No. 643,479. Patented Feb. 13, 1900.

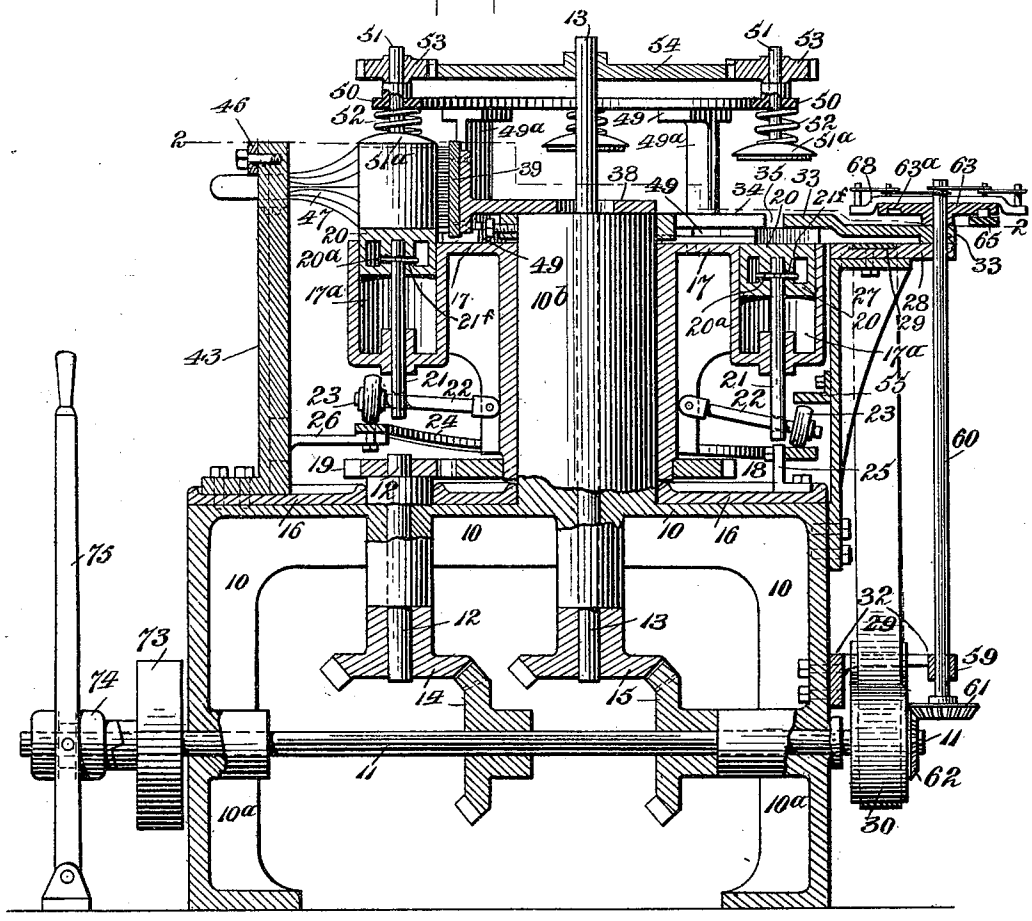
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CAN WASHING MACHINE.

(Application filed Oct. 8, 1898.)

(No Model.) 4 Sheets—Sheet 1.

Fig. 1.



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Fig. 2.

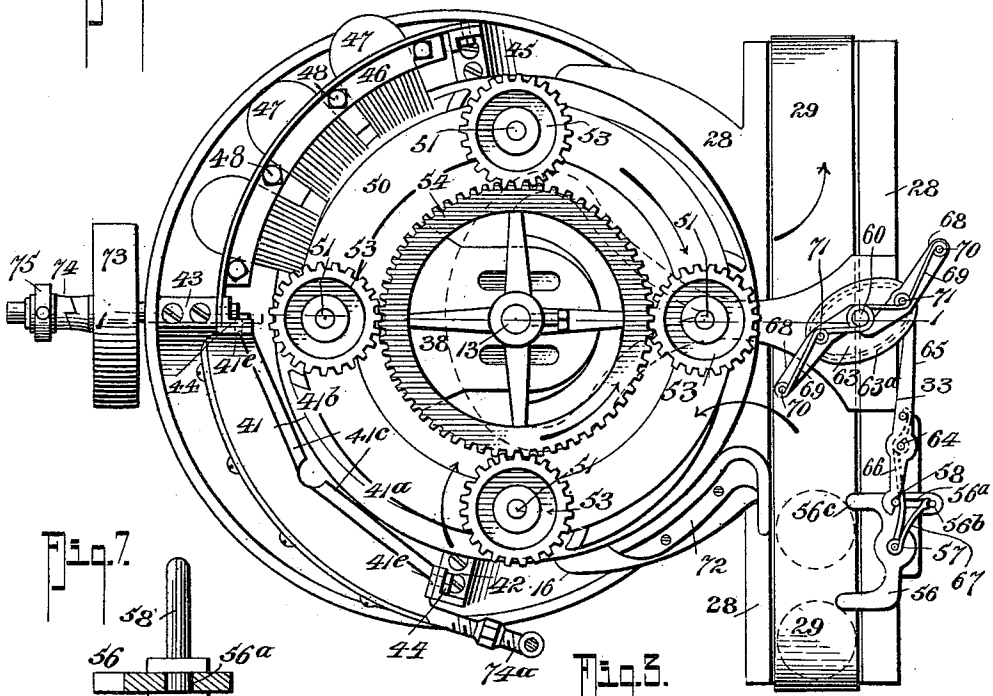


Fig. 7.

Fig. 5.

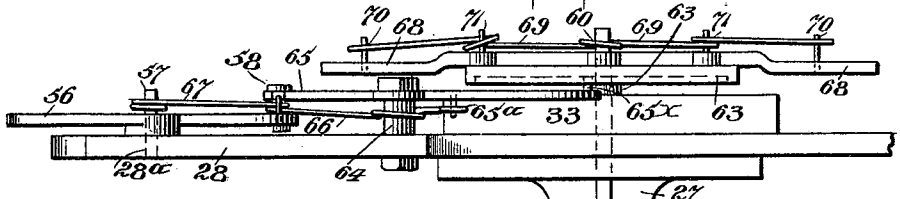
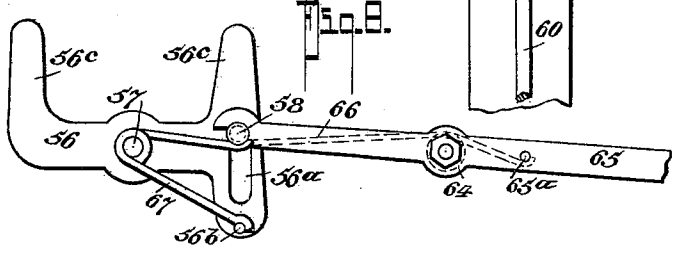


Fig. 8.



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Fig. 4.

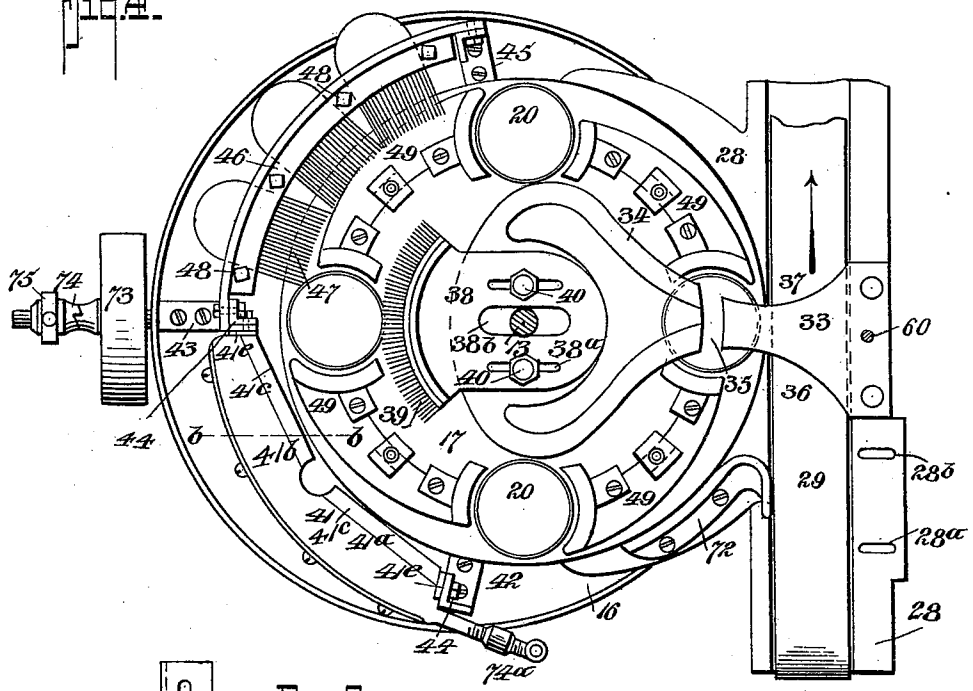


Fig. 5.

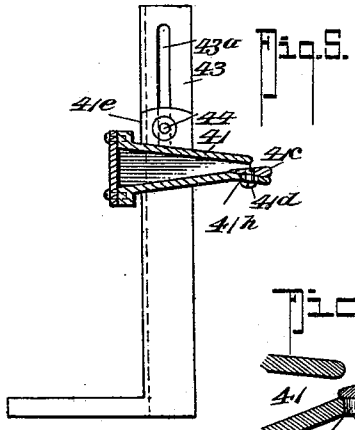


Fig. 6.

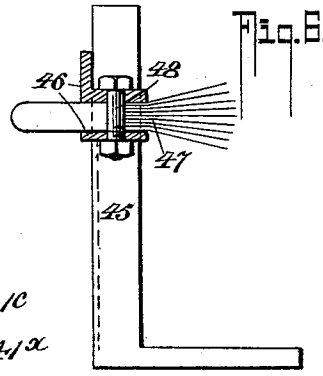
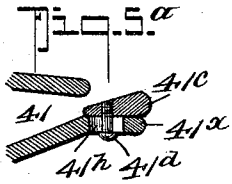


Fig. 5a.



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(Application filed Oct. 8, 1898.)

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Fig. 9.

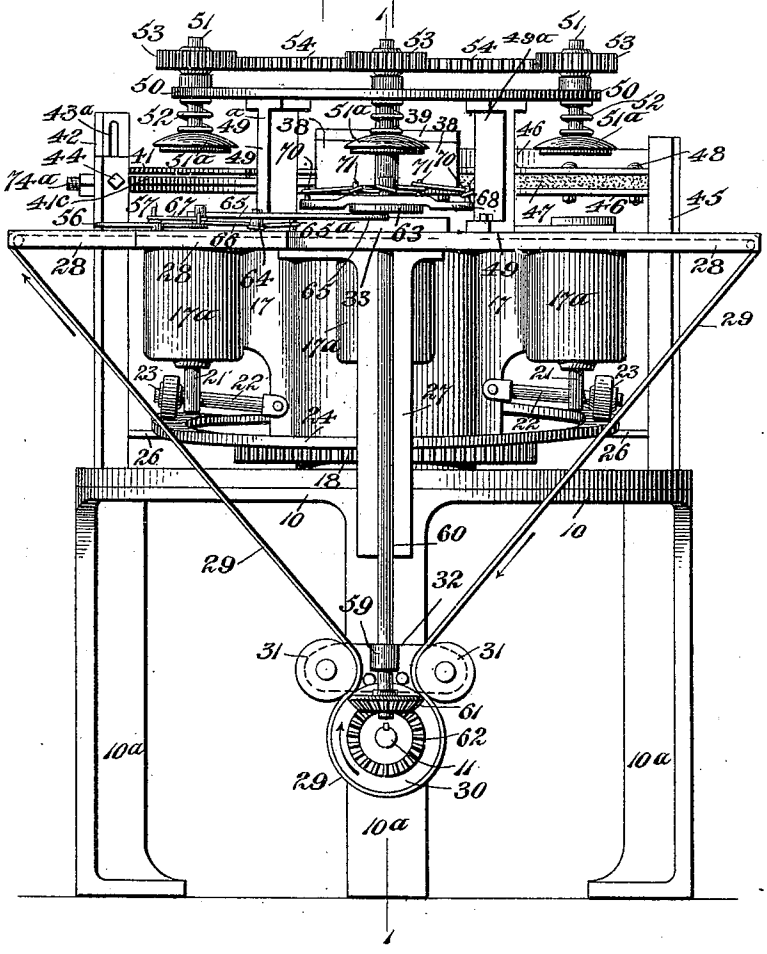
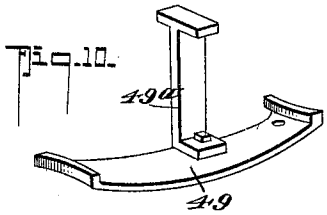


Fig. 10.



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UNITED STATES PATENT OFFICE.

JAMES DES BRISAY, OF NEW WESTMINSTER, CANADA.

CAN-WASHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 643,479, dated February 13, 1900.

Application filed October 8, 1898. Serial No. 693,012. (No model.)

To all whom it may concern:

Be it known that I, JAMES DES BRISAY, a citizen of the Dominion of Canada, residing at New Westminster, in the Province of British Columbia, Canada, have invented a new and useful Improvement in Can-Washing Machines, of which the following is a specification.

My invention relates to improvements in machines for washing the grease from cans preparatory to being covered, so that the flux will properly seal the caps; and the object of my improvement is to provide a machine of this class that is cheap to make and simple to operate and that will efficiently wash a large number of cans in a short space of time and which may be also adjusted to wash cans of different dimensions.

I attain the above object by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a vertical section of a machine constructed in accordance with my invention, taken practically on the line 1 1 on Fig. 2, parts being shown in elevation. Fig. 2 shows a plan of the machine. Fig. 3 is an enlarged elevation of the can spacing and feeding mechanism. Fig. 4 is a plan of the machine with the top removed to line 2 2 of Fig. 1. This shows the position and adjustment of the brushes on either side of the can-track. Fig. 5 shows a section of the water-box on line *b b*, Fig. 4. Fig. 5ª is a detail sectional view of a portion of the mouth of the water-box. Fig. 6 is a sectional detail of the device which secures the outer wiping-brushes. Fig. 7 shows a detail of the slidable pin in the trigger mechanism, and Fig. 8 shows an enlarged detail of the trigger which retards and spaces the cans. Fig. 9 is an end view of my can-washing machine. Fig. 10 is a detail view of one of the brackets 49 49ª, hereinafter referred to.

Similar numerals refer to similar parts throughout the several views.

The frame is comprised of a horizontal portion 10, supported by the legs 10^a, and a column 10^b, projecting upward for a suitable distance above the horizontal portion 10. Suitably journaled in the legs 10^a is a horizontal shaft 11, and placed at right angles to this shaft and passing through and journaled in the horizontal part of the frame 10 are shafts 12 and 13, these being rotated at the same speed as the shaft 11 by the bevel-gears 14 and 15, respectively.

Securely bolted to the horizontal part of the frame 10 is a circular table 16, having openings therein to receive the column 10^b and the boss for the shaft 12.

Arranged to turn on the column 10^b is a rotary table 17. Secured to the lower end or sleeve of this table is a toothed ring or gear 18, which meshes with a gear-wheel 19, secured on the upper end of the shaft 12. The diameters of the gears 18 and 19 should be two to one, respectively, for a reason to appear later.

Quadrically arranged in the table 17 are pockets 17^a, and arranged in these pockets are vertically-movable plungers 20, the same being also arranged to rotate in the pockets. Depending from the bosses of the plungers 20 are stems 21, on which the plungers turn, the said stems being held in place by pins lying in annular grooves 21^f in the same and passing through openings in the bosses of the plungers 20, as 20^a.

Pivoted to projecting webs on the under part of the table 17 and passing through openings in the depending ends of the stems 21 are radial arms 22, and on the ends of these arms 22 are rollers 23, the same taking around a track 24, which is rigidly supported by brackets 25 and 26. (See Fig. 1.)

Supported by a bracket 27 is a crescent-shaped frame 28, over which a can-feeding belt 29 is passed, and movement is imparted to this belt by its being passed beneath a pulley 30, fixed on the drive-shaft 11, and over idlers 31, journaled in a frame 32, which is secured to the leg of the frame 10^a.

As better shown in Fig. 4, securely bolted to the outer side of the frame 28 is a can-guide frame 33, which projects inward over the belt 29 toward the column 10^b, and secured to the said column is a frame 34, which projects outward, the two frames being divided by a space 35 and the opposite sides of these frames having concave contours for guiding the cans into and out of the machine, as 36 and 37, respectively.

Securely bolted to the top of the column 10^b is a frame 38, the outer edge of which is an

arc of a circle concentric with the shaft 13. On the outer rim of this frame 38 are securely fixed brushes 39, which project beyond the path of the inner circle described by the revolving cans. By reason of the set-bolts 40 passing through the slots 38^a and into the column 10^b and the shaft 13 passing through the slot 38^b it is obvious that the brushes 39 may be set in or out to engage the surfaces of cans of different diameters.

Placed on the outer side of the path of the cans is a water-box 41, supported in its proper position by standards 42 and 43. The water-box, which is composed of sections, as clearly shown in Fig. 5, is arranged with two ejecting-mouths for the hot water, these being placed tangential to the outer path of the cans, as 41^a and 41^b. By referring more particularly to Figs. 5 and 5^a it will be noticed that the water-box is wedge-shaped and its mouth contracted to form a jet-discharge, and to regulate the said discharge a wedge-shaped blade 41^c is provided, which is adjustably held on the mouth of the box by means of screws, one of which, 41^d, is shown and which passes through an elongated slot 41^h in the extended lip $41^\times$ of the mouth, such arrangement of parts enabling the operator to readily set the water-box mouth to throw the desired volume of water against the passing cans. The water-box may be set at any desired elevation by the small set-bolts 44 taking through slots 43^a in the said standards and threading into lugs 41^e on each end of the water-box. (See Fig. 5.)

Placed at some distance around the table 17 and at the same distance from the center as the standards 42 and 43 is a standard 45, and fixed to the standards in a similar manner to the water-box is a brush-holding frame 46. This consists of the upper angle-iron piece, being secured to the angle-iron standards, as shown, and an under flat piece bolted at intervals thereto, the brushes 47 being suitably held between the bolts 48, with their whisking ends extending into the path of the cans.

Placed between the pockets 17^a and securely fixed to the table 17 are can-guards 49, the opposite ends of which engage and prevent the cans from being shaken from their proper position on the plungers or supports 20.

Resting on and secured to the upwardly-projecting webs of the can-guards 49, as 49^a, is a disk or ring 50, and arranged in the ring directly over the pockets 17^a in the table are spindles 51, the same being arranged to turn in suitable bossed bearings. On the depending ends of the spindles are disks or closure members 51^a, which are designed to fit over the mouths and close the cans while being washed. Introduced between the disks 51^a and the ring 50 and wound on the spindles 51 are springs 52. These press the disks downward upon the cans, and by reason of the track 24, which causes the cans to be elevated, being of uneven plane on the side of the machine where the water-box and brushes are located the cans are driven up to the highest plane and engaged by the disks 51^a before the cans engage the brushes, and consequently the springs 52 will impart the desired pressure on the cans to hold them firmly, the contracted lower central portions of the disks being inserted into the can-mouths. Securely fixed to the spindles on the upper side of the ring 50 are pinions 53, and these mesh with a gear-wheel 54, which is keyed to the shaft 13. It is obvious from the foregoing that as the table 17 is rotated the spindles 51 and disks 51^a, engaging the cans, will be rotated at a much higher speed than the table, and consequently the cans will be rapidly revolved against the stationary brushes 39 and 47.

As better shown in Fig. 1, the cans are delivered from the belt 29 to their respective seats on the plungers 20 while such plungers are depressed to their normal position; but as the table moves around the rollers 23 on the radial arms 22, which control the vertical movement of the plungers, will take up the incline on the track 24, and before the can on such plunger comes to the side of the machine occupied by the water-box and the brushes its top will be engaged by the revolving disk 51^a and be revolved thereby, and as it is passed around it will be depressed and disconnected from the disk 51^a, when the can will be pushed around the concave 37 of the guides 34 and 33 to the belt 29.

To provide for the plungers being depressed to their lowest plane on the side of the machine where the cans are received, so that such can will slide thereon without obstruction, a depressing-rail 55 is secured to the inner side of the bracket 27, which causes the rolls 23 to follow their proper track 24, and thus insures the plungers 20 being depressed.

As illustrated in Fig. 2, the cans are fed to the machine on the belt 29, and they are released into the machine by a spacing mechanism. This consists of a trigger 56, which is pivoted on a pin 57, rigidly fixed in a slot 28^a. (See Figs. 3, 4, 7, and 8.) At the rear or inner end of the trigger is a slot 56^a, in which is a sliding pin 58. This pin is held in place by the collars thereon above and below the member 56 and is allowed to slide back and forth for a reason to appear. Passing vertically through the brackets or frames 28 and 33 and a bracket 59, secured to the idler-frame 32, is a shaft 60, the same having a beveled gear 61 secured on its lower end, which meshes with a like gear 62, secured on the main drive-shaft 11. Secured to the top end of the shaft 60 and with its boss resting on the bracket 33 is an elliptical cam 63, the under side of which is provided with a groove 63^a. Arranged intermediately between the pin 57 and the shaft 60 is a pin 64, this being adjustably fixed in a slot 28^b. Fulcrumed on this pin 64 is a lever 65, the outer end of which lies against the inner side of the slidable pin 58, and its opposite end is provided with an upwardly-projecting pin $65^\times$, which lies in the groove 63^a of the cam 63.

Coiled around the pin 64 and with its inner end resting against a stud 65^a and its opposite end lying against the slidable pin 58 is a spring 66, (see Fig. 8,) and coiled around the pivot-pin 57 of the trigger and with one end resting against the slidable pin and the other end on the inner side of a stud 56^b is a spring 67. These springs 66 and 67 are to hold the slidable pin 58 to the inner end of the slot 56^a, which is its normal position, and as the cam 63 is turned the pin taking around the groove 63^a therein will cause the lever 65 to oscillate, and by reason of the springs 66 and 67 holding the pin against the inner side of the slot 56^a and the end of the said lever, the trigger-fingers 56^c will be thrown alternately into the path of the cans, and the same will be thereby spaced, as shown in Fig. 2. In the event of a can being caught by either of the fingers 56^c the slot 56^a will allow the finger being thrown backward, and should a can be caught by each of the fingers at the same time the lever 65 will either leave the pin 58 or the said pin will be forced along the slot 56^a, according to the direction the end of the lever 65 is moving.

Pivoted near the opposite edges of the major axis of the cam 63 are resilient arms 68. The inner ends of these arms 68 are held against the opposite sides of the shaft 60 by springs 69. These springs 69 are secured to pins 70 on the opposite projecting ends of the arms 68 and are coiled around the pivot-pins 71 of the arms, and their inner ends lie against the shaft 60, the strain being exercised to cause the inner ends of the arms 68 to hug the shaft 63 tightly, so that as the cam swings around the projecting ends of the arms 68 will engage the cans and push them to and from the rotary table 17, and consequently from and to the belt 29. If a can is caught by one of the arms 68 before its opening between the brackets 49, and consequently the plunger 20, on which it rests, has arrived at the point where it can be received, the arm so engaged will spring back and allow the can to pass around without damaging the said can. As each can is pushed over the plunger 20 the guard-bracket 72 pushes the can to its proper place.

When it is desired to adjust the machine to operate on cans of another dimension, the trigger mechanism 56 is moved in or out the desired distance by moving the pins 57 and 64 in the slots 28^a and 28^b. The guard 72 on the opposite side of the belt is moved in a like manner, and the frame 38, carrying the brush 39, is moved in the desired direction to properly scrub the periphery of the cans.

The brushes 47 do not require moving, except as they become worn, as they are more in the nature of pliable brooms for whisking the water from the cans.

To adjust the machine to wash cans of different lengths, the brackets 49 are changed for ones having the upwardly-projecting webs of a proper length so as to reduce or increase the distance between the disks 51^a and the table 17, and the gear-wheel 54 is moved up or down and secured on the shaft 13 to engage the pinions on their new plane. The faces of the pinions may be of sufficient width to allow of the desired vertical movement without disconnecting the wheel 54.

In the operation of my improved can-washing machine motive power is imparted to the pulley 73, which is loose on the shaft 11. By coupling the clutch 74, operated by the lever 75, the machine is put in motion in the direction of the arrow; but owing to the central shaft 13 being driven direct from the drive-shaft 11 the pinions 53 travel therearound in the opposite direction to that in which it is traveling, and thus the said pinions have a planet movement therearound, revolving at a much higher speed than they would otherwise be revolved from a stationary gear. The belt 29 is put in motion by being passed beneath the pulley 30 and over the idlers 31, as aforesaid. The cans are placed on the said belt and are spaced, and owing to the cam 63 passing around twice for each revolution of the table four cans will be fed to the machine during such revolution. As each can comes to the point where the track 24 rises such can will be driven upward, engaged and rotated by the disk 51^a, and delivered to the same belt from which it was taken with all grease and oily matters removed therefrom.

The hot water or steam is furnished to the water-box 41 through the pipe 74^a under pressure, and this will cause a steady spray to be thrown onto the passing cans through the narrow flat openings 41^a and 41^b, as before stated.

Having thus described my invention, what I claim as new, and desire to be protected in by Letters Patent, is—

1. The combination of the rotary carriage having the annular series of upwardly-movable supports for cans, a ring 50 rigidly fixed to and at a suitable distance above the carriage, an annular series of spindles having disks 51^a journaled therein, pinions on the upper ends of said spindles, a gear 54 secured to a vertical shaft 13, which meshes with the pinions and travels in an opposite direction to the pinions and the rotary carriage, whereby the said spindles and disks will be revolved rapidly as they pass around.

2. In a machine for washing cans, the combination with a rotary can-carriage 17 having the annular series of upwardly-movable can-supports 20, and means for elevating and depressing the same and for rotating the cans; of a brush-supporting frame 38 adjustably fixed above the axis of the rotary carriage, and having inner brushes on its outer side presented in an arc form to the inner path of the passing cans; of a water-box 41 having the flat or blade-like outlet suspended in proximity to the outer path described by the cans, and means for ejecting water or steam therefrom, and the whisk-brushes 47 arranged

in a frame 48 so that as the cans are carried around they will be brushed, as specified.

3. In a can-washing machine the combination with the frame 10, having the upwardly-projecting column 10^b, and the rotary carriage arranged to turn thereon, and upwardly-movable can-supports in such carriage; of a ring 50 rigidly connected to and supported above the rotary carriage, spindles arranged to turn and to have slight vertical movement in bearings directly over the can-supports in the table, can-engaging covers on the depending ends of said spindles, and pinions secured to the upper ends of same; of a shaft 13 passing vertically through the column 10^b, a gear-wheel 54 secured to the top end thereof and the same meshing with the pinions on the spindles, and means for imparting an opposite movement to the shaft 13 to that of the carriage 17 and ring 50 whereby the spindles will be revolved rapidly on their planetary movement around the wheel 54.

4. The combination of the frame and the rotary carriage for passing the can through a hot-water-spray bath and between brushes arranged in its path and having the annular series of vertically-movable can-supports therein, and means for raising and depressing the same, as specified; a ring 50 fixed to and supported above the table, the annular series of vertically-movable spindles in said ring, can-closing members on such spindles, springs interposed between the ring and the can-closing members, whereby they will be pressed downward, means for rotating the spindles at a comparatively high speed, and for introducing a can between the upwardly-movable can-supports and the revolving disks or closures, as specified.

5. In combination with the frame 10 and the rotary carriage mounted thereon, having the annular series of can-supports 20 arranged to turn on stems 21; of a ring secured to and at some distance above the rotary carriage, the annular series of rotatable can-closures 51^a journaled in said ring at intervals over the can-supports, and means for introducing cans between the supports 20 and the closures 51^a, and for moving the cans upward and thus compacting them with the closures and supports and for passing the cans against a hot-water-spray bath and brushes, as specified.

6. In combination with the frame 10 with the upwardly-projecting column 10^b, a rotary can-table thereon, means for passing cans therearound and for rotating them thereon; of the inner brushes 39 adjustably fixed and projecting into the inner side of the path of the cans, a hot-water supply arranged on the outer side of the can-track and whisk-brushes 47 fixed in a vertical adjustable frame 46 for the purposes as specified.

7. In a machine for the purposes described in combination with the rotary carriage having the annular series of vertically-movable can-supports therein and the can-closures above the said supports, a shaft 11 and transmitting-gears 14, 19 and 18, imparting a slow movement to the table 17, a shaft 13 having movements imparted thereto by the gears 15, which is twice as fast as the movements of the table 17 and in the opposite direction, and means of imparting comparatively fast movement to the can-closures from the shaft 13, as set forth.

8. A can-washing machine having the frame 10, a rotatable can-carrier, and an annular series of vertically-movable and rotatable can-supports therein, means for passing cans around a common center on the supports in the carrier, and for moving said cans upward and compacting them with an annular series of rapidly-revolving closure members above, whereby the cans will be closed and revolved by such closure members, and brushes arranged on each side of the can-path, as specified.

9. In a can-washing machine having a frame 10, a rotatable can-carrier mounted thereon, and means for passing cans thereround and for rotating them thereon, a rigidly-fixed brush extending into the can-track, in combination with a water-box 41 supported on standards 42 and 43, and a brush-frame 46, supported by the standard 43, and a similar one 45, a water-box and the said brush-frame forming an arc around the outer path described by the cans, and slots 43^a in the said standards for raising or lowering the water-box or the brush-frame, as specified.

10. In a machine of the class described having the frame 10 with the column 10^b, the rotary can-carrier mounted thereon, and guide-brackets 33 and 34 passing horizontally over a feed-belt 29 and connecting with the outer side of the machine's frame, in combination with a trigger mechanism 56 having the fingers 56^c for spacing the cans, as specified.

11. In a machine for washing cans having the rotary can-carriage with a crescent-shaped frame 28 on one side thereof, and an endless feed and delivery belt passing thereover, and means for passing cans from and to said belt; a slot 28^a in the outer side of said crescent frame, a pin 57 secured therein, a trigger pivoted on said pin, having fingers thereon projecting laterally over the said belt; a slot 28^b in the frame 28 parallel with the slot 28^a, a pin 64 in the said slot, a lever 65 fulcrumed on said pin, a slot 56^a in the rear end of the trigger, a slidable pin 58 in said slot, means for holding the pin 58 normally to the inner side of the slot 56^a, and means for oscillating the lever 65 whereby the fingers of the trigger will be thrust into the path of the cans.

12. A can-feed mechanism comprising an endless feed-belt for feeding cans to a rotary carriage, and for delivering the same therefrom, a trigger mechanism having laterally-disposed movable fingers 56^c, which engage and retard the cans, and a rotatable elliptical-cam mechanism 63, having resilient arms 68 projecting from its major axis, which feeds

four cans to the carriage for each revolution thereof.

13. A feed mechanism for cans, comprising an endless belt for supplying cans to and delivering same from a rotary carriage, in combination with a crescent frame 28 for the said belt to pass over on a plane with the top of said carriage; a trigger 56 pivoted to frame 28, a cam 63 arranged to turn on a shaft 60 at a speed of two to one of the carriage; a lever 65 fulcrumed on the frame 28, one end of which connects with an elliptical groove in the cam 63, and the other end lies against a slidable pin 58 in the trigger 56, which pin is normally a fixed point in the trigger, whereby the same will be oscillated on its pivot as and for the purposes set forth.

14. The combination of a can-washing machine having the frame 10, the rotary can-carriage mounted thereon, the inner and outer guides having corresponding concave guiding edges at each side for passing cans to and from the carriage, and the endless feed-belt 29 for supplying the cans to the carriage and delivering them therefrom, as specified.

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