G. ENTREKIN.

WASHING MACHINE.

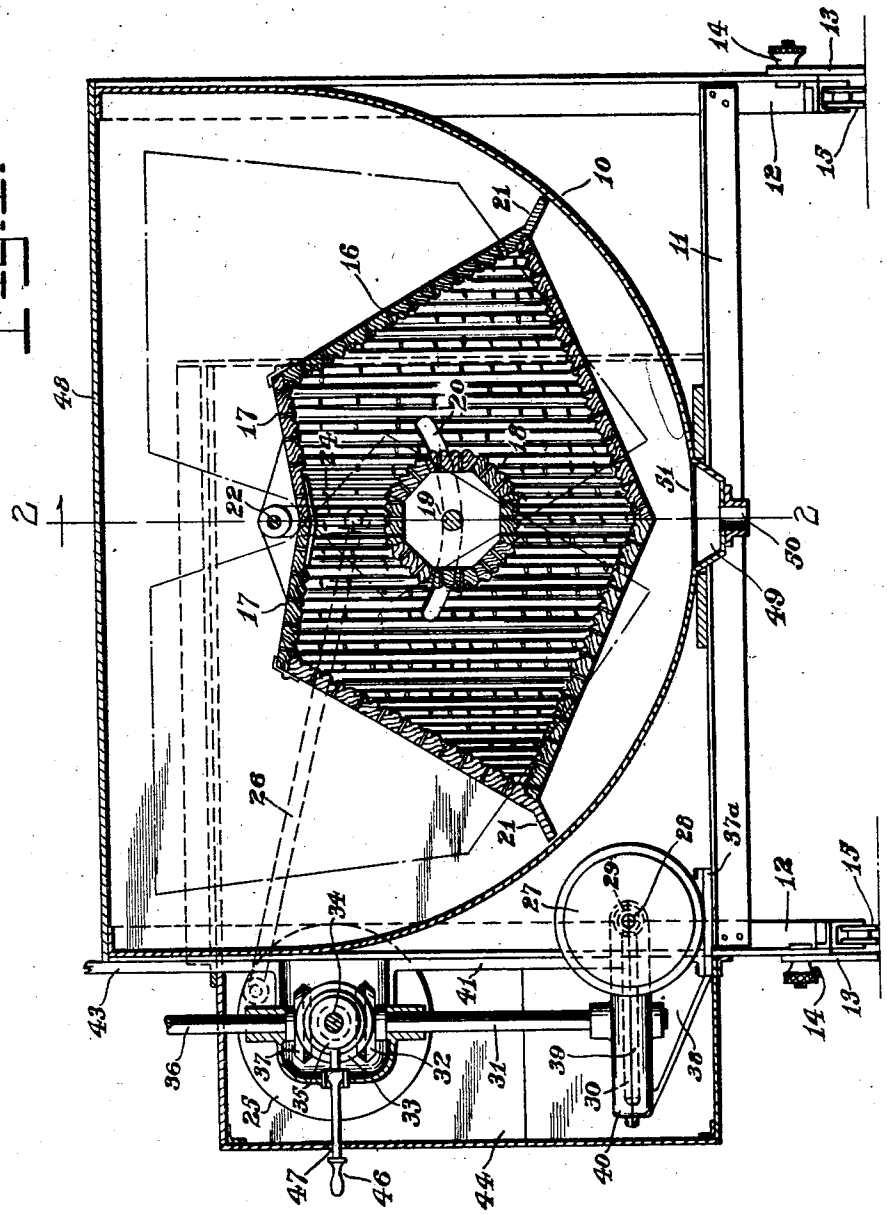
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1,386,399.

Patented Aug. 2, 1921.

2 SHEETS—SHEET 1.

Fig. 1.



Inventor.

George Entrekin.

By Max A. Schmidt

Attorney.

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Fig. 2.

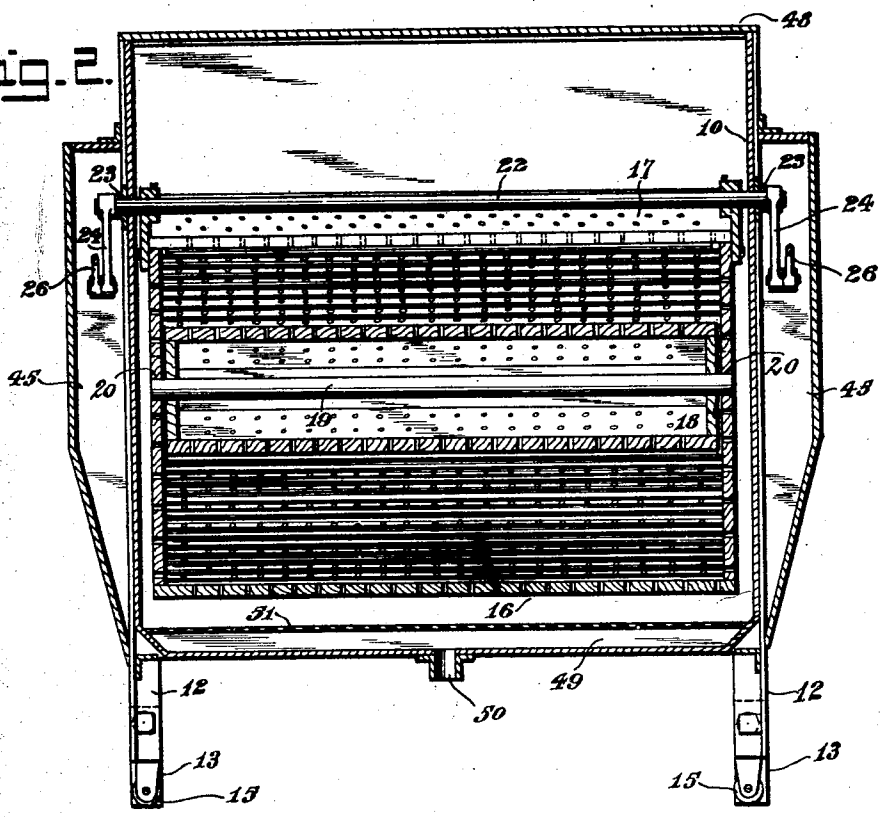
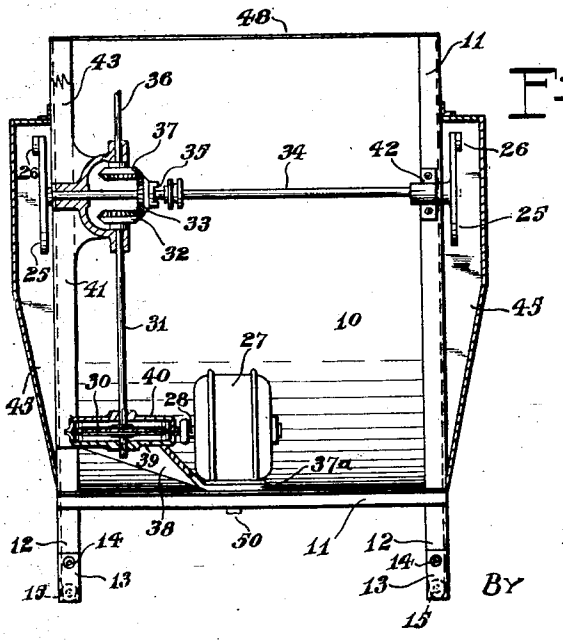


Fig. 3.



Inventor.
George Entrekin.

By Max A. Schmidt
Attorney.

UNITED STATES PATENT OFFICE.

GEORGE ENTREKIN, OF PITTSBURGH, PENNSYLVANIA.

WASHING-MACHINE.

1,386,399. Specification of Letters Patent. Patented Aug. 2, 1921.

Application filed October 9, 1919. Serial No. 329,543.

To all whom it may concern:

Be it known that I, GEORGE ENTREKIN, a citizen of the United States, residing at Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Washing-Machines, of which the following is a specification.

This invention relates to washing machines consisting of a tub in which is mounted a movable clothes receptacle, the cleansing operation being effected by a rubbing action and also by the water as it is forced into the receptacle and over the clothes as the receptacle is agitated or swung back and forth in the tub.

The invention has for its object to provide a novel and improved clothes receptacle and a means for operating the same, by which a more efficient washing operation is effected, the clothes being rapidly and thoroughly cleansed.

Other objects and advantages of the invention will be pointed out in the detailed description appearing hereinafter, and in order that the same may be better understood, reference is had to the accompanying drawings forming a part of this specification.

In the drawings,

Figure 1 is a central longitudinal section of the machine;

Fig. 2 is a cross section on the line 2—2 of Fig. 1, and

Fig. 3 is an end view, drawn to a reduced scale and partly in section.

Referring specifically to the drawings, 10 denotes a tub of substantially semi-circular section lengthwise, and supported by a suitable frame 11 having legs 12 provided with vertically adjustable foot pieces 13 so that the machine may be leveled up on an uneven floor. The foot pieces are held in adjusted position by clamping nuts 14. The legs 12 can also be provided with caster wheels 15 so that the machine may be easily shifted about.

In the tub 10 is positioned an oscillatory clothes receptacle 16 which is substantially pentagonal in cross-section. The top of this receptacle is composed of two removable sections 17 serving as lids so that the clothes may be inserted and removed. The sides of the receptacle diverge toward the bottom, the latter being composed of two angularly disposed sections which meet in the plane of the vertical center line of the receptacle. The ends, the sides, the bottom and also the top of the receptacle are perforated so that the water in the tub 10 can freely enter the receptacle to be forced through the clothes in the latter. It will also be noted that the entire inner surface of the receptacle is corrugated.

In the center of the receptacle is located a rubbing roller 18 of octagonal or other cross-sectional contour. This roller is corrugated externally and it is hollow, with its walls perforated to permit entry of water.

The roller 18 is mounted between the end walls of the receptacle 16 and it is supported by a shaft or rod 19 seating slidably in curved slots 20 in said walls. The roller is therefore loose in the receptacle so that it moves back and forth, and is also free to turn as the receptacle is oscillated or swung. The curve of the slots 20 is arcuate, the center thereof coinciding with the axis about which the receptacle 16 swings.

At the junction of the sides and the bottom of the receptacle 16 are outstanding wings 21 of such length as to terminate close to the inner surface of the wall of the tub 10.

The receptacle 16 is hung from a rock shaft 22 extending across the inside of the tub 10 and supported in bearings 23 on the outside of the latter.

The shaft 22, on the outside of the tub 10, is fitted with crank arms 24 connected to driving disks or wheels 25 by rods 26. It will therefore be seen that the receptacle 16 is oscillated or swung back and forth in the tub 10 when the drive wheels 25 are in motion. Fig. 1 of the drawings shows in dotted lines the positions of the receptacle at the limits of its swing.

The drive wheels 25 obtain motion from an electric motor 27 having its shaft 28 provided with a worm 29 which is in mesh with a worm wheel 30 on a vertical shaft 31, which latter is connected by a bevel gear 32 to a corresponding gear 33 loose on a horizontal shaft 34 carrying the drive wheels 25. A suitable clutch mechanism 35 is provided for connecting the shaft 34 to the gear 33 and for disconnecting the same to stop the operation of the receptacle 16. The drawings also show a fragment of a shaft 36 driven by a bevel gear 37 from the bevel gear 33, this shaft being employed for operating a wringer which has not been illustrated.

The motor 27 seats on a base plate 37ª hav-

ing a projection 38 provided at its outer end with a housing 39 for the worm 29 and the worm wheel 30. The housing 39 has a cover 40 so that the worm gearing is completely housed in. The housing and its cover are also provided with bearings for the worm shaft and the shaft 31. The housing 39 has an upright extension 41 provided at its upper end with bearings for the upper end of the shaft 31, the lower end of the shaft 36, and one end of the shaft 34, the opposite end of the latter shaft being supported by a bearing 42 at the corresponding side of the machine. The part 41 is also continued upwardly, as shown at 43, to provide a support for a wringer (not shown). The parts 37ª, 38, 39, 41 and 43 are fastened to the frame of the machine in any approved manner and they are all cast in one piece for greater strength and rigidity, and for holding the shafts in perfect alinement at all times. The housing inclosing the worm gearing can be made fluid-tight so that the gears may run in oil or grease.

The drive gearing hereinbefore described is inclosed in a housing 44 attached to the end of the frame of the machine in any suitable manner, and this housing is continued along the sides of the machine, as shown at 45 to cover the parts 24 and 26. The machine is therefore perfectly smooth on the outside, and has no projecting parts except the control lever 46 of the clutch 35, said lever projecting through a slot 47 in the wall of the housing 44. The absence of exposed moving parts makes the machine safe in operation, and all danger of injury to the operator is eliminated.

In operation, the clothes to be washed are placed in the receptacle 16 and the tub 10 is partly filled with water. The motor 27 being started, and the clutch 35 thrown in, the shaft 22 is given an alternating rotary motion through the cranks 24 and the connecting rods or pitmen 26 from the drive wheels 25. As the receptacle 16 is made fast to the shaft 22, it is swung back and forth in the tub 10 the extremes of its swing being shown by dotted lines in Fig. 1. The clothes in the receptacle 16 are thrown around in the same and receive a rubbing from the corrugated interior surface thereof, as well as from the corrugated exterior surface of the roller 18 extending the full length of the inside of the receptacle, as said roller rotates and also works back and forth in the receptacle to the extent of the length of the slots 20. As the walls of the receptacle 16 are perforated, the water in the tub is forced through the perforations into the receptacle and through the clothes in the latter by the oscillating motion of the receptacle, resulting in a thorough and rapid cleansing action on the clothes, the latter being subjected to a rubbing action and also to the cleansing effect of the water forced through the same. During the washing operation, the receptacle 16 describes a half circle, and the clothes are forced against the corrugated top, bottom, sides and ends of the receptacle, and also against the corrugated exterior of the roller 18, and the water is forced through the perforations in the receptacle in various dirctions according to the change of direction and position of the receptacle. The wings 21, after having moved a short distance, commence to scoop up and lift the water and force it through the perforations in the sides of the receptacle, this action being repeated each time the direction of travel of the receptacle changes.

As the rubbing roller 18 is hollow, it is made to serve as a soap holder, so that the soap is always practically in the center of the mass of clothes, and as the roller is also perforated, the water can enter the interior thereof to work up into suds. The clothes are put into and taken out of the receptacle through the covers or lids 17, which are securely latched when the machine is in operation. The tub 10 has a removable cover 48 so that access to the receptacle 16 may be had.

The bottom of the tub 10 has a depression 49 provided with a drain or outlet 50. Over this depression is placed a screen or strainer 51, so that the dirt after once settling in the depression will not be agitated by the movement of the receptacle 16 and carried back over the clothes. When the tub 10 is being emptied, the water flowing from the drain 50 carries with it the dirt which has settled in the depression.

The receptacle 16 can be easily cleaned, aired and dried without removal from the tub by swinging it around until it is in inverted position, after disconnecting the rods 26 from the crank arms 24.

The tub 10 can be made of metal, as the clothes are never in contact therewith.

The drawings illustrate the machine as driven by an electric motor 27, but it will be understood that any other driving means or power source may be employed. It is also to be understood that while the preferred embodiment of the invention has been illustrated, various changes and modifications may be made without a departure from the spirit and scope of the invention as claimed hereinafter.

I claim:

1. In a washing machine, a stationary tub, a rock shaft extending transversely of the tub, an oscillatory clothes receptacle hung from the rock shaft, a rubbing roller in the receptacle, and a shaft supporting said roller, the end walls of the receptacle having slots in which the shaft of the roller is slidably supported and also free to rotate, said slots being curved on an arc having for its

center the axis about which the receptacle oscillates, and running in the direction of the travel of the receptacle.

2. In a washing machine, a stationary tub, an oscillatory clothes receptacle in the tub and having perforated walls, the opposite sides of the receptacle which face in the direction the same is traveling diverging toward the bottom of the receptacle, projecting water lifting wings extending transversely of the line of travel of the receptacle and located at the junction of said diverging sides and the receptacle bottom, and operating means for the receptacle.

3. In a washing machine, a stationary tub, and an oscillatory receptacle in the tub, said receptacle having the shape of a polygon with its sides perforated and extending transversely of the tub, and the bottom of the receptacle being perforated and composed of flat surfaces arranged angularly with respect to each other, said surfaces being spaced from the bottom of the tub a distance to define a water space of sufficient volume to produce a flow of water upwardly through the perforations of said bottom of the receptacle when the receptacle is oscillated.

In testimony whereof I affix my signature.

GEORGE ENTREKIN.