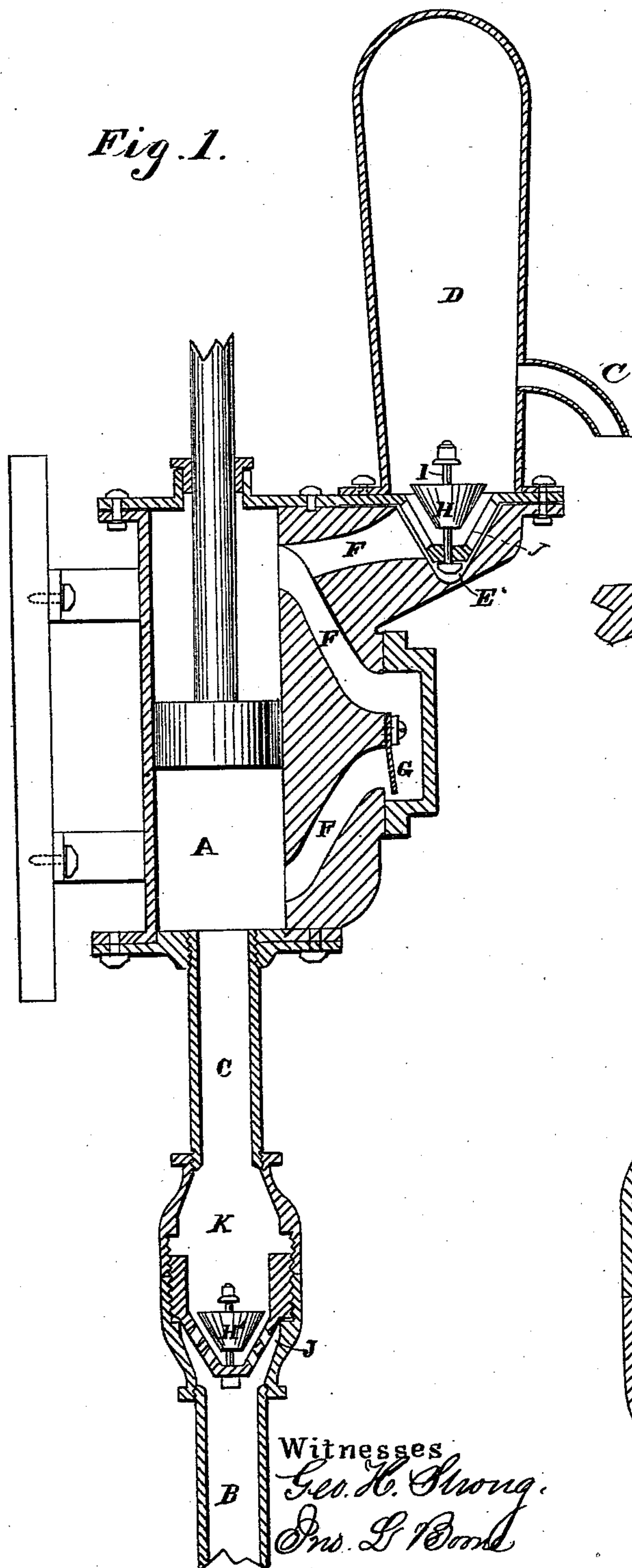


W. C. WILCOX.  
Pump.

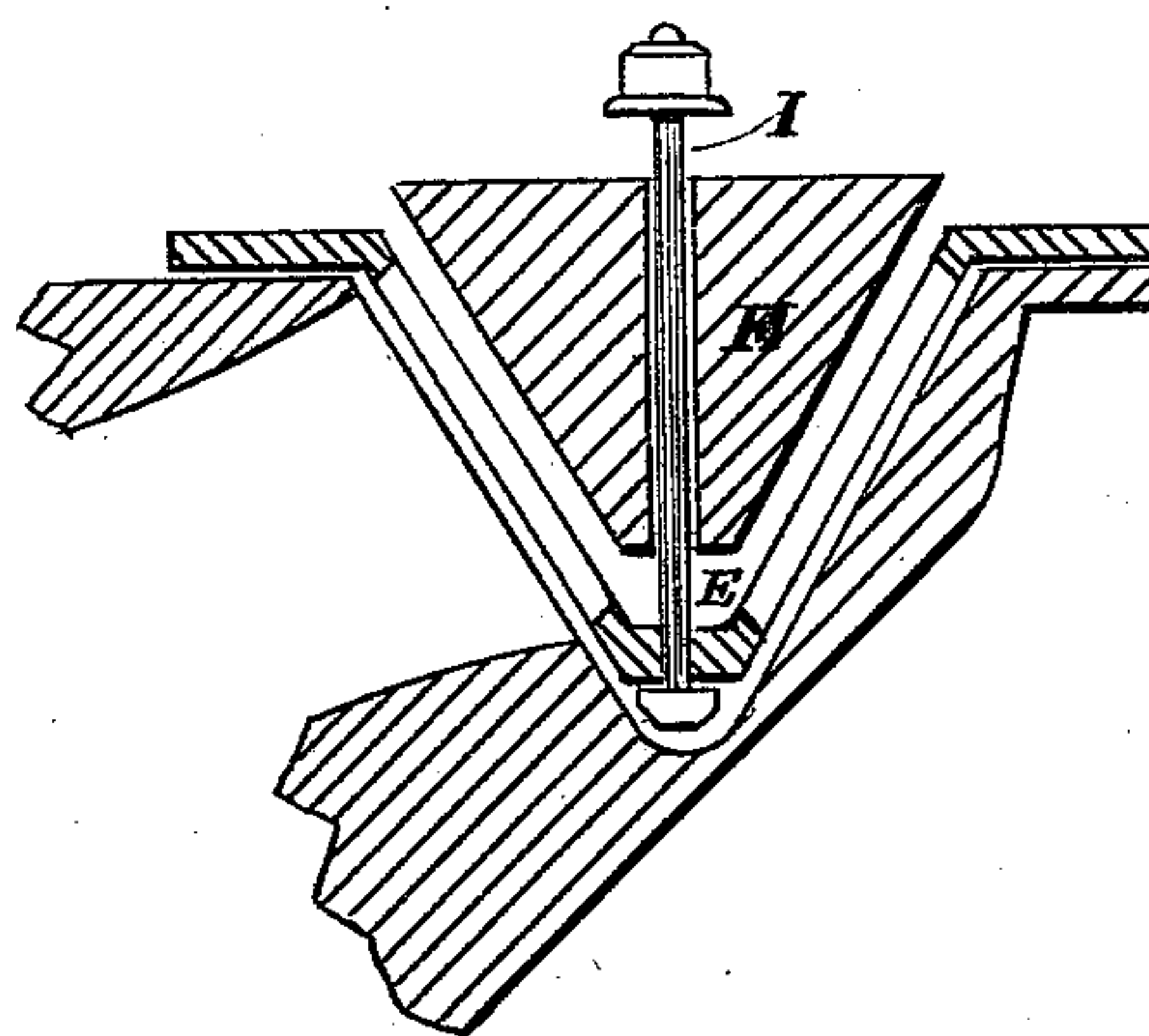
No. 213,309.

Patented Mar. 18, 1879.

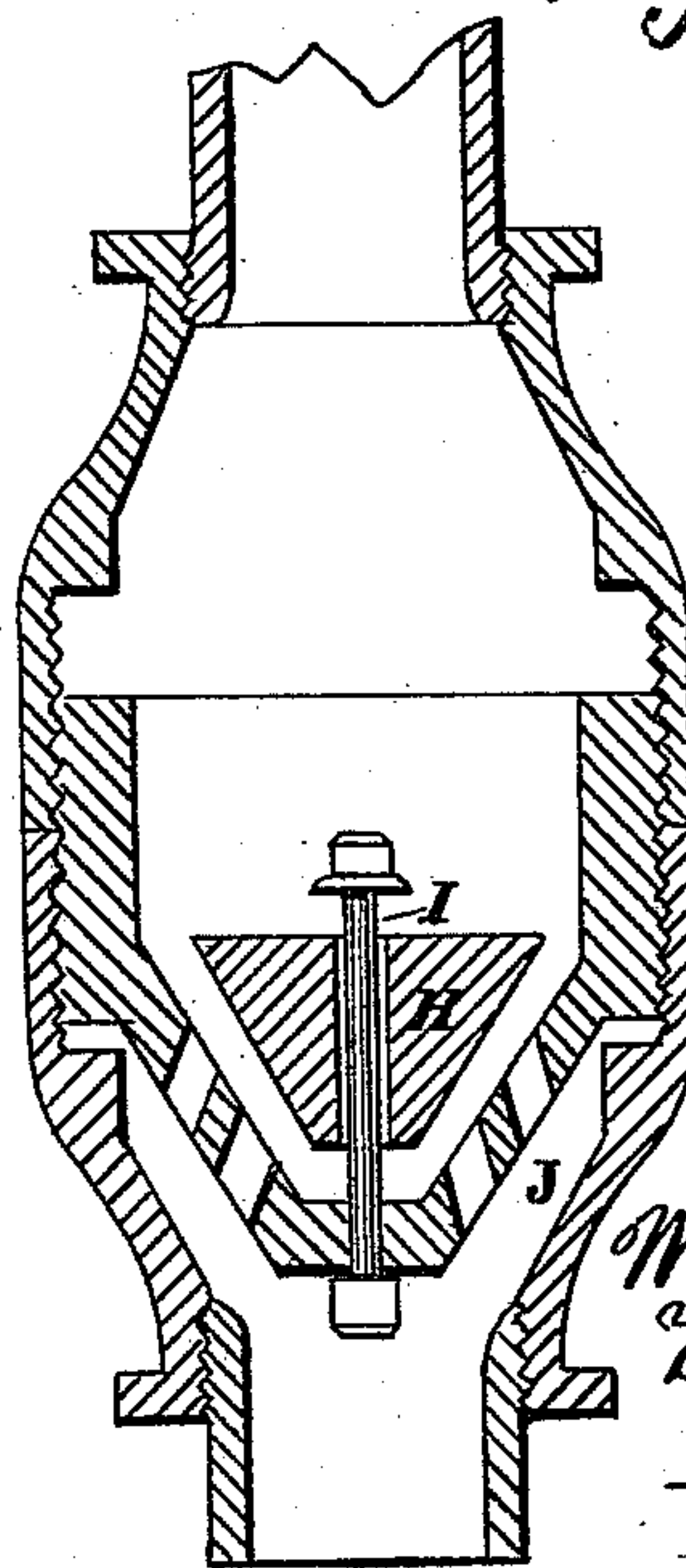
*Fig. 1.*



*Fig. 2.*



*Fig. 3.*



Witnesses  
Geo. H. Strong.  
Geo. L. Bond

Inventor  
Wm. C. Wilcox.  
By his atty's  
Dewey & Co



# UNITED STATES PATENT OFFICE.

WILLIAM C. WILCOX, OF SAN FRANCISCO, CALIFORNIA.

## IMPROVEMENT IN PUMPS.

Specification forming part of Letters Patent No. **213,309**, dated March 18, 1879; application filed December 19, 1877.

*To all whom it may concern:*

Be it known that I, WILLIAM C. WILCOX, of the city and county of San Francisco, and State of California, have invented an Improved Pump; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings.

My invention relates to certain improvements in the construction of pumps; and it consists in a means for increasing the waterways and valve-openings so as to permit a pump with a given size of cylinder to be worked to its fullest capacity without being clogged or choked.

In the accompanying drawings, Figure 1 is a vertical section of my pump. Fig. 2 is an enlarged view, showing the valves and chambers; Fig. 3, a detail view.

A is the pump-cylinder, within which the piston operates. B is the suction-pipe. C is the discharge-pipe, and D the air-chamber, these parts not differing essentially from the ordinary forms.

In the construction of a pump in which the piston is perforated for the passage of water and the reception of valves a considerable amount of space is occupied by the packing, the metallic outer circumference of the piston, and the center to receive the piston-rod, so that the amount of space available for the passage of water is always limited, and for the same reason the passage of water through the suction or other pipes which are encumbered with valves is also impeded.

In the construction of my pump I form a valve-chamber, E, (shown in the present case upon one side of the cylinder;) and this chamber has two ports, F, one opening into the cylinder at one end, while the other opens into the opposite end of the cylinder. The cylinder being placed vertically, as here shown, a clapper-valve, G, is fitted to control the lower port, opening from the cylinder, so that when the piston is forced down water will pass through this valve, and thence through the upper port into the cylinder above the piston. This valve is easily accessible by simply removing a cover from the chamber.

By this construction I am enabled to employ a solid piston in the formation of a single-acting lift-pump, and the ports and valve are not limited in size in any manner.

The suction and discharge valves H H' are made in a peculiar manner, and are, preferably, made of some solid elastic material like rubber. These valves are conical in shape, moving upon a suitable stem, I, and fitting into conical seats J, as shown. As these seats are of considerable depth, I am enabled to give them large spaces, either perforated or slotted, for the passage of water, and consequently the rise of the valve will be comparatively small and its closing quick and without jar, even when employed in very deep mines.

In order to accommodate my valves and seats so as to give the best possible results, I have made enlarged chambers K at points in the suction or discharge pipes where I wish to place these valves, and the valves and seats may be secured within these chambers so as to be removed bodily, when desired, by simply removing a section of pipe and unscrewing the valve-seat.

The operation will then be as follows: When the piston is drawn up the suction-valve H' will open and allow a body of water to enter the cylinder, the clapper-valve G closing during this operation. When the piston is forced down again the lower valve, H', closes, and the water below the piston is forced through the valve G, and thence through the upper port, F, into the cylinder above the piston. The next upstroke forces this water through the discharge-valve H.

By this construction I am enabled to run the pump at a high rate of speed, as there is no limit to the size of the valve and valve-openings, and there will be no choking or back-pressure.

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

1. The elongated conical valve H, sliding on a stem, I, in combination with a correspondingly-shaped seat, J, provided with slots or openings radial to the center of the valve, substantially as described.

2. The cylinder A, with its valve-chamber E, having the two ports F F and the single valve G, operating substantially as herein described.

3. The cylinder A, adapted to receive a solid plunger, and having the two-port valve-chamber E and valve G, in combination with the conical valves H and H' and seats J, substantially as and for the purpose herein described.

In witness whereof I have hereunto set my hand and seal.

WILLIAM C. WILCOX. [L. S.]

Witnesses:

GEO. H. STRONG,  
FRANK A. BROOKS.