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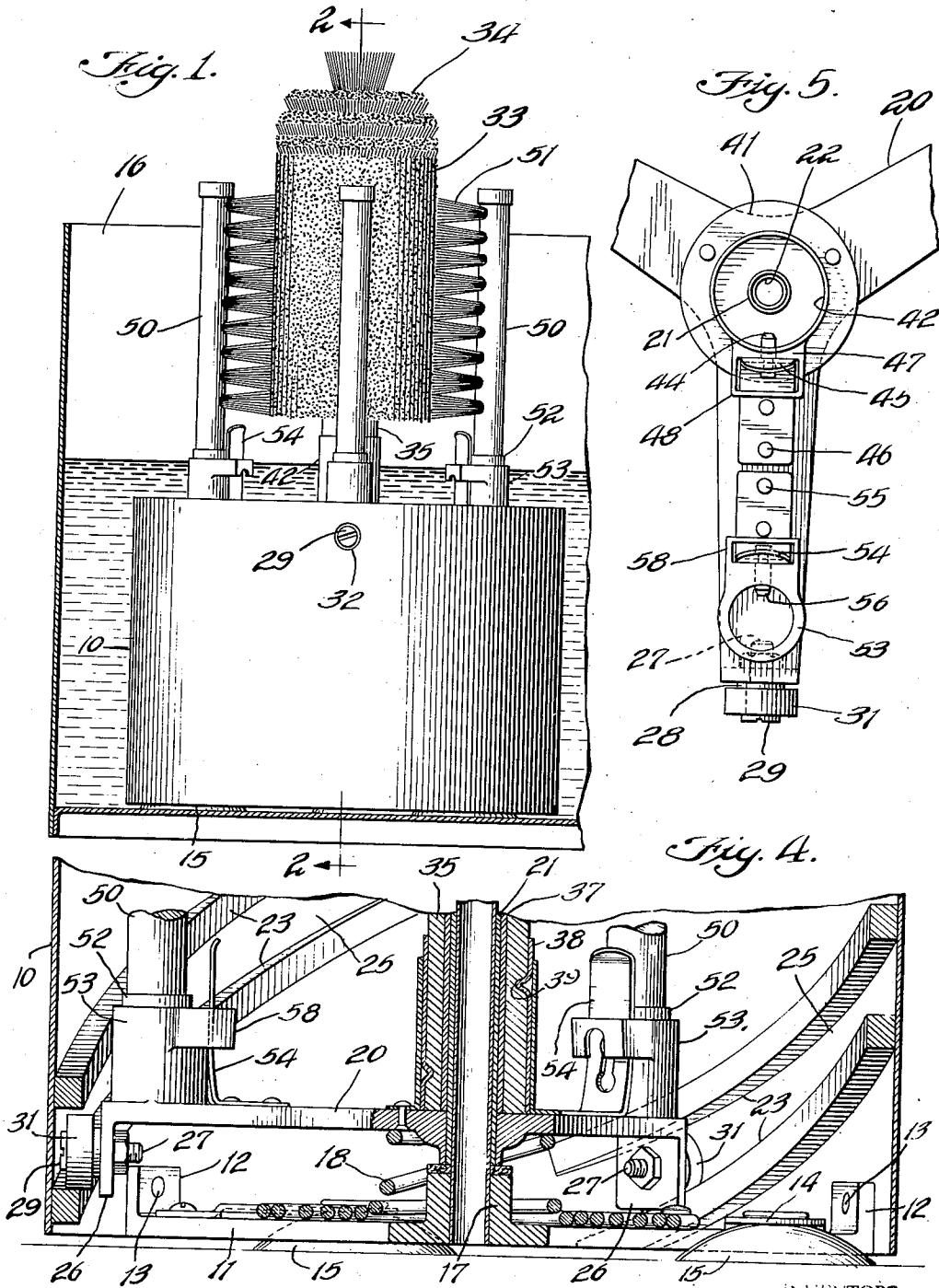
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2,258,895

## WASHING DEVICE

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3 Sheets-Sheet 1



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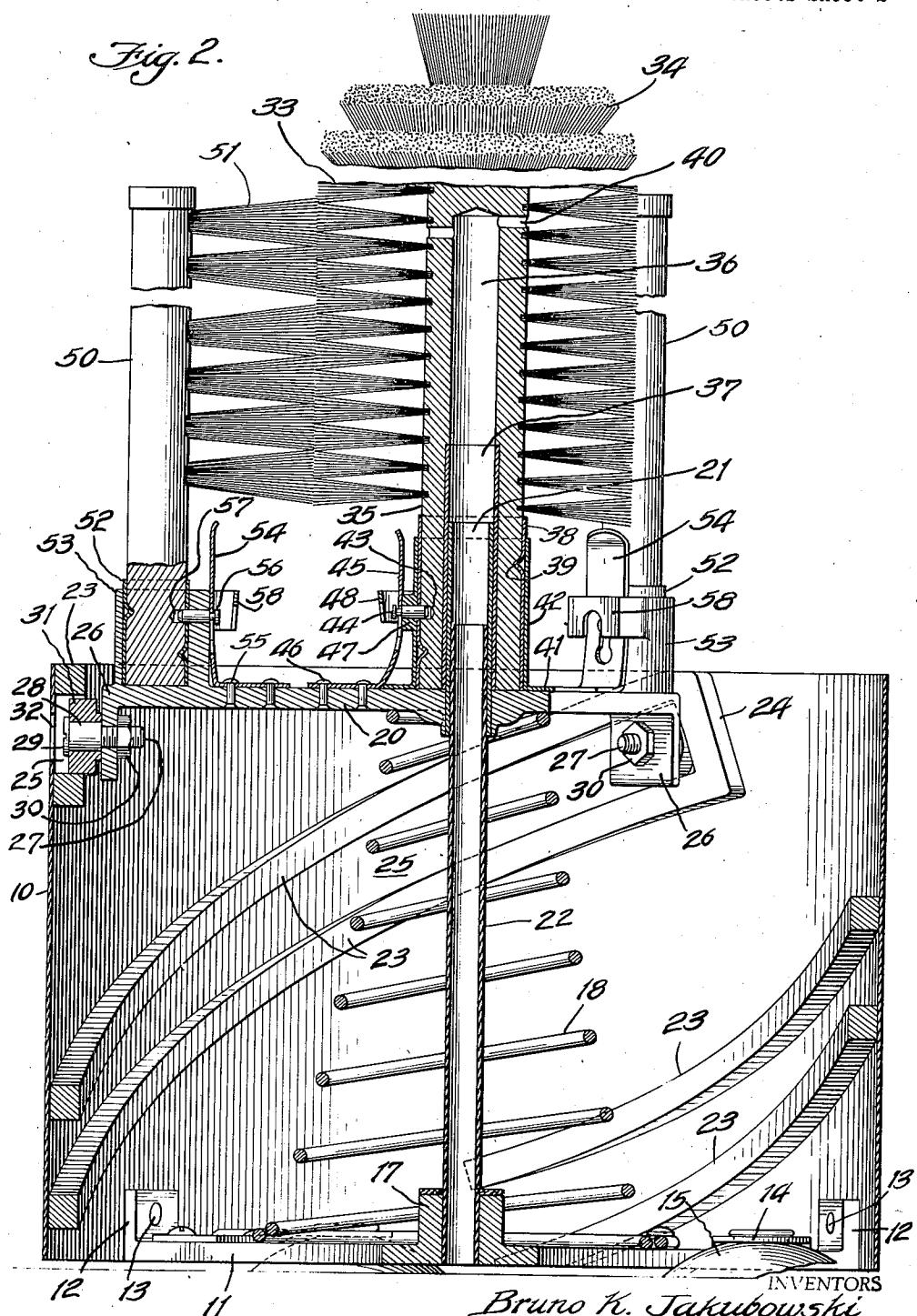
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Fig. 2.



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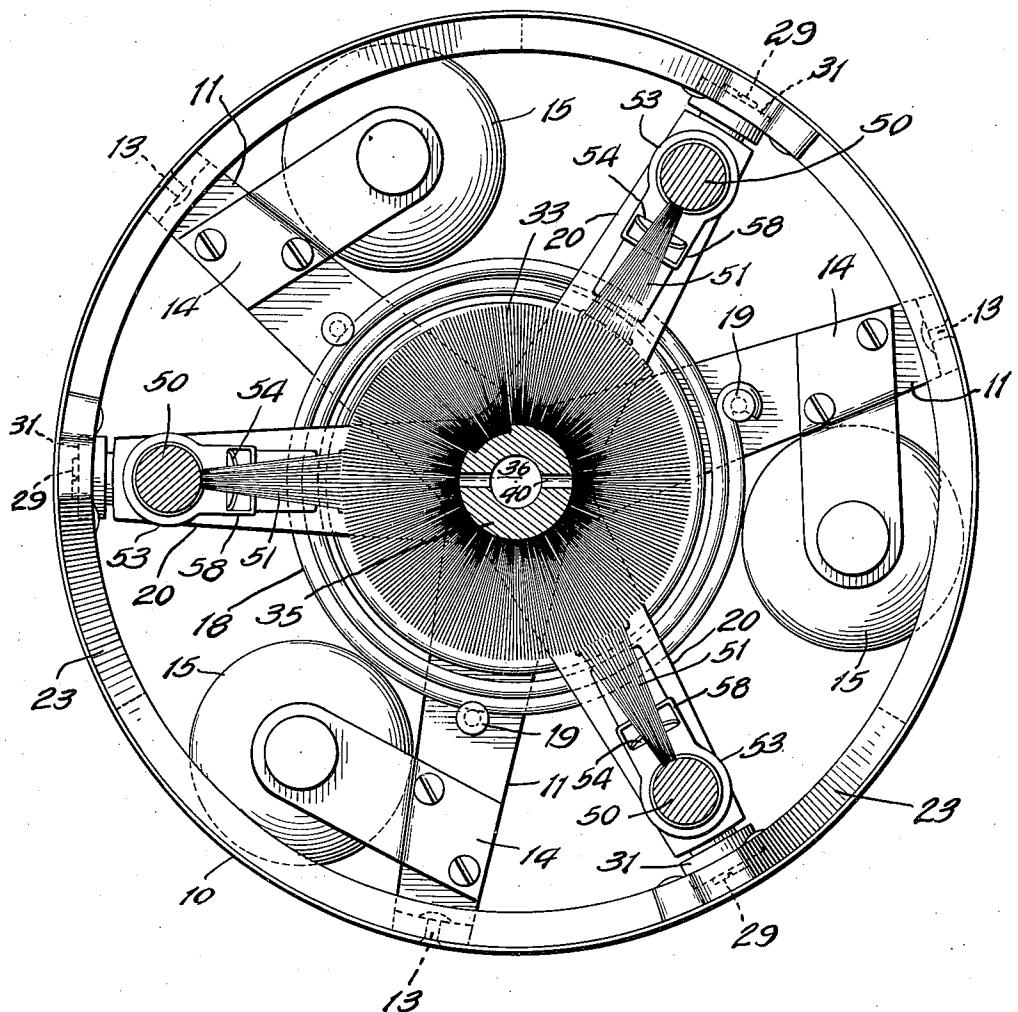
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Fig. 3.



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## UNITED STATES PATENT OFFICE

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## WASHING DEVICE

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5 Claims. (Cl. 15—76)

The present invention relates to washing devices and has main application in washing glasses, cups, pots, and other like containers.

The principal object of the present invention is the provision of a washing device having a central brush over which the container is positioned and into which the brush is receivable, with a plurality of other brushes adapted to contact the container outwardly, and so arranged that when manual pressure is exerted on the container, all brushes may bodily turn with respect to a container manually held against rotation, with means for reversing the movement of the brushes in the opposite direction.

A still further object of the present invention is the provision of a washing device of the character indicated and wherein a carriage may be provided for supporting a plurality of brushes, and which carriage, under the pressure exerted upon the container may be shifted downwardly and against the pressure of tensioning means, with suitable guides provided guiding said carriage in its rotary movement to impart rotation to the brushes so that the same may shift with respect to the container and held against rotation with respect to the brushes for the purpose of cleaning the container.

A still further object of the present invention is to generally improve the construction of a washing device of the character hereinabove indicated.

With the above general objects in view and others that will appear as the invention is better understood, the same consists in the novel construction, combination and arrangement of parts hereinafter more fully described, illustrated in the accompanying drawings and pointed out in the appended claims.

In the drawings forming a part of this application and in which like designating characters refer to corresponding parts throughout the several views:

Fig. 1 is a side elevational view of the present device;

Fig. 2 is an enlarged cross-sectional view on a vertical plane, on line 2—2 of Fig. 1, showing the washing device in an inoperative position;

Fig. 3 is a top plan elevational view of the present device, the brushes thereof being shown in a cross-section;

Fig. 4 is a vertical cross-sectional view of the lower portion of the device when the same is in an operative position; and

Fig. 5 is a fragmentary top plan elevational

view of a brush carriage, with brushes removed therefrom.

Referring in detail to the present drawings there is shown therein a cylindrical casing 10 open at both ends thereof. Positioned within the lower end of said casing 10 is a radial three-armed frame 11, each arm thereof being provided with an upwardly extending lug 12 whereby the frame may be rigidly affixed to the casing 10 by means of rivets 13. Each of said arms of frame 11 carries a laterally extending arm 14 to each of which in turn a suction cup 15 is affixed. Said casing 10 is adapted to be receivable within container 16 filled with water, and said suction cups 15 are adapted to engage the bottom of said container 16 by means of suction so as to prevent casing 10 from lateral or upright movement when in said container 16.

Integrally formed with said arms of frame 11 and centrally thereof is bushing 17. A conical coil spring 18 is affixed by its lower end to the arms of frame 11 as at 19, it being noted that the base of said coil spring 18 is considerably wider than its upper end, so that when said spring 18 is depressed, as illustrated in Fig. 4, the strands thereof assume a horizontally co-planar position.

The device further includes a three-armed frame or carriage 20 which centrally thereof is provided with a suitable aperture for insertion of tube 21, the lower end of which is frictionally held within central aperture made in the said carriage 20, for the purpose of receiving the upper end of tubular shaft 22, the lower end of which is frictionally held within a central bore 35 provided in bushing 17.

Rigidly affixed to casing 10 and on the inner periphery thereof are three pairs of rails 23, each pair of which is rigidly connected by a cross-piece 24, at the upper end of each pair of said rails 23. Each pair of said rails 23 define a helical channel 25.

The outer end of each arm of said three-armed carriage 20 is provided with an integrally formed and downwardly depending lug 26 apertured at 45 its center to receive screw 27 having an enlarged smooth shank 28 and screw head 29. Nut 30 prevents creeping movement of said screw 27 with respect to said lug 26. Receivable upon shank 28 and adapted for free rotation thereon 50 is anti-friction roller 31. The adjacent face of said lug 26 as well as head 29 prevent lateral movement of said roller 31. Casing 10 and adjacent its upper end is provided with three openings 32 at points which are coincidental with the position of said screw 27 when carriage 20 remains

in an inoperative position illustrated in Figs. 1 and 2, so that a screwdriver may be inserted through said opening 32 either for removing said screw 27 or for affixing the same to lug 26.

Central brush, insertable within a cup preparatory for washing the same, includes horizontal strands 33 and upwardly projecting strands 34, the latter at the upper end of said brush. Horizontal strands 33 are cylindrically arranged, as is clearly seen in Figs. 1 and 2. All of said strands are mounted upon a tubular shaft 35 provided with a central bore 36, the lower end of which is lined by a metallic tube 37 frictionally held within said shaft 35. The outer lower end of said shaft 35 is lined by a tubular guard 38 which is held in position upon said shaft 35 by a plurality of crimps 39. Adjacent the upper end of bore 36 said shaft 35 is further provided with a plurality of lateral openings 40 for the purpose hereinafter stated.

Rigidly affixed to the central portion of carriage 23 by its flange 41 is socket 42 which remains in a concentric relation with tube 21 and shaft 22 as is seen in Fig. 5. Made in guard 38 and in the adjacent body portion of shaft 35 is a bore 43 for the purpose of receiving therewithin a catch lug 44 the latter carried by a tensioned plate 45, the lower end of which is affixed to one of the arms of carriage 20 as at 46. Socket 42 coincidental with catch lug 44 is provided with a laterally extending spacing lug 47 through which said catch lug 44 is adapted to pass as is seen in Fig. 2. Integrally formed with said spacing lug 47 is a rectangular guard plate 48 within which plate 45 is adapted to shift.

From the hereinabove construction of brush 33-34 and its mounting means upon carriage 20, it will be apparent that the lower end of shaft 35 with its tubular guard 38 is insertable within socket 42, on first manually deflecting plate 45 away from said socket 42 for the purpose of retracting catch lug 44 from within said socket 42. When the lower end of said shaft 35 is in position within said socket 42 and bore 43 is in an alignment with said catch lug 44, the manual hold on plate 45 is released for permitting said lug 44 to spring into bore 43. This arrangement will permit said brush 33-34 with its shaft 35 to remain in a rigid stationary position with respect to carriage 20. Tube 21 forms a guide for shaft 22 and permits a free sliding movement of the latter within said tube 21, as will hereinafter be apparent.

Co-operating with said central brush 33—34 are three outer brushes each mounted adjacent the end of each arm of carriage 20, as is clearly seen in Fig. 3, and each of said outer brushes includes shaft 50 provided with horizontally extending bristles 51 disposed towards and normally contacting with horizontal bristles 33 of the central brush. Each of said shafts and at the lower end thereof is provided with an annular, crimped guard 52, receivable within socket 53, the latter integrally formed with each arm of carriage 20.

To rigidly affix said shafts 50 to the respective arms of carriage 20 tensioning plate 54 is provided, the same being affixed by its lower, horizontal leg portion to the arm as at 55. Each of said plates 54 carries a catch lug 56, extending through an opening made in the adjacent periphery of socket 53 and a coincidental bore 57 made in the lower end of shaft 50. Rigidly formed with socket 53 is a rectangular guard plate 58 within which the upright portion of plate 54 is positioned and within which the same is adapt-

ed for shifting movement for the purpose of manually retracting said plate 54 away from socket 53 with its lug 56 from its engagement with shaft 50. When said shafts 50 are in an operative position on carriage 20 they will be in a rigid engagement therewith through the medium of said catch lug 56.

Assuming that the device is within a receptacle 16, the latter filled with water, with suction cups 15 engaging the bottom of said receptacle 16, with brushes and carriage 20 in an inoperative position shown in Figs. 1 and 2, a container such as glass while in an inverted position is pressed over the central brush 33-34 and is shifted downwardly so that the bristles thereof completely fill the container and contact with its inner peripheral wall and bottom. The ends of the outer brushes by their bristles 51 will at the same time contact with the outer periphery of the container. While a container remains in that position with respect to the two sets of brushes a manual hold is maintained adjacent the bottom end thereof, and simultaneously the container is pressed downwardly for the purpose of shifting carriage 20 downwardly and imparting thereto a rotary movement through the medium of rollers 31 as they press lower rails 23 and ride upon the adjacent faces thereof.

Since channels 25 are of a helical or spiral formation a simultaneous downward and rotary shifting movement to carriage 20 will be imparted and likewise to said brushes 33-34 and 51. Said carriage 20 will shift in the manner indicated and against the pressure of spring 18, until said carriage and brushes will assume the position illustrated in Fig. 4. It is observed that the upper end of spring 18 merely contacts with the underface of carriage 20, but is not attached thereto in any manner, permitting a free sliding movement of said carriage upon the upper end of spring 18. When the downward maximum shifting movement of carriage 20 is attained, spring 18 will fold until the same reaches the position illustrated in Fig. 4.

5 When the downward pressure at the container, as the same remains in position upon brush 33—  
34, is released, carriage 20 with the brushes will rise upwardly due to the upward tension of spring 18 and will make a reverse rotary motion due to  
0 the arms of said carriage 20 being guided by rollers 31 within their respective channels 25 made by rails 23. In the reverse upward and rotary movement of carriage 20 and of the brushes, rollers 31 will contact the adjacent faces of upper  
5 rails 23.

During operation of the device casing 10, and if preferred brushes 33—34 and 51, or major portions thereof, are immersed in water within container 16 as is indicated in Fig. 1. To eliminate compression or suction of water within bore 36 in shaft 35, which otherwise would ensue on downward or upward movement of said shaft 35, openings 40 in the upper end of shaft 35 are provided, to communicate with said bore 36, through which the air in bore 36 may be expelled on downward movement of shaft 35, and through which air may enter said bore 36 on upward movement of said shaft 35. By virtue of this arrangement the pressure upon water which may remain within said bore 36 and shaft 22 will be unaffected by virtue of the upright sliding movement of said shaft 35.

One of the advantages of the device herein disclosed resides in the fact that the load and weight of carriage 20 as the same makes simultaneous

upright and rotary movements is not centered entirely upon spring 18 and shaft 22 but is distributed laterally to the several pairs of rails 23, where part of the load is taken up by rollers 31 as they make sliding movement within their respective channels 25 and as they contact with their respective pairs of rails 23.

While there is described herein a preferred embodiment of the present invention, it is nevertheless to be understood that minor changes may be made therein without departing from the spirit and scope of the invention as claimed.

What we claim as new is:

1. A washing device comprising a cylindrical casing, a stationary shaft rigidly positioned within said casing and centrally thereof, a carriage slidably mounted upon said shaft for a vertical movement, a brush mounted upon said carriage, tensioning means for normally holding said carriage and said brush in an elevated inoperative position with respect to said shaft, a plurality of spiral guides upon said casing, and sliding members mounted upon said carriage and entering said guides for imparting a rotary movement to said carriage and to said brush when a downward pressure is exerted upon said brush and against said tensioning means.

2. A washing device comprising a cylindrical casing, a stationary shaft mounted centrally in the said casing, a carriage slidably mounted upon said shaft for vertical movement, a brush mounted upon said carriage, tensioning means for normally holding said carriage and said brush in an elevated inoperative position with respect to said shaft, a plurality of spiral tracks mounted upon the inner periphery of said casing, and a plurality of rollers positioned within said tracks and mounted upon said carriage, said rollers being adapted to impart a rotary movement to said carriage and to said brush when the same slide within said tracks when a downward pressure is exerted upon said brush and against said tensioning means.

3. A washing device comprising a cylindrical casing, a stationary shaft rigidly mounted in the said casing and centrally thereof, a carriage slidably mounted upon said shaft for vertical

movement, said carriage including a plurality of laterally extending arms, a brush mounted upon said carriage, tensioning means for normally holding said carriage and said brush in an elevated inoperative position with respect to said shaft, said carriage and said brush being adapted for vertical sliding movement upon said shaft when downward pressure is exerted upon said brush and against said tensioning means, a plurality of spiral tracks mounted upon the inner periphery of said casing, and a roller carried by the end of each of said arms, each of said rollers being positioned within each of said tracks, said tracks and said rollers being adapted to impart a simultaneous rotary movement to said carriage and to said brush when said carriage slides downwardly upon said shaft by a downward pressure exerted upon said brush and against said tensioning means.

4. In a washing device including a carriage and a brush carried thereby and adapted for a vertical shifting movement, means for imparting a simultaneous rotary movement to said carriage and to said brush when a downward pressure is exerted upon said brush, comprising a cylindrical casing, a plurality of arms laterally extending from said carriage, a plurality of tracks spirally mounted upon the inner periphery of said cylindrical casing, and a roller affixed to the end of each of said arms, said roller being adapted to enter its respective track for guiding said carriage and for imparting a rotary movement thereto when a downward pressure upon said brush is exerted.

5. A washing device comprising a casing, a stationary shaft positioned within said casing, a carriage slidably mounted upon said shaft for a vertical movement, a brush mounted upon said carriage, a plurality of spiral tracks upon said casing, and guiding members mounted upon said carriage and entering said tracks for imparting a rotary movement to said carriage and to said brush during the vertical movement of said carriage.

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