

(No Model.)

E. J. VERRUE.
ROTARY PUMP.

No. 577,936.

Patented Mar. 2, 1897.

Fig. 1.

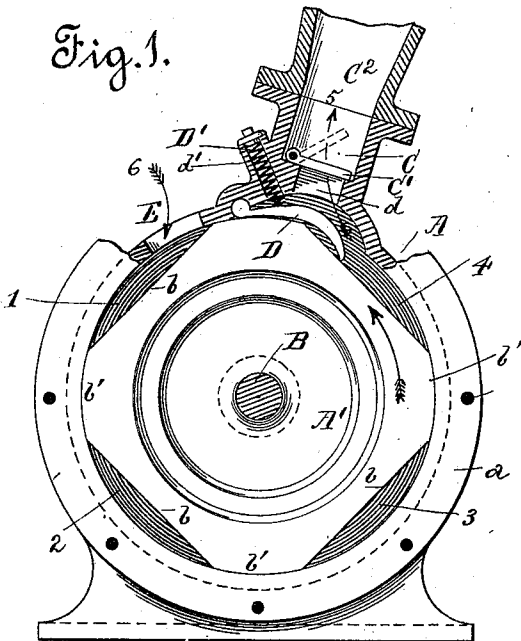


Fig. 2.

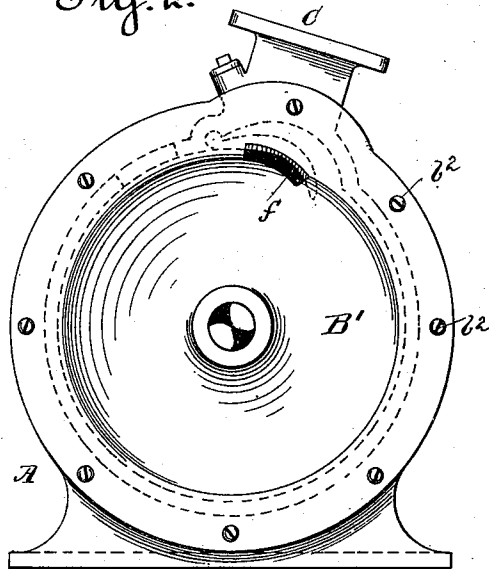


Fig. 3.

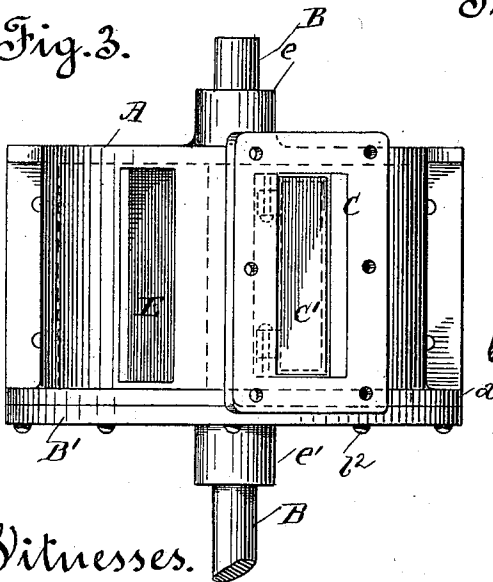
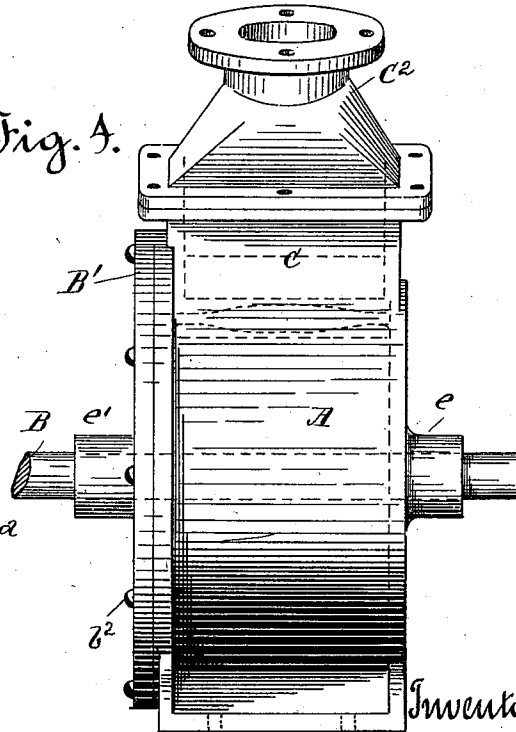


Fig. 4.



Witnesses.

J. Houteverde.

M. G. Loefer.

Inventor

E. J. Verrue

by N. A. Ackerman
Att'y.

UNITED STATES PATENT OFFICE.

ERNEST J. VERRUE, OF SAN FRANCISCO, CALIFORNIA.

ROTARY PUMP.

SPECIFICATION forming part of Letters Patent No. 577,936, dated March 2, 1897.

Application filed June 16, 1896. Serial No. 595,801. (No model.)

To all whom it may concern:

Be it known that I, ERNEST J. VERRUE, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented certain new and useful Improvements in Rotary Pumps; and I do hereby declare that the following is a full, clear, and exact description thereof.

This invention relates to a certain new and useful rotary pump for raising or elevating water from within a river or stream to any given height; and it consists in the arrangement of parts and details of construction, as will be hereinafter fully set forth in the drawings and described and pointed out in the specification.

In order to fully comprehend the invention, reference must be had to the accompanying sheet of drawings, forming a part of this application, wherein—

Figure 1 is a front view in elevation of the pump with its cover removed, the casing being partly broken away. Fig. 2 is a similar view with the cover secured to the casing. Fig. 3 is a top plan view of the pump, and Fig. 4 is an end view in elevation of the pump.

In the drawings the letter A is used to indicate the stationary cylinder or casing of the pump, which cylinder or casing is cast with the circular flange *a*. Within the said cylinder or casing is placed a revolving drum A', which drum is secured upon the shaft B. The drum A' is cut away, so as to present four flattened or straight faces *b*, the corners *b'* being rounding and bearing against the inner face of the cylinder or casing A, so as to form, when the drum is in place, distinct water-chambers 1, 2, 3, and 4, Fig. 1. The stationary cylinder or casing is closed by the cover B', which is secured by bolts *b*² to the flange of the said cylinder or casing.

From the top of the cylinder or casing extends the valve-chamber C, within which is hinged the clapper-valve C', which valve opens to permit of outflow of water from the cylinder or casing through the exit-port *d*, cut in the top thereof, into the valve-chamber C and closes the moment the water has been forced through the port *d* in order that it may not flow back into the cylinder or casing. To the valve-chamber C is connected the lower end of the stand-pipe C², which pipe

may extend any desired height, and into or through which water is forced to any given point.

The metal bordering the lower edge of the exit-port *d* is cut away considerably in order to give a free passage for the water forced through the said port and prevent its becoming choked or gorged at the entrance of the outlet-port. At a point a short distance beyond the outlet-port is hinged to the inner face of the cylinder or casing the curved clapper-valve D, which valve, as raised and lowered, closes and opens the outlet-port *d*. This valve is normally held down by the pressure of the spring D', which fits within a chamber *d'* in the top of the casing and bears down upon the upper face of the valve D, Fig. 1.

Through the top of the cylinder or casing A, immediately back of the hinged clapper-valve D, is formed the inlet-port E, through which the water enters into the cylinder or casing, Fig. 1.

The shaft B extends through the back and cover of the casing or cylinder, working in bearings *e e'* of the casing A and cover B'. This shaft is driven by any suitable power in order to drive or rotate the drum A' within the cylinder or casing.

When in use, the casing A is submerged within the water to be elevated or raised. As the drum is driven or rotated by the movement of the drive-shaft the water enters into one of the water-chambers, say 1, through the inlet-port E and is carried around within the cylinder or casing until the outlet-port is reached, when the water is forced therethrough into the valve-chamber C, the pressure of the water raising the clapper-valve C'. The moment the water has been forced from within the water-chamber the forward end of the clapper-valve D is engaged by one of the rounding corners *b'* of the revolving drum and is raised so as to close the outlet-port *d*, in which position it is held until the corner of the said drum is carried beyond the valve, when the valve is quickly forced downward by the pressure of the spring D'. While the exit-port is held closed by the valve D, the upward pressure upon the clapper-valve C' is removed, and the said valve falls by gravity and closes the exit-port against the water flowing back into the casing or cylinder. As one of the

water-chambers is filled with water and is carried past the inlet-port by the rotation of the drum A' a second water-chamber is formed thereunder to receive the water. It will be
5 noticed by reference to Fig. 1 that as one water-chamber is emptied another is being filled.

Arrow 5 denotes the outflowing water, and arrow 6 denotes the inflowing water.

10 I have ascertained by practical working of a rotary pump built in accordance with the foregoing description that a vacuum is formed between the under face of the clapper-valve and the emptied chamber of the pump. In
15 such case it is necessary in order to raise the clapper-valve and operate the pump that sufficient power be applied not only to rotate the drum A' and lift the column of water within the valve-chamber, but to overcome the
20 vacuum between the clapper-valve and the chamber. In order to successfully operate the pump with the minimum power, it is required that the formation of this vacuum be prevented, and in order to overcome the for-
25 mation of a vacuum between the clapper-valve D and the chamber emptied there is cut through the cover B' at a point immediately below the line of the said valve a water-open-

ing f, Fig. 2. Through this opening water enters and prevents the formation of a vacuum. 30

Having thus described my invention, what I claim as new, and desire to secure protection in by Letters Patent, is—

In a rotary pump, the combination with the outer casing, of a revolving drum having a
35 series of straight faces separated from each other by rounding corners located within the casing, a drive-shaft for the drum, an outlet-port in the casing, a valve-chamber with
40 which the outlet-port communicates, a valve located within the valve-chamber, an inlet-port in the casing, a valve hinged to the inner face of the casing, a spring for maintain-
45 ing said valve downward, the cover secured to the casing, and of a water-opening formed in said cover through which water is admitted to prevent the formation of a vacuum within the casing.

In testimony whereof I affix my signature, in presence of two witnesses, this 29th day of
50 May, 1896.

ERNEST J. VERRUE.

Witnesses:

N. A. ACKER,
RAYMOND HOLMES.