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2,380,872

FLUID AGENCY CLOTHES WASHER WITH OSCILLATING TUB

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2 Sheets-Sheet 1

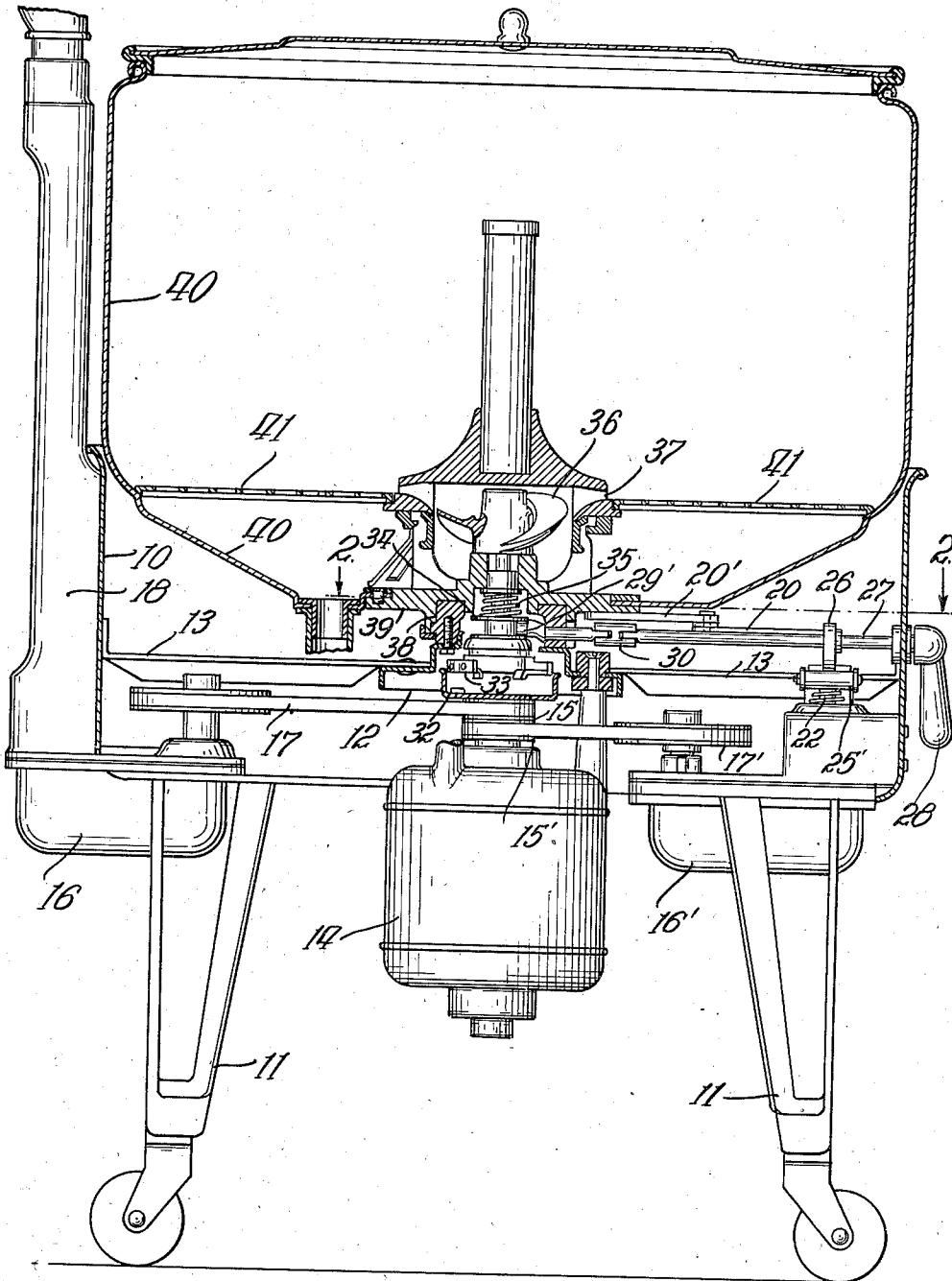


Fig. 1

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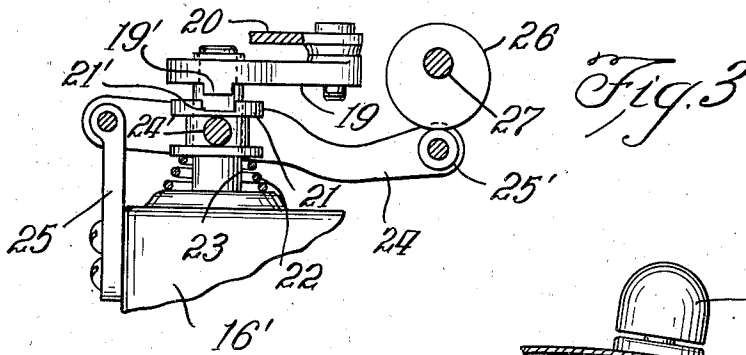
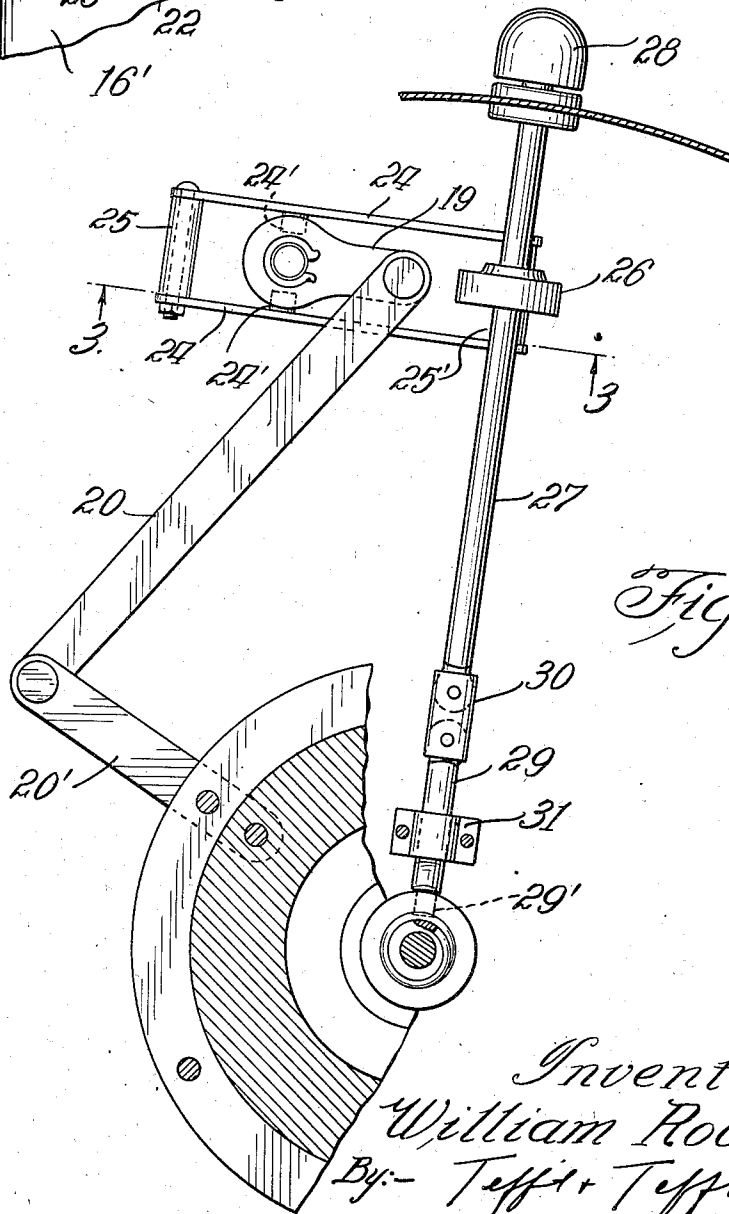
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UNITED STATES PATENT OFFICE

2,380,872

FLUID AGENCY CLOTHES WASHER WITH
OSCILLATING TUB

William Roocke, South Bend, Ind.

Application October 30, 1941, Serial No. 417,073

1 Claim. (Cl. 68-148)

This invention relates to clothes washing machines and will be described as applied to the well known domestic clothes washer. It is an improvement on my fluid agency washer fully described in my patents No. Re. 20,424 and No. 2,250,315.

In fluid agency washers, as exemplified by my patents, there is some lack of thoroughness in the washing due to the fact that the clothes and water move together in a uniform cyclic flow with little or no change in the relationship of the clothes to each other or to the currents of water. It has long been recognized as a principle of good washing that the greatest washing effectiveness is accomplished when the relative action and movement of the clothes and water subject the complete area of the clothes to infinite variations of flexing and flushing action.

Various experiments have been tried to effect this desired relative movement of the clothes and water and such experiments have indicated that deflector devices within the tub would produce the desired results. However, the mechanical difficulties of driving such a deflector device through the bottom of the tub in which a high-speed pump is operated, seriously handicap efforts along this line. Further, the economic and merchandising effects of such devices were not satisfactory.

The principal object of this invention is to provide in a fluid agency washer, with a pump mounted within the tub to effect a cyclic flow of clothes and water, means exterior of the tub to divert the clothes from their normal path in the water currents, thus to rearrange and interchange the clothes with respect to each other and the water currents.

Other objects and benefits will be disclosed in the following descriptions and drawings, in which:

Fig. 1 is a side cross-sectional elevational view showing my fluid agency washer with means to oscillate the tub;

Fig. 2 is an enlarged broken plan view showing the tub-oscillating mechanism as it would appear on the section line 2-2 of Fig. 1; and

Fig. 3 is a side elevational view of the crank clutch mechanism for oscillating the tub, as it would appear on the line 3-3 of Fig. 2.

Now referring to the drawings and, at the outset, to Fig. 1, I support a base ring 10 by conventional legs 11 and from the base ring 10 support a circular bracket member 12 by means of angle iron supports 13 riveted to the base ring 10, as shown. A motor 14 is mounted in a con-

ventional manner on the bracket member 12 and through dual pulleys 15 and 15' drives conventional encased gear mechanisms 16 and 16', by means of belt and pulley transmissions 17 and 17'. Although in this case I have shown two gear mechanisms, each utilized for a different purpose, it will be understood that in the practical embodiment of my invention I may desire to incorporate both gear mechanisms in one case. The gear mechanism 16 drives a conventional wringer through a conventional wringer column mechanism 18. The gear mechanism 16' drives the tub-oscillating crank 19 through clutch mechanism as best shown in Figs. 2 and 3. The crank 19 has a male clutch jaw 19', which contacts and interengages a female clutch jaw 21' formed on the rotating clutch member 21 slidably mounted on the drive shaft 23 of the gear mechanism 16, as shown. The clutch member 21 is urged into clutching engagement with the crank 19 by the spring 22, whereupon the jaws 19' and 21' are engaged to revolve the crank 19. The crank 19 is connected by the connecting rod 20 to the oscillating arm 20' attached to the tub, and thus the entire tub and attached mechanism is oscillated. The clutch 21 is controlled by dual yoke arms 24 pivotally mounted on the bracket 25 with the pins 24' engaging between the flanges of the clutch member 21. On the outer ends of the yoke arms 24 is a roller 25' in contact with the cam 26 mounted on the control rod 27. The control rod 27 is actuated by a handle 28 and connects with the crank rod 29 and the crank 29' by means of the pivotal coupling 30 and the mounting bracket 31.

Again referring to the central pump mechanism, above the dual pulleys 15 and 15' driven by the motor 14, is mounted a cup friction clutch member 32 to engage an expanding friction member 33 controlled by a flange member 34 actuated by the crank 20' controlled by the handle 28. The member 34 is urged downwardly by a spring 35 and it will be understood that when released by the handle 28 the friction members 32 and 33 are in engagement with each other and are driven by the motor 14 with the impeller 36 of the pump which discharges radially outward currents of water through the annular orifice member 37. The tub 40 is divided by a perforate partition 41 to protect the clothes from the inlet of the pump. The tub 40 is mounted on a ring bearing member 38 supported by an annular ring 39 from the bracket member 12. It will thus be appreciated that the complete tub and pump assembly will be oscillated by the crank 19 when the con-

trial handle 28 permits the clutch control 34 to bring the friction members 32 and 33 together. Thus, when the pump is discharging radially outward water currents in the tub 40, the tub is being oscillated by the crank mechanism heretofore described.

Having described the construction and relationship of the various parts of my washing machine, I will now explain its operation.

It will be appreciated, as explained heretofore as well as in my patents No. Re. 20,424 and No. 2,250,316, that the pump 36 is creating a cyclic rolling flow of clothes and water radially outwardly from the central annular discharge orifice 37 across the perforate partition 41; thence upwardly along the vertical walls of the tub 40; thence inwardly toward the center of the tub and back downwardly toward the partition 41. During the course of this movement the clothes are continually in contact with the tub and partition.

When the tub is oscillated on its axis it will be obvious that the clothes will be moved arcuately about said tub axis by the oscillation of the tub and thus they will be rearranged with respect

to each other and the currents of water. This continuous rearrangement of the clothes will subject them to infinite variations of flexing and flushing to accomplish thorough washing.

Having thus described my invention, I now claim as new:

In a fluid agency clothes washer, a tub mounted for pivotal movement on a central vertical axis, said tub carrying spaced above its bottom a horizontally disposed perforate partition, a pump mounted in said tub below said partition, said pump having an annular discharge orifice immediately above said partition and concentric with said axis and discharging radially, to create cyclic, toroidal, rolling water currents in washing action carrying clothes in contact with said partition and tub, and means to oscillate said tub, independently of said pump, about its axis during said washing action to interrupt the flow of the clothes in the rolling water currents and divert them from their normal course in effecting said washing action.

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