

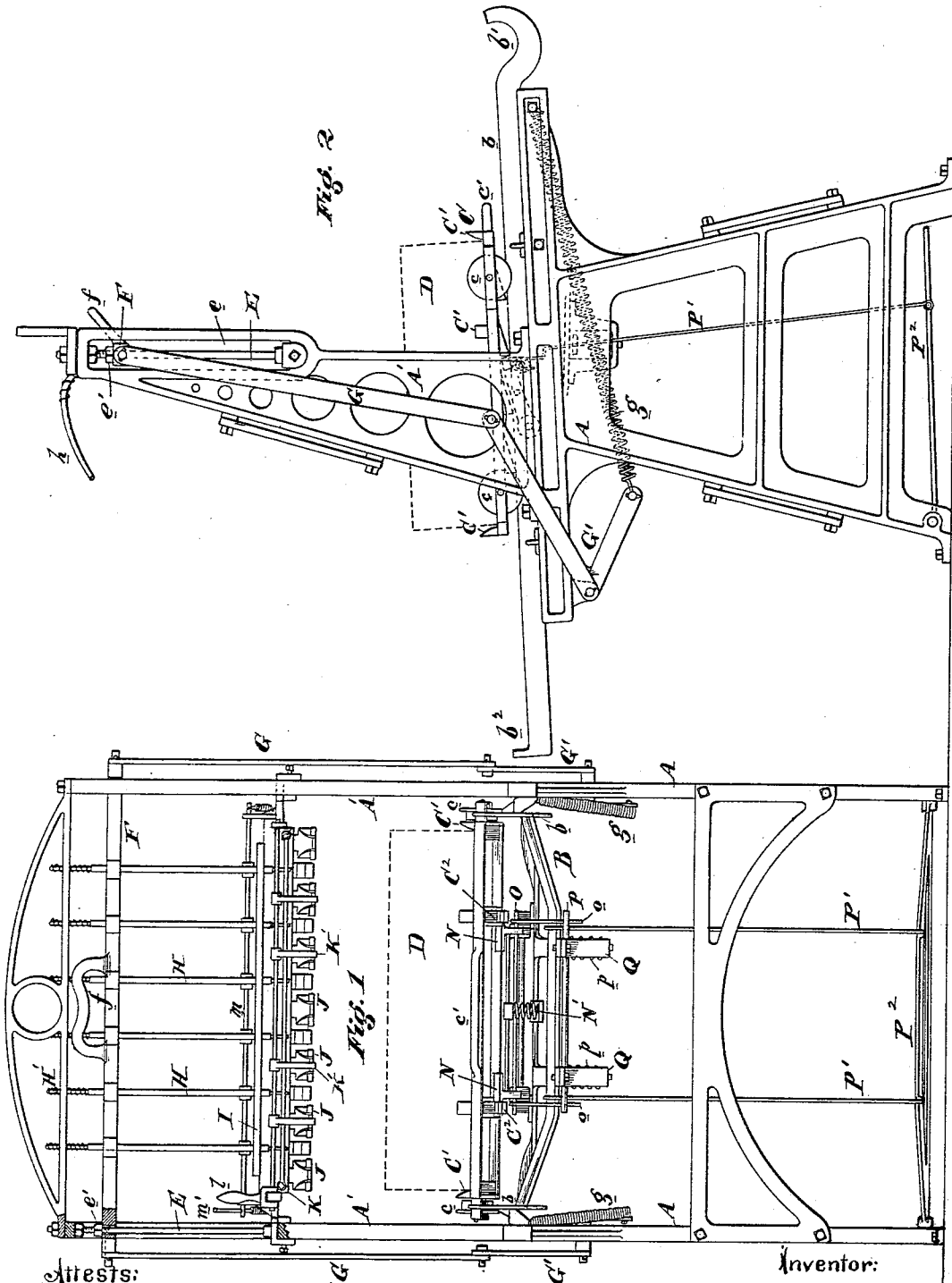
(No Model.)

3 Sheets—Sheet 1.

R. M. HUNTER.
BOTTLING MACHINE.

No. 555,166.

Patented Feb. 25, 1896.



Attests:
Henry Drury
C. W. Burkholder

Inventor:
R. M. Hunter

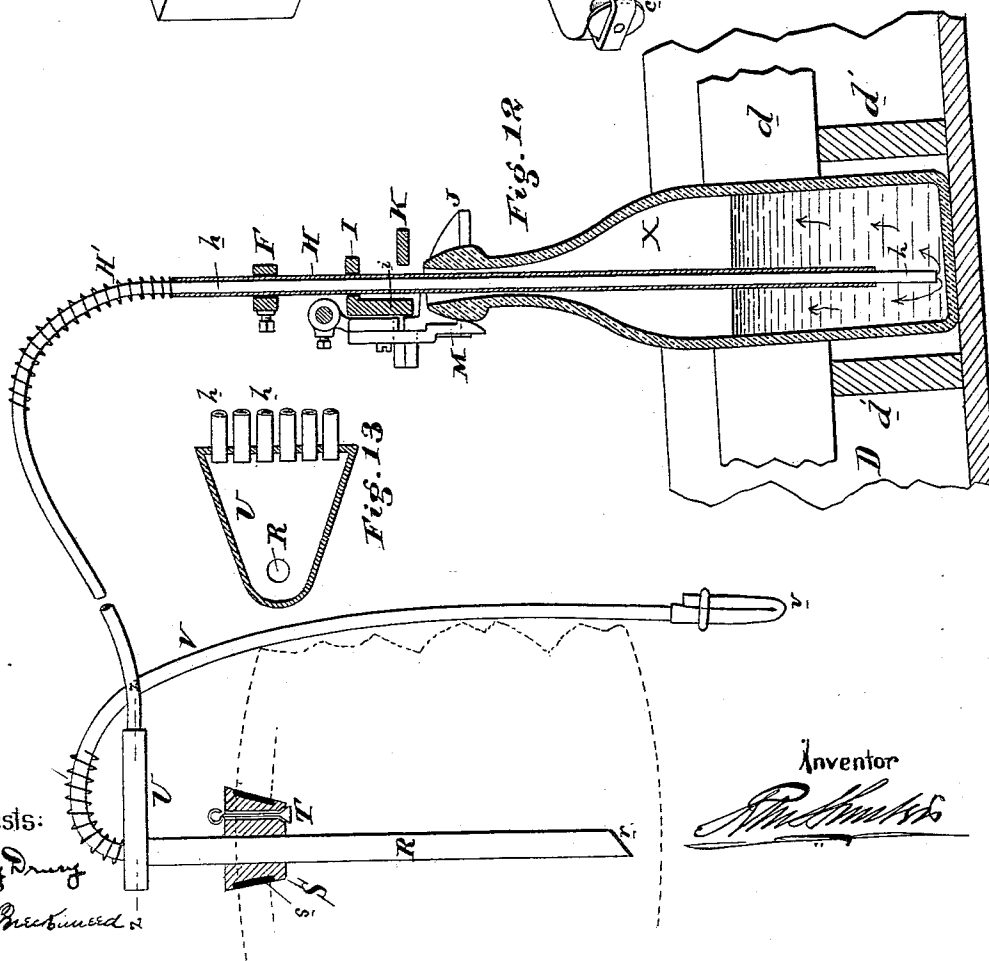
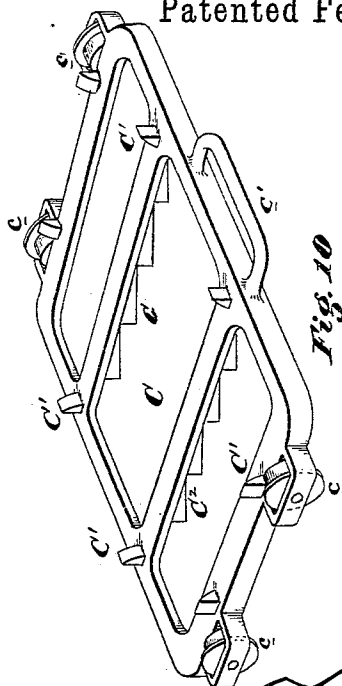
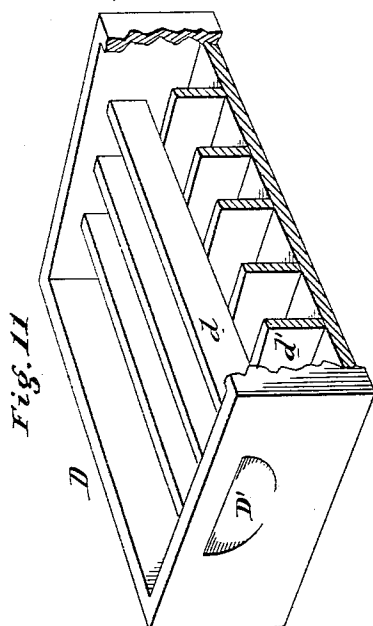
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3 Sheets—Sheet 3.

R. M. HUNTER.
BOTTLING MACHINE.

No. 555,166.

Patented Feb. 25, 1896.



Attests:
Henry Drury
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UNITED STATES PATENT OFFICE.

RUDOLPH M. HUNTER, OF PHILADELPHIA, PENNSYLVANIA.

BOTTLING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 555,166, dated February 25, 1896.

Application filed June 7, 1888. Serial No. 276,363. (No model.)

To all whom it may concern:

Be it known that I, RUDOLPH M. HUNTER, of the city and county of Philadelphia and State of Pennsylvania, have invented an Improvement in Bottling-Machines, of which the following is a specification.

My invention has reference to bottling-machines; and it consists of certain improvements which are fully set forth in the following specification and shown in the accompanying drawings, which form part thereof.

This invention (Case No. 65) is particularly adapted to bottling of beer or other substances which are liable to foam or be injured by disturbance due to handling. In bottling beer it is necessary to cause the flow in a way to disturb it as slightly as possible, and in doing this it becomes necessary to prevent any flawing or turbulent action taking place, and it is also necessary as far as possible to exclude the direct action of the atmosphere.

Bottling-machines of various forms have heretofore been designed and used by myself and others; but in all such machines, as far as I have any knowledge of them, they were defective, owing to the fact that the beer could not be put into the bottles with great rapidity without foaming. In my present machines, described in detail hereinafter, I have overcome these existing objections and provide a piece of mechanism capable of being operated by the most ignorant persons and enabling one man to perform much more work in a given time than can be accomplished by employing the most approved methods in vogue at the present time. My invention, as a practical machine, saves time and employes required to accomplish a given amount of work, is simple in construction, not liable to get out of order, and is easily kept clean.

The general features of my invention may be described as follows: The bottles to be filled are placed in a tray or box, which is in turn placed upon a traveling carriage which moves intermittently beneath a series of vertically-reciprocating siphon-tubes. These siphon-tubes are made of rubber and communicate with an enlarged tube which enters the barrel through the bung-hole. The parts of the siphon-tubes which enter the bottles are incased with brass tubes, which give rigidity

and through the mediation of a frame enable them all to be reciprocated simultaneously, so as to enter all of the bottles of a row at once and pass to the bottoms of the said bottles so as to fill upwardly and thereby prevent any falling of the beer. The lower ends of the siphon-tubes project slightly below the brass tubes and being of soft rubber may be nipped when raised to shut off the flow of beer during the changing of the tray of bottles and without losing the vacuum necessary to the maintenance of the siphon. As the bottles are fed beneath the siphon-tubes the necks are guided laterally and adjusted in the direction of their travel to come directly under the siphon-tubes, so that when said tubes are thrust down they must of necessity enter the necks of the bottles, irrespective of the usual variations of the sizes and shapes of beer-bottles.

The trays are usually arranged to take in twenty-four bottles in four rows of six bottles each, and hence the usual construction of machine employs six siphons side by side. The tray and its supporting-carriage are moved by gravity, the rails being set at an incline, and the travel is controlled by a foot-treadle, leaving the hands free for manipulations above. Normally in starting the machine there will be gases sufficient in the barrel to force the beer up through the siphon-tubes; but should the vacuum so formed in the tubes become destroyed from any cause it may be re-formed by an auxiliary suction-tube, extending from the top of the barrel-tube, by which the air from the siphons may be sucked out, filling them with beer, and when once formed they will maintain the vacuum under normal circumstances. A valve is also provided in the bung of the barrel-tube to allow ingress of air to the barrel should there be no gases to form an outward pressure, as in such case the action of the siphons would be interfered with by the production of a partial vacuum within the barrel.

It is to be understood that I do not limit myself to details of construction hereinafter set out, as the same general principles can be adapted to various designs of machines constituting modifications of this invention. The construction herein specified and shown is

that, however, which I am using and have found best adapted to the purpose of bottling beer direct from the barrel.

In the drawings, Figure 1 is a front elevation of my improved beer-bottling machine. Fig. 2 is a side elevation of the same. Fig. 3 is a plan view of a detached portion of the frame, &c., for guiding and clamping the bottles and feeding-tubes. Fig. 4 is a plan view of the rail-frame for the tray-carriage. Fig. 5 is a sectional view through the line *yy* of Fig. 3. Fig. 6 is a similar view through the line *xx* of Fig. 3. Fig. 7 is a perspective view in detail of the detached bottle-stop. Fig. 8 is a similar view of one of the bottle-guides. Fig. 9 is a perspective view of the mechanism employed to intermittently stop the tray carriage. Fig. 10 is a perspective view of the tray-carriage. Fig. 11 is a similar view of the tray with a front portion broken away. Fig. 12 is a view of a portion of the machine in section, showing the connection of the siphon-tubes with the barrel and the manner of inserting them into the bottles; and Fig. 13 is a sectional view of the beer-distributing head through the line *zz* of Fig. 12.

A is the main frame, which may be bolted or secured to the floor, if desired, to give greater firmness to the machine. From the sides of the main frame A extend vertically the standards A', which may be connected at the top in any suitable manner.

B is a rail-frame secured to the top of the main frame A and inclining slightly backward, as shown in Fig. 2. This rail-frame is provided on each side with rails *b*, having depressed and curved forward stops, *b'*, and rear stops, *b''*, for the tray-carriage C, which is provided on its sides with wheels or guide-rollers *c* adapted to run upon the rails *b*. This tray-carriage C (shown in perspective in Fig. 10) is provided upon its under side with racks C² for the purpose of stopping it in different positions, as is hereinafter described. C' are guides upon the upper part of the tray-carriage for properly locating the tray D. A handle *c'* is placed upon the front of the tray-carriage C, by which it may be more conveniently managed. The tray D is fitted on the inside with cross-pieces, forming divisions *d d'*, to receive the bottles, and has handles D' upon the sides by which it may be carried to and from the machine.

E are guide-rods secured in slots *e* of the uprights A', preferably bolted to the top, as shown in Figs. 1 and 2; but such mere details are unimportant and may be varied, as desired. At the top of these guide-rods E are placed stop-nuts *e'*, which I prefer to make adjustable up or down.

F is a siphon-holder consisting of a bar or frame provided with a series of holes through which the tubes H are passed. It is also provided with holes through which the rods E pass and upon which it is guided. The two extremities of this siphon-holder are connected by the links G, bell-cranks G' having springs

g to the main frame A, the tendency of which connection is obviously to keep the siphon-holder F up at the top of the rods E in the highest position. A handle *f* is provided for the purpose of pulling down the siphon-holder to insert the tubes H into the bottles X. These tubes, of which there may be any convenient number, consist of an inner flexible tube *h* of rubber, having the lower portion or that part which passes through the siphon-holder F and into the bottles covered by the metallic tube H. I prefer, however, to have a portion of the rubber tube *h* of the siphon extend below the end of the tube H, as shown in Figs. 5 and 12; but obviously this is not essential to my invention. I also find it expedient to provide that portion of the rubber tube *h* of the siphon, which is necessarily bent over during operation, with a coil H' to prevent it from bending abruptly and thereby closing the passage for the liquor.

I is a guide-frame secured to the main frame A, provided with holes through which the tubes H are guided to the bottles, and has a clamping-face *i* along its back edge and to which frame guides J are secured. These guides J are preferably constructed in the shovel form shown in Fig. 8, having the lateral curved guiding rims or edges *j*. They are arranged between the tubes *h* H, and their function is to guide the necks of the bottles laterally into position beneath these tubes *h* H. It is evident that if a bottle is not in proper position as it is moved forward to the tubes it will come in contact with the curved rims or edges *j* and be brought exactly under the tube H, where it will be stopped, as is hereinafter explained.

K is a clamping-bar, preferably flat and secured to the guide-frame I by the guides *k*, which I prefer to provide with springs *k'* to normally keep the clamping-bar away from the frame I but to allow it to be forced toward it when any pressure is exerted upon the clamping-bar. Also secured to the guiding-frame I and extending along immediately in front of the clamping-bar K is a cam-shaft L journaled in arms extending from the guiding-frame. This shaft is provided with a handle *l* at its end and cams K', the number of which is not important to my invention. It will be seen that by turning the handle *l* these cams K' will be forced against the clamping-bar K, pushing it over toward the guide-bar I and clamping the protruding ends of the rubber tubes *h* to stop the flow of the liquor. This forms an excellent and cheap valve device.

To arrest the bottles and hold them in place and to again release them when they are filled, or when desirable, I fix a shaft *m* in uprights from the guide-frame I, to which the bottle-stops M are secured. These bottle-stops are adjustable to suit bottles of different heights, and are constructed as follows: The main part is secured to the shaft *m* and is provided with a lug M'. The adjustable end M' is pro-

vided with a slot M^3 adapted to receive the lug M^4 , and a screw M^2 unites the pieces together and allows the stop to be lengthened or shortened, as may be required. (See Figs. 5, 7, and 12.) m' is a handle secured to the shaft m , the end of which extends beyond the shaft and is connected by a spring m^2 to the frame I. This spring normally keeps the handle m up and holds the bottle-stops M down.

When the filled bottles are fed along, as hereinafter set out, the movement of said bottles, due to their weight and that of the tray and carriage, pushes the stops M back, and the instant the bottles have passed these stops fly back and bring the next row of bottles into line under the tubes. It is apparent that by forcing down this handle the bottle-stops will be raised and the bottles will be free to pass if it should be required to draw back the tray.

It is apparent now that when one row of bottles is filled the next row must be brought under the tubes H and there be held until these bottles are filled. The means by which this is accomplished is shown more minutely in Figs. 4 and 9. Stop-pawls N are pivoted to a rod or shaft n which is secured to the rail-frame B. I prefer to employ two of these stops, which are situated directly beneath the racks C^2 of the tray-carriage, in the teeth of the racks of which they are adapted to engage; but it is apparent that the number is unimportant to my invention and that a single central rack C^2 and centrally-located pivoted stop N might be used. Secured to these stops N is a cross-bar O, which is loosely connected by links o to the frame P, which is in turn connected by links P' to the treadle P^2 . The treadle is supported by the springs p through the mediation of the frame P and links P' .

The frame P is guided in brackets Q, which also support the springs. When this treadle P^2 is depressed it is apparent that the pivoted stops N will be drawn down, releasing the rack C^2 of the carriage C. A spring N' normally keeps the pawl-stops N up to engage with the rack C^2 . To prevent objectionable shaking or jolting of the tray-carriage and to allow it to be drawn forward easily without using the treadle P^2 the hooked links o are used in conjunction with the spring N' , which allows the pivoted stops N to be easily depressed and permits the rack C^2 to be drawn forward without shaking or jumping.

R is the barrel-tube, which I find it advantageous to provide with a screen r on its lower end.

S is the bung through which this tube R is inserted for projecting into the barrel, and may be made either entirely of rubber or of metal with a rubber surface s . (See Fig. 12.) A valve T through this bung admits the air to the barrel when necessary to keep the proper pressure upon the siphon.

U is a head to which the barrel-tube R leads from the barrel, and opening from this head are the rubber tubes h of the siphon, by which the beer or liquor is fed into the bottles.

V is an auxiliary tube provided with a normally-closed end v , through which a vacuum may be created in the head U and barrel-tube R to renew the flowing of the liquor when it has been interrupted from any accidental cause.

X is a bottle showing the introduction of the liquor into it from its bottom upward.

The operation of the machine is as follows: The bottles to be filled are placed in the divisions on the tray D, and the bottles are thus arranged in rows. This tray is then placed upon the carriage C, the guides C' of which bring it into position and keep it in place. As has been heretofore explained, the tubes H are normally raised so that the ends of the rubber tube h are between the face i of the guide-frame I and the clamping-bar K, between which they are clamped by the operation of the cam K' to stop the flow of the liquid and maintain the siphon. Owing to the incline of the rail-frame B and its rails b the tray-carriage C would naturally tend to run down to the end of the frame, but is prevented from doing so by the racks C^2 and the pivoted stops N which engage in them. The tray-carriage is allowed to run upon the frame B far enough to bring the bottles X under the tubes, into which position their racks are guided by the guides J and the stops M. The tray-carriage is held in place by the stops N. The handle l is now turned to release the tubes, which are inserted into the bottles by drawing down the siphon-holder F by means of its handle f . The length of the guiding-rod E should be such as to allow the tubes to reach close to the bottoms of the bottles, as shown in Fig. 12, to prevent foaming of the liquid. When one row of bottles has been filled, the pressure on the handle f of the siphon-holder is removed, allowing the tubes to rise out of the bottles into their normal position, when they may be clamped as before; the treadle P^2 is depressed, thus releasing the rack C^2 from the stop N; the bottles push past the bottle-stops M, and the tray-carriage is allowed to run down upon the rails b until the pawl-stops N engage in the next tooth of the rack C^2 , and the second row of bottles is thus guided into position under the tubes H by the guides J and held by the bottle-stops M, and the operation is repeated as before, and so on until the last row of the bottles is filled, when the tray of bottles may be removed and the carriage drawn up until the forward wheels c fit into the forward stops, b' , with which the rails are provided, holding the tray-carriage there and adapted to receive another tray of bottles. By thus tilting the carriage forward it leans away from the siphon-tubes and a new tray of bottles is easily placed in position. The rear stops, b' , on the ends of the rails limit the descent of the tray-carriage and prevent it from falling from the rail-frame. If the running of the liquid is accidentally interrupted by breaking the siphon it may be started by creating a suction through

the auxiliary tube V, which will cause the liquid to rise again into the tubes H.

In practice it is found that the operation is so rapid as to render it unnecessary to clamp the ends *h* of the tubes H between the fillings of the different rows; but of course this may be done, if desired.

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

1. In a bottling-machine the combination of a barrel or supply tube, flexible siphon-tubes opening from said barrel or supply tube, a reciprocating holder for said siphon-tubes to move them all simultaneously up or down a guide-frame for said siphon-tubes, and metal tubes surrounding the siphon-tubes at or near their ends to prevent them bending where they enter the bottles.

2. In a bottling-machine the combination of a barrel or supply tube, flexible siphon-tubes opening from said barrel or supply tube, a reciprocating holder for said siphon-tubes to move them all simultaneously up or down, a guide-frame for said siphon-tubes, and metal tubes surrounding the siphon-tubes near their ends to prevent them bending where they enter the bottles, but leaving the ends of the siphon-tubes free, and a clamp to simultaneously clamp all of said ends to arrest the flow of liquor.

3. In a bottling-machine the combination of a barrel or supply tube, flexible siphon-tubes opening from said barrel or supply tube, a reciprocating holder for said siphon-tubes to move them all simultaneously up or down, a guide-frame for said siphon-tubes, and metal tubes surrounding the siphon-tubes near their ends to prevent them bending where they enter the bottles, but leaving the ends of the siphon-tubes free, a clamp to simultaneously clamp all of said ends to arrest the flow of liquor, a bottle-tray a traveling carriage therefor, and guides to bring the necks of the bottles into line beneath the siphon-tubes.

4. In a bottling-machine the combination of a barrel or supply tube, flexible siphon-tubes opening from said barrel or supply tube, a reciprocating holder for said siphon-tubes to move them all simultaneously up or down, a guide-frame for said siphon-tubes, metal tubes surrounding the siphon-tubes near their ends to prevent them bending where they enter the bottles, but leaving the ends of the siphon-tubes free, a clamp to simultaneously clamp all of said ends to arrest the flow of liquor, a bottle-tray, a traveling carriage therefor, guides to bring the necks of the bottles into line beneath the siphon-tubes, and a movable stop to intermittently interrupt the travel of said bottle, tray and carriage.

5. The combination of the barrel-tube R having bung S and head U, with tube V for creating a vacuum, and the siphon-tubes *h* of rubber.

6. The combination of the barrel-tube R having bung S and head U, with tube V for

creating a vacuum, the siphon-tubes *h* of rubber, and protecting sheaths or tubes H of metal around the ends of the tubes *h*.

7. The combination of a vertically-reciprocating liquid-supplying tube of flexible material, a bottle-support, clamping devices arranged above the bottle-support to clamp the end of the tube to arrest the flow of liquid when the tube is raised, a guide for the tube and a protecting tube or sheath of metal extending almost to the end of the flexible tube.

8. The combination of a vertically-reciprocating tube, a traveling support for the bottles to cause them to pass in succession under said tube, stationary guides acting upon the lateral parts of the bottles to automatically adjust them laterally in line with the reciprocating tubes, and movable stops to adjust the bottles in the line of their travel to bring them in position to receive the tubes when depressed.

9. The combination of a vertically-reciprocating tube, an intermittently-traveling support for the bottles to cause them to pass in succession under said tube, stationary guides acting upon the lateral parts of the bottles to automatically adjust them laterally in line with the reciprocating tubes, and spring-stops or movable guides to adjust the bottles in the line of their travel to bring them in position to receive the tubes when depressed, but which may be automatically pushed out of the way by the filled bottles.

10. The combination of a vertically-reciprocating tube, an intermittently-traveling bottle support or carriage, with movable stops in the path of the bottles to cause their necks to be held immediately below the tubes.

11. The combination of a vertically-reciprocating tube, an intermittently-traveling bottle support or carriage, with movable spring-actuated stops in the path of the bottles to cause their necks to be held immediately below the tubes, but adapted to be pushed out of the way by movement of the filled bottle, and a handle for independently removing said stops from the path of the bottles.

12. The combination of the vertically-reciprocating holder F, the siphon-tubes *h* H carried thereby, guide-frame I for the siphon-tubes *h* H having face *i*, clamping-bar K opposite to the face *i*, shaft L and cams K' thereon for moving the clamping-bar toward said face *i*.

13. The combination of the vertically-reciprocating holder F, the siphon-tubes *h* H carried thereby, guide-frame I having face *i*, clamping-bar K, springs for normally moving the clamping-bar away from the face *i*, shaft L and cams K' thereon for moving the clamping-bar.

14. The combination of inclined rails, a carriage movable thereon, a ratchet upon said carriage, a spring-pawl adapted to engage in said ratchet to intermittently arrest the movement of said carriage down the rails but allow of the carriage being freely drawn back,

and one or more liquid-feeding tubes above said carriage.

15. The combination of inclined rails, a carriage movable thereon, a ratchet upon said carriage, a spring-pawl adapted to engage in said ratchet to intermittently arrest the movement of said carriage down the rails but allow of the carriage being freely drawn back, an independent lever or treadle mechanism to actuate the spring-pawl to feed the carriage forward but unacted on by the pawl when the carriage is drawn back, and one or more liquid-feeding tubes above said carriage.

16. In a bottle-filling machine the combination of a main frame, a series of supply-tubes, the tray D, inclined rails *b*, having the depressed forward stop *b'*, and the carriage C having rollers *c*, whereby the forward rollers *c* fit into the forward stop *b'*, when the carriage C is drawn up and the tray D is supported in a horizontal position.

17. The combination of the main frame, a vertically-reciprocating holder F carrying one or more liquid-feeding tubes, guides for said holder, a bottle-support movable under said feeding-tubes, bell-cranks G', links G connecting the bell-crank with the holder, and counterbalancing-springs *g* acting on said bell-cranks.

18. In a bottling-machine a main frame having inclined rails, a bottle-carriage moving by gravity on said rails, one or more

vertically-reciprocating tubes for supplying liquor to the bottles, and a stop to intermittently arrest the movement of said carriage upon the rails.

19. In a bottling-machine the combination with the main frame, having inclined guides of a reciprocating frame or holder, a series of liquid-supply tubes carried by and moving with said reciprocating holder, a traveling inclined bottle-support to bring a series of bottles arranged in lines successively beneath said tubes, moving by gravity upon the inclined guides, and a stop to make the movement intermittent.

20. In a bottle-filling machine an automatically-movable bottle-support for presenting a series of bottles to be filled at one time, a movable stop to make the movement of the support intermittent, a supply pipe or tube of large diameter, a series of vertically-reciprocating tubes of small diameter for entering the bottles, flexible tube connections between said supply tube or pipe and each of the vertical reciprocating small tubes, and a frame to reciprocate said small tubes.

In testimony of which invention I hereunto set my hand.

RUDOLPH M. HUNTER.

Witnesses:

ERNEST HOWARD HUNTER,
E. M. BRECKINREED.