

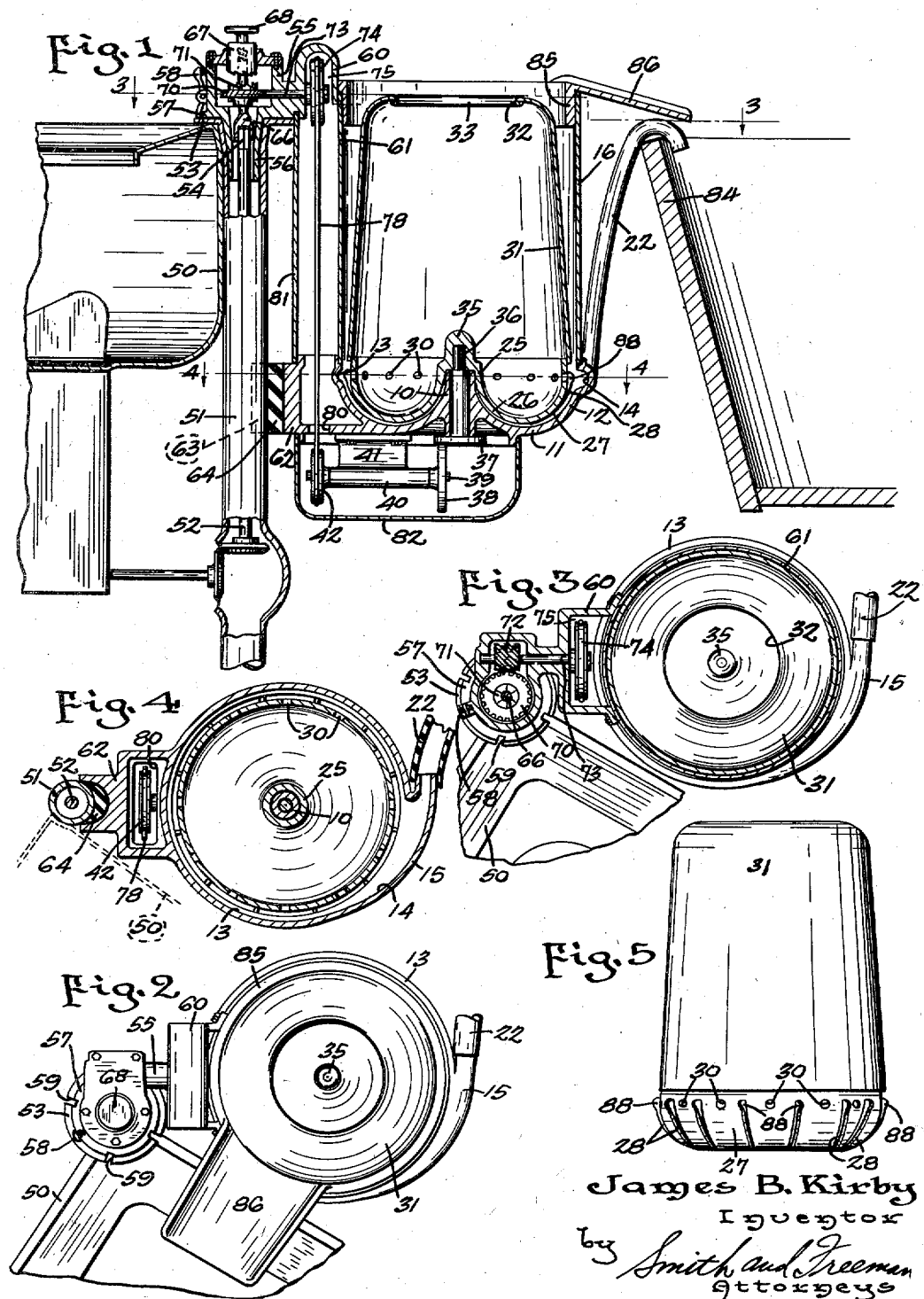
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LAUNDRY MACHINE

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LAUNDRY MACHINE

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260,889. Divided and this application April 25,
1929, Serial No. 358,025

19 Claims. (Cl. 210—71)

This invention relates to laundry machines and has special reference to extractors of the centrifugal type for removing the excess liquid from clothes after washing. The objects of the invention are the provision of a centrifugal extractor which is capable of being substituted in place of a wringer in existing machines; the provision of a centrifugal extractor capable of being moved to different positions relative to the washing machine for which it is used; the provision of a centrifugal extractor capable of being substituted for a wringer and driven by the same mechanism employed in connection with such wringer; the provision of a centrifugal extractor capable of being attached to existing washing machines which shall be substantially free from vibration, easy of access, and which shall automatically discharge the extracted liquid either back to the machine or into a suitable sink or tub, while further objects and advantages of the invention will become apparent as the description proceeds. The present application is a division of my earlier application, Serial No. 260,889, filed March 12, 1928 but subsequently abandoned.

In the drawing accompanying and forming a part of this application I have shown certain specific physical forms in which my inventive idea is embodied. Fig. 1 is a vertical sectional view showing my improvements applied to a standard type of washing machine as a wringer substitute; Fig. 2 is a top plan view of the machine shown in Fig. 1; Figs. 3 and 4 are horizontal sectional views corresponding to the section lines 3—3 and 4—4 respectively of Fig. 1; and Fig. 5 is a side elevation of the extractor container shown in Fig. 1.

The casing of the extractor comprises a bottom preferably of a rigid member, here shown as of cast form, having at its center an upright, hollow sleeve 10 surrounded by an annular round-bottomed-basin portion 11 whose outer wall 12 slants outwardly and upwardly until it merges with a circumferential inwardly opening channel 13 which is formed at one point with a port 14 communicating with an outlet neck 15. Above this channel I have shown the casing wall as continuing in the form of an upright cylindrical wall 16.

Located inside this casing is a container for the clothes to be centrifuged, said container comprising a bottom member having at its center a hollow upwardly projecting boss 25, hollowed out beneath to receive the sleeve 10 and surrounded by the annular round-bottomed basin portion 26 whose exterior swings freely in the

basin 11 and conforms approximately thereto. Projecting from the outer wall 27 of this basin in line with the recess 13 are radially projecting blades 28, and between each pair of adjacent blades a discharge aperture 30. Above these apertures the extractor container is prolonged in the form of a wall 31 defining a surface of revolution about the axis of the sleeve 10, and narrower at the top than at the bottom, its top being formed with an opening 32 surrounded by a stiffening rim 33. It is immaterial whether this wall portion 31 be uniformly or irregularly slanted; whether it be smooth or vertically corrugated; whether it be wholly imperforate or formed with perforations, all these details being set forth in my applications: Serial No. 174,208, filed March 10, 1927; Serial No. 195,091, filed May 28, 1927; Serial No. 257,283, filed February 27, 1928.

The upper end of the boss 25 is formed as a socket 35 to receive the fluted or prismatic upper end of the vertical shaft 36 which is journaled in the sleeve 10 and carries at its lower end the friction disk 37 resting on and driven by the friction plate 38 carried by the horizontal shaft 39 journaled in the bearing 40 carried by the bracket 41 which depends from the bottom member of the casing, the opposite end of said shaft having a pulley 42 for driving purposes.

In Fig. 1 I have shown a part of a conventional type of washing machine comprising a casing 50 provided with upright hollow standard 51 in which is journaled an upright shaft 52. The upper end of this standard terminates in a horizontal circular flange 53 adapted for the reception of a wringer frame so pivoted as to be swung to different positions to accommodate the convenience of the operator, the upper end of the shaft being squared as at 54 to enable the ready removal and replacement of such wringer. To the upper end of this standard I apply a gear casing 55 having a depending neck 56 adapted to fit in the standard 51 and having a faced portion 57 adapted to rest on the flange 53 and a suitable latch 58 adapted to engage the notches 59 in that flange to hold the device in angularly adjusted position. Projecting laterally from this casing is a bracket portion 60 to which is attached the upper end 61 of the extractor casing.

The base part of the casing is formed with a laterally projecting portion 62 (see Fig. 4) bifurcated as shown at 63 to straddle the standard 52. A rubber cushion 64 can be employed if desired.

In the present embodiment the driving mechanism for the container comprises the following

parts: journaled inside the casing 55 is a vertical shaft 66 having at its lower end a socket to engage the prismatic portion 54 of the shaft 52 and having at its upper end a vertically slidable clutch element 67 splined thereto and having an operating handle 68. Loosely journaled on the shaft 66 is a spiral gear 70 whose hub is formed with clutch teeth 71 adapted to cooperate with those of the member 67. Meshing with a gear 70 is a second spiral gear 72 carried by the horizontal shaft 73 whose end is provided with a belt pulley 74 located in a recess 75 formed in the bracket 60 for that purpose close to the wall 61. The pulley 74 is connected to the pulley 42 by the belt 78 which passes through an aperture 80 formed for the purpose in the bracket 62. The belt is surrounded and protected by a sheet metal housing 81 interposed between the bracket 62 and casing 55; while the wheels 42, 38, etc., are concealed within a housing 82 applied to the bottom of the device.

The outlet neck 15 is provided with a discharge hose 22 which can either deliver to a set tub 84 or other place of discharge, or back to the casing 50 as will be obvious. Also I preferably insert in the upper end of the casing 61 a rotatable metal ring 85 which is formed at one side with an outwardly slanting apron 86 adapted either to overlap the side of the casing 50 or the side of the tub 84 so that no washing liquid need fall on the floor during the transfer of fabrics to the container.

In Figs. 1 and 5 I have shown the bottom wall of the container as provided with a plurality of blades 28, terminating between the apertures 30 with enlarged heads 88, these enlargements being located substantially opposite the channel 13. Even in the absence of this or any other blade, however, any roughness or irregularity on the exterior of the container exhibits a similar action which the blades tend merely to increase, and this action is sometimes sufficient for operative purpose without any blades whatever.

The blades, however, in addition to the liquid-discharging function, have also the effect of setting up a considerable air current which assists in expelling the last portions of the liquid.

The outside diameter of the container is greatest at the blades 28, and is so related to that of the upper portion of the rim 40 as to enable the removal and replacement of said container. The action of the blades 28, in combination with the channel 13, produces a combined centrifugal and swirling action which forceably ejects the liquid through the hose 22, any liquid discharged through the apertures 30, and even serves to elevate this liquid sufficiently to discharge it over the top of the tub or sink. The extent of the inclined portion 12 may bear any desired relation to that of the cylindrical portion 16. I have shown the height of the portion 12 as small compared with the height of the portion 16, thus bringing the channel 13 and the maximum diameter of the container rather far down, thus facilitating the discharge of the washing liquid out of contact with the fabrics. It will be understood, however, that many changes in detail, proportion, and arrangement can be made within the scope of my inventive idea, and I do not limit myself to any of the details, structures or assemblages herein described except as specifically recited in my several claims which I desire may be construed broadly, each independently of limitations contained in other claims.

Having thus described my invention what I claim is:

1. In a laundry machine the combination with a support of a swinging centrifugal extractor comprising a casing and an upright rotatable container therein, means whereby said casing is secured in various adjusted positions at one side of said support upon a vertical axis which is also at one side of said support and outside of said casing, said casing being supported for angular movement about said vertical axis, and a power driving device coaxial with said axis and operatively connected to said container in all positions of said casing relative to said axis.

2. In a laundry machine, a supporting structure having a vertical rotatable shaft at one side thereof, an extractor casing located outside of said structure and movably hinged thereto upon a vertical axis coaxial with said shaft, said hinge being located outside one wall of said casing, and the top of said casing being located approximately on the same general level with the top of the supporting structure, a centrifugal extractor rotatably journaled inside said casing on a vertical axis which is displaced horizontally from said first axis, and driving mechanism connecting said shaft to said container in all positions of said casing about said shaft.

3. In a laundry machine the combination with a support of a swinging centrifugal extractor comprising a casing hinged to said support upon a vertical axis which is located at one side of said support and outside of said casing, a drainboard swiveled to said casing upon a vertical axis and having a radially projecting apron adapted to project from said casing in different directions according as said drainboard is turned, a centrifuge container journaled inside said casing on a vertical axis, and means for rotating said container in any position thereof relative to said first axis.

4. The combination with a supporting structure having a vertical tube and a vertical shaft rotatable therein, of an extractor casing secured to said tube alongside of said shaft, an extractor container inside said casing, driving means for said container operatively connected to said vertical shaft, and a discharge conduit leading from the lower end of said casing and adapted for the removal of liquid from said casing, and means operative by the rotation of said container to discharge extracted liquid through said conduit, the top of said container being approximately level with the top of said tub.

5. A laundry machine comprising a casing, an extractor journaled in said casing on a vertical axis, means pivotally supporting said casing in various adjusted positions about a vertical axis which is eccentric to the extractor axis, and means for driving said extractor.

6. In a laundry machine, a supporting structure, a vertical standard carried by said structure, a vertical shaft located with the axis of said standard, a casing swiveled to said standard on an axis concentric with said shaft, a centrifugal extractor mounted in said casing on a vertical axis which is eccentric to the swivel axis, and driving connections between said shaft and said extractor.

7. In a laundry machine, a support, a vertical hollow standard located at one side of said support, an upright shaft in said standard, a hollow casing swiveled to said standard upon a vertical axis which is displaced from the axis of the casing, a centrifugal extractor journaled inside

said casing on a vertical axis, and driving means connecting said shaft and extractor, said casing having liquid discharge provisions emptying at a distance from the axis about which said casing moves.

8. In a laundry machine, a support, a hollow vertical standard at one side of said support, a hollow upright casing swiveled to said standard upon a vertical axis, a centrifugal extractor journaled inside said casing upon a vertical axis, a shaft in said standard, driving connections between said shaft and said extractor, and a combined drainboard and clothes chute carried by said casing and angularly adjustable about the same and having a radially extending apron or projection.

9. In a laundry machine, a support, a vertical shaft journaled at one side of said support, a centrifugal extractor operatively connected to said shaft, a casing for said extractor rotatably mounted on said support for angular adjustment about the axis of said shaft, said casing having at one side a laterally projecting discharge element which is movable with said casing to different positions of discharge, and means for securing said casing in its various adjusted positions.

10. A laundry machine comprising a supporting member, an extractor journaled in said supporting member on a vertical axis, means pivotally supporting said supporting member upon a vertical axis which is eccentric to the extractor, and means for locking said supporting member in various predetermined positions of adjustment about its pivotal support.

11. A laundry machine comprising a casing, an extractor journaled in said casing on a vertical axis, means pivotally and detachably supporting said casing upon a vertical axis which is eccentric to the extractor axis, controllable driving means for said extractor disconnectible upon the detachment of said casing from its support, and means for securing said casing in various predetermined positions about the axis of its pivoted support.

12. A laundry machine comprising a casing, an extractor journaled in said casing on a vertical axis, means pivotally supporting said casing upon a vertical axis which is eccentric to the extractor axis, and means for holding said casing in various adjusted positions about the eccentric axis.

13. A laundry machine comprising a casing, an extractor journaled in said casing on a vertical axis and means comprising a yielding resilient

member for pivotally supporting said casing upon a vertical axis which is eccentric to the extractor axis.

14. A laundry machine comprising a casing, an extractor journaled in said casing on a vertical axis and means comprising a yielding soft rubber member for pivotally supporting said casing upon a vertical axis which is eccentric to the extractor axis.

15. A laundry machine comprising a casing, an extractor journaled in said casing on a vertical axis, means for supporting said casing, and means for driving said extractor comprising parallel power transmission members located alongside of said casing and interconnecting power transmission means adjacent to the top and bottom of said casing for connecting said power transmission members to each other and to said extractor.

16. A laundry machine comprising a casing, an extractor journaled in said casing on a vertical axis, means for supporting said casing upon a vertical axis which is eccentric to the extractor axis, and means for driving said extractor comprising a vertical shaft and power transmission means operably connected to the top of said shaft and to the bottom of said extractor.

17. A laundry machine comprising a casing, an extractor journaled in said casing on a vertical axis, means for supporting said casing upon a vertical axis which is eccentric to the extractor axis, and means for driving said extractor comprising a vertical shaft and power transmission means operably connected to the top of said shaft and to said extractor.

18. A laundry machine comprising a casing, an extractor journaled in said casing on a vertical axis, means for supporting said casing, means for driving said extractor comprising parallel power transmission members located alongside of said casing, and control means for connecting and disconnecting said members to each other.

19. A laundry machine comprising a casing, an extractor journaled in said casing on a vertical axis, means for supporting said casing upon a vertical axis which is eccentric to the extractor axis, means for driving said extractor comprising a vertical shaft, power transmission means operably connected to the top of said shaft and said extractor, and means for controlling the driving connection between said shaft and said power transmission means.

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CERTIFICATE OF CORRECTION.

Patent No. 1,964,882.

July 3, 1934.

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It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 2, line 138, claim 6, for "located" read coaxial; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 11th day of September, A. D. 1934.

Leslie Frazer

Acting Commissioner of Patents.

(Seal)

said casing on a vertical axis, and driving means connecting said shaft and extractor, said casing having liquid discharge provisions emptying at a distance from the axis about which said casing moves.

8. In a laundry machine, a support, a hollow vertical standard at one side of said support, a hollow upright casing swiveled to said standard upon a vertical axis, a centrifugal extractor journaled inside said casing upon a vertical axis, a shaft in said standard, driving connections between said shaft and said extractor, and a combined drainboard and clothes chute carried by said casing and angularly adjustable about the same and having a radially extending apron or projection.

9. In a laundry machine, a support, a vertical shaft journaled at one side of said support, a centrifugal extractor operatively connected to said shaft, a casing for said extractor rotatably mounted on said support for angular adjustment about the axis of said shaft, said casing having at one side a laterally projecting discharge element which is movable with said casing to different positions of discharge, and means for securing said casing in its various adjusted positions.

10. A laundry machine comprising a supporting member, an extractor journaled in said supporting member on a vertical axis, means pivotally supporting said supporting member upon a vertical axis which is eccentric to the extractor, and means for locking said supporting member in various predetermined positions of adjustment about its pivotal support.

11. A laundry machine comprising a casing, an extractor journaled in said casing on a vertical axis, means pivotally and detachably supporting said casing upon a vertical axis which is eccentric to the extractor axis, controllable driving means for said extractor disconnectible upon the detachment of said casing from its support, and means for securing said casing in various predetermined positions about the axis of its pivoted support.

12. A laundry machine comprising a casing, an extractor journaled in said casing on a vertical axis, means pivotally supporting said casing upon a vertical axis which is eccentric to the extractor axis, and means for holding said casing in various adjusted positions about the eccentric axis.

13. A laundry machine comprising a casing, an extractor journaled in said casing on a vertical axis and means comprising a yielding resilient

member for pivotally supporting said casing upon a vertical axis which is eccentric to the extractor axis.

14. A laundry machine comprising a casing, an extractor journaled in said casing on a vertical axis and means comprising a yielding soft rubber member for pivotally supporting said casing upon a vertical axis which is eccentric to the extractor axis.

15. A laundry machine comprising a casing, an extractor journaled in said casing on a vertical axis, means for supporting said casing, and means for driving said extractor comprising parallel power transmission members located alongside of said casing and interconnecting power transmission means adjacent to the top and bottom of said casing for connecting said power transmission members to each other and to said extractor.

16. A laundry machine comprising a casing, an extractor journaled in said casing on a vertical axis, means for supporting said casing upon a vertical axis which is eccentric to the extractor axis, and means for driving said extractor comprising a vertical shaft and power transmission means operably connected to the top of said shaft and to the bottom of said extractor.

17. A laundry machine comprising a casing, an extractor journaled in said casing on a vertical axis, means for supporting said casing upon a vertical axis which is eccentric to the extractor axis, and means for driving said extractor comprising a vertical shaft and power transmission means operably connected to the top of said shaft and to said extractor.

18. A laundry machine comprising a casing, an extractor journaled in said casing on a vertical axis, means for supporting said casing, means for driving said extractor comprising parallel power transmission members located alongside of said casing, and control means for connecting and disconnecting said members to each other.

19. A laundry machine comprising a casing, an extractor journaled in said casing on a vertical axis, means for supporting said casing upon a vertical axis which is eccentric to the extractor axis, means for driving said extractor comprising a vertical shaft, power transmission means operably connected to the top of said shaft and said extractor, and means for controlling the driving connection between said shaft and said power transmission means.

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