

(No Model.)

W. A. SMITH.
BARREL FILLER.

No. 586,077.

Patented July 6, 1897.

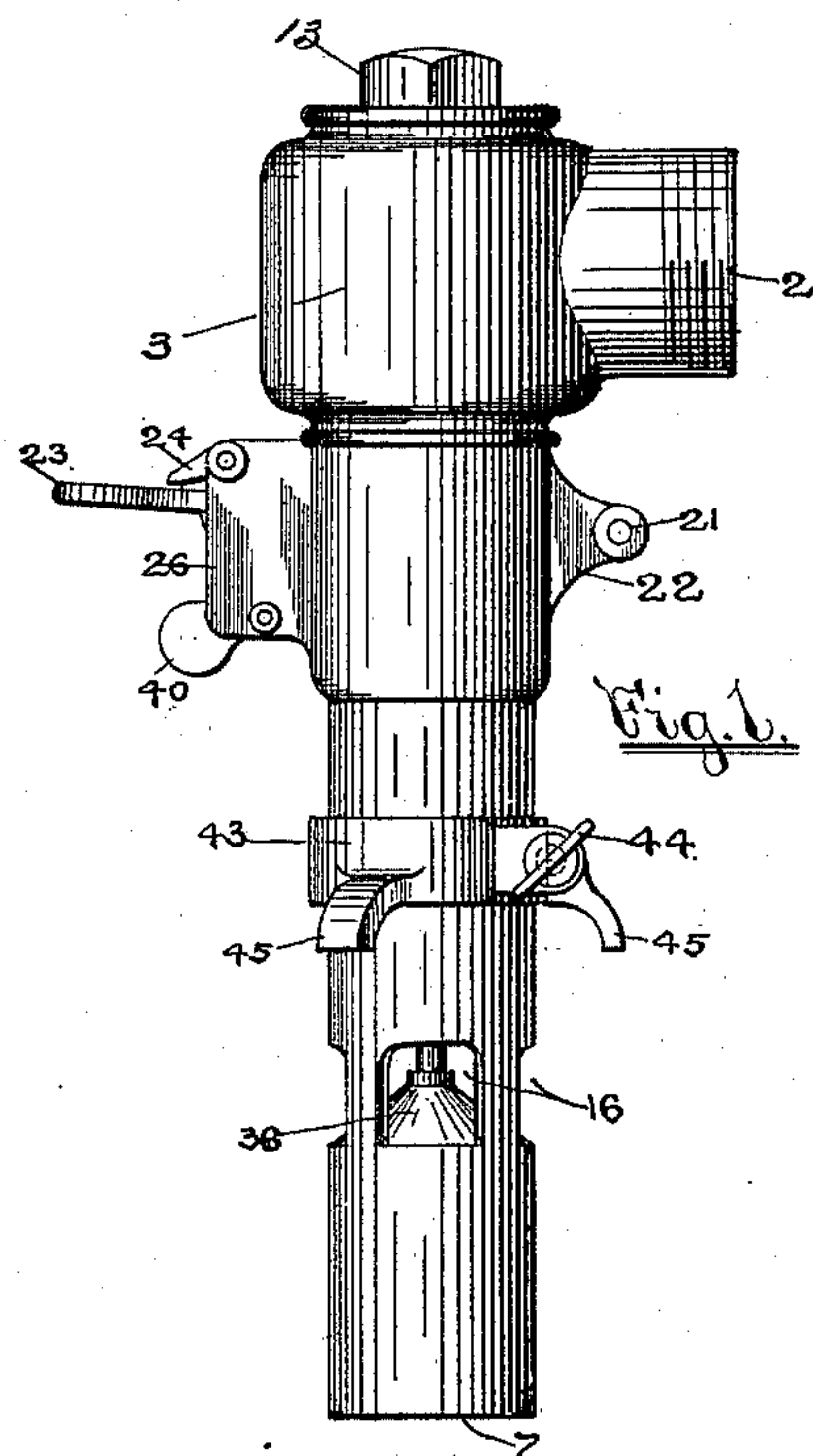


Fig. 1.

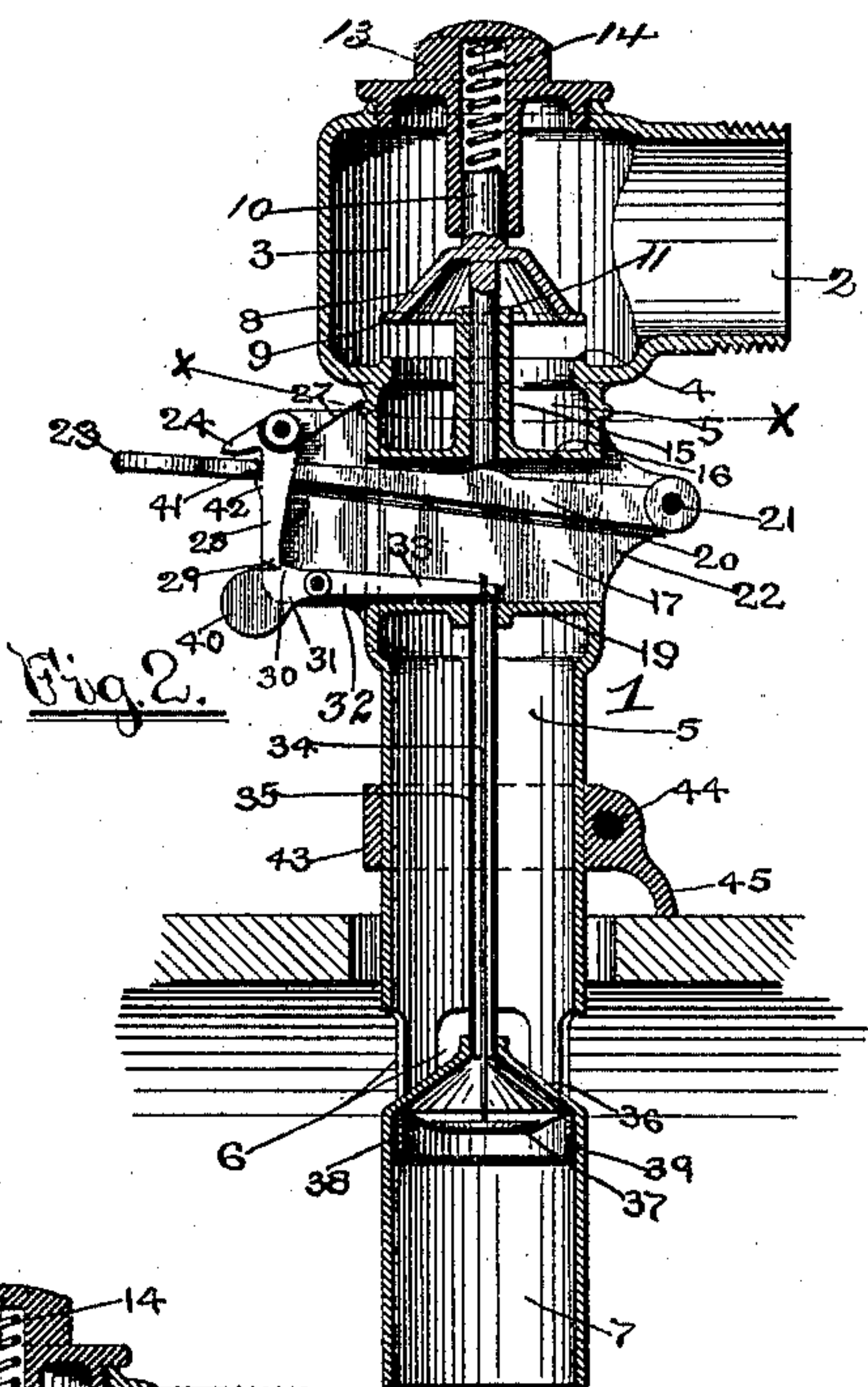


Fig. 2.

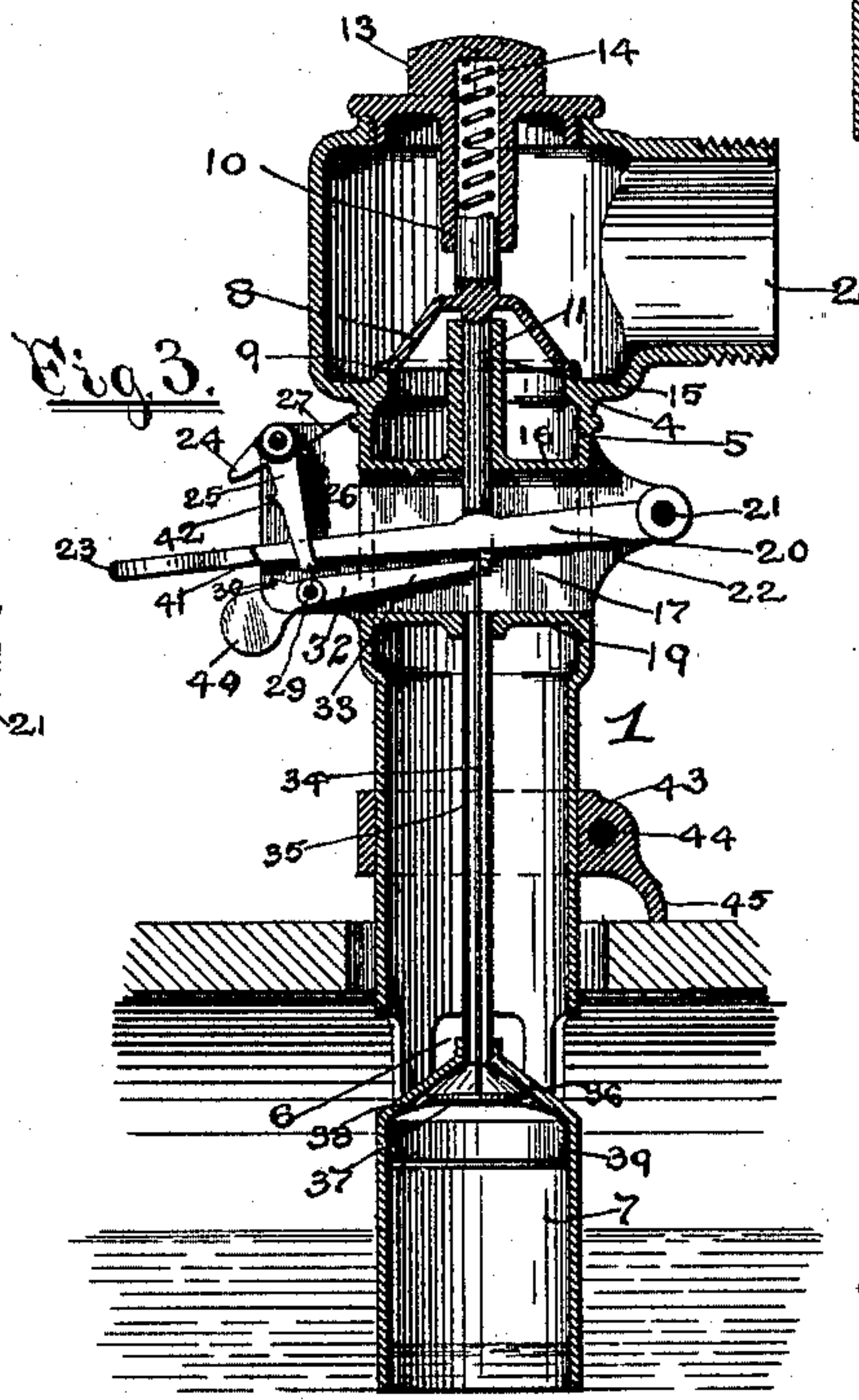


Fig. 3.

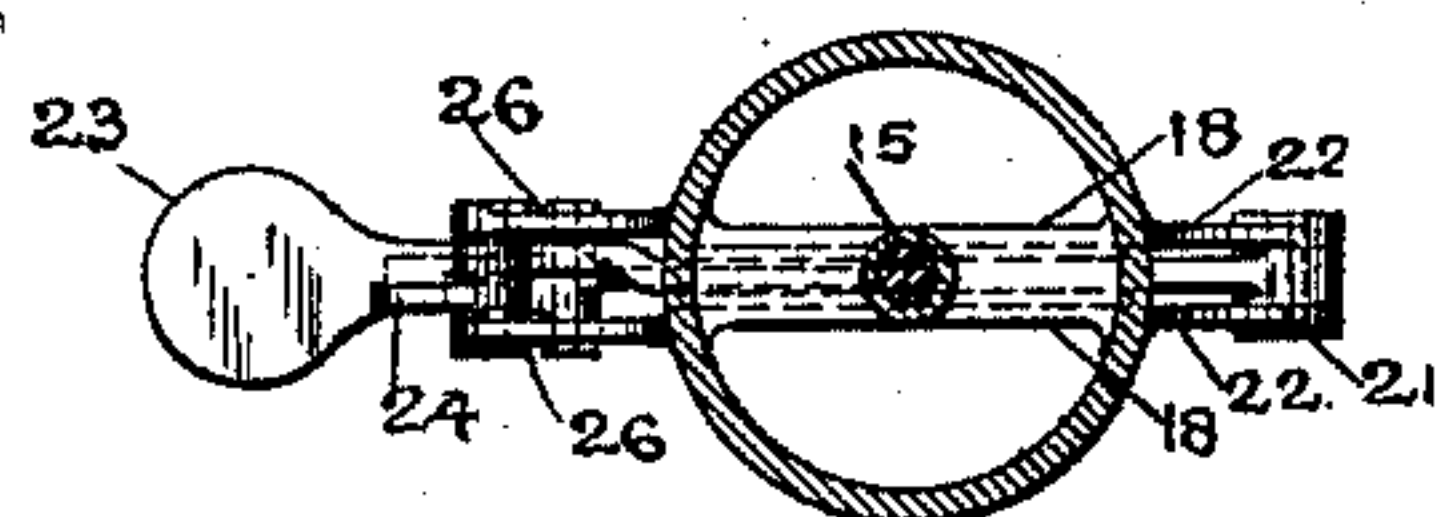
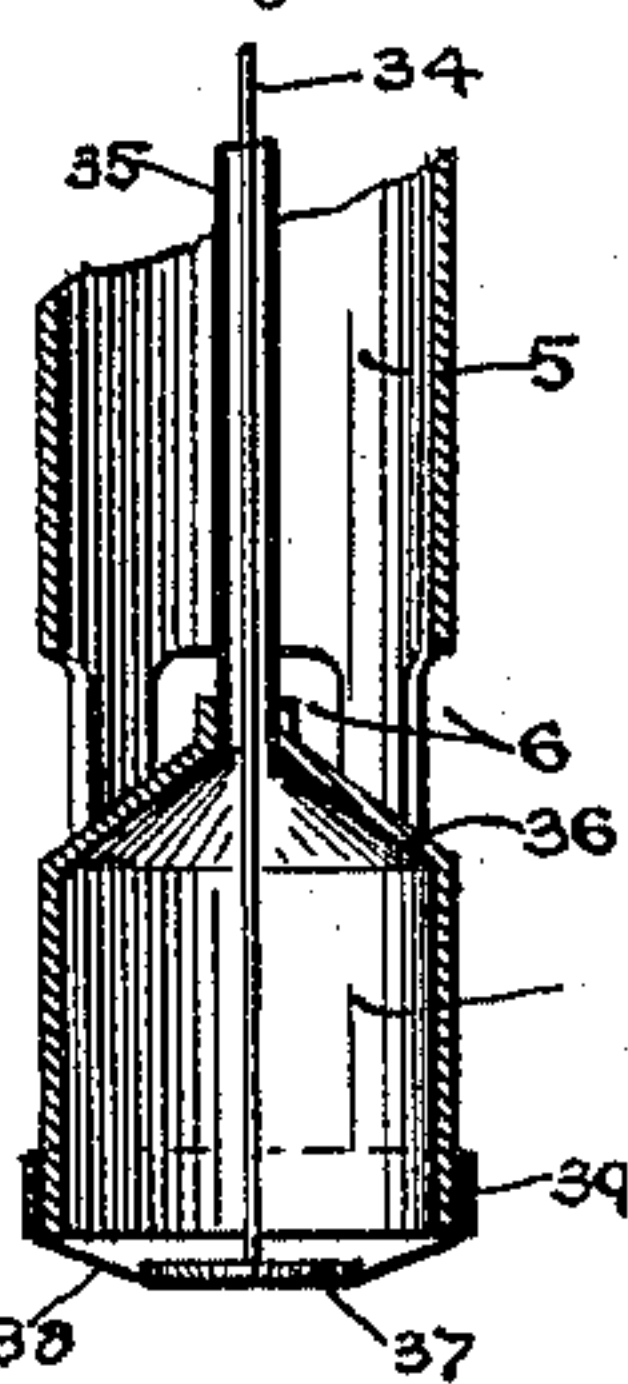


Fig. 4.

Fig. 5.



Witnesses.

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WILLARD A. SMITH, OF PROVIDENCE, RHODE ISLAND.

BARREL-FILLER.

SPECIFICATION forming part of Letters Patent No. 586,077, dated July 6, 1897.

Application filed November 21, 1895. Serial No. 569,715. (No model.)

To all whom it may concern:

Be it known that I, WILLARD A. SMITH, a citizen of the United States, residing at Providence, in the county of Providence and State of Rhode Island, have invented a new and useful Improvement in Barrel-Fillers, of which the following is a specification.

My invention relates to improvements in barrel-fillers, the object of my invention being to provide an improved barrel-filler, simple, economical, and efficient, which will automatically stop the flow of the liquid when it has reached a predetermined height in the barrel.

My invention therefore consists in the construction, combination, and arrangement of parts for accomplishing the above end, the same being hereinafter fully specified, and particularly pointed out in the claims.

Figure 1 is a side elevation of the barrel-filler. Fig. 2 is a central vertical section of the same in position in the barrel, the valve being open. Fig. 3 is a similar view with the valve closed. Fig. 4 is a horizontal section taken in the line $x x$ of Fig. 2; and Fig. 5 is a vertical section of the lower end of the filler, showing a modification.

1 is the casing of the barrel-filler, and it comprises an inlet 2, threaded to connect with the supply-pipe, a valve-chamber 3, provided with a valve-seat 4, a passage 5 for the liquid, discharge-openings 6 for the liquid, and an air-chamber 7 below the discharge-openings.

8 is the valve, which is of conical form, having a horizontal circular lip 9 to rest upon the valve-seat 4, and it is provided with upper and lower valve-stems 10 11. The upper valve-stem 10 slides in the guide 12, formed in a cap 13, screwed into the top of the valve-chamber, a light spring 14 being provided to positively depress the valve upon its seat. The lower valve-stem 11 slides in a guide or bearing 15, erected upon the upper wall 16 of a chamber 17, formed across the passage 5, said chamber opening into the sides of the casing, but being closed to the passage 5 by the side walls 18 and the upper and lower walls 16 19, except as to the guide 15, in which the lower stem 11 slides, and it will be observed that the wall of the guide 15 is carried well under the cone of the valve 8 and above

the lip 9 thereof, even when the valve is in its uppermost position, so as to effectually prevent leakage.

The lower end of the stem 11 projects into the chamber 17 and rests upon a valve-lever 20, fulcrumed at 21 upon lateral extensions 22 of the walls of the chamber. The power end of the lever 20 is provided with a finger-piece 23 for raising the lever and valve, said lever when so raised being adapted to impinge upon the rearwardly-extending arm 24 of the catch-lever 25, pivoted on extensions 26 of the walls of the chamber 17, moving said arm upwardly against the pressure of the spring 27 and moving the downwardly-extending arm 28 outwardly, as shown in Fig. 2. The toe 29 of said arm will then pass and be in position to be engaged and held by the tooth 30, formed on an arm 31 of the latch 32, pivoted on the extensions 26, the other arm 33 of said latch being attached to the end of a vertical rod 34, moving in a tube 35, connecting the lower wall 19 of the chamber 17 and the apex of the conical top 36 of the air-chamber 7. The lower end of said rod is secured to a disk 37, resting upon the top of a diaphragm 38, the sides of said diaphragm being pressed closely and held in position against the wall of the air-chamber 7 by means of an annular spring 39.

In Fig. 5 is shown a modification in which the diaphragm is placed at the bottom of the air-chamber, and the side of the diaphragm is placed outside the wall of said chamber instead of inside. In order to render the action of the diaphragm sufficiently sensitive to increase of pressure in the air-chamber 7, the latch 32 is counterbalanced by a suitable weight 40 on the end of the arm 31.

When the valve has been raised by the valve-lever and the weight of the disk 37 and rod 34 have moved the latch 32 into the position shown in Fig. 2, so that the tooth 30 engages and holds the toe 29 of the catch-lever, and when the valve-lever has been released from the upward pressure of the finger the descent of said lever will be arrested by a shoulder 41 thereof impinging upon a catch 42 on the arm 28 of the catch-lever, and the valve will be held open and the liquid will flow therethrough until said valve is auto-

5 matically closed by the liquid having attained a predetermined height. This latter operation will be readily understood from the foregoing description of the apparatus. As shown in Fig. 3, when the liquid has reached a height to close the mouth of the air-chamber and has risen above the same the pressure of the air in said chamber will force the diaphragm upward, thus actuating the rod 34 to vibrate
10 the latch 32, releasing the catch-lever 25, which, under pressure from the spring 27, will move inwardly, releasing the valve-lever and allowing the valve to fall upon its seat and close the passage.

15 For supporting the device upon the barrel there is provided a sleeve 43, which is clamped in any desired position upon the casing by the clamp-screw 44, said sleeve being provided with three feet 45, which rest upon the
20 surface of the barrel. By disposing the sleeve in the proper position on the casing the height to which the barrel is to be filled may be varied as desired.

I am aware that barrel-fillers have been
25 devised wherein the valve is automatically closed by the rise of a float in the barrel and others wherein the valve is actuated by the movement of a diaphragm outside the barrel, said diaphragm being operated by compression of air resulting from the rise of the liquid in the barrel; but barrel-fillers of both these kinds are found to be objectionable in this respect: These barrel-fillers are employed in great measure for filling barrels
35 with heavy oils or similar liquids which on evaporation leave a sticky deposit. It has been found with both the classes of fillers above referred to that the spray from the oil which is being poured into the barrel being constantly deposited in the narrow tube
40 above the float or leading to the diaphragm, as the case may be, will soon clog up said passage, so that repeated washing with acids has been found to be necessary. Now in my invention the diaphragm is placed in the air-chamber below the discharge-openings, thus dispensing with the air-passage to a distant diaphragm, so that there is no danger of any stoppage or impairment of the device by reason of a sticky deposit of the oil.
45 50

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

1. In a barrel-filler, the combination with
55 the valve, of the lever 20 having the finger-piece 23 and the shoulder 41, the catch-lever 25 having the arm 24 adapted to be operated by the lever in its ascent and the downwardly-extending arm 28, the latter having the catch
60 42 to engage the shoulder 41 and also having the toe 29, and the latch 32 having the tooth 30 to engage the toe 29, said latch being operatively connected with means actuated by the rising of the liquid in the barrel, to operate said latch, substantially as described.
65

2. In a barrel-filler, the combination with

the valve, of a hand-lever for raising or opening the same, a catch arranged to be actuated by the movement of said lever when so raising said valve to throw the latch into a position behind said lever to restrain its return
70 movement, a catch-lever actuated by the rising of the liquid in the barrel, said lever being, except when the liquid has reached a predetermined height, in such a position as
75 to engage the aforesaid latch when thrown by the valve-lever, and automatically lock the latch in its position restraining said lever from return movement, substantially as described.
80

3. In a barrel-filler, the combination of a casing provided with an inlet for the liquid, a discharge-opening into the barrel, a passage between them, a valve closing said passage, said casing having an opening there-
85 through from side to side, closed to the liquid in the passage, the walls of said opening having extensions outside the casing to form fulcrum, a lever for raising said valve fulcrumed at one end of the opening, extending
90 through said opening and provided beyond the other end with a finger-piece, a catch at the latter end for holding said lever in its position raising said valve, and means, actuated by the rising of the liquid in the barrel, for
95 operating said catch to release said lever, substantially as described.

4. In a barrel-filler, the combination of a casing provided with an inlet for the liquid, a discharge-opening into the barrel, a pas-
100 sage between them, a valve closing said passage, said casing having an opening there-through from side to side, closed to the liquid in the passage, the walls of said opening having extensions outside the casing to form
105 fulcrum, a lever for raising said valve fulcrumed at one end of the opening, extending through said opening and provided beyond the other end with a finger-piece, a catch adapted to be moved by said lever into posi-
110 tion to hold said lever in its position holding said valve, a latch automatically engaging said catch when so moved, and locking the same, and means, actuated by the rising of the liquid in the barrel, for operating said
115 latch to release said catch, substantially as described.

5. In a barrel-filler, the combination of a casing provided with an inlet for the liquid, a discharge-opening, a passage between them,
120 an air-chamber below said discharge-opening, a diaphragm extending across said air-chamber, the chamber having an opening into the barrel below said diaphragm of substantially the same size as the diaphragm, a valve clos-
125 ing the passage in said casing, said casing having an opening therethrough from side to side, closed to the liquid in the passage, the walls of said opening having extensions outside the casing to form fulcrum, a lever for
130 raising said valve fulcrumed at one end of the opening, extending through said opening

and provided beyond the other end with a
finger-piece, a catch at the latter end for
holding said lever in its position raising said
valve, a latch locking said catch, and a rod
5 from said diaphragm, entering the opening
through the casing, and connected with the
latch, whereby the rising of the liquid oper-
ates the latch through the diaphragm and rod,

to release said catch and valve-lever, sub-
stantially as described.

In witness whereof I have hereunto set my
hand in the presence of two witnesses.

WILLARD A. SMITH.

Witnesses:

WALTER B. VINCENT,
E. F. WARNER.