E. E. WINKLEY.

BOTTLE FEEDING MECHANISM.

APPLICATION FILED SEPT. 14, 1914.

1,278,274.

Patented Sept. 10, 1918.

2 SHEETS—SHEET 1.

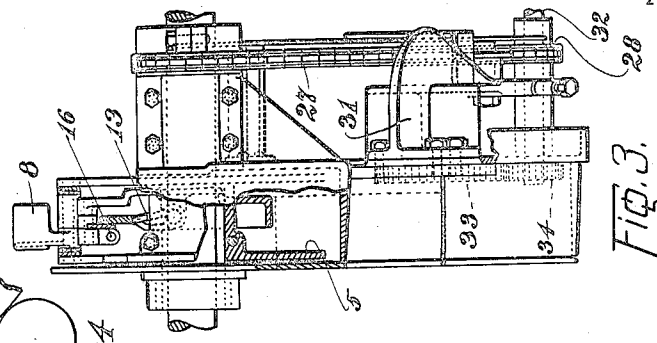


Fig. 3.

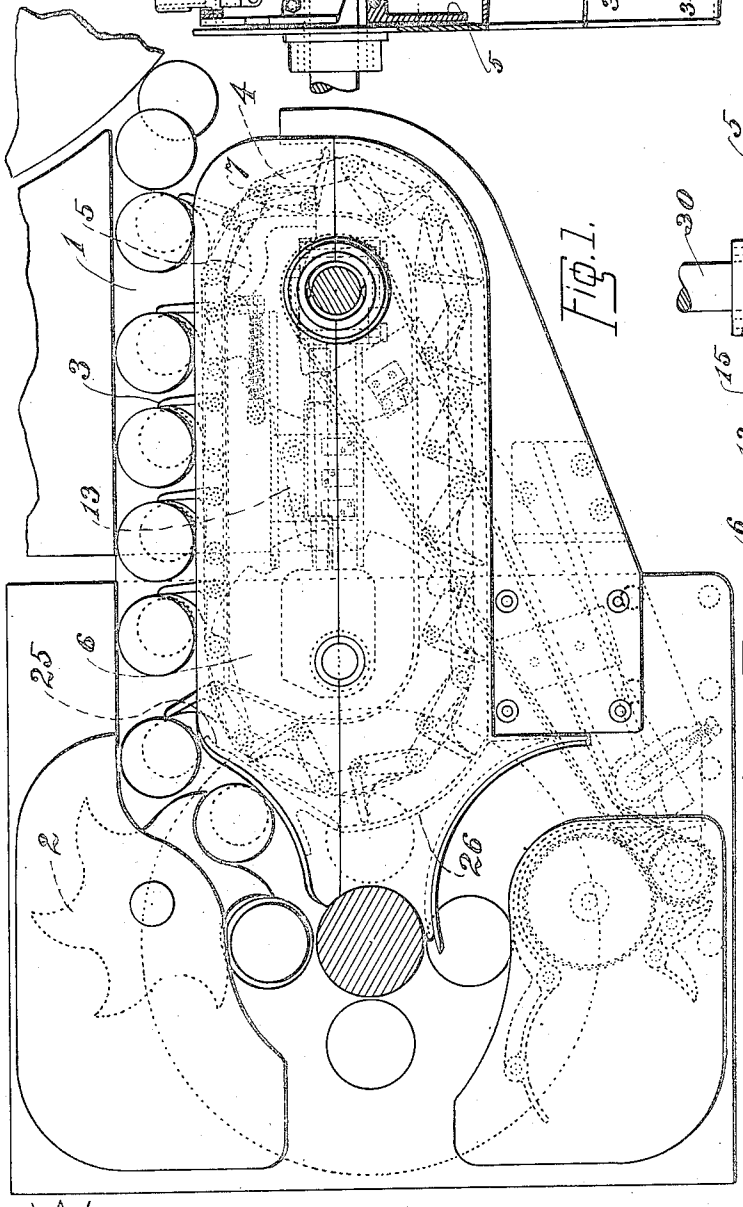


Fig. 1.

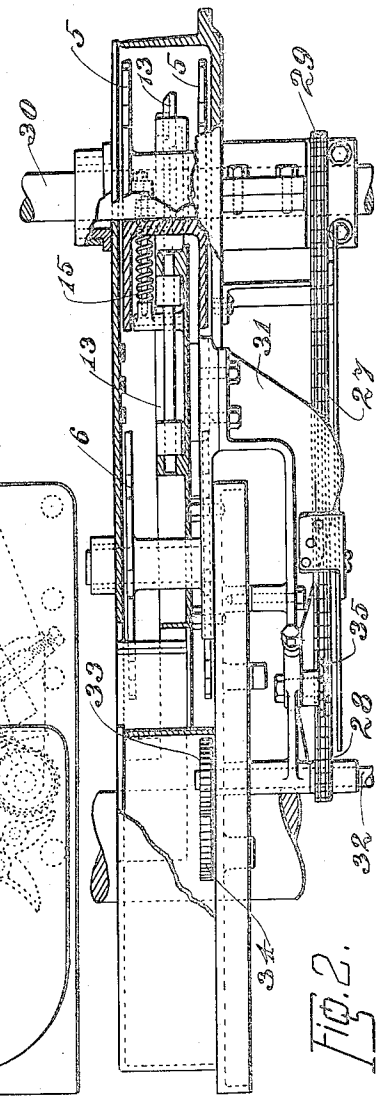


Fig. 2.

Witnesses

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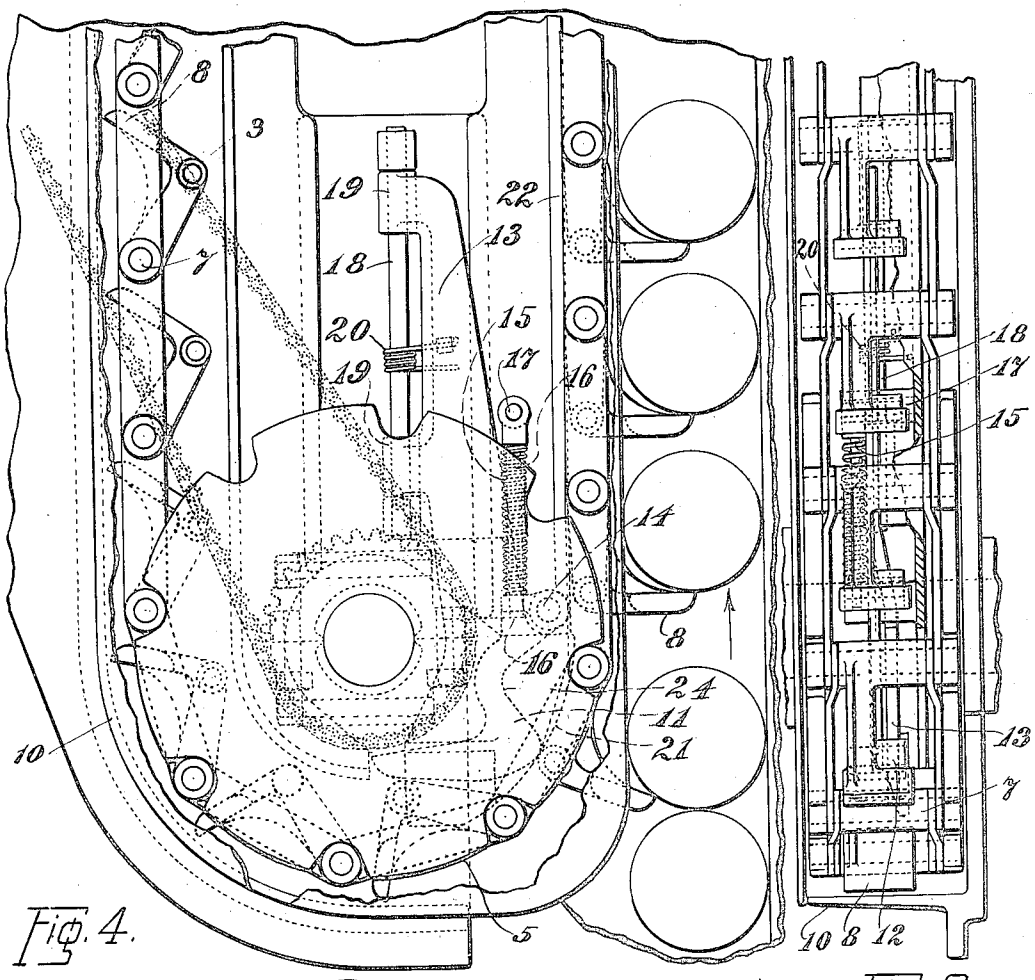


Fig. 4.

Fig. 6.

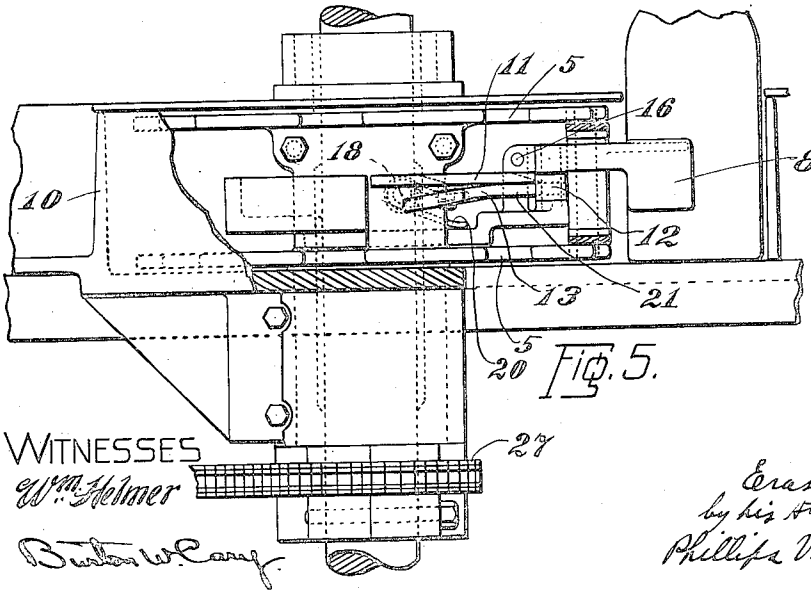


Fig. 5.

WITNESSES

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BOTTLE-FEEDING MECHANISM.

1,278,274. Specification of Letters Patent. Patented Sept. 10, 1918.

Application filed September 14, 1914. Serial No. 861,595.

To all whom it may concern:

Be it known that I, ERASTUS E. WINKLEY, a citizen of the United States, residing at Lynn, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Bottle-Feeding Mechanism; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The present invention relates to package conveyer mechanism and more particularly to an improved mechanism of this type employed for feeding bottles.

In connection with the automatic transferring of bottles from the filling to the capping machine as disclosed in the patent to Winkley, No. 1,216,036, dated February 13, 1917, it has been found that under certain conditions the bottles are not fed properly to the capping machine. In this construction the bottles are discharged from the filling machine into a runway and are pushed along the runway until each bottle is engaged by a rotating star wheel and fed to the capping machine. As the passage of the bottles through the runway is effected by each bottle discharged from the filling machine the entire row of bottles engage with one another and if the bottles vary in size they are positioned at irregular intervals and may be so located that the star wheel is unable to engage properly with a bottle and feed it to the capping machine, which frequently causes the clogging of the runway and a possible breakage of the bottles.

The object of the present invention is to provide an improved form of bottle feeding mechanism which receives the bottles at the discharging point and feeds them at uniform intervals to the feeding mechanism, which then removes them from the conveyer without liability of breaking the bottles or clogging the conveyer during the operation of the mechanism. With this object in view the several features of the invention consist in certain novel features of construction, combinations and arrangements of parts, the advantages of which will be obvious to those skilled in the art from the following description.

In the accompanying drawings illustrating the preferred form of the invention; Figure 1 represents a plan view of the improved conveyer mechanism; Fig. 2 is a right hand side elevation partly in section of the conveyer mechanism; Fig. 3 is an end elevation partly in section of the mechanism shown in Fig. 1; Fig. 4 is a detail illustrating a partial plan view of the conveyer mechanism upon an enlarged scale; Fig. 5 is a detail illustrating an end elevation of the mechanism shown in Fig. 4; and Fig. 6 is a detail showing a side elevation of the mechanism shown in Fig. 4.

In the illustrated embodiment of the invention the bottles are discharged from the filling machine into a runway indicated at 1 and are positioned upon the runway at regular intervals and fed along the runway until they reach a receiving star wheel 2 which feeds them to the capping machine in the usual manner. In the present invention the positioning and feeding of the bottles at regular intervals is conveniently accomplished by a series of feeding fingers which are positioned equi-distant from one another upon a conveyer member and are arranged to engage behind each bottle to feed it along the runway. With this construction the rear faces of the bottles which are engaged by the star wheel 2 are always positioned at the same distance from one another irrespective of the diameter of the bottle. As the bottles are initially positioned in the runway more or less irregularly, depending upon their size, the feeding fingers have a yielding bottle engaging movement and are arranged to pass by the bottle if any substantial resistance is encountered, thus preventing the jamming of the bottles between the fingers and the side of the raceway. In order to insure the positive feeding of each bottle, however, after it has been engaged properly by the feeding finger a positive bottle feeding movement is imparted to the finger, and mechanism is provided for retaining it in a bottle engaging position until the bottle is received by the star wheel 2. To this end a series of feeding fingers 3 are mounted upon a horizontal chain conveyer 4 which is guided about the sprocket wheels 5 and 6, respectively. Each finger is fulcrumed upon the conveyer at 7 and is provided with an outwardly projecting face 8 arranged to engage with the bottle, as shown clearly in Fig. 5. Referring to Fig. 4, as the conveyer passes about the sprocket 5 and prior to the bottle engaging movement the fingers are normally retained in a

retracted position by the engagement of the outer end of the face 8 with a curved guide plate 10 which extends in the direction of travel of the conveyer until a point is reached at which the fingers are to be moved outwardly to engage with the bottles. The bottle engaging movement is imparted to the fingers by a cam member 11, the face of which engages with a cam roll 12 journaled at the bend of the finger 3, as shown clearly in Fig. 5. The passage of the finger along the cam 11 causes it to swing outwardly into a bottle engaging position and after engaging with the bottle to feed it along in the direction of the arrow in Fig. 4. As the bottles are positioned somewhat irregularly it may happen that under certain conditions the finger during the bottle engaging movement will engage with the side of the bottle and tend to cramp it against the opposite side of the runway rather than to feed it forward in the direction of the arrow. In case this occurs the finger is arranged to yield inwardly and pass by the bottle without exerting a sufficient pressure upon the bottle to break it or clamp it against the side of the raceway. To this end the cam 11 is fulcrumed at 14 and is normally retained in the position shown in Fig. 4 by a spring 15 surrounding a rod 16 which is pivoted at 17 and is loosely received at its opposite end in a recess formed in the cam member 11. As the spring 15 is arranged to exert only a light pressure upon the cam this construction permits the cam member to swing rearwardly if a comparatively small pressure is exerted upon the end of the finger 3. In addition to permitting a yielding movement of the feeding finger 3 if the bottle is not engaged properly it is desirable to lock the finger in bottle engaging position in order to insure the positive feeding thereof if the bottle is engaged properly. To this end, as the feeding finger passes around the sprocket 5 the under side of the cam roll 12 engages with and rides up on the beveled end of a cam table 13. The table 13 is hinged at 19 upon a shaft 18 and is normally maintained in an elevated position by a coil spring 20 surrounding the shaft and engaging respectively with the frame and the under side of the table at its opposite ends, as shown clearly in Fig. 4. As the feeding finger passes about the sprocket wheel it rides up on the beveled surface of the table and gradually depresses the table and at the same time is moved outwardly toward the edge of the table by the cam member 11. If the cam member 11 is swung rearwardly owing to the exerting of an undue pressure upon the feeding finger, the finger does not pass off of the edge of the table and maintains the table in a depressed position, but on the other hand, if the bottle is engaged properly and the feeding finger is swung outwardly to the full extent of its movement it passes beyond the edge of the table, as shown in Fig. 4, allowing an upward movement of the table to a position behind the cam roll. In this position the feeding finger is guided in its further movement by the edge 21 of the table 13 until the cam roll engages with a fixed guide plate 22 which serves to maintain the fingers in the proper operative relation to the table during their movement through the runway. In order to facilitate the passage of the finger by the bottle if the latter is not engaged properly, the cam member 11 is provided with a depression 24 which permits the inward movement of the finger without the necessity for compressing the spring 15 to an undue extent. This mechanism serves to feed the bottles to the receiving star wheel 2 at uniform intervals and after each bottle has been received by the star wheel the feeding finger is engaged by a stationary cam rib 25 and swung back into inoperative position, shown in Fig. 1, in which it is retained by the guide member 26 until again moved outwardly into bottle engaging position by the cam member 11.

The conveyer mechanism is conveniently operated by a drive chain 27 passing respectively about the drive sprocket 28 and driven sprocket 29. The conveyer sprocket 5 is mounted upon the upper end of a shaft 30 having the sprocket 29 secured to its lower end. The drive sprocket 28 is journaled in a depending bracket 31 secured to the machine frame and is secured to the lower end of a shaft 32 having a spur gear 33 mounted upon the upper end which meshes with a driving gear 34 actuated in a suitable manner. The drive chain 27 is maintained in a taut condition by an idler sprocket 35 journaled upon the bracket 31 and held against the drive chain 27 in any suitable manner. The mechanism for actuating the conveyer is operated in timed relation to the mechanism for operating the filling and capping machines, and as it is obvious that this may be done in any suitable manner it has not been described herein in detail.

While it is preferred to employ the specific construction and arrangement of parts shown and described, it will be understood that this construction and arrangement is not essential except so far as specified in the claims, and may be changed or modified without departing from the broader features of the invention.

The invention having been described, what is claimed is:

1. A bottle feeding mechanism comprising a series of feeding fingers, and mechanism for imparting a yielding bottle engaging movement to the fingers and for positively retaining the fingers in contact with the bottles after engagement therewith.

2. A bottle feeding mechanism comprising a conveyer continuously moving along a runway, a series of fingers carried by the conveyer, means for normally causing the fingers to engage and feed bottles along the runway, and means for permitting the fingers to be retracted and pass by a bottle if the latter is cramped in the runway.

3. A bottle feeding mechanism comprising a conveyer, a finger supported upon the conveyer in a retracted position, a cam engaging with the finger and arranged to move the finger outwardly into a bottle engaging position, and means for yieldingly supporting the cam.

4. A bottle feeding mechanism comprising a runway, a conveyer moving along the runway, feeding fingers supported by the conveyer, yielding mechanism for moving the feeding fingers relative to the conveyer into a bottle engaging position upon passage of the fingers into the runway, and means for retracting the fingers relative to the conveyer after the fingers have passed through the runway.

5. A bottle feeding mechanism comprising a conveyer, a feeding finger fulcrumed upon the conveyer, mechanism for actuating the conveyer, a cam member arranged to swing the finger outwardly about the fulcrum as the finger passes thereby, and means for yieldingly retaining the cam member in an operative position.

6. A bottle feeding mechanism comprising a bottle feeding finger, means for yieldingly moving the finger into a bottle engaging position, and means acting only when the finger is moved to bottle engaging position to positively hold the finger in the position into which it is moved.

7. A bottle feeding mechanism comprising a conveyer, a finger supported upon the conveyer, mechanism for actuating the conveyer, a cam table arranged to be depressed by the finger as it passes thereover, and means for moving the finger outwardly toward the edge of the table as the conveyer is actuated.

8. A bottle feeding mechanism comprising a conveyer, a curved finger fulcrumed at one end upon the conveyer, a cam member yieldingly supported in an operative position and arranged to swing the finger outwardly as the conveyer is actuated, and a cam table normally retained in an elevated position and arranged to be depressed by the finger as it passes thereover.

9. A bottle feeding mechanism comprising a conveyer, a bottle engaging finger fulcrumed upon the conveyer, a cam member arranged to engage with the finger and swing it outwardly into bottle engaging position having a recessed portion to permit passage of the finger by a bottle, and means for yieldingly retaining the cam member in operative position.

10. A bottle feeding mechanism comprising a conveyer, mechanism for actuating the conveyer, a finger fulcrumed upon the conveyer, yielding mechanism for swinging the finger outwardly with relation to the conveyer, and means constructed and arranged to positively retain the finger in its outward position when the finger is swung outwardly to a predetermined point.

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