A. A. EICH.

PUMPING MACHINERY.

APPLICATION FILED FEB. 25, 1921.

1,402,059.

Patented Jan. 3, 1922.

2 SHEETS—SHEET 1.

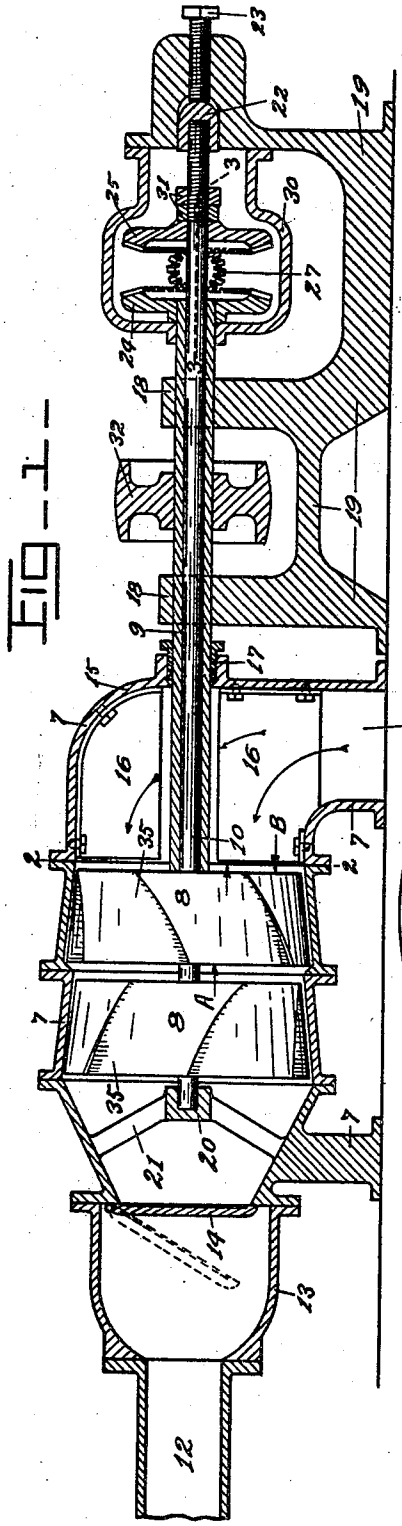


Fig. 1.

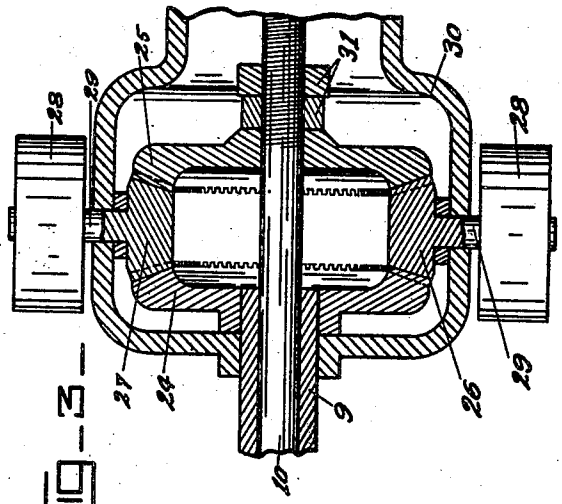


Fig. 3.

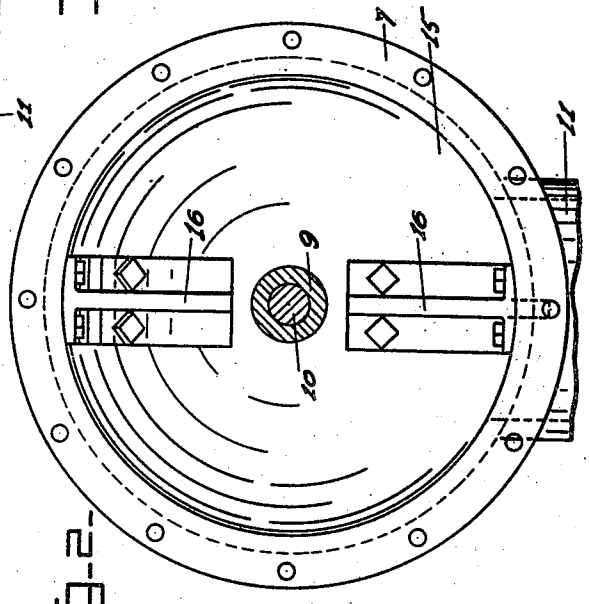


Fig. 2.

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2 SHEETS—SHEET 2.

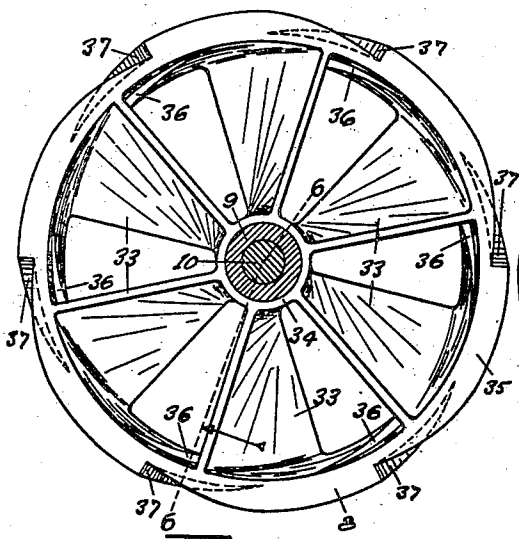


Fig. 4.

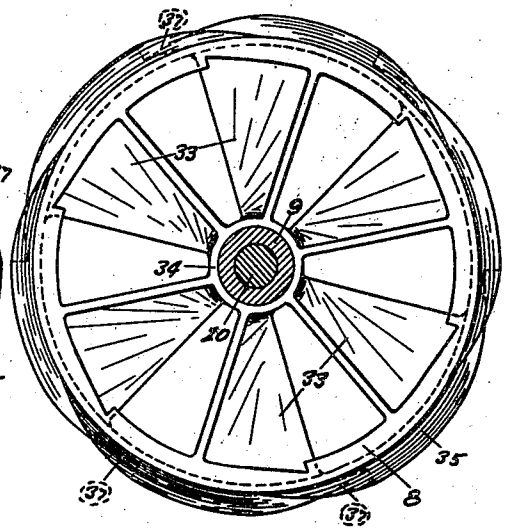


Fig. 5.

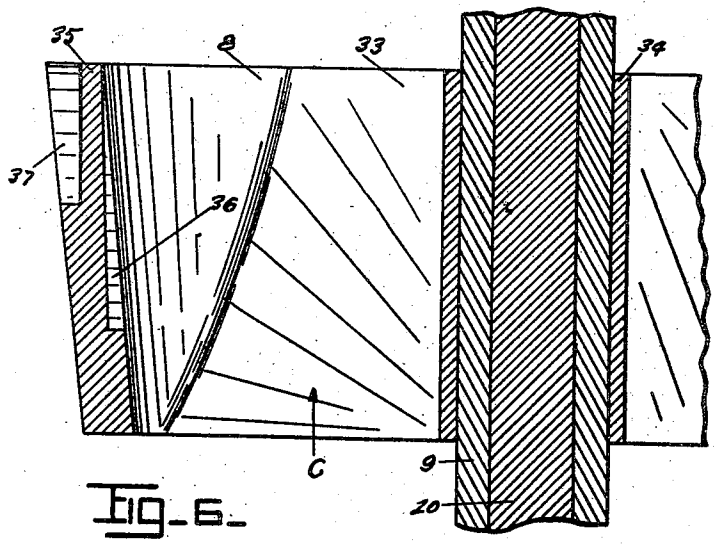


Fig. 6.

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UNITED STATES PATENT OFFICE.

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PUMPING MACHINERY.

1,402,059. Specification of Letters Patent. Patented Jan. 3, 1922.

Application filed February 25, 1921. Serial No. 447,847.

To all whom it may concern:

Be it known that I, ALBERT A. EICH, a citizen of the United States, residing at Richmond, in the County of Stearns and State of Minnesota, have invented certain new and useful Improvements in Pumping Machinery, of which the following is a specification.

This invention relates to pumping machinery and the object is to provide an efficient and practical machine for pumping water or other liquid, or which may, if so desired be used as a turbine. The invention consists in certain novel constructions and combination of parts as will be described and claimed hereinafter, and which are clearly illustrated in the accompanying drawings, in which;

Fig. 1 is substantially a sectional elevation of the machine.

Fig. 2 is an enlarged detail sectional view on the line 2—2 in Fig. 1.

Fig. 3 is an enlarged detail sectional view on the line 3—3 in Fig. 1.

Fig. 4 is an enlarged detail view of one of the propellers, looking in the direction of the arrow A in Fig. 1.

Fig. 5 is an enlarged detail view of one of the propellers, looking in the direction of the arrow B in Fig. 1.

Fig. 6 is an enlarged fragmentary section on the line 6—6 in Fig. 4.

Referring to the drawings by reference characters 7 designates a sectional casing in which are rotatably mounted two propellers 8, one of which is secured to the hollow shaft 9 and the other to the shaft 10 rotatable therein. These propellers rotate in opposite directions and it is their object to pump a liquid from the intake 11 to the outlet 12. Intermediate the propellers 8 and the outlet 12 is a valve dome 13 having a valve 14 adapted to prevent the return flow of liquid being pumped. A delivering chamber 15, intermediate the inlet 11 and the propellers 8 is provided with two vertical partitions or wings 16, which have for their object to prevent the rotation of the inflowing water previous to its contact with the propellers.

The shaft 9 rotates in a packing bearing 17 in the casing 7 and also rotates in bearings 18 in a frame 19. The shaft 10 while rotatably mounted in the shaft 9 has one end journaled in a bearing 20, in a web 21 of a section 7, and its other end secured in a cup 22. Said cup 22 is rotatable in the frame 19 and is adjustably held in proper position by a set screw 23.

On the shafts 9 and 10 are respectively secured bevel gears 24 and 25, both of which simultaneously engage two bevel pinions 26 and 27. Each of said pinions is provided with a pulley or fly wheel 28, and both have their shafts 29 journaled in a boxing 30 which encloses said gears. Two lock nuts 31 on the shaft 10 provide means for adjusting and locking the gear 25 in its proper position relative to the pinions 26, 27. A pulley 32 is secured to the shaft 9, between the bearings 18. Thus in transmitting power to or from the machine a belt may engage either the pulley 32 or one of the pulleys 28, depending on whether high or low speed or power is required.

The construction of the propellers 8, which are identical in form, is shown particularly in Figs. 4, 5 and 6, in the latter Fig. of which the direction of the water is indicated by the arrow C. The propeller wings 33 are made integral at their inner ends with a hub 34 and at their outer ends with rim or carrier 35. Said carrier is inclined or conical in shape so that its receiving opening is considerably smaller than its discharge opening, the object being to provide room for the water that is being driven therethrough, it being a well known fact that water expands or spreads out considerably when propelled by a fan. The carrier is further provided with curved notches in its inner and outer surfaces, which notches present driving surfaces 36 and 37, respectively, which have degrees of curvature substantially the same as those of the outer ends of the wings 33. It may further be observed that the surfaces 36 grow narrower and the surfaces 37 grow wider as they approach the discharge end of the carrier. Thus the surfaces 36 will aid the wings 33 in their function while the surfaces 37 will quickly discharge such water as may get in between the carriers and the casing 7.

It is understood that various suitable modifications may be made in the form and structure of this invention if such modifications come within the spirit and scope of the appended claims.

Having now therefore fully shown and described my invention what I claim to be new and desire to protect by Letters Patent is:

1. In a machine of the class described, a

propeller consisting of a hub, blades extending radially from the hub, and a rim having tapered inner and outer surfaces connecting the outer ends of said blades, said rim having grooves in its inner side intermediate said blades presenting tapered driving surfaces, substantially as described.

2. In a machine of the class described, a propeller consisting of a hub, blades extending radially from the hub, and a rim having tapered inner and outer surfaces connecting the outer ends of said blades, said rim having grooves in its outer side presenting tapered driving surfaces, substantially as described.

In testimony whereof I affix my signature.

ALBERT A. EICH.