F. TYSON.

BOTTLE CRATE EMPTYING MACHINE.

APPLICATION FILED MAR. 20, 1916.

1,253,748.

Patented Jan. 15, 1918.

2 SHEETS—SHEET 1.

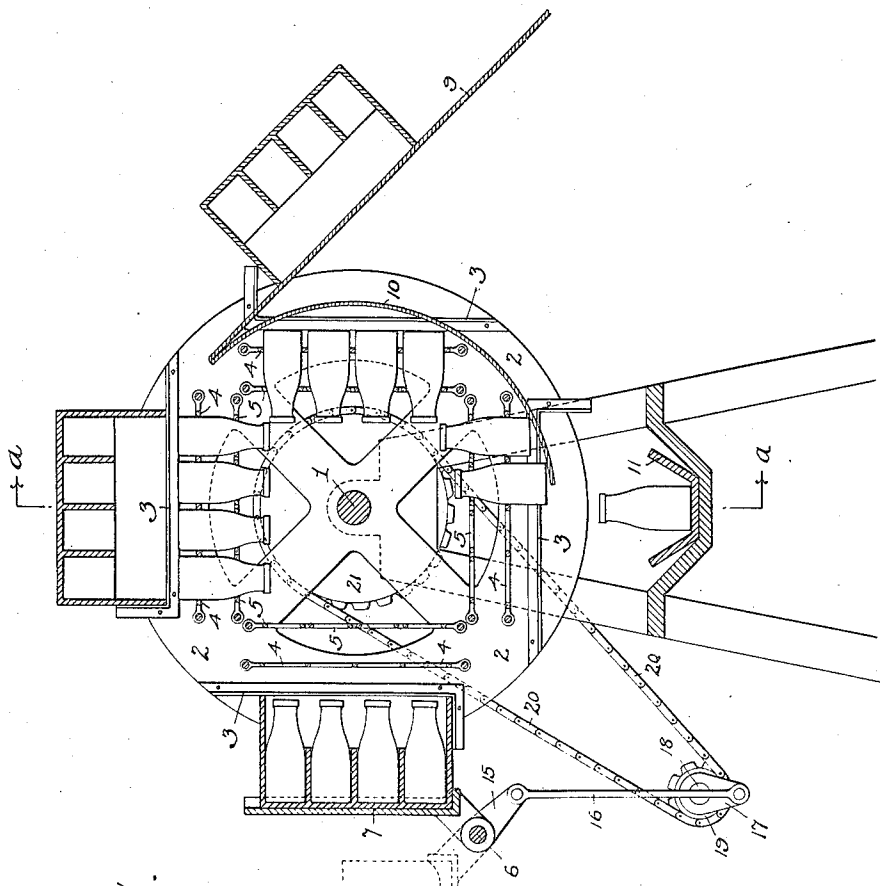


Fig. 1.

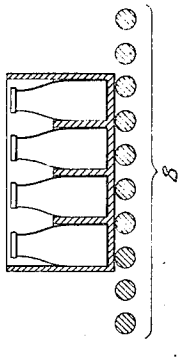


Fig. 2.

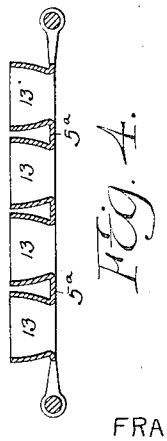


Fig. 4.

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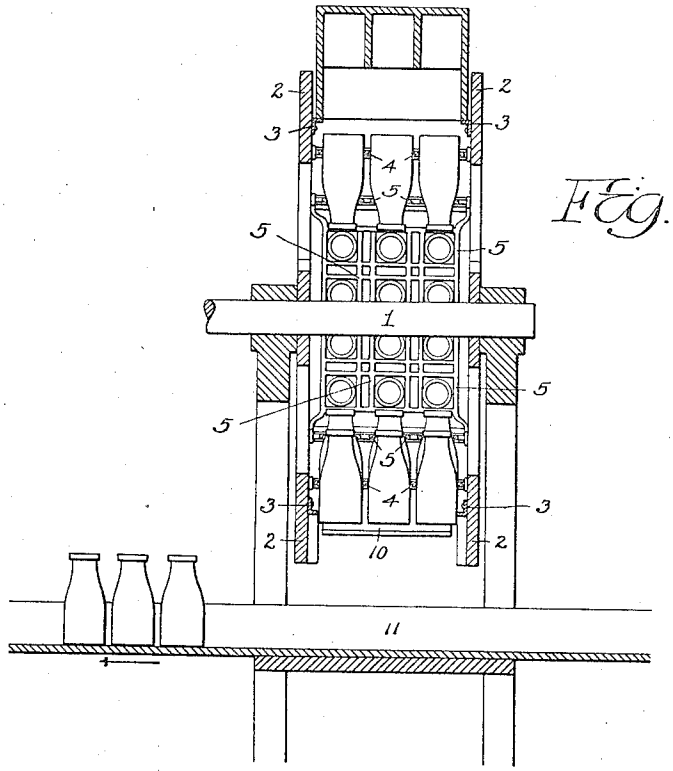


Fig. 2.

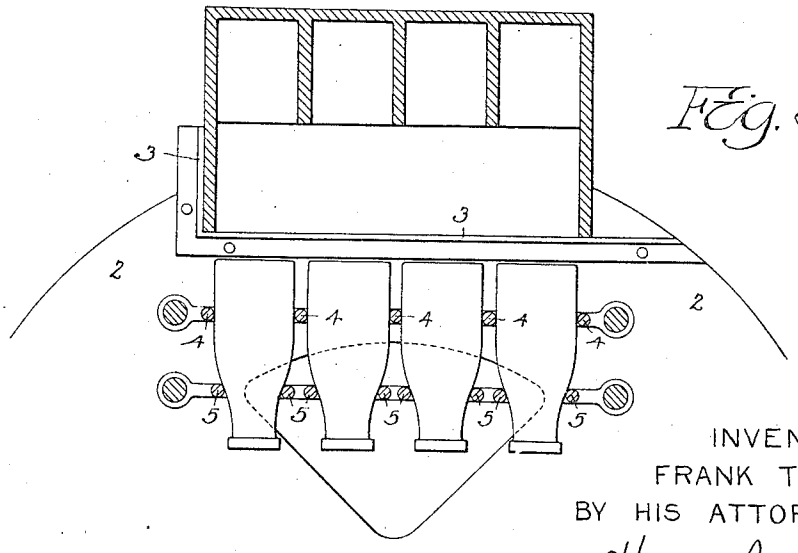


Fig. 3.

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UNITED STATES PATENT OFFICE.

FRANK TYSON, OF CANTON, OHIO.

BOTTLE-CRATE-EMPTYING MACHINE.

1,253,748. Specification of Letters Patent. Patented Jan. 15, 1918.

Application filed March 20, 1916. Serial No. 85,365.

To all whom it may concern:

Be it known that I, FRANK TYSON, a citizen of the United States, residing in Canton, Ohio, have invented certain Improvements in Bottle-Crate-Emptying Machines, of which the following is a specification.

One object of my invention is to provide for the quick and safe removal of bottles from bottle crates, such as those used for the transportation of milk bottles, a further object being to provide for the delivery of the empty crates at a different point from that at which the bottles are delivered, and a still further object being to provide for the delivery of the bottles in a single row.

These objects I attain in the manner hereinafter set forth, reference being had to the accompanying drawings, in which—

Figure 1 is a longitudinal section, illustrating the essential features of a bottle crate emptying machine constructed in accordance with my invention;

Fig. 2 is a transverse section on the line *a*—*a*, Fig. 1;

Fig. 3 is an enlarged section of part of the machine looking in the same direction as in Fig. 1, and

Fig. 4 is an enlarged view of a modified form of bottle receiver.

In the drawings, 1 represents a shaft having thereon a crate carrier consisting of suitably spaced disks 2 which are rotated by any appropriate means, either continuously, or intermittently to the extent of a quarter turn at each movement. On the inner faces of these disks are secured crate receivers, each comprising opposed bars 3, preferably of angular cross section, as shown in Fig. 2, and each presenting two members one at a right angle to the other, as shown in Fig. 1, each crate receiver being therefore open at its forward end.

Extending from one disk to the other adjacent to the bars 3 are outer and inner racks 4 and 5, preferably composed of wire, and having therein openings for the reception of inverted bottles dumped from an inverted crate resting on the bars 3, the openings in the inner racks 5 being of less dimensions than those in the outer racks 4 so that a series of bottles dumped mouth down from a crate will be caught and held by said racks, the contracted mouth portion of the bottles passing freely through the openings in both racks, but said bottles being caught and held by engagement of their tapering necks with the wires of the inner rack 5.

In front of the machine is a rock shaft 6 carrying a loading shelf 7, rocking movement to the extent of a quarter turn being imparted to said shaft 6, as hereinafter described, so as to carry the shelf from the position shown by dotted lines in Fig. 1 to that shown by full lines in said figure, the shelf, when in the position shown by dotted lines, Fig. 1, receiving a bottle crate from the adjacent roller table 8 and, as it swings from such position to that shown by full lines in Fig. 1, delivering said crate onto a crate receiver formed by opposite bars 3 on the crate carrier disks 2.

As soon as the crate, on the forward movement of the carrier, reaches such a position that the bottles will slide or drop therefrom by gravity said bottles will be discharged, mouth inward, into the racks 4 and 5 below the crate and will be held by said racks during the further rotation of the carrier until they finally reach the point of discharge.

When the crate reaches the top of the machine the bottles will have been completely discharged therefrom and held by the racks 4 and 5 and when, on the further rotation of the crate carrier, the crate reaches the delivery side of the machine it will slide from the carrier onto an inclined delivery chute 9 by which it may be directed to any suitable point.

At the crate delivering side of the machine is a segmental guide plate 10 and as the bottle carrying racks 4 and 5 pass from the vertical position shown at the right hand side of Fig. 1 to the horizontal position shown at the bottom of said figure, the bottles will slide from the racks until their bottoms strike the segmental guide 10, which will thus serve to retain them in the upright position during the further movement of the carrier, until each row of bottles reaches the end of the guard plate 10, whereupon the bottles of the row will drop, mouth up, onto a transversely traveling conveyer 11 below the crate carrier, this conveyer moving at such a rate of speed that, between the delivery of successive rows of bottles thereto, it will have carried the first row out of the way of the next, so that the bottles, as delivered by the conveyer 11, will be disposed close together in a single row.

Any desired means may be employed for

rocking the shelf 7 so as to cause it to operate in unison with the movements of the carrier disks 2. In the present instance I have shown the shaft 6 as provided with an arm 15 which is connected by a rod 16 to an arm 17 on a shaft 18, the latter having a wheel 19 which is connected by a belt 20 with a wheel 21 on the shaft 1, the wheels 19 and 21 being, by preference, sprocket wheels and the belt 20 a chain belt, so as to provide for positive operation of the shaft 18 from the shaft 1, the relative sizes of the sprocket wheels 19 and 21 being such that the shelf 7 will be swung from the position shown by full lines in Fig. 1 to the position shown by dotted lines in said figure, and back again, during a quarter turn of the disks 2.

Bottle receivers each consisting of a plurality of racks spaced apart from one another, while preferred, are not essential to my invention, and in Fig. 4 I have illustrated a modified form of bottle receiver consisting of a single rack 5^a having cups 13 thereon for receiving the tapering necks of the bottles and preventing lateral tilting of the same.

I claim:

1. The combination, in a bottle crate emptying device, of a crate carrier having a receiver for the filled crate, means for moving said crate carrier so as to invert the crate and discharge the bottles therefrom mouth down, a bottle receiver into which the bottles are discharged from the crate, and means for inverting said bottle receiver so as to discharge the bottles therefrom mouth up.

2. The combination, in a bottle crate emptying device, of a crate carrier having a receiver for the filled crate, means for moving said crate carrier so as to invert the crate and discharge the bottles therefrom mouth down, a bottle receiver into which the bottles are discharged from the crate, means for inverting said bottle receiver so as to discharge the bottles therefrom mouth up, and a traveling conveyer for receiving the discharged bottles.

3. The combination, in a machine for emptying bottle crates, of a crate carrier having a receiver for the filled crate, means for moving said carrier so as to invert the crate and discharge the bottles therefrom, a bottle receiver in which the bottles are disposed in parallel rows, and means for discharging the rows of bottles in succession from said receiver.

4. The combination, in a machine for emptying bottle crates, of a crate carrier having a receiver for the filled crate, means for moving said carrier so as to invert the crate and discharge the bottles therefrom, a bottle receiver in which the bottles are disposed in parallel rows, means for discharging the rows of bottles in succession from said receiver, a carrier for receiving said successive rows of bottles, and means for moving said carrier so that each row of bottles will be out of the way of the next.

5. The combination, in a machine for emptying bottle crates, of a carrier having a receiver for the filled crate, and a receiver for the bottles, means for moving said carrier so as to invert the crate and discharge the bottles therefrom into the bottle receiver, and then continue the movement, and means for retaining the bottles in said bottle receiver while the carrier is moving to a bottle discharging point.

6. The combination, in a machine for emptying bottle crates, of a carrier having a receiver for the filled crate, and a receiver for the bottles, means for moving said carrier so as to invert the crate and discharge the bottles therefrom into the bottle receiver and then continue the movement, a segmental guard plate for maintaining the bottles in the bottle receiver during such continued movement, and a traveling conveyer for receiving the bottles as they drop from the bottle receiver at the end of said segmental guard plate.

7. The combination, in a bottle crate emptying device, of a crate carrier having a receiver for the filled crate, a bottle receiver consisting of a pair of racks spaced apart from one another, the openings of one rack being less in size than those of the other, means for moving the crate carrier so as to invert the crate and discharge the bottles mouth down through the openings of one rack and into the openings of the other rack of the bottle receiver, the latter rack engaging the necks of the bottles and preventing their further downward movement, and means for afterward inverting the bottle receiver so as to permit of the discharge of the bottles therefrom mouth upward.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

FRANK TYSON.

Witnesses:
KATE A. BEADLE,
HAMILTON D. TURNER.