July 21, 1931. C. M. OTIS 1,815,724

CASING DOORLOCK

Filed June 27, 1928

FIG. 1

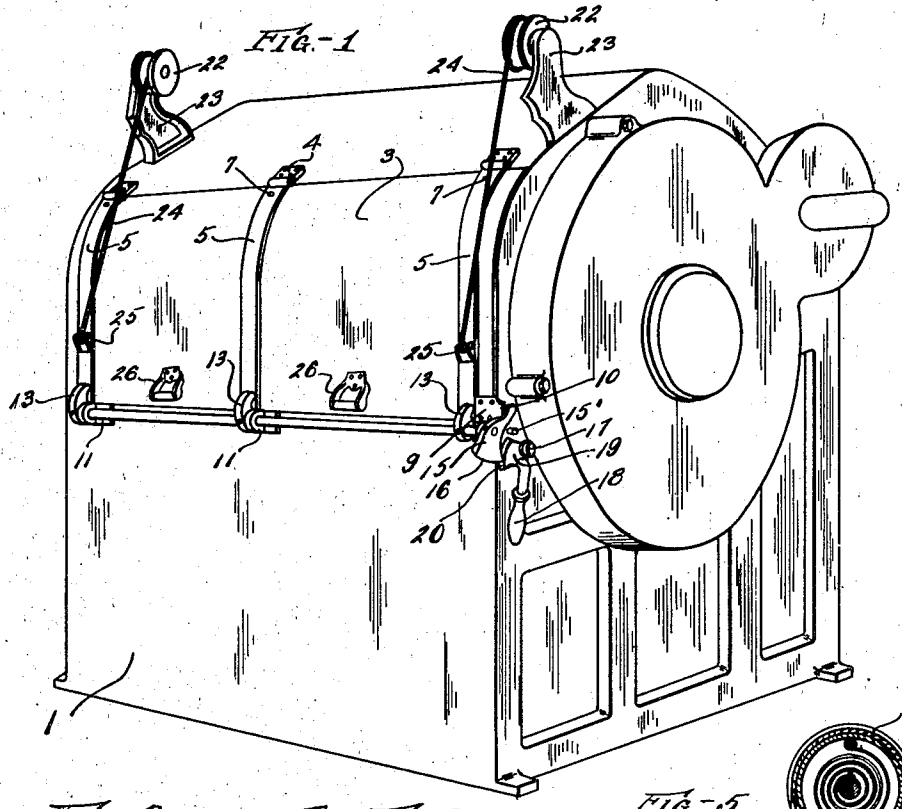


FIG. 3

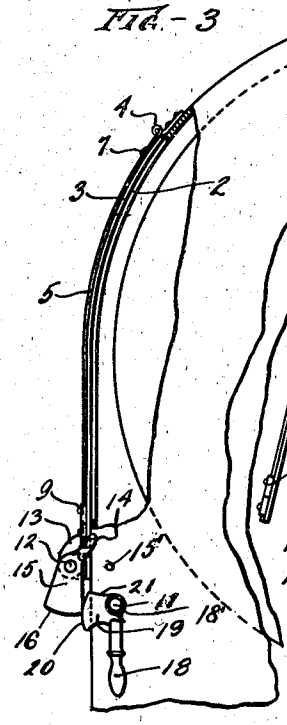


FIG. 2



FIG. 5

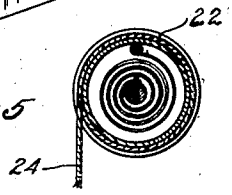


FIG. 4

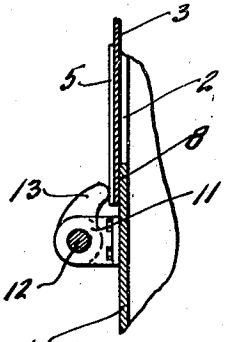
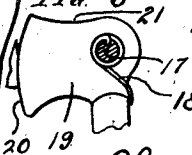


FIG. 6



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UNITED STATES PATENT OFFICE

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CASING DOORLOCK

Application filed June 27, 1928. Serial No. 288,588.

This invention relates to door clamping and latching mechanism for use on the doors of various machines such as washers, tumblers, driers and the like.

The object of the invention is to provide a door clamping and latching mechanism of a type such that, as the door is brought to final seated closed position, a plurality of clamping and latching devices are brought into engagement with the outer margin of the door ready for actuation by a single operating means, which further actuates said devices thereby firmly clamping and latching the door in closed position.

In the embodiment shown, the invention is applied to a swinging door and comprises a single operating member or shaft preferably carried by the outer casing adjacent the lower edge of the opening of the door and opposed to the hinge thereof and carrying a plurality of door engaging devices adapted, when the operating member or shaft is operated either by the door itself or by hand, to be brought into engagement with the door to firmly clamp and latch its free edge at several points against the casing.

Other features of the invention will be brought out in the following description, drawings and claims.

Referring to the drawings, Fig. 1 is a perspective view of the machine provided with my invention; Fig. 2 shows a forward portion of the casing with the door as it is approaching closed position; Fig. 3 is a similar view showing the door closed; Fig. 4 is a detailed sectional view through the door clamp and latch; and Fig. 5 is a detailed view of one of the retriever pulleys.

In the drawings, 1 represents a suitable outer casing adapted to house a revolving cylinder in a drying machine or in a little different arrangement to house or encase the cylinder of a washing machine or the like. Casings of this type are usually provided with a door opening 2, Fig. 3, adapted to be closed by either a sliding or a hinged door, the latter being shown in the drawings and indicated at 3. It is swingingly mounted by suitable hinges comprising casing members 4 and door straps 5 extending transversely of the door 3 and secured thereto or else allowed to remain loose but capable of swinging with the door. If these straps are loose from the door, then they should be connected by suitable rivets 7 or other securing means adjacent the hinge.

In the drawings, three of these straps 5 are shown and they extend down to the outer free edge of the door, as shown in Fig. 4. The door laps over the casing as at 8 and should be sealed thereagainst by devices applied at several points. In the arrangement shown, the clamping and latching mechanism to be described engages the ends of the three straps 5 in a manner shown in Fig. 4.

Secured to the door 3 near the lower edge is a clamp and latch operating plate 9 having a projection 10 extending well beyond the edge of the door and for the purpose of performing a preliminary actuation of the clamping and latching mechanism as will appear.

Secured to the outside of the casing and just below the lower edge of the door opening are a plurality of clamp and latch shaft bearing brackets 11, as shown in Fig. 4. These bracklets support a shaft 12 provided with a plurality of clamping and latching fingers 13, three being shown in the drawings, one for each of the straps 5. At the right hand end of the machine the shaft 12 extends outward where it is provided with an actuating member comprising an upwardly extending arm 14 and a downwardly extending clamping arm 15 having an arcuate shaped outer peripheral portion 16 concentric with the shaft 12. Cooperating with this peripheral portion 16 is an operator actuated latch mounted upon a pin 17 and comprising a hand lever 18 and a laterally extending cam portion 19 having an eccentric peripheral cam portion 20 and a lateral arc-

shaped portion 21 adapted for engagement with the peripheral portion 16. A spring 18′ may be used to assist the weight of the handle 18.

The door 5 may be counter-balanced by suitable retriever pulleys 22 mounted on brackets 23 above the door opening. The retriever pulley in Fig. 5 comprises an outer pulley portion 22 and a coil spring 22′ attached to the pulley and to the shaft 22″ secured to the bracket 23. These retriever pulleys receive cables 24 attached to clips 25 secured to the door. These retriever pulleys may be adjusted in any suitable manner to open the door automatically or just counter-balance its weight. The door is provided with suitable handles 26 arranged near the lower free edge.

Opening of the door causes the fingers, together with the shaft 12 and the actuating arm 15, to tend to move in a counter-clockwise direction, as shown in Fig. 2 and movement in this direction is limited by a stop 15′ in the form of a pin secured to the side of the casing.

As the door swings outward and moves the latching mechanism counter-clockwise as above described, its lower edge passes from between the fingers and the arm 14 which is a position with the clamping arm 15 against the stop 15′. The parts remain in this position by reason of the engagement of the arcuate edge portions 16 and 21 which are caused to produce a friction holding means due to the action of the weighted handle 18. A spring 18′ may be added for the purpose of augmenting the effect of the weighted handle.

In operation, assuming that the door is open, the operator grasps the handles 26 and brings the door down into closed position and, as it approaches complete closed position, the lug or projection 10 engages the trip or arm 14 and rotates the shaft 12, as shown in Fig. 4, in a clockwise direction bringing the fingers 13 into position so that they engage the lower ends of the strap 5. During this period of operation, the peripheral portion 16 of the clamping arm 15 slides along the surface 21 of the latching member until it passes beyond the same and its right hand corner engages the cam surface 20, this being brought about by the weight of the handle 18 with the help of the spiral spring 18′ which tend to move the latching member clockwise. This locks the door. For tighter clamping, the operator then grasps the handle 18, rotates the locking member in a clockwise direction and causes the cam surface, through the clamping arm 15, to rotate the shaft 12 and bring the fingers more tightly into engagement with the door thereby sealing it against the casing as shown in Fig. 4.

From the foregoing, it will be seen that upon closing of the door the door clamping and latching mechanism receive a clamping movement which latches the door even against the action of the retriever pulleys. At the same time the final lock mechanism has moved into the position where it can, from its cam surfaces, when actuated by the operator more firmly clamp and latch the door at a plurality of points throughout its length in completely closed position.

What I claim is:

1. In a machine of the class described, a casing having a door opening, a door carried by the casing and adapted to close said opening, clamping and latching mechanism therefor comprising a shaft, a door clamp carried thereby, an actuating member for said shaft and comprising a trip in the path of the door as it closes causing the clamping members to engage with the door, a clamping arm having a peripheral arc-shaped portion concentric with the shaft, and an operator operated latching device comprising an arc-shaped surface for engagement with the arc-shaped surface of the actuating member to hold the same against accidental movement, a cam surface for engaging the edge of said actuating member to clamp the device, and means tending to move the arc-shaped surface of said latching device into engagement with the arc-shaped periphery of said actuating member.

2. In a machine of the class described, a casing having a door opening, a door carried by the casing and adapted to close said opening, clamping and latching mechanism therefor comprising a shaft, a door clamp carried thereby, an actuating member for said shaft and comprising a trip in the path of the door as it closes causing the clamping members to engage with the door, a clamping arm having a peripheral arc-shaped portion concentric with the shaft, and an operator operated latching device comprising an arc-shaped surface for engagement with the arc-shaped surface of the actuating member to hold the same against accidental movement, a cam surface for engaging the edge of said actuating member to clamp the device, and means tending to move the arc-shaped surface of said latching device into engagement with the arc-shaped periphery of said actuating member and comprising a weighted handle.

3. In a machine of the class described, a casing having a door opening, a door carried by the casing and adapted to close said opening, clamping and latching mechanism therefor comprising a shaft, a door clamp carried thereby, an actuating member for said shaft and comprising a trip in the path of the door as it closes causing the clamping members to engage with the door, a clamping arm having a peripheral arc-shaped portion concentric with the shaft, and an operator operated latching device comprising an arc-shaped surface for engagement with the arc-

shaped surface of the actuating member to hold the same against accidental movement, a cam surface for engaging the edge of said actuating member to clamp the device, and means tending to move the arc-shaped surface of said latching device into engagement with the arc-shaped periphery of said actuating member and comprising a weighted handle and a spring.

In testimony whereof I hereby affix my signature.

CHARLES M. OTIS.