The present invention relates to door means for washing machine cylinders of the type illustrated in Patents 1,588,355, of August 31, 1926, and 1,700,706, of January 29, 1929, and has for its object to improve the same.

One of the difficult problems in the washing machine art, particularly in the case of wooden cylinders, has been to insure that the doors, when closed, will be held so immovable that no cracks or crevices in which pieces of laundry catch will appear. In constructions of the type under consideration, each cylinder door opening is closed by a large upper door and a narrow lower door that serves also as an unloading shelf. Herefore looseness has sometimes occurred in the hinge connections between the cylinders and the narrow doors, causing cracks or crevices, in which the laundry may catch, to appear. One of the objects of the present invention is to improve these hinge connections and thus overcome the objection of looseness therein even after long service.

A further object of the present invention is to produce an improved construction in which the doors that serve also as unloading shelves cooperate with a metal longitudinal partition in a wooden cylinder to make a tight, substantially waterproof joint.

In carrying out this last object we carry the metal of the longitudinal partition over the top of the lower door sills and then down along the front faces thereof. Then, in order that the corresponding doors shall make tight joints with the sills, they are caused to bear against the downwardly turned portions or flanges of the partition. In this connection, a further object of the present invention may be said to be to produce a novel form of door which will not warp or become distorted in use and thus cause or permit cracks to open between it and the sill, when closed.

The various features of novelty whereby our invention is characterized will hereinafter be pointed out with particularity in the claims; but, for a full understanding of the invention and of its objects and advantages, reference may be had to the following detailed description taken in connection with the accompanying drawings, wherein:

Figure 1 is a front elevation of a fragment of a cylinder for a washing machine, having a door construction embodying the present invention; Figs. 2 and 3 are sections, respectively on lines 2—2 and 3—3 of Fig. 1, but on a larger scale; Fig. 4 is an elevation of the lower end of one of the hinge straps or leaves for the main or upper door, showing the inner side; Fig. 5 is an elevation of one of the stationary hinge leaves for the narrow lower door; and Fig. 6 is a top plan view of the leaf of Fig. 5, showing, in section, the strap of Fig. 4 engaged therewith.

Referring to the drawings, 1 represents a wooden washing machine cylinder of any usual or suitable construction having in the periphery at least one door opening provided with a large or main upper door 2 and a narrow lower door 3. At the lower edge of the door opening is a wooden sill 4 having its upper outer portion cut away to provide an upper front face 5 set back from the front face proper. A sheet metal longitudinal partition 6 rests on top of the sill and has a flange 7 extending down over said front face 5. The door 3, as best shown in Fig. 3, lies flat against the flange 7, when closed. In order that the door 3 shall be rigid, we preferably form it of a heavy stiff metal trough into the ends of which are fitted metal blocks 8 secured in place by bolts 9 or otherwise. The movable hinge leaves 10 for the lower door are preferably cast integral with the blocks 8. The stationary hinge leaves for the lower door are Z-shaped: each consisting of a central section 11 adapted to rest on a depressed seat 12 at the front and below the top of the sill; a lower section or wing 13, adapted to rest against the front face of the sill and against the periphery of the cylinder; and an upper section or wing 14 extending up in contact with the sill and the metal partition are notched to permit the upright section 14 to lie inwardly of the door when the latter is closed, and the section 11 to underlie the closed door. The hinge leaf sections 11 and 14, the sill and the metal partition are notched to permit the upright section 14 to lie inwardly of the door when the latter is closed, and the section 11 to underlie the closed door. The hinge leaf sections 11 have notches 15 in their upper faces to receive a lip 16 on the lower inner corner of the door and thus interlock the stationary hinge leaf and the door when the door is closed. At the upper end of each stationary hinge leaf for the lower door is a lip 17 that projects inwardly and rests upon the front end of the longitudinal partition 6. These stationary hinge leaves are secured in place by one or more bolts. In the arrangement shown, there are two bolts for each hinge, a short bolt 18 passing through the lower section and through a cylinder stave adjacent to the sill, and a long bolt 19 that extends through the lower hinge leaf section and through the sill.

Since the stationary hinge leaves for the lower door are held by bolts extending through the same below the hinge pintle 20, there is a tendency for the upper ends of the hinge leaves to...
pull away from engagement with the sill whenever there is a pull on the hinge joint in the outward direction. We have therefore provided means to hold the upper sections of these stationary hinge leaves firmly in place. In the arrangement shown, there is riveted to the inner or rear face of each of the hinge leaf sections 14 or formed integrally therewith a stiff metal tongue 21 that extends downward a considerable distance below the lower central hinge leaf section 11. Slots 22 are cut down into the sill at the inner ends of the seats 12, in position to receive the tongues 21 when the stationary hinge leaves are set in place. These slots are preferably so proportioned that the tongues will fit snugly in the same. Each of these tongues is provided near its lower end with a bolt hole 23 so located that the corresponding bolt 19 passes through the same. Consequently, after a stationary hinge leaf has been placed in position and the two bolts have been applied, the upper section of the hinge leaf is tied down to the bolt 19 and is therefore securely anchored to overcome any tendency that it may have to spring away from the sill behind it and thus open a crack or crevice.

As is customary in this type of construction, the hinge leaves or straps 24 on the upper or main door are continued past the free end or edge of that door so as to overlap the lower door sill when the upper door is closed. In our construction, the hinges or straps 24 are so placed as to cause them to engage with the outer sides or faces of the upper sections 14 of the stationary hinge straps for the lower door. The stationary hinge leaf sections 14 and the hinge leaves or straps 24 are, furthermore, so proportioned and shaped that they become effectively interlocked when the doors are closed, to prevent relative movements circumferentially or longitudinally of the cylinder. To this end, each strap or hinge leaf 24 is provided at its free end, on its under or inner side, with a U-shaped rib or bead adapted to fit a corresponding U-shaped groove or depression in the adjacent lower stationary hinge leaf. In the arrangement shown herein, the U-shaped rib or bead consists of ribs 25, 26 at the long edges of the strap 24, and a connecting cross rib or bead 26 following the lower edge, as best shown in Fig. 4. In the front face of each of the hinge leaf sections 14 is a pocket or depression 27 just large enough to receive the upwardly faced end of the corresponding hinge leaf or strap 24. Projecting outwardly from the upper end of the inner or rear wall of the pocket 27 is a ledge 28 whose length is slightly less than the distance between the ribs 25, 26 on the strap 24. Therefore, when the upper door is swung down, the lower ends of the straps 24 enter the pockets 27, the ribs or beads 25, 26, passing the ends of the ledges 28, and the rib or bead sections 26 underlying the ledges 28, Fig. 6 illustrates the relation between the ledge 28 and the ribs or beads 25 when the upper door is swung down, whereas Fig. 2 shows the manner in which the ledge overlies the rib or bead 26.

The doors are locked in their closed positions, as heretofore, by catches on the lower door engaged with the body of the cylinder. Since the blocks 8 are properly located for the purpose, they are made hollow so as to serve as casings or housings for the movable elements of the catches. The chambers in the blocks 8 open out through the outer ends of the blocks to permit the passage of the sliding bolt elements 29 of the catches.

It will thus be seen that we have produced a simple and novel door and hinge construction which, particularly in cooperation with a longitudinal metal partition in the cylinder, insure permanency of adjustment and alignment and thus make it practically impossible for any looseness to develop whereby a space will at times be open to catch and grip the laundry.

While we have illustrated and described with particularity only a single preferred form of our invention, we do not desire to be limited to the exact structural details thus illustrated and described, but intend to cover all forms and arrangements which come within the definitions of the invention constituting the appended claims.

We claim:

1. The combination with a washing machine cylinder having a door opening and a door sill at one side of said opening, the upper outer portion of the sill being cut away to give to the sill a step formation, of a Z-shaped hinge leaf resting on the tread of the step in the sill and having portions thereof lying against offset faces of the sill above and below said tread, said sill having a vertical slot extending downwardly therein from the plane of said tread, a tongue secured to the hinge leaf and fitted into said slot, and a bolt extending inwardly through the lower portion of said hinge leaf, through the sill and through said tongue.

2. The combination with a washing machine cylinder having a door opening and a sill for said opening, the top of the sill being cut away along the front to form at the front of the sill a seat disposed at a level lower than the top of the sill, of a metal partition resting on the sill, a fixed hinge leaf formed to comprise an element resting on said seat, an upwardly projecting element engaged with the portion of said sill extending upwardly from said seat and a downwardly projecting element engaged with the face of the sill below said seat, and means at the upper edge of said upwardly projecting element forming a lip overlying an edge of said partition and in engagement therewith.

3. The combination with a door sill in a washing machine cylinder, the top of the sill being cut away along the front to provide a seat at a level lower than the top of said sill, said sill having a slot formed therein extending downwardly from the inner margin of said seat, of an immovable hinge leaf having a central section adapted to rest on said seat and second and third sections projecting respectively upwardly and downwardly from said central section to lie against offset faces of the sill disposed above and below the said seat, means forming a retaining member on the hinge leaf extending downwardly from the inner margin of the central section thereof to lie within said slot, and a bolt adapted to secure the said third section of said hinge leaf to the outer face of said sill and to pass through an aperture in said retaining member.

4. The combination with a washing machine cylinder having a door opening and a door sill at the lower side of said opening, the upper outer portion of the sill being cut away to provide a substantially vertical wall set back from the outer face of the sill, of a partition resting on top of the sill and having its front marginal portion bent downwardly and disposed in contact with said vertical wall, a door hinge disposed to said sill and provided with a downward extension adapted to bear against the said downwardly bent part of the partition when the door is closed.

5. The combination with the cylinder of a
5 washing machine having a door opening, of an upper door and a lower door for said opening, hinges connecting the lower door to the cylinder at the bottom of the door opening, hinges connecting the upper door to the cylinder at the top of said opening, the hinge leaves fastened on the upper door projecting beyond the free edge of that door and overlapping the stationary leaves of the hinges on the lower door, each of the last mentioned leaves having therein a U-shaped groove, and each hinge leaf fastened on the upper door having a U-shaped rib adapted to fit into the groove in the corresponding hinge on the lower door.

6. A door for a washing machine cylinder composed of a long, flat, stiff metal plate having flanges projecting from the same side thereof at both long edges, and a pair of hinges each having a leaf in the form of a block fitting into the trough of the plate at one end, means securing said blocks to the plate, said blocks being hollow and having openings in the outer ends thereof, and door catches in the interior of the blocks provided with bolt elements projecting through said openings.

7. In a washing machine cylinder, in combination, a door sill having a face forming part of the periphery of the cylinder, said sill being cut away at its upper peripheral edge to provide a re-entrant angular notch, a fixed hinge member having an upper portion formed to follow the contour of said notch and a lower portion adapted to extend downwardly below said notch in contact with the peripheral face of said sill, means for fastening the said lower portion of said hinge member to said sill, and means secured to and projecting downwardly from the said upper portion of said hinged member adapted to coact with said fastening means for holding said upper portion of said fixed hinge securely within said notched portion of said wall.

8. In a washing machine cylinder, in combination, a door sill having a face forming part of the periphery of the cylinder, said sill being cut away at its upper peripheral edge to provide a re-entrant angular notch, a fixed hinge member having an upper portion formed to follow the contour of said notch and a lower portion adapted to extend downwardly below said notch in contact with the peripheral face of said sill, means for fastening the said lower portion of said hinge member to said sill, and means secured to and projecting downwardly from the said upper portion of said hinged member adapted to coact with said fastening means for holding said upper portion of said fixed hinge securely within said notched portion of said wall.

9. In a washing machine cylinder, in combination, a door sill having a face forming part of the periphery of the cylinder, said sill being cut away at its upper peripheral edge to provide a re-entrant angular notch, a fixed hinge member having an upper portion formed to follow the contour of said notch and a lower portion adapted to extend downwardly below said notch in contact with the peripheral face of said sill, means for fastening the said lower portion of said hinge member to said sill, a partition in said cylinder supported along one edge by the sill, and means formed upon the said upper portion of said fixed hinge member for retaining said partition in fixed engagement with said sill.

10. The combination with the cylinder of a washing machine having a door opening, of an upper door and a lower door for said opening, hinges connecting the lower door to the cylinder at the bottom of the door opening, hinges connecting the upper door to the cylinder at the top of said opening, the hinge leaves fastened on the upper door projecting beyond the free edge of that door and overlapping the stationary leaves of the hinges on the lower door, and co-operating members on said overlapping hinge leaves adapted to hold said hinge leaves against tangential relative movement.

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