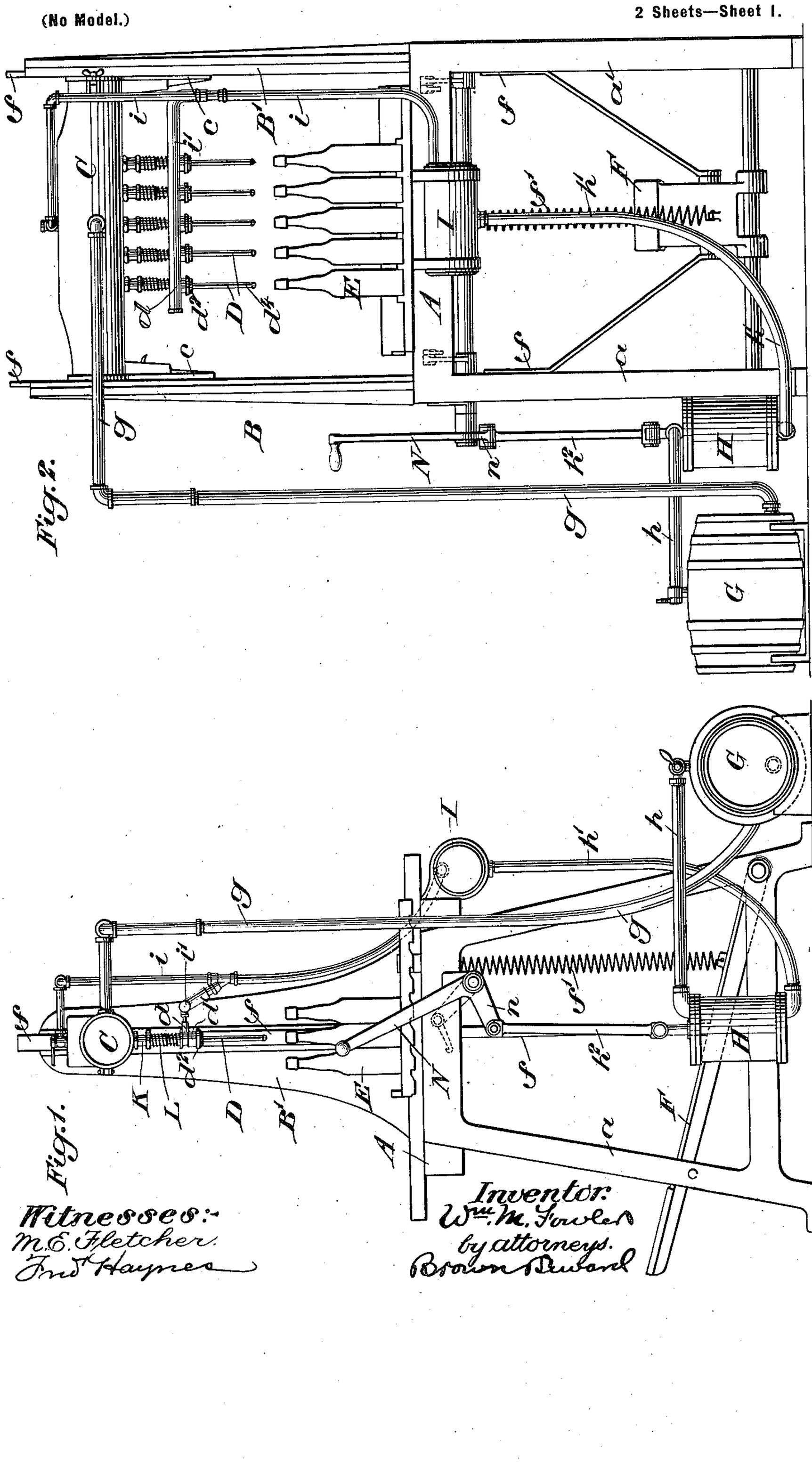
No. 619,474. Patented Feb. 14, 1899.

W. M. FOWLER.

BOTTLE FILLING MACHINE.

(No Model.) 2 Sheets—Sheet 1.



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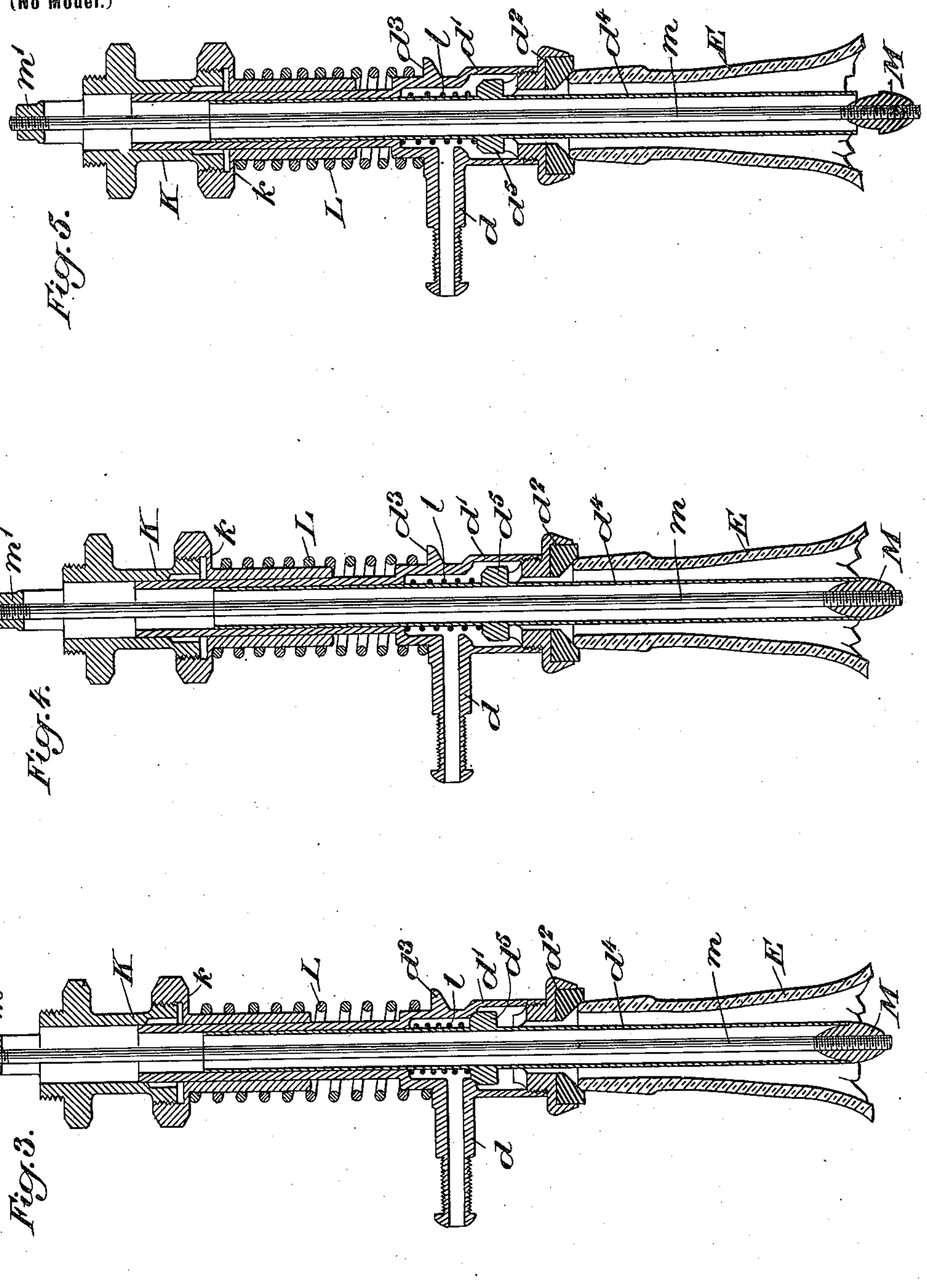

Fig. 3.

Witnesses:-
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Jas. H. Haynes

Inventor:
Wm. M. Fowler
by attorneys.
Brown & Ward

UNITED STATES PATENT OFFICE.

WILLIAM MILES FOWLER, OF STAMFORD, CONNECTICUT.

BOTTLE-FILLING MACHINE.

SPECIFICATION forming part of Letters Patent No. 619,474, dated February 14, 1899.

Application filed January 27, 1898. Serial No. 668,108. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM MILES FOWLER, a citizen of the United States, and a resident of Stamford, in the county of Fairfield and State of Connecticut, have invented a new and useful Improvement in Bottle-Filling Machines, of which the following is a specification.

My invention relates to an improvement in bottle-filling machines in which provision is made for maintaining the supply pressure within the supply-cask or other vessel and a corresponding pressure within the distributing-reservoir and within the bottles or other vessels during the filling operation.

My invention further contemplates means for returning any foam, gas, or liquid which may escape from the distributing-reservoir or bottles or other vessels to the supply-vessel while maintaining the aforesaid pressures and for effectually shutting off drip from the filler when the latter is removed from the bottle or other vessel.

A practical embodiment of my invention is represented in the accompanying drawings, in which—

Figure 1 is a view of the machine in end elevation, partly in section. Fig. 2 is a rear elevation; and Figs. 3, 4, and 5 represent elongated views in detail, showing the filler in longitudinal section and the parts in the positions which they assume when the sealing-head on the filler first engages the mouth of the bottle, when the filler has been still further depressed, and in the depressed position for filling.

The frame conveniently consists of a bed-piece A, supported by sets of legs a a' and surmounted by a pair of standards B B', between which the distributing-reservoir C is mounted to slide down and up to introduce the fillers D into and withdraw them from the bottles E or other vessels to be filled. The reservoir C and the fillers D carried thereby are lowered by an operating-treadle F, connected with the slides c at the opposite ends of the reservoir by rods f and are returned by the retracting-spring f'.

The supply-cask is denoted by G and is connected with the distributing-reservoir by a pipe g, leading from a point at or near the bottom of the cask to the distributing-reservoir.

The upper portion of the cask G is connected by a pipe h with the upper end of a pump-cylinder H, the lower end of the cylinder being connected with the bottom of an expansion-chamber I by a pipe h'.

The upper portion of the expansion-chamber I is connected by a pipe i and branch pipe i' with the top of the distributing-reservoir C and with the several nipples d, connected with the tubular casings d' of the fillers D. The casing d' has fixed to its lower end the sealing-head d^2 for engaging the mouth of the bottle E, as clearly shown in Figs. 3, 4, and 5, and is fitted at its upper end to slide within a tubular casing K, the two casings d' and K being held normally extended by means of a spring L, interposed between shoulders d^3 and k.

The filling-tube d^4 is fitted to slide within the casing d' and has fixed thereto a valve d^5, which when the tube d^4 is in its raised position (shown in Fig. 3) cuts off communication between that part of the interior of the casing d' which is open to the interior of the vessel being filled and the nipple d. The valve d^5 also limits the movement of the filling-tube d^4 relatively to the casing d' by its engagement with the valve-seat at one end of its movement and with the top of the seal-head at the opposite end of its movement.

The tube d^4 is promptly thrown to the limit of its downward movement when released by a spring l, interposed between the valve d^5 and an interior shoulder on the casing d'. The valve for opening and closing the lower end of the filler-tube d^4 is denoted by M, its stem m extending upwardly through the interior of the tube d^4 to its point of attachment at m' to a yoke on the casing K.

The structure of the filler is such that when the sealing-head d^2 is lowered into engagement with the bottle and the downward movement of the distributing-reservoir is continued the compression of the spring L by the movement of the casing K relatively to the casing d', while the latter is held by the bottle against movement, will at first permit the spring l, assisted by gravity, to slide the tube d^4 within the casing d', as shown in Fig. 4, until the valve d^5 strikes the abutment at the top of the sealing-head, thereby opening the interior of the bottle to the nipple d and

through it to the pipe i' and i, leading to the expansion-chamber I. The further downward movement of the distributing-reservoir and casing K, attached thereto, will open the valve M from the end of the tube d^4, as shown in Fig. 5, and permit the liquid from the distributing-reservoir to enter the bottle, while the escaping air, gas, and foam, if there be any, will pass to the expansion-chamber I.

The upward movement of the distributing-reservoir will first close the end of the filling-tube by the return of the valve M to its seat and finally lift the valve M and the tube d^4 bodily into the position shown in Fig. 3, with the valve d^5 seated, thereby cutting off any possible drip from the nipple and pipes in communication therewith.

The piston of the pump, the cylinder of which is denoted by H, is actuated by a rod h^2, connected with the arm n of an operating-lever N. The bottles or other vessels to be filled may be fed step by step in any well-known or approved manner.

When the pump-piston is lifted, it will permit the air, gas, and any liquid which may have accumulated in the expansion-chamber i to rush into the cylinder H, at the same time forcing the air, gas, and liquid above the piston into the top of the supply-cask through the pipe h. As the piston of the pump descends the air, gas, and liquid beneath it pass through a valve (not shown) of any well-known or approved form in the piston to the upper side of the piston, to be forced into the cask at the next stroke of the piston. The pressure within the cask is thus maintained and at the same time a corresponding pressure is at all times exerted on the liquid within the bottle and distributing-reservoir, since the pump-cylinder on both sides of the pump-piston is at all times in communication either directly or indirectly with the interior of the supply-task. This constant pressure exerted on the liquid serves to prevent it, as in the case of bottling beer, from foaming to any great extent, and hence serves to keep it from deterioration during the bottling operation.

It is obvious that changes might be resorted to in the form and arrangement of the parts without departing from the spirit and scope of my invention. Hence I do not wish to limit myself to the structure herein shown and described; but

What I claim is—

1. A bottling-machine comprising a supply cask or vessel, a distributing-reservoir in communication therewith, a filler in communication with the distributing-reservoir, a pump, a conduit connecting one end of the pump-cylinder with the supply cask or vessel, a conduit connecting the opposite end of the pump-cylinder with the filler and with the distributing-reservoir and means for operating the filler, substantially as set forth.

2. A bottling-machine comprising a supply cask or vessel, a distributing-reservoir in connection therewith, a pump, a conduit connecting one end of the pump-cylinder with the supply cask or vessel, an expansion-chamber, a pipe connecting the opposite end of the pump with the expansion-chamber, a filler connected with the distributing-reservoir and conduits connecting the filler and distributing-reservoir with the expansion-chamber, substantially as set forth.

3. A filler comprising a filling-tube, tubular casings movable relatively to each other and to the filling-tube, an overflow-conduit connected with one of the casings, a valve carried by the filling-tube for opening and closing communication between the overflow-conduit and interior of the vessel being filled, a valve under the control of another casing for opening and closing the filling-tube and a spring interposed between the casings, substantially as set forth.

4. The combination with the tubular casings movable relatively to one another and the spring interposed between the casings, of a filling-tube movable relatively to the said tubular casings and a valve carried by one of the casings for opening and closing the filling-tube and for bodily moving the filling-tube relatively to the casings, substantially as set forth.

5. The combination with the tubular casings movable relatively to one another and a spring interposed between the casings, of a filling-tube movable with respect to the tubular casings, a spring under tension tending to throw the filling-tube in one direction and a valve carried by one of the tubular sections and engaged with the filling-tube and tending to hold the filling-tube against the tension of the aforesaid spring, substantially as set forth.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 26th day of January, 1898.

WILLIAM MILES FOWLER.

Witnesses:
FREDK. HAYNES,
EDWARD VIESER.