

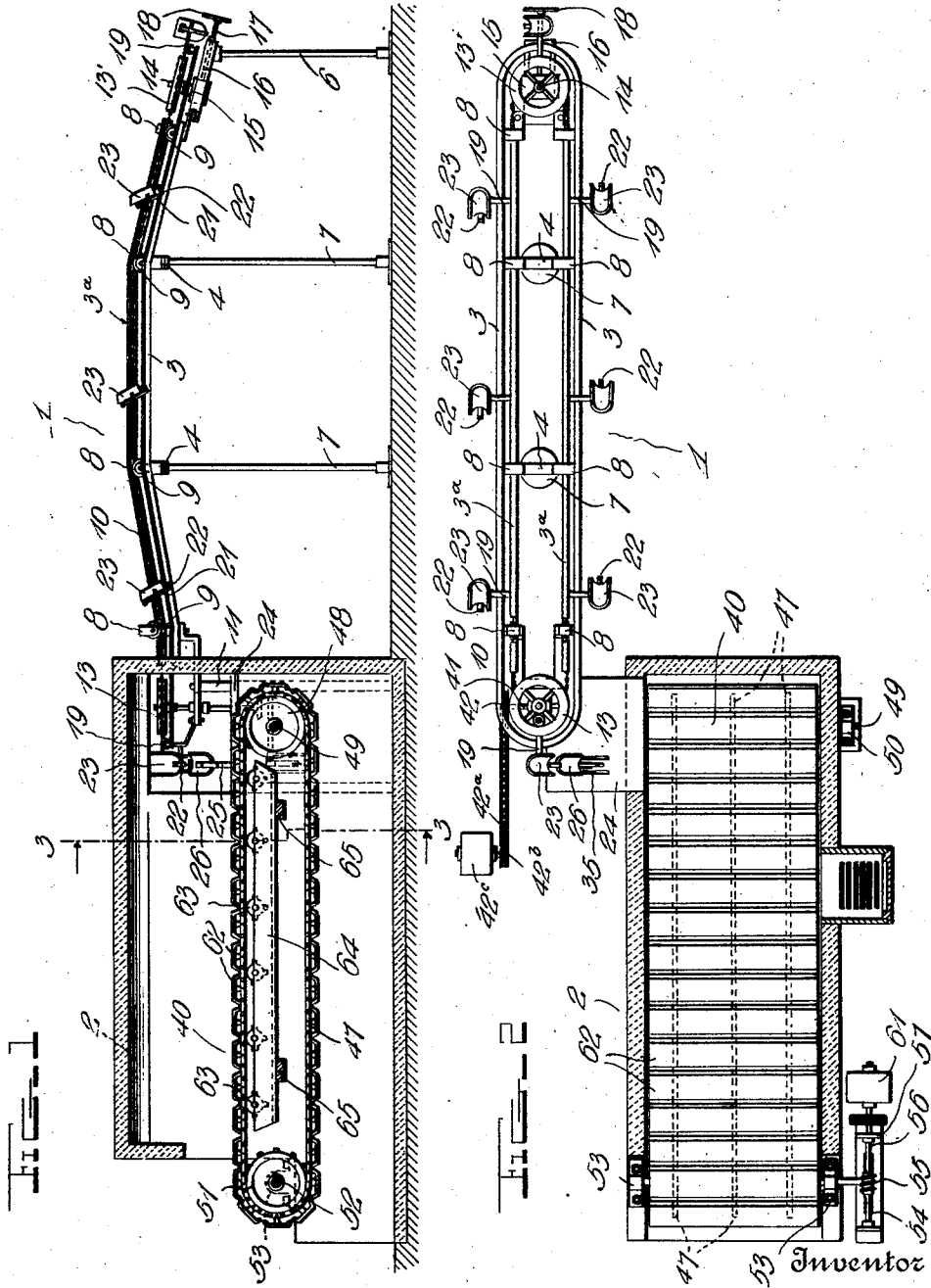
W. STENDER.
BOTTLE CONVEYER.

APPLICATION FILED DEC. 28, 1911.

Patented Nov. 5, 1912.

4 SHEETS—SHEET 1.

1,043,548.



Witnesses
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4 SHEETS—SHEET 2.

FIG. 3

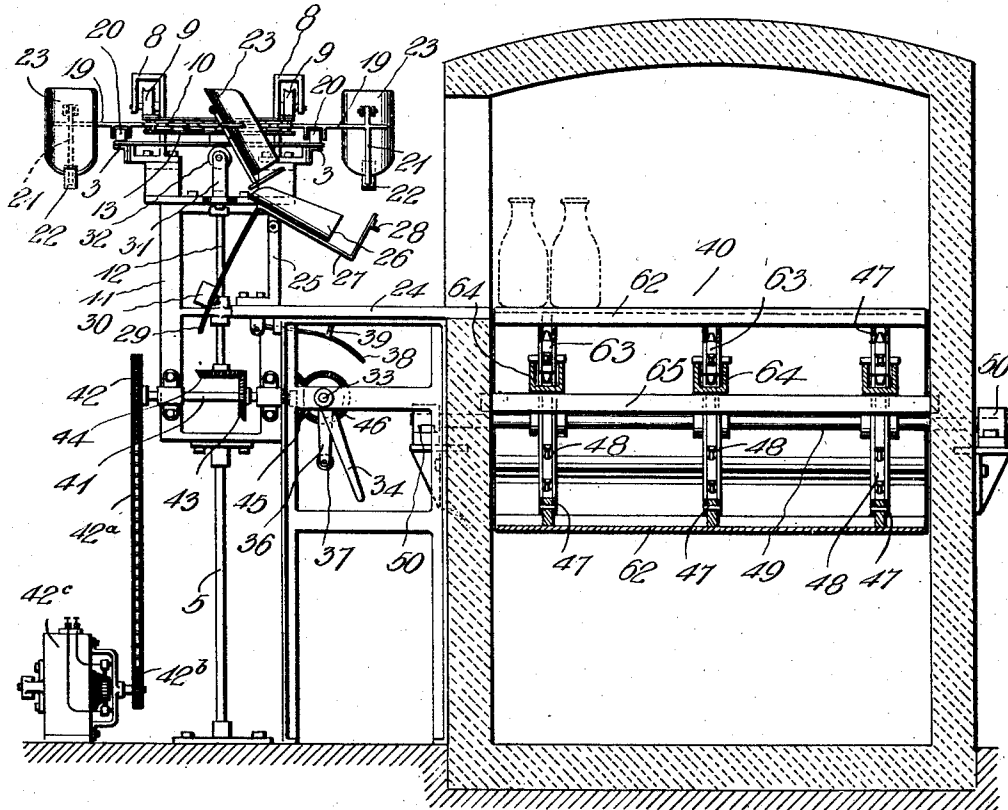
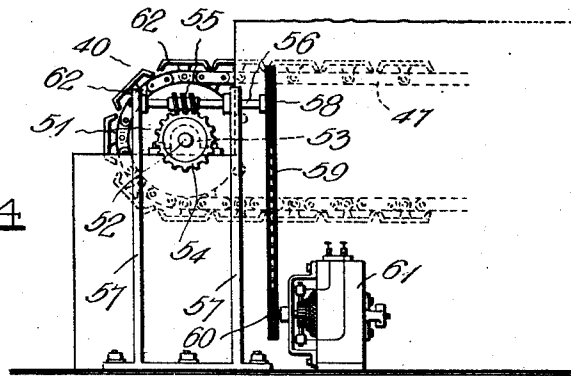


FIG. 4



Inventor

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Witnesses

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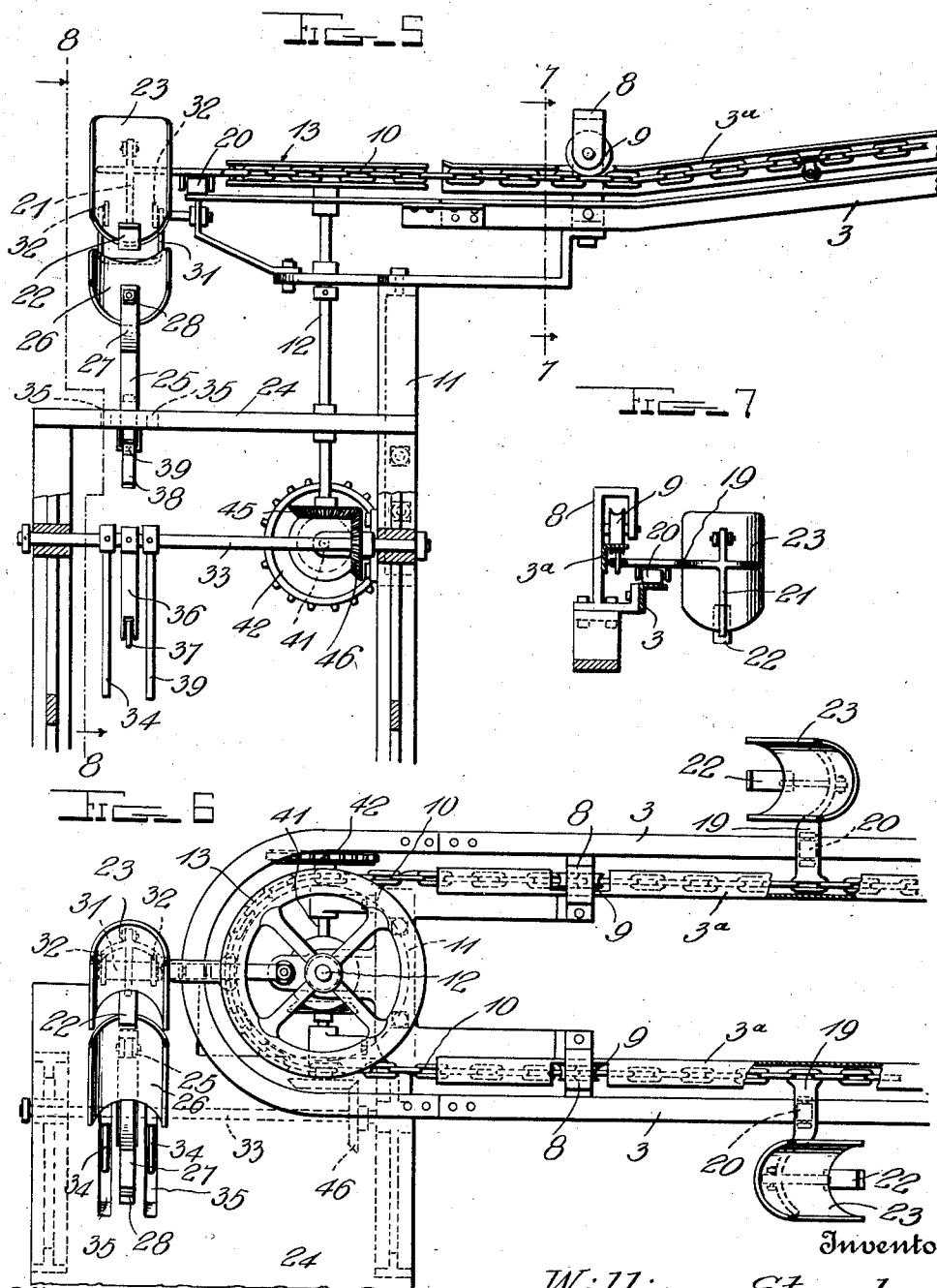
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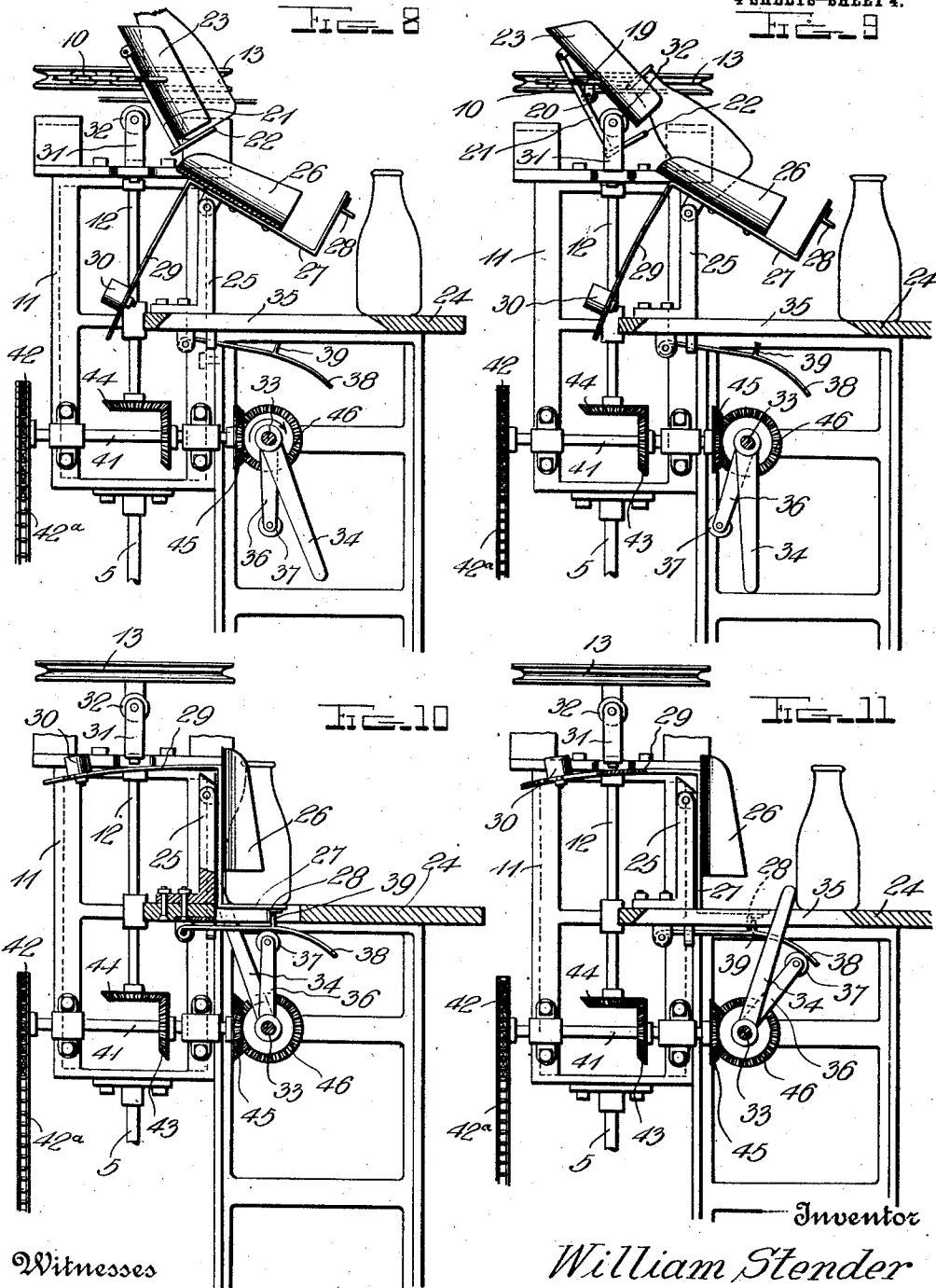
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UNITED STATES PATENT OFFICE.

WILLIAM STENDER, OF STREATOR, ILLINOIS.

BOTTLE-CONVEYER.

1,043,548.

Specification of Letters Patent.

Patented Nov. 5, 1912.

Application filed December 28, 1911. Serial No. 668,371.

To all whom it may concern:

Be it known that I, WILLIAM STENDER, a citizen of the United States, residing at Streator, in the county of LaSalle and State of Illinois, have invented certain new and useful Improvements in Bottle-Conveyers; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in bottle conveyers, for conveying bottles or similar objects and delivering the same into annealing furnaces.

One object of the invention is to provide a conveying apparatus of this character having an improved construction and arrangement of bottle delivering mechanism by means of which the bottles or other objects are automatically discharged from the conveyor and delivered into the furnace.

Another object is to improve the conveying and feeding mechanism shown in my U. S. Patents No. 818,573, issued April 24, 1906 and 878,684 issued February 11, 1908 whereby the construction of the apparatus is improved and simplified and the operation rendered more efficient.

In the accompanying drawings; Figure 1 is a side view of the apparatus showing the oven in section; Fig. 2 is a plan view with the oven shown in horizontal section; Fig. 3 is a cross sectional view on the line 3—3 of Fig. 1; Fig. 4 is a detail side elevation of one end of the apparatus showing the means for operating the same; Fig. 5 is a side view partly in section of the front end of the apparatus; Fig. 6 is a plan view of the parts shown in Fig. 5; Fig. 7 is a detail cross sectional view on the line 7—7 of Fig. 5; Fig. 8 is a cross sectional view on the line 8—8 of Fig. 5; Fig. 9 is a similar view showing the parts in the position occupied when the bottle is being discharged from the carriers; Fig. 10 is a similar view showing the position of the parts after the bottle has been deposited on the table; Fig. 11 is a similar view showing the manner in which the bottles are moved across the table and into the oven.

Referring more particularly to the drawings 1 denotes my improved conveying mechanism and 2 denotes the annealing furnace into which the bottles are delivered by the conveying mechanism. The conveying

apparatus comprises a pair of parallel track bars 3 which may be of any desired length and are secured to and spaced apart by cross bars 4. The tracks are supported at the delivery end of the apparatus upon a standard 5 and at their opposite ends upon a standard 6. The tracks are preferably elevated intermediately of their ends and said elevated portion of the tracks is supported upon intermediate standards 7. The cross bars which support the tracks are provided with bearing brackets 8 in which are journaled chain guiding pulleys 9 which support and guide an endless conveyor chain 10 engaged therewith. The chain 10 passes over the guide pulleys of the intermediate and end cross bar at the starting end of the apparatus and under the guide pulleys of the cross bar at the delivery end of the apparatus. Between the guide pulleys on the cross bars 4 the stretches of the chain are engaged with angle iron guide bars 3^a arranged between and disposed parallel with the track bars 3 as shown.

On the standard 5 at the delivery end of the apparatus is arranged a bearing frame 11 in which is revolubly mounted a vertically disposed chain operating shaft 12 having fixed on its upper end a grooved pulley or chain driving wheel 13 around which the chain 10 passes at this end of the apparatus and by means of which the chain is driven. At the opposite end of the apparatus the chain 10 is engaged with an idle pulley 13' which is revolubly mounted on a short stub shaft 14 fixed on a supporting block 15 having a sliding engagement with a supporting frame 16 on the upper end of the standard 6. With the block 15 is connected an adjusting screw 17 having an operative engagement with the frame 16 and provided on its outer end with a hand wheel 18 whereby the block and the pulley 13 may be adjusted to tighten the chain 10 and to keep the latter at the proper tension.

Connected at intervals to the chain are a series of bottle carriers each of which comprises a laterally extending bracket 19 in which is revolubly mounted a supporting roller 20. The rollers 20 of the brackets 19 are adapted to travel on the track bars 3. The inner end of the brackets are suitably secured to one of the links of the chain 10 while the outer ends of the brackets are curved slightly and have formed thereon a

depending arm 21 on the lower end of which is secured a bottle supporting plate 22. Hingedly connected to the bracket 19 is a curved bottle holding and delivering plate 23 which holds the bottle in position on the supporting plate 22 while being conveyed to the furnace and which at the proper time pushes the bottle off from the plate 22, thus delivering the bottles to a suitable receiving mechanism hereinafter described.

On the frame 11 of the standard 5 at the delivery end of the apparatus is arranged a bottle receiving table 24. On the table 24 is arranged a bottle receiving and depositing mechanism comprising a standard 25 on the upper end of which is pivotally mounted a curved bottle receiving tray 26 having secured thereto a bottle supporting bar 27 the lower end of which is bent at right angles to form a seat for the lower end of the bottle, said seat having on its lower side a depending stop lug 28 the purpose of which will be hereinafter described. On the bar 27 near the opposite end of the tray 26 is formed a right angularly projecting weight supporting arm 29 on the outer end of which is arranged a counter-balancing weight 30 which when the bottle is removed from the tray 26, causes the bar 27 to swing back to normal position for receiving another bottle.

The bottles are discharged from the carriers onto the trays 26 by means of a tripping device comprising a U-shaped bracket 31 secured to the delivery ends of the track bars and between the arms of which the lower ends of the bottle holding plates 23 and supporting arms and plates 21 and 22 are adapted to pass as the carriers are brought around by the chain. The plates 23 when brought through the tripping devices are engaged by the tripping rollers 32 revolvably mounted on the upper ends of the U-shaped bracket 31 and are tripped or rocked on their hinge connection with the brackets 19, the bottles being thereby allowed to slide off from the supporting plates 22 on the lower ends of the arms 21 and into the trays 26 of the receiving and depositing mechanism hereinbefore described. When the bottles are thus discharged from the carriers onto the tray 26 the latter will be overbalanced by the weight of the bottle and will swing downwardly into a vertical position, thus depositing the bottle right side up on the receiving table 24.

Revolvably mounted in suitable bearings in the frame 11 is a shaft 33 on which is fixedly mounted a pair of bottle pushing arms 34 which are revolved by the shaft and are brought around through slots 35 in the table 24 in position to engage the bottle when deposited on the table by the receiving and depositing mechanism, thereby pushing the

bottle off from the plate on the lower end of the bar 27 and across the table. Also fixedly mounted on the shaft 33 between the arms 34 is a latch operating arm 36 having in its outer end a roller 37 which is adapted to be brought into engagement with a curved latch plate 38 loosely connected at one end to the under side of the table and having formed thereon an upwardly projecting stud 39 which is adapted to be brought into engagement with the stop lug 28 on the right angular lower end of the bottle supporting bar 27 of the receiving and discharging mechanism whereby said mechanism is locked or held in a vertical position until the bottle has been entirely pushed off of the lower end of the bar 27 by the pushing arms 34 thus preventing the counter-balancing weight 30 of the mechanism from tilting the latter too soon and thereby upsetting the bottle.

It will be understood that when the receiving and depositing mechanism is in a vertical position for depositing the bottle on the table that the lug 28 will project through a suitable slot in said table and in position to be engaged by the stud 39 on the latch plate 38 when the latter is lifted by the latch operating arm 36 hereinbefore described. As soon as the push arms 34 have pushed the bottle off from or out of the receiving or depositing mechanism the roller 37 in the outer end of the latch operating arm 36 will disengage the latch 38 thus permitting the latter to drop by gravity and disengage the stud 39 thereon from the lug 28 whereby the counter-balancing weight 30 will swing the tray 26 and bottle supporting bar 27 back to their normal position for receiving the next bottle brought around by the carriers. As the bottles are thus deposited on the table and pushed from the tray 26 by the pushing arms 34, said bottles will push each other along off from the table and onto the endless carrier 40 of the furnace.

Revolvably mounted in suitable bearings in the frame 11 is a main drive shaft 41 on the outer end of which is fixedly mounted a drive pulley or sprocket gear 42 which may be connected with any suitable power and is here shown as connected by a sprocket chain 42^a with a sprocket gear 42^b on the shaft of the motor 42^c. On the shaft 41 is fixedly mounted a beveled gear pinion 43 which is operatively engaged with a similar pinion 44 on the lower end of the shaft 12 whereby the chain operating pulley 13 is driven for operating the endless carrier chain 12. On the inner end of the shaft 41 is also fixedly mounted a bevel gear pinion 45 which is operatively engaged with a similar pinion 46 on the shaft 43 whereby the pusher arms 36 are operated in the proper direction.

The endless bottle carrier 40 of the furnace comprises a series of endless chains 47

which are engaged at one end with idle pulleys 48 fixed on a shaft 49 loosely mounted in suitable bearing standards 50 arranged in one end of the furnace. At their opposite ends the chains 47 are engaged with drive pulleys 51 fixed on the carrier operating shaft 52 revolubly mounted in the bearing standards 53 in the opposite end of the furnace. On one end of the shaft 52 is fixed a worm gear 54 which is operatively engaged by a worm 55 on the drive shaft 56 mounted in a suitable bearing frame 57 arranged at this end of the furnace. The shaft 56 has fixed on one end a sprocket gear 58 which is connected by a sprocket chain 59 with a sprocket gear 60 on the shaft of a suitable motor 61 as shown.

The chains 47 have connected to the outer side of the links thereof a series of bottle supporting plates 62, the side edges of which are preferably turned down or bent inwardly and engage each other on the upper horizontal stretches of the chain and thus form a table or flat support for the bottles when pushed off from the table 24 onto the carriers, the links of the upper stretches of the chains preferably engage and are supported by a series of sprocket gears 63 which are revolubly mounted in longitudinally disposed channel iron bars 64 arranged beneath the upper stretch of the chains and which are supported on cross bars 65 as shown.

From the foregoing description taken in connection with the accompanying drawings, the construction and operation of the invention will be readily understood without requiring a more extended explanation.

Various changes in the form, proportion and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of the invention as claimed.

Having thus described my invention, what I claim is:

1. A bottle conveyer comprising a pair of track bars, an endless conveyer chain, a plurality of bottle carriers connected at intervals to said chain, said carriers comprising brackets secured at their inner ends to the links of the chain, depending arms on said brackets having bottle supporting plates, a bottle holder and deliverer hingedly connected to the bracket, bottle receiving and depositing mechanism, and a tripping mechanism adapted to trip said bottle holder and deliverer and to discharge the bottles therefrom onto said receiving and depositing mechanism.

2. A bottle conveyer comprising a pair of track bars, a pair of chain guiding bars, chain receiving pulleys revolubly mounted at the ends of said bars, an endless conveyer chain engaged with said guide bars and pulleys, a plurality of bottle carriers connected at intervals to said chain, said carriers com-

prising brackets secured at their inner ends to the links of the chain, supporting rollers revolubly mounted on said brackets and adapted to travel on said track bars, depending arms on said brackets, having on their lower ends bottle supporting plates, a bottle holding and delivering plate hingedly connected to the bracket, a bottle receiving and depositing mechanism, and a tripping mechanism adapted to trip said bottle holding and delivering plates and to discharge the bottles therefrom onto said receiving and depositing mechanism.

3. In a bottle conveyer, a pair of track bars, a bottle conveying chain, a bottle receiving table arranged at one end of said tracks, a plurality of bottle carriers connected with said chain and adapted to travel over said tracks, a bottle receiving and depositing mechanism comprising a supporting standard secured to said table, a bottle receiving tray hingedly connected to said standard, a bottle supporting bar connected to said tray and having on its lower end a seat which, together with said tray forms a receptacle for the bottles discharged from the carriers, a tripping mechanism to discharge the bottles from the carriers into said receiving and depositing mechanism, said bottles over-balancing said trays and bars and tilting the latter downwardly in position to deposit the bottles on said table, means to remove the bottles from the seat and tray of said depositing mechanism, and a counter balancing weight to restore said mechanism to an operative position.

4. In a bottle conveyer, a bottle carrying mechanism, a bottle receiving table, a bottle receiving and depositing mechanism comprising a supporting standard secured to said table, a bottle receiving tray hingedly connected to said standard, a bottle supporting bar connected to said tray and having on one end a seat, a stop lug secured to said seat, a counter-balancing weight arranged on the opposite end of said bar, means to discharge the bottles from said conveying mechanism onto the tray and seat of said receiving and depositing mechanism, said bottles over-balancing said tray and bar whereby the bottles are deposited onto said table, a revolubly mounted shaft, a catch operating arm fixed on said shaft and adapted to be brought into engagement with said catch whereby the latter is lifted into engagement with the locking lug on the seat of said depositing mechanism thereby locking the latter in a lowered position, and means whereby the bottle is removed from said tray and seat and pushed across the table.

5. In a bottle conveyer, a bottle carrying mechanism, a bottle receiving table, a bottle receiving and depositing mechanism comprising a supporting standard secured to

said table, a bottle receiving tray hingedly connected to said standard, a bottle supporting bar connected to said tray and having on one end a seat, a stop lug secured to said seat, a counter-balancing weight arranged on the opposite end of said bar, means to discharge the bottles from said conveying mechanism onto the tray and seat of said receiving and depositing mechanism, said bottles over-balancing said tray and bar whereby the bottles are deposited onto said table, a catch arranged on said table, a revolvably mounted shaft, bottle pushing arms fixedly mounted on said shaft and adapted to be operated thereby to remove the bottle from said tray and seat and to push the bottle across the table, a latch operating arm fixed on said shaft, and an operating roller revolvably mounted in the end of said arm and adapted to be engaged thereby with said latch and to lift the latter into engagement with the stop lug on the seat of the bottle depositing mechanism.

6. In a bottle conveyer, a bottle carrying mechanism comprising a suitably supported and driven endless carrier operating ele-

ment, a plurality of bottle carriers connected with said element, a bottle receiving table, a bottle receiving and depositing mechanism, a carrier tripping mechanism comprising a U-shaped frame having in its upper end carrier engaging rollers adapted to engage and trip said carriers and to discharge the bottles therefrom into said receiving and depositing mechanism, said receiving and depositing mechanism being over-balanced by the weight of the bottles whereby the latter are deposited on the table, a bottle pushing mechanism adapted to remove the bottles from said depositing mechanism and to push the bottles across the table, and a driving mechanism operatively connected with said bottle carrying mechanism and with said pushing mechanism whereby the same are driven.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

WILLIAM STENDER.

Witnesses:

K. C. Kopp,
J. Kopp.