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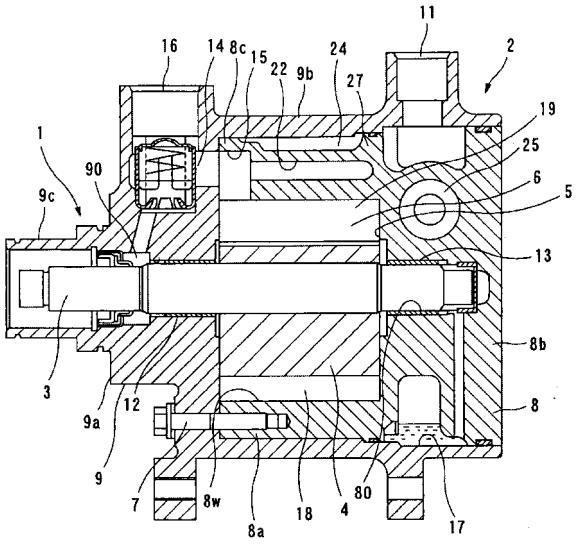
(54) **Vane compressor**

(57) Vane compressor capable of easily performing centering in the assembly of the vane compressor forming a housing by the combination of first and second housing members, the first housing member being formed by integrally forming a cylinder forming portion and a side block forming portion blocking one end side of the cylinder forming portion in the axial direction, the second housing member being formed by integrally forming a shell forming portion surrounding the outer peripheral surface of the first housing member and a front side block forming portion blocking the other end side of the cylinder forming portion in the axial direction.

A plurality of contacting portions are provided between the first housing member and the second housing member at a predetermined interval in the axial direction of the driving shaft, and the contacting portions include a plurality of protrusions that protrude in the radial direction of the driving shaft and are arranged in the circumferential direction.

Fig. 1



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Description

[0001] The present invention relates to a technique for improving precision in the centering of a bearing that supports a driving shaft in the assembly of a vane compressor.

[0002] A general vane compressor has a configuration in which a columnar rotor receiving a vane is fixed to a driving shaft rotating with a driving force generated from an engine or the like, the rotor is received in a circular hole inside a cylinder, and front and rear end surfaces of the cylinder are sealed by a sealing member (called a front/rear head, a side block, or the like). The clearance between a small diameter portion of the circular hole of the cylinder and the outer diameter of the rotor needs to be set as small as possible in order to reduce the amount of compressed gas leaking to an adjacent compression compartment. In each of the sealing members for the front and rear sides of the cylinder, a bearing is provided to support the driving shaft. Here, it is very important to accurately perform the positioning (centering) between the axis of the bearing and the circular shape of the cylinder in terms of improvements in the performance and reliability of the compressor.

[0003] In order to accurately perform such positioning, hitherto, a method has been considered in which the positioning is performed by using a centering dummy rotor (refer to Japanese Patent Application Laid-Open (JP-A) Nos. 4-58094 and 11-210651). The centering dummy rotor is a member having a virtual rotor and a virtual driving shaft. When the dummy rotor is disposed in the cylinder upon assembling the cylinder and any one sealing member, the center of the oval hole of the cylinder is not deviated from the center of the penetration hole as the bearing portion of the sealing member.

[0004] Furthermore, as a general positioning method of disposing a plurality of mechanical components at correct positions relative to each other, a method is used in which positioning pin holes are respectively provided at components as subjects for position adjustment (generally, at two positions) and positioning pins are respectively inserted into the positioning pin holes to determine the positions of respective components, or a method is used in which a cylindrical boss portion is provided at one of the opposite components, a cylindrical hole is provided at the other thereof, and the boss portion and the hole are fitted to each other to perform the centering of each component (so-called socket and spigot joining). Also, there is a vane compressor including a rotor fixed to a driving shaft, a vane slidably received in a vane groove formed in the rotor, a cylinder having a space for receiving the rotor and the vane, a front side sealing member sealing the front surface side of the cylinder, and a rear side sealing member sealing the rear surface side of the cylinder, wherein a contacting portion between the cylinder and the front side sealing member and a contacting portion between the cylinder and the rear side sealing member are composed of protrusions protruding in the radial direction of the rotor (refer to Japanese PCT National publication No. 2008/026494).

[0005] However, in the configuration of using the centering dummy rotor disclosed in JP-A Nos. 4-58094 and 11-210651, the dummy rotor is used as one sealing member due to its nature when assembling the vane compressor in which the housing is formed by three or more members in total, that is, the cylinder and two sealing members. For this reason, the dummy rotor may not be used when assembling the vane compressor in which the housing is formed by two members, that is, a member integrally forming the cylinder and the side block and a member surrounding the outer peripheral surface of the cylinder, in order to decrease the number of components forming the vane compressor.

[0006] However, when a needle bearing is used as the bearing of the shaft of the vane compressor, the clearance between the shaft and the bearing may be removed almost perfectly. Accordingly, the centering of the bearing is automatically performed just by supporting the driving shaft to the bearing. However, when a plane bearing is used as the bearing, the clearance between the shaft and the bearing is needed. For this reason, this method may not be used. Furthermore, in the centering in the socket and spigot joining manner disclosed in Japanese PCT National Publication No. 2008/026494, a socket and spigot joining member is provided between the cylinder and the front side sealing member and between the cylinder and the rear side sealing member, and the front side sealing member and the rear side sealing member are bonded to each other through the cylinder. As a result, a deviation in centering may be caused by the accumulation of errors of three members.

[0007] Incidentally, in the vane compressor in which the housing is formed by two members, that is, the member integrally forming the cylinder and one side block and the member integrally forming the member surrounding the outer peripheral surface of the cylinder and the other side block, when the socket and spigot joining member is provided at one position in the axial direction as in Japanese PCT national publication No. 2008/026494, the axial length of one member included in the other member is long, so that an inclination (deviation in centering) easily occurs about the socket and spigot joining member when the two members are bonded to each other. Although the inclination may be corrected when the contacting surfaces of the respective members collide with each other, this correction is not sufficient. Accordingly, in some cases, a deviation in centering occurs between the two members due to the inclination.

[0008] Then, when the deviation in centering occurs between the two members, the rotor is inclined with respect to the sealing surface and the sliding surface of the cylinder or the side member. As a result, the performance of the sealing portion degrades since its gap is not appropriately maintained. Furthermore, partial abrasion, seizure, or the like may occur in the sliding surface.

[0009] Furthermore, in the centering in the socket and

spigot joint manner, a method may be considered in which the assembly is carefully performed so that the cylinder is not inclined. However, the method has the following problems. That is, the assembly work is difficult to perform while the driving shaft is perpendicularly or horizontally maintained, and manufacturing cost increases due to the particular centering required for such a work.

[0010] The invention is made in view of such problems, and its main objective is to provide a vane compressor capable of easily performing centering in the assembly of the vane compressor.

[0011] According to an aspect of the invention, there is provided a vane compressor forming a housing by the combination of first and second housing members, the first housing member being formed by integrally forming a cylinder forming portion with a side block forming portion that closes one end side of the cylinder forming portion in the axial direction, the second housing member being formed by integrally forming a shell forming portion surrounding the outer peripheral surface of the first housing member with a side block forming portion that closes the other end side of the cylinder forming portion in the axial direction, the vane compressor including: a driving shaft that is rotatably supported by the side block forming portion of the first housing member and the side block forming portion of the second housing member; a rotor that is fixed to the driving shaft and is rotatably received in the cylinder forming portion; and vanes that are respectively and slidably inserted into a plurality of vane grooves provided in the rotor, wherein the first housing member has at least one contacting portion to be contacted to the second housing member, and wherein the contacting portion includes a plurality of protrusions that protrude in the radial direction of the driving shaft and are arranged in the circumferential direction.

[0012] Since the housing includes the first housing member and the second housing member, and the contacting portion to be contacted to the second housing member in the first housing member includes a plurality of protrusions that protrude in the radial direction of the driving shaft and are arranged in the circumferential direction., the positioning is performed only between the first housing member (the front side sealing member) and the second housing member (the rear side sealing member). That is, since the cylinder forming portion is integrally formed with the first housing member, the number of members to be positioned may decrease compared to the existing vane compressor, and the deviation in centering caused by the accumulation of errors of the respective members may be improved.

[0013] Furthermore, a plurality of the contacting portions may be provided between the first housing member and the second housing member at a predetermined interval in the direction of the driving shaft, and a plurality of the protrusions may be arranged in the circumferential direction. Accordingly, it is possible to prevent the housing member from being inclined using the plurality of contacting portions during assembly, and to easily perform centering.

[0014] As a result, since it is possible to prevent the inclination of the rotor which is to be caused by the deviation in centering in the first housing member and the second housing member, it is possible to prevent partial abrasion, seizure, or the like of the sliding member and to decrease the clearance in the sliding surface with respect to the rotor or the driving shaft.

[0015] Furthermore, since it is possible to perform the centering in a socket and spigot joining manner without using a dummy rotor, it is possible to perform the centering in the vane compressor forming the housing using two members without particular centering during assembly.

[0016] Here, one of the contacting portions between the first housing member and the second housing member may be a portion near the outside of a bearing that supports the driving shaft in the radial direction, and the other of the contacting portions may be disposed near a contact portion where an insertion end of the first housing member is in contact with the side block forming portion of the second housing member. Accordingly, a reliable support structure may be obtained.

[0017] Furthermore, the protrusions that compose as contacting portion may be press-inserted almost at the same time when the first housing member and the second housing member are assembled.

[0018] Furthermore, each of the plurality of contacting portions formed in the second housing member and connected to the first housing member may be formed to have a different diameter, and the diameter may gradually increase from the contacting portions near a contacting surface of the side block forming portion of the second housing member and the insertion end of the first housing member.

[0019] Furthermore, the circumferential positions of the protrusions formed at the first housing member may be disposed to have different phases. Alternatively, the positions may be disposed to have almost the same phase (the circumferential positions of the plurality of contacting portions may be aligned with each other) in order to maximally suppress the inclination of the housing.

[0020] Furthermore, the circumferential positions of the protrusion portions formed at the first housing member may be determined so as to avoid a position where the rotor and the cylinder forming portion form a minute gap.

[0021] As described above, according to the aspect of the invention, since the housing includes the first housing member and the second housing member, and the contacting portion to be contacted to the second housing member in the first housing member includes a plurality of protrusions that protrude in the radial direction of the driving shaft and are arranged in the circumferential direction, the positioning is performed only between the first housing member (the front side sealing member) and

the second housing member (the rear side sealing member). Accordingly, the number of members to be positioned may decrease compared to the existing vane compressor, the problem of the deviation in centering caused by the accumulation of errors of the respective members may be solved, and then the centering may be easily performed.

[0022] Furthermore, since a plurality of the contacting portions are provided between the first housing member and the second housing member at a predetermined interval in the axial direction of the driving shaft and each contacting portion includes a plurality of protrusions that protrude in the radial direction of the driving shaft and are arranged in the circumferential direction, it is possible to prevent the housing member from being inclined using the plurality of contacting portions during assembly and hence easily perform the centering.

[0023] Accordingly, since it is possible to prevent the rotor from being inclined due to the deviation in centering in the first housing member and the second housing member and decrease the clearance in the sliding surface with respect to the driving shaft or the rotor, it is possible to improve the performance of the vane compressor.

[0024] Furthermore, since the rotor is not inclined, it is possible to prevent partial abrasion, seizure, or the like of the sliding member and improve the reliability of the vane compressor.

[0025] Furthermore, since it is possible to perform the centering in a socket and spigot joining manner without using a dummy rotor, it is possible to perform the centering in the vane compressor in which the housing is formed by two members. Also, since it is possible to assemble the two members without particular centering during assembly, it is possible to reduce the manufacturing cost.

Fig. 1 is a cross-sectional view illustrating an entire configuration of a vane compressor according to the invention;

Fig. 2 is a diagram illustrating a portion having a cylinder hole in a first housing member according to a first embodiment;

Fig. 3 is a perspective view illustrating a state before assembling a vane compressor according to the first embodiment;

Fig. 4 is a perspective view illustrating a state after assembling the vane compressor according to the first embodiment;

Fig. 5 is an enlarged view illustrating an assembling state of the vane compressor according to the first embodiment; and

Fig. 6 is a perspective view illustrating a state before assembling a vane compressor according to a second embodiment.

[0026] Hereinafter, a vane compressor of this invention will be described by referring to the accompanying drawings.

[0027] In Fig. 1, a vane compressor suitable for a refrigeration cycle using refrigerant as a working fluid is shown. As shown in Figs. 1 and 2, a vane compressor 1 includes a driving shaft 3, a rotor 4 that is fixed to the driving shaft 3 and is movable with the rotation of the driving shaft 3, and first and second housing members 8 and 9 that define a compression space 18 to be described later with the rotor 4, where the first and second housing members 8 and 9 form a housing 2 receiving the driving shaft 3, the rotor 4, and the like.

[0028] The first housing member 8 includes a cylinder forming portion 8a that has a cylinder hole 86 used for receiving the rotor 4 and a rear side block forming portion 8b that is positioned at the rear side of the cylinder forming portion 8a in the axial direction of the driving shaft 3, is integrally molded with the cylinder forming portion 8a, and blocks one end at the rear side.

[0029] The second housing member 9 is formed by integrating a front side block forming portion 9a that is in contact with the front side end surface of the cylinder forming portion 8a and a shell forming portion 9b that extends in the axial direction of the driving shaft 3 and surrounds the outer peripheral surfaces of the cylinder forming portion 8a and the rear side block forming portion 8b. Then, the second housing member 9 is connected to the first housing member 8 through a coupler 7 such as a bolt. Furthermore, a plurality of seal members such as an O-ring are interposed between the shell forming portion 9b of the second housing member 9, and the cylinder forming portion 8a and the rear side block forming portion 8b of the first housing member 8, so that the gap therebetween is sealed with good air-tightness. Furthermore, in the second housing member 9, a pulley (not shown) is rotatably mounted on a boss portion 9c integrated with the front side block forming portion 9a so as to transfer rotary power to the driving shaft 3, whereby the rotary power is transferred from the pulley to the driving shaft 3 through an electromagnetic clutch (not shown).

[0030] The space surrounded by the cylinder forming portion 8a and the cross-section of the rotor 4 are formed in a true circular shape, the axis of the cylinder forming portion 8a and the axis of the rotor 4 are deviated from each other (are deviated from each other by about 1/2 of a difference between the inner diameter of the cylinder forming portion 8a and the outer diameter of the rotor 4) so that a minute size of gap (a portion where the inner wall of the cylinder forming portion 8a and the outer wall of the rotor 4 are closest to each other) is formed at one position in the circumferential direction between the outer peripheral surface of the rotor 4 and an inner peripheral surface 8w (the side surface of the cylinder hole 86) of the cylinder forming portion 8a, and the compression space 18 is defined between the inner peripheral surface 8w of the cylinder forming portion 8a and the outer peripheral surface of the rotor 4. The compression space 18 is divided into a plurality of compression compartments 19 by vanes 6 slidably inserted into a plurality of vane grooves 5 formed in the rotor 4, and the volume of

each compression compartment 19 changes with the rotation of the rotor 4.

[0031] The driving shaft 3 is rotatably supported to the front side block forming portion 9a of the second housing member 9 and the rear side block forming portion 8b of the first housing member 8 through plane bearings 12 and 13.

[0032] The second housing member 9 is provided with a suction opening 16 and an discharge opening 11 for a working fluid (a refrigerant gas), and with a suction space 14 formed together with a concave portion 22 formed in the cylinder forming portion 8a and communicating with the suction opening 16. Furthermore, an discharge space 24 to be described later is defined between the cylinder forming portion 8a and the shell forming portion 9b of the second housing member 9, and the discharge space 24 communicates with the discharge opening 11 through an oil separator 25 formed in the rear side block forming portion 8b of the first housing member 8.

[0033] Furthermore, the second housing member 9 is provided with the suction opening 16 and the discharge opening 11 of the working fluid, and with the space (a suction space) 14 connected with suction opening 16 and positioned at the inside of the radial direction of the driving shaft 3, where a suction space (a low pressure space) 15 is defined by the space 14 and the concave portion 22 formed in the cylinder forming portion 8a of the first housing member 8 and opened toward the second housing member 9. Furthermore, the discharge space (the high pressure space) 24 is defined between the cylinder forming portion 8a of the first housing member 8 and the shell forming portion 9b of the second housing member 9, and the discharge space 24 communicates with the discharge opening 11. Furthermore, the oil separator 25 is disposed between the discharge space 24 and the discharge opening 11, and oil separated from the working fluid by the oil separator 25 temporarily collects in an oil reservoir 17.

[0034] In Figs. 3 to 5, the assembly state of the first and second housing members 8 and 9 is shown. As a procedure of the assembly work, the rotor 4 integrated with the driving shaft 3 is stored in the cylinder hole 86 of the cylinder forming portion 8a shown in Fig. 2, the rear end of the driving shaft 3 is inserted through a penetration hole 80 of the rear side block forming portion 8b, and then the vane 6 is inserted into the vane groove 5 of the rotor 4. Then, the front side block forming portion 9a of the second housing member 9 is bonded to the front surface portion of the cylinder forming portion 8a to cover the entire first housing member 8, and the front end of the driving shaft 3 is inserted through a penetration hole 90 of the front side block forming portion 9a.

[0035] As shown in Fig. 3, the front portion (the surface bonded to the second housing member) of the cylinder forming portion 8a of the first housing member 8 is provided with a front side flange 8c, and the rear portion thereof is provided with a rear side flange 8d.

[0036] Furthermore, the inner surface of the shell forming portion 9b of the second housing member 9 is provided with a first inner diameter portion 95 serving as a contacting portion and a second inner diameter portion 96 positioned at the rear end side in relation to the first inner diameter portion 95.

[0037] Furthermore, the inner surface of the shell forming portion 9b is provided with an intermediate inner diameter portion between the first inner diameter portion 95 and the second inner diameter portion 96. Each inner diameter portion is formed to have a constant diameter, but the diameter of the shell forming portion increases as a whole as it goes toward the rear end.

[0038] The front side flange 8c is formed in a shape matching the inner peripheral shape of the second housing member 9, is fitted into the second housing member 9, and is disposed inside the first inner diameter portion 95 formed near the end surface of the front side block forming portion 9a. Furthermore, the rear side flange 8d is formed in a shape matching the inner peripheral shape of the second housing member 9 and is disposed inside the second inner diameter portion 96.

[0039] Then, the assembly of the first housing member 8 and the second housing member 9 is performed in a manner such that the front side flange 8c of the first housing member 8 is brought into close contact with the first inner diameter portion 95 of the second housing member 9 with a protrusion TI to be described later interposed therebetween, and the rear side flange 8d is brought into close contact with the second inner diameter portion 96 with a protrusion T2 to be described later interposed therebetween, where the press-inserting of the protrusion TI to the inner diameter portion 95 and the press-inserting of the protrusion T2 to the inner diameter portion 96 are performed at almost the same time.

[0040] In the vane compressor of the invention, a plurality of protrusions TI are integrally formed with the front side flange 8c of the cylinder forming portion 8a, and a plurality of protrusions T2 are integrally formed with the rear side flange 8d. These protrusions TI and T2 are respectively provided at the same interval at, for example, six positions on the flanges 8c and 8d. Furthermore, the circumferential positions of the protrusions TI and T2 respectively provided in the flanges 8c and 8d are substantially aligned with each other (the protrusions TI and T2 are disposed in the same direction to have the same phase in the flanges).

[0041] It is desirable to simultaneously process the protrusions TI and T2 in order to improve the concentric precision.

[0042] The protrusion TI is provided at a position near the insertion end of the first housing member 8, and the protrusion T2 is provided at a position near the outside portion of the bearing 13 in the radial direction. In this example, the protrusion T2 is arranged at the outer periphery of the flange positioned between the bearing 12 and the bearing 13. Furthermore, in order to avoid the deformation of the above-described minute gap, the circumferential positions of the protrusions TI and T2 are

provided to avoid a position where a minute size of gap is formed.

[0043] In the above-described configuration, rotary power is transferred from a power source (not shown) to the driving shaft 3 through the pulley 20 and the electromagnetic clutch 21, and then when the rotor 4 rotates, the working fluid flowing from the suction opening 16 into the suction space 14 is suctioned into the compression space 18 through the suction port 30. Since the volume of the separate compression compartments 19 divided by the vanes 6 inside the compression space 18 changes with the rotation of the rotor 4, the working fluid confined between the vanes 6 is compressed and is discharged from an discharge port (not shown) into the discharge space 24 through an discharge valve (not shown). The working fluid discharged into the discharge space 24 moves in the circumferential direction along the outer peripheral surface of the cylinder forming portion 8a (the inner peripheral surface of the shell forming portion 9b of the second housing member 9) to be introduced into the oil separator 25 integrally formed with the rear side block forming portion 8b through the penetration hole formed in the flange 8d, and the working fluid subjected to the oil separation is discharged from the discharge opening 11 to the outer circuit.

[0044] As described above, since a plurality of inner diameter portions 95, 96 (the contacting portions) of the second housing member 9 and the first housing member 8 are at a predetermined distance from each other in the axial direction of the driving shaft 3, it is possible to easily perform the centering without causing the inclination of the housing member even in the vane compressor forming a housing using two members.

[0045] For this reason, since it is possible to decrease the margin in the clearance with respect to the seizure in the sliding surfaces of the outer periphery of the rotor 4 and the front end rear end surfaces, it is possible to improve the performance of the vane compressor 1.

[0046] Furthermore, since the inclination between the first housing member 8 and the second housing member 9 is removed, it is possible to prevent the partial abrasion, the seizure, or the like, thereby improving the reliability of the vane compressor.

[0047] Furthermore, since the centering by a socket and spigot joining manner like the embodiment can be performed, a particular centering process for improving the assembly precision may not be needed and the manufacturing cost may be reduced.

[0048] Furthermore, in the above-described configuration, since the protrusion TI is provided at a position near the insertion end of the first housing member 8, it is possible to prevent the first housing member 8 from being inclined during assembly. Then, since the protrusion T2 is provided at a position near the outer portion of the bearing 13 in the radial direction, it is possible for the second housing member 9 to receive the load of the bearing through the protrusion T2 so that a strong structure can be ensured.

[0049] Furthermore, in the first embodiment, an example of the vane compressor has been described in which the housing 2 is formed by fitting the first housing member 8 to the second housing member 9 wherein the first housing member 8 has the cylinder forming portion 8a and the rear side block forming portion 8b integrally formed with each other and the second housing member 9 has the front side block forming portion 9a and the shell forming portion 9b integrally formed with each other. However, the housing 2 including the first housing member 8 having the cylinder forming portion 8a and the front side block forming portion 9a integrally formed with each other and the second housing member 9 having the rear side block forming portion 8b and the shell forming portion 9b integrally formed with each other may be applied to the vane compressor.

[0050] Specifically, as shown in Fig. 6, the first housing member 8 is formed by integrally forming the front side block forming portion 9a and the cylinder forming portion 8a with each other, and the second housing member 9 is formed by integrally forming the rear side block forming portion 8b and the shell forming portion 9b with each other. Furthermore, the second housing member 9 forms a cylindrical portion 9m using the rear side block forming portion 8b and the shell forming portion 9b to block the rear side of the cylinder forming portion 8a, and the first housing member 8 is fitted into the cylindrical portion 9m to block the front side of the cylinder forming portion 8a, thereby forming the housing 2.

[0051] The assembly of the housing 2 with this configuration is performed in a manner such that the protrusions T1 and T2 formed in the flanges 8c and 8d of the first housing member are respectively brought into close contact with the inner diameter portions 95 and 96 of the second housing member 9 in the same manner as the first embodiment.

[0052] Furthermore, since the other configurations are the same as those of the above-described embodiment, the same reference numerals will be given to the same components, and the description thereof will not be repeated.

[0053] Even in the vane compressor 1 with such a configuration, it is possible to easily perform the centering of the vane compressor and to obtain the same operation and effect as those of the above-described embodiment.

[0054] In the above-described vane compressor, the centering is performed by providing two protrusions TI and T2, but if the first housing member 8 and the second housing member 9 may be bonded to each other with a small inclination, the centering thereof may be easily performed even when either the protrusion T1 or T2 is provided.

1	vane compressor
2	housing
3	driving shaft

4	rotor
6	vane
8	first housing member (rear side)
8a	cylinder forming portion
8b	rear side block forming portion
8c	front side flange
9	second housing member (front side)
11	discharge opening
12 , 13	plane bearing
16	suction opening
17	oil reservoir
19	compression compartment
25	oil separator

Claims

1. A vane compressor forming a housing by the combination of first and second housing members, the first housing member being formed by integrally forming a cylinder forming portion with a side block forming portion that closes one end of the cylinder forming portion in the axial direction, the second housing member being formed by integrally forming a shell forming portion surrounding the outer peripheral surface of the first housing member with a side block forming portion that closes the other end of the cylinder forming portion in the axial direction, the vane compressor comprising:

- a driving shaft that is rotatably supported by the side block forming portion of the first housing member and the side block forming portion of the second housing member;
- a rotor that is fixed to the driving shaft and is rotatably received in the cylinder forming portion; and
- vanes that are respectively and slidably inserted into a plurality of vane grooves provided in the rotor,

wherein the first housing member has at least one contacting portion to be contacted to the second housing member, and
wherein the contacting portion includes a plurality of protrusions that protrude in the radial direction of the driving shaft and are arranged in the circumferential direction.

2. The vane compressor according to claim 1, wherein a plurality of the contacting portions are provided between the first housing member and the second housing member at a predetermined interval in the direction of the driving shaft.

3. The vane compressor according to claim 1 or 2, wherein one of the contacting portions between the first housing member and the second housing member is a portion near the outside of a bearing supporting the driving shaft in the radial direction.

4. The vane compressor according to any one of claims 1 to 3, wherein the other of the contacting portions is disposed near a contact portion where an insertion end of the first housing member is in contact with the side block forming portion of the second housing member.

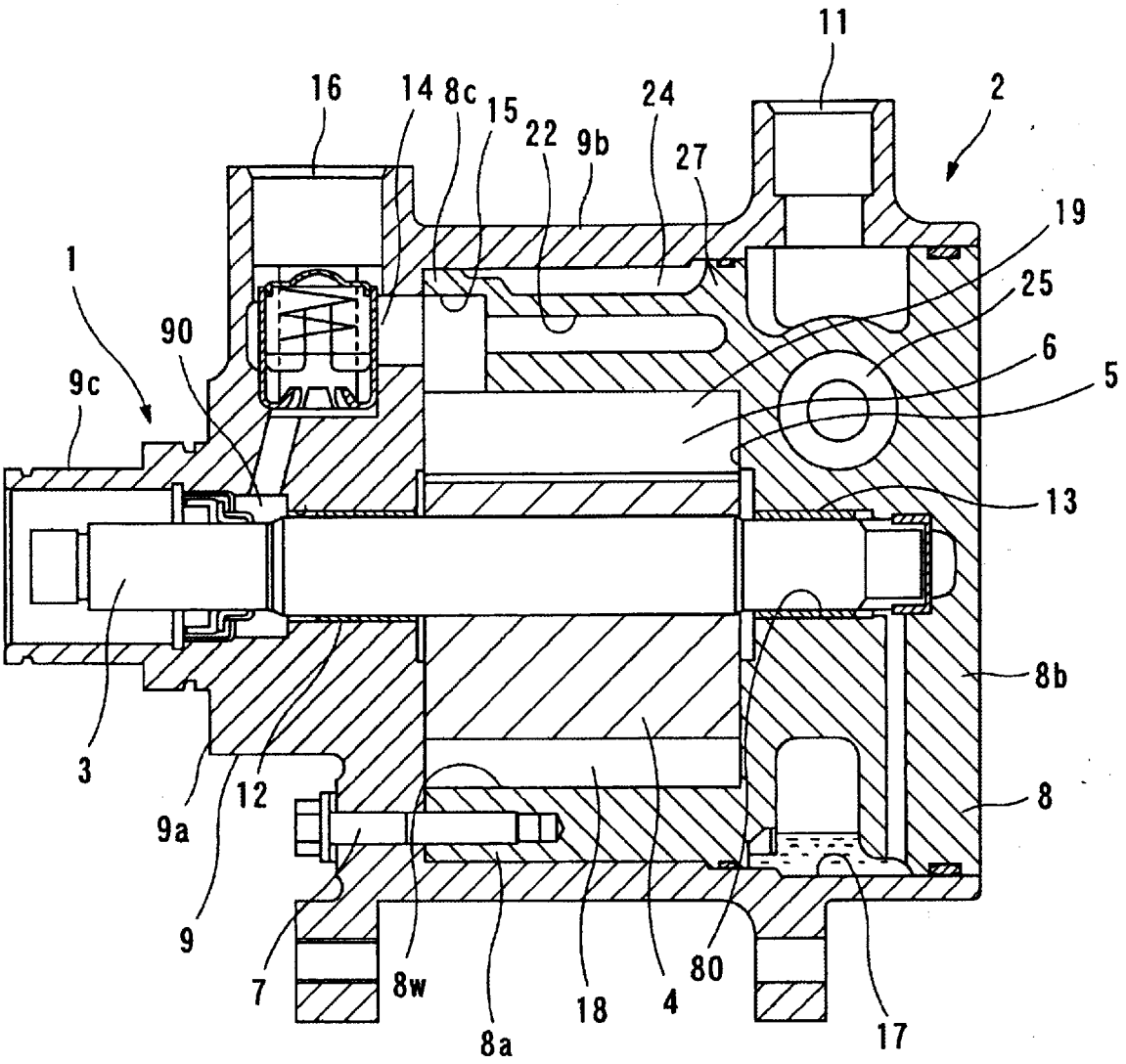
5. The vane compressor according to any one of claims 1 to 4, wherein the protrusions formed in the first housing member and composed as the contacting portion near the insertion end and the protrusions formed in the first housing member and composed as the contacting portion near the side block forming portion are press-inserted almost at the same time when the first housing member and the second housing member are assembled.

6. The vane compressor according to any one of claims 1 to 5, wherein each of the plurality of contacting portions formed at the second housing member and connected to the first housing member is formed to have a different diameter, and the diameter gradually increases from the contacting portions near a contacting surface of the side block forming portion of the second housing member and the insertion end of the first housing member.

7. The vane compressor according to any one of claims 1 to 6, wherein the circumferential positions of the protrusions formed at the first housing member are disposed almost at the same phases as those of the plurality of contacting portions.

8. The vane compressor according to any one of claims 1 to 7, wherein the circumferential positions of the protrusions formed at the first housing member are disposed so as to avoid a position where the rotor and the cylinder forming portion form a minute gap.

Fig. 1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2
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8c
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22
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25
6
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1
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8b
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12
8
9
7
8w
8a
18
4
80
17

Fig. 2

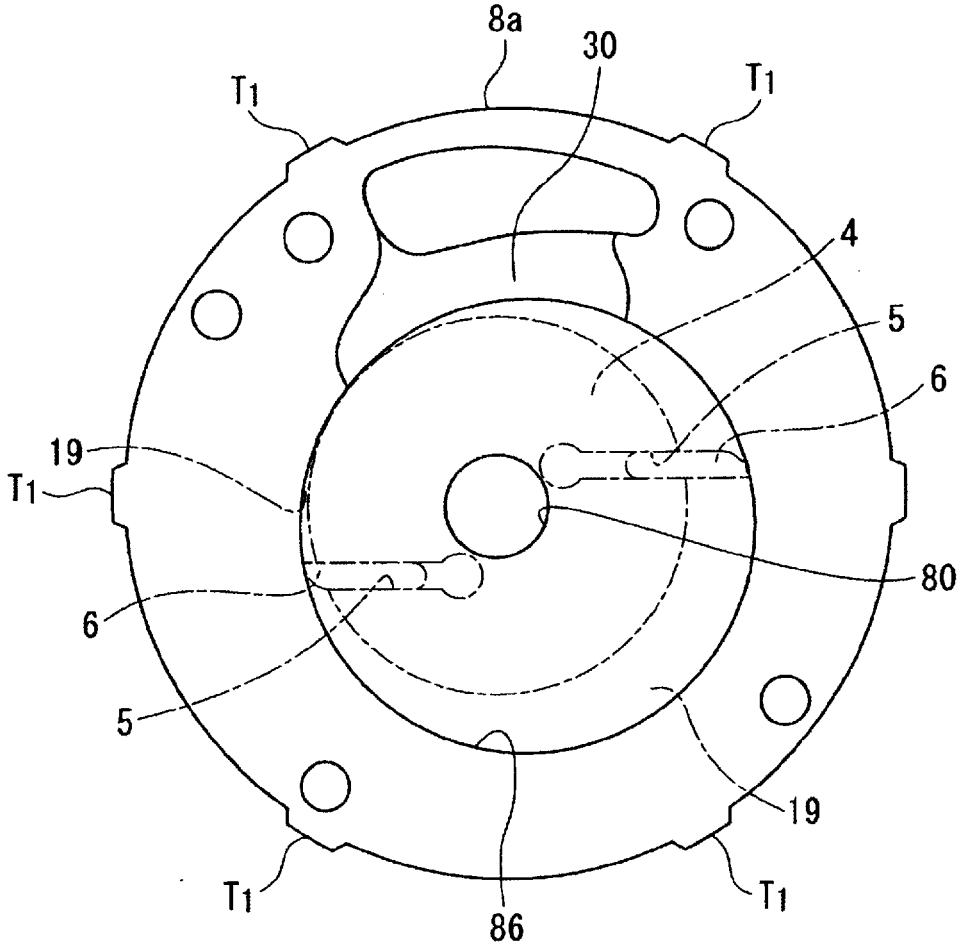


Fig. 3

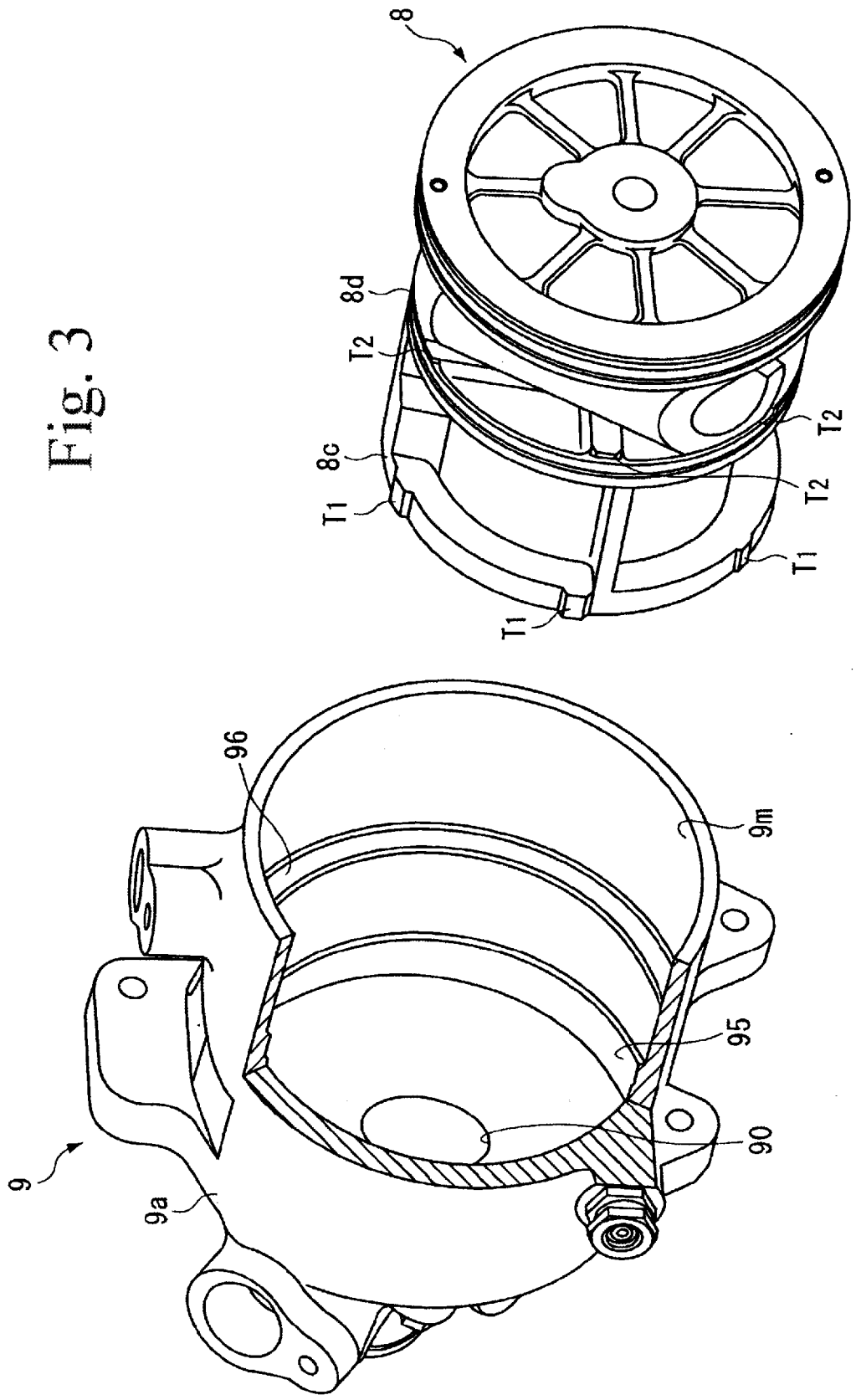


Fig. 4

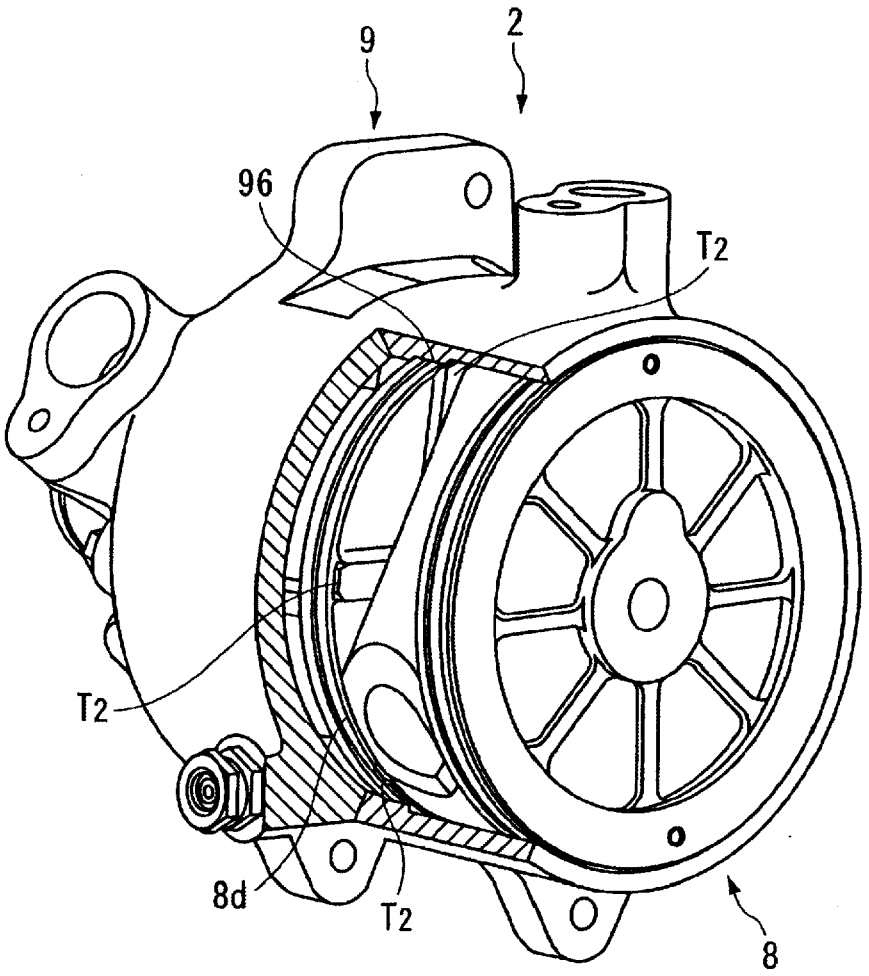


Fig. 5

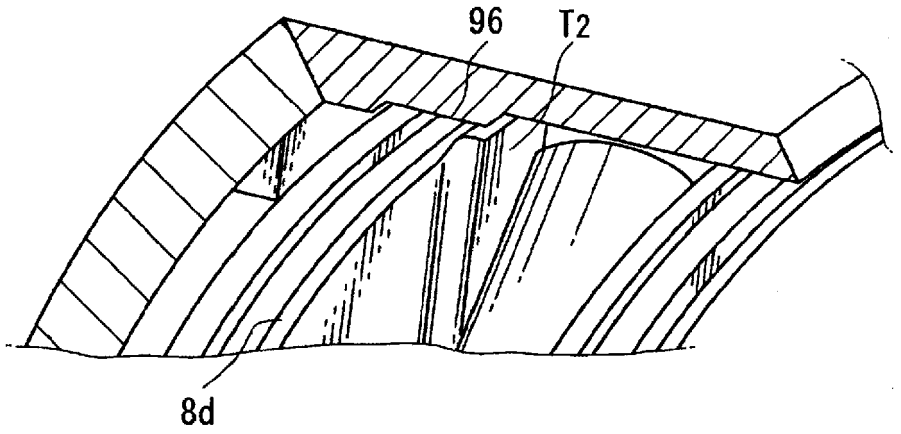
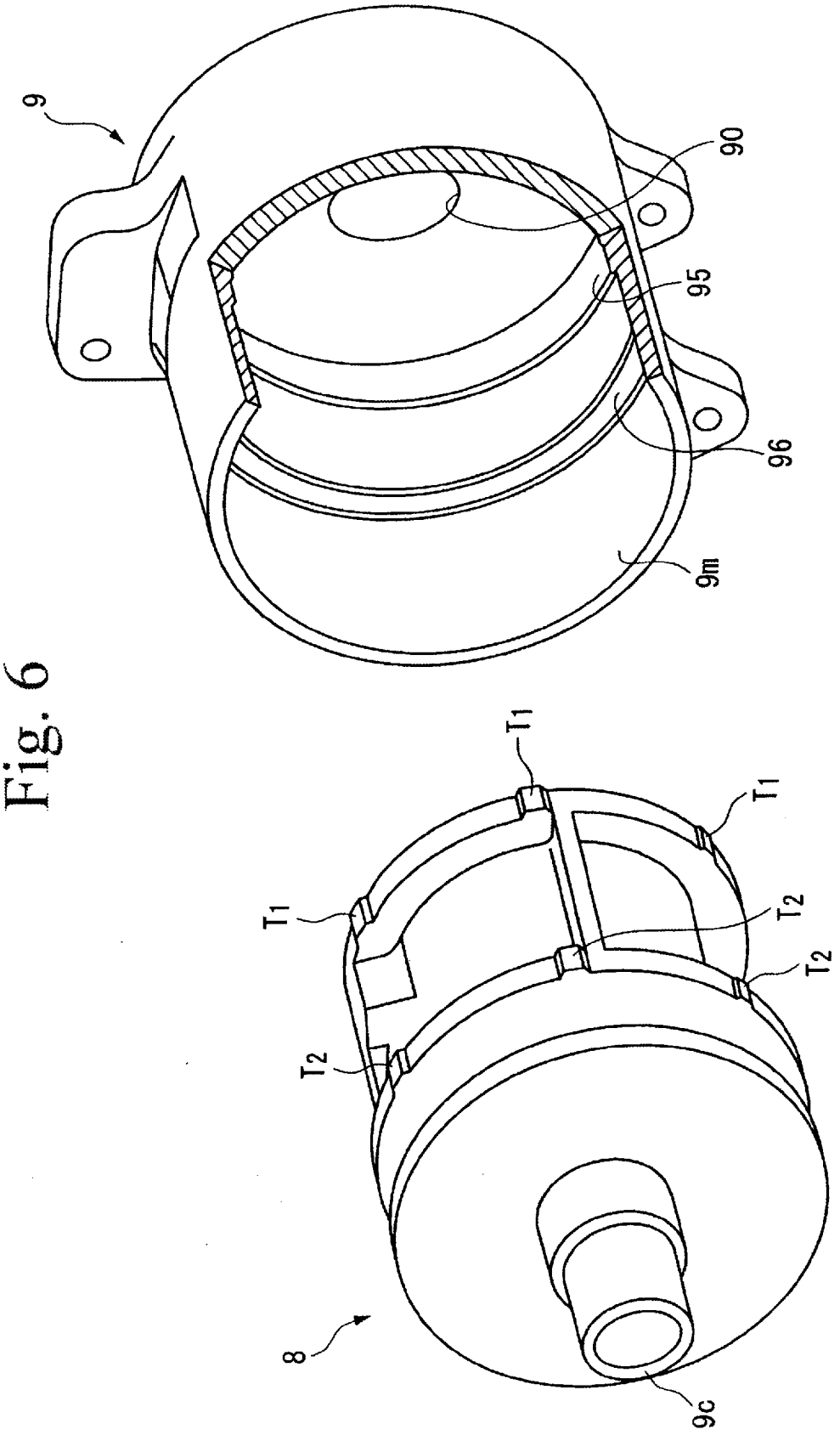


Fig. 6



REFERENCES CITED IN THE DESCRIPTION

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