No. 756,856. PATENTED APR. 12, 1904.

J. G. HOFFKEN.

WASHING MACHINE.

APPLICATION FILED DEC. 21, 1901.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1.

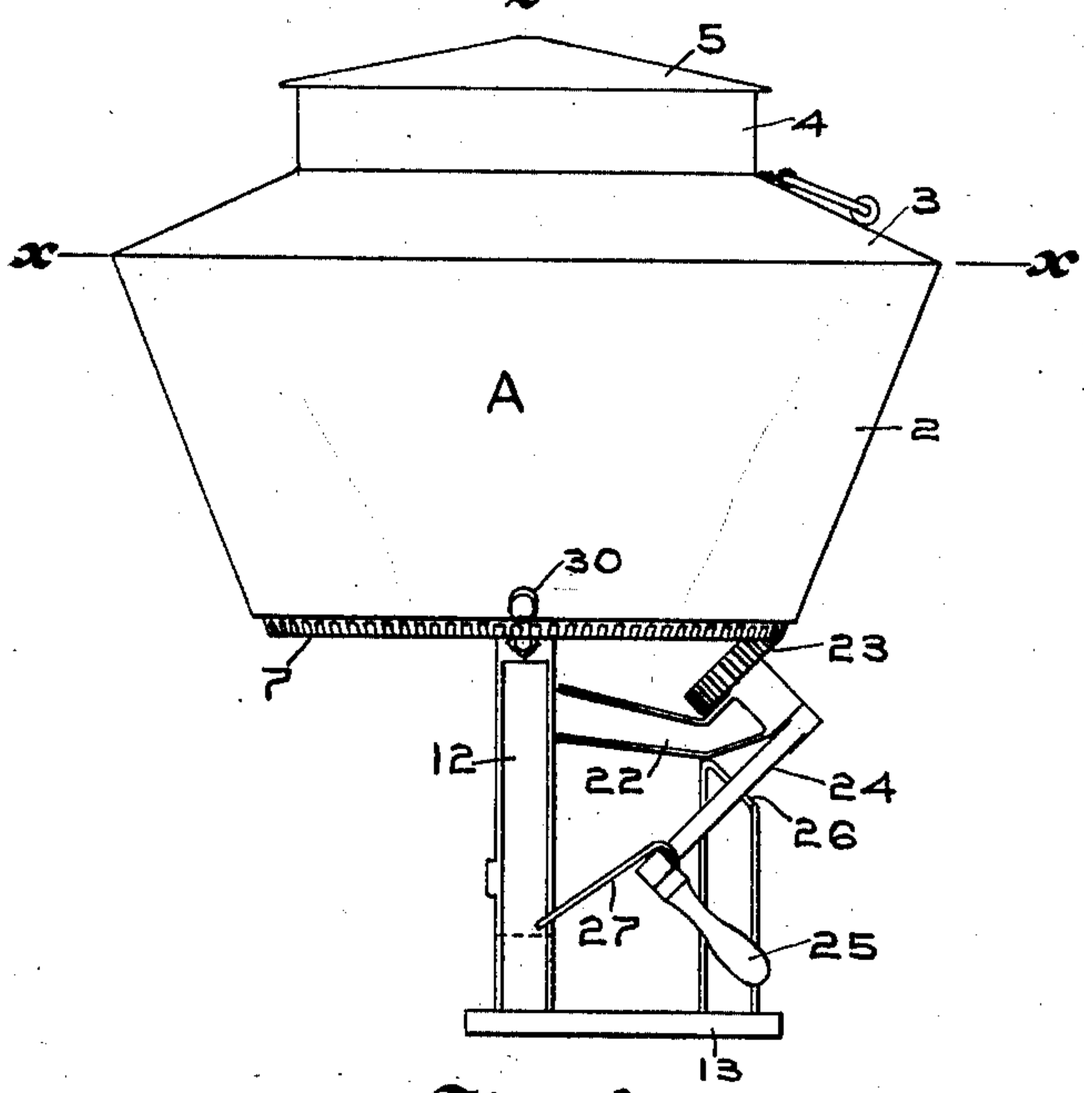
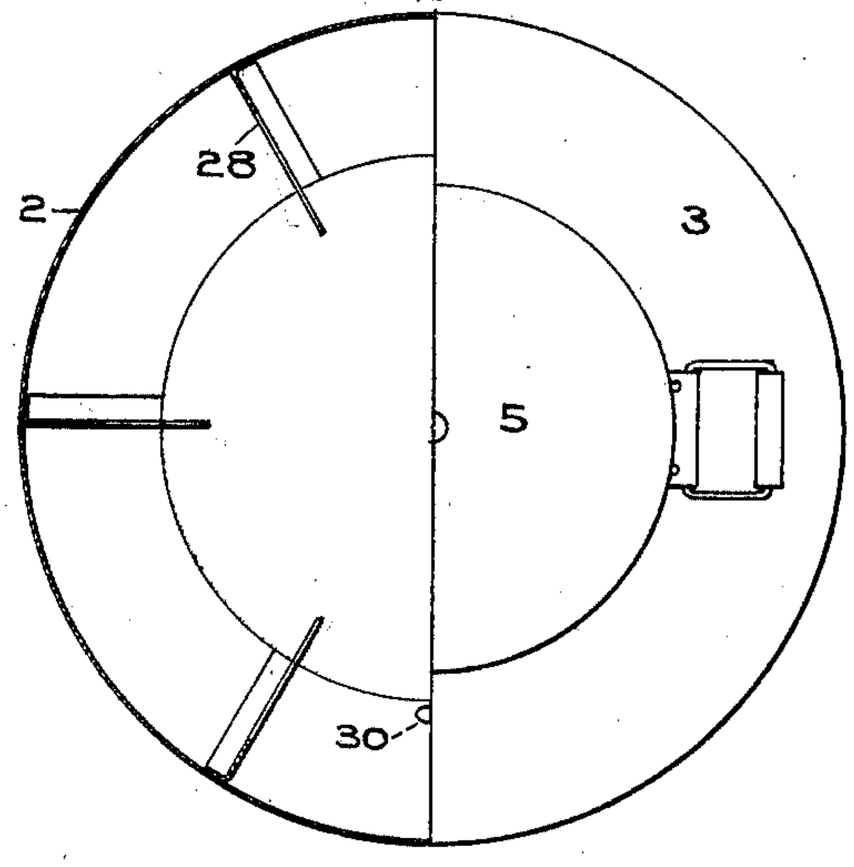


Fig. 2.



Witnesses,
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NO MODEL. 2 SHEETS—SHEET 2.

Fig. 3.

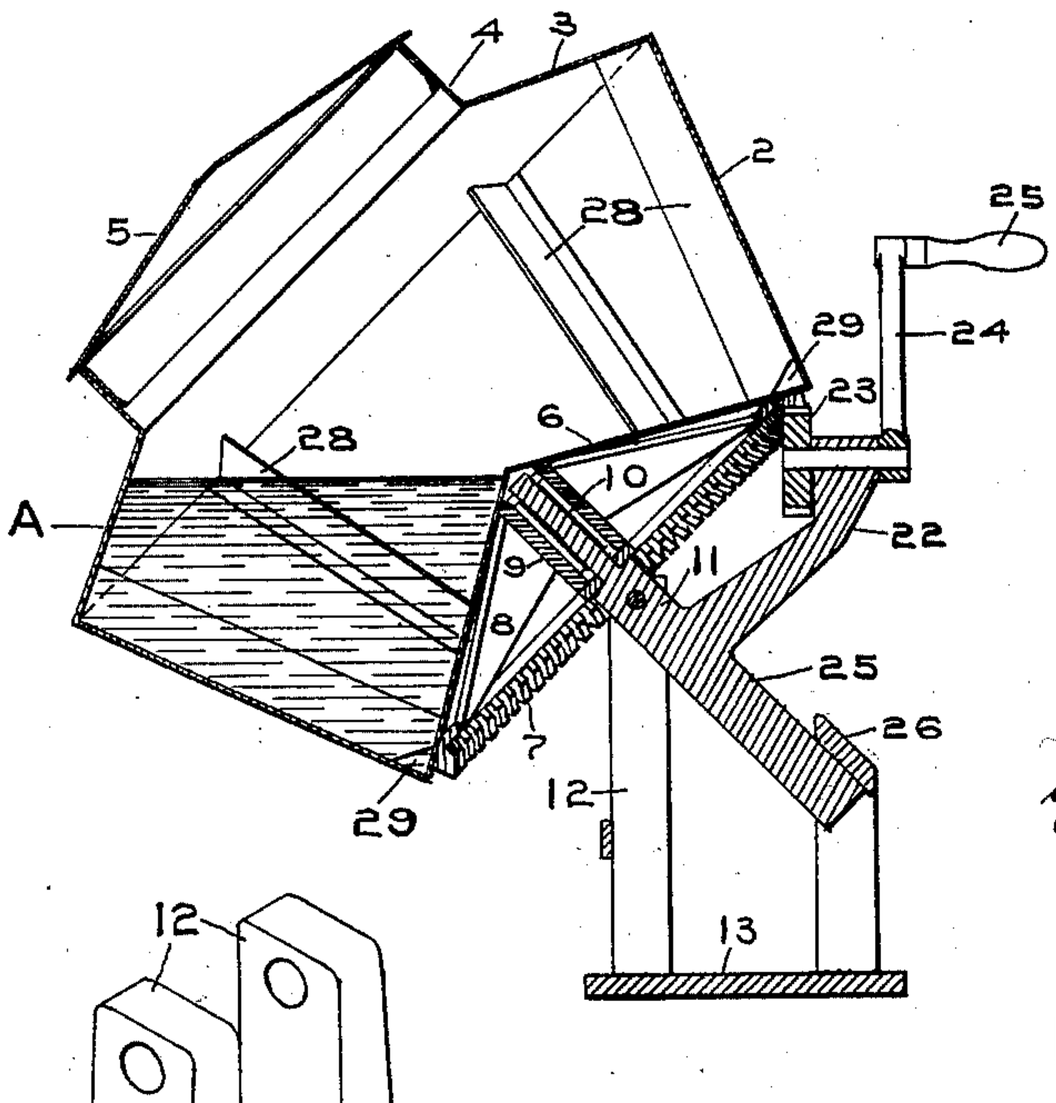


Fig. 5.

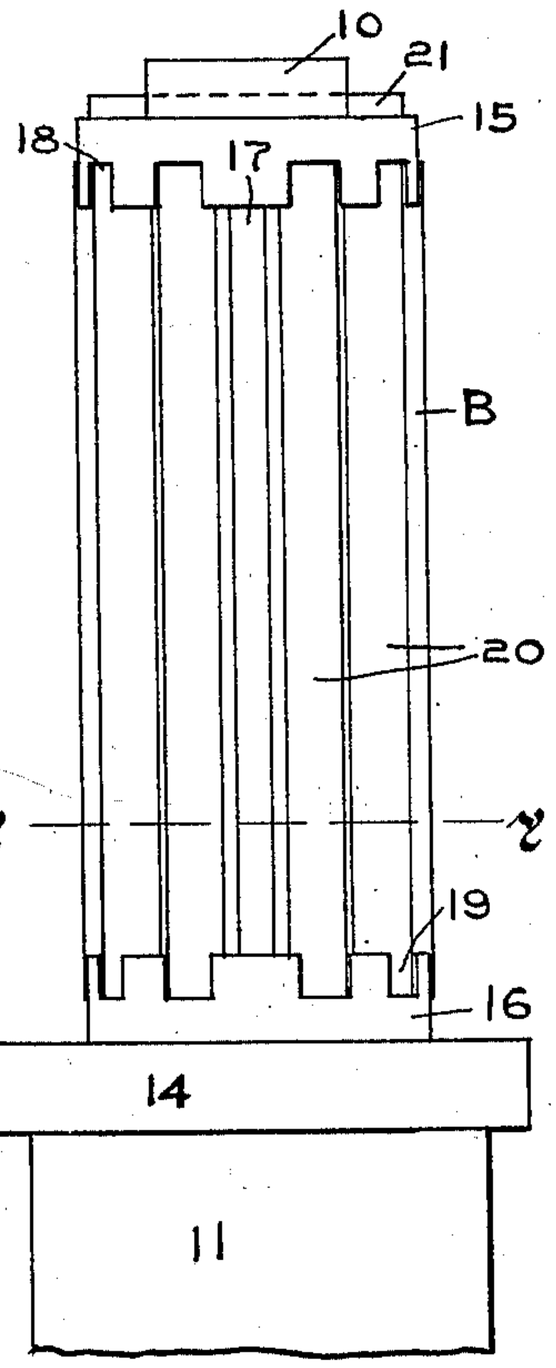


Fig. 4.

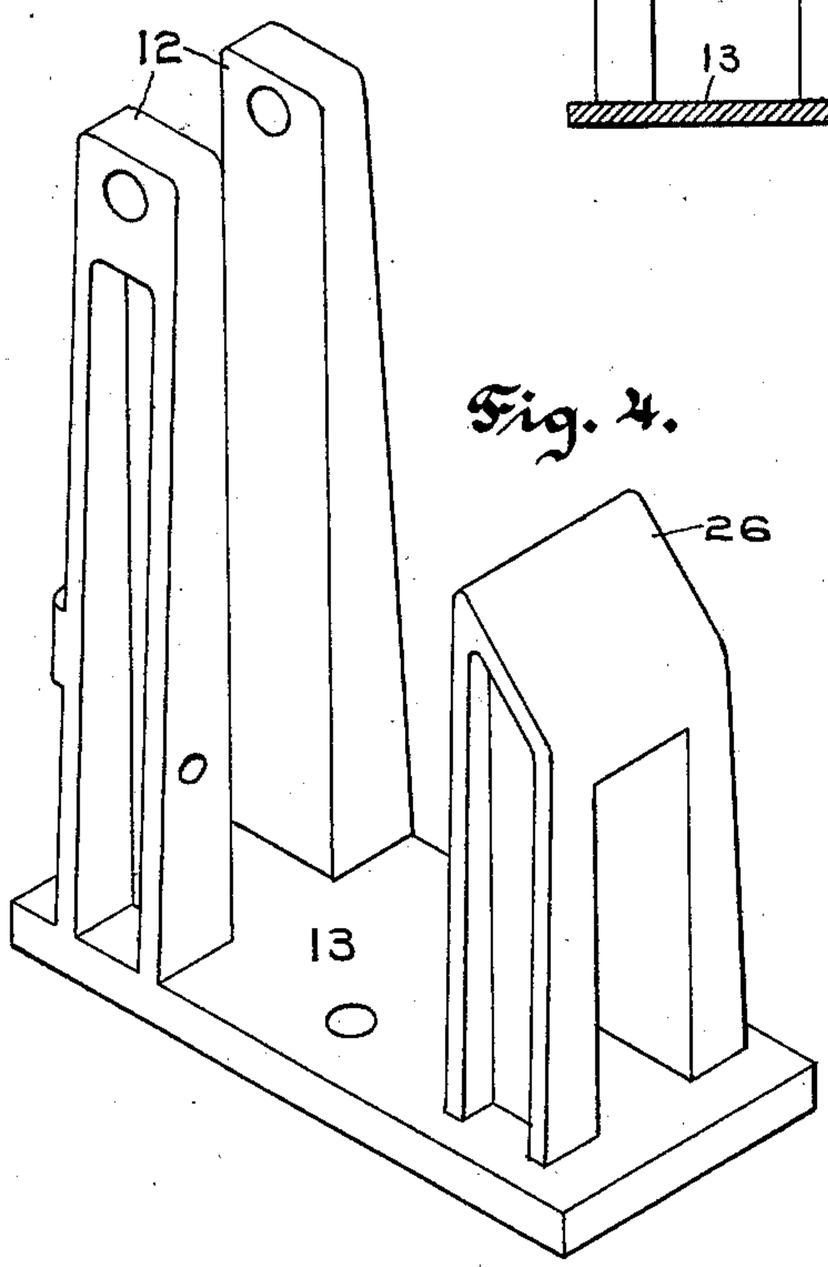
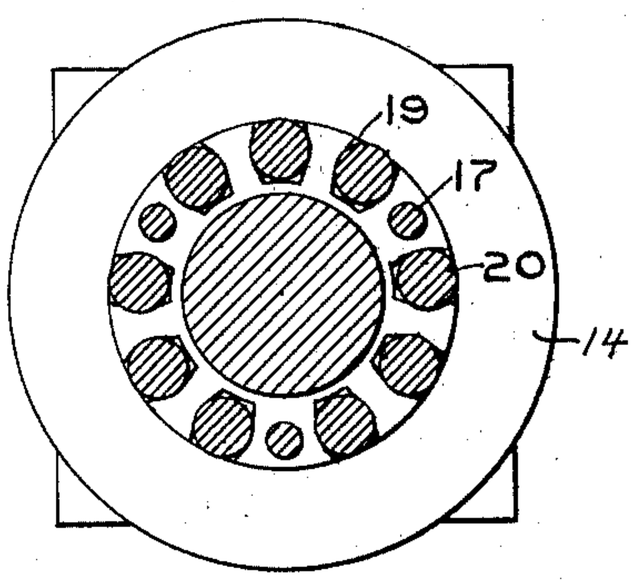


Fig. 6.



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UNITED STATES PATENT OFFICE.

JERRY G. HOFFKEN, OF HAMPTON, MINNESOTA.

WASHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 756,856, dated April 12, 1904.

Application filed December 21, 1901. Serial No. 86,743. (No model.)

To all whom it may concern:

Be it known that I, JERRY G. HOFFKEN, a citizen of the United States, residing at Hampton, in the county of Dakota and State of Minnesota, have invented certain new and useful Improvements in Washing-Machines, of which the following is a specification.

My invention relates to improvements in washing-machines; and it consists in the features of construction and combination hereinafter particularly described and claimed.

In the accompanying drawings, forming part of this specification, Figure 1 is a side elevation of my improved machine with the tub in upright position. Fig. 2 is a top view, partly in plan and partly in horizontal section, on line *x x* of Fig. 1. Fig. 3 is a vertical section through the middle of the machine, showing the tub in tilted or operative position. Fig. 4 is a detail showing the supports of the tub and the back-stop to hold the tub in tilted position. Fig. 5 is a detail showing the roller-bearings whereon the tub is rotated, and Fig. 6 is horizontal section taken on line *y y* of Fig. 5.

In the drawings, A represents the clothes receptacle or tub, formed, preferably, with round outwardly-flaring sides 2 and an upwardly and inwardly extending top portion 3, terminating in a neck 4, which is provided with a detachable cover 5. The tub is formed with a conical bottom 6, extending upwardly to an apex within the tub. Secured to the outside of the bottom of the tub along its edge is an annular gear 7, to which is secured a conical spider 8, which has at the center a hub 9, secured at its upper end to the bottom of the tub and adapted to receive and fit over the spindle 10 of the supporting-arm 11 and the roller-bearing mechanism B, carried thereby. The supporting-arm 11 is pivotally supported below the bottom of the tub between posts 12, secured to the base-plate 13, and its upper part is formed into the spindle 10, already referred to. At the base of the spindle is a ring or washer 14 to form a smooth bearing for the lower end of the hub 9. Around the spindle is arranged the roller-bearing mechanism B. (Illustrated in Figs. 5 and 6 of the drawings.) This consists of an upper ring 15 and a lower ring 16, connected by vertical rods 17, distributed at intervals around the rings. On their adjacent sides the rings are formed with sockets 18 and 19, respectively, to receive the upper and lower ends, respectively, of rollers 20, which fit loosely within the sockets, so as to be rotatable therein. The sockets are open at the periphery of the rings and are of such size that the sides of the rollers project a trifle beyond such periphery. To retain the rollers within the sockets, the width of the peripheral opening of the sockets is less than the diameter of the rollers. The roller-bearing mechanism B is slipped over the spindle 10 and held thereon by a key 21, passing through a hole in the spindle above the upper ring 15.

Below its point of pivotal support upon the posts 12 the supporting-arm 11 carries a laterally-extending bracket 22, at the end of which is journaled a gear-wheel 23, intermeshing with the annular gear 7 upon the bottom of the tub and operated by a crank 24, having a handle 25. The bracket is so shaped that the gear-wheel 23 and the crank 24 will stand in substantially vertical position when the tub is tilted at the desired angle for operating. Below the bracket 22 the arm 11 is formed with a downwardly-extending portion 25, adapted to engage the back-stop 26 when the tub is tilted, the back-stop being so positioned that such engagement takes place when the tub has been tilted to the desired angle for operation. When the tub is in upright position, as shown in Fig. 1, the bracket 22 will rest upon the top of the back-stop 26, which will thus prevent the tub from tilting in one direction, and it may be held from tilting in the opposite direction, if desired, by any suitable means, such as the hook 27, adapted to engage the crank 24, as shown in Fig. 1.

Interiorly the sides of the tub are provided with a series of radial wings 28, extending, preferably, the entire length of the sides 2 to the top portion 3 and being, preferably, of uniform width. In order completely to drain off all the water after use, the wings are formed at the bottom with small holes 29. The water

may be drawn from the tub by a discharge-opening with a removable cap, such as that shown at 30.

When not in use, the tub is most conveniently held in the upright position shown in Fig. 1. When it is desired to use it, it is filled with the proper amount of water or suds, and the clothes to be washed are placed therein. It is then tilted over into the position shown in Fig. 3, where it is held by the back-stop 26. It is then rapidly rotated upon the roller-bearings B by turning the crank 24, which causes the gear-wheel 23 to rotate the intermeshing annular gear 7 upon the bottom of the tub. When the tub is in tilted position, it will be seen that owing to the conical shape of the bottom that part of the bottom which is tilted down will approach a vertical position, while the opposite or uptilted bottom portion will approach a horizontal position. The contained suds or other liquid will therefore not only collect in the downtilted portion of the tub, but will be confined in a space of less width and greater depth than if the bottom were flat. It will also be observed that by having a conical bottom and outwardly-flaring sides the downtilted side portion 2 becomes, in effect, the bottom, while the conical bottom portion becomes, in effect, a side. The clothes are kept by the wings 28 away from the dowtilted side portion 2 of the tub, which portion has become, in effect, the bottom, as stated. When the tub is rotated, the clothes and water are carried up by the wings, leaving the compartments at the bottom between the wings only partially filled with water, and the clothes falling from above upon the partially-filled compartments mingle with the air and water therein, which keeps the mass aerated and helps to prevent the clothes from matting.

It will be observed that the clothes are not positively stirred or acted upon by oppositely-acting parts; but the clothes are simply carried around by the rotation of the tub and allowed to fall back into the water, so that the likelihood of fraying and tearing is greatly diminished.

While my invention is particularly designed for a washing-machine, it is also adapted for use as a churn, and it is not my intention to limit the invention to a machine for any particular use.

It will be evident that various modifications may be made in the machine without departing from the principle of the invention, the scope of which is defined in the claims.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A machine of the class described, comprising, in combination, a support, an arm pivotally mounted thereon so as to swing in a substantially vertical plane, a tub rotatably mounted upon the arm, an annular gear upon the tub, a bracket carried by the arm, and a gear rotatably mounted upon the bracket in a position to intermesh with the annular gear upon the tub to rotate the same.

2. A machine of the class described, comprising, in combination, a support, an arm pivotally mounted thereon so as to swing in a substantially vertical plane, a conical spider centrally and rotatably mounted upon the upper end of said arm and carrying an annular gear at its base, a tub having an upwardly-coned bottom secured to said conical spider, and means carried by said arm to engage said annular gear and thereby rotate the spider and tub.

In testimony whereof I affix my signature in presence of two witnesses.

JERRY G. HOFFKEN.

Witnesses:

GEORGE GERMAIN,

S. A. NEELAND.