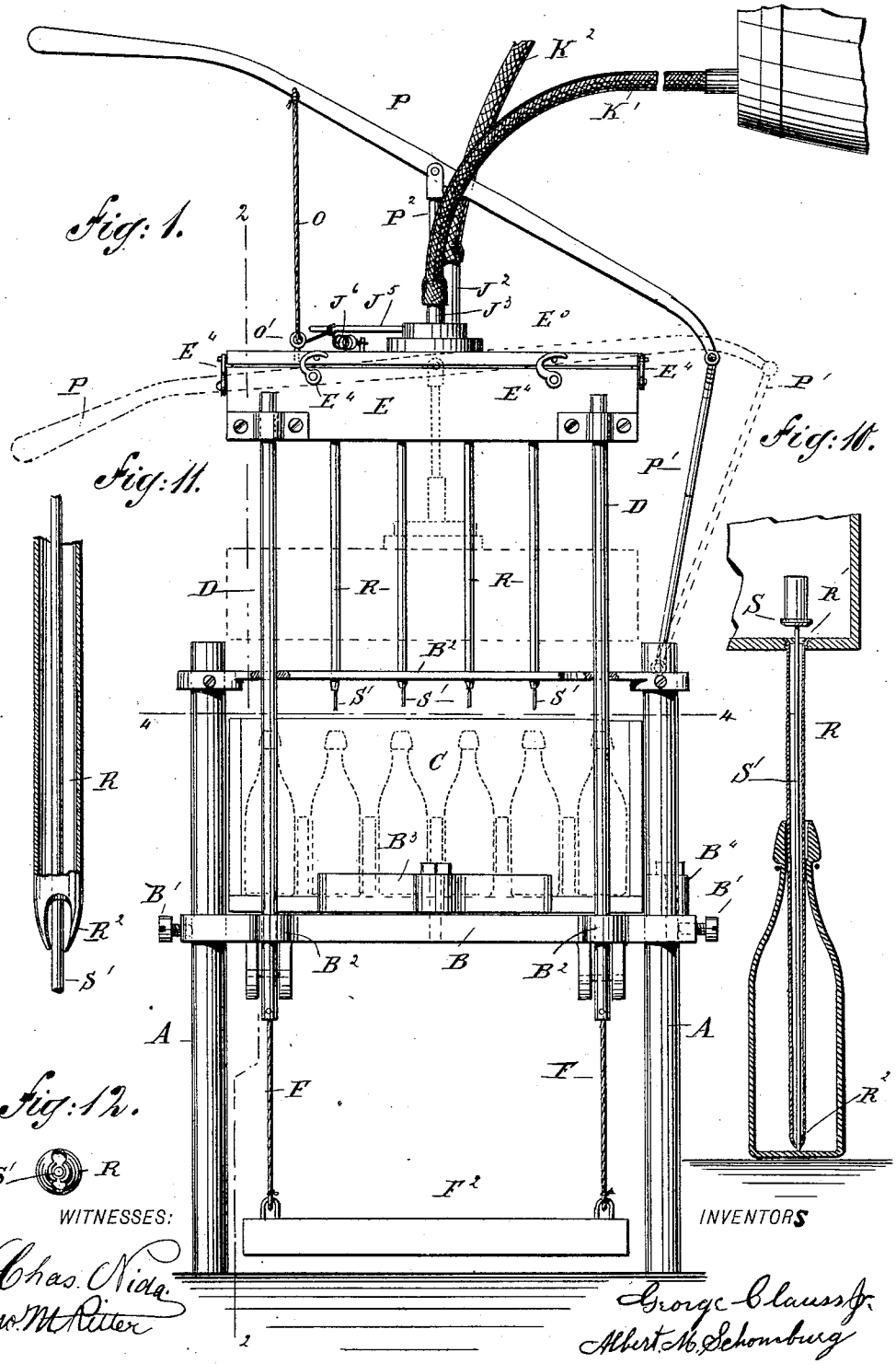
(No Model.) 3 Sheets—Sheet 1.

G. CLAUSS, Jr. & A. M. SCHOMBURG.

BOTTLE FILLING MACHINE.

No. 482,894. Patented Sept. 20, 1892.



WITNESSES:

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(No Model.) 3 Sheets—Sheet 2.

G. CLAUSS, Jr. & A. M. SCHOMBURG.

BOTTLE FILLING MACHINE.

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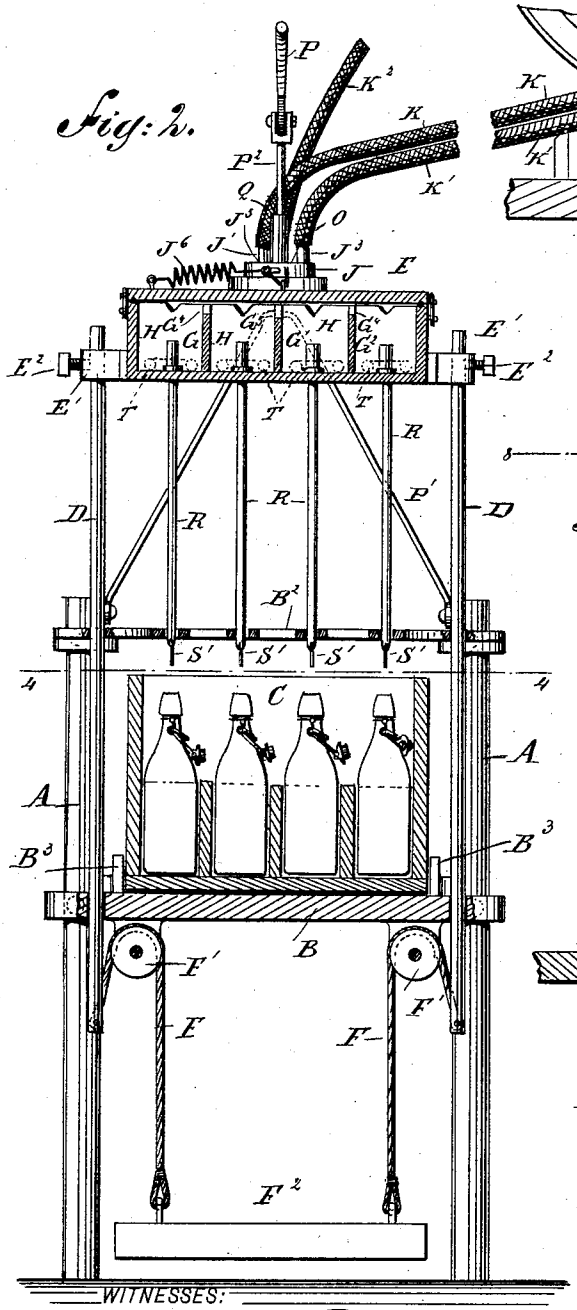
Fig: 2.



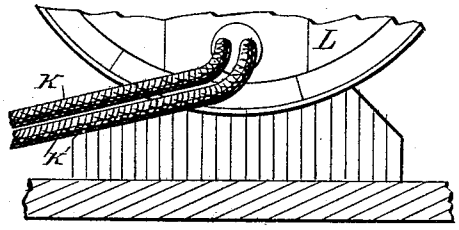


Fig: 7.

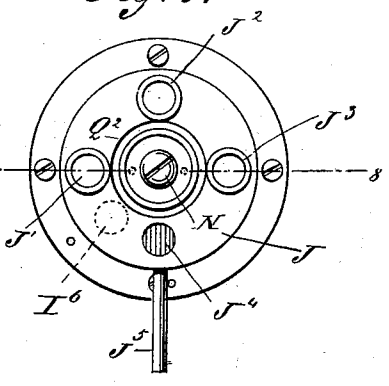


Fig: 8.

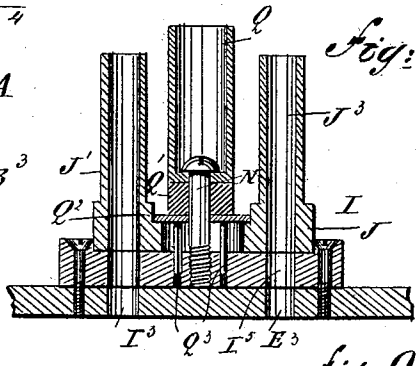
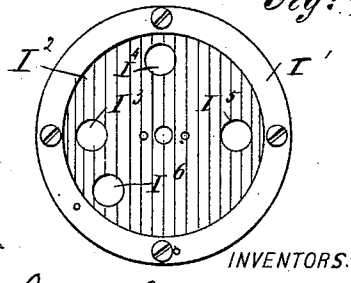


Fig: 9.



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(No Model.) 3 Sheets—Sheet 3.

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BOTTLE FILLING MACHINE.

No. 482,894. Patented Sept. 20, 1892.

Fig: 3.

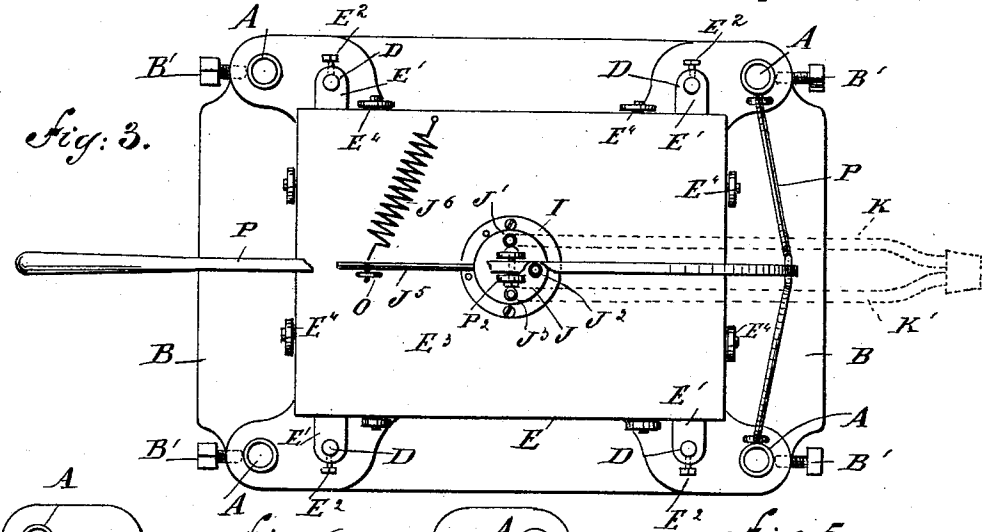


Fig: 6.

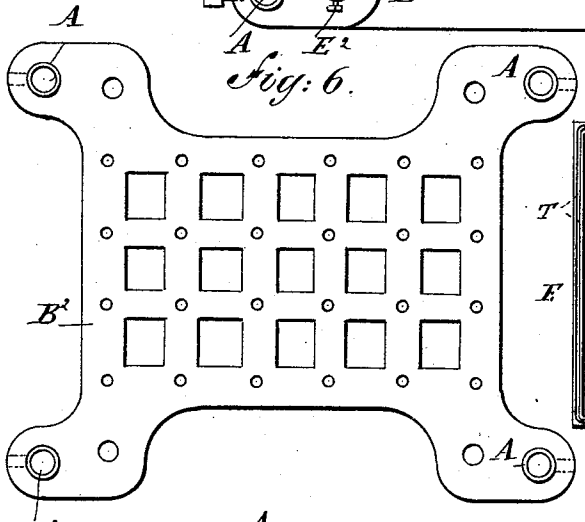


Fig: 5.

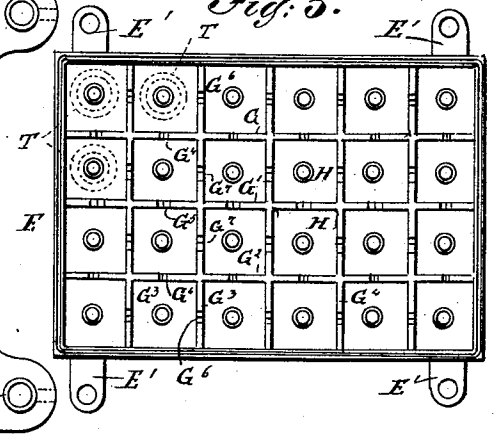
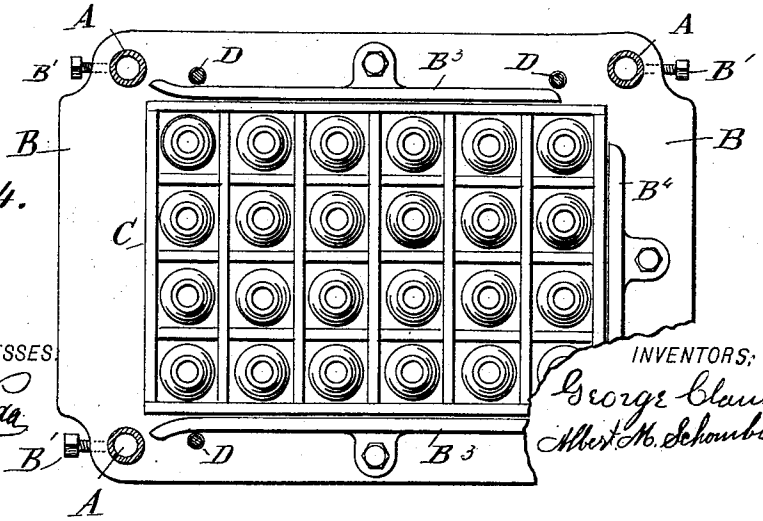


Fig: 4.



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UNITED STATES PATENT OFFICE.

GEORGE CLAUSS, JR., OF ELIZABETH, AND ALBERT M. SCHOMBURG, OF NEWARK, NEW JERSEY.

BOTTLE-FILLING MACHINE.

SPECIFICATION forming part of Letters Patent No. 482,894, dated September 20, 1892.

Application filed March 23, 1892. Serial No. 426,041. (No model.)

To all whom it may concern:

Be it known that we, GEORGE CLAUSS, Jr., of Elizabeth, Union county, and ALBERT M. SCHOMBURG, of Newark, county of Essex, State of New Jersey, citizens of the United States, have invented certain new and useful Improvements in Bottle-Filling Machines, of which the following is a specification.

The invention relates to bottle-filling apparatus such as shown and described in the application for Letters Patent of the United States, Serial No. 408,836, filed by us under date of October 15, 1891.

The object of the present invention is to provide a new and useful bottle-filling apparatus which is simple and durable in construction, so arranged to permit the air in the bottles to readily escape at the time of filling the same with the liquid, and which prevents the formation of foam in the bottles by the filling liquid.

The invention consists of parts and details and combinations of the same, as hereinafter more fully described, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, and in which similar letters of reference indicate corresponding parts in all the views.

Figure 1 is a side elevation of the improvement. Fig. 2 is a sectional front view of the same on the lines 2 2 of Fig. 1. Fig. 3 is a plan view of the same. Fig. 4 is a sectional plan view of the same on the lines 4 4 of Figs. 1 and 2. Fig. 5 is a plan view of the filling-tank with the cover removed. Fig. 6 is a plan view of the guide-plates for the filling-pipes. Fig. 7 is an enlarged plan view of the valve for the filling-tank. Fig. 8 is a sectional side elevation of the same on the lines 8 8 of Fig. 7. Fig. 9 is a plan view of the valve-seat. Fig. 10 is an enlarged sectional side elevation of one of the filling-pipes, part of the tank, and a bottle to be filled. Fig. 11 is an enlarged side elevation, with part in section, of one of the filling-pipes; and Fig. 12 is an inverted plan view of the same.

The improved bottle-filling apparatus is provided with posts A, preferably four in number and erected on a suitable base or foundation.

On the posts A is held vertically adjustable a platform B by means of set-screws B′, and on the said platform is to be placed the tray C, carrying the bottles to be filled. The tray C is preferably provided with longitudinal and transverse partitions forming compartments, one for each bottle, as is plainly illustrated in Figs. 2 and 4.

Above the tray C and on the upper ends of the posts A is secured a horizontal guide-plate B^2, in which and in the platform B are fitted to slide the vertically-extending rods D, carrying at their upper ends the tank E, formed with lugs E′, engaging the said rods D and secured thereon by set-screws E^2, which when loosened permit a vertical adjustment of the tank E. The lower ends of the rods D are connected with the ends of ropes or chains F, extending first upward and over pulleys F, journaled in suitable brackets held on the under side of the platform B. The ropes or chains F then extend downward from the said pulleys F′ and support at their lower ends a weight F^2 for counterbalancing the tank E, as hereinafter more fully described.

The tank E is provided with a series of longitudinal partitions G, G′, and G^2 and transverse partitions G^3, which partitions form a series of compartments H, the cubic contents of each of which correspond to that of a bottle to be filled, and the number of the compartments also corresponds to the number of compartments in the tray holding the bottles. The several partitions are all of the same length, and in the top edges of the outermost longitudinal partitions G and G^2 are formed notches G^4, and in the middle longitudinal partition G′ are arranged notches G^5, somewhat deeper than the notches G^4.

In each transverse partition G^3 are formed on opposite sides of the middle longitudinal partition G′ the notches G^7, which correspond in size to the notches G^5 and are somewhat deeper than the notches G^6 formed in each partition G^3 near their outer ends between the sides of the tank and the partitions G and G^2. By these notches G^4, G^5, G^6, and G^7 the several adjacent compartments H are connected with each other and the two longitudinal rows of middle compartments H fill first, as hereinafter more fully explained.

The tank E is provided with a removable cover E^3, adapted to be secured in place by suitable catches E^4 or other means. On the top of this cover E^3 and in the middle of the same is arranged a valve I (shown in detail in Figs. 7, 8, and 9) provided with a plate I′, secured to the cover E^3 and formed in its top with a circular recess I^2, forming the seat for the valve-disk J, mounted to turn in the said recess I^2. In the bottom of the latter are arranged the apertures I^3 I^4 I^5 to register with openings formed in cover of the tank E and located over the middle longitudinal rows of the compartments H. The apertures I^3, I^4, and I^5 are adapted to register with pipes J′, J^2, and J^3, respectively, held in the valve-disk J, and the aperture I^6 is adapted to register with an aperture J^4, formed in the disk J and leading to the outside. The pipes J′ and J^3 are connected with flexible tubes K and K′, respectively, leading to a bung L′ in the head of the barrel L, containing the liquid to be filled into the bottles. The other pipe J^2 is made of glass and is connected with a flexible tube K^2, extending upward and leading into the bung or opening (not shown) in the top of the barrel L. The tubes K K′ and pipes J′ J^3 serve to conduct the liquid from the barrel L into the tank E at the time the apertures I^3 and I^5 register with the said pipes J′ and J^3, respectively, while at the same time the gases arising in the tank E are conducted through the aperture I^4, the registering glass pipe J^2, and the tube K^2 back into the top of the barrel L, so that a uniform pressure is obtained on the liquid in the barrel L to insure a ready flow of the liquid into the tank E through the tubes K and K′. Furthermore, the valuable properties in the gases are not lost, as the same pass back into the barrel. At the time the apertures I^3, I^4, and I^5 register with the pipes J′, J^2, and J^3, respectively, as above described, and for the purpose set forth. The apertures I^6 and J^4 are disconnected, as is indicated in Fig. 7; but when the valve-disk J is turned and the pipes J′, J^2, and J^3 are cut off from the apertures I^3, I^4, and I^5, respectively, then the apertures I^6 and J^4 register to admit atmospheric air into the tank E to insure a ready emptying of the liquid into the bottles, as hereinafter more fully explained.

From the valve-disk J extends a handle J^5, connected near its outer end with a spring J^6, fastened to the cover E^3 and serving to turn the valve-disk in one direction to cut off the supply of liquid passing to the tank and to connect the latter with the open air by apertures J^4 and J^6, as above explained. The handle J^5 is also connected with one end of a rope O, extending in an opposite direction to the spring J^6 and passing through an eye O′, held on the cover E^3. The rope O then passes upward and connects with a lever P, fulcrumed on a link P′, pivoted on the two rear posts A, as shown. When the lever P is in an uppermost position, as illustrated in Fig. 1, the spring J^6 is extended and the apertures I^3, I^4, and I^5 register with the pipes J′, J^2, and J^3, respectively; but when the lever is swung downward the rope O slacks and the spring J^6 pulls the handle J^5 to the left, thus turning the valve-disk J, so as to cut off the supply of liquid from the tank E. When the lever P is moved upward, the rope O pulls the handle J^5 to the right to connect the barrel L with the tank E.

On the lever P is pivoted an arm P^2, engaging a short pipe Q, held on a rubber block Q′, resting on a washer Q^2, fitted on an annular shoulder in the middle of the valve-disk J. A screw N engages the closed end of the pipe Q and passes through the block Q′ and washer Q^2 screw into the plate I′ at the center thereof. The arrangement just described serves to hold the valve-disk J on its seat in the recess I^2 of the plate I′ to prevent leakage. To prevent the bolt N and washer Q^2 from turning, the latter is provided with downwardly-extending pins Q^3, engaging apertures in the plate I′. By pressing on the lever P, as above described, the arm P^2 exerts a downward pressure on the tank E, so that the latter slides downward, being guided by the rods D, fitted to slide in the platform B and guide-plate B^2, above mentioned.

In the bottom of the tank E are secured the filling-pipes R, one for each compartment H. The pipes R extend downward through bearings in the guide-plate B^2 and are adapted to pass into the bottles arranged in alignment with the pipes and contained in the tray C. The upper end of each of the filling-pipes R is formed with a valve-seat R′, adapted to be engaged by a weighted valve S, held on a rod S′, extending downward through the filling-pipe. The lower end of the rod S′ has its bearings on the inwardly-bent prongs R^2, formed on the lower end of the pipe R, as is plainly shown in Fig. 11. When the valve S is seated on the seat R′, the extreme lower end of the rod S′ projects a suitable distance through the lower end of the pipe R, so that when the tank E moves downward and the pipes R pass into the several bottles on the tray C then the said projecting ends of the rods S′ finally strike the bottoms of the bottles, and on the further downward motion of the tank E and its pipes R the rods S′ are held stationary and the valves S are unseated from the seats R′, (see Fig. 10,) so that the said pipes open into the compartments H of the tank E and the liquid flows from the said compartments into the corresponding bottles to fill the same.

In order to hold the tray C in the proper position on the platform B, the latter is provided on top with the side guides B^3 and at the rear end with a stop-plate B^4. (See Fig. 4.) Should the bottles to be filled be less in size than that of the compartments H, then we prefer to place disks or plates T, of suitable material, into the said compartments to diminish their filling size for the liquids to

correspond with the smaller bottles. In this manner the apparatus can be readily used for filling bottles of less cubic contents than the compartments H.

The operation is as follows: When the several parts are in position, as shown in Figs. 1, 2, and 3, the liquid in the barrel L can flow into the tank E to first fill the four central compartments H, located directly below the apertures I^3 and I^5. As soon as the liquid reaches the notches in G^7 in the transverse outer partitions of the said compartments, then the liquid flows into the next compartment of the two middle longitudinal rows of compartments and finally into the end compartments of said rows. As soon as the said two rows are filled the liquid rises to the smaller notches G^4 in the partitions G and G′ to finally flow into and fill the outer longitudinal rows of compartments until the tank E is nearly full. At this time the tank E overbalances the weight F^2 and the said tank slides downward, the operator, however, having hold of the free end of the lever P to assist and guide the downward movement. As the lever P swings downward the spring J^6 acts on the handle J^5 and the liquid-supply to the tank is cut off and communication is established between the interior of the tank E and the outer air by the apertures I^6 and J^4. When the tank E moves into a lowermost position, the valves S are unseated, as above described, and the liquid flows from the compartments H into the bottles by means of the filling-pipes R, which open into the said bottles near the bottoms thereof. As the amount of liquid in each of the compartments is sufficient to fill a bottle, the latter receive the proper amount of liquid without any waste whatever. The operator holds the lever P and by it the tank E in a lowermost position until the tank is empty and the bottles are filled. As soon as this is accomplished he releases the pressure on the lever and the weight F^2 causes the tank E to move upward into its former position. By this upward movement of the tank E the lever P is carried along so that the spring J^6 acts on the handle J^5, whereby the valve-disk J is turned and the tank is again connected with the barrel. The above-described operation is then repeated. During the filling of the tank E the operator can turn the valve-disk J by manipulating the handle J^5 in case the flow of liquid is too rapid and too much foam forms in the tank. The foam formed is at once observed by the operator at the glass pipe J^2, into which the foam will naturally rise. The middle longitudinal rows of compartments H are preferably filled first, so that when the barrel is nearly empty only a few compartments H, and consequently only a few bottles, are filled with the usually-impure rest of liquid discharged from the barrel. During the time the tank is filling the tray with the filled bottles is removed and another tray with empty bottles is placed on the platform.

Having thus described our invention, what we desire to secure by Letters Patent is—

1. In a bottle-filling apparatus, the combination, with a filling-tank mounted to slide vertically and provided with single compartments formed by longitudinal and transverse partitions in the said tank, of an inlet-valve held on the cover of the said tank and controlling the filling of the several compartments, a filling-pipe extending from the bottom of each compartment, and a valve held in each filling-pipe and provided with a rod extending below the end of the said filling-pipe at the time the valve is seated on the upper end of the said filling-pipe, substantially as shown and described.

2. In a bottle-filling apparatus, the combination, with a filling-tank mounted to slide vertically and provided with single compartments formed by longitudinal and transverse partitions in the said tank, of an inlet-valve held on the cover of the said tank and controlling the filling of the several compartments, a filling-pipe extending from the bottom of each compartment, and a valve held in each filling-pipe and provided with a rod extending below the end of the said filling-pipe at the time the valve is seated on the upper end of the said filling-pipe, the said inlet-valve being adapted to close at the downward movement of the said tank to shut off the supply and connect the tank with the outer air while the valve in the filling-pipe opens when the tank moves into a lowermost position, substantially as shown and described.

3. In a bottle-filling apparatus, the combination, with a tank, of an inlet-valve held on the said tank and comprising a plate attached to the said tank and formed with inlet-apertures and a gas-escape aperture, which apertures lead to the interior of the tank, a valve-disk mounted to turn on the said plate, inlet-pipes held on the said disk and adapted to register with the said inlet-apertures, and a gas-escape pipe held in the said disk and adapted to register with the said escape-aperture at the time the other inlet-pipes register with their corresponding inlet-apertures, substantially as shown and described.

4. In a bottle-filling apparatus, the combination, with a fixed platform adapted to support the tray carrying the bottles, of a counterbalanced filling-tank mounted to slide toward and from the said platform and provided with longitudinal and transverse partitions forming single compartments, filling-pipes secured on the bottom of the said tank, one for each compartment, the said pipes being adapted to pass into the bottles to be filled, a valve held on the upper end of each filling-pipe, and a rod extending from each valve through the corresponding filling-pipe to project below the end of the latter at the time the valve is seated, substantially as shown and described.

5. In a bottle-filling apparatus, the combination, with a fixed platform adapted to support

the tray carrying the bottles, of a counterbalanced filling-tank mounted to slide toward and from the said platform and provided with longitudinal and transverse partitions forming single compartments, filling-pipes secured on the bottom of the said tank, one for each compartment, the said pipes being adapted to pass into the bottles to be filled, a valve held on the upper end of each filling-pipe, and a rod extending from each valve through the corresponding filling-pipe to project below the end of the latter at the time the valve is seated, and an inlet-valve held on the top of the said filling-tank and arranged to automatically close on the downward movement of the said tank, so that the supply is cut off at the time the valves in the filling-pipes open to discharge their contents into the individual bottles, substantially as shown and described.

6. In a bottle-filling apparatus, the combination, with a counterbalanced tank mounted to slide vertically, of a valve held on the said tank and provided with a disk mounted to turn and connected with the filling-pipes, a spring-pressed handle extending from the said disk, a rope connected with the said handle, and a lever for controlling the sliding motion of the said tank and connected with the said rope, substantially as shown and described.

In testimony that we claim the foregoing as our invention we have signed our names, in presence of two witnesses, this 19th day of March, 1892.

GEORGE CLAUSS, JR.
ALBERT M. SCHOMBURG.

Witnesses:
CHARLES NIDA,
THOS. B. MCQUADE.