J. B. Kibler.

Sand Pump.

No. 54,739. Patented May 15, 1866.

Fig. 1.

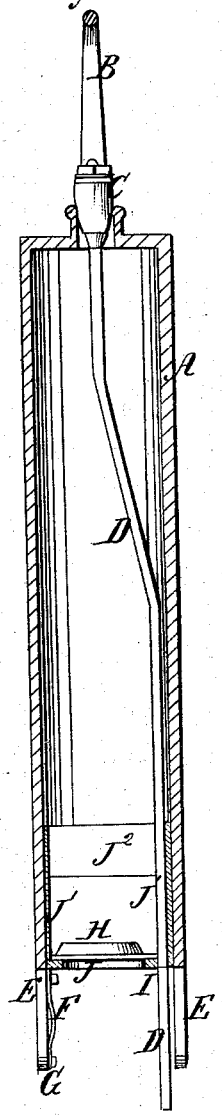
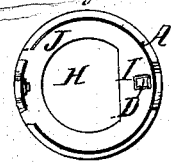


Fig. 2.



Witnesses;

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UNITED STATES PATENT OFFICE.

J. B. KIBLER, OF GIRARD, PENNSYLVANIA.

IMPROVEMENT IN SAND-PUMPS.

Specification forming part of Letters Patent No. **54,739**, dated May 15, 1866.

To all whom it may concern:

Be it known that I, J. B. KIBLER, of Girard, Erie county, State of Pennsylvania, have invented a new and useful Improvement in Sand-Pumps; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is an axial section of a sand-pump made according to my invention. Fig. 2 is an under-side view.

Similar letters of reference indicate like parts.

This invention consists in a novel construction of sand-pump, which is automatic in its operation. It is composed of a tube or hollow cylinder having a valve at each end, with a bail at its upper end, by which it is suspended from a rope and lowered into a well from which sand and the detritus produced in drilling are to be removed. The upper valve opens upward and is of the nature of an elastic stopper, the stem of which extends downward through the cylinder along its side, passing through the seat of the valve, and terminating at a point below the supports of the cylinder. The weight of the cylinder takes it down to the bottom of the well, when the extremity of the spindle of the upper valve strikes the rock and opens said valve, allowing the air which is confined and compressed in the upper part of the cylinder to escape and its place to be occupied by the detritus and sediment from below. The bottom valve opens upward and consequently checks and prevents the escape of the sediment so received. In order to empty the pump it is drawn up by its rope, and the valve-seat of the lower valve is made to drop down far enough below its proper position to allow the sediment to run out.

The letter A designates a hollow cylinder, in whose lower end is placed a movable valve-seat, J, having ribs J′, which are connected at their upper ends by a ring, J^2, that fits loosely inside of the cylinder.

H is a check-valve, which is connected to the valve-seat.

E E are standards or legs which support the cylinder when it has reached the bottom of a well. To the lower end of one of these standards, on its inner side, is pivoted a spring-bar, F, which is turned up against the under side of the valve-seat when the latter is to be kept in its proper position for the valve to operate, the spring being so arranged as to make the bar hug the standard and keep its place in despite of the jars produced by the descent of the pump.

The top of the cylinder has a small opening like the opening in the neck of a jar or bottle, in which is fitted an elastic valve or stopper, C, that is allowed to enter but not to pass through said opening. The stem D of this stopper extends downward into the cylinder, being bent so as to follow one side thereof, and is taken past ring J^2 of the frame of the valve-seat, and through the valve-seat by means of a hole, I, terminating below the ends of standards E, a distance more than equal to the distance which the stopper C enters the neck of the cylinder.

The pump, having been arranged and prepared in the manner shown in the drawings, is lowered into a well, when the lower valve will be opened by the resistance of the water in the well, and more or less of the water will enter the cylinder and compress the air contained in it, the valve or stopper C being forced in so tightly that the action of compressing the air will not expel it; but when the end of spindle D strikes the bottom of the well the resistance of the solid bottom to the momentum of the pump will drive the stopper out of its valve and allow the standards E to rest on the rock. The release of the stopper allows the confined air to escape with suddenness, and will produce a momentary vacuum in the pump, which will be instantly filled from below by the heavy and thick sediment at the bottom of the well, the valve H retaining the mud which enters the pump. The pump is next drawn up and is emptied by turning aside the bar F and pulling down or allowing the weight of the contents of the cylinder to carry down the valve-seat J, with its frame J' J^2, so that the sediment can escape. The valve-seat and its frame are next pushed up to their places, the bar F sprung back beneath the seat, the plug-valve forced into the neck of the cylinder, and the operation is repeated.

Each standard E may have a bar, F, so as to give a better support to the valve-seat.

By means of my improvement I am able to construct a sand-pump which can be easily removed in case it gets fast in a well. Heavy sand-pumps and such as are made with thick walls are not regarded with favor by oil-well men, because if they get fast it becomes necessary to remove them by drilling them out, which is both expensive and tedious. In order to provide against this difficulty, I make the shell of the pump of light material, such as sheet-zinc, with a diaphragm across its interior near its upper end, so as to form a chamber to receive sand or other heavy material of sufficient weight to sink the pump through the water. The rod of the upper valve goes through this chamber in a tube or stuffing-box, so that the sand will not be allowed to escape in working that valve. If the pump sticks fast, so that it must be broken up to get it out, it is only necessary to crush and break open the shell of the pump and let the sand run out, when the broken fragments can be easily drawn up by the rope of the sand-pump or by grabs.

I claim as new and desire to secure by Letters Patent—

1. The movable valve-seat J in the bottom of a sand-pump, substantially as described.

2. The stopper or plug-valve C in the top of the pump, in combination with a spindle extending downward below the end of the supports of the pump, substantially as described.

J. B. KIBLER.

Witnesses:
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