April 15, 1930. A. W. ALTORFER 1,754,252

CENTRIFUGAL DRIER

Filed June 23, 1928

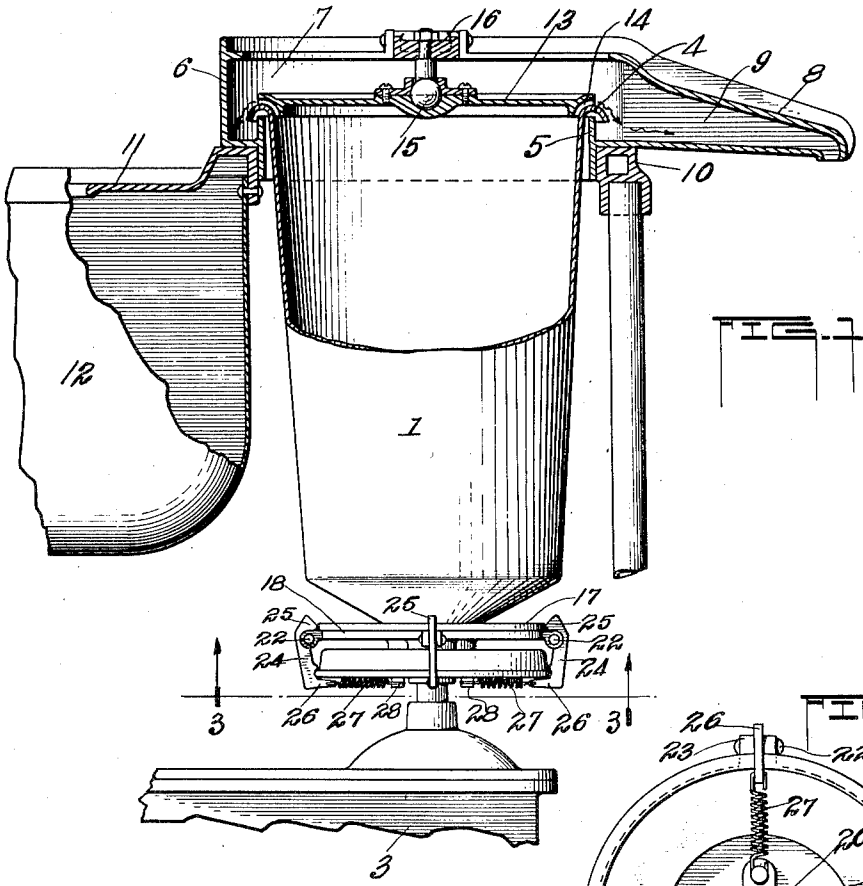


FIG. 1.

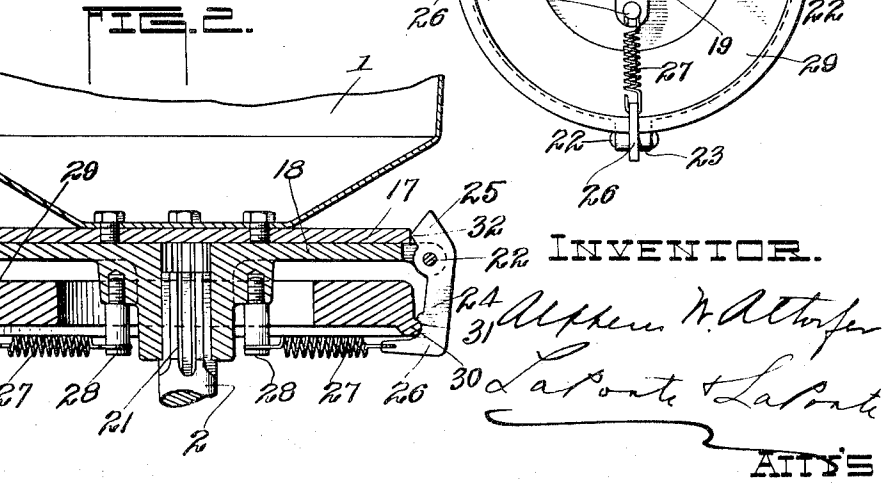


FIG. 2.

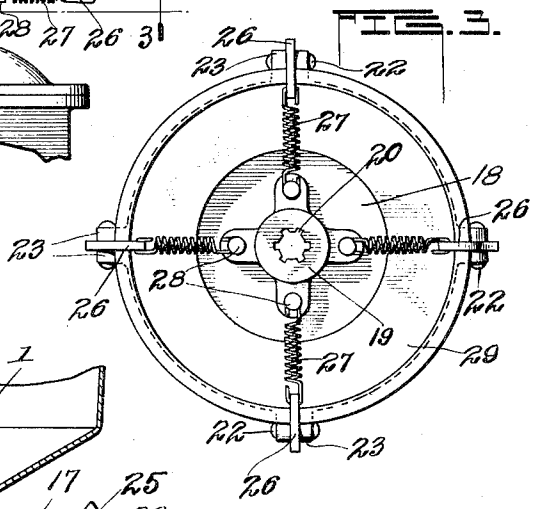


FIG. 3.

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UNITED STATES PATENT OFFICE

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CENTRIFUGAL DRIER

Application filed June 23, 1928. Serial No. 287,713.

This invention has reference to centrifugal driers and it relates particularly to that type of drier used to dry clothing and other materials by the extraction of the free water therein by centrifugal action.

The invention has for its principal object to provide a balancing means for the extracting receptacle, whereby to remove irregularities in weight from that portion of the receptacle, where it may be in excess, due to centrifugal force which may unbalance the materials within the receptacle.

The invention has for a further object a counterbalance at the base of the extracting receptacle, preferably in the form of a balance wheel, which functions as a counterweight to bring to an equipoise the receptacle when the materials therein become unbalanced as a result of centrifugal action.

Other objects will more fully appear from the following description.

That the invention may be more fully understood, reference is had to the accompanying drawings, forming part of this description, illustrating a preferred embodiment of the invention, in which:—

Fig. 1 is an elevation, partly in section, showing a form of centrifugal drier for a washing machine, and with my counterbalancing mechanism applied thereto;

Fig. 2 is a sectional detail view through my counterbalancing mechanism and the manner of associating the same with the base of the extracting receptacle, and

Fig. 3 is a bottom plan view of the counterbalancing mechanism as it would appear on the line 3—3, Fig. 1, looking in the direction of the arrows.

Like characters of reference denote corresponding parts throughout the figures.

In illustrating the application of my invention to the extracting receptacle of a washing machine, I have elected to show that character of device wherein is employed an imperforate receptacle from which the water extracted from the materials is discharged from over the top of the receptacle; but in no sense is this intended to place a limitation on the use of the mechanism, as I am fully aware that it would be practical to apply the same to a perforated receptacle, as in each instance the effect of the balancer is to remove irregularities in weight resulting from centrifugal force which at times distributes the materials, being dried, unevenly within the receptacle.

The receptacle is designated 1 and is adapted to be rotated from a driving shaft 2, in a manner to be described, and said shaft receives its power from a driving mechanism, not shown, within a housing or casing 3. Said receptacle has an outwardly and downwardly curved rim portion 4 which normally overlies an inner ring-like wall 5 of a manually rotatable housing or turret 6 having a chamber 7 and a radially disposed drainboard 8 provided with a conductor spout 9 in communication with the chamber of the housing. The housing is bodily removable and rotatable on a support 10, being a part of the head frame 11 for the washing tub 12. A closure 13 is provided for the receptacle, being adapted to have an engaging relation with the rim 4 thereof and so associated therewith as to provide water passages or egress openings 14. The closure has a ball and socket connection 15 with a support 16 hinged in a suitable manner with the housing 6, whereby the closure may be opened or closed at will, and the ball and socket connection for the closure allows certain flexibility in the centering of the receptacle. To the bottom of the receptacle is secured a disk or plate-like member 17.

The counterbalancing mechanism, in addition to employing the member 17, comprises a disk or plate-like member 18 provided with a depending hub 19 having an opening therethrough, the wall of which is grooved, as shown at 20. The shaft 2 is shown splined at 21 in a manner complementary to the grooves in the hub of the member 18 to provide for a driving connection between these parts and to enable an easy slip on and off connection therebetween.

Having a pivotal connection at 22 and between ears 23 on the rim of the member 18, are a plurality of lever-arms 24 which have ends 25 projecting above the top surface of the member 18 and which also have portions

26 extending downwardly and normally slightly inwardly of said member, and to said portions 26 of the lever-arms 24 are connected springs 27, which also have connection with studs 28 secured in the hub 19 of the member 18. Supported by the portions 26 of the lever-arms 24 is a balance wheel 29, which, when in operative position encircles the hub 19 of the member 18. The balance wheel 29 is preferably formed or provided with an annular bead or rib 30 and the lever-arms 24 are provided with seats 31 to receive said bead or rib. The member 18, lever-arms 24, the balance wheel 29 and the springs 27 form a unit placeable on and removable from the shaft 2 and the receptacle 1 and its member 17 have a seating and driving relation with said unit.

When assembled, the counterbalancing unit is slipped down over the top of the shaft 2, see Fig. 2, and the receptacle 1 is in lowered position with its member 17 resting in frictional engaging relation on the member 18 and with contacting points 32 of the lever-arms 24 in bearing relation with the peripheral edge of the member 17.

In operation, power imparted to the shaft 2 will be transmitted through the member 18 to the member 17, resulting in the rotation of the receptacle 1 and the closure 13, as it is believed will be understood. Should the materials placed in the receptacle become unbalanced as a result of centrifugal force the member 17 applying lateral force to one or more of the lever-arms 24 will oscillate the same, causing a shifting movement of the balance wheel 29 which acts to bring the receptacle to an equipoise and remove the irregularities in weight within the receptacle, where it is in excess, and restore the receptacle to balance. Balance being restored the springs 27 act to return the lever-arms to normal or neutral position.

It is not uncommon in centrifugal driers of the character herein described, for the materials to become unbalanced, due to centrifugal force, which not only prevents smooth running of the device but so jars the machine as to cause it to creep. With a counterbalancing means applied to the receptacle these objections are overcome.

What I claim is:—

1. In a centrifugal clothes drier, in combination, a receptacle, a driving shaft, a counterbalancing means arranged for an axial sliding connection with said driving shaft, and means on the lower end of the receptacle arranged for driving connection with said counter-balancing means.

2. In a centrifugal clothes drier, in combination, a receptacle, a driving shaft, a counterbalancing means arranged for an axial sliding connection with said driving shaft and including a balance wheel, and means on the lower end of the receptacle arranged for driving connection with said counterbalancing means.

3. In a centrifugal clothes drier, in combination, a receptacle, a driving shaft, a counterbalancing unit arranged for detachable connection with said shaft and including a disk-like driving member and an associated balance wheel, and a disk-like member connected with the lower end of the receptacle and adapted to have a driving relation with said first mentioned disk-like member.

4. In a centrifugal clothes drier, in combination, a receptacle, a driving shaft, a counterbalancing unit arranged for detachable connection with said shaft and including a disk-like member, lever-arms having a pivotal connection with said member, a balance wheel supported by said arms and movable thereby, spring connections between said member and said arms, and a disk-like member secured to the lower end of said receptacle adapted to have a driving relation with said first mentioned disk-like member and having points of contact with said lever arms.

5. A counter-balancing unit for the receptacle of a centrifugal clothes drier, comprising a disk-like member provided with a hub arranged for detachable connection with a driving part, a plurality of lever-arms pivotally connected with the periphery of said member, a balance wheel supported by and within the confines of said lever-arms, and spring connections between said member and said arms.

In witness whereof, I have hereunto affixed my hand and seal this 20th day of June, 1928.

ALPHEUS W. ALTORFER.