(No Model.)

H. SCHNEIDER.

FILLER.

No. 515,884. Patented Mar. 6, 1894.

Fig. 1.

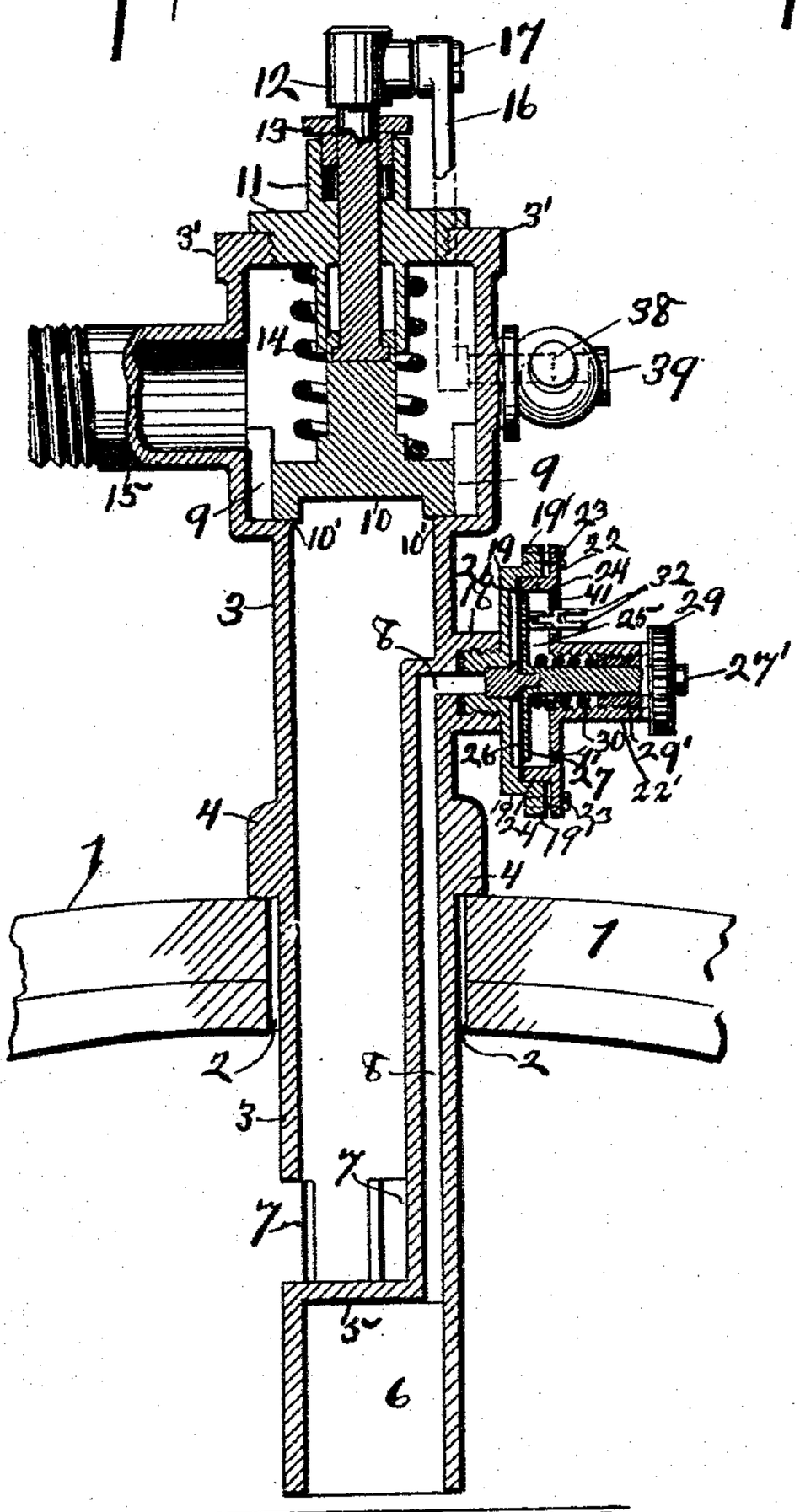


Fig. 2.

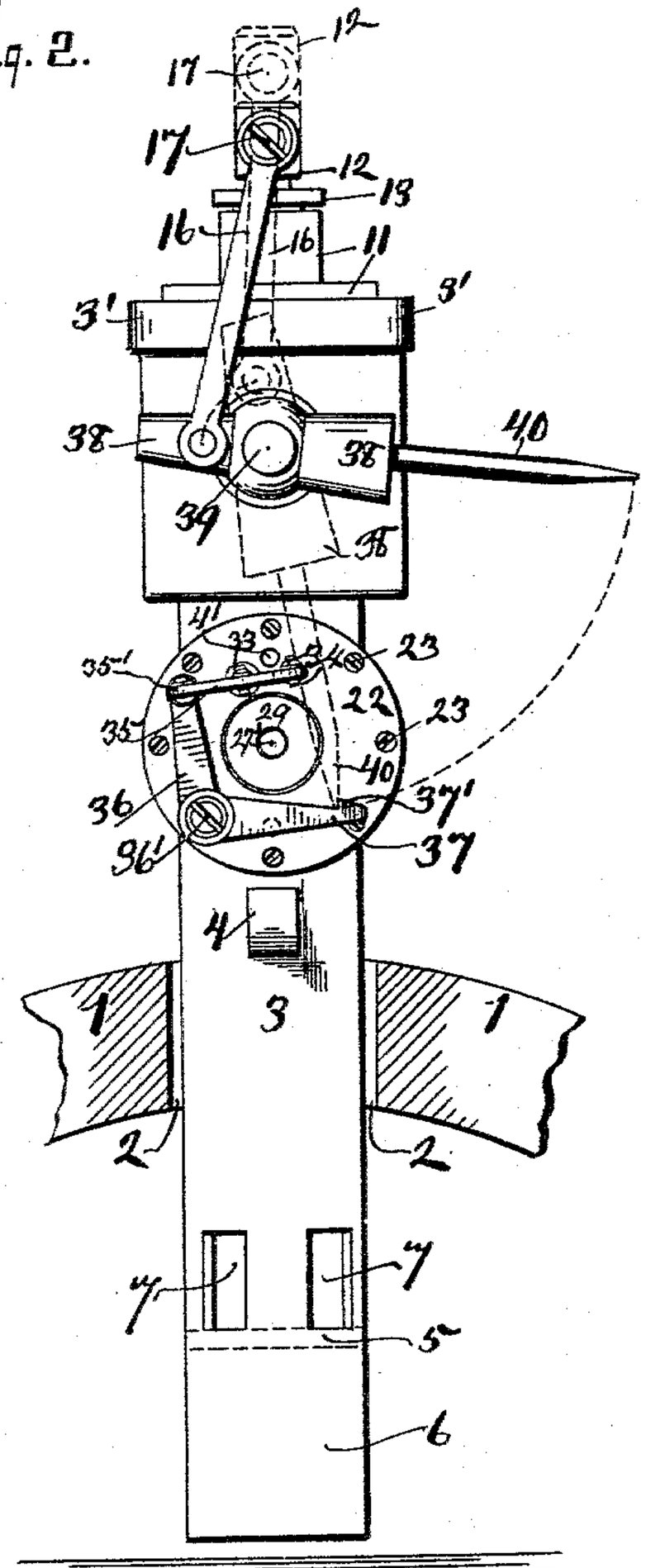


Fig. 3.

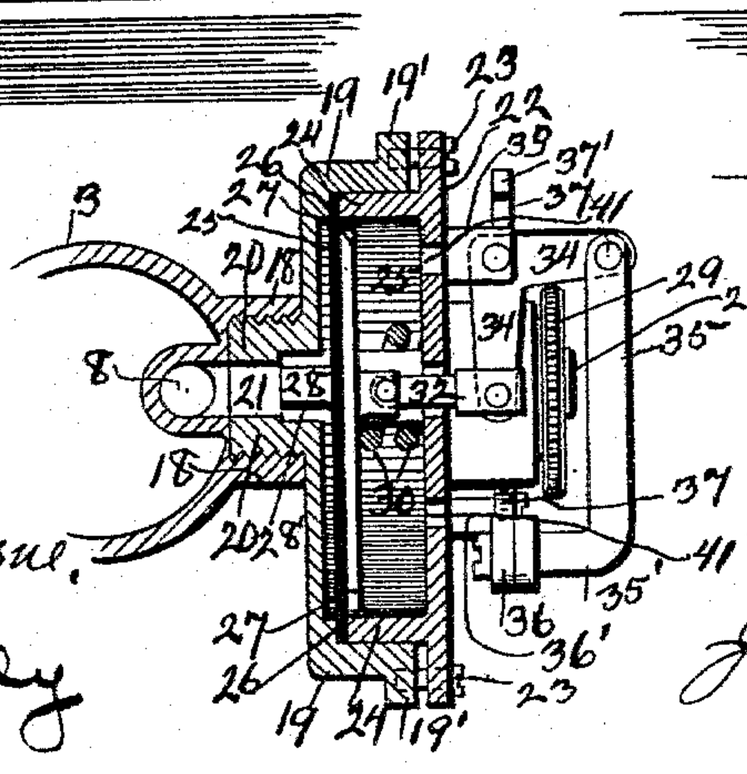
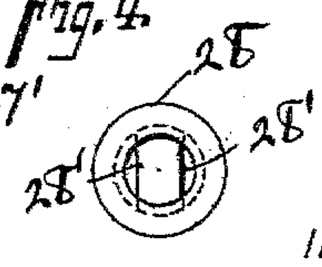


Fig. 4.



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FILLER.

SPECIFICATION forming part of Letters Patent No. 515,884, dated March 6, 1894.

Application filed April 20, 1893. Serial No. 471,086. (No model.)

To all whom it may concern:

Be it known that I, HUGO SCHNEIDER, a subject of the Emperor of Germany, and a resident of Cleveland, county of Cuyahoga, State of Ohio, have invented certain new and useful Improvements in Fillers, of which the following, with the accompanying drawings, is a specification.

My invention relates to fillers used in filling tanks, barrels, bottles, and other closed vessels with any kind of liquids.

The object of my invention is an apparatus which, without the use of floats, will automatically close a valve in the filler to shut off the flow of the liquid into the vessel being filled when the vessel shall have been filled to a desired degree.

My invention consists in a diaphragm operated by air pressure, and also to the construction and the combination of parts substantially as illustrated in the drawings, described herein, and defined in the claims.

In the drawings froming part of this specification, Figure 1 is a central vertical section of my improved filler. Fig. 2 is a front elevation of my improved filler. Fig. 3 is an enlarged cross-section through the diaphragm chamber, of my improved filler, and Fig. 4 is an enlarged end view of the air-port way from the air-chamber to the diaphragm.

In the different figures of the drawings, 1 represents a broken section of a barrel, or other vessel, being filled, through the bung-hole, 2, and through which passes the filler.

3 is an outer wall forming the cylindrical portion of the filler, and constitutes that part which enters the bung-hole, and to which my valve-closing device is attached on its side, and which carries the valve and filling pipe at its top.

4 are lugs formed on the cylinder 3 to prevent the filler from passing too far into the vessel being filled. Near the lower end of the cylinder 3 is a wall 5 which closes the cylinder and leaves what, for convenience, I term an air-chamber, 6, in the bottom of the cylinder 3. Immediately above the wall 5, are lateral openings, 7, through the cylinder. From the air chamber 6, vertically along one side of the cylinder 3, is an air-passage 8, which leads to the diaphragm hereinafter described. The upper end of the cylinder 3, at 3′, is enlarged, as illustrated, for carrying the closing-valve. Inside of the enlarged portion 3′ of the filler are guides 9 which direct the vertical travel of the closing-valve 10. The top end of the filler is closed with a screw cap 11, through which passes vertically a rod 12 which is attached to the closing-valve 10, as illustrated.

13 is a packing arrangement of the usual construction, for making an air-tight connection around the rod 12 which operates the valve 10. A coil spring 14 is interposed between the top of the valve 10 and the bottom of the screw-cap 11.

15 is a nipple opening into the filler, and provides a means of attachment for a hose through which the liquid is conducted through the filler into the vessel to be filled. The conducting hose is secured to the nipple 15 by any known means. To the top of the rod 12 is pivoted a link 16 by means of a screw 17, as illustrated. Above the lugs 4, upon one side of the cylinder 3, is formed a nipple 18. A cup 19, having a shank 20 is attached to the nipple 18, as illustrated. Through the shank 20 is an opening 21, which coincides with the air passage 8, and forms a continuation thereof. A plate 22 closes the cup 19, said plate 22 being secured to the cup 19 by means of screws or bolts 23, which pass through the plate 22 into the annular flange 19′ that is formed around the top of the cup 19. On the under side of the plate 22 there is an angular flange 24 which fits within the mouth of the cup, making an air-tight connection therewith. The space 25, between the cup 19 and the closing plate 22 forms a chamber, which I, for convenience, designate a diaphragm chamber. A diaphragm, 26, divides the diaphragm chamber 25. The diaphragm 26 is a circular disk formed of rubber, or of other flexible material. The outer edge of the diaphragm is held between the bottom edge of the flange 24 and the bottom of the cup 19, in order to make an air-tight connection. The diaphragm 26 is provided with a metal backing piece 27, which is secured to the diaphragm 26 by means of a screw 28 which passes through the diaphragm 26 at its center, and screws into the backing piece 27, as illustrated in section in Fig. 1. The sides of the head of the screw 28 are cut

away as seen at 28′ to form air port-ways from the air passages in the chamber 25 back of the diaphragm 26. The diaphragm backing plate 27 carries a lug or boss 27′, which passes through a bore in the boss 22′ formed upon the closing plate 22. A cap, 29, having a shank 29′, screws into the boss 22′. A coil spring 30 is interposed between the shank 29′ and the backing plate 27. By turning the screw head 29, the resistance of the spring 30 is increased or diminished as desired. The spring 30 is necessarily one of weak resistance. Upon the backing plate 27 is formed a lug 31 to which is pivoted a link 32. Upon the closing plate 22 is attached a bracket 33 to which is pivoted a bell crank 34. One end of the bell crank is pivoted to the outer end of the link 32, and to the opposite end of the bell crank 34 is pivoted a link 35, having the bent arm 35′ which is pivotally connected with the arm 36. The arm 36 is integral with the arm 37, the arms 36 and 37 forming a bell-lever. Near the outer end of the arm 37 is formed a lip 37′, whose function is hereinafter described. A rocking arm 38 is pivoted to the side of that part of the filler marked 3′ by means of the pivot 39. The link 16 has its lower end pivoted to the upper end of the rocking arm 38. A trigger, 40, enters the lower end of the rocking arm 38, and is made adjustable vertically therein by any well known means. The adjustment of the trigger 40 may be made by means of screwing the trigger into the arm 38, or by means of a set screw, or otherwise. As so many ways will suggest themselves to mechanics, the adjustment of the trigger 40 in the arm 38 is not illustrated.

Instead of the diaphragm 26, the backing plate 27 may be made to serve the purpose of a valve, the valve being provided with a cup leather or rubber back; but as the movement of the diaphragm is slight, the construction illustrated is preferable in view of the fact that it is simpler and is more susceptive to air pressure than would be a cup valve. The construction illustrated requires a flexible diaphragm 26, as previously described.

I have now fully described the construction of my improved filler. From the drawings and the description given, its operation will be readily understood.

In use, the filler is first placed in the bung-hole of the vessel to be filled, as illustrated by Figs. 1 and 2. The trigger 40 is then pulled down so that its point is engaged and held by the lip 37′ that is formed on the arm 37. When the trigger 40 is pulled down and thus engages, the valve 10 in the valve case 3′ is raised through the link 16 which connects the upper end of the arm 38 on the valve stem 12. So long as the trigger 40 is in engagement with the lip 37′ of the arm 37, the valve 10 is raised against the resistance of the spring 14 and held open that any kind of fluid or liquid will freely pass from the connecting hose through the nipple 15 down through the cylinder 3 and out through the lateral openings 7 into the vessel 1. As the vessel is filled, the air passes out of the bung around the filler cylinder until the liquid in the vessel comes up to and closes the open end of the air chamber 6. As the air in the chamber 6 and in the passage way 8 is forced up by the rise of the fluid in the vessel 1, the diaphragm 26 is sprung out, carrying with it the backing plate 27; the outward throwing of the link 32 raises the inner end of the bell crank 34, thus pulling to the right the upper end of the arm 36, which depresses the outer end of the arm 37 and lets the end of the trigger 40 free of engagement with the lip 37′. As the trip is freed, as described, the spring 14 in the valve head 3′ forces the valve 10 upon its seat 10′ and closes the opening through the filler. Through the plate 22, which closes the cup 19, I make one or more openings 41 to allow the diaphragm to be moved forward without air resistance within the chamber.

It will be seen that my air operated diaphragm dispenses with the use of all floats, and avoids the uncertainty of operation of some floats which arises from the nicety required in their construction. As the diaphragm is under spring resistance by means of the coil spring 30, and as the resistance of said coil spring 30 is regulated by means of the screw 29, the filler may be adjusted to close the valve 10 at any point desired after the vessel 1 shall have been filled up to the air chamber 6. The greater the resistance of the spring 30, the higher up the liquid will have to come upon the lower end of the filler in order to get the requisite air pressure from the air chamber 6 through the air passage way 8 to operate the diaphragm under its spring resistance.

My invention may take on various modifications in detail of construction, and I do not, therefore, limit myself to the construction illustrated and described.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a barrel filler, the combination of a diaphragm chamber, 25; a diaphragm, 26, within the diaphragm chamber; a passage, 8, to conduct air into the diaphragm chamber 25 back of the diaphragm 26; a spring, 30, between the diaphragm, 26, and the front of the diaphragm chamber, 25; a link, 32, connected with the diaphragm 26; a bell-lever, 34, connected with the link 32; a lever, 35, having a bent arm, 35′, connected with the outer end of the bell-lever 34; two arms, 36 and 37, forming a bell-lever, one of the arms, 37, having a lip, 37′, formed thereon; and a trigger, 40, adapted to be in engagement with said lip 37′, and to be released therefrom by pressure on the diaphragm 26, substantially as illustrated and described.

2. In a barrel filler, the combination of a cylinder, 3, having a wall, 5, near its bottom to form a chamber, 6, at the lower end of the

cylinder 3; lateral openings, 7, immediately above the wall 5; a diaphragm chamber 25, having a diaphragm, 26, therein; a passage, 8, from the chamber 6 to the diaphragm chamber 25 back of the diaphragm 26; a spring, 30, in front of the diaphragm 26; a trigger, 40; and intermediate connection between the diaphragm 26 and the trigger 40, whereby said trigger is released from engagement by pressure upon the diaphragm, substantially as illustrated and described.

3. In a barrel filler, the combination of a diaphragm chamber, 25; a flexible diaphragm, 26, within the diaphragm chamber 25, the diaphragm being provided with a backing plate, 27; a spring, 30, interposed between the backing plate 27 and the front of the diaphragm chamber 25; and a passage, 8, opening into the diaphragm chamber 25, substantially as illustrated and described.

4. In a barrel filler, the combination of a cylinder, 3, having a valve-case, 3′, at its top; a nipple, 15, opening into the valve-case 3′; a valve, 10, within the valve-case 3′; a stem, 12, projecting from the valve 10 through the top of the valve-case 3′; a spring, 14, interposed between the top of the valve-case 3′ and the valve 10; a rocking arm, 38, pivoted to the outer side of the valve-case 3′; a link, 16, connecting the upper end of the rocking arm 38 with the valve-stem 12; a diaphragm, 26, and intermediate connection between the rocking arm 38 and the diaphragm 26, whereby the valve 10 is closed by pressure upon the diaphragm 26, substantially as illustrated and described.

5. In a barrel filler, the combination of a cylinder, 3; a valve-case, 3′, at the top of the cylinder 3; a nipple, 15, opening into the valve-case 3′; a valve, 12, within the valve-case 3′; a valve-stem, 12, projecting from the valve 10 through the top of the valve-case 3′; a spring, 14, interposed between the valve 10 and the top of the valve-case 3′; a rocking arm, 38, pivoted to the outer side of the valve-case 3′; a link, 16, connecting the upper end of the valve-stem 12, with the rocking arm 38; a trigger, 40, secured to the rocking arm 38; a chamber, 6, in the lower end of the cylinder 3; a chamber, 25, having a diaphragm, 26, therein; a passage-way, 8, from the chamber 6 to the diaphragm chamber 25; a spring, 30, in front of the diaphragm 26; a link, 32, connected with the diaphragm; a bell-lever, 34, having one arm pivotally connected to said link 32; a link, 35, having a bent arm, 35′, attached to the outer arm of the bell-lever 34; an arm, 26, connected with the bent end, 35′, of the link 35; and an arm, 37, having a lip, 37′, thereon to engage the trigger 40, substantially as illustrated and described.

In testimony whereof I affix my signature, in presence of two witnesses, this 17th day of April, 1893.

HUGO SCHNEIDER.

Witnesses:
J. A. OSBORNE,
DON M. OSBORNE.