

May 8, 1934.

W. I. GLADFELTER

1,957,534

BOTTLE FEEDING MECHANISM

Filed Dec. 30. 1930

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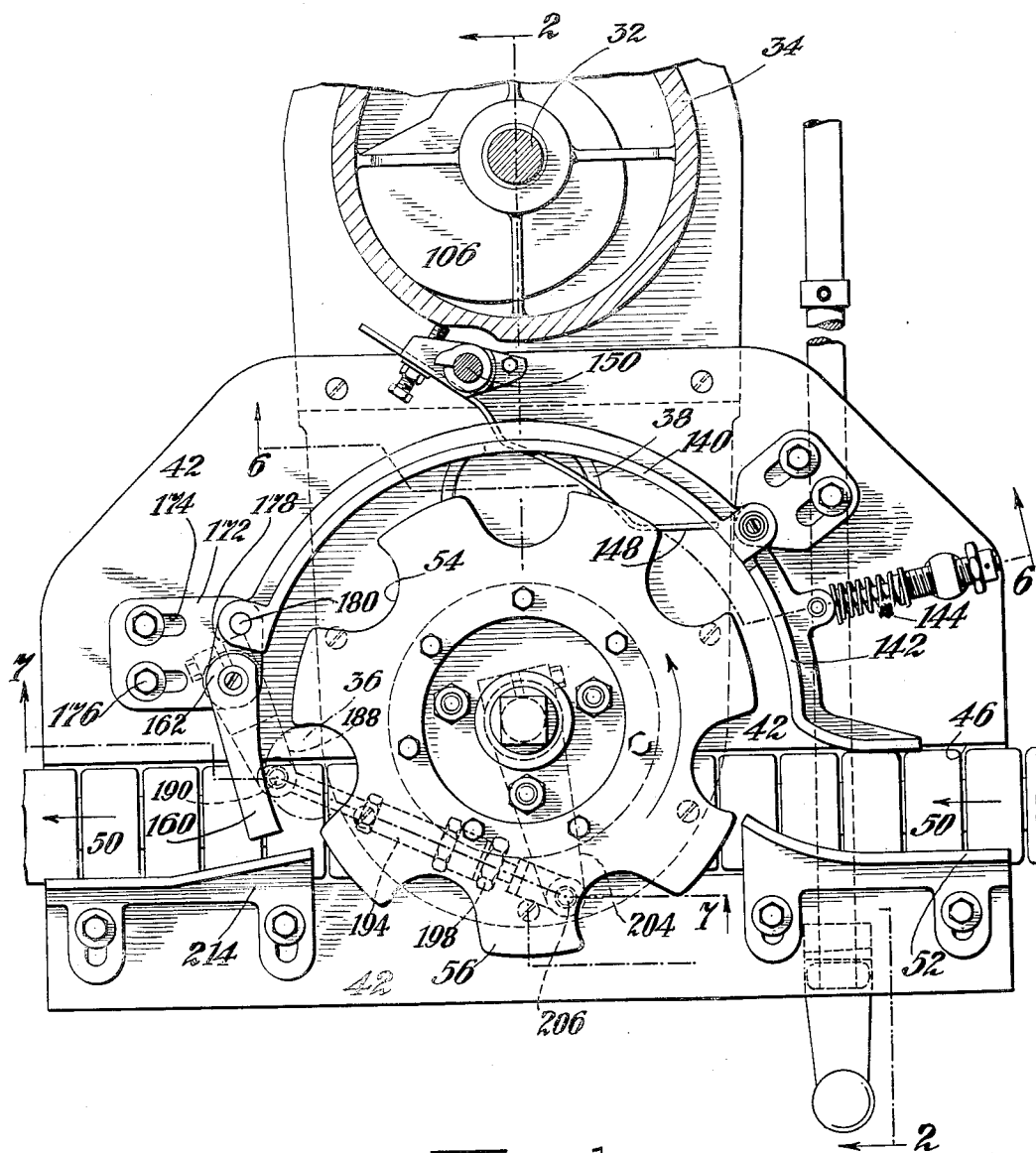


Fig. 1

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Filed Dec. 30, 1930

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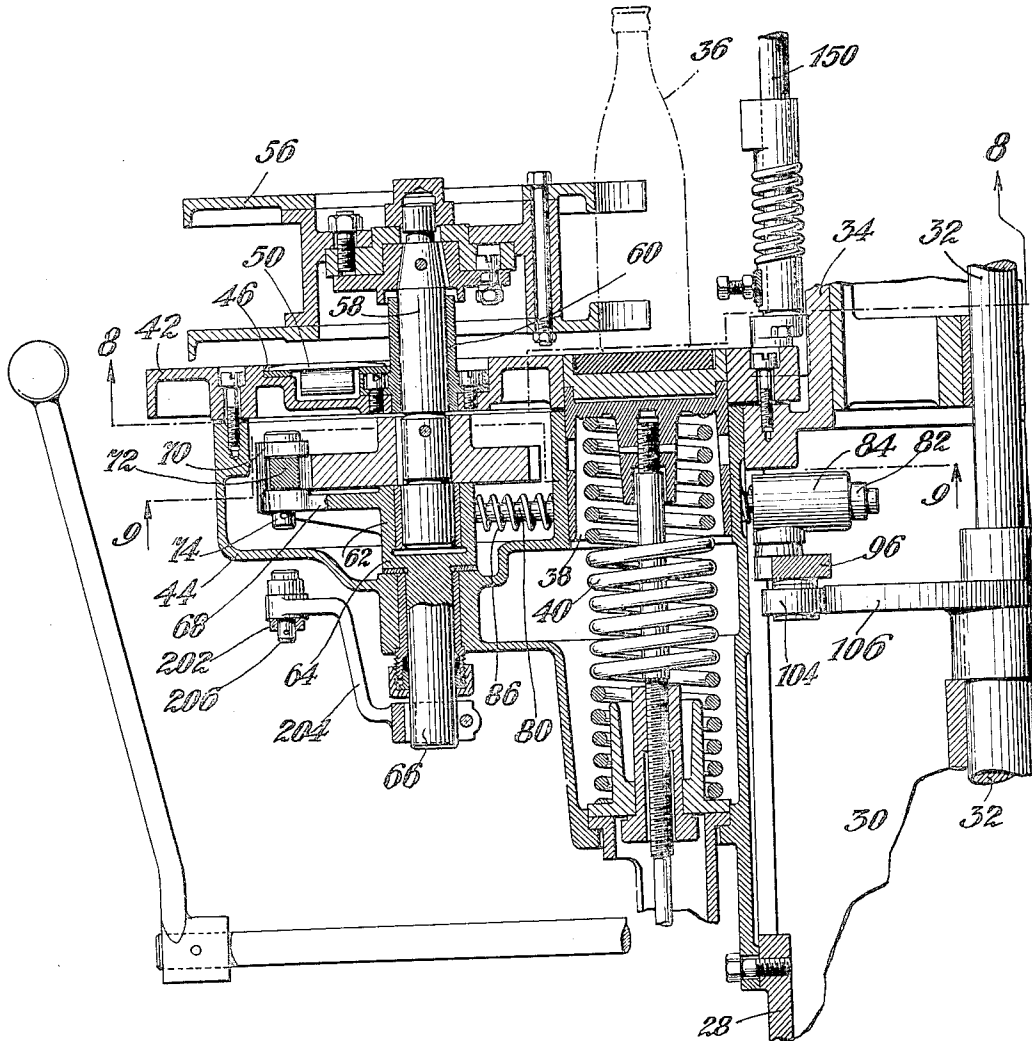


Fig. 2

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1,957,534

Filed Dec. 30, 1930

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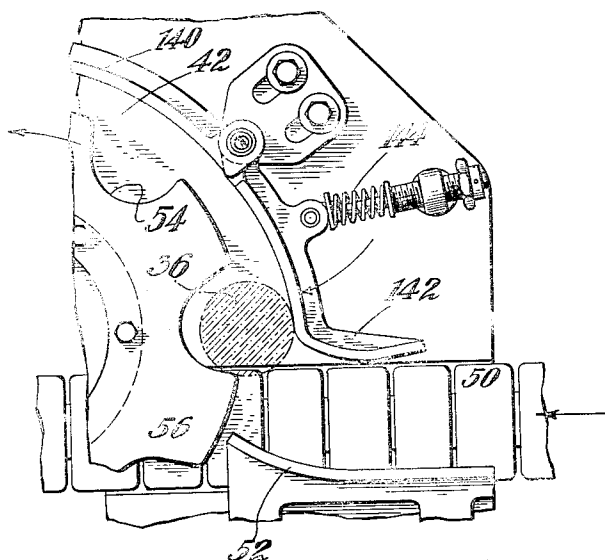


Fig. 3

Fig. 4

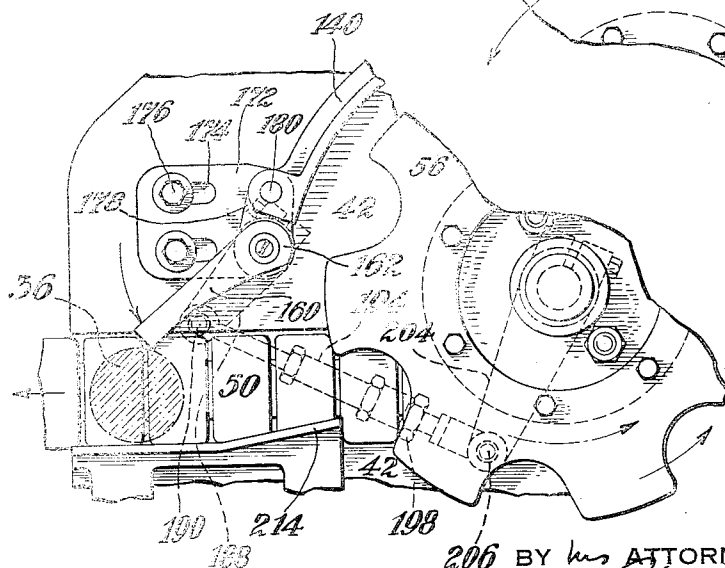
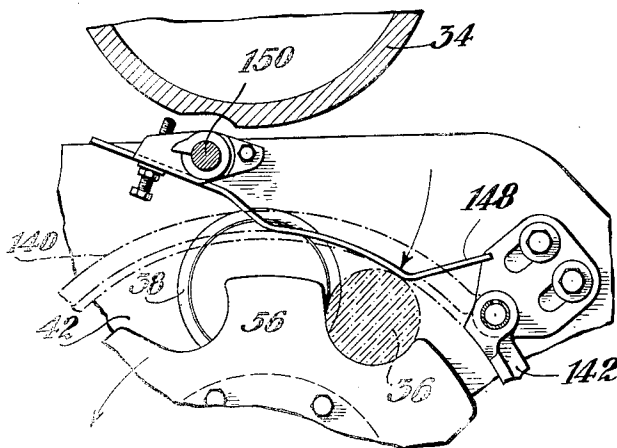


Fig. 5

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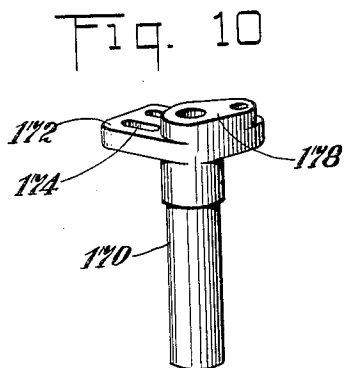
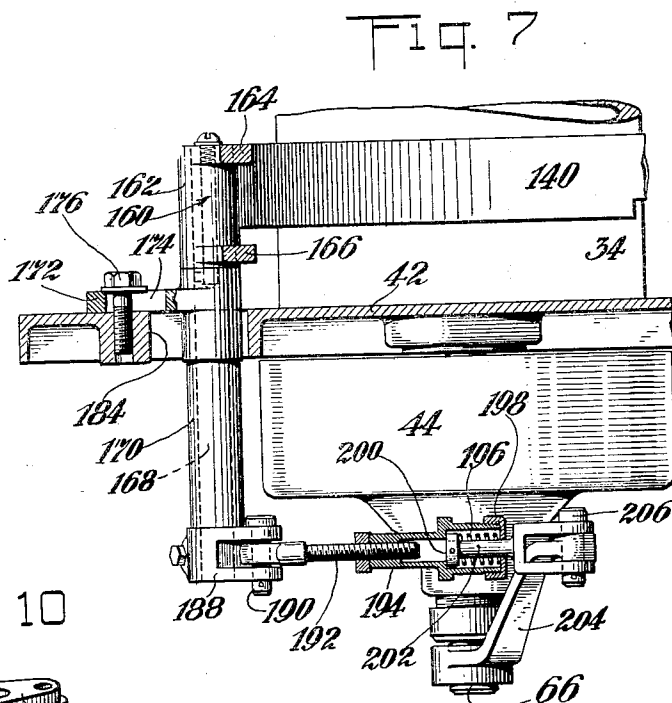
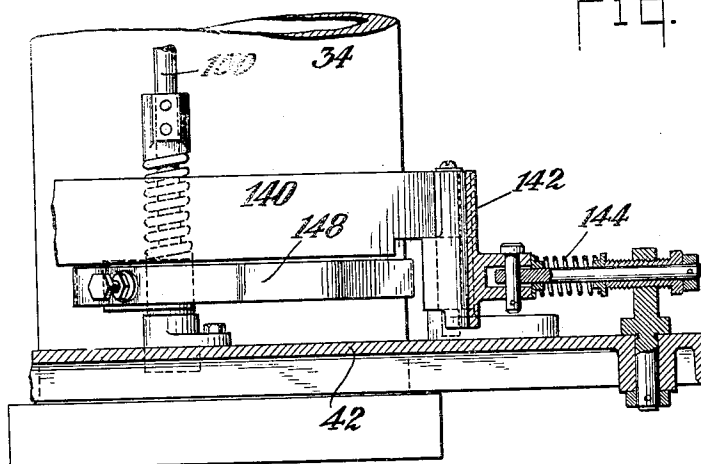
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BOTTLE FEEDING MECHANISM

Filed Dec. 30, 1930

5 Sheets-Sheet 4



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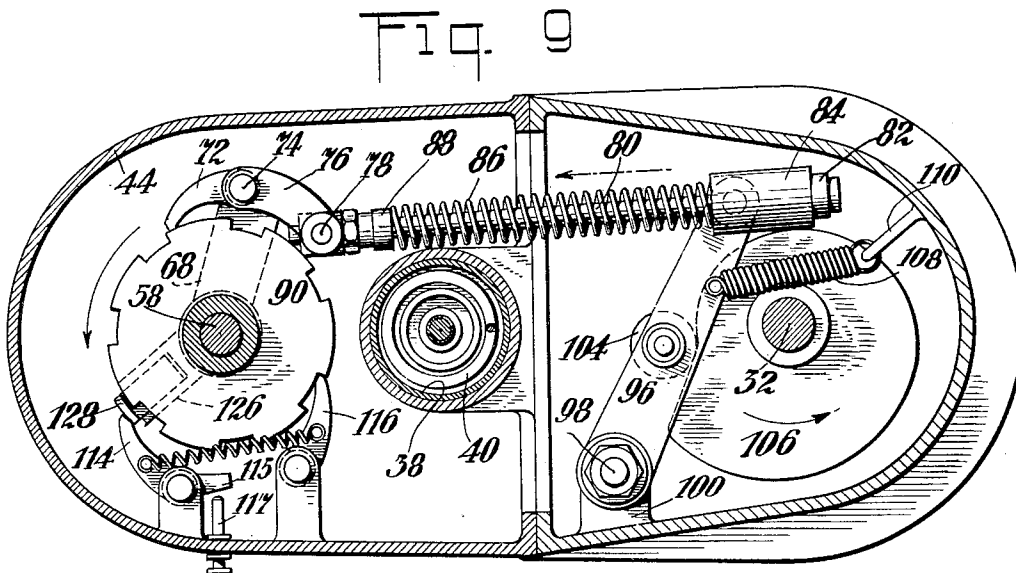
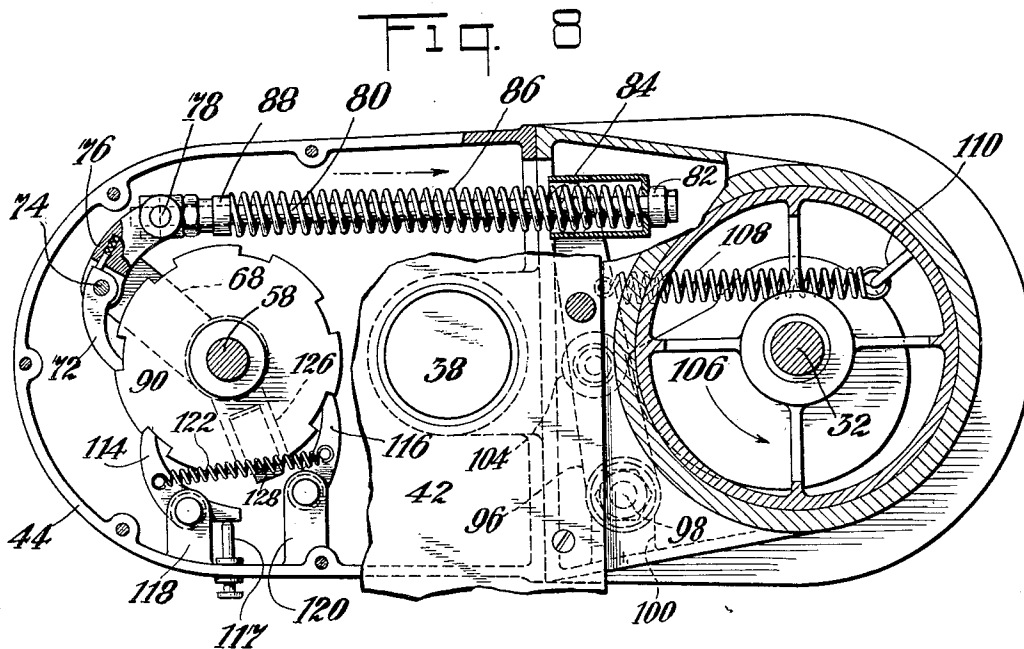
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BOTTLE FEEDING MECHANISM

Filed Dec. 30, 1930

5 Sheets-Sheet 5



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1,957,534

BOTTLE FEEDING MECHANISM

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Application December 30, 1930, Serial No. 505,511

9 Claims. (Cl. 198—22)

This invention relates to improvements in feeding mechanism for packaging apparatus and more particularly to feeding mechanism for so-called soda machines.

The principal objects of the invention are to provide, in connection with a bottle dial, apparatus cooperating with the dial and a filled bottle for preventing the bottle from toppling over when it is placed by the dial on a conveyor and, also, for serving as a gate to prevent the bottle from being moved forward on the conveyor until the bottle has been properly positioned on the conveyor by the dial.

Other objects and advantages of the invention will appear from the following description taken in connection with the accompanying drawings which illustrate, as an example, a preferred embodiment of the invention and in which:

Figure 1 is a top plan view of a bottle feeding mechanism embodying the present invention;

Figure 2 is a vertical sectional view taken on the line 2—2 of Fig. 1;

Figure 3 is a fragmentary top plan showing a bottle being removed from a conveyor by the feeding mechanism, to be carried to filling position;

Figure 4 is a similar view showing the bottle approaching filling position;

Figure 5 is a similar view illustrating the release of a filled bottle on the conveyor;

Figure 6 is a fragmentary vertical sectional view taken on the line 6—6 of Fig. 1;

Figure 7 is a vertical sectional view on line 7—7 of Fig. 1;

Figure 8 is a horizontal sectional view taken on line 8—8 of Fig. 2; and

Figure 9 is a similar section on line 9—9 of Fig. 2 showing a different position of the parts;

Figure 10 is a perspective view of the gate mounting plate.

Referring in detail to the drawings, and particularly to Figures 1 and 2, there is illustrated a bottle feeding mechanism for use, for example, in a soda machine of the type shown and described in Huntley Patent No. 1,709,577, April 16, 1929.

The mechanism is carried on a suitable base or support 28 and includes a housing 30 extending vertically and within which is located a rotatable drive shaft 32 which extends upwardly through a cylindrical post 34 associated with suitable filling and capping mechanism. In Fig. 2, a bottle 36 is illustrated in dotted lines in filling position, being located and held stationary for the filling and capping operations on the top face

of a cylindrical plunger 38, normally in the position shown in Fig. 2 but yieldable downwardly against the action of coil spring 40. The top surface of the plunger 38 is aligned with the surface of the bottle-supporting table 42 fixed on the top of the housing 44 secured to base 28. The bottle-supporting table 42 is provided in its upper face with a depression 46 in which travels a bottle conveyor 50.

At the oncoming portion of the conveyor a bottle deflecting guide 52 is provided to deflect the empty bottles successively from the conveyor into the bottle recesses 54 of a bottle dial 56.

The bottle dial 56 is fast on the upper end of a vertical shaft 58 which is rotatable in an upper bearing 60 mounted in the table 42. The lower end of the shaft 58 is rotatably mounted in the cup portion 62 of a rocking member 64 whose lower end, below the cup, is formed as a cylindrical rock shaft 66. The rocking member 64 at the top of the cup portion is provided with a radially extending arm 68 having a vertical portion 70 cut away intermediate its ends to provide space for a pawl 72 (Figs. 2, 8 and 9) mounted on a pin 74 carried by the vertical portion 70. The rocking member 64, in addition to the vertical portion 70, includes a curved arm 76 extending horizontally therefrom and pivotally secured by a pin 78 to one end of a horizontal rocking rod 80. The other end of the rod 80 is provided with a head 82 against which abuts a cup 84 urged against the head by a coil spring 86 surrounding the rod and bearing at its other end against a collar 88 fixed on the rod. A spring 73 holds the pawl 72 to its work.

Means are provided for moving the rod 80 back and forth substantially in the direction of its length to cause pawl 72 to give a step by step rotary motion to a ratchet 90 keyed on the vertical shaft 58. In the form shown, this means includes a lever arm 96 pivoted at 98 to a bracket 100 within the casing 30. The other end of lever 96 is pivoted at 102 to the underside of the spring receiving cup 84. The lever 96 carries on its lower face a roller 104 held to engagement with a cam disc 106 by a spring 108 which has one end attached to the lever 96 and its other end secured to a lug 110 on the casing 30. The cam disc 106 is fast on the vertical shaft 32 and rotates continuously with said shaft. Owing to the shape of the cam, the rod 80 is moved back and forth continuously so that it takes alternately the position of Fig. 8 and the position of Fig. 9. This movement causes pawl 72 to give the ratchet 90 a step by step rotary motion in the direction of the

arrow (Fig. 9), thus causing corresponding movement of the bottle dial 56. The bottles are filled while resting on the yieldable support 38.

Means are provided for preventing the ratchet 90 from having either forward or backward movement during the idle stroke of the pawl 72 and, as illustrated in Fig. 9, this means may conveniently include a pair of oppositely extending pawls 114 and 116 pivotally mounted on fixed brackets 118 and 120 respectively. These pawls are connected by a coil spring 122 under tension which holds both pawls in engagement with the ratchet. It will be evident that the pawl 116 prevents any retrograde motion of the ratchet 90 and the pawl 114 insures uniform angular movement of the ratchet on each working stroke of the pawl 72 and remains in holding engagement with the ratchet on the idle stroke of pawl 72. Means are provided for disengaging the pawl 114 from the ratchet 90 at the starting of the working stroke of pawl 72 and, as illustrated in Figs. 8 and 9, this means includes a radially extending arm 126 on rocking member 64 which extends radially outwardly beyond the ratchet 90 and has an upturned end 128 for engagement with the pawl 114 when the pawl 72 reaches the end of its idle stroke and is about to commence its working stroke. In this way, the pawl 114 is at the proper moment disengaged from the ratchet but is released by arm 126 when the pawl 72 starts its working stroke so that the pawl 114 again contacts with the ratchet and drops into the next depression. Its movement may be limited by contact of pawl tail piece 115 with an adjustable stop pin 117.

Referring now particularly to Fig. 1, bottles are delivered to the dial 56 by conveyor 50 travelling in the direction of the arrows, and are deflected from the conveyor by the guide 52. A fixed guide rail 140 prevents the bottles from being moved out of engagement with the dial. At the forward end of the guide rail 140 a movable guide rail arm 142 is pivoted on the supporting table 42 and is held normally in the position of Fig. 1 by a spring 144 against which it may yield if necessary while a bottle is being seated in the pockets of the dial and is being moved off the conveyor.

Means may be provided to prevent the filling apparatus from operating if no bottle is present to be filled and this means may conveniently be the same as or similar to the means shown for this purpose in Huntley Patent No. 1,556,837, October 13, 1925. The arm 148 of Fig. 1 herein corresponds to the arm 286 in Fig. 2 of said patent and is fast on a vertical rock shaft 150 controlling a clutch of the type, for example, described in said patent. An oncoming bottle strikes the rock arm 148 thereby moving the shaft 150 and causing the filling operation to be performed at the proper moment. If there is no bottle in the next oncoming pocket, the arm 148 and rock shaft 150 will not be operated and the filling operation will not take place. The dial 56 being operated from the vertical shaft 32 is timed with the filling operation. When this has been completed the dial moves forward another step and continues in this manner to bring the filled and capped bottle back upon the conveyor 50.

In accordance with the present invention, means are provided for preventing the filled bottle from toppling over as it is pushed onto the conveyor, for preventing its release upon the conveyor until it has been properly centered thereon. In the form shown (Figs. 1, 5 and 7), this means includes the positioning and releasing gate 160 pivotally mounted and actuated in cooperation with

the dial 56. The gate 160 has a vertical hub portion 162 and from this hub upper and lower parallel arms 164 and 166 extend horizontally for engagement with a bottle. The hub 162 is fixed on a vertical rock shaft 168 which rocks in the downwardly extending sleeve bearing 170 of an adjustable plate 172. The plate 172 is provided with a pair of slots 174 for the reception of securing bolts 176 by which the plate is fastened to the bottle support 42. The forward end of the plate 172 is provided with a raised boss 178 near one end of which is a vertical opening to receive a pin 180 by which one end of the bottle guide 140 is secured to the plate. Another opening is provided in the boss 178 for the reception of shaft 168 which extends downwardly, as shown in Fig. 7, in the sleeve 170 formed as a part of the plate and projecting through an opening 184 in the bottle support 42. The hub 162 of the gate 160 rests upon the top of the sleeve 170 and has rocking movement thereon, as indicated in Figs. 1 and 5.

The invention provides means for rocking the gate 160 alternately into the positions of Fig. 1 and Fig. 5 in timed relation to the movements of the bottle dial 56, and, as shown in Figs. 2 and 7, this means is illustrated as including an arm 188 fast on the bottom portion of shaft 168 which projects downwardly beyond the bottom of sleeve 170. The arm 188 is slotted to receive a pivot pin 190 by means of which there is pivoted to the arm a threaded rod 192 which has adjustable threaded connection with sleeve 194 interiorly shouldered for the reception of a coil spring 196, bearing at one end against a sleeve cap 198 and at its other end against the flange 200 of an actuating link 202. The link 202 is slotted for the reception of a lever 204 pivotally secured to the link by a pin 206, the lever 204 being fast on the bottom projecting portion of shaft 66, as shown in Fig. 2. This connection preferably permits the adjustment of lever 204 in angular relation to shaft 66 to provide for the desired accurate timing relation of the operation of the bottle gate with respect to the bottle dial. Other adjustments may be effected by varying the position of arm 188 on the shaft 168 and by the threaded engagement of rod 192 with sleeve 194. The spring connection illustrated in Fig. 7 provides for the positive opening of the gate and also for the closing of the gate yieldably to prevent crushing of any bottle in the event of a jam. Referring to Fig. 1, a guide plate 214, adjustably secured to bottle support 42, cooperates with the gate and bottle dial for starting the filled bottle (indicated in dotted lines at 36 in Fig. 1) on the conveyor in proper relation thereto and in stable equilibrium.

In operation, the vertical shaft 32 rotates continuously and by its cam, acting through lever 96 and rod 80, causes step by step rotation of the ratchet 90 and consequently of the bottle dial to which the conveyor 50 carries bottles to be filled and capped. By engagement of successive bottles in its pockets, the dial removes the bottles from the conveyor and slides them around the bottle support 42 between the dial and the guide rail 140 in step by step movement to the filling and capping station 38 where each bottle is filled and capped during the pause in the movement of the dial. The filled and capped bottles are brought by step by step movement of the bottle dial to the position of Fig. 1 at which moment the dial actuating mechanism has the position shown in Fig. 8 and the gate 160 has the position of Fig. 1, pre-

venting the bottle from being carried away by the conveyor. The bottle, however, is pushed against the gate by the conveyor 50 but is prevented by the gate from moving out of its dial pocket. The gate is, therefore, in position to maintain the bottle in the position of Fig. 1 at the moment of its arrival there. During movement of the dial actuating mechanism from the position of Fig. 9, the ratchet shaft 58 remains stationary, held by pawls 114 and 116, but arm 68 and shaft 66 are rocked by rod 80 to move the gate actuating mechanism of Fig. 7 and cause the gate 160 to open. During the opening movement of the gate the conveyor 50 tends to carry the bottle away and as the gate moves to the position of Fig. 5, the bottle is moved by the conveyor along the bottle engaging face of the gate and is held by the gate and the guide 214 until the gate has opened far enough to reach the position of Fig. 5 and thus release the bottle to be carried away by the conveyor.

The mechanism described prevents the bottle from being carried away the moment it reaches the conveyor, guides the bottle to proper position on the conveyor, steadies it thereon, holds it back sufficiently to prevent it from starting off too suddenly, and insures that it will be carried away by the conveyor in its proper predetermined position thereon.

What is claimed is:

1. Bottle handling apparatus including a conveyor, a bottle dial in bottle delivering relation thereto, a bottle releasing and positioning device associated with said conveyor and with said dial, for positioning on said conveyor while it is in motion a bottle delivered to said conveyor by said dial, and means for moving said device toward and from the dial in synchronism with movements of the dial.

2. Bottle handling apparatus including a conveyor, a bottle dial in bottle delivering relation thereto, and a bottle steadying device associated with said conveyor and said dial for positioning on said conveyor a bottle delivered thereto by said dial, said device being movable substantially horizontally toward the dial into bottle retaining position with respect to said dial and movable substantially horizontally away from said dial into bottle releasing position.

3. Bottle handling apparatus including a conveyor, a bottle dial in bottle delivering relation thereto, and a movable bottle steadying gate movable toward and from the dial in the direction of travel of the conveyor and cooperating with said dial during its placing of a bottle on said conveyor and operable thereafter to release and position the bottle on said conveyor.

4. Bottle handling apparatus including a conveyor, a bottle dial in bottle delivering relation thereto, actuating mechanism for giving said dial a step by step rotary motion, and a bottle holding positioner associated with said conveyor and said dial and actuated by said mechanism be-

tween the step by step motions of said dial to release a bottle from the dial and position it on the conveyor.

5. Bottle handling apparatus including a conveyor, a bottle dial in bottle delivering relation thereto, actuating mechanism for giving said dial a step by step rotary motion, and a bottle gate cooperating with said dial, said gate being opened by said mechanism while said dial is stationary to release and position a bottle on said conveyor, and being closed by the dial moving operation of said mechanism.

6. Bottle handling apparatus including a conveyor, a bottle dial in bottle delivering relation thereto, actuating mechanism for giving said dial a step by step rotary motion, and a pivoted gate overlying said conveyor and cooperating with said dial, said gate being moved by said mechanism away from said dial to open position while said dial is stationary to release and position a bottle on said conveyor and being moved toward said dial to closed position by dial moving operation of said mechanism.

7. Bottle handling apparatus including a conveyor, a bottle dial in bottle delivering relation thereto, actuating mechanism including a member having forward and return movement for giving said dial a step by step rotary motion, a bottle positioning device associated with said dial and said conveyor and operatively connected with said member, said device being moved by return movement of said member to release and position a bottle on said conveyor, and moved by forward movement of said member into bottle holding and steadying relation to said dial, and a holding element preventing forward movement of said dial during return movement of said member and moved out of dial holding position by forward movement of said member.

8. Bottle handling apparatus including a conveyor, a bottle dial in bottle delivering relation thereto, a rocking member for giving said dial a step by step rotary motion, a gate actuating lever moved by said rocking member, a gate shaft connected thereto, and means for retaining a bottle in the dial against the action of said conveyor, said means being movable into bottle releasing and positioning relation with respect to said conveyor and comprising a bottle gate associated with said dial and conveyor and mounted on said shaft.

9. Bottle handling apparatus including a conveyor, a bottle dial in bottle delivering relation thereto, a rocking member for giving said dial a step by step rotary motion, a gate actuating lever moved by said rocking member, a gate shaft, a rock arm thereon, elements yieldable in one direction connecting said rock arm and said gate actuating lever, and a bottle retaining and releasing gate associated with said dial and conveyor and mounted on said shaft.

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