

No. 698,871.

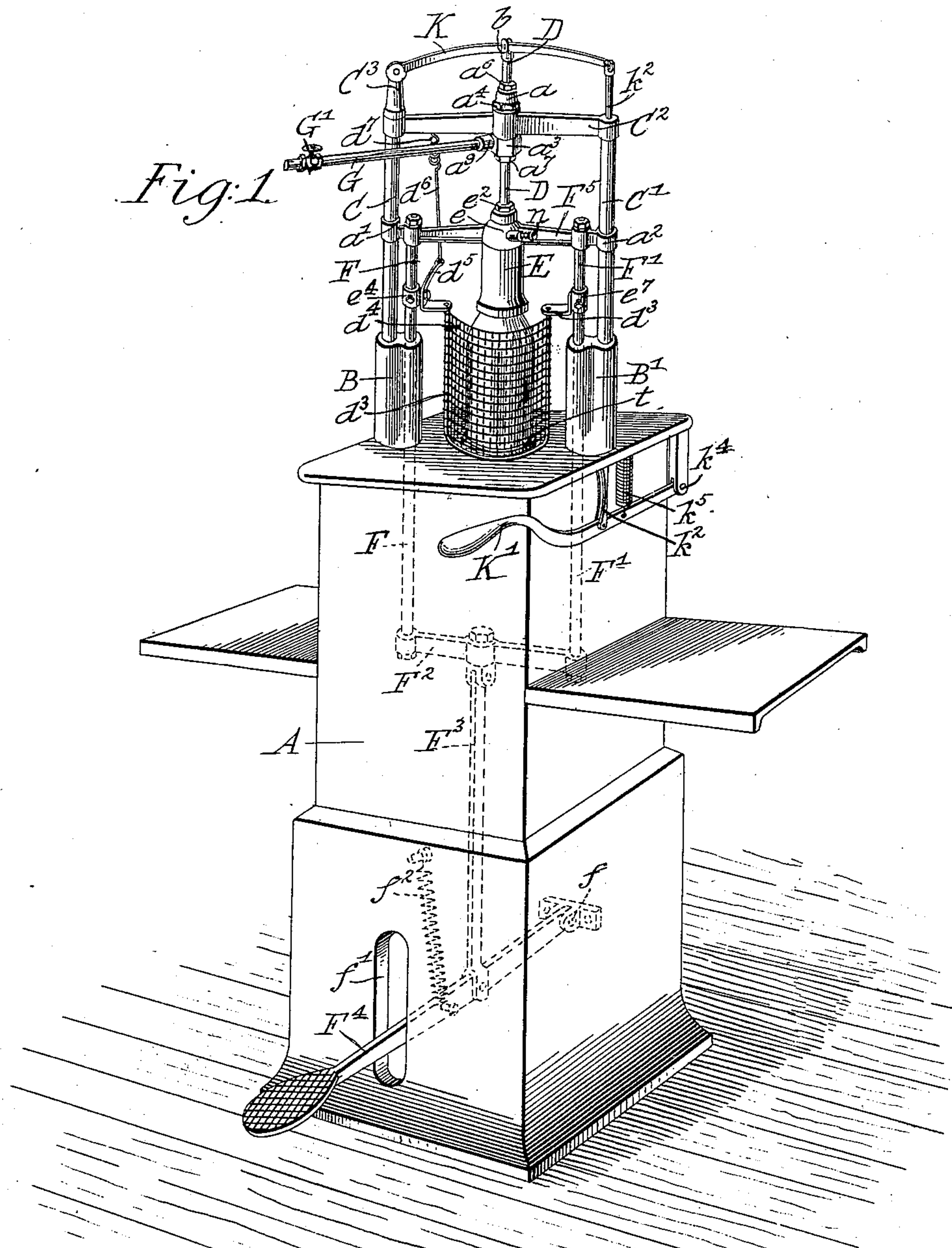
Patented Apr. 29, 1902.

L. STREBEL & C. W. WILLIAMS.  
BOTTLE FILLING MACHINE.

(Application filed Jan. 16, 1902.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES:

Joseph H. Niles.  
Henry Suhrbier.

INVENTORS

Louis Strebel  
Charles W. Williams  
BY Louisa Wahle  
ATTORNEYS

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2 Sheets—Sheet 2.

Fig. 2.

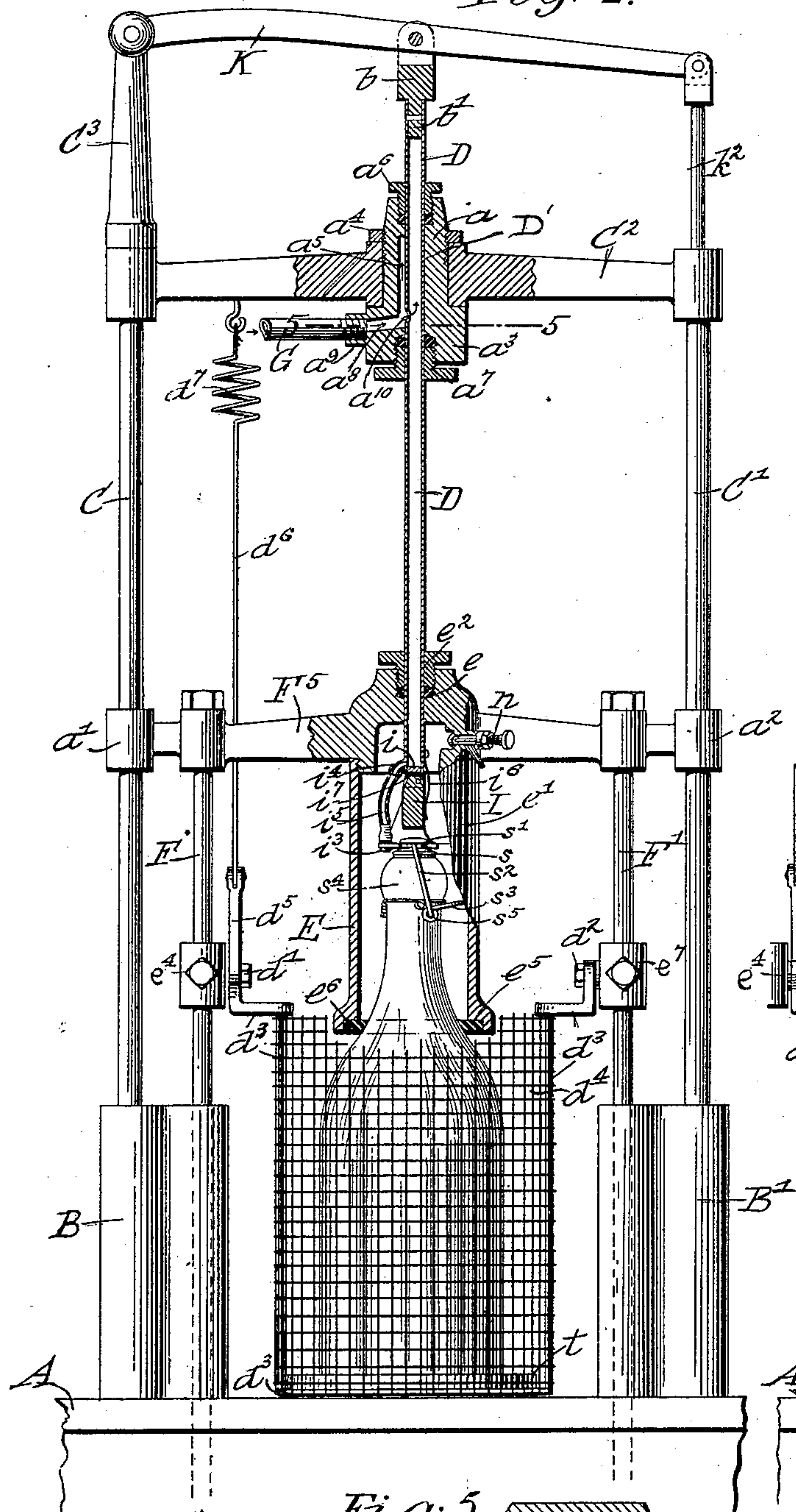


Fig. 4.

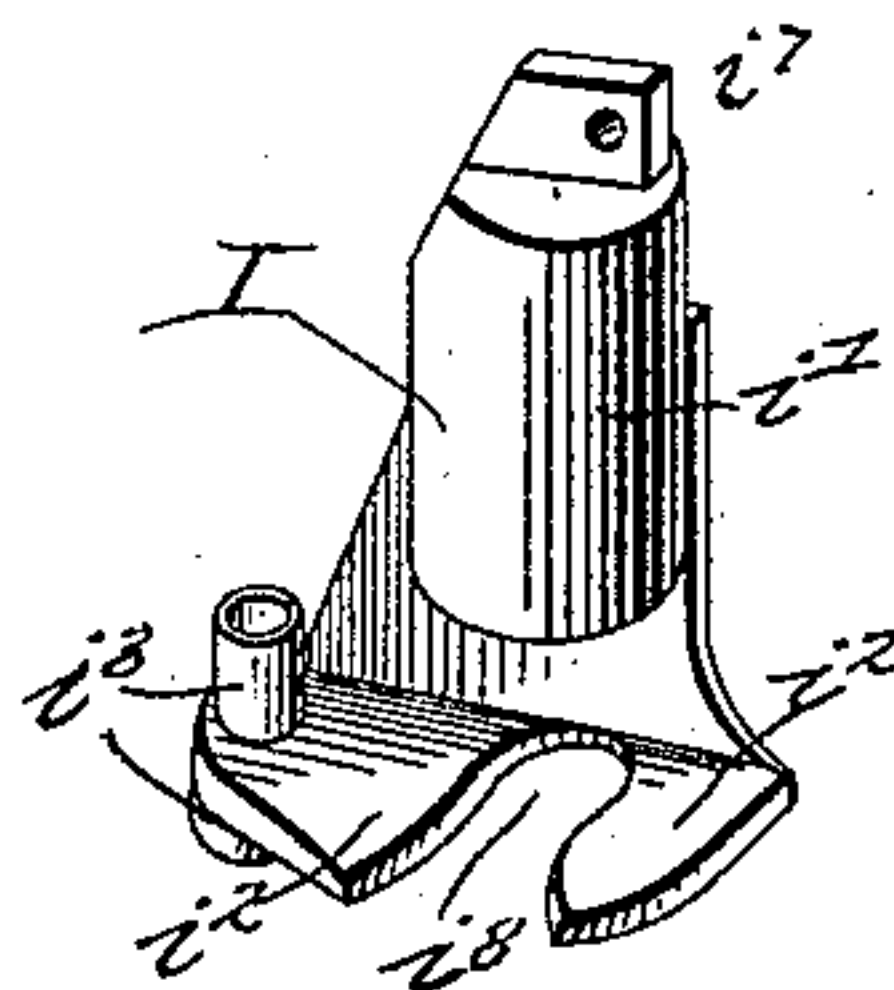


Fig. 3.

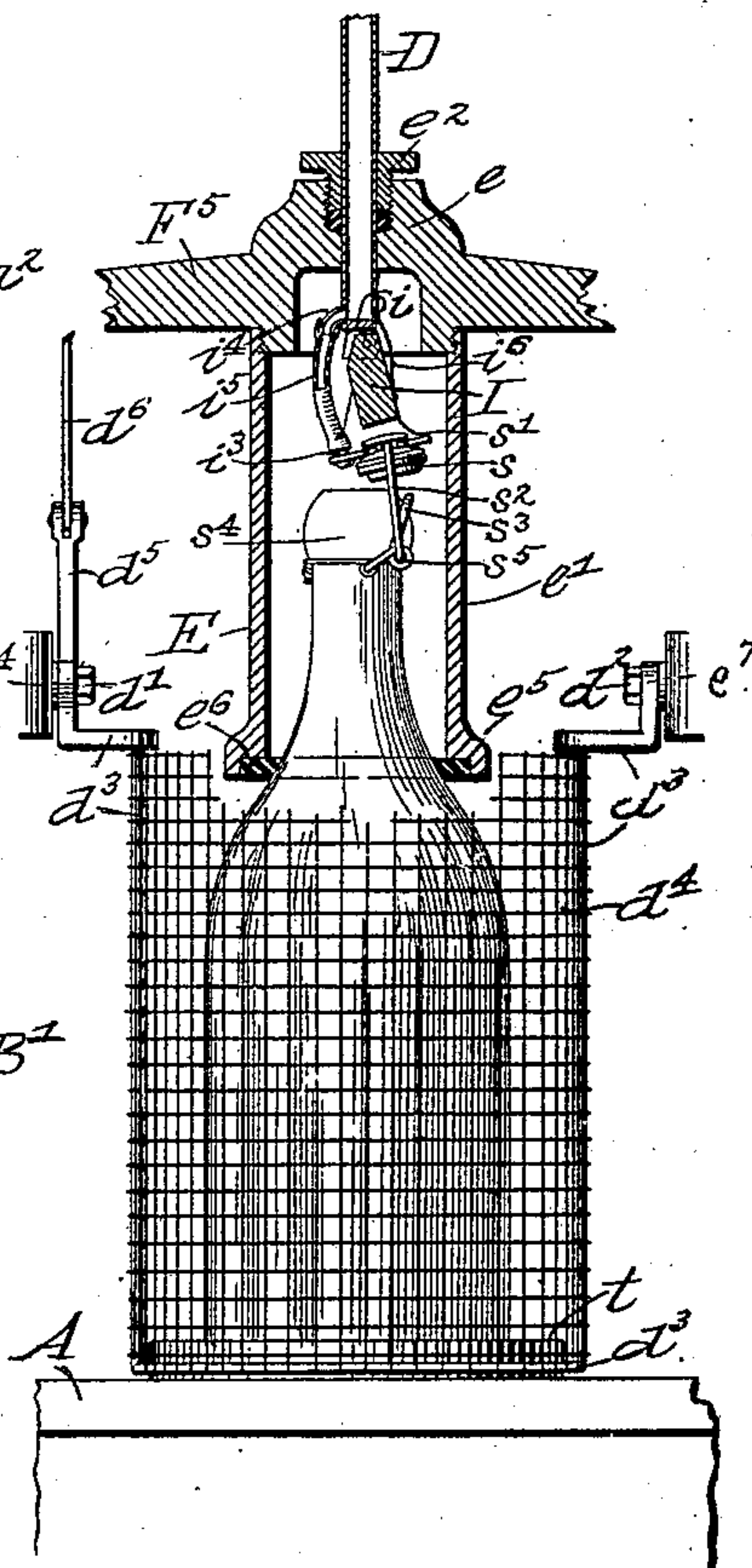
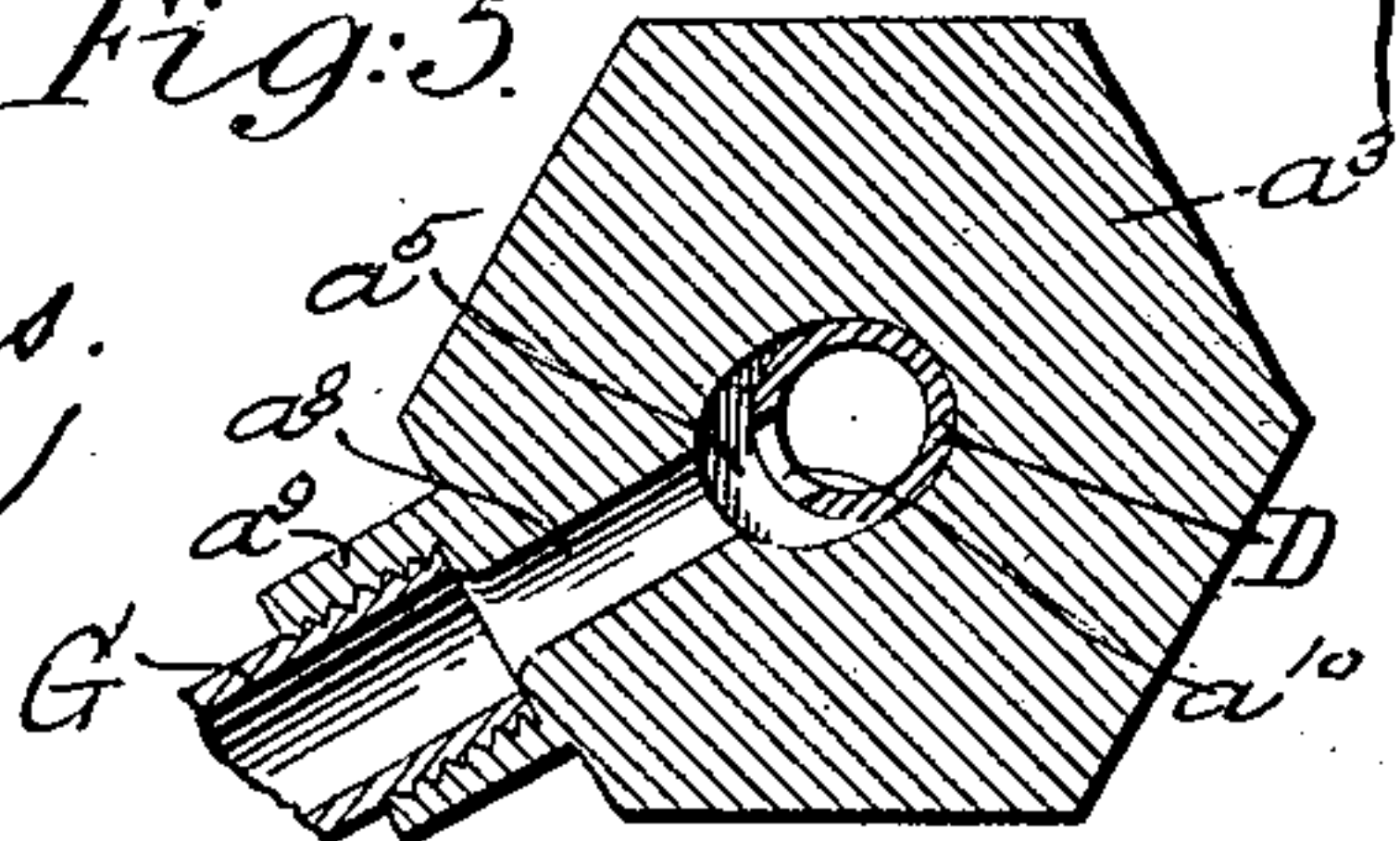


Fig. 5.

WITNESSES:

Joseph H. Niles.  
H. Suberlin



INVENTORS  
Louis Strebel  
Charles W. Williams  
BY  
James W. Wable  
ATTORNEYS



# UNITED STATES PATENT OFFICE.

LOUIS STREBEL AND CHARLES W. WILLIAMS, OF NEW YORK, N. Y.,  
ASSIGNORS TO THE CENTURY STOPPER COMPANY, OF NEW YORK,  
N. Y., A CORPORATION OF NEW YORK.

## BOTTLE-FILLING MACHINE.

SPECIFICATION forming part of Letters Patent No. 698,871, dated April 29, 1902.

Application filed January 16, 1902. Serial No. 90,016. (No model.)

*To all whom it may concern:*

Be it known that we, LOUIS STREBEL and CHARLES W. WILLIAMS, citizens of the United States, residing in New York, borough of Manhattan, 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 improvements in machines for filling bottles of that class in which the stopper is attached to the bottle by mechanism permitting motion of the stopper relatively to the bottle-mouth.

The object of the invention is to provide a machine by which bottles of this class may be rapidly, conveniently, and safely filled; and for this purpose the invention consists in the combination, in a machine for filling bottles, of a discharge-nozzle and means constructed to cooperate with the stopper mechanism for positioning said discharge-nozzle.

The invention consists, further, in certain novel mechanism for operating a protective screen and in 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 is a perspective view of our improved bottle-filling machine. Fig. 2 is a side view of the upper portion of the machine with parts broken away and in vertical central section. Fig. 3 is a similar view of a portion of the mechanism illustrated in Fig. 2, showing the stopper-engaging gripper in a different position. Fig. 4 is a perspective view of the gripper detached and drawn on a larger scale; and Fig. 5 is a horizontal section on line 5 5, Fig. 2.

Similar letters of reference indicate corresponding parts.

Referring to the drawings, A indicates the base of the machine. The base is provided at the upper portion with a suitable seat *t* for positioning the bottle to be filled. From the base A rise two standards B B', from which extend in upward direction posts C C', connected at their upper portions across the base by means of a cross-bar C<sup>2</sup>. Guided in suitable bores of the standards B B' are two slide-

rods F F', which are connected at their upper portions by a cross-head F<sup>5</sup>, which is preferably provided with guide-sleeves, as *a'* *a*<sup>2</sup>, engaging the posts C C', respectively. The slide-rods F F' are connected at their lower ends by a cross-head F<sup>2</sup>, which is connected, by means of a link F<sup>3</sup>, with a treadle F<sup>4</sup>, which is pivoted at *f* within the base A, said lever projecting through a slot *f'* into convenient position for use by the operator. A spring *f*<sup>2</sup>, secured to the base and to the treadle, serves to retain the latter and the parts connected therewith in normal raised position when not in use and to return the same into such position when the treadle is released after depression. Guided in the cross-bar C<sup>2</sup> and in the cross-head F<sup>5</sup> is a tubular stock D, which is pivoted at its upper end by means of a coupling *b*, the shank *b'* of which serves to close the upper end of the stock to a lever K, fulcrumed at one end to an extension C<sup>3</sup> of the post C and at the other end to a draw-rod *k*<sup>2</sup>, guided in the post C', which is tubular for this purpose, said rod *k*<sup>2</sup> being connected at its lower end to a hand-lever K', fulcrumed at *k*<sup>4</sup> to the base A. A spring *k*<sup>5</sup>, secured at one end to the base and at its other end to the lever K', serves to return the lever and connected parts to normal raised position when released and to retain the parts normally in said position.

For admitting the liquid to be bottled to the tubular stock D the latter is guided at the cross-bar C<sup>2</sup> in a suitable box D', which comprises a cylindrical body *a*, screw-threaded at one end, as its upper end, and adapted to enter a corresponding vertical bore of the cross-bar, and an enlarged head *a*<sup>3</sup>, adapted to bear against said cross-bar when the box is secured in place by a nut *a*<sup>4</sup>, screwed upon the screw-threaded upper end of the body *a* at the opposite side of the cross-bar. The box is provided with a bore or duct *a*<sup>5</sup>, adapted to permit passage of the stock D, and at its ends with suitable stuffing-boxes *a*<sup>6</sup> *a*<sup>7</sup>. For a portion of its length the duct *a*<sup>5</sup> is enlarged, so as to be of suitably larger size than the stock D to permit flow of liquid, as clearly shown in Fig. 5, and said enlarged



portion communicates, by a branch bore or duct  $a^8$ , with a tubular projection  $a^9$  of the box, into which projection a supply-pipe G for the liquid is screwed. The liquid is admitted from the bore or duct  $a^5$  to the stock D by means of an opening  $a^{10}$  in the latter, and said enlarged portion of the bore  $a^5$  is of such length that the opening  $a^{10}$  is always in communication with the same, so that the liquid to be bottled can always pass into the stock. The flow of liquid is controlled by a cock G', located within convenient reach of the operator, upon the supply-tube G.

At its lower portion the stock D passes through the head  $e$  of a cup-shaped housing E, said head  $e$  forming a part of the cross-head F<sup>5</sup> and being provided with a suitable stuffing-box  $e^2$ . The lower part of the housing consists of a cylindrical shell  $e'$ , screwed to a screw-threaded seat of the cross-head F<sup>5</sup>, as indicated in Figs. 2 and 3, and provided at its lower inner edge with a groove  $e^5$ , in which is seated a suitable elastic gasket or packing-ring  $e^6$ , adapted to fit snugly upon the bottle to be filled, thereby serving in positioning and retaining the same in the housing and preventing escape of fluid between the housing and bottle. The housing E, preferably at its head  $e$ , is provided with a spring-actuated relief-valve  $n$  of any well-known type.

The lower portion of the stock D within the housing E is closed by means of a plug  $i$ , and to said plug or to any other suitable supporting means at the lower portion of the stock is pivoted a stopper-gripper I, which comprises a shank or body portion  $i'$  and a claw  $i^2$ , extending at an angle from the opposite or lower end of said shank and adapted to firmly engage the stopper of the bottle to be filled. The claw may be of any suitable form for this purpose, according to the particular form of bottle-stopper. When a stopper  $s$  having a contracted neck  $s'$ , such as shown in the drawings, is used, the claw is preferably provided with a recess  $i^3$ , extending into the claw at a right angle to the direction of lateral movement of the gripper when swung on its pivot, whereby to engage the stopper at said neck. Upon the gripper, preferably upon or adjacent the claw, is mounted a discharge-nozzle  $i^3$ , which may be of any suitable form and secured to the gripper by soldering or any suitable means. A discharge-tube  $i^4$  extends from the stock D within the housing, and a flexible tube  $i^5$ , connected therewith, or other flexible connecting means serves to conduct the liquid to be bottled from said stock to the discharge-nozzle. Suitable means—such as a spring  $i^6$ , secured to the stock and bearing on the gripper—serve to return the gripper from laterally-shifted into normal position, and such return movement is limited by any suitable stop—as, for instance, an abutment  $i^7$  at the upper end of the gripper, adapted to abut against the plug  $i$ . When the construction is as shown, the normal position of the gripper

is in line with the stock D and the gripping portion of the claw is located at the center line of the casing.

To suitable sleeves  $e^4$   $e^7$ , secured rigidly to the slide-rods F F', is pivoted, by means of screw-studs  $d'$   $d^2$ , an angular screen-frame  $d^3$ , to which is attached a screen  $d^4$ , extending when in lowered position, as shown in Figs. 2 and 3, at one side of the bottle opposite that portion of the same not within the casing. From the angular frame  $d^3$  projects an arm  $d^5$ , connected by a connecting-rod  $d^6$ , preferably made of stiff wire and provided with a spring-coil  $d^7$ , with the stationary cross-bar C<sup>2</sup> or other suitable point of support. The coil  $d^7$  cushions the screen when the frame strikes against the seat  $t$  upon arrival in lowermost position. In Figs. 2 and 3 the screen is partly broken away to expose the housing E.

The cock G' being closed, the treadle F<sup>4</sup> and the hand-lever K' being in normal raised position and the housing and screen thereby also raised, a bottle is placed on the seat  $t$ . The hand-lever K' is depressed, causing the gripper to protrude from the housing in proximity to the stopper with which it is then engaged by the hand of the operator, the bottle itself being slightly shifted, if necessary, and then firmly reseated in the seat  $t$ . The treadle F<sup>4</sup> is now depressed, lowering the housing E, so that the same assumes the position shown in Fig. 2. The lowering of the slide-rods F F' causes the bodily lowering of the screen and also the swinging of the same in downward direction, the frame  $d^3$  turning by its angular end pieces upon the pivots  $d'$   $d^2$ , so that the screen is swung from raised horizontal position into lowered vertical position below the housing—i. e., beyond the housing opposite that portion of the bottle not inclosed by the housing. The parts are now in position shown in Fig. 2. The hand-lever K' is permitted to rise. The bottle is, however, retained in position by the housing, and the upward or longitudinal movement of the stock D carries the gripper I in upward direction, thereby also raising the stopper  $s$ . The lower ends of the bail  $s^2$  of the stopper mechanism draw up the locking-lever  $s^3$  until the same abuts against the head  $s^4$  of the bottle in the well-known manner, as shown in Fig. 3. When in this position, the pivotal points  $s^5$  of the lower ends of the bail  $s^2$  are not in line with the bottle-mouth and with the pivot of the gripper, but are considerably to one side. The pull on the gripper and bail between the two pivotal points or centers causes the parts to shift into the position shown in Fig. 3, the gripper being shifted laterally against the tension of its spring  $i^6$  and retained in said position by the continuous upward pull of the stock actuated by the spring  $k^5$ . The valve G' is now opened by the operator, and the liquid flows through the course G  $a^8$   $a^5$   $a^{10}$  D  $i^4$   $i^5$   $i^3$  into the bottle, the location of the discharge-nozzle  $i^3$  on the gripper being such that when the gripper is in shifted position,



Fig. 3, said discharge-nozzle directs the stream into the bottle. The air displaced by the entering liquid is allowed to escape by operating the relief-valve by hand a few times during the filling operation. When the liquid has risen to the desired point, the supply is shut off by closing the valve G'. The hand-lever K' is depressed. Upon doing this the spring  $i^6$  returns the gripper to normal position, thereby swinging the stopper over the bottle-mouth. Continued descent of the stock and gripper causes the bail  $s^2$  to swing the lever  $s^3$  downwardly, and the stopper itself is seated on the bottle-head  $s^4$ , the parts being now in the position shown in Fig. 2, with the bottle filled. The hand-lever is now pressed hard down and the treadle is released, thereby raising the housing E and exposing the lever  $s^3$  of the stopper-locking mechanism. By this movement also the screen is moved bodily in upward direction and also swung upwardly on its pivots into a horizontal plane, so as to be out of the way. The operator while holding the lever K' down with one hand with the other presses down the locking-lever  $s^3$ , thereby locking the stopper, and then raising the hand-lever K' slightly withdraws the bottle from the seat  $t$  and gripper and releases the lever K'. Another empty bottle may then be put in, the hand-lever K' depressed, and the gripper secured to the stopper, as before described, and the operation of filling repeated.

The housing E serves not only for retaining the bottle in position against the vertical pull of the stock, thereby securing the described lateral shifting of the gripper with the stopper, but it also serves for positioning the bottle, as stated, so that the pivots of the bail are not, when the stopper is in raised position, in line with the mouth of the bottle and the pivot of the gripper. When the locking mechanism of the bottle-stopper is of the type shown, this result is secured by arranging the stock and the gasket-opening of the housing on the same axial line and suspending the gripper from a pivot approximately in the same line and its claw when in normal position also in approximately the same line, this line also passing through the center of the seat  $t$ . It is obvious that many modifications of the mechanism may be adopted without departing from the spirit of the invention.

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

1. 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 operating said stock, a stopper-gripper pivoted to said stock at the lower portion of the same, a discharge-nozzle carried by said gripper and arranged to discharge into the bottle when the gripper is in laterally-shifted position, and means for supplying the liquid to be bottled to said discharge-nozzle, substantially as set forth.

2. 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 moving said housing in vertical direction, a vertically-movable stock having its lower portion located within the housing, means for operating said stock, a stopper-gripper pivoted to said stock within the housing, a discharge-nozzle carried by said gripper and arranged to discharge into the bottle when the gripper is in laterally-shifted position, and means for supplying the liquid to be bottled to said discharge-nozzle, substantially as set forth.

3. In a bottle-filling machine, the combination, with a seat for the bottle to be filled, of a housing located above the seat and adapted to inclose the upper portion of the bottle, means for moving said housing in vertical direction, a tubular vertically-movable stock having its lower portion located within the housing, means for supplying the liquid to be bottled to said tubular stock, means for operating said stock, a spring-actuated stopper-gripper pivoted to the stock within the housing, a discharge-nozzle carried by said gripper and arranged to discharge into the bottle when the gripper is in laterally-shifted position, and a flexible tube connecting said tubular stock with the discharge-nozzle, substantially as set forth.

4. In a bottle-filling machine, the combination, with a tubular vertically-movable stock, of a laterally-shiftable stopper-gripper pivoted to the same at its lower portion, a discharge-nozzle carried by said gripper and arranged to discharge into the bottle when the gripper is in laterally-shifted position, and a flexible tube connecting said discharge-nozzle and the stock, substantially as set forth.

5. In a bottle-filling machine, the combination, with a tubular vertically-movable stock, of a laterally-shiftable stopper-gripper pivoted to and adapted to abut against the same at its lower portion, a discharge-nozzle carried by said gripper and arranged to discharge into the bottle when the gripper is in laterally-shifted position, and a flexible tube connecting said discharge-nozzle and stock, substantially as set forth.

6. In a bottle-filling machine, the combination, with a vertically-movable stock, of a laterally-shiftable stopper-gripper pivoted to the same at its lower portion and comprising a body portion or shank and a horizontal claw extending at an angle from the lower end of the shank and having a stopper-receiving recess arranged at an angle to the direction of movement of the gripper, and a discharge-nozzle carried by said claw and arranged to discharge into the bottle when the gripper is in laterally-shifted position, substantially as set forth.

7. In a bottle-filling machine, the combination of a stationary cross-bar, a seat for the bottle to be filled, vertically-movable slide-rods, means for actuating the same, a screen-



frame pivoted to said slide-rods and adapted to abut when in lowered position against said seat, a screen on said screen-frame, an arm extending from said screen-frame, a rod connecting said arm with the cross-bar, and a spring-coil in said rod, substantially as set forth.

8. In a bottle-filling machine, the combination of a stationary cross-bar, vertically-movable slide-rods, means for actuating the same, a cross-head connecting said slide-rods, a housing supported on said cross-head, a screen-frame pivoted to said slide-rods, a screen on said screen-frame, said screen-frame being so

pivoted as to swing the screen in downward direction beyond said housing, an arm extending from said screen-frame, and a rod connecting said arm with said cross-bar, substantially as set forth.

In testimony that we claim the foregoing as our invention we have signed our names in presence of two subscribing witnesses.

LOUIS STREBEL.

CHARLES W. WILLIAMS.

Witnesses:

JOSEPH H. NILES,  
HENRY SUHRBIER.