(No Model.)

W. ALLDERDICE & R. D. WILLIAMS.

PUMP.

No. 254,584. Patented Mar. 7, 1882.

Fig. 1

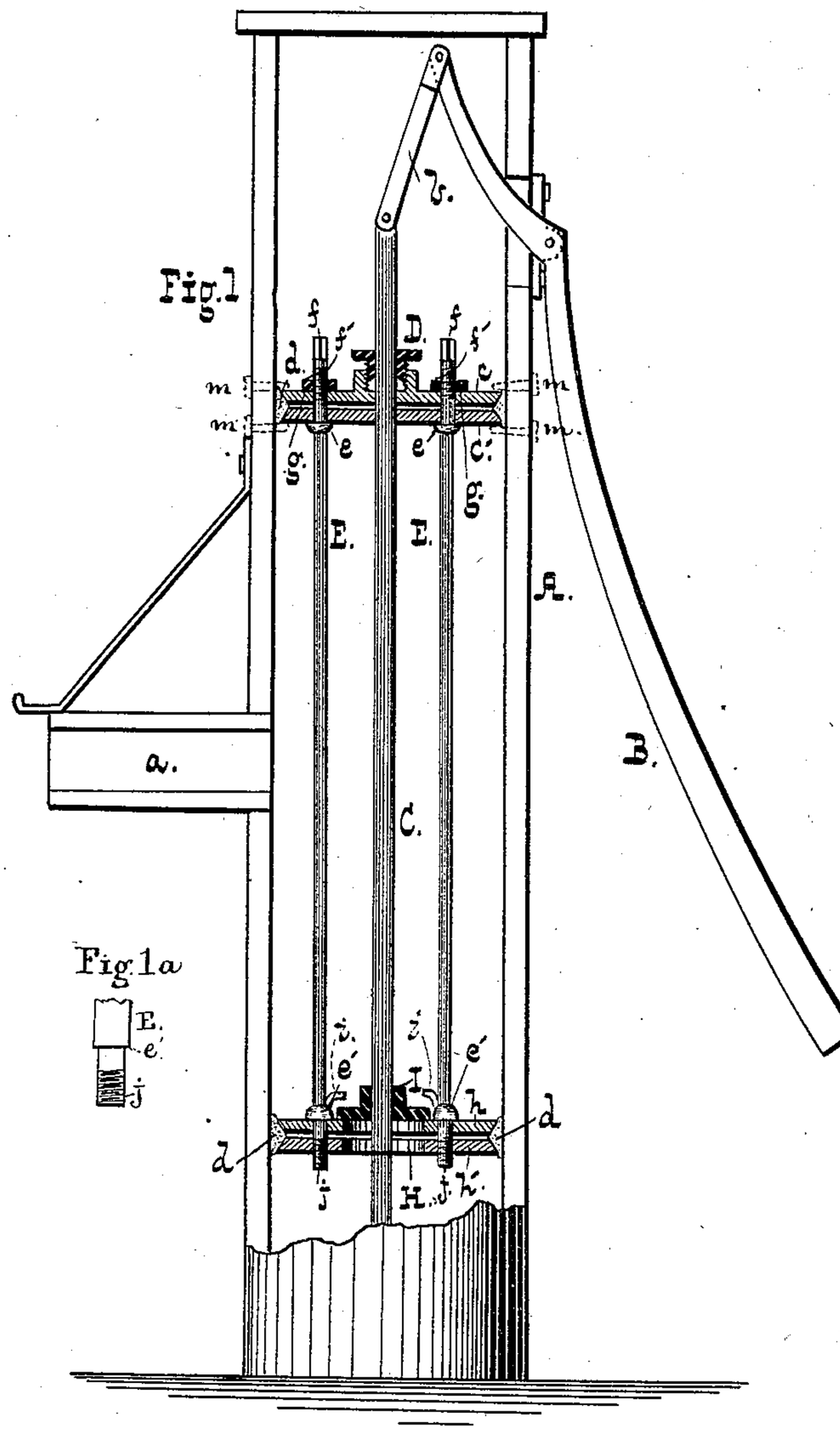
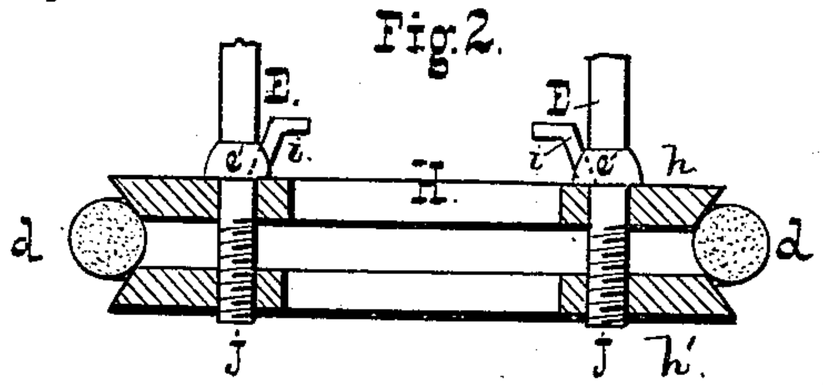


Fig. 1a

Fig. 2.



WITNESSES.

W. A. Bertram.

James Marriott

INVENTORS.

Winslow Allderdice.

R. D. Williams.

UNITED STATES PATENT OFFICE.

WINSLOW ALLDERDICE AND RICHARD D. WILLIAMS, OF BALTIMORE, MD.

PUMP.

SPECIFICATION forming part of Letters Patent No. 254,584, dated March 7, 1882.

Application filed January 16, 1882. (No model.)

To all whom it may concern:

Be it known that we, WINSLOW ALLDERDICE and RICHARD D. WILLIAMS, both of Baltimore city, State of Maryland, have invented certain new and useful Improvements in Pumps; and we hereby declare the same to be fully, clearly, and exactly described as follows, reference being had to the accompanying drawings, in which—

Figure 1 is a central vertical sectional view of a pump embodying our invention. Fig. 2 is a similar view, on an enlarged scale, of a part of the same; and Fig. 1ª is an enlarged view, showing in elevation a detail of construction.

Our invention relates to sucking and forcing or lifting and forcing pumps; and it has for its object to provide a simple attachment to be used in connection with any ordinary and well-known sucking and lifting pump—such as the common wooden "cucumber"—whereby, without impairing its use in its original capacity, it can be readily and cheaply converted into a forcing-pump adapted to deliver water at heights and distances limited only by the strength of the parts.

A cheap and simple forcing-pump has long been a desideratum, especially on farms or in villages, where the well is at some distance from the house, not only to avoid the inconvenience and trouble of carrying the water from the well or pump in buckets, but also to provide a supply of water under head for purposes of irrigation or for use in case of fire.

The difference in cost between the simplest and cheapest form of forcing-pump heretofore made and the wooden cucumber has led to the almost universal use of the latter; and the object of our invention is to supply a device whereby the common wooden pump already in use may be converted into a thoroughly efficient forcing-pump at a trifling cost. The change is, moreover, a simple one of addition, no alteration being made in the pump itself, considered simply as a sucking and lifting pump. This result we attain by providing a pair of partitions adapted to be secured in the barrel of the pump, one above and the other below the spout. These partitions are made to fit the barrel closely, whereby leakage of air past the upper and water past the lower one is substantially prevented, and the space between the spout and the upper partition constitutes an air-chamber, serving to provide a constant flow. Should a constant flow of water not be desired, the upper partition may of course be located at the level of the spout.

In the drawings, A is a pump of the usual or well-known form, having a spout, *a*, handle B, and piston-rod C, connected thereto by a link, *b*. The piston and the chamber in which it works are not shown. They constitute no part of our invention.

The piston-rod works through a stuffing-box, D, in the upper partition, which latter consists of a pair of disks, *c c'*, having beveled edges, as shown. The disks are made slightly smaller than the diameter of the pump, and around their peripheries is sprung a rubber ring, *d*.

The lower partition consists of a pair of similar disks, *h h'*, and ring *d*. A water-way, H, is formed in these disks, and a valve, I, rests thereover. Prongs *i i* serve to limit the lift of the valve.

The two partitions are connected by rods E E, having collars *e' e*, which rest against the upper face of the lower and lower face of the upper partition. The lower ends, *j*, of the rods E screw into holes in the disk *h'*, and the upper ends, *f*, are squared, so that the rods may be turned by means of a wrench. Just below the squared portions the upper ends of the rods are threaded and nuts *f'* are screwed thereon.

Instead of using collars *e e'*, the ends of the rods may be simply turned down, forming shoulders, which answer the same end. Fig. 1ª shows on an enlarged scale this mode of forming the ends of the rods E.

To apply the device the top of the pump and the handle are removed and the disks *h h'* are separated, as shown in Fig. 2, by turning the rods E so as to partially unscrew them from the lower disk. The upper disks are separated in like manner by turning up the nuts *f'*. The entire device is then lowered to its proper position in the pump, the piston-rod being made to pass through the valve I and stuffing-box D. A wrench is then applied to the squared ends of the rods E, and they are turned so as to cause their lower ends to screw into the disk *h'* and draw it up toward the disk *h*. In so doing the beveled edges of the disks force the

rubber ring outward against the walls of the pump, forming a tight joint. A band may be placed around the pump opposite the partitions, if it be feared that the pump may split under the pressure of the gaskets *d* and the head of water. The upper partition is next treated in the same manner, its ring *d* being expanded by turning down the nuts *f'*. The handle is then connected with the piston-rod, and the pump is ready for use.

In order to prevent any lateral strain upon the gaskets caused by the downward and upward thrust of the water on the partitions as the piston descends or rises, bolts *m* may be inserted through the walls of the pump at each side of either partition.

In operation a hose is attached to the spout *a* by means of any suitable form of coupling, and the pump is worked as usual. On the downstroke of its piston the piston-valve lifts and allows the water to pass. On the upstroke the valve I is lifted, and the water is forced through the spout and hose. Assuming the upper partition and its stuffing-box to close the pump air-tight, the water cannot reach the partition, but only rises above the spout to a distance represented by the hydrostatic head. The elasticity of the compressed air serves in the usual way to maintain a constant flow of water.

The lower partition serves to prevent the descent of the water on the downstroke of the piston, and, in addition, operates as a brace for the upper one.

We have shown and described what we deem the simplest and cheapest form of device for closing the pump-barrel above and below the spout; but it is obvious that other forms of partitions may be used for the purpose.

While it is desirable for several reasons that the partitions be connected, it is obviously not essential that they shall be. The device is applicable to any of the usual forms of pumps, and is readily applied and as readily removed should it be necessary. It will, however, rarely be found necessary to remove the device after it is once in place. The valve I is the only moving part, and its motion is simply that of rising and of falling squarely upon its seat.

Should the stuffing-box leak, it is only necessary to remove the top of the pump, unscrew the gland, and renew the packing.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. The device herein described for attachment to an ordinary sucking or lifting pump to convert it into a forcing-pump, consisting essentially of a pair of partitions adapted to be secured within the barrel respectively above and below the spout or outlet, the said partitions being perforated for the passage of the piston-rod, and the lower one being provided with an upwardly-opening valve, as and for the purpose set forth.

2. The device herein described, for the purpose set forth, consisting of a pair of partitions adapted to close the barrel of the pump at each side of the spout, the said partitions being arranged to be expanded against the inner walls of the pump, as described.

3. The device herein described, for the purpose set forth, consisting of a pair of partitions, each of said partitions being composed of two disks having an interposed expansible gasket and means for compressing the disks of each pair together, whereby the gaskets are expanded against the inner walls of the pump, as described.

4. The device herein described, for the purpose set forth, consisting of two connected partitions arranged to be secured within the pump-barrel respectively above and below the spout, as described.

5. In a sucking and forcing pump, a pair of partitions, one on each side of the spout, in combination with mechanism, substantially as described, for expanding said partitions after insertion within the pump.

6. In a sucking and forcing pump, a pair of partitions, each consisting of a pair of disks having expansible gaskets, in combination with two or more rods having shoulders against which the inner faces of the partitions rest, the said rods being at one end threaded for engagement with an exterior disk, and having nuts on their opposite ends, whereby upon turning the rods and nuts the disks of each pair are brought together and the gaskets are expanded, as set forth.

7. In a sucking and forcing pump, a partition above the spout, having a stuffing-box, through which the piston-rod passes, and an expansible gasket, in combination with a second partition below the spout, having an upwardly-opening valve, whereby the said partitions are adapted for the purpose set forth.

8. In combination with the partitions, each composed of a pair of disks having beveled edges, and the expansible gaskets, the shouldered rods connecting the partitions, squared at the upper and threaded at both ends, as set forth.

9. The combination, with the partitions connected by means of the rods E, and having respectively a valve and stuffing-box, of the bolts *m* for securing the partitions in place, as set forth.

WINSLOW ALLDERDICE.
R. DOUGLAS WILLIAMS.

Witnesses:
ED. RAINE,
GODFREY FISHER.