J. HORVATH.

BOTTLE ANNEALING AND DELIVERING MACHINE.

APPLICATION FILED SEPT. 13, 1909.

953,337.

Patented Mar. 29, 1910.

4 SHEETS—SHEET 1.

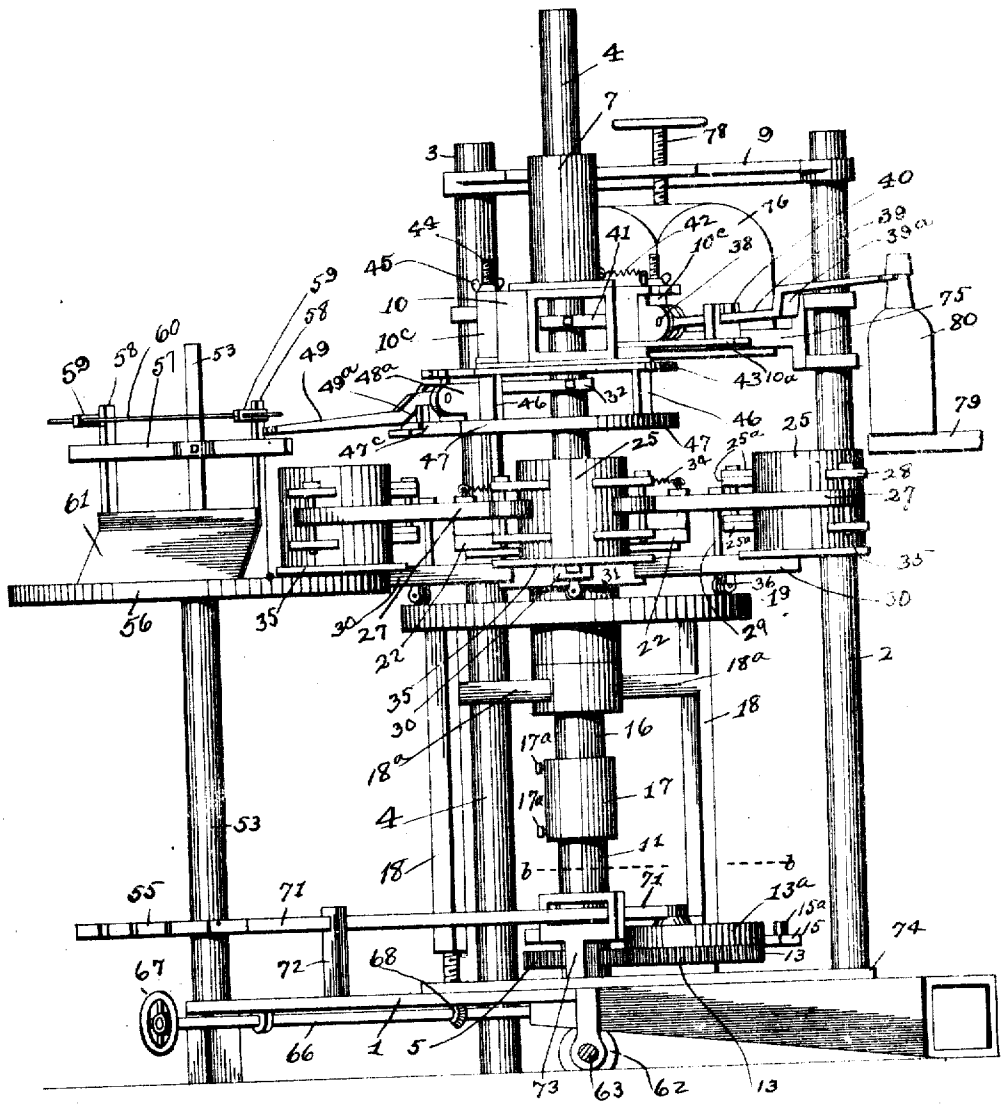

Fig. 1.

Witnesses

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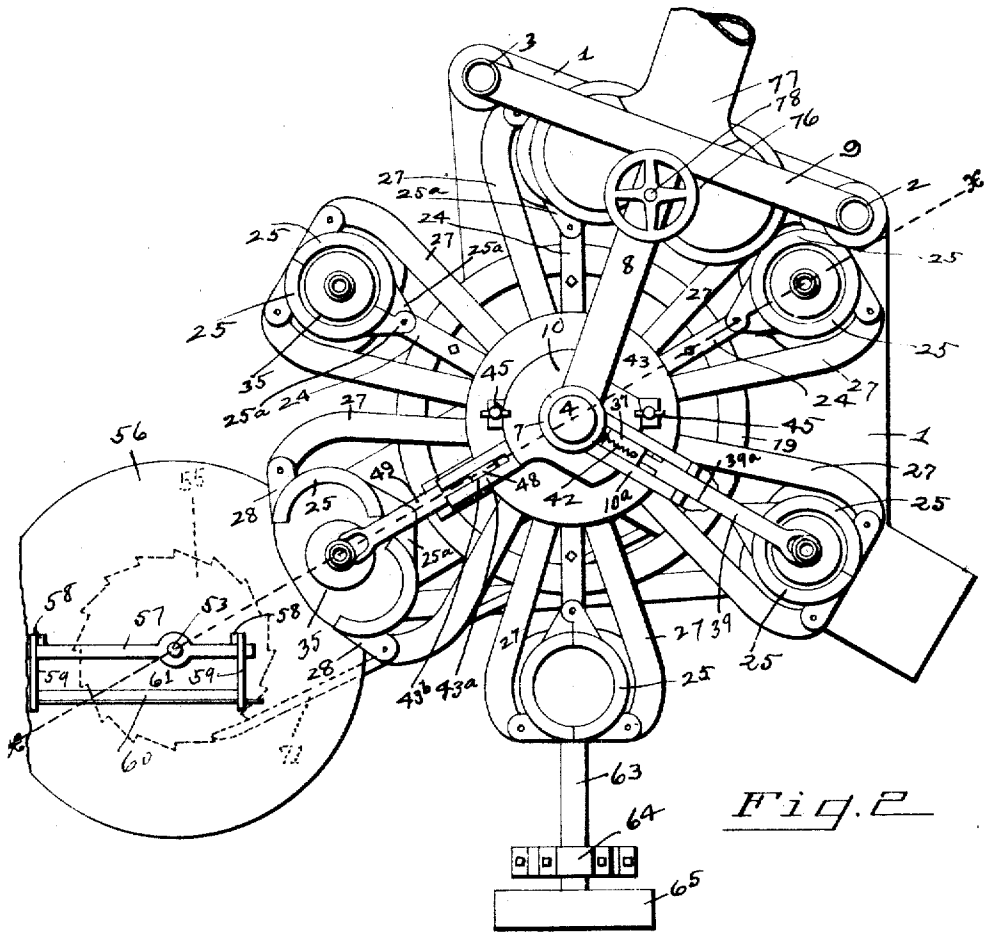

Fig. 2

Witnesses

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4 SHEETS—SHEET 3.

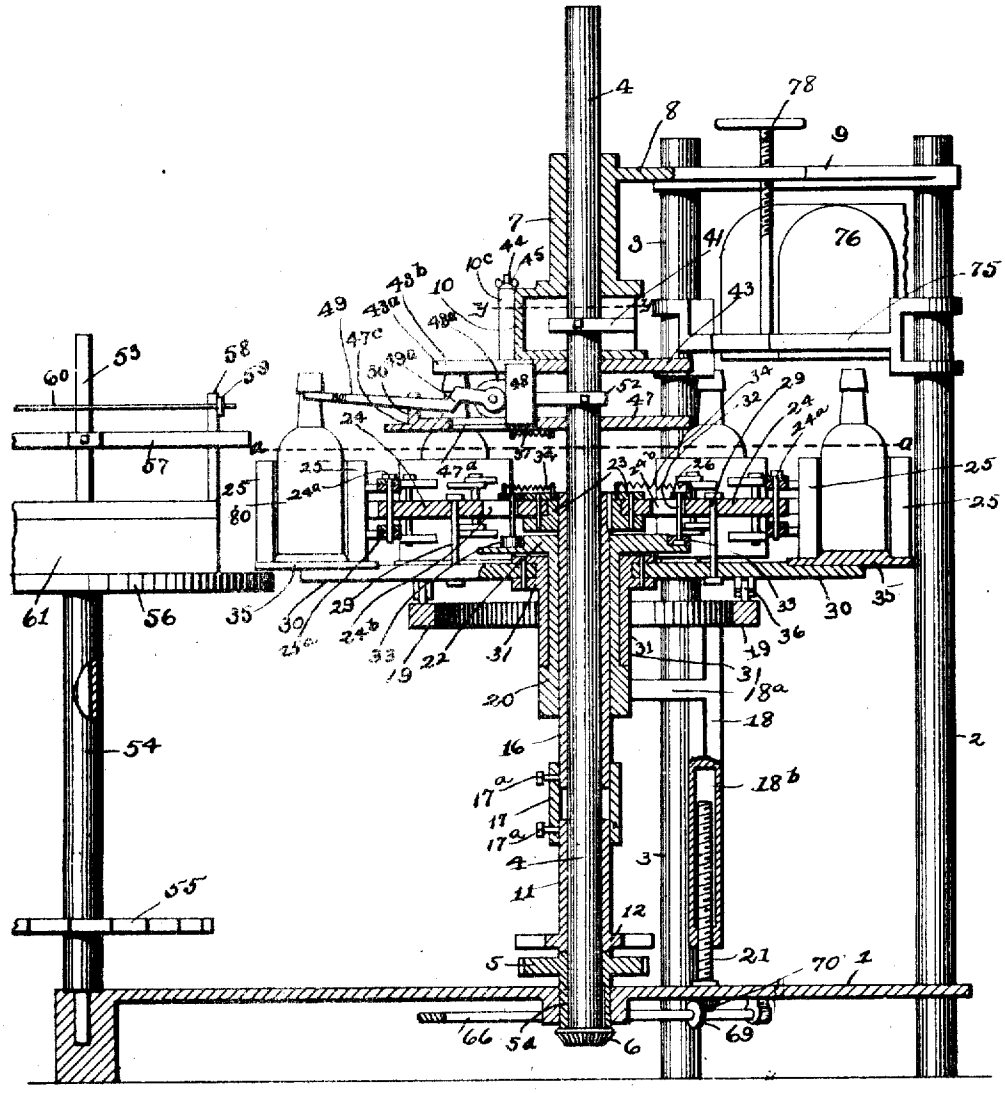

Fig. 3

Witnesses
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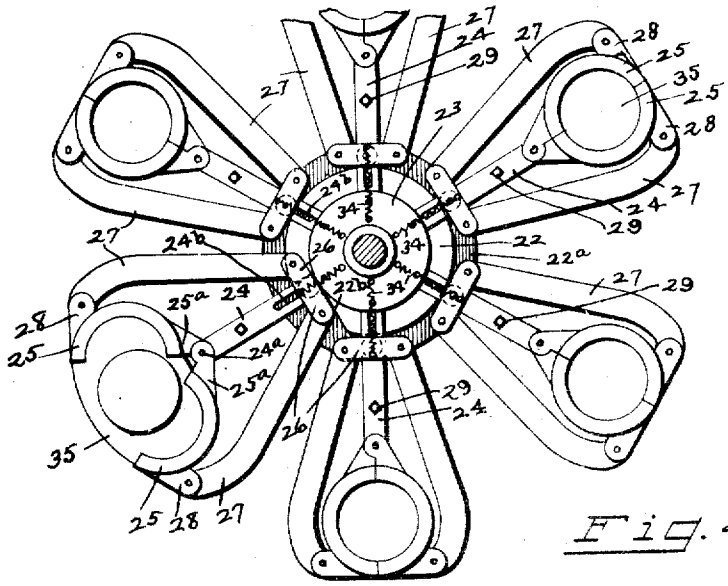

Fig. 4.

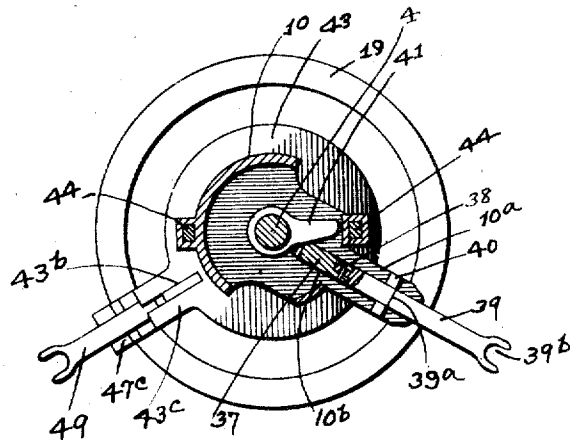

Fig. 5.

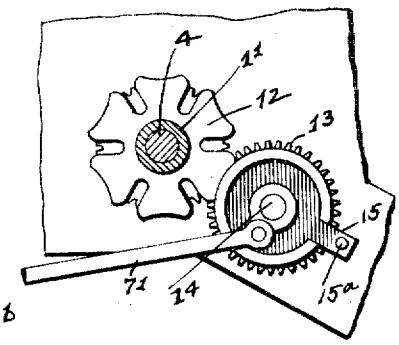

Fig. 6.

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UNITED STATES PATENT OFFICE.

JULIUS HORVATH, OF NEWARK, OHIO.

BOTTLE ANNEALING AND DELIVERING MACHINE.

953,337. Specification of Letters Patent. Patented Mar. 29, 1910.

Application filed September 13, 1909. Serial No. 517,454.

To all whom it may concern:

Be it known that I, JULIUS HORVATH, a citizen of Hungary, residing at Newark, in the county of Licking and State of Ohio, have invented certain new and useful Improvements in Bottle Annealing and Delivering Machines, of which the following is a specification.

My invention relates to the improvement of bottle annealing and delivering machines and the objects of my invention are to provide an improved mechanism by means of which bottles which are molded or blown, are automatically conveyed to position for annealing and thence conveyed to and deposited upon a receiving table for finished ware; to provide improved means for successively engaging and lifting the bottles from the molding machine; to provide bottle carrying cups of improved construction in conjunction with means for opening and closing the same; to provide improved means for imparting an intermittent traveling motion to the bottle carrying devices and an intermittent operation to the bottle discharging devices; to provide means for adjusting the parts of my device for operation upon bottles of different sizes and to produce other improvements the details of which will be more fully pointed out hereinafter. These objects I accomplish in the manner illustrated in the accompanying drawings, in which:

Figure 1 is a side elevation of my improved machine, Fig. 2 is a plan view of the same, Fig. 3 is a vertical section on line *x—x* of Fig. 2, Fig. 4 is a transverse section on line *a—a* of Fig. 3, Fig. 5 is a transverse section on line *y—y* of Fig. 3, and, Fig. 6 is a transverse section on line *b—b* of Fig. 1.

Similar numerals refer to similar parts throughout the several views.

1 represents a horizontal base or platform of suitable contour and 2 and 3 represent respectively vertical standards or frame rods which rise from said base at desirable points.

4 represents a vertical shaft, the lower portion of which has keyed thereon the sleeve-like extension 5^a of a gear wheel 5, said sleeve extension being journaled in the base 1. Below this base the shaft 4 carries a bevel pinion 6. The upper portion of the shaft 4 is journaled in a vertical bearing member 7 which is supported by an arm 8 of a horizontal frame bar 9 which extends between the upper ends of the frame rods 2 and 3. The lower portion of the bearing member 7 terminates in a semi-circular housing 10, which will be more fully described hereinafter. Above the gear wheel 5 is mounted rotatably on the shaft 4, one section 11 of a hollow shaft or sleeve, upon the lower end of which is carried a desirable form of star wheel 12. The wheel 5 gears with a wheel 13 which is journaled on a short vertical shaft 14 which rises from the base 1. This wheel 13 has a raised upper side portion 13^a with which is formed a radially extending arm 15, the latter being provided with an upwardly projecting pin 15^a, said pin being adapted when the wheel 13 is rotated to successively engage the recesses between the teeth or projections of the wheel 12. Above the hollow shaft member 11, the shaft 4 is surrounded by a second sleeve or hollow shaft 16, the latter being adjustably connected with the section 11 through the medium of a coupling sleeve or collar 17, through which set screws 17^a pass to engage the peripheries of the sections 11 and 16.

On opposite sides of the shaft 4 and at a suitable distance therefrom, are arranged vertical frame members 18, the upper ends of which support a horizontally disposed track ring 19. Each of the frame members 18 has an arm 18^a extending therefrom, said arms supporting a rigid vertical sleeve or casing 20 through which the hollow shaft 16 passes. The lower portion of each of the frame members 18 is formed hollow as shown at 18^b and in the lower end of each of said members is formed a threaded opening through which passes and with the threads of which engages a vertical supporting screw 21, the lower end of which is fixed in connection with the base 1. The head or upper end of the vertical sleeve or casing 20 has formed therewith a horizontal cam plate 22 which is in the nature of a disk, the base of which is provided with a circumferential flange 22^a, said flange having an angular recess therein, as indicated at 22^b. Above the cam plate 22, the hollow shaft 16 carries a circular head 23, the periphery of which is formed with a plurality of sockets arranged at equidistant points therein and in each of these sockets is secured the inner end of a radially ex-

tending arm 24. The outer end of each of the arms 24 is pivotally connected as indicated at 24^a with the overlapping projecting inner end jaws 25^a of opposing semi-circular cup members 25, these members when their outer ends are brought together, forming a short cylindrical body. The inner end portion of each of the arms 24 is formed with a longitudinal slot 24^b and extending transversely across the slotted portion of each of said arms is a bar 26. With the ends of each bar 26 are connected the inner ends of outwardly extending divergent arms 27, the inwardly curved outer ends of which are pivotally connected with laterally extending lugs 28 of the cup members 25. Through the medium of vertical pins or bolts 29, each arm 24 is connected with a lower and parallel arm 30, these lower arms extending radially from sockets formed in the periphery of the enlarged upper portion of a sleeve 31 which loosely surrounds the sleeve or hollow member 20. Through each of the cross bars 26 passes centrally a pin 32, the latter extending downward through the slotted opening 24^b of the arm 24 and carrying on its lower end a pivoted roller 33, the latter having its periphery adapted to bear against the periphery of the cam body 22.

34, 34 represent coiled springs which extend between pins on the upper sides of the cross bars 26 and heads 23.

Upon the outer end portion of each of the lower arms 30 is mounted a horizontal plate or bracket member 35 having a raised central portion, these plates or brackets forming floors for the cup members 25 (see Figs. 3 and 4). On the underside of each of the arms 30 is carried a small pivoted caster or wheel 36 which wheels bear upon the track ring 19 heretofore described.

The heretofore mentioned housing 10 which is formed with the lower portion of the bearing 7 has its bottom plate formed with a laterally extending arm 10^a (see Fig. 5), the inner portion of which extension is formed with a longitudinal slot 10^b. Within the inner end portion of this slot is provided a sliding block 37, with which is pivotally connected at 38, the inner end of an outwardly extending arm 39, the latter bearing in the upper side bifurcation of an upright bearing block 40 which is supported from the housing tongue 10^a. The arm 39 has its outer portion elevated above its inner portion, resulting in the formation of a shoulder 39^a, as shown in Fig. 1. The outer end of the arm 39 is bifurcated as indicated at 39^b and said arm is normally inclined upward and outward, owing to the fact that the bottom of the recess or bifurcation in the block 40 is higher than the pivot point of said arm. Upon the shaft 4 within the housing 10 is carried a projecting cam finger 41, which is adapted when the shaft is rotated to contact with the inner end of the block 37 and force the latter outward.

42 is a spring which connects the upper side of the block 37 with the bearing member 7 and which serves to normally hold said block in its innermost position in the slot of the housing base.

Beneath the housing 10 is provided a plate 43 which plate has extending upwardly therefrom, bolts 44 the bodies of which are square in cross section and the upper terminal portions of which are rounded and threaded as indicated. These bolts extend upward through vertical casings 10^c of the housing and are held in connection with the latter by means of nuts 45 on the threaded terminations of the bolts. The plate 43 is through the medium of vertical arms 46 connected with a lower horizontal plate 47 through which the shaft 4 passes loosely. The plate 43 is formed with a radial arm extension 43^a in which is formed a longitudinal slot or recess 43^b which is vertically above a horizontal slot 47^a in the plate 47.

48 represents a sliding block, the lower reduced end portion of which enters the reduced lower portion of the slot 47^a and the upper end portion of which extends within the opening 43^b. This block has connected therewith two forwardly extending lugs 48^a between which is pivoted the rear end of an outwardly extending arm 49. This arm in its outer end is bifurcated or forked and in its inner end portion is elevated to form a shoulder 49^a. The arm 49 is adapted to bear, as shown, in a recessed bracket member 50 which rises from an arm-like extension 47^c of the plate 47. With the lower end of the block 48 is connected a spring 51, the remaining end of which is connected with the plate 47 in rear of said block, said spring normally tending to draw the block inward toward the shaft 4. Upon the shaft 4 between the plates 43 and 47 is secured to said shaft, one end of a horizontally projecting tongue 52, the latter corresponding with the tongue 41. This tongue 52 is adapted when the shaft is rotated to contact with the block 48 and force the latter outward in its bearings.

At one side of the mechanism heretofore described, I provide a fixed vertical rod 53 which rises from the base 1 and a portion of which is incased loosely in a pipe or hollow shaft member 54, the latter carrying on its lower portion a ratchet wheel 55 and having its upper end connected centrally with a table top or disk 56. The upwardly extending rod 53 has connected therewith the central portion of a horizontal frame bar 57, the outer end portions of which are connected with vertical frame standards 58. From the

upper ends of these frame standards project outwardly, arms 59, the outer ends of which are connected by a horizontal rod 60. Formed with or secured to the lower portions of the frame standards 58 is the upper portion of an outwardly inclined baseboard 61.

With the pinion 6 which is carried on the lower end of the shaft 4, gears a bevel wheel 62 (see Fig. 1); the latter being mounted in a horizontal laterally extending shaft 63 (see Figs. 1 and 2), said shaft being journaled in a suitably supported boxing 64 and carrying on its outer end a belt wheel 65 through the medium of which rotary motion is imparted to the shafts 63 and 4.

66 is a horizontally disposed rod which is journaled beneath the platform 1 and which on its outer end carries a suitable hand wheel 67. This rod also carries two bevel pinions which are indicated at 68 and 69, said pinions gearing respectively with bevel pinions 70 carried on the lower ends of the screw rods 21. Above the platform is provided a horizontal operating bar 71, the latter being slidably supported in an opening formed in the upper portion of a frame standard 72. The outer portion of this operating bar forms a pawl which is adapted to successively engage the teeth of the ratchet wheel 55 which is carried on the hollow shaft 53. The remaining end of the operating bar 71 is eccentrically pivoted to the wheel 13ª, said bar passing through a vertically supported keeper or guide bracket 73, which rises from a horizontal frame member 74 which is supported on the upper side of the base or platform 1.

Extending between the frame standards 2 and 3 in the upper portion thereof and having its ends slidably connected with said standards is a horizontal frame member 75 which supports a suitable form of annealing furnace body 76, the latter having its lower side open and being formed with a laterally extending gas inlet 77.

Formed in the frame arm 8 is a threaded opening through which passes a furnace adjusting screw 78, the lower end of the latter being connected with the furnace supporting frame 75.

For the purpose of illustrating the operation of my improved machine, I have shown at one side of Fig. 1, a portion of a bottle molding machine platform which is indicated at 79 and have shown thereon, one of a number of bottles 80. By the means described, it will be understood that constant rotary motion in one direction is imparted to the shaft 4 and that intermittent rotary motion is imparted to the hollow shaft or sleeve 11—16 and the parts carried thereby, through the engagement of the pin 15ª of the arm 15 with a tooth of the star wheel 12 which engagement occurs at each revolution of the wheel 13. An intermittent rotary motion which is imparted from the hollow shaft 16, its head 22 and arms 24 and 30, results in the normally closed cup bodies formed by the semi-circular members 25 being carried in the arc of a circle beneath the furnace body 76. At each revolution of the shaft 4, it is obvious that the cam finger 41, will come into contact with the sliding block 37, thereby forcing the arm 39 outward until its forked end embraces the neck of a bottle 80 shown in Fig. 1 and owing to the upward movement of the arm 39 and the fact that its forked terminal member engages the underside of the bottle neck head, said bottle will be lifted off its supporting platform 79. As the cam finger 41 passes out of contact with the block 37, it is obvious that the spring 42 will act to draw the arm 39 inward toward the shaft 4, with the result that the inclined shoulder portion 39ª of the arm 39 drops downward on the rear side of the supporting block 40 and permits the arm 39 to descend until its forked terminal is disengaged from the bottle neck. At the moment of this disengagement, one of the cup bodies formed by the sections 25 has been carried by the arms 24 and 30 to a position beneath the bottle to receive the latter as it drops from said arm 39. The bottle thus deposited in the cup body is at the next movement of the members 24 and 30 carried to a position beneath the furnace body, where before the next movement imparted thereto, the bottle receives the desired annealing heat from the furnace. The rotation of the shaft 4 results at each revolution thereof in the cam finger 52 coming into contact with the block 48 and forcing the latter together with the arm 49 outward, said arm also traveling upward on the support 50. As the arm is thus forced outward, the bottle which has been properly annealed as described, is brought by the successive movements heretofore referred to, to a portion where its neck portion is engaged by the forked terminal member of said arm 49. As the cam finger 52 comes into contact with the block 48, the roller 33 which is carried by the cross bar 26 of that arm 24 which connects with the bottle holding cup as described, drops into the cam recess 22ᵇ of the cam 22, the corresponding spring 34 operating to pull said cross bar 26 inward toward the shaft and to thus spread the cup section holding arms 27 until the cup members 25 are in an open position (see Fig. 4), the cup members being thus opened and the outwardly moving arm 49 being engaged with the bottle neck, it is obvious that the bottle will be forced over on to the revolving table 56 and that as the bottle is re-

moved from the cup, the cam roller 33 will ride out of the depression 22^b and permit the cup sections to again close. It is obvious that each bottle carried by the cups, will successively be treated as above described and when a plurality of said bottles are deposited upon the table 56 in front of the inclined base-board 61 said bottles are removed in the usual manner by a scoop or shovel-like tool which when pushed against the lower ends of a group of bottles which have their neck portions bearing against the rod 60, drop outward into the scoop or shovel and are removed therein. It will be understood that the rotary movement of the bottle receiving table 56, will be of an intermittent nature owing to the eccentric connection of the pawl or operating bar 71 with the wheel 13^a.

In order to provide for the treatment of bottles of different heights, I have provided various means of adjustment, one of which consists in the provision of the threaded furnace supporting rod 78 which by being turned upward or downward raises or lowers the furnace with relation to the top of the bottle. In addition, I have provided the track frame supporting screws 21 which by turning the rod 66, will result in the raising or lowering of the frame 18, track ring 19 and members 20 and 31. This raising or lowering movement is also contributed to the arms 30 and 24, a vertical movement of the latter being permitted through the fact that the head 23 is movably keyed on the hollow shaft 16.

From the construction shown and described, it will readily be understood that simple and positive means are provided for successively removing bottles from the molding machine table or platform, carrying the same to an annealing oven and thence to a receiving table.

From the foregoing description, it will be seen that simple and efficient means are herein provided for accomplishing the objects of the invention, but while the elements shown and described are well adapted to serve the purposes for which they are intended, it is to be understood that the invention is not limited to the precise construction set forth, but includes within its purview such changes as may be made within the scope of the appended claims.

What I claim, is:

1. In a machine of the character described, the combination with a framework and an annealing oven supported thereby, of a rotary shaft, a slidable arm adapted to engage the neck of a bottle, means carried by said shaft for imparting an outward movement to said slidable arm at each revolution of the shaft, a bottle carrying frame having an intermittent rotary motion about said shaft and beneath said annealing oven, and a spring for retracting said arm.

2. In a machine of the character described, the combination with a framework and an annealing oven supported thereby, of a rotary shaft, a slidable arm adapted to engage the neck of a bottle, means carried by said shaft for imparting an outward movement to said slidable arm at each revolution of the shaft, a bottle carrying frame having an intermediate rotary motion about said shaft and beneath said annealing oven.

3. In a bottle annealing and delivering machine, the combination with a framework, and an annealing oven supported therein, of a main rotating shaft, slidable arms, means carried by said main shaft for moving said arms outwardly at predetermined times, an intermittently rotated bottle carrying frame and a receiving table, one of said sliding arms adapted to engage and remove a bottle from its support and to deposit the same on said bottle carrying frame and the other arm being adapted to remove said bottle from its supporting frame, the bottle carried by said supporting frame being held a predetermined time in position to receive heat from said furnace before the bottle is removed from said carrying frame.

4. In a machine of the character described, the combination with a framework and an annealing oven supported thereby, of a rotary shaft, a slidable arm adapted to engage a bottle adjacent to said framework, said arm having an angular offset therein whereby the arm is dropped downward when moved outward a predetermined distance, means connected with said shaft for moving said arm outward at each revolution of the shaft, and an intermittently rotated bottle carrying frame surrounding the shaft and adapted to receive bottles from said arm and to carry said bottles adjacent to said annealing oven.

5. In a machine of the character described, the combination with a framework and a rotating shaft mounted therein, pivoted and slidable means in said framework for engaging a bottle adjacent to the framework, and to lower said bottle when said engaging means are moved outward to a predetermined position, an intermittently rotated bottle carrying frame about said shaft comprising radial arms, normally closed pivotally connected cup sections carried by each of said arms, and means for automatically opening said cup sections at predetermined intervals.

6. In a machine of the character described, the combination with a framework and an annealing oven supported thereby, of a rotary shaft, a bottle carrying frame about said shaft, a fixed cam plate about said shaft having a recess in its periphery, said bottle

carrying frame comprising arms extending radially therefrom, pivotally connected sectional cups carried by said bottle carrying frame and pivotally connected with said arms, spring actuated cam rollers supported from the traveling bottle supporting frame and in contact with said cam plate periphery, and means controlled by said rotary shaft for depositing bottles successively in said cups.

In testimony whereof I affix my signature in presence of two witnesses.

JULIUS HORVATH.

Witnesses:

JOHN BAUER,

GEORGE VARGA.