

Sept. 11, 1923.

1,467,409

S. W. WILKINSON

AUTOMATIC CASE FEEDER FOR BOTTLE WASHERS, ETC

Filed Nov. 26 1920

3 Sheets-Sheet 1

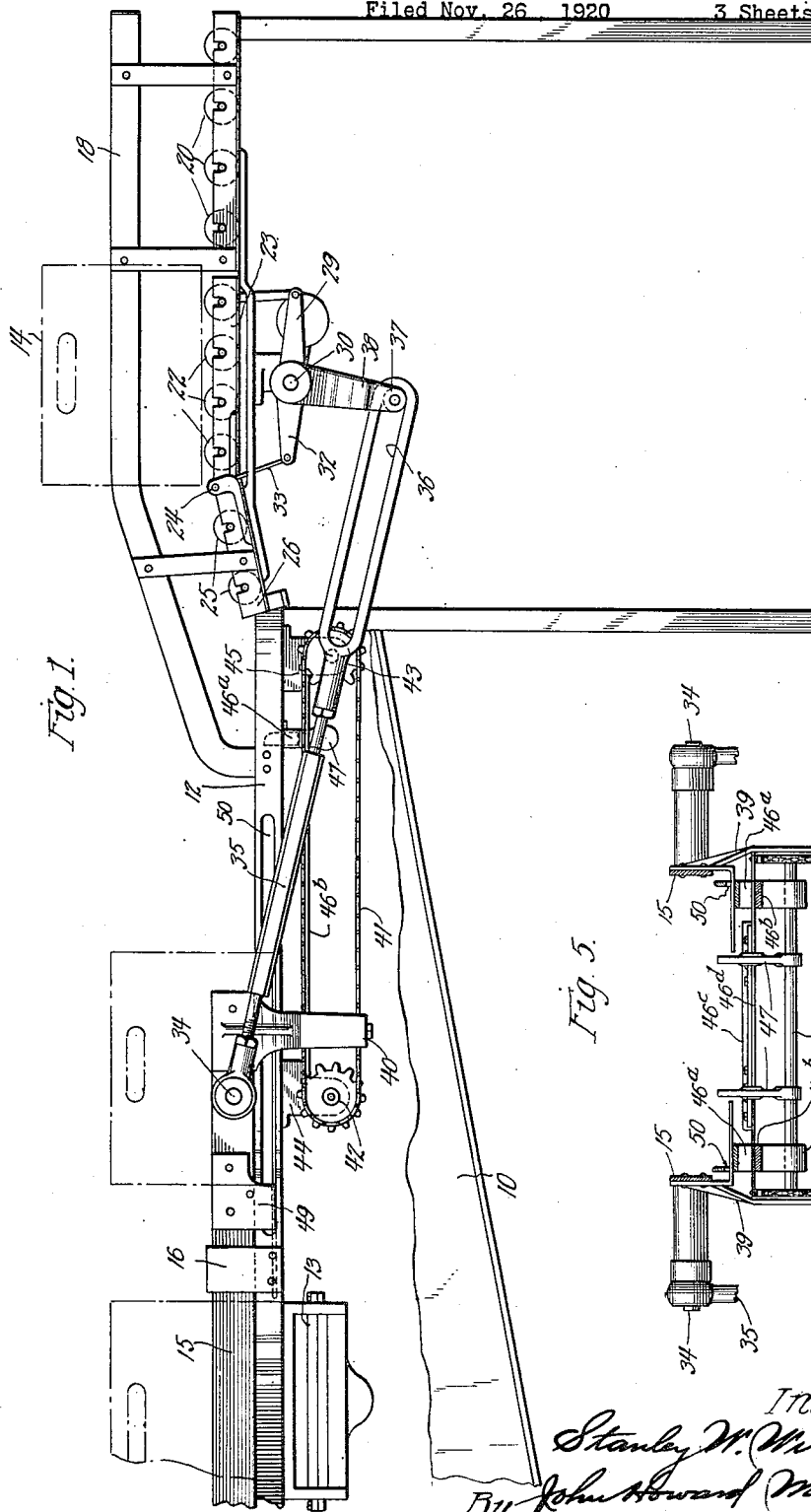
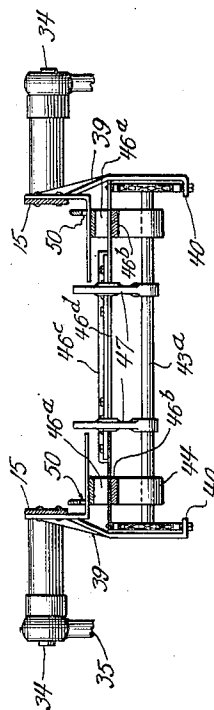


Fig. 1.

Fig. 5.



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3 Sheets-Sheet 2

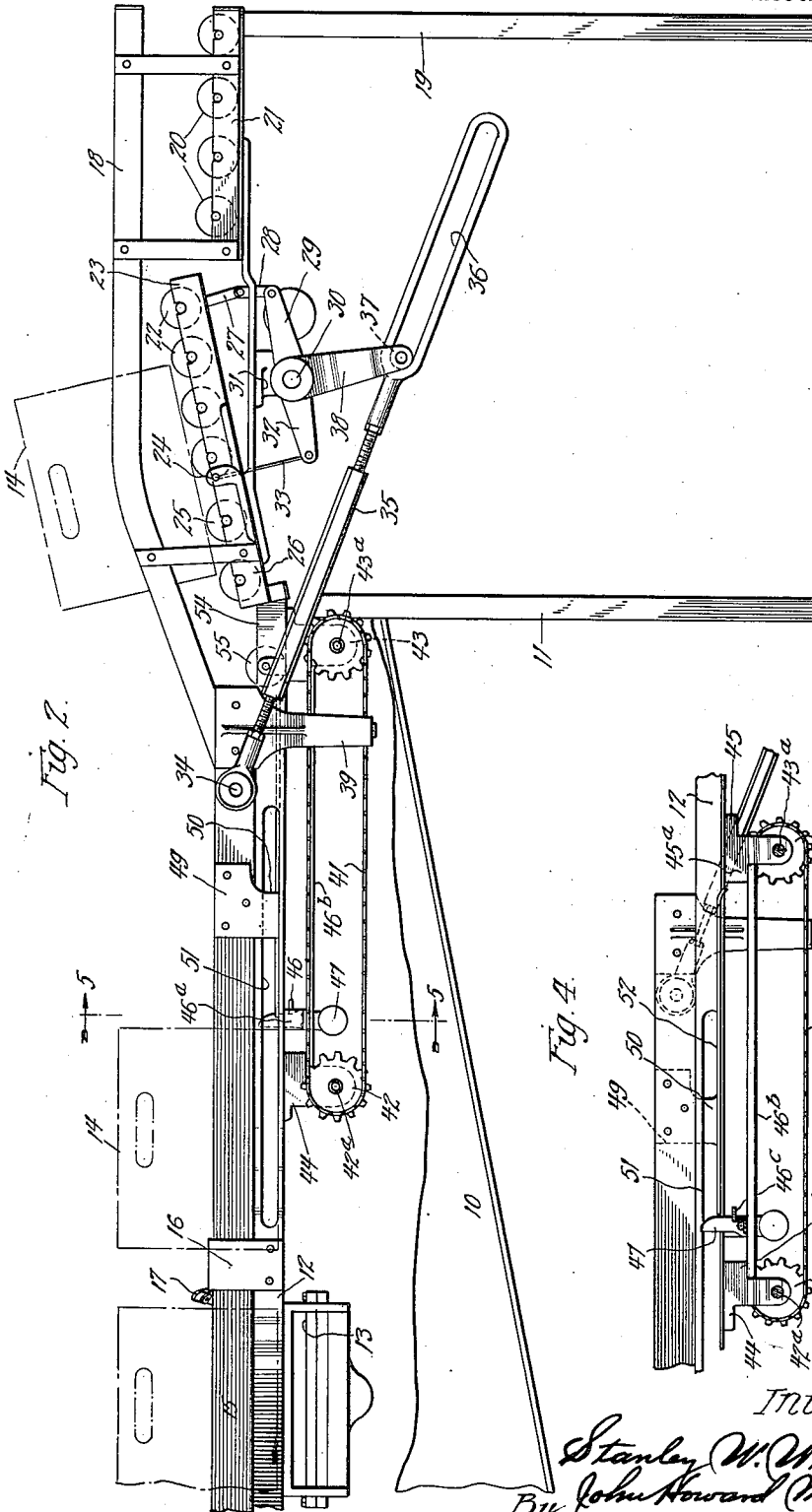
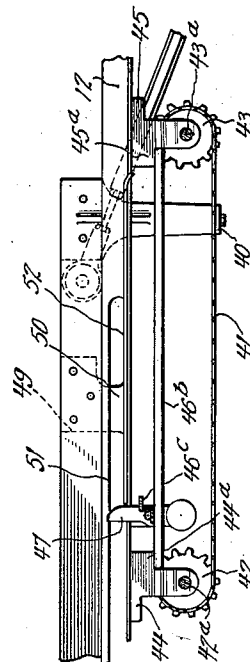


Fig. 4



Inventor:

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his Atty.

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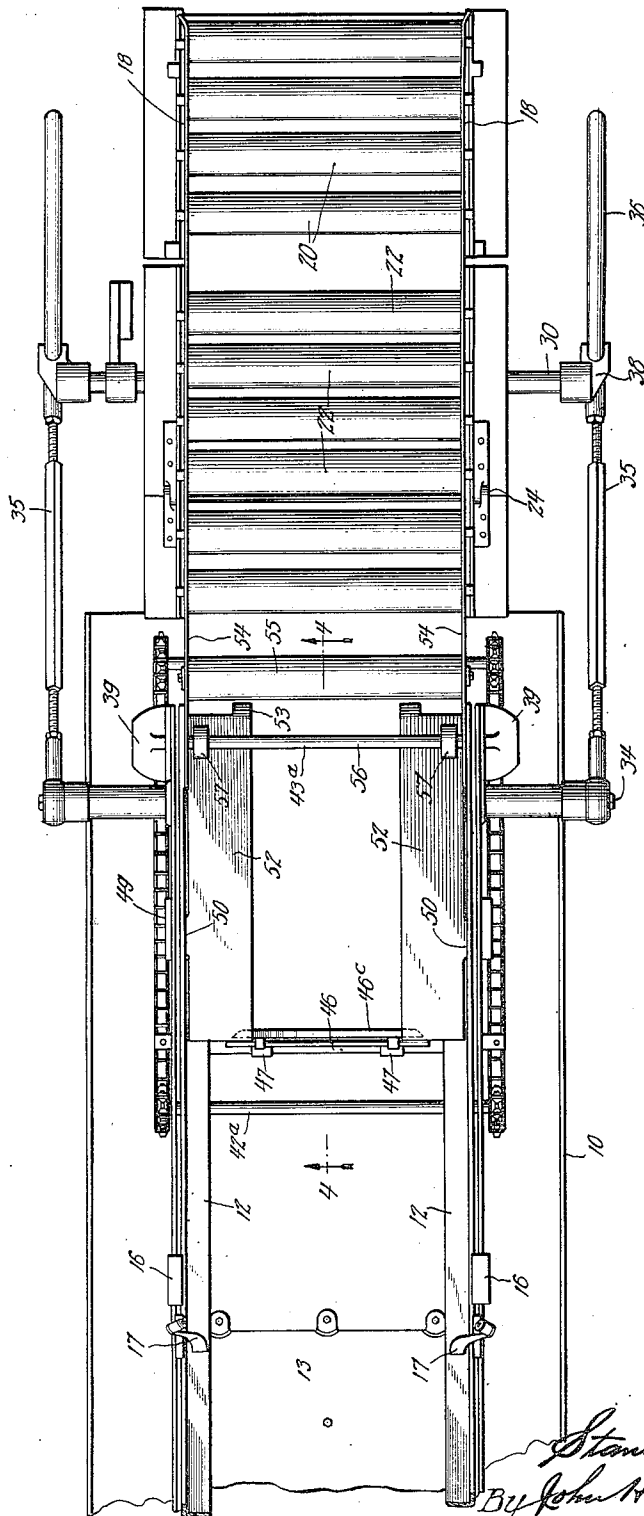
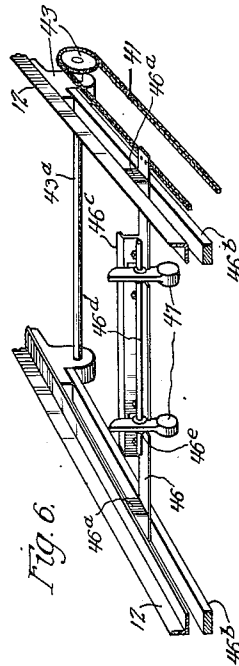
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3 Sheets-Sheet 3

Fig. 3.



Inventor:

Stanley W. Wilkinson

By John Howard (McClary)

UNITED STATES PATENT OFFICE.

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

AUTOMATIC CASE FEEDER FOR BOTTLE WASHERS, ETC.

Application filed November 26, 1920. Serial No. 426,511.

To all whom it may concern:

Be it known that I, STANLEY W. WILKINSON, a citizen of the United States, and a resident of Waukegan, in the county of Lake and State of Illinois, have invented certain new and useful Improvements in Automatic Case Feeders for Bottle Washers, Etc., of which the following is a full, clear, and exact specification.

My invention is concerned with feeding apparatus, and is designed more especially as an automatic case feeding apparatus for bottle washing machines, and is designed to produce an apparatus by which the cases of dirty bottles delivered automatically to the receiving end of the machine will be surely and certainly fed into the machine in perfect synchronism with the reciprocating feed by which the cases are moved step by step through the machine.

Prior to my invention, automatic reciprocating feed mechanisms to carry boxes step by step have been employed, and have had associated with them tilting gravity supply mechanisms which were supposed to feed the boxes or cases one by one at the proper time to the nearest feed dogs of the reciprocating feed mechanism so that the boxes would be supplied steadily. As the gravity feed was not positive, it sometimes happened that the boxes did not advance far enough so as to be engaged by the nearest feed dogs, and sometimes they advanced too far, striking the boxes being fed and producing an unnecessary jarring and possible breakage of the contents. To remove these difficulties, I employ an intermediate feed mechanism that receives the box from the gravity supply mechanism and carries it positively, irrespective of the length of movement it receives from the gravity supply mechanism, exactly to the proper position to be engaged by the nearest feed dogs of the main feeding mechanism.

To illustrate my invention, I annex hereto three sheets of drawings in which the same reference characters are used to designate identical parts in all the figures, of which

Fig. 1 is a side elevation of the receiving end of a case bottle washing machine to which my invention has been applied;

Fig. 2 is a similar view but showing the

main feeding mechanism at the end of its rearward movement instead of its forward movement, as seen in Fig. 1;

Fig. 3 is a plan view of the mechanism in the position shown in Fig. 2;

Figs. 4 and 5 are views in section on the lines 4—4 and 5—5, respectively, of Figs. 3 and 2, respectively; and

Fig. 6 is a perspective view of a portion of the mechanism.

In illustrating my invention, I have shown it as applied to a bottle washing machine, and one end of the basin 10 is shown therein with the supporting legs 11. In this type of bottle washing machine, a pair of angle iron rails 12 extending the entire length of the machine are suitably supported in the basin 10, and at suitable intervals between these angle iron rails are supported perforated hot water plates 13, one of which is shown in the views. These plates are supplied with hot water under pressure so that when a case of bottles stands with the bottle's mouth downward over the plate 13, jets of water are forced up through the plate into the interiors thereof to wash the same. These plates are located certain exact distances apart so that the cases 14 will be fed step by step from one plate to another during their progress through the machine, and will stand over the plate as the feeding mechanism returns prior to a new advance.

The feeding mechanism which I have illustrated for the purpose of advancing the cases step by step through the machine consists of a pair of reciprocating bars 15, supported above the angle irons 12 and guided by the necessary standards 16 extending upward from the angle bars and supplied with suitable recesses or apertures to receive and guide the bars in their movement. The boxes are engaged by the pairs of feed dogs 17, which are pivoted on the bars 15 at the necessary intervals, and which may be constructed as shown by having their bearing pins set at a double angle to the bar 15 so that they will naturally fall by their weight into position to engage the boxes as they pass back of them but will automatically yield and swing upward out of the way as they are drawn back past the boxes already fed forward by them.

Associated with this feeding mechanism is a gravity supply mechanism, which as seen in Figs. 1, 2 and 3 consists of a supplemental frame 18 supported by a pair of legs 19 adjacent to the end of the machine and having journaled therein the rollers 20 which have the bars 21 in which they are journaled fixed. In advance of these rollers 20 is a set of rollers 22 ordinarily in alignment with the rollers 20, but journaled in a pair of bars 23, which are pivoted at 24 to the framework so that the rollers 23 may be held either in the same horizontal plane as the rollers 20, or may be tilted into the inclined plane occupied by the rolls 25, which are journaled in the bars 26 which are inclined, as shown. The ends of the bars 23 are connected by the pairs of links 27 and 28 with the pair of arms 29 secured on the rock shaft 30 journaled in the bearings 31 extending downward from the framework of the gravity supply mechanism. A pair of forwardly projecting arms 32 likewise secured to the rock shaft 30 have pivoted between them a stop plate 33, which, when the rolls 22 are in the position shown in Fig. 1 extends up between the rolls 22 and 25 into the path of the case 14 which has run on to the rolls 22 and stops the case in the position shown in Fig. 1. When the shaft 30 is rocked to the position shown in Fig. 2, the bars 23 are tilted with the result that the case 14 is tilted and slides readily over the rolls 22 and 25 down to the receiving end of the bottle washing machine or other apparatus to which the gravity supply mechanism is connected. To swing the rock shaft 30 at the desired times, the feed bars 15 have extending from the sides thereof the stub shafts 34, which form the bearings for the adjacent ends of the pair of links 35, which have the elongated slots 36 in their other ends into which slots extend the rollers 37 projecting inwardly from the lower ends of the arms 38 secured to the rock shaft 30. By means of the connection shown, the length of the link 35 being adjustable by the turnbuckle mechanism shown, the ends of the slot 36 will serve to tilt the rock shaft 30 as the bars 15 near the end of their movement in either direction.

The feeding mechanism of the bottle washing machine and the gravity stop mechanism associated therewith as thus far explained, per se, form no part of my invention, which is concerned with the intermediate feed mechanism, per se and in combination with the two associated mechanisms.

In carrying out my invention, I secure to the rear ends of the feed bars 15 the brackets 39, which have downwardly extending arms with the inwardly projecting lugs 40 to which are secured the adjacent links of the pair of sprocket chains 41, which are

carried by the pairs of sprocket wheels 42 and 43, which are secured on shafts 42^a and 43^a journaled in bearings formed in or supported by the brackets 44 and 45 extending downward from and supported by the angle bars 12. Secured on the upper runs of the chains 41 is a cross bar 46, upon which is pivoted the pair of weighted dogs 47, which are so mounted thereon that they are free to swing backward and pass underneath the box 14 as they move to the rear, but which must retain their vertical position and carry the box with them as they move forward. The cross bar 46 has the pair of bearing blocks 46^a formed thereon or secured thereto and sliding in the guide ways formed by the under sides of the horizontal flanges of the angle bars 12 and the top sides of the flat bars 46^b secured to the undersides of the offsets 44^a and 45^a of the brackets 44 and 45. The bars 15 are provided with the brackets 49 secured to the outer side thereof, which brackets have the narrow necks 50 extending through the elongated slots 51 formed in the vertical webs of the angle bars 12 and by these necks 50 the brackets 49 are connected to the pair of plates 52 which are in part supported on the horizontal webs of the angle irons 12, and which have their rear ends 53 turned down slightly, as shown. The cross bar 46 preferably has its central portion Z-shaped in cross-section, with the top horizontal flange 46^c travelling directly beneath the edges of the plates 52. As seen in Fig. 6, the pawls 47 are pivoted on the rod 46^d secured on the bar 46 by screws and are held from side-wise movement by the edges of the slots 46^e cut in the lower horizontal and the vertical webs of the cross bar 46. Journaled in the side pieces 54 in the same vertical plane as the bars 26 is another roller 55 and journaled in the same bars 54 slightly in advance of the roller 55 is the shaft 56 which carries the disks 57.

The operation of the complete apparatus will now be readily apparent. When the parts are in the position shown in Fig. 1, the feed bars 15, which will be reciprocated at the desired intervals by any suitable mechanism, are at the limit of their forward movement, and the pawls 47 are at the limit of their rearward movement, and the box 14 that may have been on the plates 52 has had the pawls 47 dragged underneath it during their rearward movement. The bars 15 now move backward, and as they move backward, the dogs 17 give way and pass the box 14 which has been delivered to operative position upon the plate 13. As the bars 15 move rearwardly, the upper runs of the chains 41 move forward, carrying with them the dogs 47, which engage the rear of the box which has been slid down on to the horizontal flanges of the angle bars 12 by the

action of the gravity supply mechanism, wherever said box may be found, and move the box forward sliding it over the plates 52 which are moving backward, to a certain definite fixed position. The turned-down rear ends of the plates 52 permit the box to be forced up onto them without difficulty when they meet the front edge of the box being moved forward by the pawls 47. At the end of this rearward movement of the bars 15, the forward end of the slot 36 engages the rollers 37 rocking the shaft 30 and elevating the rolls 22 to the position shown in Fig. 2 so that the box 14 which is on said rolls will be tilted so that it will run down over the rolls 25, 55 and the disks 57 with its forward edge resting on the plates 52 carried by the bars 15 and with its rear on the disks 57. The forward movement of the plates 52, when it begins, will drag the box with them by reason of its frictional engagement therewith until its rear end runs off of the disks 57 and carry it forward far enough so that the pawls 47 now moving backward pass to its rear, so that when they begin their forward movement they will shove the box they have just passed under forward to a position where it is off of the plates 52 and rests on the horizontal webs of the angle bars 12, with the forward ends of the plates 52 just back of its rear edge. When the bars 15 now move forward, said forward ends of the plates 52 engage said rear edge of the box and shove it forward to its position over the plate 13, where it is in position to be engaged by the dogs 17 of the main feeding mechanism. With this mechanism, it will be obvious that the boxes are received one by one by the machine and that they are fed with absolute accuracy to the dogs 17 which carry them to the plate 13.

While I have shown and described my invention as embodied in the form which I at present consider best adapted to carry out its purposes, it will be understood that it is capable of modifications, and that I do not desire to be limited in the interpretation of the following claims except as may be necessitated by the state of the prior art.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a feeding apparatus for rigid units, the combination with a reciprocating feed mechanism, of a gravity supply feed for delivering said units one by one, and an intermediate reciprocating feed mechanism which receives the units one by one from the gravity supply feed and positively forces them in the same plane to the reciprocating feed mechanism as the latter is returning from its feeding movement.

2. In an apparatus of the class described, the combination with a reciprocating feed mechanism, of a tilting gravity supply feed, an intermediate reciprocating feed mecha-

nism which receives the boxes one by one from the gravity supply feed and advances them to the reciprocating feed mechanism, and connections between said reciprocating feed mechanism, the gravity supply feed, and the intermediate reciprocating feed mechanism whereby the reciprocating feed mechanism advances the intermediate reciprocating feed mechanism during its rearward movement and tilts the gravity supply feed at the end thereof.

3. In an apparatus of the class described, the combination with a reciprocating feed mechanism, of a tilting gravity supply feed, an intermediate reciprocating feed mechanism which receives the boxes one by one from the gravity supply and advances them to the reciprocating feed mechanism, and connections between said reciprocating feed mechanism, the gravity supply feed, and the intermediate reciprocating feed mechanism whereby the reciprocating feed mechanism advances the intermediate reciprocating feed mechanism during its rearward movement and tilts the gravity supply feed at the end thereof to deliver a box to the intermediate reciprocating feed mechanism and returns the latter during its forward movement and restores the gravity supply feed to normal at the end thereof.

4. In a feeding apparatus for rigid units, the combination with an intermediate reciprocating feed mechanism for moving said units horizontally, one by one, of a gravity supply feed for delivering units thereto one by one, without turning them, and means for reciprocating the intermediate reciprocating feed mechanism and operating the gravity supply feed to deliver units to the intermediate reciprocating feed mechanism at the end of its forward movement.

5. In a feeding apparatus for rigid units, the combination with a reciprocating feed mechanism operating in a horizontal plane through a certain space and comprising a positive feed portion which must move the units, and a friction feed portion which may move them, of an associated reciprocating feed mechanism operating in the same space as the frictional feed portion of the first feed mechanism but over a different space in advance of the space occupied by the positive portion of the first feed mechanism to deliver the units thereto one by one, and connections between the two feed mechanisms whereby the unit engaging members of the two mechanisms move in diametrically opposite directions in the same plane, for the purpose described.

6. In a feeding apparatus for rigid units, the combination with a supporting frame, of a pair of reciprocating feed bars mounted thereon and moving together in the same direction, feed dogs associated therewith and operating in a horizontal plane through

a certain space, and a primary feed mechanism moving in synchronism with the feed bars, but in a diametrically opposite direction in the same plane, but over a different space and in advance of that through which the feed dogs reciprocate and acting to insure the feed of a fresh unit into position while the feed dogs are moving backward.

7. In an apparatus of the class described, the combination with a supporting frame, of a pair of reciprocating feed bars mounted thereon, feed dogs associated therewith, and a primary feed mechanism moving in synchronism with the feed bars, but in the opposite direction and acting to feed a fresh box into position while the feed dogs are moving backward, said primary feed mechanism consisting of a supporting plate attached to the receiving end of a feed bar upon which a box is fed, a yielding pusher moving back underneath the box as the pusher bars are moved forward, and forward propelling the box as the pusher bars move backward, and connections between the feed bars and the yielding pusher to move it in the opposite direction to the feed bars.

8. In an apparatus of the class described, the combination with a supporting frame, of a pair of reciprocating feed bars mounted thereon, feed dogs associated therewith, and a primary feed mechanism moving in synchronism with the feed bars, but in the opposite direction and acting to feed a fresh box into position while the feed dogs are moving backward, said primary feed mechanism consisting of a supporting plate attached to the receiving end of a feed bar upon which a box is fed, a yielding pusher moving back underneath the box as the pusher bars are moved forward, and forward propelling the box as the pusher bars move backward, an endless chain running beneath and parallel to the pusher bars, connections from the lower run of the chain to

the pusher bars, and a cross-piece connected to the upper run of the chain upon which cross-piece the yielding pusher is pivoted.

9. In an apparatus of the class described, the combination with a supporting frame, of a pair of reciprocating feed bars mounted thereon, feed dogs associated therewith, and a primary feed mechanism moving in synchronism with the feed bars, but in the opposite direction and acting to feed a fresh box into position while the feed dogs are moving backward, said primary feed mechanism consisting of a pair of supporting plates attached to the receiving end of the feed bars upon which a box is fed, yielding pushers moving back underneath the box as the pusher bars are moved forward, and forward propelling the box as the pusher bars move backward, a pair of endless chains running beneath and parallel to the pusher bars, connections from the lower run of the chains to the pusher bars, and a cross-piece connected to the upper runs of the chains upon which cross-piece the yielding pushers are pivoted.

10. In a feeding apparatus for rigid units, the combination with a pair of horizontal bars reciprocating in unison and carrying dogs to engage and advance the units in one direction and also horizontal supporting portions upon which the units are discharged automatically to an uncertain position, and a supplemental feed mechanism moving synchronously with the bars but in the opposite direction and having feed dogs tending to shove the units off of the horizontal supporting portions into position to be certainly engaged by the dogs of the bars.

In witnesses whereof, I have hereunto set my hand and affixed my seal, this 21st day of November, A. D. 1920.

STANLEY W. WILKINSON. [L. s.]

Witness:

JOHN HOWARD McELROY.