No. 819,102. PATENTED MAY 1, 1906.

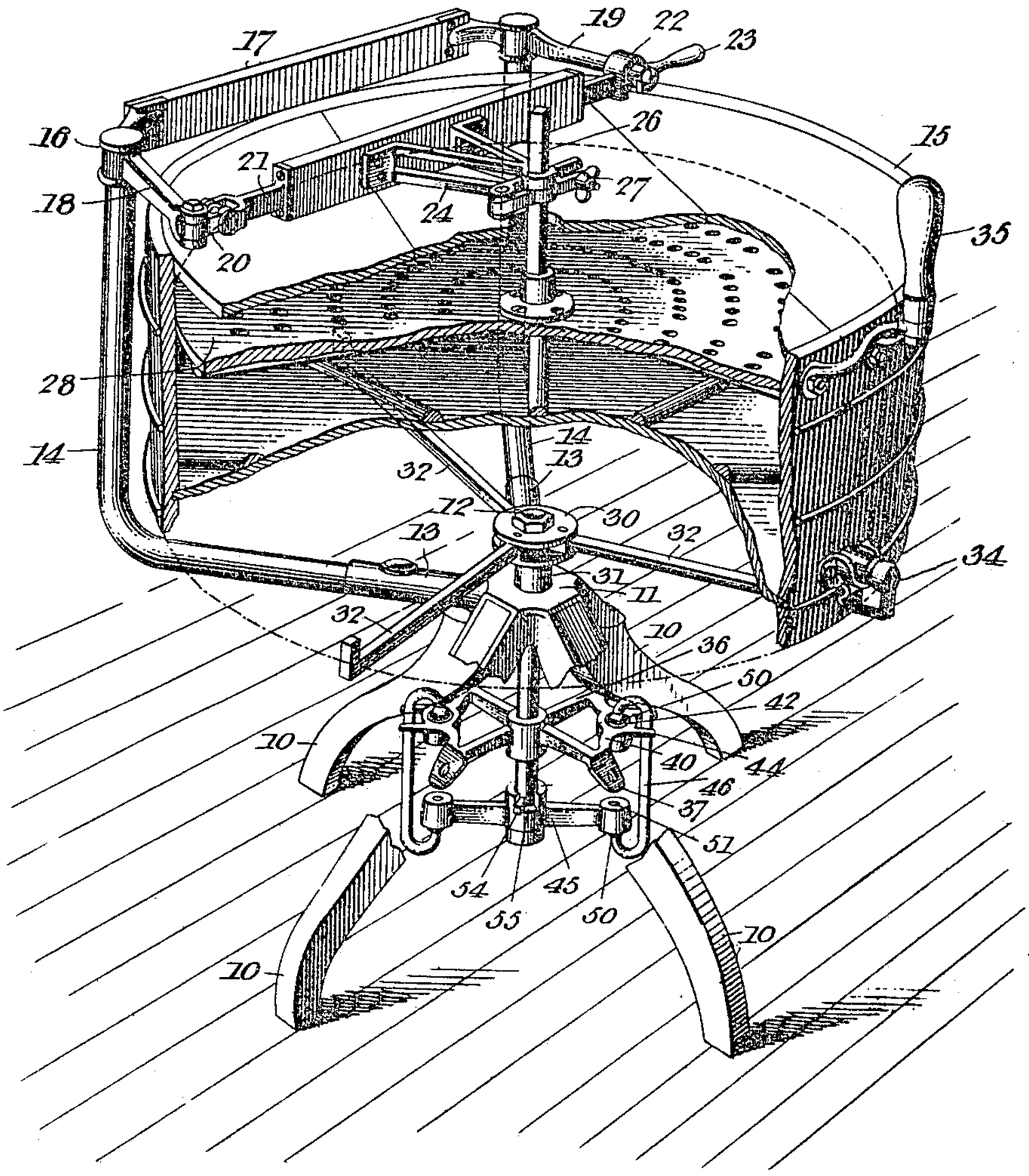
R. L. WEARNE.

WASHING MACHINE.

APPLICATION FILED MAY 22, 1905.

2 SHEETS—SHEET 1.

Fig. 1.



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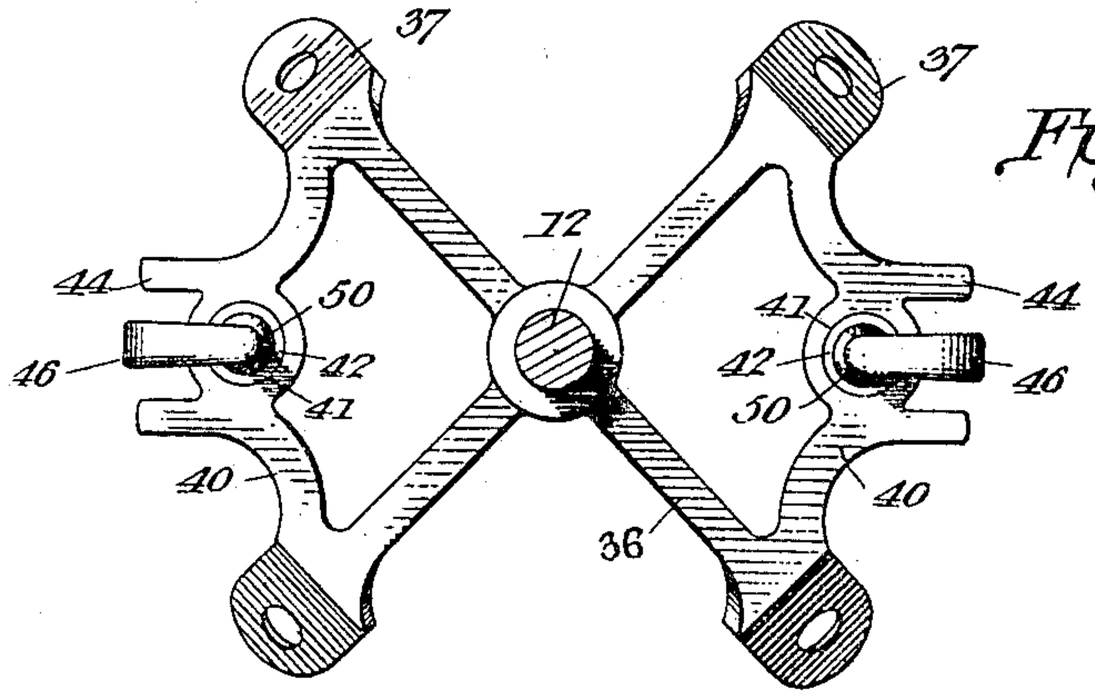


Fig. 3.

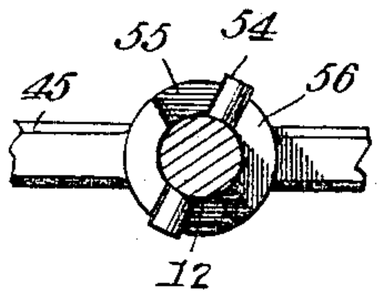


Fig. 4.

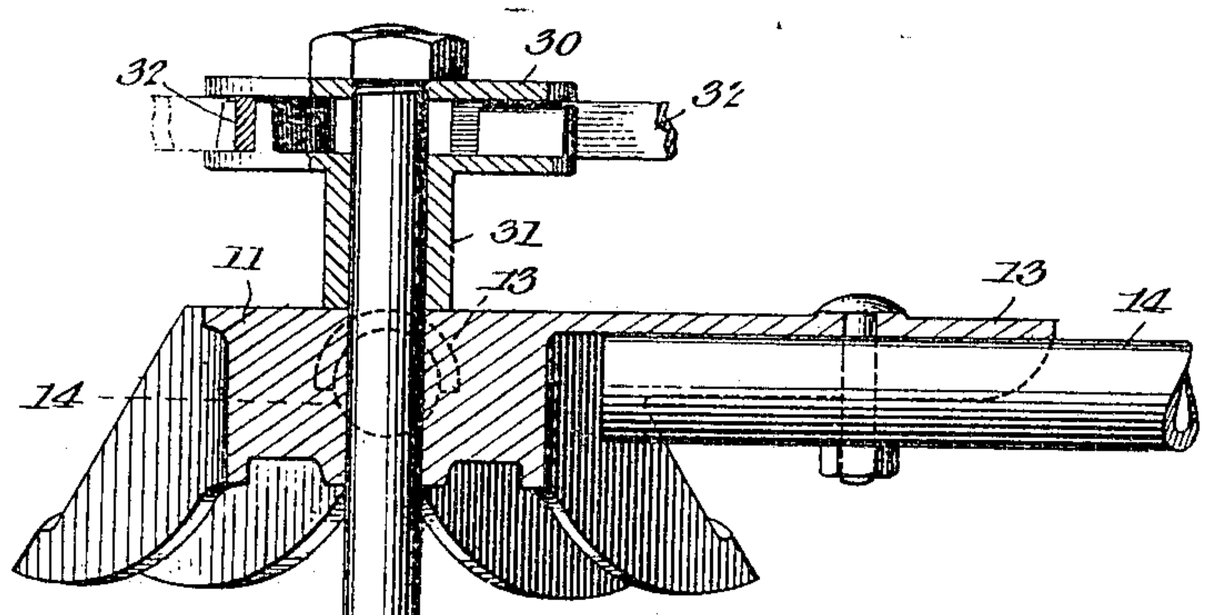
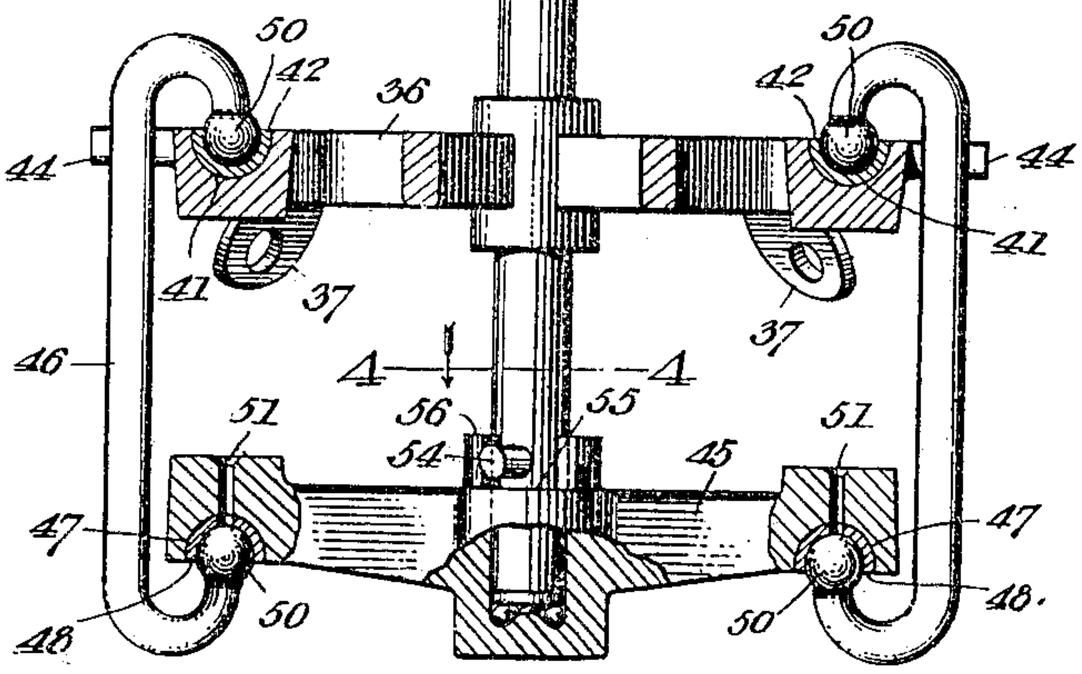


Fig. 2.



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UNITED STATES PATENT OFFICE.

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WASHING-MACHINE.

No. 819,102. Specification of Letters Patent. Patented May 1, 1906.

Application filed May 22, 1905. Serial No. 261,658.

To all whom it may concern:

Be it known that I, RICHARD L. WEARNE, a citizen of the United States, residing at Binghamton, in the county of Broome and State of New York, have invented a new and useful Washing-Machine, of which the following is a specification.

This invention relates to washing-machines of that type in which the clothes are subjected to a combined rubbing and squeezing action for the purpose of removing the dirt.

The principal object of the invention is to provide novel and efficient mechanism for accomplishing the compression or squeezing and release of the clothes and to construct a machine that may be operated with minimum effort.

A further object of the invention is to provide a machine of the type described in which the acquired momentum of the tub and its connected parts due to oscillatory movement in a horizontal plane may be utilized in elevating the tub to accomplish the squeezing of the clothes.

A still further object of the invention is to provide a machine in which the clothes may be washed by a simple oscillatory movement of one rubbing member with respect to another without altering the distance between such members or to permit the squeezing and release of the clothing at the completion of each oscillatory movement at the will of the operator and, further, to so arrange the mechanism that, if necessary, the clothes may be alternately compressed and released with a minimum of rubbing action, the device being wholly under the control of the operator and it being merely necessary to limit the extent of movement of the tub to accomplish the desired result.

A still further object of the invention is to provide a device of this character in which the swinging or oscillatory movement of the tub in a horizontal plane may be transformed into vertical movement of such tub, so that the clothes carried by the tub may be moved toward and from a stationary member mounted within the tub.

With these and other objects in view, as will more fully hereinafter appear, the invention consists in certain novel features of construction and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that various changes in the form, proportions, size, and minor details of the structure may be made without departing from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawings, Figure 1 is a perspective view of a washing-machine constructed in accordance with the invention, portions of the tub and standard being broken away in order to more clearly illustrate the construction. Fig. 2 is a sectional elevation of the principal portions of the mechanism, drawn to an enlarged scale. Fig. 3 is a plan view of a stationary frame arranged at the lower portion of the machine and forming bearings for the vertical shaft or arbor on which the tub-carrier is mounted, the shaft being shown in section. Fig. 4 is a sectional plan view of a detail of construction on the line 4 4 of Fig. 3.

Similar numerals of reference are employed to indicate corresponding parts throughout the several figures of the drawings.

The working parts of the apparatus are supported on a suitable frame, which, in the present instance, takes the form of a number of legs or standards 10, connected at their upper ends by a spider-frame 11, generally formed of cast metal, and having a central bearing-opening for the reception of the vertical shaft 12 of the tub-carrier.

From the spider extends a pair of arms 13, to which are secured the lower ends of frame bars or tubes 14, which extend above the top of the tub 15. The upper ends of these bars are provided with caps 16, that are connected by a cross-bar 17, and from said caps extend arms 18 and 19, respectively. To the outer end of the arm 18 is pivoted a block 20, the block being arranged to swing in a horizontal plane, and to the outer end of the block is pivoted one end of a bar 21, arranged to swing in a vertical plane. The opposite end of this bar 21, which may be formed of wood or metal or a combination of the two, is provided with a socket 22 for the reception of the end of the arm 19, and an eccentric locking-lever 23, carried by the socket member, serves as a means for locking the arm in place.

Secured rigidly to the arm 21 is a bracket 24, that is provided at its outer end at a point

in vertical alinement with the shaft 12 with a socket for the reception of a vertically-disposed bar 26, which may be clamped in any position of adjustment by means of a thumb-nut and clamp 27. This bar 26 extends down through an opening in the cover or lid of the tub and serves as a support for a disk 28, that is rigidly held in place during the washing operation and which may be adjusted vertically in accordance with the quantity of clothes to be washed.

Secured to the upper end of the shaft 12 is a two-part spider head or clamp 30, having a hub member 31, that may rest on top of the spider 11, and this clamp 30 is provided with sockets for the reception of the inner ends of a plurality of radially-disposed arms 32, that carry the tub. The tub may be of any suitable construction and preferably is provided with a water-outlet normally closed by a removable plug 34, and to the front of the tub is secured an operating-handle 35 of any ordinary construction. In addition to the bearing afforded by the spider 11 the shaft is also guided by a spider-frame 36, the outer portion of which has inclined lugs 37 for securement to the inner faces of the legs or standards 10, the frame 36 being rigidly secured in place and being arranged to permit free revoluble and vertical movement of the shaft 12.

The outer portion of the spider-frame is provided with cross-bars 40, which may be formed integral with the frame, and in these cross-bars are formed approximately semicircular recesses 41 for the reception of cups 42, that preferably are formed of hardened steel, these cups being disposed at diametrically opposite points and at equal distances from the vertical axis of the shaft 12. Each of the cross-bars is also provided with a pair of spaced stop-fingers 44, arranged on opposite sides of the diametrical plane which includes the two cups 42.

The lower end of the shaft 12 is provided with a step-bearing formed in a bar 45, that is suspended from the frame 36 by yokes 46. In the lower face of the bar are two semicircular recesses 47 for the reception of cups 48, formed, preferably, of hardened steel, said cups being arranged at points diametrically opposite each other in a plane extending through the axis of the shaft 12 and being in vertical alinement with the cups 42, carried by the frame 36. The opposite ends of the yokes are provided with balls 50, which enter the cups 42 and 47, and said yokes are otherwise free from contact with both the frame 36 and bar 45. The upper cups 42 may be readily supplied with lubricant, while the lower cups are supplied through oil-holes 51, extending from the cups to the upper face of the cross-bar 45. The lower end of the shaft preferably rests on bearing-balls, as shown in Fig. 2, and said shaft is provided with a pair of diametrically opposite lugs 54, which may be formed by driving a pin through an opening in the shaft. This pin plays in recesses 55, formed between two vertically-extended projections 56, and each time the shaft is oscillated these lugs 54 will engage the projections 56, and if the movement is continued to a sufficient extent the cross-bar 45 will be turned with the shaft and in turning will move the lower ends of the yokes 46 out of vertical alinement with the upper end of said yokes, the upper cups 42 forming fulcrums on which the yokes swing during this movement.

In the operation of the machine the clothes to be washed are placed within the tub and disk 28 is adjusted in accordance with the quantity of clothes. After adding water and any detergents that may be desired the operator grasps the handle at the front of the tub and moves the same to and fro, this movement being imparted, through the tub, to the shaft. So long as the movement continues in the horizontal plane—that is to say, with the lugs 54 playing between the projections 56 without coming into contact therewith—the two rubbing members will remain the same distance from each other and the clothes will be merely rubbed. If the movement is continued in one direction or the other, the lugs 54 will actively engage the projections 56 and the suspended bar will be forced to travel around with the shaft, thus rocking the suspension members or yokes, and as the latter move from a vertical plane the suspended bar will be elevated and the shaft and tub will be moved up in order to squeeze or compress the clothes between two rubbing members and at the same time continue the rubbing movement. On movement in the opposite direction, or if the handle is released and the tub is allowed to descend by gravity, the suspension members will again assume a vertical position, and as they move toward said vertical position the tub will descend and the clothes will be released to permit fresh saturation.

In the operation of the device advantage is taken of the momentum acquired by the tub when moving in the horizontal plane to effect the upward movement of said tub through the suspension members or yokes, so that the device may be operated with but little exertion. If desired, the plain rubbing movement may be continued without moving the tub up and down, or the tub may be oscillated to its fullest extent and raised at the end of each movement, or the oscillatory movement may be confined to the limits of swinging movement of the suspension members, so that hard rubbing and alternate squeezing and compressing only may take place, all of these being thoroughly within

the control of the operator and necessitating merely a difference in the extent of swinging movement of the operating-handle.

It will be observed that the parts principally exposed to wear are formed of hardened steel, and these may be renewed from time to time, if necessary.

Having thus described the invention, what is claimed is—

1. In combination, a pair of rubbing members, one of which is mounted for oscillatory movement with respect to the other, a suspended support for one of said members, and means for imparting both oscillatory and vertical movement to the support.

2. In combination, a pair of rubbing members, one of which is mounted for oscillatory movement with respect to the other, a suspended support for one of said members, and means operable through said support for decreasing and increasing the distance between the rubbing members to effect alternate squeezing and release of the clothes.

3. The combination with a pair of rubbing members, of a suspended support for one of them, and means operable on rocking movement of said support for imparting vertical movement to the rubbing member carried by said support.

4. The combination with a pair of rubbing members, of a support for one of them, a support-suspending means normally arranged in a vertical plane, rocking or oscillatory movement of the support moving the suspending means from the vertical plane and effecting vertical movement of the support.

5. The combination with a pair of rubbing members, of a suspended support for one of them, said support permitting limited oscillatory movement of the supported rubbing member, and means operable on excessive movement of said rubbing member for effecting vertical movement of said support.

6. The combination with a pair of rubbing members, of a suspended support for one of them, suspension members normally arranged in a vertical plane, the supported rubbing member being free for limited oscillatory movement in a horizontal plane, and means operable at the completion of such limited movement for utilizing the acquired momentum in oscillating the support and moving the suspension members from a vertical plane.

7. The combination with a pair of rubbing members, of a support for one of them, swinging yokes on which said support is suspended, the movement of the yokes from a normal vertical plane effecting a vertical reciprocation of said support.

8. The combination with a pair of rubbing members, of a vertically-arranged shaft carrying one of said members, a shaft-support, swinging yokes carrying said support, and means for transmitting rocking movement from the shaft to the support, and from thence to the yokes, thereby to effect vertical movement of the support and shaft.

9. The combination with a pair of rubbing members, of a vertically-guided shaft carrying one of said members, a support in which said shaft is mounted, the shaft being free for rocking movement to a limited extent independent of the support, means for transmitting excessive rocking movement of the shaft to the support, and suspension members carrying said support and serving on movement of the latter to effect vertical movement of the support and shaft.

10. The combination with a pair of rubbing members, of a clothes-container carrying one of said members, a vertically-guided shaft carrying said clothes-container, a supporting-bar in which the shaft is stepped, suspension members for the supporting-bar, and means for engaging the shaft with the support after limited rocking movement of said shaft in either direction.

11. The combination with a pair of rubbing members, of a clothes-container carrying one of said members, a vertically-disposed shaft carrying said clothes-container, a supporting-bar in which the shaft is stepped, suspension-yokes carrying said supporting-bar, and normally occupying a vertical position, and interengaging means between the shaft and supporting-bar, whereby rocking movement of the shaft is transmitted to the bar and to the yokes.

12. The combination in a washing-machine, of a clothes-container, a vertical shaft carrying the same, a supporting-bar in which the shaft is stepped, suspension-yokes carrying said bar, said bar having spaced projections adjacent to the shaft, and vertical pins carried by the shaft and adapted to engage said projections.

13. In a washing-machine, a vertically-disposed shaft, a clothes-container carried thereby, a supporting-bar in which the shaft is stepped, a rigid frame, a suspension-yoke connecting the frame to the supporting-bar, and interengaging means between the shaft and bar, whereby rocking movement of the shaft may be imparted to said bar after limited movement of the shaft in both directions.

14. In a washing-machine, the combination with a vertically-disposed shaft, of a clothes-container supported thereby, a spider-frame having a guiding-opening for the shaft, cups or socket members carried by said frame, a supporting-bar in which the lower end of the shaft is stepped, said bar having a pair of spaced projections adjacent to the shaft, pins carried by the shaft and playing between said projections, cups or sockets arranged in the lower face of the bar in vertical alinement with those of the spider-frame, and suspension-yokes having their opposite ends fitted in said cups or sockets.

15. The combination in a washing-machine, of a vertically-guided shaft, a clamp arranged at the upper end of the same and and having a hub or collar member, a frame or standard on which the hub or collar member is supported to limit downward movement of the shaft, arms projecting radially from said clamp, a clothes-container carried by the arms, a spider-frame forming a bearing for the lower portion of the shaft and provided with cups or sockets, stops extending from said frame, a supporting-bar in which the lower end of the shaft is stepped, said bar being provided with a pair of spaced projections adjacent to the shaft, pins projecting from the shaft and playing between said projections, cups or socket members carried by the bar in alinement with those of the spider-frame, and suspension-yokes having terminal balls fitted in said cups or sockets.

16. The combination in a washing-machine, of a main frame including standards, a spider arranged at the upper end of the frame and connecting the members thereof, said spider having a centrally-disposed guiding-opening, a shaft extending therethrough, a clamping member secured to the upper end of the shaft and serving by engagement with said spider to limit downward movement of the shaft, projecting arms carried by the clamping member, a clothes-container carried by the arms, a second spider-frame secured to the standards and having a guiding-opening for the passage of the shaft, a support in which the lower end of the shaft is stepped, and swinging yoke members extending between the second spider-frame and support.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

RICHARD L. WEARNE.

Witnesses:
A. G. SHEOK,
ALFRED DAVID.