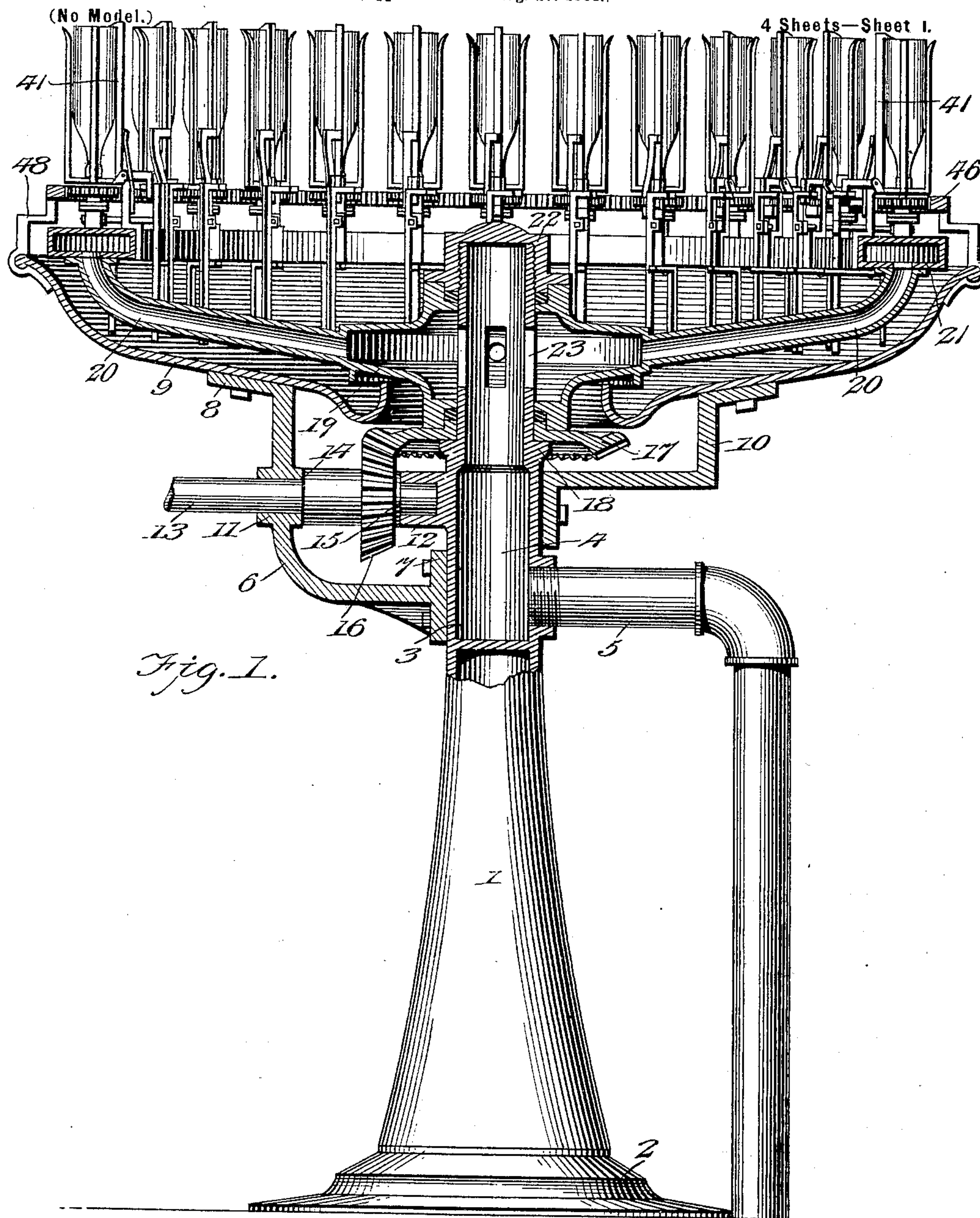


No. 697,796.

Patented Apr. 15, 1902.

H. S. BREWINGTON.
BOTTLE WASHING MACHINE.

(Application filed Aug. 27, 1901.)



Henry S. Brewington Inventor

Witnesses

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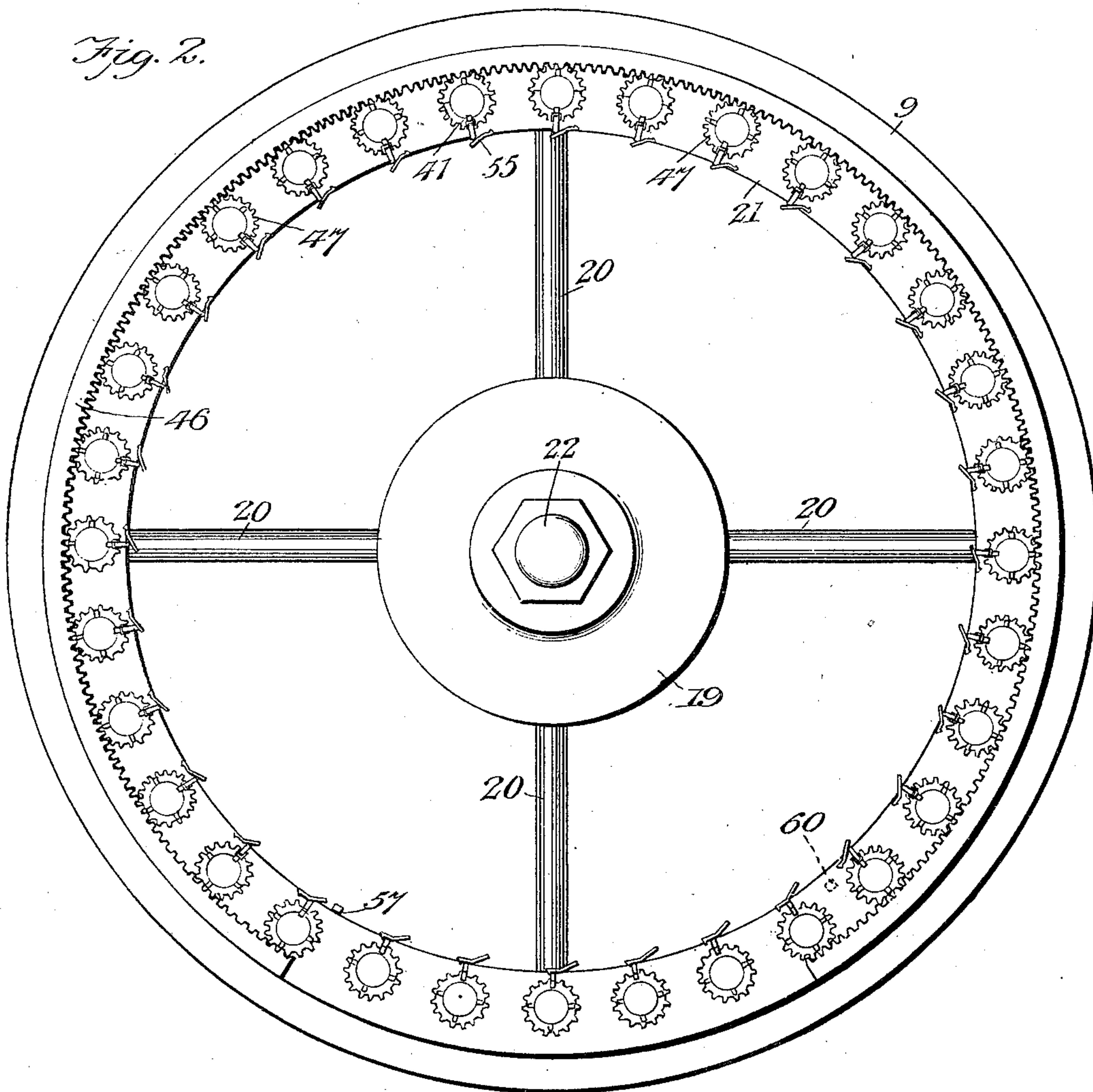
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4 Sheets—Sheet 2.



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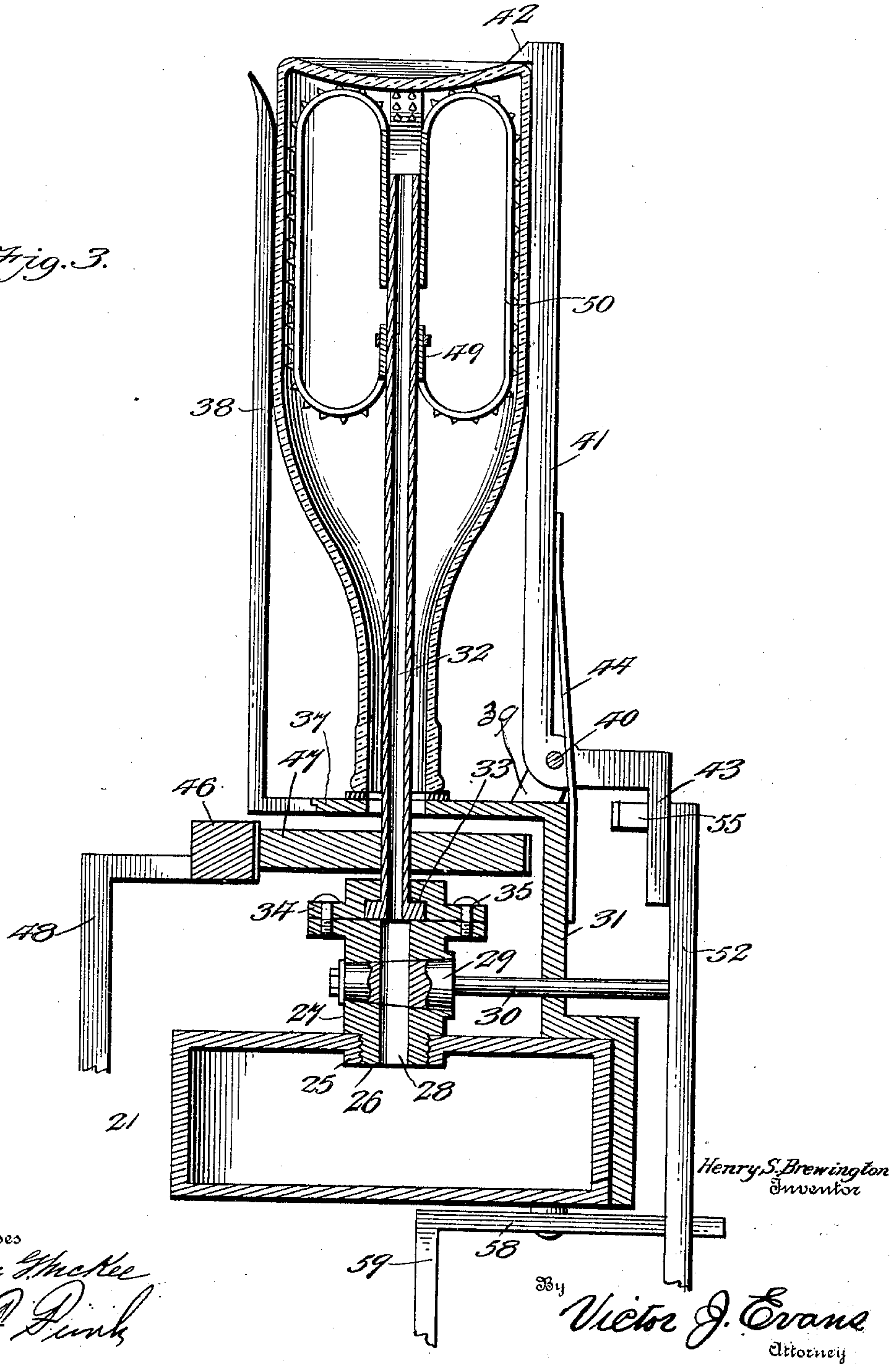
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(No Model.)

4 Sheets—Sheet 3.

Fig. 3.



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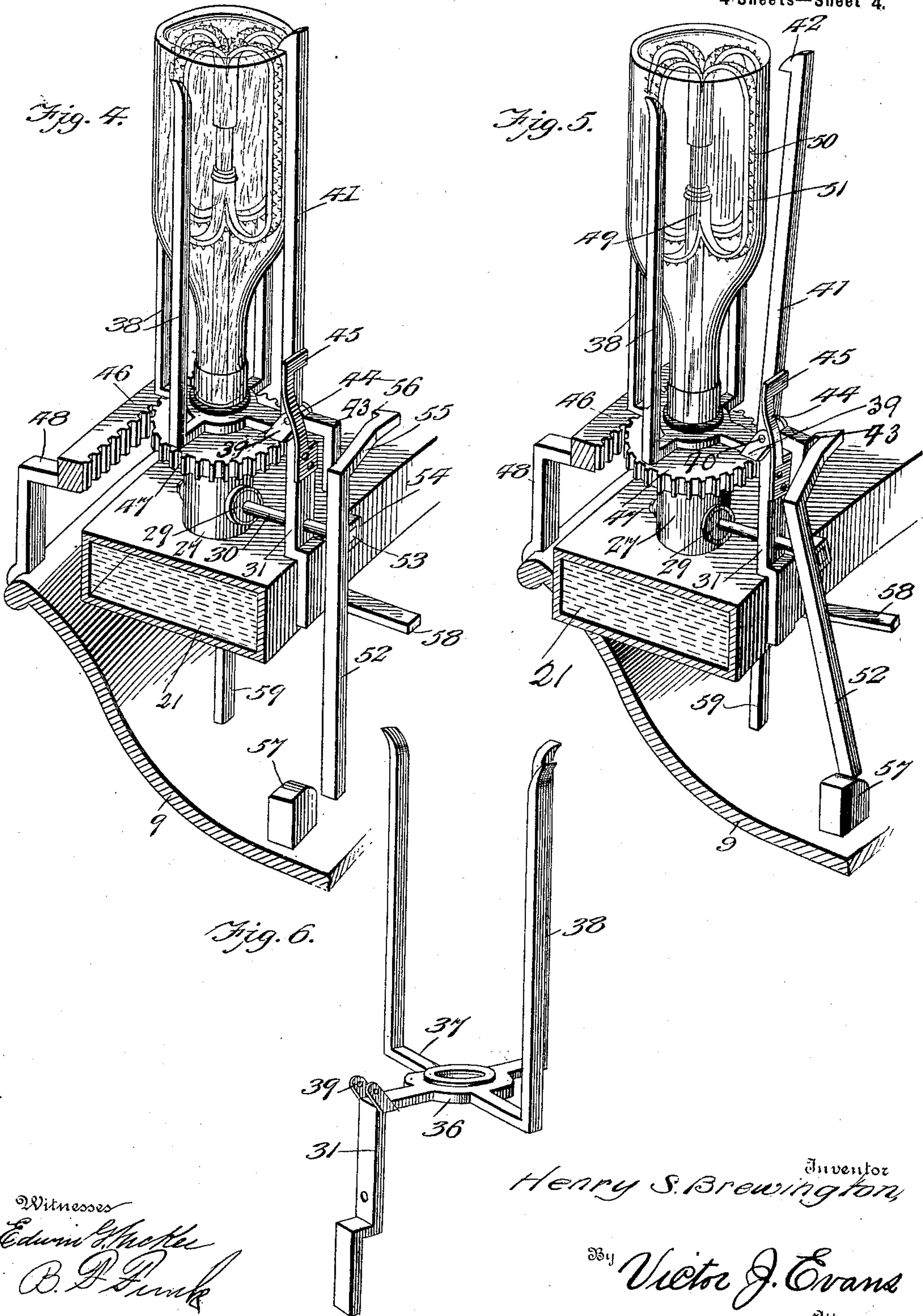
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4 Sheets—Sheet 4.



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UNITED STATES PATENT OFFICE.

HENRY S. BREWINGTON, OF BALTIMORE, MARYLAND, ASSIGNOR OF ONE-HALF TO WILLIAM F. SEIM, OF BALTIMORE, MARYLAND.

BOTTLE-WASHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 697,796, dated April 15, 1902.

Application filed August 27, 1901. Serial No. 73,450. (No model.)

To all whom it may concern:

Be it known that I, HENRY S. BREWINGTON, a citizen of the United States, residing at 7 St. Paul street, Baltimore, in the State of Maryland, have invented new and useful Improvements in Bottle-Washing Machines, of which the following is a specification.

My invention relates to bottle-washing machines; and its primary object is to provide novel and effective mechanism for thoroughly cleansing bottles by the use of revolving brushes or cleaners within the bottles.

A further object of the invention is to provide improved means for supporting the bottles in an inverted position upon a revolving wheel and for automatically releasing the bottles after they are washed.

A further object of the invention is to provide novel means for supplying water to the interior of the bottles and for automatically shutting off the supply of water after the cleansing has been effected.

A further object of the invention is to provide a flexible brush or cleaner of improved construction and means for revolving the same within the bottle, so as to thoroughly wash the latter.

With these several ends in view the invention consists in the construction, combination of parts, and characteristic features hereinafter fully described in connection with the accompanying drawings, which form a part of this specification, and its novel features will be defined and particularly pointed out in the appended claims.

In the drawings, Figure 1 is a central vertical section of a bottle-washing machine embodying the invention. Fig. 2 is a top plan of the same with the bottles and parts of the mechanism removed. Fig. 3 is a vertical section, on an enlarged scale, of a portion of the machine on an enlarged scale. Fig. 4 is a perspective view, partly in section, showing a bottle clamped in position for washing. Fig. 5 is a similar view illustrating the clamp in the open position which it automatically assumes to permit the bottle to be removed after washing, and Fig. 6 is a perspective view of one of the bottle-holders detached.

The reference-numeral 1 designates a tapered hollow standard having a base 2 and a

transverse partition 3, the space 4 within the standard above the partition serving as a water-chamber, with which a supply-pipe 5 communicates.

6 designates a curved bracket having flanges 7 bolted to one side of the standard and an outwardly-projecting flange 8, serving as a support for one side of a pan 9, the opposite side of which is supported by a flanged angle-bracket 10, bolted to the standard at a point opposite to the bracket 6.

The bracket 6 is formed with a horizontal bearing 11 in the same plane with a bearing 12, projecting from the proximate side of the standard. Within these bearings is revolubly mounted a shaft 13, having shoulders 14 and 15 and carrying a fixed bevel gear-pinion 16, meshing with a bevel gear-wheel 17, revolubly supported upon a collar 18 on the standard and having a fixed relation to a hollow hub 19. From the hub 19 radiates a plurality of hollow spokes 20, communicating at their inner ends with the hub and at their outer ends with a hollow ring 21. The upper end of the standard is closed by a screw-cap 22, and below said cap the hollow standard is formed with openings 23, one opposite each of the spokes 20, to admit water to the hub, from whence it passes through the spokes to the ring 21. The hollow ring 21 is preferably of rectangular form in cross-section, and its upper wall 24 is formed with equidistant internally-threaded sockets 25, each of which receives the depending threaded nipple 26 of a valve-casing 27, formed with a central water-passage 28 and transversely bored to receive an oscillating tapering valve 29, having a stem 30, the outer end of which extends through an opening in an angle-bracket 31, secured to the inner periphery of the ring.

32 designates a tube formed at its lower end with an annular flange 33, resting on the upper flanged end of the valve-casing 27, to which it is secured by a clamping-plate and screws or bolts 35.

The angle-bracket 31 above referred to depends from and is formed integral with a bottle-holder consisting of a hub 36, radial arms 37, and a plurality of fingers 38, projecting vertically from the radial arms 37, having their outer ends turned outward.

One of the arms 37 is provided at its outer end with a pair of parallel perforated ears 39, between which is pivotally secured by a pin 40 a finger 41 of bell-crank form having a lip 42 at its upper end to engage the bottom edge of a bottle and at its lower end a depending arm 43, adapted to be struck by a tripping device, as will be further explained. A flat spring 44 is secured at its lower end to the upper end of the bracket 31, and the upper free end of said spring is formed with a lateral extension 45, bearing against the pivoted finger 41 of the bottle-holder and serving to hold said finger in engagement with the bottom.

For the purpose of revolving the spindles within the bottle I provide mechanism consisting of an internally-toothed ring 46 and a plurality of gear-pinions 47, one pinion for each spindle. The gear-ring 46 is stationary and supported above the pan 9 by bracket-arms 48 in position to mesh with the pinions mounted, respectively, one upon each spindle 32.

Upon the end of each of the hollow spindles is secured a novel brush or cleaner consisting of a rubber tube 49, longitudinally slitted and inverted upon itself, as shown in Figs. 4 and 5, forming a plurality of flexible loops 50, the outer surfaces of which are preferably formed with projections 51 to facilitate the cleansing of the bottle and the loosening and dislodging of substances adhering to the interior surfaces thereof.

52 designates levers corresponding in number to the spindles and bottle-holders, and fulcrumed upon the outer squared end 53 of the valve-stems 30 is a lug 54, with a square opening projecting from the lever adjacent to its upper end to receive the lug.

From the upper end of each of the levers 52 projects an inclined arm 55, terminating in a lip 56, and the lower end of each lever is adapted to strike against a tripping-block 57, projecting from the pan 9, to tilt the upper end of the lever forward.

To the under side of the hollow ring 21, below each of the bottle-holders, is pivotally secured a tripping-lever comprising an angle-iron the horizontal arm 58 of which is adapted to strike the lever 52, as hereinafter referred to, while the vertical arm 59 is adapted to contact with a trip-block 60, located in the pan 9, as will be further explained.

The operation of the machine is as follows: Power is applied to the shaft 13 from any suitable source to revolve the hub, spokes, and hollow ring 21 through the medium of the gearing 16 and 17. The gear-pinions 47 upon the spindles are carried around with the ring 21, and as said pinions mesh with the teeth of the stationary gear-ring 46 it is obvious that the pinions and the spindles upon which they are fixed will be revolved. As clearly illustrated in the drawings, the bottles are inverted over the spindles, the flexibility of the rubber cleaners permitting them to pass

through the bottle-necks and resiliently restoring them to shape after they have been fully inserted. The stationary fingers 38 and movable spring-pressed finger 41 securely support the bottle in upright inverted position. Water supplied through the pipe 5 passes through the upper portion of the hollow standard into the hub 19 and then through the hollow spokes 20 to the hollow ring 21, and thence into the bottles through the casings 27 and hollow spindles 32.

An important feature of the present invention is that the supply of water to the bottle is cut off and the movable finger of the bottle-holder released at the same time, so that the bottle may be quickly and conveniently removed from the machine.

From the plan view in Fig. 2 it will be seen that there is a break in the ring 46 at the front of the machine, where the operator is to be stationed, and hence the revolution of the spindle will cease after the pinion passes the teeth of the geared ring, and the washed bottles may be quite rapidly removed. The contact of the lever 52 with the block 57 forces the inclined arm 55 into a wiping contact with the arm 43 of the bell-crank lever 41, tilting said lever on its fulcrum and withdrawing its tooth 42 from engagement with the bottle. At the same time the movement of said bell-crank lever 41 oscillates the valve 29 to shut off the water, as will be apparent. The lip 56 of the arm 55 engages the lever 41 and holds it in its tilted position while the washed bottle is being removed.

After the washed bottle has been removed from the spindle and replaced by a new one to be washed and the spindle passes the break in the geared ring the vertical arm 59 of the tripping-lever strikes the tripping-block 60, causing the horizontal arm 58 to strike the lever 52 and disengage its lip 56 from the pivoted finger 41. The spring 44 45 then forces the finger 41 toward the bottle to engage the lip 42 therewith, and the valve 29 is simultaneously opened to start the flow of water.

It will thus be seen that the machine is automatic in action and affords an effective apparatus for rapidly cleansing bottles.

I claim—

1. In a bottle-washing machine the combination with a hollow standard and water-supply pipe, of a revoluble wheel comprising a hollow hub, a ring connected to the hub by hollow spokes, said hub having communication with the hollow standard, a series of vertically-disposed spindles supported upon said hollow ring, valves for controlling the flow of water to the spindles, bottle-holders supported above said hollow ring, means for revolving said spindles and means for simultaneously cutting off the supply of water to the spindles and releasing the bottles from their holders.

2. In a bottle-washing machine the combination with a standard and the water-supply pipe, of a hollow revoluble wheel mounted

upon the standard and having communication therewith and comprising a hollow ring, a hollow hub, and spokes connecting said ring and hub, a plurality of spindles supported upon said wheel, valves for controlling the supply of water to said spindles, bottle-holders supported upon said wheel, and means for simultaneously operating said valves successively as the bottles are released from their holders.

3. In a bottle-washing machine the combination with a hollow standard and a water-supply pipe, of a revoluble wheel comprising a hollow hub, hollow spokes, and a hollow ring, said hub communicating with the upper portion of the hollow standard, a plurality of valve-casings supported upon said hollow ring and communicating therewith, valves within said casings, a hollow spindle secured to each of the valve-casings and communicating therewith, a bottle-holder supported above each valve-casing and means for simultaneously operating the valve and bottle-holder.

4. In a bottle-washing machine the combination with a hollow standard and water-supply pipe, of a revoluble wheel comprising a hollow hub, hollow spokes, and a hollow ring, a series of valve-casings supported by said hollow ring, valves within said casings, a hollow spindle secured to each of said casings and communicating therewith, a gear-pinion on each of said spindles and an internally-gearred stationary ring with which said pinions intermesh.

5. In a bottle-washing machine the combination with a hollow standard and water-supply pipe, of a revoluble hollow wheel, a plurality of spindles supported upon said wheel, a gear-pinion mounted on each of said spindles, a water-pan supported below the wheel, and an internally-gearred ring supported upon said pan with which said pinions intermesh.

6. In a bottle-washing machine the combination with a revoluble wheel, of a plurality of hollow spindles supported upon said wheel, means for supplying water to said spindles, and a bottle-holder for each spindle, said holders each comprising a plurality of stationary fingers and a movable finger, and means for tilting said movable finger and simultaneously shutting off or turning on the supply of water to the spindles.

7. In a bottle-washing machine the combination with a hollow standard and a water-supply pipe communicating therewith, of a hollow revoluble wheel communicating with the upper portion of the standard, a series of vertically-disposed hollow spindles supported upon said wheel and means for revolving said spindles, a bottle-holder for each spindle pro-

vided with a pivoted finger adapted to engage a bottle and means for simultaneously tilting said pivoted finger and shutting off and turning on the supply of water to the spindles.

8. In a bottle-washing machine the combination with a bottle-holder comprising a plurality of stationary fingers and a pivoted finger formed with a lip to engage the bottom of a bottle, of means for tilting said pivoted finger comprising a trip-lever and a projection with which the trip-lever is adapted to contact.

9. In a bottle-washing machine the combination with a revoluble hollow wheel, of a plurality of valve-casings supported on said wheel, a hollow spindle supported upon each of said casings, a valve within each casing, having an outwardly-projecting stem, a bottle-holder for each spindle having a pivoted finger and means for simultaneously operating the said valve and pivoted finger, comprising a trip-lever fulcrumed upon said valve-stem and having an inclined arm and a projection against which said trip-lever is adapted to contact.

10. In a bottle-washing machine the combination with a hollow standard and water-supply pipe communicating therewith, of a pan supported by said standard, an internally-gearred ring supported upon said pan, a hollow revoluble wheel having communication with the upper portion of the standard, a series of valve-casings mounted upon the wheel, valves within said casings, each having an upwardly-projecting stem, a hollow spindle secured to the upper end of each of said casings, a bottle-holder for each spindle, comprising a plurality of rigid fingers and a pivoted finger formed with a lip to engage the bottom of a bottle, a spring bearing upon said pivoted finger, and means for simultaneously operating said valve and pivoted finger comprising a trip-lever, projections on said pan and an angle-lever pivoted to the underside of the wheel.

11. In a bottle-washing machine the combination with a hollow standard and water-supply pipe, of a revoluble hollow wheel, a stationary pan below said wheel, an internally-gearred ring having a break or opening at the front of the machine, a plurality of spindles supported by said wheel, and a gear-pinion mounted on each of said spindles, and intermeshing with said internally-gearred ring.

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

HENRY S. BREWINGTON.

Witnesses:

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WM. A. WOOD.