

No. 813,012.

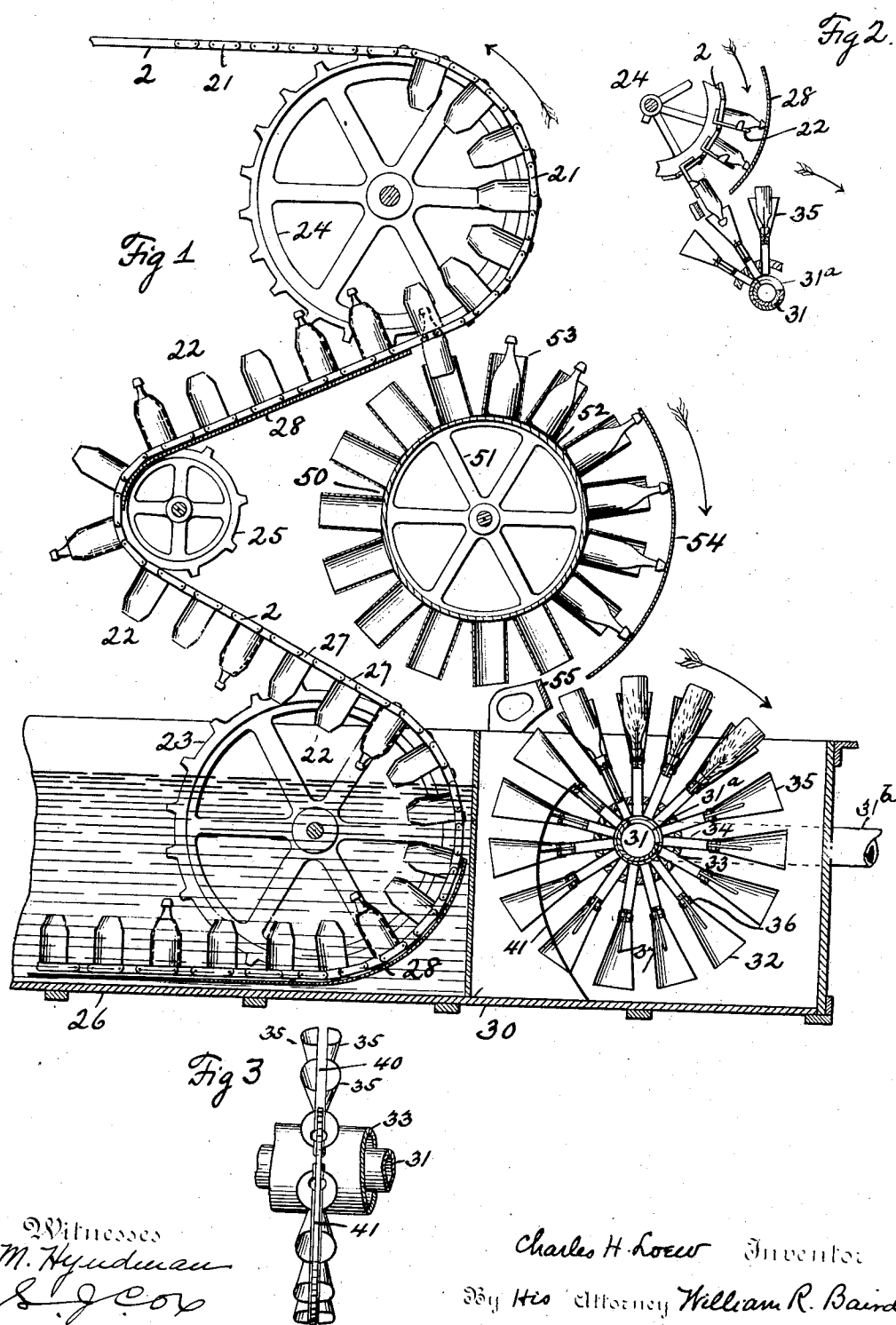
PATENTED FEB. 20, 1906.

C. H. LOEW.
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APPLICATION FILED APR. 7, 1903.

2 SHEETS—SHEET 1.



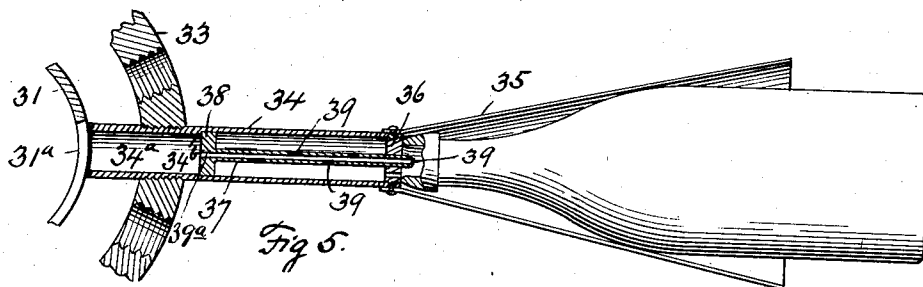
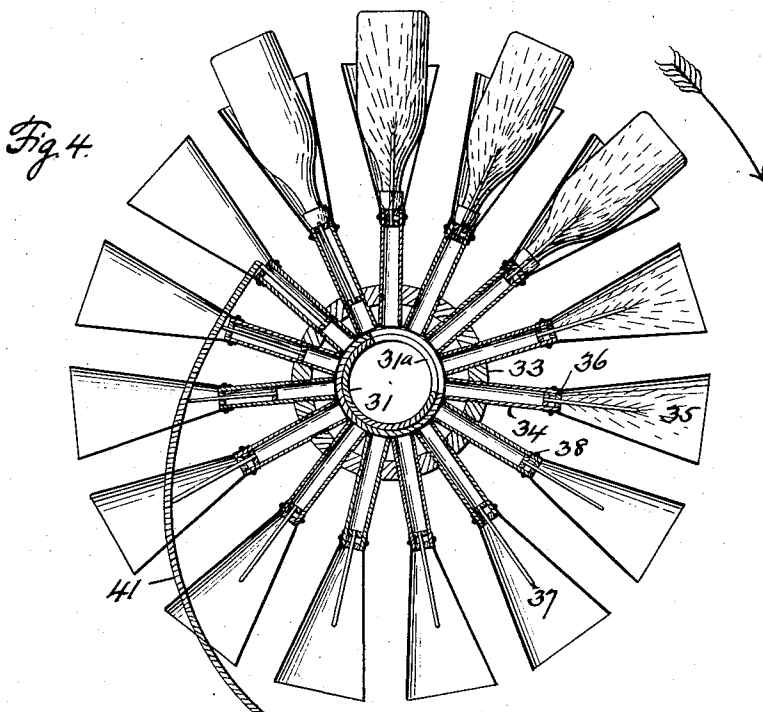
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Witnesses
M. Hyndman
S. J. Cox.

Charles H. Loew Inventor
By His Attorney William R. Baird

UNITED STATES PATENT OFFICE.

CHARLES H. LOEW, OF LAKEWOOD, OHIO.

MACHINE FOR CLEANING BOTTLES.

No. 813,012.

Specification of Letters Patent.

Patented Feb. 20, 1906.

Application filed April 7, 1903. Serial No. 151,457.

To all whom it may concern:

Be it known that I, CHARLES H. LOEW, a citizen of the United States, and a resident of Lakewood, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Machines for Cleaning Bottles, of which the following is a specification.

My invention relates to machines for cleaning bottles; and its novelty consists in the construction and adaptation of the parts, as will be more fully hereinafter pointed out. In bottle-washing machines of the class described in Letters Patent of the United States No. 690,563, issued to me January 7, 1902, as the assignee of William B. Cobb, there is comprised mechanism for carrying the bottles through a cleansing solution and discharging them (after emptying their contents) automatically and by gravity into a second tank. It is customary with bottlers after the bottles have been soaked, and thus cleansed, to rinse them upon a separate machine made for that purpose, which introduces into their interior a revolving brush and one or more jets of water. To do this requires the labor of one or two men and a costly machine.

In another application hitherto filed by me, (Serial No. 149,197, filed March 23, 1903,) I have shown, described, and claimed an apparatus having many features in common with the apparatus shown in the present case and having for an important purpose thereof the provision of a machine which saves the labor and machinery incident to the rinsing of the bottles in the above-mentioned manner and automatically conveys the bottles from the carrier of the soaking mechanism to a rinsing or spraying mechanism, whereby they will be thoroughly rinsed and sprayed internally without having been handled.

The present invention more particularly relates to means for retracting the discharge means of the bottle-rinsing mechanism from the bottles.

In the drawings, Figure 1 is a view of the delivery end of a bottle-cleaning apparatus comprising my invention, showing the same partly in side elevation and partly in vertical longitudinal section, the carrier-chain and its pockets being shown in elevation, while the other parts are shown in section. Fig. 2 is a small detail of a direct-delivery mechanism.

Fig. 3 is an end view of the spraying-wheel. Fig. 4 is an enlarged side view and partial section of the spraying-wheel. Fig. 5 is a central section of a sprinkling-stem and its connection.

In the drawings, 2 represents the endless carrier of a bottle-washing machine of the class above referred to.

21 represents the links of its chain.

22 22 are the bottle-pockets.

23 and 24 are sprocket-wheels adapted to engage the carrier 2.

25 is a sprocket-wheel or idler, whereby the direction of the carrier is reversed, and 26 is the tank. It will be understood that the wheels are arranged in pairs, mounted in suitable bearings on each side of the machines and driven from any suitable source of power, and that the pockets 22 are arranged on transversely-extending plates 27, secured horizontally across between the chains. 28 28 are guards to prevent the bottles from falling from the carrier, which very slowly progresses. Alongside of the tank 26 is placed a second tank or compartment 30, either made integral with the tank 26 or detachable therefrom, as may be convenient. Mounted in suitable bearings in this compartment is a hollow shaft 31, provided with a longitudinal opening or series of openings 31^a and connected with a suitable source of supply of rinsing fluid through a pipe 31^b or other suitable means. Surrounding this shaft and adapted to rotate thereon is a sprinkling-wheel 32, comprising a hub 33, provided with hollow spokes 34, which terminate at their extremities in conical flaring mouths 35. At the end of each spoke 34 and the bottom of each mouth 35 is a transverse diaphragm 36, provided with a central aperture to permit of the passage of a hollow sprinkling-stem 37. This stem is provided at its inner end with a plunger or piston 38, fitting snugly within the hollow spokes 34 and at its extremity and along its length with apertures 39 to permit of the outward passage of the jets of water, and its interior has communication with the water-space 34^a in the spoke, preferably through an aperture 39^a in said piston, as shown. The mechanism thus far described is shown, described, and claimed in my previous application above referred to. Each spoke and its mouth is

made of two pieces, with a central vertical longitudinal slot 40 between them to admit of the reception of a cam-returning plate 41, a series of which is secured in any suitable manner within the compartment 30 and which plates gradually curve inward toward the center of the wheel. Intermediate the discharge-wheel 24 and the sprinkling-wheel 32 and suitably mounted in bearings (not shown) is a reversing-wheel 50, which is also claimed in my said previous application and comprises a framework 51, a cylinder 52, and a series of open bottle-pockets 53 radiating therefrom. A curved guard 54 is so mounted as to prevent the escape of the bottles from the wheel 50, except at predetermined points. A similar guard 55 is mounted on the tank 30 to prevent the further movement of the bottles toward the left and to guide them surely into the mouths of the spraying-wheel.

The operation of the device described is as follows: The bottles contained within the pockets 22 of the carrier 2 are slowly moved toward the discharge-wheel 24 by the forward motion of the carrier. They are prevented from falling from the open pockets by the guard 28, against which they rest as they move toward this wheel. Finally reaching the end of the guard 28 they fall therefrom and into the pockets 53 of the reversing-wheel 50, the movement of this latter wheel being timed to coincide with that of the discharge-wheel 24, so that the pockets on the reversing-wheel are ready to receive the falling bottles. This reversing-wheel moves slowly from left to right and the bottles finally travel around with it, being prevented from falling out by the guard 54 until they reach the end of the guard 54 and fall bottom upward into the mouths 35 of the sprinkling-wheel 32, the guard 55 assisting to guide them in the proper direction. As the bottles fall into the conical mouth 35 of the spoke 34 mouth downward they rest upon the diaphragm 36, the end of the stem 37 just entering the bottle. As the sprinkling-wheel 32 slowly rotates a point is reached where the hollow spoke 34 coincides with the opening 31^a in the hollow shaft 31. In the meantime when the machine was started the hollow shaft had been coupled to a source of water-supply under pressure. Consequently as soon as the opening 31^a is reached the water rushes into the hollow spoke 34. It first fills the space 34^a and then pushes forward or upward the plunger or piston 38 until the latter reaches the end of its stroke and impinges against the lower side of the diaphragm 36. In the meantime the water has filled the sprinkling-stem 37 and having nowhere else to go escapes in jets through the apertures 39. As it is easier for the water to push the piston 38 than escape through the

apertures 39, practically the jets do not begin until the stem 37 is quite within the bottle. The bottle is thus given a thorough sprinkling internally. As the wheel continues to revolve the sprinkling continues until the hollow spoke 34 no longer communicates with the aperture 31^a and the inrush of water ceases. Shortly after reaching this point the bottle drops from the wheel by gravity, the water in the tank 30 affording a cushion on which to receive it. It is now necessary to return the sprinkling-stems 37 to their original position within the spokes 34, because if this were not done the bottles could not be guided accurately into place. For this purpose I provide the series of cam-returning plates 41. These are set up on edge within the tank. As the wheel continues to revolve these come within the aperture or slit 40 and striking the head of the stem 37 drive it back into position. Within the spoke 34 is an annular shoulder 34^b to limit the backward motion of the piston 38.

It will be observed that the construction described applies to an apparatus in which the carrier is so arranged that the bottles are delivered bottom downward therefrom when passing the wheel 24. Hence the necessity for the reversing-wheel 50, because the bottles must be reversed and delivered to the sprinkling-wheel bottoms upward and necks downward. In Fig. 2 I have indicated a construction where the carrier is so constructed as to deliver the bottles bottoms upward. In such case the bottle-holder is of different construction and needs no special description at this time except to say that the bottles are delivered by gravity as the carrier moves around the delivery-wheel 24, only their mouths are downward. In such case naturally the reversing-wheel is not needed.

What I claim as new is—

1. A bottle-rinsing mechanism, comprising a movable bottle-carrier, reciprocatorily-mounted fluid-discharge devices which partake of the movement of said carrier and are adapted to be projected into the bottles thereon, and retracting means for said discharge devices arranged in the path traversed by the same in their movement with said carrier.

2. A bottle-rinsing mechanism comprising a rotating wheel having bottle-receptacles, hollow reciprocatory fluid-discharge stems carried by said wheel and adapted to be projected into the bottles in said receptacles, means for supplying said stems with bottle-rinsing fluid, and means arranged in the path of movement of said stems for automatically retracting the same when they reach a predetermined place in the travel of the wheel.

3. A bottle-rinsing mechanism comprising a rotative wheel adapted to carry the bottles

to be rinsed, hollow reciprocatory fluid-discharge stems carried by said wheel, means by which said stems are projected into the interiors of bottles by the pressure of rinsing fluid, and a cam-plate arranged to retract said stems when they reach a predetermined place in the travel of said wheel.

4. A bottle-rinsing mechanism comprising a rotative wheel having bottle-receptacles provided with side apertures, a cam-plate projecting into said apertures, reciprocative fluid-discharge means engaged by said cam-plates and moved thereby in one direction of their reciprocation, and means through which said fluid-discharge means are supplied with rinsing fluid.

5. A bottle-rinsing mechanism comprising a rotative wheel having bottle-receptacles, hollow fluid-discharge stems carried by said wheel and mounted to have movement therein, said stems having pistons, means for supplying rinsing fluid under pressure to the interior of said discharge-stems and to said pistons at a predetermined place in the travel of said wheel, whereby the stems are advanced to within the interiors of the bottles being rinsed, and relatively stationary means operating to retract said stems at a predetermined place in the travel of said wheel.

6. A bottle-rinsing mechanism comprising a rotative wheel having bottle-receptacles provided with side apertures, hollow fluid-discharge stems carried by said wheel and mounted to have movement therein and arranged in line with said receptacles, said stems having pistons, means for supplying rinsing fluid under pressure to the interior of said discharge-stems and to said pistons at a predetermined place in the travel of said wheel, and a cam-plate adapted to project into said apertures and to engage the ends of the discharge-stems and to retract said stems at a predetermined place in the travel of the wheel.

7. In a machine of the class described, a sprinkling-wheel comprising means for receiving the bottles mouth downward, means for introducing into the interior of the bottles jets of water, comprising a hollow hub supplied with water under pressure, hollow sprinkling-stems radiating therefrom and communicating therewith, said stems having plungers adapted to be forced forward by the pressure of the water to thereby project the stems into the bottles, and means for pushing the stems and plungers into place after use comprising a retracting cam-plate substantially as described.

8. In a machine of the class described, a hollow shaft adapted to be connected with a source of supply of rinsing fluid under pressure and having an aperture for the discharge

of the fluid therefrom, a rinsing-wheel mounted to rotate on said shaft and provided with bottle-receptacles and with hollow spokes which are successively brought into communication with the discharge-aperture in said shaft, hollow fluid-discharge stems mounted in said spokes and adapted to be advanced therefrom and into the bottles under the control of the water in said spokes, and stationary retracting means engaged with said stems at a predetermined place in the travel of said wheel.

9. In a machine of the class described, a hollow shaft adapted to be connected with a source of supply of rinsing fluid under pressure and having an aperture for the discharge of the fluid therefrom, a rinsing-wheel mounted to rotate on said shaft and comprising hollow spokes which are successively brought into communication with the discharge-apertures in said shaft and are provided with bottle-receptacles, hollow fluid-discharge stems mounted in said spokes and adapted to be advanced therefrom and into the bottles by the pressure of the water in said spokes, and a stationary cam-plate arranged to retract said stems at a predetermined place in the travel of said wheel.

10. A traveling bottle carrying and rinsing means comprising fluid-discharge devices which are movable toward and from the bottles being carried, and stationary means for automatically retracting said discharge devices at a predetermined place in the travel of the carrier.

11. A bottle-rinsing apparatus comprising a traveling bottle-carrier having fluid-discharge devices provided with means whereby they are advanced toward the bottles by the pressure of the rinsing fluid, means by which the supply of said fluid is automatically controlled by the movement of the bottle-carrying means, and stationary means for automatically retracting said discharge devices at a predetermined place in the travel of said carrying means.

12. A bottle-washing device comprising a rotative bottle-carrying means, fluid-discharge devices carried thereby and mounted to reciprocate to and from the bottles, and means whereby said fluid-discharge devices are reciprocated, comprising stationary retracting devices engaged with said discharge devices at a predetermined place in the rotation of said carrying means.

13. In a bottle-washing apparatus, the combination with bottle-soaking means having a traveling carrier provided with bottle-holders, a bottle-rinsing means comprising a wheel having bottle-receptacles, fluid-discharge devices carried by said wheel and movable toward and from the bottles in said re-

ceptacles, means by which said discharge devices are advanced toward the bottles at a predetermined place in the travel of said carrier by the pressure of the rinsing fluid, stationary means by which said discharge devices are automatically retracted from said bottles at a predetermined place in the travel of said carrier, and means for delivering the bottles automatically neck downward into

the receptacles of the rinsing apparatus from the carrier of the soaking means.

Witness my hand, this 4th day of April, 1903, at the city of Boston, county of Suffolk, and State of Massachusetts.

CHARLES H. LOEW.

Witnesses:

C. C. ROTE,

GEORGE O. G. COALE.