

Dec. 9, 1947.

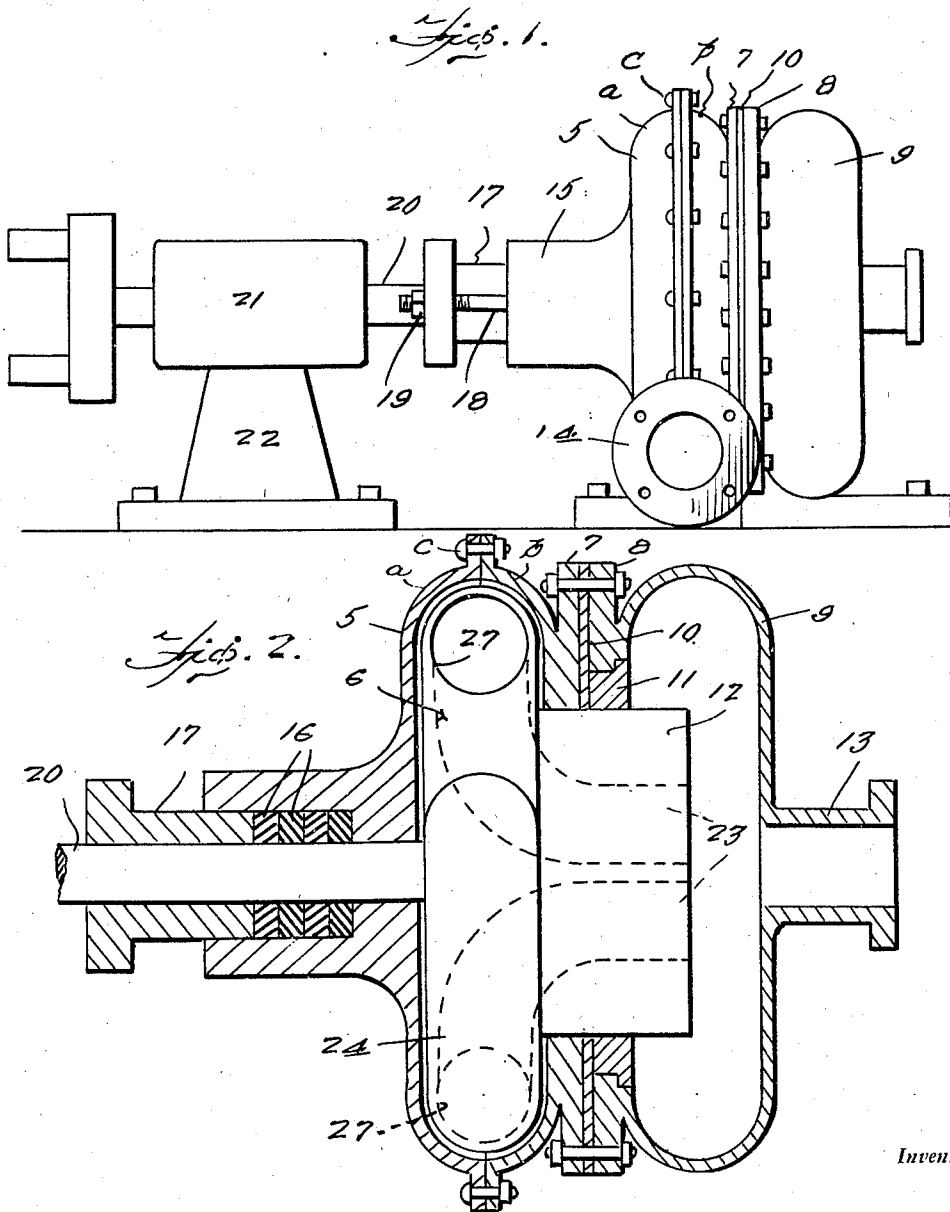
L. V. McANALLEN

2,432,247

PUMP

Filed Nov. 3, 1944

3 Sheets-Sheet 1



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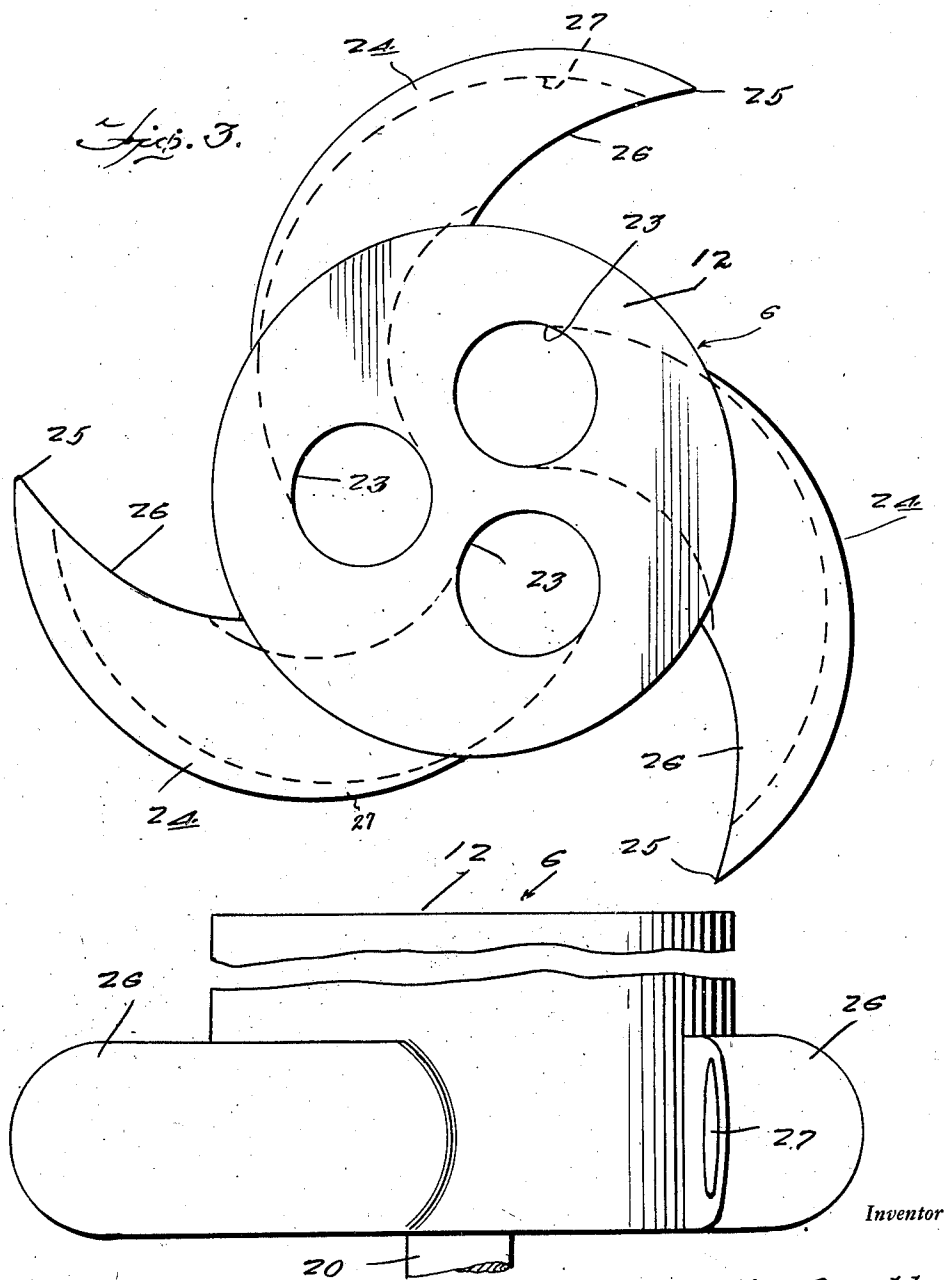
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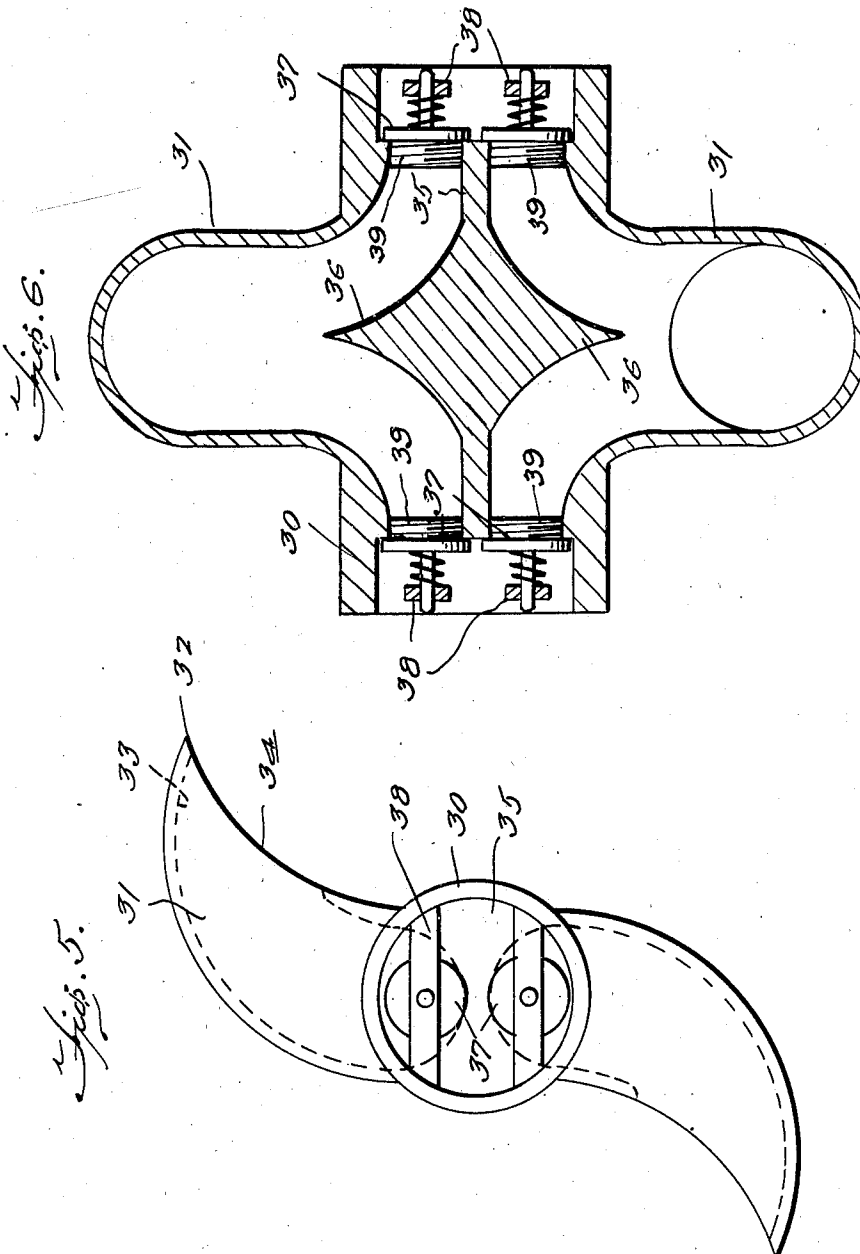
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UNITED STATES PATENT OFFICE

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4 Claims. (Cl. 103—95)

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This invention relates to new and useful improvements in pumps, the principal object of this invention being to provide a rotary pump, wherein the rotor acts in a scoop-like manner in delivering fluid rather than by the more or less centrifugal force now exerted in most types of present-day rotary pumps, to the end, that there is less exertion on the rotor and less power is necessary for its operation.

Other objects and advantages of the invention will become apparent to the reader of the following description.

In the drawings:

Figure 1 represents a side elevational view of the pump.

Figure 2 is a vertical section through the pump.

Figure 3 is an elevation of the rotor.

Figure 4 is a top plan view of the rotor.

Figure 5 is a front elevation of a modified form of rotor.

Figure 6 is a section through the rotor shown in Figure 5.

Referring to the drawings wherein like numerals designate like parts, it can be seen that numeral 5 denotes a case containing a rotor generally referred to by numeral 6 and which forms the important part of the present invention. It is preferable that the case be in two sections *a*, *b* bolted together as at *c*. The section *b* has a circumferential flange 7 which is bolted to a flange 8 on the open side of a bowl 9 with a suitable sealing gasket 10 interposed.

It is preferable that the bowl 9 at its open side be provided with a bearing ring 11 within which operates the hub formation 12 of the rotor 6.

The bowl 9 has an outlet neck 13, while the case 5 has an inlet neck 14 suitably secured thereto.

A packing gland is provided on one side of the case 5 and consists of the shell formation 15 containing packing material or elements 16 and a follower 17 operating against these elements 16 and adapted to be adjusted and held in place by stud bolts 18 extending through the outer flanged portion of the follower 17 and equipped with nuts 19. Extending from the rotor 6 is a drive shaft 20 journaled through a bearing 21 mounted on a suitable stand 22.

As shown in Figures 3 and 4, the rotor has a plurality of ducts 23 extending through its hub 12 and curving outwardly on arcs eccentric to the axis of the hub 12 are scoop-like blades 24, equal in number to the ducts 23. The number of blades used is, however, otherwise not limited so that any number may be used. Each of these

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blades 24 has a pointed extremity 25 and an arcuate-shaped lead side 26. Each blade 24 at its lead side 26 has a passageway 27 opening therethrough, these passageways 27 extending lengthwise through the blades and merging with the ducts 23.

It can now be seen, that when the rotor 6 is in operation, the points 25 of the blades 24 will be wiping the inside of the case 5 or in very close proximity thereto, cutting through the fluid delivered to the case by way of the inlet 14 and causing prompt displacement of this fluid through the passageways 27 and ducts 23 to the bowl 9 and from there out through the outlet 13.

A modification of the rotor is shown in Figures 5 and 6 wherein a hub structure 30 has two or more arcuate-shaped blades 31 projecting therefrom, each having a pointed outer end 32 and a passageway 33 therein opening through an arcuate lead face 34.

The hub 30 is hollow and has a partition 35 therein on opposite sides of which spreader formations 36 are provided for dividing the fluid being pumped toward opposite ends of the hub 30, where spring retained check valves 37 are arranged which may be seated at 38 by means of members screwed into the ducts.

The type of rotor shown in Figures 5 and 6 will be used in a slightly differently constructed housing. The housing wherein the rotor is used may be equipped with baffle plates.

While the foregoing specification sets forth the invention in specific terms, it is to be understood that numerous changes in the shape, size and materials may be resorted to without departing from the spirit and scope of the invention as claimed hereinafter.

Having described the invention, what is claimed as new is:

1. In a rotary pump, a rotating impeller including a hub member and a number of scoop-like impeller members projecting therefrom, each impeller member having a curved back portion and end face and each being provided with an inwardly directed channel section leading from the end face towards the hub member, a separate axial channel section for each impeller member provided in said hub member, each such section being in communication with and a continuation of the inwardly directed impeller member channel section, a casing closely surrounding the impeller member, a further casing adjacent thereto, the hub member of the impeller passing from the first-named casing into the adjacent casing, all the axial channel sections leading into

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said casing, an inlet pipe leading to the circumferential portion of the first-named casing and a central outlet opening leading from the second casing into which the hub member projects.

2. A rotary pump comprising two casings arranged axially adjacent to each other with their side walls forming a common partition wall, separating the same, a rotating impeller consisting of a hub member projecting into both casings passing through the above named common partition wall and sealed therein, said hub member portion projecting into and filling the center part of one of the casings and being provided with a number of outwardly projecting impeller members of crescent shape with curved back and end portions, each member being provided with a channel section leading from said end portion towards said hub member, the latter being provided with a number of axial channel sections each communicating with and a continuation of one of the aforesaid channel sections of the impelling member, the axial channel section leading to the casing adjacent to that housing the impeller, a circumferential inlet opening leading into the casing housing the impeller and a central discharge opening leading from the casing arranged adjacent to the former.

3. In a rotary pump a rotating impeller comprising a pair of scoop-like crescent shaped impeller members with curved back and end portions, a hub member connected therewith and

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arranged on both sides of said impeller member, a partition wall, within said impeller separating the two impeller members, each impeller member being provided with a channel with a radially directed section, dividing itself and communicating with two axially directed channel sections, and discharge channels provided with the hub member communicating with the two channels provided in both impeller members on the same side of the impeller.

4. A rotary pump of the type specified in claim 3, wherein spring pressed valves are arranged between each axially directed channel section of the impeller member and the discharge channels in the hub member.

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