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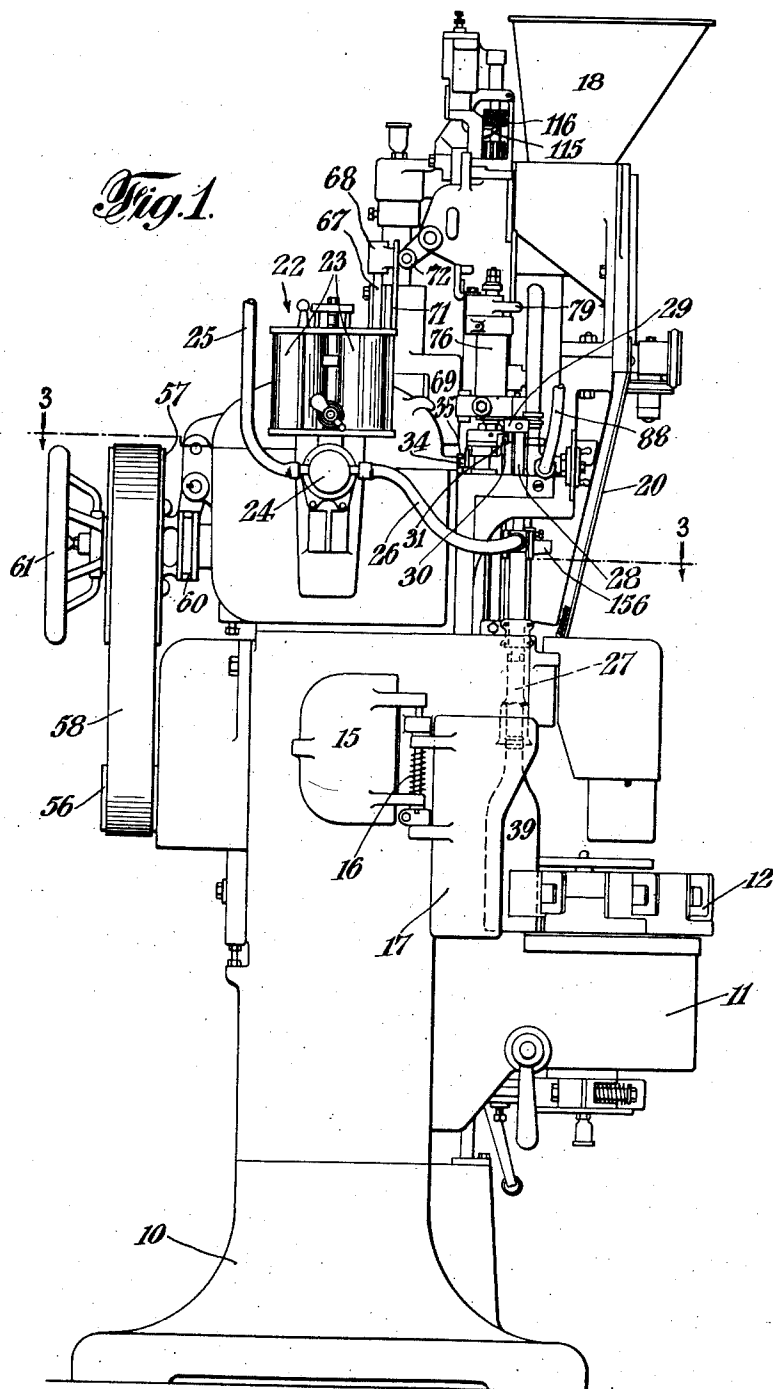
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1,874,353

BOTTLE FILLING AND CROWNING MACHINE

Filed June 11, 1929

10 Sheets-Sheet 1



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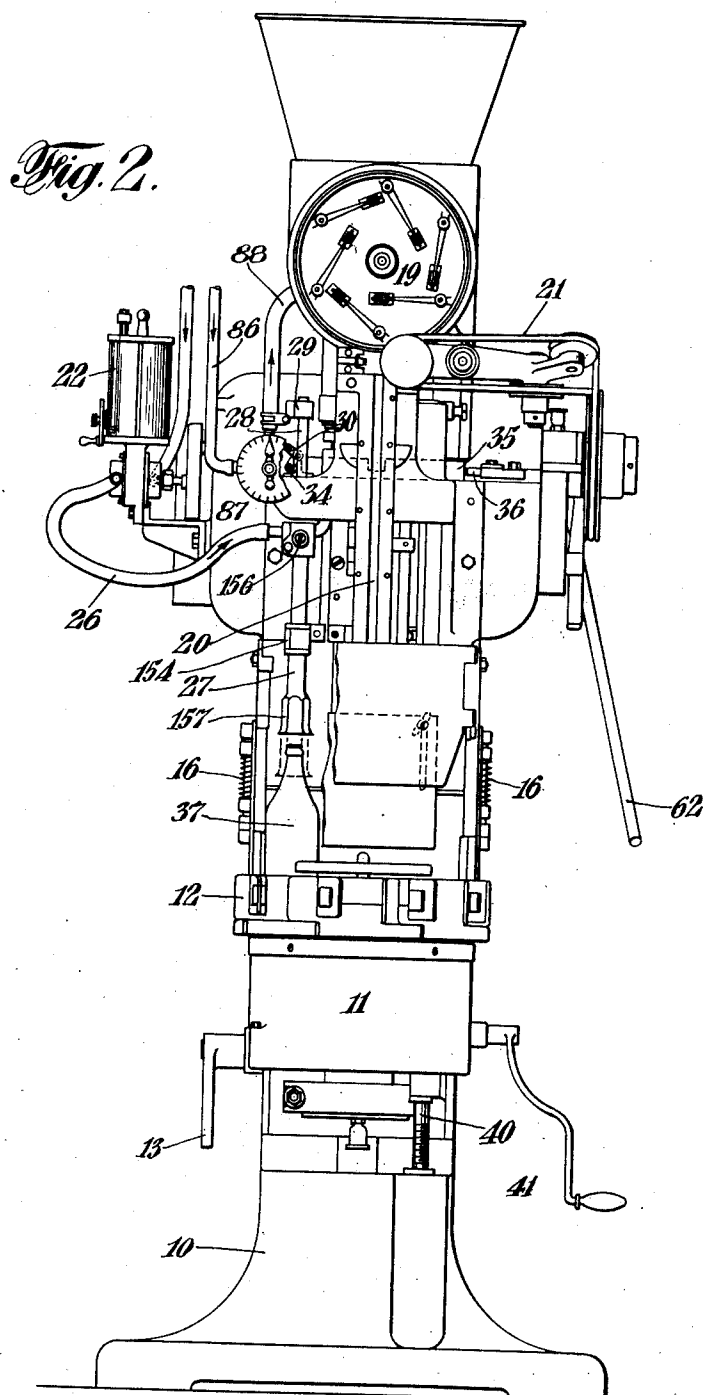
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BOTTLE FILLING AND CROWNING MACHINE

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10 Sheets-Sheet 2



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10 Sheets-Sheet 3

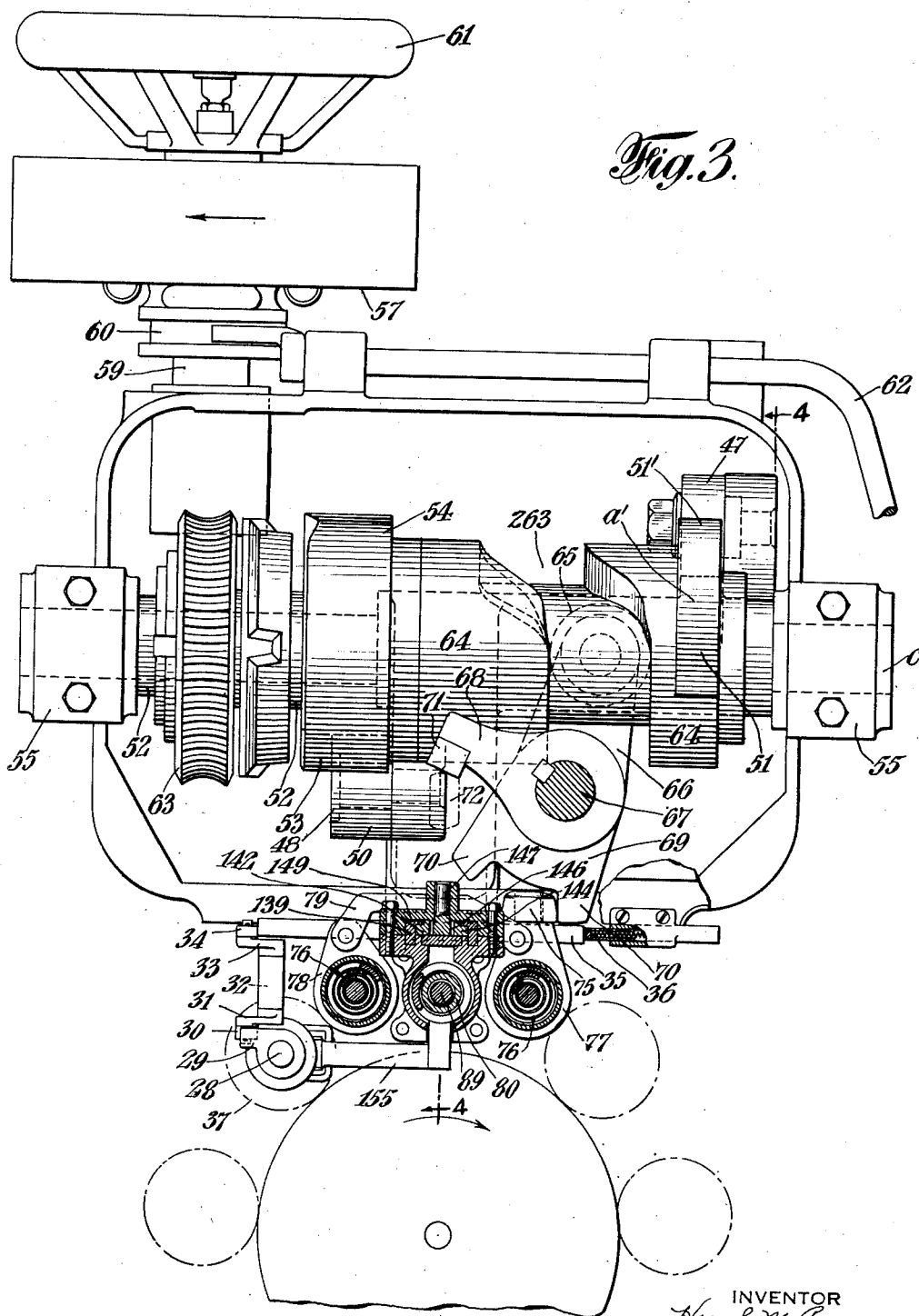


Fig. 3.

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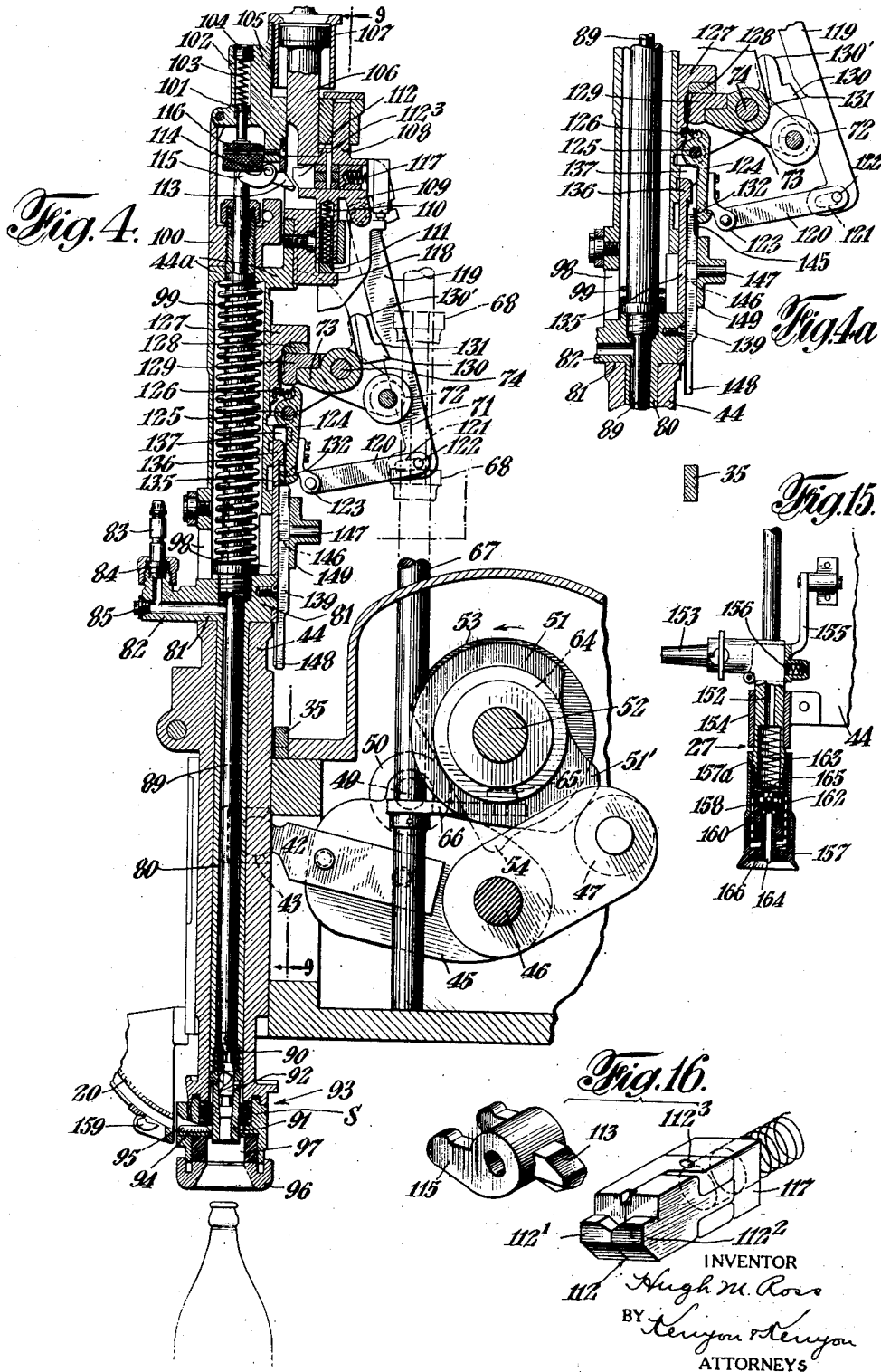
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BOTTLE FILLING AND CROWNING MACHINE

Filed June 11, 1929

10 Sheets-Sheet 4



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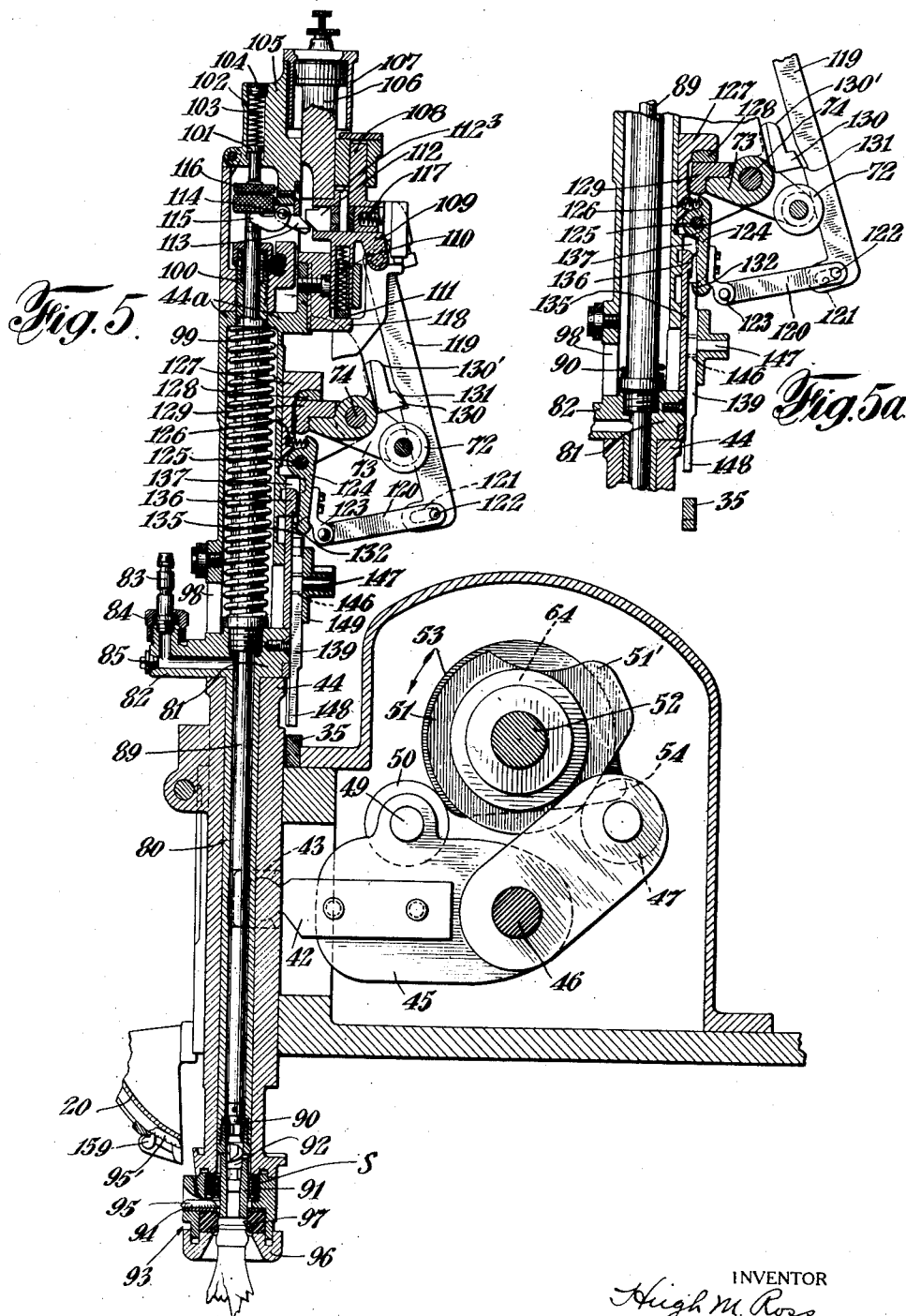
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BOTTLE FILLING AND CROWNING MACHINE

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Fig. 6.

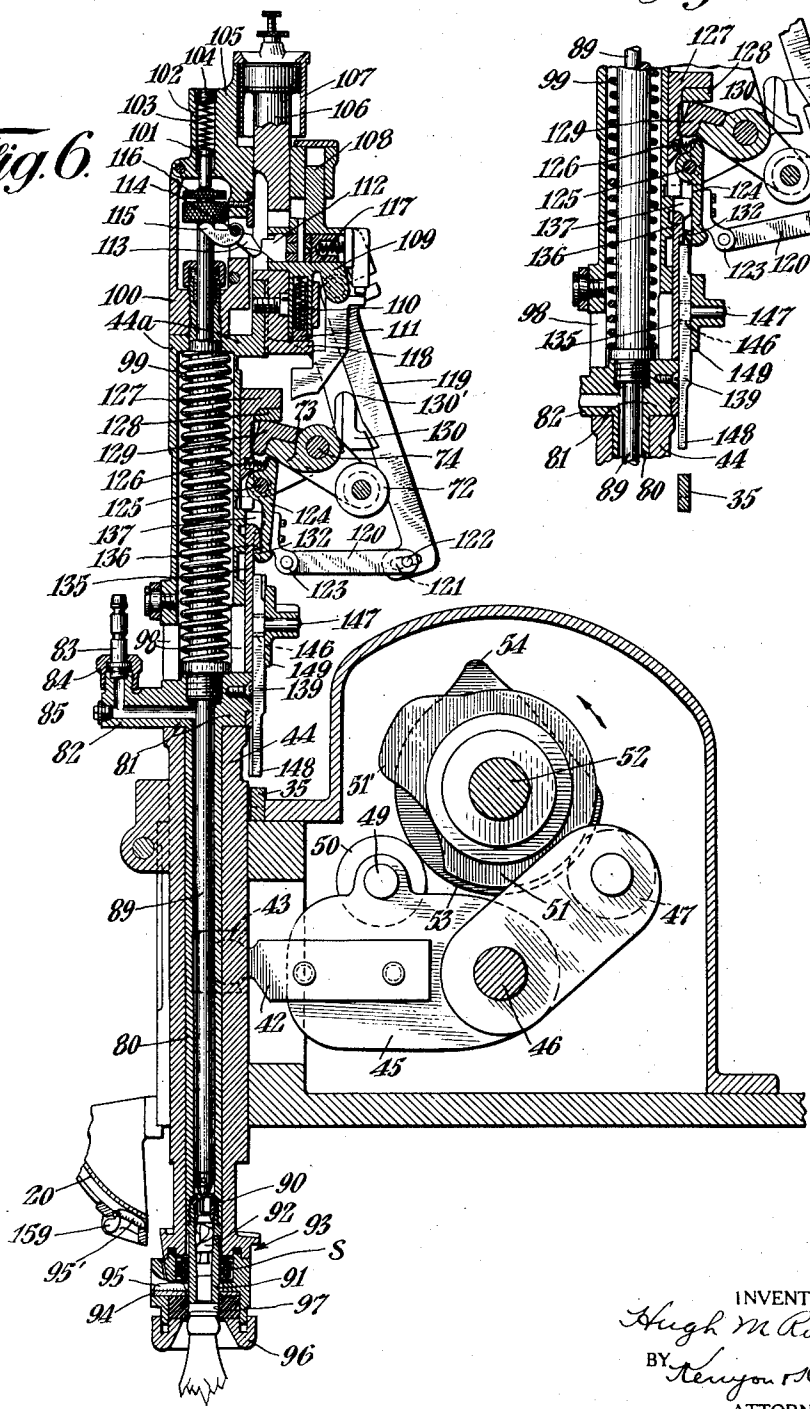
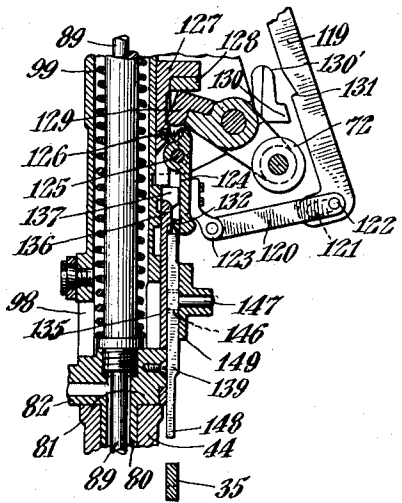


Fig. 6a.



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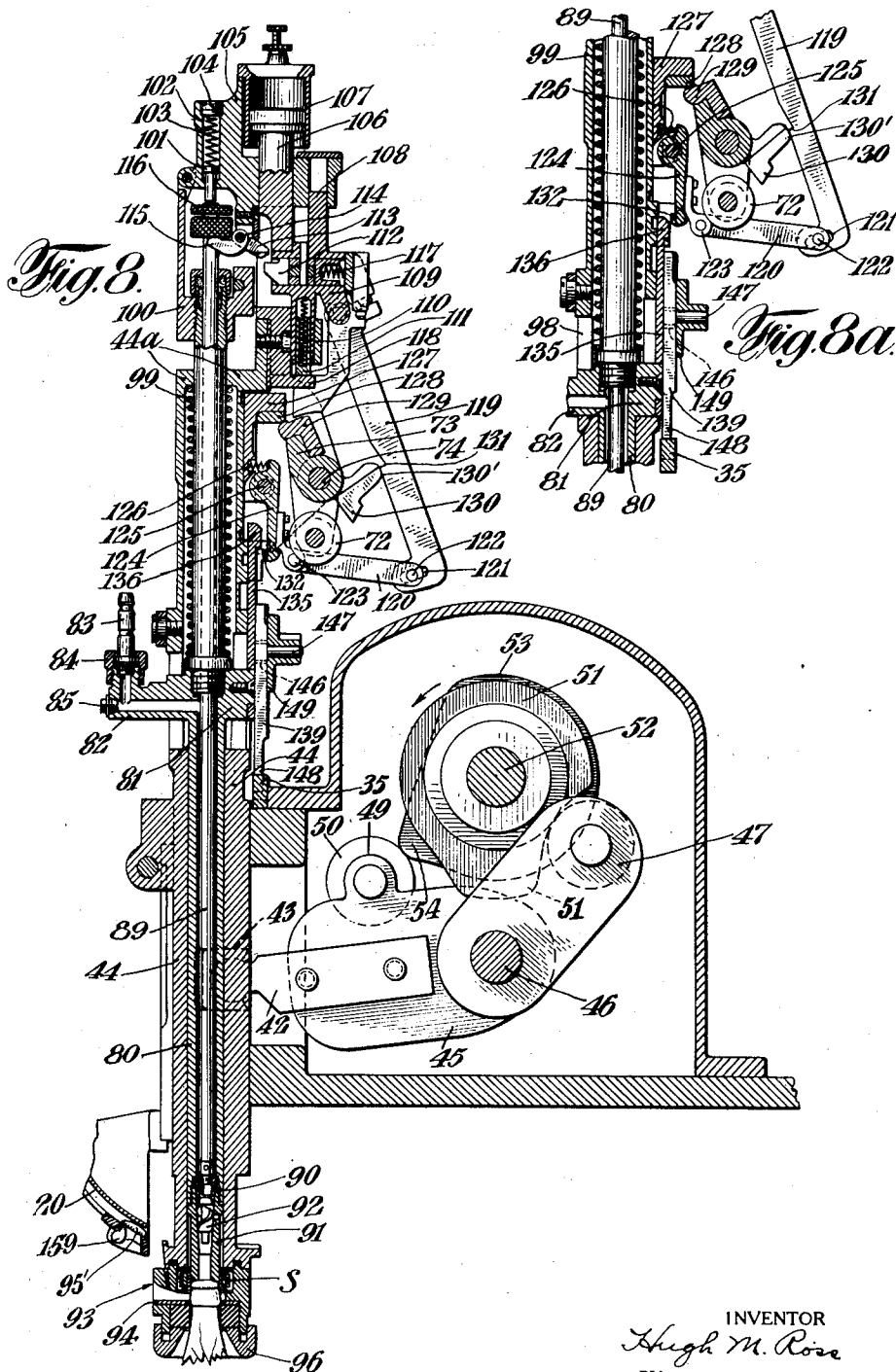
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BOTTLE FILLING AND CROWNING MACHINE

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10 Sheets-Sheet 8



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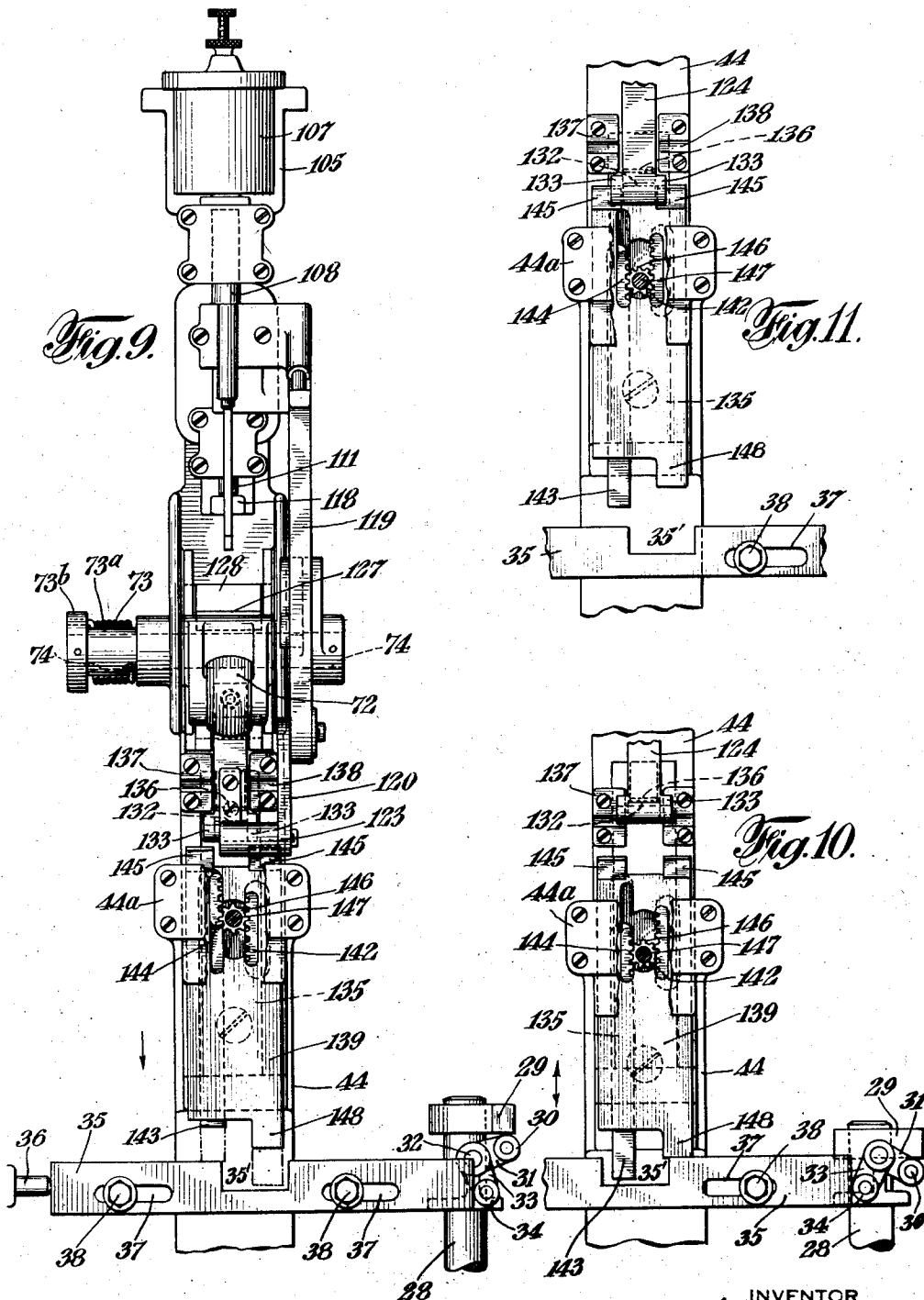
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BOTTLE FILLING AND CROWNING MACHINE

Filed June 11, 1929

10 Sheets-Sheet 9



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BOTTLE FILLING AND CROWNING MACHINE

Filed June 11, 1929

10 Sheets-Sheet 10

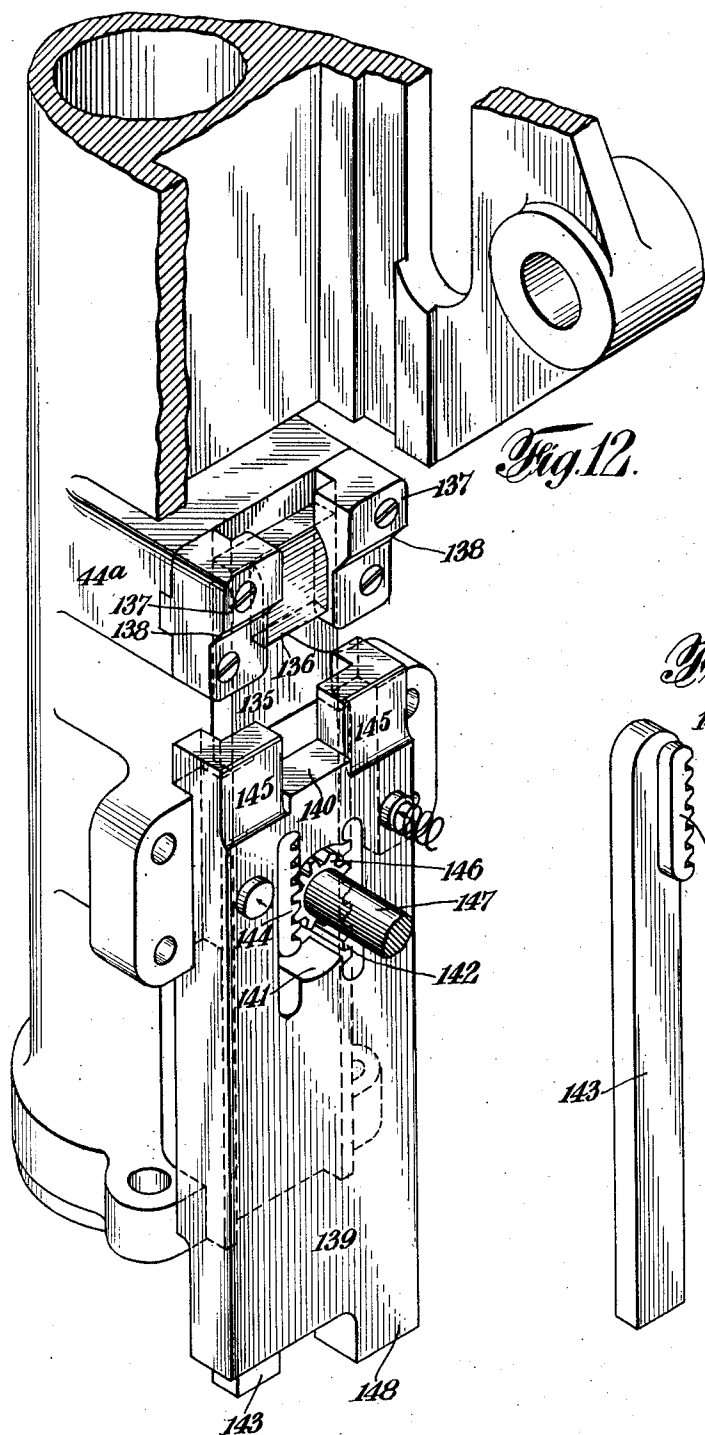


Fig. 12.

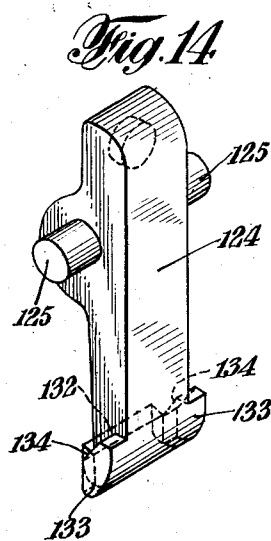


Fig. 14.

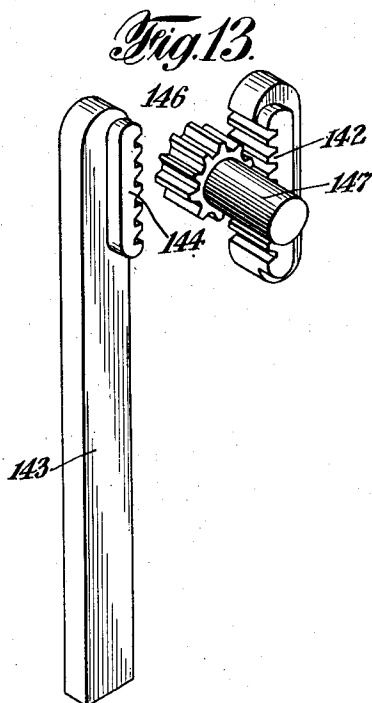


Fig. 13.

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UNITED STATES PATENT OFFICE

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BOTTLE FILLING AND CROWNING MACHINE

Application filed June 11, 1929. Serial No. 370,088.

My invention relates to bottle filling and crowning machines. The principal object of the invention is to provide an automatic machine of that character which is simple in construction and operation. Another object of the invention is to provide improved means for controlling the delivery of the liquid or other material with which the containers are to be filled, and for preventing such delivery when there is no container in position to receive the material.

Another object of the invention is to provide improved means for preventing the delivery of a closure to a position above the container and in operative relation to the closure affixing means when there is no container in position to have a closure affixed thereto.

Other objects, features and advantages will appear more fully in the following detailed description and appended claims.

The accompanying drawings, forming a part of this specification illustrate one embodiment of my invention.

In the drawings,

Fig. 1 is a left side view of a machine embodying the invention.

Fig. 2 is a front view of the same machine.

Fig. 3 is a horizontal section taken on the lines 3—3 of Fig. 1.

Fig. 4 is a section taken substantially on the lines 4—4 of Fig. 3 showing the apparatus for controlling the feeding of water to a bottle, such apparatus being in normal operating position at the beginning of a stroke.

Fig. 4—A is a fragmentary view of a portion of the mechanism illustrated in Fig. 4 showing the position of the mechanism when there is no bottle in place to be filled.

Fig. 5 is a view similar to Fig. 4 of the same mechanism in a succeeding position in operation.

Fig. 5—A is a section similar to Fig. 4—A showing the action of mechanism in Fig. 5 in the absence of a bottle to be filled.

Fig. 6 is a view of the same mechanism shown in Figs. 4 and 5 at a further step in the cycle of operation.

Fig. 6—A is a fragmentary view of a portion of the apparatus for the same position

in the cycle in the absence of a bottle to be filled.

Fig. 7 shows the same mechanism in a still further step in the cycle of operation.

Fig. 7—A shows a fragmentary part of the same apparatus in the absence of a bottle to be filled in the same step in the cycle.

Fig. 8 shows the same mechanism in the completion of one-half of its cycle.

Fig. 8—A is a representation of a fragmentary part of the same apparatus in the absence of a bottle to be filled in the same step in the cycle.

Fig. 9 is a section taken on the lines 9—9 of Fig. 4.

Fig. 10 is an illustration of a fragmentary part of the apparatus shown in Fig. 9 in a different step in the operation thereof.

Fig. 11 illustrates the mechanism shown in Fig. 10 in a different position.

Fig. 12 is an enlarged perspective of a part of the mechanism illustrated in Figs. 9, 10 and 11.

Fig. 13 shows a portion of the parts illustrated in Fig. 12 in enlarged and dismantled condition; and

Fig. 14 is an enlarged perspective view of one of the pieces of apparatus used in the machine.

Fig. 15 is a vertical sectional view, illustrating the syrup dispensing means.

Fig. 16 is a perspective view of certain parts of the mechanism for opening the water valve of the machine.

Referring now to the drawings, 10 indicates the base of the machine adapted to support the mechanism for filling and capping bottles. Extending outwardly from the front of the base 10 is a supporting member 11 which serves as a turret for supporting bottle conveying mechanism 12 which moves the bottles into and out of position to be filled with syrup, then with water and finally capped. The conveyor 12 is preferably constructed and operated the same as the conveyor shown and described in United States Letters Patent Reissue 14,657 to Calleson, to which reference is made for the details of its construction and operation. Briefly stated, it is made up of a number of bottle

receiving pockets movable in a horizontal plane. In each of the two sides of the frame member 10 a substantial distance above the bottle thereof are doors 15 closed by springs 16 which doors serve to permit access to the interior of the frame member 10 and the mechanism contained therein. Pivoted at substantially the same axis as the doors 15 are wing plates 17 for enclosing the syringing and water filling stations.

Near the top of the machine is mounted a hopper 18 for caps or other suitable closures, which caps may be fed by selective mechanism 19 into a chute 20 which leads then into position for attachment to the tops of filled bottles. The mechanism 19 is power operated through the agency of a belt drive 21 passing around a series of pulleys in the usual manner (see Re. 14,657).

Mounted on one side of the machine is a syrup measuring device 22 composed (as shown in Fig. 1) of a pair of cylinders 23, a selective valve 24, an inlet conduit 25 connected with a source of supply and an outlet conduit 26. This measuring device forms no part of the present invention, being the subject of my co-pending application Ser. No. 665,261, filed Sept. 28, 1923. The outlet conduit 26 leads directly into a syringing head 27 which is vertically reciprocated by mechanism to be described more fully hereinafter in connection with Fig. 15. The end of the syringing head 27 is of such shape as to fit around the neck of a bottle to prevent leakage of any of the syrup therearound.

For controlling the operation of the water valve and the delivery of closures to a position above the containers and in operative relation to the closure affixing means, the syringing means 27 is provided with an upwardly extending rod 28 (Figs. 1, 9 and 10) from which extends a projection 29 which in certain positions engages a roller 30 connected to a bell crank 31 secured to a shaft 32 to which is also secured a similar bell crank 33 having mounted thereon roller 34. Roller 34 rests against the end of a horizontally movable control bar 35 which is normally held in contact with the roller 34 by means of plunger 36 pressed towards bar 35 by a spring (not shown). From this it will be seen that should the rod 28 with projection 29 be depressed sufficient to cause movement of crank 31, this movement will be transmitted through crank 33 and roller 34 to move the control bar 35 in a horizontal direction. This movement of bar 35 is, as shown, defined by means of slots 37 through which extend bolts having nuts 38 on the ends thereof. Liquid measured by any suitable measuring device 22 can be fed directly through the head 27 into a bottle 37 positioned on the turret and the height of the turret can be adjusted to cause correct en-

gagement of head 27 with the bottle by means of the vertical adjusting member comprising screw rod 40 (Fig. 2) which may be rotated by means of a handle 41.

Adjacent to the syringing station is the station wherein plain water or carbonated water may be supplied to the bottle and the bottle capped. In Figs. 4, 5, 6, 7 and 8 the water filling head and capping head is shown in section in different positions in its cycle of operation. It is to be understood, however, that the head does not remain in any one of these positions, since its movement is continuous and these views are merely to illustrate positions in its cycle of movement. In Fig. 4 the head in section is shown in its position directly after a bottle is moved by the conveyor mechanism 12 into position to be filled and capped. In this position the entire head is raised relative to the top of the bottle by means of a member 42 having a ball shaped end fitting in a socket in a block 43 slidable horizontally towards and away from the vertical axis of head 44 in a recess provided for the same in the head 44. Member 42 is affixed to a bell crank 45 which is pivoted about the shaft 46 and has a roller 47 at the end opposite from the member 42. Carried at the top of crank 45 is a shaft 49 having rotatably mounted thereon a cam roller 50. Roller 47 rests against and is moved by means of a cam 51 mounted upon a main drive shaft 52 supported in bearings 55 (Fig. 3). The cam 51 is provided with a shoulder 51' which when contacting with roller 47 serves to depress the same and in turn to elevate the member 42 and the head 44. Secured upon the same shaft 52 is a cam 53 which engages the roller 50 and which is provided with a shoulder in the shape of substantially a point 54 which serves when it contacts with the roller 50 to depress the end of crank 45 next the ball 43 and thereby to depress the head 44.

Power to rotate the main drive shaft 52 is supplied from a source of power such as a motor (not illustrated) having a drive pulley 56 (Fig. 1) transmitting power to a pulley 57 by means of belt 58. This pulley 57 is so arranged as to permit rotation to be imparted from it to a shaft 59 (Fig. 3) through a clutch member 60 which may be controlled by means of a handle 62 which extends around into position to be grasped by an operator. To the shaft 59 is affixed a worm (not shown) in mesh with a worm gear 63 keyed upon shaft 52. It will be seen from this that when the clutch 60 is operated by handle 62 and power is supplied to shaft 59, the shaft 52 will be rotated to cause rotation of the cams 51 and 53.

Mounted upon shaft 52 is a cylindrical cam 64 having a guide way 263 cut in its face. This guideway serves to vary the position of a cam roller 65 on an arm 66 secured to the shaft 67 which has keyed thereto arms 68 and

a second arm 69 provided with ears 70. The arms 68 are provided at the extremity thereof with a rail 71 which extends vertically in contact with a roller 72 so that when the arms 68 are moved by means of the barrel cam 64 the rail 71 will press the roller 72 forwardly; and as the roller 72 is carried by the outer end of an arm 73 (Fig. 5) pivoted at 74, this movement will cause the outer end of the arm 73 to be depressed.

For effecting a seal between the gaskets 97 (Fig. 1) and the bottle mouth, the ears 70 (Fig. 3) of arm 69 are adapted to contact with a member 75 which member is secured to barrel springs 76 by means of member 77 secured to one of the springs and member 78 secured to the other, these members 77 and 78 being connected by link 79. The barrel springs 76 serve to compress or release a rubber or other resilient gasket member 97 (Fig. 4) which in certain positions fits around the neck of the bottle to be filled with water to prevent leakage of the same. The mechanism connecting this member 97 with the barrel springs and the details of construction of the barrel springs forms no part of this application, being described in Reissue Patent 14,657, issued June 10, 1919.

The water filling head is composed of a frame member 44, previously referred to, fitting around a tubular member 80 (Fig. 4) which has at the upper end thereof a shoulder 81 and an extension 82 which extension 82 is bored to permit the introduction of the water charge from the source of supply through a nipple 83. Water from the source of supply passes through the conduit 86 (Fig. 2), the measuring device 87 and conduit 88 to the nipple 83. Within the tubular member 80 is a stem 89 the end of which forms a valve seated upon valve seat 90 held in place by means of a tubular nozzle member 91 which is secured to the end of tubular member 80. Within the nozzle 91 is a spirally grooved member 92 which serves to impart a whirling movement to liquid passing from tubular member 80 through nozzle 91 into a bottle. Secured to the lower end of frame member 44 is a crowning head 93 having cut at one side thereof an opening which serves as a shelf 94 upon which a cap 95 may be delivered from chute 20. Slidable upon the end of crowning head member 93 is an annular mouth piece 96 which is connected with the barrel springs 76 (Fig. 3) so as to be movable to vary the compression on gasket 97 and cause it to be squeezed into sealing relation to the bottle or released.

The filling and sealing head member 44 has vertical openings, as indicated at 98 (Fig. 4) so as to permit the shoulder 81 and the extension 82 of tubular member 80 to pass through the said member. The latter extends upwardly from the said openings, as indicated at 44a, in a tubular shape, forming

a chamber through which the upper portion of the valve stem 89 passes, such chamber having therein a spring 99 which serves to press the tubular filling member 80 downwardly until the parts 81 and 82 seat upon the bottom walls of openings 98. The valve stem 89 passes upwardly through the frame member 44a and through a hollow member 100 to the top thereof, the valve stem terminating in a head 101 which slides in a channel 102 secured in the part 105. The head 101 is normally depressed by means of spring 103. As shown in the drawings, the part 105 is also provided with a vertical opening in which slides a rod 106, the enlarged upper end of which fits in a chamber 107 which acts in the nature of a dashpot for a portion of the moving mechanism.

For opening the valve 89, the machine as shown comprises the following mechanism: In a vertical opening in the part 105 slides the stem portion 108 of member 109 which is normally forced upwardly by means of a spring 110. Mounted within a horizontal groove in member 109 is a split frog member 112 having a slanting under surface which engages a lever 113, 115 pivoted at 114, the free end of which engages a knurled head 116 upon the valve stem 89. The member 116 is preferably threaded upon stem 89 so that it may be moved upwardly or downwardly on the stem for the purpose of varying the degree of opening of the valve with respect to the valve seat at the lower end thereof. The split frog member is shown in detail in Fig. 16. It comprises jaws 112' and 112" connected by the vertical pivot 112". A spring pressed member 117 slidable horizontally in member 109 serves to normally keep the jaws of the frog in closed position. Pivotally secured to a depending portion of member 109 is a link 119 having its lower end connected to a second link 120 by means of a pin and slot arrangement (Figs. 4 to 8 inclusive), the arm 119 being provided with a slot 121 engaged by a pin 122 on arm 120. The arm 120 in turn is pivotally connected by member 123 to a hook mechanism 124 pivoted at 125 to member 127 slidable on head member 44a and yieldingly held against rotation by means of a spring 126 located above the pivot 125. Located directly beneath a shoulder of the member 127 and secured thereto is a piece of wear resisting metal 128, against which a crank member 129 pivoted about the axis 74 bears. This crank member 129 is rotated by the lever 73, upon movement thereof from roller 72. Firmly secured or keyed to the shaft 74 is a dog member 130 having a lip fitting within a recess 131 cut in the arm 119 so that upon depression of the said dog member the link 119 and the frog 112 are also depressed. The member 130 is yieldably secured to the member 73 by a spring 73a (Fig. 9) having its ends secured

respectively to a collar 73b secured to the pivot 74 and to the hub of arm 73.

The hook mechanism 124 (Fig. 14) is part of the mechanism for lifting the filling tube 80 to move the same out of obstructing position with respect to a cap on shelf 94. It includes an inwardly directed hook 132. Extending laterally at the lower end from the body of the member 124 are a pair of projections 133 provided with slanting upper surfaces 134, the function of which will be set forth hereinafter. Secured to the shoulder portion 81 of the tubular water supplying member 80 is an elongated vertical extension 135 (Fig. 4), the upper end of which is provided with a thickened portion formed in the shape of a hook 136 more clearly shown in Fig. 12. As shown clearly in Fig. 12, the member 135 is slidable in a slot formed in a part of the sealing and filling head member 44a. Secured to the member 44a at approximately the point of uppermost travel of sliding member 135 are a pair of shoulders 137 having inclined under faces 138 conforming to the shape of the upper inclined surfaces 134 of the hook mechanism 124, as clearly shown in Fig. 14, so as to cooperate therewith in disengaging hooks 132 and 136.

For preventing engagement of the hooks 132 and 136 when there is not a bottle to be filled and crowned, member 44a carries a member 139 which is slidable vertically with respect to the member 44a but is normally movable with the same by reason of its frictional engagement therewith. The member 139 has an upper portion cut away as indicated at 140 (Fig. 12) and a centrally disposed portion a short distance below the top thereof cut away, as shown at 141. The walls of this cut-away portion 141 are provided with teeth 142 to form a rack. Slidable within this extension 139 is a metallic bar 143 provided with a rack portion 144 which normally enters into the opening 141. The upper end of extension 139 terminates in a pair of shoulder members 145 which function to obstruct the hook member 124 and prevent engagement of the hook 132 with hook 136. Engaging the rack members 142 and 144 is a pinion 146 mounted upon a shaft 147 which is rotatable in the frame member 149 secured to head member 44a. (Fig. 3). The lower end of the extension 139 is provided with a depending portion 148.

The syrup dispensing device (Fig. 15) includes a tubular receiver 152 having a nipple 153 connected with the flexible tube 26 leading from the syrup pump. The receiver 152 is arranged to be reciprocated vertically in a guide 154 of the frame, being suspended by a rod 155 having a friction strip connection 156 with the receiver and connected with the vertically movable head 44. Fitted over the lower end of the tubular receiver 152 and movable vertically thereon is a fun-

nel-shaped mouthpiece 157 whose downward movement may be limited by contact of shoulder 157a with shoulder on the receiver 152. The mouthpiece is yieldingly held in its lowermost position with respect to the receiver by spring 158. The passage through the tubular receiver 152 is restricted to form a valve seat 160 which is normally closed by a valve 162 held against its seat by spiral spring 163 contained in the receiver. The valve 162 has a port 164 which extends from its lower end to a point near the seating part of the valve and is then turned off laterally and another port 165 which extends from the upper end of the valve and then provides openings at the side of the valve short of its seat part. The valve includes a lower stem having an enlargement or head (which affords the seating part), but the stem of the lower valve has a reduced extension 166 penetrating the mouthpiece 157 and leaving a shoulder 167 which normally stands below the lower end of the tubular receiver part 152.

On the down stroke of the receiver, if no bottle is present, there will be no delivery of syrup because valve 162 remains closed. If a bottle is present the descent of the mouthpiece is stopped thereby allowing the lower end of valve 162 to enter the bottle (to serve as a delivery nozzle), whereupon said valve is also stopped and becomes unseated at 160 upon the further downward movement of the receiver. A predetermined amount of syrup is now forced by the pump 22 through the receiver, around the valve head into the valve stem and then into the bottle.

The operation of the machine is substantially as follows. A bottle to be filled is first moved into the syringing station (Fig. 2), in which position the syringing head 27 is lowered by the usual mechanism and syrup measured in the measuring device 22 permitted to flow into the bottle. When there is a bottle in the syringing station, the rod 28 on the syringing head (see Figs. 1, 9 and 10) is elevated so that the shoulder 29 on the upper end thereof does not depress the roller 30. Due to the spring plunger 36, the rod or bar 35 is accordingly left in normal position as illustrated in Fig. 9. After the syringing operation is completed, the bottle is moved by the conveyor mechanism forming a part of the turret 11 into position to be filled with water and capped, such position being shown in Fig. 4. At this time, the hook of the member 124 rests against the slidable bar 135 somewhat below the hook portion thereof 136. The rack members 142 and 144 are in substantially the position relative to pinion 146 as illustrated in Figs 9 and 12. The shoulder 51' of roller cam 50 is engaged with the roller 47, thereby holding the frame member 44 in its uppermost position. In this position, the valve at the end of stem 89 is closed and a cap

95 is resting on shelf 94 ready to be inserted over the mouth of the bottle.

As the shaft 52 rotates, the shoulder 51' is moved out of engagement with the roller 47 while the cam 53 causes the member 42 to force the filling and capping head member 44 downwardly as shown in Fig. 5. The action of spring 99 causes the tubular filling member 80 to move concurrently with the member 44, which movement is translated into a simultaneous downward movement of the entire filling and capping head mechanism. In Fig. 5, the head is shown in position somewhat lower than Fig. 4, but this position is not the lowermost position, but is merely one stage of a downward movement of such head. It will be seen that the shelf 94 is no longer in alinement with the stationary cap chute 20, the next succeeding cap 95' being prevented from falling from the chute 20 by catch or stop 159. In the position shown in Fig. 5, the head has moved an amount sufficient to permit the top of the bottle to enter the annular resilient gasket 97.

Fig. 6 illustrates the mechanism in position as effected by a further movement of the main shaft 52. Due to cam lever 65 (Fig. 3) following the cam groove 263, the forked member 69, 70 is moved to strike the projection 75 releasing springs 76, which causes the resilient gasket 97 to be contracted around the neck of the bottle as shown in Fig. 6 and as more fully explained in United States Letters Patent Reissue 14,657. Likewise, movement of the shaft 67 caused by this cam lever 65 moves the arms 68 with its vertical rail 71, which strikes the roller 72, moving it inwardly and downwardly about the pivotal axis 74 causing the dog 130 to force the arm 119 downwardly a slight amount. This movement of the arm 119 pulls the member 109 downward, causing the split frog member 112 to rotate the arm 115 about axis 114 due to the engagement of the frog and the arm 113. This movement of the arm 115 lifts the knurled nut 116 thereby elevating the valve stem 89 an amount sufficient to clear the valve seat at the bottom thereof. As soon as this valve seat is cleared by the valve, water, carbonated or plain, introduced from an outside source flows through the tubular member 80 around the stem 89 downwardly into and through the spiral agitator 92 and the cylinder 91 into the bottle, leakage being prevented by means of the contracted ring 97. Furthermore, this movement of roller 72 has caused rotation of shaft 74 and arm 129, which latter in turn elevates the member 127 and the hook mechanism 124 pivoted thereto an amount sufficient to permit the hook 132 to engage with the corresponding hook 136 attached to the sliding bar 135.

A later position of the parts in the cycle of operation is shown in Fig. 7. Continued movement of the arm 68 and rail 71 (Fig. 3)

causes further movement of roll 72 inwardly and downwardly, thereby further rotating the shaft 74, which disengages the lip of dog 130 from recess 131, freeing the link arm 119, which is swung outwardly to its maximum position by means of the shoulder 130' forming a part of dog 130. As soon as the link 119 is free, the spring 110 forces the member 109 upwardly. The rotation of shaft 74 has also caused the arm 129 to elevate the member 127 and hook mechanism 124. This movement of the hook mechanism 124 elevates the sliding bar 135, which in turn raises the member 81 and tubular member 80 an amount sufficient to close the valve at the bottom of stem 89. Through tubular member 81', the member 105 carrying lever 113, 115 has been elevated so that the lever arm 113 has slipped over the front of frog 112 to a position above it. The raising of tubular member 80 and cylindrical mouth 91 secured thereto clears the shelf 94, permits cap 95 to be pushed into position above the bottle, as fully described in said Letters Patent Reissue No. 14,657.

A later step in the cycle of operation of the head is illustrated in Fig. 8. The continued rotation of main shaft 52 has caused the shoulder 54 of cam 53 to depress the roller 50 and the arm 45, the roller 47 entering into a hollowed-out portion of cam 51 so as not to interfere with this movement of the arm 45. This downward movement of arm 45 forces the head member 44 downwardly to cause the crimping of cap 95 about the top of the bottle by the sealing throat S which may be constructed as shown in United States Patent No. 1,078,607. Simultaneously, further rotation of the main shaft 52 has caused further movement of arms 68 and rail 71 (Fig. 3) which moves the roll 72 inwardly and downwardly a still further amount, thereby imparting additional rotary movement to shaft 74. This rotary movement is in turn communicated to the arm 129, which, bearing against the bearing piece 128, raises the member 127 and hook mechanism 124 still higher. As the hook mechanism 124 is elevated, the extensions 133 (Fig. 14) at the bottom thereof come into contact with the shoulders 138 (Fig. 12) which rotate the hook mechanism 124 about its axis 125 upon the continued upward movement thereof, thereby forcibly releasing and separating the hook members 132 and 136. It will be noted in connection with Fig. 8 that, as the member 44 is pushed downwardly by arm 42, the filling tube 80 which normally follows movement of member 44 due to spring 99, is arrested in its movement by reason of the cylindrical outlet 91 of the filling tube striking the cap on top of the bottle. The continued downward movement of member 44 imparts the necessary power to cause crimping of the cap 95 about the neck of the bottle by the sealing throats.

The bottle having been filled and capped, continued rotation of main shaft 52 moves the cams 51 and 53 into position to restore the head to its starting point at the beginning of a cycle, as illustrated in Fig. 4. The barrel cam roller 65 in following the cam groove 263 (Fig. 3) moves the arm 71 to permit the roller 72 to move outwardly and upwardly, releasing the upper pressure on member 127, thereby permitting this member and hook mechanism 124 pivoted thereto to descend to their normal position. The remaining parts are also restored to the position illustrated in Fig. 4, the members 112¹ and 112² of the split frog 112 separating by reason of the wedging action of the lower portion of lever 113 to permit the said lever to pass below the split frog; and, if a bottle has been in the syringing station, while this operation has been carried on, the continued rotation of main shaft 52 will cause a repetition of the cycle of movement hereinbefore set forth.

If for any reason there should be a failure to move a bottle into position at the syringing station to be filled with syrup so that there is an empty space in the conveyor at that point, the usual mechanism for preventing flow of syrup from the head 27 is brought into operation, and in addition thereto mechanism is energized for preventing the passage of water from the water-filling head and the passage of a cap into position in the capping device in the next succeeding cycle when the said empty space in the conveyor is under the water filling and capping head.

Let it be assumed, then, that a bottle is not in position to be filled with syrup. The syrup head 27 descends and, since no bottle is there to arrest its downward movement, it moves further than normally. Such movement causes the shoulder 29 (Figs. 9 and 10) fastened to rod 28 to strike the roller 30, thereby causing roller 34 to move the bar 35 against the normal pressure of spring plunger 36. It is to be noted by reference to the dotted lines in Fig. 9 (which shows the normal operation of the machine) that movement downwardly of the member 139 (Figs. 4 and 9 to 12) with head member 44 permits the extension 148 of the member 139 to enter the notch 35' in bar 35 while the end of rod 143 comes to rest substantially upon the top of bar 35. When this bar is moved over as shown in Fig. 10, the bottle under the water filling and capping head (which bottle is just ahead of the empty position in the conveyor under the syringing head) is filled and capped in the usual way; but as the member 139 moves downwardly, the extension 148 strikes the top of bar 35, arresting movement of the member 139. The frame member 44 continues its downward movement filling and capping the bottle then in position, however, carrying the pinion 146 along with it and, since the rack 142 is stationary, this move-

ment of the pinion causes downward movement of the bar 143, during which the end of the bar 143 enters the cut-away portion 35'. As a result of this transposition of the racks 142 and 144 relative to the pinion 146, when the member 139 is restored to its uppermost position through upward movement of the member 44, the shoulders 145,—instead of lying just below the extensions 133 of the hook mechanism 124 as shown in Fig. 9,—will have moved to a position directly in back of these members as shown in Fig. 11, thereby forcing and holding the hook member 124 outwardly from its normal position. The difference in the normal and abnormal positions is shown respectively in Figs. 4 and 4a.

In the absence of a bottle to be filled with water, the operation is substantially as follows. Consider, first, Fig. 4a. The hook member 124 is held outwardly, away from normal position as before explained, and link 120 consequently holds the arm 119 outwardly an amount sufficient to avoid engagement of the lip of dog 130 with the recess 131.

Consider next the movement in the cycle to the position exemplified by Fig. 5a. The entire mechanism of the head has been moved downwardly by the arm 42 in the same manner as before explained, but otherwise the parts shown in Fig. 5a occupy the same relative positions as shown in Fig. 4—A.

Further movement of the machine brings the parts to the position shown in Fig. 6—A. The roll 72 (Fig. 3) has been moved inwardly and downwardly in the manner before explained, but, as the dog 130 is not engaged with the bottom of the recess 131, arm 119 is not depressed and consequently the member 109 is not moved downwardly and the frog 112 remains in position above the arm 113 without depressing the same, with the result that the valve stem 89 is not elevated and the water valve remains closed. Flow of water into the empty space below the water filling head is accordingly avoided.

In the position of parts shown by Fig. 7—A, after continued movement of roll 72 inwardly and downwardly, the hook 132 is held out of engagement with hook 136 by means of the shoulder members 145 so that the shoulder 81 remains seated on member 44 and the filling tube 80 remains in its lower position with respect to the member 44, whereby the outlet portion 91 of the filling tube obstructs the passage of a cap to a central position in the head above the gasket 97.

Fig. 8—A shows a later position of the mechanism in the absence of a bottle to be filled, showing the contact of the members 148 and 143 with the bar 35 after the point in the cycle where the crowning ordinarily takes place. Should there be no bottle in the syringing position when the water-filling and crowning head has reached this position, the bar 35 will maintain the position shown in

Fig. 10, and accordingly the part 143 will enter the slot 35' and the same operation will result as explained in connection with Figs. 4a to 7a inclusive. Should, however, a bottle have been in position at the syringing station during this downward movement of the syringing head, the pressure exerted upon the end of bar 35 by roller 34 will be relieved and the plunger 36 will restore the said bar to normal position shown fully in Fig. 9 and partially in Fig. 11. During the movement to the position shown in Fig. 8—A, the extensions 143 and 148 have been moved downwardly to the bar 35. The bar 35 being in its normal position, it will be evident that the rack 143 will have struck the top of bar 35 so as to reverse the positions of racks 142 and 144 relative to pinion 146 and thereby restoring these racks to their normal positions shown in Fig. 9. This repositioning having been accomplished, the mechanism, upon return to its starting point of a cycle, will be in position in the following cycle to operate again to permit the passage of water into the bottle and to cap the same in the manner described in connection with Figs. 4 to 8 inclusive.

It will be seen from the foregoing that the control of the water valve and of the cap obstructing tube 80 is set by the presence or absence of a container at the syringing station in the cycle of the machine in advance of that for which the control is set. In other words, the control is set when a given pocket in the conveyor is under the syringing head; and that setting determines whether the water valve is to open and the tube 80 move out of obstructing position in the next cycle of the machine when the same pocket is under the water-filling head.

While I have shown one embodiment of my invention, it is to be understood that changes may be made within the scope of the appended claims without departing from the spirit of the invention.

I claim:

1. In a container filling machine, the combination of container conveying means, means for delivering a charge of syrup to a container in said conveyor, means for delivering a charge of water to the container at a later station of said conveying means, a valve for said water delivery means, means for opening said valve, and controlling means operable in the absence of a container in the conveyor at the syringing station to prevent delivery of syrup by said syrup delivery means and to render said valve operating means inoperative in the following cycle of the machine.

2. The combination of a container conveyor, means for applying a closure to a container in the conveyor at a predetermined station, means for delivering a charge to the container including an obstructing member arranged to prevent passage of a closure into po-

sition to be applied, means for moving said member out of obstructing position, and means for rendering said moving means inoperative in the absence of a container at an earlier station in the conveyor.

3. The combination of a container conveyor, means for applying a closure to a container in the conveyor at a predetermined station, means for delivering a charge to the container including a tubular obstructing member arranged to prevent passage of a closure into position to be applied, means for moving said member out of obstructing position, and means for rendering said moving means inoperative in the absence of a container at an earlier station in the conveyor.

4. The combination of container conveyor, means for delivering a charge at a given station to a container in said conveyor, means for delivering another charge to the container at a later station, means for applying a closure to the container after the delivery thereto of the second named charge, said second named delivery means being provided with an obstructing member arranged to prevent the passage of a closure into position to be applied to the container, means for moving said member out of obstructing position, and means for rendering said moving means inoperative in the following cycle in the absence of a container at the first named station.

5. The combination of container conveyor, means for delivering a charge at a given station to a container in said conveyor, means for delivering another charge to the container at a later station, means for applying a closure to the container after the delivery thereto of the second named charge, said second named delivery means being provided with a tubular obstructing member arranged to prevent the passage of a closure into position to be applied to the container, means for moving said member out of obstructing position, and means for rendering said moving means inoperative in the following cycle in the absence of a container at the first named station.

6. The combination of a container, means for delivering a charge and applying a closure to a container in the conveyor at a predetermined station, said means being provided with a valve and an obstructing member arranged to prevent passage of a closure into position to be applied, means for opening said valve and for subsequently moving said member out of obstructing position, and means for rendering said last named means inoperative in the absence of a container at an earlier station in the conveyor.

7. The combination of container conveyor, means for delivering a charge at a given station to a container in said conveyor, means for delivering another charge to the container at a later station, a valve for said last-named means, means for applying a closure

to the container after the delivery thereto of the second named charge, said second named delivery means being provided with an obstructing member arranged to prevent the
 5 passage of a closure into position to be applied to the container, means for opening said valve and for subsequently moving said member out of obstructing position, and means for rendering said last-named means inoperative
 10 in the following cycle in the absence of a container at the first-named station.

8. The combination of container conveyor, means for delivering a charge of syrup at a given station to a container in said conveyor,
 15 means for delivering a charge of water to the container at a later station, a valve for said last-named means, means for applying a closure to the container after the delivery thereto of the second named charge, said second
 20 named delivery means being provided with a tubular obstructing member arranged to prevent the passage of a closure into position to be applied to the container, means for opening said valve and for subsequently moving
 25 said member out of obstructing position, and means for rendering said last named means inoperative in the following cycle in the absence of a container at the first named station.

9. The combination of means for delivering a charge to a container, a valve therefor, and means for moving said valve including
 30 coacting members, one of said members having pivotally connected parts which are movable apart to permit one of the members to
 35 pass the other in one direction.

10. The combination of means for delivering a charge to a container, a valve therefor, and means for moving said valve including a
 40 lever coacting with said valve, and a frog coacting with said lever and having pivotally connected parts movable apart to permit said lever and said frog to pass each other in one
 45 direction, and means tending to yieldingly hold said parts together.

11. The combination of means for delivering a charge to a container, a valve therefor, means for operating said valve, and controlling
 50 means for rendering said valve operating means inoperative, said controlling means including a control bar, container actuated means for controlling the position thereof, and a plurality of members coacting with
 55 said bar, said members being interconnected to move in opposite directions.

12. The combination of means for delivering a charge to a container, a valve therefor, means for operating said valve, and controlling
 60 means for rendering said valve operating means inoperative, said controlling means including a control bar, container actuated means for controlling the position thereof, and a plurality of rack members coacting
 65 with said bar, said members being interconnected to move in opposite directions.

13. The combination of means for affixing a closure to a container, a member for obstructing the passage of the closure into operative relation to the container, means for
 70 moving said member out of closure obstructing position, and means for rendering said moving means inoperative, including a container controlled device and a plurality of racks coacting with said device, said racks
 75 being interconnected to move in opposite directions.

14. The combination of means for affixing a closure to a container, a member for obstructing the passage of the closure into operative relation to the container, means including a hook for moving said member out
 80 of closure obstructing position, and means for holding said hook in inoperative position including a controlling device and rack mechanism coacting with said device.

15. The combination of means for affixing a closure to a container, a member for obstructing the passage of the closure into operative relation to the container, means including a hook for moving said member out
 90 of closure obstructing position, and means for holding said hook in inoperative position including a horizontally shiftable control member, container operable means coacting with said control member to control the
 95 setting thereof, and rack mechanism operable by said control member.

16. The combination of means for delivering a charge to a container, a valve therefor, means for affixing a closure to the container, a member for obstructing the passage of the
 100 closure into operative relation to the container during the delivery of the charge thereto, operating means for opening said valve and subsequently moving said member out of closure obstructing position, and means for rendering
 105 said operating means inoperative including a control member, container operable means for controlling the position thereof, and rack mechanism operable by said control member.

17. The combination of means for delivering a charge to a container, a valve therefor, means for affixing a closure to the container, a member for obstructing the passage of the
 110 closure into operative relation to the container during the delivery of the charge thereto, operating means for opening said valve and subsequently moving said member out of closure obstructing position, said operating
 115 means including a lift hook and valve operating means connected with said hook, and means for moving said hook to inoperative position and rendering said valve operating means inoperative.

18. The combination of means for delivering a charge to a container, a valve therefor, means for affixing a closure to the container, a member for obstructing the passage of the
 120 closure into operative relation to the container,

1 tainer during the delivery of the charge
thereto, operating means for opening said
valve and subsequently moving said member
out of closure obstructing position, said op-
5 erating means including a lift member and
valve operating means including coacting
power transmitting members one of which is
connected with said lift member, and means
for moving said lift member to inoperative
10 position and rendering said valve operating
means inoperative.

19. The combination of means for deliver-
ing a charge to a container, a valve therefor,
means for affixing a closure to the container,
15 a member for obstructing the passage of the
closure into operative relation to the con-
tainer during the delivery of the charge there-
to, operating means for opening said valve
and subsequently moving said member out
20 of closure obstructing position, said operat-
ing means including hook mechanism for
lifting said obstructing member and valve
operating means including a dog and a power
transmitting member coacting with said dog
25 and connected with said hook mechanism,
and means for rendering said hook mecha-
nism and said dog inoperative.

In testimony whereof, I have signed my
name to this specification.

30 HUGH M. ROSS.