T. L. VALERIUS.

APPARATUS FOR WASHING CONTAINERS.

APPLICATION FILED MAY 12, 1911.

1,228,851.

Patented June 5, 1917.

3 SHEETS—SHEET 1.

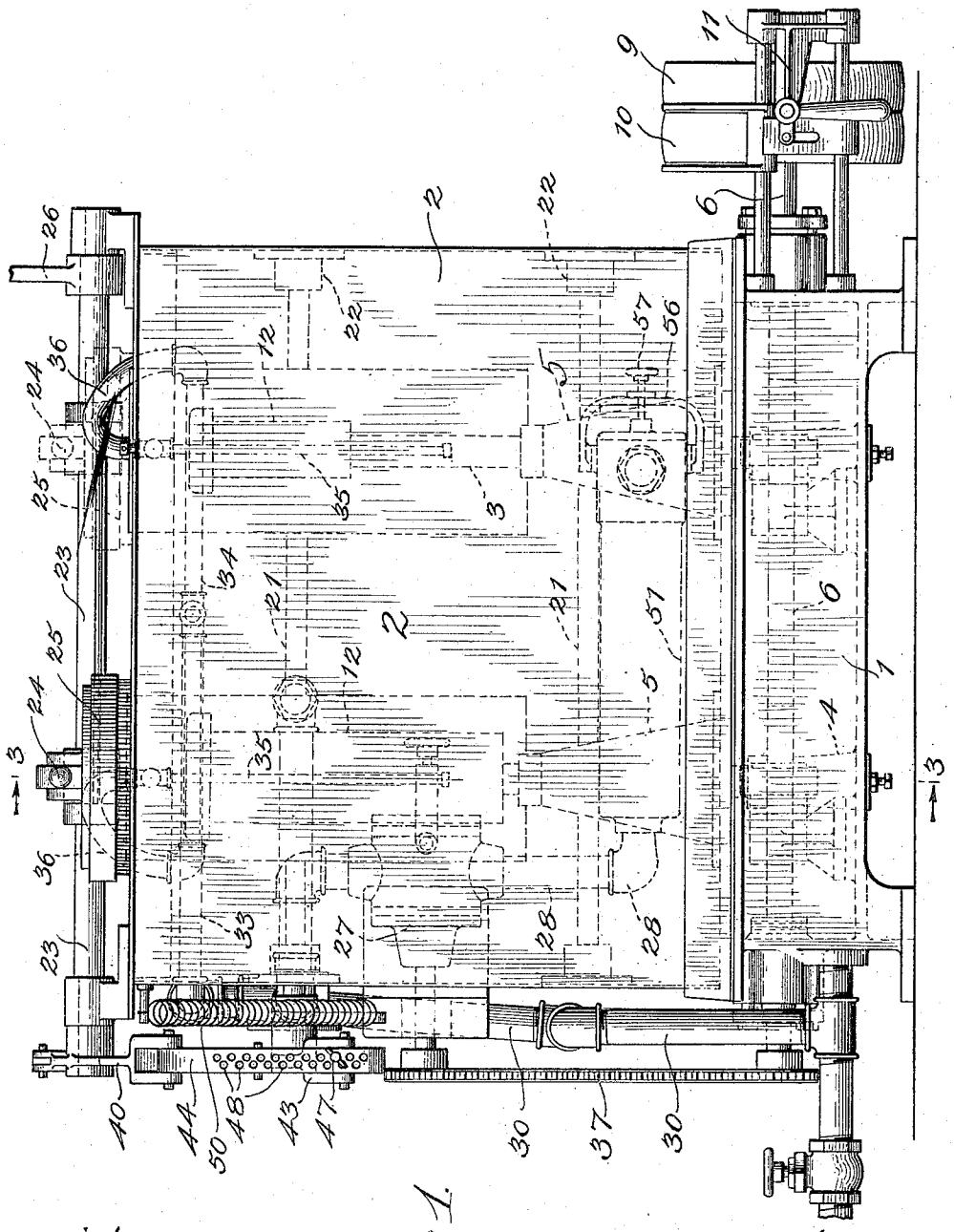


Fig. 1.

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3 SHEETS—SHEET 2.

Fig. 2.

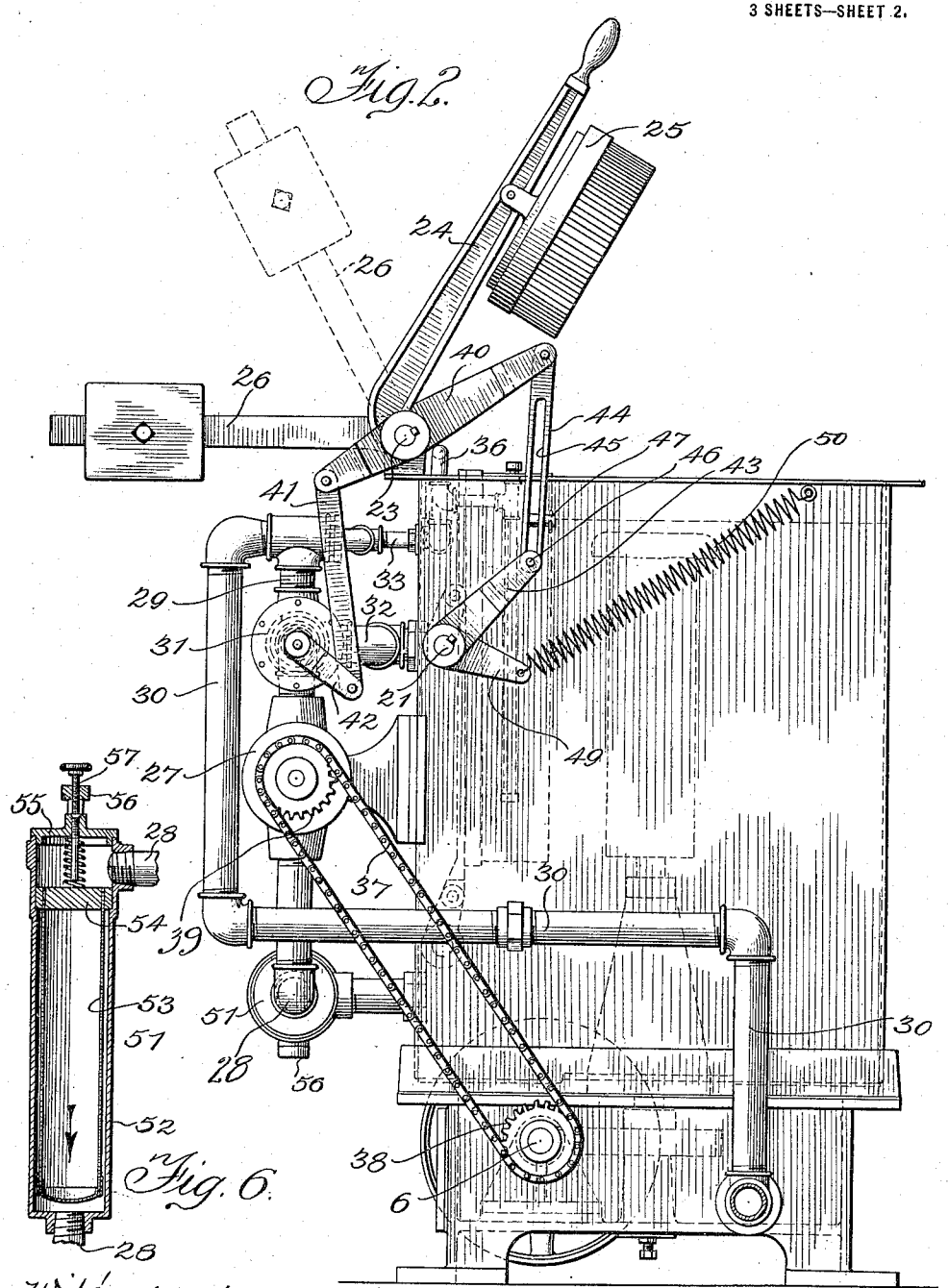


Fig. 6.

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3 SHEETS—SHEET 3.

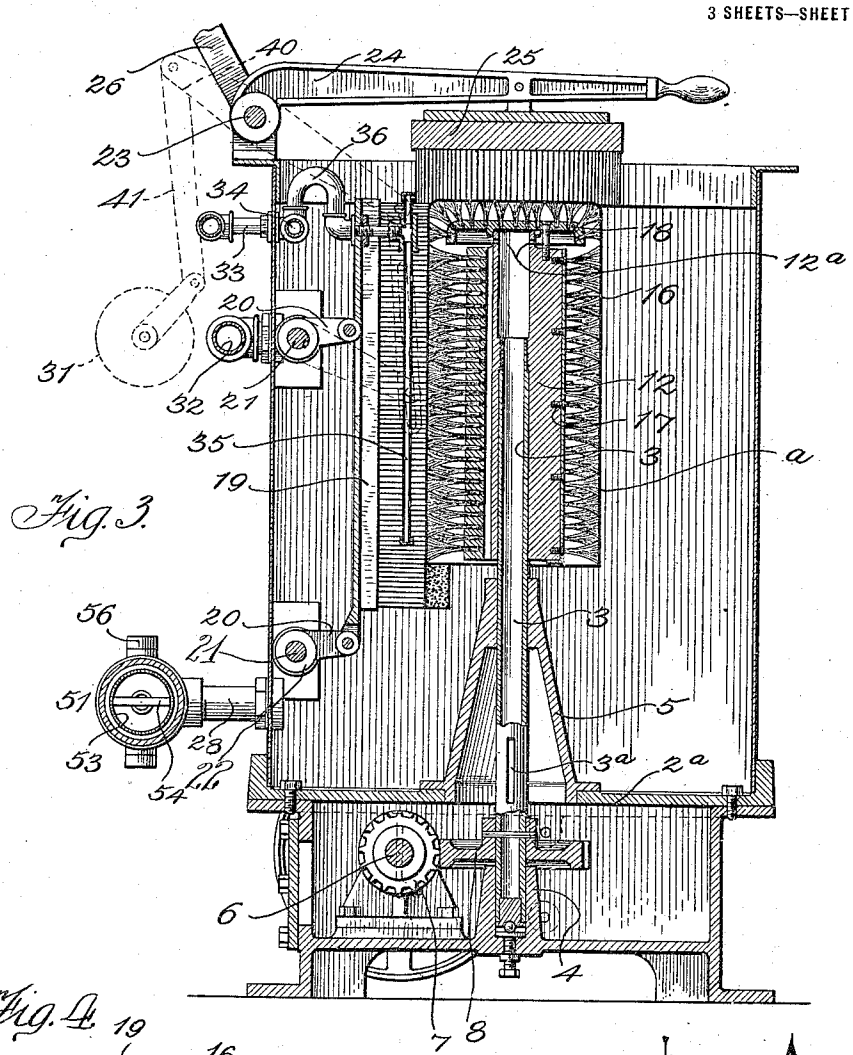


Fig. 3.

Fig. 4.

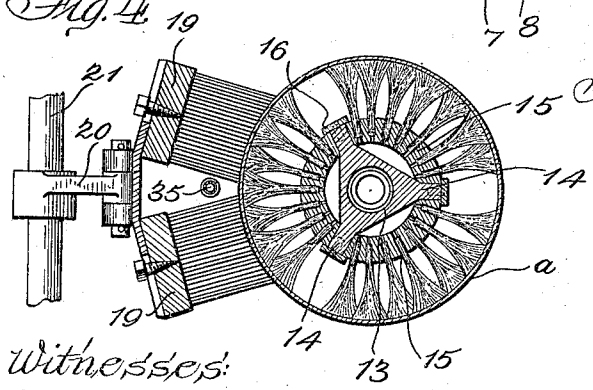
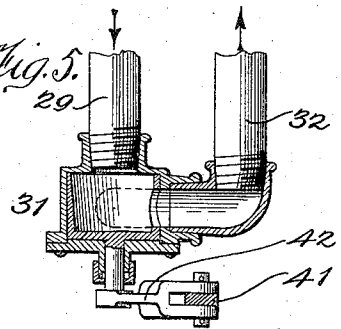


Fig. 5.



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UNITED STATES PATENT OFFICE.

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APPARATUS FOR WASHING CONTAINERS.

1,228,851. Specification of Letters Patent. Patented June 5, 1917.

Application filed May 12, 1911. Serial No. 626,748.

To all whom it may concern:

Be it known that I, THEODORE L. VALERIUS, a citizen of the United States, residing at Fort Atkinson, in the county of Jefferson and State of Wisconsin, have invented certain new and useful Improvements in Apparatus for Washing Containers, of which the following is a specification.

This invention relates to a machine for washing containers, the embodiment herein shown being particularly adapted for washing ice cream packing cans, although certain features are applicable to machines for washing other styles of containers.

One of the objects of the invention is to produce an improved means for mounting the brushes.

Another object is to provide novel means for supplying water to the brushes.

A further object is to provide valve means for controlling the flow of the water to the brushes.

Another object is to provide a single means for operating said valve means and the brush carrying means. Further objects of the invention and objects relating to details of construction will be more fully understood from the following detailed description.

In the accompanying drawings Figure 1 is a side elevation of a machine embodying the features of my invention. Fig. 2 is an end elevation thereof. Fig. 3 is a vertical section taken in the plane of line 3 3 of Fig. 1. Fig. 4 is a horizontal section through the brushes, showing a container in operative relation thereto. Fig. 5 is a sectional view of a three-way valve comprised in the machine. Fig. 6 is a longitudinal sectional view through a strainer or filter embodied in the machine.

The embodiment of my invention which I have herein shown by way of example comprises a base 1, which constitutes a casing for the spindle-driving gears, and also a chamber from which fluid is forced to the interior brushes. Upon the base 1 is mounted a tank 2, rectangular in the present construction, the bottom of said tank closing the top of the chamber 1. The tank 2 constitutes means for preventing the water from splashing upon the operator and also serves as a reservoir from which the washing fluid is drawn by a pump to be later described.

In the form of machine herein shown two vertical can-supporting spindles 3 are provided, brush heads of different sizes being arranged to be mounted on said spindles to accommodate the varying sizes of ice-cream cans. The lower ends of the spindles 3 are rotatably supported in step bearings 4 of any suitable construction. Hollow bearing members 5 supported upon the bottom wall 2^a of the tank 2 provide bearings for the middle portion of the spindles 3.

The spindles 3 are rotated by means of a drive shaft 6 and spiral gears 7 fixed on said drive shaft and meshing with the spiral gears 8 fixed upon the spindles 3. 9 and 10 are respectively a loose and tight pulley on the drive shaft 6. Any suitable form of belt-shifting means 11 may be provided.

Removably mounted upon the upper end of each of the spindles 3 is a brush head 12 comprising a casting 13, having three radial arms 14 between which arms are secured brushes proper 15. The castings 13 preferably have a screw-threaded connection with the spindles, as shown in Fig. 3. Plates 16 engaging the edges of the brushes 15 have screws 17 extending therethrough and into the arms 14 for holding the brushes 15 in place. A brush 18 fixed to the upper end of the casting 13 is adapted to contact the inner bottom wall of the ice cream can *a*. The spindles 3 are hollow and each has a slot 3^a near its lower end. Water is forced from the chamber 1 through the slot 3^a, the spindle 3, and through ports 12^a in the brush head 12 to wet the brushes 15, to prevent matting of the bristles and to prevent dry brushing.

Brushes 19 adapted to contact the outer side walls of the cans *a* are positioned adjacent each of the spindles 3, said brushes being mounted upon arms 20, fixed to rock shafts 21, which shafts are pivotally mounted in suitable bearings 22, carried by the tank 2. A rock shaft 23 mounted in bearings at the upper edge of the tank 2 has fixed thereto a hand lever 24, to which is pivotally attached a brush 25 for brushing the outer bottom wall of the container *a*. A weighted arm 26 fixed to the rock shaft 23 tends normally to raise the hand lever 24.

The hand lever 24 is splined upon the rock shaft 23 so that it may be slidden longitudinally thereon into position above either of the spindles 3 as indicated in Fig. 1.

A rotary pump 27 has its suction end connected by means of a pipe 28 with the lower portion of the tank 2, the discharge end of said pump being connected by means of pipes 29 and 30 with the chamber 1. In the line of pipe 28 between the pump 27 and the said lower portion of the tank I preferably insert a strainer 51 of any suitable construction, the one herein shown comprising an outer casing 52 (see Figs. 3 and 6) communicating at opposite ends with the pipe 28, and an inner strainer tube 53 spaced from the casing 52 and having one end closed, the open end of said tube being positioned adjacent the inlet end of the casing 52 and being fixed to a suitable crosspiece 54 removably fitting within said casing. The end wall 55 of the casing adjacent the inlet end thereof is removable to permit of withdrawing the strainer tube 53 for cleaning purposes, said end wall being held in place by any suitable means such as a yoke 56 pivoted upon the casing and a screw 57 threaded in said yoke and bearing against said end wall. Mounted in the pipe 29 is a three-way valve 31 of any suitable construction, said valve being adapted to direct the flow from the pump 27 into the pipe 30 leading to the chamber 1, or into a pipe 32 leading into the upper portion of the tank 2.

Water is supplied to the brushes 19 for the outer side of the container *a* by means of a pipe 33 leading from the pipe 29 and communicating with a pipe 34 extending along the inner side of one wall of the tank 2. Fixed in any suitable way to each set of the brushes 19 is a vertical spray pipe 35 having a plurality of perforations therein adapted to discharge water against the container *a* and brushes 19, said spray pipe having a port at its upper end arranged to discharge the water against the upper brush 25. Water is supplied to the pipes 35 through the medium of flexible conductors 36 leading from the ends of the pipe 34 to the pipes 35. As will be seen the flexible conductors 36 permit the brushes 19 and the spray pipes 35 to be moved upon their supports toward and away from the spindles 3.

The pump 27 may be driven in any suitable manner as by means of a sprocket chain 37 running upon sprocket wheels 38 and 39 upon the driving shaft 6 and the pump shaft, respectively.

Means is provided for simultaneously operating the three-way valve 31 and rocking the upper shaft 21 which supports the brushes 19. Said means in this instance comprises a lever 40 fixed upon the rock shaft 23, one end of said lever being connected by means of a link 41 with an arm 42 fixed to the movable valve member of the valve 31. The opposite end of the lever 40 has an adjustable connection with an arm 43 fixed upon the rock shaft 21. Said adjustable connection comprises a link 44 pivotally connected at one end with the lever 40 and having a slot 45 therein adapted to receive a pin 46 carried by the forked end of the arm 43. A stop pin 47 adapted to enter any one of a plurality of openings 48 in the link 44 engages the pin 46 in the downward movement of the link 44, so as to swing the rock shafts 21, the position of the stop pin 47 determining the time at which the brushes 19 will be moved into contact with the container *a*. An arm 49 fixed to the upper rock shaft 21 is engaged by a coiled spring 50, said spring tending to hold the brushes 19 in their inoperative position.

In practice, several of the brush heads 12 of different sizes are preferably provided, said heads being arranged to be interchangeably mounted on either of the spindles 3. In this way any size of can may be washed.

Before starting the machine a quantity of water is placed in the tank 2, washing powder being added to make a washing solution of the desired strength.

In operation, the machine is started by shifting the driving belt to the tight pulley 10, whereupon the interior brush heads 12 will be set in rotation, and the pump 27 started. During the time the machine is in use the driving shaft 6 is, of course, rotated constantly, and at the intervals in which the apparatus is in the position indicated in Fig. 2 the water from the pump is by-passed through the pipe 32 into the upper portion of the tank 2. With the parts in the position just mentioned, the operator grasps a can and pushes it slowly down over one of the brushes 12, the can being held by the operator against rotation with the brush until the can is fully in place, whereby the can receives an initial interior brushing during the time it is being moved down over the brush. When the operator releases the can it rotates with the brush. The operator now lowers the hand lever 24 to carry the brush 25 into engagement with the outer bottom wall of the can, said hand lever being slidden along its shaft into position above the spindle to be used. The lowering movement of said hand lever 24 simultaneously operates the three-way valve 31 to direct the discharge of the pump 27 into the chamber 1 and the exterior brushes, and swings said exterior brushes into contact with the sides and bottom of the can. Water is thus discharged from the pump 27 into the chamber 1, the water in said chamber being forced therefrom upwardly through the slot 3^a and the spindle 3, and escaping

through the ports 12ª in the casting 13 to wet the bristles of the interior brushes. Water is also forced from the pump to the spray pipes 35 so that the exterior brushes are kept wet.

When the can has been brushed on the outside sufficiently, the operator releases the lever 24, thus withdrawing the exterior brushes from the can and shutting off the water from the brushes, after which he grasps the can and slowly raises it off from the rotating brush thus giving the can a second internal brushing.

It will be seen that the machine herein disclosed is specially adapted to quickly and thoroughly wash ice cream packing cans. The vertical spindles and upright tank contribute to convenience in handling the cans, and since the water supplying means and the exterior brush means are controlled by a single hand lever, the time necessary to clean each can is reduced to a minimum. Each can may be brushed just as much as its condition requires.

While I have herein shown and described one illustrative embodiment of my invention, I do not wish to be limited to the exact construction shown, inasmuch as various modifications within the scope of my invention will be apparent to persons skilled in this art.

I claim as my invention:

1. In an apparatus for washing large metallic cans, the combination of a tank open at its upper end, a rotary vertical spindle in said tank, brush means fixed on said spindle and adapted to have an inverted can pushed downwardly thereover, exterior brush means mounted in the tank for movement into and out of contact with the outer sides of the can while supported on the first mentioned brush means, a pump adapted to force water to said brush means, a valve for controlling the flow of the water from the pump, and a hand-actuated lever arranged to operate said valve and simultaneously move the exterior brush means into and out of can-engaging position.

2. In an apparatus of the character described, the combination of means for rotatably supporting a container, a rock shaft, brush means fixed to said rock shaft and adapted to move into and out of contact with said container, means for supplying water to said brush means, a valve controlling the water supply, brush means for the bottom of said container, a hand lever to which the last mentioned brush means is fixed, a connection between said hand lever and said valve, and a connection between said hand lever and said rock shaft.

3. In an apparatus of the character described, the combination of means for rotatably supporting a container, a rock shaft, brush means fixed to said rock shaft and adapted to move into and out of contact with the sides of said container, means for supplying water to said brush means, a rotary valve for controlling the water supply, a second rock shaft, a hand lever fixed thereon, a brush carried by said hand lever and adapted to contact the bottom of the container, a lever fixed on said second rock shaft, a link connecting said lever with said rotary valve and a link connecting said lever with the first mentioned rock shaft.

4. In an apparatus of the character described, the combination of a plurality of rotary spindles, brush means fixed thereon and adapted to receive containers, means for supplying water to said brush means, a rock shaft, a hand lever non-rotatably mounted on said rock shaft, means connected with said rock shaft for controlling said water supply, and a brush carried by said hand lever and adapted to contact the bottom of containers, said hand lever being slidable on said rock shaft into position above any one of said spindles.

5. In an apparatus of the character described, the combination of brush means adapted to enter a container, movably mounted brush means adapted to contact the outer side walls of the container, means for supplying water to said brush means, a valve for controlling said water supplying means, a brush movable into contact with the bottom wall of the containers, and means connecting the last mentioned brush with said movably mounted brush means and said valve for simultaneous operation.

6. In an apparatus of the character described, the combination of a chamber, a tank, a rotary spindle, brush means fixed on said spindle within said tank, said spindle being adapted to conduct water from said chamber to said brush means, a pump having its suction end connected with the lower portion of said tank, a conductor leading from the discharge of said pump to said chamber, a three-way valve in said conductor, a second conductor leading from said three-way valve to the upper portion of said tank, movably mounted brush means adapted to contact the outer side of a container, a pipe leading from the first mentioned conductor to said movably mounted brush means, movement of said valve being adapted to throw the discharge from said pump into the upper portion of said tank or into said chamber and said movably mounted brush means, brush means adapted to contact the bottom of a container, a connection between the last mentioned brush means and said valve, and a connection between the last mentioned brush means and said movably mounted brush means.

7. In an apparatus of the character described, in combination, a tank, a chamber, rotary brush means in said tank adapted to

extend into and support a container, means for conducting water from said chamber to said brush means, brush means movably mounted in said tank and adapted to contact the outer side of the container, a pump having its suction end connected with the lower portion of said tank, means for conducting the discharge from said pump to said chamber, to said outer brush means, and to the upper portion of said tank, a valve in said conducting means adapted to throw the discharge from said pump either into the upper portion of said tank or into said chamber and said outer brush means, a pivoted hand lever, means connecting said hand lever with said valve and said outer brush means, and brush means carried by said hand lever and adapted to contact the bottom of a container.

8. In an apparatus of the character described, the combination of a rotary spindle, brush means fixed thereon and adapted to extend into and support a container, movably mounted brush means adapted to contact the outer side wall of the container, means for supplying water to both of said brush means, a valve controlling the water supply, a hand lever, a brush carried by said lever and adapted to contact the bottom of a container, and means operatively connecting said hand lever with said valve and said movably mounted brush means.

9. In an apparatus of the character described, the combination of movable brush means, water supplying means, a valve connected with said brush means and adapted to control said water supplying means, and a second brush means adapted to operate said valve and the first mentioned brush means.

10. In an apparatus of the character described, the combination of a tank, a pump having its suction end communicating with the lower portion of said tank, brush means in said tank, means connecting the discharging end of said pump with the upper portion of said tank and with said brush means, and a three-way valve adapted to direct the discharge from said pump either into the upper end of said tank or to said brush means.

11. In an apparatus of the character described, the combination of a tank, a pump having its suction end communicating with the lower portion of said tank, movably mounted brush means in said tank adapted to contact the side of a container, means connecting the discharge end of said pump with said brush means and with the upper portion of said tank, a three-way valve in said connecting means and a brush for the bottom of a container, said brush being connected with said valve and with said movably mounted brush means.

12. In an apparatus of the character described, the combination of a tank, a pump having its suction end connected with the lower portion of said tank, a three-way valve into which said pump discharges, brush means, means connecting one outlet of said valve with said brush means, and means connecting another outlet of said valve with the upper portion of said tank.

13. In an apparatus of the character described, the combination of movable brush means for the exterior side wall of a container, independently mounted brush means for the exterior bottom wall of a container and a connection between said brush means whereby they will move simultaneously toward and away from the container.

14. In an apparatus of the character described, the combination of movable brush means for the side of a container, movable brush means for the bottom of a container, means for supplying water to said brush means, a valve in said water supplying means, an adjustable connection between said two brush means, and a connection between one of said brush means and said valve whereby movement of the latter brush means will move the other brush means and actuate said valve.

15. In an apparatus of the character described, the combination of a rock shaft, an arm fixed thereon, brush means carried by said arm, a pivoted hand lever, brush means carried by said hand lever, a lever rigid with said hand lever, a second arm on the first mentioned rock shaft, a link adjustably connecting said second arm with said lever, water supplying means, a rotary valve therein, and a link connecting said rotary valve with the second mentioned lever.

16. In a can-washing machine, in combination, means for rotatably supporting a can; a pair of horizontal rock shafts mounted adjacent to said supporting means; arms fixed on said shafts; a vertical brush head carried by said arms and arranged to be moved into and out of engagement with a can mounted on said supporting means; a spraying device rigidly mounted on said brush head; means for supplying water to said spraying device; and means for rocking said shafts.

17. In a can-washing machine, in combination, a support; a rotatably mounted can-supporting device; a hand lever pivoted on said support; a brush carried by said hand lever and arranged to contact the outer side of the bottom of a can mounted on said device; a brush for the exterior of the sides of the can, said brush being mounted on said support for movement toward and away from the can; and a connection between the last mentioned brush and said hand lever, whereby movement of said hand lever will carry said bottom brush and said side brush into engagement with the can.

18. In a can-washing machine, in combination, a tank; a rotatably mounted vertical brush in said tank adapted to have an inverted can pushed downwardly thereover; a brush for the outer sides of the can mounted in said tank for movement toward and away from the can; a hand lever pivoted upon the upward portion of said tank; a brush for the bottom of the can carried by said hand lever; and a connection between said hand lever and the first mentioned brush, whereby swinging of said lever will simultaneously move said bottom brush and said side brush toward and away from the can.

19. In a can-washing machine, in combination, means for rotatably supporting a can; a brush for the outer sides of the can, said brush being movable toward and away from the can; a spray device for supplying water to said brush; a valve for controlling the flow of water to said spray device; a brush for the outer side of the bottom of the can; and a hand lever and connections arranged to simultaneously move said side brush and said bottom brush into engagement with the can and to actuate said valve to turn on the water.

20. In a can-washing machine, in combination, a stationary tank open at its upper end; a plurality of rotatably mounted hollow vertical spindles in said tank; brushes mounted on the upper ends of said spindles and arranged to have inverted cans pushed downwardly thereover; a chamber beneath said tank, said spindles being arranged to conduct washing fluid from said chamber to said brushes; brushes for the exterior sides of the cans mounted in said tank for movement toward and away from the cans; a pump arranged to draw water from the lower portion of said tank; conductors arranged to lead the water from said pump to the upper portion of said tank, to said chamber, and to said exterior brushes; a three-way valve in said conductors arranged to direct the discharge from said pump into the upper portion of the tank at times, and at other times into said chamber and said exterior brushes; and means for simultaneously moving said exterior brushes and for actuating said three-way valve.

21. In a machine for washing ice-cream packing cans, the combination of a tank open at its upper end; a rotatably mounted vertical spindle in said tank; a brush head fixed on the upper end of said spindle and having its bristles arranged in the form of a cylinder, whereby an inverted ice-cream can may be pushed downwardly over said brush head and frictionally engaged and rotated thereby; a brush for the outer sides of the can, the latter brush being mounted within said tank for movement toward and away from the interior brush; a hand lever pivoted in the upper portion of said tank; a brush for the bottom of the can mounted on said hand lever; and a connection between said hand lever and said exterior side brush, whereby when the hand lever is swung to move said bottom brush into contact with the can, said outer side brush will also be moved into such contact.

22. In a can-washing machine, in combination, a tank; a rotatably mounted can support vertically disposed within said tank; a rock shaft mounted in said tank; a brush for the outer sides of the can carried by said rock shaft; a second rock shaft mounted in the upper portion of said tank; arms on said rock shafts; a link connecting said arms; a hand lever fixed on the second rock shaft; and a brush mounted on said hand lever and arranged to contact the outer side of the bottom of the can.

23. In a machine for washing large metallic cans, the combination of a base adapted to rest upon the floor and providing an interior chamber, a tank open at its upper end and having its bottom supported by said base at the top of said chamber, a plurality of rotatably mounted hollow vertical spindles in said tank, internal brushes mounted on said spindles, all of said spindles communicating at their lower ends with said chamber and arranged to conduct water therefrom to said internal brushes, a horizontal drive shaft mounted near the bottom of the tank and connected to said spindles for rotating them, a pump arranged to draw water from said tank and discharge the water into said chamber, and an operative connection between said pump and said drive shaft.

24. In a machine for washing ice-cream packing cans, the combination of a tank open at its upper end, a plurality of rotary vertical spindles mounted in said tank, brush heads fixed upon said spindles, said brush heads being of different sizes and being adapted to have different sized cans inverted and pushed downwardly thereover, exterior brush means mounted in said tank and disposed vertically alongside said interior brush heads, the latter being arranged to rotate with reference to said exterior brush means, a hand lever pivoted in the upper portion of said tank, said lever being movable laterally into position above either of said spindles, a brush mounted on said hand lever arranged to swing downwardly therewith and contact the outside of the bottom of an inverted can and connections between the hand lever and the exterior brush means for moving the latter against the sides of the can when the brush on the lever is moved against the bottom of the can.

25. A machine for washing ice cream packing cans having, in combination, a tank open at its upper end and adapted to con-

tain water, an upright spindle rotatably mounted in a bearing at the bottom of said tank and projecting upwardly therefrom, an internal brush rigidly fixed on the upper part of said spindle to rotate therewith, said brush being adapted to have an inverted can pushed downwardly thereover and constituting the sole support for the can, an external brush mounted in the tank independently of said internal brush and positioned at all times alongside the latter in an upright position, and a bottom brush mounted on the upper portion of the tank and arranged to contact with the outer face of the bottom wall of the can when supported on said internal brush, said bottom brush being movable laterally upward with respect to said external and internal brushes to a position at one side of and away from the axis of the internal brush so as to permit the can to be placed on and removed from the latter, said internal brush being rotatable with reference to both the external brush and the bottom brush.

26. A machine for washing large ice cream packing cans having, in combination, a water tank open at its upper end, a rotary vertical spindle mounted in a bearing at the bottom of the tank and projecting upwardly therefrom, an internal brush rigidly fixed to said spindle to rotate therewith, said brush being adapted to have an inverted can pushed downwardly thereover and constituting the sole support for the can, there being a water conducting passage located within the interior of the inverted can and communicating at its upper end with the tank and at its other end with a conduit outside of the tank to provide a change of water beneath the can and around the brush during the brushing operation, an external brush mounted in the tank and positioned at all times vertically alongside of said internal brush, the latter being arranged to rotate with reference to said external brush, a hand lever pivoted on the upper part of the tank, and a bottom brush mounted on said hand lever and arranged to contact with the outer side of the bottom wall of the can and being movable up and down with the lever relative to said internal and external brushes to permit of placing cans on and removing them from said internal brush.

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

THEODORE L. VALERIUS.

Witnesses:
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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."