C. CHADWICK.
Centrifugal Pump.

No. 204,535. **Patented June 4, 1878.**

FIG. 1.

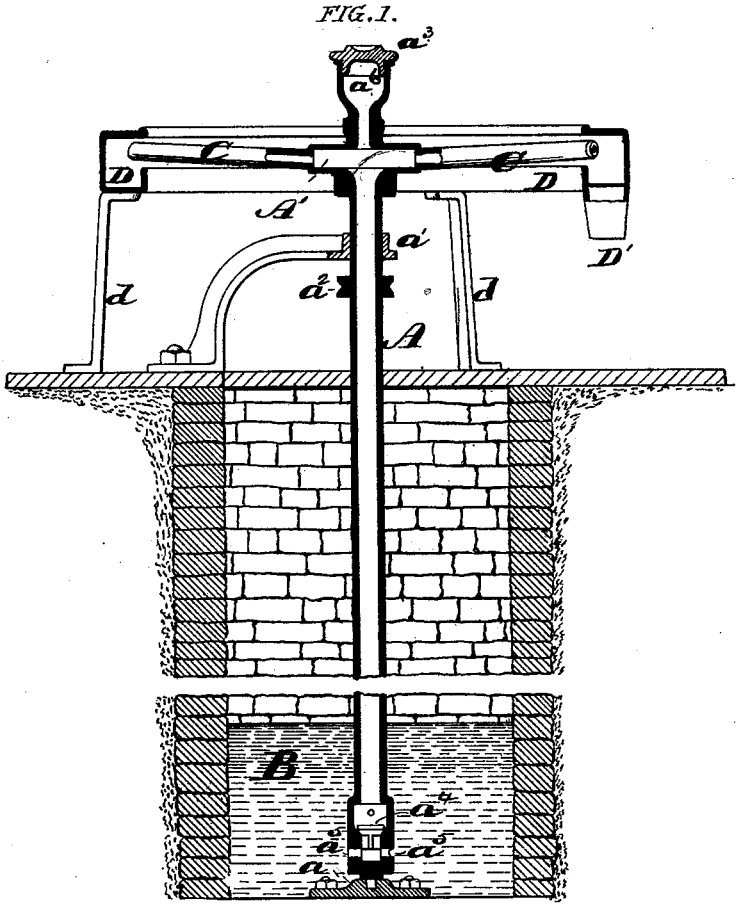
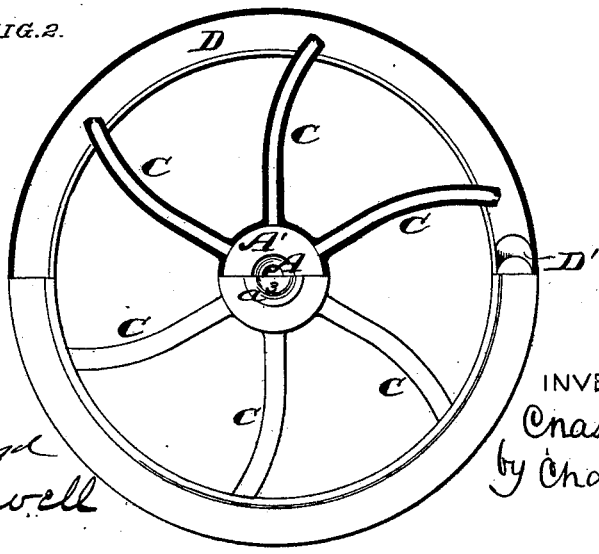


FIG. 2.



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UNITED STATES PATENT OFFICE.

CHARLES CHADWICK, OF HANNIBAL, MISSOURI, ASSIGNOR OF TWO-THIRDS HIS RIGHT TO PETER B. GROAT, OF SAME PLACE, AND JOHN B. SCHOTT, OF QUINCY, ILLINOIS.

IMPROVEMENT IN CENTRIFUGAL PUMPS.

Specification forming part of Letters Patent No. **204,535**, dated June 4, 1878; application filed February 5, 1878.

To all whom it may concern:

Be it known that I, CHARLES CHADWICK, a resident of Hannibal, Missouri, have made a new and useful Improvement in Pumps, of which the following is a full, clear, and exact description, reference being had to the annexed drawing, making part of this specification, in which—

Figure 1 is a central vertical section; and Fig. 2, a plan, partly in horizontal section.

Similar letters refer to similar parts.

The present is an improvement in centrifugal pumps. It is very simple in its construction and operation, and very efficient as a means for elevating fluids.

In the annexed drawing, A represents a hollow stock or tube arranged vertically in the well or reservoir B, containing the fluid to be elevated, and extending upward therefrom to any height not exceeding that of a column of the fluid that is sustainable by atmospheric pressure.

C represents hollow arms connected with the interior of the tube A, and radiating from the upper end thereof, and at right angles, or thereabout, with the tube. They are preferably curved, as shown, and are of any suitable length. Their aggregate areas, in cross-section, are equal, or thereabout, to that of the tube A. The apertures at the extremities of the arms, however, are contracted, so as to be much smaller in cross-section than the remaining portions of the arms, as shown in Fig. 2.

The tube and arms constitute the pump, which is arranged to rotate horizontally. For this purpose the lower end of the tube is held in a step, a, in the reservoir, B, and the upper end is held in a bearing, a^1. The motion may be imparted to the pump in any suitable manner, as by a belt passing around the pulley a^2, which is attached to the tube.

The invention is operated as follows: The pump is primed by introducing the fluid into the tube A through an opening, a^6, in the top thereof, and which, when the pump is in motion, is closed by the cap a^3. A foot-valve, a^4, opening upward, serves to hold the fluid in the tube. The extreme upper end of the tube is made to extend above the apertures in the ends of the arms C, and the latter are, preferably, made to incline slightly upward, so as to bring their ends above the level at which the arms are attached to the tube. This enables the entire pump to be readily primed. The rotary motion being imparted to the pump, the fluid is, by centrifugal force, thrown from the arms C, creating a vacuum within the pump, and causing the fluid to flow from the reservoir B, through the apertures a^5, up into the tube and arms.

Now, by reason of the apertures at the ends of the arms being contracted, as described, the air is prevented from entering the arms, and the fluid is thrown out therefrom very rapidly. The fluid is caught in a chamber, D, that is arranged without the arms, and it preferably is of the annular form shown.

If desired, the chamber may be extended inwardly, so as to entirely inclose the arms. The fluid can be conducted from this chamber in any desired direction, as through the discharge-pipe D′. The chamber may be supported in any suitable manner, as by the supports d d. In place of inserting the arms C directly in the tube A, I preferably enlarge the tube at A′, forming a chamber with which the arms are directly connected.

I claim—

1. The combination of the tube A and the arms C, the latter being contracted at their outer ends, as and for the purpose described.

2. The combination of the tube A, having the aperture a^6 at its upper end, the removable cap a^3, the foot-valve a^4, and the arms C, substantially as described.

3. The tube A, enlarged at A′, in combination with the arms C, substantially as described.

4. The combination of the tube A, having the apertures a^5 and a^6, the foot-valve a^4, cap a^3, chamber A′, arms C, and chamber D, substantially as described.

CHARLES CHADWICK.

Witnesses:
CHAS. D. MOODY,
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