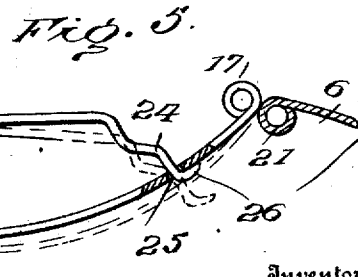
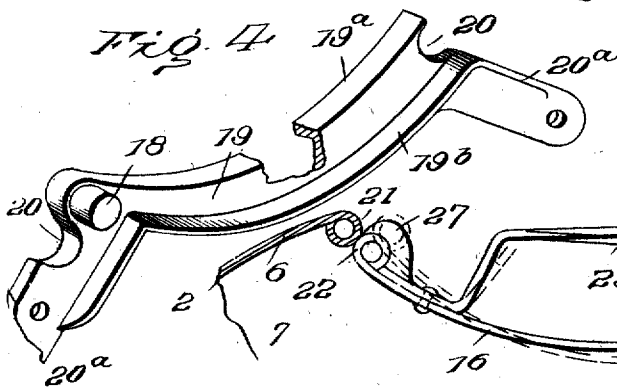
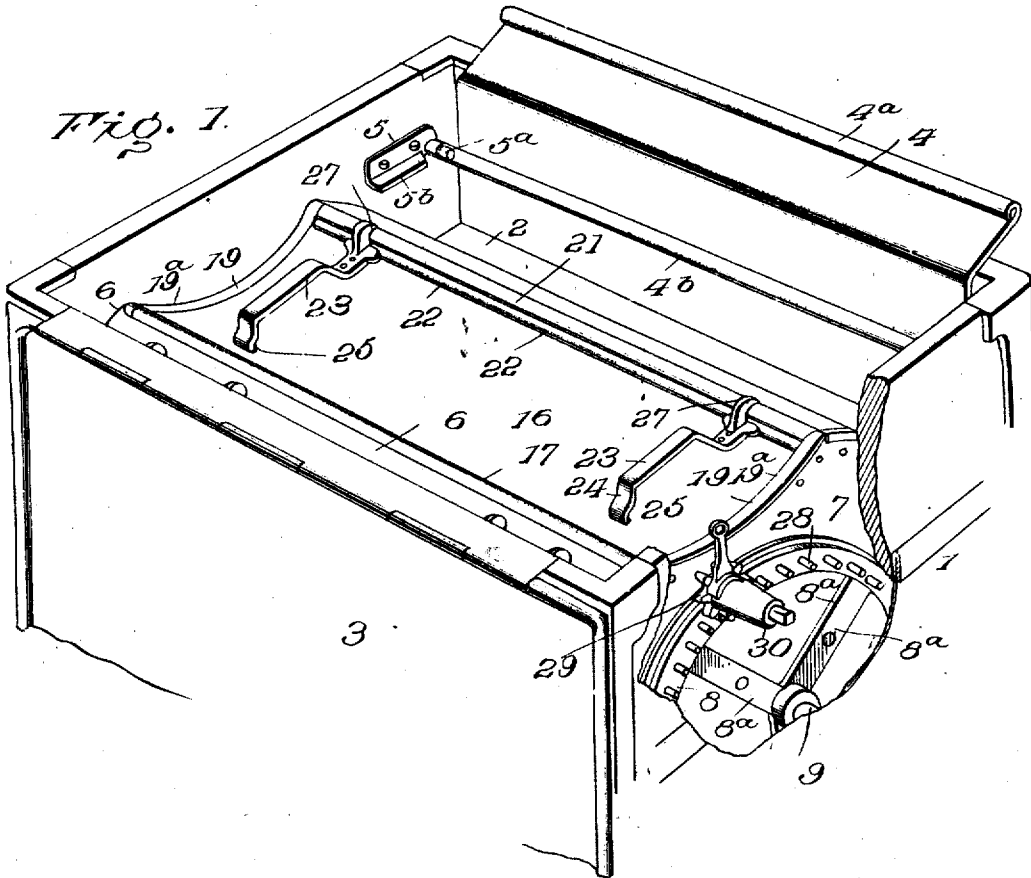


H. W. DARROW.
 WASHING MACHINE.
 APPLICATION FILED SEPT. 11, 1907

Patented Sept. 7, 1909.
 2 SHEETS—SHEET 1.

933,295.



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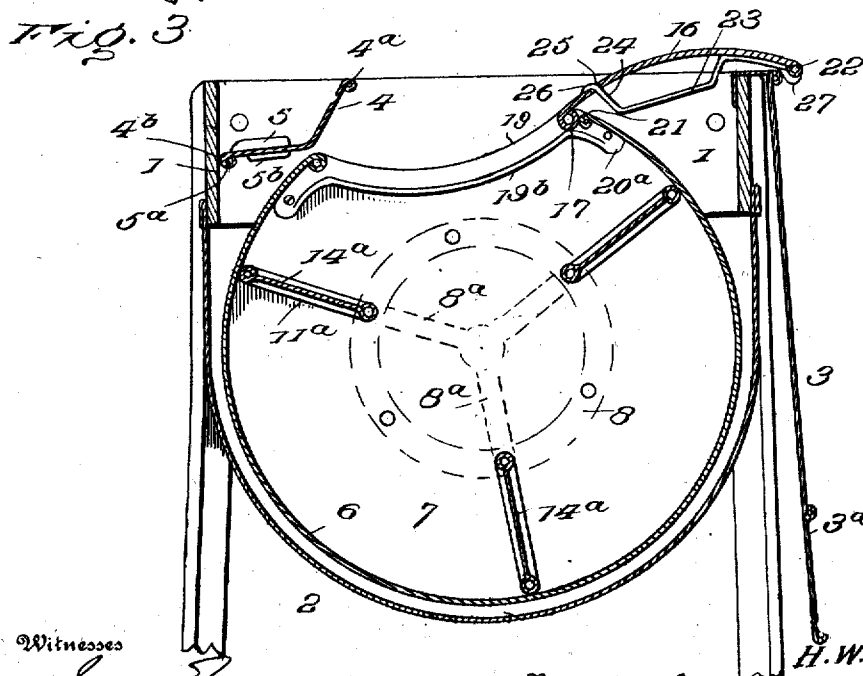
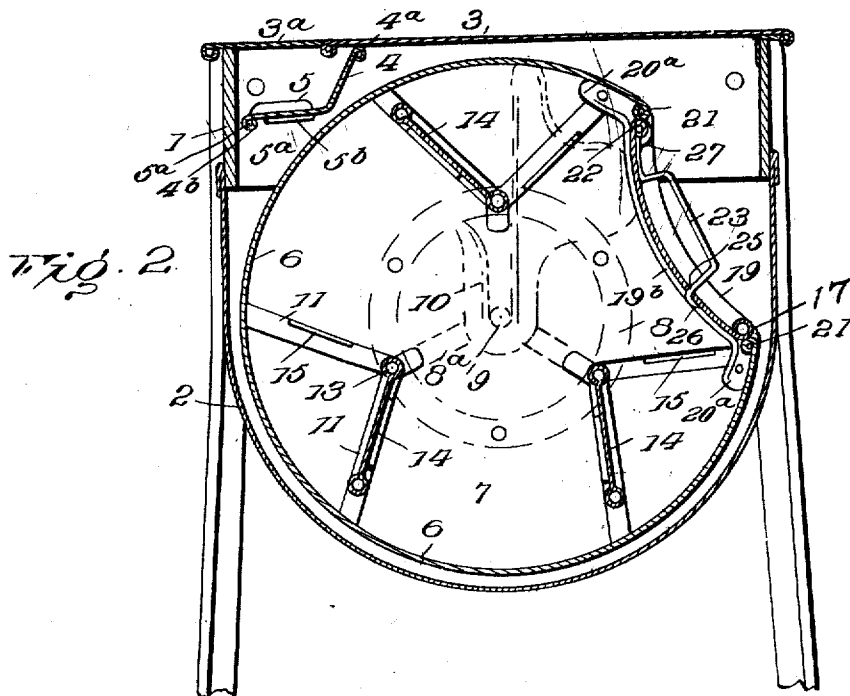
By

Harvey, Attorneys

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Inventor

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UNITED STATES PATENT OFFICE.

HENRY W. DARROW, OF CHICAGO, ILLINOIS, ASSIGNOR TO PARAGON MFG. CO., OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

WASHING-MACHINE.

933,295.

Specification of Letters Patent.

Patented Sept. 7, 1909.

Application filed September 11, 1907. Serial No. 392,336.

To all whom it may concern:

Be it known that I, HENRY W. DARROW, citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Washing-Machines, of which the following is a specification.

This invention contemplates certain new and useful improvements in revoluble cylinder washing machines; and the invention has for its general object a simple, durable and efficient construction of machine of this type, the invention relating particularly to the cylinder itself which is so constructed that it may be cheaply manufactured so that it will possess to a marked degree elements of lightness and strength, and capability of resisting hard usage.

To this end, the invention comprises essentially an all-metal cylinder which is reinforced and made rigid in a simple and effective manner.

A further object of the invention is a cylinder provided with clothes carriers which will not only have an effective clothes-carrying capacity and lift the clothes to a high point, so as to drop the clothes from a high elevation into the water in the cylinder, but which will also assist in reinforcing the heads of the cylinder, in connection with other parts hereinafter described. And a further object of the invention is a cylinder embodying a door which will be easy to open and close and which by its inherent construction will hold itself securely after being closed and without any gap or opening through which any of the articles being carried therein may protrude where they would be in danger of becoming torn.

With these and other objects in view as will more fully appear as the description proceeds, the invention consists in certain constructions, arrangements and combinations of the parts that I shall hereinafter describe and claim, reference being had to the accompanying drawings in which:

Figure 1 is a perspective view, partly broken away, of a portion of a washing machine embodying the improvements of my invention; Fig. 2 is a transverse sectional view thereof, the section being taken through the clothes carrying cylinder or drum; Fig. 3 is a similar view with the door of the drum being shown open, this view illustrating the modified form of clothes carriers; Fig. 4 is

a detail perspective view of one of the braces employed to stiffen the cylinder and to coact with the door thereof; and, Fig. 5 is a fragmentary transverse sectional view through the cylinder and its door.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

Referring to the drawings, the numeral 1 designates the body portion of my improved washing machine, said body portion embodying the sheet metal trough or tank 2 and being preferably provided with a flat lid or cover 3 hinged thereto at one edge. Preferably the lid 3 is provided with a hinged section 3^a, which may be turned backwardly, preferably underneath the main portion of the lid during the washing operation, so as to expose the soap box 4 which is also of sheet metal and which in addition to its function as a receptacle for bars of soap, serves as a steam cut-off or protector in connection with the main portion of the lid 3 which overhangs it. In order to strengthen it, the edges of the angular plate 4 which constitutes the soap box are curled as indicated at 4^a, 4^b; one of said edges forming sockets at its ends to receive the trunnions 5^a on which the said plate is pivotally mounted, so that it may be swung backwardly, as illustrated in Fig. 1 to allow the cylinder to be removed. These trunnions 5^a project inwardly from and are preferably formed integral with angular brackets 5 secured by screws or otherwise within the ends of the body portion 1 and formed with inwardly extending ledges 5^b designed to support the plate 4 in operative position, as clearly illustrated in the drawings.

The clothes carrying cylinder 6 is in the present instance constructed entirely of thin sheet metal, the body portion, as well as the heads, and in order to secure the necessary rigidity of the parts of the all-metal cylinder, I secure to each of the heads 7 and to the outer faces thereof rings 8 that are provided with preferably radially and inwardly extending webs 8^a meeting at the center where the trunnions 9 are formed, said trunnions being mounted within stirrups 10 having open slot bearings so that the cylinder may be readily removed and replaced. The rings 8 are preferably riveted to the heads. These rings constitute reinforcing members

which coact with complementary members 11 in the form of bars secured preferably to the inner faces of the respective heads 7 and preferably overlapping the ends of the webs 8^a and secured to the heads by the same rivets as said webs, as well as by other rivets. The reinforcing members 11 extend from the rings 8 outwardly to the edges of the heads and their outer ends preferably abut against the inner surface of the body portion of the cylinder. The rings 8, and their complementary reinforcing members 11 are preferably formed of castings, so as to produce the necessary rigidity at small cost.

In addition to their function as reinforcing members or braces, the castings 11 form supports for the clothes carrying blades or plates 14. In that form of the invention illustrated in Fig. 2, these plates which are preferably constructed of sheet metal have a swinging movement between the diverging members of the bifurcated castings, as shown, the latter being formed with lugs 15 to limit the movements of the plates 14 in one direction or the other. The plates 14 may be pivoted by the ends of one rolled edge receiving the rivets 13 which extend through the rings and the overlapping ends of the castings 11, as illustrated in Fig. 2.

By this arrangement of swinging clothes carriers, it is obvious that they may be swung to the right or the left according to the direction in which the cylinder is revolved. Each clothes carrier thus forms a pocket which carries a larger quantity of clothes than the ordinary straight or stationary clothes carriers that extend usually but a short distance in a radial direction inwardly from the body of the cylinder.

Hence, my construction of clothes carrier insures that the clothes will be carried to a higher point in the cylinder, thereby increasing the fall and the constant efficiency of the washing machine. In addition, also, as the edges of the plates 14 extend close to the body portion of the cylinder, they serve to assist in reinforcing the same. It is to be understood, however, that my invention is not limited to a swinging clothes carrier. For example, as illustrated in Fig. 3, the reinforcing bars or castings 11^a may extend straight out from the outer ends of the webs 8^a of the ring 8 and may carry the straight plates 14^a, the edges of which are curled as shown so as to extend around and be held stationary by the inner and outer rivets of the said bars or castings 11^a.

The door 16 constructed in accordance with this invention is dished or curved inwardly in transverse section, as best seen in Figs. 2 and 5, and is made of comparatively light sheet metal with sufficient resiliency or spring to effect a proper locking engagement with the body portion of the cylinder, without the use of other latches

that are so liable to get out of order and that increase the cost of construction. One edge 17 of the dished or concave door 16 is curled as shown to strengthen it and is preferably hinged at its ends on the trunnions 18 projecting inwardly from the door frames 19, although it is to be understood that it is within the purview of my invention to hinge the door to the cylinder in various ways. These door frames 19 are preferably light castings which reinforce the cylinder heads where the doorway is provided, and they are formed with outwardly projecting angularly disposed flanges 19^a extending over the recessed edges of the respective heads as shown. They are also formed with end recesses 20 in which the curled (and thereby strengthened) edges of the body portion of the cylinder are fitted, arms 20^a projecting in opposite directions from the ends of the door frames 19 and being riveted to the body portion of the cylinder as shown. In order to support the side edges of the door 16 and prevent it from being swung too far within the cylinder, the door frames 19 are formed with inwardly projecting curved ledges 19^b.

The free edge 22 of the door 16 is curled upon itself to strengthen it and to also at the same time form a locking bead which may be sprung downwardly past the adjacent curled edge of the body portion of the cylinder when the door is moved to the closed position, thereby effecting a tight joint between the door and the cylinder and securely holding the door in place by its inherent construction and without the use of locking accessories. By the formation of the tight joint or contact between the curled edge 22 of the door and the curled edge 21 of the body portion of the cylinder throughout their length, all possibility of clothes protruding out of the cylinder and becoming caught and damaged is effectually precluded.

In order to open the door 16 and at the same time to serve as handles by which the cylinder may be lifted from the body portion of the machine when the door is closed, I provide the handles 23. These handles are riveted or otherwise securely fastened at one end to the door near the free edge of the latter and are provided with offset opposite free ends 24 which project downwardly and loosely through slots 25 formed in the door to receive them. The extremities 26 of the free ends of the handles are projected outwardly as shown best in Fig. 5 so as to limit the outward movement of the handles relative to the door. In order to open the door, it is only necessary to grasp the handles 23, preferably facing the hinged edge of the door and then twist the handles toward you, pressing downwardly upon the rear free ends and giving a slight upward

pressure to the fastened ends of the handles. This will cause the door 16 to flex sufficiently for its free edge to become disengaged from the cylinder.

5 The door 16 also serves the useful function of holding the cylinder immovable while the clothes are being inserted in or taken from the same. To accomplish this end, the said door is so constructed and arranged
10 proportionately to the hinged edge of the lid or cover 3 that when the door is swung backwardly, its bead 22 or lugs 27 on the handles 23 may be caught over the said hinged edge of the lid 3 and thereby hold
15 the cylinder stationary in an obvious manner.

It is to be understood that the cylinder 16 may be rotated in any desired way. For instance, one of the rings 8 may be provided
20 with a series of teeth or pins 28 designed for engagement by a driving pinion 29 on the shaft 30.

From the foregoing description in connection with the accompanying drawings,
25 it will be seen that I have provided a cheap, simple, durable and efficient construction of all-metal revoluble cylinder for washing machines, and one which is provided with a door having a positive locking action with-
30 out the use of the pivoted or other latches that are so liable to get out of order and are in other ways generally unsatisfactory.

Having thus described the invention, what is claimed as new is:

35 1. A washing machine including a body portion, a revoluble cylinder mounted therein and provided with heads, reinforcing rings secured to the outer faces of the re-
40 spective heads, radial reinforcing bars secured to the inner faces of said heads and extending outwardly from a point opposite said rings, and clothes-carrying plates sup-
45 ported by said radial bars and extending longitudinally across the cylinder and with the outer edges thereof contiguous to the outer wall of the cylinder, said plates being
50 of a width less than the distance between the circumference of the cylinder and the axis thereof.

50 2. A washing machine including a body portion, a revoluble cylinder mounted therein and provided with heads, reinforcing rings secured to the outer faces of the re-
55 spective heads, radial reinforcing bars also secured to said heads on the inside thereof and extending outward from a point opposite said rings, clothes-carrying plates freely
60 pivoted at their inner edges to the bars and of a width less than the radius of said cylinder and means for limiting the pivotal motion of said plates.

3. A washing machine including a body portion, a revoluble cylinder mounted there-
65 in and provided with heads, reinforcing members secured to the respective heads on

the exterior face thereof, bifurcated bars also secured to said heads on the inner faces thereof, said bars extending radially out-
ward from a point opposite said first named reinforcing members and the circumference
70 of the cylinder, the bars being provided with lugs, and clothes carrying plates pivoted to the bars at the fork thereof adapted to swing between the bifurcated bars and to be limited
75 in their movement by the lugs thereon.

4. A washing machine including a body portion, a cylinder rotatably mounted there-
in and provided with heads, a reinforcing ring secured to the outer face of each head, a
80 plurality of pairs of bifurcated bars secured to the inner face of the heads, the junction point of each of the bifurcated bars being opposite to the reinforcing ring, lugs on the bars, and a plurality of clothes-carrying
85 plates, each plate being pivotally mounted at the junction of each pair of bifurcated bars and adapted to be limited in its movement by the lugs thereon.

5. A washing machine including a body portion, a rotatable cylinder mounted there-
90 in and provided with heads, a plurality of pairs of bifurcated bars secured to the inner side of said heads, the junction point of each bifurcated bar being midway between the circumference and the center of said
95 heads, and the arms of each bar diverging in an outward direction, clothes-carrying plates pivotally mounted between opposed pairs of bars at the junction point thereof, said plates extending outward from their
100 pivotal axis to the circumference of the cylinder, and lugs on the said bars extending outward therefrom and limiting the movement of the plates in either direction.

6. A washing machine including a rotat-
105 able cylinder provided with opposed heads, a series of clothes carrying plates freely mounted between said heads and extending outward away from the center of the cylin-
110 der, the inside edges of the said plates at their inside margins being pivotally connected to said heads and said plates being less in width than the radius of the cylin-
115 der, and lugs extending inward from said heads, and engaging with the plates to limit their movement in either direction.

7. A washing machine, comprising a body portion, a revoluble cylinder mounted therein and provided with heads and a doorway,
120 door frames secured to the body portion of the cylinder at the ends of the doorway and provided, respectively, with butwardly projecting flanges overhanging the edges of the heads, said door frames being also formed
125 with inwardly projecting ledges below the level of the upwardly projecting flange, and a door adapted to close the doorway and rest upon said ledges.

8. A washing machine, comprising a body portion, a revoluble cylinder mounted therein 130

and including a body portion and heads and provided in its body portion with a doorway, door frames secured to the body portion of the cylinder at the ends of the doorway and provided, respectively, with outwardly projecting flanges overhanging the edges of the heads, and inwardly projecting flanges concave on their upper faces, adapted to support the door, said door frames being provided with arms projecting in opposite directions from the ends thereof and secured to the body portion of the cylinder, and a door adapted to close said doorway.

9. A washing machine, comprising a body portion, a revoluble cylinder mounted therein and provided with heads and a doorway, door frames at the ends of the doorway and formed, respectively, with outwardly projecting flanges overhanging the edges of the heads and also formed with end recesses, the body portion of the cylinder being curled along the side edges of the doorway with the ends of the curled portions resting in said recesses, and a door adapted to close said doorway.

10. A washing machine comprising a body portion, a revoluble cylinder mounted therein and provided with heads and a doorway, door frames at the ends of the doorway and formed with end recesses, the body portion of the cylinder being curled along the side edges of the doorway with the ends of the curled portions resting in said recesses, and a door adapted to close said doorway.

11. A washing machine, comprising a body portion, a revoluble cylinder mounted therein and provided with a doorway, a door of

spring material hinged at one edge to one edge of the doorway and adapted to be sprung at its opposite edge to the opposite edge of the doorway whereby to hold the door closed, and handles secured to the door near the free or opening edge thereof, the opposite ends of said handles having a limited independent movement inwardly relative to the door.

12. A washing machine, comprising a body portion, a revoluble cylinder mounted therein and provided with a doorway, a door of spring material hinged at one edge to the doorway and adapted to spring past the opposite edge of the doorway into locking engagement therewith, and handles secured at one end to the free or opening edge of the door and provided with opposite offset ends, the door near its hinged edge being formed with slots through which the offset ends of the handles loosely extend, as and for the purpose set forth.

13. A washing machine comprising a body portion, a revoluble cylinder mounted therein and provided with a doorway, a door adapted to close said doorway, and handles secured to the said door, said handles being formed with lugs adapted to engage a portion of the body of the machine in the swung back position of the door, whereby to hold the cylinder stationary.

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

HENRY W. DARROW. [L.S.]

Witnesses:

HERVEY ROY DAILEY,
LEO S. THEIN.