

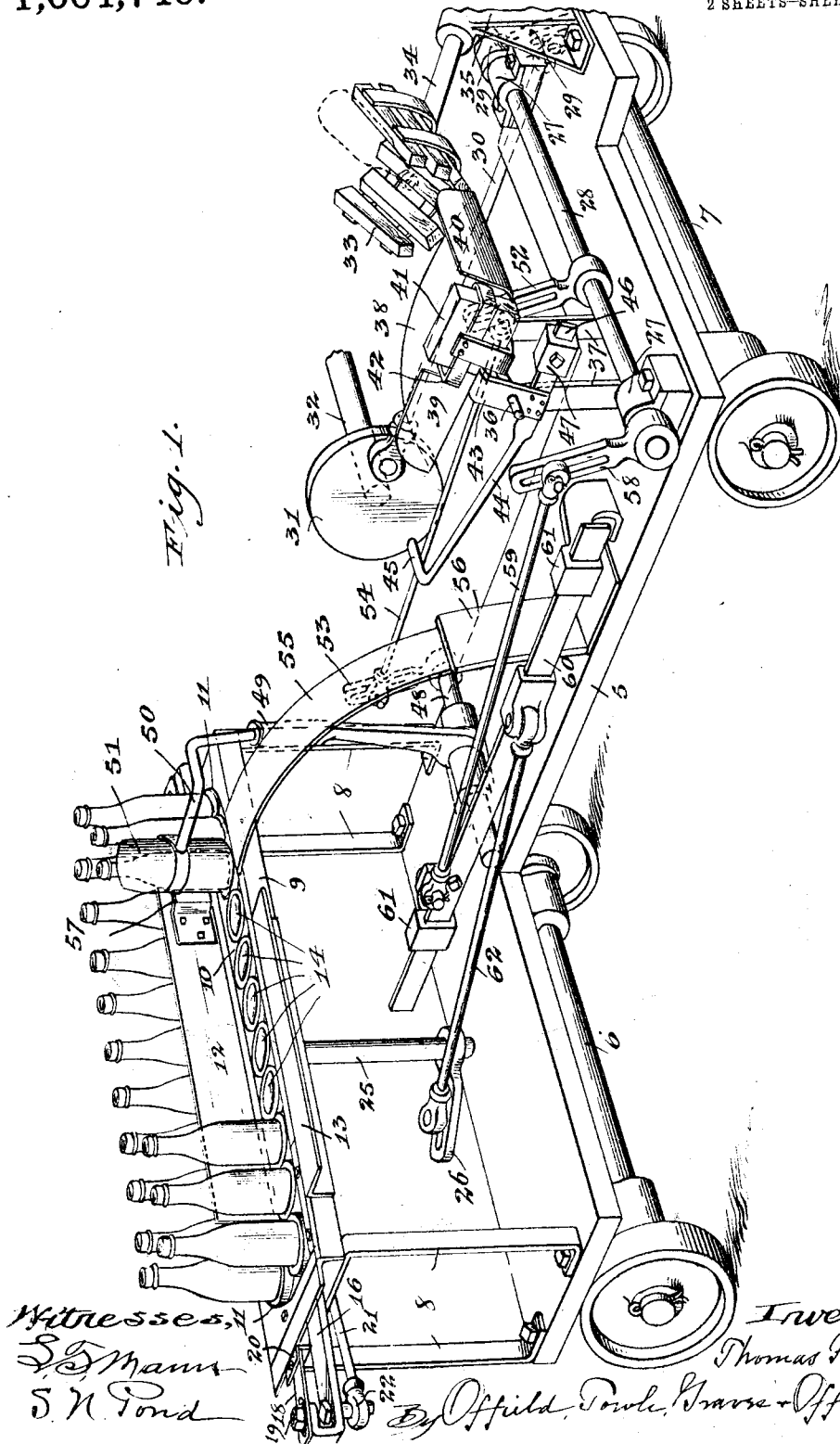
T. F. LAMB.
BOTTLE HANDLING DEVICE.
APPLICATION FILED MAR. 7, 1913.

Patented June 17, 1913.

2 SHEETS-SHEET 1.

1,064,746.

Fig. 1.



Witnesses,
S. S. Mann
S. N. Pond

Inventor,
Thomas F. Lamb,

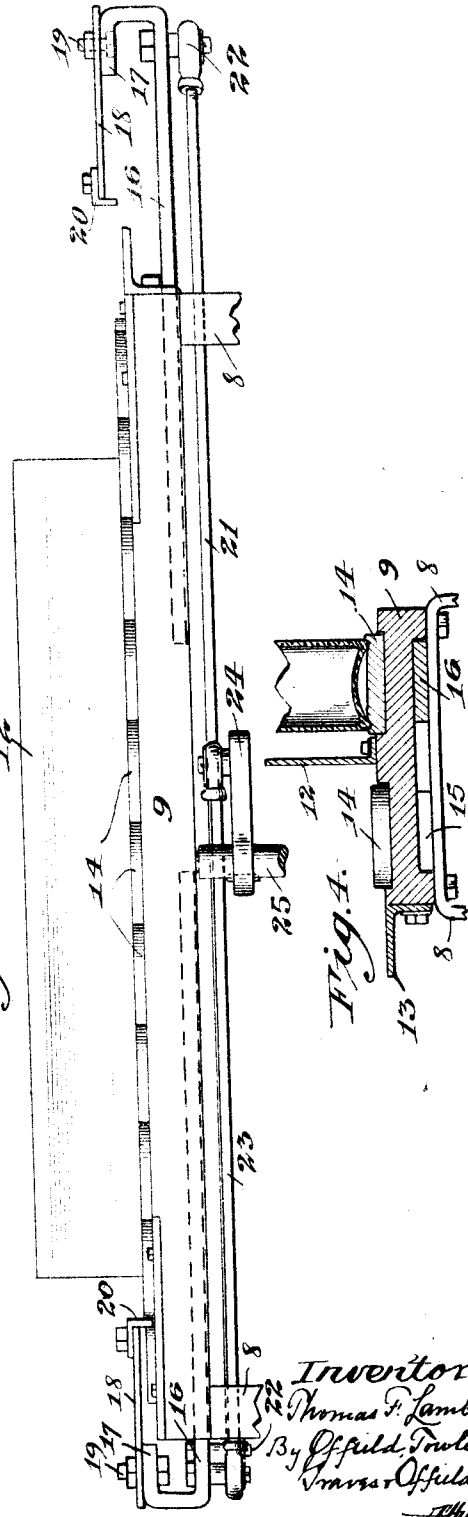
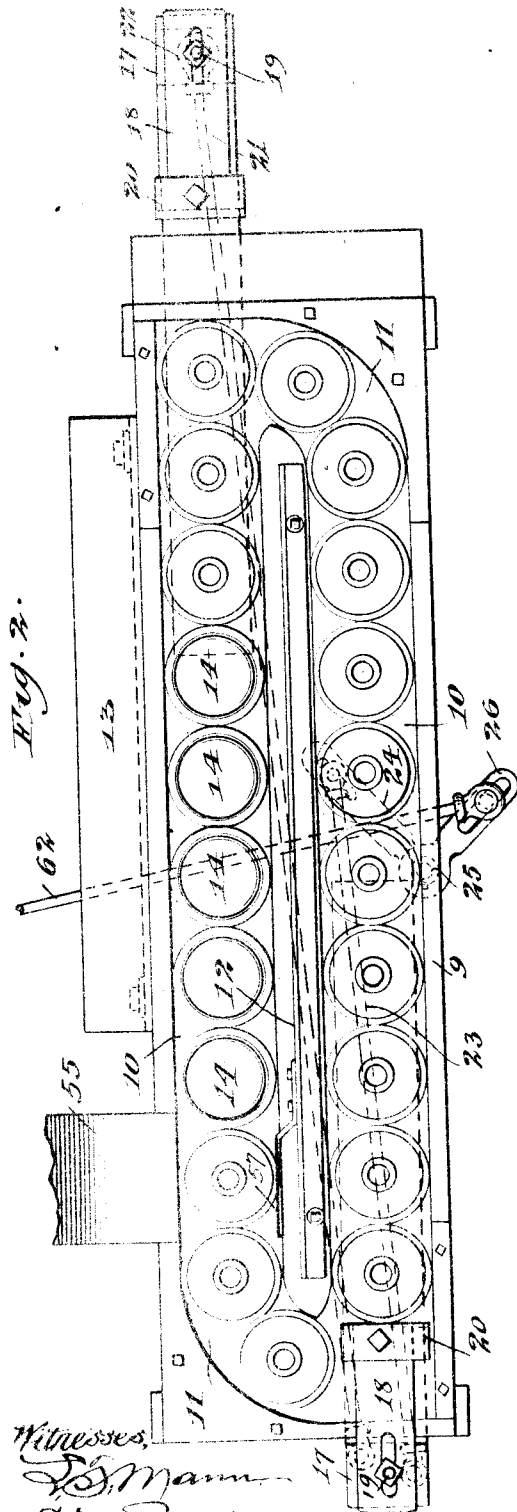
By Offield, Fowler, Morse & Offield, Attys.

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2 SHEETS—SHEET 2.

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UNITED STATES PATENT OFFICE.

THOMAS F. LAMB, OF NEWARK, OHIO, ASSIGNOR TO THE AMERICAN BOTTLE COMPANY, OF NEWARK, OHIO, A CORPORATION OF OHIO.

BOTTLE-HANDLING DEVICE.

1,064,746.

Specification of Letters Patent.

Patented June 17, 1913.

Application filed March 7, 1912. Serial No. 752,599.

To all whom it may concern:

Be it known that I, THOMAS F. LAMB, a citizen of the United States, residing at Newark, in the county of Licking and State of Ohio, have invented certain new and useful Improvements in Bottle-Handling Devices, of which the following is a specification.

My invention relates to an apparatus designed for use as an adjunct to a bottle-blowing or molding machine, and the main object of the invention is to provide a simple and convenient apparatus for receiving the freshly made bottles in succession from the blowing or molding machine and arranging them in convenient and compact order to be transferred in the usual manner by a workman to the annealing oven or leer. Several forms and types of such machines have heretofore been devised, but have, for the most part, proved unsatisfactory by reason of their cumbersome and complicated structure or their unreliability in operation. By my present invention I have overcome the difficulties and objections heretofore encountered in connection with such machines, and have produced a simple and thoroughly reliable bottle-handling apparatus which dispenses with the labor of several workmen as compared with the old method, still existing to a considerable extent, of removing the freshly made bottles separately by hand and arranging them for convenient transfer to the annealing oven.

My invention, its mode of operation, and the advantages secured thereby will all be readily understood when considered in connection with the accompanying drawings which illustrate the preferred embodiment of the invention, and in which—

Figure 1 is a perspective elevation of the complete machine. Fig. 2 is a top plan view of the bottle-receiving table or platform and its adjunctive devices. Fig. 3 is a rear edge elevation of the table or platform. Fig. 4 is a detail view in vertical transverse section through the table or platform.

Referring to the drawings, 5 designates as an entirety the base-plate on which the mechanism is supported, said base-plate in turn being preferably mounted on fore and aft trucks 6 and 7, respectively, for convenient portability and adjustment relatively to the machine which it serves. Mounted on suitable uprights 8 on the forward portion

of the base-plate is a horizontal table or platform 9 on which the bottles are received, arranged in successive order, and partially cooled just prior to their transfer to the leer. As best shown in Fig. 2, there is formed on the upper surface of the table 9 a shallow, oblong endless way or channel comprising parallel straight sections 10 each of which merges into the other at one end laterally thereof by a curved section 11. Between the straight sections 10 of the channel is interposed a partition-plate 12. Slidably mounted within this channel is a series of bottle-seats or carriers comprising disks 14 arranged in edge to edge juxtaposition throughout the full extent of the channel with the exception of a space about equal to that occupied by a single disk, and each suitably shaped on its upper surface to substantially fit the bottom of the bottle served thereby.

Slidably mounted in guide-ways 15 (Fig. 4) formed beneath the upper surface of the table 9 at opposite ends of the latter are a pair of alternately acting pushers, each comprising, as best shown in Fig. 3, a slide 16 having an upwardly bent end 17, and a pusher-plate 18 adjustably secured to said upwardly bent end 17 as by a bolt and slot connection 19 (Fig. 2). The inner or forward end of the pusher-plate 18 is preferably provided with a contact-block 20 that, on the inward movement of the pusher engages the adjacent rear end seat-disk of that row which is in alinement with the pusher, thereby moving the entire row to an extent equal to the diameter of one of said disks, and advancing the foremost disk of the row from the curved section 11 into the rear end of the other straight section 10 (the other pusher being at this time retracted). The two slides 16 are connected for simultaneous movement in opposite directions relatively to the table 9 by a connecting rod 21 underlying the table and connected to the slides 16 at its opposite ends by suitable swivel joints 22. One of the slides 16 is pivotally connected through a pitman 23 with a crank-arm 24 fast on the upper end of a vertical rock-shaft 25, the arm 24 being preferably slotted, as indicated in Fig. 2, to permit an adjustable connection of the pitman 23 thereto so as to adjust, as desired, the length of stroke of the pushers. The rock-shaft 25 is journaled at its upper end in the

table 9, and at its lower end in the base-plate 5; and fast on said rock-shaft near its lower end is another slotted crank-arm 26 that extends substantially at a right-angle to the crank-arm 24, as clearly shown in Fig. 2.

Referring to Fig. 1, in journals 27 on the opposite end of the base-plate 5 from that which carries the table 9 is a horizontal rock-shaft 28, having fast on one end thereof a crank-arm 29 connected by a pitman 30 to a crank-disk 31 fast on a shaft 32; this latter shaft being geared to turn in timed relation to the bottle-blowing or molding machine and in a fixed ratio to the rotary movement of the latter. This actuating mechanism for the bottle-handling apparatus is preferred by me because insuring that the rate of speed of the moving parts of the bottle-handling apparatus shall always bear a fixed relation to the speed of the blowing or molding machine and consequently the speed of delivery of the bottles from the latter; said bottles being dropped successively into a stationary guide and delivery chute 33, as shown by dotted lines in Fig. 1, which chute is conveniently supported upon an arm 34 mounted in an upright corner bracket 35 secured to the base-plate 5.

Pivotaly supported at 36 on a pair of uprights 37 rising from the base-plate 5 is a bent strip 43 on which is secured a quadrant-shaped pan 38 formed with upright flanges 39 and 40 on its respective straight edges, while its curved or rounding edge portion is slightly raised so as to cause the bottle, after it has been received from the chute 33, to roll downwardly, as the pan tips forwardly (as hereinafter described) to a position in which it lies against and parallel with the flange 39. A portion of the flange 39 is cut away to accommodate a wooden block 41 mounted in a frame 42 and receiving the impact of the open ends of the freshly made bottles as they are delivered by the chute 33, to cushion the impact of said bottles and prevent danger of breaking or chipping from contact with metal. Secured to the lower end of one arm of the bent strip 43 below the pivot 36, is an arm having a forwardly projecting portion 44 with an angularly bent end 45, and a rearwardly projecting portion 46 on which is adjustably mounted a weight 47; said weight normally maintaining the pan 38 in the elevated position shown, ready for the reception of a bottle from the chute 33.

On the forward portion of the base-plate 5 is journaled a rock-shaft 48, fast on which is an adjustable upstanding arm 49, the outer or free end portion 50 of which is inwardly bent and carries a cradle 51. The radius arm 49 is actuated from the rock-shaft 28 by an arm 52 on said latter shaft, an arm 53 on the rock-shaft 48,

and a connecting rod 54 between said arms. The arm 49 occupies such a position relatively to the arm 44 that, on the downward swinging movement of the arm 49, it strikes the bent end 45 of the arm 44, thereby lowering the arm 44 against the action of weight 47, and tilting the pan 38 to a downwardly and forwardly inclined position in which the bottle swings through a right-angle, then slides down off the pan 38 onto the cradle 51, its bottom striking the lower end of a curved slideway 55 extending between the base-plate 5 and the upper surface of the table 9. The bottle-engaging surface of the slideway 55 is convex, as shown; and its lower end is preferably covered by an asbestos pad 56 to cushion the impact of the bottles. The slideway 55 is formed on an arc whose center of curvature is substantially in the axis of the rock-shaft 48 that carries the arm 49, and the lower end of the cradle 51 reciprocates over the outer surface of the slideway 55 in close proximity to the latter, the bottoms of the bottles sliding over the slideway 55 as they are raised by the cradle and successively pushed onto the bottle-carrying disks 14. Secured to the partition 11 at a point directly opposite the upper end of the slideway 55 is a plate-spring 57 that forms a cushion stop or abutment preventing overthrow of the bottles due to their momentum and arresting them at a point at which they are accurately centered upon the seat-disks 14.

The mechanism for actuating the rock-shaft 25, through which the pusher-plates 18 are reciprocated comprises a slotted crank-arm 58 on one end of the rock-shaft 28, a pitman 59 connecting the arm 58 with a cross-head 60 slidably mounted in bearings 61 on the base-plate 5, and a pitman 62 connecting the cross-head 60 with the slotted crank-arm 26 on the lower portion of the rock-shaft 25. A narrow shelf 13 secured to one side of the table 9 forms a rest for the workman's paddle in transferring the bottles from the table 9 to the leer.

The operation of the apparatus is, as already stated, suitably timed to the operation of the bottle-blowing or molding machine, and is as follows: As the bottles are successively delivered from the blowing or molding machine to the chute 33 they slide thence onto the pan 38, the open end of the bottle striking the stop-block 41. At this instant the arm 49 carrying cradle 51 is descending, and, striking the bent end 45 of the arm 44, it rocks the pan 38 forwardly and downwardly, during which movement the bottle rolls through a right-angle and slides off the pan 38 onto the cradle 51 with its bottom end resting upon the lower end of the slideway 55. At this instant the arm 49 swings upwardly, pushing the bottle over

the slideway 55 onto that one of the seat-disks 14 directly opposite the upper end of the slideway 55, the spring 57 preventing overthrow, and, with the cradle 51, accurately centering the bottle on the seat-disk. At the instant the cradle 51 withdraws from the bottle, the pusher shown at the left of Fig. 1 moves inwardly and advances the entire row of bottle-seat-disks disposed on that side of the partition 11 to the extent of the diameter of one disk, thus bringing the next empty seat-disk opposite the slideway 55. While the cradle-arm 49 is returning for another bottle, the opposite pusher (at the right-hand end as shown in Fig. 1) moves inwardly, similarly advancing the row of seat-disks on the other side of the partition 12, advancing the foremost disk of the row around the curve 11 into a position to be engaged by the left-hand pusher on its next inward movement. In this way, the inward or operative stroke of each pusher advances the foremost seat-disk of the row actuated thereby to a position to be engaged by the other pusher on its next inward or operative stroke; while each inward stroke of the left-hand pusher of Fig. 1 brings a new empty seat-disk in position to receive a bottle. As soon as the table 9 has become loaded with bottles to the extent that there is a sufficient number (usually five or six) on the inner side of the partition 11 to fill the workman's paddle by which the bottles are manually transferred to the leer, such bottles are removed, and a fresh supply brought into delivery position during the trip of the attendant from this machine to the leer and back.

It will thus be seen that the operation of the machine is continuous during the operation of the blowing or molding machine; that the machine entirely dispenses with the necessity of manual removal of the bottles from the blowing or molding machine; and that the operations are performed with substantial certainty and exactness, greatly reducing the extent of waste through breakage and other causes. The seat-disks 14 are, as shown, of slightly greater diameter than the maximum diameter of the bottles, thus avoiding liability of the bottles sticking together in their heated state during their travel over the bottle-receiving table or platform of the apparatus.

It will be evident to those skilled in the art that the machine as shown and described is capable of variation and modification in minor details without involving any departure from the principle involved or sacrificing any of the advantages thereof. Hence I do not limit the invention to the exact structure and mechanism shown and described.

I claim—

1. In a bottle-handling device, the com-

bination with a table, and a row of bottle-seats slidably mounted thereon in edge contact with each other, of means for delivering the bottles from a bottle-forming machine to said bottle-seats successively, and means for moving said row of bottle-seats lengthwise of the row between successive deliveries of bottles thereto.

2. In a bottle-handling device, the combination with a table having an endless guide-way formed in its upper surface, of bottle-seats slidably mounted in said guide-way in edge contact with each other, means for delivering the bottles from a bottle-forming machine to said bottle-seats successively; and a pair of alternately acting pushers at opposite ends of said table, respectively, acting in turn to advance a group of said bottle-seats lengthwise of said guide-way.

3. In a bottle-handling device, the combination with a table having an endless guide-way formed in its upper surface, of bottle-seats slidably mounted in said guide-way in edge contact with each other, means for delivering the bottles from a bottle-forming machine to said bottle-seats successively at a fixed point on said guide-way, a pair of pushers slidably mounted in opposite ends of said table and connected for simultaneous movement in opposite directions relatively to said table, said pushers on their inward movements advancing a group of said bottle-seats lengthwise of said guide-way, and means for effecting reciprocating movements of said pushers.

4. In a bottle-handling device, the combination with a table having a guide-way formed in its upper surface and comprising parallel straight sections each communicating with the other at one end by a curved section, of bottle-seats slidably mounted in said sections of the guide-way in edge contact with each other, means for delivering the bottles from a bottle-forming machine successively to the bottle-seats in one of said guide-way sections, and a pair of alternately acting pushers operating to move said bottle-seats through said guide-way to the extent of the diameter of one seat between successive deliveries of bottles to said seats.

5. In a bottle-handling device, the combination with a table and means for arranging in a row a plurality of bottles successively received at a fixed point thereon, of means for successively delivering bottles from a bottle-forming machine to said table comprising a tiltable pan in which the bottles are received from the bottle-forming machine, a guide connected to a fixed point on said table and to which the bottles are delivered bottom foremost by said pan, and a cradle receiving the bottles from said pan and advancing them over said guide onto said table.

6. In a bottle-handling device, the combination with a table and means for arranging in a row a plurality of bottles successively received at a fixed point thereon, of
 5 means for successively delivering bottles from a bottle-forming machine to said table comprising a tiltable pan in which the bottles are received from the bottle-forming machine and shifted angularly during the
 10 tilting operation to present their bottoms foremost, a guide connected at its upper end to a fixed point on said table and having its lower end at a point opposite the delivery position of said pan, and a cradle receiving
 15 the bottles from said pan and advancing them over said guide onto said table.

7. In a bottle-handling device, the combination with a delivery chute, of a quadrant-shaped pan having upstanding walls on its
 20 straight edges and pivotally mounted opposite the lower end of said delivery chute, and means for tilting said pan in a direction transverse to said delivery chute, whereby,
 25 said pan, the bottles are automatically shifted angularly from a position parallel with one of said walls to a position parallel with the other.

8. In a bottle-handling device, the combination with a table, and means for arranging in a row a plurality of bottles successively received at a fixed point thereon, of
 30 an arc-shaped guide connected at its upper end to a fixed point on said table, a radius arm mounted to swing through an arc concentric with said guide, a cradle carried by
 35 the free end of said arm and reciprocating over the upper surface of said guide, and means for delivering the bottles successively to said cradle.
 40

9. In a bottle-handling device, the combination with a table, and means for arranging in a row a plurality of bottles successively received at a fixed point thereon, of
 45 a tiltable pan in which the bottles are received from the bottle-forming machine, a guide connected at its upper end to a fixed point on said table and having its lower end at a

point opposite the delivery position of said pan, means normally maintaining said pan in
 50 elevated position, a swinging arm carrying a cradle reciprocating over said guide, and means actuated by said swinging arm on its downward movement for tilting said pan to deliver a bottle therefrom to said cradle. 55

10. In a bottle-handling device, the combination with a table, and means for arranging in a row a plurality of bottles successively received at a fixed point thereon, of a tiltable pan in which the bottles are
 60 received from the bottle-forming machine, an arc-shaped guide connected at its upper end to a fixed point on said table and having its lower end at a point opposite the delivery position of said pan, a radius arm
 65 mounted to swing through an arc concentric with said guide, a cradle carried by the free end of said arm and reciprocating over the upper surface of said guide, a weight normally maintaining said pan in elevated position,
 70 tion, and an arm connected to said pan and projecting into the path of movement of said radius arm and adapted to be struck by the latter on its downward movement to thereby tilt said pan, against the action of
 75 said weight, to a position to deliver the bottle to said cradle.

11. In a bottle-handling device, the combination with a base-plate, of a table mounted on one end of said base-plate and means
 80 for arranging in a row a plurality of bottles successively received at a fixed point thereon, a tiltable pan mounted at the opposite end of said base-plate, means mounted on said base-plate intermediate said pan and
 85 table for transferring bottles successively from the former onto the latter, and interconnected actuating mechanism for said bottle-arranging means, said pan, and said transferring means, mounted on said base-plate.
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THOMAS F. LAMB,

Witnesses:

C. I. DAYTON,

T. E. FITZGIBBON.