E. CHAQUETTE.
Centrifugal-Pump.

No. 216,603. Patented June 17, 1879.

Fig. 1.

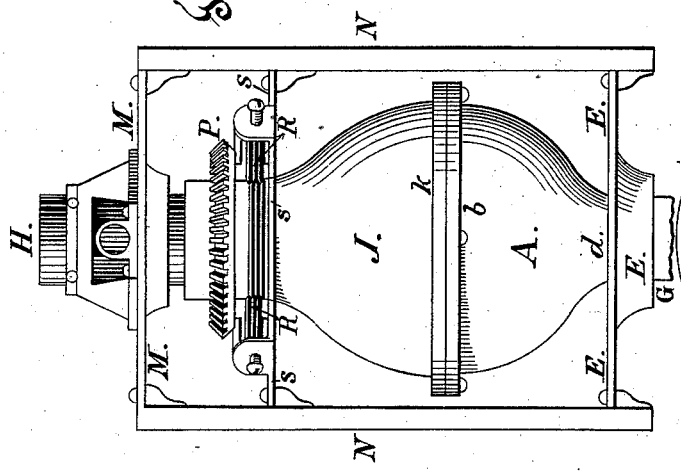


Fig. 3.

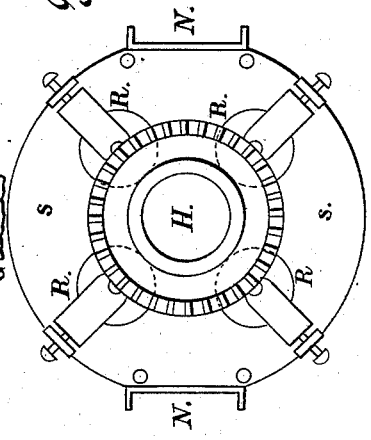


Fig. 2.

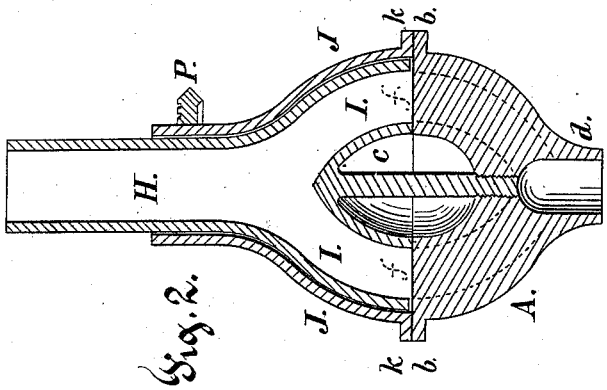
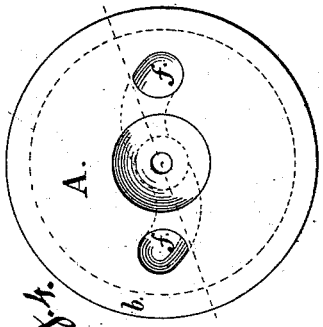


Fig. 4.



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UNITED STATES PATENT OFFICE

EPHRAIEM CHAQUETTE, OF SAN FRANCISCO, CALIFORNIA.

IMPROVEMENT IN CENTRIFUGAL PUMPS.

Specification forming part of Letters Patent No. **216,603**, dated June 17, 1879; application filed May 17, 1879.

To all whom it may concern:

Be it known that I, EPHRAIEM CHAQUETTE, of the city and county of San Francisco, and State of California, have invented an Improved Centrifugal Pump; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings.

My invention has reference to an improved centrifugal pump for raising water mixed with solid matter, and forcing it upward or to a distance through a pipe or pipes.

My improved pump is so constructed that it can be interposed in the length of a vertical pipe or tube, and is made without valves or other obstruction to the free passage of the water and material through it, so that it is especially adapted for dredging purposes, all as hereinafter more fully described.

Referring to the accompanying drawings, Figure 1 is an elevation, and Fig. 2 is a vertical section, of my improved centrifugal pump. Fig. 3 is a plan of the stationary plate *s*, which supports the friction-rollers and driving-gear; and Fig. 4 is a plan view of the block which forms the lower part of my pump.

Let A represent a semi-globular block, which forms the lower part of my pump. The top of the block is flat, with a rim or flange, *b*, projecting all around it, and a cone, *c*, projects upward from its center. The bottom of the block has a short tubular extension, *d*, extending downward from it, and the lower end of the tube steps in a cross-plate, E, of the frame that connects the upper and lower parts of the pump. One or more spiral passages, *f*, are made through the block A, so as to connect the passage in the tubular extension with the upper surface of the block. These passages radiate outward in their passage through the block, and their upper ends terminate just outside of the base of the cone in the flat upper surface.

The suction-pipe G connects with the lower end of the tubular extension *d*, and is fixed to the under side of the cross-plate E, above referred to.

H is the pipe through which the material is forced upward by the pump. This pipe has a large bell-shaped lower end, I, and the lower edge or mouth of this bell rests upon the flat upper surface of the block A outside of the passages *f*, while the cone C extends up into its interior and fills its central portion, leaving a chamber all around it. This pipe H and its bell-shaped lower end are stationary.

Outside of the bell I, and fitting close to it, is another bell-shaped or hemispherical shell, J, the lower edge of which has a projecting rim or flange, *k*, corresponding with the rim or flange *b* on the lower block, A. This outside shell rests upon the outer edge of the flat surface of the lower block outside of the bell I, and its projecting rim or flange *k* is bolted to the rim or flange *b* of the lower block. Suitable packing can be inserted between the flanges before bolting them together in order to make a perfectly water-tight joint.

The upper end of the outside shell, J, is formed into a short tubular extension, which extends upward outside of the pipe H, and this extension is supported by the upper cross-plate, M, of the pump-frame.

N N are the upright side pieces of the pump-frame, to which the ends of the cross-bars E M are secured. These side pieces I shall usually groove on their outer sides, so that they can move on vertical ways for adjusting the pump up or down.

The pump can be driven either by gearing or by belts. In the present instance I have shown a bevel-wheel, P, on the upper end of the shell J. This will be driven by a corresponding bevel-wheel (not shown) when the pump is driven by gearing.

As before stated, the tube H and its bell-mouth I are stationary, while the outside shell, J, and lower block, A, are rotated at a high rate of speed. This causes the radial passages *f* in the block A to act as centrifugal conductors and force the material which is raised through the suction-pipe into the chamber surrounding the cone *c*, whence the pressure of the constantly-accumulating material forces it up through the discharge-tube H.

In order to steady the rotation of the outside shell, I arrange a number of horizontal friction-rollers, R R, on a stationary plate, S, at intervals around the extension of the shell J, and below the bevel-wheel P. The edges of these rollers are grooved, and the tube is also grooved to correspond, so that the edges

of the rollers engage with the grooves in the tube. Such roller is mounted in a slide, so that it can be adjusted to or from the tube, as desired.

It will be noticed that the arrangement of this pump is such that the material is kept moving in a direct line upward without changing its direction from the time it enters the suction-pipe until it enters the upper discharge-pipe. The large amount of surface between the bell I and outside shell, J, makes a practical water-tight joint, through which the water cannot pass, while the stationary inside bell forms an inclosed stationary chamber to receive the material and direct it upward through the tube H.

This pump has no valves or other obstruction to interfere with the free movement of the material through its passages; hence water laden with earth, sand, gravel, and even stones small enough to move through the passages can be raised through it.

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

1. A centrifugal pump consisting of the stationary bell I, with its vertical-tube conductor H, in combination with the outside rotary shell, J, with its attached block A, said block having the radial passages *f* and cone *c*, constructed and arranged substantially as above described.

2. The combination of an inclosed stationary chamber, I, which is connected with a vertical discharge-tube, H, with an outside rotating shell or case, J, and its attached semi-globular-block A, with its tubular extension *d* and radial passages *f f*, said tubular extension connecting with a stationary suction-pipe, G, the whole combined and arranged to operate substantially as and for the purpose described.

In witness whereof I have hereunto set my hand and seal.

EPHRAIEM CHAQUETTE. [L. S.]

Witnesses:
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W. F. CLARK.