

E. L. STARCK.
Apparatus for Drawing Liquids from Casks, &c.

No. 225,175.

Patented Mar. 2, 1880.

Fig. 1.

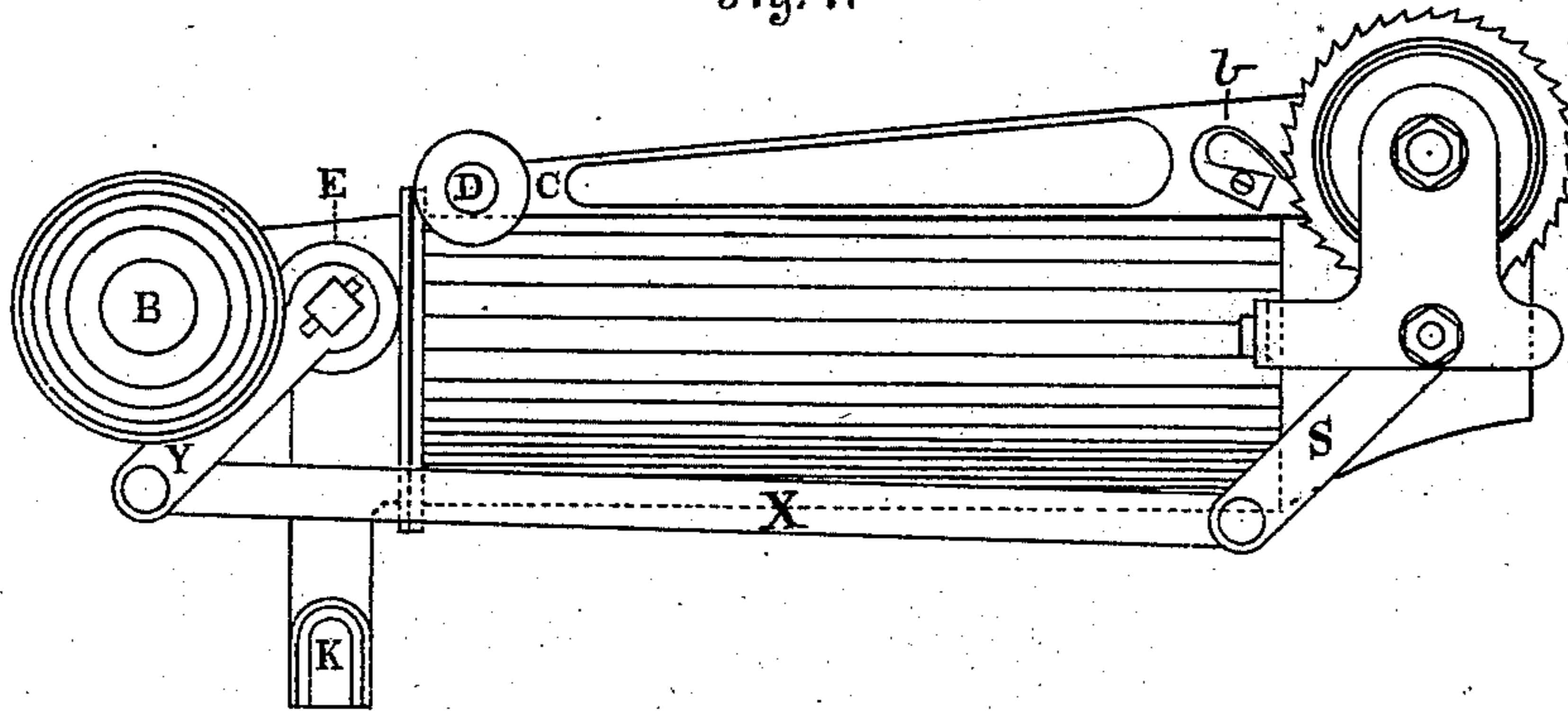


Fig. 2.

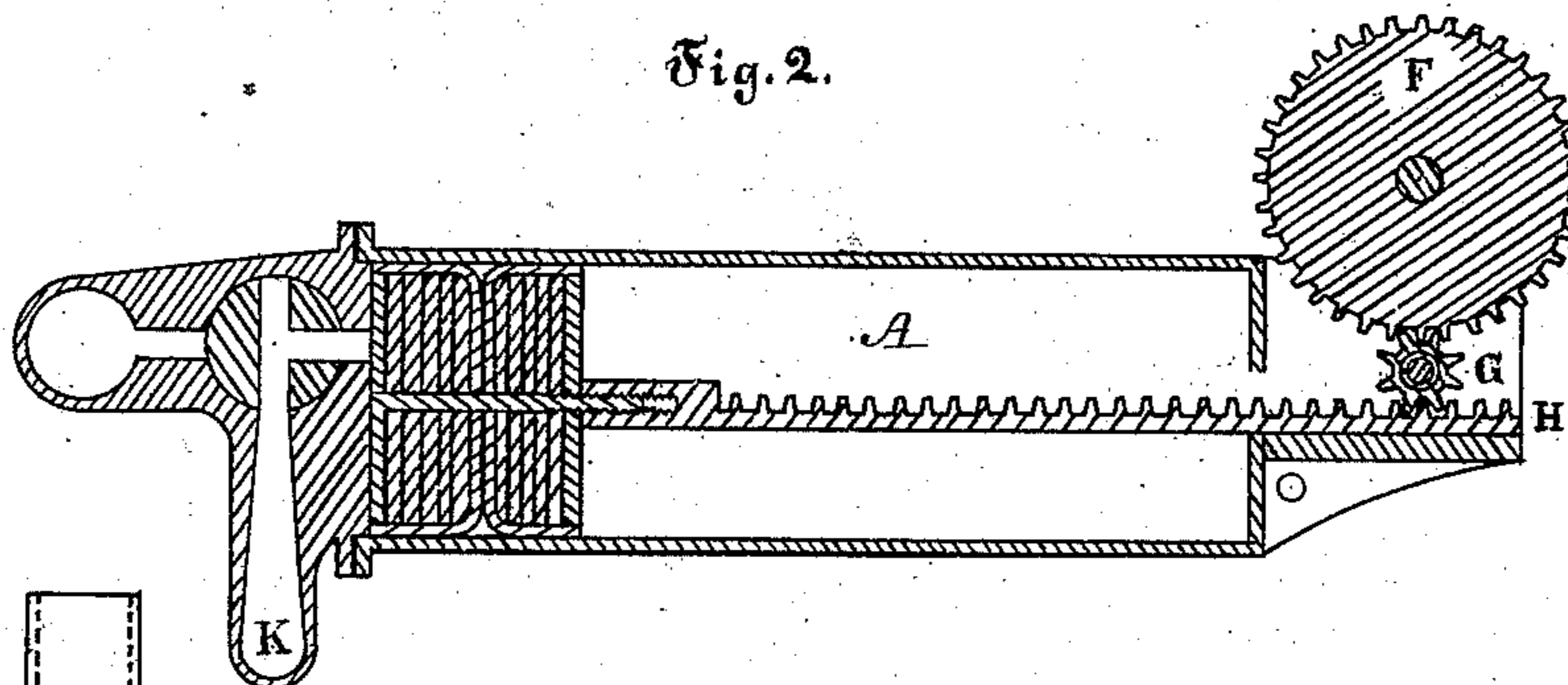
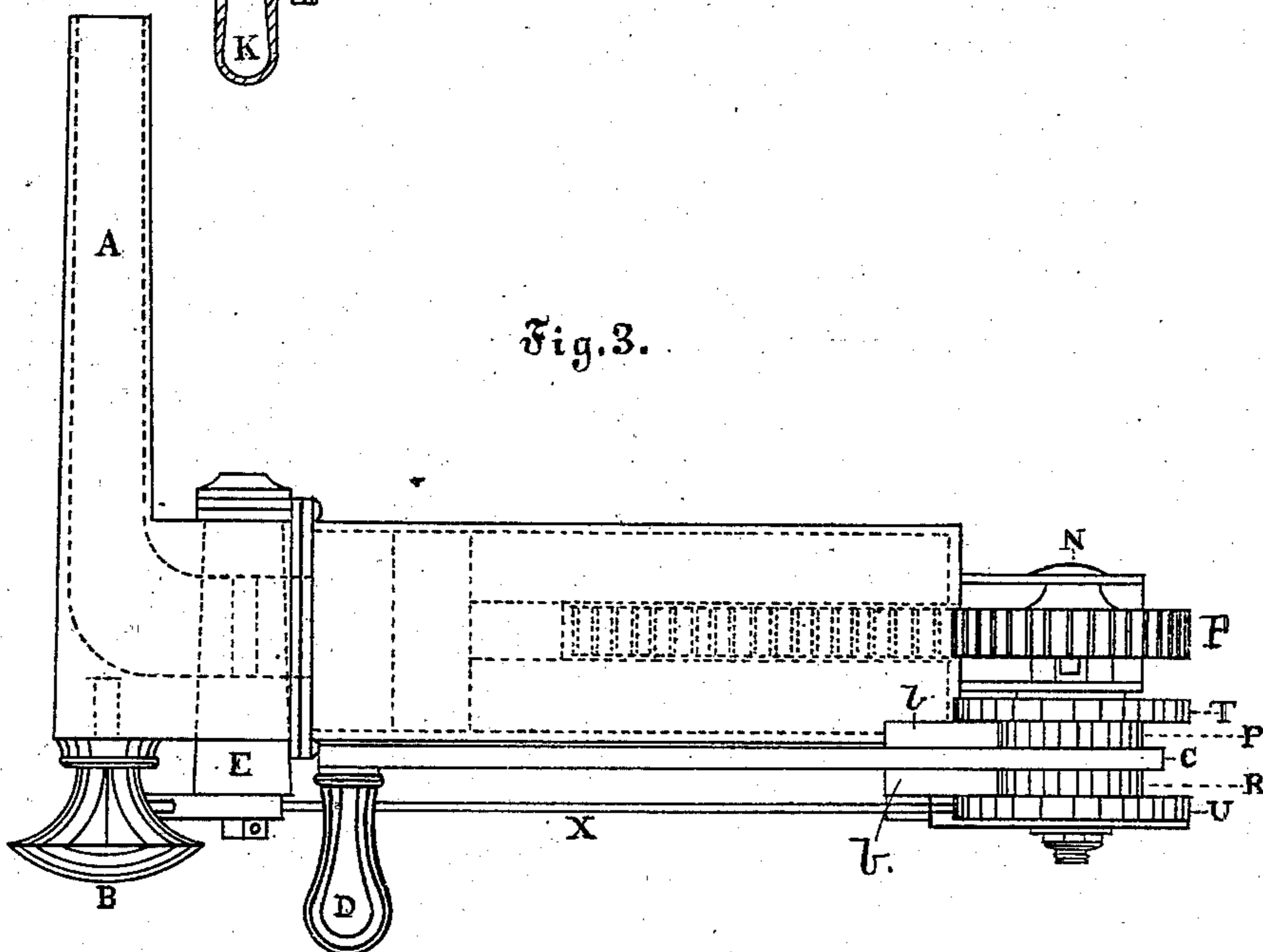


Fig. 3.



WITNESSES:

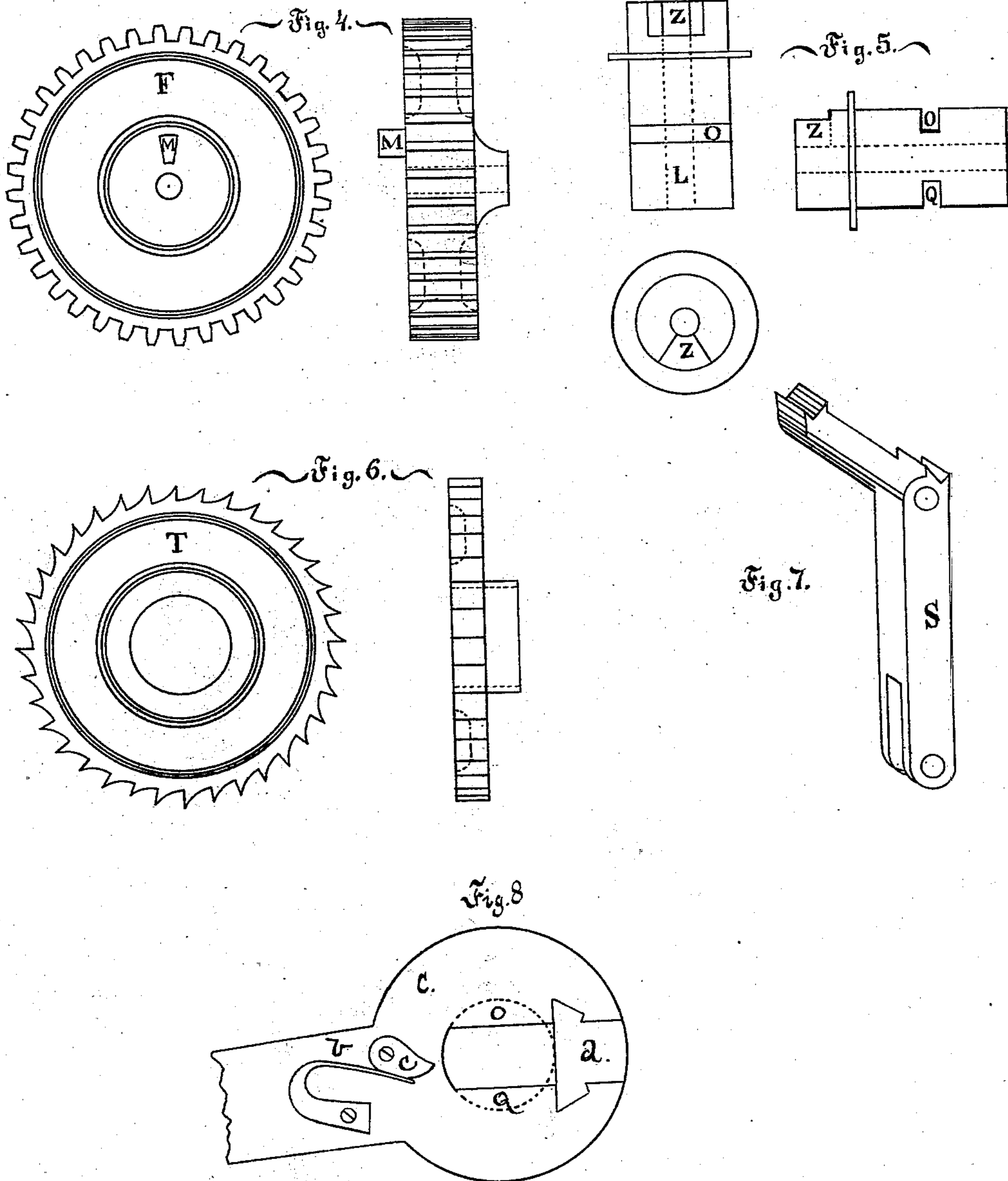
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UNITED STATES PATENT OFFICE.

EDWARD L. STARCK, OF BALTIMORE, MARYLAND.

APPARATUS FOR DRAWING LIQUIDS FROM CASKS, &c.

SPECIFICATION forming part of Letters Patent No. 225,175, dated March 2, 1880.

Application filed September 3, 1879.

To all whom it may concern:

Be it known that I, EDWARD L. STARCK, of the city of Baltimore, in the State of Maryland, have invented a new and useful Improvement in Apparatus for Drawing Liquids out of Casks, Kegs, or other Vessels, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof.

Heretofore the liquids have been drawn out of casks or kegs by means of a common faucet, which always required the bung-hole to be kept open. For a certain class of liquids which (such as beer and cider) lose their strength by coming in contact with air this method was found to be objectionable, as the free access of air and escape of gases made them flat and stale. To remedy this various forms of apparatus were devised, which admitted only a limited quantity of air into the keg, just sufficient to produce the flow. Notwithstanding that they partly prevented the free escape of gases, they still did not protect the liquid from the action of the air, which is the real cause of the loss of strength and staleness of the same. My invention is based upon an entirely different and new principle. Keeping the bung-hole perfectly closed and not admitting at the same time any air into the keg, I make the liquid flow by its own gravity into the cylinder of a vacuum-pump, from which it is forced out by the downstroke of the piston, and consequently does not come in contact with air before it leaves the nozzle. Above the liquid in the keg I preserve a perfect vacuum till the keg is emptied.

In the accompanying drawings, in which similar letters of reference indicate like parts, Figure 1 is a front elevation of my faucet. Fig. 2 is a vertical longitudinal section through the geometrical axis of the cylinder. Fig. 3 is a top view of the faucet. Figs. 4, 5, 6, 7, and 8 represent certain separate parts and pieces of the mechanism, and will be explained and described at the proper place.

The working of my apparatus is very simple, and is as follows: After the straight pipe A is driven through the tap-hole in the keg, (for which purpose I provide my faucet with a strong cast-iron knob, B,) the motion of the lever C, by means of the handle D, toward the

right will, in the first place, turn the cock E to a quarter of a circumference, open the passage from the keg into the cylinder, and then any further motion of the same lever will be transferred through the spur-wheel F and a pinion, *g*, to the rack H, which acts at the same time as the piston-rod of the pump. While the upstroke of the piston is producing a vacuum in the cylinder the space in the same is being filled with the liquid flowing out of the keg, by its own gravity, through the pipe A. Now, if we commence the downstroke—that is, move the lever C to the left—the cock E will make a quarter of a revolution and be brought to its former position. This will close the channel leading to the keg and open the communication of the cylinder with the nozzle K, through which the liquid will be forced out while we are bringing the lever C in its first position. The three-way cock E makes automatically a quarter of a revolution every time we change the motion of the lever C from left toward the right, and vice versa; and this turning of the cock takes place always ahead of any motion of the piston, no matter at what portion of the up or down stroke we reverse the motion. To accomplish this I secure to the side face of the spur-wheel F a strong pin, M, and on the shaft L, which turns free on the journal N, I cut a slot, Z, larger than the pin M by two teeth of the spur-wheel F. These two teeth which I lose on the spur-wheel F enable me to give a turn of ninety degrees to the cock E before the spur-wheel F communicates any motion to the piston. This lost motion is transferred to the cock E by the following arrangement: The lever C is secured to the shaft L, as shown in Fig. 8, the shaft being provided with suitable slots O and Q, and secured to it by a dovetailed key, *a*. At a proper distance from the shaft L, on each side of the lever C, is a spring, *b*, pressing a catch, *c*, which works in a ratchet. These ratchets P and R are riveted to the side faces of larger wheels T and U and sit loose on the shaft L. The wheels T and U gear in a knee-piece, S, a combination of a pinion with a crank, which, by a connecting-rod, X, turns the crank Y of the three-way cock E. The catches, ratchets, and wheels T and U occupy a reverse position toward each

other on different sides of the lever C, and this is necessary, as one set must be thrown out of gear while the second set is in gear with the knee-piece S, according to whether the lever C is on its up or down stroke.

In order to be able to open or close the cock E at any position of the lever C, I designed this intermediate gear—that is, the knee-piece S and wheels T and U—with a peculiar shape of teeth. The curvature of the teeth of wheels T and U is generated by the radius of the outer circle of the knee-piece, and the curvature of the teeth of the latter by the radius of the outer circle of the former.

It will be seen that by this method of withdrawing their contents from vessels as perfect a vacuum is formed in the same as is compatible with the evolution of gas from or evaporation of their liquid contents. Were the liquid mercury or other non-volatile or slightly-volatile liquid the vacuum formed would be practically a perfect one, which fact suggests uses for my apparatus which are widely different from the single one hereinbefore referred to—viz., the tapping of liquids from casks.

What I claim is—

1. In an apparatus for withdrawing their liquid contents from vessels without contact of air with said contents, a chamber provided with mechanism for producing a vacuum therein, and having a cut-off actuated by the said mechanism, as set forth.

2. In an apparatus for withdrawing their liquid contents from vessels without contact of air with said contents, a chamber provided with mechanism for producing a vacuum therein, and having a cut-off actuated by the said mechanism, the motion of the cut-off preceding that of the vacuum-producing mechanism, as described.

3. In an apparatus for withdrawing their liquid contents from vessels without contact of air with the same, a vacuum-chamber communicating with said vessel, and having a

three-way cock in the connection, as and for the purpose set forth.

4. The combination, substantially as set forth, of the faucet and nozzle, the cylinder and piston, and the three-way cock, as described.

5. The combination, substantially as set forth, of the faucet and nozzle, the cylinder and piston having rack and pinion, and the three-way cock, as described.

6. The combination, with the faucet, nozzle, cylinder, piston, and rack, of the actuating-lever and intermediate gearing, whereby the three-way cock is operated in advance of the stroke of the piston, as described.

7. The combination, with the faucet, nozzle, three-way cock, and cylinder, of the piston, consisting of a series of washers inclosed in cup-shaped packings, as set forth.

8. In combination with the vacuum-chamber and its connection, a three-way cock, adapted, as described, to set up communication between the vacuum-chamber and the vessel whose contents are to be discharged, and to discharge the contents of the vacuum-chamber after a whole or partial filling, as described.

9. The three-way cock having the connecting-rod of its crank attached to the knee-piece S, which latter is mounted on the journal with the pinion that transmits motion to the rack and piston of the pump, as set forth.

10. The knee-piece S and wheels T and U gearing therewith, as described, and provided with ratchets P and R, made fast to the wheels, the wheels and ratchets being free to turn on the shaft L, as set forth.

11. In combination with the lever C and slotted shaft, the dovetail key *a*, substantially as described.

ED. L. STARCK.

Witnesses:

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AL. M. BRISCOE.