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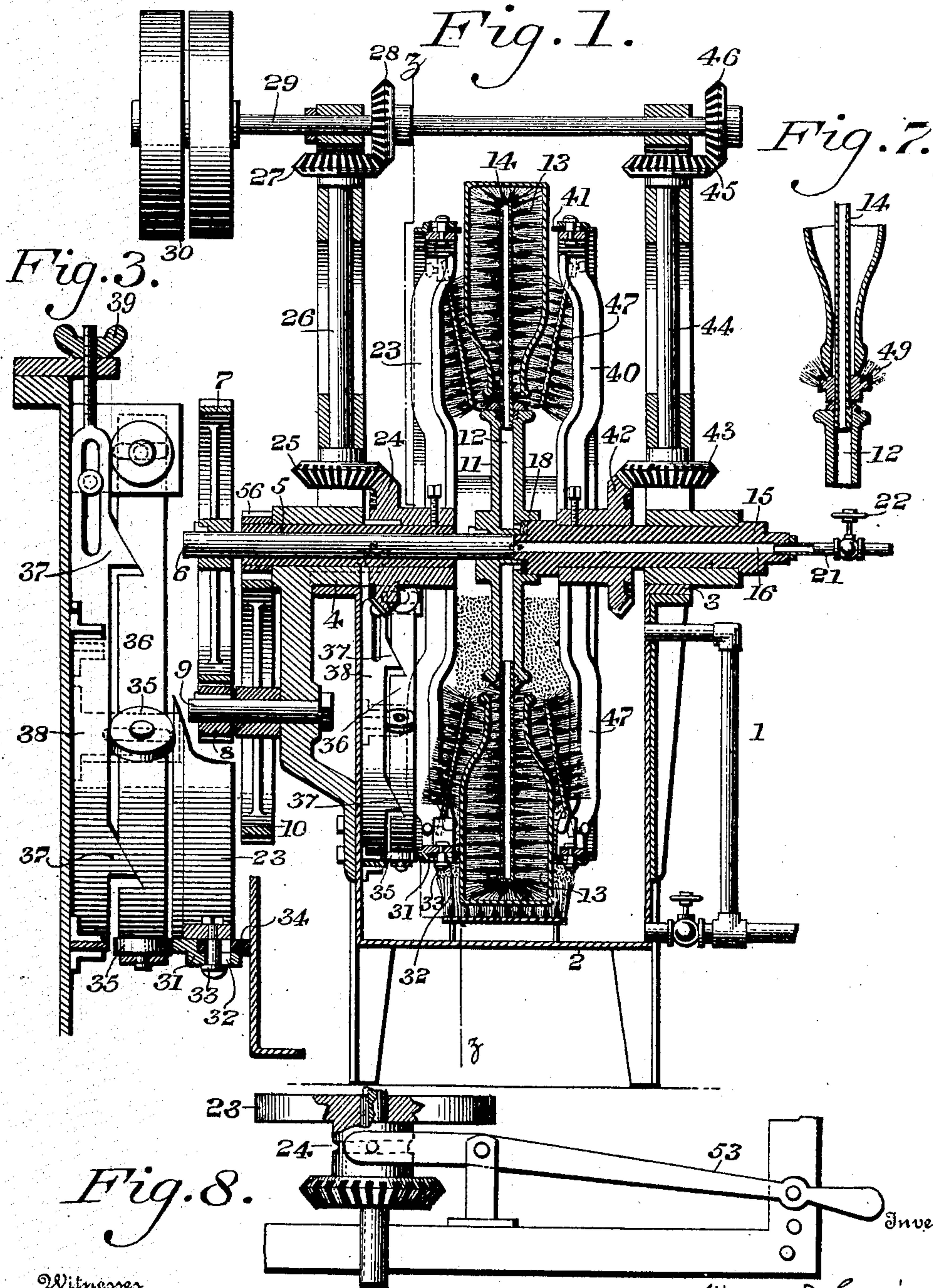
PATENTED JULY 16, 1907.

W. J. CUNNINGHAM.

BOTTLE WASHING MACHINE.

APPLICATION FILED AUG. 6, 1902. RENEWED DEC. 15, 1906.

2 SHEETS—SHEET 1.



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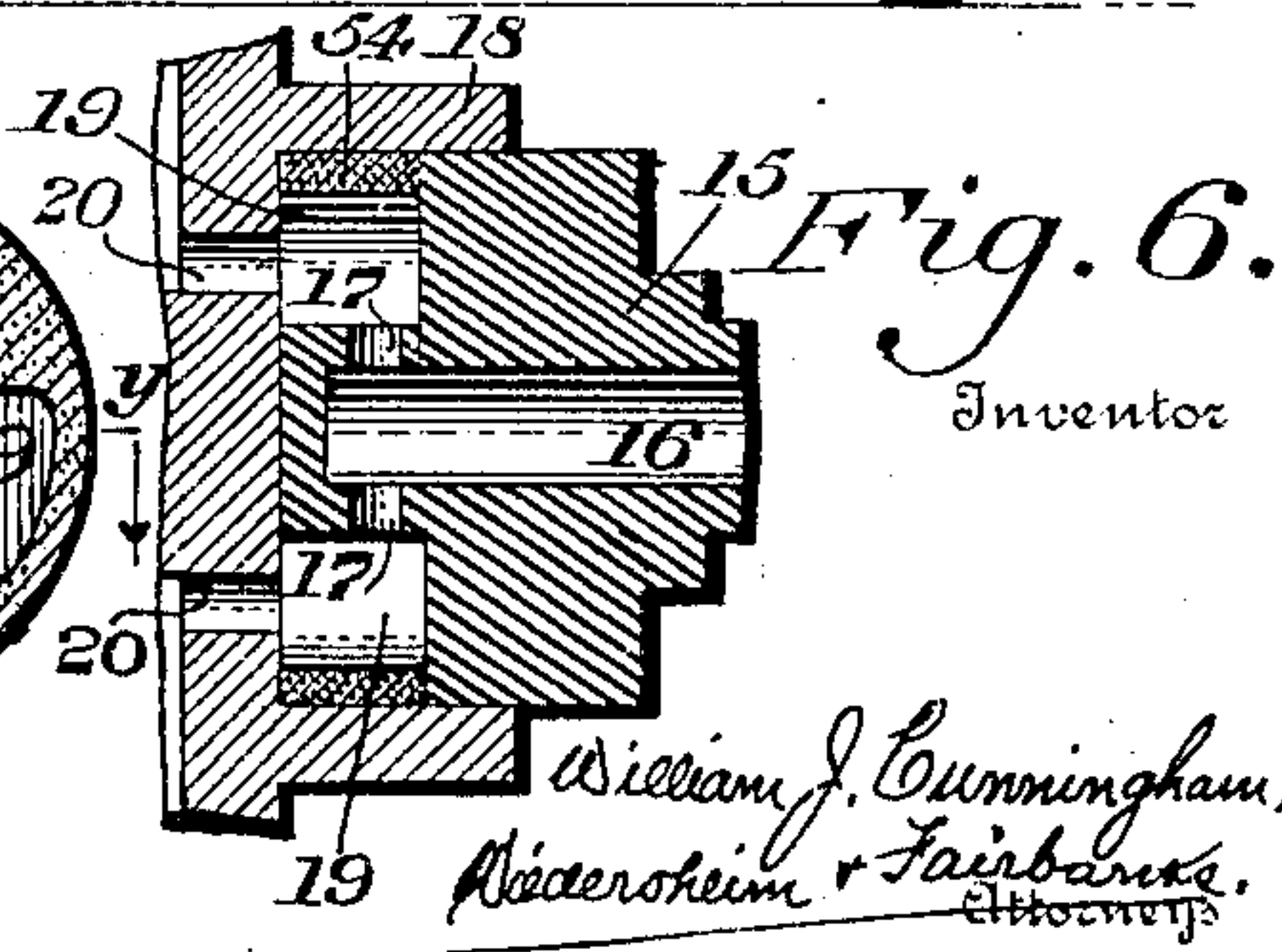
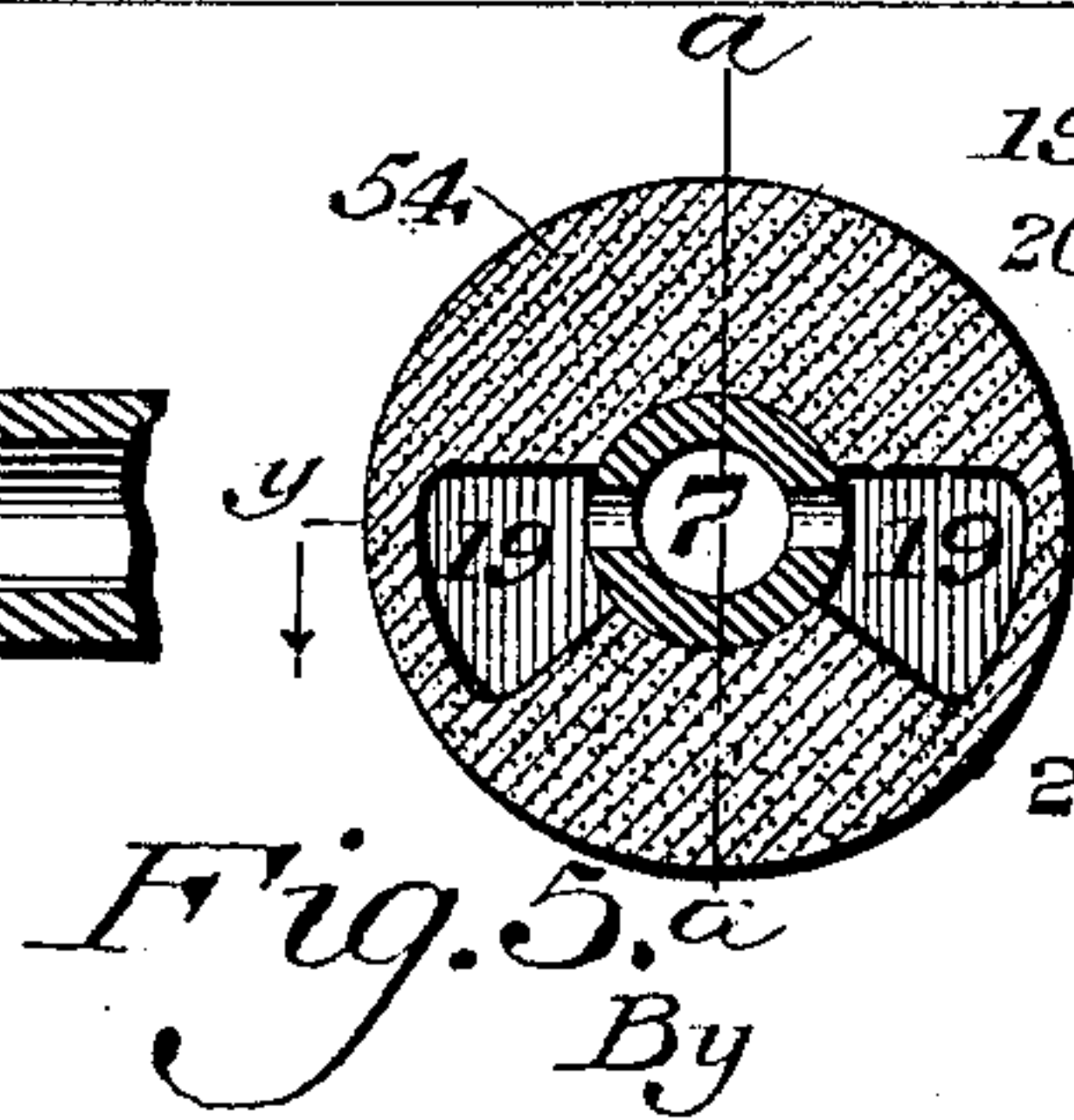
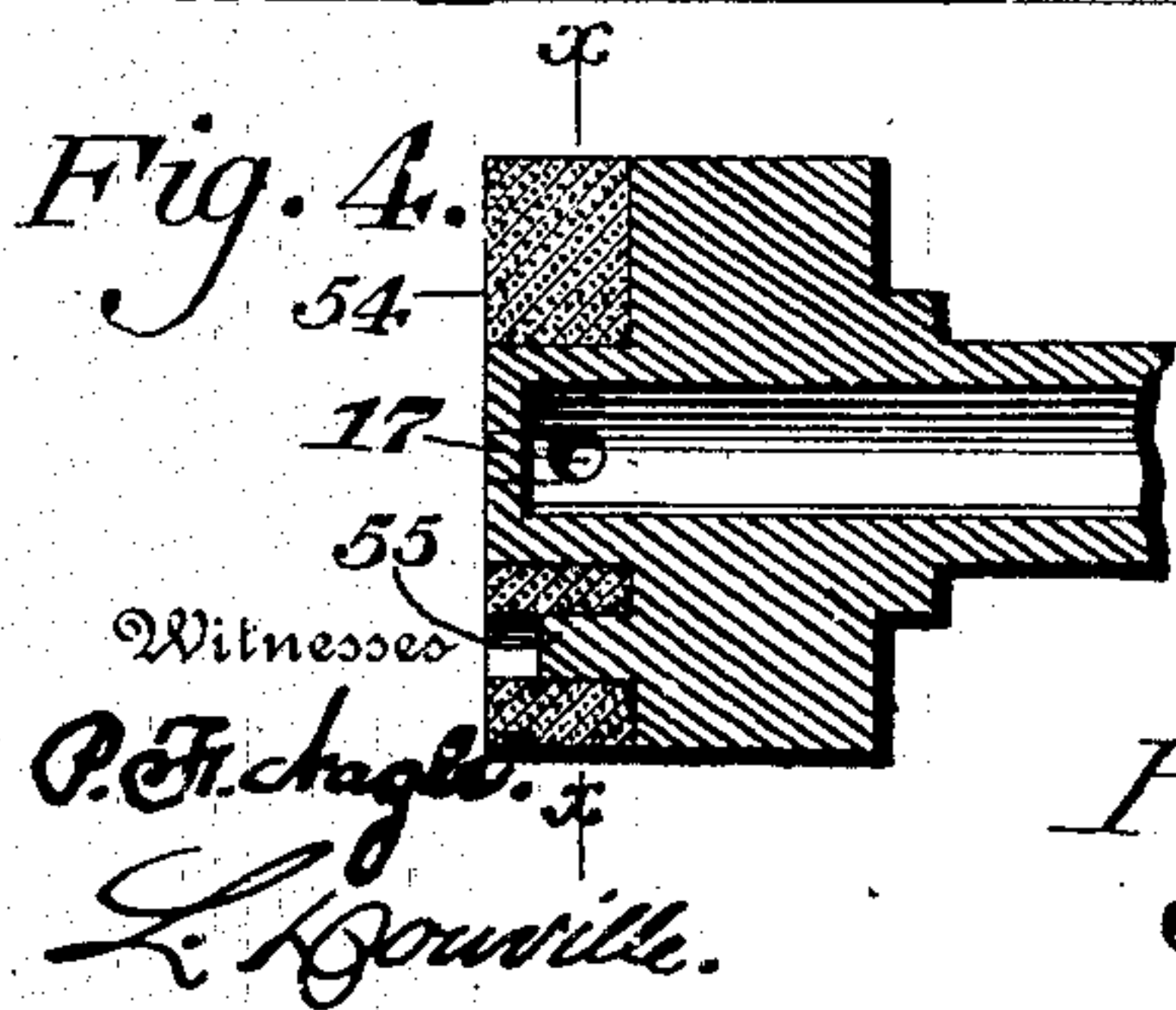
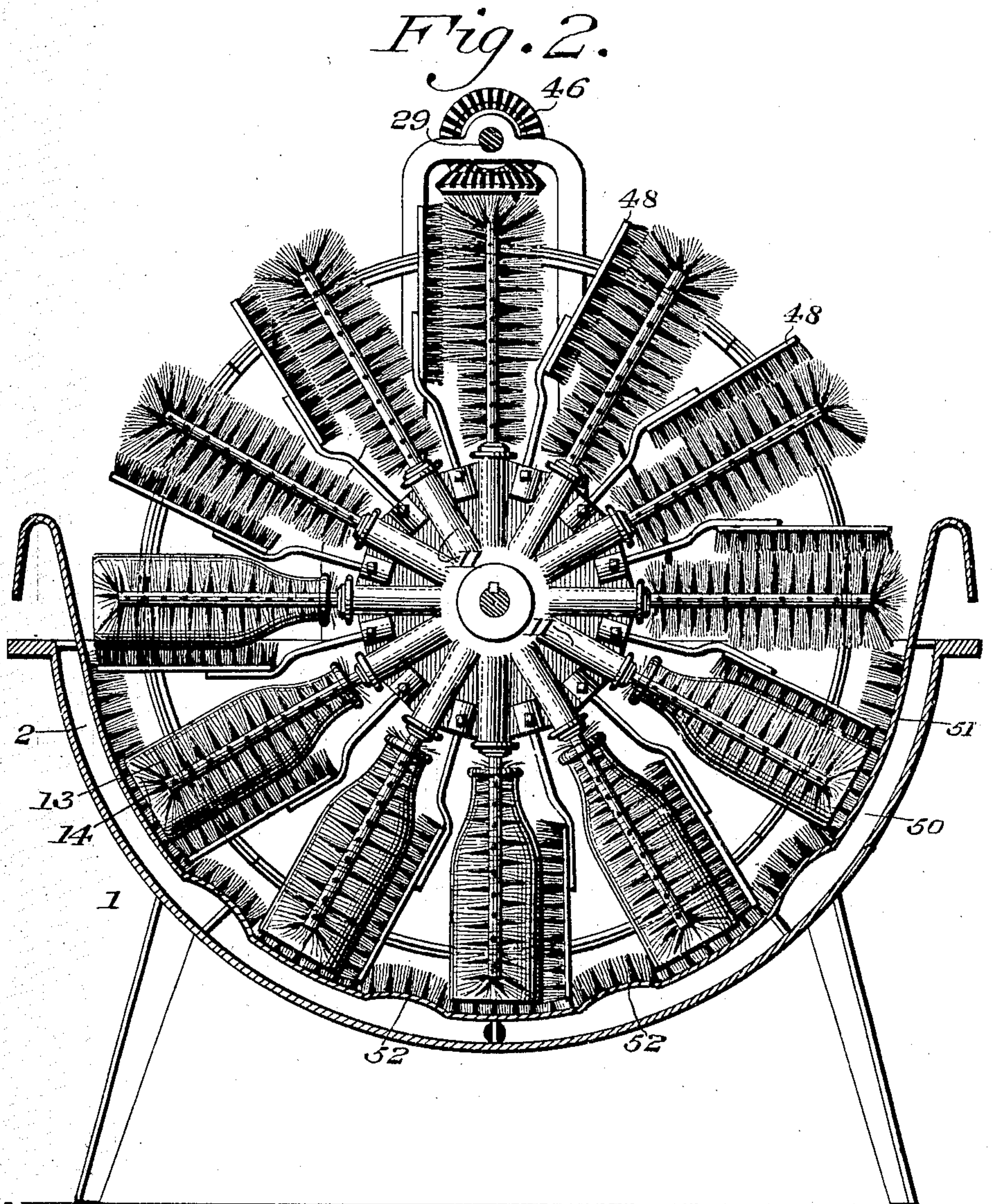
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# UNITED STATES PATENT OFFICE.

WILLIAM J. CUNNINGHAM, OF PHILADELPHIA, PENNSYLVANIA.

## BOTTLE-WASHING MACHINE.

No. 860,533.

Specification of Letters Patent.

Patented July 16, 1907.

Application filed August 6, 1902, Serial No. 118,620. Renewed December 15, 1906. Serial No. 348,028.

*To all whom it may concern:*

Be it known that I, WILLIAM J. CUNNINGHAM, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Improvement in Bottle-Washing Machines, of which the following is a specification.

My invention consists of an improvement in a bottle washing machine, wherein I provide brushes for washing the bottles and means for revolving the bottle.

It further consists of means for conveying the water or other cleansing material to the interior of the bottle, and for automatically controlling the flow thereof.

It further consists of providing means for imparting a reciprocating motion to the bottle with respect to the holders thereof.

It further consists of novel details of construction all as will be hereinafter set forth.

Figure 1 represents a vertical sectional view of a bottle washing machine embodying my invention. Fig. 2 represents a vertical sectional view on line  $z-z$ , Fig. 1. Fig. 3 represents a partial sectional view, partial elevation of a portion of the machine on an enlarged scale. Figs. 4, 5 and 6 represent sectional views of the device employed for controlling the passage of the water into the bottles, the sections being taken on lines  $a-a$  Fig. 5;  $x-x$  Fig. 4 and  $y-y$  Fig. 5, respectively. Fig. 7 represents a sectional view of a portion of the device with a portion of the bottle in position showing a brush adapted to clean the mouth of the bottle. Fig. 8 represents a plan view of a device that may be employed for adjusting certain portions of the machine.

Similar numerals of reference indicate corresponding parts in the figures.

Referring to the drawings: 1 designates a bottle washing machine having a tank 2, which is adapted to contain or receive suitable cleansing material, and which is provided with suitable journals 3 and 4 and in the latter is mounted a sleeve 5 through which passes a shaft 6, which latter is adapted to revolve in said sleeve independent thereof, suitable mechanism being employed in order to impart motion to said shaft in the present instance by means of a gear 7 connected with said shaft to which motion is imparted by the small gear 8 carried on the shaft 9, which receives motion from the gear 10 which receives motion from gear 56 carried by the sleeve 5. Carried on said shaft is a wheel 11, which is adapted to support and carry the bottles, said wheel having a plurality of passages 12 there-through in the extremities of which are secured the brushes 13, the shanks 14 of which are hollow and communicate with the said passages 12, said shanks having openings therethrough. In the journal 3 is a tube 15 having a passage 16 therethrough, the end of which is closed but has the ports 17 leading therefrom at an angle

to said passage 16, it being seen that the end of said tube 15 is adapted to fit in the suitable bearings 18 on the wheel 11 and that a plug 54 is situated between said tube 15 and the wheel 11, and that the said plug is secured to the tube 15 by the pin 55.

19 designates chambers or passages in the said plug, said passages 19 communicating at the proper time with the interior of certain of the said passages 12, by the ports 20, which form a practical continuation of said passages 12, it being seen that only two of the ports 20 on each side of the machine are open at one time. A suitable pipe 21 leading from a suitable source of supply and communicating with the passage 16, is adapted to conduct water or other suitable cleansing material thereinto, said pipe 21 being controlled by the valve 22.

Suitably mounted on the sleeve 5 is a disk 23, having a gear 24 thereon, to which motion is imparted by a gear 25 carried on a shaft 26, which carries the second gear 27 meshing with a gear 28 carried on the shaft 29, to which motion is imparted in any suitable manner for example, by means of a belt passing around the pulleys 30, it being seen that in this manner the disk is revolved independent of the shaft 6 and wheel 11, said disk 23 being secured to the sleeve 5 imparts motion to the gear 56 which is carried on said sleeve and which meshing with the gear 10 imparts motion thereto. The disk 23 has secured to its periphery a rim 31, which is formed in sections and which sections are movable on said disk independent of each other, it being seen (more especially in Fig. 3) that the said rim sections have slots 32 in which are seated the screws or pins 33 which secure said rim sections to the disk, it being further seen that a suitable piece of rubber 34 or other material is secured and moves with said rim sections and extends beyond the same. The edge of said rim sections 31 extending beyond the rim of the disk 23 and said extending edge is adapted to contact, when within the tank 2, with rollers 35, which are carried by a movable bar 36 conveniently supported as for example by brackets and movable thereon, said bar 36 having suitable faces contacting with cams 37 carried by the bar 38 which moves in suitable guides secured to the tank and which is adjusted and held in adjusted position by a thumb-nut 39 suitably connected therewith, said parts just described forming the adjusting device for the disks 23.

40 designates a second disk provided with suitable rubber contacting devices 41 and having a gear 42, which meshes with the gear 43, carried on the shaft 44, which has also the gear 45 meshing with the gear 46, carried by the shaft 29.

47 designates suitable brushes which project from the disks 23 and 40.

48 designates brushes which are carried by the wheel 11, it being seen that when the bottle is in position on



the brushes 13 that the brushes 48 and 47 contact with the exterior of said bottles at the proper time, and a brush 49 may also be employed in order to contact with the mouth of the bottle.

50 designates a track or apron on the interior of the tank and conforms to the course of travel which the bottle will take when in suitable position on the brushes, said track being provided with brushes 51, in order to cleanse the bottom of the bottle.

10 If desired, the track 50 may be supplied with springs 52, in order to impart a reciprocating motion to the bottles as they pass through the tank.

53 designates a lever which extends beyond the sides of the tank and is suitably connected with the disk 23 15 for example, in order to properly adjust or manipulate the same.

The operation is as follows: Power being imparted to the shaft 29 through the medium of the pulleys 30 and by reason of the gears 28, 27, 25 and 24, motion is im- 20 parted to the disk 23 and the sleeve 5, and through the gears 56, 10, 8 and 7 to the shaft 6, which carries the disk and causes the wheel 11 to revolve. The bottles are now placed in position on the brushes 13, which contact with the interior thereof, while the brushes 47 25 and 48 are on the exterior of the bottle as well as the brushes 49. Through the gears 46, 45, 43 and 42, motion is imparted to the disk 40, it being seen that by the arrangement of the various gears that the disk 40 revolves in an opposite direction from that of the revo- 30 lution of the disk 23, and that the speed of revolution of the disks is different, as well as, that of the revolution of the wheel 11, which carries with it the brushes 13 and the bottles thereon. The resilient materials 41 and 34 carried respectively by the said disks 40 and 23 35 are so arranged as to contact with the bottle when the same enter the tank during the revolution of the wheel 11, it being of course understood that the said tank has been previously filled with suitable cleansing material. By reason of this contact of the resilient material and of 40 the different speeds of revolution, the bottles are caused to revolve while in contact with the brushes, the effect of which is evident. The track 50 holds the bottles in position as the same are revolving through the tank and by reason of the spring 52 the said bottles are 45 caused to reciprocate on the brushes. As the wheel 11 revolves and carries with it the passages 12 and ports 20, it will be seen that the said ports during their revolution register with the chambers 19 in the stationary plug 54, and by proper manipulation of the valve 22, the water 50 or other suitable cleansing material enters through the passage 16 and through the ports 17 into the said chambers 19 and through such of the ports 20, as the same register with said chambers and thence through the passages 12 and the shanks 14, into the bottles, it being 55 seen that in this manner, cleansing material is automatically supplied to and cut off from the interior of the bottle, and as the wheel 11 revolves, the bottles can be removed as cleansed and new ones inserted in their place. By reason of the variation of the size of 60 the bottles it may be found that the space between the disks 23 and 40 may be either too large or too small, so that by proper manipulation of the thumb-nut 39, the rim sections on the disk 23 can be moved towards or away from the disk 40, in order to properly contact with 65 the bottle. It will be further seen that by having the

adjustable device for the rim section within the tank, that the bottles can be easily removed from the top since the disks do not bear on the bottles at that point.

If desired I may employ the construction shown in Fig. 8 for bodily adjusting the relative position of the 70 the disks and co-acting parts.

It will be evident that various changes may be made in the art which may come within the scope of my invention and I do not therefore desire to be limited in every instance to the exact construction as herein 75 shown and described.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is:

1. In a bottle washing machine, brushes adapted to receive and hold the bottles, means for rotating said brushes 80 and with them the bottles, means for revolving said bottles with respect to said brushes, and means for adjusting the said means for revolving the bottles.
2. In a bottle washing machine, bottle holders adapted to receive the bottles, means for rotating said holders and 85 with them the bottles, disks contacting with said bottles for revolving the same with respect to said bottle holders, and means for adjusting the position of said disks.
3. In a bottle washing machine, bottle holders adapted to receive the bottles, means for rotating said holders and 90 with them the bottles, disks for rotating said bottles with respect to said bottle holders; and means for rotating said disks at a different speed from the speed of revolution of the bottle holders.
4. In a bottle washing machine, bottle holders adapted 95 to receive the bottles, means for rotating the said holders and with them the bottles, disks suitably mounted and adapted to be rotated in opposite directions, and a movable rim on one of said disks which is adapted to be forced into contact with said bottles at the proper time in order to re- 100 solve the same with respect to the bottle holders.
5. In a bottle washing machine, a tank adapted to contain cleansing material, radial brushes suitably supported and adapted to hold the bottle and to rotate in said tank, and brushes suitably supported and adapted to rotate with 105 respect to said tank independent of said brushes which hold the bottle.
6. In a bottle washing machine, a tank adapted to contain cleansing material, bottle holders adapted to receive the bottles, means for rotating said holders and with them 110 the bottles, disks suitably mounted and adapted to be rotated, a movable rim on one of said disks, and adjusting means which is adapted to bear against said rim when the same is in the tank, in order to cause the same to contact 115 with the bottle.
7. In a bottle washing machine, bottle holders adapted to receive the bottles, disks suitably mounted adjacent said bottle holders, and gears suitably mounted and so arranged as to operate said bottle holders and said disks at a differ- 120 ent rate of speed from each other.
8. In a bottle washing machine, bottle holders adapted to receive the bottles, means for rotating said holders and with them the bottles, means for revolving said bottles with respect to said holders, means for adjusting the said 125 means for revolving the bottles, and means for conducting cleansing material to the interior of the bottles when in position on the said holders.
9. In a bottle washing machine, bottle holders adapted to receive the bottles, means for rotating said holders and with them the bottles, means for revolving said bottles 130 with respect to said holders, means for adjusting said means for revolving the bottles, and means for automatically controlling a supply of cleansing material for the interior of the bottles.
10. In a bottle washing machine, a tank adapted to re- 135 ceive cleansing material, bottle holders adapted to receive the bottles, means for rotating said holders and with them the bottles with respect to said tank, means for revolving said bottles with respect to said brushes, means for adjusting said means for revolving the bottles, and means for au- 140 tomatically controlling a supply of cleansing material for the interior of the bottles.



11. A bottle washing machine comprising a rotary wheel, a brush on said wheel, a rotary disk, a brush on said disk and means for supporting, rotating and revolving a bottle adjacent said brushes.
- 5 12. A bottle washing machine comprising a rotary wheel, a brush radially secured on said wheel, a rotary device adjacent said wheel, a brush on said rotary device and a bottle-engaging portion on said rotary device whereby a bottle may be supported, revolved and brushed interiorly
- 10 and exteriorly.
13. A bottle washing machine comprising a rotary wheel, a brush on said wheel, a rotary device adjacent said wheel, a brush on said rotary device and means for introducing a liquid to the interior and exterior of a bottle in contact
- 15 with said brushes.
14. A bottle washing device comprising a tank, rotary mechanism for brushing the inner and outer sides of bot-

ties in said tank and an arc shaped track having a brush on its inner periphery in the path of the bottom of such bottles.

15. A bottle washing device comprising a tank, a rotary wheel, a brush on said wheel, a rotary bottle holding device and an arc shaped track in said tank having a brush on its inner periphery adapted to contact with the bottom of a bottle secured on said rotary device.

16. A bottle washing device comprising a tank, radial brushes arranged on a central wheel and adapted to receive the bottles, brush carrying disks adapted to rotate on each side of the bottles and means for actuating said wheel and disks.

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