To all whom it may concern:  

Be it known that I, CARL BRAUER, working-manager, a subject of the Emperor of Austria, and resident of Hostomitz, near Teplitz, Bohemia, Empire of Austria, have invented a new and useful Improvement in or Relating to Apparatus for Transferring Bottles or the like to an Annealing-Oven, of which the following is a specification.

This invention relates to apparatus for transferring bottles or the like hereinafter referred to as bottles, to an annealing oven. Such apparatus, in general, consists of two portions, the one an apparatus for blowing the bottles, the other an apparatus for placing the bottles in the annealing oven. The bottles are blown in a horizontal position, but are transferred from this position to the vertical position of the annealing oven. 

In such an apparatus according to the present invention the principal novelty consists in the fact that the bottles which travel bottom first are pushed upward, and are received in an upright position in a receiver located in the entrance to the annealing oven provided with a movable floor or sole, and are pushed forward out of the receiver on or on to the floor or sole by a pusher device, the chute, the pusher device and the receiver, being carried by a carrier frame so reciprocated transversely to the direction of travel of the movable sole, that each bottle pushed or fed on to the latter comes beside the preceding one.

The general arrangement of the devices, which can be erected at any time while the plant is in full operation, without interruption of working and without rearrangement of the Owens or like installation, is illustrated by way of example in Figure 1.

Fig. 2 is a view of larger scale, partly in elevation and partly in section on A—B, Fig. 1; Fig. 2 is a perspective view of a detail of a device for inverting the bottles to be transferred one after another, and Fig. 3 is a view partly in elevation and partly a section on C—D, Fig. 1. Fig. 4 illustrates in plan the device for imparting the lateral motion to the two devices for feeding and placing the bottles in position on the movable sole, these two devices being arranged side by side. Fig. 5 is an elevation of this apparatus seen from the right of Fig. 4. Fig. 6 represents in elevation the arrangement of levers and operating arms for actuating the bottle placing devices, the open and closed positions of which are shown diagrammatically in plan, Fig. 7.

As seen in Fig. 2, the adjustable bottle raising or ejection plunger 1 is mounted under the bottle disk or table c of the Owens 60 or such like machine, in such manner that in its rise it pushes the bottle out of the cup or seat 2 of the disk and into the bottle inverter or tilter d mounted free above same. The bottle inverter d consists of a sleeve-like or tubular member slotted or open at the top as shown in Fig. 2, and fixed to the frame of the bucket elevator e, Fig. 2. The device d is formed with a deflecting face 3 and a turning face 4 so inclined and opening freely downward at the end, that the bottle ejected by the plunger 1 is tilted over by the faces 3 and 4 and delivered bottom downward on to a bucket 5 of the elevator e which carries it up. The driving mechanism of the ejector plunger and of the elevator are in positive connection with each other, and such that each bottle ejected and inverted is delivered with certainty to a bucket 5 of the elevator e. The bottle tilter d is preferably so arranged that it can be swung aside or upward if required; it may also be provided with a pendulous flap for controlling the passage for the bottle through it. The bottles raised by the buckets 5 are delivered successively to the known bottle depositing device f as each bucket reaches the reversing point of the elevator, as shown in Fig. 2. The bottle is deposited by the device f on to likewise known automatically discharging cartridges k running on a conveyer track g leading to the annealing oven, and is delivered to known catchers l, as shown by Fig. 3, from which it passes into the chute k and is delivered upright into the bottle placing device m located over the conveyer band l of the annealing oven. In the constructional example illustrated, two bottle placing devices m, two chutes k and two pairs of catchers l are arranged side by side. The bottle placing device m consists as shown in Figs. 3, 4 and 7, of a funnel-like receiver made in halves 6. The halves 6 are fixed at the free ends of the legs of a scissors motion 9, pivoted at 7 and opened and closed from the point 8, Figs. 3 and 7, and below the scissors motion 9 is a pusher rod 13 mounted in the guide 10 and supported on rollers 11, 12, running on the conveyer-band l. From the pusher rod 13 rises an angularly bent 110
arm 14, Fig. 3, the upward portion of which carries the point of application 8 of the force for operating the scissors motion 9. The long horizontal portion of the arm 14 is mounted to slide in eyes 15 fixed to an angularly bent lever 16. The bent lever 16 is mounted to swing laterally right and left about a pivot 18 on an arm 17 of the pillar supporting the rails of the conveyor track \( g \) (Fig. 4) and to the short arm of the bent lever 16 is connected the chute \( k \) the lower end of which is carried by the support or guide 10. To the bent lever 16 ispivotally connected a nut 19, and the two nuts 19 used in the case where two of the devices are disposed side by side are mounted on a screw spindle 20 (see Figs. 4 and 5) fitted with one fixed and two loose pulleys for an open and a crossed belt which pass at the other end over a belt pulley on a counter shaft 21. The counter shaft 21 is adapted to be driven for example with three speeds, from the staff-wheel \( n \) that drives the band or rope of the conveyor track \( g \) to be referred to hereinafter. To one of the nuts 19 is fixed a tappet 22 in the path of which is a weighted lever 23 connected to the belt shift fork, so that when the nuts reach each other end position the weighted lever 23 is moved so as by its weight to effect automatic shifting of the belts and thus reverse the motion of the nuts and of the entire bottle placing apparatus.

To the end of the pusher rod 13 extending inward at the bottom from the bent arm 14 is connected a link 24 the other end of which is connected to the shorter arm of a powerful bell crank lever 25, Fig. 7. Bell crank lever 25 is pivoted at 26 on a support 27 carried by the arm 17. To the long arm of each bell crank lever 25 is connected a link 28 and each of these links is connected to an operating lever 29, Figs. 3 and 5. Each of the levers 29 is pivotally mounted at 31 on a carrier 30 fixed to the rail supporting pillar, and its upper end extends into the path of the bottle carriages. To the carrier 30 are also pivoted at 32 the operating levers 33 the upper ends of which extend into the path of the bottle carriages in a different plane than that of the operating levers 29, and each of the levers 33 is connected by a reversing link 34 to the adjacent lever 29 in such manner that when a lever 33 is moved to the right, the lever 29 connected to it by the reversing link 34 is swung to the left, while when the lever 29 is moved back to the right, the lever 33 coupled to it is swung back to the left. The separate actuation of the levers 29 and 33 by the bottle carriages in such manner that at one time the lever 33 is moved and at the next the lever 29 is attained by making the striker or tripping arms of the successive bottle carriages of suitably different shape.

On the bottle carriage in Fig. 2, the striker or tripping arm \( o \) is of such shape that it throws over the levers 33, while the striker arm \( p \) on the bottle carriage in Fig. 3 can only actuate the levers 33.

Assuming now that a charged bottle carriage having a striker arm \( o \), Fig. 2, in traveling in the direction of the arrow, Fig. 6, comes against the left hand lever 33, the striker arm \( o \) in the travel of the carriage will move this lever over to the right, and the lever 29 coupled thereto will therefore be moved to the left, with the result that the pusher rod 13 of the left hand bottle placing device \( m \), Fig. 7, which is in the advanced position will be retracted and the appertaining bottle receiver 6 will be closed. At the same time a bottle discharged from the bottle carriage through the pairs of catchers \( i \) and through the chute \( k \) is fed into the bottle receiver 6 and set erect on the conveyor band \( l \). When the striker arm \( o \) in the further travel of the bottle carriage comes against the second lever 33, this is moved over to the right and the lever 29 coupled to it is moved to the left, whereby the receiver 6 of the right hand bottle placing device \( m \) is opened, and the bottle which was received and set erect therein at the previous feed is pushed forward on the band \( l \) by the pusher rod 13. Thus both levers 29 have now been moved over to the left and are in advance of the levers 33.

Now when another charged bottle carriage having a striker arm \( p \), Fig. 3, in traveling in the direction of the arrow of Fig. 6, strikes the left hand lever 29, it will move this to the right and the lever 33 coupled thereto to the left, thus opening the receiver 6 of the left hand bottle placing device. At the same time the appertaining pusher rod 13 pushes the bottle which was contained in this receiver, Figs. 5 and 6. Each of the levers 29 is pivotally mounted at 31 on a carrier 30 fixed to the rail supporting pillar, and its upper end extends into the path of the bottle carriages. To the carrier 30 are also pivoted at 32 the operating levers 33 the upper ends of which extend into the path of the bottle carriages in a different plane than that of the operating levers 29, and each of the levers 33 is connected by a reversing link 34 to the adjacent lever 29 in such manner that when a lever 33 is moved to the right, the lever 29 coupled to it by the reversing link 34 is swung to the left, while when the lever 29 is moved back to the right, the lever 33 coupled to it is swung back to the left. The separate actuation of the levers 29 and 33 by the bottle carriages in such manner that at one time the lever 33 is moved and at the next the lever 29 is attained by making the striker or tripping arms of the successive bottle carriages of suitably different shape.
tirely automatically in a row, on the con-

veyor band of the annealing oven, as shown
by Fig. 4, and the band is then moved for-
ward automatically a sufficient distance to
allow the next row to be placed. The drive
of the screw spindle 20 has then been so re-
versed by the weighted lever 23 that the bot-
tle placing devices are moved in the opposite
direction until the next row of bottles has
been placed by them.

The bottle conveying device described
above is so constructed or arranged that
bottles or the like of different sizes can with
equal reliability be automatically placed in
rows in the annealing oven.

The device or apparatus hereinbefore de-
scribed as arranged for power operation
can of course be arranged for hand opera-
tion.

What I claim is:

1. Automatic bottle transferring appa-
ratus including an endless conveyor for re-
ceiving the bottles direct from the machine,
an annealing oven provided with a movable
sole, means for sliding the bottles bottom
first including a chute, an open-topped re-
ceiver in proximity to the annealing oven
and adapted to receive the bottles from the
chute erect, a pusher device for removing
the bottles from the receiver to said mov-
able sole, and a reciprocating frame form-
ing a support for the chute, the receiver
and the pusher device, the said frame being
arranged transversely to the movement of
the said sole for assembling the bottles in
juxtaposition and the said receiver being
mounted to rock about a fixed point of the
carrier frame and thereby have its open top
closed during the backward motion of the
carrier frame.

2. Automatic bottle transferring appa-
ratus including an endless conveyor for re-
ceiving the bottles direct from the machine,
an annealing oven provided with a movable
sole, means for sliding the bottles bottom
first including a chute, an open-topped re-
ceiver in proximity to the annealing oven
and adapted to receive the bottles from the
chute erect, means for opening and closing
the receiver, a pusher device for removing
the bottles from the receiver to said mov-
able sole, and lever arms projecting into the
path of the endless conveyor and arranged
to move the pusher device and the receiver
opening and closing means at intervals cor-
responding to the arrival of successive bot-
tles.

In testimony, that I claim the foregoing
as my invention I have signed my name in
presence of two witnesses, this 2 day of 60
April, 1914.

CARL BRAUER.

Witnesses:
PAUL ARRAS,
ALISON G. BUCHANAN.