

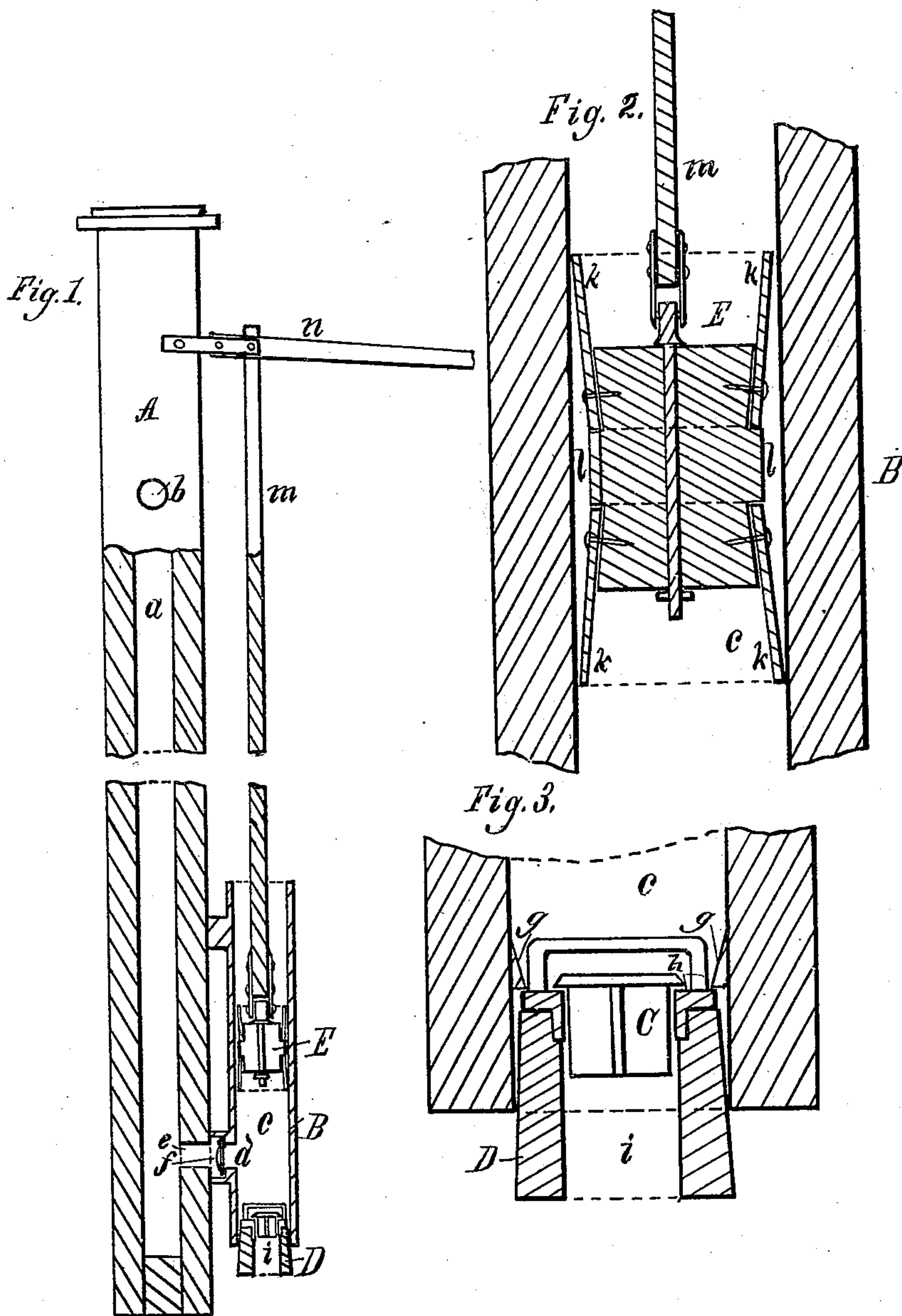
(No Model.)

A. J. HULL.

PUMP.

No. 250,817.

Patented Dec. 13, 1881.



Witnesses:

Cyrus Kehr.

F. L. Small.

Inventor:

Aaron J. Hull.

By Manahan & Ward  
His Atty

# UNITED STATES PATENT OFFICE.

AARON J. HULL, OF STERLING, ILLINOIS.

## PUMP.

SPECIFICATION forming part of Letters Patent No. 250,817, dated December 13, 1881.

Application filed September 24, 1881. (No model.)

*To all whom it may concern:*

Be it known that I, AARON J. HULL, a citizen of the United States, residing at Sterling, in the county of Whiteside and State of Illinois, 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, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

My invention pertains to that class of pumps which have the double function of lifting and forcing, and refers more particularly to certain improvements in the bucket or piston and in the provision for the ingress of the water.

In the drawings, Figure 1 is the sectional side elevation of a pump embodying my invention. Fig. 2 is a detached vertical sectional view of the bucket in position. Fig. 3 is a like view of the lower valve and its adjunctive parts.

A is an ordinary pump-stock, having the longitudinal cylindrical chamber *a* and discharge-spout *b*.

B is a short cylinder, having the chamber *c*, and attached in any suitable manner to the side of the stock A at such altitude as that the lower end of the cylinder B is submerged in the water. The operation of the pump is equally complete if the entire cylinder B be submerged; but it is sufficient if the water-line be any place above the lower end thereof.

Communication from the chamber *c* of the cylinder B to the chamber *a* of the stock A is had through the lateral orifice *d* of the former and the like opening *e* of the latter.

On the outer end of the orifice *d* is seated the valve *f*, opening toward the stock A, and which permits the passage of the water from the cylinder B to the stock A, but prevents its return. Near the bottom and around the inner circumference of the cylinder B, I form the annular ledge *g*, having a square face on its lower side, against which abuts the upper end of the valve-seat *h*.

C is a valve seated on the valve-seat *h* and opening upward into the chamber *c*. 50

D is a short plug fitted into the lower end of the chamber *c* and provided with the vertical chamber *i*, which communicates through the valve C with the chamber *c* of the cylinder B. The purpose of the plug D is to secure the valve C in place and at the same time to permit the passage of the water. 55

E is a valveless bucket or piston playing in the chamber *a*, and provided at each end with the flexible wings *k k*, made of leather or other suitable material, and having its circumference between its two ends reduced so as to form the annular chamber *l*. The bucket E is operated in the usual way by means of the piston-rod *m* and lever *n*, the latter being fulcrumed, as shown, to the pump-stock A. 60 65

The purpose and advantage of having the double wings *k k* is that such wings act alternately to exclude the air—the upper wing when the bucket E is lifted and the lower wing when such bucket is forced down. When the bucket E is raised the upper valve *k* adjusts itself against the walls of the chamber *c*, excludes the superincumbent air, and the water is drawn into the chamber *c*. As the bucket E is forced downward the lower wing *k* adjusts itself against the walls of the chamber *c* and forces the water through the openings *d* and *e* into the chamber *a*, from whence the water is ultimately discharged through the spout *b*, thus furnishing in one piston-head a lifting and forcing apparatus. 70 75 80

The purpose in providing the chamber *l* is to furnish an apartment which is filled with water, thus assisting to exclude the air from the surface of the water beneath. 85

The advantage of locating the lower valve below the normal water-line is that it absolutely precludes any leakage, and there thus being no valve in the pump which when the pump is at rest is relied upon to hold the water above its normal surface, or which it is important should do so, no material deterioration of the pump can result from periods of inaction. 90 95

The cylinder B with its appendages can be



duplicated and one placed on each side of the stock A, and, the action of one alternating the other, a continuous stream can be thrown.

What I claim as new, and desire to secure by  
5 Letters Patent of the United States, is—

In a pump, the combination of the cylinder B, provided with the ledge *g*, the bucket E, having concave sides and alternately-operating adjustable wings *k k*, the valve C, plug D,

piston-rod *m*, lever *n*, and pump-stock A, all so arranged substantially as shown, and for the purpose specified.

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

AARON J. HULL.

Witnesses:

C. L. SHELDON,  
W. STAGER.