

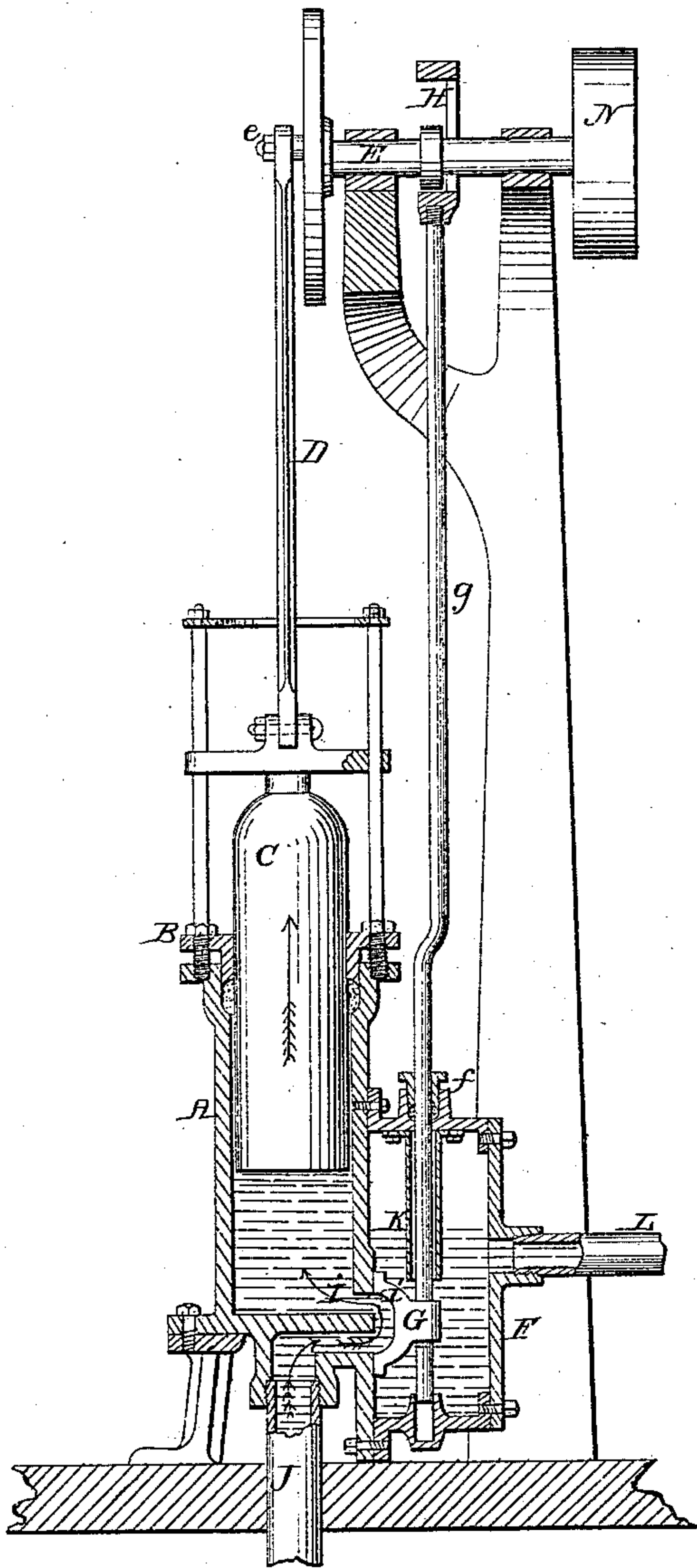
O. Snell,

Force Pump,

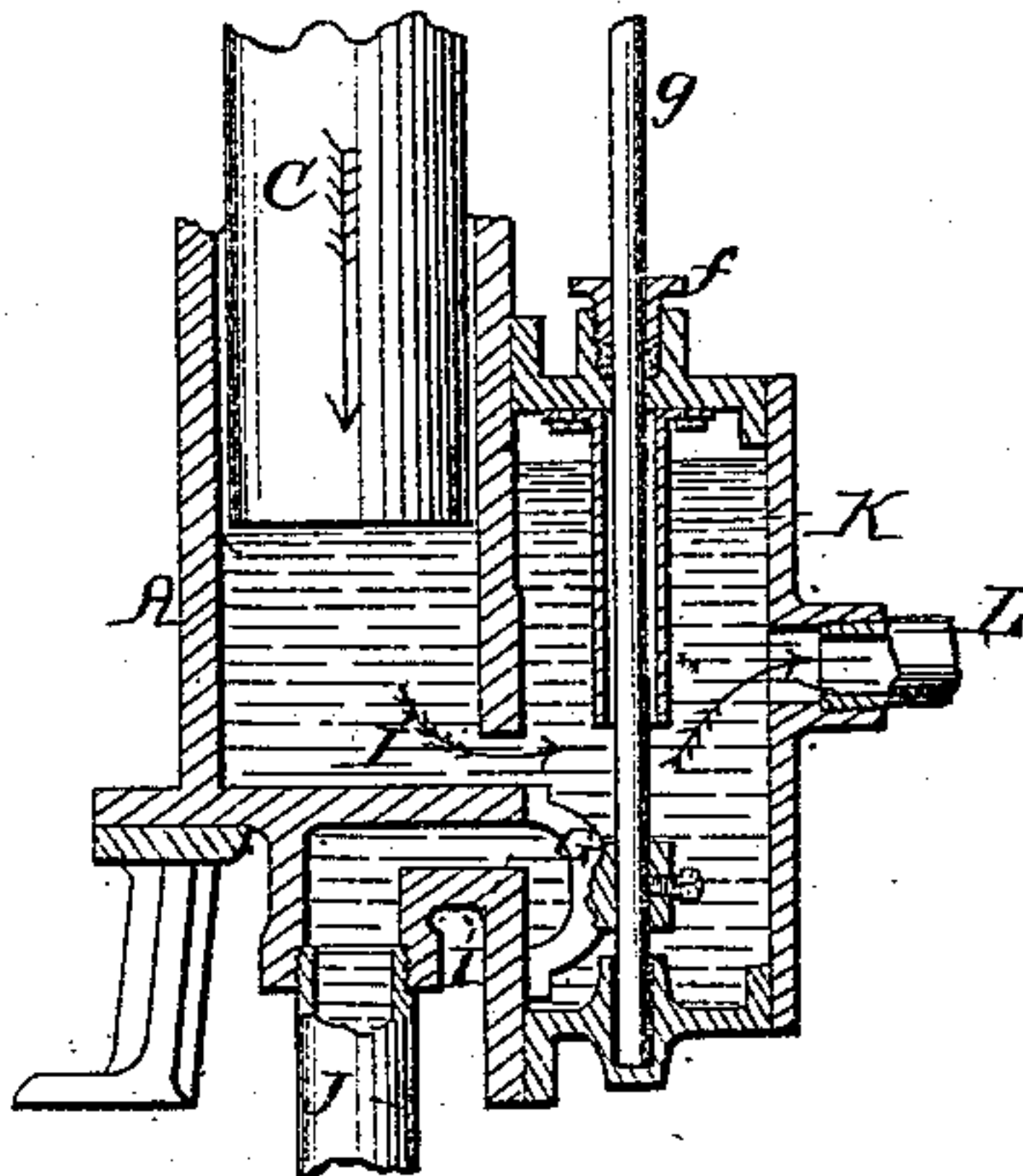
N^o 84,846.

Patented Dec. 8, 1868.

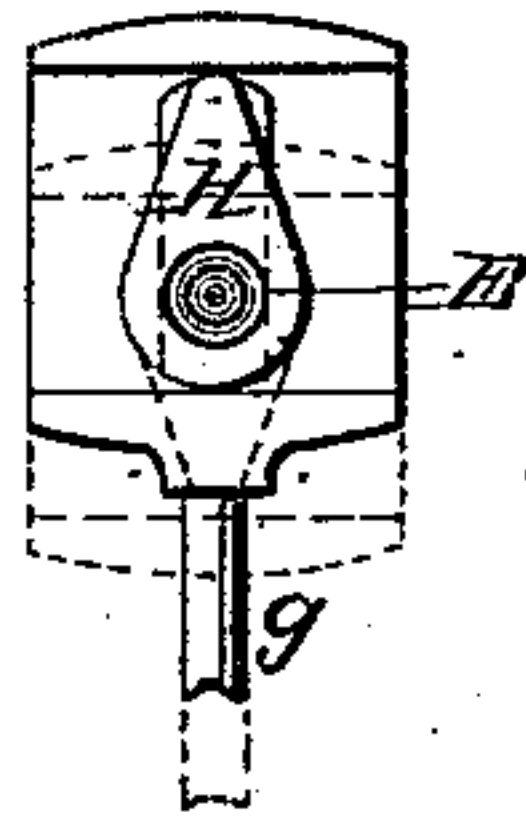
Fig; 1.



Fig; 2.



Fig; 3.



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OSCAR SNELL, OF WILLIAMSBURG, OHIO.

Letters Patent No. 84,846, dated December 8, 1868.

IMPROVEMENT IN PUMPS.

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, OSCAR SNELL, of Williamsburg, Clermont county, Ohio, have invented a new and useful Improvement in Pumps; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, making part of this specification.

This invention relates to that class of solid-plunger pumps, which are generally employed for forcing hot feed-water into steam-boilers; and

My improvement consists in providing the pump with a single slide-valve, to which a positive movement is imparted by means of a suitable cam, and in so constructing the chest or chamber in which the said valve works, that it will serve also as an air-chamber, to make the flow of water constant and uniform.

In the accompanying drawings—

Figure 1 is a vertical section of a pump embodying my improvement, the slide-valve being in such a position as to open communication between the pump and suction-pipe.

Figure 2 is a section of the working-parts of the pump, with the valve in the reverse position to that shown in fig. 1, so as to open communication between the pump and discharge-pipe.

Figure 3 is an elevation of the cam which operates the slide-valve.

A represents the barrel of a feed-pump, having the customary stuffing-box, B, and solid plunger, C, the latter being driven by a pitman, D, which is connected to the wrist *e* of the driving-shaft E.

Projecting from one side of the pump-barrel is a chest, F, which contains a slide-valve, G, whose stem, *g*, is operated by a cam, H, that is keyed to the driving-shaft E.

The valve G covers two ports, I I', the upper one of which, I', leads into the pump-barrel A, while the lower one, I, communicates with the suction-pipe J.

The valve-chest is arranged to act as an air-vessel, in the following manner:

Projecting downwardly from the top of said chest is a tube, K, of sufficient length to permit the full stroke of the valve G, and the stem *g* passes through said tube and plays within the stuffing-box *f*, and it will be seen that this provision of the tube K causes the upper part of the valve-chest to serve as an air-vessel, by which means feed-water is delivered through the discharge-pipe L in a continuous stream.

The shaft E may be driven by a belt, passing around the pulley N.

The operation of the pump is as follows:

When the piston C is ascending, as shown in fig. 1, the valve G is in such a position as to cover both of

the ports, I I', and water, consequently, flows up the suction-pipe J, and through said ports, I I', into the pump-barrel A, which flow continues during the ascent of the piston.

As soon as the piston has completed its upward stroke, the action of the cam H instantly reverses the position of the valve G, as shown in fig. 2, which permits of the contents of the pump being discharged through the port I', valve-chest E, and pipe L, into the boiler.

It will be seen that, as a positive movement is given to the valve, the pump is certain of being filled and emptied at every alternate stroke, and there is no danger of the pump becoming inoperative on account of the accumulation of steam within it; neither is there any liability of the valve becoming choked with sand or other foreign substances in the feed-water.

As leather and India-rubber valves are liable to shrink and shrivel when brought in contact with very hot water, and thereby impair, if not destroy, the efficiency of the feed-pump, and as no such objections can be brought to bear against a metallic valve, when operated by a positive movement, independent of the flow of water, the advantages of my arrangement will be understood by all.

In the drawings, my improvement is shown as applied to a single-acting pump, but it is evident that with a very slight alteration it can be adapted to a double-acting one.

If preferred, the valve-chest may be extended as high as the top of the pump-cylinder, so as to increase the capacity of the air-vessel.

The tube K, instead of being secured to the top of the valve-chest, as here shown, may project up through the same, and the stuffing-box *f* may be screwed on to the upper end of said tube.

My improvement may be applied to an ordinary hand-pump, by arranging the apparatus in such a manner that the operating-lever or handle will move the slide-valve at the termination of each stroke.

The following is what I claim as new, and desire to secure by Letters Patent:

In combination with the pump proper, A, I claim the valve-chest F, constituting, also, an air-chamber, the slide-valve G, tube K, and discharge-pipe L, when constructed and arranged, to operate in the manner and for the purposes herein set forth.

In testimony of which invention, I hereunto set my hand.

OSCAR SNELL.

Witnesses:

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