

No. 723,065.

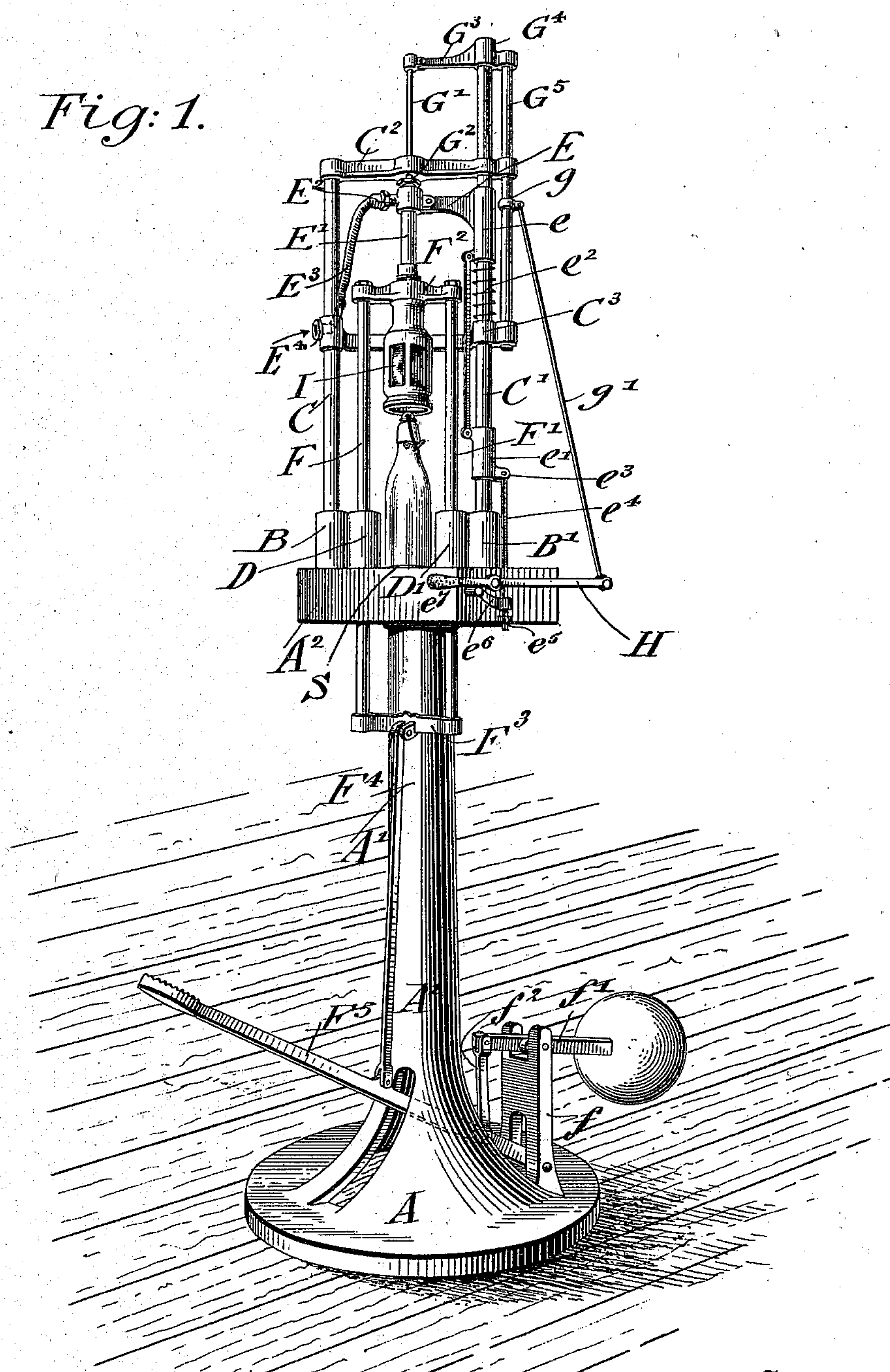
PATENTED MAR. 17, 1903.

L. STREBEL.
BOTTLE FILLING MACHINE.
APPLICATION FILED NOV. 22, 1902.

NO MODEL.

3 SHEETS—SHEET 1.

Fig: 1.



Witnesses
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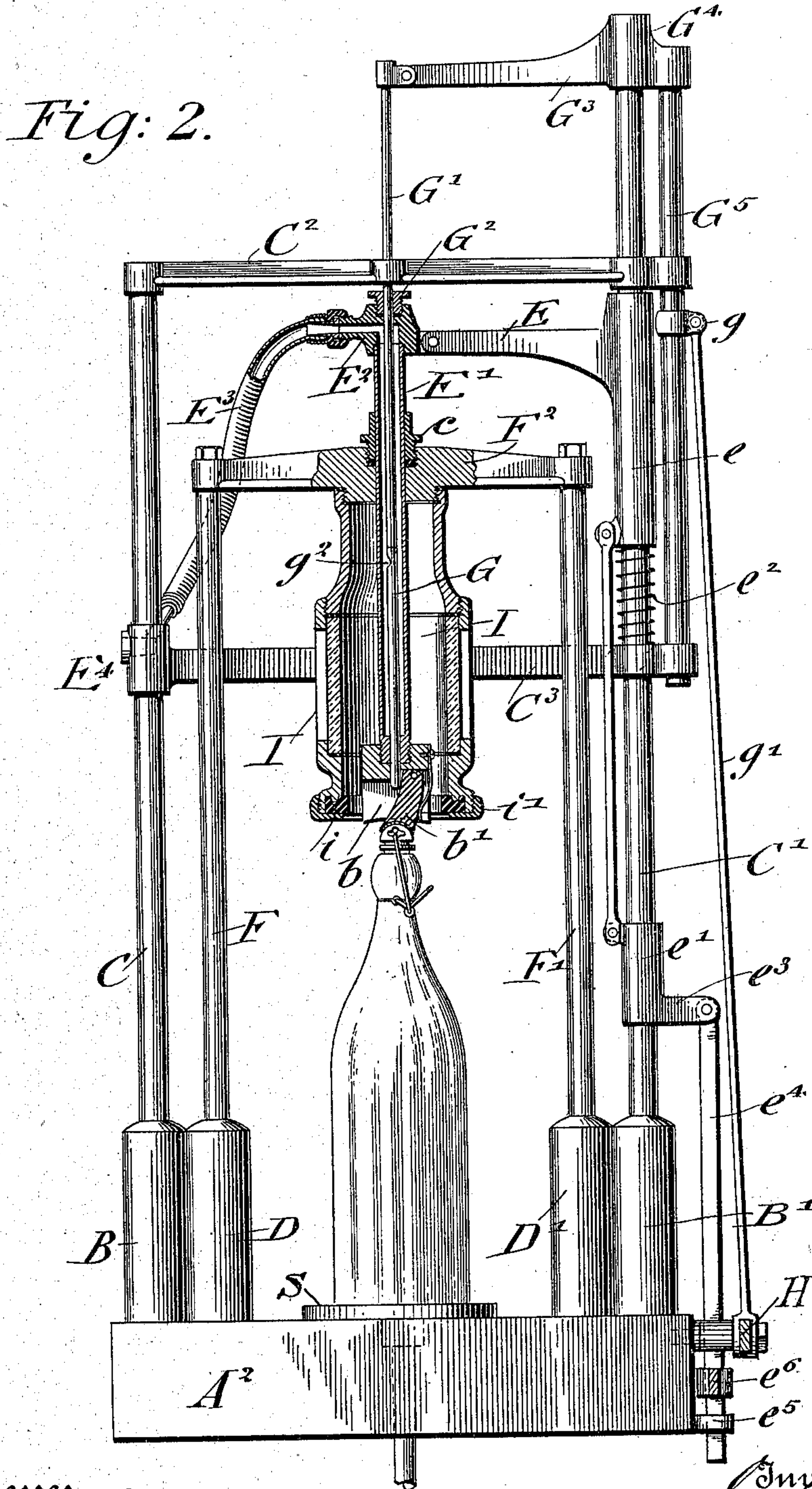
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NO MODEL.

3 SHEETS—SHEET 2.



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3 SHEETS—SHEET 3.

Fig: 3.

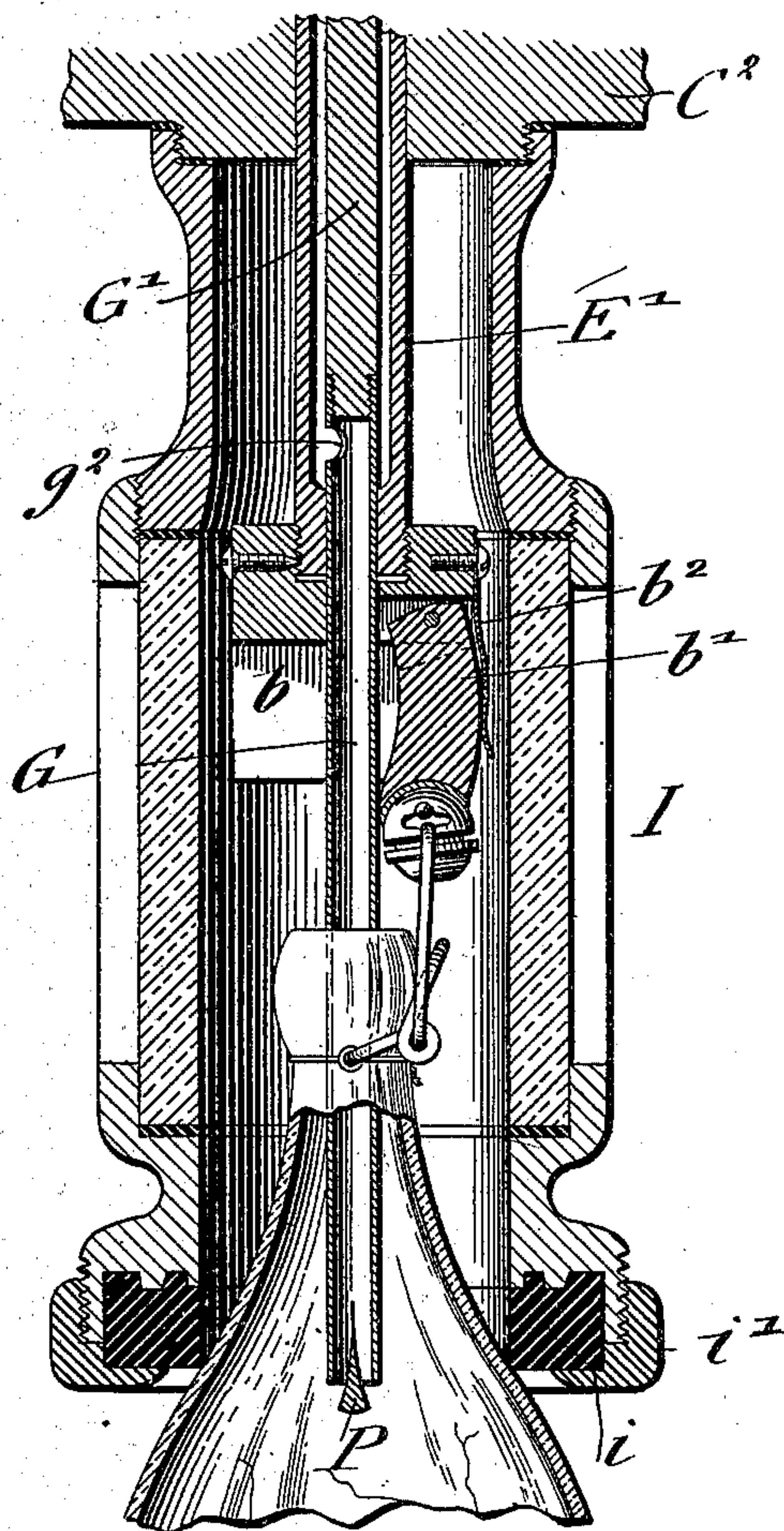


Fig: 4.

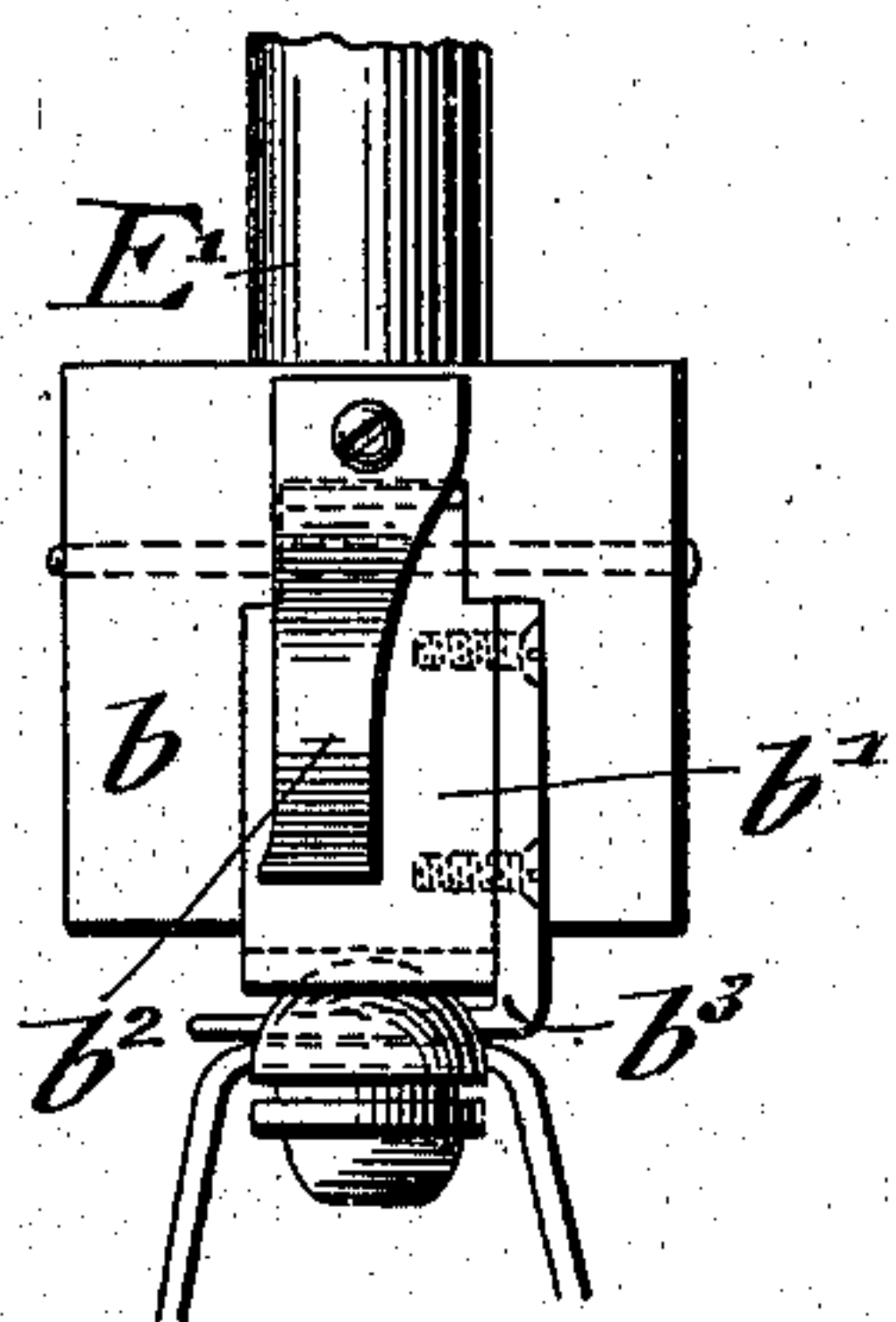


Fig: 5.

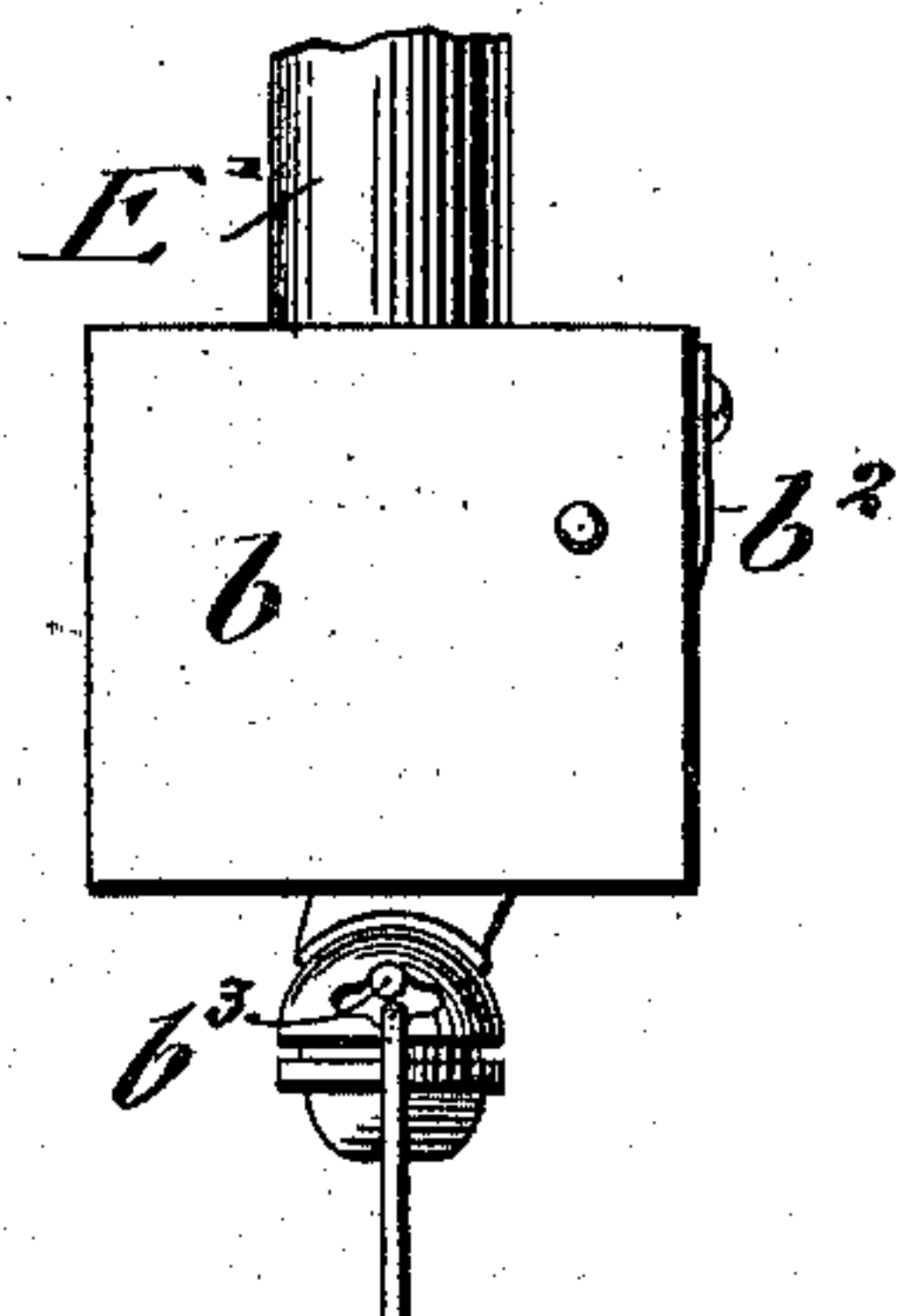
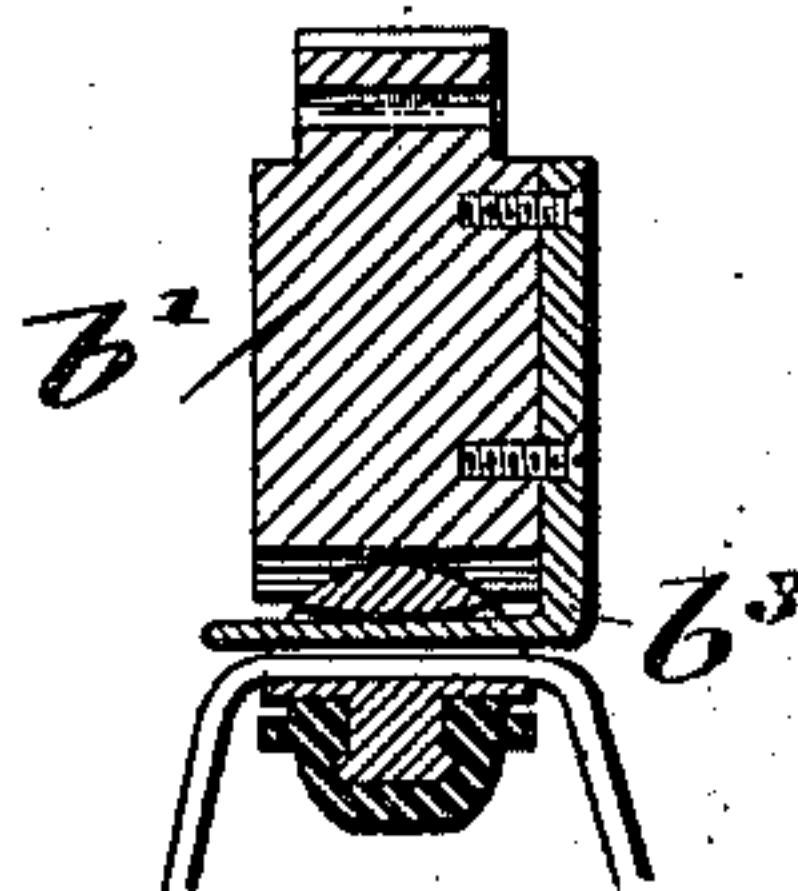


Fig: 6.



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UNITED STATES PATENT OFFICE.

LOUIS STREBEL, OF NEW YORK, N. Y.

BOTTLE-FILLING MACHINE.

SPECIFICATION forming part of Letters Patent No. 723,065, dated March 17, 1903.

Application filed November 22, 1902. Serial No. 132,369. (No model.)

To all whom it may concern:

Be it known that I, LOUIS STREBEL, a citizen of the United States, residing in New York, borough of Bronx, and State of New York, have invented certain new and useful Improvements in Bottle-Filling Machines, of which the following is a specification.

This invention relates to certain improvements in bottle-filling machines of that class in which carbonated liquids are filled into bottles having stoppers connected permanently thereto and in which the stopper is tightly closed on the mouth of the bottle as soon as the filling operation is completed, so as to prevent as little escape of the gas as possible from the liquid, the object of the invention being more specifically to simplify the construction of this class of machines and render the operation of the machine rapid and convenient and produce the filling of the bottle with the least possible loss of liquid and gas; and for this purpose the invention consists, primarily, in the combination, in a machine for filling bottles, of a supply-tube, which is introduced into the bottle-neck, yielding means engaging the stopper-head and adapted to be actuated by said supply-tube, so as to permit the free entrance of the supply-tube into the bottle and to return to its normal position as soon as the supply-tube is withdrawn from the bottle after the same is filled.

The invention consists, further, in the novel means for engaging the stopper and holding the same in proper position during the filling operation and releasing the same for closing the bottle after the filling operation is completed; and the invention consists, lastly, of certain details of construction and combinations of parts which will be fully described hereinafter and finally pointed out in the claims.

In the accompanying drawings, Figure 1 represents a perspective view of my improved bottle-filling machine. Fig. 2 is a front elevation of the upper portion of the machine, shown with parts broken away and in vertical central section. Fig. 3 is a vertical central section of a portion of the filling mechanism, drawn on a larger scale and showing the stopper-positioning device in position while filling the bottle. Figs. 4 and 5 are re-

spectively a rear elevation and a side elevation, and Fig. 6 is a transverse section, of the stopper-gripper.

Similar letters of reference indicate corresponding parts.

Referring to the drawings, A represents the base of the machine, and A' the pedestal, which is preferably cast integral with the base A. The pedestal A' is provided at its upper end with a table A², provided with a seat S, on which the bottle to be filled is placed. On the table A² are placed two vertical sockets B B', adjacent two opposite sides, in which are supported upright posts C C', which are connected at their upper ends by a cross-bar C². The table A² is further provided with two vertical guide-boxes D D', juxtaposed to the sockets B B', through which the two slide-rods F F' are adapted to reciprocate. These slide-rods are connected at their upper ends by a cross-head F² and at their lower ends by a cross-head F³, the latter being connected, by means of a link F⁴, with a treadle-lever F⁵, which extends through the pedestal and is fulcrumed at its rear end, said pedestal being slotted on the base A to permit a vertical curvilinear motion of the treadle-lever. At the rear of the base is an upright f, to which the treadle-lever F⁵ is pivoted, and at the top of this standard is fulcrumed a weighted lever f', that is connected with the treadle-lever by a link f² for counterbalancing the treadle-lever and keeping it normally raised when not in use and to return the parts with which it is connected into normal position when the treadle is released after each depression. On the post C' is placed a sliding sleeve-shaped portion e, having an inwardly-extending horizontal arm E, which is pivotally connected to the upper end of a vertical tubular stock E', said stock having an L-joint E² connected with its upper end, to which is connected a flexible tube E³, that is attached to a stationary coupling E⁴ on the upright post C. Said coupling is to connect with the valved supply-tube usually used in machines of this class. The sleeve e is connected by a pivot-link with a second sliding sleeve e', that is guided on the lower part of the post C', a helical spring e² being interposed between the lower end of the sleeve e and an intermediate cross-bar C³, that is

permanently attached to the upright posts C' and bent backwardly at its middle portion, so as to provide the required space for the housing that extends around the filling devices. The lower guide-sleeve e' is provided at its lower end with a laterally-extending lug e^3 , to which is connected a rod e^4 , that is guided at its lower end in a keeper e^5 at the side of the table A^2 and provided with a forwardly-extending arm e^6 , rigidly connected therewith, and the front end of the arm e^6 is provided with a laterally-projecting pin e^7 , that is adapted to be engaged by a hand-lever H, that is fulcrumed to the side of the table A^2 . The motion of the hand-lever H acts on the forwardly-extending arm of the guide-rod e^4 and when depressed imparts a downward movement to the sliding sleeves $e' e$, and thereby the downward motion of the tubular stock E' , connected with the bracket-arm E. The tubular stock E' is guided in a stuffing-box c in the cross-head F^2 and is adapted to have reciprocating movement independent of the cross-head. The tubular stock is surrounded by the housing I, which is screwed to the under side of the cross-head, as shown clearly in Figs. 2 and 3. The housing I is made of cylindrical shape, its middle part being preferably provided with a skeleton frame and a glass cylinder, so as to permit the observation of the progress of the filling operation, said housing being also provided at the lower end with a gasket i , that is firmly held in position on the housing by a suitable collar i' and is adapted to be held tightly around the neck of the bottle to be filled when the housing is in lowered position, as shown clearly in Fig. 3. The housing may be of any suitable construction.

Centrally in the tubular stock E' extends the supply-tube G, which is attached to a rod G' , that passes through the upper end of the tubular stock E' and tightly fitted thereto by a suitable stuffing-box G^2 in the L-joint E^2 and through the cross-bar C^2 above the same, said rod and supply-tube being adapted to reciprocate independently of either the tubular stock or the housing I. The upper solid end of the supply-tube is provided with a lug, that is applied by a pivot connection to a horizontal arm G^3 , which arm is guided on the upwardly-extending end of the upright post C' by means of a sleeve-shaped portion G^4 and connected rigidly with the upper end of a guide-rod G^5 , extending parallel with the post C' and having its middle and lower portions guided in sleeves at the ends of the cross-bar $C^2 C^3$, as shown clearly in Fig. 2. The guide-rod G^5 is connected by a stop-clip g and pivot-rod g' with the rear end of the fulcrumed hand-lever H, so that by depressing the front end of the hand-lever H the guide-rod G^5 and arm G^3 are raised, while on lifting the hand-lever the same are lowered, so that the supply-tube is thereby moved up into the housing or down through the housing into the mouth of the bottle to be filled. The

stop-clip g limits the upward movement of the rod G^5 and the supply-tube G, so that the latter will not be drawn out of the lower end of the tubular stock. The supply-tube G is provided with an opening g^2 at its upper end, and through this there is permanent communication between the interior of the supply-tube and the space in the tubular stock around the supply-tube. The tubular stock E' follows by the action of its spring e^2 the upward motion of the supply-tube and by the downward motion of the hand-lever the downward motion of the supply-tube.

To the lower end of the tubular stock within the housing E^2 is applied a block b , which is provided with a central bore, so as to permit the passage of the supply-tube. This block is provided with the mechanism by which the stopper of the bottle is engaged and positioned. This mechanism consists of a swinging block b' , that is pivoted at its upper end in the transverse recess of the block b , said swinging block being acted upon at its outer face by inward tension of a flat spring b^2 , that is attached to the upper end of the block b , so that the swinging block is maintained in line with the supply-tube, as shown in Fig. 2. This places the inner concave side of the swinging block in the path of the lower end of the supply-tube, so that by the downward motion of the supply-tube the lower end of the same encounters the swinging block b' and forces it laterally against the tension of the spring b^2 into position sidewise of the filling-tube, as shown in Fig. 3. To the side of the swinging block is applied the upright shank of a gripping-finger b^3 , which is bent at right angles to the shank and which extends transversely below the swinging block, as shown clearly in Figs. 4 and 6. The lower end of the swinging block is preferably concave, so as to correspond to the rounded-off shape of the stopper-head, said stopper-head being provided with an opening of sufficient size to permit the entrance of the gripping-finger b^3 above the bail of the stopper, as shown clearly in detail, Figs. 4, 5, and 6. As shown in Fig. 2, the stopper is set loosely on the mouth of the bottle preparatory to placing it in position on its seat in the table A^2 . The bottle-stopper is readily slipped on the gripping-finger in an obvious manner. When the bottle is in the position as indicated in Figs. 1 and 2, the treadle is depressed by the foot of the operator, so as to lower the housing I into position shown in Fig. 3. The treadle is held firmly depressed, whereby the elastic gasket of the housing fits tightly around the neck of the bottle. The hand-lever H has in the meantime been slightly depressed, so as to place the tubular stock under tension of the spring e^2 in order that the block at the lower end of the tubular stock will raise simultaneously with the raising of the hand-lever H for lowering the supply-tube into the neck of the bottle. As the supply-tube descends its lower end en-

counters the swinging block and shifts it laterally into the position shown in Fig. 3. The lower end of the supply-tube is open, so that when a stop-cock in the supply-pipe for the carbonated liquid is opened the liquid passes from the supply-pipe through the flexible tube E³ into the space between the tubular stock E' and the rod G' and the supply-tube G, then into the latter through the opening g² in the upper portion of the supply-tube, and thence into the bottle. The supply-tube is preferably provided at its lower end with a tapering partition-plate P, so that the stream of carbonated liquid is divided into two parts on each side of the same, forcing thereby the air in the bottle out through the bottle-mouth into the housing in a continuous stream, thereby facilitating the filling of the bottle.

As soon as the bottle is filled, which is observed through the glass cylinder of the housing, the stop-cock of the supply-pipe is closed, and thereby the supply of carbonated liquid cut off. The hand-lever H is then moved in downward direction, so that the supply-tube is withdrawn from the neck of the bottle until it clears the swinging block and permits the same to return by its spring into position above the bottle-mouth, as shown in Fig. 2. Simultaneously the lower end of the tubular stock is lowered, so that the stopper is placed in position on the mouth of the bottle. The treadle is then released, so that the housing is moved in upward direction away from the bottle. The operator closes the mouth of the bottle simultaneously with the upward movement of the housing. The bottle is then removed from the gripping-finger and the stopper-head of the next bottle placed in position in the same, so that the next filling operation can be performed.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a bottle-filling machine, the combination with a table having a seat for the bottle to be filled, of a vertically-reciprocating stock above said seat, an independently-reciprocating supply-tube passing through said stock, a laterally-yielding stopper-gripper on the lower end of said stock disposed in the path of said reciprocating supply-tube and adapted to be moved laterally by the same, and means for supplying liquid to said tubular stock and supply-tube, substantially as set forth.

2. In a bottle-filling machine, the combination, with a table having a seat for the bottle to be filled, of a vertically-reciprocating stock above said seat, an independently-reciprocating supply-tube passing through said stock, a laterally-yielding spring-controlled stopper-gripper on the lower end of said stock, disposed in the path of said reciprocating supply-tube and adapted to be moved laterally by the same, and means for supplying liquid to said tubular stock and supply-tube, substantially as set forth.

3. In a bottle-filling machine, the combination, with a seat for the bottle to be filled, of a vertically-movable stock above said seat, means for vertically reciprocating said stock, a vertically-reciprocating supply-tube passing through said tubular stock, a stopper-gripper hinged to the lower end of the stock, said stopper-gripper being actuated by the lower end of the supply-tube so as to be moved in laterally-shifted position, and means for supplying the liquid to be bottled to the tubular stock and supply-tube, substantially as set forth.

4. In a bottle-filling machine, the combination, with a table having a bottle-seat, of a vertically-reciprocating stock above said seat, a reciprocating supply-tube passing through said stock, means for actuating said stock and supply-tube simultaneously in opposite directions, means on the lower end of said stock for engaging the stopper-head of the bottle and adapted to be actuated by the supply-tube, and means for supplying liquid to said supply-tube, substantially as set forth.

5. In a bottle-filling machine, the combination, with a table having a bottle-seat, of a vertically-reciprocating tubular stock above said seat, a reciprocating supply-tube in said tubular stock, the same having an exterior diameter considerably less than the interior diameter of said stock forming an annular space between the same, means for supplying liquid into said stock, said supply-tube, having an opening communicating with said annular space for admitting liquid therefrom into said supply-tube, and means for limiting the movement of said reciprocating supply-tube for retaining said opening in communication with the annular space of the stock, substantially as set forth.

6. In a bottle-filling machine, the combination, with a seat for the bottle to be filled, of a housing adapted to inclose the upper portion of the bottle, means for reciprocating said housing, a vertically-movable tubular stock having its lower portion located within the housing, means for operating said stock, a supply-tube passing centrally through said tubular stock, a hinged stopper-gripper hinged to the lower end of the stock and adapted to be laterally shifted by the descending of the supply-tube and returned by a spring acting on the same, and means for supplying the liquid to be bottled to said tubular stock and supply-tube, substantially as set forth.

7. In a bottle-filling machine, the combination, with a seat for the bottle to be filled, of a vertically-movable tubular stock, a laterally-shiftable stopper-gripper hinged to the lower end of the same, a spring for pressing the stopper-gripper inwardly, a vertically-reciprocating supply-tube guided in said tubular stock and adapted to shift the stopper-gripper during its descending motion and hold the same in lateral position for filling, and a flexible tube connecting the upper end

of the tubular stock with the supply-tube for the liquid to be bottled, substantially as set forth.

5 8. In a bottle-filling machine, the combination with a vertically-movable tubular stock, of a descending recessed block at the lower end of the same, a spring-actuated stopper-gripper hinged in said recessed block, a stopper-gripping finger attached to said block and
10 extending transversely thereto at the lower end of the same, a vertically-reciprocating supply-tube adapted to move the hinged block and gripper sidewise when descending into the bottle, and a flexible tube connect-
15 ing the upper end of the tubular stock with the supply-tube for the liquid to be bottled, substantially as set forth.

9. In a bottle-filling machine, the combination, with a vertically-movable tubular stock,
20 of a centrally-recessed block attached to the lower end of the same, a stopper-gripping block hinged in said recess, a spring acting on said stopper-gripping block and moving the same inwardly in the recessed block, a
25 vertically-reciprocating supply-tube adapted to engage the face of the stopper-gripping block and move it sidewise during its descent

into the bottle, means for imparting reciprocating motion to the tubular stock, means for imparting reciprocating motion to the supply- 30 tube, and a flexible tube connecting the upper end of the tubular stock with the supply-tube for the liquid to be bottled, substantially as set forth.

10. In a bottle-filling machine, the combination, with a vertically-movable tubular stock, of a vertically-reciprocating supply- 35 tube guided in said stock, a block at the lower end of the stock provided with a central transverse recess, a hinged and spring-actuated block in said recess, and a tapering finger at- 40 tached to the side of said hinged block and extending transversely across the lower end of the same, said finger being adapted to engage a recess in the head of the bottle-stopper, 45 substantially as set forth.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

LOUIS STREBEL.

Witnesses:

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