

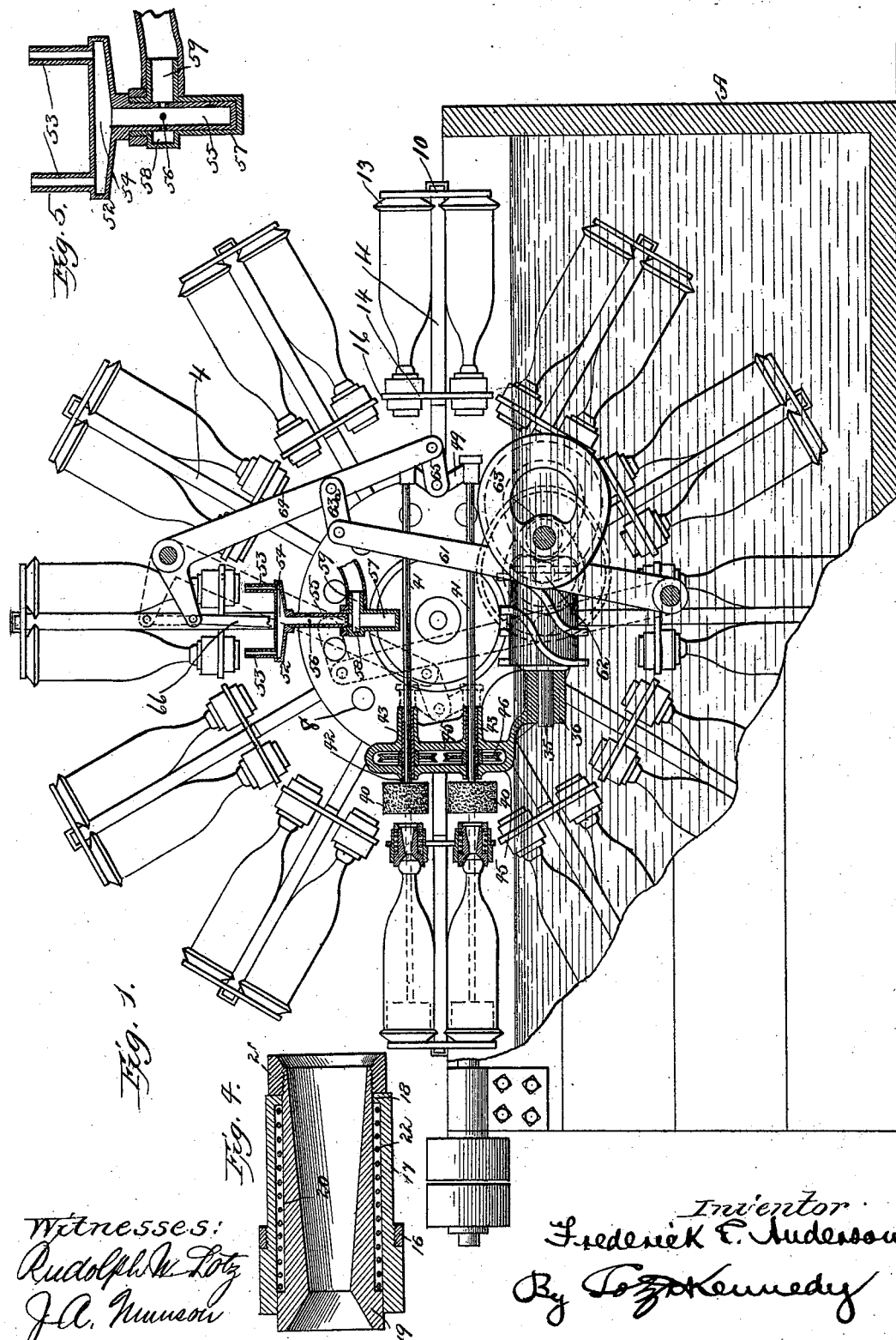
(No Model.)

2 Sheets—Sheet 1.

F. E. ANDERSON.
BOTTLE WASHER.

No. 524,053.

Patented Aug. 7, 1894.



Witnesses:
Rudolph K. Lotz
J. A. Munson

Inventor
Frederick E. Anderson
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(No Model.)

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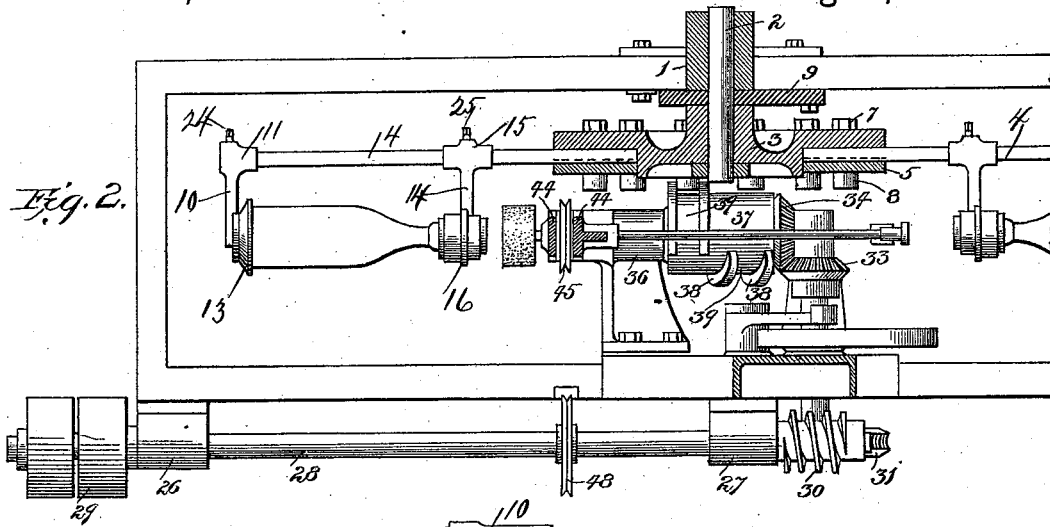
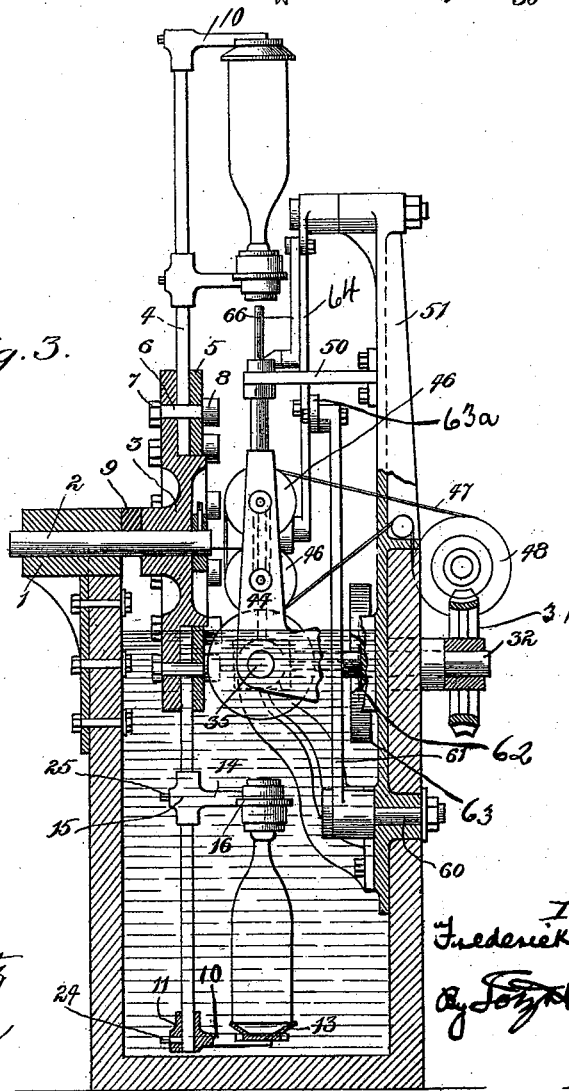
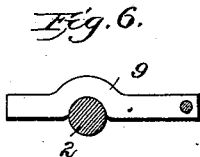


Fig. 3.



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UNITED STATES PATENT OFFICE.

FREDERICK E. ANDERSON, OF CHICAGO, ILLINOIS.

BOTTLE-WASHER.

SPECIFICATION forming part of Letters Patent No. 524,053, dated August 7, 1894.

Application filed February 14, 1893. Serial No. 462,278. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK E. ANDERSON, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Bottle-Washing 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.

This invention relates to a novel construction in bottle washing machines, the object being to provide a device of this character that will be simple and durable in construction and efficient in operation.

The invention consists in the features of construction and combinations of parts hereinafter fully described and specifically claimed.

In the accompanying drawings illustrating my invention,—Figure 1 is a side elevation of a bottle washing machine constructed in accordance with my invention, partly in section for convenience of illustration. Fig. 2 is a top plan view also partly in section. Fig. 3 is a vertical cross section partly in elevation. Fig. 4 is a central vertical section of the device for receiving the mouth of a bottle. Fig. 5 is an enlarged detail section of the nozzle for spraying water into the bottles. Fig. 6 is a detail view of the shaft and stop for holding the same against longitudinal movement.

Referring now to said drawings, A indicates a tub or trough to contain the water through which the bottles are to be passed and upon which the operative parts of my invention are supported. In accordance with the principle involved by my invention I employ a revoluble wheel upon which the bottles are placed and which in turning carries the bottles first through the water in the tub and then in front of a mop or brush, at which point the movement of the bottle is arrested a sufficient length of time to permit the mop or brush to be inserted and withdrawn from the bottle, and then the said bottle is moved again and further arrested in front of a nozzle from which a stream of water is thrown into the bottle to rinse it out, after which the bottle moves forward again and is removed by the operator. The construction of said wheel is

as follows: A journal bearing 1 is secured to one of the sides of the tub about midway between the ends thereof and supports a short shaft 2 that extends inwardly over the tub and upon which is secured the wheel 3. Upon the wheel 3 are mounted a plurality of radial arms 4 that carry at their outer end portions the bottle holding devices hereinafter fully described. The said arms 4 are disposed at equal distances about the wheel 3 and any convenient number may be used. The said arms are secured to the wheel by means of a ring 5 between which and the side of the wheel said arms are located and held rigidly in position by bolts 6 that pass through the wheel and ring 5 and are securely held by nuts 7 on the outer face of the wheel. The inner ends of said bolts 6 are provided with cylindrical heads 8 which stand out from the inner face of the ring 5, as clearly shown in Figs. 2 and 3. These cylindrical heads 8 provide what I term teeth and serve as a means for turning the said wheel 3 as more fully described hereinafter. In the position shown in Figs. 2 and 3 this said wheel is shown in its normal position or in the position it will occupy when the machine is in operation, but it will be noted, however, that it may be desirable to move the said wheel and the devices carried thereby outwardly, for cleaning the machine or other purposes, and for this reason I provide a movable stop 9 that is pivoted to the tub or trough and is arranged to swing into the position shown in Figs. 2 and 3, between the hub of the wheel 3 and the journal bearing 1, and when in this position it will be noted that said stop 9 will hold the wheel 3 at the inner limit of its movement, but that when said stop 9 is thrown outwardly, that said wheel 3 and parts covered thereby can be moved outwardly to the extent of the thickness of said stop which is sufficient to remove the teeth 8 from engagement with the gearing with which they intermesh and thus the wheel will be free to turn on its axis.

The construction of the bottle holding devices carried by the arms 4 is as follows: Each of said arms 4 is provided with devices for holding two bottles, which are duplicates of each other, and are carried one at the outer end of the arm and one about midway between its ends. The device at the outer end

of the arm 4 is to receive the bottom of the bottle and consists of a finger 10 connected with the arm 4 by sleeve 11 and carrying at its outer end two conical shaped plates 13 that receive the bottom of the bottle as shown in Fig. 3. The device for receiving the mouth of the bottle is carried by an arm 14 connected with the arm 4 by a sleeve 15 and carrying at its outer end two rings 16 that are located opposite the plates 13 before referred to. The said ring 16 is interiorly screw-threaded to receive a collar 17 that screws therein from the outer side of the same, which collar 17 is provided at its inner end with an inwardly projecting flange 18. Located within the collar 17 is a nozzle or stop 19 which at its outer end fits nicely within the outer end of said collar, but which is reduced along its main body portion, as at 20, to fit within the inwardly projecting flange 18 on said collar 17. The said nozzle 19 projects beyond the other end of the collar 17 and receives a screw-threaded ring 21 which forms an outer forwardly facing shoulder to encounter the inner end of the flange 18 on the collar 17. Located within the chamber or opening formed between the nozzle 19 and collar 17 is a spring 22 that bears at its opposite ends against the shoulder 23 between the enlarged and reduced portions of the nozzle 19 and against the inwardly projecting flange 18 of said collar 17. This spring serves to hold the nozzle 19 under tension at the outer limit of its movement with the ring 21 encountering the rear face of the flange 18.

The outer end of the nozzle 19 is conical or cup shaped to receive and make a good connection with the mouth of the bottle, while the inner end of said nozzle flares gradually outward, as shown in Fig. 4, to receive the stream of water to be sprayed into the bottle. It will thus be seen that by reason of the yielding nozzle 19 that the bottle holding devices are adapted to accommodate the bottles as they are commercially made, for it will be noted that although bottles may be of the same kind yet they vary in length, and thus by reason of the yielding nozzles these bottles of different length can be accommodated and held in position with certainty. Furthermore, the machine is adapted for use with bottles of different size, since, by reason of the set screws 24 and 25 that serve to hold the sleeves 11 upon the arms 4, the distance between said arms can be regulated so that the holding devices can accommodate either pint or quart bottles, or bottles of other lengths. It will, of course, be understood that the adjustability of the bottle holding devices upon the arms can be secured in various ways and that the construction illustrated can be varied as found desired.

I will now proceed to describe the construction of the devices for rotating the said wheel 3. Mounted in bearings 26 and 27 on the other side of the tub from the wheel 3 is a shaft 28 having suitable driving pulleys 29.

The inner end of said shaft is provided with a worm 30 that intermeshes with the worm wheel 31 carried by a shaft 32 mounted in suitable bearings on said tub. The said shaft 32 extends into the tub, is suitably supported by bearings therein and carries at its inner end a miter gear 33 that intermeshes with a miter gear 34 carried by a shaft 35 that is supported in a bearing 36 projecting from the side of the tub. The said shaft 35 carries a cam disk 37 having ribs 38 that form a cam groove 39. The said cam groove 39 is so located that the teeth 8 of the wheel enter therein during the revolution of the said cam cylinder, and the shaft of the said cam groove 39 is such with relation to the position of the teeth 8 upon the wheel 3 that, as soon as the said cam groove has acted upon one of the said teeth and drops the same at one end, the other end of the cam groove takes in the succeeding tooth upon the wheel 3. The rotation of the wheel 3 is caused by said cam groove 39 and the said groove is so formed that it serves to move the wheel 3 the distance between two of the radiating arms 4 thereon. The rotation of the wheel is caused when one of the teeth first enters the cam groove, said groove being inclined at the start, which obviously serves to move the wheel, after which the said cam groove is straight which causes the wheel to remain in a stationary position until the tooth leaves the end of the straight portion of the cam groove and another tooth enters the inclined portion. At such time as the wheel remains stationary by reason of the passage of the tooth through the straight portion of the cam groove, the brushes or mops are passed into the mouth of the bottle and the spray of water is also injected into the bottles during such arrest in their movement.

The brushes or mops to be inserted and to be withdrawn from the bottles during their arrest and movement are indicated by 40, and it will be noted that I employ a pair because the bottles are arranged in pairs. The said mops are carried by spindles 41 that pass through bearing sleeves 42 mounted in bearings 43 upon a bracket 44 on the tub or trough. The said spindles 41 have a spline and feather connection with said sleeves 42, so that while they will be caused to rotate with the sleeves 42 they can move longitudinally with relation thereto. Mounted upon the sleeves 42 between walls 45 of the bracket of the bearing 43 are pulleys 46, and around these pulleys 46 is trained a cord or belt 47 that also passes over a driving pulley 48 on the driving shaft 28 upon the tub. In this way it will be seen that the said pulleys are driven from the shaft 28 and through their spline and feather connection with the spindles 41 serve to rotate said spindles, while at the same time said spindles are free to move longitudinally. The said spindles are connected at their rear ends with a yoke 49.

Since the devices for operating the spindles 41 and for controlling the current of wa-

ter to be sprayed into the bottles operate in unison, I will first proceed to describe the construction of valve and nozzle for shooting the current of water, and then describe the devices for operating the same. Mounted upon an arm 50 projecting inwardly from a standard 51 from the side of the tub is a nozzle 52 having two nipples 53 located the same distance apart as the distance between two bottles when they are held by the bottle holding devices of the machine. The said nipples 53 communicate with a common chamber 54 which in turn communicates with a pipe or passage 55 which between its ends is provided with a series of perforations 56. Surrounding the said pipe or passage 55 is a sliding collar 57 that fits closely thereon and is provided with an enlargement to form a chamber 58, which chamber communicates with a nozzle 59 that can be connected by means of a hose or flexible pipe with a source supplying water. It will be noted therefore that when the sliding sleeve 57 is depressed so that the chamber 58 is moved away from the perforations 56, that the supply of water to the pipe or passage 55 will be cut off, but that on the other hand when sleeve 57 is elevated to bring the chamber 58 opposite the perforations 56 that a communication will be established between the source of water supply and the interior of the tube 55, in an obvious manner, which of course permits the water to flow from the nipples 53.

The devices for operating the spindles 41 and the nozzle 52 are constructed as follows: Pivoted upon a pin 60 upon the side of the tub is a vibratory arm 61 that rises therefrom and is provided with a lateral projection 62 that engages a side grooved cam 63 mounted upon the shaft 32. The shape of said cam is such that the vibratory arm 61 will be held immovable for a certain length of time and then rocked on its pivot and brought back to its normal position as shown in Fig. 1. The upper end of the vibratory arm 61 is connected by means of a link 63^a with a bell crank lever 64 that is pivoted upon the standard 51 and has its lower end connected by a link 65 with the yoke 49 of the spindles 41, while its other or short end is connected by means of a bar 66 with the sliding sleeve 57 of the nozzle 52. When the cam is in such a position that the vibrating arm 61 is held immovable the lever 64 stands in such a position that the spindles are at the rearward limit of their movement and the sliding sleeve 57 is depressed. At the same time, moreover, the cam cylinder 37 is turning the wheel 3, as before described. At the moment that the teeth 8 of the wheel 3 enter the straight portion of the cam groove 39 and the wheel stops, a pair of bottles will be located opposite the ends of the spindles, while another pair of bottles will be located opposite the nipples 53. The cam 63 then comes into play and moves the vibratory arm 61 and through the intermediacy of the gearing before described the spindles are

advanced and carry the mops 40 into the bottles, while at the same time the water supply to the nozzle is open and allows a stream of water to issue from the nozzles into the bottles. As the cam 63 continues to revolve the spindles are retracted to withdraw the mops from the bottles while the supply of water to the nozzle 52 is cut off, and then at such time the low part of the cam 63 is reached and the vibratory arm becomes at rest. The cam cylinder 37 then takes in another tooth of the wheel 3 and moves such wheel sufficiently to bring another pair of the bottles in front of the mops and in front of the nipples, and then the operation continues as before.

It will be seen from the foregoing that the operation of my bottle washing machine is continuous, and that all that is necessary is for the operator to remove the bottles after they have been sprayed and insert another pair in their place. The bottles are first carried down into the tub where they are filled with water, are lifted out of the tub, whereupon they lose about half their water, have their insides washed out with a mop or brush, are then elevated and drained of all the water remaining therein, and finally have their insides sprayed with fresh water. The whole operation is continuous as long as the bottles are fed upon the rotating wheel 3.

I claim as my invention—

1. In a bottle washing machine, an upright revoluble wheel carrying on one side thereof a plurality of bottle holders, each of said bottle holders consisting of an outer plate rigidly secured to said wheel, an inner collar rigidly secured to said wheel, a sliding nozzle 19 located within said collar 17, and a spring 22 located between said collar 17 and nozzle 19, substantially as described.

2. In a bottle washing machine, a tub or trough, a revoluble wheel carrying bottle holders mounted upon said tub or trough, teeth upon said wheel, a longitudinally movable and revoluble spindle carrying a brush and located opposite the path of said bottle holders, devices for rotating said spindle, a nozzle located opposite the path of said bottle holders, a source for supplying water to said nozzle, a valve controlling said supply, and a cam 63 geared to and controlling the said valve and the longitudinal movement of said spindle, and geared to a cam 37 that engages said teeth and serves to give an intermittent rotary movement to said wheel, said parts being constructed practically as described that the spindle is moved and valve opened during the intervals the wheel is at rest, substantially as described.

3. In a bottle washing machine, a revoluble wheel carrying bottle holders, a rotating spindle mounted in suitable bearings opposite the path of the bottle holders and carrying a mop or brush, a rotating cam 63, a vibratory lever 61 engaged by said cam and connected with said rotating spindle, and devices for imparting an intermittent motion to said wheel

geared to said cam 63, said parts being constructed practically as described that the spindle is moved longitudinally during the intervals the wheel is at rest, substantially as described.

4. In a bottle washing machine, a revoluble wheel carrying bottle holders, a nozzle located opposite the path of said bottle holders, a valve for controlling the supply of water to said nozzle, a rotating cam 63, a vibratory lever 61 engaged by said cam and connected with said valve, and devices for imparting an intermittent rotary motion to said wheel geared to said cam 63, said parts being constructed practically as described that the said valve is open during the intervals the wheel is at rest, substantially as described.

5. In a bottle washing machine, a tub or trough, a revoluble wheel supported thereon and carrying a plurality of bottle holders, a cam 37 geared to said wheel to impart an intermittent rotary motion thereto, longitudi-

nally movable rotating spindles carrying mops or brushes located opposite the path of said bottle holders, nozzles located opposite the path of the said bottle holders and provided with a valve for controlling the supply of water thereto, a rotating cam 63 geared to said cam 37, a vibratory lever 61 engaged by said cam 63, a bell-crank lever 64 connected with said vibratory lever 61 and with the said spindles and said valve, and devices for rotating said cam, said parts being constructed practically as described that the cam 63 will move said spindles and open said valve during the intervals the wheel is at rest, substantially as described.

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

FREDERICK E. ANDERSON.

Witnesses:

HARRY COBB KENNEDY,
RUDOLF W. LOTZ.