts to hermetically seal the compression chamber, the cylinder head internally defining a refrigerant suction chamber that is connected to the suction pipe and a refrigerant discharge chamber that is connected to the discharge pipe and separated from the refrigerant suction chamber, and a valve device interposed between the cylinder and the cylinder head and adapted to control the flow of the refrigerant being introduced from the refrigerant suction chamber into the compression chamber or being discharged from the compression chamber into the refrigerant discharge chamber.

[6] With the above described configuration, if the rotary shaft rotates by operation of the drive unit, the piston, which is connected to the eccentric portion of the rotary shaft through the connecting rod, rectilinearly reciprocates in the compression chamber, thus creating a pressure difference between the interior and exterior of the compression chamber. With the pressure difference, the refrigerant, which was introduced into the

refrigerant suction chamber through the suction pipe, is suctioned into the compression chamber, so as to be compressed in the compression chamber. The compressed refrigerant is then discharged from the compression chamber to thereby be discharged to the outside through the refrigerant discharge chamber and discharge pipe in sequence.

[7] A suction muffler is provided between the suction pipe and the refrigerant suction chamber of the cylinder head and adapted to reduce flow noise of the refrigerant caused when the refrigerant is introduced into the refrigerant suction chamber. For this, the suction muffler has a predetermined resonance chamber therein. Korean Patent Publication No. 2003-0091222 discloses the configuration of a suction muffler for use in a conventional hermetic compressor and its installation structure.

[8] As disclosed in the above patent, the suction muffler includes a muffler base configured to be mounted to the cylinder head and a muffler body disposed on the muffler base so as to be coupled to the cylinder head. The resonance chamber is defined in the muffler body.

[9] The muffler base serves to communicate the refrigerant suction chamber with the interior of the muffler body. For this, the muffler base has an outlet passage connected to the cylinder head to be inserted into the refrigerant suction chamber. The muffler body is disposed on the muffler base mounted to the cylinder head such that an inlet passage of the muffler base is inserted into the muffler body.

[10] For the sake of cooling and lubrication of frictional areas between the piston and the cylinder as well as the valve device, an oil storage space for storing oil therein is defined in a bottom region of the hermetic container, and an oil supply capillary tube is installed to the cylinder head to supply the oil of the oil storage space into the refrigerant suction chamber.

[11] The oil supply capillary pipe has one end fitted in the muffler base and the other end immersed in the oil storage space. A portion of the oil supply capillary pipe between both the ends thereof is interference fitted into a groove formed at an outer surface of the cylinder head so as to be secured to the cylinder head.

[12] Accordingly, if the piston is operated by compression of the refrigerant, the oil stored in the oil storage space is introduced into the refrigerant suction chamber along the oil supply capillary pipe by a pressure difference between the interior and exterior of the refrigerant suction chamber. Then, the oil is delivered into the compression chamber by way of the valve device. During the delivery course, the oil is in a state melted in the refrigerant. In this way, cooling and lubrication of frictional areas between the cylinder and the piston as well as the valve device can be accomplished.

[13] The muffler base is secured to the cylinder head by use of the oil supply capillary tube because one end of the oil supply capillary tube is fitted into the muffler base and in turn, the portion of the oil supply capillary tube between both the ends thereof is in-

terference-fitted in the outer surface of the cylinder head. The conventional hermetic compressor in which the muffler base is secured to the cylinder head by use of the oil supply capillary tube, however, has the following problem.

[14] Although the oil, which is introduced into the refrigerant suction chamber through the oil supply capillary tube and then, delivered into the compression chamber while being melted in the refrigerant, performs affirmative functions of cooling and lubrication of the piston or valve device, the oil also may produce unfavorable side effects, such as generation of excessive noise during flow of the refrigerant and deterioration in the density of refrigerant. For this reason, the oil supply capillary tube is often omitted in accordance with the user's selection.

[15] However, in the case where the oil supply capillary pipe is omitted, it may cause unintentional displacement of the muffler base toward the top of the cylinder head, thereby having a risk in that the muffler base may be separated upward from the cylinder head by vibrations generated upon operation of the hermetic compressor. Furthermore, in the course of coupling the cylinder head to the cylinder by use of bolts, it may be impossible to maintain a strong coupling between the muffler base and the cylinder head. It makes securing of the cylinder head relative to the cylinder be difficult.

Disclosure of Invention

Technical Problem

[16] Therefore, the present invention has been made in view of the above problems, and it is an object of the present invention to provide a hermetic compressor which can achieve easy fixation of a muffler base relative to a cylinder along with a cylinder head even under the absence of an oil supply capillary tube, and can prevent a suction muffler from being unintentionally separated from the cylinder head during a refrigerant compressing operation.

Technical Solution

[17] In accordance with an aspect of the present invention, the above and other objects can be accomplished by the provision of a hermetic compressor comprising: a cylinder having a compression chamber in which a refrigerant compressing operation is performed; a cylinder head coupled to the cylinder to hermetically seal the compression chamber, the cylinder head internally defining a refrigerant suction chamber for guiding a refrigerant to be introduced into the compression chamber and a refrigerant discharge chamber for receiving the refrigerant discharged from the compression chamber, the refrigerant suction and discharge chambers being separated from each other; and a suction muffler adapted to reduce flow noise of the refrigerant to be introduced from an external station into the refrigerant suction chamber, the

suction muffler including a muffler body having inlet and outlet passages and a resonance chamber defined between the inlet and outlet passages and a muffler base having an entrance portion inserted into the outlet passage and an exit portion inserted into the refrigerant suction chamber, the muffler base serving not only to connect the muffler body to the cylinder head, but also to guide the refrigerant, having passed through the resonance chamber, into the refrigerant suction chamber, wherein the muffler base and cylinder head are integrally formed with a first fixture and second fixture, respectively, which are configured to engage with each other.

[18] The first and second fixtures may be used to secure the muffler base to the cylinder head before the cylinder head is secured to the cylinder, thereby maintaining the muffler base in a state secured to the cylinder head during the coupling of the cylinder head and the cylinder.

[19] One of the first and second fixtures may include hooks, and the other fixture may include holders by which the hooks are fixedly caught.

[20] In accordance with another aspect of the present invention, there is provided a hermetic compressor comprising: a cylinder having a compression chamber in which a refrigerant compressing operation is performed; a cylinder head coupled to the cylinder to hermetically seal the compression chamber, the cylinder head internally defining a refrigerant suction chamber for guiding a refrigerant to be introduced into the compression chamber and a refrigerant discharge chamber for receiving the refrigerant discharged from the compression chamber, the refrigerant suction and discharge chambers being separated from each other; and a suction muffler adapted to reduce flow noise of the refrigerant to be introduced from an external station into the refrigerant suction chamber, the suction muffler including a muffler body having inlet and outlet passages and a resonance chamber defined between the inlet and outlet passages and a muffler base having an entrance portion inserted into the outlet passage and an exit portion inserted into the refrigerant suction chamber, the muffler base serving not only to connect the muffler body to the cylinder head, but also to guide the refrigerant, having passed through the resonance chamber, into the refrigerant suction chamber, wherein the muffler base is directly coupled to the cylinder head to constitute a single assembly such that the muffler base is coupled to the cylinder together with the cylinder head.

[21] Additional aspects and/or advantages of the invention will be set forth in part in the description which follows and, in part, will be obvious from the description, or may be learned by practice of the invention.

Advantageous Effects

[22] A hermetic compressor of the present invention has the following effect. That is, in consistent with the present invention, under the absence of an oil supply capillary tube

that is conventionally used to secure a suction muffler to a cylinder head, a muffler base of the suction muffler can be strongly and easily coupled to a cylinder along with the cylinder head by use of first and second fixtures. This has the effect of facilitating a securing operation of the cylinder head and muffler base and preventing the suction muffler from being unintentionally separated from the cylinder head even if vibrations caused by compression of a refrigerant are applied thereto.

Description of Drawings

[23] The above and other objects, features and other advantages of the present invention will be more clearly understood from the following detailed description taken in conjunction with the accompanying drawings, in which:

[24] FIG. 1 is a sectional view schematically illustrating the general structure of a hermetic compressor consistent with a preferred embodiment of the present invention;

[25] FIG. 2 is an enlarged sectional view illustrating the structure of a suction muffler and cylinder head shown in FIG. 1, which is seen from a different direction from that of FIG. 1;

[26] FIG. 3 is an exploded perspective view illustrating a muffler base and cylinder head included in the hermetic compressor consistent with the preferred embodiment of the present invention, prior to assembling the muffler base and cylinder head to each other;

[27] FIG. 4 is a perspective view illustrating an assembled state of the muffler base and cylinder head of FIG. 3; and

[28] FIG. 5 is a perspective view illustrating the configuration of a muffler base and cylinder head consistent with another embodiment of the present invention, prior to assembling the muffler base and cylinder head to each other.

Best Mode

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

[30] Referring to FIG. 1 illustrating a hermetic compressor consistent with a preferred embodiment of the present invention, the hermetic compressor comprises a compression unit 20 adapted to compress a refrigerant and a drive unit 30 adapted to offer a drive force required for the compression of the refrigerant. The compression unit 20 and drive unit 30 are installed in a hermetic container 10, which is formed by coupling an upper container 10a and lower container 10b to each other.

[31] The hermetic container 10 is provided with a refrigerant suction pipe 11 to introduce a refrigerant from an external station into the hermetic container 10 and a re-

frigerant discharge pipe 12 to guide the refrigerant compressed in the compression unit 20 to the outside of the hermetic container 10.

[32] The drive unit 30 includes a stator 31 secured to an outer periphery of an upper end of a frame 40 that is disposed in an approximately center region of the hermetic container 10, a rotor 32 rotatably located in the stator 31 and adapted to rotate via an electrical interaction with the stator 31, and a rotary shaft 50 having an upper portion press-fitted in the center of the rotor 32 and adapted to rotate along with the rotor 32 during rotation of the rotor 32.

[33] The rotary shaft 50 also has a lower portion penetrating through the center of the frame 40 to protrude downward from a lower end of the frame 40. An eccentric portion 51 is formed at a lower end of the rotary shaft below the frame 40 and adapted to eccentrically rotate during rotation of the rotary shaft 50.

[34] The compression unit 20 includes a connecting rod 21 coupled to the eccentric portion 51 of the rotary shaft 50 and adapted to convert a rotating motion of the rotary shaft 50 into a rectilinear reciprocating motion, a piston 22 coupled to one end of the connecting rod 21, a cylinder 23 located underneath the frame 40 at a side location of the frame 40 and having a compression chamber 23a configured to receive the piston 22 in a rectilinearly reciprocable manner, a cylinder head 24 coupled to an opening of the cylinder 23 by use of bolts that will be explained hereinafter to hermetically seal the compression chamber 23a, the cylinder head 24 internally defining a refrigerant suction chamber 24a that is connected to the suction pipe 11 and a refrigerant discharge chamber 24b that is connected to the discharge pipe 12 and separated from the refrigerant suction chamber 24a, and a valve device 25 interposed between the cylinder 23 and the cylinder head 24 and adapted to control the flow of the refrigerant being introduced from the refrigerant suction chamber 24a into the compression chamber 23a or being discharged from the compression chamber 23a into the refrigerant discharge chamber 24b.

[35] The valve device 25 includes a suction hole 25a to communicate the refrigerant suction chamber 24a with the compression chamber 23a, a discharge hole 25b to communicate the compression chamber 23a with the refrigerant discharge chamber 24b, and suction and discharge valves 25c and 25d adapted to open and close the suction and discharge holes 25a and 25b opposite to each other in accordance with a rectilinear reciprocating motion of the piston 22. The suction and discharge holes 25a and 25b are open at the refrigerant suction chamber 24a and refrigerant discharge chamber 24b of the cylinder head 24, respectively. The refrigerant suction chamber 24a has an open upper end for the installation of a muffler base that will be explained hereinafter.

[36] With the above described configuration, if the rotary shaft 50 rotates by operation

of the drive unit 30, the piston 22, which is connected to the eccentric portion 51 of the rotary shaft 50 through the connecting rod 21, rectilinearly reciprocates in the compression chamber 23a, thereby creating a pressure difference between the interior and exterior of the compression chamber 23a. With the pressure difference, the refrigerant, which was introduced the refrigerant suction chamber 24a through the suction pipe 11, is suctioned into the compression chamber 23a, so as to be compressed in the compression chamber 23a. The compressed refrigerant is then discharged from the compression chamber 23a to thereby be discharged to the outside through the refrigerant discharge chamber 24b and discharge pipe 12 in sequence.

[37] In addition to the above described configuration, a journal bearing 60 is mounted around the rotary shaft 50 at a portion between the rotor 32 and the frame 40 and adapted to rotatably support the rotary shaft 50. An oil storage space 13 is defined in a bottom region of the hermetic container 10 to store oil for use in the lubrication and cooling of frictional areas between the connecting rod 21 and the piston 22 and between the journal bearing 60 and the rotary shaft 50.

[38] An oil pickup tube 13a is inserted in a lower end region of the eccentric portion 51 and adapted to pick up and move the oil stored in the oil storage space 13 upward by use of a centrifugal force generated upon rotation of the rotary shaft 50. The oil pickup tube 13a is connected to an oil supply bore 52 perforated in the rotary shaft 50. Specifically, the oil supply bore 52 is perforated throughout the eccentric portion 51 and through a part of the rotary shaft 50 right above the eccentric portion 51. To guide a part of the oil delivered into the oil supply bore 52 upward into a gap between the journal bearing 60 and the rotary shaft 50, the rotary shaft 50 is formed with a spiral oil groove 53 at an outer peripheral surface thereof facing the journal bearing 60. Also, to guide another part of the oil delivered into the oil supply bore 52 into frictional sliding regions between the connecting rod 21 and the piston 22, an oil supply hole 21a is perforated throughout the connecting rod 21 in a longitudinal direction thereof.

[39] The hermetic compressor consistent with the present embodiment has no oil supply capillary tube, which has been conventionally used to deliver the oil from the oil storage space 13 into the refrigerant suction chamber 24a of the cylinder head 24 for the sake of lubrication and cooling of frictional areas between the cylinder 23 and the piston 22 as well as the valve device 25. Elimination of the oil supply capillary tube is to prevent the density of the refrigerant from thinning due to the oil supplied into the compression chamber 23a, or to prevent an excessive increase in the flow noise of the refrigerant.

[40] Meanwhile, a suction muffler 70 is provided between the suction pipe 11 and the refrigerant suction chamber 24a and adapted to reduce the flow noise of the refrigerant caused when the refrigerant is introduced into the refrigerant suction chamber 24a. The

suction muffler 70, as shown in FIGS. 2 and 3, includes a muffler body 80 having a resonance chamber 81a defined therein, and a muffler base 90 configured to be mounted to the cylinder head 24. The muffler base 90 serves not only to connect the muffler body 80 to the cylinder head 24, but also to guide the refrigerant, which is reduced in pulsation noise while passing through the resonance chamber 81a of the muffler body 80, into the refrigerant suction chamber 24a.

[41] The muffler body 80 includes a body 81 having an open upper end and a cover 82 configured to cover the open upper end of the body 81. The body 81 is formed at a side location thereof with an inlet passage 81b, which is connected to the suction pipe 11 and defines a flow path for guiding the introduction of the refrigerant into the muffler body 80. The body 81 is also centrally formed with an outlet passage 81c, which defines a flow path for discharging the refrigerant, which is reduced in noise within the muffler body 80, to the outside of the muffler body 80 from a lower end of the muffler body 80. The resonance chamber 81a is defined at opposite sides of the outlet passage 81c such that the resonance chamber 81a is positioned on a refrigerant flow path between the inlet passage 81b and the outlet passage 81c.

[42] With the suction muffler 70 having the above described configuration, the refrigerant can be introduced into the muffler body 80 by passing through the suction pipe 11 and inlet passage 81b in sequence, and then, be discharged to the outside through the outlet passage 81c after being reduced in pulsation noise while passing through the resonance chamber 81b. In the present embodiment, the outlet passage 81c is divided into two parts.

[43] Here, it is noted that the suction pipe 11 may be directly connected to the inlet passage 81b as shown, or may be fixed at a certain position spaced apart from the inlet passage 81b.

[44] The muffler base 90 serves to connect the muffler body 80 to the cylinder head 24, and offers a flow path for guiding the refrigerant, which is reduced in noise, from the outlet passage 81c of the muffler body 80 into the refrigerant suction chamber 24a of the cylinder head 24. The muffler base 90 includes a pair of guide tubes 91, which define an upper section of the muffler base 90 and are configured to be inserted into the two divided parts of the outlet passage 81c, respectively. The muffler base 90 further includes an insert 92, which defines a lower section of the muffler base 90 and is configured to be inserted into the refrigerant suction chamber 24a of the cylinder head 24.

[45] Upper ends of the guide tubes 91 and a lower end of the insert 92 define an entrance and exit of the muffler base 90, respectively. Also, lower ends of the guide tubes 91 are merged at an upper end of the insert 92. A pair of supporting pieces 93 are formed around the muffler base 90 at an intermediate position between the guide tubes

91 and the insert 92. The supporting pieces 93 serve to support a lower end of the muffler body 80 and an upper end of the cylinder head 24 together. Each supporting piece 93 is integrally formed with a pair of auxiliary supporting pieces 93a configured to surround and support a part of front and rear surfaces of the muffler body 80. Thereby, the muffler body 80 can be more efficiently and stably supported on the supporting pieces 93.

[46] With the above described configuration, first, the muffler base 90 is mounted to the cylinder head 24 such that the insert 92 of the muffler base 90 is inserted into the refrigerant suction chamber 24a of the cylinder head 24, and then, the muffler body 80 is disposed on the muffler base 90 such that the guide tubes 91 of the muffler base 90 are inserted into the outlet passage 81c of the muffler body 80. In this way, the suction muffler 70 can be mounted to the upper end of the cylinder head 24.

[47] In the present invention, the insert 92 of the muffler base 90 is provided with a first fixture, and the refrigerant suction chamber 24a of the cylinder head 24 that accommodates the insert 92 is provided with a second fixture. The first and second fixtures are integrally formed with the muffler base 90 and the cylinder head 24, respectively, and configured to engage with each other.

[48] With the use of the first and second fixtures, the muffler base 90 can be maintained in a state strongly coupled to the cylinder head 24 in spite of the absence of a conventional oil supply capillary tube, and therefore, the muffler base 90 has no risk of being unintentionally separated upward from the cylinder head 24 by vibrations generated upon operation of the compressor. Also, since the first and second fixtures are adapted to couple the muffler base 90 to the cylinder head 24 prior to securing the cylinder head 24 to the cylinder 23, the first and second fixtures can efficiently maintain the muffler base 90 in a state secured to the cylinder head 24 in the course of coupling the cylinder head 24 to the cylinder 23. This has the effect of allowing the muffler base 90 to be easily secured to the cylinder 23 together with the cylinder head 24.

[49] More specifically, in the present embodiment, the first fixture includes a pair of upper and lower hooks 92a and 92b spaced apart from each other by a predetermined distance. The upper and lower hooks 92a and 92b are formed at the insert 92 of the muffler base 90 at a front surface of the insert 92 facing the refrigerant suction chamber 24a when the insert 92 is inserted in the refrigerant suction chamber 24a. To correspond to the upper and lower hooks 92a and 92b, the cylinder head 24 is formed, at the refrigerant suction chamber 24a thereof, with a pair of first and second holders 24c and 24d such that the upper and lower hooks 92a and 92b are caught by the first and second holders 24c and 24d, respectively. The first holder 24a is defined by the upper end of the cylinder head 24, and the second holder 24a is a slot perforated in the

cylinder head 24 at a position right below the upper end of the cylinder head 24.

[50] Accordingly, if the insert 92 of the muffler base 90 is inserted into the refrigerant suction chamber 24a from a front side of the refrigerant suction chamber 24a, as shown in FIG. 4, the first and second hooks 92a and 92b engage with the first and second holders 24c and 24d, respectively, thus allowing the muffler base 90 to be directly coupled to the cylinder head 24 so as to form a single assembly without separate fastening members.

[51] After being assembled as stated above, the cylinder head 24 is coupled to the cylinder 23 as bolts 100 are fastened through bolt holes 24e formed at respective corners of the cylinder head 24. In this case, since the insert 92 of the muffler base 90 is in a state fixedly inserted in the refrigerant suction chamber 24a of the cylinder 24 without a relative motion with the cylinder 24 by virtue of engagement between the hooks 92a and 92b and the holders 24c and 24d, consequently, the muffler base 90 can be secured to the cylinder 23 together with the cylinder head 24 in a simplified manner.

[52] Furthermore, if the muffler body 80 is disposed on the muffler base 90 such that the guide tubes 91 of the muffler base 90 are inserted into the outlet passage 81c of the muffler body 80, the installation of the suction muffler 70 is completed. By virtue of engagement between the hooks 92a and 92b and the holders 24c and 24d, even if vibrations generated during operation of the compressor are transmitted to the suction muffler 70, the completely installed suction muffler 70 can be maintained in a state strongly coupled to the cylinder head 24 regardless of a conventional oil supply capillary tube.

[53] In another embodiment of the present invention, as shown in FIG. 5, the first fixture may include first and second fixing protrusions 92a' and 92b' formed at opposite side surfaces of the insert 92 of the muffler base 90, and the second fixture may include first and second recesses 24c' and 24d' formed at opposite inner sidewalls of the refrigerant suction chamber 24a to engage with the respective fixing protrusions 92a' and 92b'. With the present embodiment, accordingly, the first and second fixtures can be engaged with each other as the insert 92 is inserted into the refrigerant suction chamber 24a from an upper side of the refrigerant suction chamber 24a as well as the front side of the refrigerant suction chamber 24a.

Industrial Applicability

[54] As apparent from the above description, the present invention provides a hermetic compressor in which, under the absence of an oil supply capillary tube, a muffler base can be strongly coupled to a cylinder head to constitute a single assembly by use of first and second corresponding fixtures integrally formed thereto, and consequently, the resulting assembly can be stably secured to a cylinder. This has the effect of facilitating a securing operation of the cylinder head and muffler base and preventing a

suction muffler from being separated from the cylinder head due to vibrations caused by compression of a refrigerant.

[55] Although the preferred embodiments of the present invention have been disclosed for illustrative purposes, those skilled in the art will appreciate that various modifications, additions and substitutions are possible, without departing from the scope and spirit of the invention as disclosed in the accompanying claims.

Claims

[1] A hermetic compressor comprising: a cylinder having a compression chamber in which a refrigerant compressing operation is performed; a cylinder head coupled to the cylinder to hermetically seal the compression chamber, the cylinder head internally defining a refrigerant suction chamber for guiding a refrigerant to be introduced into the compression chamber and a refrigerant discharge chamber for receiving the refrigerant discharged from the compression chamber, the refrigerant suction and discharge chambers being separated from each other; and a suction muffler adapted to reduce flow noise of the refrigerant to be introduced from an external station into the refrigerant suction chamber, the suction muffler including a muffler body having inlet and outlet passages and a resonance chamber defined between the inlet and outlet passages and a muffler base having an entrance portion inserted into the outlet passage and an exit portion inserted into the refrigerant suction chamber, the muffler base serving not only to connect the muffler body to the cylinder head, but also to guide the refrigerant, having passed through the resonance chamber, into the refrigerant suction chamber, wherein the muffler base and cylinder head are integrally formed with a first fixture and second fixture, respectively, which are configured to engage with each other.

[2] The compressor according to claim 1, wherein the first and second fixtures are used to secure the muffler base to the cylinder head before the cylinder head is secured to the cylinder, thereby maintaining the muffler base in a state secured to the cylinder head during the coupling of the cylinder head and the cylinder.

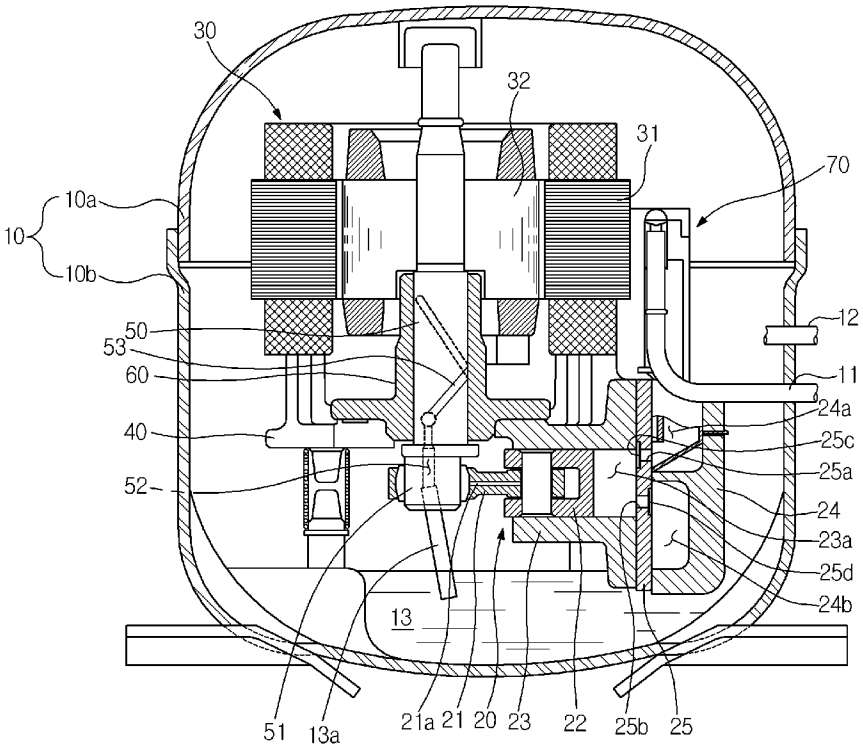
[3] The compressor according to claim 2, wherein one of the first and second fixtures includes hooks, and the other fixture includes holders by which the hooks are fixedly caught.

[4] A hermetic compressor comprising: a cylinder having a compression chamber in which a refrigerant compressing operation is performed; a cylinder head coupled to the cylinder to hermetically seal the compression chamber, the cylinder head internally defining a refrigerant suction chamber for guiding a refrigerant to be introduced into the compression chamber and a refrigerant discharge chamber for receiving the refrigerant discharged from the compression chamber, the refrigerant suction and discharge chambers being separated from each other; and a suction muffler adapted to reduce flow noise of the refrigerant to be introduced from an external station into the refrigerant suction chamber, the suction muffler including a muffler body having inlet and outlet passages and a resonance chamber defined between the inlet and outlet passages and a muffler base having

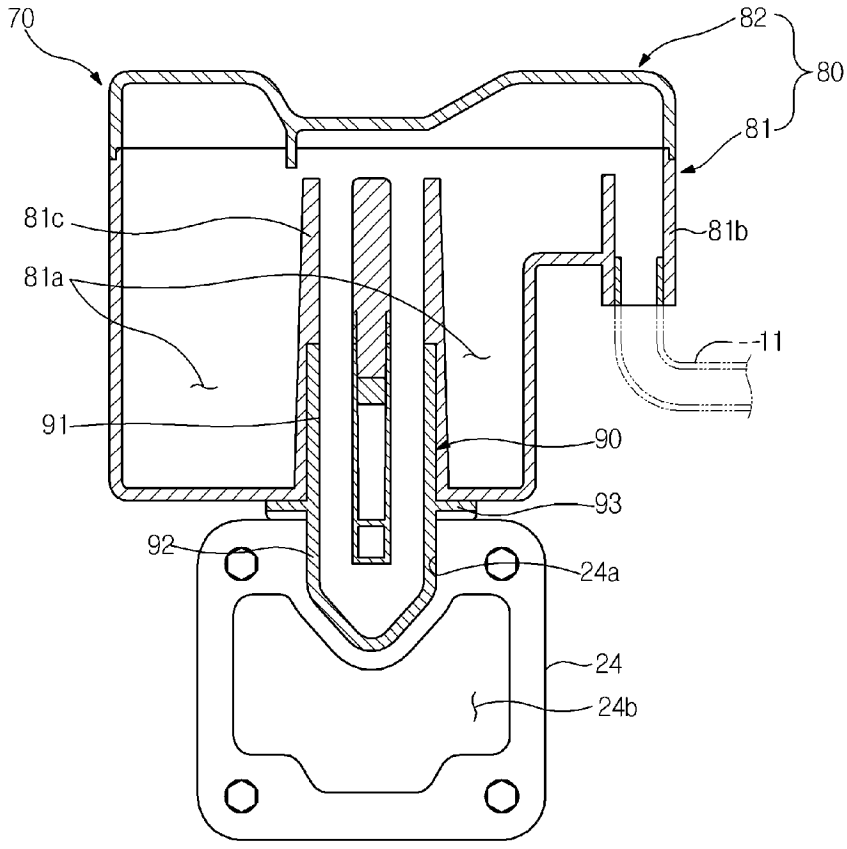
an entrance portion inserted into the outlet passage and an exit portion inserted into the refrigerant suction chamber, the muffler base serving not only to connect the muffler body to the cylinder head, but also to guide the refrigerant, having passed through the resonance chamber, into the refrigerant suction chamber, wherein the muffler base is directly coupled to the cylinder head to constitute a single assembly such that the muffler base is coupled to the cylinder together with the cylinder head.

[5] The compressor according to claim 4, wherein
the muffler base and cylinder head are integrally formed with a first fixture and second fixture, respectively, which are configured to engage with each other.

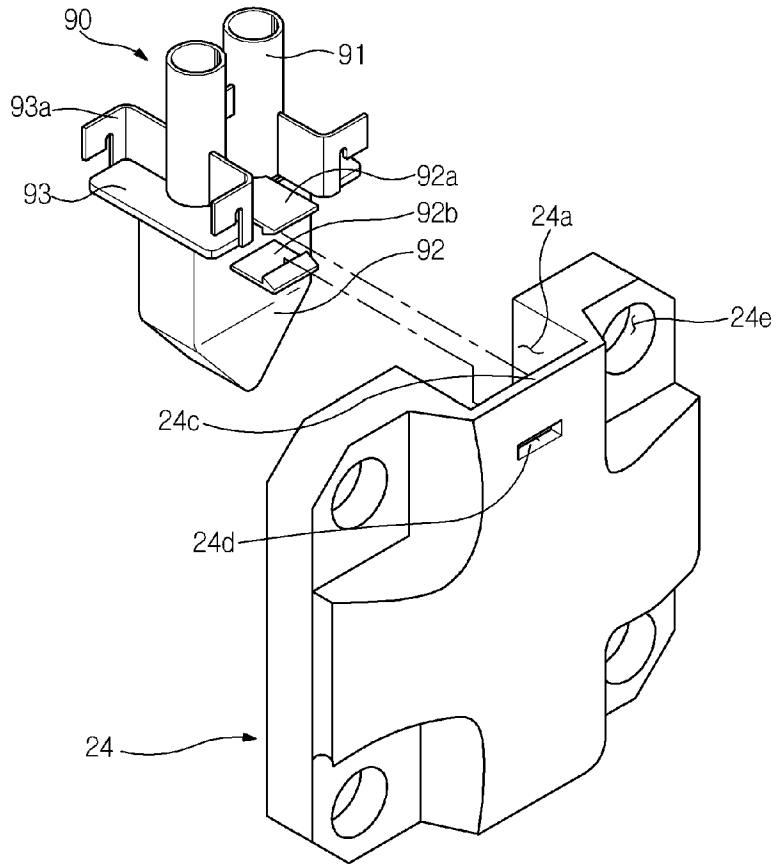
[Fig. 1]


30
32
31
70
10a
10
10b
12
50
53
11
60
24a
40
25c
25a
52
24
23a
25d
24b
13
51
13a
21a
21
20
23
22
25b
25

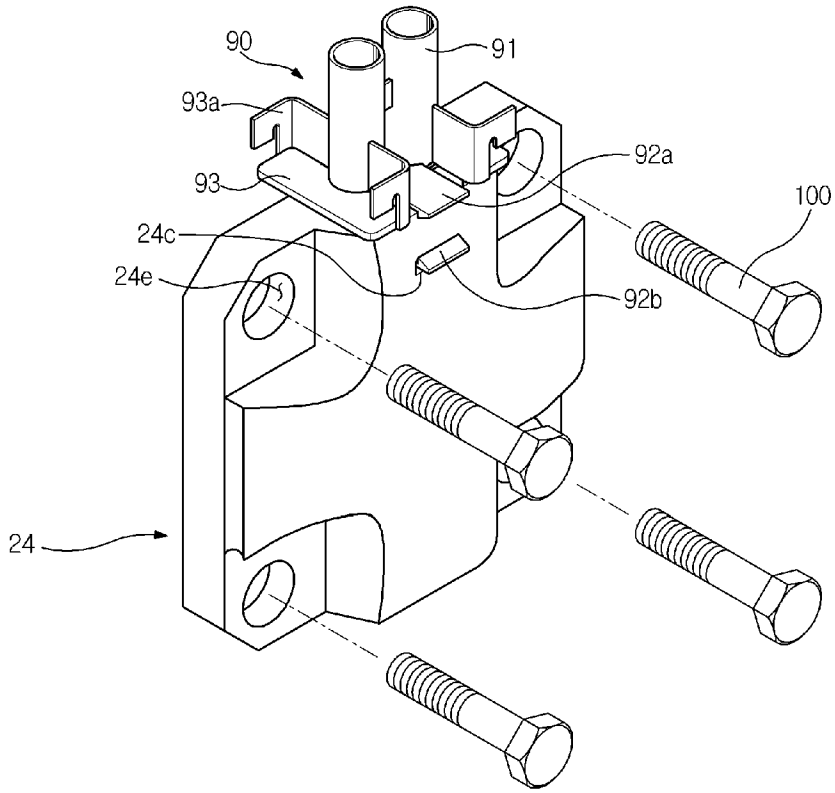
[Fig. 2]


70
82
80
81
81c
81b
81a
11
91
90
93
92
24a
24
24b

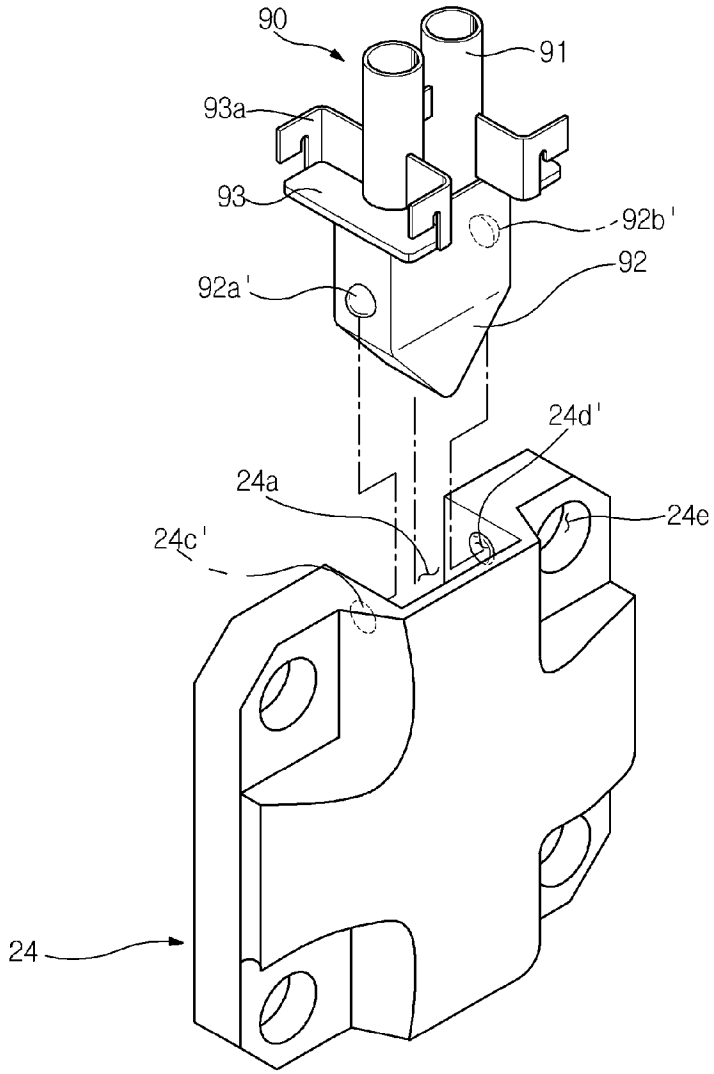
[Fig. 3]


90
91
93a
92a
93
92b
24a
92
24e
24c
24d
24

[Fig. 4]


90
91
93a
92a
93
100
24c
24e
92b
24

[Fig. 5]



INTERNATIONAL SEARCH REPORT

International application No.
PCT/KR2006/004143

A. CLASSIFICATION OF SUBJECT MATTER

F04B 39/00(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)
IPC8 F04B 39/00

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
KR.JP: IPC as above

Electronic data base consulted during the intertnational search (name of data base and, where practicable, search terms used)
eKIPASS (KIPO internal) & keyword: compressor

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y A	JP 10-169555 A (MATSUSHITA REFRIG CO., LTD.) 23 June 1998 See Claims 1, 2 and Figures 1, 4, 5.	4 1-3, 5
Y A	KR 10-0143142 B (SAMSUNG KWANGJU ELECTRONICS CO., LTD.) 07 April 1998 See Claim 1 and Figures 1-5.	4 1-3, 5
Y A	JP 05-133329 A (MATSUSHITA REFRIG CO., LTD.) 28 May 1993 See Claim 1 and Figures 1-4 and paragraphs 1-14.	4 1-3, 5
Y A	KR 10-2003-0091222 A (SAMSUNG KWANGJU ELECTRONICS CO., LTD.) 03 December 2003 See Claims 1-3 and Figures 1-4.	4 1-3, 5

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents:
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Date of the actual completion of the international search	Date of mailing of the international search report
12 JANUARY 2007 (12.01.2007)	**12 JANUARY 2007 (12.01.2007)**

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.
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