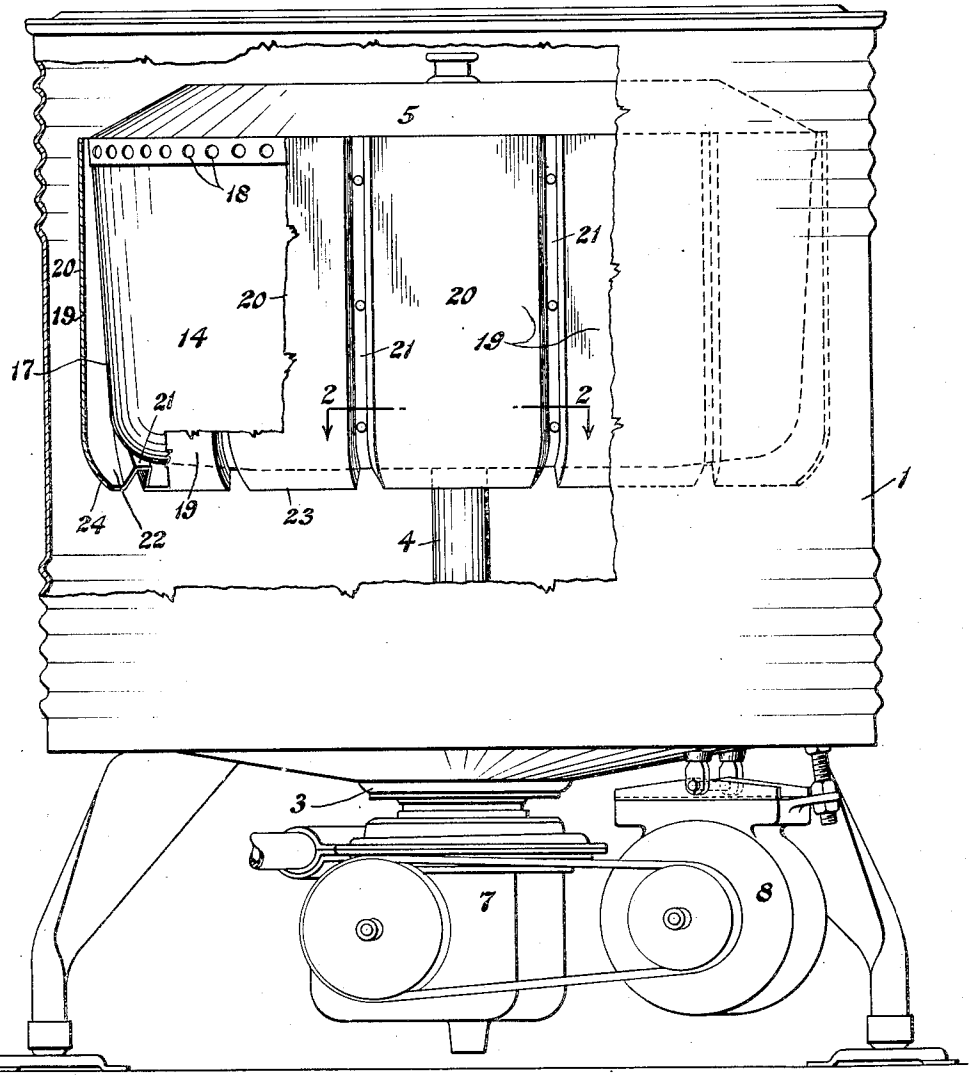
Jan. 14, 1930. G. W. DUNHAM 1,743,441

SPINNER BALANCING ARRANGEMENT FOR LAUNDRY MACHINES

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Fig. 1



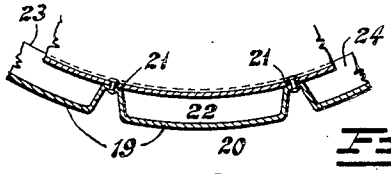


Fig. 2

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Filed July 18, 1925 2 Sheets-Sheet 2

Fig. 3

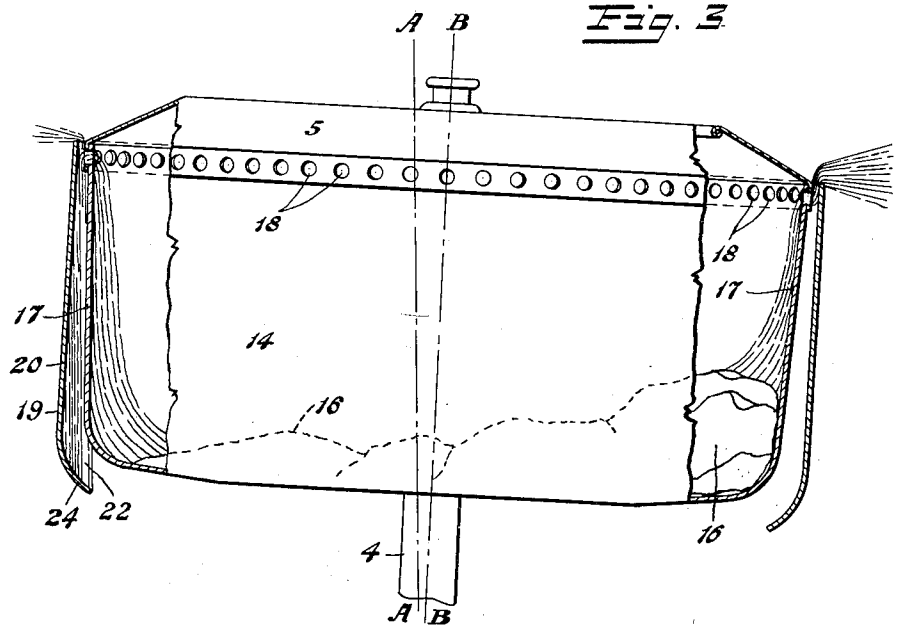


Fig. 4

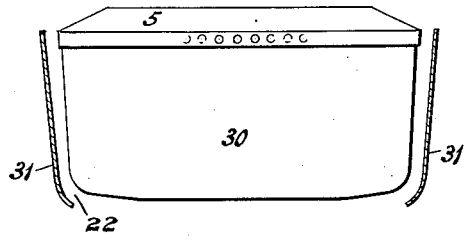
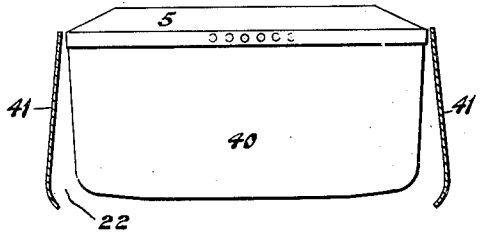


Fig. 5



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UNITED STATES PATENT OFFICE

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SPINNER-BALANCING ARRANGEMENT FOR LAUNDRY MACHINES

Application filed July 18, 1925. Serial No. 44,439.

The present invention relates to laundry machines of the type in which the clothes are washed in a receptacle mounted on a vertical axis for rotation thereabout so that the clothes can be dried by centrifugal action of the device. This invention relates particularly to the use of an outer shell or casing surrounding the clothes receptacle and rigidly secured thereto in such spaced relation from it that a slight tilting of the receptacle from its normal position causes a greater accumulation of water in the annular space between the outer shell and the receptacle on the side which moves towards the axis of rotation so that an automatic restoring tendency or action is thus secured.

It is advantageous to secure the shell and the receptacle by or in connection with a number of ribs or partitions which may be arranged substantially radially so as to divide this space between the shell and receptacle into a number of water receiving pockets which receive the water which is automatically discharged from the overflow holes in the receptacle during its operation so as to be available for this automatic counter balancing action. The outer shell may be so shaped as to have substantially normally vertical walls which may be in some cases slightly upwardly flaring at their upper portions so as to normally discharge this water by centrifugal force when the machine is rotating in its normal position, or if desired the shell may in some cases be so shaped as to normally retain a substantially uniform ring or portion of water around the receptacle when in normal rotation so that any tilting can thus exert a still more effective counter balancing action tending to automatically restore the receptacle to its normal or upright rotating position.

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

In the accompanying drawings I have shown for purposes of illustration one form of mechanism with certain modifications thereof embodying the invention, in which—

Fig. 1 is an elevational view with parts broken away of a laundry machine provided with a construction according to the invention.

Fig. 2 is a partial section on the line 2—2 of Fig. 1;

Fig. 3 is a diagrammatic view of the spinner and pedestal partly in section showing the spinner in an unbalanced position and rotating about an axis other than its normal axis of rotation; and

Figs. 4 and 5 are diagrammatic views of the spinner disclosing slightly modified forms of construction.

In general, the improved laundry machine comprises a tank 1 within which is disposed a spinner 5. The spinner may be rotatably supported by a hollow pedestal 4 which passes thru and is supported by the bottom of tank 1. If desired, the pedestal may have disposed between it and the tank bottom a resilient mounting, designated by 3 to allow the spinner 5 to rotate about an axis other than its normal axis of revolution without unduly straining the tank bottom, if the spinner should become unbalanced.

The spinner 5 may be driven by a shaft passing thru the hollow pedestal 4 which shaft may be driven by a motor 8 thru suitable transmission denoted generally by 7.

When the spinner is to be used for drying purposes, the receptacle 14 is filled with the wet articles 16 and rotated at sufficient speed to cause the liquid to be thrown to the outwardly and upwardly flaring wall 17 of the receptacle and then up the wall 17 and out through the outlet holes 18. If for any reason the receptacle is unbalanced, as, for instance, by more of the wet articles being loaded on one side than on the other, the spinner will not rotate about its normal axis, but will rotate about a new axis.

The position of the spinner 5 when it is out of balance is shown in Fig. 3, the normal axis being denoted by A—A and the new axis being denoted by B—B. This unbalanced condition is rectified and prevented by an arrangement according to the invention. In carrying out the invention an outer shell 20 is provided surrounding the receptacle 14. The wall of

the outer shell is preferably cylindrical and normally vertical and extends above the level of the holes 18 in the receptacle 14. For the purpose of securing the outer shell 20 to the receptacle 14, the outer shell is suitably provided with a plurality of bent-in beads 21. The outer shell 20 is secured to the receptacle 14 by having the bent-in beads 21 riveted or otherwise secured to the receptacle. This construction also conveniently provides a plurality of pockets 22 having side walls 19. The lower end of the shell 20 is turned in to provide an annular inturned portion 23 surrounding the bottom of the receptacle 14. The annular portion 23 provides the pockets 22 with bottom walls 24. It is of course evident that the outer shell 20 may be secured to the receptacle 14 in any other desirable manner and that the pockets 22 may be formed in other ways.

In the normal operation of the machine when it is perfectly balanced and the spinner is rotating about its normal axis A—A, (see Fig. 3) the liquid thrown from the holes 18 impinging upon the inner wall of the outer shell 20 escapes over the top thereof due to the centrifugal force exerted upon the liquid and the inability of a liquid to withstand a shearing stress. If, now, the spinner 5 becomes unbalanced for any reason, it will assume some position as shown in Fig. 3 and will rotate about some axis B—B. This causes the side walls 19 of the pockets 22 to be no longer vertical but the walls 19 on the low side or heavy side of the spinner now slope upwardly and outwardly while the walls 19 on the high or light side now slope upwardly and inwardly. The liquid which is thrown from the holes 18 on the low side will impinge upon the inner surface of the walls 19 and be thrown over the top thereof as in normal rotation. However, the liquid thrown from the holes 18 on the high side will impinge upon the inner surface of the walls 19 but due to the angle of the walls with respect to the axis of rotation this liquid cannot escape but becomes caught in the pockets 22. Thus the pockets on the high side will have liquid collected therein while the pockets on the low side will be empty. The additional weight of the liquid on the high side serves to counter-balance the unequal distribution of the weight and thereby bring the spinner back to its condition of rotation about its normal axis.

In the modification shown diagrammatically in Fig. 4, the receptacle is denoted by 30 and the outer shell by 31. In this construction the outer walls 19 of the pockets 22 instead of defining a cylindrical surface as in the preceding construction define an outwardly and upwardly flaring surface. In operation the unbalance must become greater than in the case of the cylindrical wall so that the walls 19 of the pockets 22 on the high side will obtain a sufficient angle to trap the liquid.

In the modification shown diagrammatically in Fig. 5, the receptacle is denoted by 40 and the outer shell by 41. In this construction the outer walls 19 of pockets 22 define an upwardly and inwardly flaring surface. In operation, when the spinner is balanced, liquid is trapped and held in all of the pockets 22. If a condition of unbalance occurs, some of the liquid on the low side will be thrown out at the top of the pockets 22 while additional liquid will be trapped in the pockets 22 on the high side, thereby correcting the unequal distribution of weight within the receptacle.

The invention thus provides a simple, cheap and reliable way for preventing and rectifying the unequal distribution of weight within the receptacle. It should be borne in mind that in actual operation, it is only necessary for the spinner to get out of balance a small amount to cause the rectifying action between the liquid and the pockets described above to come into operation. In effect, then, the invention causes the spinner to rotate about its normal axis of rotation substantially continuously, and never to get more than an inappreciable and unannoying amount out of balance.

While I have shown and described and have pointed out in the annexed claims certain novel features of my invention, 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 my invention.

I claim:

1. A laundry spinner adapted to be rotated about a normal axis, comprising a receptacle and means fixedly mounted on said receptacle for causing said spinner to return to its condition of rotation about its normal axis when it rotates about another axis due to uneven distribution of weight, thereby causing said spinner to rotate substantially continually about its normal axis.

2. A laundry machine comprising a receptacle adapted to be rotated about a normal axis to expel a liquid therefrom, and means operable by said liquid for causing said receptacle to return to its condition of rotation about its normal axis when it rotates about another axis due to uneven distribution of weight, thereby causing said spinner to rotate substantially continually about its normal axis.

3. A laundry machine comprising a receptacle adapted to be rotated about a normal axis to expel a liquid therefrom and means secured to said receptacle and operable by said liquid for causing said receptacle to return to its condition of rotation about its normal axis when it rotates about another axis

due to uneven distribution of weight, thereby causing said spinner to rotate substantially continually about its normal axis.

4. A spinner adapted to be rotated about a normal axis, comprising a receptacle adapted to hold wet articles, a plurality of pockets surrounding said receptacle, means whereby when the spinner is out of balance, the pockets on the high side of said spinner will retain liquid thrown from said receptacle to provide weight to counter-balance the uneven distribution of articles in said receptacle.

5. A spinner adapted to be rotated about a normal axis, comprising a receptacle having a bottom and an annular wall flaring upwardly and outwardly, said wall having holes near its upper edge, a plurality of pockets secured to and surrounding said receptacle, said pockets extending above said holes and having inturned portions below said holes, said receptacle being sufficiently imperforate to hold a liquid.

6. A spinner adapted to be rotated about a normal axis, comprising a receptacle having a wall with holes near its upper edge and a plurality of pockets secured to and surrounding said receptacle, said pockets extending above said holes and having inturned portions below said holes, said receptacle being sufficiently imperforate to hold a liquid.

7. A spinner adapted to be rotated about a normal axis, comprising a receptacle having a liquid discharge portion, an outer shell surrounding said receptacle, said shell extending above said portion and having an inturned annular portion below said receptacle, said shell having bent-in beads engaging and secured to said receptacle, said beads separating the annular space between said shell and receptacle into pockets, whereby when the spinner is out of balance the pockets on the high side of said spinner will retain liquid thrown from said discharge portion to provide weight to counter-balance the uneven distribution of articles in said receptacle.

8. A laundry spinner adapted to be rotated about a normal axis, comprising a receptacle having a bottom and an annular wall, said wall having holes at its upper edge, an outer shell surrounding said receptacle, said shell extending above said holes and having an inturned annular portion below said bottom, said shell having bent-in beads engaging and secured to said receptacle, said beads separating the annular space between said shell and receptacle into pockets, said receptacle being sufficiently imperforate to hold a liquid.

9. A spinner adapted to be rotated about a normal axis, comprising a receptacle for holding wet articles and having a liquid discharge portion, an outer shell surrounding said receptacle, said shell extending above said portion and having an inturned annular part below said portion, and means for dividing the space between said receptacle and shell into a plurality of pockets for catching liquid from said discharge portion.

10. A spinner adapted to be rotated about a normal axis, comprising a receptacle having a bottom and an annular wall flaring upwardly and outwardly, said wall having holes at the top, a cylindrical outer shell surrounding said receptacle, said shell extending above said holes and having an inturned annular portion below said bottom, said shell having bent-in beads engaging and secured to said receptacle, said beads separating the annular space between said shell and receptacle into pockets, whereby, when the spinner is out of balance, the pockets on the high side of said spinner will retain liquid thrown from said holes to provide weight to counterbalance the uneven distribution of articles in said receptacle, said receptacle being sufficiently imperforate to hold a liquid.

In testimony whereof I have hereunto set my hand.

GEORGE W. DUNHAM.