April 15, 1930. W. J. HOLLIER 1,754,951

WASHING MACHINE

Filed Sept. 6, 1928

Fig. 1.

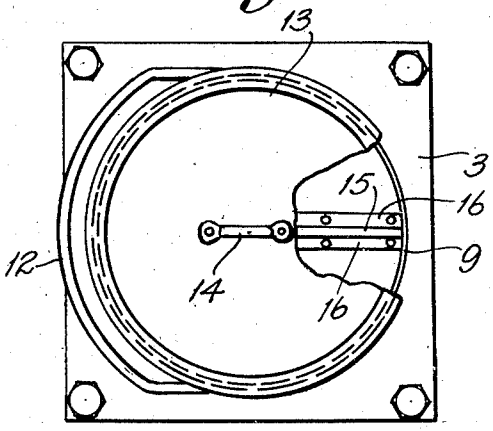


Fig. 3.

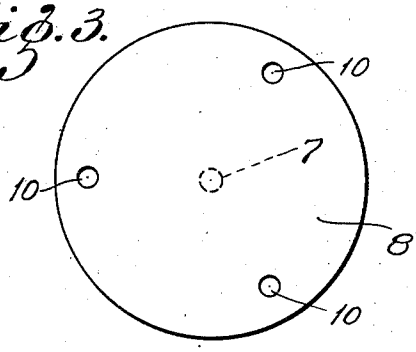


Fig. 4.

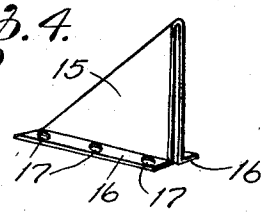


Fig. 2.

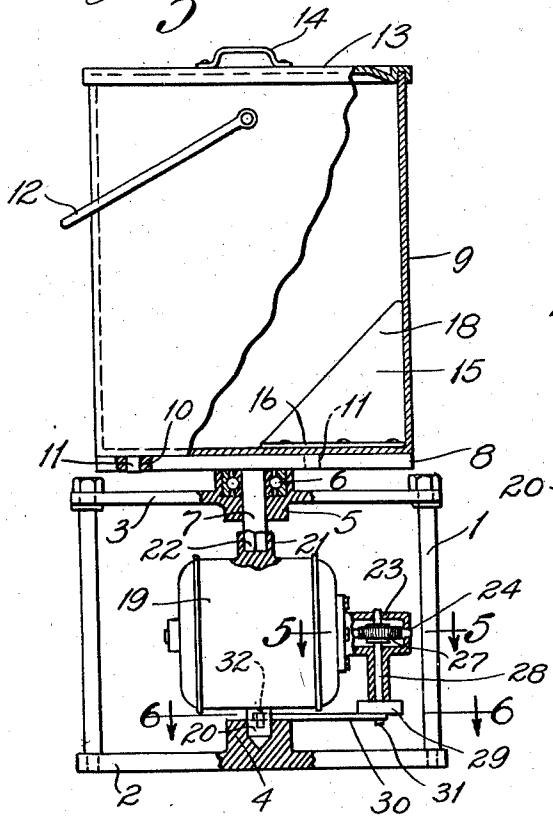


Fig. 5.

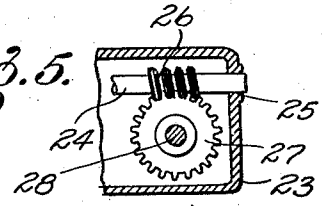
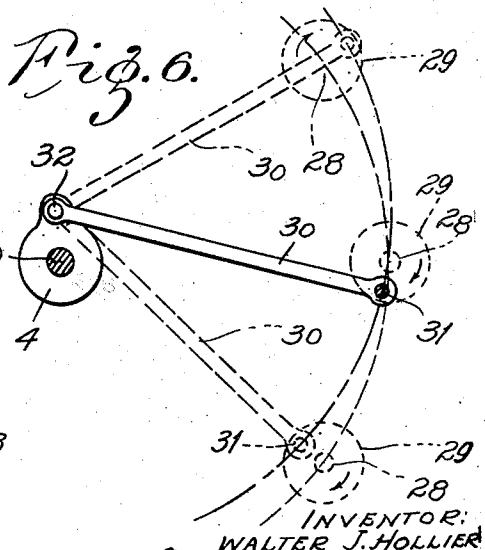


Fig. 6.



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UNITED STATES PATENT OFFICE

WALTER J. HOLLIER, OF ST. LOUIS, MISSOURI

WASHING MACHINE

Application filed September 6, 1928. Serial No. 304,264.

The general object of this invention is to provide a washing machine which shall be extremely simple and compact in construction and which shall be of relatively small size, thereby adapting it particularly for use in washing the soiled garments of babies and children.

Stated more in detail, objects of the invention are to provide a vertically disposed tub or container removably mounted on an oscillating support; to provide novel means for oscillating the support on which the container is removably mounted; and to provide a novel construction of container which in operation will thoroughly agitate the water and the articles being washed and cause them to be cleaned with great rapidity.

Other objects of the invention relate to details of construction and to novel combinations and arrangements of parts all of which will be clear from the description of the invention to follow.

In the preferred embodiment of the invention my improved washing machine comprises a base having a motor pivotally mounted at its lower end thereon and provided with mechanism for causing the motor to be oscillated back and forth as its shaft rotates, in the manner of an oscillating fan. The base preferably forms the bottom of an enclosure or casing on the top of which is provided a suitable ball bearing surrounding an opening for a stub shaft, the lower end of which is non-rotatably engaged with the top of the motor. The said stub shaft is preferably formed integral with a circular support from the center of which it projects downwardly. Said support is provided with a plurality of apertures and the container is provided on its bottom with a corresponding number of studs which fit into said apertures, so that as the said support is oscillated by the corresponding movement of the motor, the container will have imparted to it a corresponding motion.

In the drawing:—

Fig. 1 is a plan view, partly broken away, of my improved washing machine; Fig. 2 is a view partly in vertical elevation and partly in section of the same; Fig. 3 is a top plan view of the support for the cointainer; Fig. 4 is a perspective view of the agitator mounted within the tub; Fig. 5 is a section plan view on the line 5—5 of Fig. 2; and Fig. 6 is a sectional plan view on an enlarged scale, illustrating by dotted lines the paths of movement of certain parts causing the oscillation of the motor.

Referring now to the drawing, the numeral 1 indicates the base of the machine which, preferably, is in the form of an enclosed structure having a bottom 2 and a top 3. The bottom 2 on its upper side is provided with a central step-bearing 4 and the top 3 is provided with a central bearing 5 on its under-side and with a ball bearing 6 on its upper side, said bearings accommodating a stub shaft 7 passing through them and projecting downwardly from the center of the under-side of a circular plate or support 8. This plate or support is designed to be oscillated in a manner and by means presently to be described. Numeral 9 indicates the container, which, as shown, is vertically disposed and usually constructed of sheet metal, such as, tin, copper or the like.

The support 8, as shown by Fig. 3, is provided with a series of apertures 10 which, as shown, are three in number; and the container 9 is provided on its under-side with a corresponding series of studs 11 which are adapted to fit snugly in the apertures 10. When the container is thus positioned on the support 8 it will move with the support as the latter is oscillated, as will be understood. The container 9 is preferably provided with a bail 12 and has a removable closure 13 provided with a central handle 14 for manipulating it.

Within the container I mount means for causing agitation of the water and of the articles being washed in the oscillation of said container. This means is shown in Fig. 4 and consists of a triangular-shaped member which is secured along one of its sides to the bottom of the container and has its other side projecting upwardly along the wall of the container and in contact therewith. One way of forming this agitating device will be apparent from Fig. 4, and consists in bending a sheet of metal upon itself to provide a triangular body portion 15 and flanges 16

projecting laterally from one side thereof. These flanges are provided with apertures 17 by means of which the agitator, indicated in Fig. 2 generally by the numeral 18, may be secured to the bottom of the container. When so positioned, the hypotenuse of this triangular figure will extend from about the center of the bottom of the container to a point located at something less than the distance from the bottom of the container to its vertical center. It will of course be understood that these dimensions of the agitator may be varied, if found desirable.

For producing an oscillating movement of the container I provide an electric motor 19 having on its under side a boss 20 which is seated in a step bearing 4, the boss being free to turn in said bearing. On its upper side the casing of the motor is provided with a hollow boss 21, the opening in which is non-circular and receives the similarly-shaped lower end 22 of the stub-shaft 7. At one end the motor is provided with a casing 23 in to which, as shown by Fig. 5, extends the motor shaft 24, the outer end of said shaft having a bearing in the end wall of casing 23 as shown at 25. Within the casing 23 shaft 24 is provided with a worm 26 which engages the teeth of a worm-wheel 27, horizontally disposed and mounted on a vertical shaft 28; and mounted on the lower end of the shaft 28 is a crank disc 29 on the under-side of which is eccentrically secured one end of a pitman-rod 30, as indicated at 31 in Fig. 6, the other end of which is pivotally mounted at one side of the step-bearing 4, as shown at 32 in said figure.

It will be apparent that as the motor shaft is rotated the crank disc 29 will be caused to rotate by the engagement of the worm wheel 27 with the worm 26, the shaft 28 being fast with said worm-wheel and said crank disc; and as the inner end of rod 30 is fixed against all but pivotal movement on the step-bearing 4, the motor will first be moved in one direction until the pivotal connection 31 on disc 29 has passed a dead center, and then in opposite direction, and thus be continuously oscillated on its central pivotal bearing 20. This movement of the motor will be imparted to the stub shaft 7, support 8 and container 9 mounted on said support, with the result that the water will be severely agitated, in a well known manner, by the agitator 18. This movement of the water over and through the articles being washed, together with a similar, but somewhat less degree of movement of the articles themselves, results in a very rapid and efficient cleaning of such articles. In practice, the container having therein a number of articles equivalent in bulk to about two linen sheets will effectively wash the articles in about 15 minutes.

I claim:

1. A washing machine comprising a base, a motor pivotally mounted thereon, means operated by the motor shaft for oscillating said motor, a horizontal support pivotally mounted in a member of said base and having its pivot non-rotatably engaged with said motor and a container mounted on and detachably engaging said support to be oscillated therewith in the movement of said motor.

2. A washing machine comprising, in combination with a self-oscillating motor, a horizontally-disposed, pivotally-mounted support having rigid engagement with said motor to be oscillated thereby, and a container mounted on and having detachable engagement with said support to be oscillated therewith.

In testimony whereof, I have hereunto set my hand.

WALTER J. HOLLIER.