Aug. 9, 1932. G. J. MEYER 1,870,373

BOTTLE CORKING MACHINE

Filed April 3, 1931 6 Sheets-Sheet 1

FIG. 1

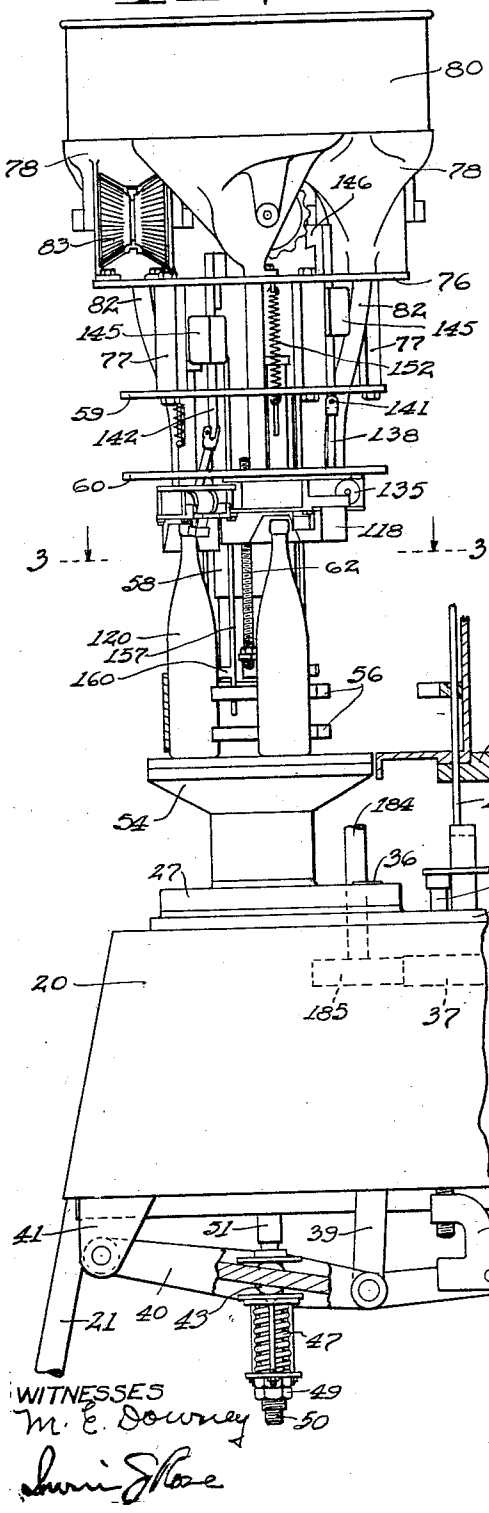


FIG. 2

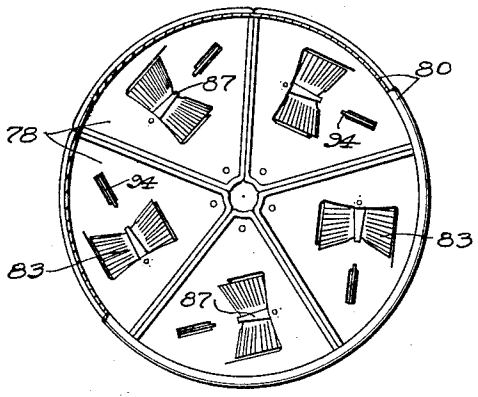
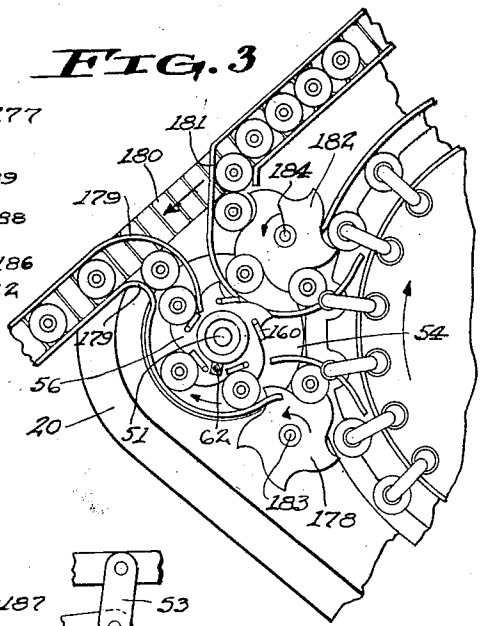


FIG. 3



WITNESSES

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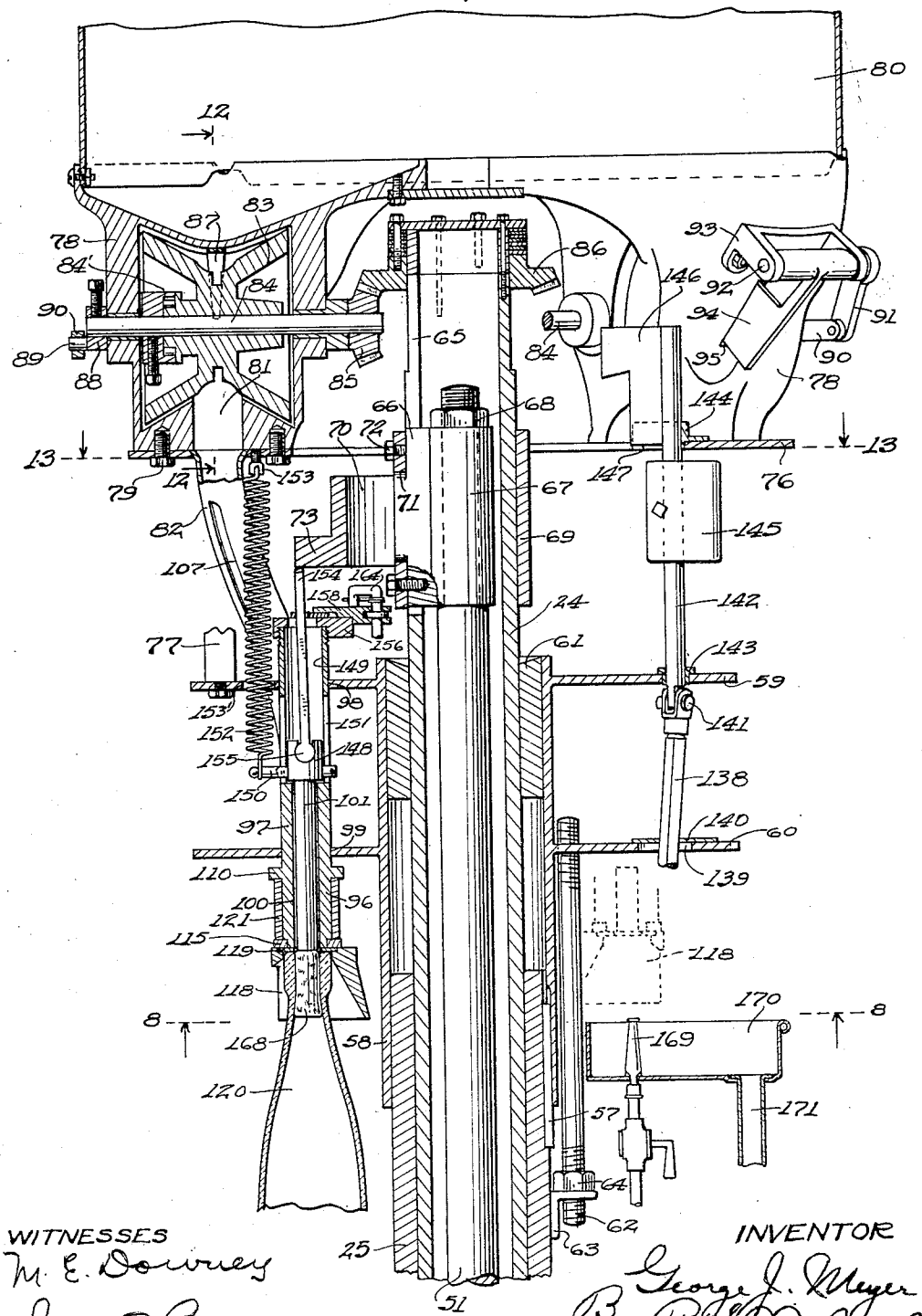
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BOTTLE CORKING MACHINE

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FIG. 4



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BOTTLE CORKING MACHINE

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FIG. 5

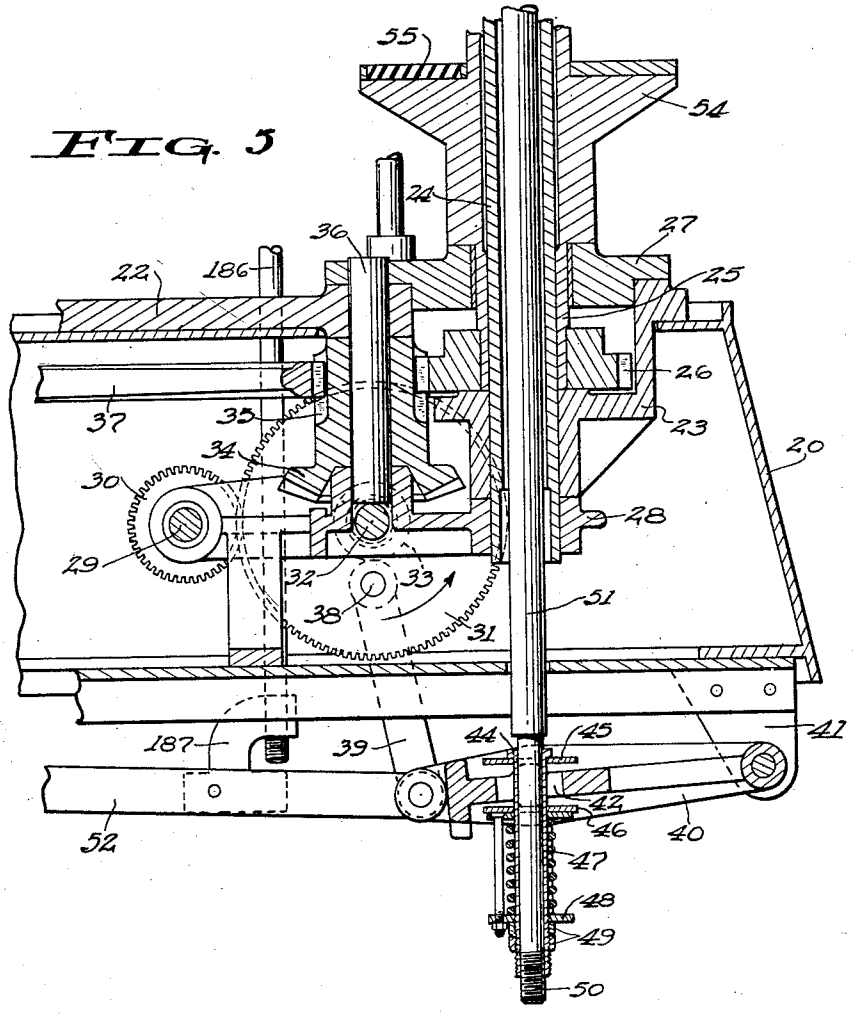
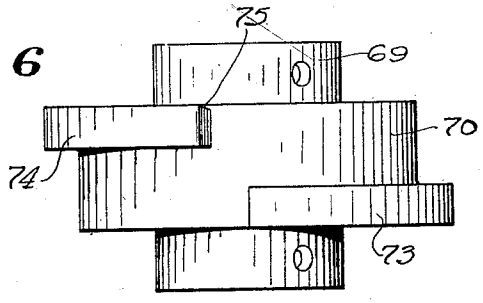


FIG. 6



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BOTTLE CORKING MACHINE

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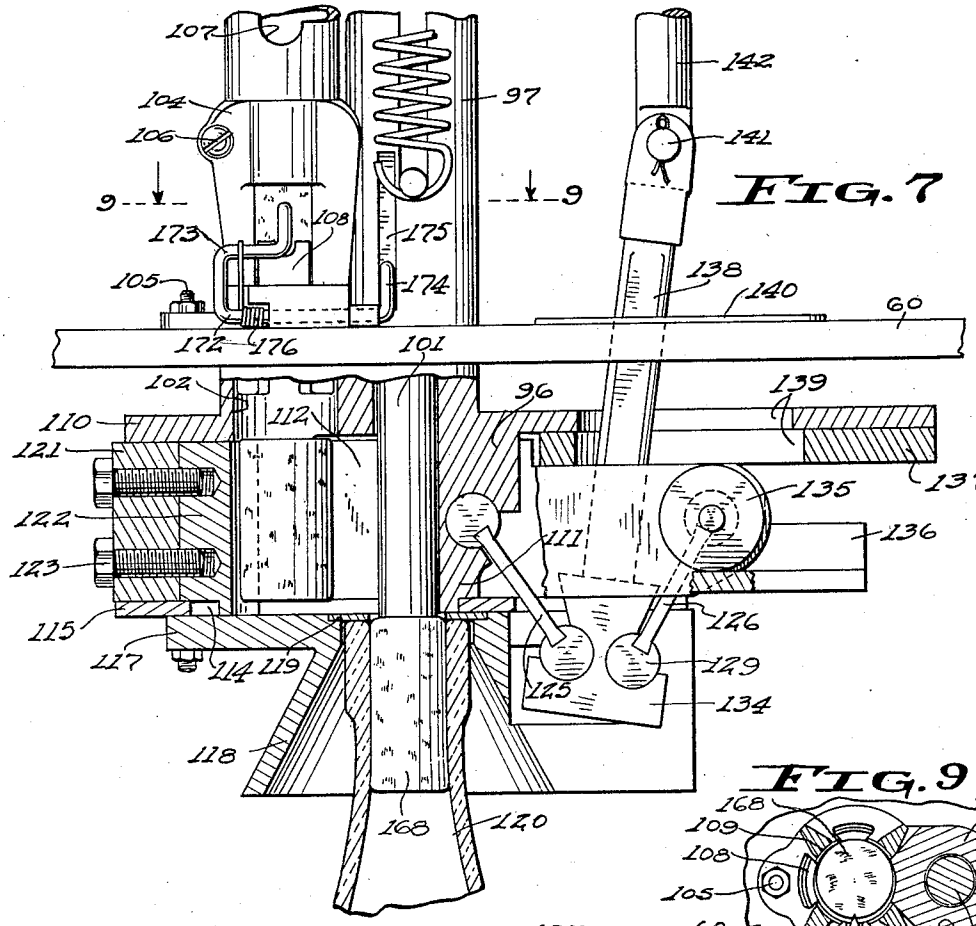


FIG. 7

FIG. 9

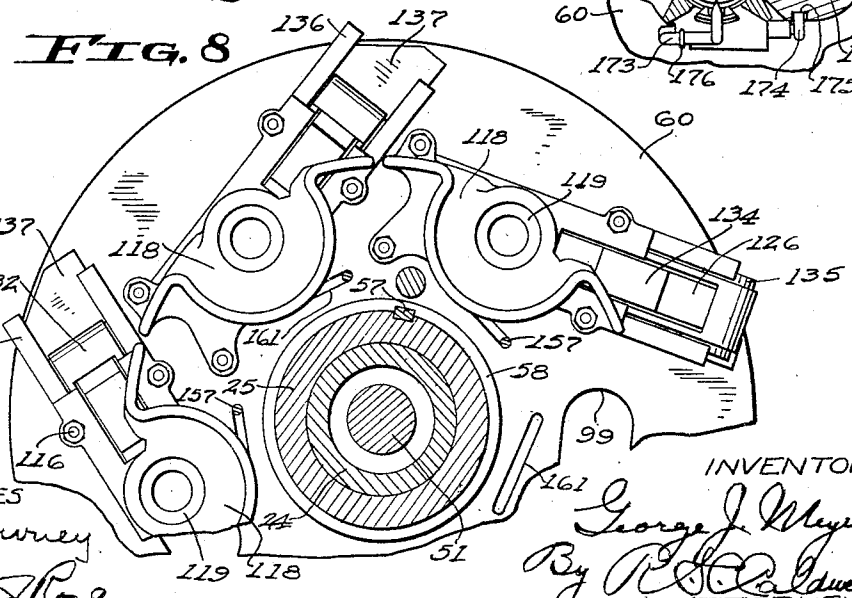


FIG. 8

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Aug. 9, 1932. G. J. MEYER 1,870,373

BOTTLE CORKING MACHINE

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FIG. 10

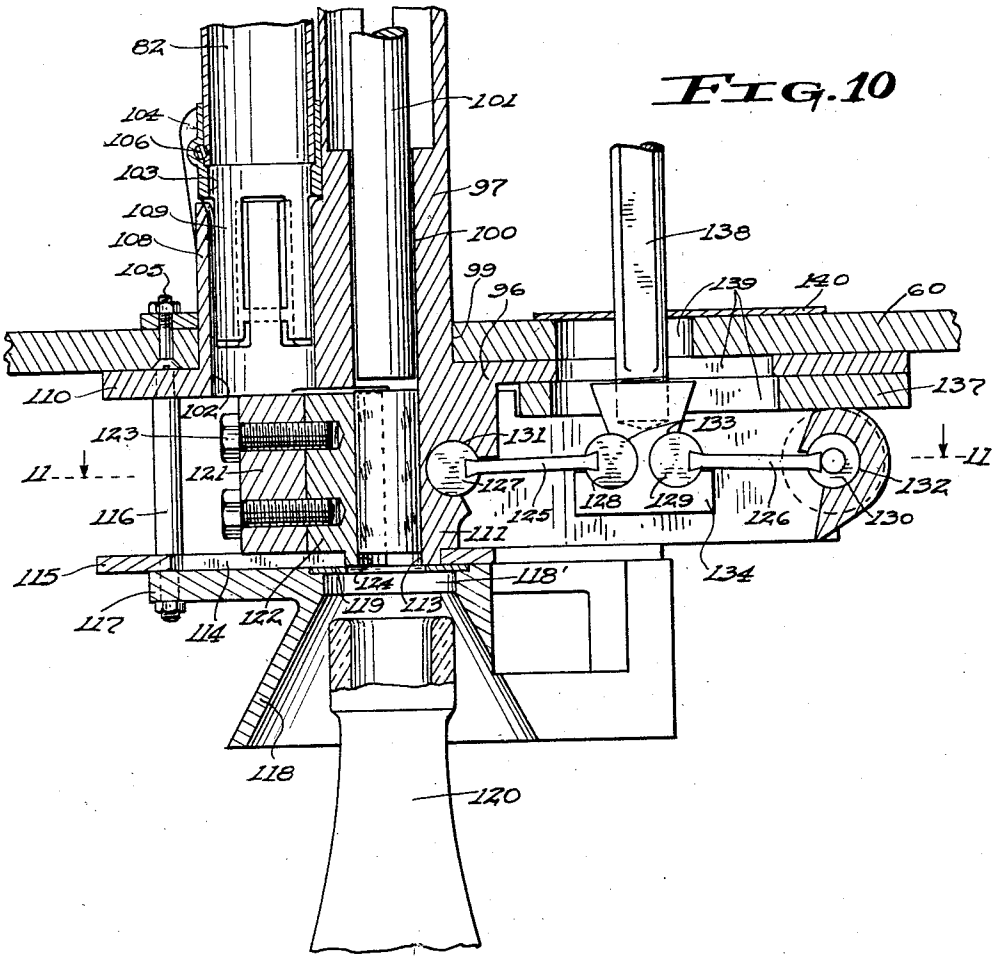
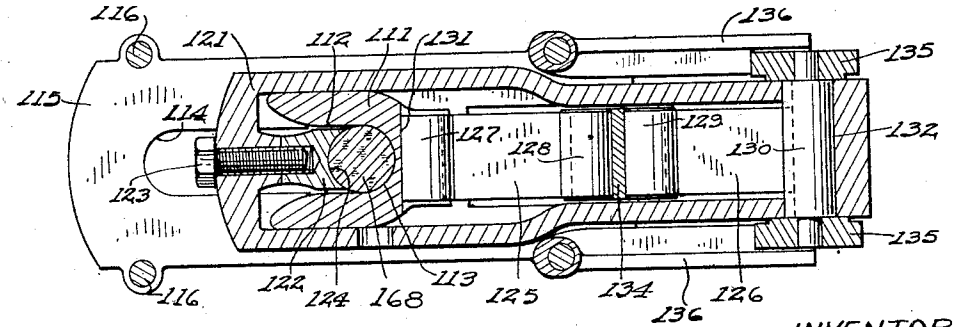


FIG. 11



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BOTTLE CORKING MACHINE

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FIG. 12

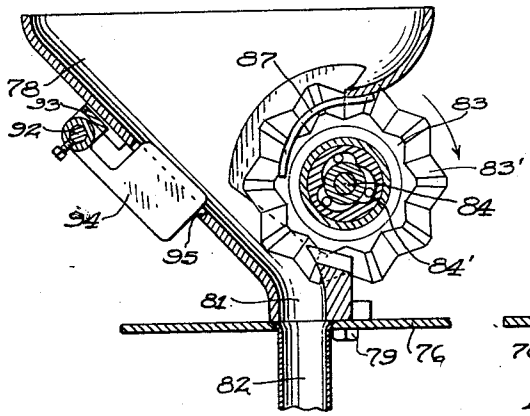


FIG. 15

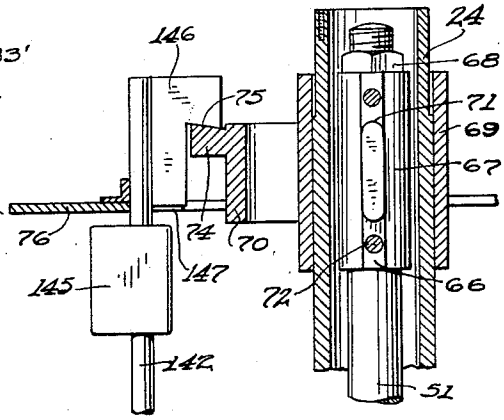


FIG. 13

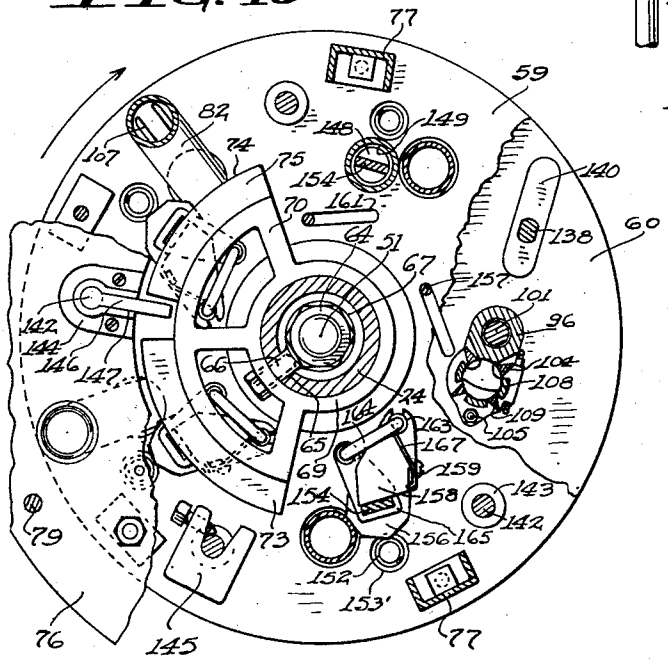
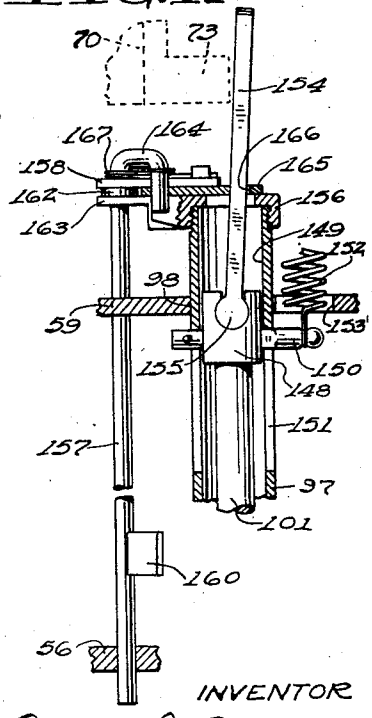


FIG. 14.



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Patented Aug. 9, 1932

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UNITED STATES PATENT OFFICE

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BOTTLE CORKING MACHINE

Application filed April 3, 1931. Serial No. 527,438.

The invention relates to container-closing machines and more particularly to machines for corking bottles.

An object of the invention is to provide a bottle-corking machine including a revoluble group of cork-compressing and cork-driving devices which are both operated by the same reciprocatory actuating means common to the group, the cork-compressing being effected on one stroke of the actuating means and the cork-driving being effected on the other stroke of the same means.

Another object of the invention is to provide a corking machine in which the cork-compressing is effected by toggle means, and in which the toggle means is retained in its compressing position by the compressed cork until the cork is driven.

A further object of the invention is to provide individual cork hoppers for the several corking devices.

A further object is to provide means for washing and spraying the corks after they are compressed.

A further object is to provide cork-driving means in which the operative movement of a cork-driving element is controlled by the presence of the bottle in corking position.

A further object of the invention is to perfect details of construction generally.

The invention further consists in the several features hereinafter set forth and more particularly defined by the annexed claims.

In the accompanying drawings, Fig. 1 is a side elevation of a bottle-corking machine embodying the invention;

Fig. 2 is a top plan view thereof, parts being broken away and parts being shown in section;

Fig. 3 is a sectional view of the machine taken along the line 3—3 of Fig. 1;

Fig. 4 is a sectional elevation of the upper portion of the machine;

Fig. 5 is a sectional elevation of the lower portion of the machine;

Fig. 6 is a detail view of a driving member forming part of a reciprocatory actuating means for the corking and compressing operations;

Fig. 7 is a detail sectional elevation of one of the compressing and driving devices as it appears at the end of a cork-driving operation;

Fig. 8 is a sectional elevation taken along the line 8—8 of Fig. 4;

Fig. 9 is a detail sectional view taken along the line 9—9 of Fig. 7;

Fig. 10 is a sectional view similar to Fig. 7, but showing the cork in compressed position;

Fig. 11 is a sectional view of the cork compressor taken along the line 11—11 of Fig. 10;

Fig. 12 is a sectional view of one of the cork hoppers taken along the line 12—12 of Fig. 4;

Fig. 13 is a sectional view taken generally along the line 13—13 of Fig. 4;

Fig. 14 is a fragmentary sectional view of one of the cork drivers in its upper position, and

Fig. 15 is a fragmentary sectional view of a drive head in its upper cork-compressing position.

In these drawings, the numeral 20 designates a hollow base which in practice may form a part of a combined filling and closing machine, the base being mounted on detachable legs 21 for facility in shipment. A bearing bracket 22 includes a flat upper portion secured to the upper wall of the base, and includes a cup-shaped portion 23 depending into the interior of the base.

An upright tubular standard 24 has its lower end portion fixedly secured in the lower end of the bearing bracket. A tubular shaft 25 is journalled about the tubular standard 24 and has its lower end portion extending into the cup-shaped portion 23 on the bearing bracket 22, where it is secured to a driving gear 26. A cover 27 receives the tubular shaft 25 therethrough and is secured to the bearing bracket to close the space in which the gear is housed.

A bearing frame 28 is disposed within the hollow base 20 and is fixedly secured to the depending portion of the bearing bracket 22 and also to the lower portions of the base. A horizontally extending shaft 29 is journalled in the frame 28 and is driven by any suitable

source of power. A pair of spaced pinions 30 (one being shown) are secured to the shaft 29 and mesh with gear wheels 31 (one being shown) secured to the opposite end portions of a horizontally extending shaft 32 which is journalled on the frame 28 in parallel relation to the shaft 29. A bevel pinion 33 is secured to the shaft 32 and meshes with a superposed bevel gear 34 which is fixedly secured to the gear 35, both gears being journalled on an upright stationary shaft 36 secured in the bearing frame 28 and in the bearing bracket 22. The gear 35 meshes with the gear 26 for rotating the vertically extending tubular shaft 25, and also meshes with a large diameter gear 37 which forms part of a bottle-filling mechanism, not shown.

The gear wheels 31 carry aligned crank pins 38 (one being shown) at their outer faces. These crank pins are journalled in the upper ends of connecting rods 39 (one being shown), and the lower ends of the connecting rods are pivotally secured to a rocker frame 40 which is pivotally supported on a depending bracket 41 fastened to the lower portions of the base 20. The rocker frame 40 is provided with a vertical slot 42 at the upper and lower ends of which are formed rounded projections 43. A vertically extending sleeve 44 extends through the slot 42 and is provided with spaced washer-like disks 45 and 46 which engage the rounded projections 43. The upper disk 45 is fixed with respect to the sleeve while the lower disk is slidable on the sleeve and is urged upwardly into engagement with the lower projection 43 by a coiled spring 47. The lower end of the spring bears against a washer-like disk 48 which is adjustably held in position by nuts 49 threaded onto the sleeve, thus urging the washers 45 and 46 into engagement with the rounded projections 43. At its lower end the sleeve is interiorly threaded to receive the reduced threaded lower end 50 of a vertically extending reciprocatory rod 51 housed within the tubular standard 24. The oscillation of the rocker frame 40 by its crank connection with the gears 31 acts to reciprocate the rod 51 simultaneously with the rotation of the tubular shaft 25. The inner free end of the rocker frame is pivotally connected to a pair of levers 52, which are suspended at their inner ends on links 53 secured to the base.

The above described construction of the base and the driving mechanism housed therein is generally similar to that disclosed in my co-pending application for bottle capping machines, Serial No. 494,657, filed November 10, 1930.

A circular table 54 is carried on an intermediate portion of the tubular shaft 25 and is provided at its upper surface with resilient bottle-supporting pads 55. A star wheel or turret 56 is secured above the table and in the present instance is provided with five bottle-receiving notches. The upper portion of the tubular shaft 25 above the table has a splined connection 57 with the surrounding lower tubular portion of a spool-shaped support 58 which carries at its upper portion a pair of spaced outstanding radial flanges 59 and 60. At its upper end the spool-shaped support 58 is provided with a bushing 61 which rotatably fits about the stationary tubular standard 24. The spool-shaped support 58 carries cork-driving and cork-compressing devices hereinafter described, and is retained against relative axial movement with respect to the tubular shaft 25 by a right-and-left-hand threaded rod 62. The rod 62 has its upper end screwed into the flange 60 and has its lower end screwed into an angle clip 63 fixedly secured to the sleeve 25, a lock nut 64 being threaded onto the rod to hold the rod into adjusted position. The rod 62 thus not only sustains the rotary support 58 but also provides an adjustment to accommodate bottles of different height.

The upper end of the standard 24 is provided with a vertical slot 65 in which slidably fits a radially extending flange 66 formed on a tubular member 67 disposed concentrically within the standard. The tubular member 67 is fixedly secured on the reduced upper end of the reciprocatory rod 51, as by a nut 68. The hub portion 69 of a drive head 70 slidably surrounds the tubular standard 24 and is provided with a slot 71 receiving therein a projecting portion of the radial flange 66. The drive head is fixedly secured to the tubular member 67 by screws 72 which enter the flange 66. The drive head 70 is shown in detail in Fig. 6 and includes a pair of outstanding arcuate flanges 73 and 74 which are spaced angularly as well as vertically. As hereinafter described, the lower flange 73 forms part of the cork-driving means, and the upper flange 74 forms part of the cork-compressing means. As seen in Fig. 15, the flange 74 has an upper conical surface 75 sloping inwardly and downwardly.

A horizontally disposed annular plate 76 is spaced upwardly from the flange 59 by supporting and retaining pillars 77. A plurality of cork hoppers 78 (five in the present instance) are secured to the upper surface of the plate 76, as by means of screws 79. At their upper edges the cork hoppers are sector-shaped to abut against the adjacent hoppers, as seen in Fig. 2. A cylindrical extension wall 80, common to the several hoppers, is secured to the upper and outer portions of the hoppers. The interior surface of each hopper 78 slopes downwardly to a tubular discharge opening 81, which registers with the upper end of a tubular cork chute 82, hereinafter described, having a flared upper end secured to and passing through the plate 76. Each cork hopper is provided with an agitator spool 83 carried loosely on a hori-

zontal shaft 84 which extends radially with respect to the vertical axis of the tubular standard 24. The shaft 84 is journalled in the cork hopper and carries a bevel gear 85 at its inner end meshing with a superposed stationary bevel gear 86 fixedly secured to the upper end of the tubular standard 24. During the rotation of the hopper assembly, each shaft 84 rotates the spool thereon through a roller clutch 84′ or other ratchet device for entering the corks into the tubular discharge opening 81 of the hopper. The roller clutch 84′ permits the agitator spool to be turned manually if occasion requires. Each cork spool is of double conical shape converging inwardly as seen in Fig. 4, and is provided with a corrugated exterior 83′. A guard bar 87 is arranged over the central portion of the spool as indicated in Fig. 12. The outer end of each shaft 84 carries a collar 88 provided with a crank pin 89 which is connected by a link 90 to an arm 91 secured to a shaft 92. The shaft 92 is journalled in a bracket 93 secured to the sloping lower surface of the cork hopper, and carries an agitator blade 94 which passes through a slot 95 formed in the wall of the cork hopper, as seen in Fig. 12, thus providing an additional means for agitating the corks.

A plurality of compressor bodies 96 (five in the present instance) are carried by the rotary support 58, and each includes an upstanding tubular portion 97 which is slidably mounted for vertical movement in aligned openings 98 and 99 formed in the flanges 59 and 60. A vertical bore 100 is formed near the lower end of the tubular portion 97 and guides therein a reciprocatory cork-driving plunger 101, hereinafter described. Another vertical bore 102 is formed in the compressor body in laterally spaced relation to the bore 100 and registers with a similar bore 103 formed in a superposed bracket member 104, which latter is fixedly secured to the upper face of the flange 60, as by means of a bolt 105. The lower end of the tubular cork chute 82 is clamped in the bracket 24 by a bolt 106. The cork chute 82 has a curved configuration and may be provided with a number of longitudinally extending slots 107. The compressor body 96 and the bracket 104 are provided with a number of interfitting prongs 108 and 109 which define a cork-guiding passage between them notwithstanding the existence of relative movement between the compressor body and the bracket member. The compressor body 96 includes a horizontally extending flange 110 which is adapted to abut against the bottom face of the flange 60 to limit the upward movement of the compressor body. A jaw 111 integrally depends from the flange 110 and includes a laterally opening recess 112 having a concave wall 113 forming a continuation of the bore 100. The reduced lower end of the jaw 111 fits in a slot-like opening 114 formed in a horizontally extending plate 115 spaced below the flange 110 and secured thereto by vertically extending bolts 116. A bottle guide 117 is secured against the lower face of the plate 115 and is provided with a conically formed downwardly flaring bottle-centering skirt 118 terminating at its upper edge in an opening 118′ concentric with the bore 100. A thin washer 119 is clamped between the plate 115 and bottle guide 117 in axial alignment with the bore 100, and has its lower face forming a seat engageable with the neck of a bottle 120 being corked, as indicated in Fig. 7.

A loop-shaped or yoke-shaped cork compressor 121 is slidably mounted for horizontal movement between the flange 110 and the plate 115, and has its opposite side walls slidably engageable with the opposite vertical faces of the jaw 111 of the compressor body, as seen in Fig. 11. A compressing jaw 122 is secured within one end portion of the loop, as by means of screws 123, and is provided with a concave cork-engaging surface 124 complementary to the surface 113 on the jaw 111. At its lower edge the jaw 122 projects into the slot 114 formed in the plate 115, so that during the cork-driving operation the lower ends of the cork jaws will be close to the neck of the bottle. Adjustment of the jaw 122 can be readily effected by interposing shims between it and the adjacent wall of the compressor.

The compressor is actuated by toggle mechanism including a pair of toggle links 125 and 126. The link 125 is provided with enlarged cylindrical end plugs 127 and 128, and the link 126 is provided with similar end plugs 129 and 130. The end plug 127 of the link 125 is journalled in a laterally and axially opening horizontal bore 131 formed transversely in the compressor jaw 111, and the end plug 130 of the link 126 is journalled in a similar bore 132 formed in the outer end of the loop-shaped compressor 121. The adjacent end plugs 128 and 129 of the two toggle links are journalled in respective laterally and axially opening bores 133 formed in a connecting block 134. The cylindrical plug 130 is provided with reduced opposite ends which loosely carry rollers 135 engageable with parallel angle tracks 136 formed on the plate 115. The rollers 135 are also engageable with a superposed plate 137 secured to the flange 110 of the compressor body. The upper end of the connecting block 134 is threaded to receive a rod 138, which passes through aligned slots 139 formed in the parts 60, 110, and 137. The rod 138 also slidably passes through a plate 140 which slidably bears on the upper surface of the flange 60 to exclude foreign matter from the slots. The upper end of the rod 138 is pivotally connected by a pin 141

to the lower end of a vertical rod 142 which is slidably guided in a bushing 143 in the flange 59 and in a guide member 144 secured to the plate 76. If desired, the rod 142 may have a weight 145 secured thereto. At its upper end the rod 142 carries a hook-shaped plate 146 which extends radially with respect to the vertical axis of the machine and is retained in such position by a slot 147 formed in the guide member 144. The hook-shaped plate is engageable with the conical surface 75 of the flange 74 of the drive head 70, as seen in Fig. 15. On its upward movement, the reciprocatory drive head 70 lifts the rod 142 by its hook plate 146 and thus serves to expand the compressor toggle to the cork-compressing position seen in Fig. 10. The toggle joint is pulled upwardly over center by this action and remains in this position by the presence of the cork between the jaws 111 and 122.

The cork-driving plunger 101 is provided with a head 148 at its upper end which is movable in an enlarged bore 149 formed in the tubular portion 97 of the compressor body. A pin 150 extends transversely through the head 148 and through vertical guide slots 151 formed in the tubular portion 97. A coiled spring 152 is suspended from a screw 153 secured to the plate 176 and has its lower end secured to the pin 150 for lifting the cork-driving plunger 101 to its upper position, the latter position being determined by the abutment of the pin 150 against the upper ends of the slots 151. Suitable openings 153′ are formed in the flange 59 to receive the several springs 152 therethrough. A drive bar 154 has an enlarged cylindrical lower end 155 journalled in the head of the cork-driving plunger 101 and is swingable in a vertical plane passing through the vertical axis of the machine. The upper end portion of the bar 154 passes through a cap 156 screwed onto the upper end of the tubular portion 97, and has its rounded upper end engageable with the lower face of the flange 73 of the drive head 70, as seen in Fig. 4.

It is desirable to prevent a cork-driving operation in the absence of a bottle, and this is accomplished in the present instance by swinging each driving bar 154 into or out of operative relation to the flange 73 of the drive head 70. Each of five vertically extending rock shafts 157 is journalled near its lower end in the star wheel 56 and at its upper end in a respective bearing member 158 secured to the cap 156 as by means of a screw 159. At its lower portions the rock shaft is provided with a blade 160 which is deflected by a bottle 120 entering the star wheel notch, to thus swing the rock shaft. The rock shaft also passes through slots 161 formed in the flanges 59 and 60. A collar 162 is secured near the upper end of the rock shaft and enters between the spaced forked portions 163 of the bearing member 158, as seen in Fig. 14, to retain the shaft against axial movement. The upper end of the rock shaft is provided with a hook-shaped arm 164, the depending end of which is pivotally received in a flat link 165 slidably guided between the upper face of the cap 156 and the lower face of the bearing member 158. The driving bar 154 passes through an opening 166 in the link 165 and is swung in a vertical plane by this link. A spring 167 bears on the upper arm of the rock shaft 157 and urges it outwardly to swing the pivoted drive bar 154 out of the range of movement of the flange 73 of the drive head 70, as indicated in Fig. 14. In this figure the drive head 70 is shown in dotted lines in its lowermost position and the drive bar 154 is in its outwardly deflected position where it remains until a bottle enters the corresponding notch of the star wheel 56. Upon the entrance of a bottle into the star wheel, the rock shaft 157 is swung inwardly to bring the drive bar 154 below the drive head, thereby permitting a cork-driving operation to take place.

The corks 168 on which the machine operates are of cylindrical shape and are usually soaked in hot water before use in order to soften them. The soaking operation causes the corks to expand and it is therefore necessary to compress the corks before they are driven into the bottles. The compression of the corks is effected by the compressing devices heretofore described. The compressing operation causes an exudation to collect upon the cork, and especially on the lower end thereof, tending to cause contamination of the bottled goods. In order to remove this exudation, an upwardly directed spray nozzle 169 is disposed below the path of the bottle guides 117 and directs a stream of water or other cleansing fluid against the bottom faces of the corks. The wash water collects in a drain receptacle 170 surrounding the spray nozzle 169 and passes out through a drain pipe 171.

The cork enters the compressing chamber from above when the compressor is in the position seen in Fig. 7, in which the toggle joint is broken. The succeeding cork in the cork chute is retained in position by a pivotally mounted pawl shaft 172 journalled in the lower portion of the bracket member 104. The pawl shaft is provided with an arm 173 having a pointed end engageable with the cork as seen in Figs. 7 and 9. The other end of the pawl shaft carries an arm 174 entering a vertically extending cam groove 175 in the tubular portion 97 of the compressor body. The pointed arm is urged inwardly by a spring 176, and is urged outwardly away from the cork by the movement of the arm 174 out of the cam groove 175 when the compressor body rises to its uppermost position.

The bottles to be crowned are conducted to and away from the rotary corking table

54 in a suitable manner. Where the corking mechanism forms part of a combined filling and closing machine, the bottles may be transferred from the filling mechanism 177 to the corking table by means including a star wheel 178, as indicated in Fig. 3. The bottles are conducted away from the corking table between suitable guides 179, which lead the bottles to a flat-topped conveyor chain 180. The incoming bottles may be conducted to the filling mechanism from the same conveyor chain 180 by means of guides 181, which lead the bottles to a star wheel 182. The direction of rotation of the filling mechanism, corking table, and transfer star wheels are indicated by arrows in Fig. 3. The star wheels 178 and 182 are carried at the upper ends of vertical shafts 183 and 184 respectively, which are journalled in the upper portion of the bearing bracket 22, and which are driven at an appropriate speed in any suitable manner, as by means of gears 185 at their lower ends meshing with the ring gear 37. The bottle-transferring means is generally similar to that disclosed in the above mentioned application Serial No. 494,657.

The levers 52 connected to the rocker frame 40 may be used to operate parts of the filling mechanism, such as the filling siphons, valves, or bottle lifters. For this purpose, a pair of vertical rods 186 are slidably mounted in the upper portion of the bearing bracket 22 to extend therethrough and are secured at their lower ends to brackets 187 mounted on the levers 52. At their upper ends the rods 186 are connected by a horizontal plate 188 which is engageable with the lower ends of rods 189 for operating filling siphons or valves.

Before placing the machine in operation, the cork hoppers 78 are filled with corks which have been previously soaked in hot water to soften them. The several tubular cork chutes are then filled with corks from the cork hoppers, this operation being facilitated by manually rotating the agitator spools 83.

In the operation of the machine, the rotary corking table 54 carried on the tubular shaft 25 is rotated through gearing connections, heretofore described, including the gears 26, 35, 34, and 33, and simultaneously the rod 51 within the tubular standard 24 is reciprocated by the crank-operated rocker frame 40. In the present instance, the rod is given five complete reciprocations for each revolution of the corking table, corresponding to the number of corking devices. The rotary spool-shaped support 58, carrying the five corking devices, is driven synchronously with the corking table by its splined connection with the upper portions of the tubular shaft 25. A bottle entering a notch of the star wheel or turret 56 swings the vertical rock shaft 157, as hereinbefore described, to move the cork driving bar 154 inwardly to a position below the flange 73 of the drive head 70. The descent of the drive head 70 by the reciprocatory rod 51 effects the depression of the drive bar 154 and connected cork-driving plunger 101 against the action of the spring 152. In the first part of this driving movement, the compressor body 96 moves downwardly by its weight until the washer 120 thereof rests on the neck of the bottle, as indicated in Figs. 4 and 7. In its further downward movement, the plunger 101 engages the compressed cork held between the jaws 111 and 122 and drives the cork downwardly into the registered neck of the bottle therebelow, the completion of this operation being indicated in Fig. 7. During the limited downward travel of the compressor body, the arm 174 of the pawl shaft 172 enters the cam groove 175, thus causing the pointed arm 173 of this shaft to engage the laterally adjacent cork in the bracket member 104 and stopping any movement of the corks in the cork chute. As soon as the downwardly driven cork leaves the compressor jaws, the toggle joint of the compressor is free to swing downwardly under the action of the weight 145 to the position seen in Fig. 7. If the rod 142 is made sufficiently heavy, the weight 145 may be omitted. The breaking of the toggle joint moves the compressor to the open position seen in Fig. 7 in readiness to receive the next cork from the cork chute, but at this time the movement of the corks is arrested by the pawl shaft 172. The cork-driving movement of the rod 51 is cushioned by the spring 147 at the lower end of this rod, so that any undue resistance to the cork-driving operation will not cause injury to the machine or to the bottle. The rod 51 now moves on its upward stroke and the coiled spring 152 raises the cork-driving plunger 101 and the compressor body, the latter movement taking place when the pin 150 engages the upper ends of the slots 151 in the tubular portion 97 of the compressor body. As the compressor approaches its upper position, the arm 174 of the pawl shaft 172 moves out of the cam groove 175, thus releasing the pointed arm 173 from the laterally adjacent cork and permitting this cork to descend into the compressor chamber. During the reciprocation of the rod 151, the cork-driving assembly is rotating at a uniform velocity so that relative sliding movement takes place between the upper end of the driving bar 154 and the bottom face of the flange 73. Upon the further upward movement of the rod 51, the upper flange 74 of the drive head 70 slidably engages and lifts the hook plate 46 at the upper end of the compressor rod 142, as indicated in Fig. 15, thus straightening out the toggle joint and compressing the newly introduced cork between the jaws 111 and

122. At the end of the compressing operation, the cork-compressing parts assume the position seen in Fig. 10, in which the compressed cork retains the toggle joint in an over-center position. Shortly after the corking operation, the corked bottle is discharged from the rotary corking table and onto the conveyor 180. During the further rotation of the corking assembly, the exudation from the compressed cork is removed by a liquid jet from the spray nozzle 169, thus placing the cork in condition to be driven into an incoming bottle. The cycle of operation is then repeated. In the absence of a bottle from corking position, the cork-driving operation does not take place and the cork remains in its compressed position for another revolution.

The driving mechanism for the machine is located within the hollow base 20, where it is well protected against tampering and entrance of foreign matter, and where there is no danger of injury to the attendant. The gearing connections are such as to permit the use of relatively simple structure for accomplishing the various functions of the machine. By operating the compressing devices through toggle mechanism, the rotary corking assembly is relieved of intermittent stresses and the consumption of power is reduced and rendered more uniform. The operation of the cork-compressing and cork-driving devices by the same reciprocatory actuating means results in a simplification of structure.

What I claim as new and desire to secure by Letters Patent is:

1. In a container-closing machine, the combination of a container support, cork-driving means disposed above said support, cork-compressing means co-operating with said driving means, and reciprocatory actuating means movable on one stroke to operate said cork-compressing means and movable on another stroke to operate said cork-driving means.

2. In a container-closing machine, the combination of a container support, revoluble cork-driving means disposed above said support, revoluble cork-compressing means co-operating with said driving means, means for revolving said cork-driving means and cork-compressing means, and reciprocatory actuating means movable on an upward stroke to operate said cork-compressing means and movable on a downward stroke to operate said cork-driving means.

3. In a container-closing machine, the combination of a container support, a revoluble group of cork-compressing and cork-driving devices disposed above said support, and reciprocatory actuating means for alternately operating said compressing and driving devices during their revolution.

4. In a container-closing machine, the combination of a tubular standard, a rotatable container support surrounding said standard, cork-driving means disposed above said container support and rotatable with said support, means for rotating said support and cork-driving means, a reciprocatory rod disposed in said standard, means for operating said rod, and a drive member carried on said rod for operating said cork-driving means.

5. In a container-closing machine, the combination of a container support, cork-driving means disposed above said support, cork-compressing means co-operating with said driving means, and reciprocatory actuating means for said cork-driving and cork-compressing means including a drive member having spaced abutments alternatively engageable with parts of said cork-driving and cork-compressing means.

6. In a container-closing machine, the combination of a tubular standard having a longitudinal slot, a rotatable container support surrounding said standard, cork-driving means disposed above said container support and rotatable with said support, means for rotating said support and cork-driving means, a reciprocatory rod disposed in said standard, means for operating said rod, and a drive member slidably surrounding said standard and having a connection with said rod passing through said slot, said drive member having an operative connection with said cork-driving means.

7. In a container-closing machine, the combination of cork-driving means, cork-compressing means normally urged to open position, and means for moving said cork-compressing means to closed position to compress a cork, said cork-compressing means being retained by the compressed cork in closed position and being movable to its open position incident to the departure of the driven cork therefrom.

8. In a container-closing machine, the combination of cork-driving means, cork-compressing means gravitationally urged to open position, and means for moving said cork-compressing means to closed position to compress a cork, said cork-compressing means being retained by the compressed cork in closed position and being gravitationally movable to its open position incident to the departure of the driven cork therefrom.

9. In a container-closing machine, the combination of a container support, cork-driving means including a swingably mounted member, actuating means engageable with said swingably mounted member for transmitting driving force therethrough, and bottle-controlled means for determining the position of said swingably mounted member in the path of said actuating means.

10. In a container-closing machine, the combination of a container support, cork-driving means including a member swingably

mounted thereon and projecting upwardly therefrom, actuating means engageable with said swingably mounted member for transmitting driving force longitudinally therethrough, and bottle-controlled means for determining the position of said swingably mounted member in the path of said actuating means.

11. In a container-closing machine, the combination of a compressor body having a cork-compressing jaw, a reciprocatory cork-driving plunger movably mounted in said compressor body, a reciprocatory compressor movable laterally with respect to the line of travel of said plunger and having a jaw complementary to said first-named jaw, a pair of connected toggle levers pivotally secured to said compressor and compressor body respectively, a reciprocatory rod having a connection with the joint between said toggle levers for moving said compressor on its compressing stroke, and co-ordinated actuating means operatively connected with said plunger and with said rod.

12. In a container-closing machine, the combination of a rotary support adapted to receive bottles thereon, a plurality of reciprocatory corking heads vertically movable on said support and having bottle-engaging lower ends, each corking head having cork-compressing means and cork-driving means, means for operating said cork-compressing means and reciprocatory actuating means for said cork-driving means controlling the descent of said corking heads into engagement with the bottles.

13. In a container-closing machine, the combination of a support adapted to receive a bottle thereon, cork-compressing means vertically movable on said support for descent to the bottle, cork-driving means co-operating with said cork-compressing means, a chute for delivering successive corks to said compressing means, and intermittently movable means controlled by the vertical movement of said compressing means for stopping the movement of corks in said chute.

14. In a container-closing machine, the combination of a rotary support adapted to receive bottles thereon, a plurality of reciprocatory corking heads vertically movable on said support for descent to the bottles, each corking head having a cork compressor and a cork-driving plunger, and means for operating the cork compressors and cork-driving plungers of said corking heads.

In testimony whereof, I affix my signature.

GEORGE J. MEYER.