(No Model.) 2 Sheets—Sheet 1.

E. T. JONES.

BOTTLING MACHINE.

No. 491,753. Patented Feb. 14, 1893.

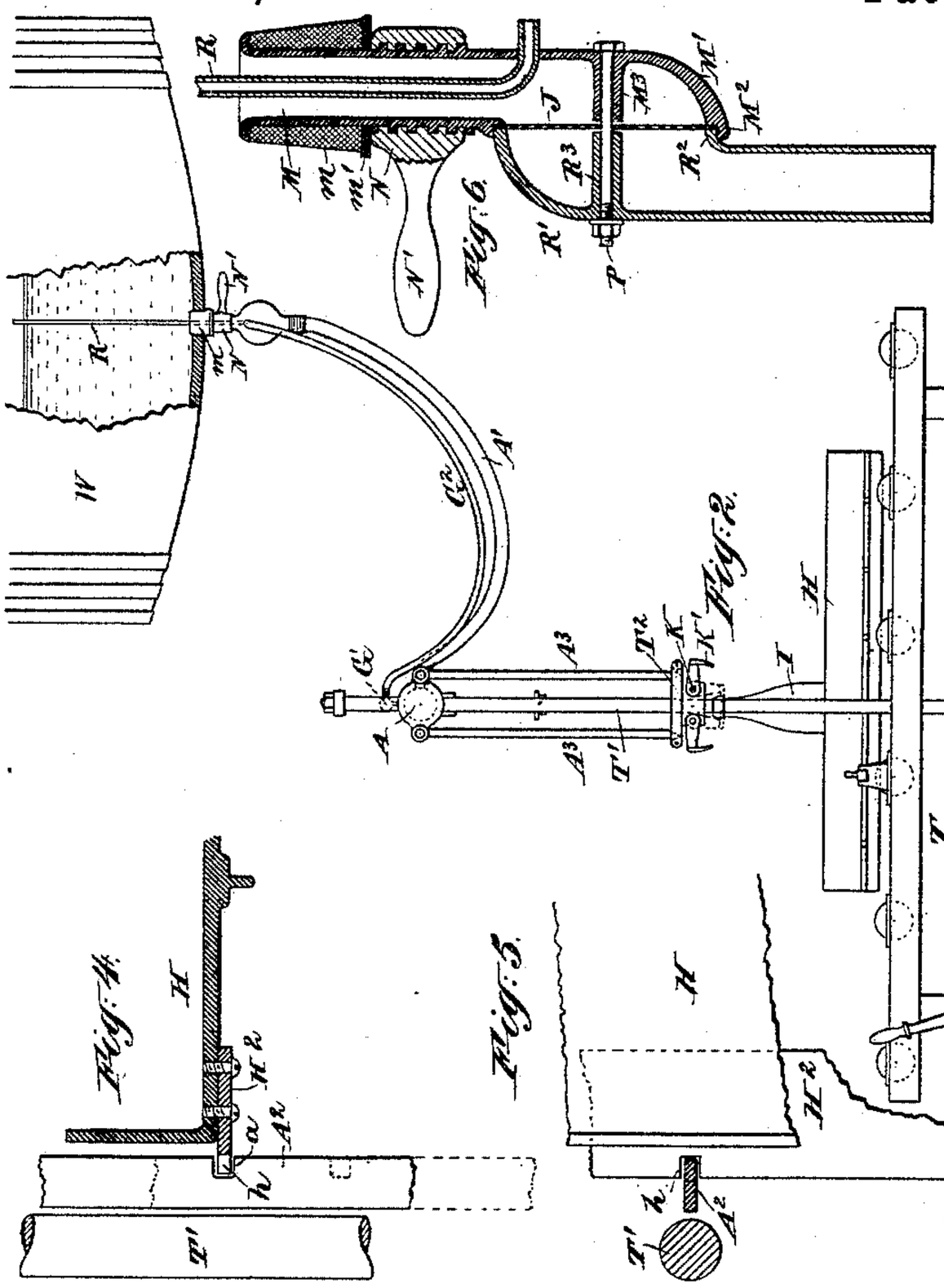

Fig. 6.

Fig. 2.

Fig. 4.

Fig. 5.

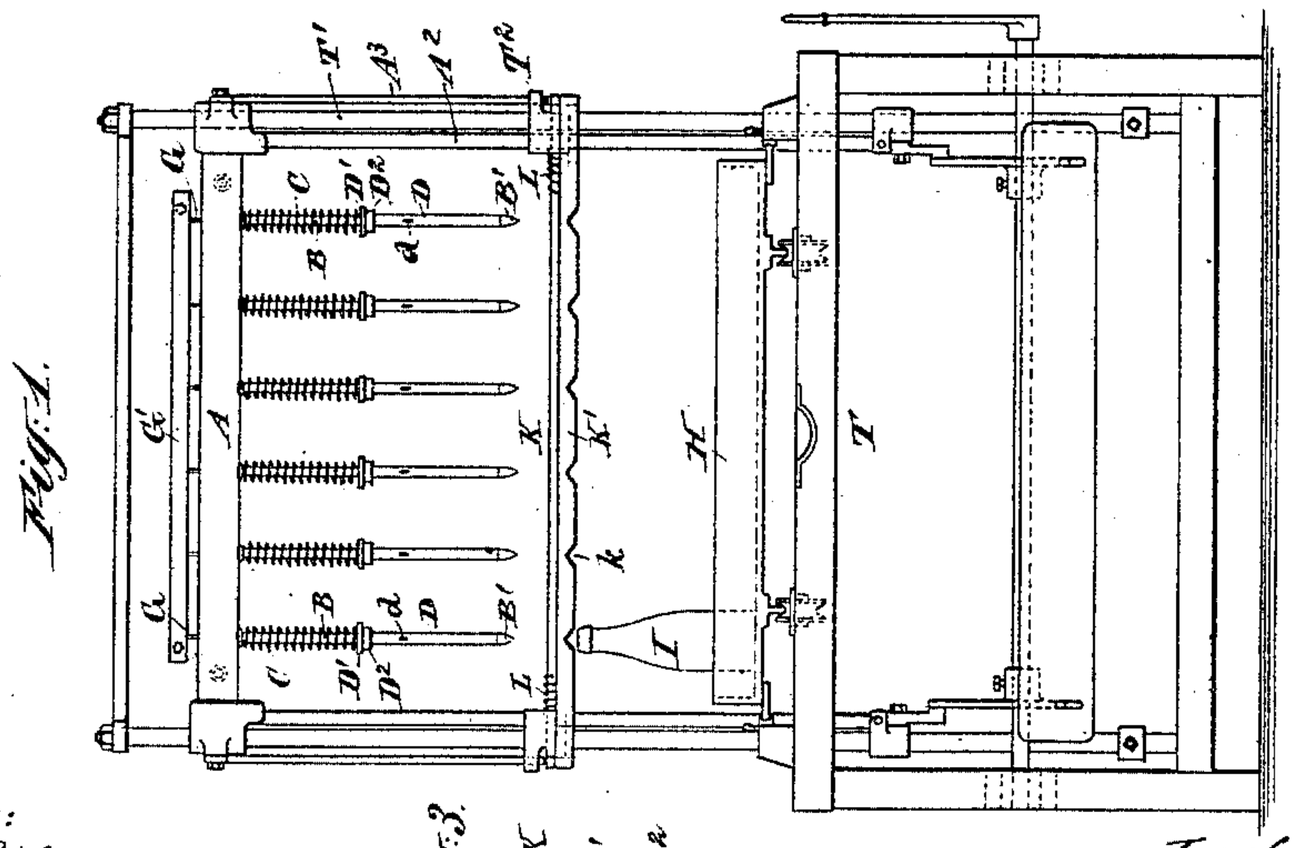

Fig. 1.

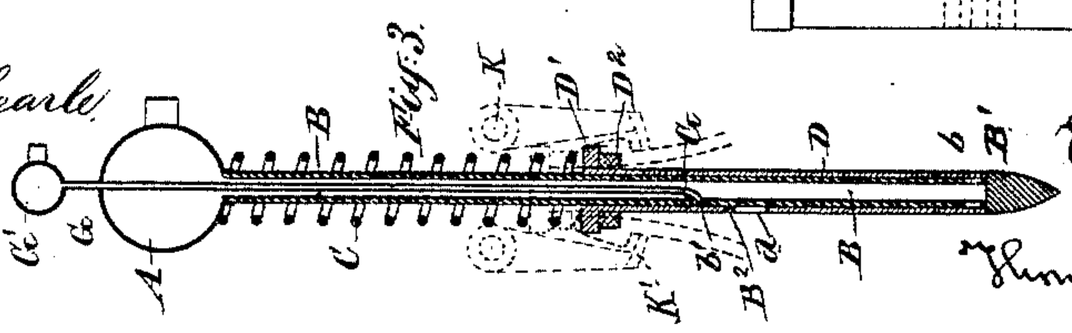

Fig. 3.

Witnesses:
Charles R. Searle.
H. A. Johnstone.

Inventor:
Ellis T. Jones
by his attorney
Thomas Drew Peters

(No Model.)

2 Sheets—Sheet 2.

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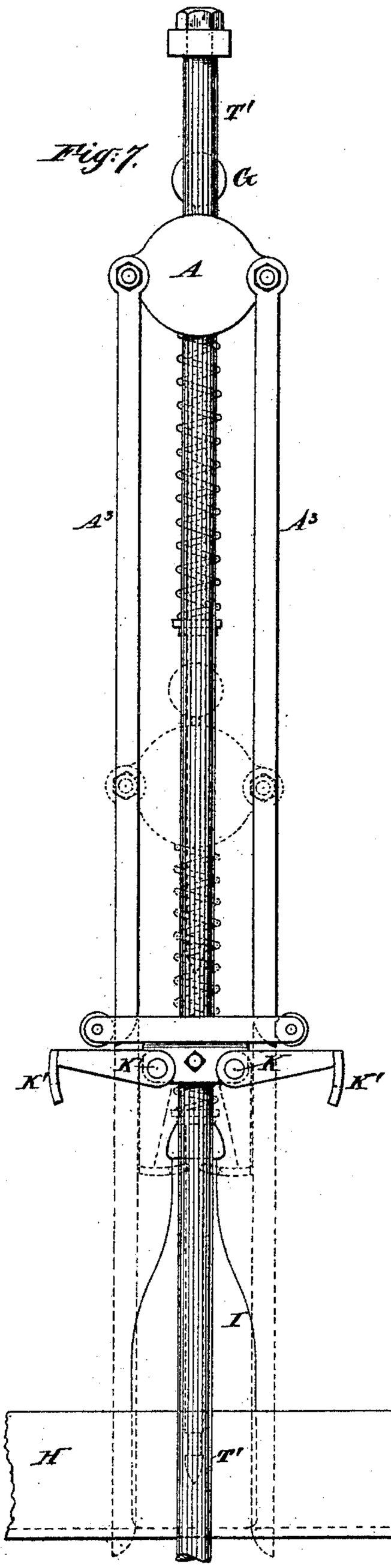
Fig. 1.



Witnesses:
Charles R. Searle,
H. L. Johnstone.

Inventor:
Ellis T. Jones
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Thomas Drew Stetson

UNITED STATES PATENT OFFICE.

ELLIS T. JONES, OF NEW YORK, N. Y.

BOTTLING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 491,753, dated February 14, 1893.

Application filed September 26, 1888. Serial No. 286,404. (No model.)

To all whom it may concern:

Be it known that I, ELLIS T. JONES, of New York city, in the county and State of New York, have invented a certain new and useful Improvement in Bottling-Machines, of which the following is a specification.

My machine is adapted to treat a number of bottles at once, to automatically start the flow when the bottles are brought into position, and to automatically and independently arrest the flow into each so soon as it is filled. All are filled rapidly, but some are likely to become filled sooner than others. When all are filled the row of bottles is removed and the flow remains suspended until another set is supplied and brought into position, and the operation is repeated. My apparatus allows the liquid to be taken direct from a barrel or other reservoir under a considerable pressure, and it retains the pressure in good part during and subsequent to the bottling operation.

The following is a description of what I consider the best means of carrying out the invention.

The accompanying drawings form a part of this specification.

Figure 1 is a front view of the apparatus in condition for work, but with only one bottle in the carriage. Fig. 2 is an elevation at right angles to the view in Fig. 1, also showing direct connection of the machine and barrel, and the rods connected with end of tube, ready with descent of the tubes to press down the flaps to the bottles. The remaining figures represent details on a larger scale. Fig. 3 is a vertical section through one of the filling tubes and shows in dotted lines the spring flaps holding the neck of the bottle; also vent pipe and tube with slot and collar. Fig. 4 is a vertical section through a portion of the tray or carriage which carries the bottles, with an elevation of the adjacent portion of the upright guide and vertically traversing rod. Fig. 5 is a horizontal section through the upright guide, and through the vertically traversing rod, with a plan view of a portion of the carriage and flat notched bars. Fig. 6 is a vertical section through a portion of the connecting device through which the liquid is led from the reservoir to the bottles and the air is led from the bottles into the reservoir. Fig. 7 is an end elevation of a portion on a large scale.

Similar letters of reference indicate corresponding parts in all the figures where they occur.

A is a horizontal pipe closed at each end, and sliding freely on two upright guides T′, and is supplied with liquid from a barrel W with which it is connected by a flexible pipe A′. The pipe A may be of any length desired. I will assume that it is of a proper length to fill six bottles at once.

B B are six vertical tubes, each closed at its lower end and secured at its upper end to the pipe A and communicating with its interior. These are all alike and a description of one will suffice for all. The main supply pipe A with its connections is capable of being moved bodily upward and downward to a required or sufficient extent. There is a collar B′ at the bottom of each tube B which serves as a stop for the lower end of an exterior tube D which latter fits tightly and easily on the exterior of tube B, and is allowed to slide endwise thereon, being actuated by a spring C urging it downward, and by the pressure of the bottle mouth acting against an elastic face D^2. The lower end of the tube B which is conveniently long to reach near the bottom of the bottle is liberally perforated, as indicated by *b*. At a certain height on the tube B is a small aperture *b′*, to which is soldered on the interior a vent pipe G which extends up through the pipe B and through the horizontal pipe A. Emerging from the top of A the several pipes G all communicate with a single horizontal pipe G′, which through a flexible pipe G^2 and suitable connections leads through the bung plug *m* to the upper portion of the barrel W when the bottle is in place and the pipe D is raised. An aperture *d* at the proper point in the pipe D exposes the mouth of the vent pipe G. But pipe A is raised, and the pipe D sinks by its gravity, aided by the force of the spring C, it closes the apertures *b*, and also closes the mouth *b′* of the vent tube G.

The bottling is effected as follows. The several bottles I are placed in rows in the carriage H, which is moved forward step by step to subject the bottles to the action of the ap-

paratus. As each row is brought into line under the pipe A, the latter is depressed, thrusting the several tubes B with their connections into the several bottles. The mouth of each bottle pressing upward the elastic face D^2 elevates the outer pipe D against the force of the spring C, and exposes the holes *b*, allowing the liquid to flow direct from the barrel or reservoir W rapidly out through the latter and fill the bottle. The air previously in the bottle escapes by flowing inward through the aperture *b'* upward through the vent pipe G direct to the barrel W, and the liquid fills the bottles. At this juncture the filling stops, and the liquid flows upward through the vent pipe G, but its gravity arrests the flow, and when the next row of bottles is presented, the pressure and flow of the liquid will force the air contained in the bottles upward with the contents of the vent pipe G into the barrel W. One bottle may fill somewhat earlier than another, but the flow into each is arrested as the liquid rises above the lower end of the vent tube G. When sufficient time has been allowed to be certain that all are filled, the tube A and its connections are raised, and the carriage H moved onward a step to present a new row of empty bottles, and the pipe A is again depressed and the operation repeated.

The temporary stopper or bung plug *m*, provided with means for securing same in the bung-hole of the barrel W, contains two connections, one for the main or supply pipe A', which allows the beer or other liquid to descend from the bottom of the barrel to fill the bottles, and another for the vent pipe G, which reaches up nearly to the top of the interior of the barrel where its end is open, and which conducts the air up from the several bottles. This arrangement provides that the air coming from the bottles shall be discharged not into the atmosphere or into a secondary reservoir but direct into the barrel W. It is thus subject to all the pressure which obtains in the barrel, and its force correspondingly re-acts on the air being driven out of the bottle. In short, the pressure of the air or gas in all parts of the apparatus is the same as exists in the barrel, whether that be more or less.

Prompt action and some dexterity are required to remove the bung of a barrel containing liquid under pressure and introduce my temporary bung plug *m* without losing much of the pressure. But it can be done. Analogous operations are familiar to tapsters. The slot *d* in the tube D is extended downward and receives a pin B^2 fixed in the tube B. This serves as a guide to prevent the tube D being turned around.

I make the extreme lower ends of the tubes B pointed to facilitate their entering. But the ordinary bottles do not always stand exactly upright, and therefore will not present their open mouths in the correct position to receive the tubes B. It, therefore, becomes necessary to provide a means to adjust and hold them in their correct positions, which I do by providing two cross-bars K, which carry flaps K', each having a series of notches *k* along the edge, and which are presented toward the bottles when depressed, and are hinged in two yoke-pieces T, secured to the upright guides T'.

The motion of the cross-bars K and flaps K' in opening and closing upon the necks of the bottles is effected by the aid of the vertically moving rods A^3 which are attached to the ends of tube A, and are guided through the yoke T^2. At each descent of the tube A and its connections these rods A^3 act instantly and directly on the cross-bars K and flaps K' and depress them, and then sliding down beyond, causing the notched flaps K' to embrace and hold the necks of the several bottles in the row in their correct positions to receive the tubes B, and releasing them when the tube A and its connections are raised. On the ascent of the pipe A and its connections the rods A^3 do not release the flaps K' until the tubes B are clear of the bottles, and are then raised by means of springs.

I also provide for preventing action of the machine only when the bottles are in their correct position, which is as follows: T is the fixed bed of the machine and T' are upright round bars, serving both as supports for the upper part of the mechanism and as guides for the pipe A and its connections as they are moved up and down by the action of a hand-lever or other means. A^2 are vertically moving bars attached to the ends of the pipe A, and their lower ends to two guides moving up and down therewith. Each is provided with a notch, as indicated by *a*, which when the pipe A is allowed to rise to its elevated position is brought on a level with flat notched bars H^2, which extend horizontally along the base of the tray or carriage H, and are provided with a series of notches *h*. There are the same number of notches *h* as there are rows of bottles in the tray or carriage H, and they are so arranged that when by the motion of the tray or carriage H a row of bottles is brought into position ready to receive the tubes B notches *h*, one on each side of the tray or carriage H, coincide in position with the vertically sliding bars A^2, allowing the latter to be moved up and down freely. When the pipe A and its connected bars A^2 have been allowed to rise to their highest position, the notches *a* are brought to the exact level of the flat bars H^2, and the carriage H moved forward by traversing the arms H^2 through the said notches *a*. Thus the carriage H cannot be moved except when the pipe A and its connections are quite up, and what is more important, the pipe A and its connections cannot be depressed except when the carriage H is in the correct position to allow the pipes B to enter the bottles. This arrangement in-

sures against the injury or fracture of the machine or of the bottles by depressing the filling mechanism with the bottles in the wrong position.

I attach importance to the fact that the opening of the vent tube into the bottle in each case is distinct from the opening by which the beer is admitted and is higher, because it allows the beer to be admitted at the bottom and the air to be vented off at the top. This feature allows the filling to be stopped by the choking of the vent automatically at the moment the filling has proceeded to the proper level in each bottle and yet to induct the beer or other liquid at the bottom of the interior of the bottle and thus avoid the production of foam.

Modifications may be made without departing from the principle or sacrificing the advantages of the invention. I can, as already intimated, increase or diminish the length of the horizontal pipe A and the number of the vertical tubes B and their attachments.

Parts of the invention can be used without the whole. I can dispense with the provisions for conveying the air from the bottles into the barrel and discharge it into the atmosphere. But in such case the pipe G′ should be extended upward to a sufficient height to prevent any ordinary or extraordinary pressure in the barrel from forcing the beer or other liquid up and out through the pipe G′.

The aperture *d* may be so arranged that it will leave the lower end *b′* of the vent pipe G always uncovered. I prefer that this vent tube shall be uncovered only when the corresponding bottle is present, and consequently the slide tube D is forced upward to or near its highest position. My arrangement by covering and closing the aperture *b′* equally with the apertures *b* when the bottles are not present, retains any beer or foam which may have been forced up into the vent tube and retains it ready for the next operation.

I can have two of the flexible pipes A′ with suitable connections to two barrels W, thus avoiding the necessity for stopping the bottling or greatly abbreviating the period of stoppage necessary when the barrels are changed.

I claim as my invention:—

1. In a bottling machine, the combination of a vertically reciprocating filling head having depending branch tubes or filling tubes, closed and pointed at their lower ends, and perforated near their lower ends, the slidable tubes surrounding said branch tubes, and having openings adapted to register with the perforations near the lower end of the latter, the vent tubes connected with and extending upwardly through the filling tubes, an air pipe connecting the vent tubes, a flexible connection between the filling head and the source of supply, a vent pipe extending into the latter above the level of the liquid therein, and a flexible connection between said vent pipe and the air pipe connecting the vent tubes, substantially as set forth.

2. In a bottling machine, the combination with the reciprocating cross head A filling tubes B, and connections for operating and supplying liquid thereto, of the rods A^3, cross-bars K, and notched flaps K′, arranged to adjust and hold the necks of the bottles in their correct position during the filling, and to release the same when the filling tubes B are withdrawn, as herein shown and specified.

3. In a bottling machine, having a reciprocating cross-head A and tubes B, and means for operating and supplying liquid thereto, and the carriage H, and provisions for supporting the bottles therein, the bars H^2 having notches *h*, and vertically moving bars A^2, having notches *a*, arranged to prevent the movement of one part until the other is in correct position, substantially as shown and specified.

In testimony whereof I have hereunto set my hand, at New York city, this 24th day of September, 1888, in the presence of two subscribing witnesses.

ELLIS T. JONES.

Witnesses:
THOMAS DREW STETSON,
ACKLAND LORD BOYLE.