May 23, 1933. G. L. N. MEYER ET AL 1,910,958

PRERINSING DEVICE

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FIG. 1

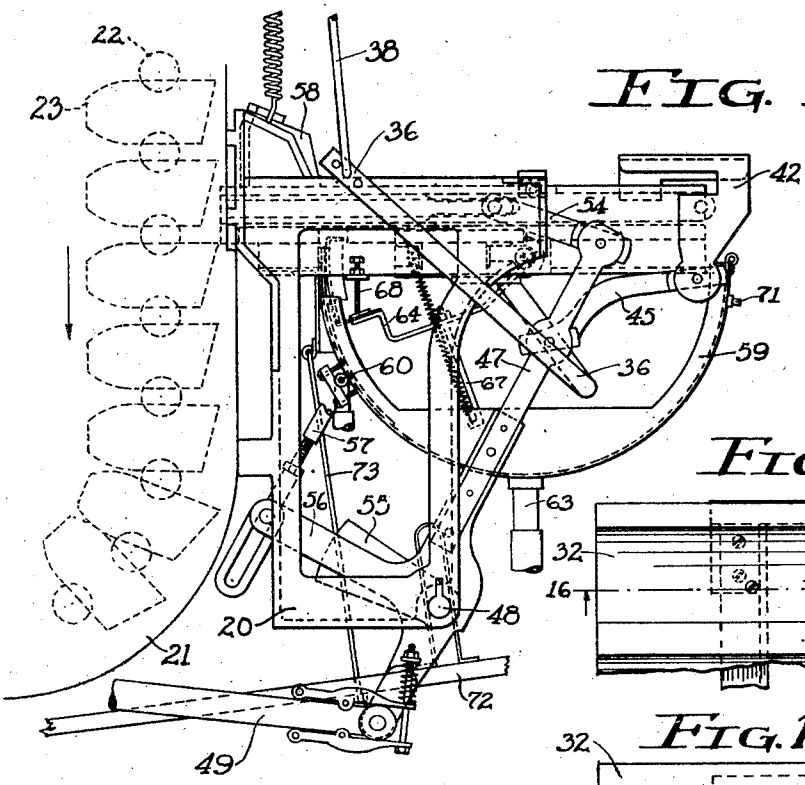


FIG. 15

FIG. 16

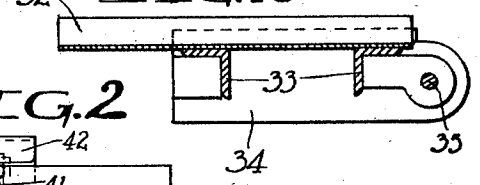


FIG. 2

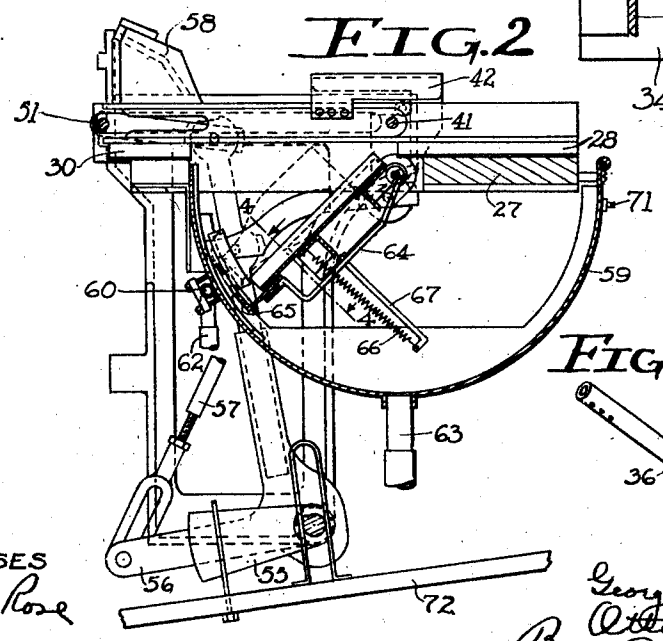
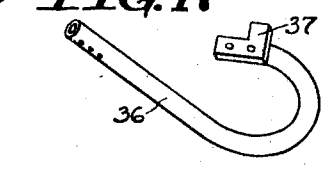


FIG. 17



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PRERINSING DEVICE

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FIG. 3

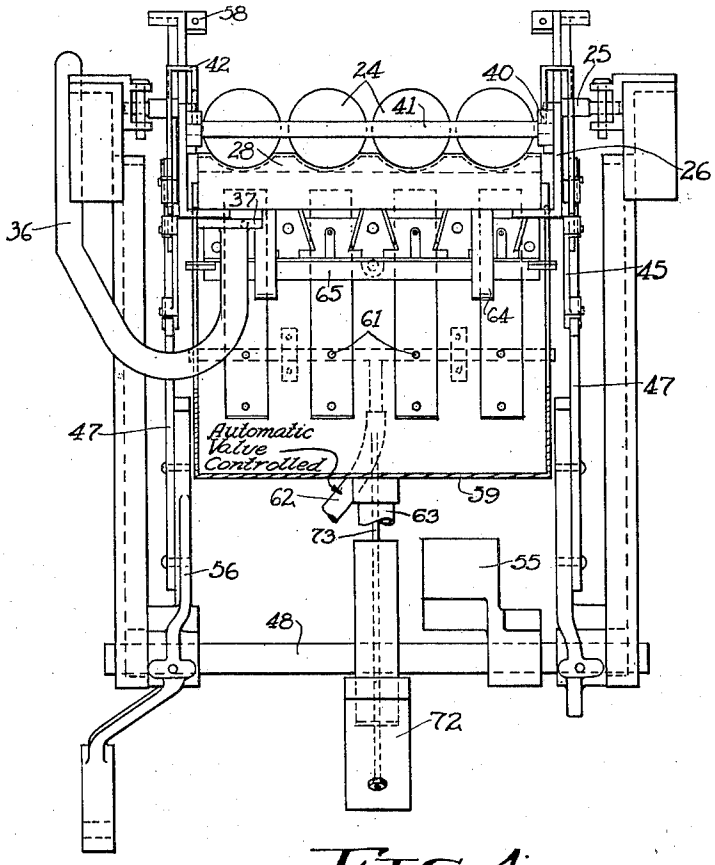
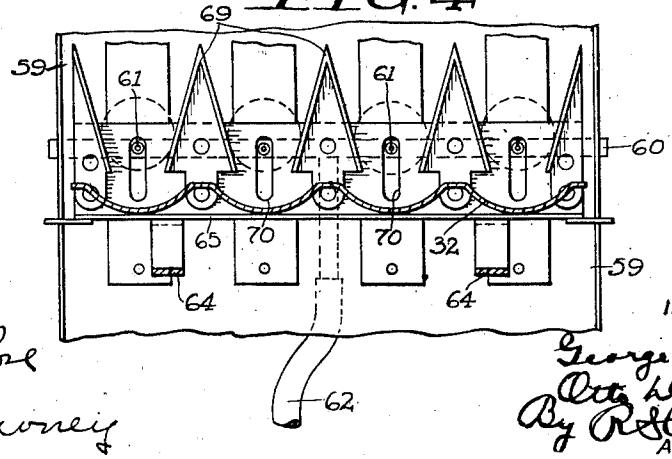


FIG. 4



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PRERINSING DEVICE

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FIG. 5

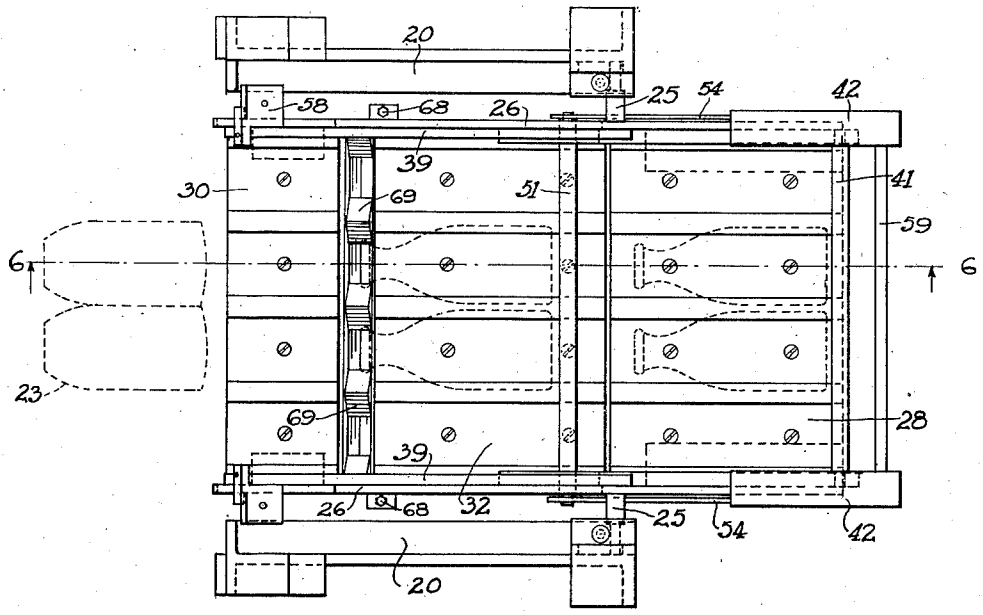


FIG. 6

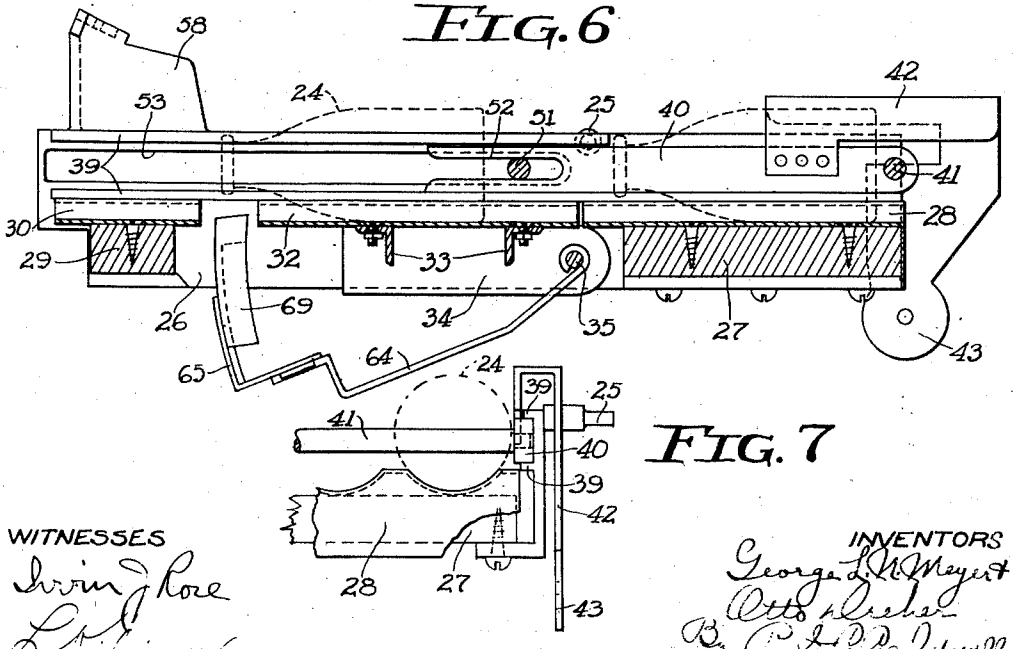


FIG. 7

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FIG. 8

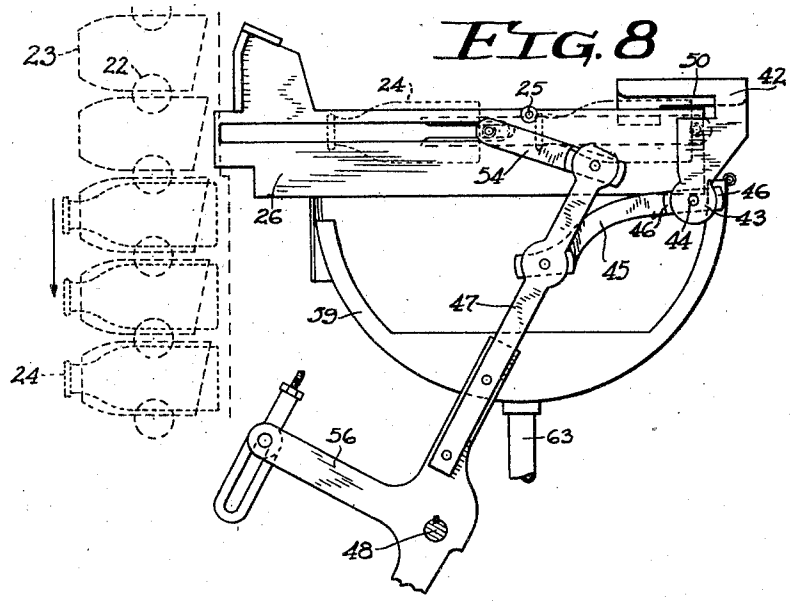
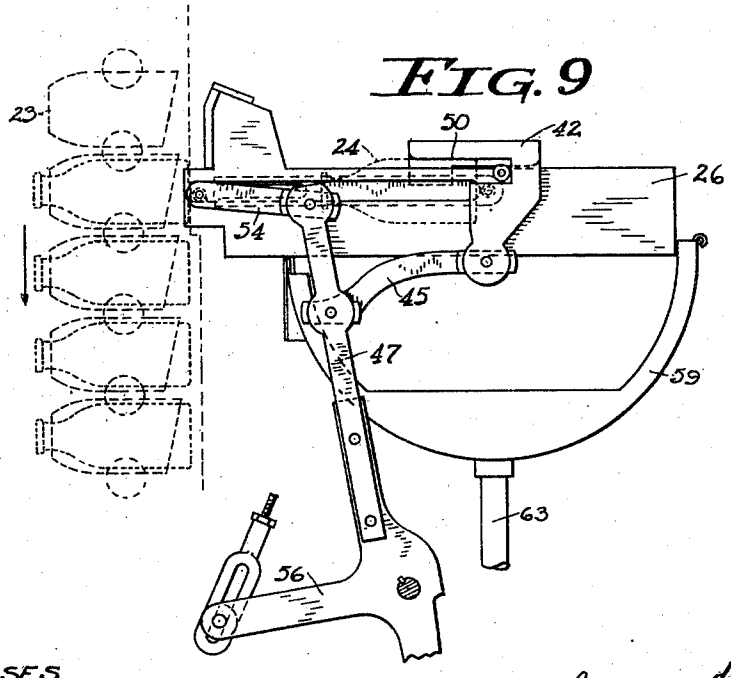


FIG. 9



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PRERINSING DEVICE

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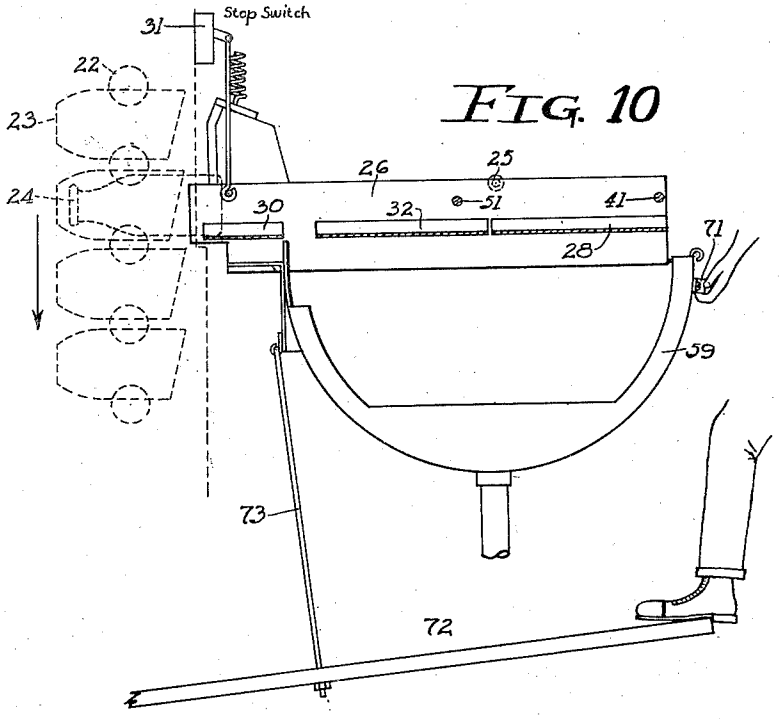


FIG. 10

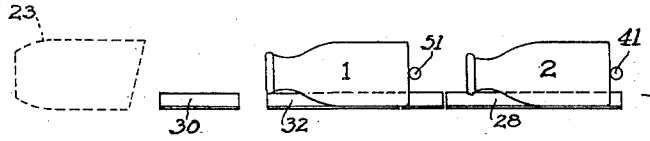


FIG. 11

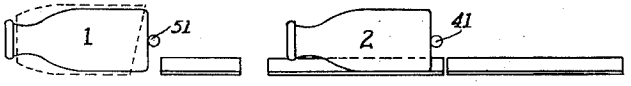


FIG. 12

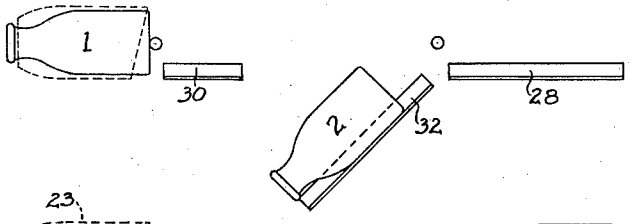


FIG. 13

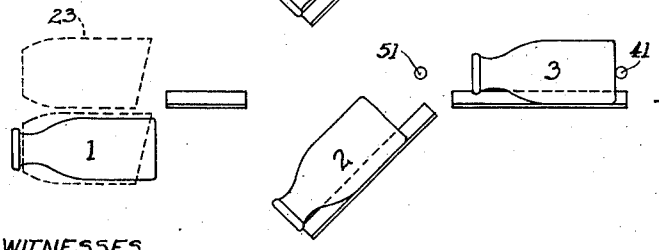


FIG. 14

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UNITED STATES PATENT OFFICE

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PRERINSING DEVICE

Application filed September 29, 1928. Serial No. 309,302.

This invention relates to pre-rinsing devices and has for its object to provide a means for emptying bottles and for giving them a preliminary rinsing, as they are fed to a bottle washing machine or sterilizer, to increase the efficiency of the sterilizing and bottle washing operations and to relieve the sterilizer and washing machine of the burden of disposing of foreign matter that may be carried by bottles to be cleaned.

Another object of the invention is to accomplish the draining and rinsing of bottles automatically, as incident to their introduction to the traveling conveyor of machines of this character.

Another object of the invention is to provide such a pre-rinsing device on a tilting or otherwise movable feeding table over which the bottles are fed to a traveling conveyor and the movements of the table incident to a bottle becoming jammed between it and the conveyor, or otherwise, serving to stop the drive of the machinery to permit correction to be made.

Another object of the invention is to perfect details of construction of a pre-rinsing device of this character.

With the above and other objects in view, the invention consists in a pre-rinsing device as herein claimed and all equivalents.

Referring to the accompanying drawings in which like characters of reference indicate the same parts in different views,

Fig. 1 is a side elevation of a pre-rinsing device in accordance with this invention;

Fig. 2 is a central longitudinal sectional view thereof with the swinging table in its lower position;

Fig. 3 is a front elevation thereof;

Fig. 4 is a sectional detail view on the plane of line 4—4 of Fig. 2, showing the bottle guides for centering the bottle necks in position to receive the rinsing spray when the swinging table is lowered;

Fig. 5 is a plan view of the bottle feeding table;

Fig. 6 is a longitudinal sectional view thereof on the plane of line 6—6 of Fig. 5;

Fig. 7 is a detail view showing one end of the bottle feeding table;

Fig. 8 is a view showing the bottle feeding mechanism in one extreme position;

Fig. 9 is a similar view thereof in the other extreme position;

Fig. 10 is a view showing the bottle feeding table tilted as by a blocked bottle or by the operator for stopping the drive of the machinery;

Figs. 11, 12, 13 and 14 are diagram views showing successive steps in the operation of feeding, draining and rinsing the bottles and delivering them to the traveling conveyor;

Fig. 15 is a detail view of one end of the swinging table;

Fig. 16 is a sectional view on the plane of line 16—16 thereof; and

Fig. 17 is a perspective view of the bent lever for operating the swinging table.

In these drawings, 20 indicates a pair of supporting brackets which may be supported in any desirable manner as by mounting them on the frame of a bottle washing machine or sterilizer 21 containing the usual traveling conveyor 22 with rows of pockets 23 to receive the bottles 24.

The outer ends of the brackets 20 form trunnion bearings for trunnions 25 on the side plates 26 of the tilting bottle feeding table, which is supported in this manner. At one end the side plates 26 are connected together by a plate 27 having a serrated sheet metal covering 28 forming a bottle loading table, and at the other end they are connected together by a plate 29 having a serrated sheet metal covering 30 forming a bottle delivery table, thus constituting a rectangular frame supported only on the trunnions 25 and free to tilt thereon. This tilting table with the mechanism mounted on it, to be later described, does not tilt on its trunnions as a part of the operation of the machine, for such tilting is relied on to stop the driving mechanism and may be produced automatically as when a bottle becomes jammed between the tilting table and the traveling conveyor, as shown in Fig. 10, or by the operator. The table movements serve to stop the operation of the ma-

chine as by means of a stop switch 31 connected therewith and operated thereby.

Between the bottle loading table and bottle delivering table is a swinging table 32, preferably also of corrugated sheet metal construction secured to angle strips 33 which are carried on side arms 34 pivotally mounted on a rod 35, which has its ends secured in the side plates 26. An operating lever 36 peculiarly bent, as seen in Figs. 1 and 17, to avoid interference with other operating parts, is connected with the swinging table 32 by having a connecting plate 37 preferably welded to its end and secured to one of the side arms 34. This operating arm 36 has adjustable connection with a link 38 from some movable part of the bottle washing machine or sterilizer which this pre-rinsing device serves in order to be operated therefrom in synchronism, the exact form of such operating part being immaterial to this invention and therefore not shown. It is sufficient to state that the bottle conveyor of the served machine operates intermittently and between the movements thereof, the operation of the swinging frame is produced by the link 38 and lever 36.

Each of the side plates 26 has a pair of parallel flanges 39 on its inner face to form a guide way between them for a bottle pusher slide 40, as best seen in Figs. 6 and 7. The two bottle pusher slides 40 are mounted on the ends of a rod 41, which extends across the bottle feeding table and serves to push the bottles from the bottle loading table 28 to the swinging table 32. In order to impart motion to the bottle pusher slides 40, they are each provided with an overhanging bracket 42 secured to the inner face thereof and extending upwardly and then outwardly and downwardly, terminating in a rounded bearing 43 with a central opening into which fits a pivot lug 44 of a link 45 having also lugs 46 bearing on the outer edge of the rounded bearing 43 at diametrically opposite points, thus forming a pivotal connection. The links 45 have similar pivotal connections with levers 47 that are carried by a rock shaft 48 journalled at its ends in the supporting brackets 20 and operated in synchronism with the bottle washing machine or sterilizer by a connecting rod 49 having a slip joint connection therewith, said connecting rod connecting with a driven part of the machine, not shown.

The brackets 42 are cut away at 50, as seen in Figs. 8 and 9, to receive the trunnions 25 in the forward position of the bottle pusher slides.

Another bottle pusher rod 51 extends across the bottle feeding table and through slots 52 in the ends of the slides 40 and slots 53 in the side plates 26 with its ends connected to links 54 which are pivotally mounted on the upper end of the levers 47 in the same manner as links 45, but at points farther from the rock shaft 48, so that the travel of the bottle pusher rod 51 is greater than the travel of the bottle pusher rod 41.

The part 55 on the rock shaft 48 is a counterweight for facilitating the start of the feeding movement of the bottle feeding mechanism and the crank arm 56 and connecting rod 57 on lever 47, as well as the parts 58 projecting above the side plates 26 near the bottle conveyor 22, relate to the unloading mechanism for receiving the bottles from the conveyor immediately above the loading mechanism of this invention.

Secured to the bottom of the tilting bottle feeding table by attachment to the bottle loading table and bottle delivery table, respectively, is an arc-shaped rinsing tank or trough 59 approximately corresponding in curvature with the swing of the swinging table and having clamped to it a water spray pipe 60 with nozzle openings 61 registering with openings in said tank and having a valved hose connection supply 62 controlled with the operation of the machine served, so that the water is ejected in forceful sprays into the mouths of the row of bottles on the swinging table when said table is in its lowered position, as shown in Fig. 2. At the sides said tank is preferably open but provided with a slight splash flange which is increased in depth at the bottom to form a funnel-like container, from the bottom of which a waste hose coupling 63 extends to conduct away the rinse water and foreign matter discharged from the inverted bottles.

In order to guide the bottles into register with the nozzle openings 61, a suitable guide frame is provided preferably capable of swinging to a certain extent with the swinging table. This guide frame consists of two bent straps 64 which are mounted on the rod 35 on which the swinging table is mounted and are welded or otherwise secured at their outer ends to an angular plate 65, the outer flange of which is curved to correspond with the curvature of tank 59.

The swinging guide frame is caused to follow the swinging table 32 in its movements, as closely as possible, by means of coiled springs 66 connected at one end to the bottom of said swinging table and at the other end to spring supporting rods 67 carried by the straps 64, thus serving to hold the angle plate 65 in bearing with the bottom of the swinging table in the lower positions of the swinging table and until, in their upward movement, said angle plate is arrested by its engagement with adjustable stop screws 68 on the side plates 26. Thus in the upper position of the swinging guide frame, the angle plate 65 does not project in the path of the bottles on the tilting feeding table and forms no obstruction to the transfer of bottles from

the swinging table to the delivery table. On its inner face the curved flange of the plate 65 has secured to it a series of spearhead-shaped flanged guides 69, as best seen in Fig. 4, the converging walls of adjacent guides serving to center the necks of bottles between them as the swinging table lowers independently of the swinging guide frame and holding the bottle necks so centered during the remainder of the movement to the position shown in Fig. 2, while said guide frame and swinging table are engaged and swing together. As shown in Fig. 4, the curved flange of the angle plate of the swinging guide frame is provided with longitudinal slots 70 registering with the nozzle openings 61 to permit the sprays of rinsing water to enter the centered necks of the bottles, while they are held in the inverted position shown in Fig. 2.

To afford the operator ready means for tilting the feeding table in addition to the automatic tilting thereof for stopping the operation of the machine, the rinsing tank 59 is provided with one or more handles 71 within easy reach of the operator which may be grasped and pulled upwardly for this purpose, and also a treadle 72 may be provided having a connecting rod 73 connecting it with the rear part of the tilting table, so that pressure of the foot on the treadle will serve this purpose.

In operation the bottles are placed by the operator on the bottle loading table 28 while the pushing rods are in their outer position and these bottles will be carried forwardly by the rod 41 with the next operation of the levers 47, the bottles sliding in grooves or channels and being thus positioned on the swinging table 32, while the bottles previously so positioned on the swinging table 32 are correspondingly advanced by the rod 51 off of the swinging table 32 and across the delivery table 30 and into the conveyor pockets 23. The positions of the bottles with respect to the other parts mentioned are shown in Figs. 11 and 12, respectively, before and after completing this movement. Immediately after the delivery of the No. 1 bottles to the conveyor pockets, the No. 2 bottles which were advanced to the swinging table are inverted by the swinging movement of the table as shown in Fig. 13. This causes the bottles to be first centered by the engagement of their necks with the yielding guides 69 so that their mouths register with the slots 70 and then said slots are brought into register with the nozzles of the spray pipe 60, so that the sprays of rinsing water are forcibly injected into the interior of the bottles. In this position, the contents of the bottles including solid matter are emptied into the trough 59 and are discharged through the outlet 63. While the bottles are thus held in their inverted position receiving the rinsing operation, the rods 51 and 41 are returned to their outer positions and a third row of bottles is placed by the operator on the bottle loading table 28, as shown in Fig. 14. The swinging table is then raised and the parts again assume the position shown in Fig. 11 to repeat the cycle of operation with the next row of empty pockets 23 which has been brought into line with the bottle feeding table.

By the use of this machine, the bottles are automatically fed to the intermittently moving conveyor and are drained and rinsed to give them a preliminary cleaning. Should a bottle become blocked between the conveyor and the tilting table, the feeding table, would become tilted, as shown in Fig. 10, thereby operating the stop switch to stop the drive of the machine until correction can be made. Likewise, the machine may be stopped by tilting the bottle feeding table by hand or by the operation of the treadle, giving the operator complete control under any emergency.

By providing a loading table separate from the swinging table, ample time is afforded for the placing of the bottles thereon as the pusher rods return as soon as the swinging table is lowered and the bottles are thereby moved out of the way. The operator then again begins to place bottles on the loading table and the bottles that are being rinsed may continue in their rinsing position until the time for the next feeding operation, when the swinging table is raised and the pusher rods advanced. The delivery table bridges the gap between the swinging table and the conveyor and because it lengthens the travel of the bottles, the inner push rod is required to travel a greater distance as previously mentioned.

The tilting of the feeding table permits it to yield to prevent the crushing of bottles when they become jammed between the table and the conveyor, besides serving to stop the machine.

Inasmuch as the bottle centering guides are stationary until the swinging table strikes the angle plate, there is relative movement between the swinging table and the guides during which the bottle necks are moved between the inclined guide flanges to be centered thereby and then, as the guides move with the swinging table, such centering position is maintained. As the return of the guides is stopped before the swinging table reaches its raised position, they do not interfere with the travel of the bottles on the feeding table.

What we claim as new and desire to secure by Letters Patent is:

1. A bottle loading means for bottle washing machines and the like comprising a feeding table, means for advancing bottles thereon, said table having a swinging sec-

tion for inverting the bottles to empty them, spray nozzles injecting rinsing water in the bottles in their inverted positions, and centering means movable with the swinging table section during part of its swinging movement and remaining stationary during the remainder of the swinging movement for centering the bottle necks with respect to the spray nozzles.

2. A loading mechanism for bottle washing machines and the like comprising a feeding table, means for advancing bottles thereon, said table having a swinging section for inverting bottles to empty them, spray nozzles for injecting rinsing water in the bottles in their inverted positions, a swinging frame engaged by the swinging table section in an intermediate position thereof and movable therewith, and inclined guides on the swinging frame engaged by the necks of the bottles for centering them during the independent movement of the table section so that they will register with the spray nozzles in their inverted positions.

3. A loading mechanism for bottle washing machines and the like comprising a feeding table, means for advancing bottles thereon, said table having a swinging section for inverting bottles to empty them, spray nozzles for injecting rinsing water in the bottles in their inverted positions, a swinging frame beneath the swinging table section engaged thereby and movable therewith in the lower part of its movement, means for returning the swinging frame, a stop for limiting the return movement of the swinging frame, a flange on the swinging frame to be engaged by the mouths of the bottles, and inclined guides carried by the flanges and engaged by the necks of the bottles for centering them, there being openings in the flange registering with the spray nozzles in the inverted position of the bottles for permitting the rinsing sprays to enter the bottles..

4. A loader for bottle washing machines and the like having a traveling conveyor comprising a feeding table having a loading section, a swinging section and a delivery section, means for advancing bottles over said table sections in the order mentioned and comprising a pair of push rods extending across the table, suitably mounted swinging levers, links connecting the levers with the push rods, the links for the outer rod connecting with the levers closer to their fulcrums than the links for the inner rod, whereby the inner rod is given a greater travel than the outer rod to move the bottles over the swinging table and the delivery table into the conveyor of the bottle washing machine, while the outer rod moves the bottles from the loading table to the swinging table.

5. In a loader for bottle washing machines and the like, a pair of side plates, trunnions thereon, stationary supports for the trunnions, a loading table connecting the side plates, a swinging table member mounted between the side plates, there being guide grooves in the inner faces of the side plates, slides mounted to travel in the grooves, a pusher rod connecting the slides, brackets on the slides arched over the side plates, operating levers, and links connecting the operating levers with the brackets for moving the slides to cause the pusher bar to push bottles from the loading table onto the swinging table.

6. In a loader for bottle washing machines and the like, side plates, trunnions thereon, stationary supports for the trunnions, a loading table connecting the side plates, a swinging table mounted between the side plates, there being guide grooves in the inner face of the side plates, slides mounted to travel in said grooves, a push rod connecting the slides, brackets mounted on the slides and arched over the side plates and provided with recesses to clear the trunnions, operating levers, links connecting the levers with the brackets for causing the push rod to move bottles from the loading table onto the swinging table, said side plates having slots, a second push rod passing through said slots, and links connecting the second push rod with the operating levers for causing said second push rod to move bottles off of the swinging table.

7. In a loader for bottle washing machines having a conveyor, side plates, trunnions thereon, supports for the trunnions, a loading table and a delivery table connecting the side plates and spaced apart, a swinging table mounted on said side plates positioned between the loading table and the delivery table, there being grooves in the inner faces of the side plates, slides mounted therein, a push bar connecting the slides, brackets on the slides arched over the side plates and recessed to clear the trunnions, operating levers, links connecting the operating levers with the brackets for causing the cross bar to move bottles from the delivery table onto the swinging table, there being slots in the side plates and in the slides, a second push rod extending therethrough, and links connecting the second push rod with the operating levers for causing the second push rod to move bottles off of the swinging table and across the delivery table to the conveyor of the bottle washing machine.

In testimony whereof, we affix our signatures.

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OTTO DREHER.