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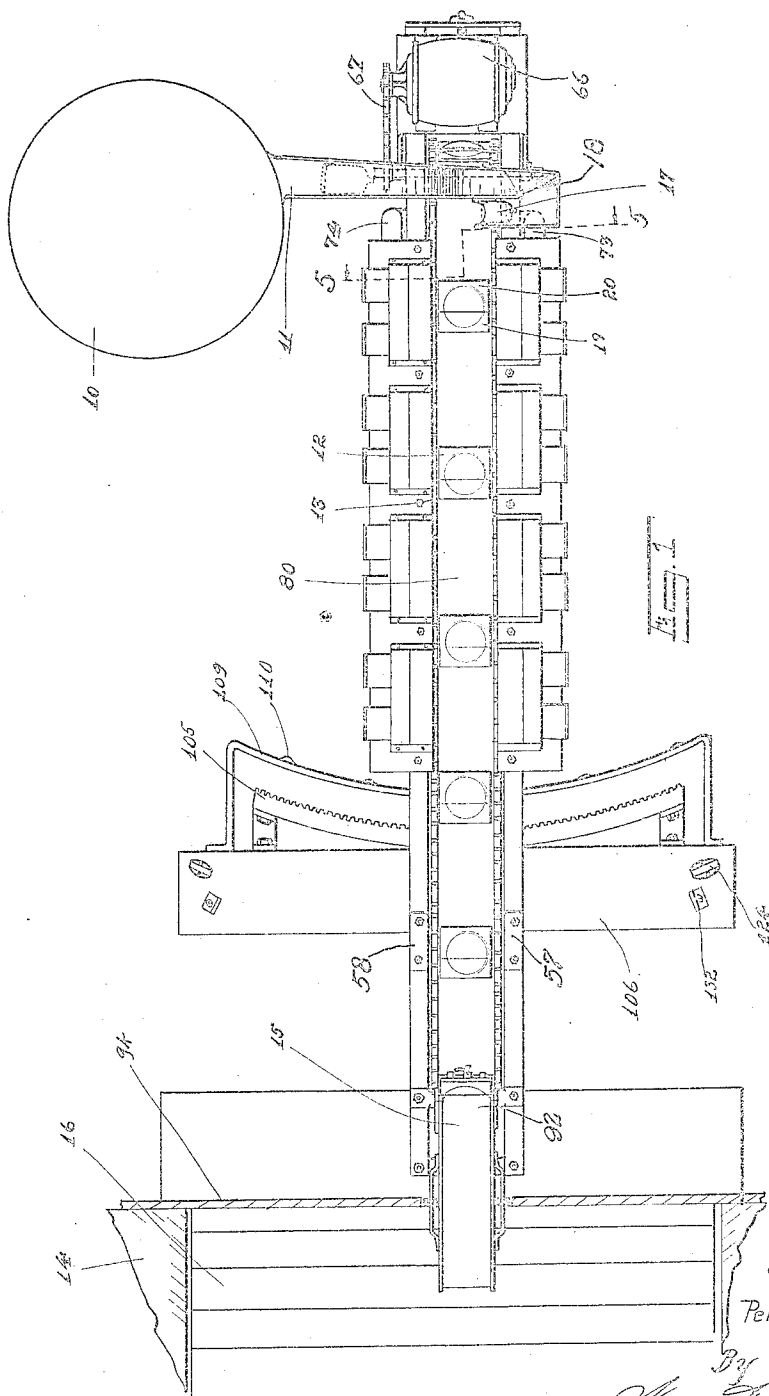
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P. Q. WILLIAMS

LEER CONVEYER

Filed June 3, 1922

6 Sheets-Sheet 1



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Sept. 2, 1924.

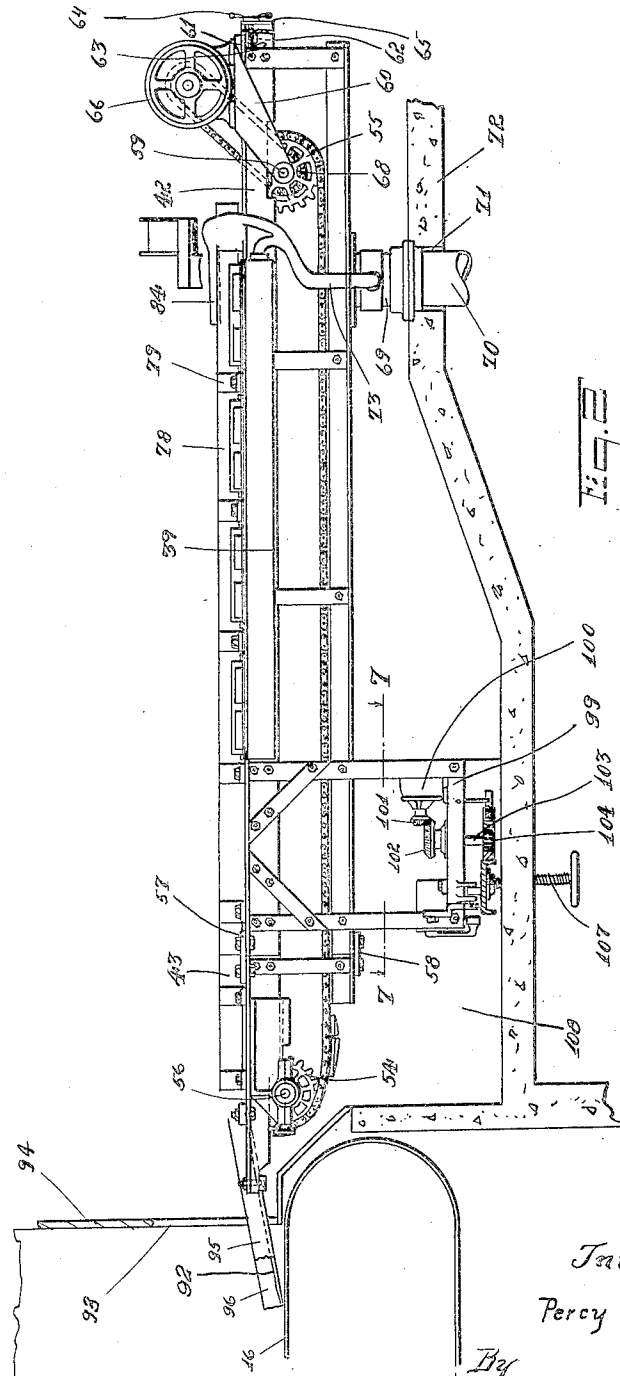
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LEER CONVEYER

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6 Sheets-Sheet 2



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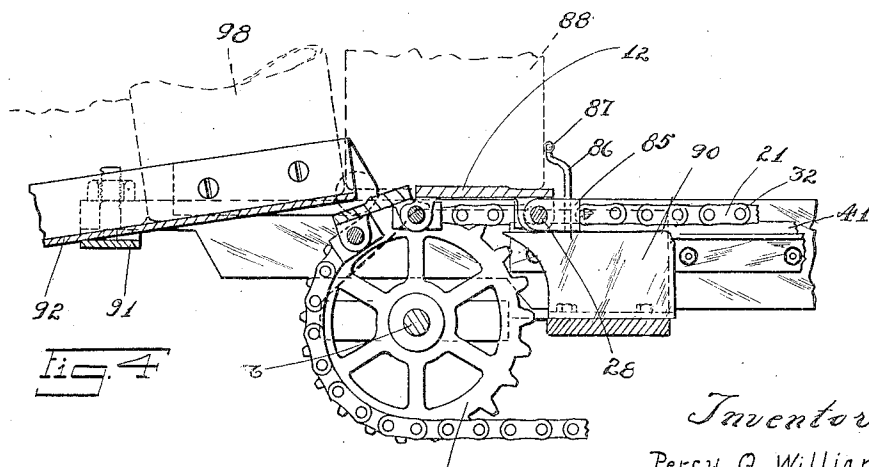
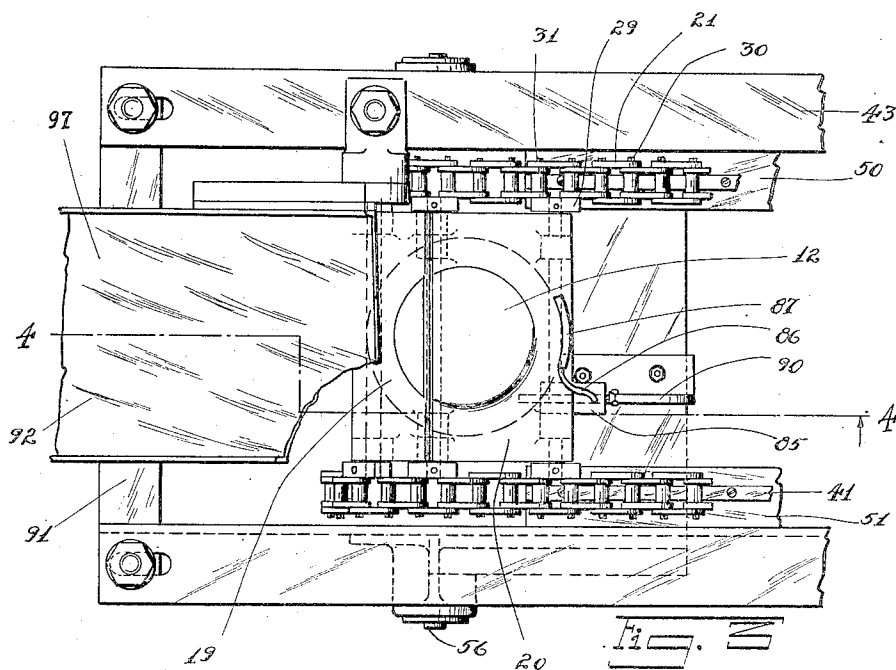
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LEER CONVEYER

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6 Sheets-Sheet 3



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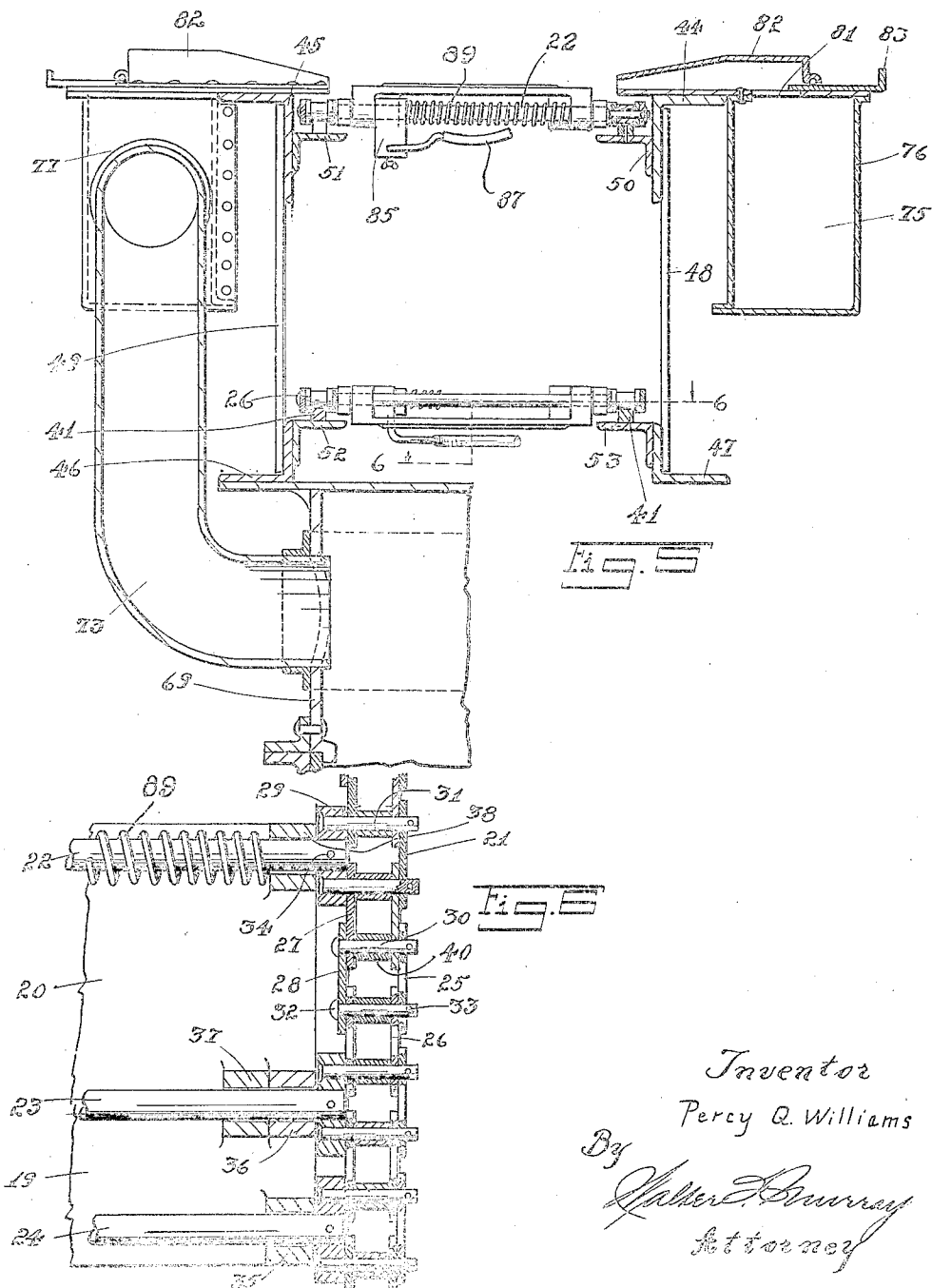
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LEER CONVEYER

Filed June 3, 1922

6 Sheets-Sheet 4



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May 6, 1924.

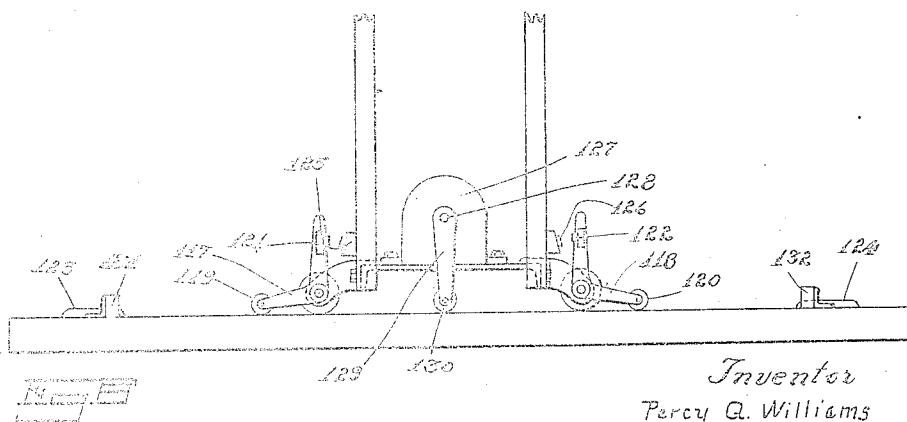
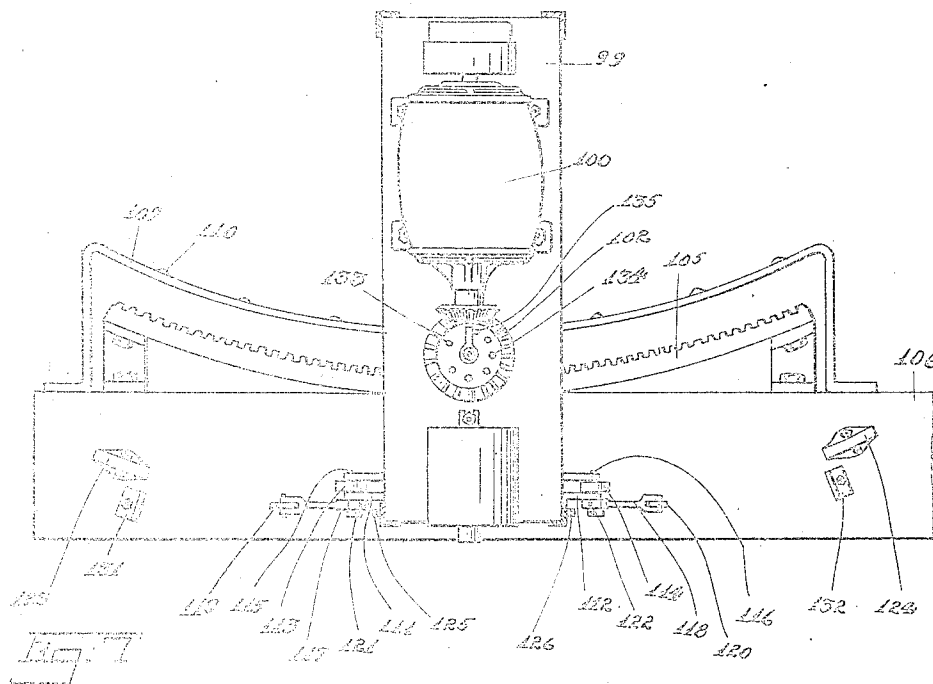
P. O. WILLIAMS

LIER CONVEYER

Filed June 5, 1922

6 Sheets-Sheet 5

1,507,301



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Sept. 2, 1924.

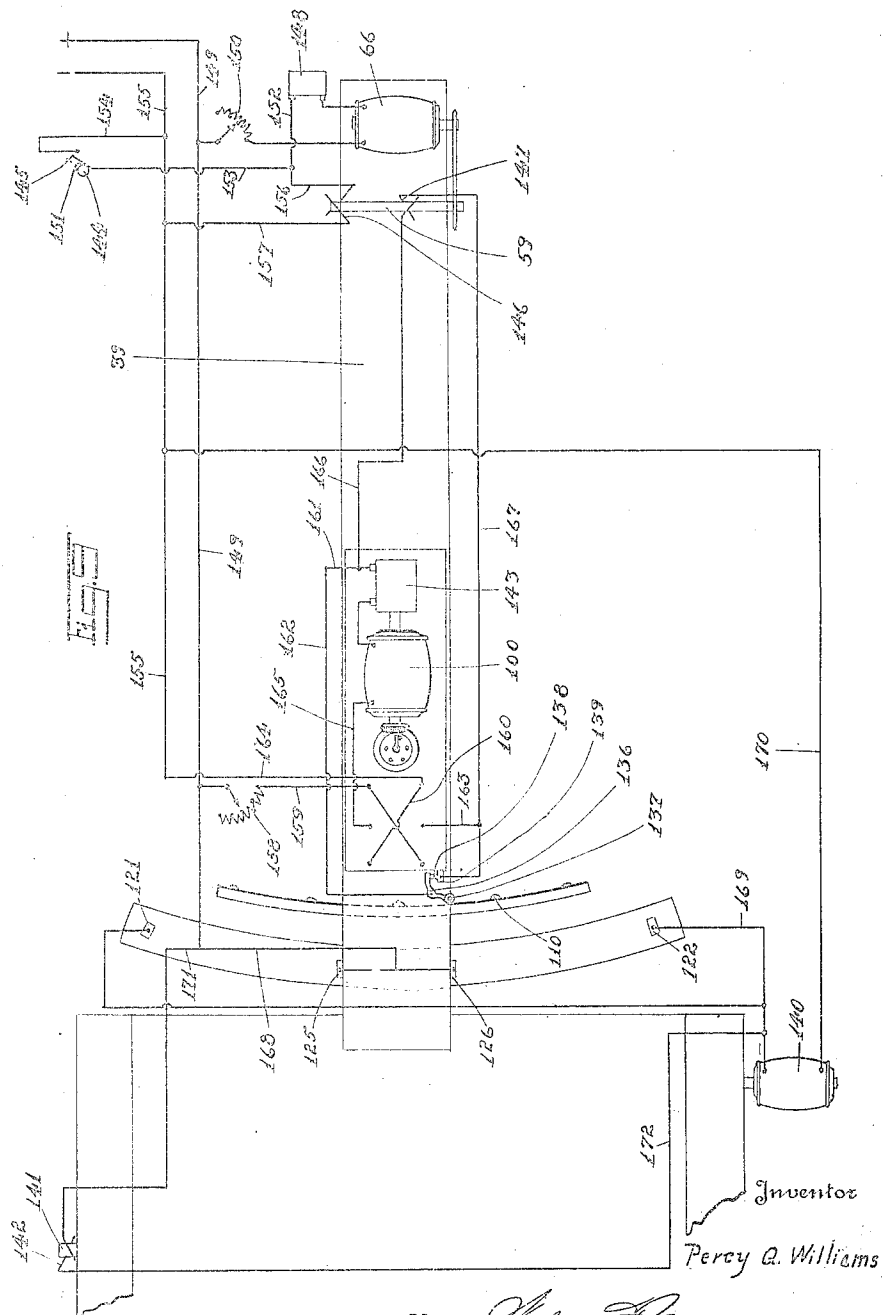
P. Q. WILLIAMS

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LEER CONVEYER

Filed June 3, 1922

6 Sheets-Sheet 6



UNITED STATES PATENT OFFICE.

PERCY Q. WILLIAMS, OF CINCINNATI, OHIO.

LEER CONVEYER.

Application filed June 3, 1922. Serial No. 565,733.

To all whom it may concern:

Be it known that I, PERCY Q. WILLIAMS, a citizen of the United States of America, and a resident of Cincinnati, in the county of Hamilton and State of Ohio, have invented a new and useful Improvement in a Leer Conveyer, of which the following is a specification.

My invention relates to apparatus for receiving glass ware, such as bottles, jars, etc., and transferring them to a leer and placing them in position on the leer conveyer, and is in the nature of a device disclosed by me in my co-pending application Serial No. 516,518, filed Nov. 21, 1921, and my co-pending application filed of even date herewith.

The device disclosed herein is for use in handling large bottles, such as gallon bottles and jugs, which because of their size, mass and heavy bases, cannot be handled on devices which up to this time have been employed with glass ware.

An object of my invention is to provide a simple conveyer mechanism.

Another object of my invention is to provide a device that will be more simple than are the devices that up to this time have been used for handling glass ware.

Another object of my invention is to eliminate the personal element in the handling of large ware.

Another object of my invention is to provide a structure wherein all the operating parts are disposed without the leer, whereby the parts are protected against the wear and damage which necessarily accompanies the extension of operating parts, into the leer.

These and other objects are attained by means described herein and disclosed in the accompanying drawings, in which:—

Fig. 1, is a plan view of a device embodying my invention.

Fig. 2, is a side elevation of parts of the device shown in Fig. 1.

Fig. 3, is an enlarged detail plan view, parts being broken away, of the mechanism disposed at the discharge end of the primary conveyer, all of which form details of my invention.

Fig. 4, is a sectional view on line 4—4 of Fig. 3.

Fig. 5, is an enlarged sectional view on line 5—5 of Fig. 1.

Fig. 6, is an enlarged fragmental view on line 6—6 of Fig. 5.

Fig. 7, is an enlarged view on line 7—7 of Fig. 2.

Fig. 8, is an elevation of the parts shown in Fig. 7.

Fig. 9, is a diagrammatical view showing the wiring of the mechanisms forming details of my invention.

Up to this time it has been the practice in the handling of large ware, such as gallon jugs, to manually lift the jugs from the bottle machine, and to deposit the jugs on the table for a period of time to permit sufficient cooling of the glass to prevent distortion of the jar, to prevent falling of the bottoms of the ware, and to prevent adhering of jars one to the other. In ware of this type, the mass of glass is great, and therefore it is necessary to support the base or bottom of the jar to preclude falling and bulging of the bottom, wherefore these bottles have been placed on a table by one operator, and after the jars have cooled to such extent that the shape thereof will not be varied by further handling thereof, another operator carried the jars to and deposited them in the leer. In the device embodying my invention, the jars are discharged from the bottling machine 10, and by gravity pass over the chutes 11 and 17, to carrier plates 12 of a primary conveyer 13. The plates 12 carry the jars from the chutes to the leer 14, and suitable mechanism 15 is provided to transfer the jars from the carrier plates to the leer conveyer 16. The several parts of the device are operated in timed relation, and the time necessary for a jar to pass from the primary receiving chute 11 to the leer, is such that the glass will be set to such extent that the jars will retain their form, and will not adhere, one to the other, although still somewhat plastic.

The bottle machine 10, may be of any type or kind ordinarily used for forming bottles and jars, and the primary receiving chute may be arranged in a suitable manner, so that the jars when discharged from the machine, will lie upon their sides in the chute. In transverse cross-section the chute is preferably arcuate in form. By inclining the primary receiving chute downwardly from the bottle machine, the jars, under the influence of gravity, pass over the primary

receiving chute 11. The jars when discharged from the bottle machine 10, pass mouth first over the primary receiving chute. The end of the primary receiving chute remote from the bottle machine, is curved upwardly, whereby the chute is given an arcuate shape between its ends. The remote or upending portion of the chute is depressed at a place substantially midway of the sides of the chute, the depression beginning at about that place where the bottom of a jar will be disposed when the jar becomes stationary due to the upward inclination of the remote end of the chute, the line of depression extending lengthwise of the chute. The depressed portion 18 extends downwardly and merges into a secondary chute 17 into which the jar will roll when it has reached its limit of travel in the primary chute. The jar rolls into the secondary chute for the reason that at the time it becomes stationary, it overcharges the depressed portion of the chute to such extent that it will move into the secondary chute under the influence of gravity. The secondary chute is given an inclination such that the jar will move downwardly thereover and be set upon its base on engagement upon one of the carrier plates.

The carrier plates 12, comprise a forward section 19, and a rear section 20, which are hingedly connected with one another. The sections of the carrier plate are mounted upon the carrier chains 21, one each of which is disposed at the opposite ends of the shafts 22, 23 and 24, comprise links 25, 26, 27 and 28, and link blocks 29, which link elements are connected by suitable pins 30 and 31. The pins and link elements are secured against separation by any suitable means such as by providing the pins with heads 32, and employing cotter pins 33, which cotter pins extend thru the pins in a manner well known in the art. The link blocks 29, serve as bearings or retaining elements for the ends of the shafts 22, 23 and 24, and the shafts may be secured upon the blocks by suitable pins 34. The plate sections 19 and 20, have suitable downwardly projecting lugs 35, 36, 37 and 38, formed on them, the lugs having bores thru which the shafts may extend. The lugs 36 of the section 19, and the lugs 37 of the section 20, are mounted on the shaft 23, whereby a hinge connection between the plate sections is attained. By referring to Fig. 6, it is readily apparent that the pins 30 may be readily removed to permit removal of the chains 21 from the frame 39 of the primary conveyer. The pins 30 and 31 carry sleeves or rollers 40, which serve both to space the links disposed at opposite ends of the pins, and also to provide bearings adapted to engage the tracks 41, carried by the conveyer frame 39. The conveyer frame 39 comprises a main frame 42,

and an auxiliary frame 43. The auxiliary frame is detachably mounted upon the main frame. The main frame 42 comprises angle bars 44, 45, 46 and 47, which extend longitudinally of the frame. The spacing bars 48, and 49, space the bars 44 and 47, and 45 and 46 respectively. The angle bars 44 and 45, and 46 and 47, are spaced from one another in any suitable manner. Brackets 50, 51, 52 and 53 are mounted on angle bars 44, 45, 46 and 47, respectively, and carry tracks 41, thereby providing substantially an endless track supporting the rollers 40, which rollers in turn support the shafts 22, 23 and 24, on which shafts are mounted the carrier plates. Pairs of sprockets 54 and 55, are disposed at the ends of the frame 39, and the chains 21 extend about the sprockets. The sprockets 54 are carried by a shaft 56 mounted upon the auxiliary frame 43. The auxiliary frame is in structure substantially similar to the main frame, and is detachably secured to the main frame by means of brackets 57 and 58, bolted to the angle bars of the main and auxiliary frames. The sprockets 55 are carried by a shaft 59, supported by the arms 60 extending downwardly from a table 61 reciprocally mounted upon the forward or receiving end of the frame 39. The table 61 carries a downwardly projecting threaded lug 62 which is engaged by the threaded shank 63 of the adjustment screw 64, which extends revolubly thru the end bar 65 joining the forward ends of the angle bars 44 and 45. The adjustment screw 64 permits reciprocation of the table 61, wherefore any slack in the chains 21 may be taken up, and whereby the tension on the chain may be relieved to permit removal of the primary conveyer chain and the elements carried thereby. A motor 66 mounted on the table 61 carries a sprocket about which extends a chain 67. The chain 67 also extends about a sprocket 68 carried by the shaft 59, whereby power from the motor 66 may be transmitted to the sprocket 55. The forward or receiving end of the main frame is pivotally mounted and is adapted to be actuated about a vertical axis disposed in substantial alignment with the center line of the chutes 11 and 17. This mounting may be effected in any suitable manner, for example, as disclosed herein and in my co-pending applications, wherein a tubular support 69 is revolubly mounted upon a tubular base 70 extending thru an aperture 71 formed in the floor 72. Pipes 73 and 74 communicate with the interior of the support 69, whereby an air draft may be directed into the chambers 75, formed in the casings 76 and 77, extending lengthwise of and suspended from the main frame. Side bars 78, as shown in Fig. 2, may be mounted upon the angle bars 45, in any suitable manner such as by means of

brackets 79, whereby a way 80 is formed, the way extending lengthwise of the frame, and being the channel thru which the carrier plates carry the jars. The side bars and their adjustable mountings are more fully disclosed in my pending application, and whereas these side bars are of no particular consequence in the handling of large ware, same may be dispensed with while handling large ware. The chambers 75, extending lengthwise of the frame, communicate at their tops, thru ports 81, with nozzles 82, which nozzles are adapted to direct blasts of air transversely of the way 80. The communication between the individual nozzles and the chamber 75, may be controlled by valves 83 adapted to close off the ports 81. A nozzle 84 communicating with the pipe 73, is adapted to direct a blast of air lengthwise of the way 80. Each shaft 22, has mounted on it a coil spring 89, the opposite ends of which abut one of the lugs 38 and a block 85 pivotally mounted on the shaft 22. The block 85 carries an arm 86, which may extend above the carrier plate, and which has mounted on its free end a finger 87 having preferably an arcuate form complementary to the contour of the jars 88 which are carried by the carrier plates. Normally the block 85 is free to move upon the axle 22 under the influence of gravity. Adjacent the discharge end of the frame, is mounted a cam 90 which may be engaged by the block 85, whereby the block is moved to the position shown in Fig. 4, at which time the finger 87 assumes a position to the rear of the jar 88, and is adapted to engage the jar 88. The discharging end of the auxiliary frame extends beyond the sprocket 54, the ends of the angle bars of the auxiliary frame being connected by a suitable cross bar 91, supporting a discharge plate 92. The discharge plate 92 extends from the primary conveyer into an opening 93, in the sliding door 94 of the leer 14, and has that end extending into the leer, terminating above and adjacent to the leer conveyer 16. The sides of the plate 92 are turned upwardly so as to form sides or flanges 95 and 96, between which a way 97 is provided thru which way the jars 88 may pass. The way 97 is of a width slightly greater than the diameter of the jars. The end of the plate 92 disposed adjacent the sprocket 54, has its upper surface disposed slightly below the upper face of the carrier plates, when carrying jars, and terminates at such a place that sufficient clearance between the sprocket and itself is attained, to permit passage between itself and the sprocket, of the sections of the carrier plates. This point of termination of the forward end of the plate 92, may also be referred to as being so located that as the front section of the carrier plate begins to move downwardly about the sprocket 54,

the forward end of the jar 88 will be projected over the end of the plate 92. By referring to Fig. 4, it is readily apparent that as the carrier plate continues to move toward the leer, the finger 87 transmits the motion of the carrier plate to and thru the jar 88, to and thru the jars disposed upon the plate 92, thereby pushing the jars toward and off of the lower end of the plate 92, which lower end is disposed within the leer. The cam is so formed that the finger 87 will push the jar 88 to the position shown by the jar 98 in Fig. 4, whereupon the block is free to swing backwardly about its pivotal mounting on the shaft 92, wherefore the arm and finger 86 may pass the forward end of the plate 92. It should be observed that the jar 98 is disposed a slight distance from the receiving end of the plate 92, wherefore there is provided an unobstructed ledge at the forward end of the plate 92 for the reception of the following jar 88. By the time that the jars have reached the position of the jar 88 in Fig. 4, the glass has cooled sufficiently that the jars may come into engagement with one another without adhering, and the bases of the jars have set sufficiently that no damage will be done to that portion of the jar which is projected over the receiving portion of the carrier plate.

The frame is oscillated about its pivotal mounting, so as to effect a discharge of the jars from the plate 92 in a line transversely of the leer conveyer 16. The rows of jars will be arcuate in form, but the device is so actuated that the bottles are disposed adjacently one to the other. The mechanism for effecting this transverse movement of the frame is substantially similar to the device disclosed in my co-pending application, and comprises a platform 99 suspended from the frame in any suitable manner, the platform carrying a reversing motor 100, the shaft of which carries bevel gear 101 engaging a bevel gear 102 revolvably mounted on the shaft 103, extending vertically thru the platform 99, and carrying at its lower end a gear 104 which engages an arcuate rack 105 mounted on a channel bar 106. The channel bar in turn is supported upon threaded standards 107 which may be reciprocated thru the floor of the pit 108. The bevel gear 102 has formed in it a number of slots 133, in which pins 134 may lodge, the pins extending upwardly from the bevel gear. The shaft 103 carries at its upper end an arm 135, which extends radially from the shaft, and which may engage the pins 134. From this it is apparent that when the motor 100 is reversed, the bevel gear 102 will be rotatably actuated to some extent before rotatory motion is imparted to the shaft 103. The purpose of this will be explained hereafter. The bar 106 also carries an arcuate knock-

out bar 109, having mounted on it spaced knock-out blocks 110. The platform 99 has mounted on it brackets 111 and 112 carrying rollers 113 and 114, respectively which
 5 rollers engage the channel bar 106. The axles 115 and 116 carrying the rollers 113 and 114, respectively, have pivotally mounted on them bell crank levers 117 and 118, which levers carry rollers 119 and 120 at the
 10 free ends of one of their arms, and which carry contact blocks 121 and 122 at the free end of their other arms. The rollers are adapted to engage cams 123 and 124 respectively, mounted on the bar 106, whereby the
 15 contact blocks may be actuated so as to effect an electrical connection with contacts 125 and 126, carried by the platform 109. The platform has mounted on it a switch box 127 from which extends a shaft 128 carrying an arm 129. The arm 129 carries a roller
 20 130, which may be brought into engagement with blocks 131 and 132 mounted upon the channel adjacent the opposite ends of such channels. A suitable reversing switch is contained within the box 127, and is actuated by engagement of the roller 130 upon
 25 the blocks 131 and 132, the reversing switch within the box being electrically connected with the motor 100. The platform carries on its lower face a pivotally mounted bell
 30 crank lever 136. One arm of the lever carries a roller 137, which engages and rides over the knock-out bar 109. The roller 137 is adapted to engage the knock-out blocks 110 to thereby actuate the lever about its
 35 pivotal mounting. The other arm of the lever carries a contact block 138, which normally engages a complementary contact block 139, both of which contact blocks are
 40 embraced within an electrical circuit which will be explained hereafter. The leer conveyer is intermittently actuated by means of a motor 140. A shaft 141, associated with the leer conveyer, carries a suitable
 45 electrical switch 142, which is embraced in a circuit which will be explained hereafter.

The shaft 141 is driven from the motor 140. The motor 100 is embraced in a circuit which also embraces a brake 143. The
 50 bottle machine 10 has a shaft 144 carrying a switch mechanism 145 embraced in an electrical circuit, to be explained. The sprocket shaft 59 carries switch mechanisms 146 and 147. A brake 148 is embraced in the circuit which embraces the motor 66,
 55 which drives the plate carriers.

Referring now to Fig. 9, the various circuits will be explained. The shaft 144, associated with the bottle machine, is moving
 60 continuously. A circuit passing thru the switch mechanism 145, associated with the shaft 144, is intermittently closed and broken. The shaft 144 carries a suitable lug 151 which is adapted to close the circuit
 65 thru the switch mechanism 145, this circuit

embracing the wire 149, rheostat 150, motor 66, brake 148, wire 152, wire 153, switch mechanism 145, wire 154, and wire 155. As the motor 66 revolves, the sprocket shaft 59 is revolvably actuated, thereby actuating the
 70 switch mechanism 146, wherefore the following circuit is completed: wire 149, rheostat 150, motor 66, brake 148, wire 152, wire 156, switch mechanism 146, wire 157 and wire 155. The parts bear a relation such
 75 that the switch mechanism 145 serves merely to begin a cycle of events, and after the motor 66 has begun to operate, it continues to operate by and thru the switch mechanism 146, and as soon as the circuit thru
 80 the switch 146 has been completed, the circuit thru the switch mechanism 145 is broken. The motor 66 operates until the sprocket shaft 59 has carried the switch mechanism to such a point that the circuit
 85 thru the switch 146 is broken, whereupon the motor 66 becomes stationary, the brake 148 becoming operative upon the breaking of the circuit thru the switch mechanism 146. Normally the motor 100 is running,
 90 the circuit therefor embracing the wire 149, rheostat 158, wire 159, reversing switch 160, motor 100, brake 143, wire 161, wire 162, contacts 138 and 139, wire 163, reversing
 95 switch 160, wire 164, and wire 155. As the frame carrying the motor 100 moves about its pivotal mounting, the roller 137 carried by the bell crank lever 136, engages the knock-out blocks 110 carried by the knock-out bar 109, thereby separating the contacts
 100 138 and 139, and breaking the circuit embracing the motor 100, wherefore the brake 143 becomes operative upon the motor 100, which motor then becomes stationary. During this time the sprocket shaft 59 is revolving and the parts of the switch mechanism
 105 147 are brought into electrical contact, whereby a circuit embracing the motor 100 is completed, thereby causing the frame to again move about its pivotal mounting. This last referred to circuit is as follows: wire 149, rheostat 158, wire 159, reversing
 110 switch 160, wire 165, motor 100, brake 143, wire 166, switch mechanism 147, wire 167, wire 163, reversing switch 160, wire 164, and wire 155. The switch mechanism 147 bears such a relation to the other parts of the device that the switch serves merely to complete the circuit embracing the motor 100, so
 115 as to carry the frame to such a place that the roller 137 carried by the bell crank lever 136, will move beyond the knock-out block 110, and thereby close the circuit thru the contacts 138 and 139, whereupon the circuit thru switch 147 is broken. When the frame reaches either of its lateral limits, one of the rollers 119 or 120, is brought into engagement with one of the cams 123 or 124, respectively, whereby circuits thru the contacts associated with said rollers are closed.
 120
 125
 130

In Fig. 9, the circuits associated with the rollers are disclosed as embracing the contacts 121, 122, 125 and 126. When the frame, see Fig. 9, reaches its right hand or lowermost portion, a circuit passing thru the contacts 122 and 126 is closed. This circuit embraces the wires 149, 168, contact 126, contact 122, wire 169, motor 140, wire 170 and wire 155. At about the time when the circuit thru contacts 122 and 126 is completed, the roller 130 carried by the arm 129, of the reversing switch 160, engages the block 132, thereby reversing the motor 100. The motor 140 will continue to run after the separation of contacts 122 and 126, for the reason that the motor 140 has revolvably actuated the leer conveyer shaft, wherefore a circuit passing thru the switch mechanism 142 has been completed. This circuit embraces wires 149, 171, switch mechanism 142, wire 172, motor 140, wire 170 and wire 155. The motor 140 continues to run until the circuit passing thru the switch mechanism has been broken, this coming to pass by the rotation of shaft 141. At the time when the motor 100 is reversed the arm carried by the shaft 103, moves in an opposite direction from that which it had been following, wherefore the frame will remain stationary for a time sufficient to permit the arm 135 to be carried into engagement with the opposite side of the pin 134. This time during which the frame is to remain stationary may be varied by placing pins in pre-determined relations in slots 133, in the bevel gear 102.

The operation of my device is as follows:—

Bottles are discharged from the bottle machine into the chute 11, and slide downwardly mouth first, thru the chute 11, until they pass onto the secondary chute 17, which serves to change the direction of movement of the jar, whereupon the jar is deposited on its own base upon one of the carrier plates 12, as heretofore explained. The several parts of the device are so related or timed that a plate carrier 12 is disposed immediately below the secondary chute 17 at the moment when a bottle is due to be discharged from the secondary chute 17. At this moment the carrier plates are stationary, due to the breaking of the circuit embracing the motor 66.

Immediately after the jar has been disposed upon one of the carrier plates 12, the motor 66 is actuated and the jar is carried toward the leer. When the next carrier plate reaches the chute 17, the motor 66 is again stopped, this procedure being continuous. When the carrier plates reach the immediate proximity of the plate 92, the forward section 19 of the conveyer plate moves about its pivotal mounting and the jar 88 takes the position shown in Fig.

4, having its one edge extending slightly over the receiving end of the plate 92. The parts bear such a relation that when a jar is in the position 88, as shown in Fig. 4, the motor 66 becomes stationary. When the motor 66 then becomes operative, the finger 87 carried by the block mounted on the carrier plate, which block has been lifted by the cam 90, as shown in Fig. 4, pushes the jar 88 and the jar 88 pushes the jars on the plate 92 into the leer and onto the conveyer 16. The frame is stationary at the time that the jar is discharged from the plate 92 onto the leer conveyer 16. When the frame reaches either of its lateral limits, the time during which the frame remains stationary at such lateral limit, as heretofore explained, is sufficient to permit movement of the leer to a distance equal to the width of a jar, and permits the first bottle of the new row of jars to be discharged from the plate 92 before the frame begins to move in the opposite direction. When the frame reaches either of its lateral limits the leer is moved or "pulled", the movement of the leer conveyer being automatically stopped as previously explained. As the jars are carried by the carrier plates, they cool and set sufficiently that they may be brought into engagement without adhering one with the other. The air nozzles adapted to direct air blasts upon the jars as the jars are carried by the carrier plates, expedite this setting of the glass.

It should be observed that the device disclosed herein has all of its operating and moving parts disposed without the leer, yet the device is capable of disposing the jars upon the leer conveyer within the oven or annealing chamber of the leer, thereby avoiding cold spots on the glassware. If desired, the carrier plates may be surfaced with asbestos, however, this has not been found necessary because the bottles when disposed upon the carrier plates are too soft and are not liable to crack or break, and are too hot to be affected deleteriously by the carrier plates, and whereas the carrier plates are heated by the glass jars, there is no danger of either shipping or cold spotting the jars.

What I claim is:—

1. In a device of the class described the combination of a bottle machine, a leer, a conveyer comprising sectional carrier plates, each sectional carrier plate being adapted to carry bottles step by step from the bottle machine to the leer and means to operate the bottle machine, the conveyer and the leer, in timed relation.

2. In a device of the class described the combination of a continuously operating bottle machine, an intermittingly operating leer conveyer, an intermittingly operated primary conveyer comprising sectional

carrier plates, each sectional carrier plate adapted to carry individual ware from the bottle machine to the leer conveyer, and means to actuate the bottle machine and the conveyers in timed relation, whereby a step by step carrying of the ware and loading of the leer conveyer is attained.

3. In a device of the class described the combination of a bottle machine, a leer conveyer, a primary conveyer comprising sectional carrier plates, each sectional carrier plate adapted to carry individual ware from the bottle machine to the leer conveyer, means to oscillate the primary conveyer between the side edges of the leer conveyer, and means to intermittently actuate the primary conveyer and the leer conveyer in timed relation to the bottle machine.

4. In a device of the class described the combination of a bottle machine, a primary conveyer comprising spaced sectional carrier plates, each sectional carrier plate being adapted to carry individual ware, means to carry ware from the bottle machine to the carrier plates, means to operate the carrier plates in timed relation with the bottle machine whereby successive carrier plates are subjected to the means for carrying the ware from the bottle machine at a time when the ware is to be discharged from said carrying means, a leer, means to oscillate the primary conveyer between the side edges of the leer, a discharge plate extending into the leer, means to transfer ware from the carrier plates to the discharge plate and from the discharge plate into the leer, and means to intermittently actuate the leer when the primary conveyer has reached its lateral limits of movement.

5. In a device of the class described the combination of a bottle machine, a leer conveyer, a primary conveyer comprising spaced sectional carrier plates, each carrier plate being adapted to carry individual ware from the bottle machine to the leer conveyer, means to intermittently actuate the primary conveyer transversely to the line of movement to the leer conveyer between the lateral edges of the leer conveyer, means to reverse the direction of movement of the primary conveyer upon arrival of the primary conveyer at its lateral limits of movement, and means to transfer ware from the carrier plates to the leer conveyer while the means for effecting lateral movement of the primary conveyer is inoperative.

6. In a device of the class described the combination of a bottle machine, a leer conveyer, a primary conveyer comprising spaced sectional carrier plates, each carrier plate being adapted to carry individual ware from the bottle machine to the leer conveyer, means to intermittently actuate

the primary conveyer transversely to the line of movement to the leer conveyer between the lateral edges of the leer conveyer, means to reverse the direction of movement of the primary conveyer upon arrival of the primary conveyer at its lateral limits of movement, means to transfer ware from the carrier plates to the leer conveyer while the means for effecting lateral movement of the primary conveyer is inoperative, and means to intermittently actuate the leer conveyer upon the arrival of the primary conveyer at its lateral limits of movement.

7. The combination with a conveyer of the class described comprising spaced carrier plates, of means to transfer ware from the carrier plates comprising a cam mounted adjacent the line of movement of the carrier plates, a block adapted to engage the cam and to be thereby brought into engagement with the ware, whereby the block will continue the line of movement of the ware in the same direction, while the direction of movement of the carrier is changed whereby to separate the ware and the carrier plate.

8. The combination with a conveyer of the class described comprising spaced carrier plates each adapted to carry a piece of ware in a straight line, of means to continue the movement of the ware in said straight line as the direction of movement of the carrier plate is varied whereby to separate the ware and the carrier plate.

9. A carrying and discharge device of the class described comprising a pair of endless chains, a pair of sprocket wheels for each chain, a carrier plate comprising a forward section and a rear section, said sections having a common pivotal mounting upon the chains, and each section having a separate pivotal mounting upon the chains, a block pivotally mounted at the rear of the rear section and adapted to assume positions below and partly above said sections whereby the block may engage ware carried by the sections, a discharge plate mounted adjacent one end of the carrying device and toward which ware is carried, a device adapted to be engaged by the block whereby the block may be projected above the carrier plate, the parts bearing a relation such that the carrier plate sections will clear the discharge plate as the carrier plate sections move about the sprocket wheels, and that the forward end of the ware carried by the carrier plate will be projected over the discharge plate as the forward end of the carrier plate moves about the sprocket wheel, and the device adapted to be engaged thereby bearing a relation such that the block will push the ware onto the discharge plate.

10. In a ware carrying and discharge device the combination of a pair of shafts, a

pair of sprocket wheels mounted on each shaft, a pair of chains carried by the sprocket wheels, a sectional carrier plate having its sections pivotally mounted on the chains, a discharge plate having one end disposed adjacent one of the shafts in such relation that ware carried by the plates will be projected onto the discharge plate as the carrier plate sections pass about said shaft, upwardly extending flanges on the discharge plate, a cam mounted adjacent the last mentioned shaft, and means pivotally carried by the chains adapted to engage the cam and to be thereby moved into engagement with the ware carried by the carrier plates and to impart the movement of the chain to the ware after the ware has been projected over the discharge plate.

11. In a conveying and discharge device of the class described the combination of a shaft, a pair of sprocket wheels on the shaft, a pair of chains extending about the sprocket wheels and having their upper portions extending in a substantially straight line, the upper portion of the chains moving toward the sprocket wheels, a discharge plate overhanging the sprocket wheels and the portions of the chains carried thereby, and having its upper surface disposed adjacent the sprocket wheels in a plane substantially in alignment with the upper surface of the chains, a forward shaft, an intermediate shaft, and a rear shaft extending between the chains and carrying in proximity one to the other, a forward carrier section pivotally mounted upon the forward and intermediate shafts, and a rear carrier plate section pivotally mounted upon the intermediate and rear shafts, a cam mounted adjacent the shaft, a block pivotally mounted on the rear shaft adapted to engage the cam and an arm carried by the block adapted to be projected above the carrier plates upon engagement of the block and the cam and to be brought into engagement with ware carried by the carrier plate sections, the arm being adapted to impart movement to the ware over the discharge plate upon separation of the carrier plate sections and the ware.

12. In an oscillating device of the class described the combination of a rack, a platform movable relatively to the rack, a shaft carried by the platform, a gear carried by the shaft engaging the rack, means revolubly mounted on the shaft adapted to have rotatory motion imparted to it, a pin removably mounted on the said last mentioned means, an arm carried by the shaft adapted to engage the pin and a reversible means adapted to impart rotatory motion to said first mentioned means.

13. In a device of the class described the combination of a pivotally mounted conveyor frame, a reversible means to move the

frame about its pivotal mounting in opposite directions between determinable limits, means to render the frame actuating means intermittently inoperative in the passage of the frame between its limits and means to render the frame temporarily quiescent during the operation of the frame actuating means.

14. In a device of the class described the combination of a pivotally mounted conveyor frame adapted to be oscillated between given limits, a continuously operating means adapted to actuate the frame in opposite directions, and means to render the continuously operating means temporarily inoperative upon the frame at the time of change in direction of the movement of the frame.

15. In a device of the class described the combination of a pivotally mounted frame, a platform carried by the frame, a motor carried by the platform, a reversing switch for the motor, a shaft carried by the platform, a gear revolubly mounted on the shaft adapted to be actuated by the motor, a pin carried by the gear, an arm carried by the shaft adapted to engage the pin whereby motion may be transmitted between the gear and the shaft, a gear fixed to the shaft, and a rack engaging the second mentioned gear.

16. In a device of the class described the combination of a frame pivotally mounted adjacent one of its ends, means to oscillate the frame about its pivotal mounting, means mounted on the frame adapted to carry ware longitudinally of the frame, means to deposit ware upon the carrying means, a discharge plate spaced from the depositing means and upon which discharge plate the carrying means is adapted to deposit ware, and means to push the ware over the discharge plate.

17. In a device of the class described the combination of a frame pivotally mounted adjacent one of its ends, means to oscillate the frame about its pivotal mounting, means mounted on the frame adapted to carry ware longitudinally of the frame, means to deposit ware upon the carrying means, a discharge plate spaced from the depositing means and upon which discharge plate the carrying means is adapted to deposit ware, and means carried by the ware carrying means adapted to push the ware over the discharge plate.

18. In a device of the class described the combination of a frame pivotally mounted adjacent one of its ends, means to oscillate the frame about its pivotal mounting, means mounted on the frame adapted to carry ware longitudinally of the frame, means to deposit ware upon the carrying means, a discharge plate spaced from the depositing means and upon which discharge plate the carrying means is adapted to deposit ware, means to push the ware over the discharge plate, and means to periodically render the frame oscillating means inoperative.

19. In a device of the class described the combination of a frame pivotally mounted adjacent one of its ends, means to oscillate the frame about its pivotal mounting, means
5 mounted on the frame adapted to carry ware longitudinally of the frame, means to deposit ware upon the carrying means, a discharge plate spaced from the depositing means and upon which discharge plate the
10 carrying means is adapted to deposit ware, means to push the ware over the discharge plate, means to periodically render the frame oscillating means inoperative, and means for rendering the pushing means operative upon
15 the ware when the frame is stationary.

20. In a device of the class described the combination of a normally operative bottle machine, a leer, a normally inoperative leer conveyer mechanism, a normally inoperative
20 primary conveyer mechanism adapted to carry ware from the bottle machine to the leer, a frame for the primary conveyer mechanism adapted to be oscillated between the lateral limits of the leer, a normally operative mechanism operative upon the frame,
25 means associated with the bottle machine for starting the primary conveyer mechanism, means associated with the primary conveyer mechanism adapted to continue the operation of the primary conveyer mechanism for a determinable period, the means
30 associated with the bottle machine being adapted to be rendered inoperative upon the operation of the means associated with the primary conveyer mechanism, means associated with the frame oscillating mechanism adapted to render the frame actuating mechanism inoperative, means associated
35 with the primary conveyer mechanism adapted to return the frame oscillating means to its normal condition, the means for rendering the frame oscillating means inoperative being adapted to continue said means in a normal condition for a determinable period after the means associated with the primary conveyer has returned the frame oscillating means to its normal condition, the means associated with the primary conveyer adapted to return the frame oscillating mechanism to its normal condition being rendered inoperative after the means for rendering the frame oscillating means inoperative has continued the frame oscillating mechanism in its normal condition, means associated with the frame adapted to render the leer actuating mechanism operative upon the arrival of the frame at its lateral limits, means to return the leer operating mechanism to its normal condition, and means to reverse the frame oscillating means.
60 means.

21. In a device of the class described the combination of a normally operative bottle machine, a leer, a normally inoperative leer
65 conveyer mechanism, a normally inoperative

primary conveyer mechanism adapted to carry ware from the bottle machine to the leer, a frame for the primary conveyer mechanism adapted to be oscillated between the lateral limits of the leer, a normally
70 inoperative mechanism operative upon the frame, means associated with the bottle machine for starting the primary conveyer mechanism, means associated with the primary conveyer mechanism adapted to continue the operation of the primary conveyer mechanism for a determinable period, the means associated with the bottle machine being adapted to be rendered inoperative upon the operation of the means associated
80 with the primary conveyer mechanism, means associated with the frame oscillating mechanism adapted to render the frame actuating mechanism inoperative, means associated with the primary conveyer mechanism adapted to return the frame oscillating means to its normal condition, the means for rendering the frame oscillating means inoperative being adapted to continue said means in a normal condition for a determinable period after the means associated with the primary conveyer has returned the frame oscillating means to its normal condition; the means associated with the primary conveyer adapted to return the frame
95 oscillating mechanism to its normal condition being rendered inoperative after the means for rendering the frame oscillating means inoperative has continued the frame oscillating mechanism in its normal condition, means associated with the frame adapted to render the leer actuating mechanism operative upon the arrival of the frame at its lateral limits, means to return the leer operating mechanism to its normal condition, means to reverse the frame oscillating mechanism, and means to temporarily render the frame oscillating mechanism inoperative upon the frame upon the arrival of the frame at either of its lateral limits.
110

22. In a device of the class described the combination of a normally operative bottle machine, a leer, a normally inoperative leer conveyer mechanism, a normally inoperative
115 primary conveyer mechanism adapted to carry ware from the bottle machine to the leer, a frame for the primary conveyer mechanism adapted to be oscillated between the lateral limits of the leer, a normally operative mechanism operative upon the frame, means associated with the bottle machine for starting the primary conveyer mechanism, means associated with the primary conveyer mechanism adapted to continue the operation of the primary conveyer mechanism for a determinable period, the means
120 associated with the bottle machine being adapted to be rendered inoperative upon the operation of the means associated with the primary conveyer mechanism, means associated with the frame oscillating mechanism adapted to render the frame actuating mechanism inoperative, means associated with the primary conveyer mechanism adapted to return the frame oscillating means to its normal condition, the means for rendering the frame oscillating means inoperative being adapted to continue said means in a normal condition for a determinable period after the means associated with the primary conveyer has returned the frame oscillating means to its normal condition, the means associated with the primary conveyer adapted to return the frame oscillating mechanism to its normal condition being rendered inoperative after the means for rendering the frame oscillating means inoperative has continued the frame oscillating mechanism in its normal condition, means associated with the frame adapted to render the leer actuating mechanism operative upon the arrival of the frame at its lateral limits, means to return the leer operating mechanism to its normal condition, and means to reverse the frame oscillating means.
125 means.

sociated with the frame oscillating mechanism adapted to render the frame actuating mechanism inoperative, means associated with the primary conveyer mechanism adapted to return the frame oscillating means to its normal condition, the means for rendering the frame oscillating means inoperative being adapted to continue said means in a normal condition for a determinable period after the means associated with the primary conveyer has returned the frame oscillating means to its normal condition, the means associated with the primary conveyer adapted to return the frame oscillating mechanism to its normal condition being rendered inoperative after the means for rendering the frame oscillating means inoperative has continued the frame oscillating mechanism in its normal condition, means associated with the frame adapted to render the leer actuating mechanism operative upon the arrival of the frame at its lateral limits, means to return the leer operating mechanism to its normal condition, means to reverse the frame oscillating means, and brakes associated with the several mechanisms to render same immediately quiescent.

23. In a device of the class described the combination of a normally operative bottle machine, a leer, a normally inoperative leer conveyer mechanism, a normally inoperative primary conveyer mechanism adapted to carry ware from the bottle machine to the leer, a frame for the primary conveyer mechanism adapted to be oscillated between the lateral limits of the leer, a normally inoperative mechanism operative upon the frame, means associated with the bottle machine for starting the primary conveyer mechanism, means associated with the primary conveyer mechanism adapted to con-

tinue the operation of the primary conveyer mechanism for a determinable period, the means associated with the bottle machine being adapted to be rendered inoperative upon the operation of the means associated with the primary conveyer mechanism, means associated with the frame oscillating mechanism adapted to render the frame actuating mechanism inoperative, means associated with the primary conveyer mechanism adapted to return the frame oscillating means to its normal condition, the means for rendering the frame oscillating means inoperative being adapted to continue said means in a normal condition for a determinable period after the means associated with the primary conveyer has returned the frame oscillating means to its normal condition, the means associated with the primary conveyer adapted to return the frame oscillating mechanism to its normal condition being rendered inoperative after the means for rendering the frame oscillating means inoperative has continued the frame oscillating mechanism in its normal condition, means associated with the frame adapted to render the leer actuating mechanism operative upon the arrival of the frame at its lateral limits, means to return the leer operating mechanism to its normal condition, means to reverse the frame oscillating mechanism, means to temporarily render the frame oscillating mechanism inoperative upon the frame upon the arrival of the frame at either of its lateral limits, and brakes associated with the several mechanisms to render same immediately quiescent.

In testimony whereof, I have hereunto subscribed my name this 15th day of May, 1922.

PERCY Q. WILLIAMS.