

March 15, 1938.

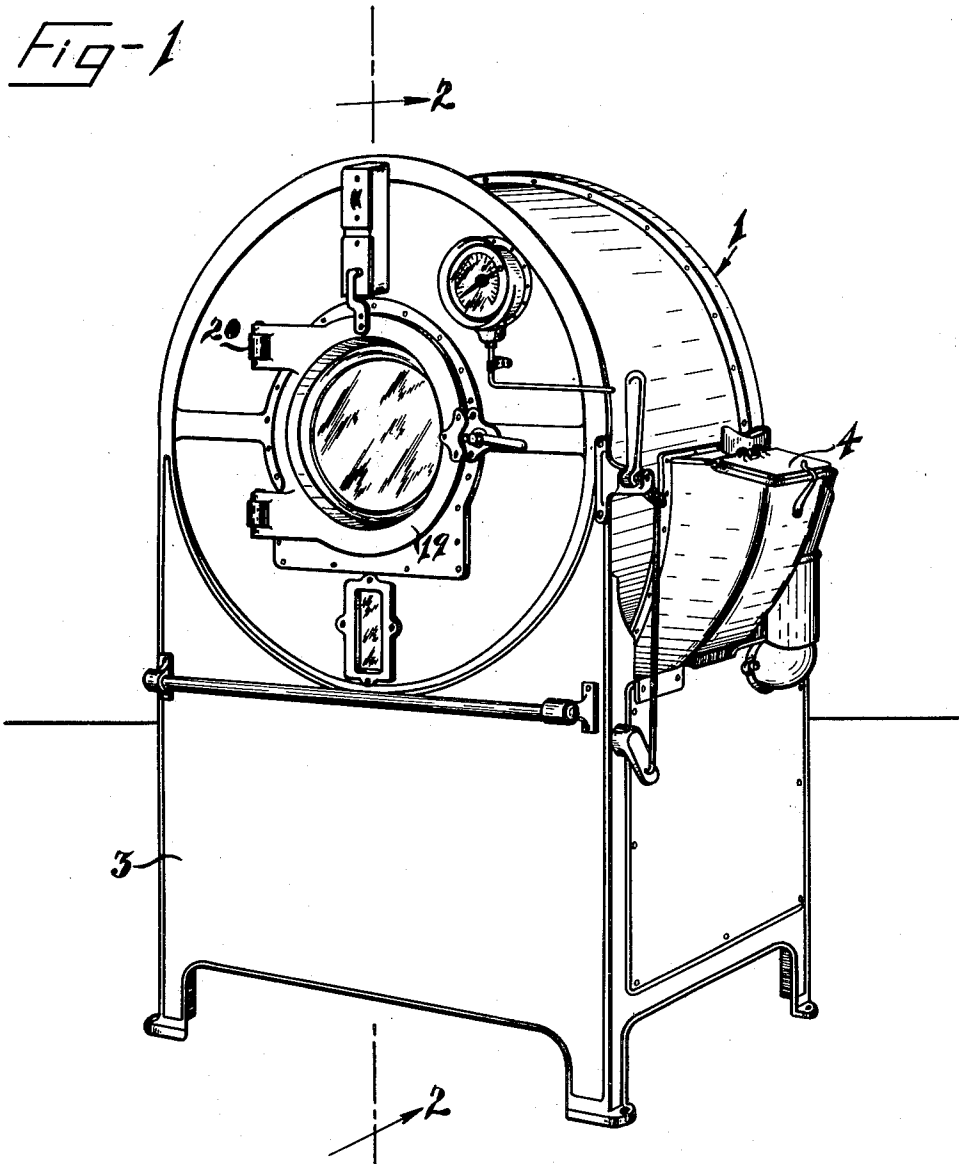
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2,111,037

LAUNDRY MACHINE

Filed June 27, 1935

3 Sheets-Sheet 1



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Fig-2

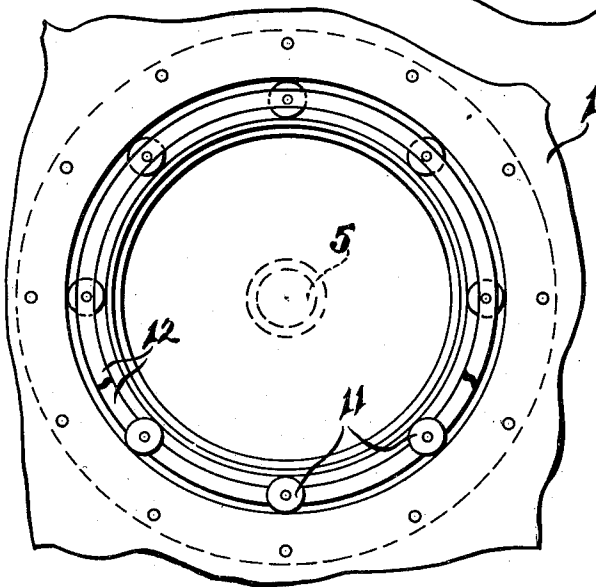
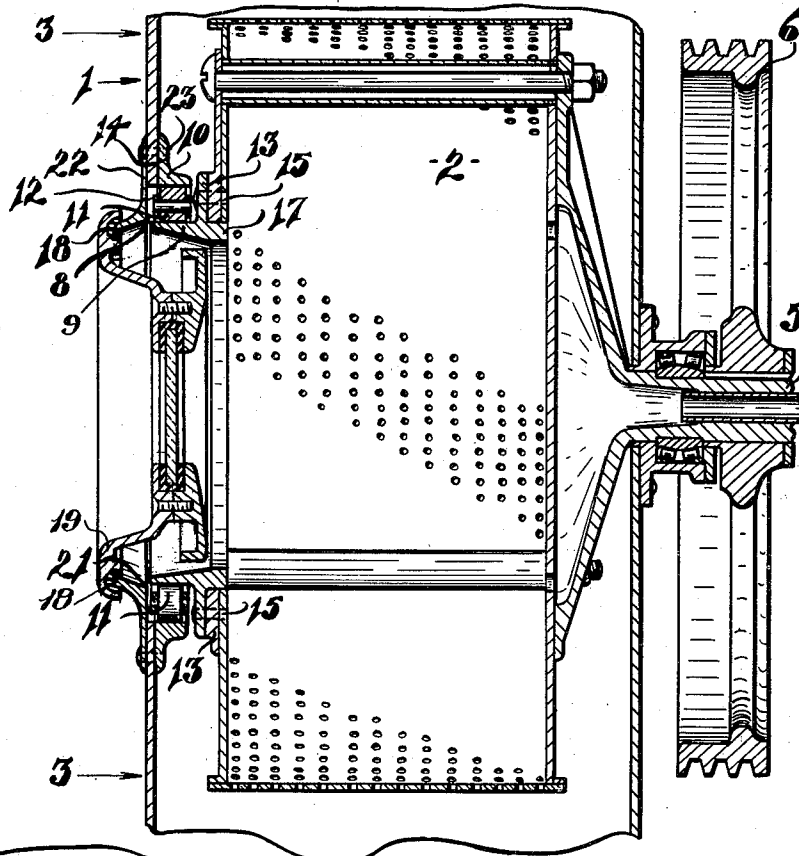


Fig-3

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Fig-4

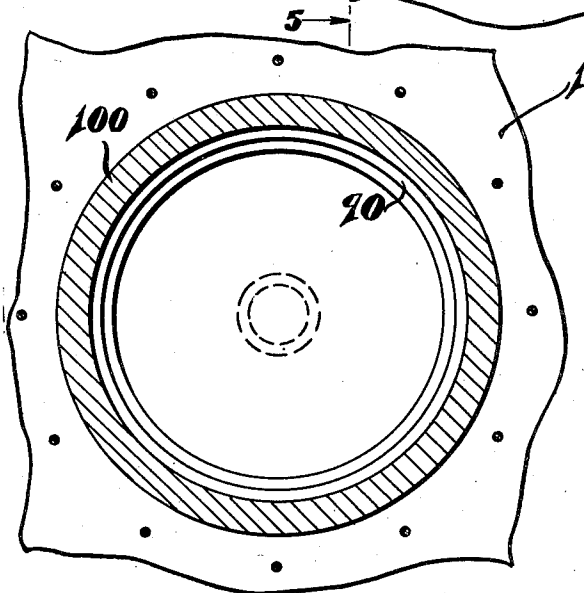
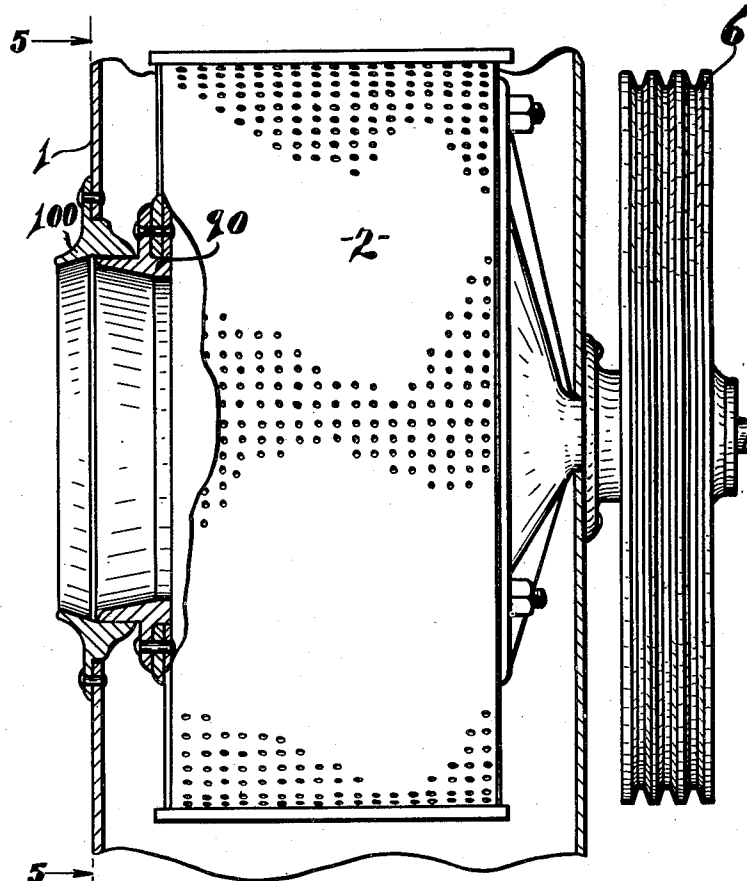


Fig-5

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UNITED STATES PATENT OFFICE

2,111,037

LAUNDRY MACHINE

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Application June 27, 1935, Serial No. 28,708

1 Claim. (Cl. 68—18)

This invention relates to laundry machines of the general type embodying a clothes container, drum, or hydro-wheel rotatably mounted in the casing to move about a horizontally extending axis, and particularly to machines in which the drum is supported at one end, with its other end overhung in the casing and provided with an axial or central loading door at the end remote from the supported end, and has for its object, a particularly simple, efficient, strong and durable bearing for supporting the otherwise overhung end of the drum, which bearing is located around the loading door opening.

The invention consists in the novel features and in the combinations and constructions herein-after set forth and claimed.

In describing this invention, reference is had to the accompanying drawings in which like characters designate corresponding parts in all the views.

Figure 1 is a front perspective view of a washing machine embodying this invention.

Figure 2 is a sectional view on the plane of line 2—2, Figure 1.

Figure 3 is a fragmentary sectional view on line 3—3, Figure 2.

Figure 4 is a view similar to Figure 2 of another embodiment of the invention.

Figure 5 is a sectional view on line 5—5, Figure 4.

This invention comprises generally bearing means between the casing and end wall of the drum or hydro-wheel that would, were it not for the bearing means, be overhung, said means including annular or cylindrical bearing flanges around the aligned door openings in the end wall of the drum and in the casing, the flanges being concentric with the axis of the drum and one being located within the other. In one embodiment of the invention, these flanges form raceways for antifriction members, as rollers, and in another embodiment, the flanges coast directly with each other, instead of indirectly, through antifriction members or rollers.

1 designates the stationary casing which is cylindrical in general form with its axis horizontal. 2 is the clothes container, hydro-wheel, or drum mounted in the casing to move about a horizontal axis or an axis extending in a general horizontal direction, coaxial with or parallel to the axis of the casing. The casing is mounted on a suitable base 3 which houses or may house mechanism, parts, etc., accessory to the machine. The base is also provided with a suitable inlet 4 through which soap or other agents may be sup-

plied to within the casing. During the washing operation, the drum 2 oscillates or rotates about its axis a predetermined number of times in one direction, and then a predetermined number of times in the opposite direction, to tumble the clothes. During the washing operation, the vat contains a washing fluid or a solvent to a certain level. During other operations, as for instance, the extracting operation, the drum may be rotated in one direction only. However, the washing mechanism, the operation and the control of the water or solvents form no part of this invention.

The drum is supported at one end by a shaft 5 suitably journaled in the casing and to which power is applied, and the other end of the drum ordinarily overhangs in the casing 1. The support of this otherwise overhung end constitutes the principal feature of the invention. The shaft 5 is actuated in any suitable manner, as by an electric motor, not shown, within the base, or in any other suitable location, and the motion is transmitted to the shaft 5 through a pulley 6 mounted on the shaft. The drum 2 has an axial or central loading door opening in its end remote from that supported by the shaft 5 and also the casing 1 has an opening 8 aligned therewith.

The bearing means between the drum and the casing 1 for supporting the otherwise overhanging end of the drum includes annular outer and inner concentric flanges on the casing 1 and the drum around the door openings, one flange extending within the other and preferably, the flange on the drum is the inner flange and extends into the flange of the casing, and bridges the space between the end of the drum and the end wall of the casing to form an unobstructed opening through which the articles or clothes may be loaded into the drum and removed therefrom.

9 and 10 designate, respectively, the annular concentric flanges on the end wall of the drum and the opposing wall of the casing. Preferably, the flange 9 on the drum laps or telescopes within the flange 10 on the casing. As seen in Figures 2 and 3, these flanges are spaced apart and are of different diameter to constitute raceways for an annular series of antifriction rollers 11 interposed between the flanges, the rollers being preferably held in spaced relation, as by a cage 12.

Preferably, these flanges are provided on what for convenience might be called door frames, the door frame on which the flange 9 is provided being also formed with a peripheral flange 13 lapping the end wall of the drum and secured thereto, as by fastening members 15. Also, the door

frame provided with the flange 9 has an annular flange 17 forming a continuation of the flange 9 and extending over the edge of the end wall of the drum around the opening 7. The door frame 5 on which the flange 10 is provided also has a cylindrical flange secured to the inner face of the end wall of the casing 1. The casing 1 is also provided with an external flange 18 around the door opening in the casing 1 against which closes and seats, a door 19 usually hinged at 20 to the end wall of the drum. Preferably, the inner face of the flange 9 is conical and flares outwardly from the end wall of the drum and the inner face of the flange 18 flares outwardly from its outer edge toward the end of the flange 9 or reversely relative to the inner face of the flange 9. Thus any liquid passing through the flange 9 can drain back into the casing, there being a clearance at 21 between the flange 18 and the outer end of the flange 9. The flange 18 is provided on an annular or base flange 22 lapping the outer face of the end wall of the casing 1 and secured thereto, preferably by the same fastening members at 23 which secure the flange 14 to the end wall of the casing 1. The flange 22 and the flange 13 form the opposing side walls of the space or raceway between the flanges 9 and 10 and hold the rollers from displacement.

30 This construction constitutes a particularly simple and strong bearing for drums of washing machines, particularly for large drums heavily loaded and permits them to be rotated at comparatively high speeds, when necessary.

35 In Figure 4, 90 and 100 designate the flanges on the opposing walls of the drum 2 and the casing 1, corresponding to the flanges 9, 10, these flanges extending one within the other, but the inner face of the flange 100 and the outer face 40 of the flange 90 constitute cylindrical bearing

faces. These flanges are made of a suitable bearing material and run in contact.

Owing to this bearing construction, drums or hydro-wheels of laundry machines of comparatively large capacity capable of carrying heavy loads, which drum would otherwise overhang into the casing or vat can be amply supported and rotated at any speed, high or low, as the peripheral speed of the bearings is considerably less than that of the periphery of the drum.

The general idea of supporting drums of this character, that is, drums in which the loading door is provided in one end constitutes part of the subject matter of my Patent No. 2,066,998, issued January 5, 1937.

What I claim is:—

In a laundry machine, an outer casing, a perforated drum mounted in the casing to move about a horizontal axis and having an axial loading door opening at one end, the casing having a door opening alined with the drum opening, the drum having a door frame around its door opening, said frame being provided with an axially extending cylindrical flange extending toward the door opening of the casing, the inner face of said flange being conical and flaring outwardly from the drum toward the door opening of the casing, the casing having a cylindrical flange on the inner side of its end wall concentric with the flange of the door frame of the drum, said flanges telescoping, with the flange on the door frame of the drum extending into the flange on the casing, the casing being provided with an outwardly extending external annular flange around its door opening formed with an internal conical surface flaring inwardly toward and reversely to the conical surface of the flange on the door frame of the drum, and a door for closing the casing opening and seating on the last named flange.

LOUIS ZIMARIK.