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3 SHEETS—SHEET 1.

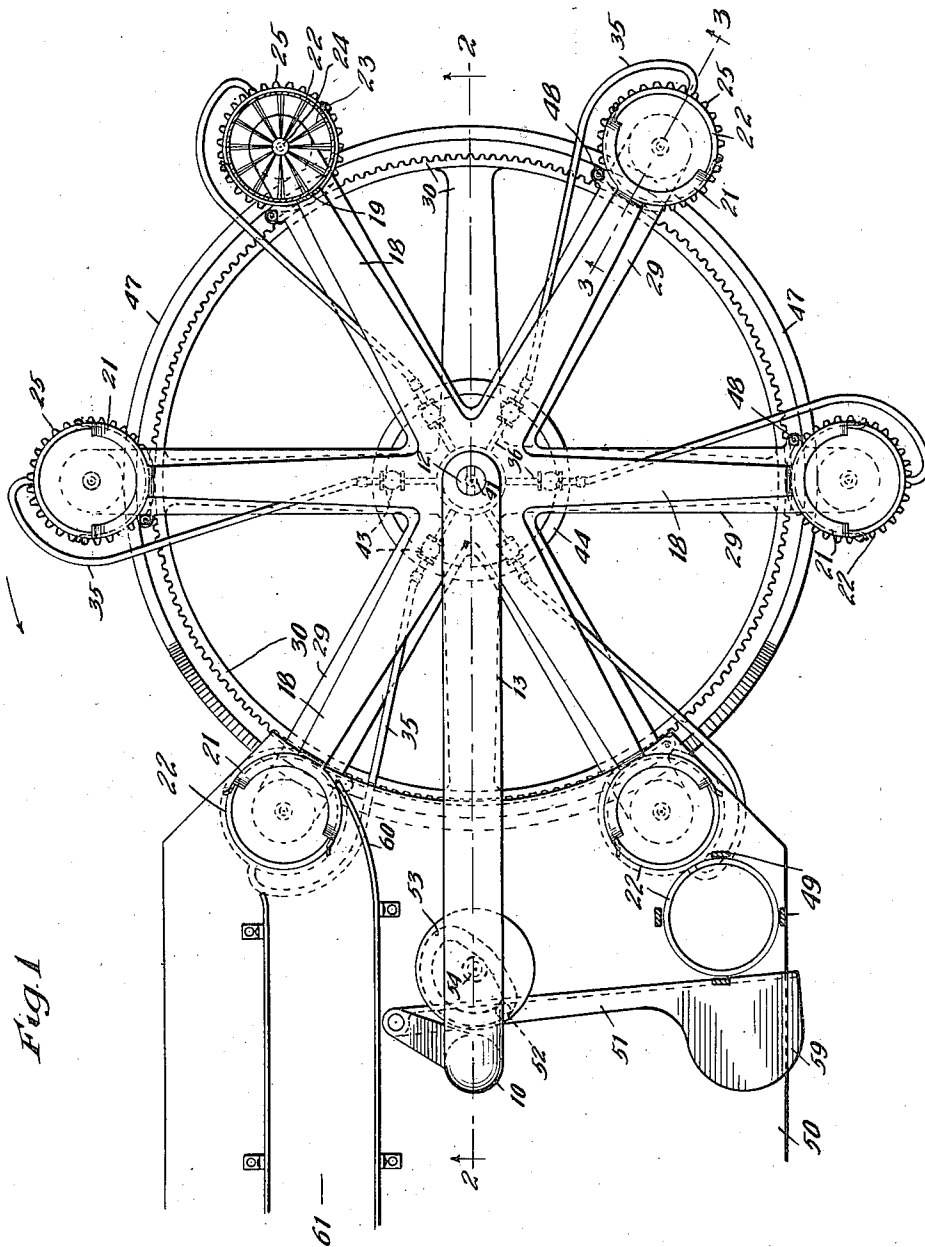


Fig. 1

Wm. Geiger
Pearl Abrams.

By Munday, Everts, Asperch & Clarke,
his Attys

F. EBERHART.
CONTAINER WASHING MACHINE.
APPLICATION FILED NOV. 4, 1912.

Patented Feb. 29, 1916.

3 SHEETS—SHEET 2.

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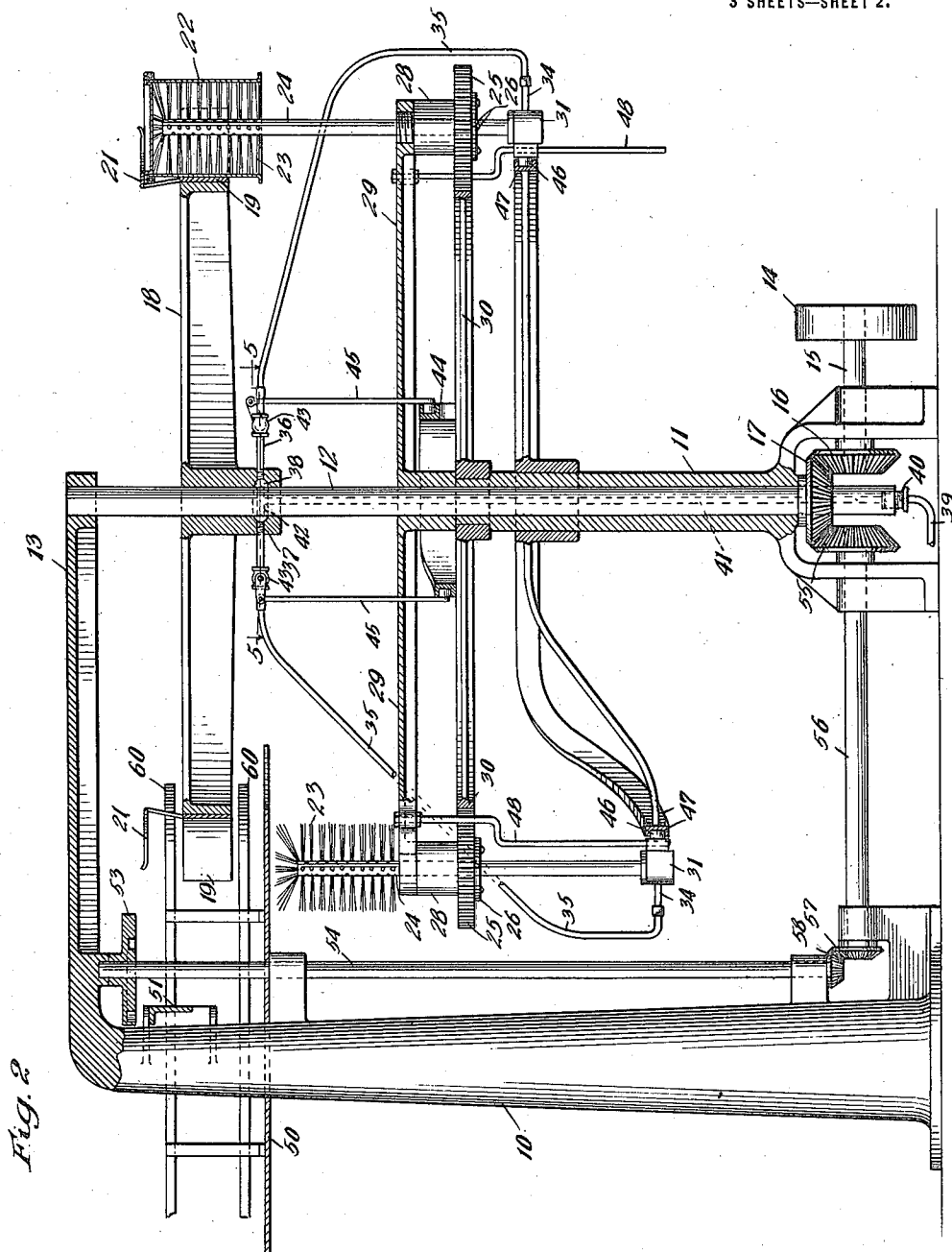


Fig. 2

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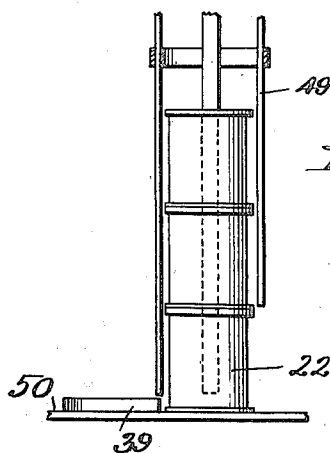
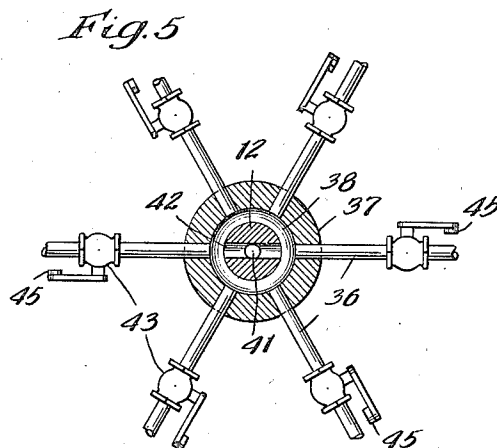
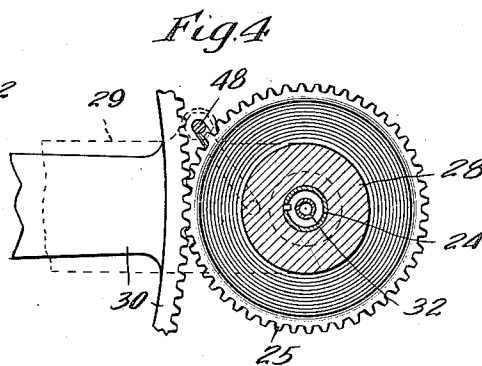
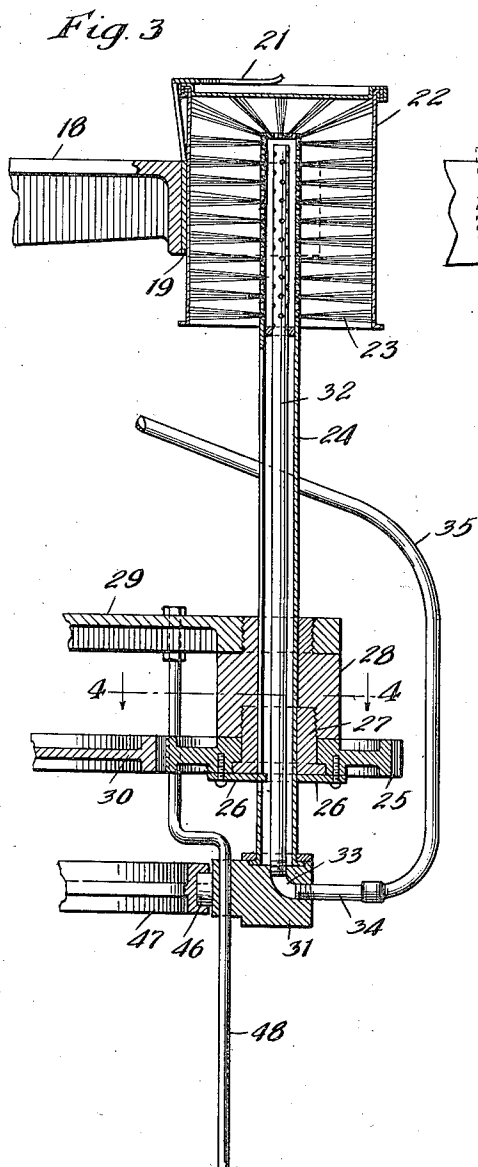
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3 SHEETS—SHEET 3.



Witnesses:

Wm. Geiger
Pearl Abrams.

Inventor:
Felix Eberhart

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UNITED STATES PATENT OFFICE.

FELIX EBERHART, OF NEWARK, NEW JERSEY, ASSIGNOR TO AMERICAN CAN COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

CONTAINER-WASHING MACHINE.

1,173,255.

Specification of Letters Patent.

Patented Feb. 29, 1916.

Application filed November 4, 1912. Serial No. 729,249.

To all whom it may concern:

Be it known that I, FELIX EBERHART, a citizen of the United States, residing in Newark, in the county of Essex and State of New Jersey, have invented a new and useful Improvement in Container-Washing Machines, of which the following is a specification.

This invention relates to improvements in container washing machines.

One object of the invention is to provide an automatically, continuously operating machine of large capacity, for washing and cleansing cans or other forms of containers.

Another object of the invention is to provide a washing machine of the type above indicated, which is of simple construction, adjustable for different sizes of containers and one which is particularly adapted for use in canning factories.

A further object of the invention is to provide a machine which automatically feeds the cans to the carrier, one by one, from a stack.

The invention furthermore consists in the improvements in the parts and devices and in the novel combinations of the parts and devices herein shown, described and made the subject of claim.

In the drawing forming a part of this specification, Figure 1 is a plan view of a machine embodying my improvements, the same showing a carrier having cans in some of the pockets or holders and one of the pockets or holders being shown empty, to more clearly illustrate the cleansing devices. Fig. 2 is a longitudinal, sectional view of the structure shown in Fig. 1 and taken on the line 2—2 thereof, only two of the cleansing devices, diametrically disposed, being shown, in order to prevent crowding of the drawing. Fig. 3 is an enlarged, vertical, sectional view taken substantially on the line 3—3 of Fig. 1. Fig. 4 is a horizontal, detail, sectional view, taken on the line 4—4 of Fig. 3, and Fig. 5 is a horizontal, sectional view taken substantially on the line 5—5 of Fig. 2, Fig. 5 being on a somewhat larger scale than Fig. 2. Fig. 6 is a vertical sectional detail view illustrating the lower part of the vertical chute down which the cans may be fed by gravity to the table.

As shown in the drawing, the machine comprises a pair of vertically extending up-rights or standards 10 and 11, the latter

having mounted therein a rotatable shaft 12 having a bearing at its upper end in a horizontally extending arm 13 formed integrally with the standard 10. The shaft 12 is adapted to be continuously rotated by power derived from any suitable source (not shown) by pulley 14, shaft 15 and bevel gears 16 and 17, the latter being fixed to the lower end of the shaft 12. Also secured to the shaft 12 near its upper end, is a spider conveyer or carrier 18, having a plurality of peripherally arranged container holders 19 equally spaced around the circumference of the carrier 18, and each being in the form of a U-shaped spring clip having resilient arms and detachably secured to the carrier 18, by any suitable means such as screws or equivalents, whereby the same may be interchanged for others of different size. Secured to the carrier 18 above each of the holders 19 are a plurality of members 21 adapted to prevent the cans 22 from being displaced in the holders by the cleansing devices when the latter are moved within the cans, as hereinafter described.

Means for cleansing the cans or other containers while the latter are being conveyed by the carrier are provided, which comprise a plurality of brushes, scrubbers or swabs 23, each mounted on the upper end of a rotatable spindle 24, the brushes corresponding in number to the number of holders on the carrier and being alined therewith. All of said brushes are bodily rotatable in unison with the carrier 18 and are also independently rotatable and vertically movable as hereinafter described. Each of the hollow, rotatable spindles 24 is slidably keyed or spliced to a pinion 25 by means of a detachable, two-piece plate 26, and said pinion and plate are rotatably mounted on a hollow bearing member 27 removably threaded in a hollow depending support 28, which is removably threaded in a carrying member 29 fixed to the shaft 12 and thereby rotatable in unison with the carrier or conveyer 18. Each of the pinions 25 is continuously rotated as the carrying member 29 is revolved, by means of a major, stationary gear 30, secured to the upper end of the standard 11 and below the carrying member 29.

Each hollow, rotatable spindle 24 is perforated at its upper end and through the

perforations a cleansing liquid is supplied to the brushes and to the interior of the containers at the proper time by the following means. Each spindle 24 is swivelly mounted in a cam block 31 having threaded therein a pipe 32 extending up into the hollow spindle 24 and perforated at its upper end. Also secured in the block 31 and communicating with the pipe 32 by means of a short passageway 33 is a short piece of pipe 34, to which is attached a flexible pipe or tube 35 attached at its other end to a short pipe section 36 threaded in the hub 37 of the carrier 18. The hub 37 is provided with an annular, distributing chamber 38 which communicates with each of the short pipe sections 36 and to which the cleansing liquid is supplied from a suitable source (not shown) through pipe 39, stuffing box 40, axial passageway 41 in the rotatable shaft 12 and transverse passageway 42 communicating with the distributing chamber 38. Each pipe section 36 has included therein a valve 43 automatically operated by means of a stationary cam 44 and rods 45, the cam 44 being secured to the stationary gear 30. Each cam block 31 is provided with an anti-friction roller 46 which rides in a stationary cam track 47 secured to the standard 11, whereby the brushes are reciprocated up and down into and out of the containers as the carrier and carrier members are rotated, and the blocks 31 are prevented from rotation with the spindle 24 by means of depending rods 48 secured to the carrying member 29 and slidably engaging in vertical slots in the blocks 31.

The conveyer 18 and carrying member 29 are rotated in the direction indicated by the arrow in Fig. 1, and the can bodies or other containers are fed thereto automatically from a vertical chute composed of a plurality of rods 49, the rods forming the chute terminating slightly more than the length of a can above the table 50. The cans or other containers are pushed automatically one by one into the holders on the carrier by means of a pivoted feed arm 51 oscillated by means of a pin 52, engaging in a grooved cam 53, mounted on the vertical rotating shaft 54, the latter being driven from the bevel gear 17 by means of bevel gear 55, horizontal shaft 56 and bevel gears 57 and 58. At its outer end, the feed arm 51 is provided with a flat, horizontal shelf 59, which is adapted to support the stack of cans in the chute while the lowermost can is being pushed into a pocket on the carrier. After the containers have been thoroughly cleansed, the same are automatically removed from the holders by means of an ejector 60 which projects into the path of the containers as the same are brought around by the carrier, and deflects the same into a runway 61 on the table 50.

All the parts of the machine are properly adjusted and so arranged that the brushes are moved up into the containers directly after the latter have been fed to the holders and are withdrawn prior to the cans encountering the ejector 60, and the cleansing liquid is supplied to the brushes preferably only while the brushes are within the containers.

From the foregoing description, it will be seen that I have provided a washing machine of large capacity and one that is particularly adapted for use in canning factories or packing houses.

In actual practice, it has been found that although every precaution be taken in the manufacture, shipping and storage of open end containers, it is impossible to keep the same clean and free from dust, dirt or other foreign matter, and it is necessary to thoroughly cleanse the cans immediately prior to filling.

It will also be seen that with my improvements the cans are treated in an inverted position, with the result that the same are quite thoroughly drained after the brushes are withdrawn, and the containers may therefore be immediately conveyed to the filling machines without further drying, in those cases where water has been used as the cleansing medium, since a small amount of moisture will not injuriously affect a great many food products which, when sealed, contain a certain amount of moisture. However, if desired, the containers may be passed through a drying oven after being cleansed.

I have herein shown and described what I now consider to be the preferred form of my invention, but it will be obvious to those skilled in the art, that various changes and modifications may be made in the parts and combinations of the parts without departing from the spirit of the invention, and all such changes and modifications are contemplated as come within the scope of the claims appended hereto.

I claim:—

1. A machine for washing articles of the character described including, in combination: a continuously rotatable carrier having a plurality of spring grasping holders fixed thereto which extend more than half way around the articles, said holders being adapted to hold the articles from rotation relatively to the carrier while being cleansed; and devices for cleansing the articles while so held in said holders, each of said devices including a rotatable brush adapted to enter the articles.

2. A machine for washing articles of the character described including, in combination: a rotatable carrier having a plurality of U-shaped yielding and grasping holders fixed thereto, each of said holders being adapted to prevent the articles from rota-

tion while held therein; means for pressing the articles laterally and successively into the said holders; means for cleansing the articles while held by said holders, said means including a plurality of brushes adapted to enter the articles and rotatable while therein, substantially as specified.

3. A machine for washing articles of the character described including, in combination: a carrier continuously rotatable about a vertical axis and having a plurality of laterally yielding grasping holders thereon adapted to frictionally hold the articles while being cleansed and to prevent the same from rotating; means for pressing the articles laterally and successively into said holders; and a plurality of devices, corresponding in number to the number of said holders, for cleansing the containers while held by said holders, each device including a rotatable brush adapted to enter the article being cleansed; substantially as specified.

4. A machine for washing articles of the character described including, in combination: a carrier continuously rotatable about a vertical axis and having a plurality of laterally yielding grasping holders thereon adapted to frictionally hold the articles while being cleansed and to prevent the same from rotating; a plurality of devices, corresponding in number to the number of said holders, for cleansing the containers while held by said holders, each device including a rotatable brush adapted to enter the articles being cleansed; and automatically operable means for overcoming the grasping action of the holders and feeding articles one by one laterally into said holders; substantially as specified.

5. A machine for washing articles of the character described including, in combination: a rotatable carrier having a plurality of U-shaped grasping holders fixed thereto, each of said holders being adapted to prevent the articles from rotating while held therein; means for cleansing the articles while held by said holders, said means including a plurality of brushes adapted to enter the articles and rotatable while therein; and means for automatically feeding articles one by one laterally into the grasping members of the said U-shaped holders comprising a table on which the articles slide on their open ends, and a feeding arm; substantially as specified.

6. In a machine for cleansing cans and the like, a cleansing device comprising a hollow, rotatable spindle having a plurality of bristles forming a brush secured thereto at one end, said end being perforated to permit water to pass therethrough into the brush, a non-rotatable water supply pipe within said hollow spindle, means for rotating the said spindle relative to which the spindle is longitudinally movable, and

means for moving the spindle and pipe longitudinally together; substantially as specified.

7. In a can washing machine, in combination: a carrier rotatable on a vertical axis and having can-grasping holders; a fixed central master gear; pinions mounted and carried beneath said holders and meshing with said gear; hollow spindles vertically movable in said pinions and engaged and rotated thereby; brushes carried by the upper ends of said spindles, said upper ends being perforated and constituting water chambers; means, with which said spindles have rotary connections, for elevating the spindles at predetermined times; and water pipes fixed on said elevating means, arranged within the spindles and having conduits for receiving a water supply, the said water pipes extending and delivering into the said water chambers of the spindles; substantially as specified.

8. In a can washing machine, in combination: a carrier rotatable on a vertical axis and having individual can grasping holders which are open at the outer side and yielding, and which extend more than half way around the bodies of the cans; means for forcing cans successively and laterally into said holders; members on said holders which allow the cans to be fed horizontally within the holders and prevent upward movement of the cans; vertically movable brushing and water supplying devices carried beneath the holders; and means whereby the movement of the carrier causes the brushing and water supplying devices to be elevated during the intervals between the operations of the means which forces the cans into said holders; substantially as specified.

9. In a machine for washing cans, in combination: a continuously rotatable can carrier; a series of can holders fixed thereon comprising spring arms which yieldingly grasp around the body of the can and hold the same from rotation and are open at one side to admit of the can being forced thereinto, and members which engage the upper closed end of the can to hold it from endwise movement; scrubbing means including a brush and water feeding pipe; mechanism for rotating the carrier and the scrubbing means; devices for reciprocating the scrubbing means into and out of the can; a table on which the cans rest and slide successively on their open ends; and automatic means for successively forcing the cans along the table and within the grasp of the said can holders.

10. In a machine for washing cans, in combination: a continuously rotatable can carrier; a series of can holders fixed thereon comprising spring arms which yieldingly grasp around the body of the can and hold

the same from rotation and are open at one side to admit of the can being forced there-into, and members which engage the upper closed end of the can to hold it from endwise movement; scrubbing means including a brush and water feeding pipe; mechanism for rotating the carrier and the scrubbing means; devices for reciprocating the scrubbing means into and out of the can; a table on which the cans rest and slide successively on their open ends; a vertical chute down which the cans are fed to the table; and automatic means for successively forcing the cans from within the bottom of the chute along the table and within the grasp of the said can holders.

11. In a machine for washing cans, in combination: a continuously rotatable can carrier; a series of can holders fixed thereon comprising spring arms which yieldingly grasp around the body of the can and hold the same from rotation and are open at one side to admit of the can being forced there-into, and members which engage the upper closed end of the can to hold it from endwise movement; scrubbing means including a brush and water feeding pipe; mechanism for rotating the carrier and the scrubbing means; devices for reciprocating the scrubbing means into and out of the can; a table on which the cans rest and slide successively on their open ends; a vertical chute down which the cans are fed to the table; automatic means for successively forcing the

cans from within the bottom of the chute along the table and within the grasp of the said can holders; a receiving chute along which the scrubbed cans slide on their open ends; and means for deflecting the cans successively into the receiving chute.

12. In a machine for washing cans, in combination: a continuously rotatable can carrier; a series of can holders fixed thereon comprising spring arms which yieldingly grasp around the body of the can and hold the same from rotation and are open at one side to admit of the can being forced there-into, and members which engage the upper closed end of the can to hold it from endwise movement; scrubbing means including a brush and water feeding pipe; vertically movable blocks on which the brush is swiveled and on which the water pipe is fixed; means for vertically reciprocating the said blocks; mechanism for rotating the carrier and the scrubbing means; devices for reciprocating the scrubbing means into and out of the can; a table on which the cans rest and slide successively on their open end; vertical chute down which the cans are fed to the table; and automatic means for successively forcing the cans from within the bottom of the chute along the table and within the grasp of the said can holders.

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Witnesses:

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W. D. FOSTER.