Oct. 26, 1926. 1,604,440

S. W. WILKINSON

TRANSFERRING MECHANISM FOR BOTTLE FILLING MACHINES

Filed Feb. 18, 1924 2 Sheets-Sheet 1

FIG. 1

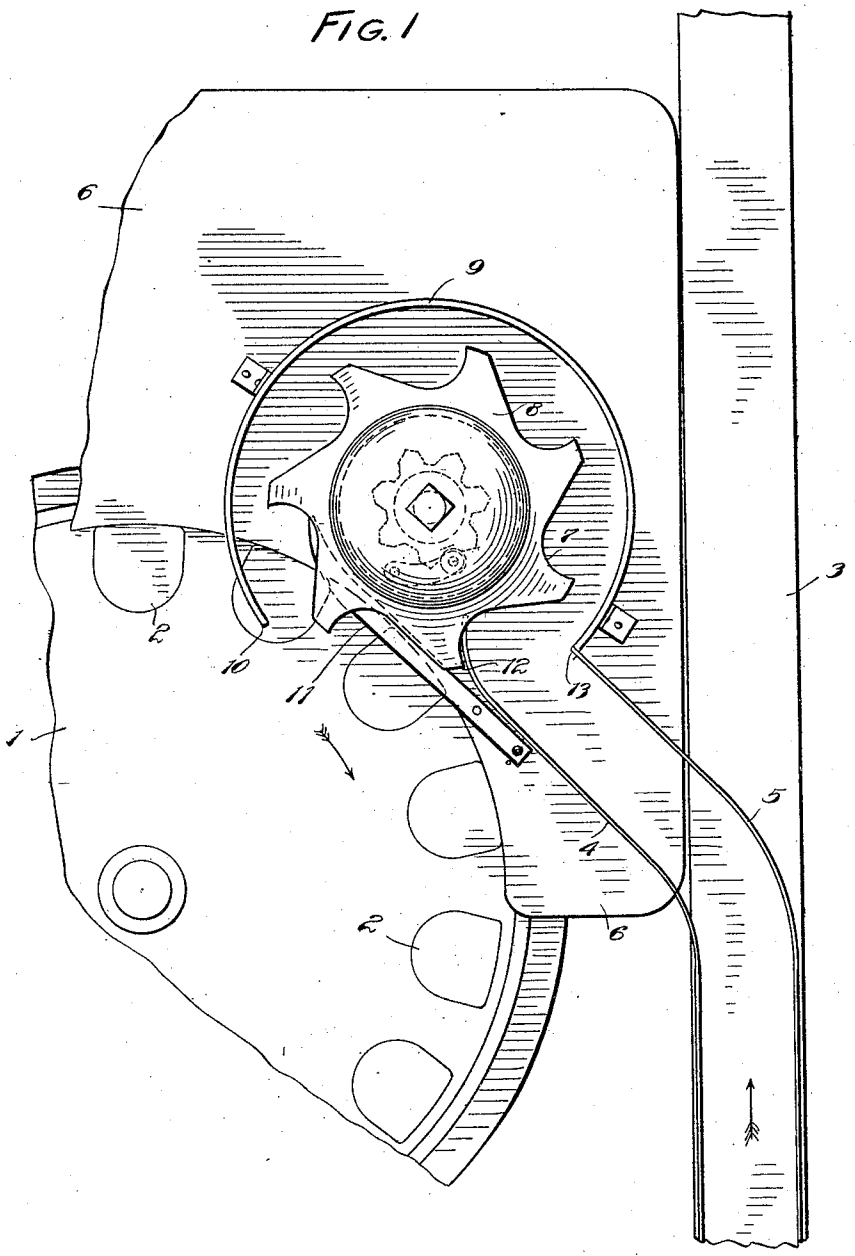

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FIG. 2

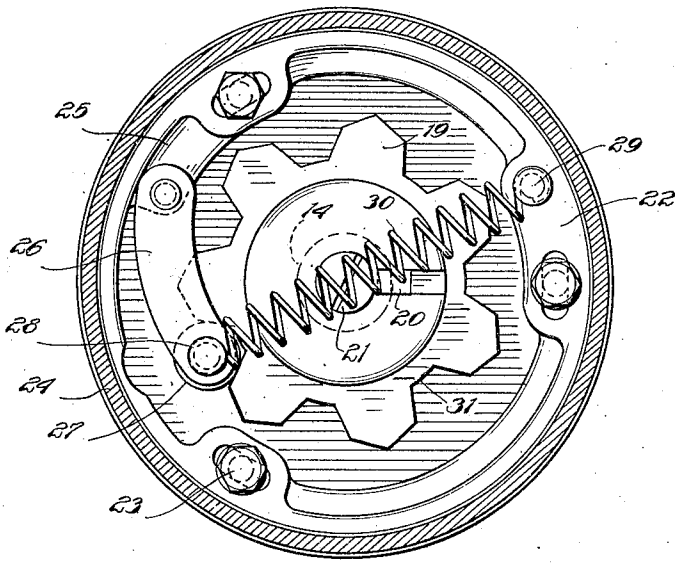
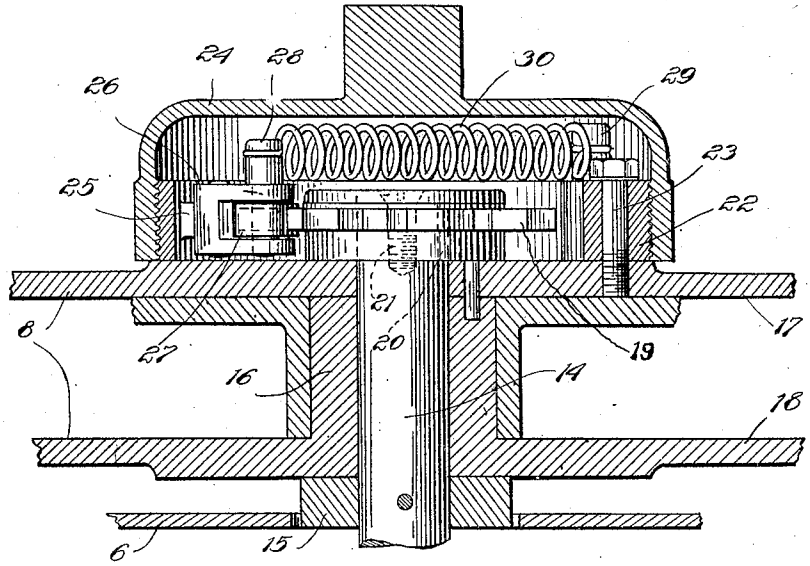


FIG. 3



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UNITED STATES PATENT OFFICE.

STANLEY W. WILKINSON, OF WAUKEGAN, ILLINOIS, ASSIGNOR TO THE CREAMERY PACKAGE MFG. COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

TRANSFERRING MECHANISM FOR BOTTLE-FILLING MACHINES.

Application filed February 18, 1924. Serial No. 693,427.

The invention relates to mechanism for transferring bottles from a conveyor to the filling positions in a bottle filling machine, more particularly to the rotary pocketed wheel type of such mechanism.

In mechanism of this type, the bottles are conveyed into radial pockets in a revolving wheel, wherein the bottles are retained by an outer guide while they are carried through a portion of a revolution of the wheel and deposited on another conveyor.

In the ordinary construction, if the bottles are retarded in their approach to the revolving wheel so that they are not well within the pockets when engaged thereby, there is liability that a bottle may be caught at diametrically opposite points between the positively driven and the rigid retaining guide, resulting in smashing the bottle or damaging the mechanism.

It is the object of this invention to provide a transferring mechanism in which a radially pocketed wheel rotates positively under normal conditions, but in the contingency of a bottle becoming jammed in the mechanism, the rotation of the wheel is arrested and the latter is given a resiliently reversed movement which effects the displacement of the bottle from its jammed position.

Other objects and advantages will be apparent in the following description of a preferred embodiment of the invention which I have selected for illustration herein. It will be understood, however, that various changes in form, construction and arrangement may be made by those skilled in the art without departing from the spirit and scope of the invention as expressed in the appended claims.

Referring to the drawings, Fig. 1 is a fragmentary plan view of a bottle filling machine of the type illustrated in my Patent No. 1,171,996 issued Feburary 15th, 1916, and in which my present invention is shown as incorporated. Fig. 2 is a sectional plan view of the driving mechanism for rotating the pocketed transferring wheel. Fig. 3 is a vertical sectional view of the driving mechanism and the hub portion of the wheel.

Referring to Fig. 1 of the drawings, the numeral 1 indicates the rotary conveying table in a bottle filling machine which carries a spaced series of bottle elevators 2 adapted to support the bottles positioned thereon and raise them into filling contact with a series of valves (not shown) positioned above the bottles and communicating with a revolving reservoir (not shown). A belt 3 conveys the supply of empty bottles to the machine. A pair of guides 4 and 5 diverts the bottles from the conveyor belt 3 across the table 6 and directs them into the pockets 7 of the rotating transferring wheel 8, the movement of the bottles across the space over the stationary table being accomplished by the pushing of the rearward bottles still resting on the conveyor belt.

As the bottles progress into the path of rotation of the wheel 8, they are successively engaged in the pockets 7 and moved laterally around the table with the wheel, the bottles being retained in position within the pockets by a concentric guide 9 secured to the table 6. The wheel 8 extends laterally over and above the rotary table 1, and the speeds of those parts are relatively so timed that the pockets 7 coincide in their passage over the rotary table with the positions of the elevators 2, the top faces of the latter in their lowered positions being flush with the surface of the stationary table 6. The guide 9 terminates at 10 suitably to release the bottles from the wheel 8 when they are positioned successively on the elevators 2. An opposite stationary guide 11 serves to push the bottles out of the pockets 7 and properly place them on the elevators.

It sometimes happens, as when a break occurs in the contacting succession of bottles being delivered between the guides 4 and 5, that their movement is momentarily retarded. In such instance the forward bottle may be at rest in such position as to be caught at diametrically opposite points between the approaching tooth 12 of the wheel 8 and the junction 13 of the stationary guides 5 and 9, obviously resulting

in crushing the bottle unless the movement of the wheel 8 is arrested and the bottle moved out of its centered position of engagement. The latter mentioned protective actions are accomplished by my present invention.

Referring now to Figs. 2 and 3, a driven shaft 14 extends upwardly through the table 6, and carries a fixed collar 15. The collar and upper portion of the shaft support the hub portion 16 of the wheel 8, the latter comprising spaced upper and lower plates 17 and 18 radiating from the hub. The wheel 8 is loosely rotatable on the shaft 14 which extends substantially above the wheel.

Mounted on the upper end of shaft 14 is a toothed member 19, secured to the shaft as by the key 20 and the end screw 21. A ring 22 is mounted on the upper surface of the wheel 8 concentric with the shaft 14, and secured to the wheel 8 as by means of bolts 23. The ring 22 preferably is screw threaded on its outer periphery to removably receive a cover 24 forming a casing over the enclosed mechanism. The ring 22 is provided with an inner lug or flange 25 on which is pivotally mounted one end of a bifurcated dog 26. A roller 27 preferably is pivotally supported in the other end of the dog 26, the dog being positioned to swing the roller in and out of engagement with the teeth and intermediate pockets of the member 19. A pin 28 is secured to the dog 26, and a similar pin 29 is mounted on the ring 22. A spring 30 is mounted on the two pins and tensioned to normally hold the roller 27 in engagement with one of the pockets 31 in the member 19.

The equi-spaced pockets 31 are equal in number to the pockets 7 in the wheel 8, so that the roller 27 may be positioned in either of the pockets 31 and normally maintain the wheel 8 in correct relation between the bottle receiving pockets 7 and the elevators 2. The tensioned spring 30 resiliently secures the roller 27 in one of the pockets 31, and under normal conditions the wheel 8 is driven through the ring 22, the link 26 and roller 27, the member 19, and the shaft 14.

Assuming a bottle to be caught in the mechanism as previously related, the obstruction of the wheel 8 overcomes the tension of the spring 30, and the particular driving tooth of the member 19 swings the dog 26 outwardly until the roller 27 passes over the end of the tooth, whereupon the spring reacts to suddenly draw the roller into the next pocket 31, giving the wheel 8 a quick reverse movement and causing the rear edge of the preceding tooth of the wheel 8 to engage and push the bottle backward from its dead-centered position. With the displacement of the jammed bottle the mechanism continues in normal operation without interruption.

I claim as my invention:

1. In a bottle filling machine having a rotary conveyor and a second conveyor for bringing bottles adjacent said rotary conveyor, the combination of a rotary wheel adapted to receive bottles from said second conveyor and transfer them to said rotary conveyor, and driving means for said wheel operative upon obstructing the normal movement of said wheel to effect a reverse movement of the wheel.

2. In a bottle filling machine having a rotary conveyor and a second conveyor for bringing bottles adjacent said rotary conveyor, the combination of a rotary wheel adapted to receive bottles from said second conveyor and transfer them to said rotary conveyor, a drive shaft, and driving connections between said shaft and said wheel normally operative to rotate said wheel continuously and operative to effect an alternate reverse and forward rotation of the wheel when obstructed.

3. In a bottle filling machine having means for conveying bottles thereto, the combination of a rotary transferring wheel having pockets adapted to receive bottles from said conveying means, a drive shaft axially positioned in said wheel and loosely supporting the same, a toothed member rigidly mounted on said shaft, a swinging dog having a pivotal support at one end in fixed relation to said wheel, the free end of said dog normally engaging said toothed member between two teeth, and resilient means for securing said engagement, said securing means permitting said dog to swing out of and into successive engagement with the teeth of said rotating toothed member when the rotation of said wheel is obstructed and thereby effect a momentary reverse movement of said wheel.

4. In a device of the class described in combination, a bottle transferring wheel, a shaft loosely supporting said wheel, a member rigidly mounted on said shaft having regularly spaced pointed teeth, a dog having a pivotal support in fixed relation to said wheel, a roller carried at the free end of said dog positioned to engage the teeth of said member, and a spring tending to force said roller into such engagement between said teeth, said teeth being formed to force said roller outwardly when said wheel is retarded and to impart a reverse movement to said wheel when said roller passes the point of a tooth and is reengaged between the next pair of teeth by the impulse of said spring.

5. In a device of the class described, in combination, a bottle transferring wheel having a series of peripheral pockets to receive and convey bottles, a shaft loosely supporting said wheel, a member rigidly mounted on said shaft having radial teeth

equal in number to the pockets in said wheel, a ring rigidly mounted on said wheel concentrically with said shaft, a dog pivotally supported on said ring having a roller at the free end thereof, said roller being positioned for engagement between the teeth of said member and swingable with said dog for engagement between successive teeth upon the relative rotation of said member and said wheel, and resilient means for resisting the outward swinging of said dog and roller.

In witness whereof I have hereunto attached my signature.

STANLEY W. WILKINSON.