

John F. Carrll, Sand-Pump for Oil Wells

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PATENTED

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Fig. 1.

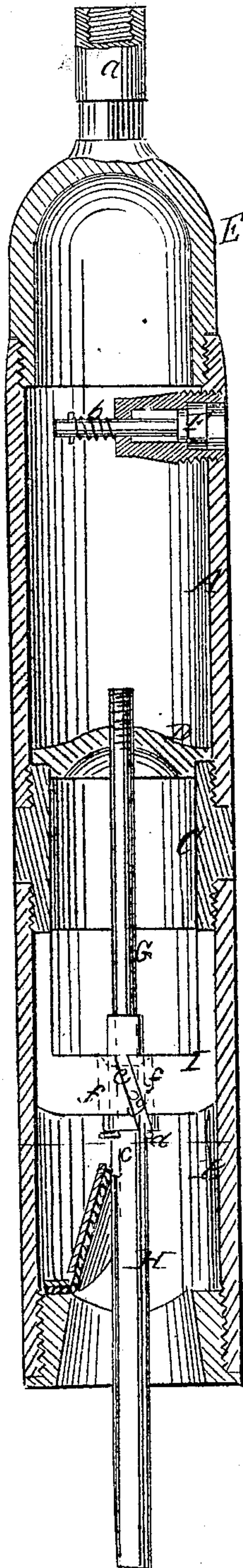
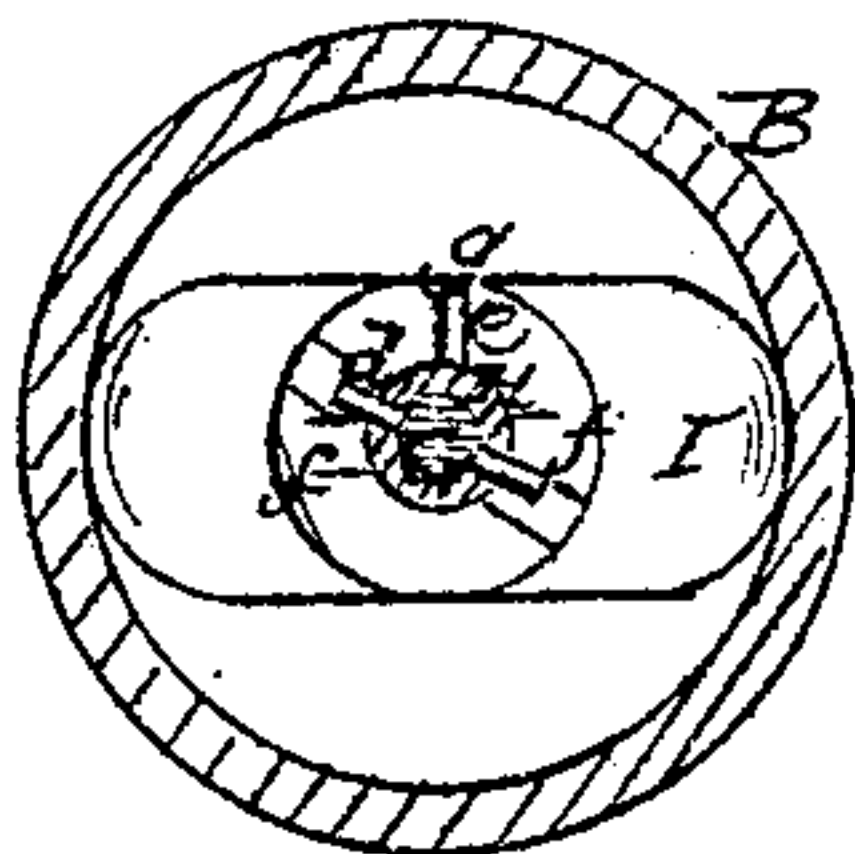


Fig. 2.



Witnesses
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JOHN F. CARLL, OF BROOKLYN, NEW YORK.

Letters Patent No. 73,577, dated January 21, 1868.

IMPROVEMENT IN SAND-PUMPS FOR OIL-WELLS.

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

TO ALL WHOM IT MAY CONCERN:

Be it known that I, JOHN F. CARLL, of Brooklyn, in the county of Kings, and State of New York, have invented a new and improved Sand-Pump for Oil-Wells; 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, and to the letters of reference marked thereon.

This invention relates to a new and improved sand-pump for oil-wells, in which the water and debris or sand in said wells is forced into the pump-cylinder through the medium of static pressure, as hereinafter fully shown and described. In the accompanying drawings—

Figure 1 represents a longitudinal central section of my invention.

Figure 2, a horizontal section of the same.

The pump-cylinder is composed of two parts, A B, connected together by a screw-coupling, C, the upper edge of which serves as a seat for a valve, D, which works in the upper part A of the cylinder, similar to a piston or plunger. E represents a cap which is screwed into the upper end of A, is perfectly tight or close at its outer or upper end, and is provided with a socket, *a*, at its apex, having an internal screw to receive a screw which joins it to the auger-stem. The cap and screw, it will be seen, serve as a connection between the pump and the auger-stem. In the upper part A of the pump-cylinder, there is placed a valve, F, opening outward, the valve-stem having a spiral spring, *b*, upon it, which has a tendency to keep the valve closed. This valve is a safety one, and is designed to prevent an undue pressure of air in A. The valve D is screwed or otherwise fitted on the upper end of a stem, G, the latter extending down into a tube, H, which passes through a pendent yoke, I, attached to the screw-coupling C. The tube H has an oblong slot, *c*, made through it, and through this slot and the valve-stem G, a pin, *d*, passes, the latter being allowed to pass through the yoke in consequence of the latter being provided with a slot, *f*, at each side of the hole, through which the tube H passes. These slots *ff* are indicated by the dotted lines in the drawing. The tube H has a pin, *g*, projecting laterally from it, which works in an oblique slot, *e*, in the yoke I. This pin *g* and the oblique slot *e* serve, when the tube H is drawn down, to turn the pin *d* so that it will be, when below the yoke I, out of line with the slots *ff*, and retain the valve D down upon its seat. In the bottom of the lower part B of the pump-cylinder there is placed a flap-valve, J, opening upward. When the pump is let down into the well, the valve D is held down upon its seat C, in consequence of the pin *d*, which passes through the stem G, being out of line with the slots *ff*. The tube H, as the pump is let down, extends below the bottom of the pump-cylinder, keeping the valve J open. The water enters the lower part B of the pump-cylinder, compressing the air therein, the valve D being kept closed by the means previously stated. When the pump nearly arrives at the bottom of the well the tube H comes in contact with the bottom, and the pump-cylinder descending, the valve-stem G is turned in consequence of the oblique slot *e* acting upon the pin *g*, and this turning of the valve-stem brings the pin *d* in line with the slots *ff* in the yoke I, and the valve D is thereby liberated, and is instantly forced upward under static pressure, the air in A above the valve D being compressed, and the water rushing into the lower end of B, carrying the debris with it. The tube H is also drawn within the lower part B of the pump-cylinder, and above valve J, which instantly closes, when H passes above it, owing to the reaction of the compressed air in A, and the pump and its contents are then drawn up. This pumping or cleaning of the well is performed at one operation, and the operation is perfect.

The invention possesses several advantages:

First. It is cheaper. Being used on the drilling-tools, it saves the expense of a sand-pump rope, friction-pulley, &c.

Second. It operates more expeditiously than an ordinary sand-pump, all "churning" being avoided, the pump-cylinder filling instantly when it touches the bottom of the well.

Third. It is safer, being less liable to stick in the hole, and if it should stick, it can be readily loosened on account of having the cable and tools to loosen it with.

Fourth. It is more effectual, for being closed at both ends, it displaces nearly all the sediment at the bottom of the well, and forces it up around the outside of the pump, and when the valve opens, this sediment is instantly

forced down under the bottom of the pump and into the same, owing to the weight of water above, the motion being so quick and the force so great, that the bottom of the well is swept clean in an instant.

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

1. A sand-pump provided with valves D J, and their connecting agencies, arranged in such a manner that the valves will be operated automatically, and the pump filled with sand or debris under the static pressure of the water within the well or hole, substantially as herein shown and described.

2. The valve-stem G, with the tube H, yoke I, oblique slot *e*, pin *g*, and the slots *ff*, all arranged to operate in connection with the valve J, substantially as and for the purpose specified.

3. The safety-valve F, arranged in relation to the valves D J, applied to the cylinder of a sand-pump, to operate in the manner substantially as and for the purpose set forth.

JOHN F. CARLL.

Witnesses:

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