

May 31, 1932.

A. G. SCHWIETERMAN

1,861,244

WASHING MACHINE

Filed July 18, 1927

3 Sheets-Sheet 1

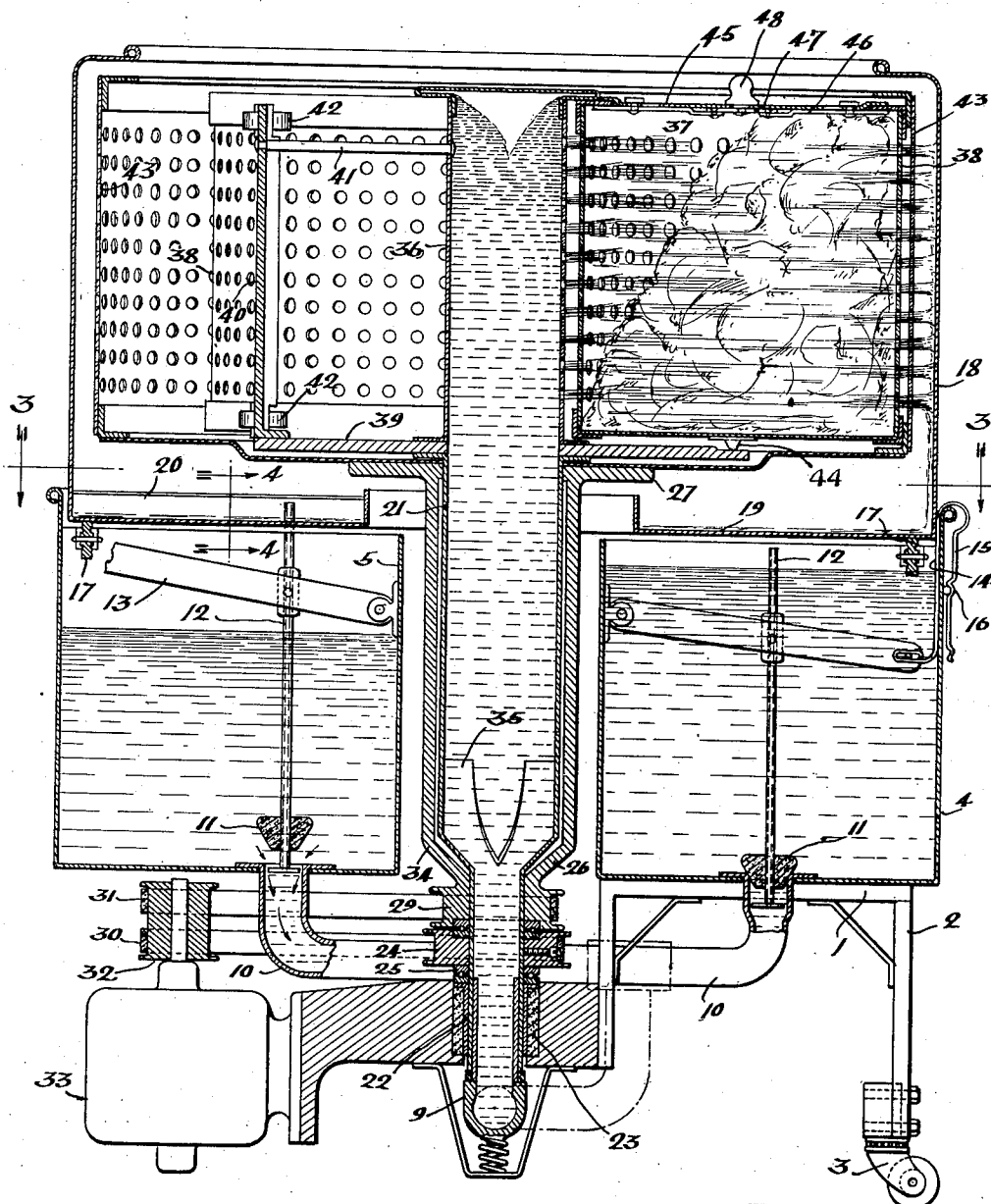


Fig. 1.

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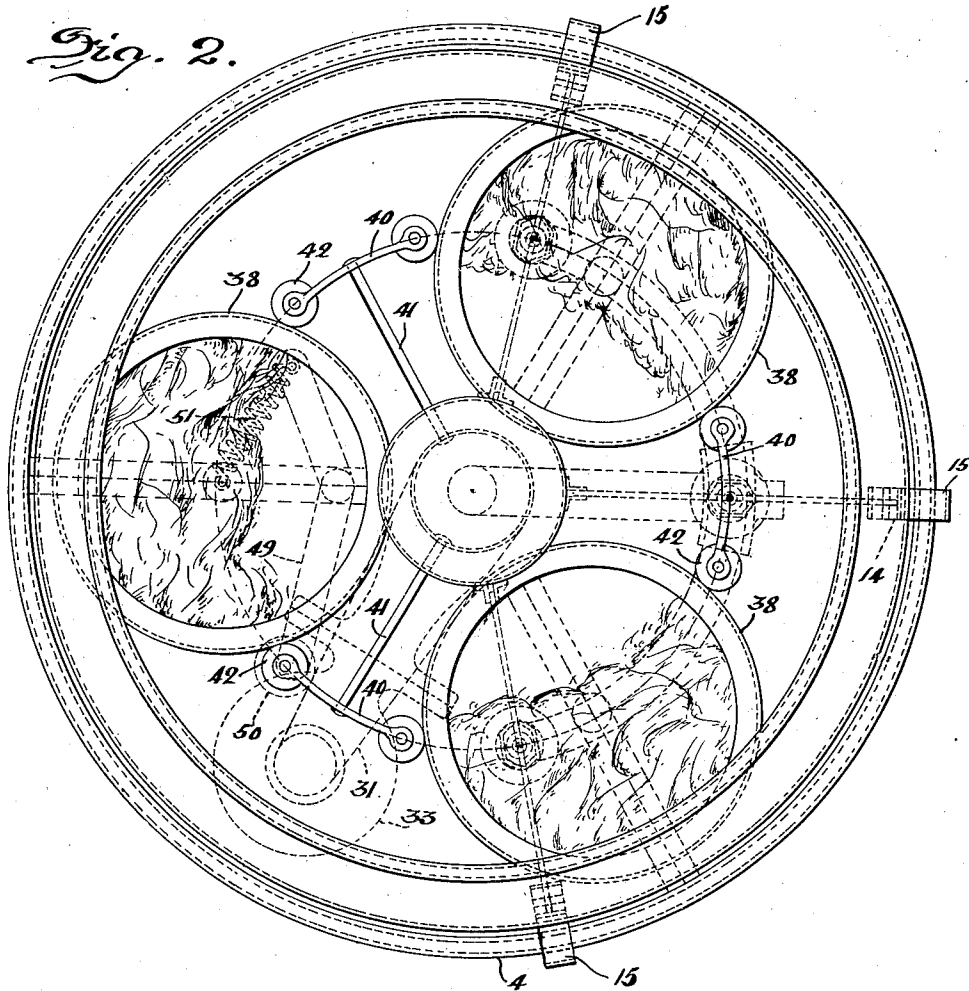
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3 Sheets-Sheet 2

Fig. 2.



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3 Sheets-Sheet 3

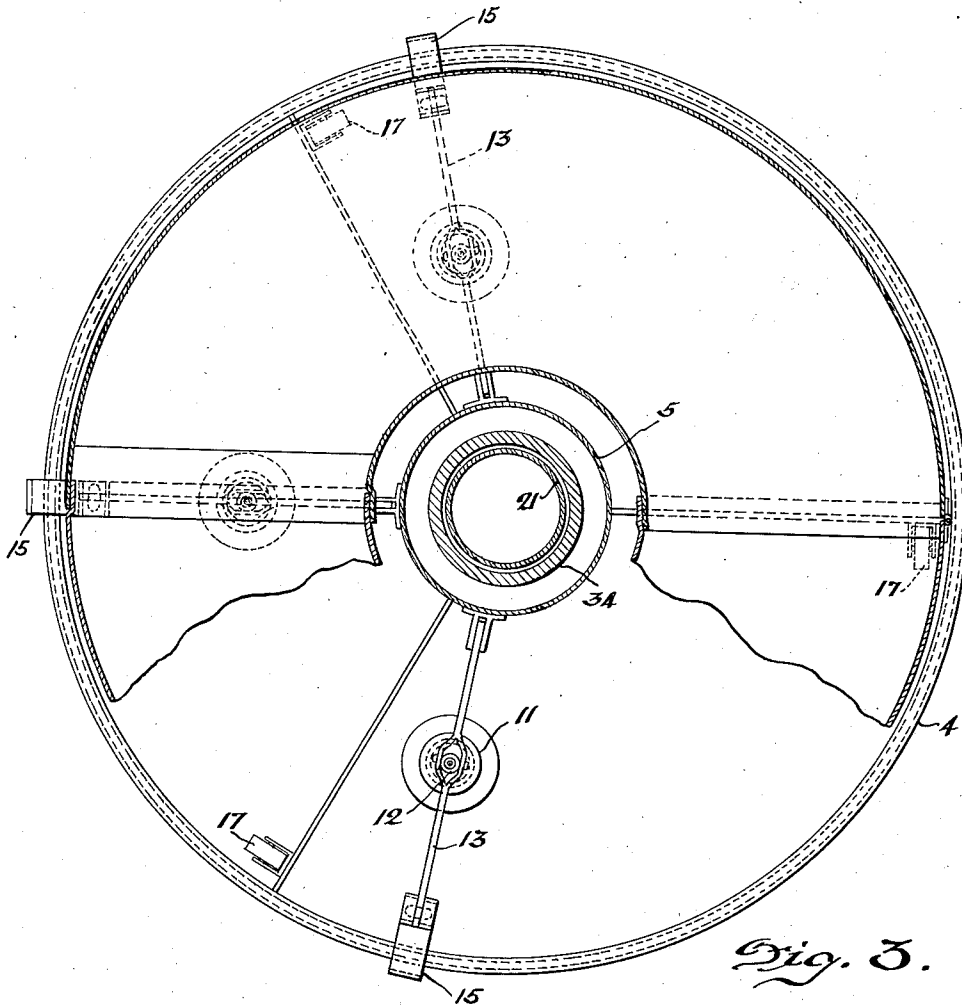


Fig. 3.

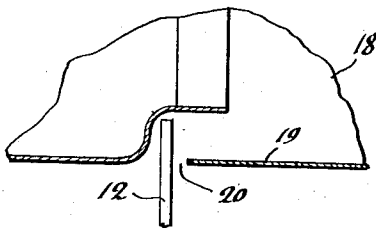


Fig. 4.

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UNITED STATES PATENT OFFICE

AUGUST G. SCHWIETERMAN, OF DAYTON, OHIO

WASHING MACHINE

Application filed July 18, 1927. Serial No. 206,517.

My invention relates to laundry apparatus, and more particularly to a washing machine utilizing a circulative system wherein centrifugal influence is utilized for tumbling the clothes and for forcibly discharging water therethrough, the water being collected and returned continuously.

The invention embodies a multi-compartment washer to contain suds and successive
rinse waters to be automatically discharged
upon and through the clothing being washed
and thence returned to their respective compartments and the remaining water extracted
without the necessity of handling the clothing. The clothes to be washed are contained
in a series of containers or cages, which describe a planetary movement, rotating slowly about their own axes while simultaneously rotating at a much higher rate of speed about
a common axis. The high speed of the clothing containers or carriers in their orbits tends to throw the clothing to the outer sides of such containers or carriers by centrifugal influence while the slow rotation of such carriers or cages upon their own axis constantly changes the position of the mass of clothing being acted upon, turning it from an outermost position to which it is thrown by centrifugal influence to an inner position wherein the centrifugal influence again acts upon the clothing to move it within the carrier or cage, thus causing a constant tumbling or agitation of the material being washed. At the same time wash water is being discharged forcibly under centrifugal influence through the clothing carriers or cages. This wash water is raised by centrifugal influence from a compartment in the bottom of the washer through a centrally disposed stand pipe having lateral discharge orifices directed toward the carriers or cages. The sides of the cages are perforated to permit the entrance of such water upon the mass of clothing being tumbled therein. The wash water, after being discharged through the clothing carrier or cage is drained back to the reservoir or compartment from which it was drawn for re-use. By closing a valve to one reservoir compartment and opening that to another the water may be changed. That is to say after the

clothing has been subjected to the action of suds under centrifugal influence and the suds extracted from the partially washed clothing, by closing the outlet valve from the suds reservoir and opening that of the first rinse water reservoir the clothing may be automatically subjected to the action of rinse water. Upon the completion of the first rinse operation, the closing of the corresponding valve and the opening of the second rinse water reservoir will subject the clothing to a further rinsing operation with fresh water. This operation may be successively repeated, the water in each instance being returned for re-use.

While washing machines of the centrifugal or extractor type are well known, in such constructions the mass of clothing is thrown against the outer wall of the revolving carrier, which as usually constructed, rotates at a high speed about its own axis. The clothing is thus held in one position without tumbling or agitation. In the present construction, due to the planetary motion of the clothing carriers or cages, the clothing is not held in one position under centrifugal influence, but, as the carrier or cage rotates about its own axis, centrifugal influence operates to move the mass of clothing from one side to the other of the carrier or cage thus causing a constant tumbling or agitation. While this movement of the clothing is somewhat similar to that occurring in the usual rotary drum washing machine wherein the clothing falls from one position to another by gravity, the present forcible displacement of the clothing within the carrier or cage is much more effective as is also the forcible discharge of wash water by centrifugal influence.

The object of the invention is to simplify the construction as well as the means and mode of operation of washing machines, whereby they will not only be cheapened in construction, but will be more efficient in use, positive in operation, uniform in action, easily operated, and unlikely to get out of repair.

A further object of the invention is to provide a machine wherein successive wash waters of different character may be automati-

cally discharged through the clothing being washed and returned to their respective reservoir compartments and the wash water completely extracted from the clothing without the necessity of handling the clothes.

5 A further object of the invention is to provide an improved washing apparatus having a planetary motion wherein the clothes are constantly agitated by centrifugal influence.

10 A further object of the invention is to provide an improved means for mounting relatively revoluble assemblies of the apparatus and to provide novel means for relatively rotating the clothes carriers or cages at a comparatively low speed about their own axes, while simultaneously rotating such carriers or cages at a very much greater speed about a common axis.

20 A further object of the invention is to provide a wash water reservoir having a plurality of compartments and means for operatively connecting the compartments successively with the water discharge apparatus and to further provide means for insuring the disconnection of one reservoir compartment before connecting a second reservoir compartment with such discharge means.

25 A further object of the invention is to provide improved means for discharging the wash water forcibly upon the clothing and to simultaneously change the position of the clothing being operated upon so that every part of the clothing mass is subjected to the action of the wash water under pressure.

30 With the above primary and other incidental objects in view, as will more fully appear in the specification, the invention consists of the features of construction, the parts and combinations thereof, and the mode of operation, or their equivalents, as hereinafter described and set forth in the claims.

35 Referring to the accompanying drawings, wherein is shown the preferred, but obviously not necessarily the only form of embodiment of the invention, Fig. 1 is a vertical sectional view of an assembled washing machine embodying the present invention. Fig. 2 is a top plan view thereof. Fig. 3 is a sectional view on line 3—3 of Fig. 1. Fig. 4 is a detail view on line 4—4 of Fig. 3.

40 In constructing the washer there is employed a support or base frame 1 to which are connected in radially disposed relation a plurality of supporting legs 2 preferably, though not necessarily mounted upon casters 3. Supported upon the frame structure 1 is a reservoir 4 of annular form having a central well or opening 5. The reservoir 4 is divided into a plurality of compartments. There may be any number of such compartments. In the present instance, the reservoir 4 has been divided into three chambers or compartments 5, 6 and 7 for suds, first rinse and second rinse waters respectively. Centrally disposed in the main frame or base member 1

is a short length of pipe 9 common to and connected with the several reservoirs by branch pipes 10. Each reservoir compartment is provided with an outlet valve 11 carried upon a vertically reciprocatory stem 12. The vertical stems 12 and valves 11 are raised and lowered by means of pivoted arms 13. Vertically adjustable handles 14 extend within the reservoir compartment and are connected with the end of each valve adjusting lever 13. This handle 14 has a resilient depending arm 15 projecting outside the reservoir wall engageable at the opposite limits of its range of movement with a detent 16 to hold the valve adjusting lever 13 and the valve 11 in their elevated or depressed positions as may be required. Revolvably mounted above the reservoir 4 and carried upon rollers 17 is a housing 18, the bottom 19 of which forms a drain pan and is provided with a drain opening 20 which may be brought into registry with any one of the reservoir compartments by the rotation of the housing 18. The valve stems 12 of the outlet valves 11 are so extended that they project into close proximity to the underside of the drain pan or bottom 19 of the revoluble housing 18. The drain pan thus forms a stop to prevent the opening of a valve 11 pertaining to any one of the reservoir compartments until the revoluble housing has been adjusted to bring the drain opening or outlet 20 of such drain pan 19 into registry with the selected reservoir compartment. When properly adjusted, the drain opening registering with the drain valve stem 12 will permit the valve operating levers 13 to be elevated by the sliding handle 14 to lift the valve 11 and open the orifice to the outlet conduit 10. In such case, the upper end of the valve stem 12 projects through the drain opening in the bottom 19 of the revoluble housing, thereby preventing further adjustment of such housing until the open valve has been closed.

45 The valve stems 12 of the valves 11 are hollow to admit air to the branch conduits 10 subsequent to the closing of the valve 11 in order that the branch conduits 10 may be emptied by the action of the centrifugal stand pipe 21. The admission of air through the hollow valve stems 12 prevents the formation of a vacuum within the conduits 10.

50 The drain opening in the drain pan 19 which forms the bottom of the housing 18 is preferably formed by raising the material forming the bottom 19 at one side of the opening above the normal plane of such bottom and deflecting it laterally to form a hood or overhanging flange above the drain opening 20. This elevated portion of the bottom 19 is on the advance side of the drain opening 20 in relation with the direction of rotation so that it intercepts the water falling on the bottom of the drain pan 19 incident to its dis-

charge from the rotating carriers or cages and their retaining drums.

Revolubly mounted in the main frame 1 is a vertical stand pipe 21. This stand pipe 21 communicates at its lower end with the upright short pipe 9 common to the several reservoir compartment outlet conduits 10. The upright short length of pipe 9 which forms the outlet common to all of the reservoirs, projects concentrically within the lower end of the standpipe 21 forming a hollow trunnion about which the standpipe 21 rotates. The stand pipe 21 is revolubly mounted in a bushing 22 which bushing is preferably, though not necessarily embedded in a resilient body 23 of rubber, or the like. The resilient mounting of the bearing bushing 22 is for the purpose of eliminating vibration and minimizing noise of operation. Obviously such resilient mounting is not essential for the successful operation of the mechanism. Secured upon the stand pipe 21 is a drive pulley 24 beneath which is a ball thrust bearing 25, upon which the stand pipe is supported. Mounted exteriorly of the stand pipe 21 for rotation thereon is a sleeve or tubular column 26 having a bearing 27 upon the stand pipe 21 at its upper end and a corresponding bearing 28 at its lower end. The sleeve or column 26 is provided with a pulley 29 of slightly smaller diameter than the pulley 24 carried by the rotary stand pipe 21. These pulleys are driven by belts 30 and 31 connecting the respective pulleys with a common drive pulley 32 upon an electric motor 33 secured to the base or supporting frame 1. The proportion of the pulleys 24 and 29 is such that the stand pipe 21 and sleeve 26 are simultaneously rotated in the same direction, but at slightly different speeds.

The stand pipe 21 is of somewhat reduced diameter at its lower end to agree with the common conduit 9 with which it communicates and through which it receives wash water from the reservoir compartments. At a mid-height point the stand pipe is enlarged, having an internal angular shoulder 34 of approximately 45 degrees. The wash water admitted to the stand pipe 21 through the corresponding branch conduit 10 and common outlet pipe 9 will rise within the stand pipe to the same level as within the connected reservoir compartment. The stand pipe is provided interiorly with inclined screw blades or propellers 35 which supplement the centrifugal action of the rotating sleeve to raise the water to the top of the apparatus. On its upper end the stand pipe 21 carries a perforated tube 36 having therein vertically arranged rows of perforations 37 in different radial positions. These rows of perforations are positioned to discharge directly upon the perforated clothes containers or cages 38 which are arranged in a concentric series about the perforated tubular extension 36 of

the stand pipe 21. These clothes containers or cages 36 are cylindrical in form and have perforated side walls. They rest upon a turn table 39 attached to and rotating in unison with the central stand pipe 21. Secured to the turn table 39 at spaced intervals are standards 40, the upper ends of which are connected by tie rods 41 with the central perforated water discharge tube 36. These standards 40 separate the clothes containers or cages 38 and afford a driving influence in carrying the clothes containers or cages through a circular path in unison with the rotation of the turn table 39. These spacing and driving standards 40 are preferably provided with anti-friction rollers 42 which engage the perforated sides of the clothes containers or cages 38 to carry the cages about in unison with the rotation of the turn table and facilitate the simultaneous rotation of the cages or containers 38 about their own axes.

Carried by the revoluble sleeve 26 and enclosing the turn table 39 and clothes containers or cages 38 is a rotating drum 43 also having perforated side walls. The clothes carriers or cages 38 are loosely positioned upon the turn table 39. They are preferably provided with a central projecting boss or step bearing 44 engaging the turn table 39 and on which the cages or clothes containers rest for relative rotary movement about their own axes.

The centrifugal influence due to the rotation of the turn table 39 tends to shift the clothes containers or cages 38 outwardly in radial directions intermediate the driving and spacing standards 40. In their outermost positions the perforated side walls of the clothes containers 38 contact with the interior side walls of the drum 43 carried by the revoluble sleeve 26. The turn table 39 and the drum 43 simultaneously rotate in the same direction, but at different rates of speed. Drum 43 rotates slightly faster than the turn table 39 therefore the clothes containers or cages 38 being carried about the turn table 39 roll upon the interior of the side walls of the drum 43, turning about their own individual axes.

While the apparatus may be operated at various rates of speed dependent upon the conditions of use, it has been proposed to rotate the stand pipe 21 and turn table 39 at approximately 750 R. P. M. and to rotate the sleeve 26 and drum 43 at an increase of approximately 10 R. P. M. over that of the turn table and stand pipe. This differential rate of rotation in an apparatus proportioned approximately as illustrated will afford approximately 20 R. P. M. of each of the individual clothes containers or cages 38.

The centrifugal influence which holds the containers or cages 38 in rolling contact with the side wall of the drum 43 also tends to

force the mass of clothes within such cages or containers against the outermost sides thereof. That is to say, the centrifugal influence due to the high rate of rotation of the

5 turn table 39 carrying the clothes containers or cages 38 with it projects the several masses of clothes radially outwardly against that side of the cage or container which contacts and rolls upon the inner wall of the drum 43.

10 The slow rolling action of the cages or containers 38, however, constantly changes this outermost side or point of contact of the cages tending to carry the masses of clothes inwardly by the rotation of the cage or container about its own axis against the centrifugal influence. As the mass of clothes turns inwardly with the rotation of the cage

15 38 centrifugal influence acting thereon tumbles the clothes within the cage again returning the mass to the outermost side thereof. This movement of the clothes under centrifugal influence is progressive and constant causing a continual agitation, turning and reversal of the clothes, so that every portion

20 thereof is subjected to the action of the water which is forcibly discharged through the perforations 37 of the discharge pipe 36 extending from the rotary stand pipe 21. These jets of water discharged from the perforations 37 enter the clothes containers or cages

30 38 through the perforated sides thereof at the inner sides of the cages. Centrifugal influence tends to carry the wash water through the mass of clothes and discharges it through the perforated sides of the cage or container

35 38 and then through the perforated wall of the drum 43 into the housing wherein it falls to the drain pan 19 and is returned through the drain opening 20 to the corresponding reservoir compartment from which it was withdrawn. The water is raised and forcibly discharged through the perforations 37 by the centrifugal action of the revolving stand pipe 21 and discharge nozzle 36. The tumbling action of the clothes within the cages or containers 38 under centrifugal influence induces a rubbing action between the pieces of clothing much greater than is produced in the usual washing machine having a horizontal cylinder, wherein the clothing is tumbled only under influence of gravity. When the action of one wash water is completed the valve 11 of the corresponding reservoir compartment is closed by depressing the handle

50 14 and by short continued rotation all of the water is extracted from the clothing within the containers or cages 38. Thereupon the housing 18 is rotated through a partial revolution upon its supporting rollers 17 to bring the drain outlet 20 into registry with a different reservoir compartment. Upon opening the valve 11 of such compartment, the stem 12 of which is projected within the drain outlet opening 20 of the drain pan 19, water

60 from such compartment which may be a

rinse water is admitted through the branch conduit 10 to the common upright outlet pipe 9, and delivered thence into the rotating stand pipe 21. This water is carried up through the stand pipe and discharged through the perforated nozzle 36 in the manner before described, being returned thence to the reservoir compartment.

The containers or cages 38 are provided with covers 45 which may be fastened in any suitable manner. In the present instance these cover lids 45 are shown provided with oppositely extending locking bolts 46, the inner ends of which are eccentrically connected with an oscillatory disc 47 to which is attached a knob or handle 48. By rotating the knob 48 and correspondingly rotating the disc 47 the locking bolts 46 are extended or retracted.

Pivotaly attached to the base or support 1 are two spring actuated oscillatory arms 49 which carry at their ends idler rollers 50 bearing upon the drive belts 30 and 31. The arms 49 are subjected to the tension of springs 51 which cause the rollers to bear upon the belts sufficiently to keep such belts tight and take up slack.

From the above description it will be apparent that there is thus provided a construction of the character described possessing the particular features of advantage before enumerated as desirable, but which obviously is susceptible of modification in its form, proportions, and arrangement of parts, without departing from the principle involved or sacrificing any of its advantages.

While in order to comply with the statute the invention is described in language more or less specific as to structural features, it is to be understood that the invention is not limited to the specific details shown, but that the means and construction herein disclosed comprise the preferred form of several modes of putting the invention into effect and the invention is therefore claimed in any of its forms or modifications within the legitimate and valid scope of the appended claims.

Having thus described my invention, I claim:

1. In a washing machine, a rotary table, a clothes carrier eccentrically mounted thereon for rotation about its own axis independent of its rotation with said table, a traction member rotating at a rate slightly different from that of the table and engaged by said rotary clothes carrier, whereby the latter is given a slow rotation about its own axis and a rapid rotation about an axis eccentric therewith and means for discharging water transversely through the clothes in said carrier during said rotation.

2. In a washing machine, a perforated clothes container and means for transmitting to said container a planetary motion about vertical axes wherein it will rotate slowly about its own vertical axis and simultaneous-

ly rotate rapidly about an eccentric vertical axis, and means for discharging water transversely through said container.

3. In a washing machine, a perforated clothes container, a rotary carrier therefor on which the container is mounted for independent rotary movement, a traction member engaged by the clothes container with rolling contact as said carrier revolves to impart rotary motion to the container, and means for discharging water through the container simultaneously with its rotation.

4. In a washing machine, a perforated clothes container, a rotary carrier therefor on which the container is mounted for independent rotary movement, a traction member engaged by the clothes container with rolling contact and means for imparting to the traction member a rotary motion in the same direction as said carrier at a comparatively small difference of speed, whereby the container will be given a rotary motion at a comparatively low speed.

5. In a washing machine, a plurality of perforated clothes containers, a vertically disposed stand pipe common to all the containers from which water is discharged laterally through the walls of said containers, and means for rotating the containers relative to the stand pipe to present different sides of the containers to the water discharge.

6. In a washing machine, a perforated clothes container, a water supply conduit discharging thereonto, and means for rotating the container to present different sides thereof to the water discharge, and means for whirling said container concentrically about said water supply conduit independent of the aforementioned rotary motion of the said container to retract the water therefrom by centrifugal tendency.

7. In a washing machine, a reservoir having a plurality of compartments, a rotary clothes carrier, a concentrically disposed rotary stand pipe for drawing water from any one of the compartments and discharging same by centrifugal force through the clothes in the carrier, and a revoluble drip pan for collecting the discharged water and having a discharge opening brought into communication with different compartments of the plurality by the rotation of the pan for discharging the water into any selected compartment.

8. In a washing machine, a plurality of water compartments, means for drawing water from any one of the compartments, a clothes container through which the water is discharged, independently operable valves controlling the flow of water from the compartments, an adjustable drain pan for returning the discharged water to the compartment from which it was drawn, said pan having cooperative relation with the valves whereby the valves are released singly for independent operation and thereby controlling the

operation of the valve means by the adjustment of the drain pan.

9. In a washing machine, a plurality of water compartments, an outlet valve for each compartment, a common discharge conduit pertaining to said compartments, a clothes compartment into which water from said compartments is to be discharged, adjustable means for returning the water from the clothes compartment to the water compartment from which it was drawn, and means for automatically locking the water return means in adjusted position by the opening of a valve, thereby preventing the adjustment of the water return means to direct the water to a different compartment until the valve of the first compartment has been closed.

10. In a washing machine, a plurality of water compartments, a clothes compartment located above the water compartments, and means for automatically drawing the water from the different compartments one at a time, and discharging same into said clothes compartment and a rotary collecting pan for automatically returning the water from the clothes compartment to the particular water compartment from which it was drawn and stop means for automatically locking the collecting pan in its adjusted position so long as water is being drawn from such compartment.

11. In a washing machine, a circular reservoir divided into a plurality of water compartments, outlet valves controlling the discharge of water from the respective compartments, a washing compartment located above said reservoir, a revoluble drip pan interposed between the washing compartment and the reservoir to receive the discharge from said washing compartment and having an outlet brought into registry with the different water compartments by the rotation of the drip pan whereby the water discharged from the washing compartment is returned to a selected compartment of the plurality, and locking means for the drip pan controlled by the operation of the valves by which the drip pan is held in adjusted position until released by the operation of a particular valve.

12. In a washing machine, a reservoir divided into a plurality of water compartments, a washing compartment located above said reservoir, a discharge conduit leading to the washing compartment and common to the plurality of water compartments, a plurality of independently operable valves controlling the outlets from the water compartments to the common discharge conduit, and adjustable stop means common to all the valves preventing the opening of outlets from more than one compartment to said conduit at the same time.

13. The herein described method of washing clothes consisting in whirling a mass of clothing to be washed about an axis of rota-

tion distantly removed from such mass at a rapid rate of rotation, and simultaneously discharging water upon the mass which is impelled therethrough by centrifugal tendency, and rotating said mass of clothes at a slow rate of speed about a second axis close to such mass and eccentric with said first mentioned axis, presenting different portions of the mass to the action of the water and causing the mass to change its position within the circle of operation about the last mentioned axis by centrifugal tendency incident to its rotation about the first mentioned axis.

14. The herein described method of washing clothes, and the like, consisting in imparting to a mass of clothes a planetary motion wherein the mass travels rapidly in its orbit and slowly about its own axis and simultaneously subjecting the mass to the action of a water jet at the inner side of the mass of clothes whereby the water is carried therethrough and extracted therefrom by centrifugal tendency.

15. In a washing machine, a main frame, a pair of concentric independently revoluble tubular spindles, a rotary clothes carrier connected to and operative in unison with one of the spindles, a rotary housing with which the clothes carrier has rolling contact, said rotary housing being connected to and rotating in unison with the other spindle, and a driving means common to both spindles for rotating the spindles and their connected parts at different speeds of rotation.

16. In a washing machine, a washing apparatus, a plurality of reservoir compartments for suds and rinse water, an outlet valve for each compartment, means for withdrawing water from a selected compartment for circulation through the washing apparatus, a drain pan having an outlet opening adjustable to discharge the circulated water into any one of the compartments, elongated stems on said valves into the path of movement of which the drain pan extends, said drain pan having a clearance space brought into position to receive the elongate stem of an operated outlet valve by the adjustment of the drain pan opening to return the discharged water to the compartment to which such valve pertains.

17. In a washing machine, a centrifugal washing apparatus, a plurality of reservoir compartments for suds and rinse water located below the washing apparatus, means for withdrawing water from a selected compartment for discharge into the washing apparatus, a collecting housing for the discharged water having a drain opening, said reservoir compartments and collector housing being relatively adjustable to enable the return of the water to the particular compartment from which it was withdrawn and locking means for automatically locking the collector housing and reservoirs in their ad-

justed relation with its drain opening communicating with the selected compartment.

18. In a washing machine, a rotary clothes container, means for transmitting to the clothes container a planetary motion wherein it will rotate slowly about its own axis while traveling at a greater speed in an orbit about an eccentric axis, a supply conduit discharging water into the clothes container during travel, and a collector housing for the discharged water enclosing the path of travel of the container.

19. In a washing machine, a centrifugal type washer, a reservoir having compartments for suds and rinse water, a centrally disposed rotary standpipe, water elevating means for elevating water from one compartment independent of another through said centrally disposed standpipe, the water being discharged from the standpipe into the washer by centrifugal influence, and adjustable drain means for returning the discharged water to a selected reservoir compartment.

20. In a washing machine, a washing apparatus, a plurality of reservoir compartments for suds and rinse water, an outlet valve for each compartment, means for withdrawing water from a selected compartment for circulation through the washing apparatus, an adjustable drain pan having an outlet opening variable by adjustment of the pan to discharge the circulated water into any one of the compartments, and a locking device for the drain pan operable by the adjustment of an outlet valve for preventing the relative adjustment of the drain pan until the outlet valve of the previously selected compartment has been closed.

21. In a washing machine, a washing apparatus, a plurality of reservoir compartments for suds and rinse water, an outlet valve for each compartment, means for withdrawing water from a selected compartment for circulation through the washing apparatus, an adjustable drain pan having an outlet opening variable by adjustment of the pan to discharge the circulated water into any one of the compartments, said valves having elongated hollow stems extending above the normal water level of the compartment and forming air ducts opening beyond said valves.

22. In a washing machine, a washing compartment, a reservoir for water, an outlet valve therefor, operating means for said valve, a discharge conduit leading from the reservoir to the washing compartment, and controlled by said valve, an air duct extending above the water level of the reservoir and communicating with the discharge conduit beyond said valve to admit air to said discharge conduit when the valve is closed to enable the escape of water from the conduit and prevent formation of a vacuum.

23. In a washing apparatus, a washing compartment, a plurality of reservoir compartments for suds and rinse water, a vertical hollow rotary spindle, branch conduits 5 connecting each of the reservoir compartments with the spindle, valve means controlling the interconnection of the spindle with the compartments, means for rotating the spindle to withdraw water from a selected 10 compartment and discharge it into the washing compartment by centrifugal influence, and means for returning the water to the particular compartment from which it was drawn.
- 15 24. A washing machine including a rotary carrier, a clothes container eccentrically mounted thereon for rotation about its own axis additional to its rotation with said carrier, an annular traction member upon which 20 the container has rolling contact, and means for rotating the carrier.
- 25 25. A washing machine, including a rotary carrier, a clothes container eccentrically mounted thereon for rotation about its own 25 axis additional to its rotation with said carrier, an annular traction member upon which the container has rolling contact, and means for rotating the carrier and the surrounding traction member at different rates of speed.
- 30 26. A washing machine including a rotary carrier, a clothes container eccentrically mounted thereon for rotary motion about its own axis additional to its rotation with said 35 carrier, driving means for the carrier and means for transmitting simultaneous rotation to the clothes container at a different rate of speed.
- 40 27. A washing machine including a rotary carrier, a clothes container eccentrically mounted thereon for rotary motion about its own axis additional to its rotation with said 45 carrier, driving means for the carrier, and driving means for said clothes container by which the container will be rotated upon its own axis at a rate of rotation less than that of the carrier while traveling with said carrier.
- 50 28. A washing machine including a rotary carrier, a clothes container eccentrically mounted thereon for rotary motion about its own axis additional to its rotation with said 55 carrier, means for discharging water upon the inner side of the clothes container whereby the force of such water will be augmented by centrifugal influence to carry the water through the container and its contents driving means for the carrier, and independent driving means for the clothes container.
- 60 29. A washing machine including a rotary carrier, a clothes container eccentrically mounted thereon for rotary motion about its own axis additional to its rotation with said carrier, a centrally disposed water conduit discharging radially upon the exterior of 65 the traveling clothes container driving means for the carrier, and a rotary driving member rotating the clothes container independent of the rotation of the carrier.
30. A washing machine including a traveling clothes container, having a rotary path 70 of travel about an eccentric axis, a water supply conduit centrally disposed relative to the path of travel of the container for discharging a stream of water radially upon the contents of the clothes container during its 75 travel thereabout, and means for collecting the discharged water for return to the jet nozzle to effect a continuous circulation.
31. A washing machine including a rotary clothes container, an eccentrically positioned 80 discharge conduit for discharging water upon the contents of the container during rotation thereof, means for rotating the container through a path of travel concentric with said discharge conduit to effect the continuous extraction of the discharged water 85 and means for presenting different sides of the container progressively to the action of the discharged water.
32. A washing machine including a rotary 90 perforated clothes container, a jet nozzle eccentrically positioned in relation with the container and discharging wash water upon the contents of the container, means for rotating the container in a circuitous path 95 about the jet nozzle and means for rotating the container during its travel about said circuitous path.
33. The herein described method of treating clothes during washing including carrying 100 the clothes at a high rate of speed in a circular path of travel, discharging water onto the clothes in a radial direction relative to the path of travel whereby the penetrating force of the water is augmented by centrifugal influence and simultaneously extracting 105 the water from the body of clothes by centrifugal influence and tumbling the clothes during said extraction operation by changing their position relative to the path 110 of travel in opposition to centrifugal influence whereby centrifugal influence will act to move the clothes transversely to their circular path of travel.
34. The herein method of treating clothes 115 during washing, consisting in subjecting a body of clothes to centrifugal influence, and simultaneously discharging water onto the inner side of the body of clothes whereby the water will be caused to penetrate the 120 clothes under centrifugal influence, moving the clothes inwardly in opposition to centrifugal influence, whereby centrifugal tendency will reverse the direction of such movement by the clothes thus effecting a tumbling 125 action.
35. A washing machine including a rotary carrier for clothes in which the clothes are subject to centrifugal influence, means for discharging water onto the inner side of the 130

- body of clothes whereby the water is caused to penetrate the clothes under centrifugal influence and means for effecting a movement of the clothes from their outermost position inwardly contrary to centrifugal influence from which position they are returned by centrifugal influence to their outermost position, thereby effecting a tumbling action of the clothing.
36. A washing machine including a rotary carrier for clothes in which the clothes are subject to centrifugal influence, a water discharge conduit around which the clothes are carried in a circular orbit and from which water is discharged radially upon the clothes during such travel and an auxiliary carrier for the clothes revolvably mounted on the main carrier by the rotation of which the clothes are carried from an outer position to an inner position relative to the center of rotation of the main carrier, from which inner position the clothes are returned by centrifugal influence to an outer position in said auxiliary container, thereby effecting a tumbling action.
37. A washing machine including a rotary carrier for clothes in which the clothes are subject to centrifugal influence, a water supply conduit through which water is discharged onto the clothes during their movement within such carrier and means for effecting an alternating inwardly and outwardly shifting movement of the clothes during the rotation of the carrier, the outward movement being effected by centrifugal tendency and the inward movement in opposition.
38. A washing machine including a reservoir divided into a plurality of compartments, a washing compartment located thereabove, water circulating means for drawing water from a selected reservoir compartment and discharging it into the washing compartment, a valve controlling the flow of water from the selected reservoir, an adjustable drain receptacle interposed between the wash compartment and reservoir, receiving water from the wash compartment and having a drain outlet adapted by the relative adjustment of the drain receptacle to discharge the drained water into a selected reservoir and a locking detent for said adjustable drain receptacle operatively engaged therewith upon the opening of said valve to lock the drain receptacle against further adjustment until said valve is closed.
39. A washing machine including a reservoir divided into a plurality of compartments, an independently operable outlet valve for each compartment, a washing compartment located thereabove, water circulating means for drawing water from a selected reservoir compartment and discharging it into the washing compartment, and a revoluble drain pan intermediate the washing compartment and reservoir compartments, and adapted by its rotation to return the drained water to any one of the reservoir compartments, and automatic control means preventing movement of the drain pan from adjusted position relative to one compartment until the outlet valve thereof is closed.
40. A washing machine including a reservoir divided into a plurality of compartments, an independently operable outlet valve for each compartment, a washing compartment located thereabove, water circulating means for drawing water from a selected reservoir compartment and discharging it into the washing compartment, and a revoluble drain pan intermediate the washing compartment and reservoir compartments, and adapted by its rotation to return the drained water to any one of the reservoir compartments, and automatic control means preventing the opening of the outlet valve of a selected compartment until the drain pan is adjusted to operative position relative to the compartment.
41. In a washing machine, a perforated clothes container, a water supply conduit discharging upon the clothes within the container, means for rotating the container at a rapid rate about an eccentric axis to extract from the clothes within the container the water discharged thereonto, and means for transmitting to the container a slow rotary motion about an axis within itself to present to the water jet all sides of the container and the body of clothes contained therein whereby the clothes are moved contrary to centrifugal influence and thence tumbled within the container by centrifugal influence to present different portions of the body of clothes to the action of the water jet.
42. A washing machine, including a revoluble clothes container, rotating about a vertical axis, actuating mechanism for rotating the clothes container for effecting outward radial movement of the clothes within the container under centrifugal influence and means for moving the clothes inwardly contrary to centrifugal influence into position to be again acted upon and moved outwardly by centrifugal influence thereby causing a tumbling action of the clothes within the container.
43. In a washing machine, a washing apparatus, a plurality of reservoir compartments for suds and rinse water, a water discharge means for withdrawing water from a selected compartment for circulation through the washing apparatus, an adjustable collecting means for returning the water to the selected compartment after such circulation, adjustable valve means by which the compartment from which water is to be withdrawn is selected, and detent means operating with the valve means for preventing movement of the

collecting means out of its adjusted relation with a selected compartment until the valve means is adjusted to disconnect such compartment from the water discharge means.

44. In a washing machine, a rotary clothes container, actuating means for rotating the container at high speed so that the clothes therein will be moved outwardly from the axis of rotation by centrifugal force, means for effecting an inward movement of the clothes to a position intermediate the outer position and the axis of rotation simultaneously with their rotation thereabout, from which position they are again moved outwardly by centrifugal force, thereby giving to the clothes a tumbling action simultaneously with their rotation.

45. In a washing machine, a rotary clothes container in which moisture is extracted from the clothes by centrifugal influence, actuating means for rotating the clothes container at such speed that the clothes therein will be moved outwardly relative to the axis of rotation by centrifugal influence, and means for shifting the container additionally to its aforesaid rotary motion to again present the clothes in an inner position for repetitious outward movement under centrifugal influence whereby the clothes are given a tumbling action within the container.

46. In a washing machine, a rotary clothes container, actuating means for rotating the container at such speed that the clothes therein are shifted outwardly by centrifugal influence, means for discharging water upon the clothes within the rotating container, the water being impelled through the clothes by centrifugal influence, means for shifting the clothes inwardly toward their axis of rotation simultaneously with their rotation thereabout to receive water upon a different portion thereof preparatory to repetition of their outward movement under centrifugal influence whereby the clothes are given a tumbling action within the container.

47. In a washing machine, a washing apparatus, a plurality of reservoir compartments for suds and rinse water, a water discharge means for withdrawing water from a selected compartment for circulation through the washing apparatus, an adjustable collecting means for returning the water to the selected compartment after such circulation, adjustable valve means by which the compartment from which water is to be withdrawn is selected, and means for preventing adjustment of the selective valve means to connect a particular compartment with the water discharge means until the collecting means is arrested in its operative position relative to said compartment.

In testimony whereof, I have hereunto set my hand this 2nd day of July, A. D. 1927.

AUGUST G. SCHWIETERMAN.