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Description

The present invention relates to swash plate type compressors, and more particularly, it relates to an improved swash plate type compressor for use in vehicles.

Japanese Unexamined Patent Publication No. 3-92587 discloses a swash plate type compressor which includes a front and rear cylinder blocks. A crank case is connected to a refrigerant suction port, and is located at an interface section between the front and rear cylinder blocks. Each cylinder block has a distal end which is covered by a corresponding housing section. A front valve plate is disposed intermediate the front cylinder block and the front housing section. Similarly, a rear valve plate is disposed intermediate the rear cylinder block and the rear housing section. Each housing section includes a suction chamber and a discharge chamber. The discharge chamber leads to a refrigerant discharge port.

A drive shaft rotatably enters through an axial opening in the front and rear cylinder blocks. A swash plate is fixedly mounted on the drive shaft and is rotatably disposed within the crank case. The valve plates include suction ports which connect the suction chambers to a plurality of cylinders, via corresponding suction valves. Each valve plate also has a discharge port which connects each discharge chamber with each cylinder via a discharge valve. Each cylinder block has a plurality of suction passages which connect the crank case to the front and rear suction chambers, and a discharge passage which interconnects the front and rear discharge chambers.

The discharge passage is located such that the discharge passage does not interfere with the suction passage and the crank case. Due to design restrictions, such as the limited outer dimensions, the discharge passage has to be positioned close to the suction passage. In this arrangement, however, the refrigerant flows from the refrigerating circuit to the crank case and the suction passage, through the suction ports. The refrigerant absorbs heat from the hot and compressed refrigerant flowing through the discharge passage. The refrigerant is compressed to a higher temperature and is then discharged. As a result, the circulation of the discharged heated refrigerant increases the load on the refrigerating circuit, thus lowering its cooling ability and the overall efficiency of the compressor.

It is therefore an object of the present invention to avoid the overheating of the refrigerant.

It is also an object of the present invention to reduce the size and weight of the compressor.

This object is achieved by a compressor having the features of claims 1 and 4, respectively.

The invention, together with objects and advantages thereof, may best be understood by reference to the following description of the presently preferred embodiments together with the accompanying drawings in which:

Fig. 1 is a sectional view of a swash plate type compressor according to the first embodiment of the present invention;

Fig. 2 is a cross sectional view of the compressor of Fig. 1, taken along line 2-2;

Fig. 3 is a graph showing the relationship between the number of revolutions and the temperature of the discharged refrigerant in the compressor of Fig. 1;

Fig. 4 is a cross sectional view of another embodiment of a swash plate type compressor according to the present invention;

Fig. 5 is a cross sectional view of yet another embodiment of a swash plate type compressor according to the present invention;

Fig. 6 is a cross sectional view of the compressor of Fig. 5, taken along line 6-6; and

Fig. 7 is a cross sectional view of another embodiment of a swash plate type compressor according to the present invention.

Fig. 1 illustrates the preferred embodiment of a swash plate type compressor according to the present invention. The compressor includes a front and rear cylinder blocks 1 and 2 which are oppositely disposed with respect to each other. A crank case 4 is centrally disposed with respect to the cylinder blocks 1 and 2, and leads to a suction port 3. The distal end of the front cylinder block 1 and the distal end of the rear cylinder block 2 are covered by a front and rear housing sections 7 and 8. A front valve plate 5 and a rear valve plate 6 are disposed intermediate their respective cylinder blocks and housing sections.

While Fig. 2 illustrates a cross sectional view of the front housing section 7, it should be understood that the rear housing section 8 is substantially similarly designed to the front housing section 7. The front housing section 7 includes an outer ring shaped front suction chamber 9, which is generally concentrically located around an inner ring shaped front discharge chamber 11. The front discharge chamber 11 is in turn concentrically located around a portion of a drive shaft 18.

The drive shaft 18 rotatably engages an axial opening 1f which extends through the front and rear cylinder blocks 1 and 2, and which is supported by radial bearings 14 and 15 and sealing devices 16 and 17. The drive shaft 18 further penetrates through an opening 5c provided in the front valve plate 5, and extends outwardly through the front housing section 7 via a sealing device 19.

A swash plate 23 is mounted on the drive shaft 18, and rotates within the crank case 4. The swash

plate 23 is supported by the front and rear cylinder blocks 1 and 2 via thrust bearings 21 and 22 respectively.

The front and rear cylinder blocks 1 and 2 include a plurality of cylinders such as the cylinders 1a and 2a which are arranged in parallel with the drive shaft 18 at specified intervals therearound. Each cylinder 1a or 2a houses a two-head type piston 25. Each piston 25 engages the swash plate 23 via a pair of shoes 24.

The front and rear valve plates 5 and 6 contain suction ports 5a and 6a respectively. These suction ports 5a and 6a connect the front and rear suction chambers 9 and 10 with the cylinders 1a and 2a, via suction valves 30 and 31. The front and rear valve plates 5 and 6 also contain discharge ports 5b and 6b respectively. These discharge ports 5b and 6b connect the front and rear discharge chambers 11 and 12 with the cylinders 1a and 2a via discharge valves 30 and 31.

A plurality of suction passages 32 are provided along the outside circumference of the front and rear cylinder blocks 1 and 2, and connect the crank case 4 with the front and rear suction chambers 9 and 10. A bolt 33 penetrates through the suction passage 32, and secures the front and rear housings 7 and 9 together. A discharge port 28 is opened to the rear discharge chamber 12. The rear discharge chamber 12 is also opened to the axial opening 1f provided in the rear cylinder block 2, via an opening 6c through the rear valve plate 6.

One important feature of the swash plate type compressor of the present invention is that the drive shaft 18 includes the discharge passage 40 along its axial length. The rear end of the discharge passage 40 is opened to the axial opening at the rear end of the drive shaft 18. The front end of the discharge passage 40 is open to the front discharge chamber 11 via an opening 40a which includes radial holes or openings that lead to the drive shaft 18. The axial opening 1f and the opening or hole 6c substantially form a part of the discharge passage 40.

The opening 6c contains a valve 41 in the rear discharge chamber 12 to control the opening function of the hole 6c. The valve 41 in this embodiment is a reed valve attached to the rear valve plate 6. The valve 41 allows the opening of the hole 6c to be freely controlled in relation to the pressure difference between the compressed refrigerant flowing in the front discharge chamber 11 and the rear discharge chamber 12.

In the above arrangement, the refrigerant in the external refrigerating circuit flows into the swash plate type compressor via the suction port 3. The refrigerant is guided into the crank case 4 and is further guided into the front and rear suction chambers 9 and 10, via their respective suction pas-

sages 32. The pistons 25 move inside the cylinders 1a and 2a, and are driven by the swash plate 23 and the drive shaft 18.

The pistons 25 draw the refrigerant into the cylinders 1a and 2a via the suction ports 5a and 6a. The refrigerant is then discharged from the cylinders 1a and 2a into the front and rear discharge chambers 11 and 12, via the discharge ports 5b and 6b.

The compressed refrigerant which was discharged into the front discharge chamber 11 is guided into the discharge passage 40, via the opening 40a. The refrigerant mixes with the compressed refrigerant discharged from the rear discharge chamber 12. The refrigerant is then discharged into the external refrigerating circuit via the discharge port 28.

As described above, the discharge passage 40 is provided inside the drive shaft 18. Therefore, the refrigerant flowing through the crank case 4 and the suction passage 32 is insulated from the hot discharged refrigerant in the discharge passage 40, which is substantially separated from the crank case 4 and the suction passage 32. In this arrangement, unnecessary heat transfer is avoided.

The efficiency of the swash plate type compressor of the present invention will now be compared to a conventional swash plate type compressor, based on the number of revolutions and the temperature of the discharged refrigerant. As shown in Fig. 3, the swash plate type compressor of the present invention shows a temperature reduction of about 5°C in the range of 1000 to 3000 rpm. This proves a significant improvement in avoiding heat transfer from the discharge passage 40.

In the swash plate type compressor of the present invention, the inner axial opening in the drive shaft 18 is used as a discharge passage 40. This reduces the weight and size of the compressor main body, and further improves the degree of freedom in designing the main components, including the front and rear cylinder blocks 1 and 2.

The opening of the hole 6c is controlled by the valve 41 according to the pressure difference between the compressed refrigerant within the front discharge chamber 11 and that within the rear discharge chamber 12. In this arrangement, the pulsation factors of the compressed refrigerant within the front and rear discharge chambers 11 and 12 are evened out by mutual interference without peak synchronization. As a result, the amplitude of each pulsation factor is significantly small.

Experiments indicate that pulsation factors at a high frequency of about 300Hz could be suppressed most effectively. The frequency referred to herein means the natural frequency of a general

type condenser to be connected to the compressor. If the frequency of the condenser were tuned to that of the compressor, resonance may be caused between the condenser and the compressor. The swash plate type compressor of the present embodiment, however, has substantially no resonance and can suppress noise.

Fig. 4 illustrates another embodiment of the compressor and includes a modified valve in the drive shaft 18. In comparison with the design of the compressor in Fig. 1, there is no significant difference between the two designs, with the exception the alternative embodiment includes a new valve design and an opening 6d which is formed slightly larger than that of the preferred embodiment.

In Fig. 4, the valve 51 includes a sleeve 52 connected to the rear end of the drive shaft 18, a ball valve 54 built in the sleeve 52 to control the opening of a hole 53, and a spring 55 which forces the ball valve 54 against a valve seat. The spring 55 is supported at one end by a stop ring 56. The ball valve 54 controls the opening of the hole 53 proportionally to the pressure difference between the compressed refrigerant in the front discharge chamber 11 and that in the rear discharge chamber 12. The valve 54 further suppresses the pulsation factors of the compressed refrigerant, in the same way as the compressor of the first embodiment. The valve can be replaced by another functionally equivalent type valve, such as a float valve.

Another embodiment of the present invention will now be described with reference to Figs. 5 and 6. This embodiment differs from the first embodiment with respect to the discharge passage. A primary passage 61 similar to the discharge passage of the first embodiment is provided along the shaft axis of the drive shaft 18. The rear opening 61a in the primary passage 61 is opened to the rear discharge chamber 12. A plurality of through holes or openings 61b are radially provided in the front part of the drive shaft 18. Each through hole 61b is outwardly slanted or directed toward the sealing device 19. Each through hole 61b also connects the front discharge chamber 11 with the primary passage 61. The discharge port 28 is provided in the front housing section 7, such that it is open to the external refrigerating circuit and to the front discharge chamber 11 via a secondary passage 62.

In this arrangement, the refrigerant in the external refrigerating circuit is guided into the crank case 4 via the suction port 3. The refrigerant in the crank case 4 is guided into the front and rear suction chambers 9 and 10, via the suction passages 32. The refrigerant is compressed inside the cylinders 1a and 2a, and is then discharged into the front and rear discharge chambers 11 and 12.

The refrigerant within the rear discharge chamber 12 is guided to the primary passage 61 via the opening 61a. The refrigerant then mixes with the refrigerant from the front discharge chamber 11 via the hole 61b, and is thereafter discharged into the external refrigerating circuit, via the secondary passage 62 and the discharge port 28.

The main part of the discharge passage 40 is formed in the drive shaft 18, such that it is separated from the refrigerant suction passage. Therefore, the input refrigerant is sufficiently insulated from the hot and compressed refrigerant in the discharge passage 40.

The refrigerant flows from the rear discharge chamber 12 to the front discharge chamber 11 through the discharge passage 40. The hole 61b is slanted in order to facilitate the flow of the refrigerant. Fluid resistance against the refrigerant in the present design, is smaller than the fluid resistance exerted if the refrigerant there flowing in the opposite direction. Furthermore, the centrifugal force caused by the rotation of the drive shaft 18 acts on the fluid refrigerant through the hole 61b and accelerates the refrigerant flow. As a result, the refrigerant flows quite smoothly.

Experimentation was conducted to determine the relationship between the number of revolutions of the swash plate type compressor and the temperature of the discharged refrigerant. The results were similar to those of the experimentation of the preferred embodiment. The discharge resistance of the refrigerant within the discharge passage 40 in the fluid direction was also examined with fixed number of revolutions, such as 1000 rpm. Compared with a refrigerant flowing in the reverse direction, the present embodiment consumes less energy, and therefore offers an improved efficiency of the refrigerant fluid resistance.

The opening 61b which leads to the front discharge chamber 11 can be substantially enclosed with a beltlike reed valve 63, and used as a valve, similarly to the valve in the preferred embodiment.

Furthermore, as shown in Fig. 7, a valve 71 can be attached to the through hole 61a which is opened to the rear discharge chamber 12. The valve 71 comprises a sleeve 72, a ball valve 73 and a spring 74 etc. like the valve 51. The ball valve 73 is positioned at the side of the through hole 61a. A swash plate type compressor is provided with a plurality of cylinders and a front and rear cylinder blocks having a crank case connected to a suction port. The cylinder blocks are connected to a front and rear housing sections in order to cover the cylinders. Each housing section contains a discharge chamber. A drive shaft is rotatable supported by the cylinder blocks. One end of the drive shaft is sealed within the front housing. A swash plate is mounted on the drive shaft and is

rotatably disposed within the crank case. A plurality of two-bead pistons engage the swash plate via a pair of shoes. The pistons move within their respective cylinders in cooperation with the swash plate. The refrigerant is sucked into each cylinder via a suction passage, and is then compressed therein. The refrigerant is discharged into the external refrigerating circuit through the front and rear discharge chambers, and the front and rear discharge ports. A discharge passage is provided within the drive shaft, and interconnects the front and rear discharge chambers. A valve is provided at one end of the discharge passage to control the opening of the discharge port in relation to the pressure difference between the front and rear discharge chambers.

Claims

1. A compressor including a pair of cylinder blocks (1,2) having a plurality of cylinders (1a, 2a) and a crank case (4) leading to the suction port (3), a pair of housing sections (7, 8) having at least two discharge chambers (11, 12), and covering both ends of the pair of cylinder blocks (1, 2), a drive shaft (18) being rotatably supported by the pair of cylinder blocks (1, 2), a swash plate (23) being mounted on the drive shaft (18) and rotatably housed within the crank case (4), a plurality of pistons (25) engaging the swash plate (23) and moving within the cylinders (1a, 2a) in cooperation with the swash plate (23), wherein the refrigerant flows from the suction port (3) into the cylinders (1a, 2a) via a suction passage, is compressed within each cylinder (1a, 2a), and is discharged into the discharge chambers (11, 12) via discharge ports which communicate with the discharge chambers (11, 12), the compressor being characterized by,
 - a discharge passage means (40) within the drive shaft (18) and communicating with the discharge chambers (11, 12); and
 - valve means (41, 51, 71) provided at one end of the discharge passage (40) for communicating with a discharge port (28) provided in one of the housing sections (7, 8), and for controlling the opening of said discharge passage (40) proportionally to the pressure difference between the refrigerant in the discharge chambers (11, 12).
2. The compressor according to claim 1, wherein the pair of housing sections (7,8) includes a front and rear housing sections, wherein the pair of cylinder blocks (1,2) includes a front and rear cylinder blocks, wherein the discharge port (28) is located within said rear

housing section (8), and wherein the compressor further includes:

- a rear valve plate (6) provided between said rear housing section (8) and the rear cylinder block (2); and

- a through hole (6c) provided in the rear valve plate (6) for controlling the opening of said discharge passage (40).

3. The compressor according to claims 1 or 2, wherein said valve means further includes:

- a sleeve (52) in said discharge passage (40), the sleeve (52) having a through hole (53);

- a ball valve (54) for controlling the opening of said through hole (53); and

- spring means (55) for forcing said ball valve (54) against said through hole (53).

4. A compressor comprising:

- a pair of cylinder blocks (1,2) having a plurality of cylinders (1a, 2a) and a crank case (4) leading to the suction port (3), a pair of housing sections (7, 8) having at least two discharge chambers (11, 12), and covering both ends of the pair of cylinder blocks (1, 2), a drive shaft (18) being rotatably supported by the pair of cylinder blocks (1, 2), a swash plate (23) being mounted on the drive shaft (18) and rotatably housed within the crank case (4), a plurality of pistons (25) engaging the swash plate (23) and moving within the cylinders (1a, 2a) in cooperation with the swash plate (23), wherein the refrigerant flows from the suction port (3) into the cylinders (1a, 2a) via the crank case and a suction passage, is compressed within each cylinder (1a, 2a) and is discharged into the discharge chambers (11, 12) via discharge ports which communicate with the discharge chambers (11, 12);

- a primary discharge passage means being provided within the drive shaft (18) for causing said discharge chambers (11, 12) to fluidly communicate with each other, the primary discharge passage means including a primary discharge passage (61) extending along an axis of the drive shaft (18), the primary discharge passage (61) having an opening that opens toward one of the discharge chambers (11, 12); and

- secondary discharge passage means (62) for causing the front discharge chamber (11) to fluidly communicate with a discharge port (28) provided with the housing sections (7, 8), the secondary discharge means (62) being extended radially.

5. The compressor according to claim 4, wherein the compressor includes valve means (63, 71) provided at one end of said primary discharge passage means (61) for communicating with the discharge port (28), and for controlling the opening of said primary discharge passage means (61) proportionally to the pressure difference between the refrigerant within the discharge chambers (11,12).

Patentansprüche

1. Kompressor, aufweisend ein Paar von Zylinderblöcken (1, 2), die eine Mehrzahl von Zylindern (1a, 2a) und ein Kurbelgehäuse (4) aufweisen, das zu dem Saug-Anschluß (3) führt, ein Paar von Gehäuse-Abschnitten (7, 8), die zumindest zwei Ausstoß-Kammern (11, 12) aufweisen und die beiden Enden des Paares von Zylinderblöcken (1, 2) abdecken, eine Antriebswelle (18), die drehbar durch das Paar von Zylinderblöcken (1, 2) gelagert ist, eine Taumelscheibe (23), die auf der Antriebswelle (18) befestigt ist und die drehbar in dem Kurbelgehäuse (4) aufgenommen ist, eine Mehrzahl von Kolben (25), die mit der Taumelscheibe (23) in Eingriff stehen und die sich innerhalb der Zylinder (1a, 2a) zusammenwirkend mit der Taumelscheibe (23) bewegen, wobei das Kühlmittel von dem Saug-Anschluß (3) über eine Saug-Leitung in die Zylinder (1a, 2a) strömt, innerhalb jedes Zylinders (1a, 2a) komprimiert wird und über Ausstoß-Anschlüsse, die mit den Ausstoß-Kammern (11, 12) in Verbindung stehen, in die Ausstoß-Kammern (11, 12) ausgestoßen wird, wobei der Kompressor gekennzeichnet ist durch
- ein Ausstoß-Leitungs-Mittel (40) innerhalb der Antriebswelle (18), das mit den Ausstoß-Kammern (11, 12) in Verbindung steht; und
- Ventil-Mittel (41, 51, 71), die an einem Ende der Ausstoß-Leitung (40) vorgesehen sind, um mit einem Ausstoß-Anschluß (28) in Verbindung zu stehen, der in einem der Gehäuse-Abschnitte (7, 8) vorgesehen ist, und um die Öffnung der Ausstoß-Leitung (40) proportional zu der Druckdifferenz zwischen dem Kühlmittel in den Ausstoß-Kammern (11, 12) zu steuern.
2. Kompressor nach Anspruch 1, wobei das Paar von Gehäuse-Abschnitten (7, 8) einen vorderen und einen hinteren Gehäuse-Abschnitt umfaßt, wobei das Paar von Zylinderblöcken (1, 2) einen vorderen und einen hinteren Zylinderblock umfaßt, wobei der Ausstoß-Anschluß (28) innerhalb des hinteren Gehäuse-Abschnitts (8) liegt, und wobei der Kompressor weiters um-

faßt:

eine hintere Ventil-Platte (6), die zwischen dem hinteren Gehäuse-Abschnitt (8) und dem hinteren Zylinderblock (2) vorgesehen ist; und

eine Durchgangs-Bohrung (6c), die in der hinteren Ventil-Platte (6) vorgesehen ist, um die Öffnung der Ausstoß-Leitung (40) zu steuern.

3. Kompressor nach Anspruch 1 oder 2, wobei das Ventil-Mittel weiters umfaßt:

eine Hülse (52) in der Ausstoß-Leitung (40), wobei die Hülse (52) eine Durchgangs-Bohrung (53) aufweist;

ein Kugel-Ventil (54) zum Steuern der Öffnung der Durchgangs-Bohrung (53); und

Feder-Mittel (55), um das Kugel-Ventil (54) gegen die Durchgangs-Bohrung (53) zu drücken.

4. Kompressor, umfassend:

ein Paar von Zylinderblöcken (1, 2), die eine Mehrzahl von Zylindern (1a, 2a) und ein Kurbelgehäuse (4) aufweisen, das zu dem Saug-Anschluß (3) führt, ein Paar von Gehäuse-Abschnitten (7, 8), die zumindest zwei Ausstoß-Kammern (11, 12) aufweisen und die beiden Enden des Paares von Zylinderblöcken (1, 2) abdecken, eine Antriebswelle (18), die drehbar durch das Paar von Zylinderblöcken (1, 2) gelagert ist, eine Taumelscheibe (23), die auf der Antriebswelle (18) befestigt ist und die drehbar in dem Kurbelgehäuse (4) aufgenommen ist, eine Mehrzahl von Kolben (25), die mit der Taumelscheibe (23) in Eingriff stehen und die sich innerhalb der Zylinder (1a, 2a) zusammenwirkend mit der Taumelscheibe (23) bewegen, wobei das Kühlmittel von dem Saug-Anschluß (3) über eine Saug-Leitung in die Zylinder (1a, 2a) strömt, innerhalb jedes Zylinders (1a, 2a) komprimiert wird und über Ausstoß-Anschlüsse, die mit den Ausstoß-Kammern (11, 12) in Verbindung stehen, in die Ausstoß-Kammern (11, 12) ausgestoßen wird;

ein erstes Ausstoß-Leitungs-Mittel, das innerhalb der Antriebswelle (18) vorgesehen ist, um zu bewirken, daß die Ausstoß-Kammern (11, 12) hydraulisch miteinander in Verbindung stehen, wobei das erste Ausstoß-Leitungs-Mittel eine erste Ausstoß-Leitung (61) umfaßt, die sich entlang einer Achse der Antriebswelle (18) erstreckt, wobei die erste Ausstoß-Leitung (61) eine Öffnung aufweist, die sich zu einer der Ausstoß-Kammern (11, 12) hin öffnet; und

zweite Ausstoß-Leitungs-Mittel (62), um zu bewirken, daß die vordere Ausstoß-Kammer (11) hydraulisch mit einem Ausstoß-Anschluß (28) in Verbindung steht, der in den Gehäuse-

Abschnitten (7, 8) vorgesehen ist, wobei sich das zweite Ausstoß-Mittel (62) in Radialrichtung erstreckt.

5. Kompressor nach Anspruch 4, wobei der Kompressor Ventil-Mittel (63, 71) umfaßt, die an einem Ende der ersten Ausstoß-Leitungs-Mittel (61) vorgesehen sind, um mit dem Ausstoß-Anschluß (28) in Verbindung zu stehen und um die Öffnung der ersten Ausstoß-Leitungs-Mittel (61) proportional zu der Druckdifferenz zwischen dem Kühlmittel in den Ausstoß-Kammern (11, 12) zu steuern.

Revendications

1. Compresseur comprenant une paire de blocs de cylindres (1, 2) ayant une pluralité de cylindres (1a, 2a) et un logement de rotor (4), conduisant à l'orifice d'aspiration (3), une paire de sections de boîtiers (7, 8) possédant au moins deux chambres d'évacuation (11, 12), et couvrant les deux extrémités de la paire de blocs de cylindres (1, 2), un arbre d'entraînement (18) porté par la paire de blocs de cylindres (1, 2) de façon à pouvoir tourner, un plateau en biais (23) étant monte sur l'arbre d'entraînement (18) et situé de façon à pouvoir tourner dans le logement de rotor (4), une pluralité de pistons (25) en prise avec le plateau en biais (23) et mobiles à l'intérieur des cylindres (1a, 2a), en coopération avec le plateau en biais (23), dans lequel un écoulement de fluide de refroidissement depuis l' orifice d'aspiration (3) vers les cylindres (1a, 2a), et à travers un passage d'aspiration, est comprimé à l'intérieur de chaque cylindre (1a, 2a), et est évacué dans les chambres d'évacuation (11, 12) à travers des orifices d'évacuation qui communiquent avec les chambres d'évacuation (11, 12); le compresseur étant caractérisé par
- un passage d'évacuation (40) situé dans l'arbre d'entraînement (18) et communiquant avec les chambres d'évacuation (11, 12); et
 - des moyens formant vannes (41, 51, 71) situés à l'une des extrémités du passage d'évacuation (40), pour communiquer avec un orifice d'évacuation (28) situé dans l'un des boîtiers (7, 8), et pour commander l'ouverture dudit passage d'évacuation (40) proportionnellement à la différence de pression entre le fluide de refroidissement dans les chambres d'évacuation (11, 12).

2. Compresseur selon la revendication 1, dans lequel la paire de sections de boîtiers (7, 8) comprend une section de boîtier avant et une section de boîtier arrière, dans lequel la paire de blocs de cylindres (1, 2) comprend un bloc de cylindre avant et un bloc de cylindre arrière, dans lequel l'orifice d'évacuation (28) est situé à l'intérieur de la section de boîtier arrière (8), et dans lequel le compresseur comprend en outre:

- une plaque de vanne arrière (6), située entre ledit boîtier arrière (8) et le bloc de cylindre arrière (2); et
- un trou traversant (6c) situé dans la plaque de vanne arrière (6) pour commander l'ouverture dudit passage d'évacuation (40).

3. Compresseur selon l'une des revendications 1 ou 2, dans lequel les moyens formant vannes comprennent en outre:

- un manchon (52) situé dans ledit passage d'évacuation (40), ce manchon comportant un trou débouchant (53);
- une soupape à bille (54) pour commander l'ouverture dudit trou débouchant (53); et
- des moyens formant ressort (55) pour presser ladite soupape à bille (54) contre ledit trou débouchant (53).

4. Compresseur comprenant:

- une paire de blocs de cylindres (1, 2) ayant une pluralité de cylindres (1a, 2a) et un logement de rotor (4), conduisant à l'orifice d'aspiration, une paire de sections de boîtiers (7, 8) possédant au moins deux chambres d'évacuation (11, 12), et couvrant les deux extrémités de la paire de blocs de cylindres (1, 2), un arbre d'entraînement (18) porté de façon à pouvoir tourner par la paire de blocs de cylindres (1, 2), un plateau en biais (23) étant monté sur l'arbre d'entraînement (18) et disposé de façon à pouvoir tourner dans le logement de rotor (4), une pluralité de pistons (25) en prise sur le plateau en biais (23) et mobiles à l'intérieur des cylindres (1a, 2a), en coopération avec le plateau en biais (23), dans lequel un écoulement de fluide de refroidissement de l'orifice d'aspiration (3) vers les cylindres (1a, 2a) et à travers le carter et un passage d'aspiration, est comprimé à l'intérieur de chaque cylindre (1a, 2a), et est évacué dans les chambres d'évacuation (11, 12) à travers des orifices d'évacuation qui communi-

quent avec les chambres d'évacuation (11, 12);

- un passage d'évacuation primaire étant situé à l'intérieur de l'arbre d'entraînement (18) pour provoquer la communication fluide entre elles desdites chambres d'évacuation (11, 12), le passage d'évacuation primaire comprenant un passage d'évacuation primaire (61) s'étendant le long d'un axe de l'arbre d'entraînement (18), le passage d'évacuation primaire (61) possédant une ouverture qui débouche vers l'une des chambres d'évacuation (11, 12); et 5
- un passage d'évacuation secondaire (62) 10 pour provoquer la communication fluide de la chambre d'évacuation avant (11) avec un orifice d'évacuation (28) ménagé dans les boîtiers (7, 8), les moyens d'évacuation secondaires (62) s'étendant radialement. 15 20

5. Compresseur selon la revendication 4, dans lequel le compresseur comprend des moyens formant vannes (63, 71) prévus à une extrémité dudit passage d'évacuation primaire (61) pour communiquer avec l'orifice d'évacuation (28), et pour commander l'ouverture dudit passage d'évacuation primaire (61) proportionnellement à la différence de pression entre le fluide de refroidissement dans les chambres d'évacuation (11, 12). 25 30

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Fig. 1

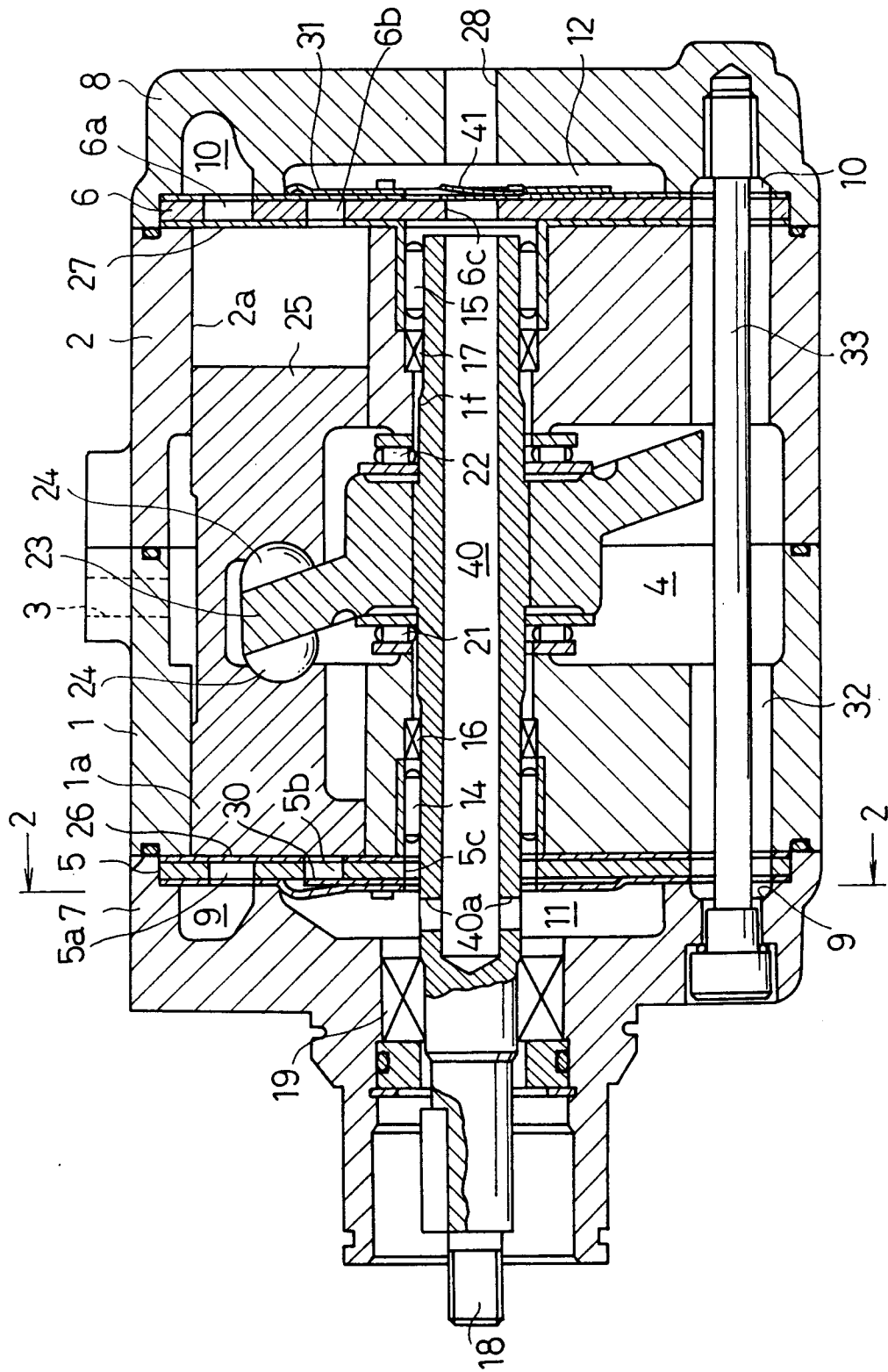


Fig. 2

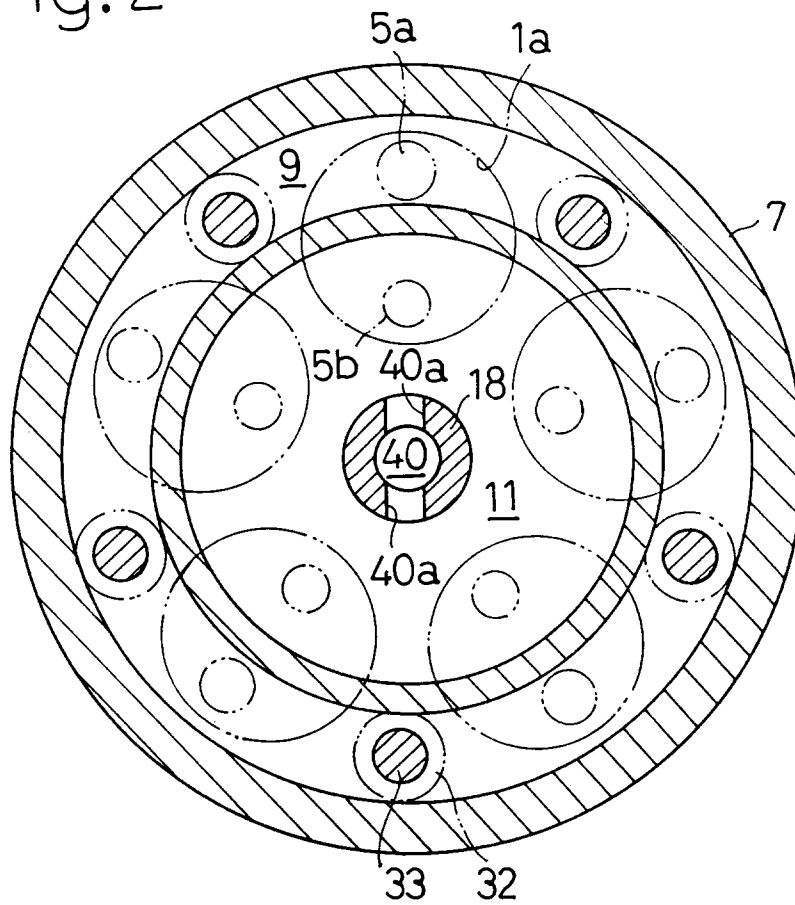


Fig. 3

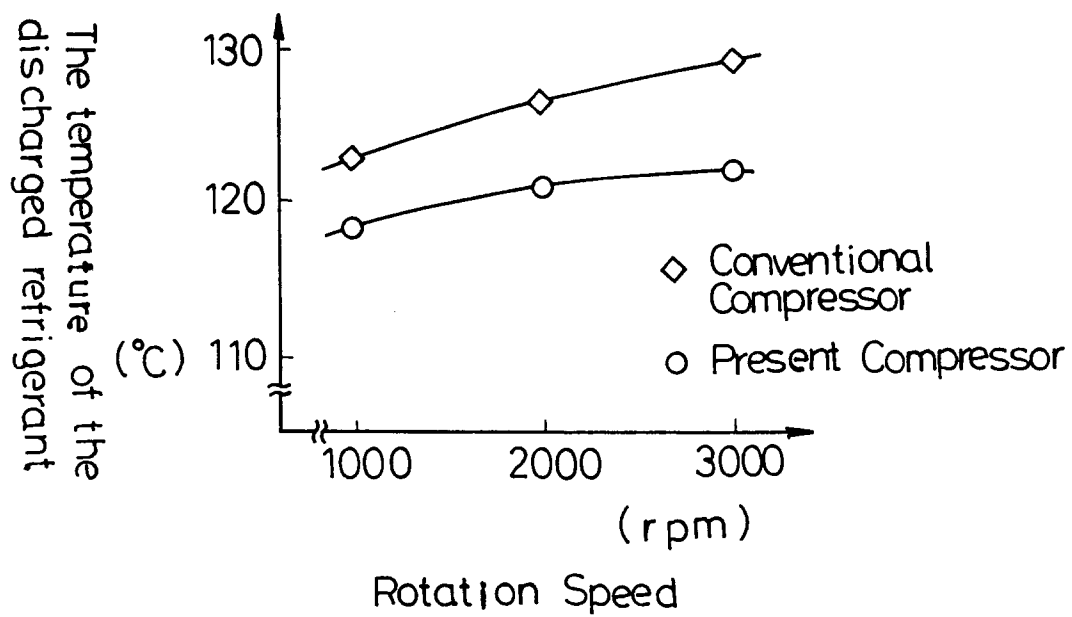


Fig. 4

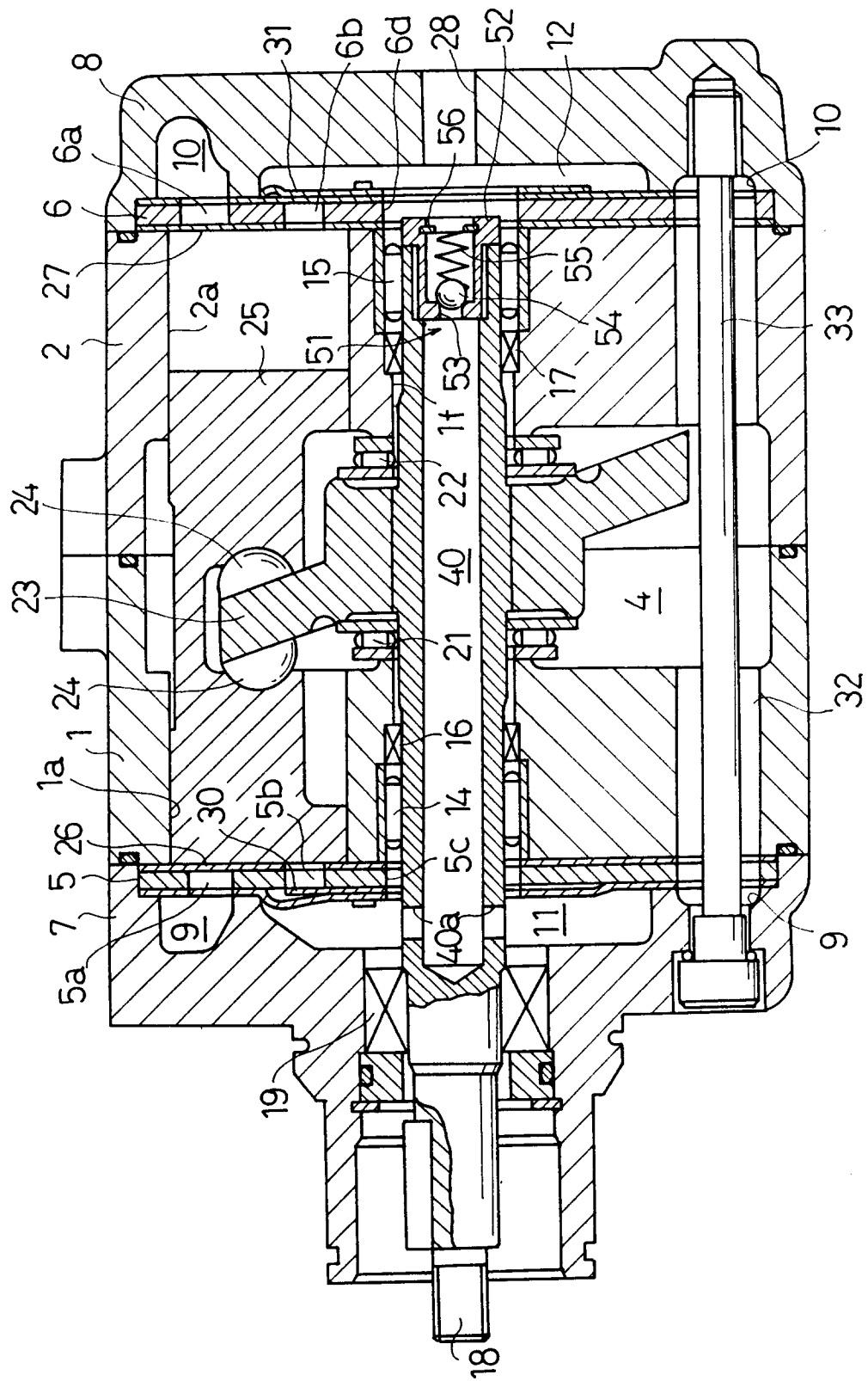


Fig. 5

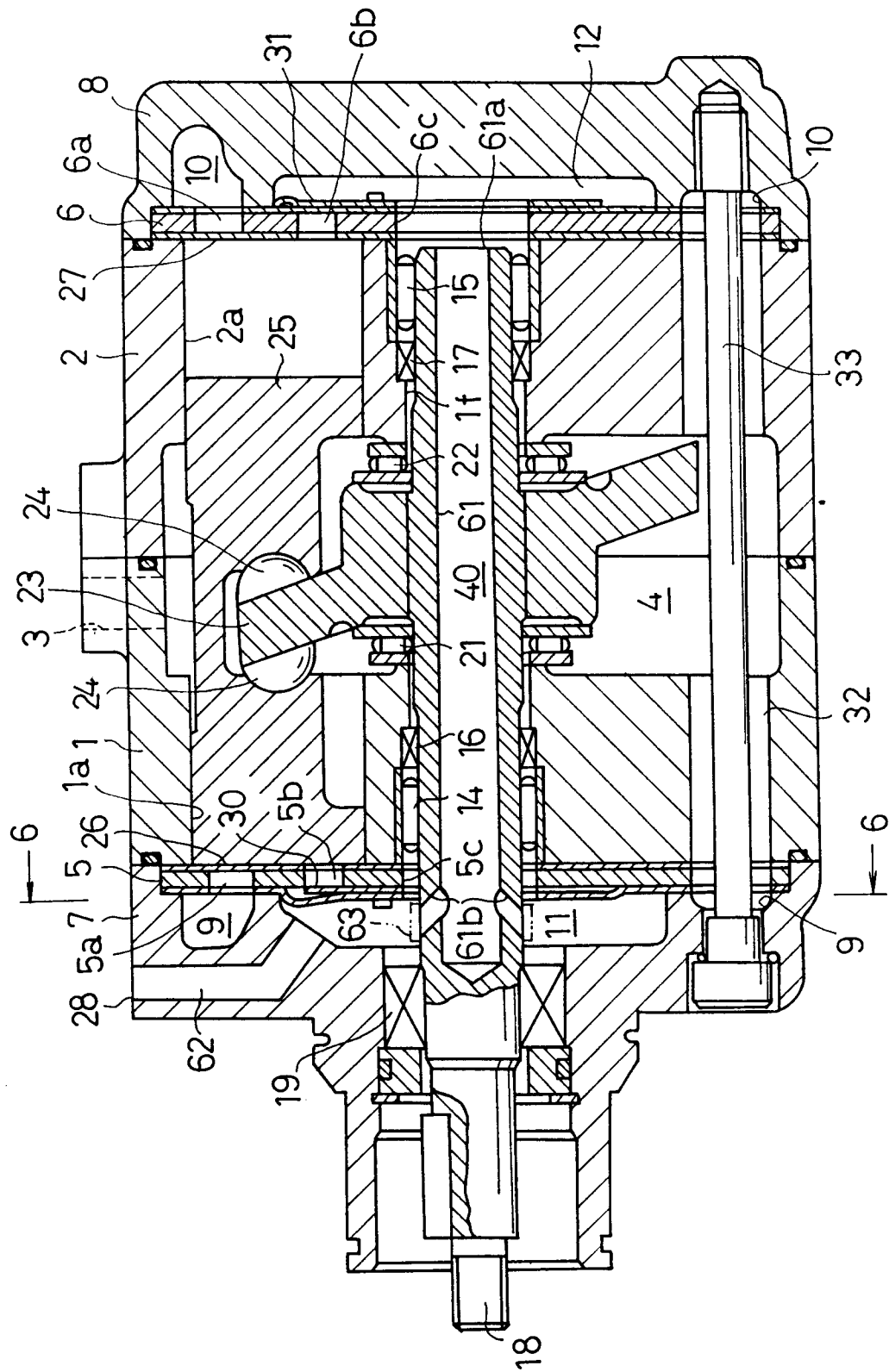


Fig. 6

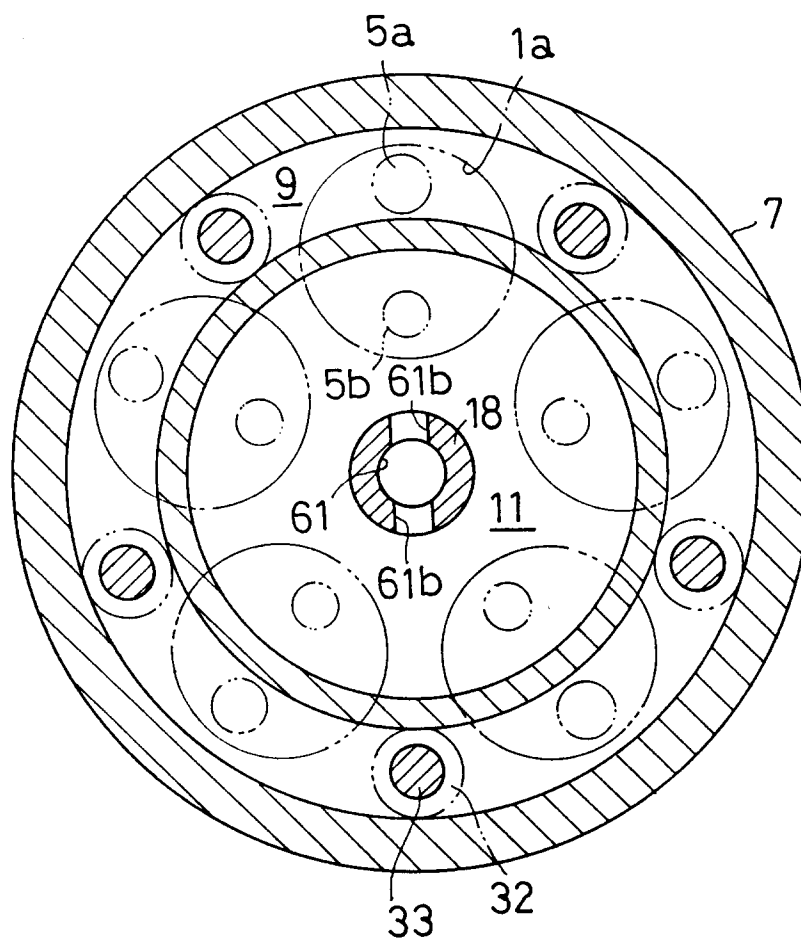


Fig. 7

