

R. B. ACKERMAN.
PUMP.
APPLICATION FILED AUG. 30, 1910.

Patented Sept. 15, 1914.
2 SHEETS-SHEET 1.

1,110,522.

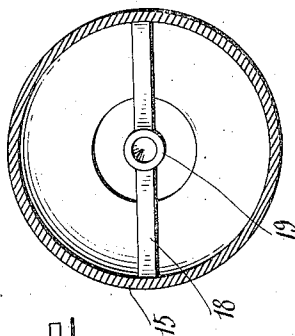


FIG. 2

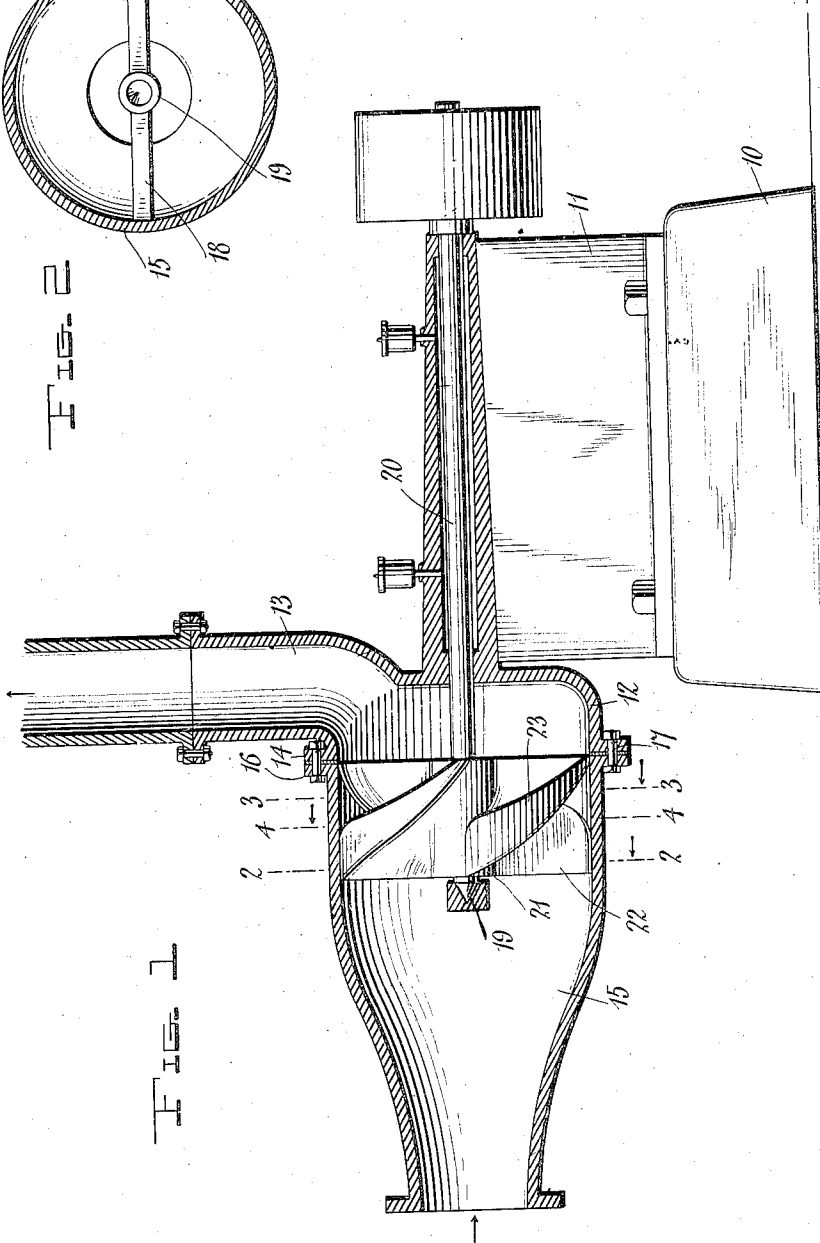


FIG. 1

Witnesses

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Fig. 5

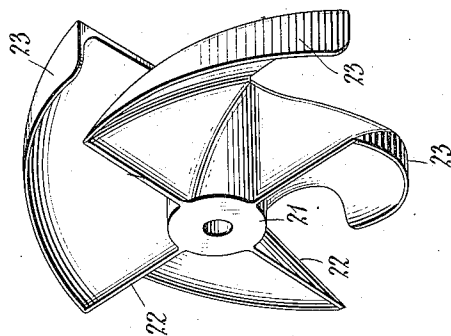


Fig. 4

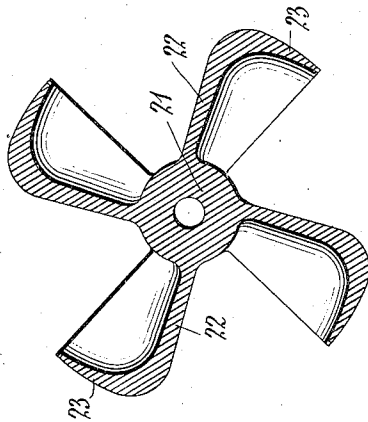
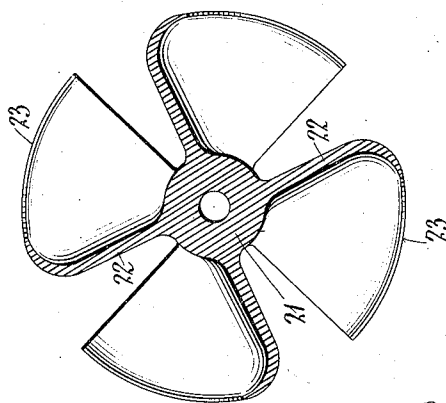


Fig. 3



Witnesses

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UNITED STATES PATENT OFFICE.

RALPH B. ACKERMAN, OF EL MORO, COLORADO.

PUMP.

1,110,522.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, RALPH B. ACKERMAN, a citizen of the United States, residing at El Moro, in the county of Las Animas, State of Colorado, have invented certain new and useful Improvements in Pumps; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to pumps and particularly that type which utilizes a rotating member for lifting fluid.

The object of the invention resides in the provision of a pump of the character named in which the rotating member, hereinafter called the rotor, is so constructed and arranged as to render the pump capable of lifting a given quantity of fluid with the expenditure of much less power than is ordinarily the case.

Another object of the invention resides in so constructing the rotor that churning of the fluid during the operation of the pump will be eliminated and as a result the efficiency of the pump as a whole enhanced.

With the above and other objects in view, the invention consists of the details of construction and in the arrangement and combination of parts to be hereinafter more fully set forth and particularly pointed out in the claims.

In describing the invention in detail reference will be had to the accompanying drawing wherein like characters of reference denote corresponding parts in the several views and in which:—

Figure 1 is a longitudinal section of a pump constructed in accordance with the invention; Fig. 2, a section on the line 2—2 of Fig. 1 with the rotor and its supporting shaft removed; Fig. 3, a section of the rotor on the line 3—3 of Fig. 1; Fig. 4, a section of the rotor on the line 4—4 of Fig. 1; and Fig. 5, a detail perspective view of the rotor.

Referring to the drawing, the pump is shown as comprising a base 10 having mounted thereon a shaft bearing 11. Formed integral with this bearing 11 is one end 12 of the pump casing; said end 12 of the casing being provided with a discharge outlet 13 and having a flange 14 for the purpose of effecting the coupling of the end 12 to the remainder of the casing. The other end

of the pump casing is formed of a hollow cast body 15, one end of which is provided with a flange 16 interlockingly connected with the flange 14 by means of bolts 17. The outer end of the casting 15 is open and constitutes the intake inlet of the pump.

Disposed transversely of the casting 15 near its inner end is a bridge 18 which carries at its central portion a cup bearing 19 for supporting one end of a shaft 20 journaled in the bearing 11. Mounted on the shaft 20 just inward of the bearing 19 is the rotor of the pump. This rotor comprises a hub 21 which has radiating therefrom a plurality of corresponding helicoidal blades 22. Each of the blades 22 has formed on its outer end a flange 23 which tapers from the intake end of the rotor toward the delivery end thereof. The shape and construction of this flange 23 is such as to form in the corresponding face of each blade a groove having a given depth at the intake end of the rotor and constantly diminishing in depth toward the delivery end.

The construction of the rotor just described is particularly designed to eliminate imparting centrifugal force to the fluid and as a result prevent the churning and waste of power so common in such devices.

What is claimed is:—

1. The combination with a cylinder, having a tapered end, flanges formed upon the opposite end of said cylinder, a bar extending transversely of the cylinder adjacent the major end thereof, a cap, a flange formed upon said cap, said flange being secured to the flange formed upon the major end of said cylinder, a plate closing one end of said cap, a sleeve extending radially from said cap in spaced relation from the open end thereof, a sleeve extending axially from said cap, said sleeve being provided with a bore having contracted ends producing an interior passage, a shaft journaled in said sleeve and engaging the contracted ends of the bore thereof and extending in spaced relation to the walls of said passage, means for rotating said shaft, and a rotor keyed to said shaft within the cylinder, said rotor consisting of a hub, a series of helical blades carried by said hub and each provided with a terminal flange tapering in height and thickness from the entrant edge rearward whereby to provide a fluid channel of gradually increasing capacity, said shaft engaging the transverse bar located within the cyl-

inder substantially as and for the purposes set forth.

2. An impeller for pumps consisting of a rotor having a hub, a series of helical blades
5 carried by said hub, each of said blades being provided with a terminal flange tapering in height and thickness from the entrant edge rearward whereby to provide a

fluid channel of gradually increasing capacity.

In testimony whereof, I affix my signature, in presence of two witnesses.

RALPH B. ACKERMAN.

Witnesses:

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