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F. CLAWSON

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ROLLER VANE PUMP OR COMPRESSOR

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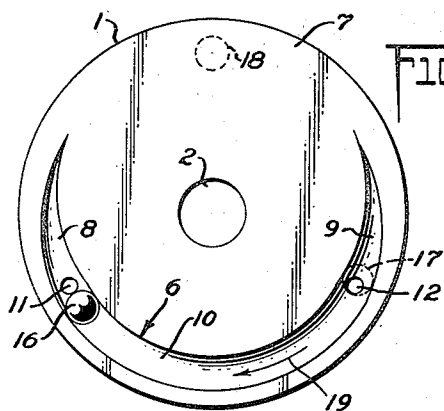
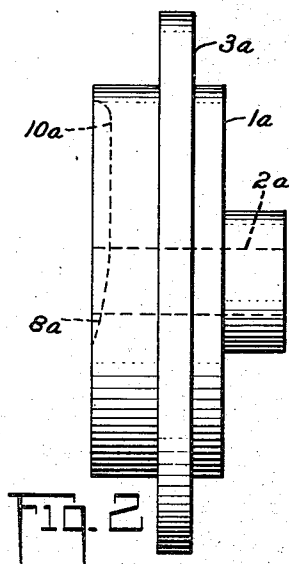
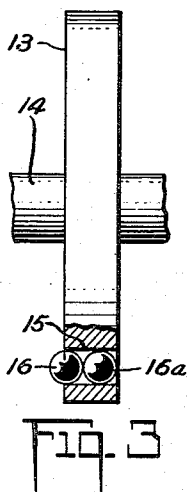
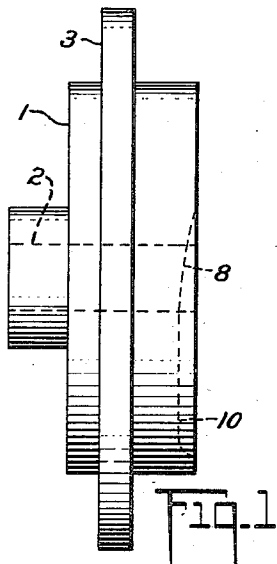


Fig. 4

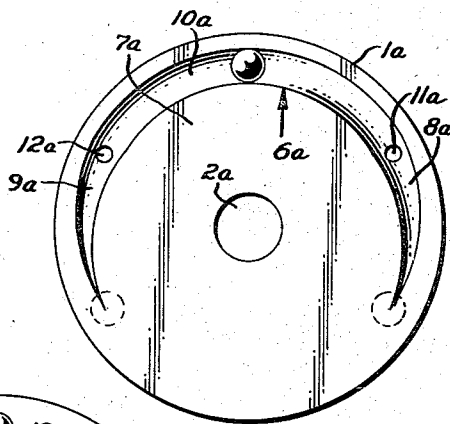


Fig. 5

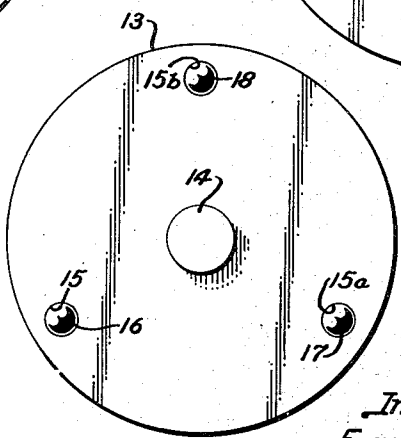


Fig. 6

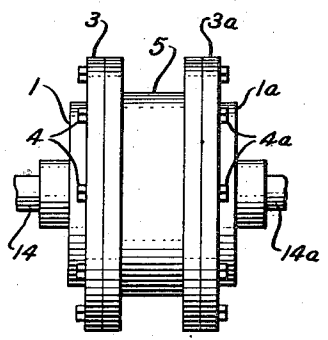


Fig. 7

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## UNITED STATES PATENT OFFICE

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## ROLLER VANE PUMP OR COMPRESSOR

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1 Claim. (Cl. 103—139)

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This invention relates to evacuating or pressure creating pumps or compressors for fluids of all kinds.

It is one object of the invention to provide a device of the character indicated that practically eliminates the problem of frictional losses now contended with in known devices, and that will therefore have a longer useful life.

Another object of the invention is to provide a device of the character indicated that provides a positive seal at all times thereby permitting the attainment of greater pressures, and one that has a minimum number of moving parts providing perfect balance at all times.

It is also an object of the invention to provide a device of the character indicated that can be operated in any desired plane, and one that has no springs.

Finally it is an object of the invention to provide a device of the character indicated that is simple in form and construction, economical to manufacture, strong and durable, and highly efficient in its practical application.

In the drawing:

Figure 1 is an edge elevational view of one of the raceway members of my invention.

Figure 2 is an edge elevational view of the other raceway member of the invention.

Figure 3 is an edge elevational view of the rotor partly in section.

Figure 4 is an inner side elevational view of the part shown in Figure 1.

Figure 5 is an inner face view of the part shown in Figure 2.

Figure 6 is a full face view of the rotor shown in Figure 3.

Figure 7 is a side elevational view of the assembled device, but on a reduced scale.

While I have herein shown and described only the preferred form of my invention, it should be understood that various changes and modifications may be made within the scope of the appended claim without departing from the spirit of the invention.

Referring now more particularly to the drawing, I show at 1 one side member of the pump or compressor having a passage therethrough at 2 to accommodate the rotor shaft as hereinafter set forth. This member is provided with an outwardly extending flange 3 by means of which it is bolted as at 4 to a casing for the rotor as shown at 5. The member 1 is circular in form and has a raceway formed concentrically with its axis as shown at 6, adjacent its outer edge and in its inner face 7 as shown. The raceway

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extends substantially two-thirds of the distance around face 7 and is of uniform depth throughout the central portion of its length and approximately one-half of its length or one-third of the distance around the face 7. The two end portions of the raceway, each amounting to one-half the length of the central portion, curve outwardly to merge with the face 7, gradually reducing in cross-sectional area from the cross-sectional area of the central portion, as shown at 8 and 9, the central portion being indicated at 10.

At 11 and 12 I show conduits leading out from the raceway to the exterior of the device and located at approximately the juncture of the curved portions 8 and 9 with the central portion 10.

The foregoing description with reference to one side member will apply equally as well to the other side member and the other side member is therefore indicated by similar numerals followed by the letter *a*.

At 13 is shown the rotor with its drive shaft at 14 rotatively mounted in bearings 2 and 2*a* and driven by a power unit not shown.

The rotor 13 is in the form of a disc having a diameter equal to the diameter of faces 7, 7*a* and has three equally spaced passages 15 passing therethrough spaced a distance from its center equal to the spacing of the raceways 6 and 6*a*. In each passage 15 are disposed two independent balls as 16 and 16*a* forming a single piston, each ball rotating independently of the other, and the disc 13 having a thickness equal to one and one-half times the diameter of a ball 16. The three sets of balls are indicated at 16—16*a*, 17—17*a* and 18—18*a*.

Assuming that the device has been assembled as described and the rotor is rotated in the direction indicated by the arrow 19, the flat surface 7*a* of member 1*a* forces the ball 16, through the medium of ball 16*a*, into the raceway 6. The raceway 6 has the same size and conformation as one-half of the ball 16 and consequently the fluid in the raceway ahead of ball 16 is forced out through conduit 11, while a fresh charge is inducted into the raceway through conduit 12.

The instant ball 16 passes conduit 11 ball 17 will pass conduit 12 and continue the operation in a similar manner. From the moment ball 16 enters the upcurved portion 8 of raceway 6 until it enters the similarly inclined portion 8*a* of raceway 6*a* there is some leakage past the ball 16 because it is not exactly half way projected into the raceway, the only position in which it

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acts as a perfect seal. The central portion 10 extends through an arc of one hundred and twenty degrees, and each end portion extends through an arc of sixty degrees.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:

A pump or compressor comprising, two fixedly positioned side members and a rotor operatively disposed between the two, each side member having a raceway formed in its inner rotor-directed face concentric with its axis and parallel with said face and having a length substantially two-thirds of a circle, being semicircular in cross-section throughout the central portion of its length and having each end portion inclined outwardly from its central portion to merge with the inner face, the two raceways being disposed on opposite sides of the axis of the members and

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being provided with inlet and outlet ports, the said rotor having passages formed therethrough to communicate with said raceways, and said passages having balls disposed therein for movement into and out of engagement with the said raceways to form movable transverse partitions therein.

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