

No. 694,371.

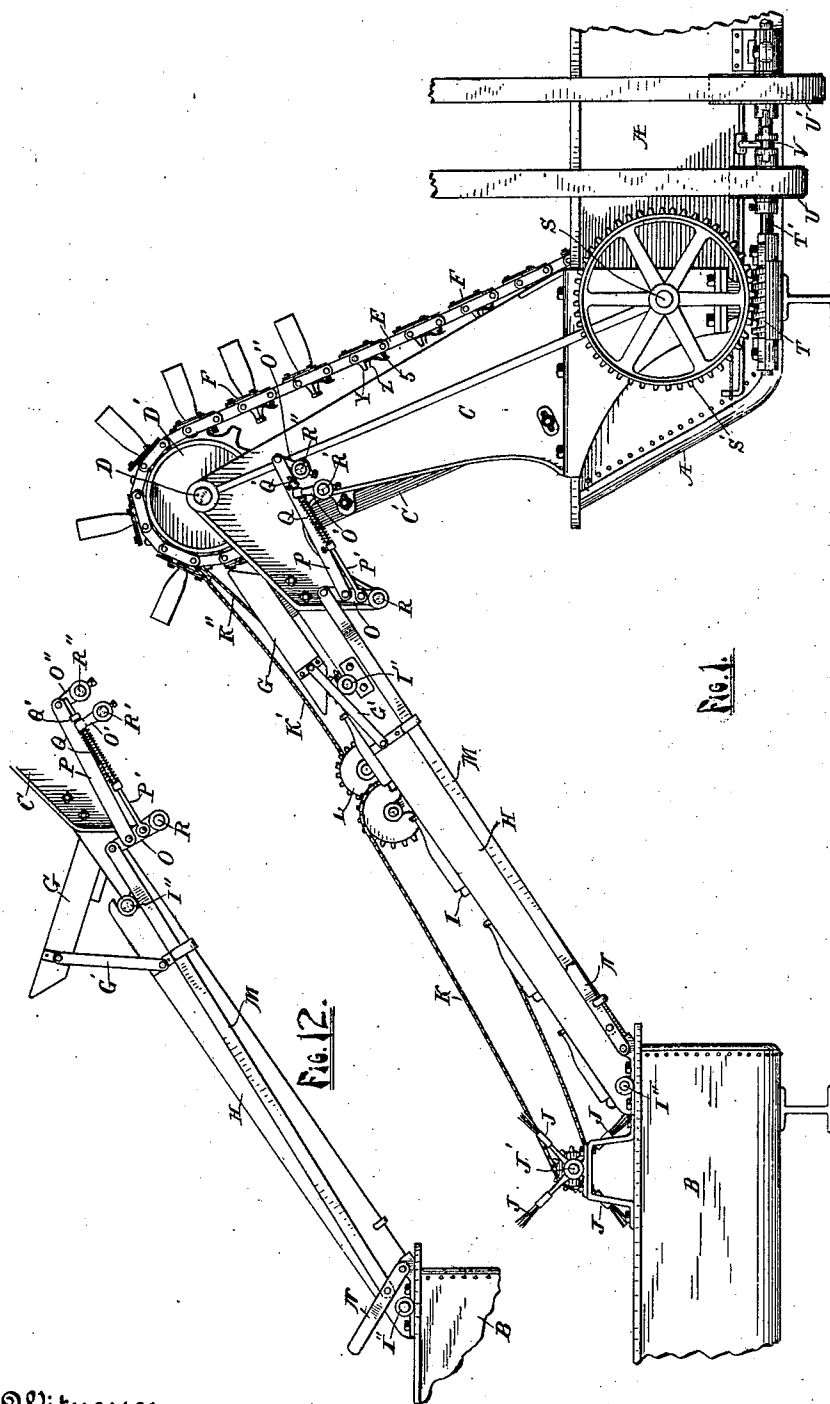
Patented Mar. 4, 1902.

A. GOETZ.
BOTTLE CLEANING MACHINE.

(Application filed Mar. 2, 1901.)

(No Model.)

3 Sheets—Sheet 1.



Witnesses
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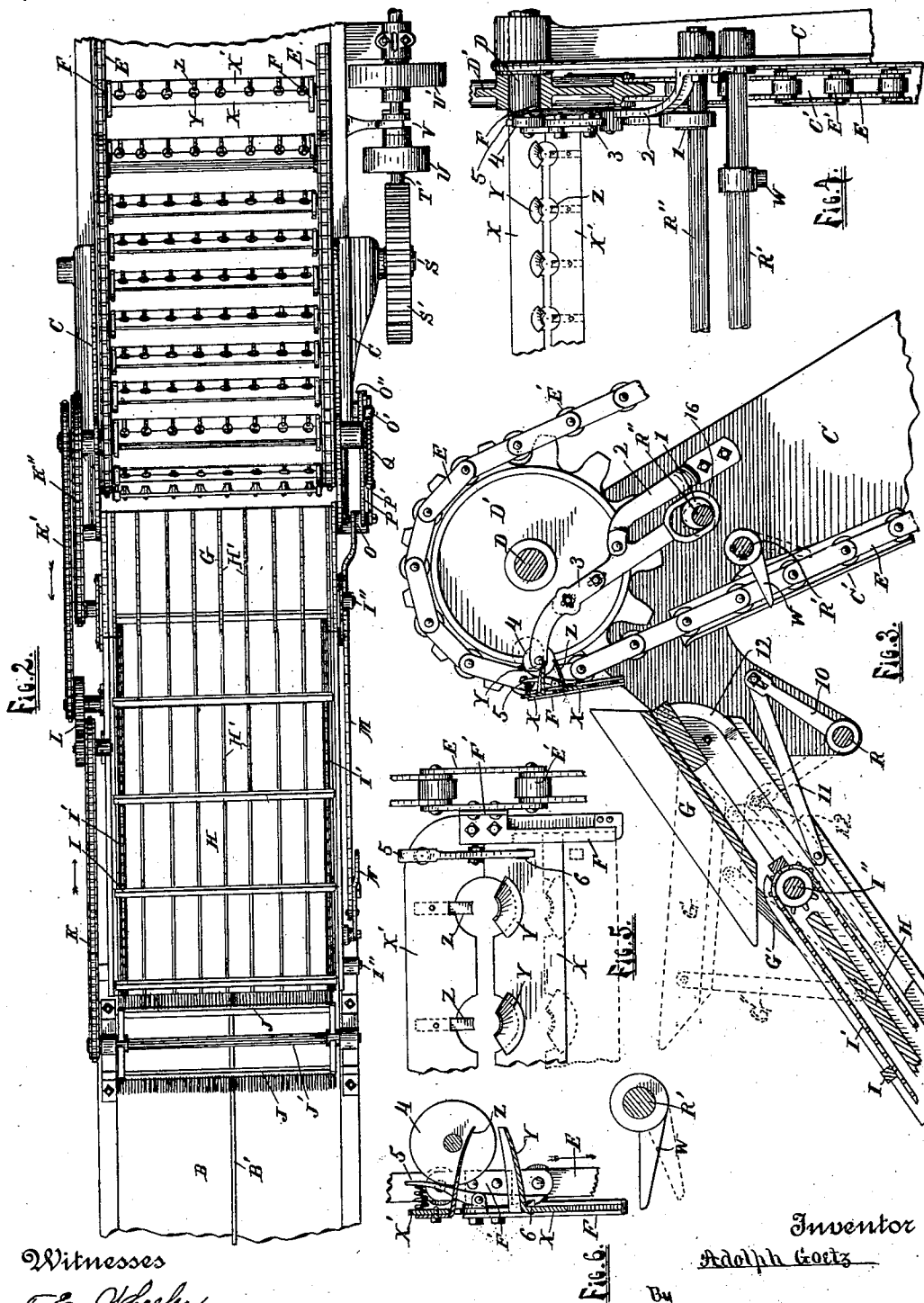
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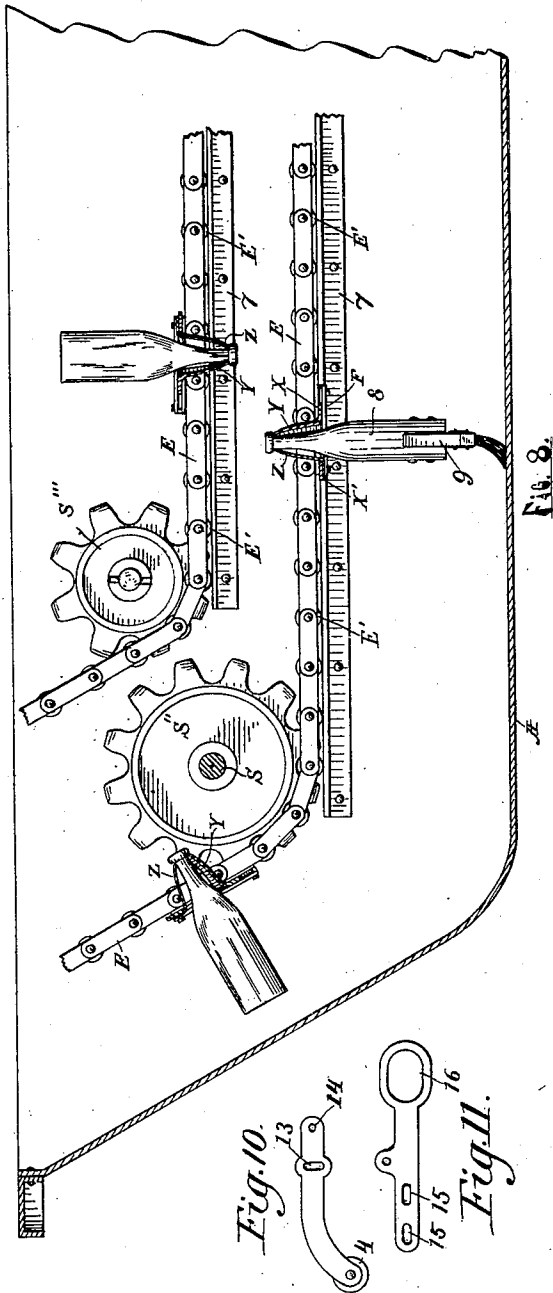
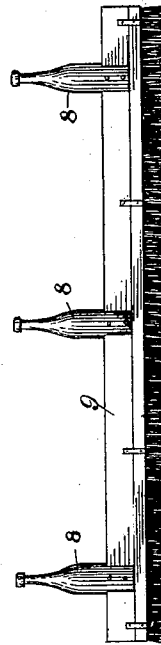


Fig. 9.

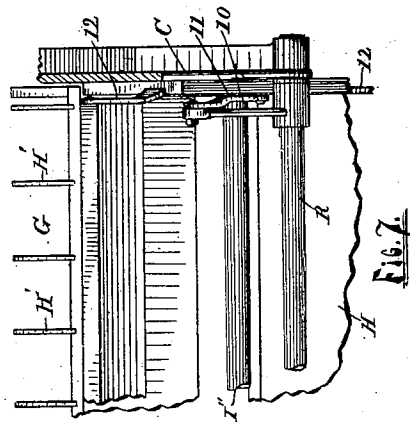
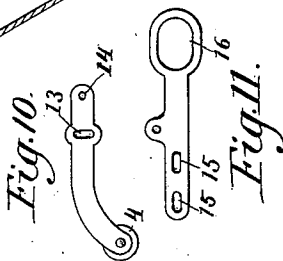


Fig. 7.



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UNITED STATES PATENT OFFICE.

ADOLPH GOETZ, OF GRAND RAPIDS, MICHIGAN.

BOTTLE-CLEANING MACHINE.

SPECIFICATION forming part of Letters Patent No. 694,371, dated March 4, 1902.

Application filed March 2, 1901. Serial No. 49,655. (No model.)

To all whom it may concern:

Be it known that I, ADOLPH GOETZ, a citizen of the United States, residing at Grand Rapids, in the county of Kent and State of Michigan, have invented certain new and useful Improvements in Bottle-Cleaning Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in bottle-cleaning machines, and more particularly to improvements in the machines shown and described in the patent to me numbered 647,082 and dated April 10, 1900, on bottle-washing machines.

The object of my invention is to provide the device with improved means for holding and discharging the bottles, means for throwing the bottle-releasing mechanism out of action, means for preventing breakage of the bottles, means for keeping two or more sizes or kinds of bottles separate, and to provide the device with various new and useful features hereinafter more fully described, and particularly pointed out in the claims, reference being had to the accompanying drawings, in which--

Figure 1 is a side elevation of a device embodying my invention with the opposite ends of the tanks removed; Fig. 2, a plan view of the same; Fig. 3, an enlarged detail in elevation of the discharging mechanism; Fig. 4, the same viewed at right angles to Fig. 3; Fig. 5, a further-enlarged detail of a part of the bottle-holding mechanism; Fig. 6, the same viewed at right angles to Fig. 5; Fig. 7, a detail of the mechanism for operating the section G; Fig. 8, a detail in vertical section of a portion of the bottle-carriers within the soaking-tank and showing the brush for sweeping the bottom of the same tank; Fig. 9, a side elevation of the brush shown in elevation in Fig. 8; Figs. 10 and 11, details of the lever 3; and Fig. 12, a detail in side elevation, showing the position of various parts when the bottle-releasing means is thrown out of action.

Like letters refer to like parts in all of the figures.

A represents the soaking-tank, adapted to contain the solution for soaking bottles.

B is a tank adapted to contain water for rinsing the bottles after soaking. 55

C is a suitable frame extending upward from the end of the soaking-tank A, adjacent to the tank B. D is a shaft journaled in the upper part of this frame and having sprocket-wheels D' near each end. 60

E are sprocket-chains having bottle-holding means attached and extending horizontally within the tank and thence upward over the wheels D' and engaging suitably-located sprocket-wheels. 65

H is an inclined way to conduct the bottles to the tank B.

I are transverse bars traversing the way II to regulate the descent of the bottles.

So far the device is substantially the same as heretofore shown in the said Patent No. 647,082. 70

S is the driving-shaft, having a worm-gear S', actuated by a worm T, attached to a shaft T', driven by a clutch V, which clutch is made movable longitudinally on the shaft in the usual way and alternately engages pulleys U U', loose on the shaft and of different diameters to give two different speeds to the machine. These pulleys are driven from any suitable line by suitable belts. The shaft S is provided with sprocket-wheels S'', which engage the chains E and move the same. 75 80

S''' are idler-sprockets engaging the chains E to hold them in place in the tank A. These chains are provided with rolls E', journaled on the rivets that connect the links. These rolls engage the sprocket-teeth and also traverse horizontal ways 77 in the tank A. Said ways consist of angle-bars secured to the tank. These rolls thus serve to materially reduce the friction, wear, and power required to operate the machine. 85 90

The bottle-holders consist of end bars F, rigidly secured to the chains at one end only by flanges F' and provided with grooves in their adjacent sides, in which grooves are slidably mounted the plates X, opposite to which plates are the plates X', rigidly attached at their respective ends to the end bars F. These plates XX' are provided at intervals with opposing recesses in their adjacent edges to re- 100

ceive the bottles and are held in closed position by spring-actuated hooks 5 on the plates X', engaging lugs 6 on the plates X. The means for holding the bottles in the recesses consists of rigid truncated conical segments Y on one plate to engage one side of the neck of the bottles and opposing springs Z on the other plate to engage the other side of the same. By rigidly securing the ends to the chains and at one point only the construction is simplified and the friction reduced, and by using a single spring opposite a rigid conical holder the number of springs is reduced and the bottles held more securely and in perfect alinement and the bottles or brush properly supported in a position at right angles to the plates, carried forward through the solution and lifted out of the same by unyielding supports formed by the edge of the plate X' at one side and the unyielding conical segment Y at the other side. To release the bottles, levers 3 are pivotally supported on brackets 2 and provided with rolls 4 to engage and release the hooks 5 from the lugs 6. This releases the plate X, which plate slides down the grooves in the end bars F and permits the bottles to drop upon the movable section G, from whence they slide down the way H, each row of bottles being retarded and separated from the previous row by one of the bars I. The section G and way H are provided with parallel ribs H', by which the bottles are kept from striking each other, and the tank B is provided with one or more longitudinal partitions B', whereby various sizes or kinds of bottles may be kept separate by inserting them in proper place in the holders attached to the chains E.

To accurately adjust the roll 4, the lever 3 is divided, one part being provided with a transverse slot 13 and opening 14 and the other part with longitudinal slots 15, and the parts attached by bolts. By slacking these bolts the roll 4 may be adjusted in any direction necessary to properly engage the hooks 5. To throw the releasing-lever out of action, said lever is pivoted to the bracket 2 and provided with a link 16 at its lower end, in which link is a cam 1, mounted on a rock-shaft R'. By shifting this shaft the upper end of the releasing-lever is moved away from the path of the hooks 5, so that the roll 4 will not engage the same.

To return the plates X to closed position, lifters W are mounted on a rock-shaft R' and extend within the path of the plates X X'. A spring Q yieldingly engages an arm O' on the rock-shaft R', and when the plates X X' are engaged this spring yields and permits the lifters to swing downward to allow the plates to pass. To throw these lifters out of action, the rock-shaft R' is shifted, as hereafter described. To insure proper engagement of the lifters with the plates, tracks C', consisting of angle-bars, are adjustably attached to the frame and engage and support the chains E in proper alinement.

To throw the section G out of the way of the bottles and permit them to pass, said section is pivotally connected to the upper ends of rods G', which rods at their lower ends are pivoted to the sides of the way H and swing upward at their upper ends. The upper end of the section G is pivoted to slides 12, longitudinally movable in grooves in the sides of the way H and operated and held by connecting-rods 11, pivoted to the same and to arms 10 on a rock-shaft R. When this shaft is shifted, the slides move downward, carrying the upper end of the section G beyond the path of the bottles, and the rods G' carry the lower end of said section upward and outward above the way H.

To simultaneously operate the rock-shafts R R' R'', each shaft is provided with an arm lettered O O' O'', respectively. The arm O is connected to the arm O'' by a rod P, pivoted at each end to the respective arms to hold the same in fixed relation, and the arm O is connected to the arm O' by a rod P', pivoted to the arm O and slidable in the arm O', being limited by the spring Q at one side and a collar Q' at the other side. For convenience of operation, a rod M is pivoted to the arm O at one end and to the lever N at the other end and extends along the outside of the way H. This increases the leverage and locates the operating-lever within easy reach. By shifting this lever N, as shown in Fig. 12, the rock-shafts are all simultaneously shifted, thus throwing the releasing-lever 3, the closing-lifters W, and the section G out of action and permitting the bottles to remain in the holders to again traverse the circuit of the soaking-tank.

To prevent the bottles discharged from the way H from contacting the bottles in the tank B, a brush J is interposed below each row of bottles as they leave the way H. To operate these brushes, a number of brushes are mounted radially on a shaft J', rotated at the proper rate to bring a brush around beneath each row of bottles in succession, and as the brush turns in the tank B it sweeps the preceding row of bottles back out of the way. The shaft J is operated by sprocket-chains K and K', driven from a suitable wheel on the shaft D and having interposed gearing L to reverse the motion and properly change the speed of said chains. The bars I are attached to the chains I', extending around shafts I' I' and driven by a suitable sprocket-chain K'', actuated by a wheel on the shaft D.

For sweeping the labels, tin-foil, or other insoluble matter accumulated at the bottom of the tank A to the end thereof for convenience of removal therefrom I provide one or more brushes 9, of suitable length, to extend across the bottom of the tank A and traverse the same and provided with bottle-shaped upwardly-extending projections, whereby the brush is inserted in a bottle-holding device in place of a series of bottles. When so attached, the rigid conical segments Y at one

side and the side of the plate X at the other side form an unyielding support to keep the brush vertical. The brush thus attached will traverse the bottom of the tank, sweeping the insoluble matter thereon to the outer end of the tank, and thence passing back to the inner end of the tank and upward said brush is automatically released and passes into the rinsing-tank, where it is freed from the soaking solution and made ready to be again used as occasion may require.

In accordance with a requirement of the Office, the described means for sweeping the bottom of the tank is reserved for a separate application.

From the foregoing the operation of my device will be readily understood without further explanation.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a bottle-cleaning machine, means for holding bottles, consisting of plates having openings to receive the bottles, rigid truncated, conical segments projecting from the plates at one side of the openings, and springs, projecting from the plates at the opposite sides of said openings, and adapted to engage the necks of the bottles, substantially as described.

2. The combination of a frame, sprocket-chains, bottle-holding means attached to the chains, a hook to hold said means in closed position, a lever adapted to engage the hook, and means for adjusting said lever within or without the path of the said hook, at pleasure, substantially as described.

3. The combination of a frame, sprocket-chains, bottle-holding means attached to the chains, a hook to hold said means in closed position, a pivoted lever to engage and release the hook, an eccentric to adjust the lever, and means for adjusting the eccentric, substantially as described.

4. The combination of a frame, sprocket-chains, a plate attached in fixed relation to the chains, a second plate attached in movable relation to the said chains, a hook to hold the plates in close relation, bottle-holding means on said plates, a pivoted lever having a roll at one end adapted to engage the hook, an adjustable joint in the lever, an opening in the lever, an eccentric in the opening, and means for adjusting the eccentric, substantially as described.

5. The combination of sprocket-chains, a plate attached to said chains and in fixed relation thereto, a second plate attached to said chains and in movable relation to the first-named plate, rigid, truncated, conical segments on one plate, and springs on the other plate and located opposite the segments, substantially as described.

6. The combination of sprocket-chains, end bars having flanges rigidly attached to said chains, a plate rigidly attached to the said end bars, a second plate movably attached to

said end bars, bottle-holding means on said plates, and means for holding and releasing the movable plate, substantially as described.

7. The combination of sprocket-chains, end bars having flanges rigidly attached to said chains and having grooves in their adjacent sides, a plate rigidly attached to said end bars, a plate slidable in the said grooves, a hook on the fixed plate, a lug on the slidable plate, truncated, conical, segments on one plate, and springs on the other plate and opposite the segments, substantially as described.

8. In a bottle-cleaning machine, the combination of plates arranged in the same plane and movable toward and from each other, and having recesses in their adjacent edges, truncated, conical, segments on one of said plates, springs on the other plate opposite said segments, and means for temporarily holding said plates in close relation, substantially as described.

9. The combination of a frame, sprocket-chains, plates attached in fixed relation thereto, plates attached in movable relation thereto, means for holding said plates in close relation, means for releasing the movable plates, a lifter to engage and close the plates, a rock-shaft supporting the lifter, and a spring yieldingly holding the lifter in the path of the plates, substantially as described.

10. The combination of a frame, sprocket-chains, a plate rigidly attached to the chains, a second plate movably attached to the chains, means for holding and releasing the movable plates, a lifter to engage the movable plates, a spring yieldingly supporting the lifter in the path of the movable plates, and tracks engaging and alining the chains opposite the lifter, substantially as described.

11. The combination of a frame, sprocket-chains, end bars attached to the chains and having grooves in their adjacent sides, plates rigidly attached to the end bars, plates slidable in the grooves, hooks and lugs on the plates, means for releasing the hooks, a lifter to engage the movable plates, a rock-shaft supporting the lifter, an arm on the rock-shaft, a spring engaging the arm to hold the lifter in the path of the plates, and means for adjusting the arm to turn the lifter out of the path of the said plates, substantially as described.

12. The combination of a frame, sprocket-chains, plates rigidly attached to the chains, other plates movably attached to the chains, means for holding and releasing the movable plates, a rock-shaft, a lifter attached to the rock-shaft and engaging the movable plates, an arm on the rock-shaft, a rod, slidably engaging the arm, a collar on the rod, engaging one side of the arm, a spring on the rod engaging the other side of the arm, and means for longitudinally adjusting the rod, substantially as described.

13. In combination with a frame, sprocket-chains, and means, for holding and releasing

bottles, attached to said chains, and means for throwing the releasing mechanism out of action; a movable, inclined section to receive the bottles, pivoted rods supporting the lower
 5 end of the section, movable slides pivoted to the upper end of the section, and means for adjusting the slides, substantially as described.

14. In combination with a frame, sprocket-chains, and means for holding and releasing
 10 bottles attached to said chains, and means for throwing the releasing mechanism out of action; a movable, inclined section to receive the bottles, pivoted rods supporting the lower
 15 end of the section, slides pivoted to the upper end of the section, a rock-shaft, arms on the rock-shaft, rods connecting the arms and slides, and means for rotating and holding the rock-shaft, substantially as described.

20 15. In combination with a frame, sprocket-chains, having bottle-holding means attached, and means for releasing the bottles from the same, and a movable section to receive the bottles; a rock-shaft adapted to throw the releasing means out of action, a rock-shaft connected to the movable section, to move the
 25 same out of action, arms on the rock-shafts, a rod connecting the arms and means for adjusting said arms, substantially as described.

30 16. The combination of a frame, sprocket-chains, bottle-holding means, attached to the chains, hooks to hold and release said means, a lever to engage and release the hooks, a rock-shaft to move the lever out of action,
 35 a lifter to close the bottle-holding means, a rock-shaft to move the lifter out of action, a movable section to receive the bottles, a rock-shaft to move the section out of the path of the bottles, and means for simultaneously
 40 operating said rock-shafts, substantially as described.

17. The combination of a frame, movable bottle-holders, means for moving the bottle-
 45 holders, hooks to release the bottles from the holders, a pivoted lever to operate the hooks, a rock-shaft and eccentric to operate the lever, a lifter to close the bottle-holders, a rock-shaft and spring to operate the lifter, a movable section to receive the bottles, a rock-
 50 shaft, arms, and connecting-rods to move the section, an arm on each rock-shaft, to adjust and hold the same, and means for connecting the arms to simultaneously move the same, substantially as described.

55 18. In a bottle-cleaning machine, the combination of a frame, movable bottle-holders, chains to which the holders are attached, a movable section to receive the bottles from the holders, a rock-shaft, means, for releasing the bottles, operated by the rock-shaft, a
 60 second rock-shaft, means for closing the bottle-holders operated by said rock-shaft, a third rock-shaft to move the section, an arm

on each rock-shaft, a pivoted lever, and connecting-rod to move one of the arms, and rods
 65 connecting said arm to the other two arms, substantially as described.

19. In a bottle-cleaning machine, a tank to hold a soaking solution, a tank to hold rinsing-water, sprocket-chains and bottle-holding
 70 means for passing bottles through the soaking solution and elevating the same, means for releasing the bottle-holding means, a way between said tanks to convey bottles, and having longitudinal ribs to keep the bottles
 75 separate, and one or more longitudinal partitions in the rinsing-tank, for the same purpose, substantially as described.

20. The combination of a tank to hold a soaking solution, a tank to hold rinsing-water, a way to convey bottles to the latter tank,
 80 means for passing bottles through the soaking solution, and discharging the bottles upon the way, and movable brushes interposed between the bottles, as they are discharged from
 85 the way, substantially as described.

21. The combination of a tank to hold a soaking solution, a tank to hold rinsing-water, an inclined way from the soaking-tank
 90 to the rinsing-tank, means for passing bottles through the soaking solution and discharging them in transverse rows upon the way, transverse bars traversing the way between the rows of bottles, a moving brush interposed between the respective rows of bottles
 95 as they leave the way, and means for moving the brush, substantially as described.

22. The combination of a tank to hold a soaking solution, a tank to hold rinsing-water, an inclined way between the tanks, means
 100 for passing bottles through the soaking solution and discharging them in transverse rows upon the way, longitudinal ribs on the way, transverse bars traversing the ways between the respective rows of bottles, means
 105 for moving the bars, a rotative shaft near the lower end of the way, radial brushes attached to the shaft and adapted to pass between the respective rows of bottles as they leave the way, and means for rotating the shaft, sub-
 110 stantially as described.

23. In a bottle-cleaning machine, a tank to contain a soaking solution, horizontal tracks attached to the sides of the tank, sprocket-chains traversing the tracks, rolls in the
 115 chains engaging the tracks and supporting the chains, means for moving the chains, and bottle-holding means attached to the chains, substantially as described.

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

ADOLPH GOETZ.

Witnesses:

L. V. MOULTON,
 PALMER A. JONES.