

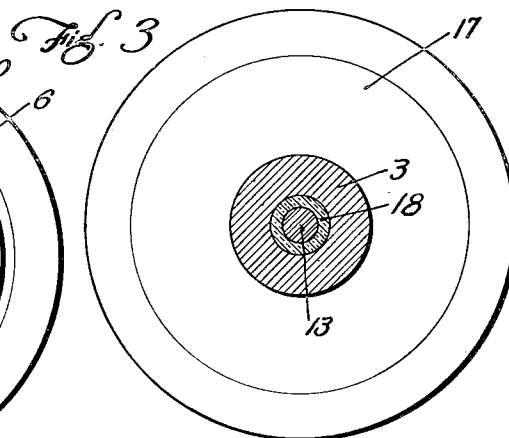
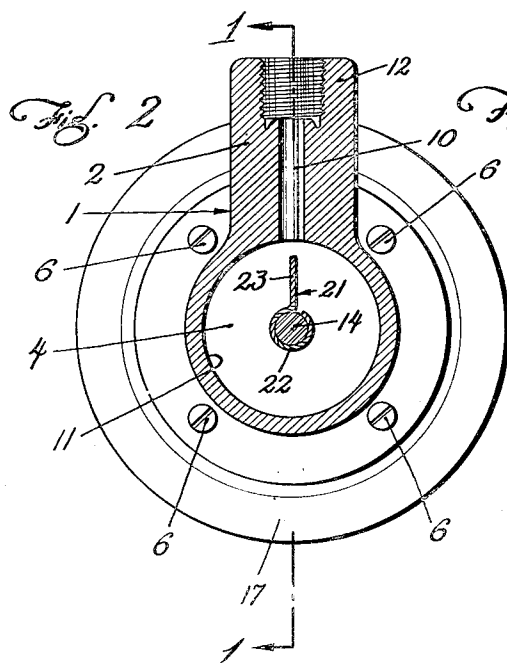
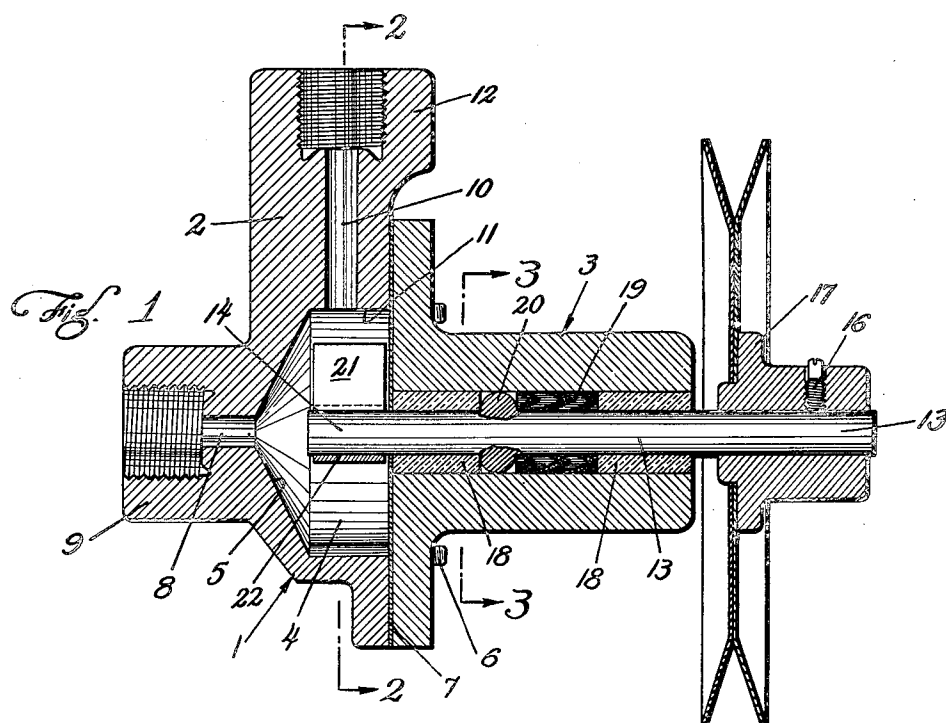
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C. E. CARLSON

2,477,043

PUMP ASSEMBLY

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UNITED STATES PATENT OFFICE

2,477,043

PUMP ASSEMBLY

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2 Claims. (Cl. 103—103)

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My invention relates to pumps and more specifically to small pumps of the rotary type, which are used for delivering fluid at a relatively low pressure.

A primary object of my invention is the provision of a pump which can be inexpensively constructed, quickly assembled and disassembled, which is relatively light in weight, and which is durable in use.

Another important object of my invention is the provision of a novel impeller element which may be inexpensively manufactured, and which may be readily secured to the impeller shaft and removed therefrom without any special tools.

The above and numerous other objects of my invention will become apparent from the following detailed specification, appended claims, and attached drawings.

Referring to the drawings, wherein like characters indicated like parts throughout the several views:

Fig. 1 is an axial section of the pump assembly taken substantially on the line 1—1 of Fig. 2;

Fig. 2 is a transverse section taken on the line 2—2 of Fig. 1; and

Fig. 3 is a transverse section taken on the line 3—3 of Fig. 1.

Referring with greater particularity to the drawings, the numeral 1 indicates in its entirety a housing comprising an end cap 2 and a bearing sleeve 3. The end cap 2 and the bearing sleeve 3 cooperate to form a cylindrical chamber 4 having a conical end wall 5. The bearing sleeve 3 is secured fast to the end cap 2 by means of machine screws or the like 6, and a gasket 7 may be interposed therebetween. An inlet passage 8 coaxial with the chamber 4 extends outwardly therefrom through a boss 9 on the end cap 2, which is internally threaded to receive pipe connections from a source of fluid supply (not shown). An outlet passage 10 extends radially outwardly from the side wall 11 of the cylindrical chamber 4 through a boss 12 in the end cap 2, which is internally threaded to receive pipe connections (not shown).

An impeller shaft element 13 is journaled in the bearing sleeve 3 and terminates at its inner end, identified by the numeral 14, within the cylindrical chamber 4. As shown, the impeller shaft element 13 is in axial alignment with the chamber 4 and inlet passage 8. Secured to the outer end of the impeller shaft element 13 by means of a set screw or the like 16, is a pulley element 17. Preferably, and as shown, I provide a pair of spaced bearing bushings 18, one on

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either end of the bearing sleeve 3, and therebetween suitable packing material 19, and a collar 20, the purpose of which is to prevent axial movement of the shaft element 13.

Secured to the inner end 14 of shaft element 13 within the chamber 4 is an impeller blade element 21, which is preferably formed from a rectangular strip of spring steel, bent at its inner end to form a circular loop 22 of somewhat less diameter than the inner end 14 of the shaft 13. The free end 23 of the rotor blade 21 projects radially outwardly therefrom within the chamber 4. The looped end 22 of the impeller element 21 forms a clip, and as it is forced over the end 14 of the shaft element 13, it adheres thereto by tight frictional engagement therewith. No other means of securing the impeller element 21 to the shaft end 14 is necessary, even though the impeller shaft 13 is frequently rotated in excess of 3000 revolutions per minute.

From the above it should be obvious that liquid entering the chamber 4 from the inlet passage 8 is forced outward through the discharge passage 10 by centrifugal force generated by the action of the rotating impeller blade 21.

While in the above specification I have described one embodiment which my invention may assume in practice, it will, of course, be understood that the same is capable of modification and that modification may be made without departing from the spirit and scope of the invention as expressed in the following claims.

What I claim is:

1. In a pump assembly, a housing, a cylindrical chamber within said housing, an inlet passage in said housing coaxial with said chamber, an outlet passage within said housing extending radially outwardly from said chamber, a bearing sleeve on said housing extending axially of said chamber, spaced bearings within said sleeve one adjacent each opposite end, packing material within said sleeve between said bearings, a positioning collar on said shaft between one of said bearings and said packing material, and a radially-disposed impeller blade on said shaft within said chamber.

2. In a pump assembly, a housing, a cylindrical chamber within said housing, an inlet passage in said housing coaxial with said chamber, an outlet passage in said housing extending radially outwardly from said chamber, a bearing sleeve on said housing extending axially of said chamber, a rotary impeller shaft in said sleeve coaxial of and terminating within said chamber, and a radially-disposed impeller blade of spring metal having an integrally-formed loop at its inner end,

said loop being mounted on the shaft within said chamber and having a normal internal diameter smaller than the diameter of the shaft portion engaged thereby, whereby the integral loop of said impeller will exert clamping pressure on said shaft sufficient to prevent slippage thereon under load.

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