

April 18, 1933.

J. R. GRUETTER

1,904,685

BOTTLE RINSING MECHANISM

Filed Jan. 6, 1932

5 Sheets-Sheet 1

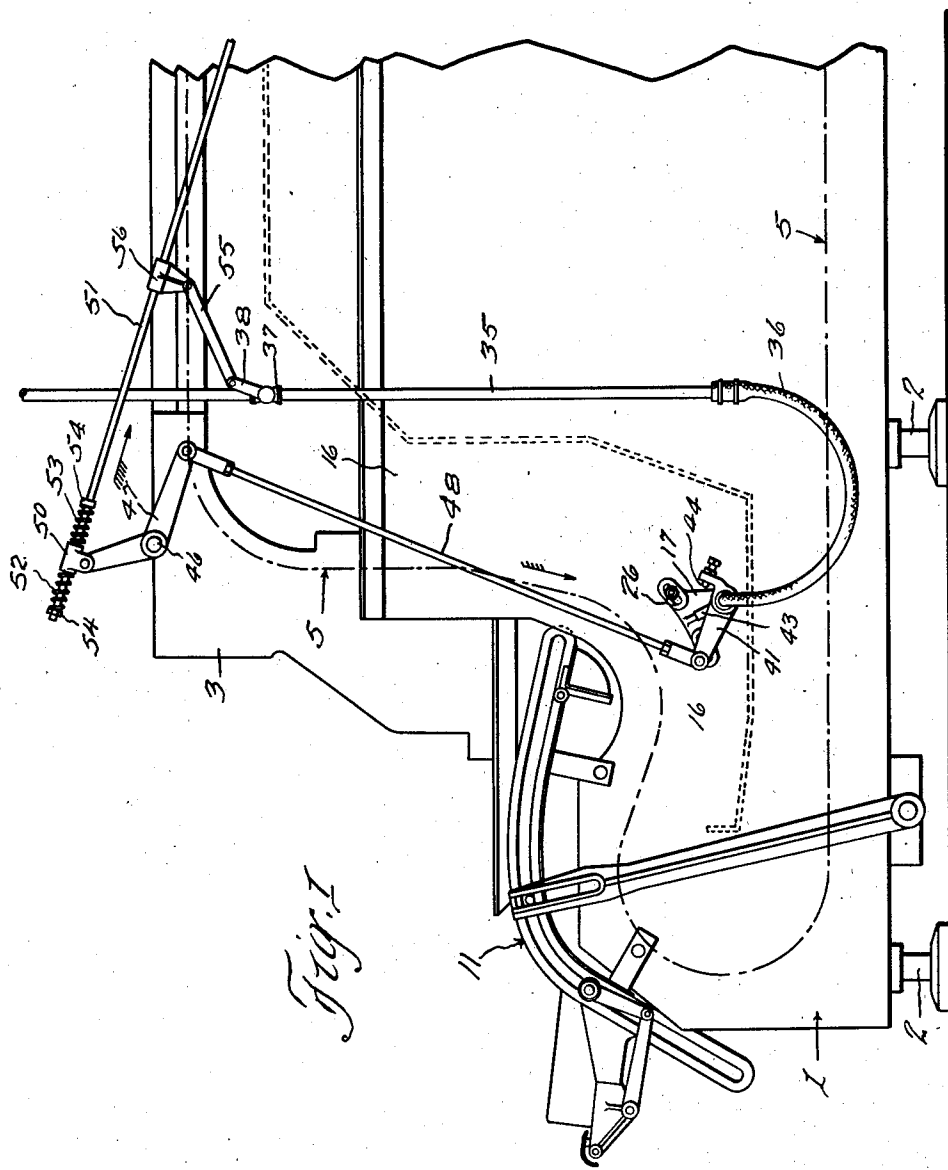


Fig. 1

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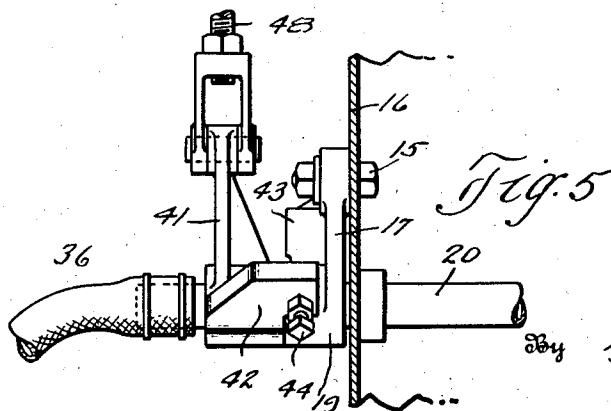
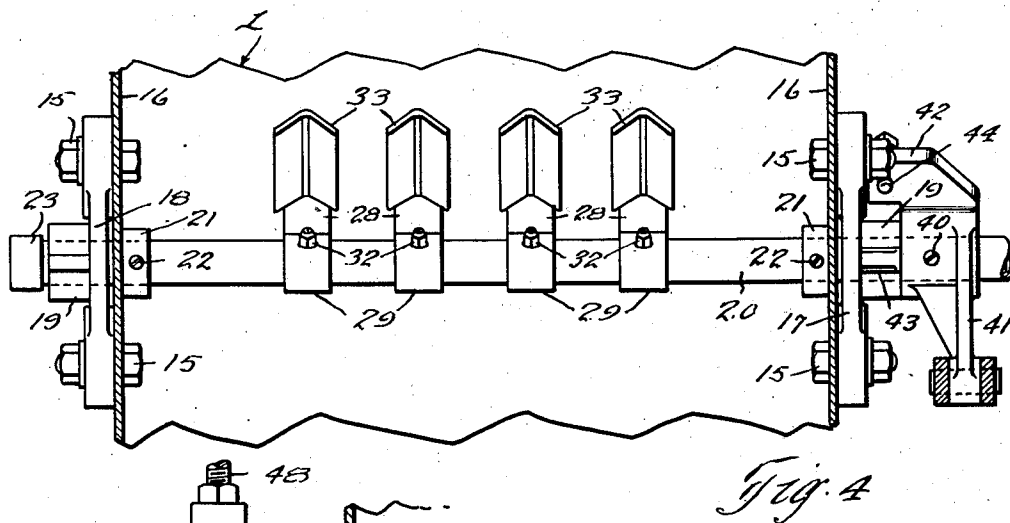
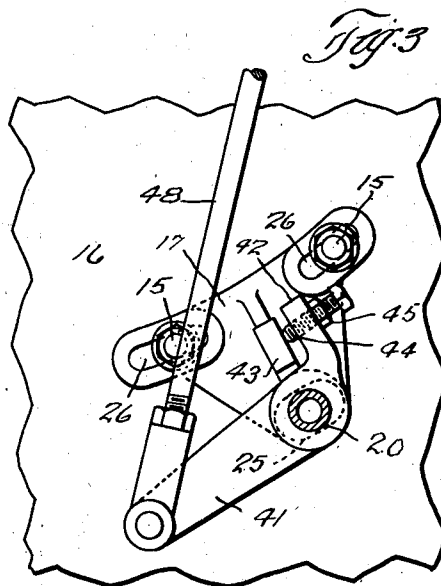
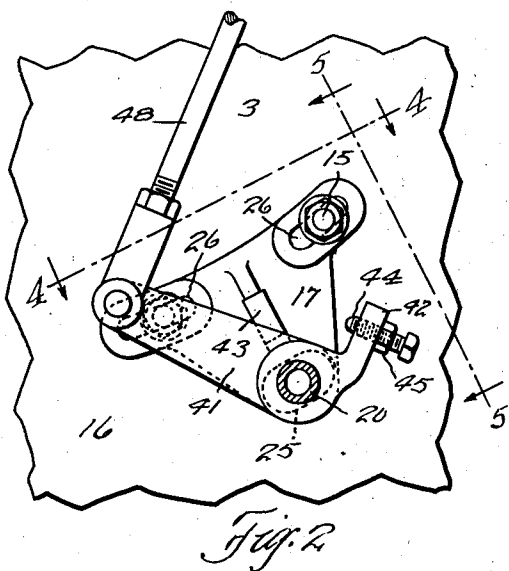
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5 Sheets-Sheet 2



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5 Sheets-Sheet 3

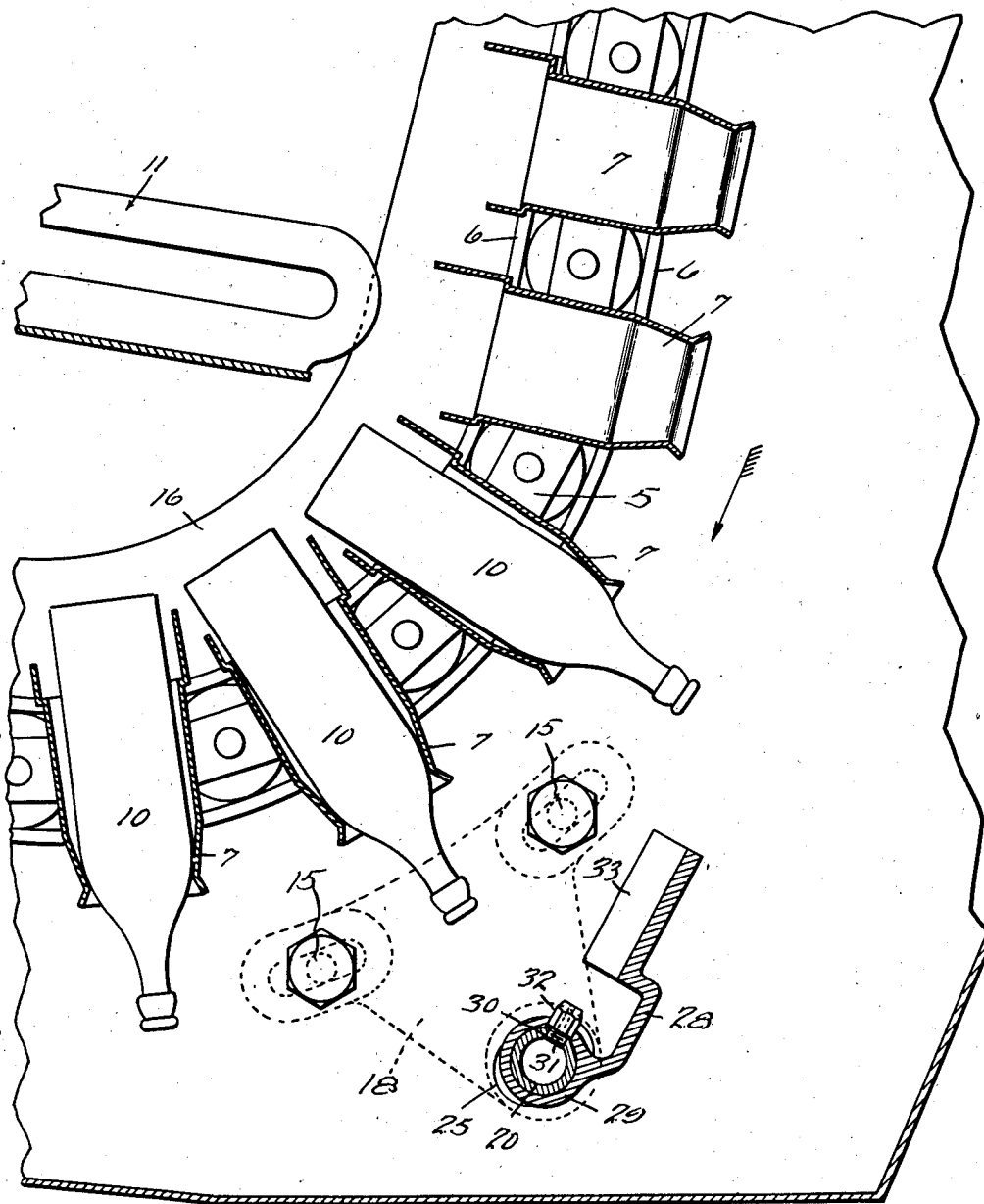


Fig. 6

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5 Sheets-Sheet 4

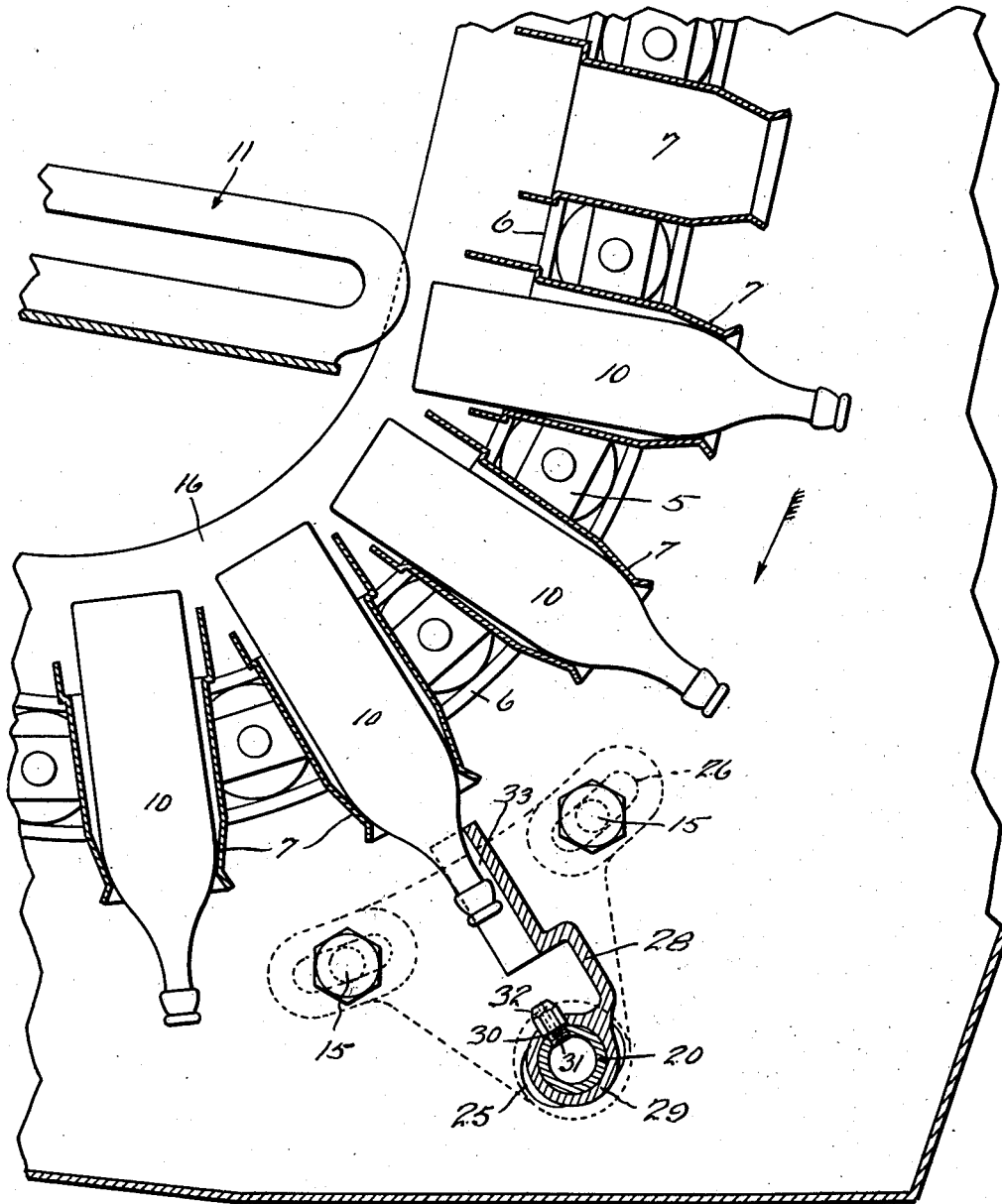


Fig. 1

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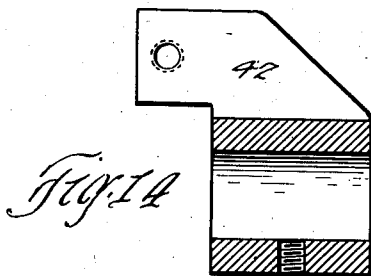
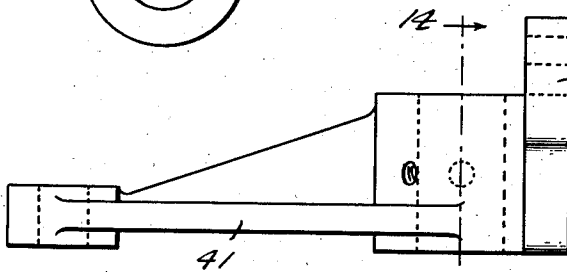
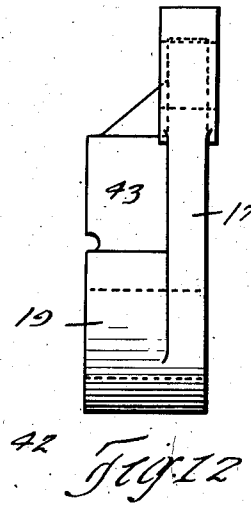
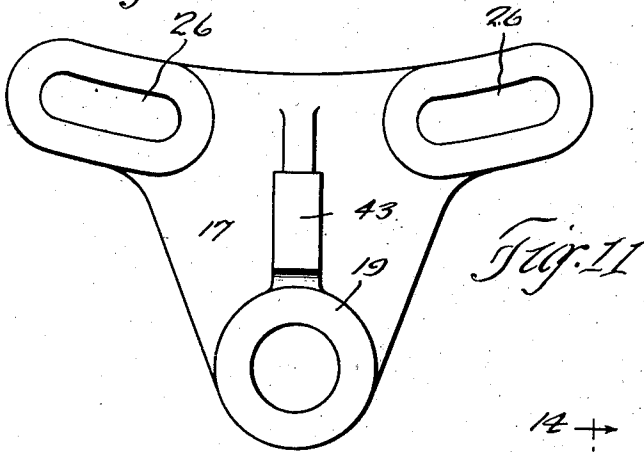
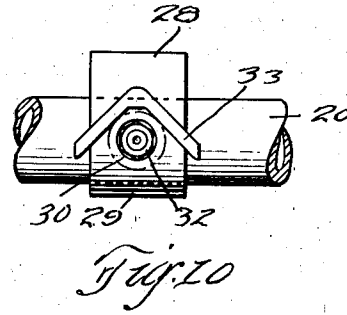
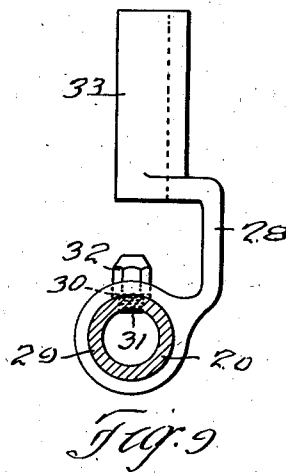
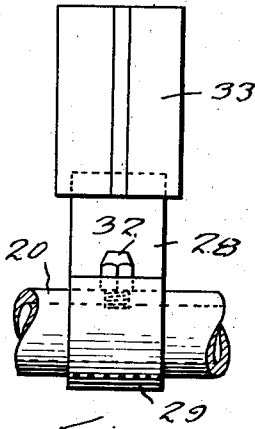
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BOTTLE RINSING MECHANISM

Filed Jan. 6, 1932

5 Sheets-Sheet 5



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UNITED STATES PATENT OFFICE

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BOTTLE RINSING MECHANISM

Application filed January 6, 1932. Serial No. 585,082.

This invention relates to bottle rinsing mechanism that is especially adapted for incorporation in bottle washing machines of the kind in which the bottles, loosely supported in holders, are carried through the machine with an intermittent movement. Machines of the class in question usually involve soaking tanks, scrubbing means that operate on both the interiors and exteriors of the bottles, and bottle rinsing means. The mechanism of the present invention is preferably utilized as a pre-rinsing means for washing out the interiors of the bottles before they enter the soaking tanks or vats although, in its broader aspect, it is not limited to such a position in the bottle washing apparatus.

The objects of the invention are to provide bottle rinsing mechanism that is efficient and reliable and, at the same time, relatively simple of construction and operation, wherein a supply conduit for the rinsing liquid is supported in operative relation to the bottle holders, the same having liquid emitting apertures for projecting jets of liquid into the bottles sustained by the holders, there being devices associated with said conduit for engagement in a lateral direction with the bottles thereby to accurately align them with said apertures, the mechanism embodying means for actuating said devices and for controlling the flow of the rinsing liquid.

A further object comprehended by the invention is the inclusion, in rinsing mechanism of the above described nature, of means by which the mechanism may be conveniently adjusted to properly align the liquid emitting apertures of the aforesaid conduit with the bottle holders, this being important inasmuch as it obviates the need of such accuracy of workmanship as would be the case if such an adjustment were not provided, this feature also enabling the position of the rinsing mechanism to be altered to compensate for any shifting or elongation of the bottle carrier or conveyor in which the bottle holders are incorporated.

Other objects and advantages, especially such as pertain to structural refinements, will become apparent as I proceed to describe the

invention in detail by reference to the accompanying drawings wherein like parts are designated by corresponding reference characters throughout the several views.

In the drawings, Fig. 1 is a fragmentary side elevation of a bottle washing machine incorporating my improved rinsing mechanism; Fig. 2 is a detail in side elevation, and on a scale considerably enlarged over that of Fig. 1, of the means for supporting the liquid supply conduit of the rinsing mechanism and the means for oscillating the same; Fig. 3 is a similar view showing the conduit rocked to its other extreme position than the one illustrated in Fig. 2; Fig. 4 is a section through the bottle washing machine in the immediate vicinity of the rinsing mechanism, the plane of section being indicated by the line 4—4 of Fig. 2; Fig. 5 is a sectional detail on the correspondingly numbered line of Fig. 2; Fig. 6 is a vertical section through the bottle washing machine in the region of the bottle rinsing mechanism showing the same in ineffective position, such position corresponding to that illustrated in Fig. 2, the plane of section in this view being parallel to the plane of Fig. 1; Fig. 7 is a view similar to Fig. 6 showing the rinsing mechanism in effective position, such position corresponding to the position of the parts illustrated in Fig. 3; Figs. 8, 9 and 10 are a front elevation, side elevation, and plan view, respectively, of one of the bottle aligning devices mounted on the liquid supply conduit, a section of which is included in each of said views; Figs. 11 and 12 are a side elevation and edge view, respectively, of one of the brackets that support the supply conduit and adjustably connect it to the side walls of the bottle washing machine; Fig. 13 is a plan view of the arm that is connected to the supply conduit and by means of which it is oscillated, and Fig. 14 is a section on the line 14—14 of Fig. 13.

The type of bottle washing machine in which I have shown my present improvements incorporated is similar to those disclosed in my copending applications Serial Nos. 510,713 and 578,297, filed January 23, 1931 and December 1, 1931, respectively. It is deemed unnecessary to illustrate in the

present case more than that portion of the machine in which the present invention is installed. The machine comprises a tank-like structure, designated generally by the reference numeral 1, supported a suitable distance above the floor by legs 2, and above which a superstructure 3 extends which, with the tank-like structure, is equipped with guides or tracks for an endless conveyor designated 5. Such conveyor is represented in dot-and-dash lines in Fig. 1, and in full lines in Figs. 6 and 7, the tracks or guides being shown at 6 in the latter view. The conveyor 5 incorporates holders 7 in which bottles 10 are adapted to be loosely supported and to which they are fed by loading or charging mechanism, designated generally by the reference numeral 11. Such loading or charging mechanism, more or less diagrammatically illustrated in the present case, constitutes the subject matter of my above mentioned copending application Serial No. 578,297.

According to the design of the machine herein disclosed, the course of the conveyor 5, which travels in the direction indicated by the arrows in Figs. 1, 6 and 7, extends downwardly and is inclined slightly toward the discharge end of the loading mechanism 11 and then curves under said end so that, while the bottles are fed into the holders 7, neck first, in an almost horizontal position, they swing, through successive steps of the intermittently moving conveyor, to an inverted upright position, the bottles assuming a position more nearly vertical than horizontal when stopped in operative relation to the rinsing mechanism, as illustrated in Figs. 6 and 7.

Attached, as by bolts 15, to the outer sides of the side walls 16 of the tank-like structure 1, are supporting brackets 17 and 18 having bearing sleeves 19 in which the ends of a conduit 20 are journaled. The conduit is held against longitudinal movement by collars 21 that are fastened to it immediately inside the walls 16 by screws 22, and the end of the conduit adjacent the bracket 18 is closed by a cap 23. The side walls 16 have enlarged openings 25 through which the conduit extends, and the brackets 17 and 18 have slots 26 that accommodate the bolts 15. By reason of this construction, the brackets may be adjusted on an arc approximately concentric with that of the adjacent portion of the conveyor 5 so as to properly locate the conduit 20 with respect to the position in which the bottles dwell for receiving the rinsing liquid.

It is well understood by those familiar with the type of bottle washing machine herein referred to, and as may be seen by reference to the above mentioned applications, that the bottle holders 7 are arranged in transverse rows of different numbers, depending upon the size and capacity of the machine. It may

be explained that in the present machine there are four holders in each transverse row, and mounted upon the conduit 20 are a corresponding number of bottle positioning or aligning devices 28 (see Fig. 4). These devices incorporate sleeve-like hubs 29 that encircle the conduit and have apertures 30 that are adapted to align with smaller threaded apertures in the conduit 20 into which the inner threaded ends 31 of nozzles 32 are screwed, the apertures 30 being of a size to receive the enlarged ends of said nozzles, such ends being formed, as of hexagonal shape, for the reception of a wrench or other tool by means of which they may be screwed in the apertures of the conduit. The outer or free ends of the devices 28 have trough-like portions 33 that are substantially V-shaped in cross section for engaging the necks of the bottles 10 and aligning them accurately with the orifices of the nozzles 32, the devices 28, as they are swung to effective position, serving to rock the bottles in the holders 7 in the planes of said devices and at the same time in a direction at right angles thereto by reason of the V-shaped character of the portions 33.

Rinsing liquid, such as water, is conveyed to the conduit 20 from any suitable source through a pipe 35 and a hose 36. A valve 37 is in the pipe 35 for controlling the flow of liquid therethrough, said valve having an operating lever 38.

Secured to the end of the conduit 20 adjacent the bracket 17, as by fastening means 40, is an arm 41 having a lateral offset 42 that is in the plane of an abutment portion 43 of the bracket 17; and threaded through said offset portion is a stop 44, consisting of a screw held in place by a lock nut 45, that is arranged to engage the abutment 43 thereby to arrest swinging movement of the conduit when the bottle aligning devices 28 are in effective position. Pivotally supported at 46 by the superstructure 3 is a two-branch unit 47, which may be in the nature of a bell crank, one branch of which is connected, by a link 48, with the arm 41. An eye 50 is pivotally connected to the other branch, and a rod 51 extends loosely through said eye. Springs 52 and 53 surround said rod on opposite sides of the eye 50 and are confined between said eye and abutments 54 that are fastened to said rod. The rod 51 is reciprocated by any suitable mechanism in timed relation to the intermittent movement of the conveyor 5, the rod and conveyor moving alternately. That is to say, when the conveyor is at rest, the rod 51 is reciprocated and, upon movement in the direction indicated by the arrow in Fig. 1, causes the unit 47 to be oscillated and the link 48 depressed thereby to swing the arm 41 downwardly and rock the conduit 20 in a direction to engage the portions 33 of the devices 28 with the

necks of the bottles 10 that are in operative relation to the rinsing mechanism, resulting in the proper aligning of said bottles with the nozzles 32. As previously stated, the conduit 20 is stopped in a position in which the bottles are properly aligned with the nozzles by the engagement of the stop 44 with the abutment 43, any movement of the rod 51 in excess of that required to engage said stop with the abutment being taken up by the spring 52.

The rod 51 is also connected to the operating lever 38 of the valve 37 by a link 55 and a fitting 56. When the rod 51 is moved as aforesaid for the purpose of causing the bottle aligning devices to perform their function, the valve 37 is opened by reason of its connection with said rod thereby to cause the rinsing liquid to flow through the pipe 33, the hose 36 and the conduit 20 and be emitted from the latter in relatively fine streams through the orifices of the nozzles 32 into the interior of the bottles 10 that are supported in operative relation to the rinsing mechanism. It is obvious from what has already been described that when the rod 51 is moved in the opposite direction the bottle aligning devices are swung to ineffective position out of the path of movement of the necks of the bottles and that the valve 37 is closed so as to shut off the supply of rinsing liquid.

Having thus described my invention, what I claim is:

1. In bottle rinsing mechanism, the combination of a holder by which a bottle is adapted to be loosely supported, a supply conduit for rinsing liquid disposed in operative relation thereto and extending substantially at right angles to the axis of the holder, the conduit having a liquid emitting opening in its side in alignment with which the bottle is adapted to be disposed, a device pivotally supported on substantially the axis of the conduit and swingable into engagement with a bottle in the holder for aligning the bottle with said opening, and means for actuating said device.

2. In bottle rinsing mechanism, the combination of a holder by which a bottle is adapted to be loosely supported, a supply conduit for rinsing liquid disposed in operative relation thereto and extending substantially at right angles to the axis of the holder, the conduit having a liquid emitting opening, in its side in alignment with which the bottle is adapted to be disposed, a device pivotally supported on substantially the axis of the conduit and swingable into engagement with a bottle in the holder for aligning the bottle with said opening, and means for actuating said device and for controlling the emission of liquid from said opening.

3. In bottle rinsing mechanism, the combination of a holder by which a bottle is

adapted to be loosely supported, a supply conduit for rinsing liquid, means rotatably supporting said conduit in operative relation to the holder and in a position substantially normal to the axis thereof, said conduit having a liquid emitting opening in its side in a vertical plane transversely of the conduit and substantially coincident with the axis of the holder a device rotatable with and carried by said conduit and swingable into engagement with a bottle in the holder when the conduit is rotated in a given direction thereby to align the bottle with the opening of the conduit, and means for oscillating the conduit.

4. In bottle rinsing mechanism, the combination of a holder by which a bottle is adapted to be loosely supported, a supply conduit for rinsing liquid having a liquid emitting opening in its side in alignment with which the bottle is adapted to be disposed, means supporting said conduit in operative relation to the holder and in a position substantially normal to the axis thereof, a device carried by said conduit and swingable on the axis thereof into engagement with a bottle in the holder thereby to align the bottle with the opening in the conduit, and means for effecting such swinging movement of said device.

5. In bottle rinsing mechanism, the combination of a holder by which a bottle is adapted to be loosely supported, a supply conduit for rinsing liquid having a liquid emitting opening in its side in alignment with which the bottle is adapted to be disposed, means supporting said conduit in operative relation to the holder and in a position substantially normal to the axis thereof, a device having a hub mounted on the conduit and swingable into engagement with a bottle in the holder thereby to align the bottle with the opening in the conduit, said hub having an opening that registers with the liquid emitting opening of the conduit, and means for effecting the swinging movement of said device.

6. In bottle rinsing mechanism, the combination of a holder by which a bottle is adapted to be loosely supported, a supply conduit for rinsing liquid having a liquid emitting opening in its side in alignment with which the bottle is adapted to be disposed, means rotatably supporting said conduit in operative relation to the holder and in a position substantially normal to the axis thereof, a device having a hub mounted on the conduit, said hub having an opening registering with the liquid emitting opening of the conduit, a nozzle disposed within said openings, the device being adapted to be swung into engagement with a bottle in the holder when the conduit is rotated in a given direction thereby to align the bottle with the

nozzle, and means for oscillating the conduit.

7. In bottle rinsing mechanism, the combination of a holder by which a bottle is adapted to be loosely supported, a supply conduit for rinsing liquid having a liquid emitting opening in its side in alignment with which the bottle is adapted to be disposed, means rotatably supporting said conduit in operative relation to the holder and in a position substantially normal to the axis thereof, a device having a hub mounted on the conduit, said hub having an opening registering with the liquid emitting opening of the conduit, a nozzle disposed within said openings and serving to hold the device against turning with respect to the conduit, the device being adapted to be swung into engagement with a bottle in the holder when the conduit is rotated in a given direction thereby to align the bottle with the nozzle, and means for oscillating the conduit and for controlling the supply of liquid thereto.

8. In bottle rinsing mechanism, the combination of a holder by which a bottle is adapted to be loosely supported, a supply conduit for rinsing liquid having a liquid emitting opening in its side in alignment with which the bottle is adapted to be disposed, means rotatably supporting said conduit in operative relation to the holder and in a position substantially normal to the axis thereof, a device having a hub mounted on the conduit, said hub having an opening registering with the liquid emitting opening of the conduit, a nozzle disposed within said openings, the device being adapted to be swung into engagement with a bottle in the holder when the conduit is rotated in a given direction thereby to align the bottle with the nozzle, a feed pipe for supplying liquid to the conduit, a valve in said pipe, and means for oscillating the conduit and for controlling the operation of said valve.

9. In bottle rinsing mechanism, the combination of a holder by which a bottle is adapted to be loosely supported, a supply conduit for rinsing liquid having a liquid emitting opening in its side in alignment with which the bottle is adapted to be disposed, means rotatably supporting said conduit in operative relation to the holder and in a position substantially normal with the axis thereof, a device mounted on the conduit having a portion that is adapted to be brought into engagement with the neck of a bottle supported in the holder when said device is swung by the rotation of the conduit in a given direction thereby to align the neck of the bottle with said liquid emitting opening, and means for oscillating the conduit.

10. In bottle rinsing mechanism, the combination of a holder by which a bottle is adapted to be loosely supported, a supply

conduit for rinsing liquid having a liquid emitting opening in its side in alignment with which the bottle is adapted to be disposed, means rotatably supporting said conduit in operative relation to the holder and in a position substantially normal with the axis thereof, a device having a hub mounted on the conduit, the hub having an opening registering with the liquid emitting opening of the conduit, a nozzle extending through said openings, the device having a portion that is adapted to be brought into engagement with the neck of a bottle supported by the holder when said device is swung by the rotation of the conduit in a given direction thereby to align the neck of the bottle with said nozzle, and means for oscillating the conduit.

11. In bottle rinsing mechanism, the combination of a holder by which a bottle is adapted to be loosely supported in an inverted, inclined position, a supply conduit for rinsing liquid located in operative relation to the holder and occupying a position substantially normal to the axis thereof, said conduit having a liquid emitting opening in its side in alignment with which the bottle is adapted to be disposed, and a device swingable substantially on the axis of the conduit into engagement with the neck of the bottle for aligning the bottle with the liquid emitting opening of the conduit.

12. In combination with a bottle washing machine involving holders by which bottles are adapted to be loosely supported and which are movable through a given course, a supply conduit for rinsing liquid supported in a position substantially normal to the axis of the holders and adjacent the path of movement thereof, said conduit having a liquid emitting opening in its side in alignment with which the bottles are adapted successively to be disposed, and means swingably supported on substantially the axis of said conduit from a position beyond the path of movement of said bottles into said path and into engagement with the bottles thereby to align the bottles with the liquid emitting opening of the conduit.

13. In combination with a bottle washing machine involving bottle holders that are movable through a given course with an intermittent movement and by which bottles are adapted to be loosely supported, a conduit supported transversely of the course of movement of the holders and beyond the range thereof, said conduit having a liquid emitting opening in its side in alignment with which the bottles are adapted successively to be disposed, a device swingable on substantially the axis of the conduit from a normal position beyond the reach of the bottles supported by the holders into engagement with the bottles as they are dis-

posed in operative relation to the conduit for aligning the bottles with the liquid emitting opening of the conduit, and means effecting the swinging of said device during the periods of rest of the bottle holders.

14. In combination with a bottle washing machine involving bottle holders that are movable with an intermittent movement through a given course and by which bottles are adapted to be loosely supported, a supply conduit for rinsing liquid, means adjustable in the direction of movement of the holders for rotatably supporting said conduit, the conduit having a liquid emitting opening in its side in alignment with which the bottles are adapted successively to be disposed, a device carried by the conduit and swingable when the conduit is rotated in a given direction into engagement with bottles supported by the holders thereby to align the bottles with the liquid emitting opening of the conduit, and means for oscillating the conduit.

15. In combination with a bottle washing machine involving bottle holders that are movable with an intermittent movement through a given course and by which bottles are adapted to be loosely supported, said holders, through a portion of said course, swinging gradually from a substantially horizontal to a substantially vertical inverted position and through an arcuate path, a supply conduit for rinsing liquid having a liquid emitting opening in its side in alignment with which the bottles are adapted successively to be disposed, means adjustable on an arc substantially concentric with the aforesaid arcuate path of the holders and by which said conduit is rotatably supported, a bottle positioning device carried by the conduit and adapted to be swung into engagement with bottles sustained by said holders when the conduit is rotated in a given direction, and means for oscillating said conduit during the periods of rest of the bottle holders.

16. In combination with a bottle washing machine involving holders by which bottles are adapted to be loosely supported, the machine having side walls between the planes of which the holders are adapted to be moved through a given course with an intermittent movement, brackets adjustably supported by the side walls, a supply conduit rotatably supported by said brackets, said conduit having a liquid emitting opening in its side in alignment with which the bottles are adapted successively to be disposed, a device carried by the conduit and swingable into engagement with the bottles when the conduit is rotated in a given direction thereby to align the bottles with the liquid emitting opening of the conduit, means for oscillating the conduit during the periods of rest of the bottle holders, and stop means for limiting

the swinging movement of the aforesaid device in a direction to engage the bottles.

17. In combination with a bottle washing machine involving holders by which bottles are adapted to be loosely supported, the machine having side walls between the planes of which the holders are adapted to be moved through a given course with an intermittent movement, brackets supported by the side walls, a supply conduit rotatably supported by said brackets, said conduit having a liquid emitting opening in its side in alignment with which the bottles are adapted successively to be disposed, a device carried by the conduit and swingable into engagement with the bottles when the conduit is rotated in a given direction thereby to align the bottles with the liquid emitting opening of the conduit, means for oscillating the conduit during the periods of rest of the bottle holders, an arm secured to the conduit adjacent one of said brackets, an abutment and stop for engagement therewith and which are carried, respectively, by the arm and the bracket adjacent thereto, and means for swinging the arm to and fro during the periods of rest of the bottle holders.

18. In combination with a bottle washing machine involving bottle holders and opposed side walls between the planes of which the bottle holders are adapted to be moved with an intermittent movement through a given course, a supply conduit extending transversely of the machine, said side walls having openings of greater breadth than the diameter of the conduit and through which the ends of the conduit project, brackets rotatably supporting the conduit, means adjustably connecting said brackets to the side walls of the machine so that the brackets are capable of an adjustment in the general direction of movement of the bottle holders, said conduit having a liquid emitting opening in its side in alignment with which the bottles are adapted successively to be disposed, a device carried by the conduit and swingable into engagement with a bottle sustained by a holder when the conduit is rotated in a given direction thereby to align said bottle with the liquid emitting aperture of the conduit, and means for oscillating the conduit during the periods of rest of the bottle holders.

19. In combination with a bottle washing machine involving transverse rows of bottle holders by which bottles are adapted to be loosely supported and which are movable through a given course, a supply conduit for rinsing liquid supported adjacent the path of movement of bottles sustained by said holders and parallel to the transverse rows of said holders, said conduit having liquid emitting openings in its side corresponding in number and spacing to the bottles in each row, and means swingably supported on substantially

the axis of said conduit from a position beyond the path of movement of said bottles into said path and into engagement with the bottles thereby to align the bottles with the liquid emitting openings of the conduit.

20. In combination with a bottle washing machine involving bottle holders arranged in transverse rows and that are movable through a given course with an intermittent movement and by which bottles are adapted to be loosely supported, a conduit supported transversely of the course of movement of the holders and parallel to the transverse rows thereof, said conduit having liquid emitting openings in its side corresponding in number and spacing to the bottle holders in each row, devices of like number and spacing swingable on substantially the axis of the conduit from a normal position beyond the reach of the bottles supported by the holders into engagement with the bottles as they are disposed in operative relation to the conduit for aligning the bottles with the liquid emitting openings of the conduit, and means effecting the swinging of said devices during the periods of rest of the bottle holders.

21. In combination with a bottle washing machine involving bottle holders that are movable through a given course with an intermittent movement and by which bottles are adapted to be loosely supported, a conduit arranged transversely of the course of movement of the holders, means supporting the conduit and by which its position may be adjusted, said conduit having a liquid emitting opening in its side in alignment with which the bottles are adapted successively to be disposed, a device swingable on substantially the axis of the conduit from a normal position beyond the reach of the bottles supported by the holders into engagement with the bottles as they are disposed in operative relation to the conduit for aligning the bottles with the liquid emitting opening of the conduit, and means effecting the swinging of said device during the periods of rest of the bottle holders.

22. In combination with a bottle washing machine involving holders by which bottles are adapted to be loosely supported, the machine having side walls between the planes of which the holders are adapted to be moved through a given course with an intermittent movement, a bracket adjacent each side wall, means by which each bracket is adjustably connected to the corresponding side wall, a supply conduit rotatably supported by said brackets, said conduit having a liquid emitting opening in its side in alignment with which the bottles are adapted successively to be disposed, a device carried by the conduit and swingable into engagement with the bottles when the conduit is rotated in a given direction thereby to align the bottles with the liquid emitting opening of the conduit,

means for oscillating the conduit during the periods of rest of the bottle holders, an arm secured to the conduit adjacent one of the aforesaid brackets, an abutment and a stop for engagement therewith and which are carried, respectively, by the arm and the bracket that is adjacent thereto, the stop being adjustably carried by said bracket, and means for swinging the arm to and fro during the periods of rest of the bottle holders.

In testimony whereof, I hereunto affix my signature.

JOHN R. GRUETTER.

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