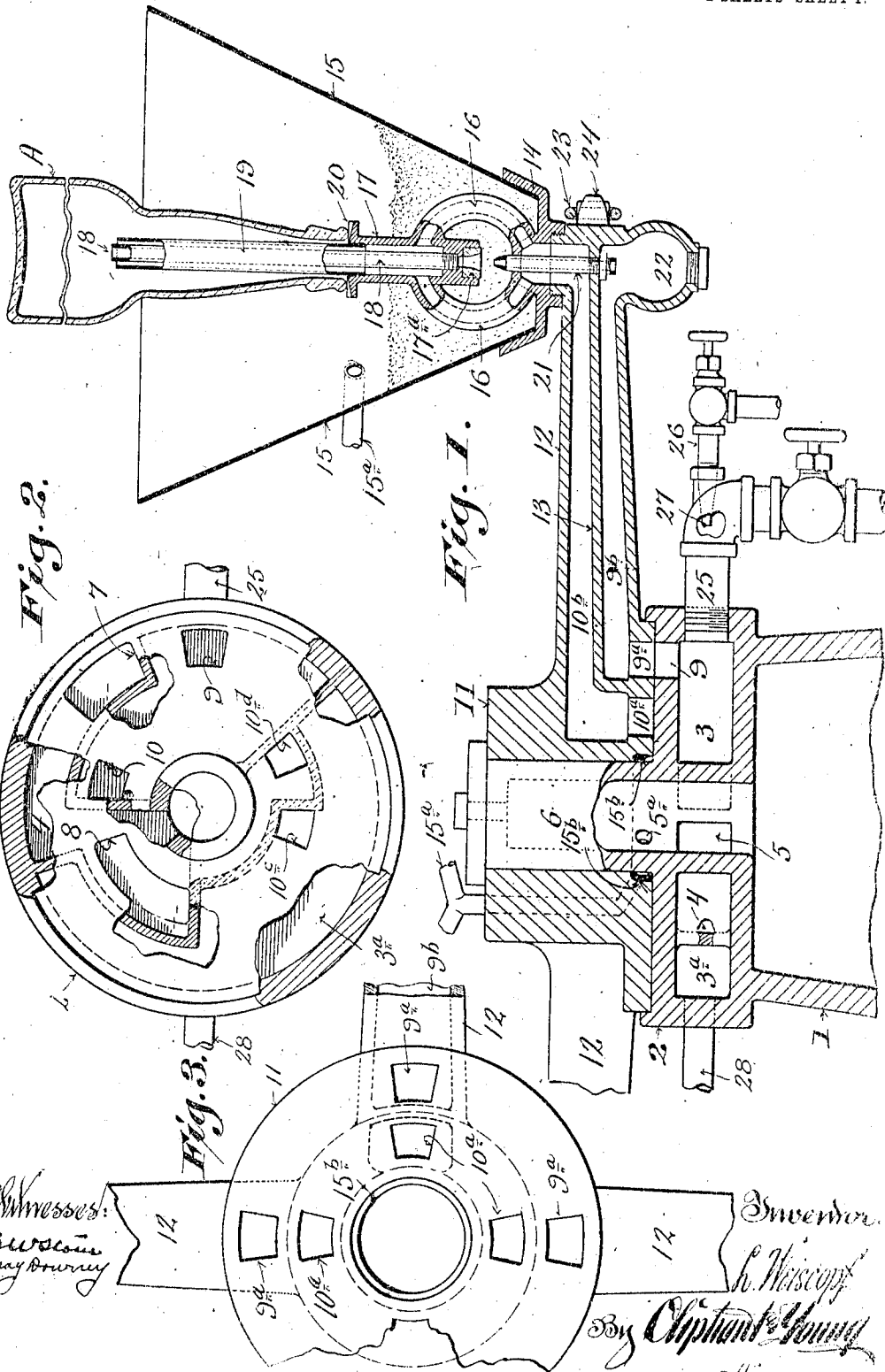


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CLEANING AND STERILIZING MACHINE.
APPLICATION FILED FEB. 3, 1910.

1,040,477.

Patented Oct. 8, 1912.

2 SHEETS-SHEET 1.



Witnesses:
B. W. Brown
May 1911

Inventor

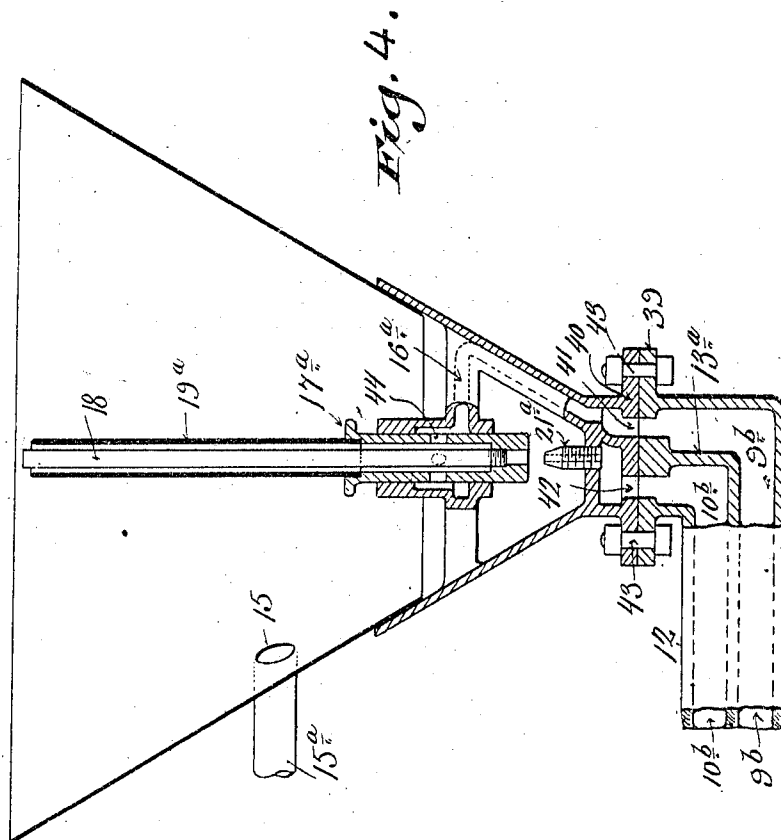
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UNITED STATES PATENT OFFICE.

LEOPOLD WEISCOFF, OF NEW YORK, N. Y.

CLEANING AND STERILIZING MACHINE.

1,040,477.

Specification of Letters Patent.

Patented Oct. 8, 1912.

Application filed February 3, 1910. Serial No. 541,916.

To all whom it may concern:

Be it known that I, LEOPOLD WEISCOFF, a citizen of the United States, and resident of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Cleaning and Sterilizing Machines; and I do hereby declare that the following is a full, clear, and exact description thereof.

10 The object of my invention is to provide a simple, economical and effective washing and rinsing machine for bottles, cans or like articles, its arrangement and construction being such that bottles may be first sub-
15 jected to a blast of sand mixed with water or air, or a combination of water and air, to thoroughly scour the inner surface of the bottle, the scoured bottle being thereafter
20 rinsed by the injection of a stream of hot or cold water therein.

It also is within the province of my invention to subject the bottle to sterilization after scouring, by means of a steam jet, which jet may be passed through the fluid
25 conductors.

The invention therefore consists in certain peculiarities of construction and combination of parts to be set forth hereinafter with reference to the accompanying drawings and subsequently claimed.

30 In the drawings Figure 1 represents a sectional elevation of a portion of a washing and rinsing machine embodying the features of my invention; Fig. 2, a plan view of the head of the washing machine, which constitutes a water chamber or fixed member
35 of a valve, the view being shown partly broken away and in section to illustrate various water compartments; Fig. 3, an inverted plan view of a portion of the rotary head of the rinsing machine, which head
40 constitutes the movable member of the valve; Fig. 4, a detail sectional view of another form of water-head which form is
45 adapted to be adjusted with relation to the reel-spoke upon which it is secured.

Referring by characters to the drawings, 1 represents a hollow column provided with a flat circular head 2, which head constitutes the stationary member of a valve,
50 being provided with a water inlet chamber 3 and a water exhaust chamber 4. The water exhaust chamber 4 is provided with

an outlet aperture 5, which aperture extends through the wall of a centrally dis- 55
posed hollow spindle 6 of the head. The upper face of the head 2, as shown in Fig. 2, has a segmental exhaust port 7 therein, that communicates with the exhaust chamber 4, and a second segmental exhaust port 60
8, also communicating with said exhaust chamber; this second port 8 being struck upon a lesser radius than the first named port. An inlet port 9, is also formed in the upper face of the head, upon the same 65
radius as the exhaust port 7, there being a similar inlet port 10, corresponding in radius to the exhaust port 8, the pairs of inlet and exhaust ports being disposed about the face of the head upon different points about 70
the axis of said head. The inlet ports 9 and 10 of the head are arranged to coincide with ports 9^a and 10^a in the face of a rotary hub 11, which hub, as shown in Fig. 3 of
the drawings, is provided with four radially 75
aligned sets of these ports. Each set of ports 9^a, 10^a, communicates with channels 9^b and 10^b respectively of a hollow spoke 12, the channels being separated by means of a longitudinal division wall 13 of said spoke and
80 constituting independent fluid conductors. The outer end of each spoke has a vertically disposed screw-threaded boss that communicates with the chamber 10^b and is provided for the reception of a water-head 14. This
85 water-head has secured thereto a hopper 15, which hopper serves as a sand receptacle and also a catch-basin for the various cleansing fluids that are discharged from bottles placed therein. The water-head 14 is pro- 90
vided with branch-pipes 16, extending upwardly from its base, the branch-pipes merging into a vertically disposed sleeve 17 with which they have communication. The open bottom of this sleeve is preferably 95
provided with a hardened thimble 17^a, which thimble is seated therein to constitute a throat, there being an inner tube 18 in screw-threaded connection with said sleeve above the thimble and communicating therewith. 100
This inner tube extends upwardly a sufficient height to effectually discharge into a bottle being cleansed, said tube being arranged to inject a stream of water and sand, air and sand, or the three elements combined. The tube is of lesser diameter than 105

the inner diameter of the sleeve 17, whereby, a water space is formed therebetween, with which space the branch-pipes 16 of the water-head communicate.

5 An outer tubular jacket 19 is in screw-threaded connection with the mouth of the sleeve 17, the tubular jacket being extended to a point slightly below or approximately upon a line with the top of the inner tube 18. The mouth of the sleeve 17 is provided with a radially grooved collar 20, upon which collar the mouth of a bottle to be cleansed is designed to rest, there being shown in Fig. 1 of the drawings a portion of a bottle A adjusted to the collar and telescoped over the tubular jacket 19. The inner and outer tubes 18 and 19 just described together form a spray-nozzle through which the various cleansing fluids, together with sand from the hopper are conducted.

Secured to the partition wall 13 of each spoke 12, is an injector-nozzle 21, the injector-nozzle being in screw-threaded connection with the partition and arranged to communicate with the spoke channel 9^b. Directly under the injector-nozzle 21 the chamber 9^b is provided with a globular extension or pocket 22, which pocket forms a trap or catch-basin for any sand which may be exhausted from the hopper 15, when the latter is drained of water, after a cleansing operation. The upper or discharge end of the injector-nozzle 21 projects through the water-head 14 and is alined with the apertured bore of the thimble 17^a, which thimble is disposed slightly above the same and at such distance therefrom, that a stream of water, when discharged from said nozzle, will enter the thimble and cause a proportion of said, within the hopper, to be carried up with the water, the sand and water thus elevated being discharged or sprayed from the end of the tube 18 against the walls of the bottle. The pocket 22 as shown is provided with a plugged aperture whereby access is had thereto for the purpose of drainage and thus sand deposited therein may be readily removed. The spokes together with the head of the rinsing machine are adapted to revolve upon the hollow spindle 6 of the head, as clearly shown in Fig. 1, and each spoke is provided with a hopper and spray-nozzle device similar to that shown. Thus the hub and spokes constitute a reel, carrying a series of rinsing devices, and in operation, this reel is slowly rotated past the operator either by hand or suitable power-driven mechanism, the means shown for rotating the reel, in this instance, being an endless chain 23, which chain is adapted to mesh with sprocket-teeth 24 that extend from a circular periphery or rim of said reel.

A valve-controlled feed-pipe 25 is in screw-threaded connection with the water inlet chamber of the head 2, which pipe may be used as a conductor for either hot or cold water, there being also a valve-controlled air pipe 26 in connection with the pipe 25. The air-pipe 26 is provided with a nozzle 27, that extends through a coupling of the pipe 25, whereby air may be admitted thereto. A second pipe 28 also communicates with the head 2 whereby steam may be admitted thereto for sterilizing purposes if desired, by which arrangement the bottles may be first washed with water, sand and air, and thereafter rinsed with cold water admitted through pipe 25 and subsequently sterilized.

The steam-pipe 28 enters a third compartment 3^a of the head 2 and this compartment is also provided with inlet and exhaust ports 10^c, 10^d respectively, the latter being arranged to communicate with the exhaust chamber 4, whereby steam is admitted to the spray-nozzle and exhausted therefrom in a similar manner to that described in connection with the cleansing and rinsing fluids.

From the foregoing description it will be seen that if the port 9^a of the hub is brought into register with port 9 of the head, water will be admitted through the channel 9^b to injector-nozzle 21, from whence it is discharged into the bottle from the mouth of tube 18. The water discharged thus is admitted to the apparatus at any desired pressure and in its passage from said injector-nozzle to the sleeve 17 above, the ejector effect of the fluid, will result in drawing up a certain percentage of sand which is contained in the hopper. This sand and water or other fluid, will thus thoroughly scour the inner surface of the bottle, the pressure being sufficient to cause all foreign matter or fine particles of glass which may adhere to the surface of the bottles in their manufacture, to be cut away, thus insuring sanitary cleansing of said bottles. Further rotation of the reel causes port 9^a to travel past port 9 and the water is thus cut off. At this juncture port 9^a will register with the exhaust aperture 7 and water contained in channel 9^b is thus drained through the exhaust aperture 5 of the hollow spindle 6. The accumulation of water discharged from the bottle is drained from the hopper through an overflow pipe 15^a which pipe is connected to the drainage channel 15^b in the hub 11. From this channel the water passes through an aperture 5^a in the spindle to the column 1, it being understood that the sand will gradually settle back upon the hopper bottom. After the described drainage has taken place the port 9^a is cut off from the aperture 7 and port 10^a now registers with port 10 of the head. Clear water for rinsing is thus admitted to channel 10^b, through

branch-pipes 16 of the water-head to sleeve 17, being discharged into the bottle through jacket 19. After this rinsing operation the water is exhausted from the channel 10^b to exhaust chamber 4 through port 10^a, the latter having established communication with the exhaust aperture 8, the drainage of water from the hopper being effected through pipe 15^a as previously described, and the drainage of water from the space between tubes 18 and 19 and said channel 10^b is exhausted through port 10^a, exhaust chamber 4 and exhaust aperture 5 from which aperture it is discharged through the hollow spindle to the column.

In some instances it is desirable, as previously stated, to utilize compressed air in connection with the water and sand for washing purposes and hence the air pipe 26 is provided, it being understood that this air pipe is connected to any suitable source of air supply under pressure. The effect of introducing air in combination with the water and sand will tend to increase the sand blast and insure efficient results. It is also desirable in some instances that sand and air be used for scouring or washing, and in this operation water is dispensed with, the rinsing operation, however, being the same as that previously described. I may also, in some cases, utilize steam for sterilizing the bottle after washing and rinsing, and thus by progressive steps, scouring, rinsing and sterilizing is attained, or the vessels may be subjected to any one of these operations without the other.

In some instances it is necessary for the machine to be revolved from right to left and at other times the rotation thereof is reversed, hence in order to obtain this reversal of motion without changing the relative location of ports 9 and 10 of the circular head 2 which constitute one of the valve members, as well as other changes in the structural features, I provide means whereby the water-head 14 may be adjusted so that its injector-nozzle may be placed in communication with the port chamber 10^b in place of with the chamber 9^b as shown in Fig. 1. This provision is obtained by the form of water-head shown in Fig. 5 of the drawings. In this figure of the drawings the hollow spoke 12 is provided with a flanged cap 39 having separate apertures therein which communicate with the channels 9^b, 10^b, the division wall 13^a in this case being extended upwardly to the face of the flanged cap. The water-head 14 in this instance is also provided with a flanged cap 40 having apertures 41 and 42 that are arranged to coincide with the spoke apertures. As shown in the drawing the aperture 42 is arranged to communicate with channel 10^b while the aperture 41 communicates with

the channel 9^b. The flanged caps of the water-head and spoke are secured by suitable bolts 43 whereby said water-head may be readily removed and its position relative to the spoke channels reversed. Aperture 41 as arranged serves to conduct water through branch-pipe 16^a and from thence through passages 44 of a sleeve 17^a. This sleeve carries a tubular jacket 19^a into which is telescoped a tube 18, the latter tube being in screw-threaded engagement with a bottom inlet aperture of the sleeve 17^a. An injector-nozzle 21^a is alined with this aperture, the nozzle being in screw-threaded engagement with the base portion of the water-head and also in communication with the aperture 42 thereof, which aperture, as shown in Fig. 5, is arranged to communicate with channel 10^b of the spoke 12. By this construction it will be readily seen that should it be desired to reverse the rotation of the machine, it will be only necessary to remove the water-head or heads and readjust them to the spoke members in such position that the aperture 42 would be alined with channel 9^b, while aperture 41 would be alined with channel 10^b.

It should be understood that, while I have shown and described a specific water-head and spray-nozzle mechanism within the hopper 15, for effecting the various operations, that this structure may be varied and any means for accomplishing the same result utilized as a substitute therefor without departing from the spirit of my invention.

From the foregoing described mechanism it will be further understood that by utilizing the essential features of the mechanism embodied in this washing and rinsing machine, I may thoroughly wash or scour, rinse, and sterilize, any form of vessel preparatory to use as a food or liquid receptacle, and thus insure most efficient sanitary results, in an economical manner, the machine being capable of manipulation by unskilled labor as effectually as if the bottle washing and rinsing operations were performed by the most careful and conscientious skilled operators.

I claim:

In a washing machine for bottles or the like, a rotary spoked reel having a hollow hub and separate fluid channels in each of its spokes communicating with the hub, a chambered supporting water-head for the reel-hub, ports in said reel-hub adapted to communicate with the channels of each spoke, and inlet and discharge ports in the supporting water-head adapted to have communication with the reel-hub ports, hopper-carrying water-heads each in communication with one of the channels of a spoke, bottle holding tubes extending from each water-head, injector nozzles in communica-

tion with the other spoke-channels and projecting through the water-heads, and inner tubes in the bottle holding tubes and each having its lower end in communication with
5 and spaced from an injector nozzle.

In testimony that I claim the foregoing
I have hereunto set my hand at New York

in the county of New York and State of New York in the presence of two witnesses.

LEOPOLD WEISCOFF.

Witnesses:

M. E. SKERRITT,
E. STODDART, 3rd.