

No. 658,211.

Patented Sept. 18, 1900.

E. E. FORD.

FILLING HEAD FOR BOTTLING APPARATUS.

(Application filed Mar. 27, 1900.)

(No Model.)

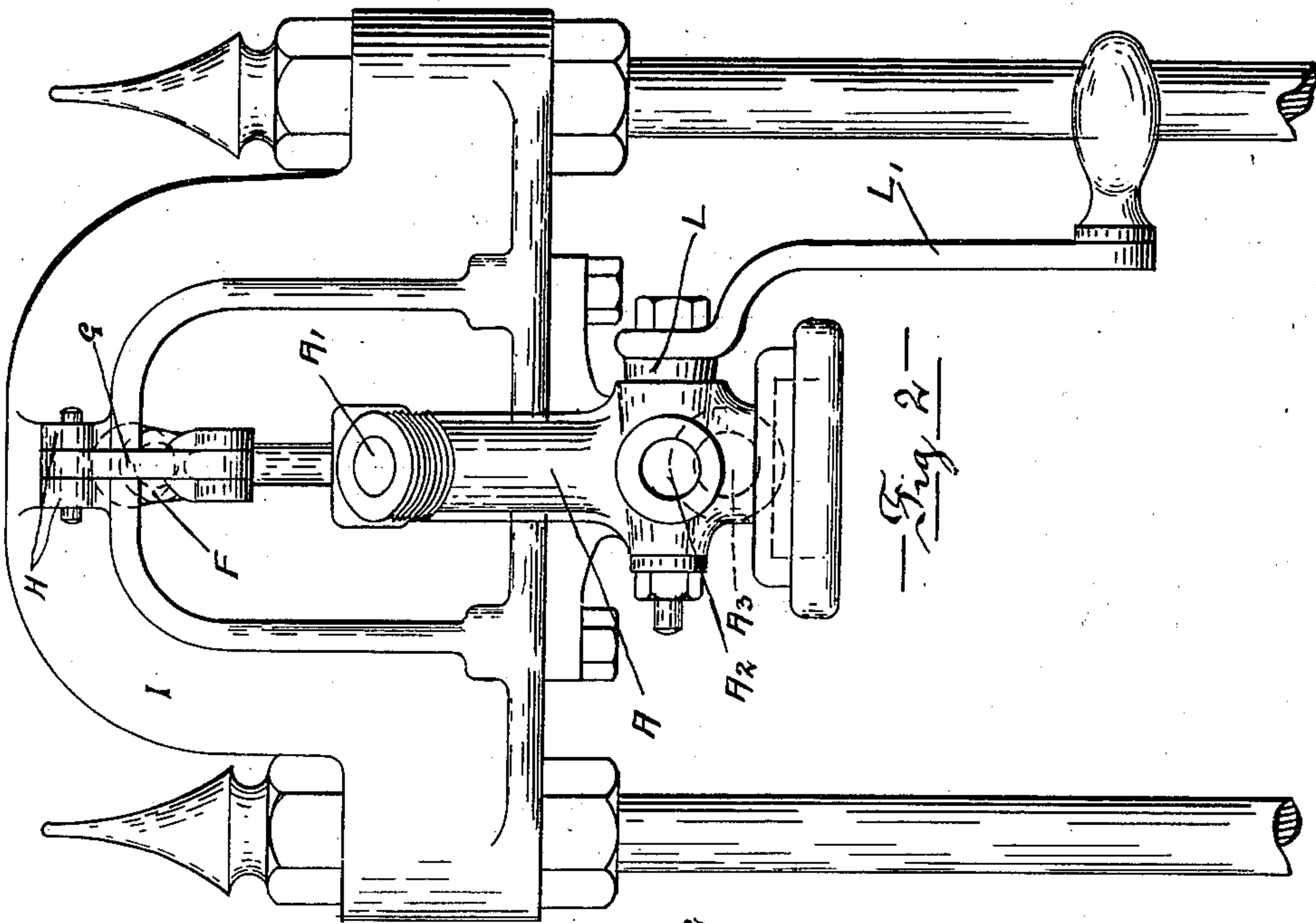


Fig. 2—

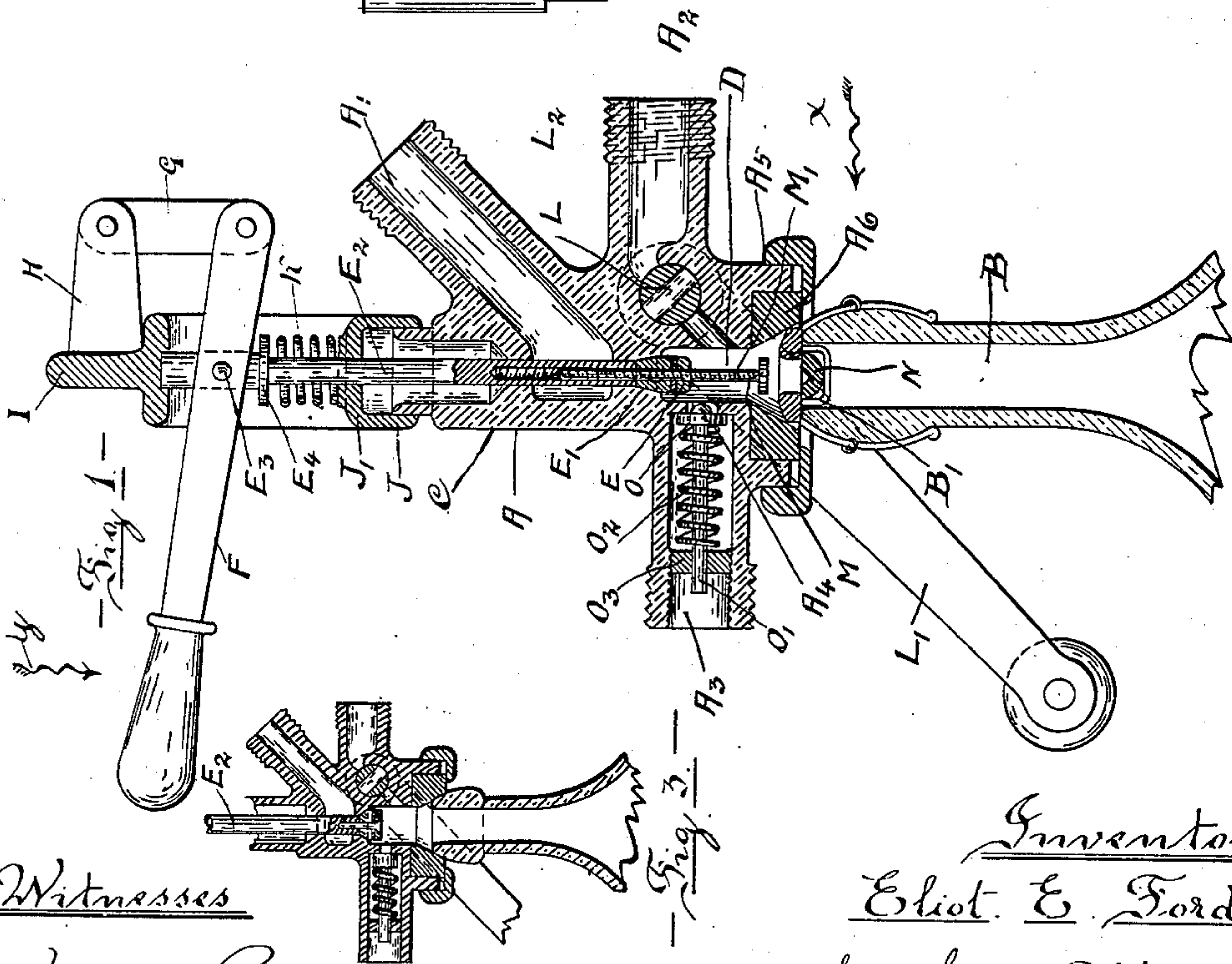


Fig. 1—

Fig. 3—

Witnesses

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FILLING-HEAD FOR BOTTLING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 658,211, dated September 18, 1900.

Application filed March 27, 1900. Serial No. 10,349. (No model.)

To all whom it may concern:

Be it known that I, ELIOT E. FORD, a citizen of the United States, residing at Rahway, in the county of Union and State of New Jersey, have invented certain new and useful Improvements in Filling-Heads for Bottling Apparatus; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

My invention relates to bottle-filling apparatus, and is an improvement on the part generally known by the name of the "filling-head."

The object of my invention is to combine with a filling-head, having the customary vacuum-vent for connecting the filling-head with the vacuum-pump, the liquid-filling vent to establish connection with the cask containing the liquid and provided with a cushioned nozzle for the reception of the bottle-mouth, an automatic relief and escape valve, as an exit for gases when an overpressure occurs, in a vent which will lead such gases causing the said overpressure back again to the top of the filling-cask.

Inasmuch as the filling of bottles with an effervescent liquid by means of a vacuum-pump and a charging apparatus is so well known in the state of the art and, moreover, has been particularly illustrated and described as to such filling process in a companion application of mine, it will be unnecessary to describe such filling elements again in this application. Furthermore, as the means embodied in the bottle-stand and the operation of the same are immaterial to a complete understanding of my invention and form no part thereof the description of those means will similarly be omitted.

In the companion application above referred to I have described and claimed the combination of an automatic relief and escape valve in a filling-head, where the liquid is secured in the bottles by means of corks or resilient stoppers of a like nature. In this application I shall describe and claim an au-

tomatic relief and escape valve in combination with bottles that are closed by means of automatic stoppers.

In describing my improved means I shall call attention to the accompanying drawings, wherein like letters of reference indicate corresponding parts in the different views.

Figure 1 is a vertical side view of a filling-head sectioned through the central axis thereof. Fig. 2 is an external view of the same filling-head as shown in Fig. 1, looking at Fig. 1 in the direction of the arrow X; and Fig. 3 is a companion view to Fig. 1 on a smaller scale, showing a form of filling-head that can be used irrespective of the kind of stopper that may be used.

In the respective figures, A indicates the filling-head as a whole, having a vacuum-vent A', a liquid-filling vent A², and a gas-return vent A³, having an automatic relief-valve A⁴ secured in it, permitting a return to the top of the filling-cask of the gases causing an overpressure during the filling of the bottle. A⁵ is the nozzle, having a cushion A⁶ to make the connection air-tight with the bottle B. C is a vertical stem lying in prolongation of the passage-way D, leading to the bottle. Into this passage-way all these vents A', A², and A³ lead. A valve E has a seat E' in said passage-way D, said valve E controlling the communication between the inside of the bottle and means for creating a vacuum therein. The valve E is secured to a valve-rod E², passing up through the vertical stem C, said rod being pivoted by means of a pin E³ to a lever-arm F, the lever-arm F having a link G attached at one end, such link finally being pivoted in the ears of a lug H, forming part of the yoke I. A stuffing-box is formed at J, and an expansion-spring K counteracts a downward pressure on the lever-arm F, lying to that effect between a collar E⁴, forming part of or affixed to the valve-rod E², and the top of the stuffing-box cover J'. A stop-cock L controls the communication between the liquid-filling vent and the passage-way D, leading to the interior of the bottle, and is operated by a lever-arm L'. Secured in the valve-rod E² by being screw-cut on a part thereof and fitting into a similarly screw-cut hole in the valve-rod is a plunger M, consist-

ing of the plunger-head M and its screw-cut rod M'. As this plunger consequently forms a fixed part of the valve-rod E², it will be obvious that a downward pressure on the handle
5 of the lever-arm F will force the disk N, made of suitable soft, air-tight, and flexible material, down into the cage B', thus affording opportunity for the bottle to be emptied of its air and subsequently filled by the manipulation
10 of the lever-arm L'.

Proceeding now to the description of the gas-return vent A³, it will be seen to have an opening O, communicating with the passage-way D. This opening O is closed by means
15 of the valve A⁴, having a valve-rod O', around which valve-rod is coiled an expansion-spring O². The said spring lies between the valve-head A⁴ and a disk O³, suitably secured in the vent A³ for present purposes by having the
20 interior end of the vent screw-cut and the disk similarly screw-cut. It can consequently be seen that unless some pressure stronger than the action of the coiled spring is exerted on the side of the valve turning toward the
25 passage-way D the valve will remain closed. The spring O² must as a consequence be constructed and tempered to such an exact degree of fitness that in case the pressure becomes so strong during the filling of the bot-
30 tle that it turns the liquid into foam the spring will yield and give vent to the supercharged liquid.

Reviewing the operative method of my improved filling-head, it will thus be seen that
35 a manipulation of the lever-arm in the direction of the arrow Y will open the valve E, and simultaneously therewith the plunger M will flatten out the disk N in the cage B', resulting in the creation of a vacuum in the
40 bottle by the well-known vacuum means, whereupon a manipulation of the lever-arm L', so as to turn the passage L² in the valve L in alinement with the passage in the vent A³, will cause the liquid to fill the bottle. If
45 then the pressure-charged liquid should

while it is rushing into the bottle be so overcharged with gas that it runs the risk of being converted into foam, the return gas-vent A³ will, by reason of the automatic valve A⁴,
50 conduct such supercharges of gas back into the filling-cask. This is what could not be accomplished by any of the old "hand-pressure escape-valves," inasmuch as they were all controlled and manipulated by the operator directly, who very naturally would be
55 quite incapable of striking the exact moment when such overcharge of gas took place, and could consequently fill the bottle with only indifferent success—that is to say, generally speaking, with more foam than liquid. 60

The illustration in Fig. 3 is an exact counterpart of the illustration in Fig. 1 with this exception, that in order to provide for filling a bottle that might not have any cage and automatic stopper the plunger M is removed
65 from the valve-rod E², thus showing a construction of filling-head having my automatic relief and escape valve attached which will suit a bottle no matter what kind of automatic stopper such bottle may be provided
70 with.

What I therefore, in accordance with the above description, desire to claim and secure protection for by Letters Patent is—

In a filling-head for a bottling apparatus, 75 filling bottles having automatic stoppers, said filling-head having a vacuum-vent, a liquid-filling vent and a cushioned nozzle; the combination of a gas-return vent having an automatic relief and escape valve coöperating
80 with the said filling-head substantially as and for the purposes described.

In testimony that I claim the foregoing I have hereunto set my hand this 29th day of January, A. D. 1900.

ELIOT E. FORD.

Witnesses:

JOHN DABNEY,
AUG. M. TRESCHOW.