

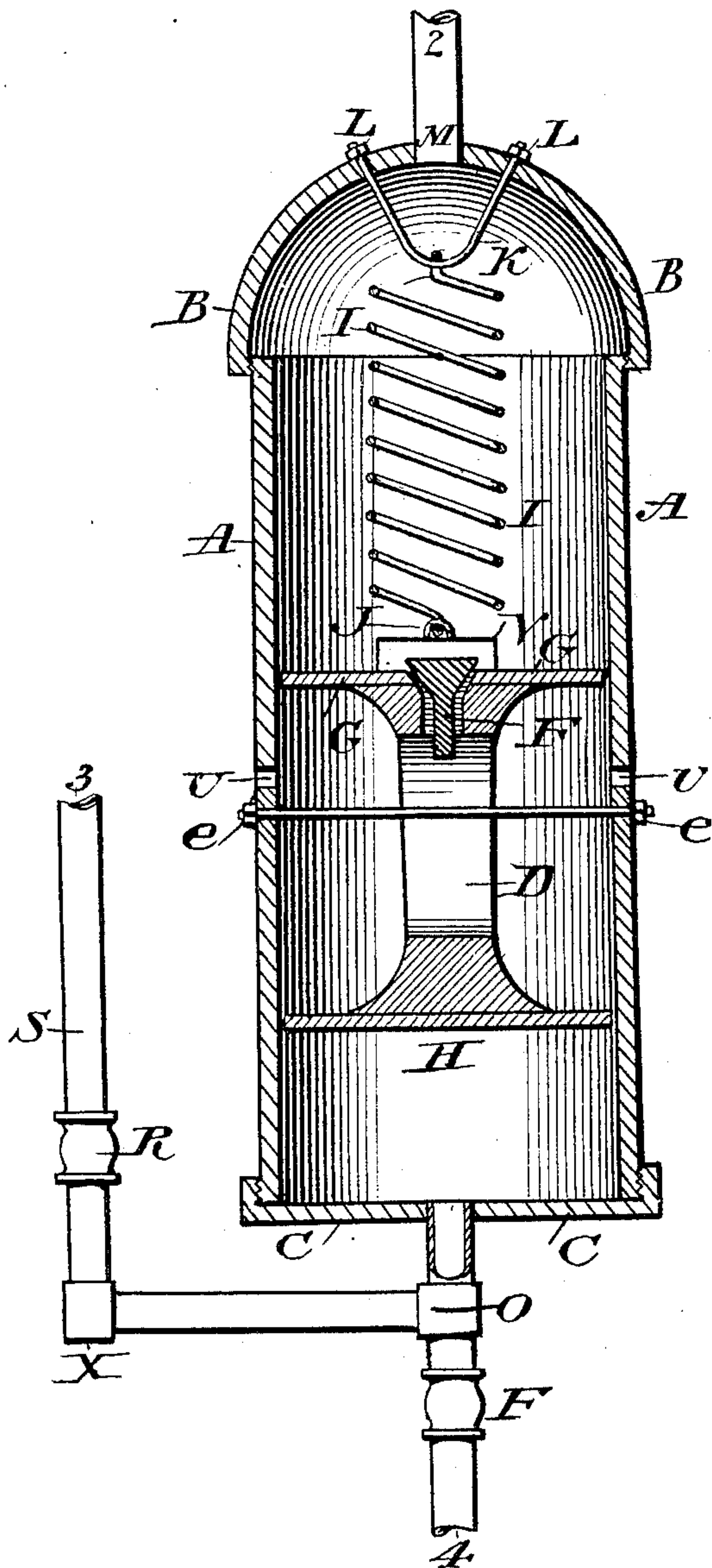
No. 657,753.

Patented Sept. 11, 1900.

F. Z. BARTELL.
AIR ACTUATED PUMP.

(Application filed Dec. 22, 1899.)

(No Model.)



Witnesses
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UNITED STATES PATENT OFFICE.

FREDERICK Z. BARTELL, OF SIOUX CITY, IOWA.

AIR-ACTUATED PUMP.

SPECIFICATION forming part of Letters Patent No. 657,753, dated September 11, 1900.

Application filed December 22, 1899. Serial No. 741,241. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK Z. BARTELL, a citizen of the United States, residing at Sioux City, in the county of Woodbury and State of Iowa, have invented new and useful Improvements in Air-Actuated Pumps, of which the following is a specification.

My invention relates to improvements in air-actuated pumps, and more particularly to a cylinder for air-actuated pumps in which the piston-head is driven in one direction in the cylinder by compressed air or steam and in the other direction by means of a spiral spring located in the cylinder; and the objects of my invention are, first, to provide a pump-cylinder that can be operated in a well near the surface of the water, and being operated by air it is not liable to be frozen up; second, to provide a pump that can be operated very cheaply; third, to provide a pump that can be kept in continuous operation without attention, the compressed air being stored in a tank near the well and being compressed by any method desired, and, fourth, to provide a new article of manufacture that can be made and sold at a very low price. I attain these objects by the mechanism illustrated in the accompanying drawing, in which the figure shown is a sectional view of my entire device, showing the form and arrangement of parts.

A represents a cylinder threaded at each end, the lower end being provided with a cap C, in the center of which is an opening N, connected with the three-way fitting O. Below O is a valve P, so that when water is drawn up through the opening 4 the check-valve P holds it from going back. At right angles with the openings N and 4 is a pipe extending from O to the elbow X. The pipe then extends up to a check-valve R, from which a pipe S extends up to any point desired, as at the point 3. The upper end of the cylinder A is a dome-shaped cap B, in the center of which is an opening M, fitted with a pipe for the inlet of air, as from the point 2.

On either side of the cylinder A are exhaust-holes T and U. On the inside of the cylinder A is fitted a double-head piston, the heads G and H being connected by a stem D. Through this stem D is a slot, through which passes a rod E and secured in place by passing through

the walls of the cylinder and secured by the heads *e e*. As the piston moves up and down it is guided and stopped at the proper points by the rod E. The lower head H is solid and is packed to fit snugly in the cylinder A. The upper head G has a V-shaped opening in its center with valve F, which snugly fits into said opening. The valve F is provided with a stem that projects down slightly below the top of the slot in the stem D. Connected to the top of the upper head G by means of a bail V and hook J is a coil-spring I. The other end of the spring is secured to the dome B by a bail K, said bail being secured by bolts L L. It will now be seen that when arranged as described the piston in its normal position is held up in the cylinder as far as it can go by the spring I. Now if compressed air be turned into the cylinder through the opening M sufficient to overcome the tension of the spring I the piston will be forced down, and when almost to its lowest extremity the point of the valve F will come into contact with the rod E, which will force the valve up and allow the air to pass down between the two piston-heads and out through the vents T and U. At the same time this is done by any means desired the air can be cut off from entering at M, when the spring I will draw the piston back until the lower part of the slot in D strikes the rod E. This upward movement of the piston will draw the water in at 4 through the opening N into the lower part of the cylinder and will be held from going back into the well by the check-valve P. When the piston is again forced down, as stated, the water in the cylinder is forced through the check-valve R and up the pipe S. Any well-known mode of turning on and off the supply of air through M may be employed, and I make no claim to a device for this purpose.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, in an air-actuated pump, of a cylinder, a double piston-head therein, a coil-spring for drawing the pistons up, a valve in the upper head of the piston adapted to be operated by a rod passing through the cylinder, and through a slot in the stem between the two piston-heads, all as described and for the purposes set forth.

2. The combination of the double pistons, G and H, the former provided with a valve F, the latter solid, a spring I adapted to hold the piston up, means for securing the spring
5 at its extremities, vents T and U and a dome-shaped cap at one end of the cylinder, all as described and for the purposes specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

FREDERICK Z. BARTELL.

Witnesses:

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W. L. SEDGWICK.