W. H. BIRGE.

SAND-PUMP.

No. 182,098. Patented Sept. 12, 1876.

Fig. 1

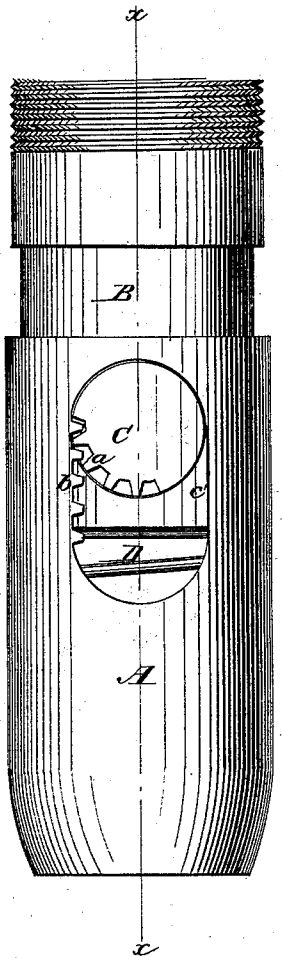


Fig. 2.

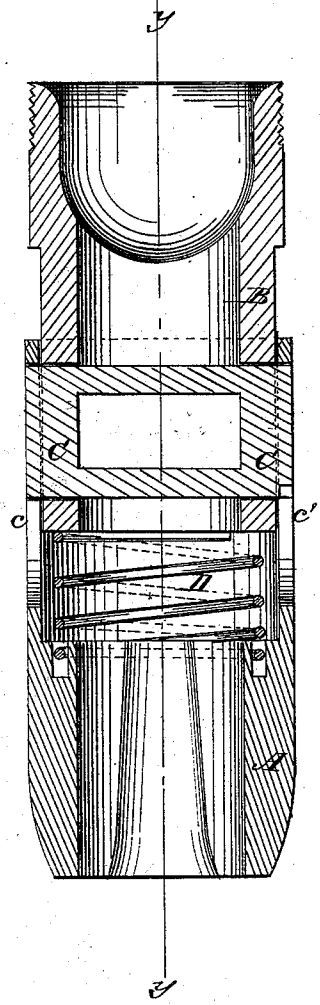
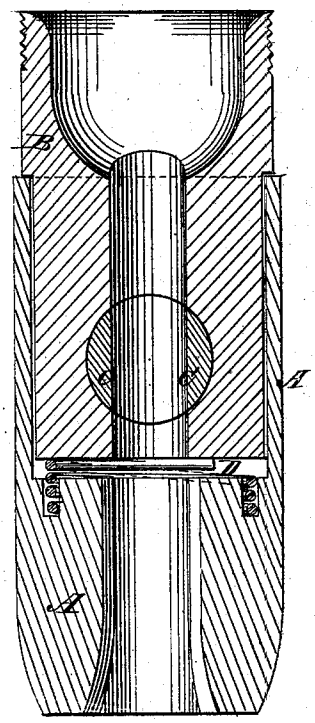


Fig. 3.



WITNESSES:

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WILLIAM H. BIRGE, OF FRANKLIN, PENNSYLVANIA.

IMPROVEMENT IN SAND-PUMPS.

Specification forming part of Letters Patent No. **182,098**, dated September 12, 1876; application filed August 7, 1876.

To all whom it may concern:

Be it known that I, WILLIAM H. BIRGE, of Franklin, in the county of Venango and State of Pennsylvania, have invented a new and Improved Sand-Pump for Oil-Wells, of which the following is a specification:

Figure 1 is a side elevation. Fig. 2 is a vertical section on line *x x* in Fig. 1. Fig. 3 is a vertical section on line *y y* in Fig. 2.

Similar letters of reference indicate corresponding parts.

This invention consists of an inner and outer tube, forming together the lower end of a sand-pump, arranged to slide one within the other, the inner tube being provided with a rotating valve having a segment of teeth on its outer end, which engages with a rack formed on the edge of a slot in the outer tube. A spring assists the parts to regain their normal position.

The object of the invention is to provide a valve which shall have a positive motion, not depending upon the action of the water or sand to open or close it.

A is the external tube that forms the lower end of the sand-pump, and slides easily on the tube B that is attached to the main body of the pump. C is a valve, similar in construction to an ordinary stop-cock plug, which is provided with a bearing or seat in the tube B, and projects a small distance beyond the tube B into slots *c c'* in the tube A. One end of the valve C is provided with teeth at *a* that mesh into the rack *b* formed at the edge of the slot *c'*. D is a spiral spring that rests in a groove in the tube A, and abuts against the lower end of the tube B. The tube forming the body of the sand-pump is closed at the top, excepting a small aperture, which is provided with a valve having a spring arranged to throw it open, but which is capable of closing when under water.

The pump is lowered through the sand and water with the upper and lower valve closed. When it reaches the bottom of the well the part A rests on the mud and sand, and the part B slides down into it, opening the valve, allowing the sand and water to enter the pump. The pressure thus created in the pump opens the valve at the upper end of the pump, allowing the air to escape as the sand and water enter below.

The motion of the valve is positive, and does not depend on the pressure or action of the sand and water to operate it. It is more effective in its operation, and will remove a greater quantity of sand or cuttings at one operation than pumps of ordinary construction.

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

1. A rotating sand-pump valve, which is opened and closed by the telescoping or sliding together of the parts forming the lower end of the pump, substantially as specified.

2. The combination of the sliding tubes A and B, valve-plug C, segment *a*, rack *b*, and spring D, substantially as shown and described.

WM. H. BIRGE.

Witnesses:
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