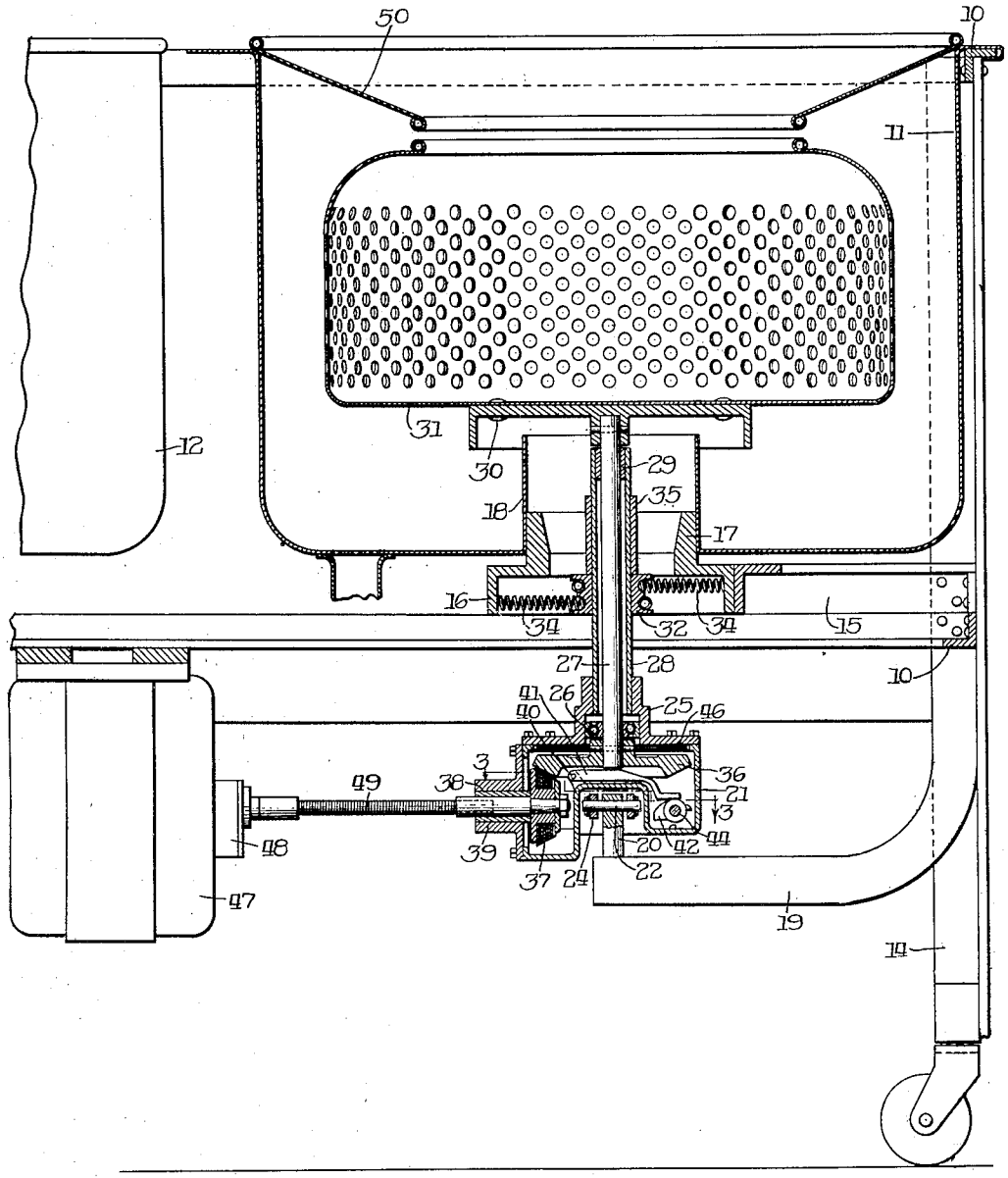
Dec. 1, 1931. G. E. DITZLER 1,834,829

CENTRIFUGAL EXTRACTOR

Filed April 24, 1931 2 Sheets-Sheet 1

Fig 1.



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Fig 2.

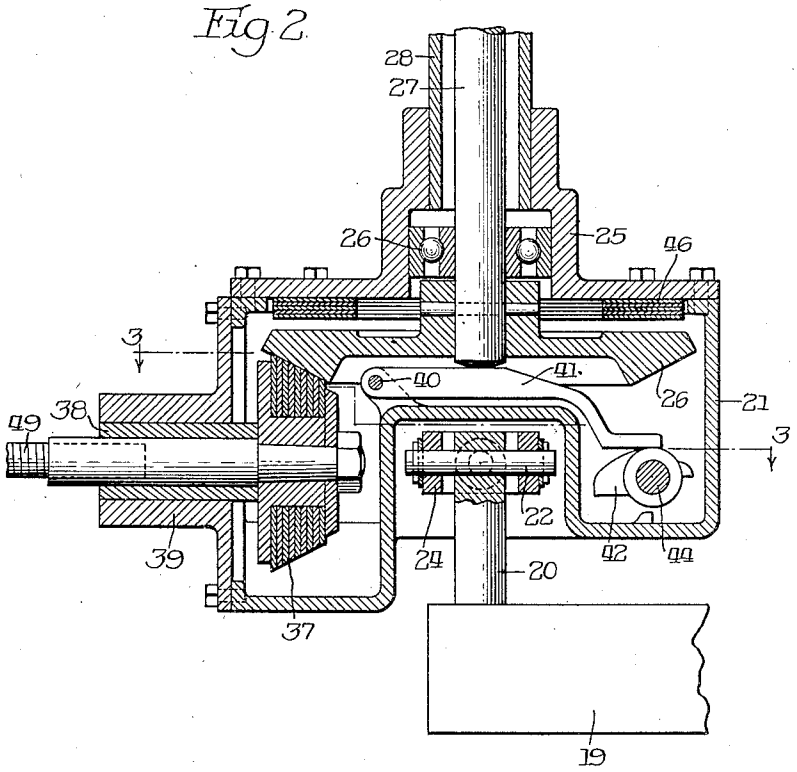
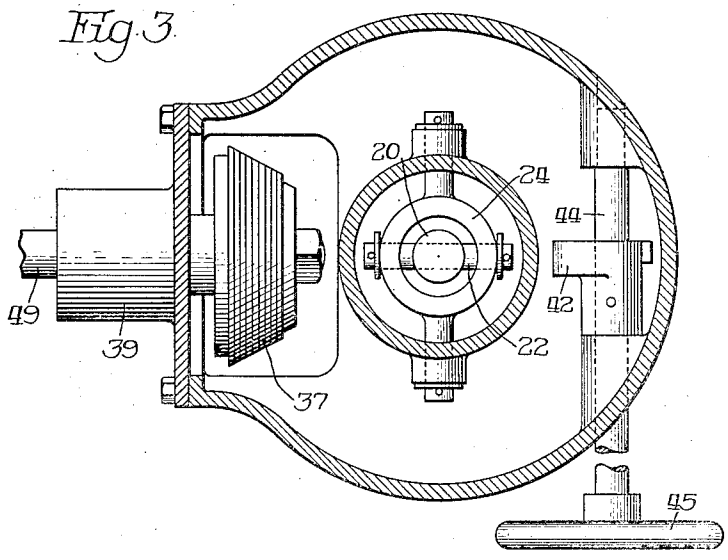


Fig 3.



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Patented Dec. 1, 1931

1,834,829

UNITED STATES PATENT OFFICE

GUY E. DITZLER, OF CHICAGO, ILLINOIS, ASSIGNOR TO TRIPLEX WASHING MACHINE CORPORATION, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS

CENTRIFUGAL EXTRACTOR

Application filed April 24, 1931. Serial No. 532,519.

This invention relates to improvements in centrifugal extractor apparatus and pertains particularly to such apparatus designed for embodiment in domestic laundry machines of the portable or mobile type.

A general object of the invention is the provision of a centrifugal extractor apparatus which may be embodied in a domestic laundry machine in such a manner that access may be had to the extractor cage during operation of the extractor, for the purpose of spraying the contents of the cage for rinsing purposes, and which is of simple, light and rugged construction particularly qualifying it for use in a comparatively small portable household appliance.

Another object of the invention is the provision of such an apparatus which will accommodate lateral movement of the cage to a limited extent, for the purpose of relieving the machine as a whole of undesirable vibratory effects from unbalanced loading of the centrifugal cage.

Yet another object is the provision of a construction for such apparatus which will admit of reduction of the overall height of the washing machine, and which will contribute to an arrangement wherein the machine will have a low center of gravity.

Still another object is the provision of such construction in which the driving parts are effectively protected from wetting from liquid in the material handled.

Still another object is the provision of such an apparatus having improved organization of parts for controlling operation of the centrifugal cage.

Other and further objects will be pointed out or indicated hereinafter or will be apparent to one skilled in the art upon an understanding of the invention or its employment in use.

For the purpose of this application I elect to show in the accompanying drawings, and described hereinafter, certain structural forms in which the invention may be embodied, but it is to be understood that these are presented for purpose of illustration only, and are not to be construed in any fashion calculated to limit the appended claims short of the true and most comprehensive scope of the invention in the art.

In said drawings,

Fig. 1 is a part sectional elevational view of a laundry machine containing a centrifugal extracting mechanism embodying the invention;

Fig. 2 is a sectional elevational view, on a larger scale, of the driving mechanism and cage support; and

Fig. 3 is a cross sectional view on substantially line 3—3 of Fig. 2.

It is desirable that domestic laundry machines be of as compact construction and light weight as feasible, for convenience in housing and use. It is also of advantage to have them afford in themselves as completely as possible all of the receptacles requisite for completing the washing, so that additional tubs and the like need not be utilized. Centrifugal extractors for removing free water from the washed material are of advantage from the standpoint of rapid operation and safety, and it is of particular advantage in the use of centrifugal extractors if it is possible to spray the material while it is in the cage and while the cage is operating, for the purpose of rinsing. This permits the material to be placed in the centrifugal extractor directly from the washing tub, and both rinsed and dewatered in the extractor, without having to be subjected to rinsing as an intermediate or subsequent operation in some separate receptacle.

The present invention provides a construction which affords these various advantages, and has the further advantages that it is particularly adapted for compact and light construction, and all of the operating parts are disposed so as not to interfere in any fashion with the handling of the material.

The nature of the invention will be rendered apparent by consideration of the illustrative embodiments shown in the drawings.

The reference numeral 10 designates a portion of a frame structure which constitutes the frame for the machine, serving to support the sheet metal tubs or receptacles 11 and 12 side by side with their tops at the same eleva-

tion. The receptacle 11 serves as the extractor receptacle and the receptacle 12 may serve as the washing receptacle in which the fabrics may be subjected to washing operation by any appropriate means. The frame is supported on legs, one of which is illustrated at 14, and these legs may be carried on casters so that the machine may be rolled from place to place. Rigidly supported on the frame is a bracket member 15 which carries a collar member 16 disposed coaxially with the receptacle 11, and having an upstanding annular flange 17 which projects through an opening in the bottom of the receptacle, said opening being encompassed by an upstanding cylindrical collar 18 which rises to a considerable elevation above the bottom of the receptacle. The collar member 16 is rigidly supported on the bracket 15, so that it will not impart thrusts to the receptacle.

Rigidly supported on the frame, and extending to a position below the collar member 16, is a bracket member 19 which carries an upstanding post 20. This serves as a mounting and support for the extractor cage and its operating mechanism. A drive housing 21 is mounted on this post by means of a gimbal pin 22 and gimbal ring 24. The top of this drive housing includes a sleeve 25 in which is supported a collar bearing 26 for the extractor shaft 27, and this sleeve also carries rigidly affixed thereto a tubular member 28 having a collar bearing 29 adjacent its upper end and encompassing the extractor shaft. At its upper end the extractor shaft carries a spider 30 upon which is mounted the extractor cage 31. This cage is circular in plan and its walls are perforate for the egress of water. The tubular member 28 carries a peripherally grooved collar 32, and about this are looped the coil springs 34, the ends of which are attached to the collar member 16, so that the springs will be tensioned so as to tend to retain the tubular member in a vertical position. Within the flange 17, the tubular member 28 is encompassed by a buffer sleeve 35, as of rubber, so arranged as to buffer any possible impacts between the flange 17 and the tubular member 28.

The extractor shaft is shiftable for a short distance longitudinally relative to the tubular member 28, and to accommodate this the bearing 26 may be shiftable in the sleeve 25. At its lower end the extractor shaft has affixed thereto a beveled drive disk 36, the friction drive face of which is adapted for cooperation with a beveled friction drive pulley 37. This pulley is rotatably supported in the bearing 38 mounted in the sleeve 39 on one side of the drive housing. Pivoted at 40 within the drive housing is a lifting lever 41, which extends transversely below the lower end of the extractor shaft. The lower end of the extractor shaft may be extended a slight distance below the adjacent face of the drive disk 26, and domed. The free end of the lifting lever 41 overlies a cam 42 which is carried on a shaft 44 journaled in the drive housing and extending forwardly from same, and carrying at its outer end a crank or wheel 45 whereby it may be rotated. Such rotation of the cam will serve to lift the lever 41 into engagement with the lower end of the extractor shaft, and then lift the shaft so as to remove the friction disk 36 from driving cooperation with the pulley 37. A ring of friction material 46 is mounted on the under surface of the cover of the drive housing in position to be engaged by the upper surface of the friction drive disk 36, when the latter is sufficiently elevated as just described, and by such engagement will exercise a braking effect on the disk and extractor shaft for the purpose of decelerating and stopping rotation of the extractor cage.

Mounted on the machine frame, in convenient association with the drive housing, is a motor 47, which may supply power for the operation of the washing mechanism, and which motor is connected through the medium of appropriate gearing in a housing 48, and a flexible drive shaft 49, with the friction drive pulley 37. The arrangement of the flexible shaft 49 is such as to accommodate movement of the drive housing 21 in any direction relative to the motor.

The gimbal mounting of the drive housing 21 allows the extractor cage to have oscillatory and gyratory movement within the limits imposed by the collar 17. The degree of said eccentric movement of the cage is likely to be considerable when starting under unbalanced loading of its contents, but as the cage gets up to speed, the degree of such movement decreases and finally attains a fairly limited orbit in which it will continue to run freely, on account of the pivotal support, without imparting the lateral thrusts to the machine frame in a degree productive of shock. The point of pivotal support being low and the center of mass being low, the gyratory movement of the cage will not subject the frame to material vibration or to impulses tending to cause it to creep.

The cage has an axial opening at the top, of liberal diameter, which is entirely unobstructed and therefore convenient for the charging of material into and its removal from the cage, and the area between said opening and the encompassing wall of the tub 11 is preferably covered by a splash ring 50 which affords a central opening over the charging opening of the cage. Through these openings water may be sprayed into the cage and onto its contents while it is rotating, for the purpose of rinsing the contained material, the centrifugal action being effective to accomplish the rinsing rapidly, and when continued after the spraying, to extract the

free liquid from the material quite rapidly. The collar 18 prevents the extracted liquid flowing from the receptacle through the central bottom opening, said receptacle being suitably drained to conduct the extracted liquid to a desired place of disposal.

It will be apparent that the cage will be rotated so long as the friction drive disk 36 is in driving cooperation with the drive pulley 37, and that the driving connection will be broken by rotation of the shaft 44 to lift the lever 41 and raise the drive disk 36 out of engagement with the pulley 37, and that the rotation of the cage will be stopped by the braking action of the braking ring 46 upon the upper surface of the drive disk after the latter is elevated into contact with it.

What I claim is:

1. Extractor apparatus comprising, in combination, a supporting frame, a receptacle mounted on the frame and having a bottom aperture, a drive housing having swivel mounting on the frame below the receptacle, an extractor shaft carried on said drive housing and extending upwardly therefrom and into the receptacle through said aperture, an extractor cage carried by said shaft within the receptacle, a drive wheel connected with the lower end of said shaft, a drive pulley journaled on the drive housing in position for driving cooperation with said wheel, a motor, and a flexible transmission member operably connecting said motor with said drive pulley and permitting swivel movement of said drive housing and the parts carried thereby relative to said motor.

2. Apparatus as specified in claim 1 and including also means for shifting said drive wheel out of driving cooperation with said drive pulley.

3. Apparatus as specified in claim 1 and including also a brake member associated with said drive wheel and means for shifting said drive wheel into braking cooperation with said brake member.

4. Apparatus as specified in claim 1 and including also a tubular member encompassing said shaft and rigidly connected with said drive housing and a collar member rigidly supported on the frame and encompassing said tubular member, said collar member having portions adapted for cooperation with said tubular member to limit the extent of movement of the same eccentrically of the receptacle.

5. Apparatus as specified in claim 1 and including a lifting member mounted on the drive housing and adapted for engagement with the lower end of said shaft, and means for moving said lifting member to lift the shaft and remove said wheel from driving cooperation with the drive pulley.

6. Apparatus as specified in claim 1 and including means adjustable to maintain said drive wheel and drive pulley out of driving cooperation.

7. Apparatus as specified in claim 1 and wherein the extractor cage has a concentric top opening affording access to the interior thereof for spraying the contents of the cage while it is rotating.

8. Apparatus as specified in claim 1 and including a bracket member rigidly supported on the frame and extending under the receptacle and affording the support for the drive housing.

9. Apparatus as specified in claim 1 and including spring means arranged below the receptacle and effective to urge the drive housing to a position wherein the shaft is approximately vertical.

10. Apparatus as specified in claim 1 and including also a tubular member encompassing the shaft and rigidly connected to the drive housing and yieldable centering means cooperating with said tubular member and tending to urge the same to approximately vertical position.

In testimony whereof I have hereunto subscribed my name.

GUY E. DITZLER.