

US Patent & Trademark Office

Patent Public Search | Text View

United States Patent	12392341
Kind Code	B2
Date of Patent	August 19, 2025
Inventor(s)	Arashi; Noriaki et al.

Compressor

Abstract

An embodiment includes: a cylindrical motor case surrounding a compression mechanism about an axis; a lower case closing an opening of the motor case, fitted to an inner circumferential face of the motor case, and defining an accommodation chamber between the motor case and the lower case where a refrigerant is introduced; a first O-ring provided about the axis at a facing portion where the motor case and the lower case fitted to each other face each other in a plane; and a second O-ring provided about the axis in the facing portion, the first O-ring is provided at a position closer to a starting point on the accommodation chamber side of the facing portion than the second O-ring, the first O-ring has better refrigerant resistance and/or oil resistance than the second O-ring, and the second O-ring has better sealing performance than the first O-ring at a temperature of -20°C . or lower.

Inventors:	Arashi; Noriaki (Tokyo, JP), Yogo; Ichiro (Tokyo, JP), Ichise; Yuki (Tokyo, JP)
Applicant:	mitsubishi heavy industries thermal systems, ltd. (Tokyo, JP)
Family ID:	1000008763128
Assignee:	mitsubishi heavy industries thermal systems, ltd. (Tokyo, JP)
Appl. No.:	18/852562
Filed (or PCT Filed):	April 21, 2023
PCT No.:	PCT/JP2023/015913
PCT Pub. No.:	WO2023/204301
PCT Pub. Date:	October 26, 2023

Prior Publication Data

Document Identifier	Publication Date
US 20250101982 A1	Mar. 27, 2025

Foreign Application Priority Data

JP	2022-070173	Apr. 21, 2022
----	-------------	---------------

Publication Classification

Int. Cl.: F04C27/00 (20060101); F04C29/02 (20060101)

U.S. Cl.:

CPC F04C27/001 (20130101); F04C29/02 (20130101); F04C2210/26 (20130101)

Field of Classification Search

CPC: F04B (39/00); F04B (39/121); F04C (27/00)

References Cited

U.S. PATENT DOCUMENTS

Patent No.	Issued Date	Patentee Name	U.S. Cl.	CPC
2018/0292008	12/2017	Fujita et al.	N/A	N/A
2020/0232462	12/2019	Park et al.	N/A	N/A
2022/0173626	12/2021	Hagita et al.	N/A	N/A

FOREIGN PATENT DOCUMENTS

Patent No.	Application Date	Country	CPC
11 2020 001120	12/2020	DE	N/A
2005-090626	12/2004	JP	N/A
2005-240676	12/2004	JP	N/A
2005-282551	12/2004	JP	N/A
2009-091986	12/2008	JP	N/A
2016-151256	12/2015	JP	N/A
2020-143650	12/2019	JP	N/A
2022-053976	12/2021	JP	N/A

OTHER PUBLICATIONS

International Search Report (PCT/ISA/210) issued in PCT/JP2023/015913, dated Jul. 11, 2023. cited by applicant
Extended European Search Report issued Jun. 13, 2025 in corresponding European Patent Application No. 23791949.3. cited by applicant

Primary Examiner: Delgado; Anthony Ayala

Background/Summary

TECHNICAL FIELD

(1) The present disclosure relates to a compressor.

BACKGROUND ART

(2) For electric compressors in which one casing is formed of a plurality of cases, a seal member such as an O-ring may be provided between one case and another case to ensure sealing performance between the cases.

(3) For example, in Patent Literature 1, two O-rings aligned in the axis direction are provided between one case and another case.

CITATION LIST

Patent Literature

(4) [PTL 1]

(5) Japanese Patent Application Laid-Open No. 2020-143650

SUMMARY OF INVENTION

Technical Problem

(6) A seal member arranged at a position that is likely to be subjected to contact with the refrigerant is required to have refrigerant resistance and/or oil resistance, but some seal members that meet these requirements exhibit reduced sealing performance at low temperatures (when exposed to an environment at a temperature of -20°C . or lower, for example).

(7) The present disclosure has been made in view of such circumstances and intends to provide a compressor that can maintain sealing performance at low temperatures.

Solution to Problem

(8) To solve the above problem, the compressor of the present disclosure employs the following solution.

(9) A compressor according to one aspect of the present disclosure includes: a cylindrical main case surrounding a compression mechanism about an axis, the compression mechanism being configured to compress a refrigerant; a sub-case closing an opening of the main case in a direction of the axis, fitted to an inner circumferential face or an outer circumferential face of the main case, and defining a space between the main case and the sub-case, the refrigerant being introduced to the space; an annular first seal member provided about the axis at a facing portion where the main case and the sub-case fitted to each other face each other in a plane; and an annular second seal member provided about the axis in the facing portion, the first seal member is provided at a position closer to a starting point on the space side of the facing portion than the second seal member, the first seal member has better refrigerant resistance and/or oil resistance than the second seal member, and the second seal member has better sealing performance than the first seal member at a temperature of -20°C . or lower.

Advantageous Effects of Invention

(10) According to the present disclosure, it is possible to maintain sealing performance at low temperatures.

Description

BRIEF DESCRIPTION OF DRAWINGS

(1) FIG. 1 is a longitudinal sectional view of a compressor according to one form of the present

disclosure.

(2) FIG. 2 is a partial enlarged view of the part A illustrated in FIG. 1.

(3) FIG. 3 illustrates a modified example 1 of the part A illustrated in FIG. 1.

(4) FIG. 4 illustrates a modified example 2 of the part A illustrated in FIG. 1.

(5) FIG. 5 illustrates a modified example 3 of the part A illustrated in FIG. 1.

DESCRIPTION OF EMBODIMENTS

(6) A compressor according to one embodiment of the present disclosure will be described below with reference to the drawings.

(7) [Overview of Compressor]

(8) A compressor **10** is an apparatus to compress a refrigerant (for example, R1234yf) containing a refrigeration oil (for example, POE oil).

(9) Note that the following description uses, as an example of the compressor **10**, a scroll compressor in which a compression mechanism **200** and an electric motor **400** serving as a driving unit are accommodated in the internal space of a casing **100** that is an enclosed space, but the compressor **10** may be a so-called open-type scroll compressor in which the driving unit is arranged outside the enclosed space.

(10) As illustrated in FIG. 1, the compressor **10** includes the casing **100**, the compression mechanism **200**, a crankshaft **310**, and the electric motor **400**.

(11) The casing **100** has a motor case (main case) **110**, an upper case **120**, and a lower case (sub-case) **130**.

(12) The motor case **110** is a cylindrical member extending in the direction of an axis X and opened at both ends.

(13) The motor case **110** surrounds the compression mechanism **200**, the crankshaft **310**, and the electric motor **400** about the axis X.

(14) The upper case **120** is a member that closes one opening of the motor case **110**.

(15) The upper case **120** is fixed to the motor case **110** by a bolt **530**.

(16) The lower case **130** is a member that closes the other opening (hereinafter referred to as "opening **111**") of the motor case **110**.

(17) The lower case **130** is fixed to the motor case **110** by a bolt (not illustrated). The detailed configuration of a portion where the motor case **110** and the lower case **130** are fitted to each other will be described later.

(18) An inverter cover **140** is attached to the lower case **130** by a screw **540**. An inverter (not illustrated) is accommodated in a space defined by the lower case **130** and the inverter cover **140**.

(19) In an enclosed space defined by the casing **100** (the motor case **110**, the upper case **120**, and the lower case **130**) configured as described above, the compression mechanism **200**, the crankshaft **310**, the electric motor **400**, and various other components are accommodated.

(20) The compression mechanism **200** is a mechanism that compresses a low-pressure gas refrigerant taken in from outside of the casing **100** through a suction port **116**.

(21) The compression mechanism **200** has a fixed scroll **210** and an orbiting scroll **220**.

(22) The fixed scroll **210** is a member having a fixed side end plate and a spiral fixed side wall body erected from the end plate.

(23) The fixed scroll **210** is fixed to the upper case **120** by a bolt **550**. Further, the outer circumferential face of the fixed side end plate of the fixed scroll **210** is in contact with the inner circumferential face of the motor case **110** and the inner circumferential face of the upper case **120** while maintaining its sealing performance. Accordingly, the enclosed space inside the casing **100** is divided into an accommodation chamber C1 which is defined by the fixed scroll **210**, the motor case **110**, and the lower case **130** and a discharge chamber C2 which is defined by the fixed scroll **210** and the upper case **120**.

(24) Note that the sealing performance between the fixed scroll **210** and the motor case **110** and the sealing performance between the fixed scroll **210** and the upper case **120** are ensured by O-rings,

for example.

(25) The orbiting scroll **220** is a member having an orbiting side end plate and a spiral orbiting side wall body erected from the end plate.

(26) The orbiting scroll **220** is configured to perform revolution movement with respect to the fixed scroll **210** by the crankshaft **310** rotated about the axis X (in detail, a crankpin **312** revolved about the axis X) and a known anti-rotation mechanism.

(27) Respective wall bodies of the fixed scroll **210** and the orbiting scroll **220** are engaged with each other, and thereby the fixed scroll **210** and the orbiting scroll **220** form a compression chamber C3.

(28) The crankshaft **310** is a member for transmitting driving force from the electric motor **400** to the orbiting scroll **220**.

(29) The crankshaft **310** has a shaft body **311** and the crankpin **312**.

(30) The shaft body **311** is a shaft-like member extending along the axis X. The shaft body **311** is driven and rotated about the axis X by the electric motor **400**.

(31) The shaft body **311** is supported rotatably about the axis X by a main bearing **510**, which is arranged on the upper case **120** side and fixed to the motor case **110**, and by a sub-bearing **520**, which is arranged on the lower case **130** side and fixed to the lower case **130**.

(32) The crankpin **312** is a shaft-like member provided at an end on the upper case **120** side of the shaft body **311**.

(33) The crankpin **312** extends along another axis eccentric from the axis X. Thus, when the shaft body **311** is rotated about the axis X, the crankpin **312** is revolved about the axis X.

(34) The crankpin **312** is connected via a bearing **222** to a boss part **221** formed in the orbiting scroll **220**.

(35) The compressor **10** configured as described above is driven as follows.

(36) The shaft body **311** of the crankshaft **310** is driven and rotated about the axis X by the electric motor **400**, and thereby the orbiting scroll **220** connected to the crankpin **312** is driven.

(37) A gas refrigerant taken into the accommodation chamber C1 on the lower case **130** side via the suction port **116** passes through a refrigerant passage or the like formed between the inner circumferential face of the motor case **110** and the outer circumferential face of the electric motor **400** (stator), and the gas refrigerant is guided to the accommodation chamber C1 on the compression mechanism **200** side.

(38) The refrigerant guided to the accommodation chamber C1 on the compression mechanism **200** side is taken into the compression chamber C3. At this time, the compression chamber C3 is configured so that the volume thereof is gradually reduced in accordance with the revolution movement of the orbiting scroll **220**, and thus the gas refrigerant is compressed accordingly.

(39) The compressed high-temperature high-pressure gas refrigerant is guided to the discharge chamber C2 via a discharge port **211a** formed in the approximate center of the fixed side end plate of the fixed scroll **210** and the discharge valve (not illustrated) provided at the outlet of the discharge port **211a**.

(40) The gas refrigerant guided to the discharge chamber C2 is discharged to outside of the compressor **10** via the discharge port (not illustrated) provided in the upper case **120**.

(41) [Engagement Portion Between Motor Case and Lower Case]

(42) As illustrated in FIG. 1 and FIG. 2, an annular protruding portion **131** is formed in the lower case **130**.

(43) The annular protruding portion **131** is a portion formed in the lower case **130** facing the opening **111** of the motor case **110**.

(44) The annular protruding portion **131** protrudes in the direction of the axis X, is formed in an annular shape about the axis X, and is fitted to the inner circumferential face of the opening **111**. Thus, the outer diameter of the annular protruding portion **131** corresponds to the inner diameter of the opening **111**.

(45) In a state where the motor case **110** and the lower case **130** are fitted to each other, two seal members (a first O-ring **151** and a second O-ring **152**) are provided in any range of a portion where the motor case **110** and the lower case **130** face each other in a plane. In detail, the portion means a portion where a portion on the opening **111** side of the motor case **110** and the annular protruding portion **131** of the lower case **130** face each other in a plane (hereinafter referred to as a “facing portion L”).

(46) The first O-ring **151** is a seal member having rubber elasticity and having an annular shape about the axis X. Further, the second O-ring **152** is a seal member having rubber elasticity and having an annular shape about the axis X.

(47) Note that the first O-ring **151** and the second O-ring **152** are formed of different materials from each other. The detail thereof will be described later.

(48) For example, the first O-ring **151** is provided in a first annular groove **133** formed in the outer circumferential face of the annular protruding portion **131**. Further, for example, the second O-ring **152** is provided in a second annular groove **134** formed in the outer circumferential face of the annular protruding portion **131**.

(49) Note that the first O-ring **151** and the second O-ring **152** being assembled into the compressor **10** are in close contact with the motor case **110** and lower case **130**, respectively, and are compressed and squeezed between the motor case **110** and lower case **130**.

(50) Herein, the first annular groove **133** is formed at a position closer to a starting point L_s of the facing portion L than the second annular groove **134** (a position away from an end point L_e of the facing portion L). In other words, the first O-ring **151** is provided at a position closer to the starting point L_s of the facing portion L than the second O-ring **152** (a position away from the end point L_e of the facing portion L).

(51) Herein, the starting point L_s of the facing portion L is a point (portion) of the facing portion L in contact with and adjacent to the accommodation chamber **C1**. Further, the end point L_e of the facing portion L is a point (portion) of the facing portion L in contact with and adjacent to the outside of the compressor **10**.

(52) In the case of FIG. 2, the starting point L_s of the facing portion L is located on an end face **131a** side of the annular protruding portion **131**. Thus, the first annular groove **133** is formed at a position closer to the end face **131a** of the annular protruding portion **131** than the second annular groove **134**.

(53) Because of such arrangement, if there is entry of a gas refrigerant from the accommodation chamber **C1** through the starting point L_s along the facing portion L, the refrigerant will first come into contact with the first O-ring **151**. Then, only if the gas refrigerant passes between the first O-ring **151** and the inner circumferential face of the motor case **110**, the refrigerant will come into contact with the second O-ring **152**.

(54) Herein, the first O-ring **151** to be employed is an O-ring having better refrigerant resistance and/or oil resistance than the second O-ring **152**.

(55) Further, the second O-ring **152** to be employed is an O-ring having better sealing performance than the first O-ring **151** at a temperature of, for example, -20°C . or lower.

(56) For example, refrigerant resistance is evaluated by an immersion test using a refrigerant (R1234yf) (JIS K 6258, “Rubber, vulcanized or thermoplastic-Determination of the effect of liquids”).

(57) Further, the refrigerant resistance is evaluated by a foaming test in addition to the immersion test. The foaming test is a test to immerse the O-ring in a refrigerant, then heat the O-ring with air, and cut ten portions out of the O-ring to see if a crack is present in the cross-section.

(58) For example, oil resistance is evaluated by an immersion test using a refrigeration oil (POE oil) (JIS K 6258, “Rubber, vulcanized or thermoplastic-Determination of the effect of liquids”).

(59) For example, the sealing performance is evaluated by a TR test (JIS K 6261, “Rubber, vulcanized or thermoplastic-Determination of low-temperature properties”). Specifically, the

sealing performance is evaluated based on a TR10 value (a temperature at which the shrinkage rate is 10%). The lower this temperature is, the better the sealing performance at low temperatures is. Note that, when an O-ring is used at a temperature lower than the TR10 value, the sealing performance may not be ensured due to a reduction in the rubber elasticity of the O-ring.

(60) An example of the material of the first O-ring **151** selected based on the above evaluation is HNBR, and an example of the material of the second O-ring **152** selected based on the above evaluation is EPDM.

(61) Note that, when the colors of the first O-ring **151** and the second O-ring **152** are made different from each other, the first O-ring **151** and the second O-ring **152** can be easily visibly distinguished from each other.

(62) This can prevent incorrect assembly of respective O-rings.

(63) According to the present embodiment, the following advantageous effects are achieved.

(64) The compressor **10** includes: the annular first O-ring **151** provided about the axis X at a facing portion L where the motor case **110** and the lower case **130** fitted to each other face each other in a plane; and the annular second O-ring **152** provided about the axis X in the facing portion L, the first O-ring **151** is provided at a position closer to the starting point Ls of the facing portion L than the second O-ring **152**, the first O-ring **151** has better refrigerant resistance and/or oil resistance than the second O-ring **152**, and the second O-ring **152** has better sealing performance than the first O-ring **151** at a temperature of -20°C . or lower. Thus, even when the first O-ring **151** and the second O-ring **152** are exposed to an environment at a temperature of -20°C . or lower due to the operation of the compressor **10**, the first O-ring **151**, which is provided at a position that is likely to be subjected to contact with the refrigerant, makes it possible to ensure a certain level of sealing performance while suppressing deterioration due to the refrigerant (containing lubricating oil) because of the excellent refrigerant resistance and/or oil resistance of the first O-ring **151**, and the second O-ring **152** makes it possible to ensure high sealing performance even in an environment at a temperature of -20°C . because of the excellent sealing performance at low temperatures of the second O-ring **152**. In this situation, while the second O-ring **152** has lower refrigerant resistance and/or oil resistance than the first O-ring **151**, the second O-ring **152** is less likely to be deteriorated by the refrigerant (less likely to be affected by the refrigerant). This is because only a small amount of the refrigerant passes by the first O-ring **151**, which has better refrigerant resistance and/or oil resistance and exhibits a certain level of sealing performance while having lower sealing performance at low temperatures than the second O-ring **152**. In short, this is because only a small amount of a refrigerant may come into contact with the second O-ring **152**.

(65) As described above, the combination of the first O-ring **151** and the second O-ring **152** whose materials differ from each other enables sealing performance at low temperatures to be maintained for a long period of time.

(66) Further, the use of different colors of the first O-ring **151** and the second O-ring **152** can prevent incorrect assembly of respective O-rings.

Modified Example 1

(67) As illustrated in FIG. 3, the second O-ring **152** may be provided in an end face **111a** of the opening **111** of the motor case **110**.

(68) In such a case, the first annular groove **133** is formed in the outer circumferential face of the annular protruding portion **131**, and a second annular groove **114** is formed in the end face **111a** of the opening **111** of the motor case **110**.

Modified Example 2

(69) As illustrated in FIG. 4, the inner circumferential face of the lower case **130** may be fitted to the outer circumferential face of the motor case **110**.

(70) In such a case, a first annular groove **113** and the second annular groove **114** are formed in the outer circumferential face in the portion on the end face **111a** side of the motor case **110**.

(71) Further, the starting point Ls of the facing portion L is located on the end face **111a** side of the

opening **111**. Thus, the first annular groove **133** is formed at a position closer to the end face **111a** of the opening **111** than the second annular groove **134**. Thus, the first O-ring **151** is provided at a position closer to the end face **111a** of the opening **111** than the second O-ring **152**.

Modified Example 3

(72) As illustrated in FIG. 5, the second O-ring **152** may be provided in a chamfer **111b** connected to the end face **111a** of the motor case **110**. Note that the chamfer **111b** is a part of the inner circumferential face of the motor case **110**.

(73) In such a case, the first annular groove **133** is formed in the outer circumferential face of the annular protruding portion **131**, and the chamfer **111b** corresponds to the second annular groove **114** or the second annular groove **134**.

(74) Note that, in all the embodiments (including modified examples), a component in which annular grooves or the like provided with two O-rings are formed can be arbitrarily selected from the motor case **110** and the lower case **130**.

(75) Further, two annular grooves may be formed in the end face **111a** of the motor case **110** and/or the face of the lower case **130** facing the end face **111a**, and thereby two O-rings may be provided in these two annular grooves.

(76) The compressor according to the present embodiment as described above is understood as follows, for example.

(77) The compressor (**10**) according to the first aspect of the present disclosure includes: a cylindrical main case (**110**) surrounding a compression mechanism (**200**) about an axis (X), the compression mechanism being configured to compress a refrigerant; a sub-case (**130**) closing an opening (**111**) of the main case in a direction of the axis, fitted to an inner circumferential face or an outer circumferential face of the main case, and defining a space (C1) between the main case and the sub-case, the refrigerant being introduced to the space; an annular first seal member (**151**) provided about the axis at a facing portion (L) where the main case and the sub-case fitted to each other face each other in a plane; and an annular second seal member (**152**) provided about the axis in the facing portion, the first seal member is provided at a position closer to a starting point (Ls) on the space side of the facing portion than the second seal member, the first seal member has better refrigerant resistance and/or oil resistance than the second seal member, and the second seal member has better sealing performance than the first seal member at a temperature of -20°C . or lower.

(78) According to the compressor of the present aspect, the compressor includes: a annular first seal member provided about the axis at a facing portion where the main case and the sub-case fitted to each other face each other in a plane; and an annular second seal member provided about the axis in the facing portion, the first seal member is provided at a position closer to a starting point on the space side of the facing portion than the second seal member, the first seal member has better refrigerant resistance and/or oil resistance than the second seal member, and the second seal member has better sealing performance than the first seal member at a temperature of -20°C . or lower. Thus, even when the first seal member and the second seal member are exposed to an environment at a temperature of -20°C . or lower due to the operation of the compressor, the first seal member, which is provided at a position that is likely to be subjected to contact with the refrigerant, makes it possible to ensure a certain level of sealing performance while suppressing deterioration due to the refrigerant (containing lubricating oil) because of the excellent refrigerant resistance and/or oil resistance of the first seal member, and the second seal member makes it possible to ensure high sealing performance even in an environment at a temperature of -20°C . because of the excellent sealing performance at low temperatures of the second seal member. In this situation, while the second seal member has lower refrigerant resistance and/or oil resistance than the first seal member, the second seal member is less likely to be deteriorated by the refrigerant (less likely to be affected by the refrigerant). This is because only a small amount of the refrigerant passes by the first seal member, which has better refrigerant resistance and/or oil

resistance and exhibits a certain level of sealing performance while having lower sealing performance at low temperatures than the second seal member. In short, this is because only a small amount of a refrigerant may come into contact with the second seal member.

(79) In such a way, the combination of the first seal member and the second seal member whose materials differ from each other enables sealing performance at low temperatures to be maintained for a long period of time.

(80) Further, in the compressor according to the second aspect of the present disclosure, in the first aspect, the first seal member may be arranged to be in contact with the inner circumferential face or the outer circumferential face of the main case, and the second seal member may be arranged to be in contact with the inner circumferential face or the outer circumferential face of the main case.

(81) According to the compressor of the present aspect, the first seal member is arranged to be in contact with the inner circumferential face or the outer circumferential face of the main case, and the second seal member is arranged to be in contact with the inner circumferential face or the outer circumferential face of the main case. Thus, the seal can be ensured with the inner circumferential face or the outer circumferential face of the main case.

(82) Further, in the compressor according to the third aspect of the present disclosure, in the first aspect, the first seal member may be arranged to be in contact with the inner circumferential face or the outer circumferential face of the main case, and the second seal member may be arranged to be in contact with an opening end face of the main case.

(83) According to the compressor of the present aspect, the first seal member is arranged to be in contact with the inner circumferential face or the outer circumferential face of the main case, and the second seal member is arranged to be in contact with an opening end face of the main case. Thus, the seal can be ensured with the inner circumferential face or the outer circumferential face of the main case and the opening end face of the main case.

(84) Further, in the compressor according to the fourth aspect of the present disclosure, in the first aspect, the first seal member may be arranged to be in contact with an opening end face of the main case, and the second seal member may be arranged to be in contact with the opening end face of the main case.

(85) According to the compressor of the present aspect, the first seal member is arranged to be in contact with an opening end face of the main case, and the second seal member is arranged to be in contact with the opening end face of the main case. Thus, the seal can be ensured with the opening end face of the main case.

(86) Further, in the compressor according to the fifth aspect of the present disclosure, in any one of the first aspect to the fourth aspect, the first seal member and the second seal member differ in color from each other.

(87) According to the compressor of the present aspect, the first seal member and the second seal member differ in color from each other, and thus incorrect assembly of respective seal members can be prevented.

REFERENCE SIGNS LIST

(88) **10** compressor **100** casing **110** motor case (main case) **111** opening **111a** end face **111b** chamfer **113** first annular groove **114** second annular groove **116** suction port **120** upper case **130** lower case (sub-case) **131** annular protruding portion **131a** end face **133** first annular groove **134** second annular groove **140** inverter cover **151** first O-ring (first seal member) **152** second O-ring (second seal member) **200** compression mechanism **210** fixed scroll **211a** discharge port **220** orbiting scroll **221** boss part **222** bearing **310** crankshaft **311** shaft body **312** crankpin **400** electric motor **510** main bearing **520** sub-bearing **530** bolt: for upper case **540** screw: for inverter cover **550** bolt: for fixed scroll **C1** accommodation chamber **C2** discharge chamber **C3** compression chamber **X** axis

Claims

1. A compressor comprising: a cylindrical main case surrounding a compression mechanism about an axis, the compression mechanism being configured to compress a refrigerant; a sub-case closing an opening of the main case in a direction of the axis, fitted to an inner circumferential face or an outer circumferential face of the main case, and defining a space between the main case and the sub-case, the refrigerant being introduced to the space; an annular first seal member provided about the axis at a facing portion where the main case and the sub-case fitted to each other face each other in a plane; and an annular second seal member provided about the axis in the facing portion, wherein the first seal member is provided at a position closer to a starting point on the space side of the facing portion than the second seal member, wherein the first seal member has better refrigerant resistance and/or oil resistance than the second seal member, and wherein the second seal member has better sealing performance than the first seal member at a temperature of -20°C . or lower.
 2. The compressor according to claim 1, wherein the first seal member is arranged to be in contact with the inner circumferential face or the outer circumferential face of the main case, and wherein the second seal member is arranged to be in contact with the inner circumferential face or the outer circumferential face of the main case.
 3. The compressor according to claim 1, wherein the first seal member is arranged to be in contact with the inner circumferential face or the outer circumferential face of the main case, and wherein the second seal member is arranged to be in contact with an opening end face of the main case.
 4. The compressor according to claim 1, wherein the first seal member is arranged to be in contact with an opening end face of the main case, and wherein the second seal member is arranged to be in contact with the opening end face of the main case.
 5. The compressor according to claim 1, wherein the first seal member and the second seal member differ in color from each other.
-