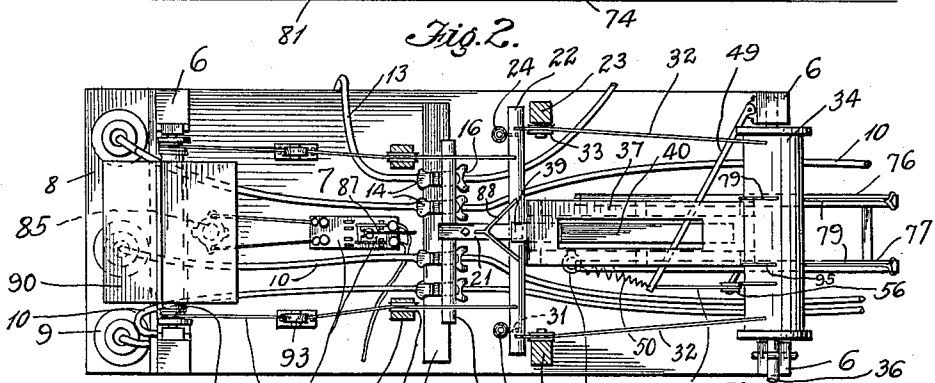
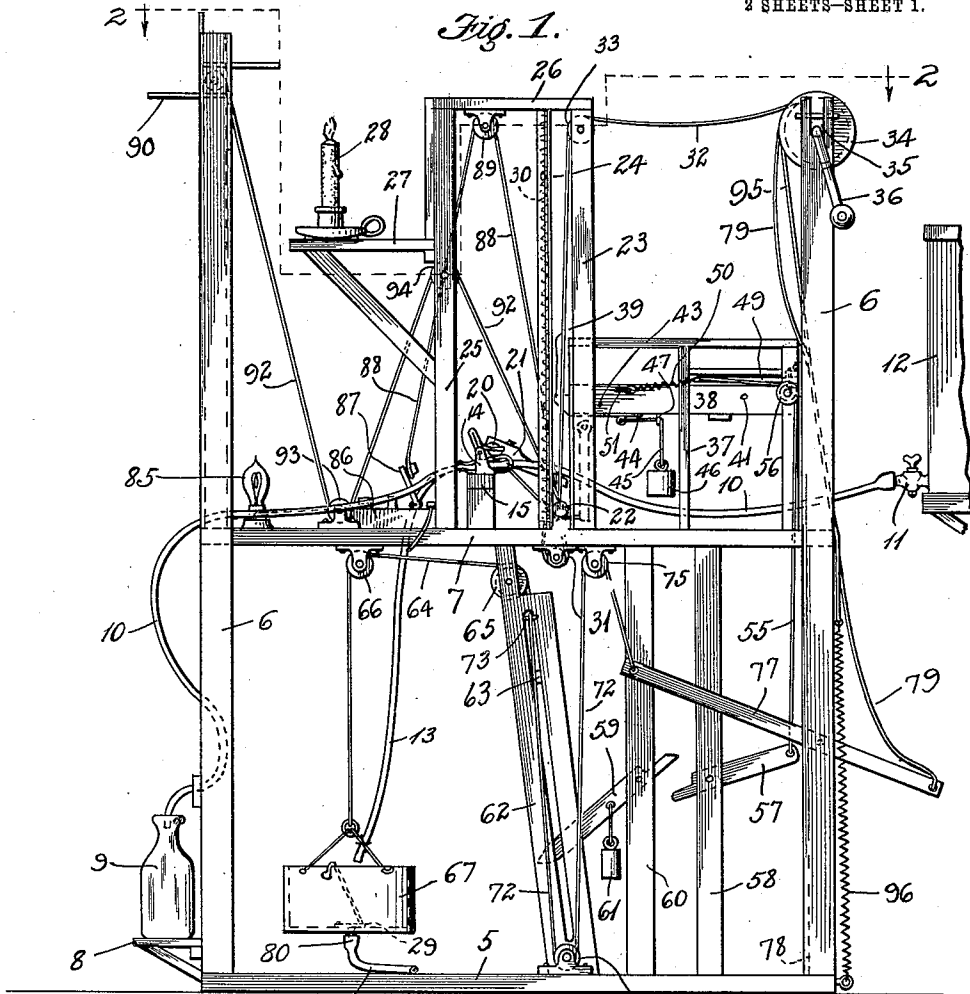


M. TAKAGI.
BOTTLE FILLING MACHINE.
APPLICATION FILED JAN. 2, 1912.

1,069,354.

Patented Aug. 5, 1913.

2 SHEETS—SHEET 1.



Witnesses.

E. R. Pollard.

C. Severance.

Inventor
Masayasu Takagi.

Harold Thayer,
Attys.

M. TAKAGI.
BOTTLE FILLING MACHINE.
APPLICATION FILED JAN. 2, 1912.

1,069,354.

Patented Aug. 5, 1913.

2 SHEETS—SHEET 2.

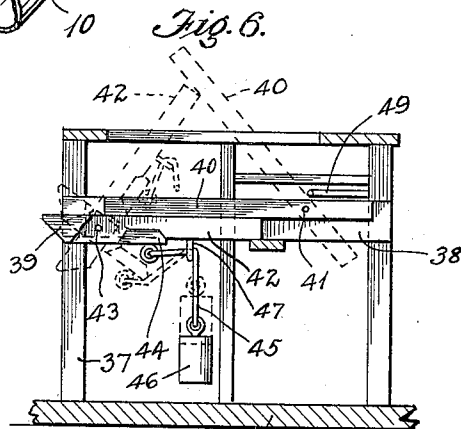
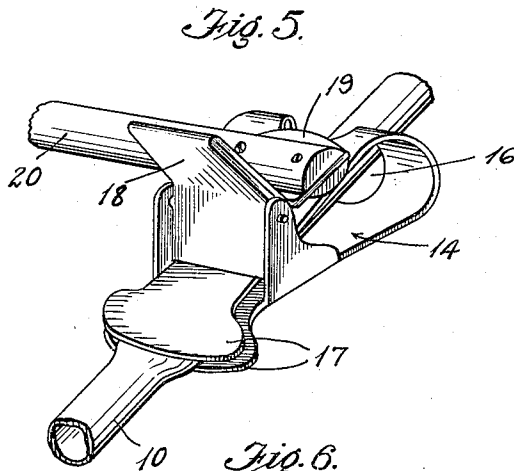
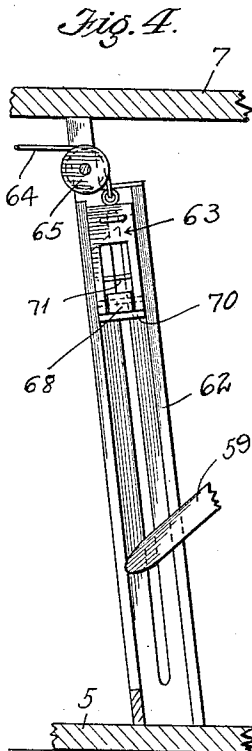
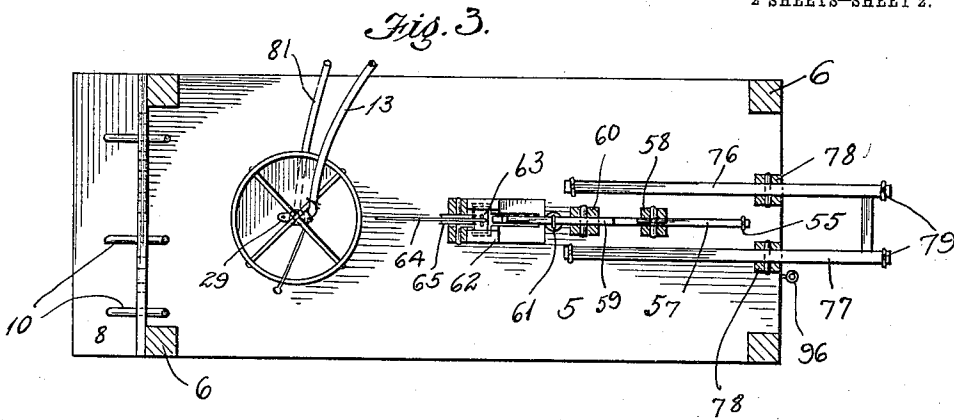
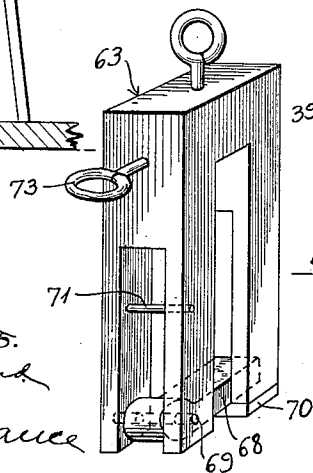


Fig. 7.



Witnesses:
E. P. Pollard
C. Severance

Inventor
Masayasu Takagi.

by
Harold Thaw
Attys.

UNITED STATES PATENT OFFICE.

MASAYASU TAKAGI, OF LOS ANGELES, CALIFORNIA.

BOTTLE-FILLING MACHINE.

1,069,354.

Specification of Letters Patent.

Patented Aug. 5, 1913.

Application filed January 2, 1912. Serial No. 668,900.

To all whom it may concern:

Be it known that I, MASAYASU TAKAGI, a citizen of Japan, residing at Los Angeles, in the county of Los Angeles and State of California, have invented new and useful Improvements in Bottle-Filling Machines, of which the following is a specification.

This invention relates to improvements in bottle filling machines and has particular relation to machines which can be set in operation for filling one or more containers of equal capacity, and which without further attention will automatically stop the filling operation when said receptacles are full.

It is an object of the invention to provide a machine in which a number of bottles or receptacles may be filled simultaneously to a given degree or with a predetermined quantity of material or liquid, the device being capable of automatic operation under a given weight of liquid for cutting off the flow of the same to the bottles or other receptacles.

It is also an object of the invention to provide such a device with a resetting mechanism whereby the parts may be restored to such position that they are in readiness for automatic operation again when the next set of receptacles are filled.

It is a still further object of the invention to provide a machine of this character with indicating means tending to draw the attention of an attendant or operator to the fact that the bottles or receptacles have been filled.

In the accompanying drawing forming a part of this specification, Figure 1 is a side elevation of the improved bottle filling apparatus forming the subject matter of this invention. Fig. 2 is a horizontal sectional view taken upon the line 2—2 of Fig. 1 and showing the intermediate operating mechanism in plan view. Fig. 3 is a horizontal sectional view taken through the framing of the machine below the central platform thereof. Fig. 4 is a detail sectional view upon an enlarged scale of the trip mechanism employed in automatically effecting the checking of the filling operation when the bottles are filled. Fig. 5 is a detail vertical perspective view of a mechanism for checking the flow of liquid to the bottles employed in the apparatus. Fig. 6 is a detail vertical sectional view through the latch mechanism used in holding the parts in position for

permitting liquids to flow to the bottles to be filled. Fig. 7 is a detail perspective view of the slide employed in the mechanism illustrated in Fig. 4, the said slide being shown on an enlarged scale.

The details and features of the invention will now be more particularly described, reference being had to the said drawing in which 5 indicates a base, 6 uprights or posts rising therefrom and 7 an intermediate platform suspended upon the posts about midway of their height. Upon the framing formed by the base 5 and the standards 6, a support or shelf 8 is arranged which is adapted to receive one or more bottles or receptacles 9 of equal capacity that are to be supplied with liquid. Tubes 10 extend to points upon the said framing so that their lower open ends may be inserted in the necks of the bottles as shown in Figs. 1 and 2. The said tubes are preferably of flexible material and extend upwardly and over the platform 7 and thence to valve controlled outlets 11 upon a tank 12. The said tank may be mounted upon a portion of the framing described but is usually carried by a separate support arranged adjacent to the said framing as indicated in Fig. 1. Any number of tubes may be employed of the same size and rate of flow but for the purpose of illustration three tubes 10 are shown leading from the tank 12 to the bottles 9. An additional tube 13 is also employed which is used to automatically control the action of the mechanism as will be herein described and which is not usually employed for conducting liquid to the bottles or other receptacles.

At a suitable point upon the platform 7 shut off clamps 14 are employed through which the tubes 10 and 13 pass, the said clamps being mounted upon a transverse bar or support 15 carried by the platform 7. Each of the said clamps preferably consists of a bent spring piece having an aperture 16 in the bent portion thereof, through which the tube may pass and having broad clamping end portions 17, which may be caused to pinch the tube for checking the flow of liquid through the same. A rocking member 18 pivotally mounted upon brackets 19 carried by one leg of the clamp 14 is adapted to compress the other leg of said clamp and bring the pinching ends thereof together when in the position shown in Fig. 5. When the said rocking member

is moved to the opposite extreme of its movement, the pinching ends 17 will be permitted to spread and the flow of liquid through the tube or tubes will be again permitted. Each rocking member 18 is provided with a projecting lever portion 19 by which it is operated. In order to operate all of the clamps simultaneously a transverse bar 20 is provided, which is connected with all of said levers 19, so that when it is rocked in one position the rocking members 18 will be moved with it, for causing the clamps to pinch the tubes and when it is rocked in the other direction it will release the clamps and permit of a flow of liquids in the tubes. The said bar 20 is thus virtually a rocking bar with the pivot points of the rocking bars 18 as its axis of movement. In order to rock the said bar 20 it is provided with a lever 21 usually secured thereto about centrally of its length. In order to operate the said lever 21 a bar 22 is mounted adjacent thereto and arranged transversely of the machine as clearly shown in Fig. 2, the ends of said bar being guided in vertical movement by standards 23 and tubes 24 arranged near the same. The said standards 23 form a part of the framing having other standards as 25, all of said standards being mounted upon the platform 7 and the upper ends of said standards are connected by a platform 26. The said framing is also provided with a platform 27 extending therefrom and affording a support for an indicating light as for instance a candle 28, the use of which will be hereinafter described. The tubes 24 in addition to acting as guides for the bar 22 are also employed for receiving and holding in place springs 30. The said springs are preferably secured at their upper ends near the upper ends of said tubes and their lower ends are connected with cords 31, which extend to and are also connected with the said transverse bar 22. The springs thus tend to pull the said bar downwardly and to carry the same into such position that the said bar will engage the arm 21 and rock the rocking bar 20. The said bar 22 is adapted to be raised against the action of the springs by means of cords 32, which pass over pulleys 33 mounted upon the standards 23 at points near their upper ends. The said cords then pass to a winding drum 34 which is journaled in bearings 35 at the upper ends of the standards 6 as clearly shown in Figs. 1 and 2. A crank 36 is provided for the said drum 34 by which it may be operated. The said drum is also employed to operate and reset other portions of the mechanism as will be hereinafter described. The bar 22 is adapted to be maintained in its raised position by means of a latch mechanism mounted upon a framing 37, which is bifurcated and pivoted therein and extending within the said bifurcation is a latch 39 having a

projecting nose portion adapted to extend beneath the said bar 22 when it is elevated, for holding it in such elevated position. The inner end of the said latch 39 is controlled by a lever 40, which is pivoted at 41 upon the longitudinal bar 38, which in lowered position extends over the inner end of the latch 39, so as to maintain it in horizontal position. The said latch 39 is made of two sections, the inner section 42 thereof being pivoted with respect to the outer end thereof, upon the pivot pin 43, which carries said latch, and the said inner section 42 normally rests against an inner projecting portion 44 of said outer section which is connected by means of a cord 45 with a weight 46. The cord passes through an eye 47 secured to the under side of the inner section 42 of the mechanism.

The structure of the parts is such that when the bar 22 is raised the nose of the latch 39 will yield and permit the same to pass, the weight 46 being pulled upwardly as indicated in dotted lines in Fig. 6. The weight will restore the parts to their normal position shown in full lines in said Fig. 6 when the bar has passed the nose of the latch. When the bar has been lifted above the said lever by the action of the drum 34 and the said drum is released again, the springs 30 will pull the said bar 22 downwardly against the nose of said latch 39. With the bar 40 maintained in lowered position it is impossible for the latch 39 to have its nose depressed and permit the passage of the bar 22. The said bar 40 is normally held against rising upon its pivotal point 41 by means of a horizontally moving pivotally mounted rod 49. The said rod 49 is connected by means of a spring 50 secured to its free end, with an eye 51 secured to the sides of the longitudinal bar 38, so that the said spring normally tends to hold the rod 49 in the position shown in Figs. 1 and 2. The said rod 49 is also provided with an operating cord 55, which passes over a pulley 56 mounted on an adjacent portion of the frame and thence extends to a trigger 57 pivoted to an upright 58, in the lower part of the mechanism and below the platform 7. When the cable 55 is pulled downwardly by the said trigger 57, the rod 49 will be swung outwardly upon its pivot point against the action of the spring 50, for releasing the bar 40 and permitting of the downward movement of the nose of said latch 39, the parts thus assuming the position shown in dotted lines in Fig. 6 and permitting the bar 22 to be drawn downwardly under the action of the springs 24.

The trigger 57 is preferably operated in conjunction with the operation of the other portions of the device, and is effected through the agency of a trip lever 59 which is pivoted to an adjacent standard 60 of the

framing. The shorter end of said trip lever 59 is adapted to engage the adjacent short end of the trigger 57 for pulling upon the cord 55 when the said trip lever is permitted to be acted upon by a weight 61, which is suspended upon the longer end thereof. The said trip lever 59 is arranged so that its long end projects into an elongated guide frame 62, which is mounted in an inclined position adjacent to the standard 60 and which has movably mounted within it a slide 63. The slide is so mounted in the guide 62 as to be capable of a reciprocating movement therein and is connected at its upper end with a cord or cable 64 which passes over pulleys 65 and 66 and thence to a weight receiving receptacle 67. The slide 63 is of a skeleton type and has a pivoted latch 68 mounted in the lower end thereof. One end of the latch bar is pivoted at 69 near one edge of the slide, while the other end of the latch bar is adapted to rest upon a cross bar 70 secured transversely of the slide, as will be clearly understood by reference to Fig. 7 of the drawing. The said latch bar 68 is arranged in the path of the longer end of the said trigger 59, so that when the slide is raised in the guide 62, with the trigger resting upon the latch bar 68, the said trigger will be moved against the action of the weight 61 and its short end will be brought to a position below the adjacent short end of the trigger 57, the said trigger 57 yielding in order to permit it to pass. When the slide 63 is lowered, and the latch 59 is also in lowered position having been permitted to drop from the bar 68, when in its highest position, the said latch bar 68 will be raised so as to pass the lever 59 and so as to become positioned beneath it again. The bar 68 will drop beneath the trip lever 59 after passing below it. The upward swinging of the latch bar 68 upon its pivotal point is usually limited by a transverse bar 71 mounted in the said slide 63, so that the said latch bar will always be held in position to fall under the action of gravity after passing the trigger lever 59. In order to pull the slide 63 downwardly, cords 72 are connected thereto, being fastened to eyes 73 which project through slots in the side bar of the guide 62. The said cables pass downwardly and about pulleys 74 mounted on the base 5 and thence upwardly and around pulleys 75 mounted upon the platform 7. The said cables are then connected with the inner ends of levers 76 and 77 which are pivoted to intermediate standards 78, arranged between the standards 6 at the end of the machine frame. The outer ends of said levers 77 are connected by a cross bar and cables 79 secured to said levers 76 and 77 extend upwardly therefrom and are fastened to the drum 34, the structure being such that when the drum 34

is rotated in elevating the transverse bar 22, as hereinbefore described, the cables 79 will also be wound upon the drum and will operate the levers 76 and 77 for pulling upon the cables 72 and drawing the slide 63 into position to engage the under end of the trip lever 59. In this position when the receptacle 67 is empty the weight 61 will overbalance the weight of said receptacle and hold the said slide in its lowered position. The construction of the parts just described is also such that when liquid or other materials are placed in the receptacle 67 to a sufficient extent to overbalance the weight 61, the slide 63 will be pulled by the weight of the receptacle and the cord 64, so as to lift the trip lever 59 and cause it to engage the short end of the trigger 57. The short end of the trip lever 59 will pass below the short end of the trigger 57, before the weighted end of the said trip lever slips from its position upon the latch bar 68. As soon as the trip lever does slip from said latch bar 68 it will drop under the action of weight 61 and actuate the trigger 57 for operating the lever 49 heretofore described.

The bottom of the receptacle 67 is provided with an outlet 80, which is usually provided with a pipe or flexible tube 81 for conducting liquids placed in said receptacle therefrom. A valve 29 is employed in the receptacle 67 for controlling the discharge of liquids therefrom. In order to fill the said receptacle 67 with liquids for tripping the mechanism dependent upon the action of said receptacle, one of the tubes heretofore described, namely the tube 13 is arranged so that its lower end is suspended over the said receptacle. The other end of said tube 13 may be connected with any suitable reservoir, water or other liquid supply for delivering the water or other liquid necessary for tripping the mechanism. It will be understood also that a receptacle such as the bottle may be set in the said suspended receptacle 67 under the end of the tube 13 whereby in addition to operating the mechanism an additional bottle will be supplied with liquid or be filled.

The mechanism is automatic in its action after the liquid has been started to flow in the pipes 12 and the equal flow of the liquid will be checked by the automatic actuation of the clamps 14 already described, so that the operator will not be compelled to watch the machine and while one is in operation, will be able to start other machines. Means for drawing an attendant's attention to the fact that the filling of the bottles has been accomplished is also a useful part of the invention and preferably consists in signal devices which may be actuated when the mechanism of the device is tripped. Thus an electric light 85 may be

mounted upon the platform 7 and connected by the usual wires with any source of electrical energy, a switch 86 of any usual or ordinary type being interposed in said conductors. The switch lever 87 is preferably connected to a cord 88 which passes upwardly and over a pulley 89 mounted upon the platform 26, after which the said cord extends to the bar 22, to the central portion of which it is connected, the structure being such that when the bar is permitted to descend under the action of the springs 30, the cable 88 will raise the switch lever 87 and interrupt the current for extinguishing the signal light 85. The device is also provided with an alternative signaling means for use where it is not convenient to obtain an electric mechanism and a source of electrical energy. Thus a candle or other light producing means such as the candle 28 heretofore referred to, may be mounted upon the platform 27 and a rotary fan 90 may be journaled opposite to the said candle and preferably a little above the same, the bearings for said fan being arranged in the upper ends of the standards 6 at that end of the machine. The said fan 90 is formed with pulley extensions 91 at each end upon which are wound cords 92, the said cords being led downwardly and about pulleys 93 upon the platform 7 and thence upwardly and about pulleys 94 upon the standards 25 and from thence to the transverse bar 22. When the machine is set in operation the paddle will be turned so as to wind up the slack of the cords 92 upon the pulley extension portions thereof and the candle will be then lighted and set in place. When the mechanism is tripped as heretofore described, the sudden downward movement of the bar 22 when it is released, will pull upon the cords 92 and rotate the fan 90 rapidly for a short time and extinguish the candle 28.

The operation of the device will be readily understood in connection with the above description and will require merely an outline statement thereof in connection with said description. When bottles are to be filled or to receive liquid they are set upon the platform 8 and the ends of the tubes 10 put in place in the necks thereof. The crank 36 is then operated for rotating the drum 34 which will through the action of the cords 32 and 79 carry the transverse bar 22 upwardly, so as to be locked temporarily upon the nose of the latch 39, the clamps 14 at the same time being caused to release their pressure upon the tubes 10 and permit the flow of liquids therethrough; and will also cause the movement of the levers 76 and 77 for pulling the slide 63 downwardly to engage the trip lever 59. After setting these parts the drum 34 will be unwound by the action of a cord 95 which is connected with

a spring 96 secured to the base of the machine. Thus the cords 32 and 79 are maintained in slack condition except when setting the parts as just described. The switch 87 is then closed for lighting the lamp 85 or a lighted candle 28 is put in place, the fan 90 having been moved to wind up the cords 92. The liquid usually water from any desired source, which passes through the tube 13, will also begin to flow into the receptacle 67, the relation of the parts being such that when the bottles are full, the weight of liquid accumulated in the receptacle 67 will be sufficient to depress said receptacle, (which has been raised when setting the slide 63) and pull the slide 63 upwardly so as to operate the trip lever 59, causing it to give an impulse to the trigger 57, sufficient to withdraw the rod 49 from its position over the free end of the bar 40. This will release the latch 39 and permit the bar 22 to descend under action of the springs 30 thereby operating the clamps through the lever 21, for pinching the tubes 10 and 13 and cutting off all further flow of liquids therethrough. At the same time the switch 87 will be opened or the candle 28 will be extinguished as the case may be. The parts will remain in this position until reset with a new set of bottles or receptacles beneath the tubes 10 for filling. The outlet 80 of the receptacle 67 may be covered in any desired manner during the filling of the receptacle, and the said receptacle is of course emptied before the next operation of supplying liquid to the bottles is commenced.

What I claim is:

1. A bottle filling mechanism, comprising a series of flexible tubes adapted to extend into bottles for conveying liquid, hinged clamping means adapted to engage said tubes, a receptacle movably supported on said mechanism and means operative when a predetermined amount of liquid has passed into said receptacle for operating said clamping mechanism.

2. A bottle filling mechanism, comprising a series of flexible tubes adapted to extend into bottles for conveying liquid, and also a flexible tube adapted to carry liquid to an actuating means, hinged clamps engaging said tubes, spring actuated means for operating said clamps, and means for actuating said spring actuated means when a predetermined amount of liquid has passed through said flexible tube connected therewith.

3. A bottle filling mechanism comprising flexible ducts adapted to direct liquid from a suitable source to the bottles to be filled, hinged clamping means for checking the flow of liquids in said ducts, and a flexibly supported and automatically actuated tripping mechanism adapted to permit the actuating of said clamps, when a predetermined

quantity of liquid has passed through said ducts.

4. A bottle filling mechanism comprising a series of flexible tubes adapted to direct liquid to the bottles, and also a flexible tube being adapted to direct liquid to a controlling mechanism, hinged clamping means for controlling the passage of liquids through all of said tubes, a spring actuated member adapted to operate the clamps simultaneously, and flexibly supported means for permitting of the operation of said member when a predetermined quantity of liquid has flowed into said controlling mechanism.

5. A bottle filling mechanism comprising a frame, a series of flexible tubes mounted thereon, a series of hinged clamping devices engaging said tubes, a rock bar for operating said clamps simultaneously, a lever for rocking said bar and weight operated mechanism for moving the lever when a predetermined quantity of liquid has passed into said weight operated mechanism for checking the flow thereof through said flexible tubes.

6. A bottle filling mechanism, comprising a frame having flexible liquid directing tubes adapted to extend into bottles for conveying liquid, means controlling the flow of liquid therethrough, a latch mechanism co-operating therewith, a tripping mechanism for releasing the latch mechanism, and a liquid weight controlled member adapted to operate the tripping mechanism.

7. A bottle filling mechanism comprising a frame, a series of flexible tubes for dis-

tributing liquid, means for controlling the flow of liquid through the tubes, a weight actuated latch mechanism engaging the controlling means, a trip mechanism for actuating the latch mechanism, a liquid weight receiving device for operating the trip mechanism, and means to release the liquid from said receiving device to reset the mechanisms after the flow of liquid through the tubes has been checked.

8. A bottle filling mechanism, comprising a frame, liquid directing tubes mounted therein, means for controlling the flow of liquid therethrough, a spring actuated member for actuating said controlling means, a weighted latch adapted to hold said spring controlling member out of operative position until the bottles have been filled, levers controlling the action of said latch, a trigger for releasing said latch, a trip lever for operating said trigger, a slide adapted to actuate said trip lever, a receptacle for moving said slide, to actuate the trip lever, means for filling the said receptacle with a predetermined quantity of liquid for actuating said slide, levers and cords for resetting the said spring actuated member and the said slide, and a drum for winding up said cords for resetting the mechanism.

In witness that I claim the foregoing I have hereunto subscribed my name this 20th day of Dec., 1911.

MASAYASU TAKAGI.

Witnesses:

E. STADTMAN,
EDMUND A. STRAUSE.