

EUROPEAN PATENT APPLICATION

Application number: **87202354.4**

Int. Cl. 4: **F03C 1/04**

Date of filing: **30.11.87**

Priority: **05.12.86 IT 2259286**
20.10.87 IT 2234487

Date of publication of application:
08.06.88 Bulletin 88/23

Designated Contracting States:
AT BE CH DE ES FR GB IT LI NL

Applicant: **RIVA CALZONI S.p.A.**
Via Emilia Ponente 72
I-40133 Bologna(IT)

Inventor: **De Vietro, Ivano**
Via Jussi, 43
S. Lazzaro Di Savena (Bologna)(IT)

Representative: **Raimondi, Alfredo, Dott. Ing.**
Prof. et al
Studio Tecnico Consulenza Brevetti Piazzale
Cadorna 15
I-20123 Milano(IT)

A rotary distribution group for hydraulic motors with orbiting sealing surfaces.

The rotary distribution group for hydraulic motors according to the invention comprises a revolving distributor disc formed with orifices communicating between its plane surfaces and connected for rotation to the drive shaft and clamped between an axially movable reaction ring formed with separate orifices connected to the supply and the discharge ducts for hydraulic fluid, and a fixed distribution plate formed with outlet orifices for the ducts supplying and discharging hydraulic fluid to the motor propulsors, continuous surfaces being present for bounding and separating the respective inlet areas of the orifices in the disc towards the reaction ring and towards the distribution plate, the surfaces of the distributor disc facing the distribution plate being formed with cavities and recesses which are eccentric with respect to the axis of rotation of the distributor disc and are adapted to move orbitally during the rotation of the distributor disc.

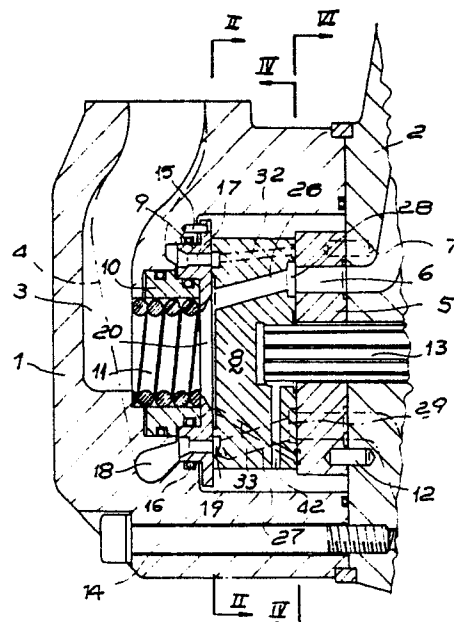


Fig. 1

A rotary distribution group for hydraulic motors with orbiting sealing surfaces

The invention relates to a rotary distribution group for hydraulic motors, more particularly of the radial piston kind, with orbiting sealing surfaces.

In order to operate, radial-piston hydraulic motors require a rotary distributor for successfully supplying and discharging the propulsors and thus driving the motor in rotation.

The distributor substantially comprises a disc rotating integrally with the drive shaft and formed with a pair of orifices communicating between an external manifold connected to the hydraulic ducts from the pressure supply and the discharge respectively, and the ducts supplying the individual propulsors in the motor body, thus connecting some of the ducts to the supply and some to the discharge.

Consequently, the distributor disc has to slide between the flat surfaces of the members formed with the hydraulic ducts to be connected, and must ensure sealing-tightness to avoid a short-circuit of hydraulic fluid on the distributor surfaces.

To this end the distributor disc is formed with surfaces exposed to the pressure of the hydraulic fluid so as to clasp together the sealing surfaces and also particularly during the starting-up phase, the outer casing of the distributor, constituting the supply manifold, advantageously has a ring formed with separate supply and discharge passages and resiliently urged against the surface of the distributor disc.

The surfaces in contact between the distributor disc and the components between which it is clamped are in contact with the hydraulic fluid in which the entire distributor group is immersed but owing to the axial thrust, which is brought about to ensure sealingtightness, the lubricating fluid in known embodiments tends to flow away from the flat surfaces in contact.

The surfaces, in order to obtain an optimum seal, are made very smooth, e.g. by lapping, and therefore cannot effectively retain the lubricating fluid. Owing to the friction the fluid becomes less viscous and is therefore even easier to expel from the surfaces in contact.

To prevent seizing during operation, the distributor disc and the parts clamped against it must therefore be made of special materials with anti-wear characteristics, which are expensive.

The problem therefore is to provide a distributor for hydraulic motor which ensures optimum lubrication conditions on all the sliding surfaces thereof and also guarantees that the hydraulic thrust on its components is balanced in each phase of rotation.

A further problem is given by the fact that the

hydraulic thrusts on the distributor disc during operation of the motor are not hydraulically balanced with respect to the diametral plane of the same disc, one zone thereof being connected to the feed at work pressure and another connected to discharge of the fluid: this causes irregular wears of the distributor disc and a loss of planarity of the sealing surfaces with a consequent early wear.

The problem therefore is to provide a distributor for hydraulic motors which ensures optimum lubrication conditions on all the sliding surfaces thereof and also guarantees that the hydraulic thrust on its components is balanced in each phase of rotation.

To this end, the invention provides a rotary distribution group for hydraulic motors which comprises a revolving distributor disc coupled for rotation to the drive shaft and clamped between an axially movable reaction ring formed with separate passages connected to the ducts for supplying and discharging the hydraulic fluid, and a fixed distribution plate formed with outlet orifices for the ducts supplying and discharging hydraulic fluid to the motor propulsors, the distributor disc being formed with at least two independent orifices communicating between its opposite flat surfaces and respectively in contact with the reaction ring and with the distribution plate, corresponding to and the separate passages in the reaction ring and to the distribution plate, and thus driving the motor in rotation, continuous surfaces being present for bounding and separating the respective inlet areas of the orifices in the disc towards the reaction ring and towards the distribution plate, the surfaces having cross-sections shaped so that they are immersed in the hydraulic fluid at least once per revolution, ducts being also present for balancing the hydraulic pressure on the surfaces of the distributor disc, with respect to a diametral plane.

More particularly, the surfaces of the distributor disc facing the reaction ring is formed with an annular cavity facing the orifices in the reaction ring which communicate with one of the ducts supplying hydraulic fluid, the cavity having an internal depression facing the passage or passages in the reaction ring which communicate with the other duct supplying hydraulic fluid, the cavity and the depression being separated from one another and bounded from the exterior by thin annular flanges abutting the surface of the reaction ring and sealing it, the cavity, the depression and the associated boundary flanges being eccentric relative to the axis of rotation of the distributor disc.

The eccentricity of the depression, the annular cavity and the associated boundary flanges is

equal to or greater than the width of the flanges, in order to uncover the flange surfaces completely at each revolution.

The reaction ring has a central orifice communicating with one of the ducts supplying hydraulic fluid and a plurality of orifices disposed on a circumference concentric with the central orifice and communicating with the other duct supplying hydraulic fluid, the annular cavity in the distributor disc facing the plurality of orifices and the depression concentric therewith communicating with the central orifice.

The annular cavity in the distributor disc has a width greater than or equal to the diameter of the orifices along the circumference of the reaction ring plus twice the eccentricity thereof relative to the axis of rotation of the distributor disc, so that the apertures disposed along the circumference of the reaction ring remain facing the interior thereof during each phase of rotation.

The flat of the distributor facing the distribution plate is formed with a pair of arcuate-shaped cavities extending in diametrically opposite positions along a circumference and facing the outlet apertures of the ducts in the distributor plate, the shaped cavities being connected to the outlets of a duct coming from the eccentric annular cavity and a duct from the cavity inside the first cavity on the opposite surface of the distributor, arcuate recesses also being present and externally surrounding the shaped cavities along their entire length and communicating with the annular cavity or the depression opposite those communicating with the adjacent cavity, and blind recesses also being formed in the facing surfaces of the distributor disc and, the distribution plate opposite the boundary edges of the shaped cavities and the arcuate recesses and communicating at least once per revolution with a zone supplied with hydraulic fluid and adapted at least once per revolution to immerse the entire front surface of the distributor disc and the plate.

More particularly, a first array of blind recesses is formed on the distribution plate corresponding to the arcuate recesses in the distributor disc and the outer edge thereof, the recesses being equal in number and diametrically opposite the outlet orifices of the ducts in the plate.

A second array of blind recesses is formed on the distribution plate and open on to the outer edge thereof and are disposed so as to correspond to and be separate from the first array of blind recesses and their inner edge extends radially corresponding to the outer edge of the first array of recesses.

A pair of blind recesses is formed on the distributor disc in the spaces between the arcuate recesses therein and extend radially towards the

exterior as far as the outer edge of the arcuate recesses and towards the interior as far as the outer edge of the arcuate-shaped cavities.

Also, a pair of blind recesses are formed on the surface of the distributor disc and open into the central orifice therein and are disposed in the space between the arcuate shaped cavities and extend radially corresponding to the inner edge thereof.

In an alternative embodiment, particularly for heavy use, the flat surfaces of the distributor disc facing the distribution plate has a pair of arc-shaped cavities extending in diametrically opposite positions along a circumference eccentric with respect to the axis of rotation of the distributor disc and facing the outlet orifices of the ducts in the distribution plate, ducts coming from the opposite surface of the distributor opening into the arc-shaped cavities, and likewise eccentric arcuate recesses also being present and externally surrounding the arc cavities along their entire length and communicating with that one of the ducts which supplies the arc cavity opposite the adjacent cavity, blind recesses also being formed in the facing surfaces of the distributor disc and the distribution plate corresponding to the boundary edges of the shaped cavities and the arcuate recesses and communicating at least once per revolution with an area supplied with hydraulic fluid and with a proportion of the boundary surface of the shaped cavities and the arcuate recesses, and supplying hydraulic fluid at each revolution to the entire surface of the distributor disc facing the plate as a result of the eccentric motion of the cavities and recesses in the distributor disc.

The shaped cavities and the arcuate recesses in the distributor disc have the same eccentricity and are concentric, the eccentricity being in the diametral plane of symmetry of the cavities and recesses.

A group of blind recesses are present on the distribution plate and aligned along a circumference having its centre on the axis of rotation of the distributor disc, corresponding to the arcuate recesses in the distributor disc and the outer edge thereof, the blind recesses being equal in number and in diametrically opposite positions to the outlet orifices of the ducts of the plate.

A pair of shaped blind recesses are present on the distributor disc in the spaces between the arcuate recesses and have a portion extending radially towards the exterior as far as the outer edge of the arcuate recesses and a portion extending internally as far as the central area of the arc-shaped cavities.

In both the embodiments the recesses and cavities in the distributor disc and the distribution plate, under conditions where hydraulic fluid is

supplied under pressure to one of the supply ducts of the motor, are under conditions of equilibrium thrust on the disc with respect to its diametral planes in each phase of rotation.

Other details will be clear from the following description with reference to the accompanying drawings in which:

Fig. 1 is a general view in section of the rotary distributor of a radial-position hydraulic motor;

Fig. 2 is a section along plane II-II of Fig. 1;

Fig. 3 is a section across plane III-III of Fig.

2;

Fig. 4 is a section across plane IV-IV of Fig.

1;

Fig. 5 is a section across plane V-V of Fig.

4;

Fig. 6 is a section across plane VI-VI of Fig.

1;

Fig. 7 is a section across plane VII-VII of Fig.

6

Fig. 8 is a section corresponding to plane IV-IV in Fig. 4, in the embodiment of the present invention;

Fig. 9 is a section along plane IX-IX in Fig. 8;

Fig. 10 is a section corresponding to plane X-X in Fig. 4, in the embodiment in Fig. 8, and

Fig. 11 is a section along plane XI-XI of Fig. 10.

As Fig. 1 shows, rotary distributor in a radial-piston motor has an outer casing 1 secured to the motor body 2 and internally formed with ducts 3, 4 for supplying and discharging hydraulic fluid to and from the motor propulsors.

Inside the distributor, a distribution plate 5 is formed with orifices 6 connected to the ducts 7 supplying the individual propulsors, the plate abutting the distributor disc 8.

An external reaction ring 9 also abuts disc 8 on the opposite side from plate 5 and is coupled to an internal reaction ring 10 and comprises a preload-ing spring 11 adapted to clamp the reaction ring against the distributor disc.

Plate 5 is coupled for rotation to the motor body 2 by pins 12 or the like, whereas the distributor 8 is connected for rotation to the drive shaft via a splined shaft 13. Screws 14 secure the distributor casing 1 to the motor body 2.

The outer reaction ring 9, which can also in some embodiments be constructed in one piece with the internal reaction ring 10, is connected for rotation to the distributor casing 1 by a pin 15 or the like and is sealed by gaskets 16. It is formed with a plurality of orifices 17 for connecting an annular chamber 18 supplying body 2 to an annular cavity 19 in the rotary distributor, separately from the connection via its central passage 20.

As shown more clearly in Figs. 2 and 3, the

side of distributor 8 facing ring 9 is formed with an annular cavity 19 disposed so as to correspond to orifices 17, which are laid out as shown by a chaindotted line in Fig. 2. As the drawing shows, orifices 17 are disposed along a circumference centred on the axis of rotation of the distributor disc, whereas cavity 19 is disposed eccentrically with an eccentricity value "e". In order nevertheless to ensure that the outlets of orifices 17 remain inside it, the annular cavity 19 in disc 8 has a width greater than or equal to the diameter of the orifices along the circumference of the reaction ring plus twice the eccentricity "e".

A drainage groove 21 and associated discharge channels 22 are disposed concentrically with cavity 19 and are separated therefrom by an annular flange 23 which externally bounds cavity 19. Cavity 19 is internally bounded by an annular flange 24 surrounding the central depression 25 opposite the outlet of the central passage 20 in the reaction ring.

When the distributor is rotating flanges 23 and 24, which are adapted to seal the reaction ring surface in order to bound the supply and drainage ducts, move in rotation opposite the reaction ring. Consequently, all the sliding surfaces are given a new film of lubricant, i.e., of hydraulic fluid supplying the motor, thus maintaining optimum conditions for sliding. To ensure that all surfaces in contact are completely exposed to and lubricated by the fluid at each revolution, the value "e" of the eccentricity of cavity 19 and of the associated boundary flanges must be greater than the thickness "s" of the flanges.

Distributor 8 has through orifices 26, 27 opening respectively into one end of the central depression 25 and into the annular cavity 19 and communicating at the opposite end with shaped cavities 28 and 29, shown more clearly in Figs. 4 and 5.

Cavities 28, 29 are adapted to define the propulsor supply cycle and are surrounded by static-equilibrium recesses 30 and 31.

The recesses receive the outlets of secondary ducts 32 and 33, the other ends of which open respectively into cavity 19 and depression 25. One recess is supplied with pressure fluid when the adjacent cavity 28 or 29 is discharged whereas the opposite cavity is under pressure. In this manner, the thrust given by the liquid to the surface of the recess balances the thrust of the liquid on the opposite side in cavity 28 or 29, thus balancing the distributor disc in every phase of rotation.

Fig. 6 is a front view of the distribution plate. It is formed with outlet orifices 34 of ducts 6 and recesses 35 and 36, recesses 35 being disposed inside the plate periphery whereas recesses 36 open towards the exterior of the periphery.

As shown from Fig. 4, where the positions of

the orifices and recesses in the distribution plate are represented by chain-dotted lines in the coupling position, orifices 34 are disposed so as to correspond to the cavities 28 and 29i, which are respectively connected to the supply of pressure hydraulic fluid and to the discharge, thus controlling the rotation cycle or the motor. Recesses 35 are disposed to correspond to recesses 30 and 31 and, since the hydraulic operating fluid present in recesses 30, 31 flows into them, the surface 37 of the distributor disc, which externally bounds recesses 30 and 31, is immersed in the hydraulic fluid and consequently lubricated.

Recesses 36 are used for immersing the outer flange of the disc in hydraulic fluid, by placing its surface in contact with the fluid present outside the distributor disc, at the drainage pressure.

The surfaces 38 separating recesses 30, 31 from cavities 28, 29 are lubricated by means of circular recesses 39 which at each revolution are connected to one of the orifices 34, as shown in the left part of Fig. 4, so that the fluid in the recesses immerses the surface of plate 5 corresponding to the circular recess 39, the surface of which is in contact with surfaces 38 during the rotation of disc 8.

In order to lubricate the surfaces of the inner flange of cavities 28 and 29, recesses 40 are also present and open towards the central orifice 41 of the disc. A spindle 13 is keyed in orifice 41, which contains hydraulic fluid at the drainage pressure, supplied via a duct 42.

Recesses 35 serve another purpose besides lubricating the respective surfaces. As shown on the right of Fig. 4, one recess 35 (reference 35a) is in the diametrically opposite position to an orifice 34a in plate 5. Consequently, when orifice 34a is hydraulically connected to the cavity 28 or 29 under pressure and adds its area to that of the cavity so as to exert thrust on the distributor disc, the recess 35a becomes correspondingly connected to the corresponding static equilibrium recess 30 or 31, thus adding its area to that of the recess and balancing the thrust. To this end, as shown in Fig. 6, a recess 35 is provided to correspond to each orifice 34.

Figs. 8, 9, 10 and 11 show the distributor 8 according to an alternative embodiment of the invention; its surface facing the distributor plate 5 is formed with shaped cavities 28, 29a disposed on a circumference which is eccentric with respect to the axis of rotation of the distributor, the eccentricity being e_1 .

Recesses 39a, which serve a similar purpose to the recesses 39 in the preceding embodiment, are disposed on a circumference concentric with the shaped cavities 28a, 29a and, in the present embodiment, have a shape comprising an oblong-

section portion 39b extending along an arc of the aforementioned circumference and communicating with a circular portion 39c towards the interior.

Static balancing recesses 30a, 31a extend along the same circumference as portion 39b of recesses 39a, whereas a central cavity 41a, likewise eccentric, is present inside cavities 28a, 29a.

Recesses 35b disposed along a circumference coaxial with shaft 13 are present on the corresponding surface of distribution plate 5 facing the distributor 8 and illustrated in this embodiment in Figs. 10 and 11. Recesses 35b are narrower than in the preceding embodiment and are disposed so as to correspond to the balancing recesses 30a, 31a or distributor 8; the balance recesses 30a, 31a are given a width in the radial direction such that in every phase of rotation they communicate with recesses 35b and also move orbitally owing to their eccentricity e .

The peripheral recesses 36, like the recesses 40, are not necessary in the present embodiment. The orbital motion of cavities 28a, 29a, recesses 39a, recesses 30a, 31a and cavity 41a, with the set eccentricity value, guarantee that during each revolution of the motor, the sliding surfaces in contact are all lubricated when they come opposite an area where the hydraulic fluid flows, although the flows are kept separate as required for operation.

The lubrication obtained by orbital motion of the surfaces in contact between distributor 8 and plate 5 is particularly efficient and is particularly suitable for high-performance hydraulic motors which have to operate under difficult conditions, since at each revolution it ensures optimum exchange of lubricating fluid between the surfaces, resulting in optimum cooling and lubrication, in the same way as for the opposite surface of distributor 8 in contact with ring 9.

By being constructed according to the invention, therefore, in both the embodiments described, the distributor disc is lubricated on all its sliding surfaces, while separating the hydraulic-fluid supply areas from the drainage areas, thus eliminating the risk of seizing between the surfaces in contact. The surfaces can therefore be made of lower-cost material e.g. hardened by heat treatment only, without the need for special alloys or facings of anti-wear material.

Furthermore, the distributor disc and the associated distribution plate are shaped so that the thrust is completely balanced during the entire revolution, thus ensuring that the wear on the sliding surfaces does not reduce the flatness thereof, and thus prolonging their life.

Many variants can be made without thereby departing from the scope of the invention in its general features.

Claims

1. A rotary distribution group for hydraulic motors, characterised in that it comprises a revolving distributor disc coupled for rotation to the drive shaft and clamped between an axially movable reaction ring formed with separate passages connected to the ducts for supplying and discharging the hydraulic fluid, and a fixed distribution plate formed with outlet orifices for the ducts supplying and discharging hydraulic fluid to the motor propulsors, the distribution disc being formed with at least two independent orifices communicating between its opposite flat surfaces and respectively in contact with the reaction ring and with the distribution plate, corresponding to the separate passages in the reaction ring and to the distribution plate, and thus driving the motor in rotation, continuous surfaces being present for bounding and separating the respective inlet areas of the orifices in the disc towards the reaction ring and towards the distribution plate, the surfaces having cross-sections shaped so that they are immersed in the hydraulic fluid at least once per revolution, ducts being also present for balancing the hydraulic pressure on the surface of the distributor disc, with respect to a diametral plane.

2. A rotary distribution group for hydraulic motors according to claim 1, characterised in that the surface of the distributor disc facing the reaction is formed with an annular cavity facing the orifices in the reaction ring which communicate with one of the ducts supplying hydraulic fluid, the cavity having an internal depression facing the passage or passages in the reaction ring which communicate with other duct supplying hydraulic fluid, the cavity and the depression being separated from one another and bounded from the exterior by thin annular flanges abutting the surface of the reaction ring and sealing it, the cavity, the depression and the associated boundary flanges being eccentric relative to the axis of rotation of the distributor disc.

3. A rotary distribution group for hydraulic motors according to claim 2, characterised in that the eccentricity of the depression, the annular cavity and the associated boundary flanges is equal to or greater than the width of the flanges.

4. A rotary distribution group for hydraulic motors according to claims 2 and 3, characterised in that the reaction ring has a central orifice communicating with one of the ducts supplying hydraulic fluid and a plurality of orifices disposed on a circumference concentric with the central orifice and communicating with the other duct supplying hydraulic fluid, the annular cavity in the distributor disc facing the plurality of orifices and the depression concentric therewith communicating with the central orifice.

5. A rotary distribution group for hydraulic motors according to claim 4, characterised in that the annular cavity in the distributor disc has a width greater than or equal to the diameter of the orifices along the circumference of the reaction ring plus twice the eccentricity thereof relative to the axis of rotation of the distributor disc, so that the orifices disposed along the circumference of the reaction ring remain facing the interior thereof during each phase of the rotation.

6. A rotary distribution group for hydraulic motors according to claim 1, characterised in that the flat surface of the distributor facing the distribution plate is formed with a pair of arcuate-shaped cavities extending in diametrically opposite positions along a circumference and facing the outlet orifices of the ducts in the distributor plate; the shaped cavities being connected to the outlets of a duct coming from the eccentric annular cavity and a duct from the cavity inside the first cavity on the opposite surface of the distributor, arcuate recesses also being present and externally surrounding the shaped cavities along their entire length and communicating with the annular cavity or the indentation opposite those communicating with the adjacent cavity, and blind recesses also being formed in the facing surfaces of the distributor disc and the distribution plate opposite the boundary edges of the shaped cavities and the arcuate recesses and communicating at least once per revolution with a zone supplied with hydraulic fluid and adapted at least once per revolution to immerse the entire front surface of the distributor disc and the plate.

7. A rotary distribution group for hydraulic motors according to claim 6, characterised in that a first array of blind recesses is formed on the distribution plate corresponding to the arcuate recesses in the distributor disc and the outer edge thereof, the recesses being equal in number and diametrically opposite the outlet orifices of the ducts in the plate.

8. A rotary distribution group for hydraulic motors according to claims 6 and 7, characterised in that a second array of blind recesses is formed on the distribution plate and open on to the other edge thereof and are disposed so as to correspond to and be separate from the first array of blind recesses and their inner edge extends radially corresponding to the outer edge of the first array of recesses.

9. A rotary distribution group for hydraulic motors according to claim 6, characterised in that a pair of blind recesses is formed on the distributor disc in the spaces between the arcuate recesses therein and extend radially towards the exterior as

far as the outer edge of the arcuate recesses and towards the interior as far as the outer edge of the arcuate-shaped cavities.

10. A rotary distribution group for hydraulic motors according to claim 6, characterised in that a pair of blind recesses are formed on the surface of the distributor disc and open into the central orifice therein and are disposed in the space between the arcuate shaped cavities and extend radially corresponding to the inner edge thereof.

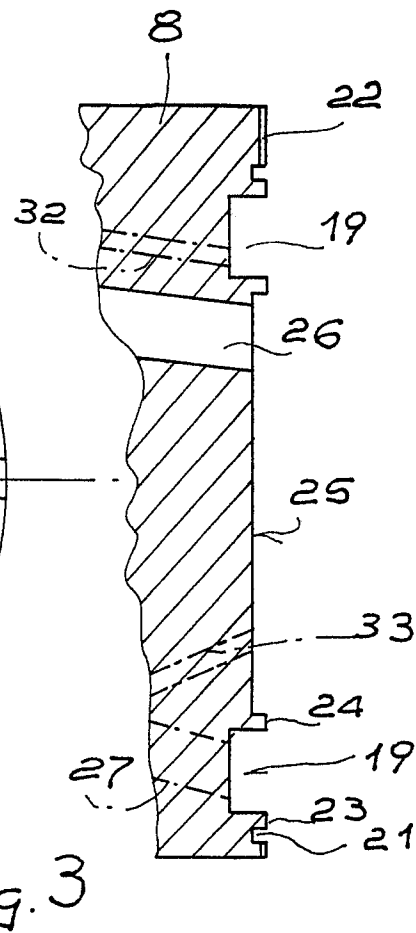
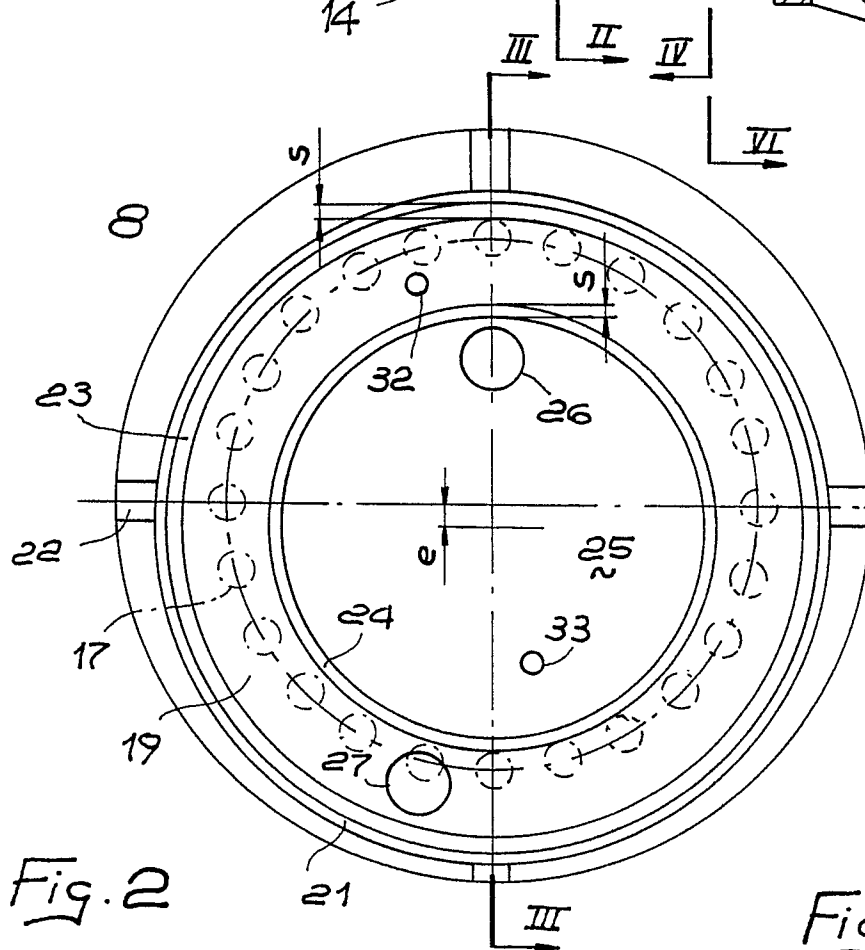
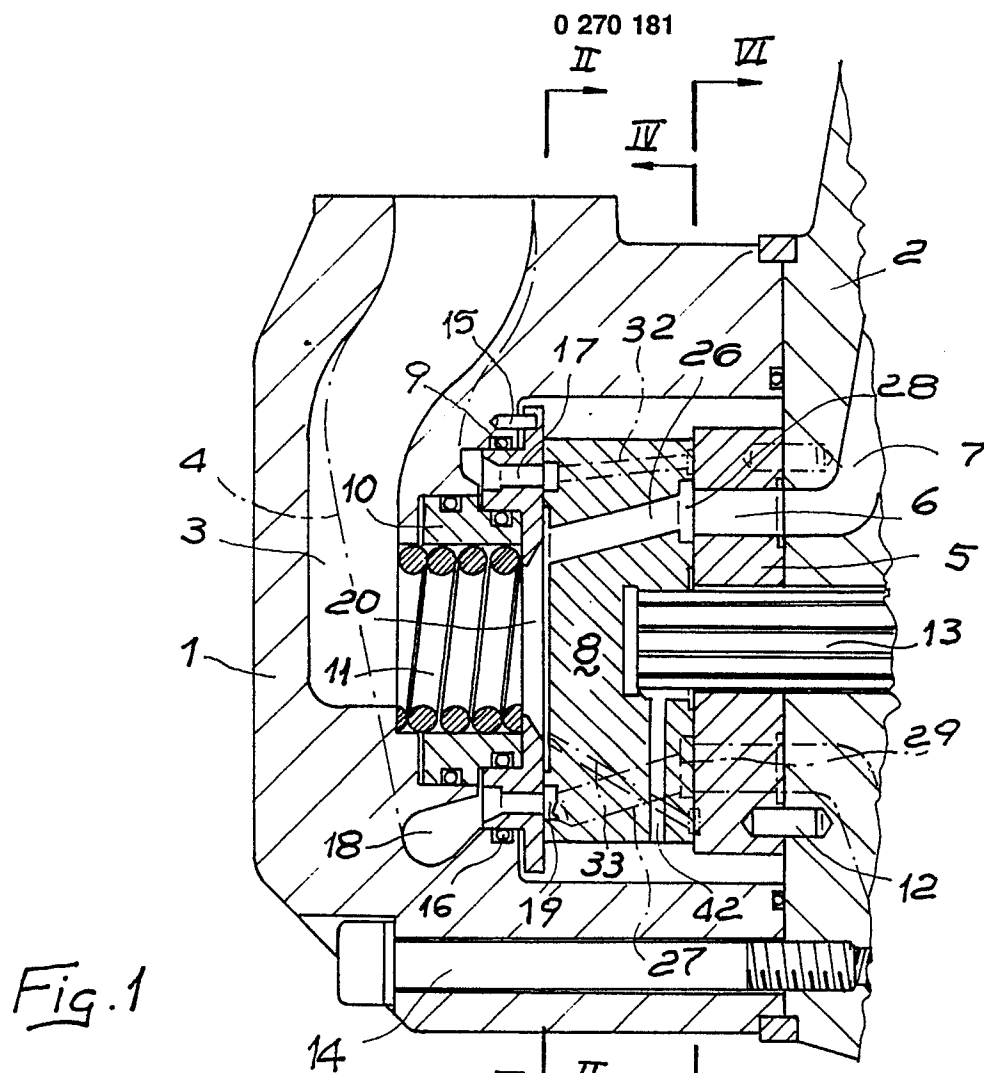
11. A rotary distribution group for hydraulic motors according to claim 1, characterised in that the flat surface of the distributor disc (8) facing the distribution plate (5) has a pair of arc-shaped, cavities (28a, 29a) extending in diametrically opposite positions along a circumference eccentric with respect to the axis of rotation of the distributor disc (8) and facing the outlet orifices (34) of the ducts (6) in the distribution plate (5), ducts (26, 27) coming from the opposite surface of the distributor disc opening into the arcsection cavities (28a, 29a), and likewise eccentric arcuate recesses (30a, 31a) also being present and externally surrounding the arc cavities (28a, 29a) along their entire length and communicating with that one of the ducts (26, 27) which supplies the arc cavity opposite the adjacent cavity, blind recesses (35b, 39a) also being formed in the facing surfaces of the distribution disc and the distribution plate corresponding to the boundary edges of the shaped cavities (28a, 29a) and the arcuate recesses (30a, 31a) and communicating at least once per revolution with an area supplied with hydraulic fluid and with a proportion of the boundary surface of the shaped cavities (28a, 29a) and the arcuate recesses (30a, 31a), and supplying hydraulic fluid at each revolution to the entire surface of the distributor disc (8) facing the plate (5) as a result of the eccentric motion of the cavities and recesses in the distribution disc.

12. A rotary distribution group for hydraulic motors according to claim 11 characterised in that the shaped cavities (28a, 29a) and the arcuate recesses (30a, 31a) in the distributor disc (8) have the same eccentricity and are concentric, the eccentricity being in the diametrical plane of symmetry of the cavities and recesses.

13. A rotary distribution group for hydraulic motors according to claims 11-12, characterised in that a group of blind recesses (35b) are present on the distribution plate (5) and aligned along a circumference having its centre on the axis of rotation of the distributor disc (8), corresponding to the arcuate recess (30a, 31a) in the distributor disc (8) and the outer edge thereof, the blind recess (35b) being equal in number and in diametrically opposite positions to the outlet orifices (34) of the ducts (6) of the plate (5).

14. A rotary distribution group for hydraulic motors according to claims 11 to 13, characterised in that a pair of sectional blind recess (39a) are present on the distributor disc (8) in the spaced between the arcuate recess (30a, 31a) and have a portion (39b) extending radially towards the exterior as far as the outer edge of the arcuate recesses (30a, 31a) and a portion extending internally as far as the central area of the arc-shaped cavities (28a, 29a).

15. A rotary distribution group for hydraulic motors according to claims 6 to 10 or 11 to 14, characterised in that the recesses and cavities in the distributor disc and the distribution plate, under conditions where hydraulic fluid is supplied under pressure to one of the supply ducts of the motor, are under conditions of equilibrium thrust on the disc with respect to its diametral planes in each phase of rotation.



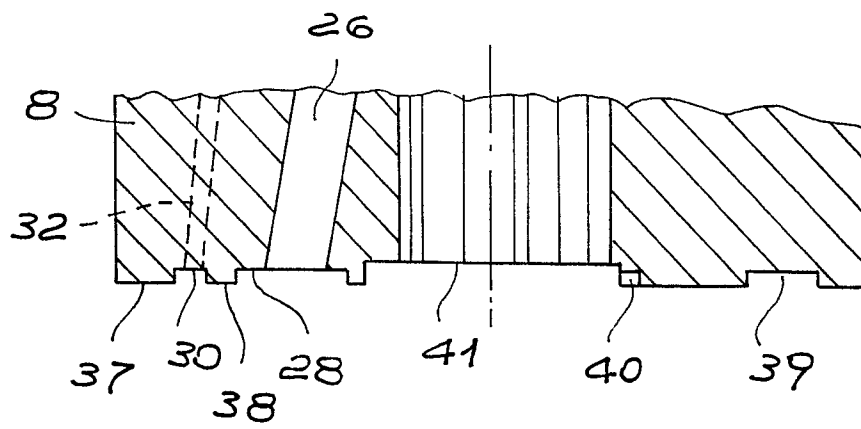
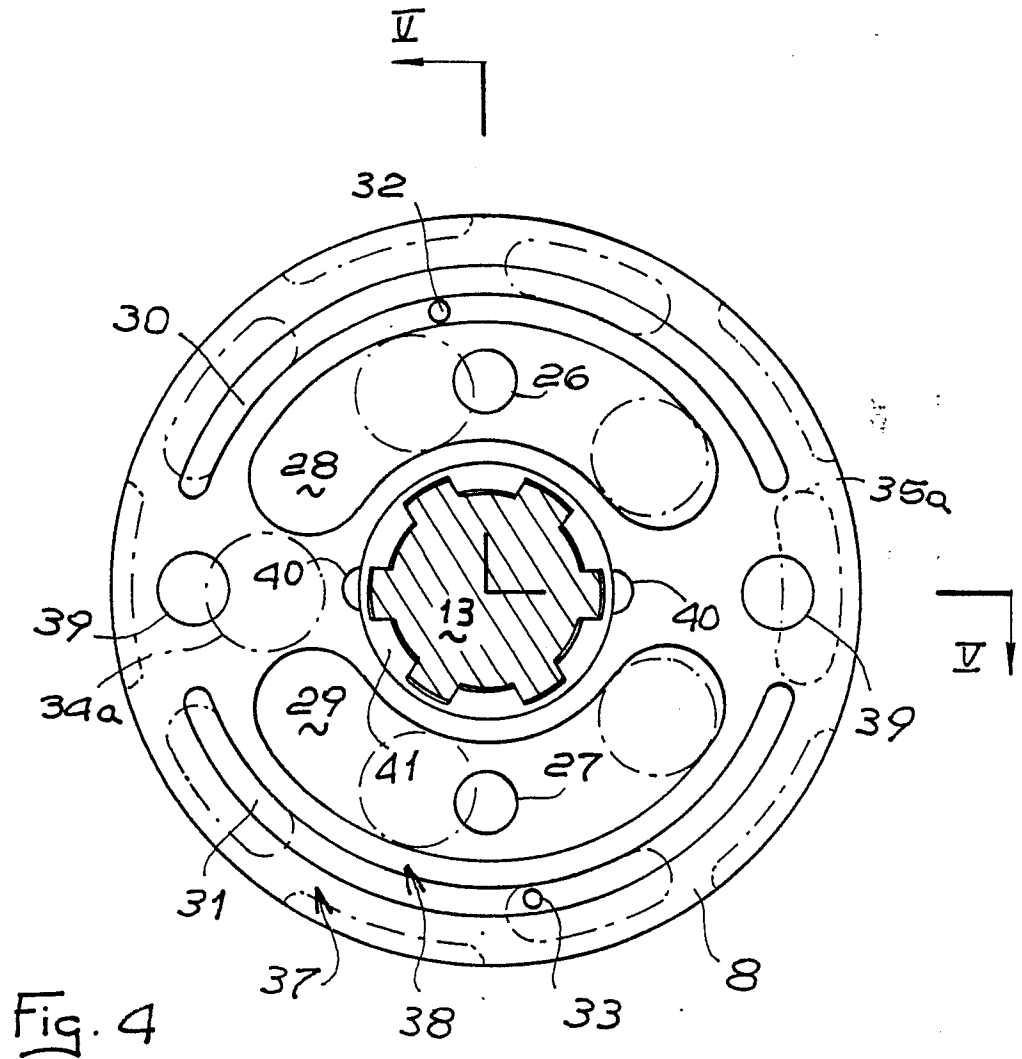


Fig. 5

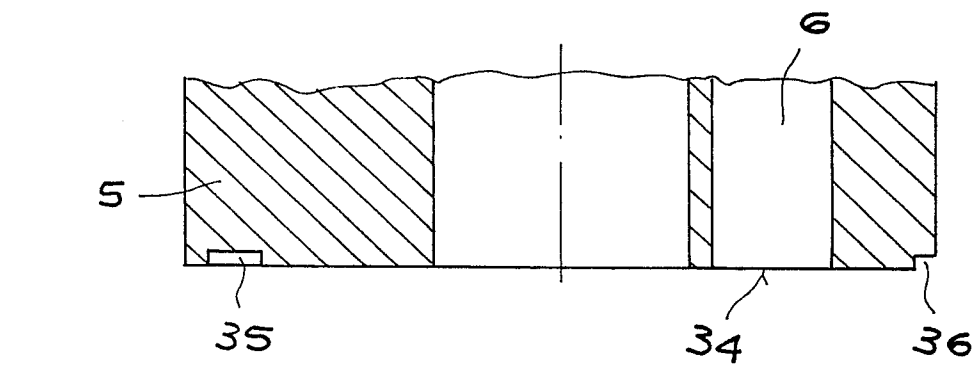
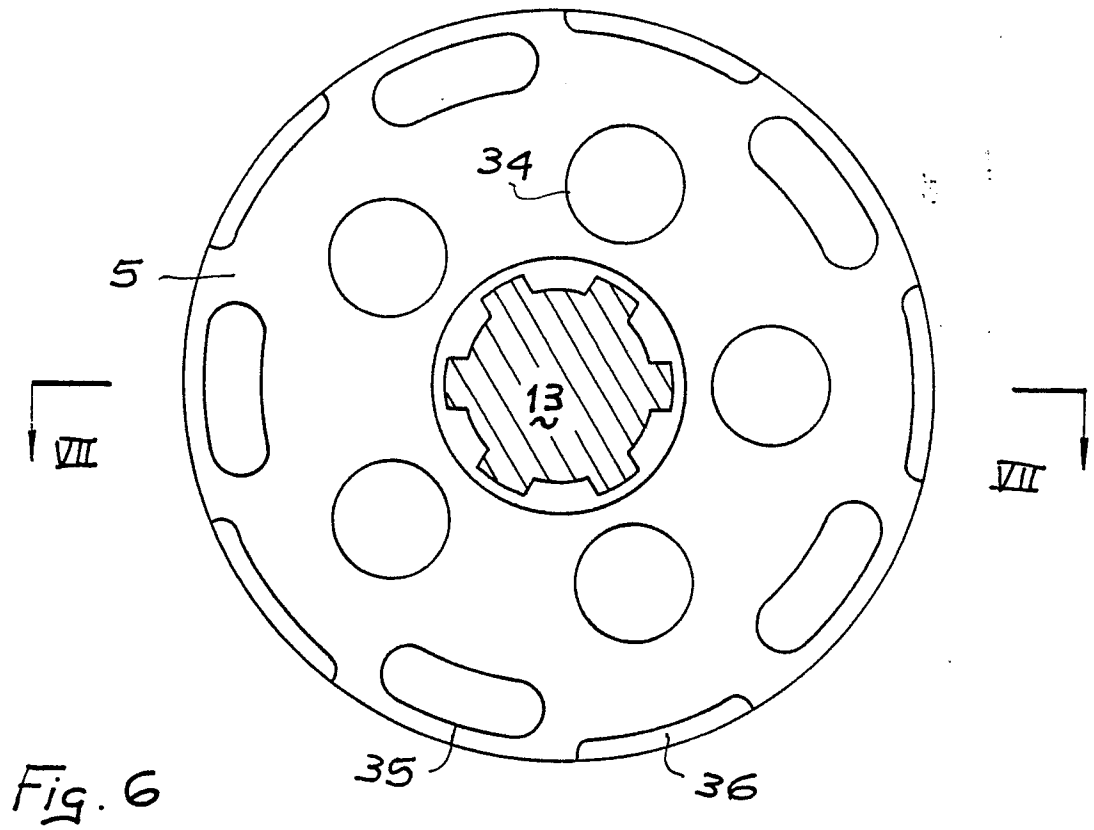


Fig. 7

