J. R. Bassett,

Pump.

No. 110,622. Patented Jan. 3. 1871.

Fig. 1.

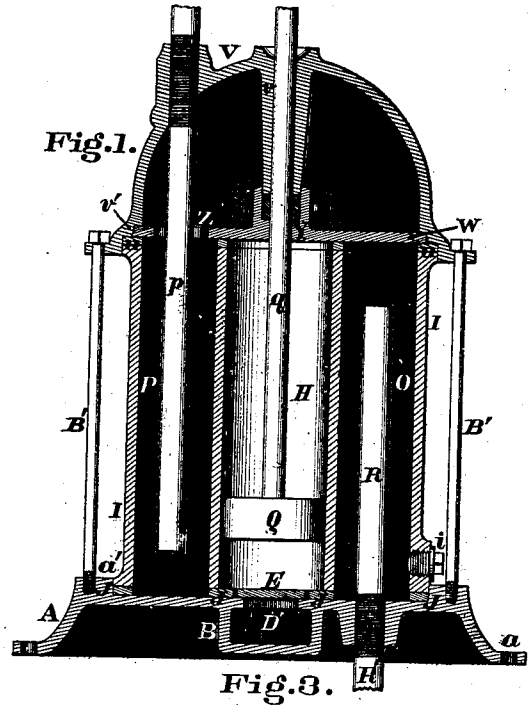


Fig. 2.

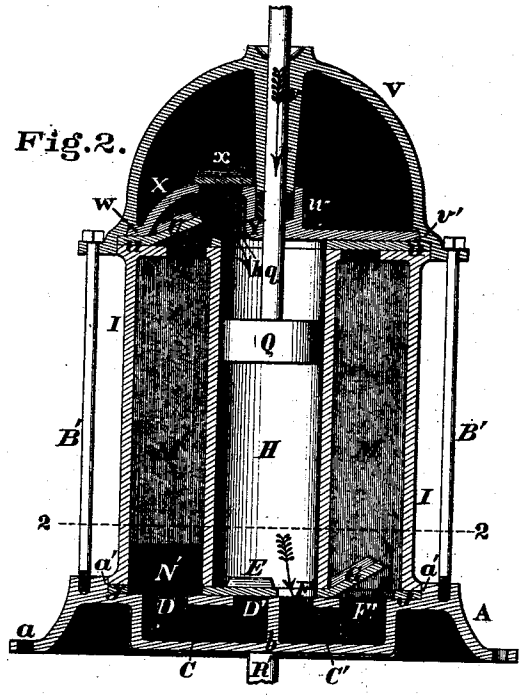


Fig. 3.

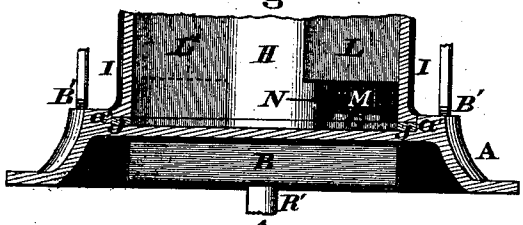


Fig. 5.

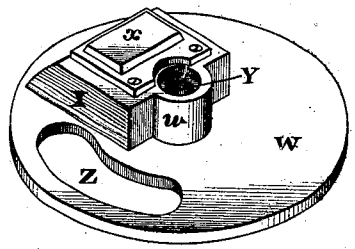


Fig. 4.

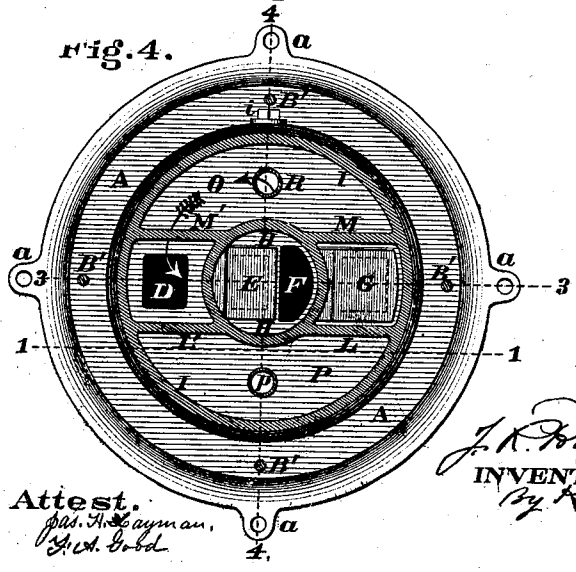
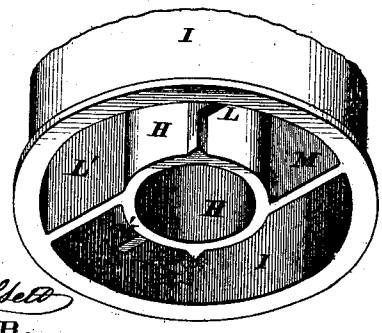


Fig. 6.



Attest.
Jas. A. Layman,
Y. A. Gobd

J. R. Bassett
INVENTOR.
By Knight Bros.
Attys.

United States Patent Office.

JOEL R. BASSETT, OF CINCINNATI, OHIO.

Letters Patent No. 110,622, dated January 3, 1871.

IMPROVEMENT IN PUMPS.

The Schedule referred to in these Letters Patent and making part of the same.

I, JOEL R. BASSETT, of Cincinnati, Hamilton county, Ohio, have invented an "Improved Pump," of which the following is a specification.

Nature and Objects of the Invention.

This invention relates to that class of devices commonly known as double-acting lift and force-pumps; and

The improvement consists, principally, in an arrangement at the extremities of the barrel or cylinder of the pump, of water-passages that permit the valves to be located as near as possible to said barrel, thereby dispensing with long channels in which air collects, and thus impairs the efficiency of the apparatus.

Description of the Accompanying Drawing.

Figure 1 is a vertical section of my improved pump, the section being taken in the plane of the suction and discharge-pipes at the line 4 4.

Figure 2 is a vertical section of the pump in the plane of the valves, or at right angles to the previous view, at the line 3 3.

Figure 3 is a vertical section of the lower portion of the pump, taken at the line 1 1.

Figure 4 is a horizontal section at the line 2 2.

Figure 5 is a perspective view of the diaphragm, which is interposed between the pump-barrel and air-vessel.

Figure 6 is a perspective view of the lower end of the pump-barrel and its accompanying partitions and shell.

General Description.

A is the base of the pump, having perforated lugs, *a*, by which the apparatus is secured in position above the well, cistern, or other source of supply.

This base has cast with it a duct, B, which is divided into two chambers, C C′, by the wall *b*, the first of said chambers, C, communicating with the suction-side of the pump, and the latter one, C′, with the delivery-side of the same.

The upper side of the suction-chamber C is provided with two apertures, D D′, of which the latter is covered by a suction-valve, E; and the other chamber, C′, is also provided with two apertures, F F′, one of which, F′, is furnished with a discharge-valve, G.

The lower end of the pump-barrel H and its concentric shell, I, are fitted within the circular recess *a′* of the base, a gasket, J, being interposed between said base and the barrel and shell, for the purpose of producing an air-tight joint.

The barrel H and its shell I are cast in one piece, and are united by four vertical and parallel partitions, L L′ M M′, of which the ones L′ and M extend from the top of the pump-barrel to the base A, while the two other partitions, L M′, stop short of said base, so as to leave ports, N N′, that communicate respectively with the discharge and suction-sides of the pump.

The suction-chamber O is segmental in shape, and is formed by the partitions M M′ and a portion of the shell I.

The discharge-chamber P is of a similar shape, and is surrounded by the partitions L L′ and another portion of shell I.

Screwed into the base A is the fixed portion R of the suction-pipe, which extends up almost to the top of the vacuum-chamber O, so as to keep the lower portion of said chamber constantly full of water, thereby preventing the valves becoming dry, and obviating the necessity of priming the pump.

The detachable portion R′ of the suction-pipe is made of any desired length to suit the location of the pump.

The upper ends of barrel H and shell I, which are of uniform length, are united by a plate, S, as shown in fig. 2, and this plate extends across from the partition L to L′, and also from the partition M to the one M′.

The plate S is not a separate piece, but is cast with the barrel and shell, and it is provided with two apertures or ports, T T′, of which the one T is covered with a valve, U, while the other one, T′, is a blind port.

By casting this plate with two apertures in it, the best one can be selected for use in case one of them should be defective.

Interposed between the upper ends of the members H I and the hemispherical air-vessel V is a horizontal diaphragm, W, having a valve-chest, X, and a central boss, *w*, which is lined with a soft-metal bushing, Y, that is traversed by the rod *q* of piston Q.

The top of chest X has an opening, *y*, which is covered by a discharge-valve, *x*, and the upper suction-valve U plays within said chest, as shown in fig. 2.

A gasket, *u*, is placed between the diaphragm W and the upper end of the pump, and a part of this gasket is made to serve as the flexible portion of the suction-valve U.

The diaphragm W has an opening, Z, in it alongside the valve-chest X, and this opening not only allows the water which is discharged through valve *x* to descend to the chamber P, but it also permits the delivery-pipe *p* to pass up through the dome or air-vessel V.

Depending from this dome and in line with the axis of the pump-barrel is a sleeve, *v*, whose lower end is fitted in the boss *w*, and this sleeve, in connection

with the bushing Y of said boss, forms an air-tight passage for the piston-rod, and thus permits of a stuffing-box being dispensed with.

The extended bearing afforded by the sleeve *v* and bushing Y serves to confine the piston-rod to a vertical path, and obviates the necessity of the complicated arrangement of guides, cross-heads, and links which are generally employed for that purpose.

The bottom portion of dome V has a recess, *v'*, for the reception of the shell I, gasket *u*, and diaphragm W, and, by the application of bolts B', which are screwed into base A, the various parts of the pump are immovably secured in their proper positions.

i is a plug, which, when unscrewed from the shell, permits sand, chips, dirt, and other sediment to be removed from the suction-chamber O.

If preferred, a perforated strainer or wire-screen may be placed in the suction-chamber, so as to prevent obstructions of any kind being drawn into the interior passages, channels, or valves of the apparatus.

The extreme lower end of the pump-barrel may be increased in diameter, so as to afford a greater area to the openings D' and F, but in this case the piston Q should be made somewhat longer, so as to reach the bottom of the barrel without uncovering or exposing the aforesaid enlargement.

Operation.

After the piston has been operated so as to form a vacuum in the chamber O, water will flow up the pipe R into said chamber, and from thence through port N' to the passage formed between the partitions L' M', barrel H, and shell I.

If the piston Q should now be depressed, the upper suction-valve U will open, and water will flow into the upper end of pump-barrel H through opening *h*, as seen in fig. 2.

During the descent of the piston, the valves E and *x* are both closed, and the one G is opened so as to permit the expulsion of air from the lower end of the pump-barrel.

When the piston has reached the termination of its downward stroke, and the barrel H has been filled with water, the stroke is reversed, the valve U closed, the one *x* opened, and the water is expelled from the pump through said valve *x* and opening Z into the chamber P, from which it is discharged by pipe *p*.

As soon as the piston commences its ascent, the lower discharge-valve G closes, the suction-valve E opens, and water flows into the lower end of pump through port N' and openings D D' in the duct B, as indicated by arrows in fig. 4.

The lower part of the pump having been thus filled by the ascent of the piston, the motion of the latter is reversed, and its descent closes valve E, and causes the water to be expelled through openings F F' and port N into chamber P, from which it escapes up the discharge-pipe *p*, and the continuous ascent and descent of the piston insures the complete filling and emptying of the pump at every stroke.

After the pump has once been filled, water will always remain in it on a level with the upper end of pipe R, thereby completely surrounding the valves with water, and obviating the necessity of priming the pump every time it is desired to use it.

It will be seen that the suction and discharge-passages enter and leave the barrel at its extreme ends, and that the valves are located as near the barrel as it is possible to have them, and, by this arrangement, confined chambers in the ends of the barrel and long water-passages are avoided, which are well known to be a source of difficulty in the operation of any pump, as air will collect or "pocket" in them, and thereby prevent the complete filling and emptying of the apparatus.

Claims.

I claim as my invention—

1. The combination, substantially as described, of the base A *a'*, duct B *b* C C with its opening D D' F F', and valves E G, pump-barrel H *h*, shell I, partitions L L' M M', ports N N', vacuum-chamber O, suction-pipe R, discharge-chamber P, pipe *p*, piston Q *q*, plate S, opening T, valve U, air-vessel V *v'*, diaphragm W *w* Z, chest X, valve *x*, and retaining devices B', for the purpose set forth.

2. In combination with the pump-barrel H, air-vessel V, and diaphragm W *w*, the sleeve *v* and the bushing Y, for the object stated.

In testimony of which invention I hereunto set my hand.

J. R. BASSETT.

Witnesses:

GEO. H. KNIGHT,

JAMES H. LAYMAN.