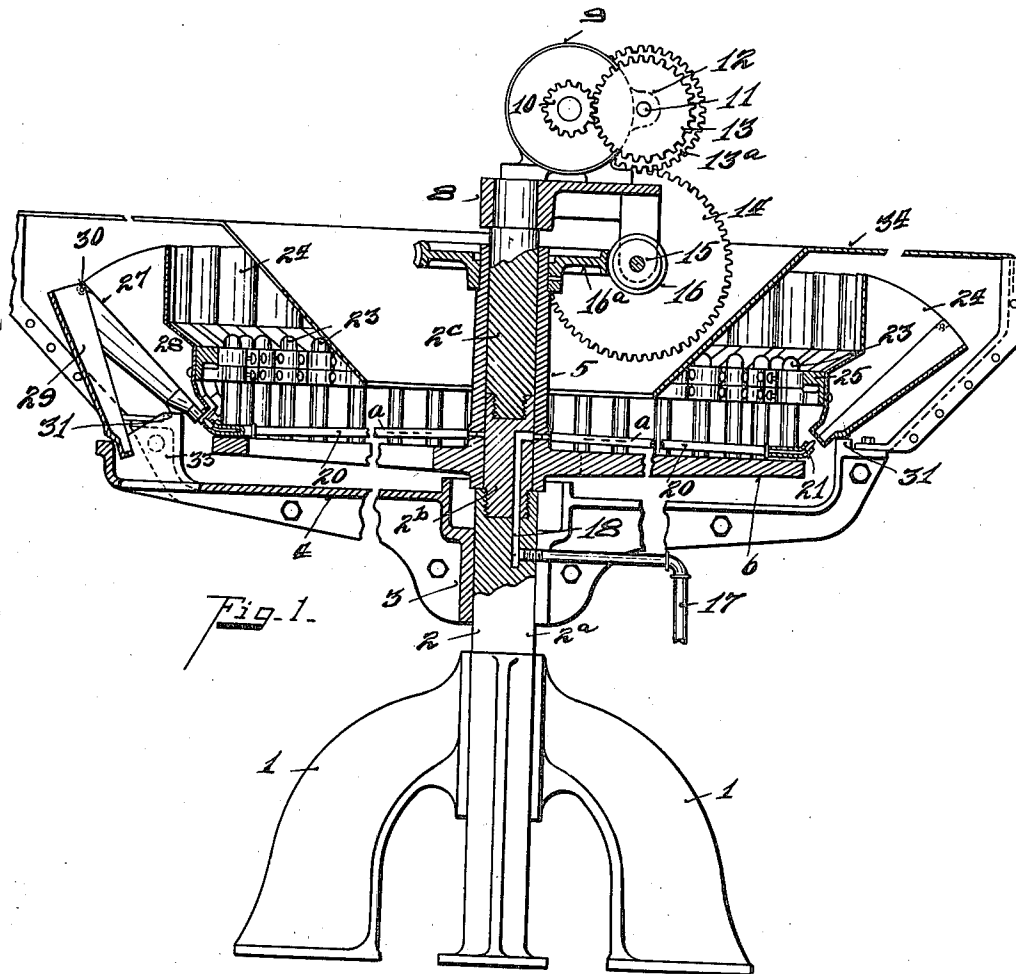


W. L. BODMAN.
BOTTLE WASHING MACHINE.
APPLICATION FILED MAR. 20, 1909.

966,404.

Patented Aug. 2, 1910.
3 SHEETS—SHEET 1.



Witnesses
Oliver B. Kaiser
Robert Graf

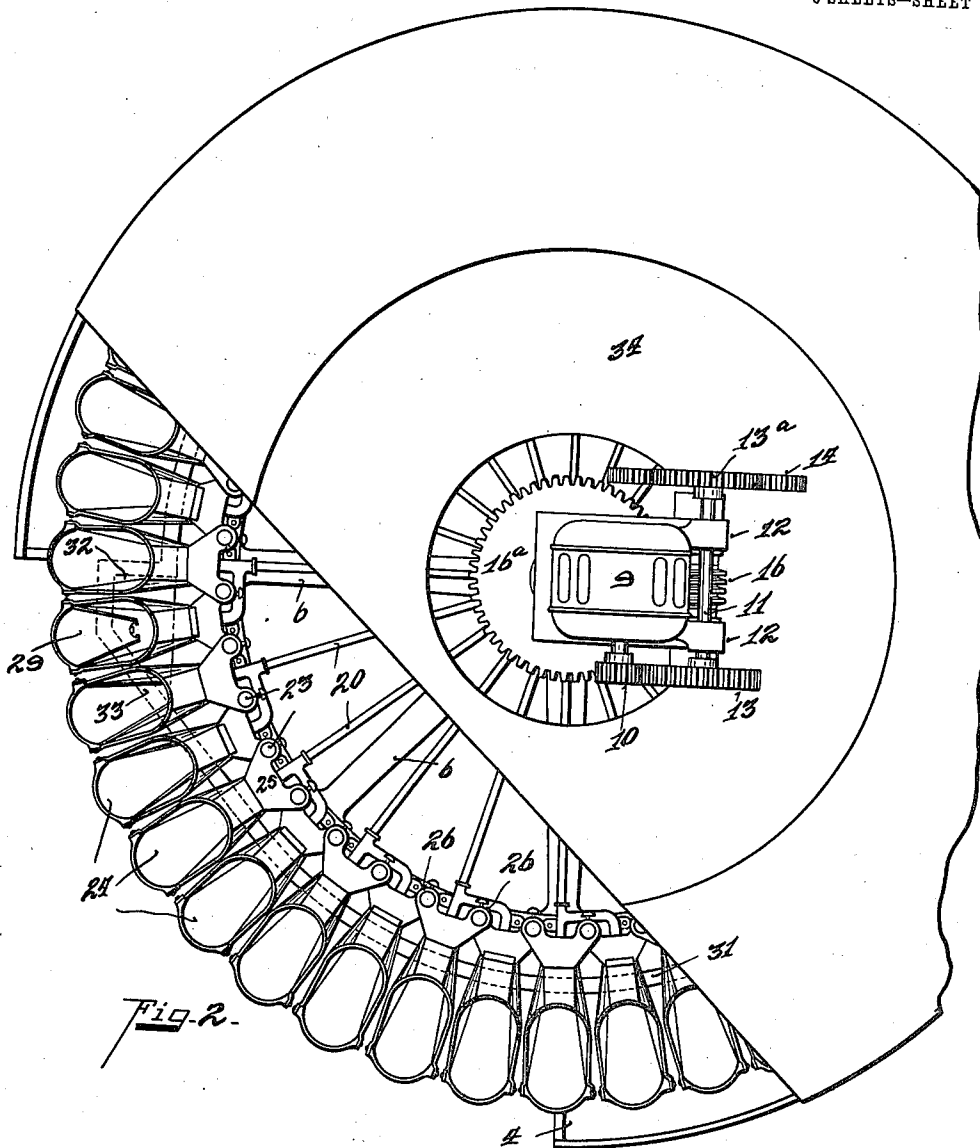
Inventor
Walter L. Bodman
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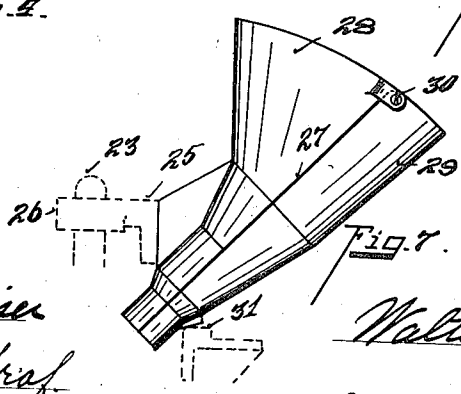
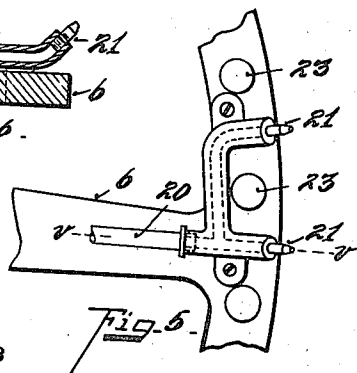
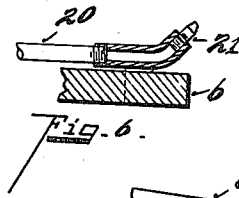
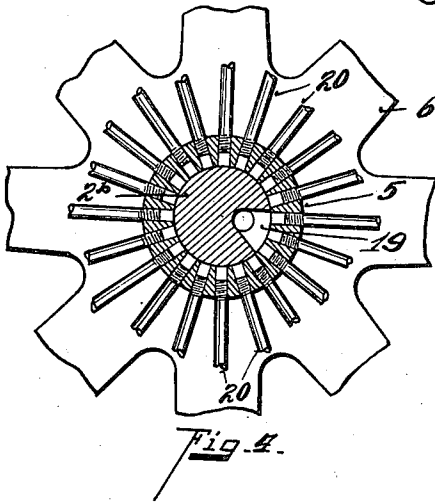
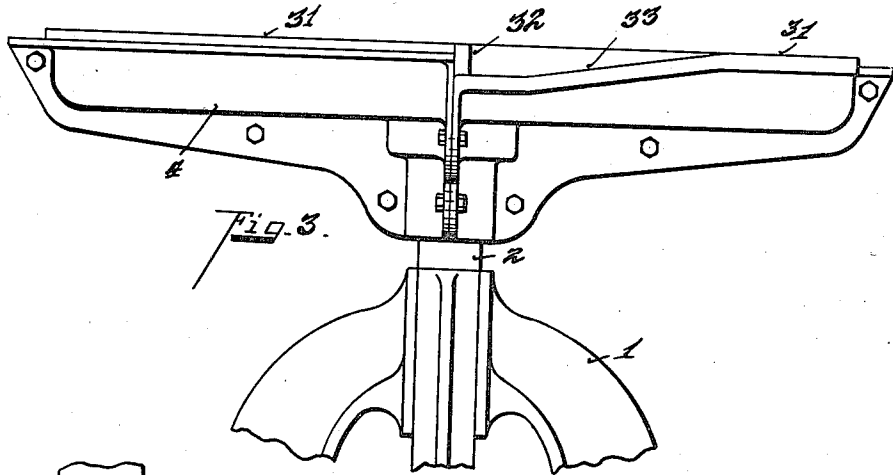
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UNITED STATES PATENT OFFICE.

WALTER L. BODMAN, OF COVINGTON, KENTUCKY, ASSIGNOR TO ISAAC RHEINSTROM,
OF CINCINNATI, OHIO.

BOTTLE-WASHING MACHINE.

966,404.

Specification of Letters Patent.

Patented Aug. 2, 1910.

Application filed March 20, 1909. Serial No. 484,695.

To all whom it may concern:

Be it known that I, WALTER L. BODMAN, a subject of the Kingdom of Great Britain, residing at Covington, in the county of Kenton and State of Kentucky, having invented certain new and useful Improvements in Bottle-Washing Machines, of which the following is a specification.

My invention relates to a bottle washing machine.

One of the objects of my invention is to produce a power driven machine of simple construction which will wash the bottles by injecting a stream of water into the bottles while they are traveling upon a suitable carrier.

Another object of the invention is to support the bottles on a carrier, mouth downward, and at an angle to the vertical and horizontal planes, so that the stream of water may enter and leave the bottle in the most efficient manner. I have found that by washing the bottles while supported in this position, the stream of water enters the mouth at one point and leaves at another, so that the entering and leaving streams do not exert counter influences. In this manner I get a steady stream of water through the bottles subjecting them to a maximum washing action during a given period.

Preferably, this machine works in conjunction with a soaking machine, filed October 14, 1908, Serial No. 457,697, and therefore another object of this invention is to produce a mechanical organization readily adapted to this conjunctive use with the soaker.

Another object of the invention is to provide the carrier with bottle holders adapted to automatically receive the bottles as delivered serially from the soaker without manual handling, and without danger of breakage, and to automatically deliver the bottles serially after the washing operation. In the accomplishment of this function also the angular positioning of the holders is a materially useful feature.

Another object of the invention is to provide a separable or hinged form of bottle holder with means to automatically open and close the holders at proper intervals to receive and discharge the bottles.

Other objects of my invention relate to the provision of improved and simple structure

with a mechanical organization as an entirety adapting it to most efficiently and conveniently perform its various offices.

The features of the invention are more fully set forth in the description of the accompanying drawings, forming a part of this specification, in which:—

Figure 1 is a central vertical section through the device. Fig. 2 is a top plan view. Fig. 3 is an elevation of a structural portion of the device. Fig. 4 is a detail sectional view on line *a, a*, Fig. 1. Fig. 5 is a detail plan view of two of the water jets. Fig. 6 is a detail sectional view on line *v, v*, Fig. 5. Fig. 7 is a side elevation of one of the holders.

The machine is preferably supported on a pedestal 1, from which is centrally projected the upright post 2. Specifically, this post is preferably made of the separate sections 2^a, 2^b, 2^c, the section 2^b is a bronze fitting as it constitutes a valve part.

3 represents a sleeve on the post 2, having an annular basin 4 thereon.

5 represents a sleeve rotatably mounted on the upper end of post 2 for holding the rotatable bottle carrier member 6.

The driving mechanism is mounted on a sleeve bracket 8 at the upper end of post 2. This driving mechanism comprises preferably a motor 9, having a gear 10 on the armature shaft, a shaft 11 journaled in bearings 12, and having on one end a gear 13, meshing with gear 10. On the other end of shaft 11 is a gear 13^a meshing with a gear 14 on the end of a worm shaft 15. 16^a is a worm wheel fixed on sleeve 5, driven by the worm 16 of the shaft 15. This means of mounting the motor on the central post of the washer is a very simple and desirable form of direct drive.

17 represents a water supply pipe communicating with a vertical water conduit 18 formed in the sections 2^a, 2^b, of the post 2. The upper end of this conduit 18 is enlarged to form a water supply chamber 19 in the section 2^b, see Fig. 4. This chamber is of segmental form and may be larger or smaller so as to supply simultaneously two or more of the radiating water tubes, as desired.

20 represents the water tubes radiating from the sleeve 5, the inner ends of which serially register with the port of the chamber 19 as the sleeve is rotated on the section

post 2^b. The outer end of each tube carries a water nozzle 21, see Fig. 6, inclined to the horizontal so as to be alined substantially with the axes of the bottles in the position in which they are supported by their holders. Preferably, each one of the tubes 20, carries two of the nozzles 21.

6 represents a rotatable carrier member formed on the lower end of sleeve 5, the outer periphery of which forms the support for the outer ends of tubes 20. This member 6 also carries an annular series of upright pins 23 for supporting the bottle holder.

24 represents one of the bottle holders and it is provided at its lower end with a bracket 25, preferably formed with two sleeves 26, which engage over two of the pins 23; in the preferred form each pin supporting link-like the sleeves of two adjacent brackets. The bottle holders 24 are preferably of hopper-like construction, the mouths being wide and the lower ends constricted so as to engage and hold the neck of the bottles. When these brackets are in position on the pins, each holder has the inclined position, indicated in Fig. 7. Preferably, the holder is a separable element being divisible on the line 27 parallel with the longitudinal axis of the holder. The sections 28 and 29 are preferably hinged at the top by means of the pivot 30, the upper section 28 being stationary and the lower section 29 swinging on said pivot. The upturned end of the basin 4 is inclined to form a flange 31, engaging the under surfaces of the holder sections 29, at their lower ends, as indicated in Figs. 1 and 7. This flange at one point in its periphery has the abrupt depression indicated at 32, Fig. 1, at which point the holder sections 29 drop to open the holders and discharge the bottles, as shown in Fig. 1. From this position the incline 33 is formed for slowly returning the hinged section of the holder to closed position preparatory to receiving bottles.

I preferably provide a top hood 34 to screen the working mechanism from the water splashing.

The operation of the device is readily understood from this description, but briefly, the bottles are serially received by the holders, the bottles sliding into position in the closed holders, occupying an inclined position to the horizontal with their mouths substantially registering with the nozzles 21. As the tubes pass the supply chamber 19, the water is injected from the nozzles into the bottles with considerable force, striking the bottoms of the bottles and flowing film-like down the inner sides of the bottles and leaving at the outer periphery of the mouth. As the stream enters substantially centrally and leaves peripherally there are no counter currents. As many bottles can be washed at

the same time as will be found desirable. After the bottles have left their washing zone they arrive at the discharging point and are serially released by the automatic opening of the lower ends of the bottle holders. The bottles are caught by the holders as they are dropped from the soaker and they are supported in an inverted, inclined position, the stream of water being injected upwardly into the bottles for washing. When the holders open at their lower ends, the bottles easily slide out of the holders, being discharged downwardly and caught in any suitable receptacle.

Having described my invention, I claim:—

1. In a bottle washer, a carrier, a series of bottle holders thereon, adapted to support the bottles in an inverted position, and means for automatically dropping the bottles vertically from the holders at a point in the path of movement of the carrier.

2. In a bottle washer, a carrier rotating in a horizontal plane, a series of bottle holders supported at an angle to the horizontal, each composed of separable members hinged together at their upper ends and adapted to hold a bottle when closed, and a cam engaging the lower end of the hinged member for opening and closing the lower end of the holder when the carrier is in motion for automatically receiving and discharging a bottle.

3. In a bottle washer, a carrier, a series of bottle holders thereon, adapted to support the bottles in an inverted position for washing, and means for automatically moving the supporting portion of the bottle holders during the movement of the carrier for discharging the bottles by gravity from the holders.

4. In a bottle washing machine, a rotatable carrier, an annular series of bottle holders thereon, adapted to catch the bottles in inverted position and support them at an angle, means for injecting a stream of water upwardly into said bottles, and means for automatically discharging the bottles endwise and downwardly from said holders after the washing operation.

5. In a bottle washing machine, a rotatable carrier, a bottle holder thereon composed of sections hinged at the top and adapted when closed to support a bottle in inverted position, and means actuated during the rotation of the carrier to open up said sectional bottle holder at the bottom to discharge the bottle endwise downwardly, said means also being adapted to close the said holder.

6. In a bottle washing machine, a rotatable carrier, an annular series of bottle holders thereon, each composed of sections hinged together at the top and adapted when closed to support a bottle in an inverted position and at an angle between the hori-

zontal and vertical plane, means for injecting a stream of water upwardly in said bottle so supported, and means automatically actuated during the rotation of the carrier to open and close said hinged sections of the holders to automatically discharge the bottles endwise and downwardly from the machine.

7. In a bottle washing machine, an inclined hopper-like bottle holder composed of sections hinged together at the top, and means for automatically swinging said hinged sections to open and closed position.

8. In a bottle washing machine, a central rigid support, a rotatable carrier on said support, an annular series of bottle holders on said carrier angularly inclined, each composed of sections hinged together, means for injecting a stream of water into the inverted and inclined bottles, and means projected from the fixed support and engaging the hinged bottle holder sections, whereby said

holders are adapted to open and close during the rotation of the carrier.

9. In a bottle washing machine, a central rigid support, a rotatable carrier thereon, an annular series of pins on the carrier, an annular series of inclined bottle holders mounted on the pins, each holder composed of hinged sections adapted when closed to support a bottle in inverted inclined position, means for injecting a stream of water upwardly into said inclined bottles, and a cam on the rigid support engaging the hinged sections of the bottle holders and causing them to open and close when the carrier is rotated.

In testimony whereof, I have hereunto set my hand.

WALTER L. BODMAN.

Witnesses:

OLIVER B. KAISER,
ROBERT GRAF.