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ROTARY ROLLER PUMP

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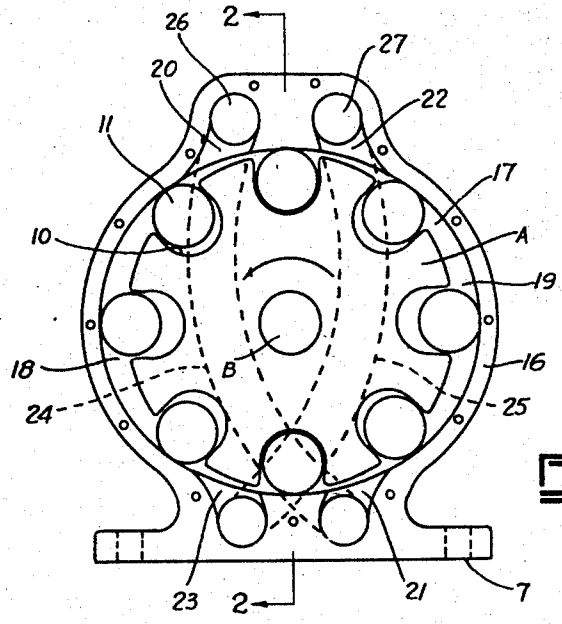


Fig. 1.

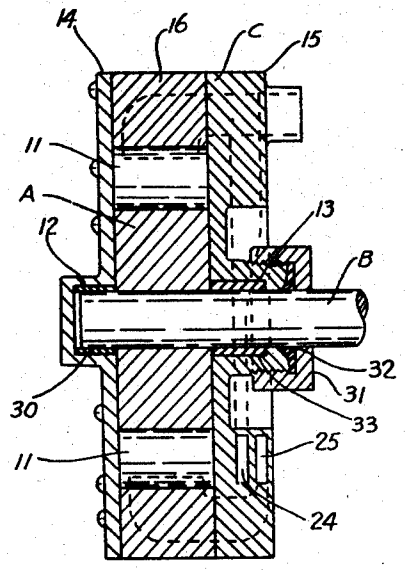


Fig. 2.

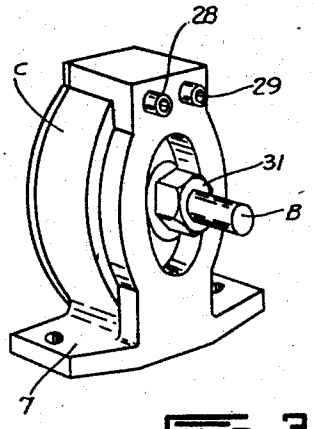


Fig. 3.

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ROTARY ROLLER PUMP

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1 Claim. (Cl. 103—136)

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This invention relates to improvements in a roller pump such as may be used for pumping various kinds of liquids including chemicals or hot water circulation, and for other purposes for which a pump of this type is used, and as an alternative if the device is supplied with liquid under pressure it may be used as a source of power.

The objects of the invention are to provide a pump which is silent in operation, may be run in either direction and efficiently perform the functions required of it.

Further objects of the invention are to reduce wear between innumerable parts of the pump and which will be liquid tight. Further objects of the invention are to enable the pump to be self-lubricating and to be capable of operation in any position, either vertical or horizontal or at an angle.

According to the present invention the pump is constructed with a suitable casing and a rotor having a plurality of peripheral recesses designed to receive the rollers, which may be formed of resilient material such as rubber and which are capable of moving inwardly and outwardly towards the wall of the casing which is so shaped as to provide pressure chambers between the rotor and the wall, all as hereinbefore more particularly set forth in the accompanying specification and drawings.

In the drawings

Figure 1 is a side elevation of the pump with an end cover removed.

Figure 2 is a sectional elevation taken on the line 2—2 of Fig. 1.

Figure 3 is a perspective view of the pump.

In the drawings like characters represent corresponding parts in all the figures.

Referring to the drawings A indicates a cylindrical rotor having a plurality of equally spaced peripheral recesses 10, each designed to accommodate a roller 11 with freedom of movement inwardly and outwardly in substantially radial direction, the depth of the recess being slightly less than the diameter of the roller.

The rotor A is mounted on a shaft B journalled in bearings 12 and 13 of a casing C. The casing may be conveniently formed with side plates 14 and 15 and a centre section 16, all bolted together. It may also be formed with a supporting base 7.

The interior of the casing C is formed with a chamber 17 in which the rotor A extends. This chamber is elliptical in cross-section whereby pressure chambers 18 and 19 will be provided at

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the side of the rotor. Inlet ports 20 and 21 for the fluid are provided at the top and bottom of the casing opening into the chamber 17. Outlet ports 22 and 23 are provided in appropriate position adjacent to the inlet ports. The two inlet ports 20 and 21 are connected by a passage 24 while the outlet ports are connected by a passage 25, both passages being suitably formed in the casing. The inlet port 20 and the outlet port 22 are connected to outlet passages 26 and 27 respectively and open through short tubular members 28 and 29 on the exterior of the casing.

The bearing 12 is designed to receive the end of the shaft B and may be lined with suitable anti-friction material 30. The bearing 13 is provided with a cap nut 31 and a gland 32 of the form shown in Fig. 2, which may also be lined with anti-friction bearing material 33 of any suitable composition.

Any suitable number of rollers 11 may be provided in the pump. These rollers are formed of suitable resilient material such as a rubber composition, although for certain uses they may be made of plastic or metal. Where the rollers are made of hard material it will be found convenient to line the body of the pump and the recesses 10 with rubber.

It will be seen that as the rotor A is turned in the direction of the arrow in Fig. 1, each roller under the action of centrifugal force tends to roll around the inside face of the casing, thus creating suction on the inlet port 22 and forcing the liquid out through the exhaust port 23. The pump is double acting since the inlet port 20 and exhaust port 23 are connected to the similar ports 21 and 22, thus balancing the rotor and substantially causing the shaft to float. Where resilient rollers are employed they will have the advantage of not cutting or scoring the pump and the arrangement of the rollers on the periphery of the rotor will give an effective distribution of the impulses which will result in smooth operation of the pump. If it is desired to operate the device as a power generator, fluid under pressure may be introduced through the inlet ports 20 and 21, the pressure of which, acting on the rollers, will impart rotary movement to the rotor and shaft carried thereby.

The casing will be constructed of any suitable material such as metal or plastic or combined metal and plastic and may be arranged in any position, either vertical, horizontal or at an angle.

It will be observed that the pump will work equally well when driven in either direction.

The outside contour of the casing may be of any convenient form.

Various modifications may be made in this invention without departing from the spirit thereof or the scope of the claim, and therefore, the exact form shown is to be taken as illustrative only and not in a limiting sense, and it is desired that only such limitations shall be placed thereon as are disclosed in the prior art or are set forth in the accompanying claim.

What I claim as my invention is:

A rotary pump comprising in combination a cylindrical rotor having a plurality of peripheral recesses therein, a rubber composition roller in each recess with fluid freedom of movement inwardly and outwardly, the recesses in the periphery of the rotor being slightly less in depth than the diameter of the rollers, a shaft connected to the rotor, a casing having an elliptical inner wall enclosing the rotor spaced therefrom all the way around and defining therewith two pressure chambers, the walls of said chambers being engaged by the rollers under centrifugal force when the rotor is turned, said casing being formed with

an inlet port at the inlet end of each pressure chamber and an outlet port in the other end of each pressure chamber, the two inlet ports and two outlet ports being respectively connected by passageways in the casing.

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