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LEER FEEDER

Filed Jan. 21, 1928

2 Sheets-Sheet 1

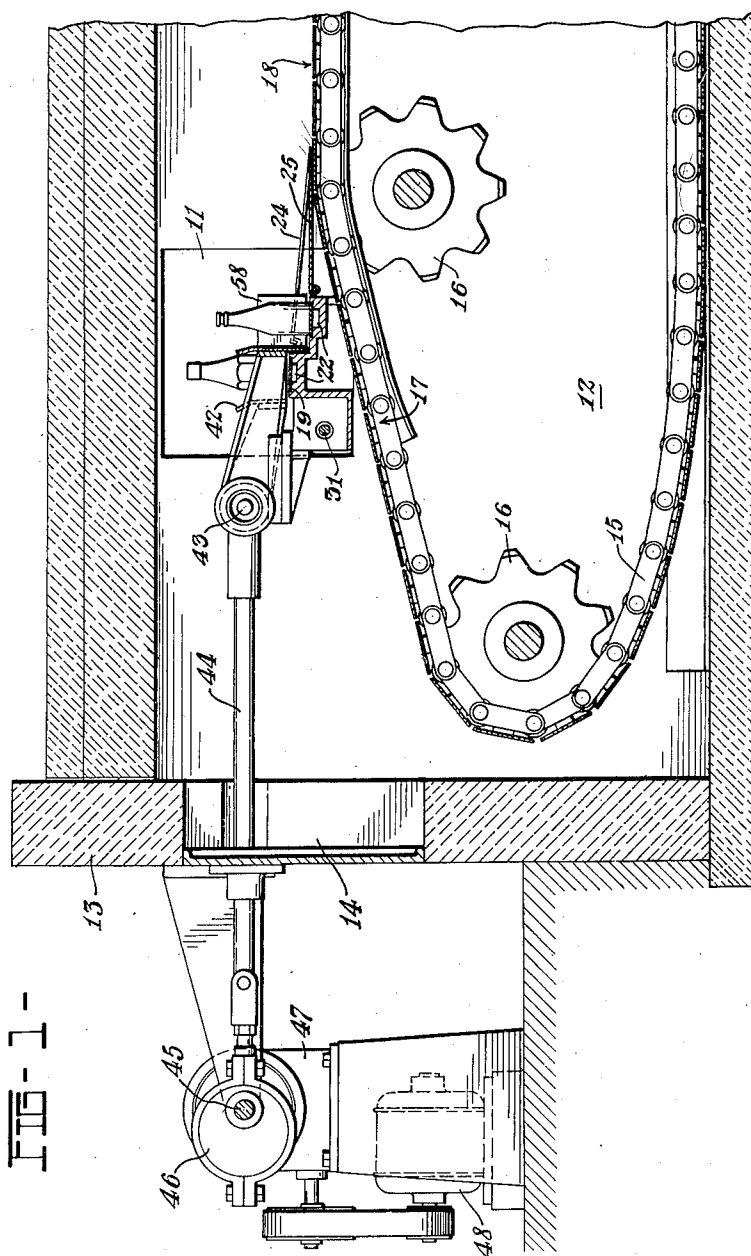


FIG. 1-

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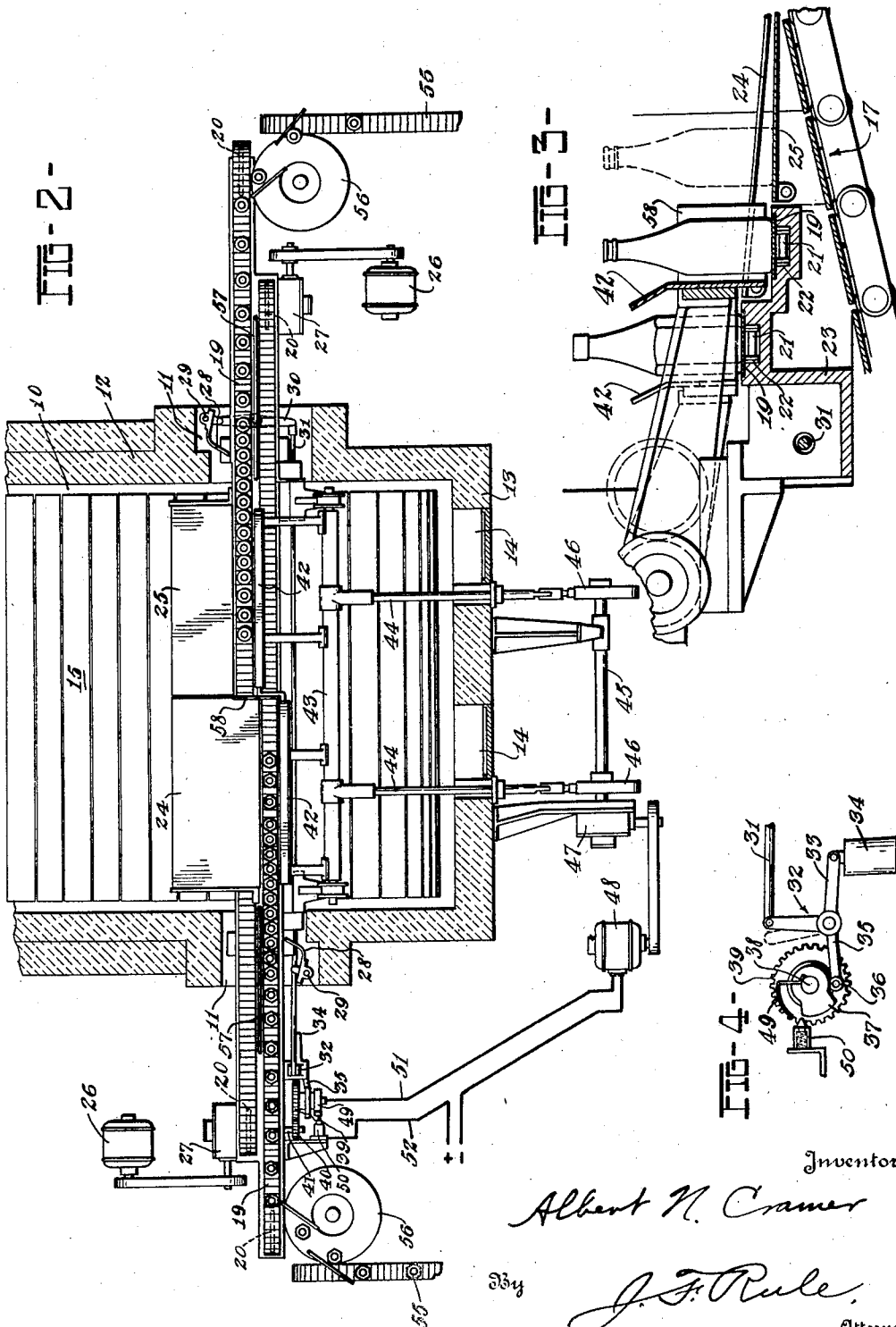
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LEER FEEDER

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The present invention relates to improvements in feeders for positioning ware upon ware conveyors in glassware annealing leers or the like.

5 In commercial operation, a single leer is frequently required to anneal ware produced by two machines, each of which may be forming three different types of ware. Ordinarily, such condition would mean that
10 the six types of ware fed into the leer would be so intermingled that each selector at the delivery end of the leer must handle ware produced by both machines, the result being that greatest efficiency in ware selection or
15 separation cannot be obtained.

An object of the present invention is to provide means whereby ware may be fed into opposite sides of a leer from two machines and placed upon the ware conveyor
20 in such fashion that there is no intermingling in the leer of the ware produced by the two machines. The ware from one machine passes through the leer at one side of the tunnel, while the other side accommodates the ware from the other machine.
25 Accordingly, the selector is merely required to handle ware from one of the machines, rather than from two as has been the practice.

30 Another object of the present invention is to provide automatic means cooperating with carrying-in belts comprising a part of the leer feeder, to periodically stop movement of ware into the leer whereby the
35 ware already in the leer, but positioned upon the inner portion of the carrying-in belts, may be removed from the latter and placed upon the leer conveyor.

Other objects will be apparent hereinafter.

In the accompanying drawings:

Fig. 1 is a central vertical sectional view taken longitudinally of the leer.

45 Fig. 2 is a horizontal sectional view through a leer, the leer feeder associated therewith and operating mechanism being shown in plan.

Fig. 3 is a detail sectional view showing the ware pushers and the manner in which
50 they transfer the ware to the leer conveyor.

Fig. 4 is a detail view showing the control device which actuates the means for periodically stopping movement of ware into the leer.

Referring to the drawings, the leer comprises a tunnel 10 having opposed openings 11 in the vertical side walls 12 to accommodate the carry-in belts of leer feeders as will be apparent presently. The front end wall 13 of the leer is formed with a pair of transversely spaced openings 14 through which portions of the leer feeding mechanism extend for a purpose to be pointed out hereinafter. A ware conveyor 15 extends longitudinally through the tunnel 10 and is supported at its front end on sprockets 16 spaced apart lengthwise of the leer and arranged at different elevations to provide an inclined area 17 in the conveyor 15 whereby portions of the leer feeders may be arranged in proper relation to the ware carrying area 18 of the conveyor. According to the present embodiment of the invention, two carrying-in belts 19 (Fig. 2) extend transversely of the leer through the opposed openings 11 in the leer side walls and are trained over sprockets 20, the upper reaches being arranged just above the inclined area 17 of the conveyor 15. These carrying-in belts 19 (Fig. 3) including the sprocket chain 21, are guided in suitable ways or channels 22 formed in a transverse supporting frame 23 whose ends may be secured to the side walls of the leer or set upon the bottom walls of the opposed openings 11. The upper reach of the forward carrying-in belt 19 is arranged at a lower elevation than the corresponding reach of the other belt so that a chute or slideway 24 (Figs. 2 and 3) may extend forwardly above said lower carrying-in belt and thereby provide means permitting uninterrupted transfer of ware from the rear carrying-in belt to the ware conveyor 15. This feature is apparent by reference to Figs. 2 and 3. A chute or slideway 25 (Fig. 3) provides means over which ware may be pushed forwardly from the forward carrying-in belt 19 onto the ware conveyor 15 in the leer.

Each carrying-in belt 19 is continuously

driven by a motor 26 through a speed reduction gearing 27 which has driving connection to one of the sprockets 20. One of the motors 26 (Fig. 2) actuates mechanism to periodically stop movement of ware into the leer so that ware upon the inner end of the carrying-in belts and already in the leer may be removed from the belts by pushers.

This mechanism includes a pair of stop fingers 28 (Fig. 2) movable about vertical axes and adapted to extend across the carrying-in belts 19 at regular time intervals at a point in proximity to the opposed openings 11 through which the belts extend into the leer tunnel. These fingers are journaled on suitable supports 29 and are interconnected through a lever 30 and a connecting rod 31 as shown in Fig. 2. This connecting rod 31 has one end pivoted to a bell crank lever 32 (Fig. 4), one arm 33 of which carries a counterweight 34 which normally holds the rod in such position that the fingers are arranged at one side of the carrying-in belts and will not interfere with movement of the ware into the leer. This bell crank lever 32 is formed with an arm 35 which carries a cam roll 36 contacting with a continuously rotating cam 37 (Fig. 4). This cam 37 is fixed to a shaft 38 carrying at one end a relatively large gear 39 running in mesh with a pinion 40, the latter being fixed to a shaft 41 driven by one of the motors 26. Continuous rotation of the cam 37 causes rocking of the bell crank lever 32 at regular intervals to project the stop fingers 28 across the carrying-in belts 19 whereby movement of ware with the carrying-in belts into the leer tunnel is stopped to permit removal of ware from the inner portion of the carrying-in belts to the ware conveyor 15 in the leer tunnel.

Pusher bars 42 (Fig. 2) arranged one in advance of the other, are carried by a cross head 43 connected through rods 44 to eccentrics 46 on a shaft 45. This shaft 45 is continuously rotated through a speed reduction gearing 47 by a motor 48 whose operating periods are timed with movements of the fingers 28. Thus, the fingers 28 operate to momentarily stop feeding of ware into the leer, and the pusher bars 42 are then moved forward to remove the ware from the inner portions of the carrying-in belts to the slideways 24 and 25 over which the ware passes to the conveyor 15.

The operating periods of the pusher operating motor 48 are regulated by rotation of the shaft 38 which periodically positions the finger 28 to stop feeding of ware into the leer. This shaft 38 carries a contact strip 49 which engages a yieldable contact 50 (Figs. 2 and 4). The contact bar 49 forms a part of a circuit closer for the motor circuit and is connected to a current conductor 51 forming one side of an electrical circuit

in which the motor 48 is placed while the other contact 50 is connected to a conductor 52 having connection to said motor and a source of current supply (not shown). The contact strip 49 is of such length that the circuit for the motor 48 is closed for a period of time sufficient to allow the pusher bars 42 to move forwardly across the inner portions of the carrying-in belts 19 and then return to their original positions while the stop fingers 28 are positioned across said belts 19.

Ware ejected from the forming machines (not shown) is carried by endless belts 55 to transfer disks 56 which in turn, place the ware upon the outer end portions of the carrying-in or hot belts 19. Partition plates 57 are placed between the hot belts 19 at positions opposite fingers 28, to prevent ware being pushed to the outgoing belt while the fingers are in stopping position. A stop plate 58 (Fig. 2) is arranged midway between the openings 11 to limit the extent of movement of the ware across the leer on the hot belts and thereby establish a dividing line between the ware produced by the two machines. Thus, as previously stated, each of the selectors at the delivery end of the leer (considering that there are two selectors as usual) may devote his entire time to separating the several types of ware produced on one machine instead of having to handle ware from both machines.

In operating a feeder such as that described above, ware is continuously placed upon the outer end portions of the hot belts 19, the latter moving continuously in directions to carry the ware into the leer through the feed openings 11. Operation of the stop fingers 28 is so timed that they are moved across the hot belts just after a sufficient number of bottles or other articles have passed the fingers to complete a transverse row of ware within the leer. Thus, movement of additional bottles into the leer is stopped for a certain period of time, and the pusher bars 42 are then operated during this period, as previously described, for the purpose of removing the ware from the inner ends of the hot belts and placing such ware upon the slideways 24 and 25 from which it is later pushed onto the main ware conveyor 15.

Modifications may be resorted to within the spirit and scope of the appended claims. What I claim is:

1. In combination, a leer, means to convey ware therethrough, means comprising a pair of endless belts extending through feed openings in the leer side walls to feed ware transversely into the leer from both sides of the latter, means to periodically arrest movement of ware into the leer on said belts, and means operating at regular intervals to

move ware from portions of the belts to the ware conveying means in the leer.

2. In combination, a leer, means to convey ware therethrough, means comprising a pair of endless belts extending through feed openings in the leer side walls to feed ware transversely into the leer from both sides of the latter, and means to limit the extent of transverse movement of the ware fed into the leer.

3. In combination, a leer, an endless ware conveyor extending through the leer, said leer having opposed feed openings in its side walls, a pair of carrying-in belts arranged side by side and extending through the opposed openings to feed ware into the leer from opposite sides of the latter, and means to limit the extent of transverse movement of ware through the leer on said belts.

4. In combination, a leer, an endless ware conveyor extending through the leer, said leer having opposed feed openings in its side walls, a pair of carrying-in belts arranged side by side and extending through the opposed openings to feed ware into the leer from opposite sides of the latter, means to limit the extent of transverse movement of ware through the leer on said belts, and means operating at regular time intervals to move ware transversely from the carrying-in belts for positioning it upon the ware conveyor.

5. In combination, a leer, means to convey ware therethrough, a pair of carrying-in belts arranged side by side and extending transversely through the leer to feed ware into the leer from opposite sides thereof, stop fingers movable periodically across the carrying-in belts to stop movement of ware into the leer on said belts, and pusher bars arranged to move across portions of the belts within the leer to remove ware from said belts and position it upon the ware conveyor in timed relation to movements of said fingers.

6. In combination, a leer, means to convey ware therethrough, a pair of carrying-in belts arranged side by side and extending transversely through the leer to feed ware into the leer from opposite sides thereof, stop fingers movable periodically across the carrying-in belts to stop movement of ware into the leer on said belts, pusher bars arranged to move across portions of the belts within the leer to remove ware from said belts and position it upon the ware conveyor, motor operated mechanism to reciprocate the pusher bars at regular intervals in timed relation to movement of the fingers, and means including a circuit closer for the motor operating the pusher bars to control the timed relation between movements of the fingers and pusher bars.

7. In combination, a leer having a pair of opposed feed openings in its side walls,

a ware conveyor extending through the leer, a pair of carrying-in belts arranged side by side and extending entirely through both of said openings and adapted to carry ware into the leer, inclined slideways arranged in advance of the carrying-in belts to receive ware removed from the latter, a stop plate arranged to limit transverse movement of ware with the carrying-in belts, and pusher bars operating at regular intervals to remove ware from those portions of the belts within the leer.

8. In combination, a leer having a pair of opposed feed openings in its side walls, a ware conveyor extending through the leer, a pair of carrying-in belts arranged side by side and extending entirely through both of said openings and adapted to carry ware into the leer, inclined slideways arranged in advance of the carrying-in belts, to receive ware removed from the latter, a stop plate arranged to limit transverse movement of ware with the carrying-in belts, means arranged to periodically stop movement of ware into the leer, and pusher bars operating at regular intervals to remove ware from the portions of the carrying-in belts within the leer.

9. In combination, a leer having a ware conveyor extending lengthwise thereof, a pair of carrying-in belts extending into the leer from opposite sides thereof, means for actuating said belts to carry ware thereon into the leer from opposite sides of the leer, and means for arresting the inward movement of the ware on said belts and thereby preventing each belt from depositing ware on the leer conveyor in a position to encroach on the area within the leer supplied by the other conveyor belt.

10. In combination, a leer having a ware conveyor extending lengthwise thereof, a pair of carrying-in belts extending into the leer from opposite sides thereof, means for actuating said belts to carry ware thereon into the leer from opposite sides of the leer, and means for arresting the inward movement of the ware on said belts and thereby preventing each belt from depositing ware on the leer conveyor in a position to encroach on the area within the leer supplied by the other conveyor belt, each of said belts extending entirely through the leer transversely thereof.

Signed at Toledo, in the county of Lucas and State of Ohio, this 16th day of January, 1928.

ALBERT N. CRAMER.