

L. J. KNOWLES.
Sirup-Pumps.

No. 158,381.

Patented Jan. 5, 1875.

Fig. 1.

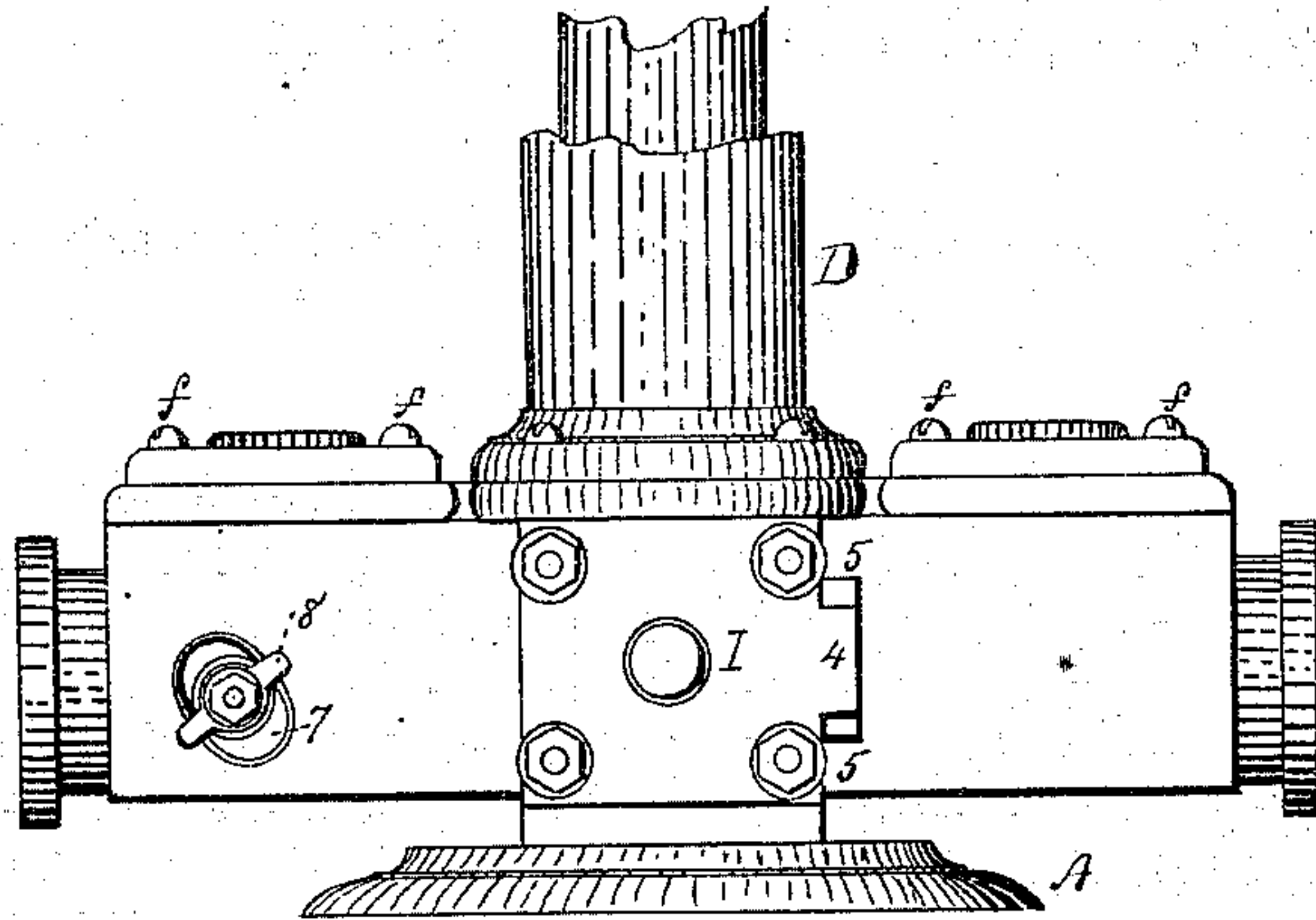


Fig. 2.

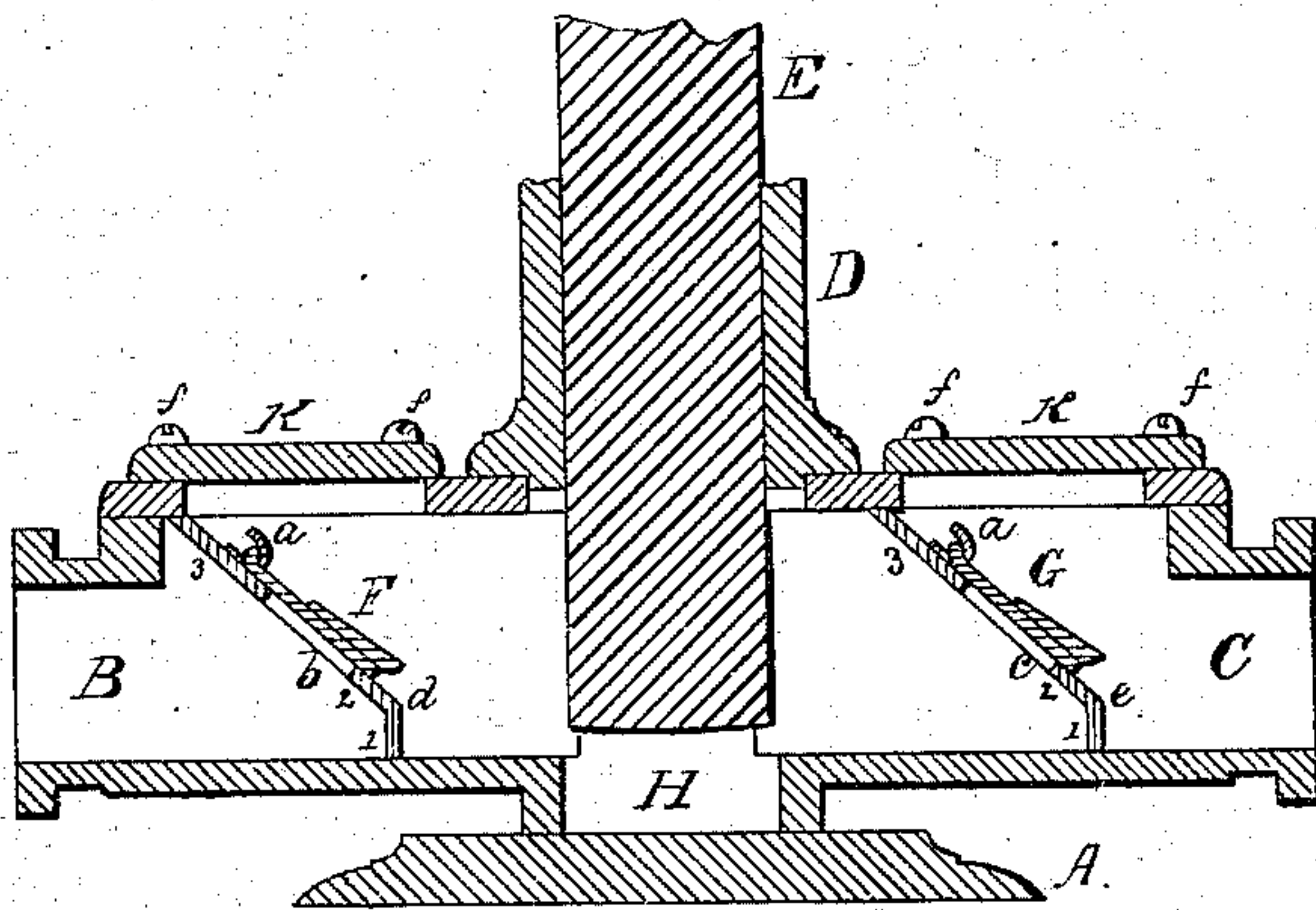
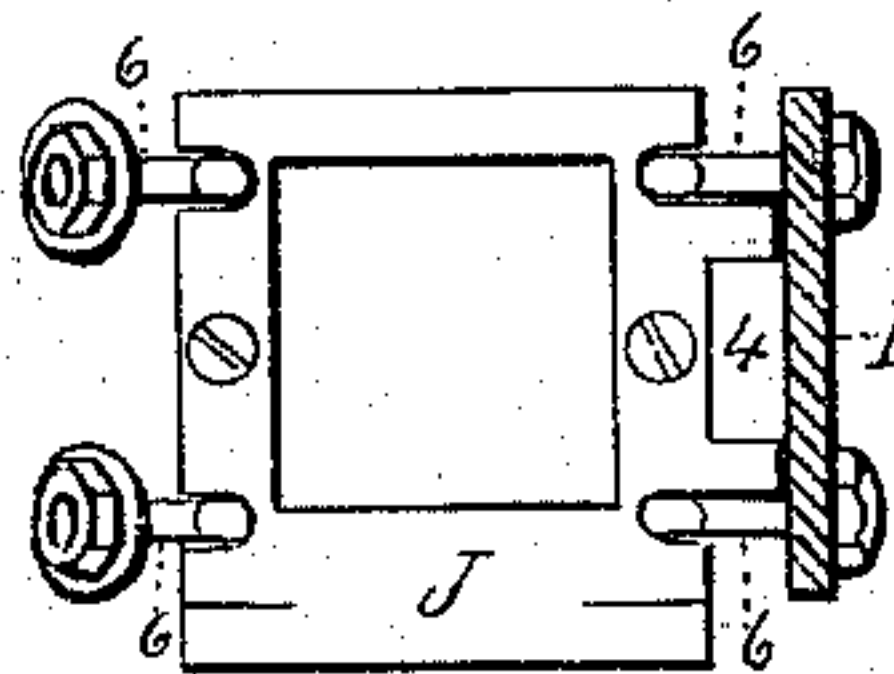


Fig. 3.



Witnesses:
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LUCIUS J. KNOWLES, OF WORCESTER, MASSACHUSETTS.

IMPROVEMENT IN SIRUP-PUMPS.

Specification forming part of Letters Patent No. **158,381**, dated January 5, 1875; application filed November 16, 1874.

To all whom it may concern:

Be it known that I, LUCIUS J. KNOWLES, of the city and county of Worcester and Commonwealth of Massachusetts, have invented certain new and useful Improvements in Sirup-Pumps; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings forming a part of this specification, and in which—

Figure 1 represents a side view of so much of a sirup-pump as is necessary to illustrate my present improvements. Fig. 2 represents a vertical central section of the same, the line of section being cut longitudinally through the valve-chambers and valves. Fig. 3 represents a side view of a detached part, a portion being shown in section, as will be hereafter explained.

To enable those skilled in the art to which my invention belongs to make and use my said improvements, I will proceed to describe it more in detail.

The object of my present invention is to produce a sirup-pump which, while possessing great strength and simplicity, shall, at the same time, be so constructed as to prevent, in a great measure, hard substances, such as nails and broken pieces thereof, and other foreign substances which happen accidentally to be mixed with the sirup, from being drawn in and forced entirely through the pump. A further object of my present invention is to construct the cylinders and valve-chambers so that they can be readily and conveniently opened for the purpose of examination, repair, and the removal of foreign substances which may have been arrested either in the valve-chambers or the base of the cylinders.

In the drawings, the part marked A represents the base of the pump, and on the top of which are arranged the inlet valve-chamber B and the outlet valve-chamber C, and above these rises the pump-cylinder D, within which a solid piston, E, works. Only a section of the lower part of cylinder D and piston E is shown in the drawings; but it will be understood that the cylinder D extends to any proper and desired height, and is provided with a suitable packing-box at its upper end, through which the upper end of the piston works, the necessary motion to the piston being imparted

by any suitable mechanism connected to its upper end in any of the well-known modes employed in connecting piston-rods to their operating mechanism. The piston E may be arranged so that it may descend into the base of the cylinder between the valve-chambers, as indicated in Fig. 2. F is the inlet-valve, and G the outlet-valve. These valves are both provided with projecting gudgeons at the upper outer corner, which rest and turn in hook or U bearings *a*, two of which are shown in Fig. 2. The valve-seats *b c* are arranged to support the valves in inclined positions, as indicated in Fig. 2. It will also be observed that the division-pieces *d e* of the valve-chambers B C, and which division-pieces form the valve-seats, are constructed and arranged in a peculiar manner, their lower ends 1 1 rising perpendicular for a short distance, and then extending back and upward at an angle, as seen at 2 2 and 3 3, Fig. 2, the valve-ports being cut through the inclined portions of such divisions. Below the lower surfaces of the valve-chambers B and C, and in line with the lower end of the piston E, is a chamber, H. To the front side of the base of the cylinder is a door, I, which, when open, affords convenient and ready access to chamber H, and to those portions of valve-chambers B and C between the valves F and G. Door I has a projecting right-angle tongue, 4, which is hinged between ears or lugs 5 5 upon a face-plate, J, securely fastened to the side of the base of the pump, through which the opening is made for access to chamber H, as before stated. Door I is retained in a closed position, as shown in Fig. 1, by means of four hinged bolts, 6 6, said bolts being hinged to plate J, while slots are cut in door I, so that by unscrewing nuts to bolts 6 they can be swung back and the door opened, as indicated in Fig. 3, door I being shown open, but in section.

The operation is as follows: When the piston E is raised the valve F opens and allows the sirup to pass through valve-chamber B and follow the piston up into cylinder D, and when the piston descends valve F closes, and the sirup is forced out through valve G and valve-chamber C. During the operation, if any hard substances or foreign matter is drawn into the chamber B with the sirup, the tendency of the

parts 1 and 2 of division *d* is to arrest and stop their progress; but if they happen to pass through valve F their greater specific gravity will cause them to lodge in chamber H, and should any of them be worked forward by the action of the sirup they will be arrested by the parts 1 and 2 of division *e* of chamber C.

A clearing-hole, 7, is made in the side of valve-chamber B, and stopped or closed by means of a screw-clamp, 8, so that access can be had in a convenient manner to valve-chamber B in rear of valve F for the purpose of removing foreign substances which may have been arrested by the division-piece *d*. Access can also be readily and conveniently had, as before explained, to chamber H and the space between the valves F and G by means of the swinging door I.

Caps K K, secured by screws *ff*, close openings in the tops of valve-cylinders B and C. By removing said caps valves F and G are accessible for repairs, adjustment, or for other purposes.

Having described my improved sirup-pump, what I claim therein as new and of my invention, and desire to secure by Letters Patent, is—

1. In combination with the valve-chambers B and C, the valves F and G and valve-chamber divisions *d* and *e*, formed substantially as shown, arranged and operating substantially as and for the purposes set forth.

2. The combination, with valve-chambers B and C, provided with division-pieces *d* and *e*, of the chamber H below the piston E, substantially as and for the purposes set forth.

3. The combination, with the base of the cylinder D, of hinged door I and hinged holding-bolts 6 6, substantially as and for the purposes set forth.

LUCIUS J. KNOWLES.

Witnesses:

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