F. A. RUHL.

Lift-Pump Valve.

No. 167,125. Patented Aug. 24, 1875.

Fig. 1.

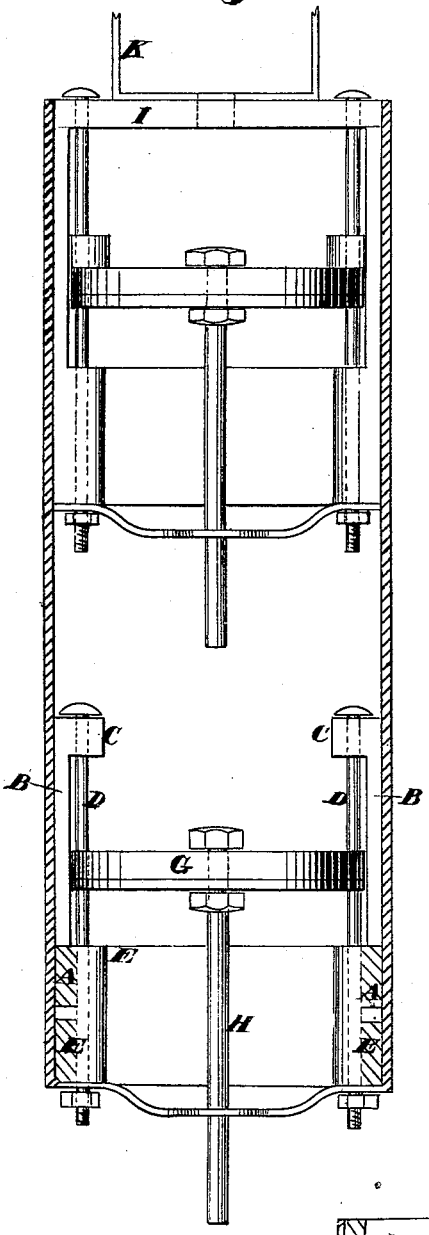


Fig. 2.

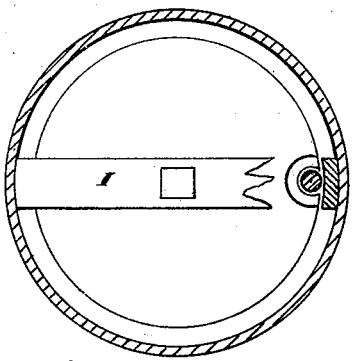
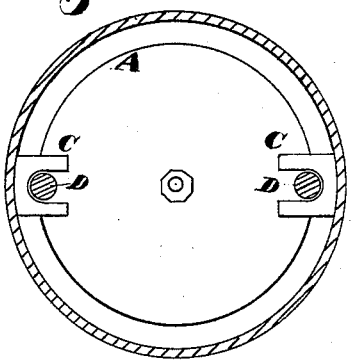
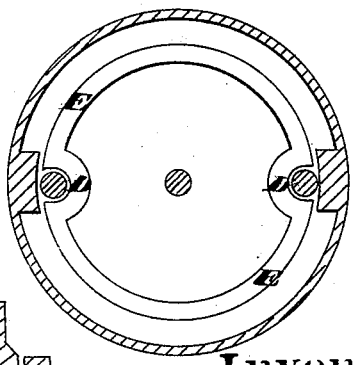
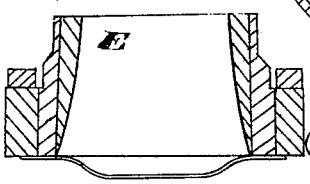


Fig. 3.







Witnesses.
Geo. H. Strong.
Jno. L. Boone

Inventor
Fred. A Ruhl
by Dewey & Co
Attys

UNITED STATES PATENT OFFICE.

FRED. AUGUST. RUHL, OF STOCKTON, CALIFORNIA.

IMPROVEMENT IN LIFT-PUMP VALVES.

Specification forming part of Letters Patent No. **167,125**, dated August 24, 1875; application filed June 12, 1875.

To all whom it may concern:

Be it known that I, FRED. A. RUHL, of Stockton, San Joaquin county, State of California, have invented an Improvement in Lift-Pump Valves; and I do hereby declare the following description and accompanying drawings are sufficient to enable any person skilled in the art or science to which it most nearly appertains to make and use my said invention or improvement without further invention or experiment.

My invention relates to certain improvements in the securing and guiding of lift-pump valves, and also in a novel method of securing the pump-rod to the upper valve-box, as will be more fully shown hereafter.

In the construction of valves for lift-pumps much difficulty has been experienced, first, from the insecurity of the fastening of the lower part of the lower pump-box, which, being simply screwed on, is liable to become loosened and gradually turned off by the jar and shock of pumping, so that it finally falls to the bottom of the well and is lost; or if made too tight for this it becomes so rusted to its seat that it is impossible to remove it for repairs to the valve. The valves themselves, being guided by single or double spindles passing through holes in cross-bars, are very liable to become clogged and fixed by sand which wedges into the guide-holes.

My invention contemplates a simple and easy method of securing the parts of the box together, and at the same time providing guides for the valve which will not clog.

Referring to the accompanying drawing for a more complete explanation of my invention, Figure 1 is a vertical section of my pump. Fig. 2 is a transverse section, showing the piston-valve. Figs. 3, 4 are transverse sections, showing the induction-valve and the lugs.

A is the part of the lower pump-valve which is fastened into the tube. This part is cast with two arms, B B, extending upward to some distance, and at their upper ends are short lugs C, projecting inward, as shown. These lugs are slotted, so that the bolts D can be slipped in from the side without putting them through holes, thus avoiding a great difficulty in small pumps.

The valve-seat E fits into the lower part of A, and the usual leather washer makes a tight joint between these parts. This seat E usually has a screw-thread cut upon its outside, and is screwed into the part A from below; but, as above stated, this method is insecure. I therefore thicken the metal a little upon two opposite sides, and make holes, through which the bolts D pass, extending downward from the lugs C, where their heads rest through the seat, and nuts F upon their lower ends serve to draw the whole firmly together.

The valve G moves between the seat E and the lugs C, and has a stem, H, passing down from its center. This stem is guided by passing through a hole in the cross-bar below, in the usual manner.

In order to prevent the valve from turning, and to guide it steadily, without liability to clog from sand, I form grooves upon each side of the valve, corresponding to the position of the rods or bolts D, and by means of these grooves the valve slides easily up and down. As these grooves are open upon the outside, it will be impossible for them to become clogged.

By my construction of the arms with the short lugs C, I am enabled to dispense with the usual cross-bar guide, which impedes the flow of water considerably.

The upper pump-valve, which is similar in construction to the lower one, is provided with a cross-bar, I, which is perforated with a vertical bolt hole or holes in its center, and the lower end of the pump-rod has a stout rectangular strap of iron, K, fixed to it. The transverse part of this strap is bolted to the cross-bar I, as shown, and thus gives a secure fastening of the valve to the rod.

By this construction I am enabled to secure my valve-seat and provide guides for the valve at one operation, thus avoiding the insecure fastening for the seat, and doing away with the guide-rods secured to the valve, which are so liable to clog.

My rods D can be easily introduced from the bottom into the smallest pump.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

The part A, with its arms B and slotted lugs C, the seat E, and the valve G, slotted at opposite sides, as shown, in combination with the bolts or rods D, when the latter serve to secure the parts together and guide the valve at the same time, substantially as herein described.

In witness whereof I hereunto set my hand and seal.

FRED. AUGUST. RUHL. [L. S.]

Witnesses:

GEO. H. STRONG,

JNO. L. BOONE.