J. A. WHITMAN.

Pump.

No. 199,131. Patented Jan. 8, 1878.

Fig. 1.

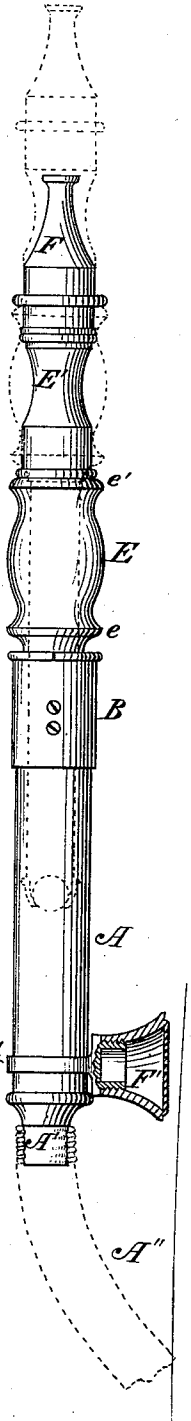


Fig. 6.

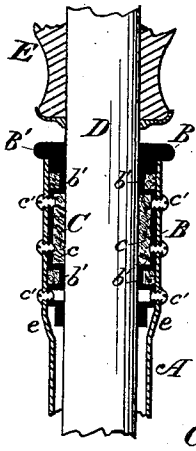


Fig. 3.

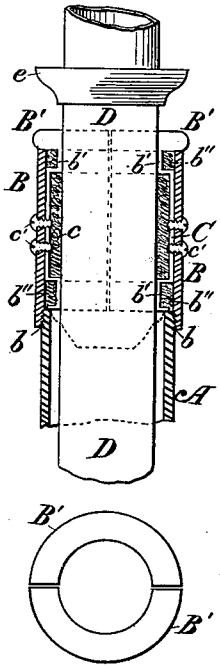


Fig. 4.

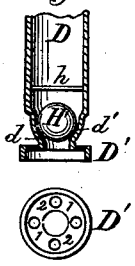


Fig. 5.

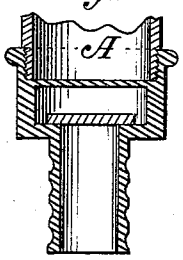
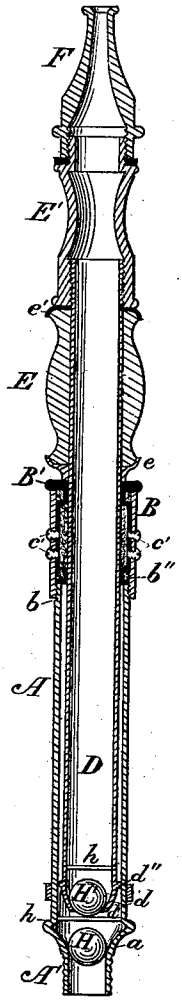


Fig. 2.





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UNITED STATES PATENT OFFICE.

JOSIAH A. WHITMAN, OF PROVIDENCE, RHODE ISLAND.

IMPROVEMENT IN PUMPS.

Specification forming part of Letters Patent No. **199,131**, dated January 8, 1878; application filed December 5, 1877.

To all whom it may concern:

Be it known that I, JOSIAH A. WHITMAN, of the city and county of Providence, in the State of Rhode Island, have made certain Improvements in Hand or Portable Pumps, especially adapted to improve the pump in Patent No. 107,633, and dated September 20, 1870, of which the following is a specification:

The object of this invention is to cheapen as well as to improve the construction and operation of the pump; and it consists in the improved construction of the parts forming the pump, as will be fully hereinafter described.

In the drawings, Figure 1 represents a side view of the pump; Fig. 2, a longitudinal section of same; Fig. 3, detail of some of the parts. Fig. 4 shows a different formation of the guide at the valve-seat end of hollow plunger. Fig. 5 shows an old method of attaching the induction-pipe, and Fig. 6 a modification of Fig. 3.

A represents the barrel or cylinder of the pump, which is made from an ordinary wrought brass or metal tube of the requisite diameter for the purpose, and may be formed to have the contracted end A′ corrugated or indented, in order to have the flexible induction-pipe A″ secured thereto in the ordinary way, and at the same time the internal valve-seat *a* is also formed in the same piece of wrought-metal tubing, thus making the barrel, the valve-seat, and contracted end to receive the flexible induction-pipe from a single piece of such tubing, which is all accomplished by proper dies and formers to produce the required shape.

B is a band of larger diameter than the barrel A, and is attached to the upper end of the barrel by screw-connection, as seen at *b* in Figs. 2 and 3, and forms a protection to the stuffing-box and packing, to form an air-tight joint upon the piston or plunger rod; or the barrel A may be a little longer, and enlarged by stretching it to the proper shape and size to inclose the stuffing-box, as seen at *e* in Fig. 6, by which construction the screw-thread connection, as seen at *b* in Figs. 2 and 3, is entirely avoided, and the expense of such screw-joint saved.

B′ is the packing-box, made in two half-circles to surround the piston or plunger rod when in position, and allow a free reciprocation to the plunger-rod, and has two grooves, *b′*, on its outer diameter, and near the ends, in which packing *b″* is secured, while in the inner diameter of the stuffing-box is chamber C, having therein packing *c*, to pack against and around the plunger-rod. This packing-box is secured in position by holding-screws *c′ c′*, that pass through band B and into the two half-circles that form the packing-box.

D is a hollow piston or plunger rod, formed from a single piece of wrought tubing of metal, and struck up into shape by the same method as the cylinder or barrel, and has its lower end *d* contracted to form the valve-seat *d′*, while there is an exterior projecting flange, *d″*, formed to be about the diameter of the inside of the barrel A, and to act as a guide to the lower end of the plunger in operating the pump; or the lower end of the hollow plunger D may be formed up from a single piece of wrought-metal tubing, to be as seen in Fig. 4, where the valve-seat is the same as seen in Fig. 2; but the guide or flange in Fig. 4 is formed at the extreme lower end of the plunger, as seen at D′, with water-holes 2 through the web 1, that connects the guide D′ with the contracted end *d* of the hollow plunger-rod D. This guide or flange D′ is formed up, in the shape seen in Fig. 4, from the same piece of tubing as the plunger-rod, and the holes 2 admit water to lubricate the plunger-rod in its bearings in the barrel A, both at the guide and at the stuffing-box.

A pump-barrel or hollow plunger-rod formed from a single piece of wrought-metal tubing into the shape to make the valve-seat, the contracted end to attach the suction-pipe to, or the valve-seat and guide to the plunger-rod, in a single piece without joints, is an essential improvement over the ordinary way of casting the valve-seats, and attaching them either to the barrel or plunger by screw-thread connection, as the weight is much less, and the work and cost of construction less, and the fibrous condition of the metal will make it more durable in resisting wear.

E is a tubular handle, surrounding the hol-

low plunger D, and is held in place by collar *e*, that is fast upon the plunger below the handle, and collar *e'*, that is loose upon the plunger above the handle, while intermediate tube E', screwed upon the upper end of the plunger, and down upon collar *e'*, holds the handle securely upon the plunger.

F is the ordinary nozzle, that is screwed to the upper end of the intermediate tube E'; or rose F' may be substituted for and screwed upon the tube E' in place of nozzle F, and when either the nozzle or rose is not in use it is secured upon the screw-ring G, as seen in Fig. 1.

H and H' are hollow metal ball-valves, made spherical from thin sheet metal by striking them up from a rectangular blank sheet by dies and formers. Valve H is in the valve-seat in the barrel or cylinder, and valve H' is in the hollow plunger-rod; and in each case a keeper-pin, *h*, is placed at the proper distance above them to keep them from ascending too high above their seats.

The hollow ball-valves made from sheet metal are very superior to solid balls, because they are lighter and will act much quicker, and wear the valve-seats and themselves less in consequence of the less weight, and because of the fibrous condition of the metal of which they are formed.

The construction of the pump, as above described, from thin metal pipes, and the barrel and plunger each being formed of a single piece of tubing, make the pump much lighter, less joints, and more sure to have everything perfectly air and water tight where joints have heretofore been made by the use of two or more pieces or parts to form such barrels and plungers, and especially is this the case with the connection to which the suction-pipe at the lower end of the pump-barrel is secured, as that had to be cast with corrugations thereon, by which the pipe was secured to it, and a screw-thread cut in the upper end to screw upon the lower end of the barrel, with a chamber for a valve, as seen in Fig. 5.

The pump is operated by taking hold of the handle E and reciprocating it, as is usual in such pumps.

What I claim as my improvement is—

1. The barrel or cylinder A of a pump formed, with the valve-seat *a* and suction-pipe connection A', from a single piece of wrought-metal tubing, substantially as and for the purposes described.

2. The hollow plunger-rod D of a pump, formed with the contracted lower end for a valve-seat, *d'*, and a flange projection, *d''* or D', to act as a guide in its reciprocation, formed from a single piece of wrought-metal tubing, substantially as and for the purposes described.

3. The stuffing-box B', made in two half-circles, and provided with external grooves *b'*, for packing, between it and ring-band or enlargement B, and interior chamber C, to contain packing *c*, between the stuffing-box and plunger, substantially as and for the purposes described.

4. The combination of a hollow sheet-metal ball-valve, H or H', with a reciprocating hollow pump-plunger, D, constructed substantially as and for the purposes described.

5. A hollow-ball pump-valve, H or H', constructed, as shown and described, from thin sheet metal, for the purpose set forth.

6. The entire barrel or cylinder A of a pump, having the contracted part A', for the induction-pipe, formed from a single piece of wrought-metal tubing, as and for the purposes substantially as described.

7. The hollow plunger-rod D and valve-seat *d'* therein, formed from a single piece of wrought-metal tubing, substantially as and for the purposes described.

JOSIAH A. WHITMAN.

Witnesses:
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JOHN J. BUCKLEY.