May 17, 1932. J. R. GRUETTER 1,859,238

BOTTLE CHARGING MECHANISM

Filed Sept. 14, 1929 6 Sheets-Sheet 1

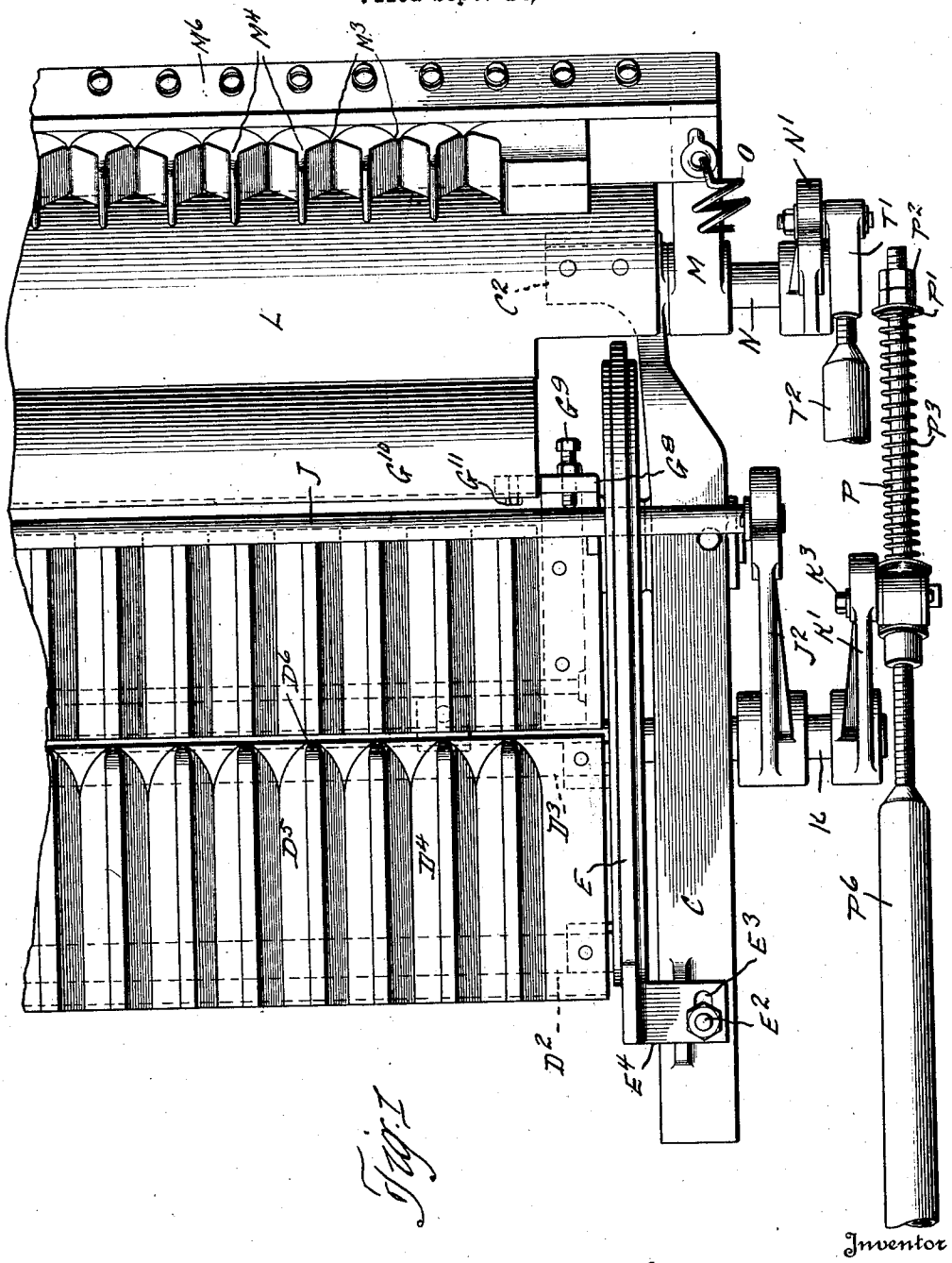



Fig. 1.

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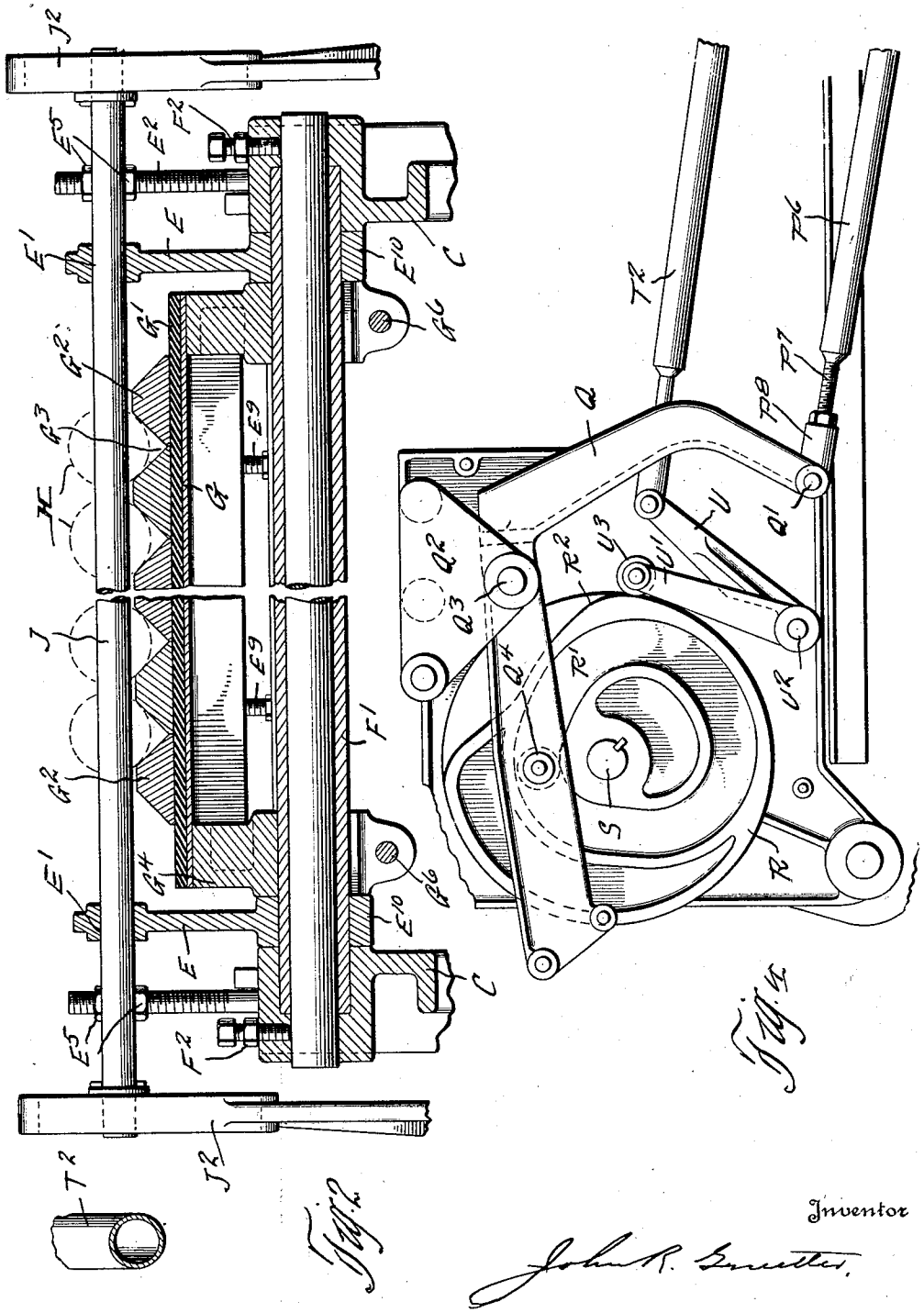
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BOTTLE CHARGING MECHANISM

Filed Sept. 14, 1929 6 Sheets-Sheet 2



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BOTTLE CHARGING MECHANISM

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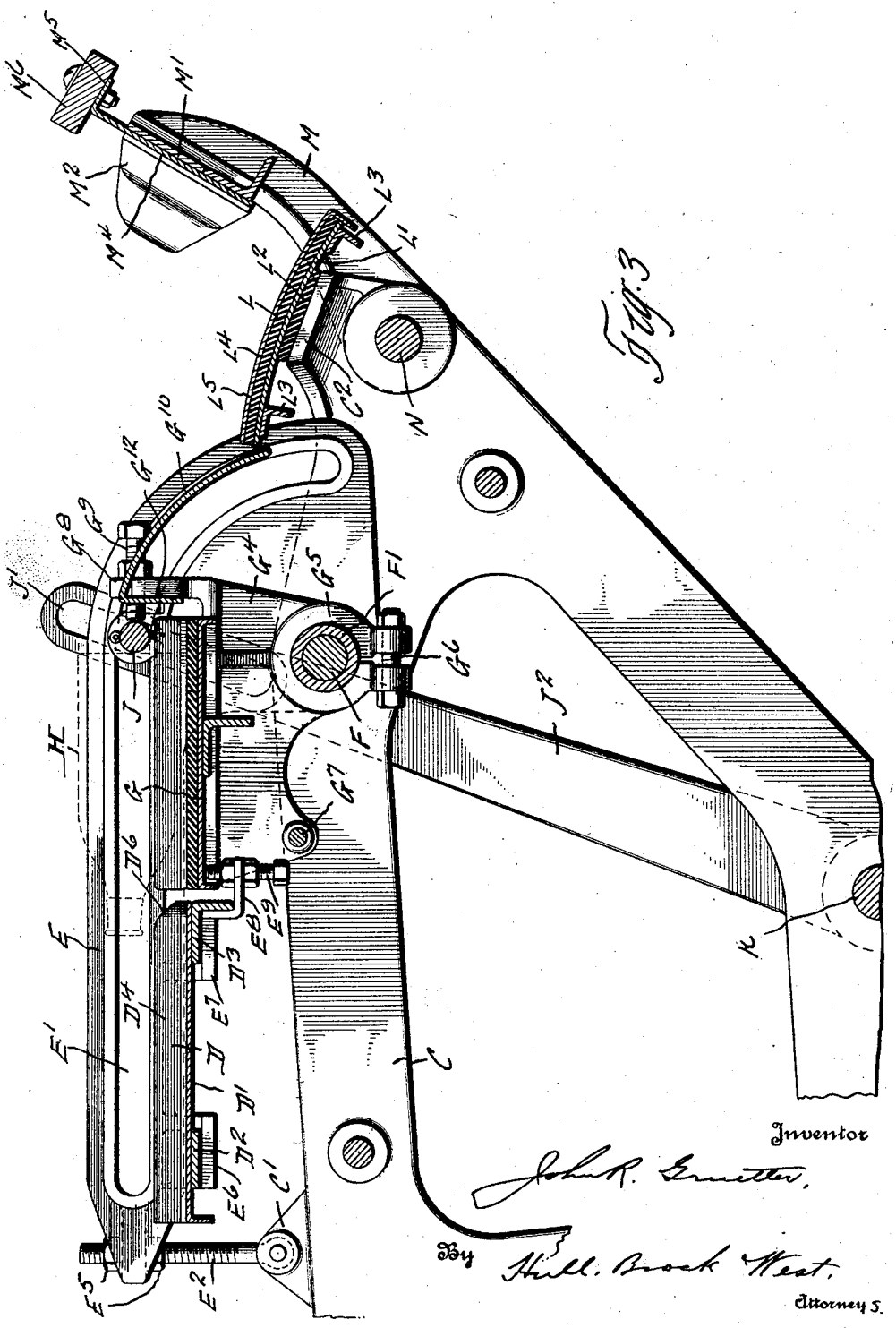


Fig. 3

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BOTTLE CHARGING MECHANISM

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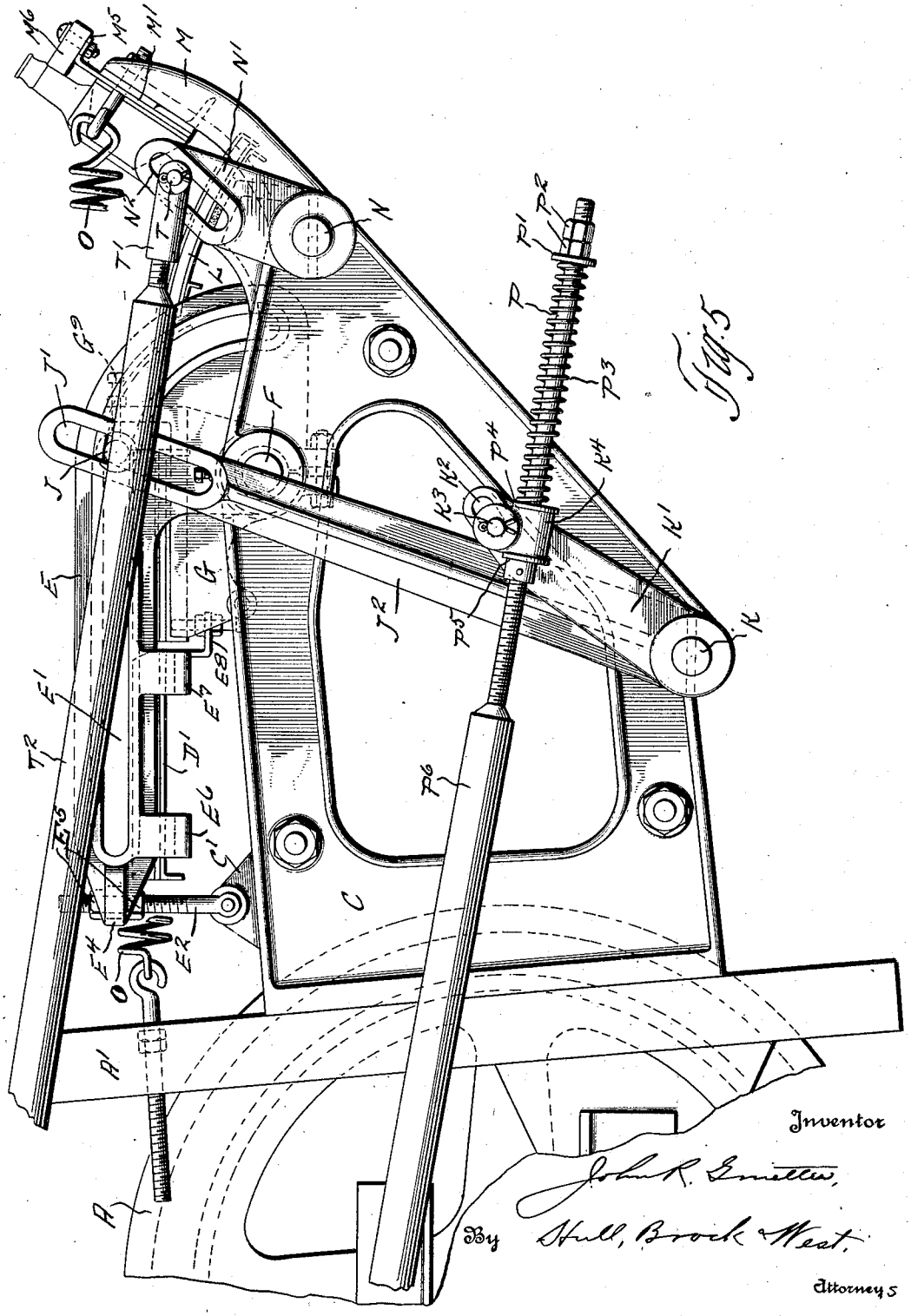


Fig. 5

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BOTTLE CHARGING MECHANISM

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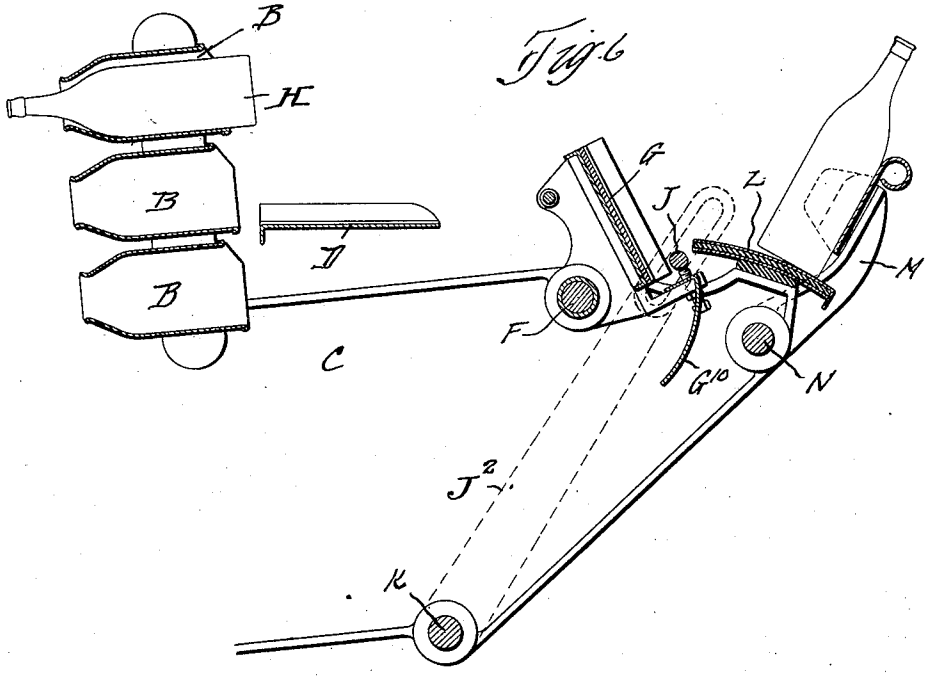



Fig. 6

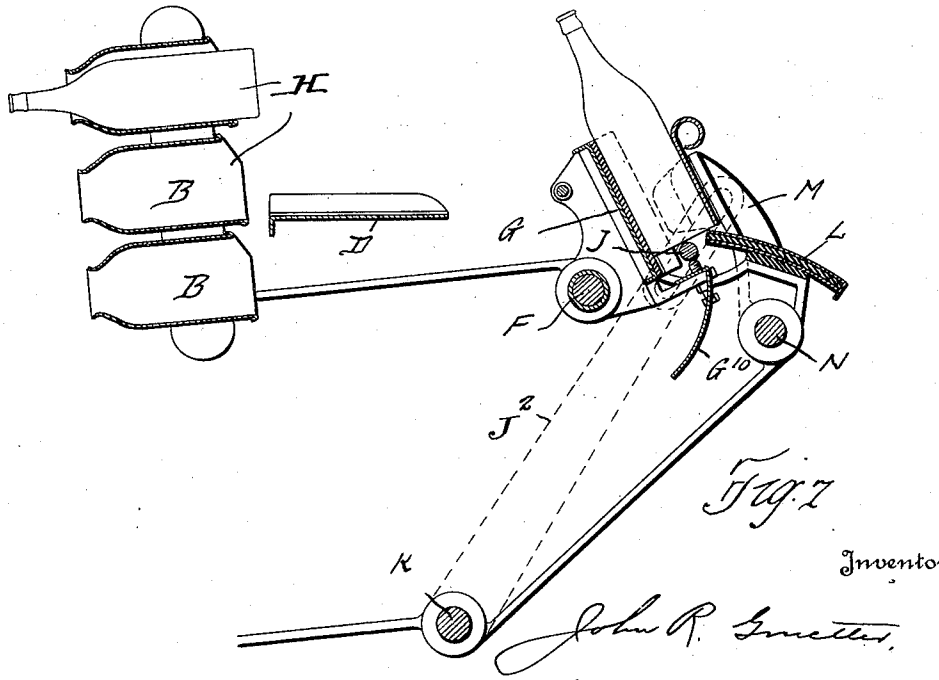



Fig. 7

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BOTTLE CHARGING MECHANISM

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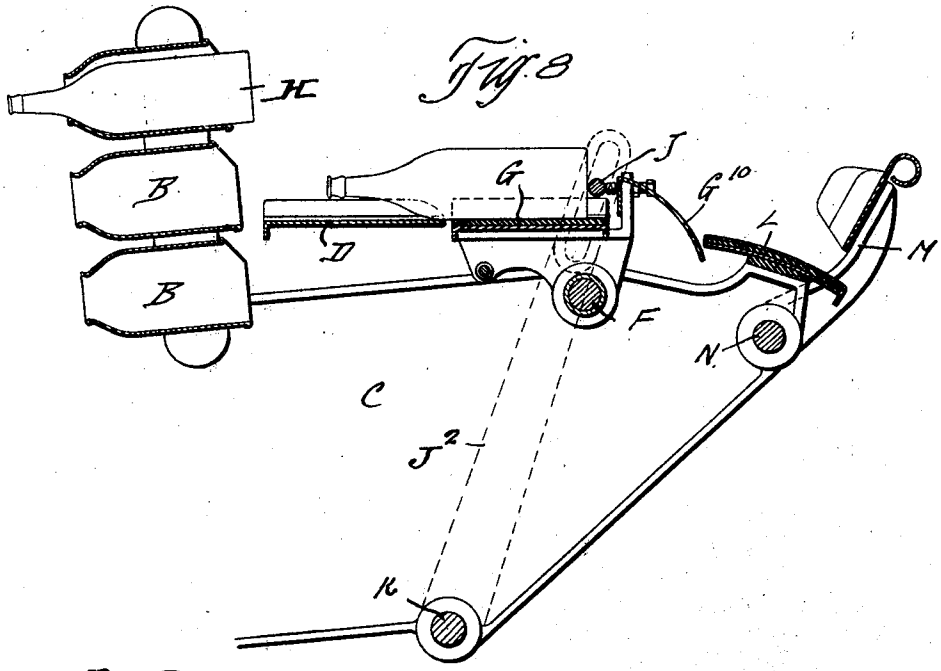



Fig. 8

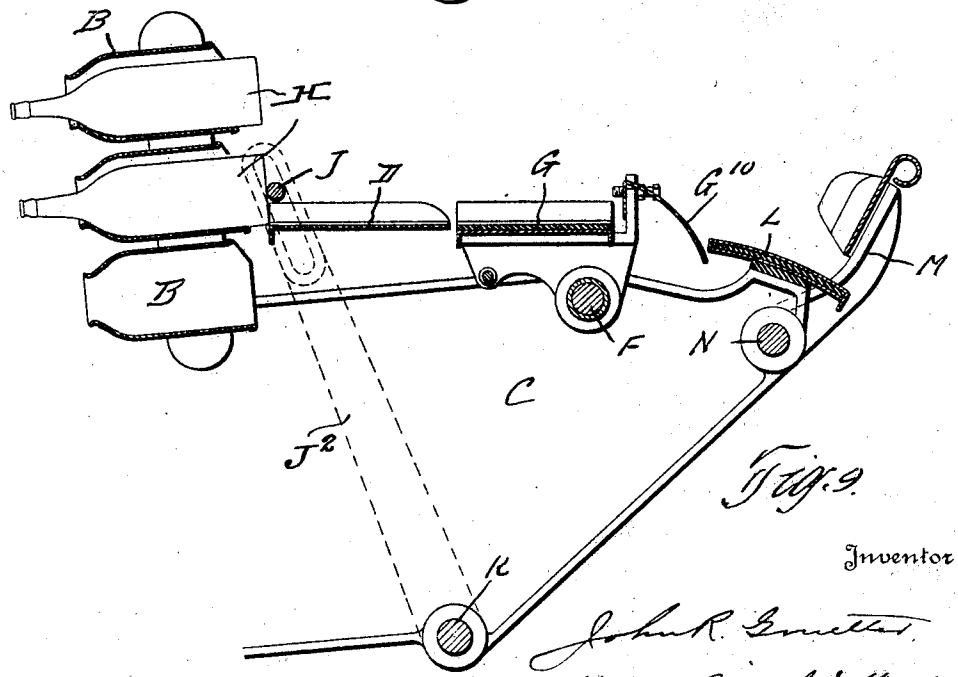



Fig. 9

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# UNITED STATES PATENT OFFICE

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## BOTTLE-CHARGING MECHANISM

Application filed September 14, 1929. Serial No. 392,663.

This invention relates to bottle-cleaning apparatus and more particularly to mechanism for charging series of bottles into series of bottle supports in such an apparatus. The invention is designed for use in bottle cleaning apparatus of the type wherein bottles are advanced intermittently through such apparatus while supported upon transverse series of seats, each series of seats forming a cross member of an endless conveyor.

It is the general purpose and object of the invention to provide for bottle-cleaning mechanism employing such transverse series of bottle supports charging mechanism which will enable the bottles to be delivered into the successive series of supports with maximum rapidity and without danger of breakage.

Further and more limited objects of the invention will appear hereinafter and will be realized in and through the combinations of elements embodied in the claims and in and through the construction and arrangement of parts illustrated in the drawings wherein Fig. 1 represents a plan view of a portion of my charging mechanism; Fig. 2 a transverse sectional view through such mechanism; Fig. 3 a longitudinal sectional view through such mechanism; Fig. 4 a detail in elevation of the main cam and the cooperating portions of the means for operating the charging mechanism; Fig. 5 a similar view of the charging mechanism and the operating rods therefor; and Figs. 6, 7, 8 and 9 are diagrammatic sectional views showing the positions of the parts comprising my charging mechanism while completing a cycle of operations involved in receiving a series of bottles and delivering the same to a series of bottle supports.

Describing the various parts by reference characters, A (Fig. 5) denotes the front or receiving end of a bottle washing machine, the said machine having therein transverse series of bottle supports, indicated at B (see Figs. 6 to 9).

Secured to uprights A′ at the front of the main frame of the said apparatus are heavy brackets C, said brackets projecting forwardly from such end and providing a support for the bottle-charging mechanism and the front connections for operating the same.

The charging mechanism comprises generally a table having a transverse series of longitudinally extending grooves, the rear ends of which are arranged to register successively with transverse series of bottle supports or carriers B, as the latter are moved intermittently through the apparatus in the usual manner; a pivoted transfer tray having grooves therein adapted to register at their rear ends with the front ends of the first mentioned grooves; a receiving platform on which the bottles to be loaded onto the tray are deposited and from which they are delivered onto said tray; a movable rack for delivering the bottles from said platform to said tray; and means for moving the bottles bodily from the transfer tray onto the grooves on the table and thence into the appropriate series of bottle carriers or supports.

The receiving and delivering table D is secured to and between the front ends of a pair of arms E each pivoted adjacent to its front end on a shaft F and each having a slot E′ extending substantially the full length thereof, the front end of each slot being curved on a radius described from the center of the shaft F, for a purpose to be explained hereinafter. The front ends of the arms E are pivotally and adjustably supported from the brackets C by bolts $E^2$ pivoted at their lower ends to lugs C′ and having their upper ends extending through slots $E^3$ provided in lugs $E^4$ extending laterally from the front ends of the arms E, each bolt $E^2$ having adjusting nuts $E^5$ thereon, located above and below the lug $E^4$.

The table D consists of a base D′ which is supported from the arms E by means of bottom cross members $D^2$, $D^3$ resting upon lugs $E^6$, $E^7$, projecting from the bottoms of the arms E. The cross member $D^3$ is in the shape of an angle bar, the vertical flange of which engages the vertical flanges depending from the forward ends of the lugs $E^7$, the vertical flanges of said lugs having each a forward extension $E^8$ which receives an adjusting screw $E^9$.

The base D′ may be of sheet metal, having applied to the upper surface thereof

a plurality of truncated inverted V-shaped ribs $D^4$, providing grooves $D^5$ therebetween, the front ends of said ribs being beveled, as shown at $D^6$, to facilitate the delivery of bottles thereinto from the swinging transfer tray.

Each arm E is pivotally mounted upon the shaft F by hubs $E^{10}$ which are mounted upon a sleeve F′ rotatable on said shaft, the shaft being held against rotation by means of the set screws $F^2$.

The receiving and transfer tray consists of a base G having on the upper surface thereof a cushion G′, of rubber or other suitable yieldable material, and on said cushion there is a series of longitudinally extending inverted truncated V-shaped ribs $G^2$, preferably of wood, and providing grooves or chutes $G^3$ therebetween which are adapted to receive the bottles H and to register at their rear ends with the front ends of the grooves or chutes $D^5$. The tray is pivotally mounted upon the shaft F by means of bracket arms $G^4$ each having a split sleeve $G^5$ at the bottom thereof whereby it may be clamped about the rotary sleeve F′ by a bolt $G^6$. A tie rod $G^7$ connects the rearward ends of the said bracket arms.

It will be noted that the rear end of the tray G is adjustably supported upon the tops of the screws $E^9$, thus enabling the grooves or chutes $G^3$ to be brought into register with the grooves or chutes $D^5$.

For the purpose of rotating the tray G, each bracket arm $G^4$ is provided at its front end with an upwardly extending lug $G^8$ in which is adjustably mounted a screw $G^9$, which screws are adapted to be engaged by a cross bar J having its extreme ends mounted for reciprocation in slots J′ provided in the upper ends of rocking arms $J^2$ mounted on a shaft K.

$G^{10}$ denotes an apron which is secured to inward extensions of the lugs $G^8$ by means of bolts $G^{11}$ extending through said lugs and a flange $G^{12}$ on said apron (see Figs. 1 and 3). The forwardly extending portion of this apron is curved on a radius described from the center of the shaft F and, when the tray is in its delivering position as shown in Fig. 3, the lower end of this apron extends below the rear end of the receiving platform L.

The platform referred to consists generally of a sheet metal base L′ having its opposite ends supported by cushions $L^2$ of rubber or similar yielding material on seats $C^2$ at the front ends of the bracket C. The front and the rear of the said platform are strengthened by angle members $L^3$ therebeneath and extending the full length of the said platform. Upon the metal base L′ there is mounted a pad $L^4$ of rubber or similar cushioning material, and the said pad in turn is covered by a thin metal sheet $L^5$.

For the purpose of moving the bottles from the platform L to the tray G, I provide a rocking delivery rack having grooves for the bodies of the bottles and which rack is pivotally supported by arms so that, by moving the said arms the bottles will be swept rearwardly across the platform and deposited between the ribs upon the tray G. M denotes the arms, which are secured to the end portions of the shaft N, outside the brackets C. These arms extend upwardly and forwardly from the said shaft and have secured thereto a base plate M′ to which in turn a plurality of inverted V-shaped ribs $M^2$ are secured, providing grooves $M^3$ therebetween for bottles the bottoms of which are deposited upon the platform L. Between the ribs $M^2$ and the base M′, there is inserted a metal sheet $M^4$, having its upper end flanged, as shown at $M^5$ and to which flange there is secured a transversely extending sill $M^6$, the rear edge of which is adapted to engage the necks of the bottles, as indicated in Figs. 6 to 9 inclusive. A coiled spring O, which is connected at one end with one of the arms M and at its opposite end with one of the uprights A′, tends to rock the arms rearwardly or toward the transfer tray.

As is well known to those familiar with the art to which this invention relates, where conveyors having transverse series of bottle supports are advanced intermittently through bottle-cleaning apparatus, it is essential that the bottle-charging mechanism be so operated and so timed in operation that bottles will be delivered into each series of supports only when such series and the final delivery member are in a register, which will also occur at a time when there is a pause in the intermittent movement of the conveyor.

For the purpose of operating the bottle-charging mechanism in such timed relation, I employ the construction which is shown more particularly in detail in Figs. 3, 4 and 5. Rigidly connected to the shaft K is a rocking arm K′. This arm is provided in its upper end with a slot $K^2$ in which is mounted a stud $K^3$; and on the said stud is swiveled a sleeve $K^4$ through which there extends a rod P having its front end threaded and provided thereon with a washer P′ and nuts $P^2$, there being a coiled spring $P^3$ interposed between the said washer and a washer $P^4$ bearing against the rear end of the sleeve $K^4$. The rear portion of the rod P is threaded and is provided with an adjustable sleeve $P^5$ thereon which may be pinned at the proper point to the said rod whereby to transfer the forward movement of the said rod to the sleeve $K^4$ and thence to the arm K′ and shaft K.

$P^6$ denotes a tubular extension of the rod P having its rear end provided with a threaded extension $P^7$ which extension is threaded into a sleeve $P^8$ which is rotatably mounted

upon a stud Q′ in the lower end of an angle lever Q, the said lever being pivoted to a bracket $Q^2$ on the side of the apparatus, the pivot being indicated at $Q^3$. At the rear of said pivot, the angle lever is provided with a roller $Q^4$ which enters an appropriate track R′ in a cam R which is driven at the proper speed by a shaft S. It will be obvious that, by the rotation of the shaft S, the arms $J^2$ will be rocked back and forth, thereby to reciprocate the cross bar J and to tilt the tray G in a manner to be described more particularly hereinafter.

For the purpose of rocking the arms M and the parts attached thereto, I have provided the shaft N with an arm N′ having a slot $N^2$ in the upper end thereof, within which slot there is mounted a stud T having a sleeve T′ mounted thereon into which is threaded the front end of a rod $T^2$. The rear end of this rod is connected with one arm U of a bell crank lever, the said arm and the arm U′ of said lever being pivoted upon a stud $U^2$, and the upper end of the arm U′ being provided with a roller $U^3$ engaging the outer surface of a cam track $R^2$ on the cam R.

It will be evident that the spring O maintains the roller $U^3$ in contact with the exterior cam $R^2$ during the movements of the rocking transfer-frame to which the arms M are attached. In like manner the spring $P^3$ serves to hold the roller $Q^4$ against the outer surface of the track R′.

With the parts constructed and arranged as described, the operation will be readily understood. The cam R will be rotated by the shaft S, which, in bottle-cleaning apparatus of the type with which this charging mechanism is to be employed, will be driven in timed relation with respect to the means for feeding the bottle supports intermittently and in timed relation with respect to the other movable means which operate upon the bottles in transit. The rotation of the cam will reciprocate the rods $P^6$ and $T^2$ in the manner described; and the rod $T^2$ will oscillate the bottle-delivery tray M′—$M^6$ to deliver the bottles onto the transfer tray G, while the rod $P^6$ will oscillate the said tray.

The parts will be so timed that, when the operator has placed the bottles by hand on the platform L, with their sides resting in the grooves $M^3$ and their necks engaged by the bars $M^6$, the tray G will have been swung forwardly to the position shown in Fig. 6. The rod J, through its engagement with the screws $G^9$, will have rocked the tray G to the inclined position shown in this figure, the rod J being adjacent to the bottoms of the slots E′. The rotation of the cam will then cause the arms M to rock rearwardly, moving the bottles across the platform and delivering them with their bottoms upon the rod J and their rear sides resting in the grooves provided therefor in the upwardly and rearwardly inclined tray G—see Figs. 6 and 7. A further rotation of the cam will move the tray M′, $M^6$ forwardly to its receiving position and will also rock the tray G to its horizontal or delivering position (see Fig. 8). A still further rotation of the cam will move the arms $J^2$ rearwardly, thereby causing the rod J to push the bottles along the table D and into the transverse series of bottle holders B in line therewith.

Following this operation, the cycle will be repeated, the conveyor of which the bottle holders form a part having been advanced one step to bring into receiving position the transverse series of bottle holders next adjacent the one just loaded.

Referenece has been made hereinbefore to the apron $G^{10}$. This apron closes the gap between the rear end of the platform L and the front end of the tray G when the latter is in its delivering position; and it also serves to close this gap during the rocking of the tray upon the shaft F—when it is being swung to receiving and delivering positions. It thus serves to prevent any material from entering the space between the tray G and platform L and from thus interfering with the operation of the said tray.

By the construction and arrangement of parts and the mode of operating the same, I have produced a bottle-charging mechanism which can be operated at relatively high speed and one wherein the danger of breaking the bottles during such operation is reduced to a minimum. This reduction of breakage is due, not only to the cushioned construction of the receiving platform L and the cushioned construction of the transfer tray G, but to the employment of the springs O and $P^3$. The former spring serves to maintain the roller $U^3$ in contact with the cam $R^2$, thus permitting the cam to move away from the roller in the event that there should be any blocking of the movement of the tray M. The spring $P^3$ permits the link $P^6$ to be moved rearwardly without movement of the lever $J^2$ and the rod J in case of an obstruction to the movement of the bottles by said rod and without danger of breakage to the bottles due to such obstruction.

Having thus described my invention, what I claim is:

1. Mechanism for charging series of bottles successively into corresponding series of holders in a bottle washing apparatus, the said mechanism comprising a platform on which the bottles are placed, a transfer tray having a plurality of grooves therein for the reception of the bodies of bottles, means pivotally supporting the said tray, means for rocking the said tray upon its support thereby to bring it into receiving position with reference to the platform and thereafter into a position for delivering the bottles therefrom, a pair of bracket arms pivotally

supported adjacent the front ends thereof and having their rear ends in proximity to the series of bottle holders, a table supported by and between the said arms, the said table having grooves in the top thereof adapted to register with the grooves in the transfer tray, means adjustably supporting the rear or delivery ends of said bracket arms to align the grooves in the table with successive series of holders, means for delivering the bottles from the platform to the tray, means for delivering the bottles from the tray to the table and thence to a series of holders, and means carried by the rear or delivery end of the tray and the front or receiving end of the table for adjusting the positions of the adjacent ends of such tray and table to insure proper alignment of the bottle receiving grooves thereon.

2. Mechanism for charging series of bottles successively into corresponding series of holders in a bottle washing apparatus, the said mechanism comprising a platform on which the bottles are placed, a transfer tray, means pivotally supporting the said tray; means for rocking the said tray upon its support thereby to bring it into receiving position with reference to the platform and thereafter into a position for delivering the bottles therefrom, a pair of bracket arms pivotally supported adjacent the rear ends thereof and having the front ends in proximity to the series of bottle holders, a table supported by and between the said arms, means adjustably supporting the rear or delivery ends of said bracket arms to align the table with the successive series of holders, means for aligning the rear or delivery end of the tray with reference to the front or receiving end of the table, means for delivering the bottles from the platform to the tray, and means for delivering the bottles from the tray to the table and thence to a series of holders.

3. Mechanism for charging series of bottles successively into corresponding series of holders in a bottle washing apparatus, the said mechanism comprising a platform on which the bottles are placed, a transfer tray having a plurality of grooves therein for the reception of the bodies of bottles, means pivotally supporting the said tray, means for rocking the said tray upon its support thereby to bring it into receiving position with reference to the platform and thereafter into a position for delivering the bottles therefrom, a pair of bracket arms, a table supported on said arms between the tray and the series of holders and having grooves in the top thereof adapted to register with the grooves in the tray, the said arms having elongated slots therein extending above the table and above the tray when the latter is in delivering position, a rod mounted in said slots, an arm at each side of the bracket arms, each of the last mentioned arms having a slot in which an end of the said rod is mounted, means including the last-mentioned arms and said rod for rocking the tray to bring the same into receiving position with reference to the platform, means for moving the bottles from the said platform into the grooves on said tray, with their bottoms above said rod, means for operating the said last-mentioned arms in the reverse direction thereby to rock the tray to delivering position and, by further movement of the arms in the same direction, to deliver the bottles from the tray to the table and thence to a series of holders.

4. Mechanism for charging series of bottles successively into corresponding series of holders in a bottle washing apparatus, the said mechanism comprising a platform for receiving bottles, a tray having grooves therein for the bodies of the bottles, means pivotally supporting said tray adjacent the delivery end of said platform, means for rocking the said tray in reverse directions thereby to bring it into bottle receiving and bottle delivery positions, the said means comprising a rod extending normally across the receiving portion of said tray, arms having slots therein and in which the opposite ends of the said rod are mounted, there being guide slots for said rod between the said arms and the said tray, the portions of said slots adjacent to the platform being concentric with the center of rotation of the tray, means carried by the tray and engaged by said rod whereby the movement of the arms toward the platform will rock the tray to bottle receiving position with reference to said platform, means for delivering bottles from the platform to the grooves in said tray, and yielding means for rocking the arms in the opposite direction whereby the tray is rocked to bottle delivering position and the rod yieldingly engages the bottoms of the bottles to push them from the said tray toward a series of bottle holders.

5. Mechanism for charging series of bottles successively into corresponding series of holders in a bottle washing apparatus, the said mechanism comprising a platform for receiving bottles, a transfer tray, means pivotally supporting said tray adjacent the delivery end of said platform, means for rocking the said tray in reverse directions thereby to bring it into bottle receiving and bottle delivering positions, the said means comprising a rod extending normally across the receiving portion of said tray, means for rocking said rod, means carried by the tray and engaged by said rod whereby the movement of the rod toward the platform will rock the tray to bottle receiving position with reference to said platform, means for delivering bottles from the platform to the said tray, and yielding means for rocking the rod in the opposite direction whereby the tray is rocked to bottle delivering position and the

rod yieldingly engages the bottoms of the bottles to push them from the said tray toward a series of bottle holders.

6. Mechanism for charging series of bottles successively into corresponding series of holders in a bottle washing apparatus, the said mechanism comprising a cushioned platform on which the bottles are placed bottoms down, a transfer tray having a plurality of grooves therein for the reception of the bodies of bottles, means pivotally supporting the said tray, means for rocking the said tray upon its support thereby to bring it into receiving position with reference to the platform and thereafter into a position to deliver the bottles therefrom, a series of holders, a delivery rack, arms pivotally supporting the said rack and normally holding the same at the front or receiving end of said platform, and means for rocking the said arms, the said means comprising a link connected with one of said arms, a cam for operating said link to move the rack to bottle receiving position, and a spring connected with said rack and arms for moving the same to bottle delivering position.

7. Mechanism for charging series of bottles successively into corresponding series of holders in a bottle washing apparatus, the said mechanism comprising a platform on which the bottles are placed, a transfer tray for the reception of the bodies of bottles, means movably supporting the said tray, means for moving the said tray thereby to bring it into receiving position with reference to the platform and thereafter into a position to deliver the bottles therefrom to a series of holders, a delivery rack, means normally holding the rack at the front or receiving end of the said platform, and yieldable means for moving the said rack across the said platform to deliver the series of bottles thereon to said tray.

8. Mechanism for charging series of bottles successively into bottle washing apparatus, the said mechanism comprising a platform on which the bottles are placed bottoms down, a movable delivery rack having grooves for the reception of the bodies of the bottles and mounted to swing across and above the said platform to push the bottles therefrom, a transfer tray having a plurality of longitudinal grooves for the reception of the bodies of bottles, means pivotally supporting the said tray, means for rocking the said tray upon its support thereby to bring it into receiving position with reference to the platform and in a position to deliver the bottles to a series of holders in said apparatus, and means cooperating with said tray for supporting the bottoms of the bottles delivered thereto by said rack and for moving the bottles along said tray.

9. Mechanism for charging series of bottles successively into corresponding series of holders in a bottle washing apparatus, the said mechanism comprising a platform on which the bottles are placed bottoms down, a transfer tray having a plurality of grooves therein for the reception of the bodies of bottles, means pivotally supporting the said tray, means for rocking the said tray upon its support thereby to bring it into receiving position with reference to the platform and in a position to deliver the bottles therefrom to a series of holders, a rack reciprocable across said platform for delivering bottles therefrom to said tray, means swinging with the said tray and movable longitudinally thereof for supporting the bottoms of the bottles delivered thereto by the rack and for moving the bottles along said tray for delivery to the said holders.

10. Mechanism for charging series of bottles successively into corresponding series of holders in a bottle washing apparatus, the said mechanism comprising a platform on which the bottles are placed, a transfer tray, means pivotally supporting the said tray, means for rocking the said tray upon its support thereby to bring it into receiving position with reference to the platform and in a position to deliver the bottles therefrom to a series of holders, a rack reciprocable across said platform for delivering bottles therefrom to said tray, and means swinging with the said tray and movable longitudinally thereof for supporting the bottoms of the bottles delivered thereto by the rack and for moving the bottles along said tray for delivery to the said holders.

11. Mechanism for charging a series of bottles successively into series of holders in a bottle washing apparatus, the said mechanism comprising a platform on which the bottles are placed, a pair of arms pivoted adjacent the sides of said platform and normally extending upwardly and forwardly thereabove, a rack supported by said arms, a transfer tray pivoted between the said platform and the bottle cleaning apparatus, a rod extending across and normally adjacent the rear of the said tray and adapted to receive the bottoms of the bottles delivered to said tray, an arm at each side of the said tray, said arms having each a slot at the upper end thereof for the reception of an end of said rod, the said tray having a projection adapted to engage the said rod whereby the tray will be rocked by said arms and the bottles delivered to the said tray will be pushed longitudinally along the tray by said rod, a shaft, and connections between said shaft and the aforesaid arms for operating the rack and tray and rod in proper timed relation to enable the rack to deliver bottles from the platform to the tray and the tray to receive said bottles and the rod to deliver them to the appropriate series of holders.

12. Mechanism for charging a series of

bottles successively into series of holders in a bottle washing apparatus, the said mechanism comprising a platform on which the bottles are placed, a delivery rack, a transfer tray pivoted between the said platform and the bottle cleaning apparatus, a rod extending across and normally adjacent the rear of the said tray and adapted to receive the bottoms of the bottles delivered to said tray, a shaft, and connections between said shaft and the aforesaid rack and rod for operating the rack and tray in proper timed relation to enable the rack to deliver bottles from the platform to the tray and the tray to receive said bottles and the rod to deliver them from the tray to the appropriate series of holders.

13. Mechanism for charging a series of bottles successively into series of holders in bottle cleaning apparatus, the said mechanism comprising a platform on which the bottles are placed, a transfer tray pivotally mounted to swing to bottle receiving position with reference to said platform and to delivering position with reference to the said holders, and means for rocking the said tray and for forcing the bottles therefrom into said holders, the said means comprising a pair of arms pivoted below the said tray and each having a slotted upper end extending above the bottom of said tray, a rod having its end portions mounted in the slots in said arms and a projection on the rear portion of the tray adapted to engage said rod, there being slotted guides for the ends of the rod beyond the said arms, the portions of the guides adjacent to the platform being curved on an arc concentric with the center of rotation of said tray, means for delivering the bottles from the platform onto the said tray when the latter is in receiving position with reference to the platform, means for rocking the said arms in one direction to move the tray into such receiving position, and means for rocking the arms in the opposite direction thereby to rotate the tray into delivering position and to move the rod longitudinally of the tray thereby to deliver the bottles therefrom to the holders.

14. Mechanism for charging a series of bottles successively into series of holders in bottle cleaning apparatus, the said mechanism comprising a platform on which the bottles are placed, a transfer tray pivotally mounted to swing to bottle receiving position with reference to said platform and to delivering position with reference to the said holders, and means for rocking the said tray and for forcing the bottles therefrom into said holders, the said means comprising a rod normally extending across and above the rear of said tray and adapted to engage the rear portion of said tray, means for delivering the bottles from the platform onto the said tray when the latter is in receiving position with reference to the platform, means for rocking the said rod in one direction to move the tray into such receiving position and means for rocking the rod in the opposite direction thereby to rotate the tray into delivering position and to move the rod longitudinally of the tray thereby to deliver the bottles therefrom to the holders.

15. Mechanism for charging series of bottles successively into series of holders in bottle washing apparatus, said mechanism comprising a platform on which the bottles are placed, a delivery rack movable across the said platform to dislodge the bottles therefrom, a transfer tray for bottles delivered thereto from the platform and pivotally supported at the rear of said platform, yieldable means for moving the said rack across the said platform to deliver bottles therefrom to said tray, and yieldable means for rocking the said tray to delivering position and for forcing the bottles therefrom to said holders.

16. Mechanism for charging series of bottles successively into series of holders in bottle washing apparatus, the said mechanism comprising a cushioned platform on which the bottles are placed, a cushioned transfer tray, yieldable means for pushing the bottles from the platform upon the tray, means for rocking the said tray into position for receiving the bottles from the platform and thence into a position for delivering the bottles to said holders, and yieldable means for delivering the bottles from the said tray to the said holders.

17. Mechanism for charging series of bottles successively into series of holders in bottle washing apparatus, the said mechanism comprising a platform on which bottles are deposited bottoms down, a transfer tray pivoted adjacent said platform and adapted to be moved into bottle receiving position with reference to said platform and thence into bottle delivery position with reference to said holders, and means for moving the bottles from the platform onto the said tray, the said means comprising a pivotally supported rack having grooves therein located above the platform for the reception of the bodies of the bottles and a rail above such grooves adapted to engage the necks of said bottles, and means for rocking the said rack.

18. Mechanism for charging series of bottles successively into series of holders in bottle washing apparatus, said mechanism comprising a platform on which the bottles comprising a series are placed with their bottoms downward, a delivery rack movable across the said platform to dislodge the bottles therefrom, a transfer tray for bottles delivered thereto from the platform by the delivery rack, said transfer tray being movable toward and from the said platform, means for moving the said rack across the

said platform to deliver bottles therefrom to said tray and to return the rack to a position to engage the forward sides of a succeeding series of bottles placed on the said platform, and means for moving the said tray to a position for receiving the bottles from the platform and to a position whence the bottles may be delivered from said tray to a series of said holders.

19. Mechanism for charging series of bottles successively to a series of holders in bottle washing apparatus, said mechanism comprising a platform on which the bottles are placed bottom downward, a delivery rack having grooves for the reception of the front sides of the bottles on the said platform and reciprocable across the platform to dislodge the bottles therefrom and to return to a position wherein the grooves are adapted to receive the forward sides of a succeeding series of bottles, a transfer tray also having grooves for the opposite sides of the bottles delivered thereto from the platform and being movable toward and from the said platform, means for moving the said rack across the said platform to deliver bottles therefrom to said tray and return the rack to a position to engage the forward sides of a succeeding series of bottles placed on the said platform, and means for moving the said tray to a position for receiving the bottles from the platform and to a position whence the bottles may be delivered from said tray to a series of said holders.

In testimony whereof, I hereunto affix my signature.

JOHN R. GRUETTER.