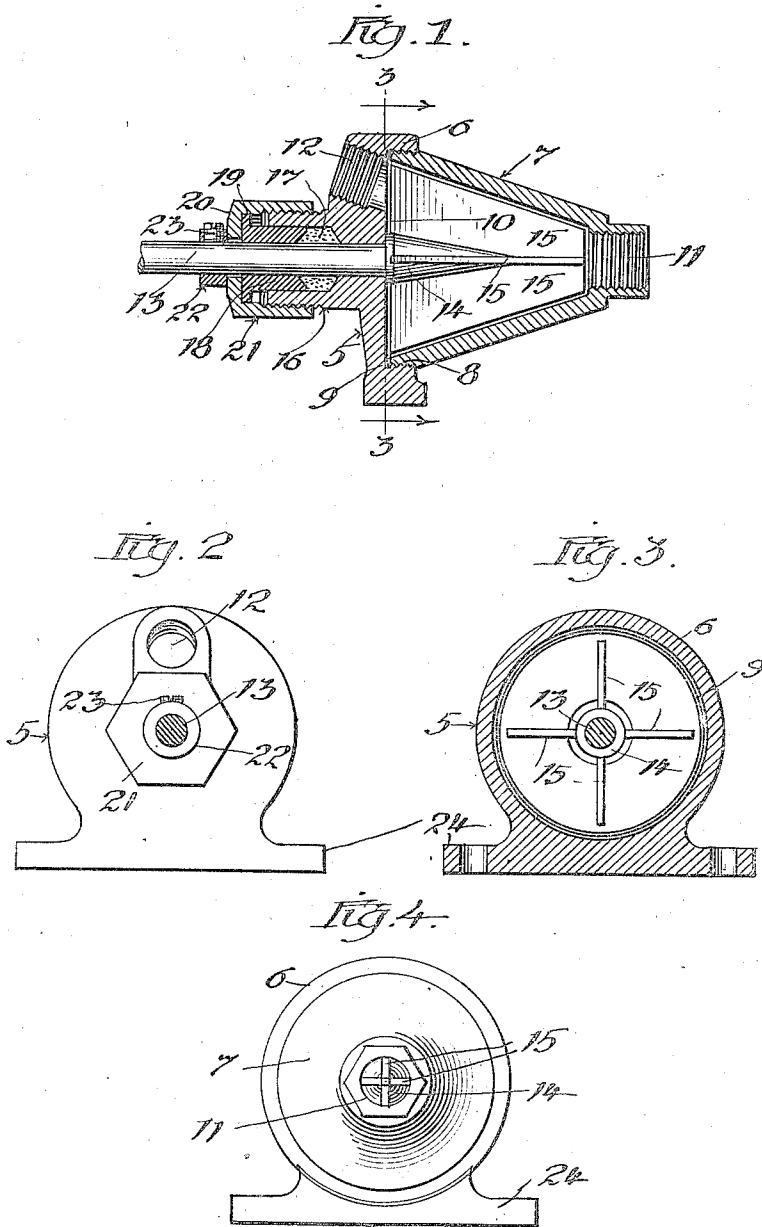


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 ROTARY PUMP.
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ROTARY PUMP.

1,242,859.

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To all whom it may concern:

Be it known that I, ALOIZY PLONSKI, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Rotary Pumps, of which the following is a specification.

This invention relates to a rotary pump particularly, although not necessarily, designed for light work, such as pumping water for fountains, etc.

The present pump is simple in the extreme, and is designed to embody the fewest possible parts, in consequence of which it can be manufactured at small expense. It also aims to provide a device which shall be durable and readily adjusted as required. These and other objects of my invention will more clearly hereinafter appear from the specification and claims, and from the several figures of the drawing, which show one exemplification of the invention, and in which:—

Figure 1 is a longitudinal section through the pump;

Fig. 2 is an elevation, looking toward the outlet end;

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

Fig. 4 is an elevation, looking toward the inlet end.

The parts of the present pump are few, as will be seen by reference to Fig. 1, in which is disclosed a frame 5 provided with a flange 6 having its inner sides screw-threaded. A cone-shaped casing or shell 7, having its large end 8 exteriorly threaded is arranged to engage with the flange of the frame as shown. A gasket 9 may be interposed between the end of the casing and the inner face 10 of the frame to limit the distance that the casing shall thread upon the flange, and to prevent leakage as well. When assembled in this manner, there is formed between the inner face 10 of the frame and the walls of the casing a cone chamber. At the apex of the casing is a hollow threaded nipple 11 which serves as an inlet for the pump, while an outlet opening 12 is provided through the frame at a point adjacent the casing walls, and preferably in alignment therewith.

The frame is arranged to provide a journal for a rotatable shaft 13 which extends axially into the chamber. For a portion of its length within the chamber, the

shaft is formed with a cone-shaped hub 14, the large end of which bears against the inner face 10 of the frame to prevent end-wise movement of the shaft in one direction. A plurality of blades 15, shown in the drawings as four in number, are radially mounted upon the shaft and hub within the chamber at distances of about 90 degrees apart. The blades are arranged to revolve in close proximity to the inner walls of the cone casing, as well as the inner face 10 of the frame, but the distance of separation between the blades and the casing may be varied according to the distance that the casing is screw-threaded on to the flange 6. Obviously the width of the particular gasket 9 that is used may be determined according to the longitudinal adjustment of the casing relative to the frame that is desired.

In the construction shown, the hub which extends for a portion only of the length of the shaft within the casing provides a mounting in which the blades are set. It will be noted that as the fluid travels axially from the inlet 11 toward the outlet 12, it constantly moves into positions of greater radius and increasing velocity and pressure, owing to the conical form of the casing 7, so that by the time the liquid reaches the discharge orifice 12, it occupies the position of greatest radius. Consequently the central portion of the pump at the discharge end, where the casing is of greatest diameter, is substantially unoccupied by liquid, the liquid remaining close to the outer periphery. It is because of this circumstance that the conical hub 14 can be positioned in this portion of the chamber, which is substantially unoccupied by liquid, without cutting into, or materially interfering with, the effective cross sectional area necessary for the proper movement of the fluid from the inlet to the outlet of the pump. The conical hub which has its greatest diameter adjacent the delivery end of the chamber is also enabled to afford the greatest lateral support to the blades at this point, and because the pressure against which the blades are working is greatest at this point, this lateral reinforcement is provided where it is most needed.

The bearing for the shaft 13 which is carried by the frame 5 comprises a sleeve 16 exteriorly threaded and interiorly recessed to receive a packing 17. A collar 18 mounted on the shaft is arranged to enter the re-

cess within the sleeve 16 to compress the packing, and is provided with an end flange 19 which is engaged by the end 20 of a hollow nut 21 threaded onto the sleeve 16. 5 From time to time as required, the nut 21 can be advanced to force the collar 18 against the packing to compress the same for the purpose of preventing leakage along the shaft. A locking sleeve 22 having a set-screw 23 is mounted on the shaft adjacent 10 to the nut 21, and from time to time can be adjusted as necessary to remain close against the end of the nut for the purpose of preventing the shaft from moving longitudinally. The longitudinal position of 15 the shaft relative to the frame is thus maintained constant by the sleeve 22 at one end and the cone hub 14 at the other end.

In service, suitable piping is connected 20 to the inlet and outlet ends of the pump. Also connection is made between the shaft 13 and a source of power for the purpose of causing the blades to be rotated within the cone casing. The direction of rotation 25 is immaterial with the present pump, as it operates with equal efficiency in either direction. As the water enters through the inlet 10, it comes in contact with the revolving blades 15 which throw it against the oblique 30 sides of the casing. Because of the cone-shape construction, the water is forced toward the large end of the casing whence it is discharged through the outlet under pressure. A base 24 is formed on the frame, as 35 shown, for purposes of securing the pump in place.

It will be noted that the parts of my invention are very few, and are so designed 40 as to provide an effective pump without any complication of elements. It is also designed for operation in either direction, so that it may be connected up directly to a motor or other source of power without regard to the rotary direction in which that 45 power is supplied. The adjustments necessary to tighten the packing can be made while the pump is in operation without any

danger, and with but slight effort. Also the head of water or other liquid discharged from the pump can be controlled to some 50 extent by varying the distance of separation between the blade edges and the inner walls of the casing which determines the loss or leakage at that point.

I claim:

1. In a rotary pump, the combination 55 with a frame provided with a screw-threaded flange, of a cone casing having its large end screw-threaded to connect with the flange whereby a cone-shaped chamber is 60 provided between the frame and casing walls, the length whereof is determined by the distance that the casing is screwed upon the flange, there being an outlet opening 65 through the frame wall adjacent the casing and an inlet opening through the casing at its apex, a shaft journaled in the frame and extended axially into the chamber, and a plurality of blades mounted on the shaft 70 interiorly of the chamber, the edges of the blades being in close proximity to the chamber walls, and having the distance of separation therebetween affected by the longitudinal position of the cone casing relative 75 to the frame, substantially as described.

2. In a rotary pump, the combination of 80 a frame, a cone casing secured at its large end to the frame, and providing between the frame and casing walls a cone-shaped chamber, there being an inlet and an outlet 85 opening formed respectively at the apex and frame ends of the chamber, a shaft journaled in the frame and extended axially into the chamber, a plurality of blades radially mounted on the shaft interiorly of 90 the chamber, the edges of the blades being in close proximity to the chamber walls, and means for adjusting in an axial direction the position of the casing relative to the frame, whereby the distance of separation between the blades and chamber walls may be varied, substantially as described.

ALOIZY PLONSKI.