

June 13, 1933.

G. W. DUNHAM

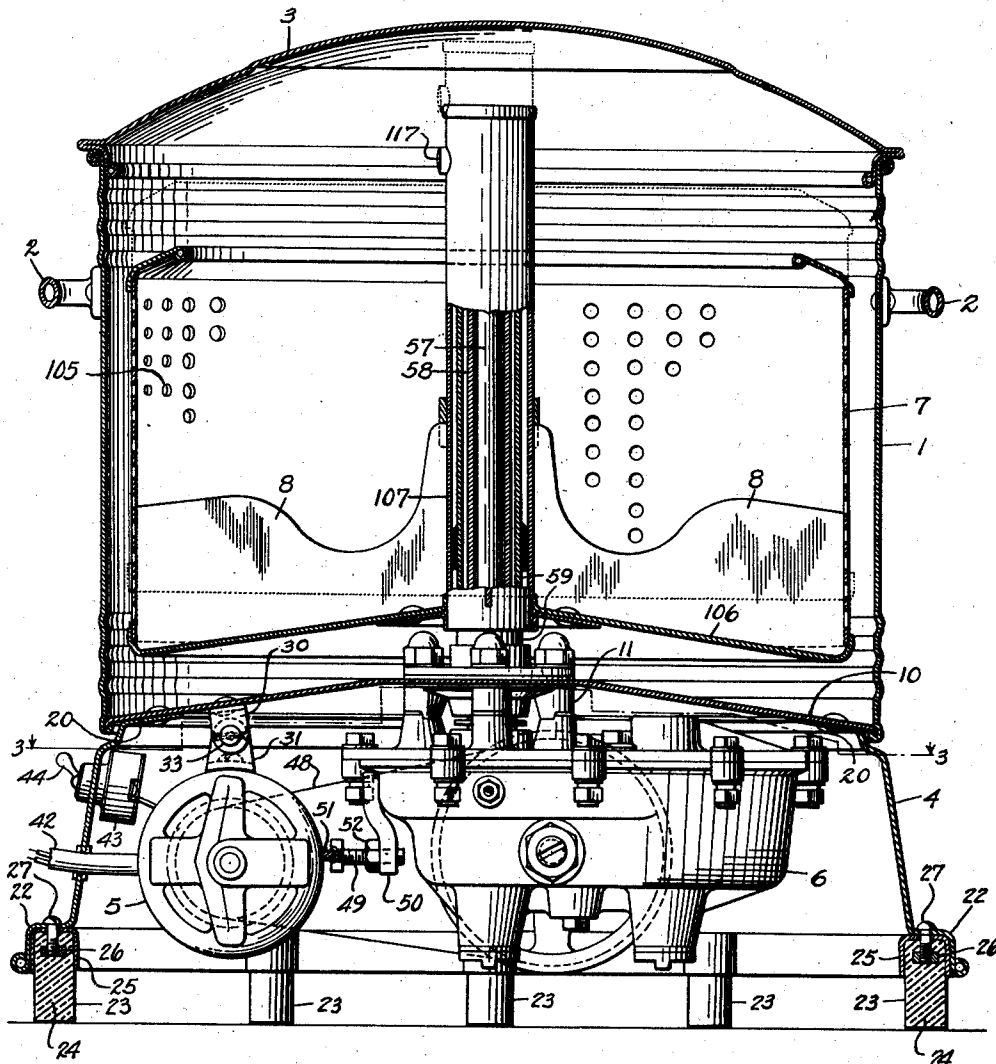
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LAUNDRY APPARATUS

Filed Oct. 12, 1928

3 Sheets-Sheet 1

Fig 1



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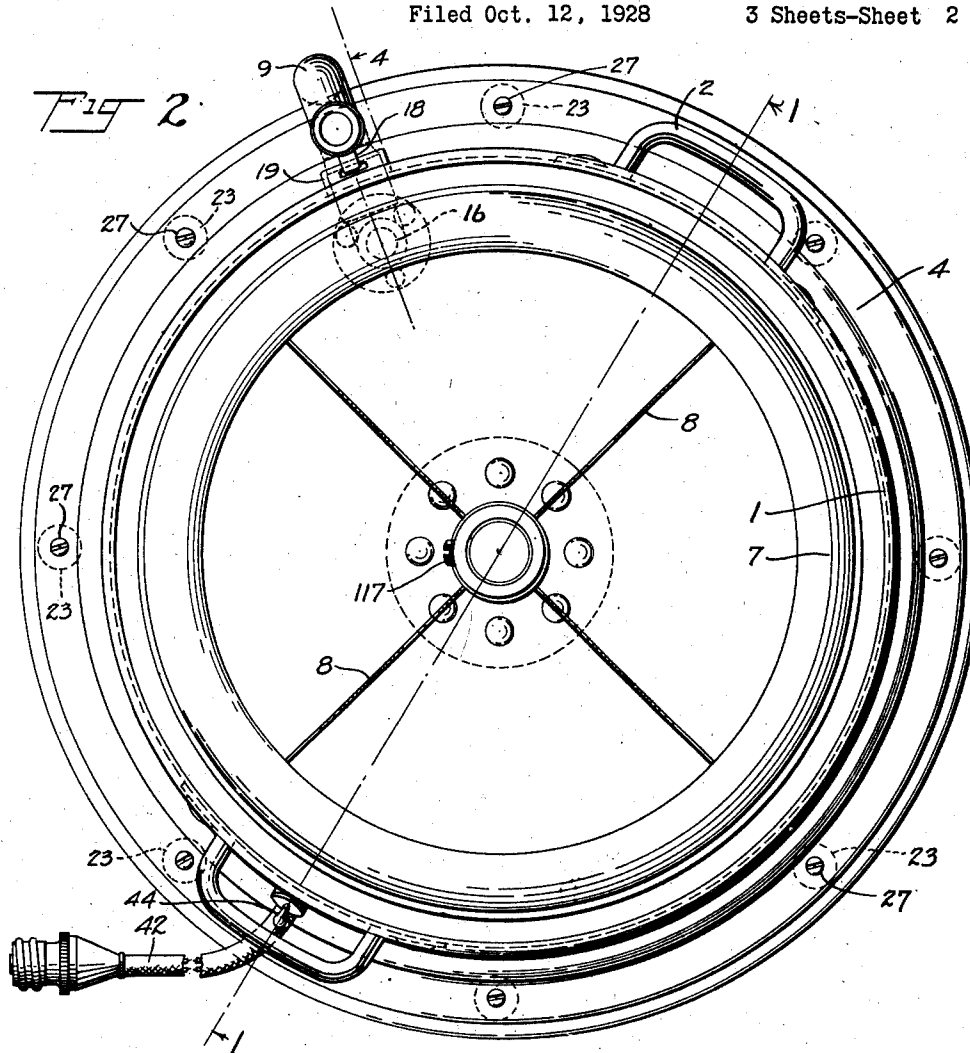
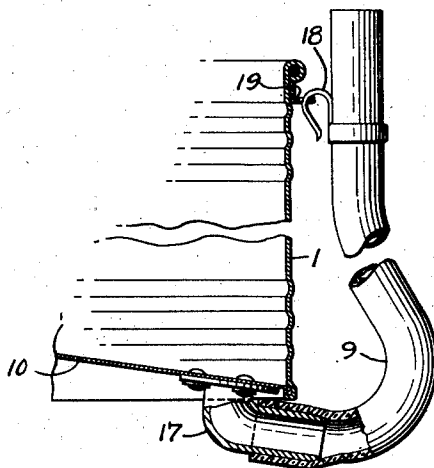
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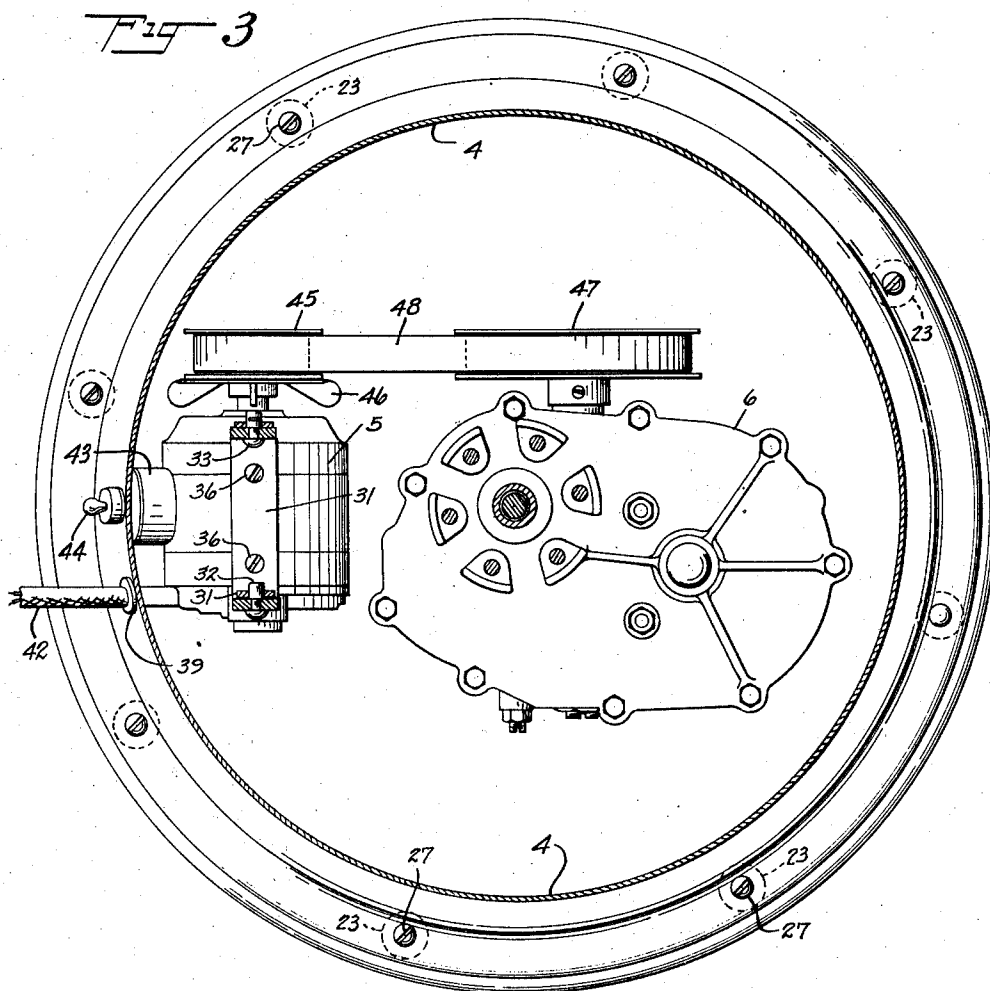
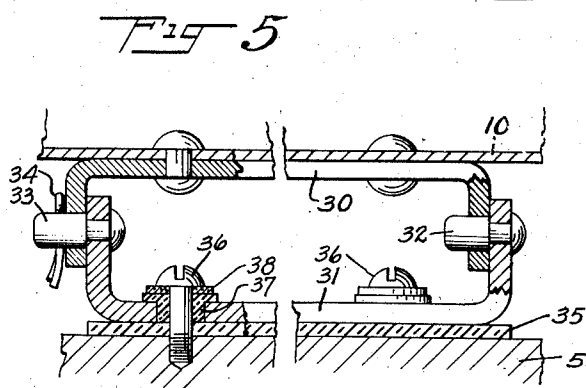
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3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE

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LAUNDRY APPARATUS

Original application filed September 25, 1928, Serial No. 308,316. Divided and this application filed October 12, 1928. Serial No. 312,010.

The invention relates in general to laundry machines and the like, and more particularly to a supporting structure for a washing machine of the centrifugal drying type.

According to one form of the invention, the machine comprises an outer container or tank suitably supported by an annular skirt. A receptacle is positioned in the tank and is rotated for drying, suitable washing devices being also provided. Suspended from the tank bottom is a gear box and an electric motor connected by a driving belt for operating the machine, these elements being protected and enclosed by the surrounding skirt. Suitable devices are provided for cooling the motor and for adjusting the tension of the driving belt. Furthermore, suitable stabilizing devices are provided for taking up effectively the out-of-balance forces set up by centrifugal drying, and also to allow the machine to rest on an uneven surface without marring such surfaces or requiring fastening thereto.

The machine may be of the small, portable type having the advantages of occupying but small space and operating sufficiently on a small batch of laundry. This machine is conveniently used on a kitchen table or kitchen sink.

The invention also consists in certain new and original features of construction and combinations of parts hereinafter set forth and claimed.

Although the novel features which are believed to be characteristic of this invention will be particularly pointed out in the claims appended hereto, the invention itself, as to its objects and advantages, the mode of its operation and the manner of its organization may be better understood by referring to the following description taken in connection with the accompanying drawings forming a part thereof, in which

Fig. 1 is an elevation of the machine with parts in section;

Fig. 2 is a top plan view of the machine;

Fig. 3 is a plan section taken on the line 3-3 of Fig. 1;

Fig. 4 is a vertical section taken through

the tank illustrating the connection of the discharge hose; and

Fig. 5 is a detail of the insulating connection for supporting the drive motor.

In the following description and in the claims parts will be identified by specific names for convenience, but they are intended to be as generic in their application to similar parts as the art will permit.

Like reference characters denote like parts in the several figures of the drawings.

In the drawings accompanying and forming part of this specification, a practical commercial embodiment of the invention is shown, but as such illustration is primarily for purposes of disclosure, it will be understood that the structure may be modified in various respects without departure from the broad spirit and scope of the invention as hereinafter defined and claimed.

Referring now to the drawings, the machine comprises in general a container or tank 1 having a pair of handles 2 and a cover 3 removably fitting on top of the tank. The tank is supported by a skirt-like base ring 4 which encloses the driving motor 5 and gear box 6. The bottom 10 of the tank 1 is conical, rising toward a central opening in which is disposed a fitting 11 which supports a hollow pedestal 59. The gear box 6 enclosing the necessary gearing is suspended from the fitting 11.

Rotatably positioned on the hollow pedestal 59 is the receptacle 7 having a foraminous outer wall 105, an imperforate bottom 106, and an upstanding hub 107. Suitable agitator blades 8 are provided to aid in agitating the laundry. Concentric shafts 57 and 58 are positioned within the pedestal. The outer shaft 58 has imparted thereto an oscillatory rotary motion and the inner shaft 57 has imparted thereto a continuous rotary motion by the gearing in the gear box 6. A suitable clutch device indicated generally by 117 is provided to selectively engage the receptacle 7 with the shafts 57 and 58. The receptacle is connected to the outer shaft 58 for washing and to the inner shaft 57 for centrifugal drying.

It will be understood that the details of the construction of the gearing in the gear box and of the clutch have been omitted for the sake of clearness since any kind of clutch or gearing performing the functions above set forth may be used. This application is a division of copending application, Serial No. 308,316 filed September 25, 1928, in which one form of gearing and clutch is disclosed.

Near one edge of the bottom 10 is a drain opening 16 to which is attached a pipe fitting 17. The rubber hose 9 slides over the fitting 17 and is provided with a ring clip 18 by which the hose is held in the position shown in Fig. 4, there being a member 19 secured to the side wall of the tank into which the clip is hooked.

The supporting ring 4 spreads slightly toward the bottom to increase the supporting area and is provided with an inwardly extending flange 20 at its upper end which is suitably fastened to the tank bottom 10 in any desirable manner, as by rivets. The lower end of the supporting ring 4 is provided with an annular, angular seat 22 in which are seated a comparatively large number of supporting feet 23. Each supporting foot 23 is made up of a rubber plug 24 inserted in a metal cap 25. Embedded in the plug is a nut 26, and a screw 27 passes through the angular portion 22 and threads the nut 26, to securely hold the supporting feet in position.

As will be seen, there are a comparatively large number of these supporting feet thereby providing a substantially uniform radius of stability. In other words, the length of the radius intersecting the discontinuous line connecting the feet is substantially constant throughout the circumference of the base. The plugs 24 may be made of any other suitable material and are preferably givable to some extent in a horizontal direction but to a very little extent in a vertical direction.

Secured to the tank bottom 10 is a U-shaped strap 30 having openings in its ends for supporting the driving motor 5. The driving motor may be of any of the well known types, preferably a universal motor running on either direct or alternating current and made very compact. Secured to the casing of the motor is a U-shaped strap 31 having pins 32 and 33 riveted to the ends thereof. The motor 5 is suspended from the upper strap 30 by inserting the pins 32 and 33 in the holes of the upper strap, both from the same side, as disclosed clearly in Fig. 5. A single cotter pin 34 through pin 33 is sufficient to hold the motor in position.

The lower strap 31 is insulated from the motor casing. A layer of insulation 35 (Fig. 5) is disposed between the strap and

the casing, while surrounding each screw 36 is an insulating bushing 37 and under the head of each screw is an insulating washer 38.

The supporting ring 4 is provided with an opening in which a bushing 39 is positioned through which passes the lead wires 42 for driving the motor. Also secured to the supporting ring is a motor switch 43 having its operating lever 44 projecting through on the outside. Mounted on the motor shaft is a pulley 45 having secured to an end face thereof suitable fan blades 46 for blowing a current of air through the motor thereby keeping it cool. The gear box 6 is also provided with a pulley 47 and a drive belt 48 connects the two pulleys for driving the gearing in the gear box. The tension of the belt is regulated by a bolt 49 threaded into a lug 50 on the gear box.

The head of this bolt is provided with a recess in which a fibre plug 51 fits for insulating the motor from the gear box at this point. By rotating this adjusting bolt 49 the tension of the belt may be adjusted and a lock nut 52 holds the bolt in adjusted position. Thus it will be seen that by the fibre plug 51 and the insulation 35, 37 and 38 between the strap 31 and the motor casing the motor is entirely insulated from the framework of the machine.

It will be seen that all of the gearing necessary for both washing and drying is located in the gear box out of the way, protected from dirt and properly lubricated. This gear box and driving motor are located under the machine within the supporting base ring out of the way and protected from injury. The provision of a relatively large number of supporting feet 23 ensures a substantially constant radius of stability and yet allows the horizontal out-of-balance forces to be taken up. These feet which are not givable to any extent vertically do not permit tipping the machine to any extent and yet easily take up any small unevenness of the supporting surface and do not mar or scratch the surface. These feet rest directly on the supporting surface and there is no necessity for the machine to be secured thereto, other than by the weight thereof.

Furthermore, the machine is small and of comparatively light weight and therefore can easily be carried from place to place and stored in a small space when not in use. The machine may conveniently be used on a kitchen table or kitchen sink and where water and drainage facilities are available.

To use the machine the drain hose 9 is clipped to its support, thus operating as a valve to prevent escape of the water from the tank. The clutch is set to connect the tubular shaft with the receptacle. The receptacle is filled with the clothes to be washed and the tank filled with water and

suitable washing substances. The switch is thrown and the motor will cause the receptacle to oscillate back and forth to wash the clothes.

5 When it is desired to dry the clothes the hose is unhooked and the water allowed to drain. The clutch is set to connect the receptacle with the solid shaft and the switch is again thrown, this time to drive the receptacle at a constant speed. The rotation of the clothes extracts water therefrom in a well known manner, the water falling to the bottom of the tank and draining out through the hose.

15 While certain novel features of the invention have been shown and described and are pointed out in the annexed claims, it will be understood that various omissions, substitutions and changes in the forms and details of the device illustrated and in its operation may be made by those skilled in the art without departing from the spirit of the invention.

I claim:

25 1. In a drying machine, a tank, an upstanding ring supporting said tank near the outer edge thereof, a plurality of soft, cushioning plugs supporting said ring and spaced apart comparatively small distances as compared to the distance across said ring, an article-holding receptacle disposed in said tank, means located within said ring for rotating said receptacle for centrifugal extraction, said plugs being of such shape as to yield comparatively greatly laterally but comparatively little longitudinally, whereby a substantially uniform radius of stability is obtained and out-of-balance forces are effectively absorbed.

40 2. In a drying machine, a tank having a conical bottom rising toward the middle, an upstanding ring supporting said tank near the outer edge thereof, said ring having an angular portion at its lower edge forming a seat, a plurality of nipples in said seat spaced apart comparatively small distances as compared to the distance across said ring, a plurality of soft, cushioning plugs disposed in said nipples, an article-holding receptacle disposed in said tank, a driving device suspended from said bottom, means for rotating said receptacle for centrifugal extraction by said driving device, said plugs being of such width and length to yield comparatively greatly laterally but comparatively little longitudinally, whereby a substantially uniform radius of stability is obtained and out-of-balance forces are effectively absorbed.

60 3. In a machine of the character described, a tank, means for supporting said tank, a gear box suspended from the bottom of said tank, a drive motor, means for insulating and suspending said motor from said tank including a pivot, and adjusting screw threaded in said gear box, said screw having

an insulating plug set in the head thereof bearing against said motor, said motor and gear box having pulleys, a belt on said pulleys, said screw moving said motor about its pivot to tighten said belt, treating devices in said tank and means for operating said devices by the gearing in said gear box.

4. In a centrifugal machine, a tank, means supporting said tank including a plurality of soft, cushioning plugs secured at their upper ends only, an article-holding receptacle disposed in said tank, means to rotate said receptacle for centrifugal extraction, said plugs being of such length and width to yield comparatively greatly laterally but comparatively little longitudinally, whereby out-of-balance forces are effectively absorbed.

In testimony whereof I have hereunto set my hand.

GEORGE W. DUNHAM.

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