

J. A. SINCLAIR.
Pump.

No. 226,005

Patented Mar. 30, 1880.

FIG. 1.

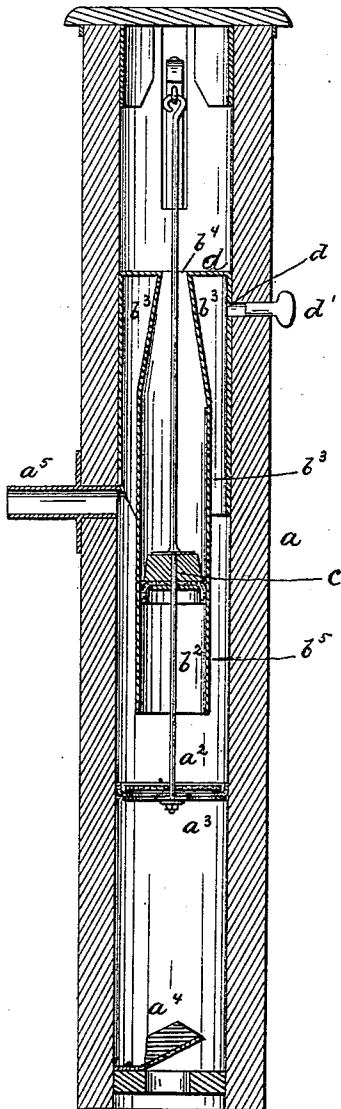


FIG. 2.

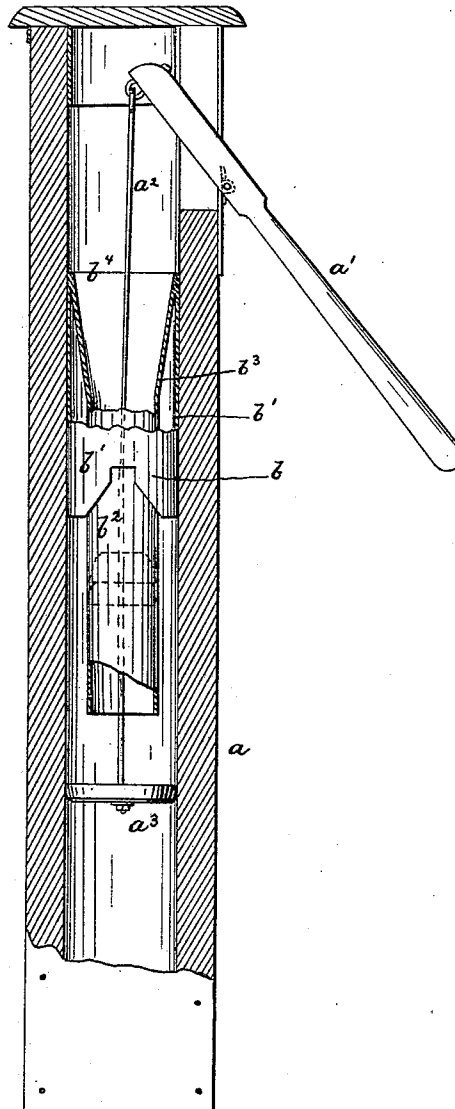


FIG. 3.

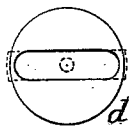


FIG. 4.

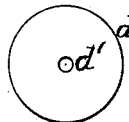
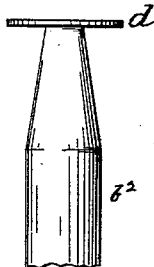


FIG. 5.



Witnesses:

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UNITED STATES PATENT OFFICE.

JAMES A. SINCLAIR, OF BRIDGEPORT, ASSIGNOR OF ONE-HALF OF HIS
RIGHT TO ABRAM LASH, OF MARTIN'S FERRY, OHIO.

PUMP.

SPECIFICATION forming part of Letters Patent No. 226,005, dated March 30, 1880.

Application filed August 27, 1879.

To all whom it may concern:

Be it known that I, JAMES A. SINCLAIR, of Bridgeport, in the county of Belmont and State of Ohio, have invented certain new and useful
5 Improvements in Pumps; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had
10 to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in combined lift and force pumps; and it consists
15 in an inner casing of peculiar form placed within the stock of an ordinary pump, as will be hereinafter fully explained, and pointed out in the claims.

In the drawings, Figure 1 is a vertical section of the pump-stock and inner casing. Fig.
20 2 is a vertical section, made on a line at right angles to the line on which the section of Fig. 1 is cut, and it shows the inner casing only partially in section. Fig. 3 is a detail view; and
25 Figs. 4 and 5 are modifications.

a is the pump-stock, having the handle a' , piston-rod a^2 , lifting-piston a^3 , check-valve a^4 , and discharge-spout a^5 , all of ordinary construction and arrangement. b is an inner casing composed, preferably, of the outer shell,
30 b' , and inner shell, b^2 , which are united at their top ends, so as to form a chamber, b^3 , closed air-tight at its top end by a cap, d , and so as to provide a central slot or opening, b^4 , in the
35 upper end of the inner casing, through which the piston-rod a^2 passes downward into and through the said inner shell, b^2 , to the piston a^3 .

The top end of the casing b is placed near the top of the stock, sufficient space being allotted
40 for the free play or stroke of the inner end of the handle a' , to which is affixed the upper end of the piston-rod a^2 .

The outer shell, b' , is made to fit the bore of the stock a , so that no water will pass upward
45 on its outer side. Its lower end reaches down the stock to a point flush with the upper side of the discharge-vent in spout a^5 . It may be, if desired, extended below the spout, in which case a suitable opening must be made through
50 it to permit the water to flow into the said

spout. The result is the same whether extended to or below the spout, as above explained.

The inner shell, b^2 , is open at its upper and lower ends, and extends downward from a point above the spout a^5 to a point at or near the
55 limit of the upward stroke of the piston a^3 , and it is surrounded by a space, b^5 , through which the water reaches the spout a^5 and the air-chamber b^3 .

In a pump designed for use in the ordinary
60 wells, where the water is received into vessels directly from the spout a^5 , I employ the above-described arrangement of the inner shell; but where it is designed to throw the water to a
65 higher level, or where the water is to be thrown through a hose attached to the spout, the inner shell, b^2 , need not be extended below the said spout. Where the free flow of the water is confined the pump will act, as described, even if
70 the lower end of the inner casing be flush with or above the spout a^5 and the play of the piston c be also above said spout.

On the piston-rod a^2 is fixed a force-piston, c , arranged to play up and down in the inner shell, b^2 , simultaneously with the play or stroke
75 of the piston-rod a^2 .

d is a vent-hole, made through the stock a and outer shell, b' , in the upper end of the air-chamber b^3 . It is closed when desired by the
80 plug d' .

The operation of the device will be readily understood. The water is lifted by the piston
85 a^3 , and is forced upward to the spout a^5 and part way up into the chamber b^3 . The piston c also acts to draw the water after it, so as to fill the space below it in the shell b^2 . On the reverse movement of the handle the check-valve a^4 prevents the water from falling back into the well or cistern, and the action of the air in the chamber b^3 maintains a constant flow
90 of water out of the spout a^5 .

It will be readily seen that the casing b can be made of a size to suit the bore of any ordinary pump-stock, and can be inserted without
95 difficulty.

By means of my improvements old pumps, which have become almost useless by reason of being cracked or otherwise injured, may be made as good as new, so far as the operation
100 of raising water is concerned.

The outer shell, b' , may be extended downward to any desired length and make a lining for the bore of the pump-stock; but this is only necessary where there are cracks in the stock which need to be covered to prevent air from getting into the bore or to prevent water from flowing out.

I have hereinbefore described a casing composed of a double shell constructed with a slot in its upper end; but it will be understood that the said slot is made to provide for the necessary lateral movement of the stiff piston-rod as the latter is operated by the handle a' .

When the slot is used the inner shell has its upper end flattened on lines parallel with the vertical plane in which the handle plays, which flattening gives to the opening the necessary elevation for the play of the piston-rod.

Instead of the slot, a small hole, d' , may be made through the cap which unites the upper ends of the shells. The piston-rod in this case would be made of two parts and coupled or hinged together above the cap. The hinge-joint would permit the necessary vertical movement of the handle. The hole through which the piston works should not be packed so as to render the upper end of the inner shell air-tight.

It will be further understood that the objects of my invention may be accomplished without having the outer shell, simply by having the cap d made so that it will fit air-tight in the bore of the stock a . This construction is shown in Fig. 5, wherein the cap c is secured

on the top of the inner shell alone, the outer shell being dispensed with. When inserted in the stock its cap closes the bore and gives the air-tight chamber b^3 , surrounding the inner shell.

What I claim as my invention is—

1. The combination, with the pump-stock a and piston-rod a^2 , having piston a^3 on its lower end, of the shell b' and shell b^2 , united air-tight at their top ends, so as to provide an air-chamber, b^3 , between them, and an opening, b^4 , into the upper end of the inner shell, b^2 , and the piston c , fixed on the rod a^2 and arranged to play up and down in the said inner shell, substantially as and for the purpose set forth.

2. The shell b^2 , having the cap d attached to its upper end, of a size to fit air-tight in the pump-stock a , and provided in its center with a hole for the piston-rod a^2 to pass through, in combination with the pump-stock a , the piston-rod a^2 , provided with the piston a^3 at its lower end, and the force-piston c , attached intermediately between its ends and having its stroke in the shell b^5 , the said shell b^5 being adjustable at any desired elevation in the pump, substantially as and for the purposes set forth.

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

JAMES A. SINCLAIR.

Witnesses:

G. B. SMITH,

T. C. ROWLES.