(No Model.)

J. G. IRVING.

PUMP.

No. 298,208. Patented May 6, 1884.

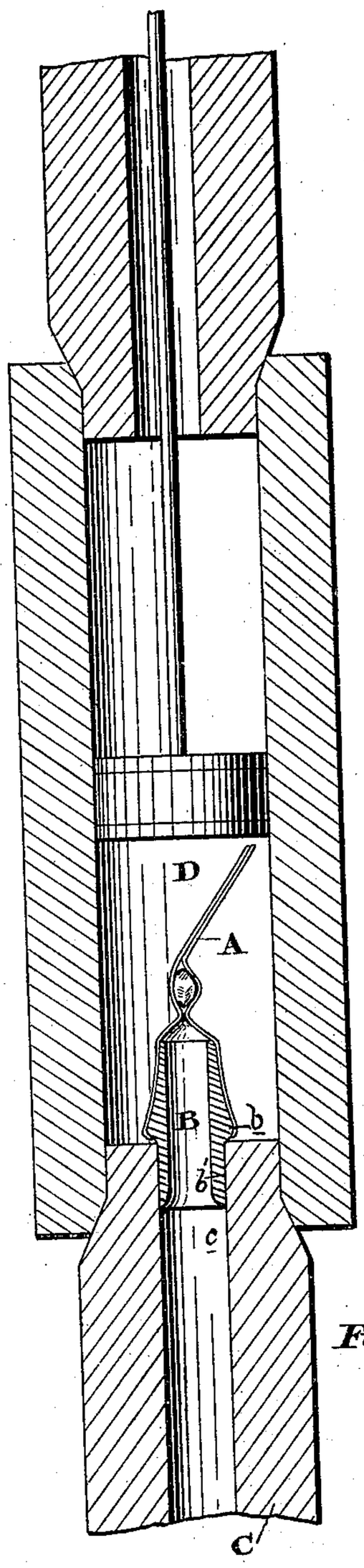

Fig. 2.

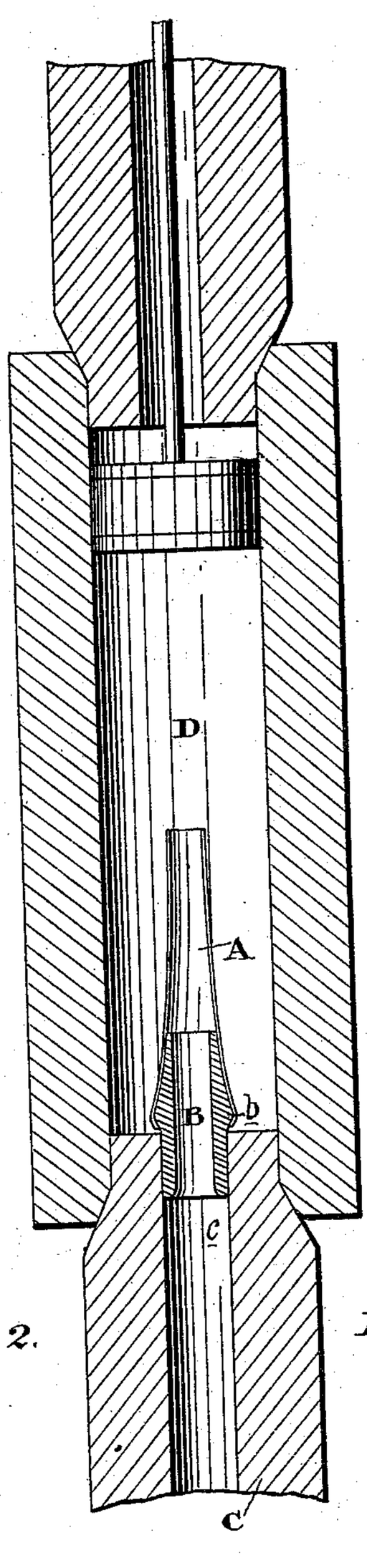

Fig. 1.

Witnesses.

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UNITED STATES PATENT OFFICE.

JOHN G. IRVING, OF MARKDALE, ONTARIO, CANADA.

PUMP.

SPECIFICATION forming part of Letters Patent No. 298,208, dated May 6, 1884.

Application filed May 19, 1883. (No model.)

To all whom it may concern:

Be it known that I, JOHN GILLILAND IRVING, a subject of the Queen of Great Britain, residing at the village of Markdale, in the county of Grey, in the Province of Ontario, Dominion of Canada, have invented certain new and useful Improvements in Pumps, of which the following is a specification.

This invention relates to improvements in pumps of that class in which flexible pipes or tubes are used in place of the ordinary foot-valve; and it consists in the peculiar construction, combination, and arrangement of parts, as more fully hereinafter described and claimed.

Figure 1 is a sectional view showing an ordinary wooden pump-cylinder with a portion of the suction-pipe below it in section, showing the valve open; and Fig. 2 is a similar view showing the valve closed.

It is well known to those using long lift-pumps that the ordinary foot-valve, placed below the plunger or sucker, is frequently held open by gravel, chips, or other obstructions, which may be carried by the water up the suction-pipe. When thus held open, the suction-pipe becomes useless for the object it is intended to accomplish, as it fails to hold the water between it and the plunger. Various methods have been devised for remedying this evil, but all such with which I am acquainted are too expensive for use in cheap pumps; and the object of this invention is to provide a simple yet effective substitute for the ordinary foot-valve, and it is accomplished in the following manner:

I provide a thimble, B, of substantially the shape shown in the drawings, having a projection or shoulder, *b*, which thimble is inserted in the bore of the log C, where it is rigidly held by friction, or it may be secured in any convenient manner.

A is a tube of rubber, leather, or other flexible material, the bottom end of which fits over the upper end of the thimble B, and is drawn down until it passes over the projection or shoulder *b* on the thimble, and it is thus held securely in place without other fastening. This projecting flange *b* has the further function of preventing the thimble being driven down the suction-tube by the pressure due to the force of the downstroke of the piston, thus performing the double function of helping to hold the thimble in place and retaining the rubber tube on the thimble.

When the plunger is caused to travel upwardly, the air in the chamber surrounding the pipe or tube A is exhausted, as well as the air within the tube and down through the suction-pipe. The said flexible pipe A will therefore open readily to permit the free flow of the water passing up the suction-pipe. When the sucker or plunger commences on the downstroke, the water previously drawn up through the tube A will surround the said tube in the chamber within which it is placed, thereby causing the tube to collapse, and forming a water-tight connection to prevent the escape of the water back through the suction-pipe. In the event of a chip or stone having found its way into the tube, the flexibility of the tube A permits the tube to close entirely around the said obstruction. Consequently, the obstruction mentioned will not hold the tube open sufficiently to permit the escape of the water, whereas had the said obstruction entered an ordinary foot-valve, the said foot-valve would have been held open and its efficiency thereby destroyed.

I am aware that flexible tubular valves have before been made, and therefore make no claim to such, broadly.

What I claim as new is—

The thimble B, having one end constructed to enter the suction-tube of a pump, the other end tapered to receive a flexible tube, and provided with a projecting flange, *b*, adapted to prevent the thimble being forced entirely into the suction-tube, in combination with the flexible rubber tube A, held on said thimble by the flange *b*, substantially as and for the purpose specified.

J. G. IRVING.

Witnesses:

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