

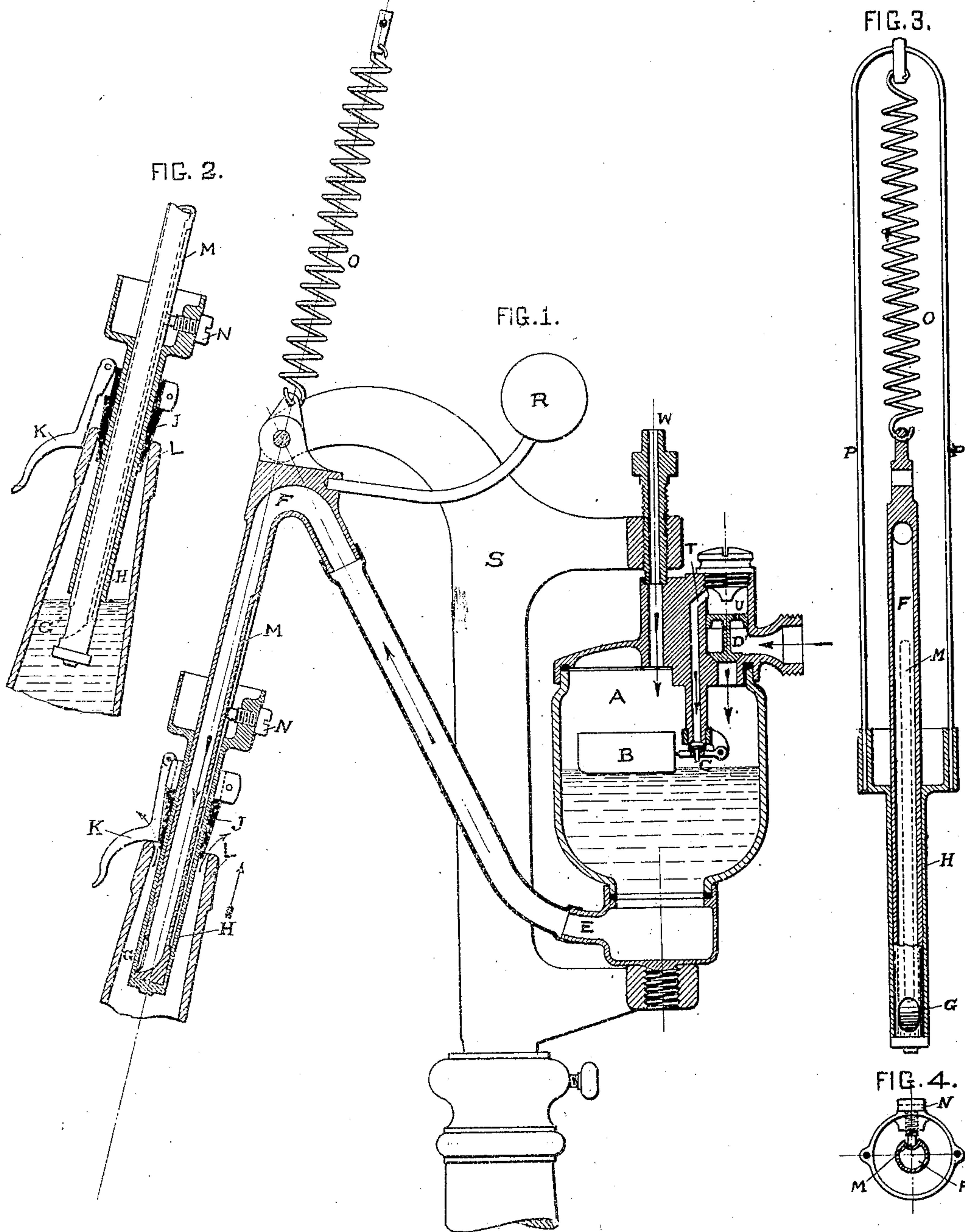
No. 865,395.

PATENTED SEPT. 10, 1907.

K. KIEFER.
BOTTLE FILLING MACHINE.

APPLICATION FILED APR. 1, 1901.

2 SHEETS—SHEET 1.



Witnesses.
Geo L Richter
A. Reinhold

Inventor.
Karl Kiefer

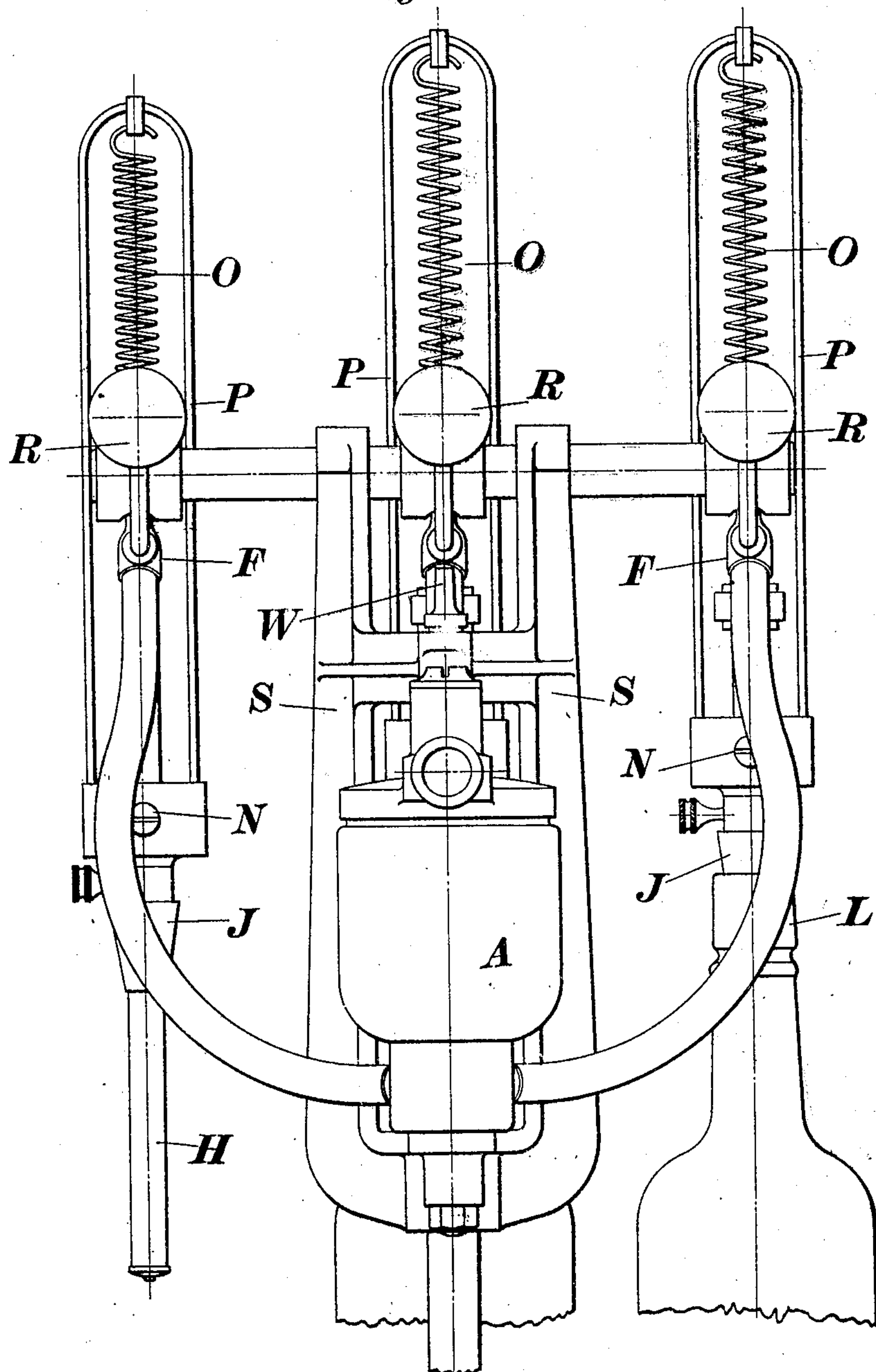
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2 SHEETS—SHEET 2.

Fig. 5



Witnesses.

E. J. Appleton
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UNITED STATES PATENT OFFICE.

KARL KIEFER, OF CINCINNATI, OHIO.

BOTTLE-FILLING MACHINE.

No. 865,385.

Specification of Letters Patent.

Patented Sept. 10, 1907.

Application filed April 1, 1901. Serial No. 53,784.

To all whom it may concern:

Be it known that I, KARL KIEFER, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented a new
5 Bottle-Filling Machine, of which the following is a specification.

My invention relates to improvements in bottle filling machines, which fill bottles with liquid to a given level, and thereafter automatically stop the flow of the
10 liquid from the reservoir. I attain these objects by the mechanism shown in the accompanying drawing in which,—

Figure 1, is a vertical section of the filling apparatus, Fig. 2, is a section through part of the filling tube proper,
15 Fig. 3, is another section, in another plane, through part of the filling tube proper, Fig. 4, is a horizontal cross section through a part of the filling tube-sleeve. Fig. 5 is a rear view of the filling machine, showing a plurality of stems.

20 Similar letters refer to similar parts throughout the several views.

The apparatus mainly consists of the vessel A, within which the liquid to be bottled is always kept at a constant level by means of the float B, and the valve arrangement C and D. Communicating with vessel A is the
25 siphon arrangement F. The siphon F is closed at its outlet G by a cylindrical and upward moving sleeve H, which carries a conical body J and latch K, as shown in Fig. 1, and shown opened in Fig. 2 at G'.

30 In pressing the mouth of a bottle L against latch K, sleeve H is lifted upward in the direction of the arrow near letter H (Fig. 1). By means of a channel or groove M in the body of the siphon F and a set-screw N, the sleeve H is prevented from turning around the axis of
35 siphon F. This channel M also serves another purpose, set forth later on. The upward movement of sleeve H causes a spiral spring O to be expanded, which latter, by means of a frame P, exerts a downward pressure upon sleeve H, closing in normal position the
40 outlet of siphon F.

R is a balance weight which swings the apparatus into a normal position, when not in use.

S is a frame to which the apparatus is conveniently attached, as shown in Fig. 1, and it could be arranged
45 to support one or more siphon apparatus at the same time. The support for the bottle L is not shown in the drawing as it is not the object of this invention. The same may be any convenient device to serve the purpose.

50 I will now describe the action of the float B and valve apparatus C and D, which serve to keep the liquid within vessel A at a constant level.

The liquid flows from a higher level through the valve apparatus. It lifts a double seated valve D. The
55 liquid flows in the direction of the arrows into the vessel A until it elevates the float B into position, as shown in

Fig. 1. Valve D is a double seated valve. The lower seat closes off the flow of the liquid. The upper seat is shaped in the form of a piston, and serves, through the exertion of an over-pressure on its larger area, to open
60 the out-flow. Valve D has in its upper seat a very small opening U. When working, a small stream of liquid continually flows through it and then to by-pass T. If the flow of this little stream of liquid is stopped
65 by the float arrangement B, pressing a little valve C against the outlet of by-pass T, this liquid accumulates above valve D and equalizes the pressure upon the upper valve seat, and the over-pressure of the liquid is exerted against the lower valve seat, closing the valve D
70 automatically.

To start the flow in the siphon F, it is necessary to open the out-flow G by pressing a bottle upwards. This out-flow is situated at a lower level than the liquid in vessel A, and by blowing with the mouth through passage W (Fig. 1), the liquid is forced through connection
75 E, siphon F, and opening G, into the bottle. New liquid is immediately supplied by reopening the in-flow through float B and valve D. In this way a suction is maintained and the liquid flows out continually into
80 the bottle, gradually filling it up. The air in the bottle escapes in the direction of the arrows, shown in Fig. 1 at the mouth of the bottle L. Suppose we now pull latch K, so as to allow the conical elastic body J, to close up
85 the mouth of the bottle, as shown in Fig. 2, then no air can escape any longer at the top of the bottle L, but is forced to find its way through groove M. The groove M, mentioned before, is a guide for sleeve H. The liquid will begin to fill up until to the position as shown in Fig.
90 2, where the vent M is shown closed, by means of the liquid. The liquid of course will rise within the vent M, until it reaches the level of vessel A; but, that space between the valve seat G and the mouth of the bottle, will not be filled up, the air having no chance to escape. The bottle being filled, can now be withdrawn, the
95 spiral spring following up that movement, quickly closing outlet of siphon F at G. When the next bottle is pushed upward, sleeve H is lifted by means of latch K, which prevents, for a short time, the elastic conical body J from closing the mouth of the bottle L. That
100 part of the liquid, which previously entered groove or vent M, will flow into the bottle and so free the groove M to serve its purpose as vent again, after latch K has been pulled out, and the mouth of the bottle L has been closed by conical body J.

The upper part of sleeve H is cup-shaped to receive
105 such drops of the liquid which are torn along with the air traveling through vent M.

The arrangement of suspending the spiral spring by means of frame P renders the motion of sleeve H very
110 easy, and is an improvement over prior arrangements, using compression springs located direct on the siphon tube F.

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

1. In a bottle filling machine, the combination of a siphon tube with a reciprocating sleeve adapted to start or check the flow of the liquid, carrying a cup shaped body and a traverse attached to said sleeve, of a spiral spring located above the siphon and adapted to be engaged by said traverse.

2. In a bottle filling machine the combination of a siphon tube F, a reciprocating sleeve H, and an expansion spring O, actuating the reciprocating sleeve suspended on a traverse P, the latter one fastened to the sleeve H. 10

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Witnesses:

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