F. D. TUTTLE.

Pump.

No. 217,175. Patented July 1, 1879.

FIG. 5.

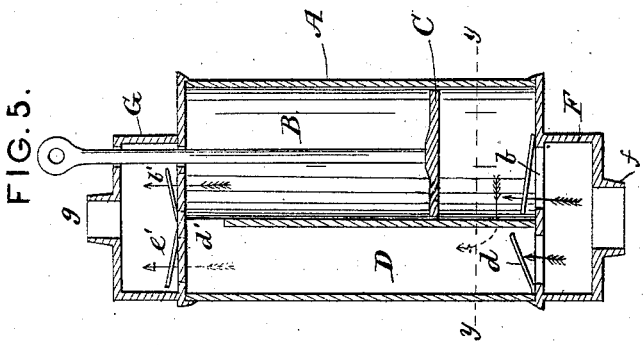


FIG. 6.

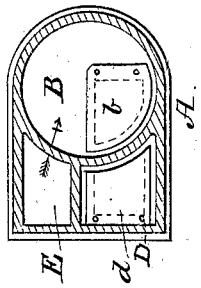


FIG. 3.

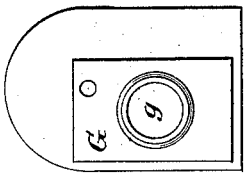


FIG. 4.

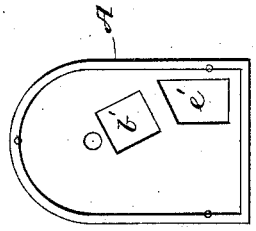


FIG. 1.

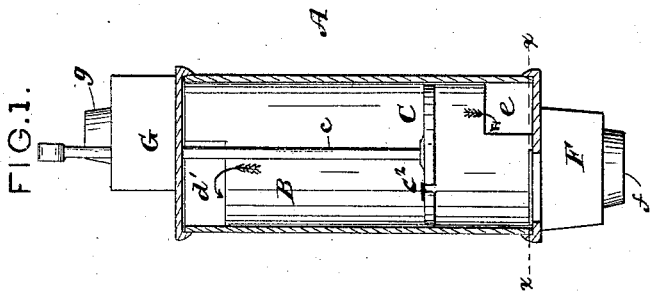
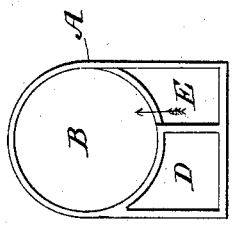


FIG. 2.



WITNESSES

Saml R. Turner

J. H. Stockman

INVENTOR

Fred'k D. Tuttle.

by L. Deane.

ATTORNEY

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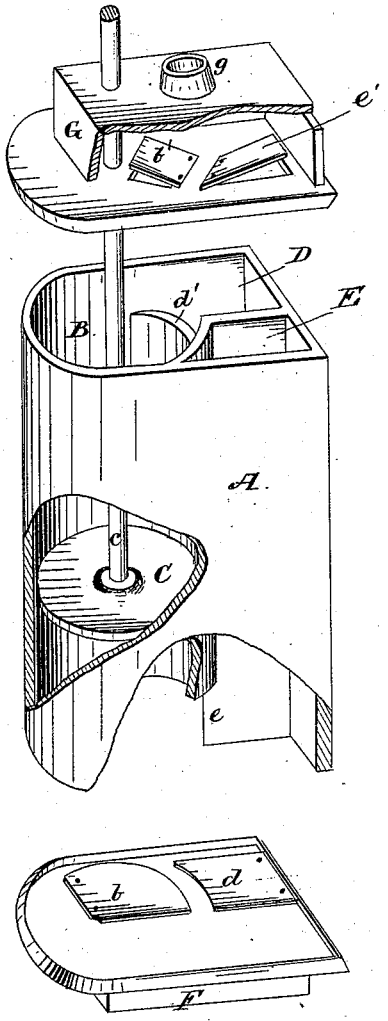

FIG. 7.

WITNESSES

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UNITED STATES PATENT OFFICE.

FREDERICK D. TUTTLE, OF OWATONNA, MINNESOTA.

IMPROVEMENT IN PUMPS.

Specification forming part of Letters Patent No. **217,175**, dated July 1, 1879; application filed March 24, 1879.

To all whom it may concern:

Be it known that I, FREDERICK D. TUTTLE, of Owatonna, in the county of Steele and State of Minnesota, have invented certain new and useful Improvements in Pumps, of which the following is a specification.

Figure 1 is a vertical central section, showing the operative parts of the pump and the induction and eduction pipe connection. Fig. 2 is a plan view on line *x x* of Fig. 1. Fig. 3 is a top plan of the device. Fig. 4 is a plan view of under side of the valve-plate. Fig. 5 is a vertical central section of the device and at right angles to view in Fig. 1. Fig. 6 is a horizontal plan view on line *x x* of Fig. 5. Fig. 7 is a perspective, showing more plainly the internal construction of the device.

The present invention belongs to that class of pumps which act both by force and suction, and can more distinctively be called a "double-acting and force and suction pump;" and the novelty consists more particularly in the special detail of arrangement and construction of the parts, whereby an effective and very useful device is produced, all as will now be more in detail set out and explained.

In the accompanying drawings, A denotes that part of the pump which is usually known as the "cylinder," and this may be made in any usual or desired shape. The plunger C works in the circular chamber B, which extends the length of the cylinder or part A. Adjoining the chamber B, and also extending parallel with it for the length of A, are two chambers or spaces, D and E, of irregular shape in horizontal plan.

The partition between the cylinder B and the chamber E is cut away at its lower end, so as to leave an open free water space or way, *e*, between the lower end of the cylinder B and the chamber E, and a similar opening, *d'*, is made in the partition between the cylinder B and chamber D at their upper ends, so that there is a free passage for water between the cylinder B and chamber E at their lower ends, and an opposite free passage of water between the cylinder B and chamber D at their upper ends.

The piston C has a small opening, c^2, made through it, over which a clapper-valve is placed, opening upward. The opening c^2 is made much smaller than the openings *e d'*, and by its employment less power is required in operating the piston in its downstroke.

At the lower end of the cylinder A is an induct-chamber, F, which connects with the chambers B and D, respectively, by means of apertures *b* and *d*, each of which is suitably provided with a clapper or other valve. At the under side of this induct-chamber F is an opening, *f*, provided with a collar, for the attachment thereto of a pipe of iron, wood, or any suitable material to extend into or reach the water in the well. Likewise on the other end, in top of the cylinder A, is an eduction-chamber, G, which, in like manner, has valved connections *b'* and *e'* with the chambers B and E.

To the collar on the opening *g* a suitable eduction-pipe can be secured. Gas-pipe can be used for this purpose. The plunger-rod *c* is operated by any suitable means.

The device as thus made can be set in the bottom of the well, or half-way out of it, or even on the top, when the well is not too deep, and can in either situation be worked easily and effectively.

In the downward movement of the piston C the valve over the opening *b* will be closed, and the greater part of the water in the cylinder will be forced through the opening *e* up through the chamber E, and from thence through the opening *e'* out of the pump. The perforation or opening c^2 in the piston will be opened, and a portion of the water in the cylinder will pass above the piston C; but as the difference of area between the opening in the piston and the opening *e* is large, the greater part of the water in the cylinder will be forced into the chamber E.

In the upstroke of the piston the opening in the latter will be closed by its valve, and the water above the piston will be lifted and ejected through the opening *d'* into the chamber D, and thence into the eduction-chamber, and suction below the piston will occur, thereby rendering the pump a double-acting, forcing, lifting, and suction pump.

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

In a pump, the cylinder B and chambers E D, connected directly therewith by the passages $e\ d'$ on opposite ends of the cylinder, and oblique to each other, in combination with the induction-chamber F, having opening $d\ b$, governed by valves, eduction-chamber G, having openings $e'\ b'$, governed by valves, and perforated piston C, having valve c^2, whereby less power is required to operate the piston on its downward stroke, substantially as described, and for the purpose set forth.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

FRED. D. TUTTLE.

Witnesses:
J. M. MATHEWS,
LEONARD CASHMON.