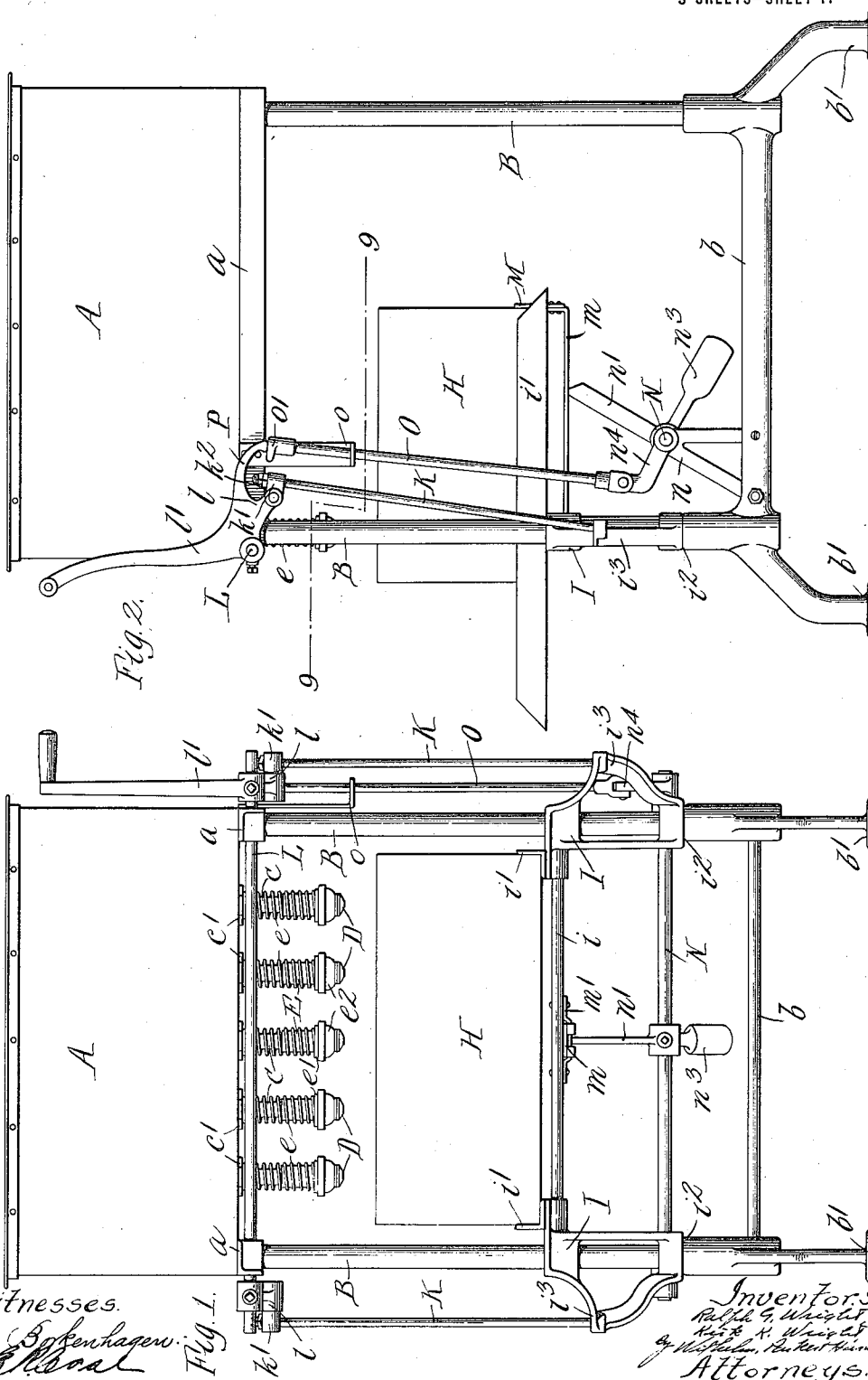


R. G. & K. K. WRIGHT.
BOTTLE FILLING MACHINE.
APPLICATION FILED AUG. 31, 1912.

1,151,147.

Patented Aug. 24, 1915.

3 SHEETS—SHEET 1.



Witnesses.
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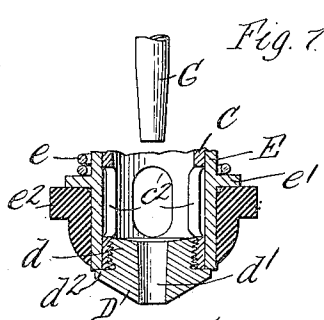
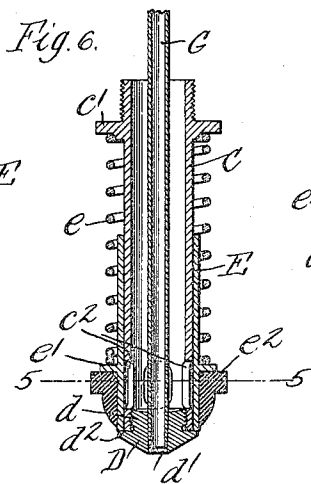
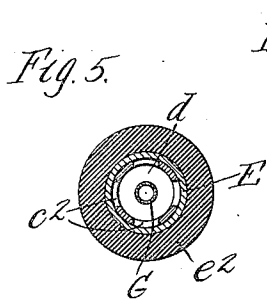
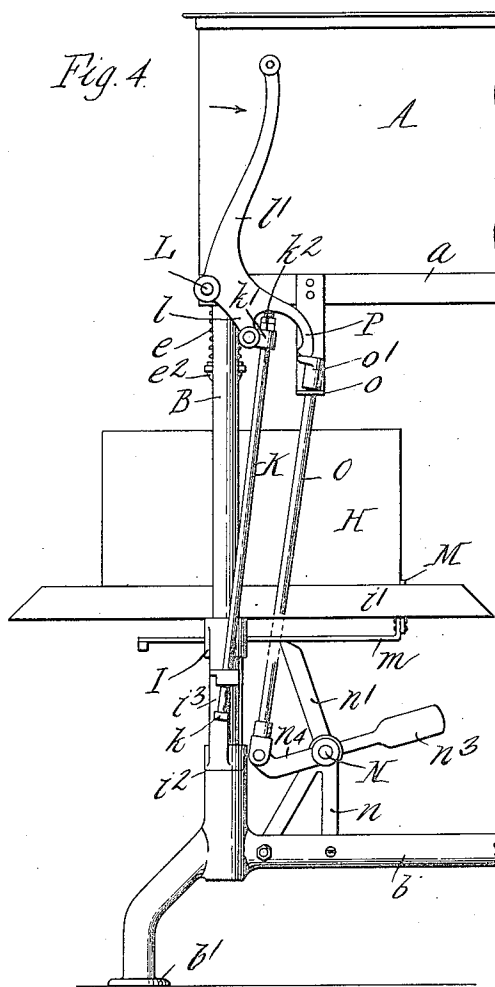
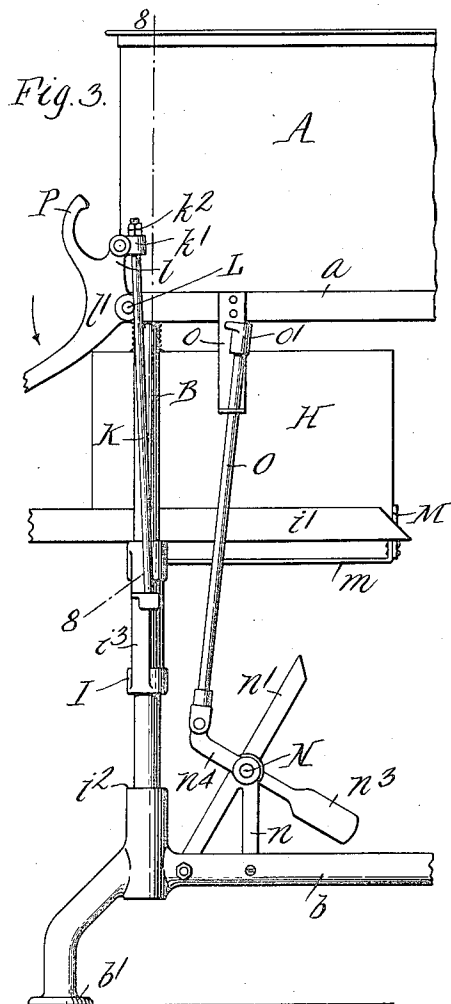
Fig. 1.

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3 SHEETS—SHEET 2.



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3 SHEETS—SHEET 3.

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Fig. 8.

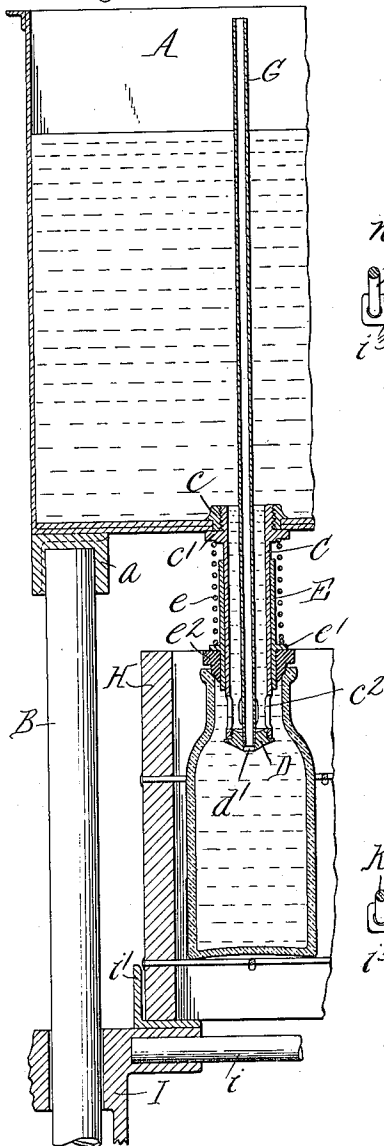


Fig. 9.

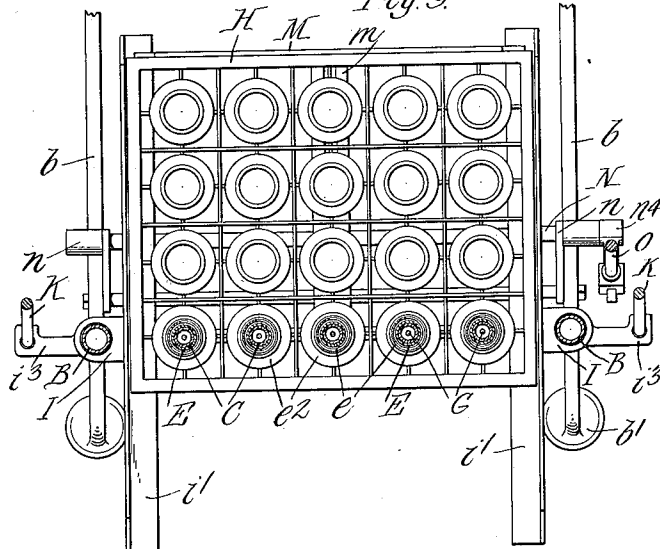


Fig. 10.

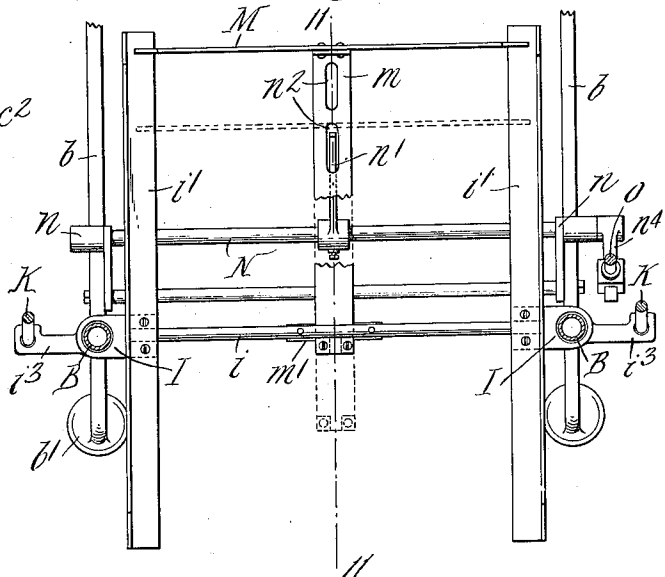
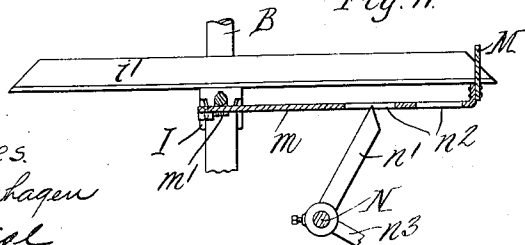


Fig. 11.



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UNITED STATES PATENT OFFICE.

RALPH G. WRIGHT AND KIRK K. WRIGHT, OF BUFFALO, NEW YORK.

BOTTLE-FILLING MACHINE.

1,151,147.

Specification of Letters Patent. Patented Aug. 24, 1915.

Application filed August 31, 1912. Serial No. 718,051.

To all whom it may concern:

Be it known that we, RALPH G. WRIGHT and KIRK K. WRIGHT, citizens of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented a new and useful Improvement in Bottle-Filling Machines, of which the following is a specification.

This invention relates to improvements in bottle filling machines and has reference more particularly to machines which are to be used for filling bottles in cases, especially milk bottles, although its use is not necessarily thus limited.

The object of this invention is to construct a simple and economical bottle filling machine which can be easily and rapidly operated for filling bottles in cases and the parts of which can be readily washed and kept in a clean and sanitary condition.

In the accompanying drawings, consisting of three sheets: Figure 1 is a front elevation of a bottle filling machine embodying the invention. Fig. 2 is a side elevation thereof. Fig. 3 is a fragmentary side elevation showing the bottle case raised to its bottle filling position. Fig. 4 is a similar view showing the position of the parts after the case has been advanced for the next filling operation. Fig. 5 is a cross section on line 5—5, Fig. 6. Fig. 6 is an enlarged sectional view of one of the filling tubes detached. Fig. 7 is an enlarged sectional view of the lower end of the filling tube showing the air tube detached therefrom. Fig. 8 is a fragmentary sectional elevation in line 8—8, Fig. 3. Fig. 9 is a fragmentary sectional plan view in line 9—9, Fig. 2. Fig. 10 is a similar view with the case for bottles removed. Fig. 11 is a cross section thereof in line 11—11, Fig. 10.

Like reference characters refer to like parts in the several figures.

The bottle filling machine comprises a tank A for the milk or other liquid which, in the construction shown, is rectangular in shape and rests upon a frame *a* which is supported at its corners by upright posts B which are connected together at their lower ends by cross rods *b* and are supported by suitable feet *b'*. This tank with its frame and supports, however, may be of any other suitable shape and construction.

In the bottom of the tank A, adjacent to its front end, are arranged in a row a plu-

rality of filling tubes C, the number of which can be made to correspond with the number of bottles in each row in the filling case, which in a case of milk bottles is generally four or five, as shown, or, if desired, sufficient tubes may be provided for all the bottles in the case. These filling tubes depend from the bottom of the tank and may be secured thereto at their upper ends in any suitable manner, such as by the socket pieces *c* which are secured in holes in the bottom of the tank and with which the upper ends of the tubes have screw-threaded engagement. Each tube is provided adjacent to its threaded portion with an annular shoulder *c'* having hexagonal faces which facilitate the screwing of the tube into its socket.

Adjacent to its lower end, each filling tube is provided with lateral openings or discharge ports *c²* formed in the side wall thereof. The tube extends a short distance beyond the lower ends of these ports and this lower end of the tube is closed by a cap D which has a portion *d* extending into the end of the tube and having screwthreaded engagement with its inner face. This cap has a central tapered opening *d'* and the inner end of the screw-threaded portion *d* of the cap is inclined from its outer edge inwardly toward this opening, the purpose of which will be hereinafter stated. The cap D also has an annular shoulder *d²* which, when the cap is in place in the end of the tube, abuts against the lower end of the tube and projects beyond the same to form a stop for a sleeve E which embraces the tube C and is movable endwise thereof. The sleeve E is normally held in engagement with the stop shoulder *d²* of the cap D by a spiral spring *e* which is interposed between the shoulder *c'* of the filling tube and an annular shoulder *e'* on the sleeve E near its lower end. In this position the ports *c²* of the filling tube are closed by the sleeve E against the passage of liquid and it will be noticed that this sleeve extends a short distance beyond the lower ends of these ports, embracing that portion of the filling tube which lies below them, before it abuts against the shoulder *d²*. This construction insures a tight closure for the ports without the use of any packing, and the ports can thus be easily kept in a clean and sanitary condition. At its lower end the sleeve E is provided with the usual rubber gasket *e²* which is adapted to be engaged

by the top of the bottle in the filling operation and which is held from upward movement on the sleeve by the shoulder e' .

The sliding sleeve E is operated in the usual manner for opening the ports in the filling tube. The bottles to be filled are raised by means, which will be hereinafter described, to a position in which their ends engage the gasket e^2 and force the sleeves upwardly to open the ports c^2 with the lower end of the filling tube projecting into the bottle, as shown in Fig. 8. It is necessary to allow the air to escape from the bottles during the filling operation and for this purpose air tubes G are provided each having a tapered lower end which is adapted to fit in the tapered opening d' of the cap D of the filling tube. The air tube extends up through the filling tube and into the tank to a point above the level of the liquid therein.

The tapered engagement between the lower ends of the air tubes and the openings in the caps D enables these tubes to be easily and quickly inserted in and withdrawn from these openings whenever desired. This is especially desirable when the tank and filling tubes are to be washed. The air tubes are then lifted out of their sockets or openings and the cleansing water poured into the tank. This water will pass out through the openings d' in the caps D at the lower end of the filling tubes and will thoroughly cleanse the interior of these tubes and their ports. The washing can thus be thoroughly done without the necessity of forcing the sleeves E upwardly to open the ports in the filling tubes to allow the water to escape as is necessary in constructions in which the air tubes are permanently secured in place in the ends of the filling tubes. The inclined face at the inner end of the cap D prevents any accumulation of liquid in the filling tube when the air tube is withdrawn and also enables the air tube to be easily replaced in the opening in the cap. The entire operation of taking out the air tubes can be easily and quickly done and will occupy a comparatively short time. The machine can thus be easily kept in a clean and sanitary condition.

While any suitable means may be employed for moving the bottles, either separately or in cases, into and out of filling engagement with the filling tubes, the present machine is especially designed for filling the bottles while they are in cases of standard size, one row of bottles being filled at a time, and for this purpose the following described means are employed for raising and lowering the cases to bring the bottles into and out of filling engagement with the filling tubes and for advancing the case after each row of bottles is filled, into position for filling the next row.

H represents a bottle case of standard size

containing a plurality of separate compartments for the bottles arranged in rows transversely and longitudinally of the case. This case is adapted to rest upon a support or carriage which is slidably mounted on the upright posts B at the front end of the machine and consists of guide members or sleeves I which embrace the posts B and are connected together by a cross rod i . Secured to these sleeves between the ports B are horizontal tracks i' , preferably of angle iron, arranged with their outer flanges upright, and the case H rests upon these tracks between their upturned outer flanges, which form guides for the case when it is moved along the track. These tracks extend for same distance inwardly, beneath the tank, and outwardly at the front end of the machine so that the case H can be moved thereon from a position in which the row of bottles at the front end of the case are beneath the filling tubes to a position in which the rear row of bottles are beneath the tubes.

The sleeves I normally rest on shoulders i^2 formed on the upright posts B. Each sleeve is provided with a laterally projecting bracket i^3 having an opening therein in which is slidably mounted a lifting rod K having at its lower end a head k which is adapted to engage the bracket, when the rod is raised, for raising the sleeve. These rods stand upright at each side of the frame and are secured at their upper ends in sleeves k' by nuts k^2 which engage their ends. The sleeves k' are pivoted to the outer ends of opposite lever or crank arms l which are secured to the oppositely projecting ends of a transverse rock shaft L which is journaled on the frame a of the machine at the front end thereof. These two lever arms on the rock shaft L at opposite sides of the machine are constructed alike with the exception that the arm on one side is provided with an operating handle l' by which the shaft can be easily rocked for raising and lowering the lifting rods K which carry with them the sleeves I and the bottle case supported by these sleeves. To raise the bottle case to bring the bottles into filling engagement with the filling tubes of the machine, the handle l' is turned to the position shown in Fig. 3. As soon as the bottles are filled the handle is swung backwardly and the case returned to its normal lowered position, as shown in Fig. 2. The operator can thus easily and quickly raise and lower the case for filling the bottles.

The machine may be constructed to fill any desired number of bottles in a single operation. In the machine shown, however, only one row of bottles in the bottle case can be filled at a time and it therefore becomes necessary to advance the case after each filling operation to bring the next row of bottles into position for filling. For this

purpose, a sliding plate M is provided which rests at its ends on the horizontal tracks *i'* and is provided centrally with a bar *m* which is secured thereto at one end and extends forwardly therefrom with its forward end slidably supported on the under-
 5 side of the cross rod *z*, a metal strap *m'* being preferably provided for this purpose which is secured at its ends to the cross rod and forms a support between its ends over
 10 which the bar *m* is free to slide.

A rock shaft N extends transversely of the machine and is journaled at its ends in supports *n* secured to the side rods *b* of the
 15 frame. This shaft is provided centrally with an arm *n'* which is secured thereto to turn therewith and which is adapted, when the shaft is rocked, to engage the bar *m* and advance the same with its slide, the bar
 20 being preferably provided with a plurality of slots *n²* arranged longitudinally thereof in which the end of the arm *n'* is adapted to engage. These slots are so spaced and arranged that by successive movements of the
 25 rock shaft, the bottle case will be advanced step by step, each step being sufficient to bring the next succeeding row of bottles into position for filling. A weighted arm *n³* secured to the shaft *n* serves to return the
 30 shaft to its normal position after it has been operated to advance the bottle case.

Any suitable operative connections may be employed between the operating handle *l'* and the rock shaft N for operating the lat-
 35 ter to advance the bottle case. In the construction shown, the rock shaft N is provided at one end with a crank arm *n⁴* to which is pivoted a rod O which is held upright at the side of the machine by a guide
 40 bracket *o* having an opening through which the rod extends. At its upper end this rod has an enlarged head *o'*, the end of which forms a bearing surface for an arm P which is secured to the rock shaft L to turn there-
 45 with, being preferably formed integral with the lever arm *z*. The arm P is so arranged that when the handle *l'* is being operated for raising and lowering the bottle case, it
 50 will be out of engagement with the rod O, but when the backward movement of the handle is continued after the case has been lowered, this arm will strike the end of the
 55 rod O and force it downwardly, causing the rock shaft N to rock to move its arm *n'* into engagement with the slots in the sliding bar *m* and advance the same sufficiently to bring the case into position for filling the next row of bottles, as shown in Fig. 4. When the operating handle is released, the weight-
 60 ed arm *n³* will cause the shaft to turn backwardly so that the arm *n'* will swing out of engagement with the slot in the sliding bar.

The machine is simple in construction and is capable of easy and rapid operation. A
 65 single movement of the operating handle in

one direction raises the case for filling the bottles, and in an opposite direction both lowers the case and advances it for the next filling operation. The different rows of bot-
 70 tles in the case can in this manner be quickly and easily filled.

We claim as our invention:

1. In a bottle filling machine, the combination with a liquid receptacle having valve-
 75 controlled filling tubes depending therefrom, of a supporting frame for said receptacle, a support for a bottle case mounted on said frame and movable thereon toward and from said receptacle, an operating lever pivoted to said frame and connected with said
 80 support for raising and lowering the same to bring the bottles of said case into and out of filling engagement with the filling tubes, a follower for the case mounted on said support to move independently there-
 85 of, and means actuated by said lever for moving said follower to advance the case a predetermined distance on said support after each filling movement of said support, substantially as set forth.

2. In a bottle filling machine, the combination with a liquid receptacle having valve-controlled filling tubes depending therefrom, of a supporting frame for said
 90 receptacle, a support for a bottle case mounted on said frame and movable thereon toward and from said receptacle, an operating lever pivoted to said frame and connected with said support for raising and lowering
 95 the same to bring the bottles of said case into and out of filling engagement with the filling tubes, a follower for the case mounted on said support to move independently thereof, a rock arm journaled on said frame and adapted to engage said follower and
 100 move the same to advance the case a predetermined distance, and means connected with said arm and adapted to be actuated by said operating lever for rocking said
 105 arm to advance the case after it has been lowered to bring its bottles out of engagement with the filling tubes, substantially as set forth.

3. In a bottle filling machine, the combination with a liquid receptacle having valve
 115 controlled filling tubes depending therefrom, of a supporting frame for said receptacle, a support for a bottle case mounted on said frame and movable thereon toward and from said receptacle, an operating lever
 120 pivoted to said frame and connected with said support for raising and lowering the same to bring the bottles of said case into and out of filling engagement with the filling tubes, a follower for the case mounted
 125 on said support to move independently thereof, a rock arm journaled on said frame and adapted to engage said follower and move the same to advance the case a predetermined distance, means connected with 12

said arm and adapted to be actuated by said operating lever for rocking said arm to advance the case after it has been lowered to bring its bottles out of engagement with the
 5 filling tubes, and means for returning said rock arm to its normal position out of engagement with said follower after it has been moved to advance the same, substantially as set forth.

10 4. In a bottle filling machine, the combination with a liquid receptacle having valve-controlled filling tubes depending therefrom, of a supporting frame for said receptacle, a support for a bottle case mounted
 15 on said frame and movable thereon toward and from said receptacle, an operating lever pivoted to said frame and connected with said support for raising and lowering the same to bring the bottles of said case into
 20 and out of filling engagement with the filling tubes, a follower for the case mounted on said support to move independently thereof, a rock arm journaled on said frame and adapted to engage said follower and
 25 move the same to advance the case a predetermined distance, and a push rod slidably mounted on said frame and connected at its lower end with said rock arm, said operating lever having a part which when the lever is
 30 moved in one direction engages this rod and actuates the same for moving said rock arm into engagement with said follower for advancing the case, substantially as set forth.

35 5. In a bottle filling machine, the combination with a liquid receptacle having valve-controlled filling tubes depending therefrom, of a supporting frame for said receptacle, a support for a bottle case mounted on said
 40 frame and movable thereon toward and from said receptacle, a transverse operating shaft journaled in said frame and having lever arms secured to the opposite ends thereof at each side of said frame and connected with said support, a handle for oper-
 45 ating said shaft to raise and lower said sup-

port, a follower for the bottle case movably mounted on said support, a rock shaft journaled on said frame and having an arm which is adapted to engage said follower and move the same for advancing the case
 50 on said support, and means connected with the end of said shaft at one side of the frame and adapted to be actuated by the operating handle for rocking said shaft to advance said case, substantially as set forth. 55

6. In a bottle filling machine, the combination with a liquid receptacle having valve-controlled filling tubes depending therefrom, of a supporting frame for said receptacle, a support for a bottle case mounted on said
 60 frame and movable thereon toward and from said receptacle, a transverse operating shaft journaled in said frame and having lever arms secured to the opposite ends thereof at each side of said frame and connected with said support, a handle for oper-
 65 ating said shaft to raise and lower said support, a follower for the bottle case movably mounted on said support, a rock shaft journaled on said frame and having an arm
 70 which is adapted to engage said follower and move the same for advancing the case on said support, an arm secured to one end of said shaft, a push rod slidably mounted on said frame and connected at its lower end
 75 to said arm, and an actuating arm secured to said transverse operating shaft and adapted when said shaft is turned in one direction to engage said push rod and actuate the same for turning said rock shaft to
 80 advance the bottle case, substantially as set forth.

Witness our hands, this 23rd day of August, 1912.

RALPH G. WRIGHT.
 KIRK K. WRIGHT.

Witnesses:

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 A. L. MCGEE.