Aug. 18, 1942. J. C. ZEGALIA 2,293,451

CASE MIXER

Filed Nov. 12, 1938 4 Sheets-Sheet 1

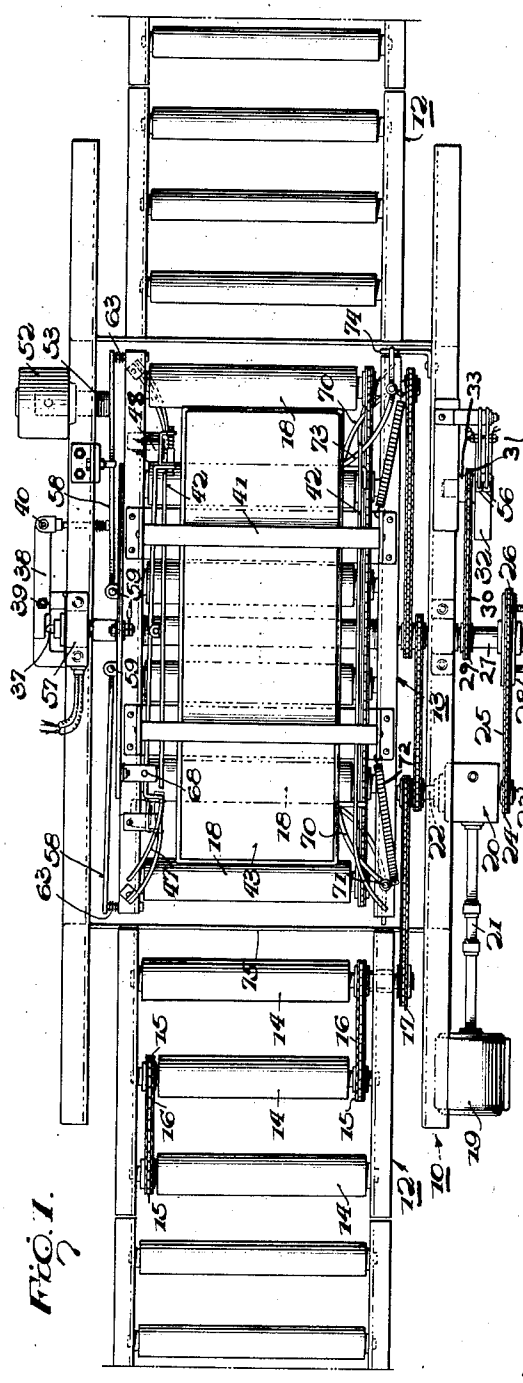


FIG. 1.

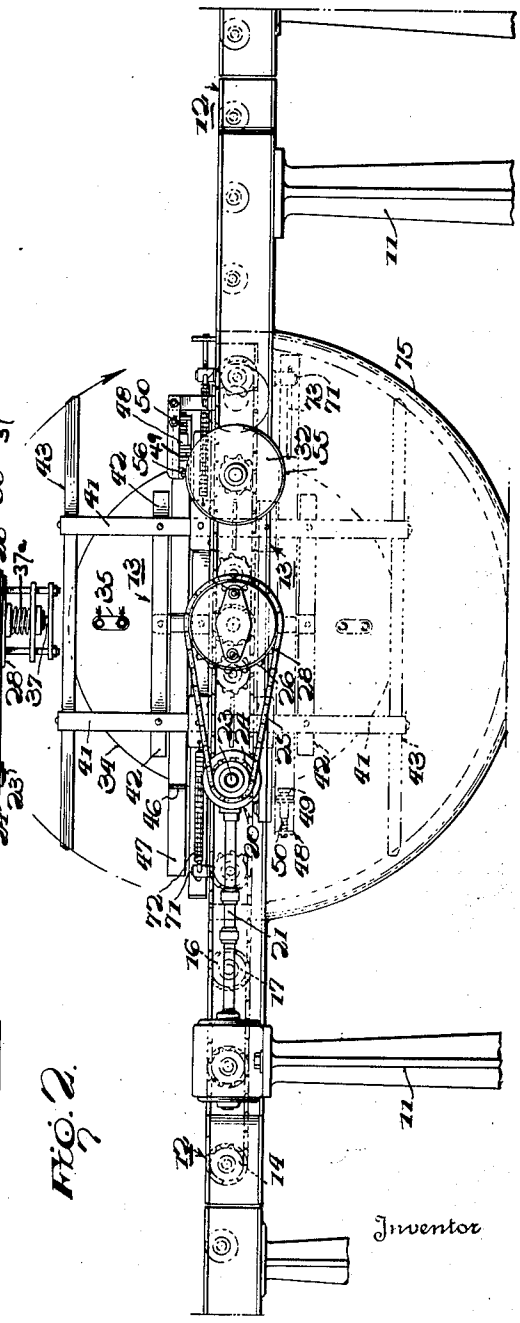


FIG. 2.

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CASE MIXER

Filed Nov. 12, 1938 4 Sheets-Sheet 2

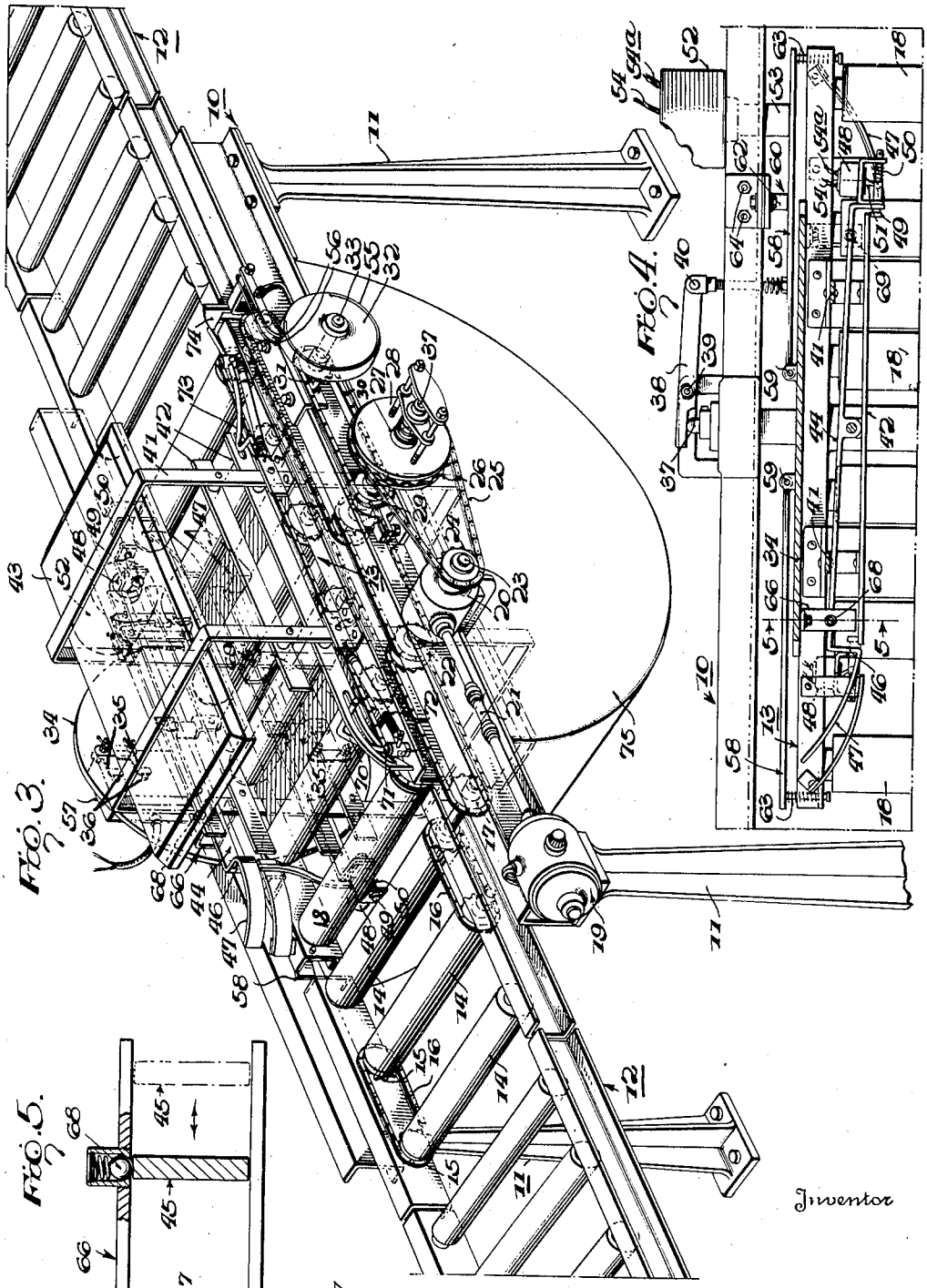


FIG. 3.



FIG. 5.



FIG. 4.

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CASE MIXER

Filed Nov. 12, 1938 4 Sheets-Sheet 3

FIG. 6.

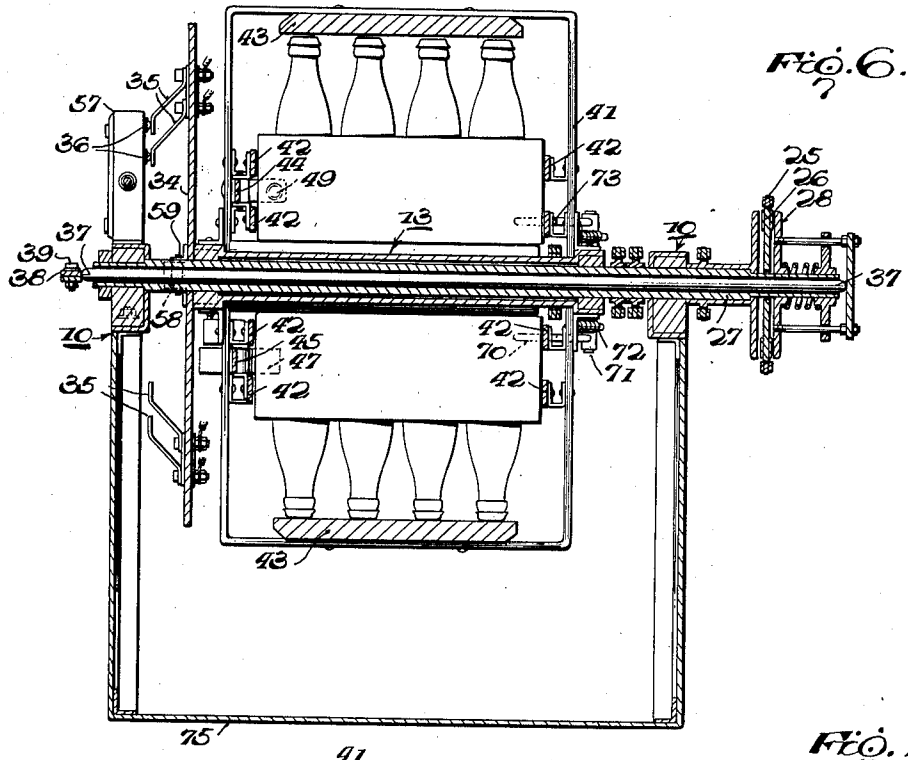
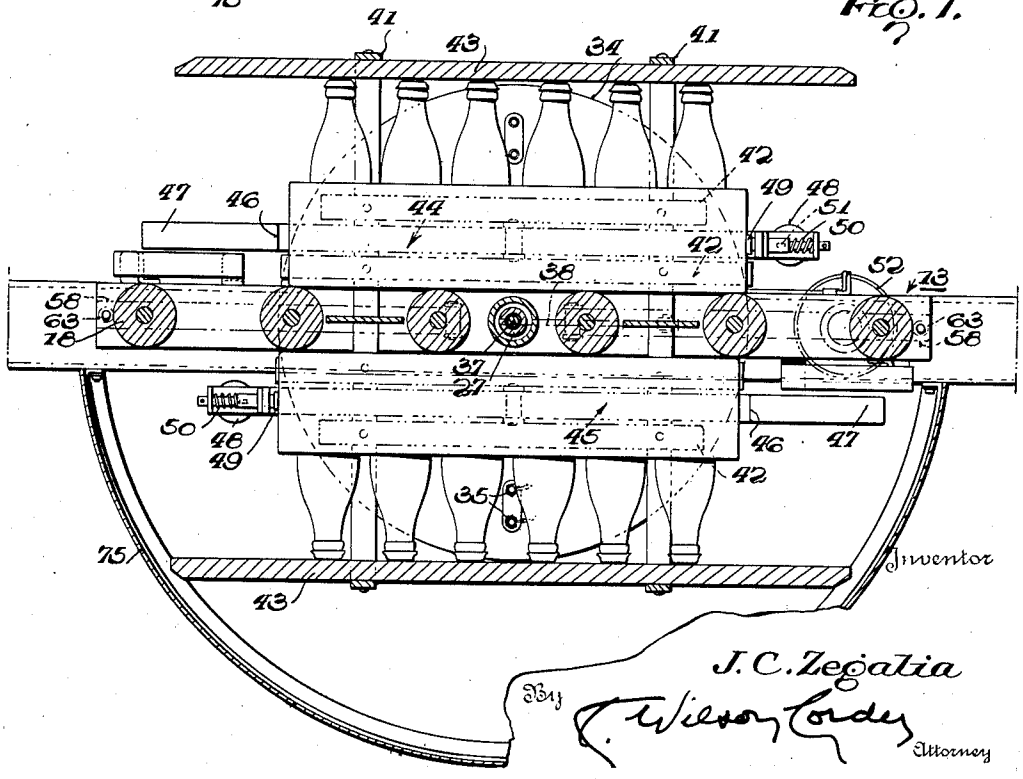



FIG. 7.




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CASE MIXER

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FIG. 8.

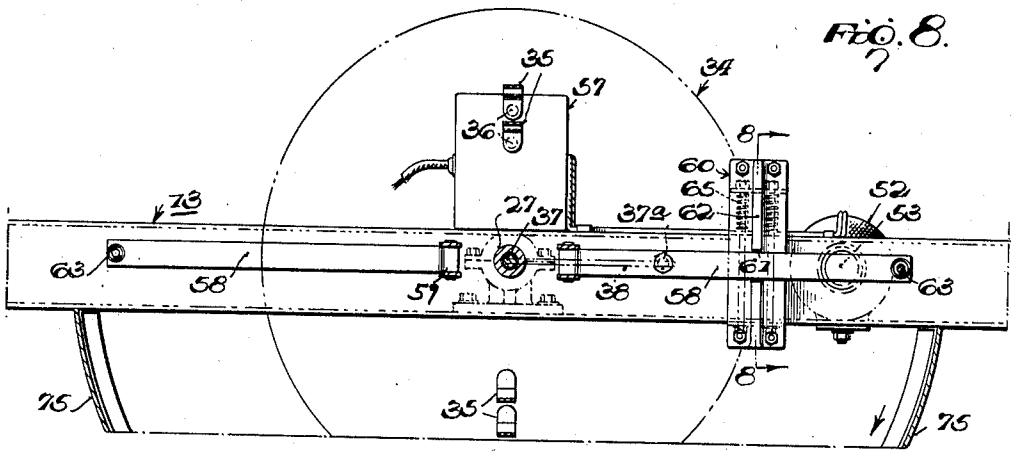



FIG. 9.

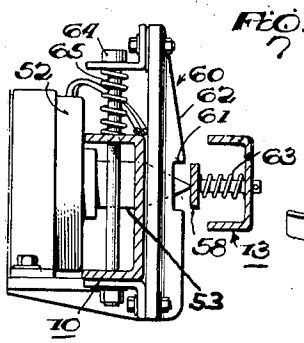



FIG. 10.

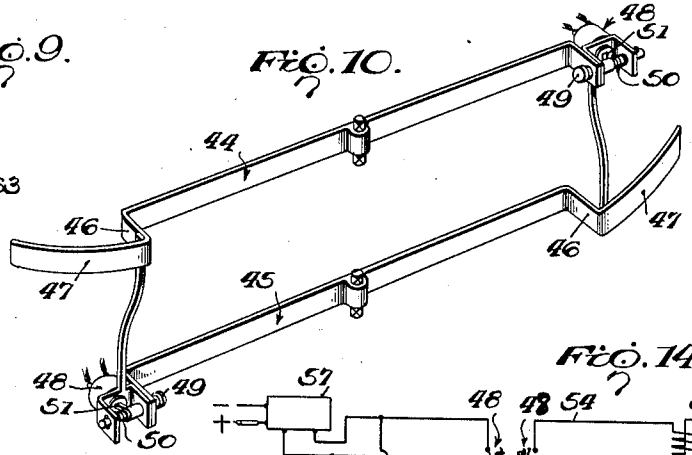



FIG. 14.

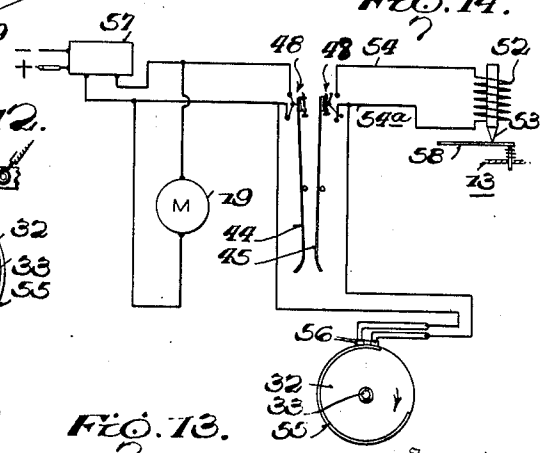



FIG. 11.

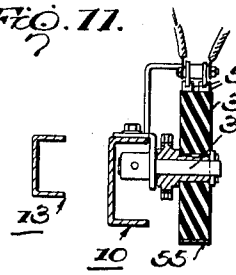



FIG. 12.

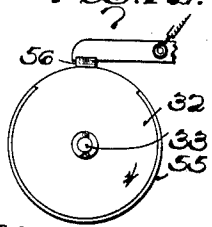
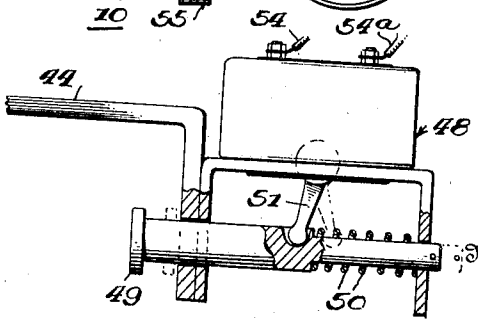



FIG. 13.




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2,293,451

# UNITED STATES PATENT OFFICE

2,293,451

## CASE MIXER

John C. Zegalia, Bethlehem, Pa.

Application November 12, 1938, Serial No. 239,989

10 Claims. (Cl. 259—57)

This invention relates to mixing devices, and more particularly to a new and improved machine for agitating bottled beverages in such manner as to thoroughly unite the contents thereof, it being contemplated that two full cases of bottles may be thus handled simultaneously.

In certain well-known types of fillers used in the soft drink industry, a measured quantity of syrup is first deposited in the bottle, and then water which has been impregnated with carbonic acid gas to a comparatively high degree is introduced into the container, this latter process being carried out slowly and quietly in order that the gas may not be separated from the water, it being desirable that the two be kept together in order that a suitably carbonated drink may be produced, experience having shown that the potability of the average beverage is greatly enhanced by this condition. Since gas and water have little affinity for each other and tend to separate, the filling of the bottles must as aforesaid be carried on quietly and with a minimum of agitation; the result being that the water is in effect floated upon the syrup; and when the bottle is crowned, two distinct strata of contents are present. That is, the syrup rests in the bottom of the container and the water in the upper portion thereof.

Before the beverage enters the channels of trade, it is necessary that the contents be mixed, as otherwise a drink which is too weak when first opened, and too strong or too sweet in its later stages will result. Again, the appearance of a beverage which has not been properly mixed is undesirable. And finally, certain automatic inspection machines which have recently been devised are reported to function most efficiently when working on bottles the contents of which furnish a uniform resistance to the passage of light therethrough, any other condition sometimes resulting in the machine rejecting bottles which are otherwise unobjectionable, this fact further suggesting the desirability of thorough mixing.

Heretofore, various means have been proposed to accomplish the mixing referred to above, one of the commonest being to simply station a man at some point in the line before the beverages leave the plant, the duties of this individual being to grasp each bottle as it appears and thoroughly agitate same by hand. This action is often unsatisfactory because complete mixing may not result; is hard on the man doing the work, particularly when the plant is engaged in full production; and may generally be characterized as crude and unscientific.

Various mechanical devices have been proposed to accomplish the desired result, but these have not been uniformly satisfactory, either because of the cost thereof, inadequate mixing, or the requirement that their operation be supplemented by hand operation, this meaning that such machines do not fully solve the labor problem centering around the instant operation.

An object of the present invention is to produce a case mixer which thoroughly and efficiently mixes the contents of all bottles entering thereinto.

Another object is to produce a device of this type which will be fully automatic in its operation.

A still further object is to produce a case mixer which may be produced at relatively small cost.

Another object is to provide a compact mixer which occupies a small space in a bottling plant.

These and other objects made apparent during the further progress of this specification are accomplished by means of my invention, a full and complete understanding of which will be facilitated by reference to the drawings herein, in which:

Fig. 1 is a top plan view of the instant case mixer installed in the conveyor line of a bottling plant.

Fig. 2 is a side view of the structure illustrated in Fig. 1.

Fig. 3 is a view in perspective of the instant device.

Fig. 4 is an enlarged fragmentary view showing in detail certain elements of my invention having primarily to do with the actuation thereof.

Fig. 5 is an enlarged view, partially in section, taken along the line 5—5 of Fig. 4, looking in the direction of the arrows, illustrating a still further detail of the structure employed to maintain the switch levers in and out of position.

Fig. 6 is an enlarged vertical cross-sectional view taken transversely through the center of the instant device.

Fig. 7 is a side view of the machine, partially in cross-section, showing same holding two cases of beverage and engaged in the mixing process.

Fig. 8 is a side view, diagrammatic in part, illustrating certain electrical elements of the machine.

Fig. 9 is an enlarged side view of the latch release mechanism employed.

Fig. 10 is a view in perspective of the two switch levers, with associated switches, employed in the instant structure.

Fig. 11 is a vertical cross-sectional view of the electrical timing device or commuter used in the instant machine.

Fig. 12 is a side view of certain of the structure shown in Fig. 11.

Fig. 13 is an enlarged view, portions of which are broken away, illustrating in detail the case switch used in conjunction with the energizing of my device.

Fig. 14 is a wiring diagram illustrating one method of connecting the various elements of my case mixer.

Referring now to the drawings (Figs. 3 and 7), it will be seen that the instant device comprises a fixed frame 10 suitably supported as by legs 11, inserted in and attached to a line of gravity roller conveyors 12; and a revolving turntable 13 calculated to receive cases of bottled beverages and rotate same in such a manner as to effect a mixing of the contents thereof, as will be made clear hereafter.

On the infeed side of the device are located three driven rollers 14 (Figs. 1 and 3), said rollers having sprockets 15 on their ends which in conjunction with chains 16 and driving sprocket 17 serve to propel said rollers at all times when the machine is running. Turntable 13 carries six similarly powered rollers 18, all of said elements being actuated by motor 19 operating through reduction gear box 20 in conjunction with drive shafts 21 and 22.

A shaft 23 drives sprocket 24 which engages chain 25 and a larger sprocket 26 mounted upon a hollow drive shaft 27 and associated with conventional dry disc clutch mechanism 28 in such manner that while sprocket 26 is constantly revolving when motor 19 is energized, shaft 27 and associated turntable only rotate when the clutch mechanism is operative, as will be made clear during the further progress of this specification. An additional sprocket 29 is fixedly mounted on shaft 27, and through chain 30 and sprocket 31 drives an electric timing device or commuter 32, mounted on frame 10, by means of shaft 33.

On one side of turntable 13 is rigidly mounted a disc 34 to which is attached electric contacts 35 (Fig. 6), these elements being mounted in pairs, two for each case position, and calculated to strike companion contacts 36 mounted on frame 10 when the turntable is in a horizontal position.

Through the center bore of shaft 27 operates clutch plunger 37 (Fig. 1), which element, when forced outwardly by spring 37*a*, upon movement of arm 38 which is pivoted at 39 and 40, causes clutch 28 to become engaged, with the result that turntable 13, which is fixedly mounted to shaft 27, revolves in its entirety so long as this condition continues.

Turntable 13 comprises essentially a section of roller conveyor having steel guards 41 and 42 on its side (Fig. 3), and a wooden guard 43 at the top, the height of the compartment thus formed being fractionally greater than that of a case containing bottled beverages, it being contemplated that such cases shall freely enter and leave this member, yet be safely held therein during the mixing operation. It will be noted that the lower or bottom portion of turntable 13 is identical with its upper section, one being a duplication of the other.

Pivotally mounted to 13 are two levers 44 and 45 (Figs. 10 and 3), said levers being rigidly connected to each other in reverse positions so that if 44 is in, 45 is out. These levers on their infeed sides are curved and bent as at 46 and 47 in order that a case being directed against said latter surface by rollers 14 and 18 shall cause the lever to move outwardly, and having passed said surface, be prevented from moving rearwardly by stop 46, same being brought into effective position by the impact of the case upon the other end of the lever, as will be explained more fully hereafter. The levers carry identical case switches 48 (Figs. 13 and 2), said switches having a plunger member 49 normally held outwardly through the tension of spring 50, said plunger or button serving to actuate a switch lever 51, whereby during the time 49 is held inwardly, the switch will remain closed, thereby completing the circuit through same; and upon release of the plunger, the switch is automatically cut off and the circuit broken.

A solenoid 52 (Figs. 1 and 9), having a plunger 53 is mounted on the side of frame 10, switches 48 being connected to said solenoid through wires 54 and 54*a*.

Said switches are connected parallel to electric timing device 32, the latter comprising a fiber roller faced with brass 55 approximately 272° of its circumference, plus two metal brushes 56, likewise connected to the solenoid circuit, said brushes riding upon brass surface 55 and keeping the circuit closed while in contact therewith.

The electric power line connects with the machine through fuse or junction box 57 (Fig. 8), leads issuing therefrom to the different elements to be operated thereby (Fig. 14).

A pair of latch members 58 are pivotally mounted to turntable 13 as at 59 (Fig. 1), said latch members normally locking the table in horizontal position by virtue of engaging a keeper 60 (Fig. 9) anchored to frame 10, said keeper having an indentation 61 into which the latch normally slides upon gliding along surface 62, the pressure of spring 63 aiding this result. Element 60 is mounted to frame 10 through bolts 64 upon which are positioned springs 65, the resulting structure forming a shock absorber at this point so that when one of the latches enters indentation 61, the jar or impact of the sudden stopping of the turntable is cushioned and softened.

In order that switch arms or levers 44 and 45 may be positively maintained in either open or closed position, a spring toggle 66 (Figs. 4 and 5) is mounted on disc 34, a U-shaped bracket 67 providing a space within which lever 45 is free to move, spring rest detents 68 and 69 serving to engage said lever and hold it in position until upset by a force greater than that exerted by said springs, as when the end of a case entering the turntable strikes surface 47.

Catches 70, pivotally mounted as at 71 and held in position by springs 72, permit the entry of a case onto the turntable, but when this has been effected, snap back into position and prevent the case from sliding backwards during the operation of the machine. Similar elements 73 are mounted at the forward ends of the turntable and serve to prevent the cases from falling downwardly while in tilted position. Release ramp 74 is mounted on frame 10 for the purpose of holding levers 73 out of position when the turntable is level, thus permitting said cases to automatically move out of the device once the mixing operation is complete.

A sheet metal guard 75 is mounted on the under side of frame 10 to prevent cases from falling

to the floor in the event catches 70 or 73 should fail to function.

While it is believed that the suggestion contained in the foregoing detailed description of a preferred embodiment of my invention suggests in a large degree the manner in which same operates, I will supplement such by the following description of operation:

A case of bottled beverage proceeding along conveyor line 12 (Fig. 3) is picked up by driven rollers 14 and 18 and urged forwardly against surface 47 of lever 44 with the result that said lever is pivoted sharply to the left, thereby bringing switch 48 in line to stop said case when the end thereof reaches that point, the resultant impact upon lever 51 closing said switch, this action in turn energizing plunger 53 of solenoid 52 in such manner as to drive latch 58 out of indentation 61 (Figs. 1 and 9), said movement further causing lever 38 to allow clutch release element 37 to move outwardly (Figs. 4 and 1), thereby engaging clutch 28 and causing turntable 13 to be rotated clockwise. During the initial stages of this movement, contact points 35 and 36 close the circuit to solenoid 52 (Figs. 6 and 3); and as disc 34 revolves with the turntable, these contacts are broken, but not before points 56 of commuter 32 have come into engagement with brass surface 55 thereof, the result being that from this point on the solenoid circuit, and hence the instrumentalities which keep the turntable rotating, are energized through this point. The length of the circumference of the electrical timing device is such that this contact is effective during the time that turntable 13 makes one and one-half revolutions, at which time the circuit is broken by virtue of points 56 coming into contact with that portion of the outer rim of 32 which is non-conductive; plunger 53 then being automatically withdrawn and latch 58 engaging latch catch 60 (Fig. 9) as described heretofore; the result being that clutch 28 is thrown out and the turntable is securely locked in horizontal position, the bottles in the case now hanging neck downwardly on the under side of the turntable (Fig. 7).

A second case entering the machine now repeats the process just described with relation to the initial carrier, it being apparent that said second case ends up on the bottom after completing one and one-half revolutions, and the first, its contents having been mixed through three complete turns and an intermediate period of suspension, is now ready to leave the device. Ejection is automatic, it being apparent that the entry of said second case has tipped lever 45, carrying with it lever 44, in such manner as to release switch 48 and associated elements from the front of the first case, while ramp 74 has caused lever 73 to be likewise removed simultaneously with the leveling of the apparatus. Powered rollers 18 now carry the case out of the device and onto the conveyor line where routine handling may then occur.

From the above, it will be apparent that I have described a new and useful mixer which is automatic in its operation, positive in its action, thorough in its work, and economical of construction.

The appended claims are to be as broadly construed as my contribution to the art warrants.

I claim:

1. In a device of the character described, a supporting framework, a pair of spaced alined conveyor sections, a rotatable turntable pivotally mounted between said sections, a switch lever pivotally mounted on said turntable, a switch carried by said lever, a spring toggle for maintaining said lever in position, a latch normally maintaining said turntable in a horizontal plane, a shock absorber associated with said latch, a solenoid serving to disengage said latch when energized by the closing of said switch, clutch release mechanism pivoted to said latch, a drive shaft for said turntable, a clutch mounted on said shaft, means to drive the shaft and associated elements, and means regulating the extent of rotation of the turntable upon the device becoming operative.

2. In a device of the character described, a supporting framework, a pair of spaced alined conveyor sections associated therewith, a rotatable turntable pivotally mounted between said sections, a latch normally maintaining said turntable in a horizontal plane, means including a solenoid for disengaging said latch, and means regulating the number of revolutions said turntable is permitted to make when the latch is thus disengaged.

3. In a device of the character described, a supporting framework, a pair of spaced alined roller conveyor sections carried thereby, means for driving said rollers, a rotatable turntable pivotally mounted between said sections, a lever mounted on said turntable, a switch mounted on said lever in such a manner that a case of bottled beverage entering the turntable automatically closes said switch, a latch normally maintaining the turntable in a horizontal plane, a solenoid serving to disengage said latch when energized by the closing of said switch, means for rotating said turntable, and means governing the extent of said rotation.

4. In a device of the character described, a supporting framework, a pair of spaced roller conveyor sections carried thereby, a rotatable turntable pivotally mounted between said sections, means for driving the conveyor rollers on the infeed side of said turntable, and means for automatically actuating said turntable upon the admittance of a case of bottled beverage thereto, whereby said turntable is revolved a predetermined number of times.

5. In a device of the character described, a supporting framework, a pair of spaced conveyor sections, a rotatable turntable pivotally mounted within said sections, a switch lever pivotally mounted on said turntable, said switch lever having a curved face on its infeed side so that a case of bottled beverage engaging said face causes the lever to pivot and bring the end thereof into the line of travel of the case, a switch mounted on said end, and means for rotating said turntable a predetermined number of times upon said switch's being closed as by contact with the end of said case.

6. In a device of the character described, a supporting framework, a pair of spaced alined conveyor sections, a rotatable turntable pivotally mounted between said sections, side guards for said turntable, a top member preventing the loss of bottles from a case of bottled beverage, means at opposite ends of said turntable to prevent a case of bottled beverage from sliding therefrom, and means for automatically rotating said turntable a predetermined number of times upon the device becoming operative.

7. In a device of the character described, a supporting framework, a pair of spaced alined roller conveyor sections, a rotatable turntable

pivotally mounted between said sections, means for driving said turntable, and means mounted on said framework and synchronized with said driving means for regulating the extent of such rotation, said means including primary contacts and a commuter.

8. In a device of the character described, a pair of spaced alined roller conveyor sections, a rotatable turntable mounted between said sections, a switch lever pivotally mounted on said turntable, a switch carried by said lever, a latch normally locking said turntable in a horizontal plane, a solenoid serving to disengage said latch when energized by the closing of said switch, clutch release mechanism actuated by said latch, a drive shaft fixedly mounted on said turntable midway between the ends thereof, a clutch mounted on said shaft, means operable to drive the shaft when connected thereto through said clutch, and means for revolving the rollers of the conveyor section on the infeed side of said turntable, whereby a case of bottled beverage is automatically propelled onto said table.

9. In a device of the character described, a supporting framework, a pair of spaced roller conveyor sections, a rotatable turntable pivotally mounted between said sections, means for driving the conveyor rollers on the infeed side of said turntable, check means for preventing a case of bottled beverage from sliding from said turntable during rotation thereof, means for automatically making the check means on the discharge end of the turntable inoperative upon the leveling thereof, and means for revolving said turntable through a predetermined number of degrees upon admission of a case of bottled beverage thereto.

10. In a device of the character described, a supporting framework, a pair of spaced alined roller conveyor sections supported thereby, a rotatable turntable pivotally mounted between said sections, a switch lever pivotally mounted on said turntable, a switch carried by said lever at one end thereof, a spring toggle for retaining said lever in position, a latch normally maintaining said turntable in a plane approximating that of said alined conveyor sections, a shock absorber associated with said latch, a solenoid serving to disengage said latch when energized by the closing of said switch, clutch release mechanism joined with said latch and actuated thereby, a drive shaft fixedly mounted to said turntable at a point midway between the two ends thereof, a clutch mounted on said shaft, means serving to drive the shaft and turntable when said clutch is in operative position, means for rotating the rollers on the infeed side of said turntable, and a source of power input for energizing said solenoid and said driving means.

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