April 21, 1936. W. STROBRIDGE 2,038,066

WASHING MACHINE

Filed March 18, 1932 3 Sheets-Sheet 1

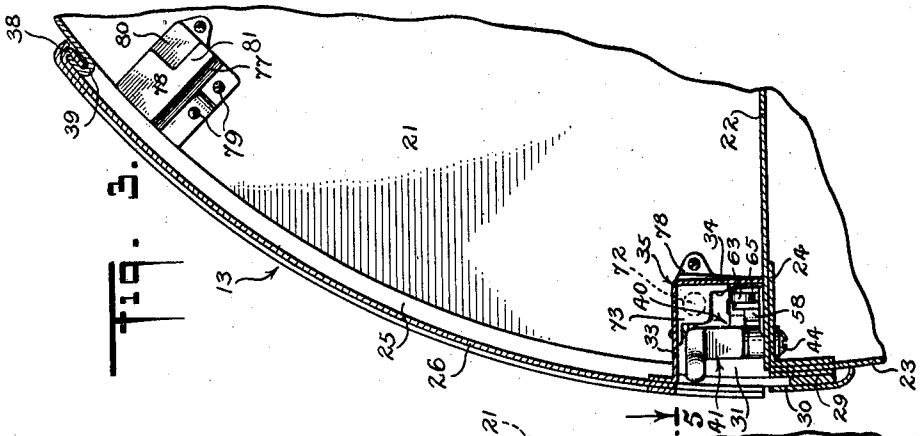


Fig. 5.

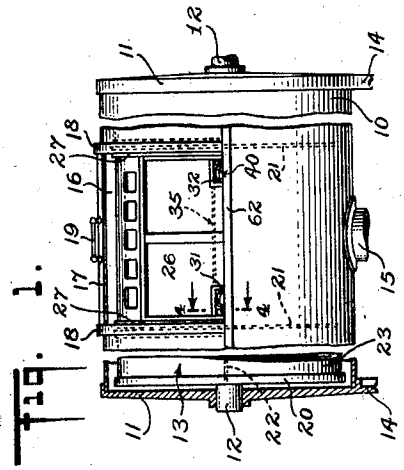


Fig. 1.

Fig. 2.

INVENTOR

William Strobridge

BY Jamney, Blair & Curtis

ATTORNEYS

April 21, 1936. W. STROBRIDGE 2,038,066

WASHING MACHINE

Filed March 18, 1932 3 Sheets-Sheet 2

Fig. 4.

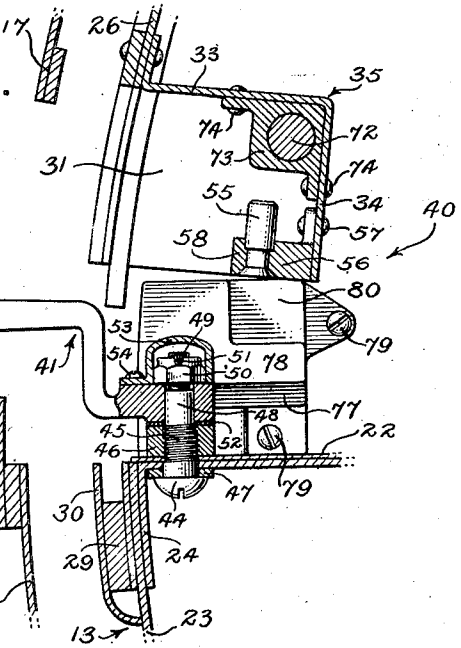


Fig. 8.

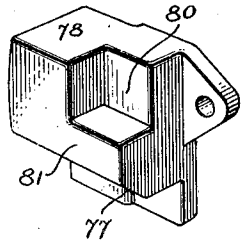


Fig. 5.

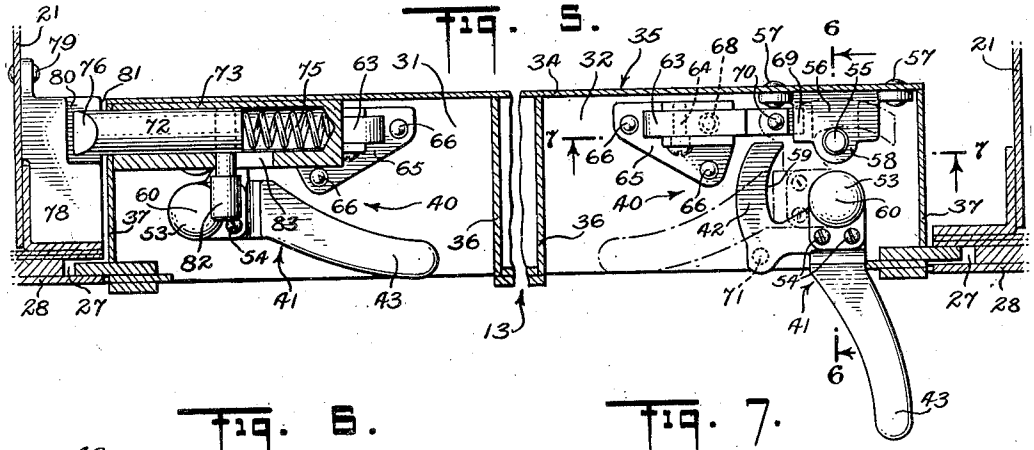


Fig. 6.

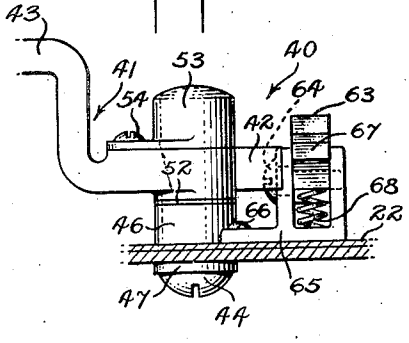
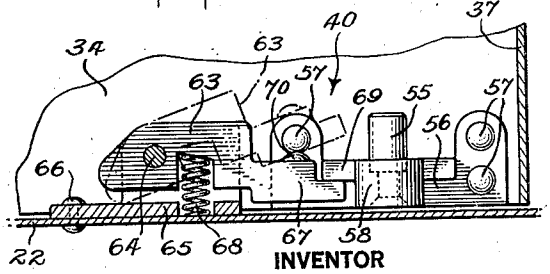


Fig. 7.



INVENTOR

William Strobridge

BY Janney, Bliss & Curtis

ATTORNEYS

April 21, 1936. W. STROBRIDGE 2,038,066

WASHING MACHINE

Filed March 18, 1932 3 Sheets-Sheet 3

Fig. 10.

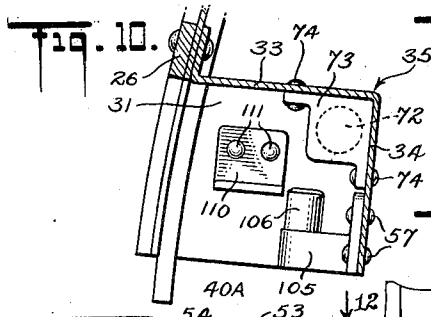


Fig. 14.

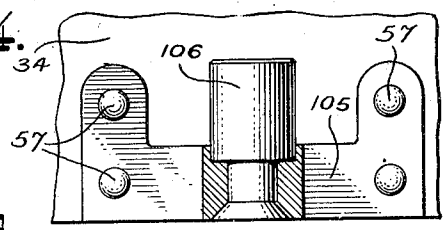


Fig. 9.

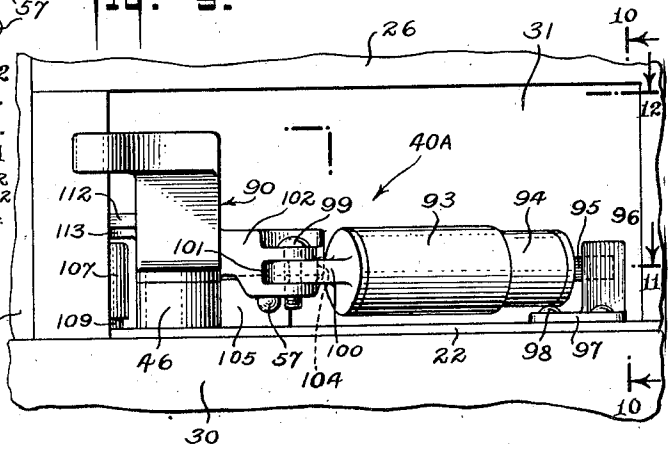


Fig. 13.

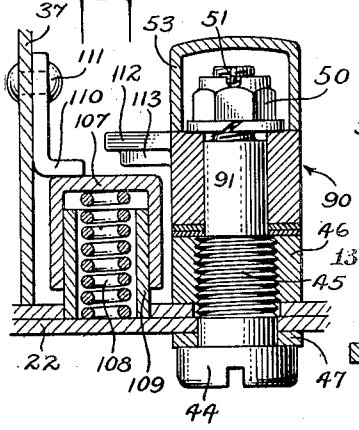
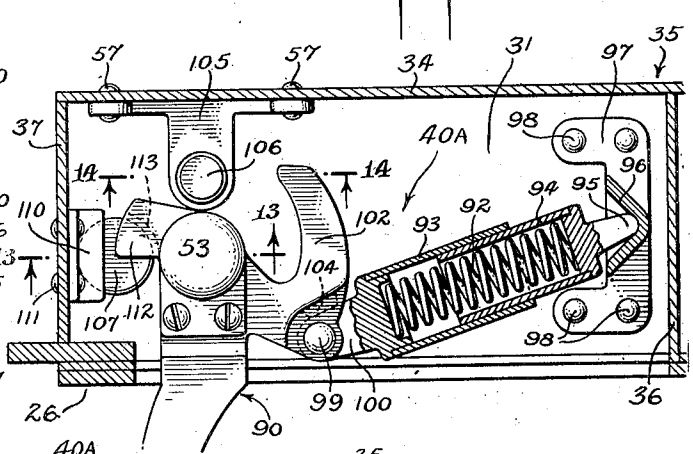


Fig. 11.



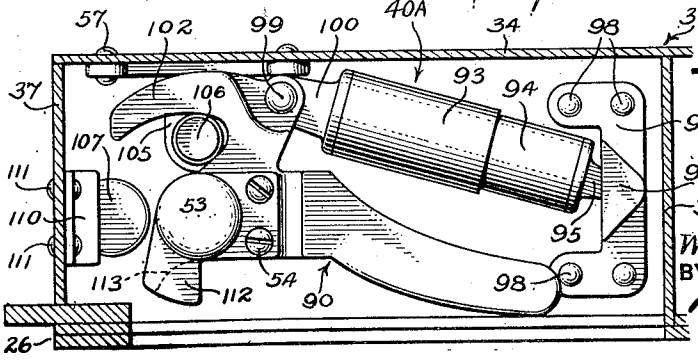


Fig. 12.

INVENTOR
William Strobridge
BY Janney, Blair & Curtis
ATTORNEYS

Patented Apr. 21, 1936 2,038,066

UNITED STATES PATENT OFFICE

2,038,066

WASHING MACHINE

William Strobridge, Syracuse, N. Y., assignor, by mesne assignments, to Reconstruction Finance Corporation, a corporation of the United States

Application March 18, 1932, Serial No. 599,654

14 Claims. (Cl. 68—18)

This invention relates to washing machines of the pocket cylinder type in which circumferentially sliding doors give access to the individual pockets thereof, and more particularly my invention relates to locking mechanism for said doors.

Washing machines of the character described commonly are provided with an outer casing or tub into which a washing or cleaning solution is charged and within which is rotatably mounted a cylinder for holding the goods to be treated. In recent practice these cylinders are divided transversely and longitudinally into a plurality of pockets to facilitate the handling of several batches of goods during one operation of the machine. The circumferential wall of each pocket is provided with an opening for receiving and discharging goods and each such opening is provided with a door preferably mounted to slide circumferentially thereover in ways formed along the edges of the opening. In order to give access to the cylinder doors similar doors are provided in the outer casing or tub. When the corresponding tub and cylinder doors are brought into registry by bringing the cylinder to loading position, access may be had from the exterior of the tub to the interior of the cylinder.

In order to avoid the possibility of inadvertently dumping goods from an open pocket into the interior of the tub, some plant managers insist that, after loading or unloading one of the cylinder pockets, the door of the said pocket shall be closed before the cylinder is "inched" around to bring the next pocket or line of pockets into registry with the tub opening. Also it should be noted that the factory laws of some States require that safety means be provided on washing machines to make it impossible under normal operating conditions to supply power to rotate the cylinder so long as a tub door remains open. To this end, washing machines are frequently provided with various devices which cooperate with each tub door to break the electrical drive circuit of the machine whenever the door is open; and only a small extent of door opening is necessary to accomplish this purpose.

It will also be realized that when the cylinder door is locked in closed position and the machine is set in operation, the doors are intermittently subjected to heavy pressure and blows from the contents of the pockets as the cylinder rotates; resulting in a tendency for the doors to undergo chattering or "chucking" movements in radial and circumferential directions, with consequent excessive wear of latches and guideways. It is important, therefore, that when the doors are locked in closed position they shall be held tightly enough to prevent such movements and wear.

It is, therefore, an object of my invention to provide simple and efficient means for tightly and positively locking the cylinder doors in closed position. A further object is to provide locking means of the character described having notable qualities of durability and simplicity of operation. A further object is to provide efficient means for preventing movement of the cylinder to an undesirable extent while a door thereof is open and for preventing closure of a tub door while such condition obtains. A further object is to provide effectively against inadvertent shifting of the locking mechanism while the machine is in operation. Other objects will be in part obvious and in part pointed out hereinafter.

The invention accordingly consists in the features of construction, combination of elements, and arrangements of parts as will be exemplified in the structure to be hereinafter described and the scope of the application of which will be indicated in the following claims.

In the accompanying drawings in which are shown two of the various possible embodiments of my invention:

Fig. 1 is a front elevation of a portion of a washing machine of the type described, with a part of the tub broken away and with a door of the tub in raised position showing the closed door of the washing cylinder in registry with the tub opening;

Fig. 2 is a fragmentary front elevation of the cylinder door, drawn to a larger scale than in Fig. 1, and showing generally one embodiment of my invention;

Fig. 3 is a cross-section taken substantially on line 3—3 of Fig. 2;

Fig. 4 is an enlarged section taken substantially on line 4—4 of Figs. 1 and 2, showing the doors of both tub and cylinder slightly raised from closed position;

Fig. 5 is an enlarged section taken substantially on line 5—5 of Fig. 2, showing the left-hand latching member in door locking position, and the right-hand latching member in door releasing position;

Fig. 6 is a sectional view taken substantially on line 6—6 of Fig. 5;

Fig. 7 is a sectional view taken substantially on line 7—7 of Fig. 5;

Fig. 8 is a perspective view of a keeper for holding the cylinder door in open position;

Fig. 9 is a front elevation of a left-hand door pocket showing a modified and preferred form of my door locking mechanism;

Fig. 10 is a view similar to Fig. 4, but showing the form of latch mechanism disclosed in Fig. 9;

Fig. 11 is a horizontal section taken on line 11—11 of Fig. 9 and showing the latch mechanism in door releasing position;

Fig. 12 is a horizontal section taken on line 12—12 of Fig. 9 but showing the latch mechanism in door locking position;

Fig. 13 is a vertical section taken on line 13—13 of Fig. 11; and

Fig. 14 is a vertical section taken substantially on line 14—14 of Fig. 11.

Similar reference characters refer to similar parts throughout the various views of the drawings.

The washing machine which I have shown as embodying my invention is seen in Fig. 1 as comprising a tub or liquid container 10 of substantially cylindrical form and provided with header members 11 providing bearings for the trunnions 12 of a washing cylinder 13. The header members 11 also provide standards 14 for supporting the machine; and a fluid outlet for the tub is indicated at 15. The tub may be provided with one or a plurality of aligned openings for giving access at different points to the interior of the washing cylinder. Such an opening is shown at 16. This opening is covered by a door 17 suitably mounted to slide in a circumferential path over the tub opening. Suitable framing, indicated at 18, is provided to supply guideways for the lateral edges of the tub door. A handle 19 serves to facilitate raising and lowering the door by hand.

The cylinder 13, which may be of any suitable length, has its ends closed by header members 20 and is divided longitudinally into a plurality of sections by means of transversely disposed partitions 21; and is further divided, preferably into sectorlike compartments, by longitudinally and radially disposed partitions 22. These latter partitions extend substantially from the axis of the cylinder to a point of intersection with the circumference thereof, at which point the partitions are secured to the circumferential wall or shell 23 of the cylinder by means of angular sheets 24. These parts may be secured together in any desired manner as by riveting or welding. This structure may be best seen in Fig. 3. Preferably three partitions 22 are provided, arranged at 120°, to divide the cylinder circumferentially into three sets of said sectorlike compartments, and the total number of these compartments will depend upon the length of the cylinder. Each said compartment is provided with a loading and discharging opening 25, of substantially rectangular shape, formed in the shell 23, the bottom of the opening being substantially in alignment with the intersection of a partition 22 with the cylinder sheet 23, and such opening will be of sufficient height to give ready access to the interior of the compartment.

Covering each said opening is a door 26 formed to the curvature of the cylinder and mounted to slide circumferentially over the opening 25, supported and guided in suitable guideways 27, which may comprise outer members 28 beneath which the edges of the door are guided. At its lower edge the door extends beyond the partition 22 and when closed is seated upon a sill member 29. The cylinder, at the lower edge of the door opening, is also provided with a plate 30 which forms a frame along the lower edge of the opening and overlies the edge of the door when the latter is in closed position.

Recesses or latch pockets 31 and 32 are provided adjacent the lower corners of the cylinder door. Provision is made for these pockets by cutting away the door plate, the upper wall 33 and rear wall 34 of the pockets being formed by an angle sheet 35 which preferably will extend the full length of the lower edge of the door. The ends of pockets 31 and 32 are closed by inner and outer transverse partitions 36 and 37. It will be clear then that these pockets are open at the front to the exterior of the cylinder and at the bottom to the interior of the cylinder, except when the doors are closed, when the bottom of the pockets will be closed by the partition wall 22. The door may have at its upper edge an inwardly and downwardly turned flange 38 adapted to interfit with an outwardly and upwardly turned flange 39 provided at the upper edge of the cylinder opening.

In order to lock the door in closed position and to press its lower and side edges tightly against the frame strip 30 and members 28, I have provided a latching mechanism indicated generally by the reference number 40 in Figs. 1 to 7, which show one form thereof, and by reference number 40A in Figs. 9 to 14, which latter figures show my latching mechanism in its preferred form.

Referring first, however, to Figs. 1 to 7, it will be seen that this latching mechanism comprises a latch lever 41 provided with a hook-shaped latch 42 and a handle 43. Latch lever 41 is pivotally mounted upon partition 22 by means of a pivot stud 44, threaded as at 45 to receive a nut 46. A lock washer 47 is preferably interposed between the head of the stud 44 and the partition. The latch lever 41 is seated upon a bearing portion 48 of the stud, which has a threaded end 49 adapted to receive a castellated nut 50 held in proper adjustment by means of a cotter pin 51. A suitable anti-friction washer 52 may be interposed between the latch lever and the nut 46. A cap or shield 53 is secured to the upper side of the lever by means of screws 54 the purpose of which is to prevent damage to goods through contact with the nut or cotter pin while loading or unloading the washing cylinder.

The hook portion 42 is adapted to be swung in behind and engage the inwardly facing surface of a post 55 upstanding from a keeper bracket 56, secured by rivets 57 to the rear wall 34 of the angle plate 35. Thus it will be understood that the keeper is mounted upon the door and is raised therewith; and the latch lever is mounted upon the partition 22 and is not raised when the door is opened. The latch 42, when the parts are in locked position, engages the keeper 56 to coact therewith in a direction to hold the door closed and this by reason of the bottom surface of the hook portion 42 overlying an upwardly facing portion 58 of the keeper. The hook 42 also engages the inwardly facing surface of post 55 of the keeper to exert an outward pressure upon the door, causing it to jam tightly against the edges of the door frame. In order to accomplish this jamming action the active latching surface 59 is formed eccentrically with respect to the axis 60 of the latch lever so that it serves as a cam when in engagement with the post 55 to draw the door tightly against its frame.

In Fig. 5 the latch in the lefthand pocket 31 is shown in its door locking position, that is, when

its hook member is engaged behind the keeper post 55. This position of the hook is shown in broken lines in Fig. 5 with reference to the right-hand pocket 32. In this position, it will be noted that the handle 43 lies wholly within the circumference of the cylinder. The latch lever in the righthand pocket of Fig. 5, that is, pocket 32, is shown in its door releasing position with the latch hook out of engagement with the keeper post 55, and here it should be noted that the handle 43 extends outwardly substantially in a radial direction from the circumference of the cylinder, and in this position crosses the path of travel of the outer tub door, as is indicated in Fig. 4, in which figure the tub door is indicated at 17 and the sill of the tub doorway at 62. It will be obvious by inspection of this figure that when the handle extends across the doorway of the tub, the cylinder cannot be rotated in one direction below the sill of the tub doorway and in the other direction beyond the lower edge of the open tub door. It will also be seen that so long as the latch stands in its door releasing position it will be impossible to close the tub door.

It is desirable to provide means positively preventing movement of the latch lever from its door releasing position to its door locking position while the cylinder door stands in any open position. In other words, means must be provided to make it necessary to close the cylinder door before the latch member can be thrown to door locking position to ensure that the tub door cannot be closed so long as the cylinder door remains open even to a slight extent. Such means is provided in the embodiment of my invention shown in Figs. 1 to 7 by means of a trigger 63 best shown in Figs. 5, 6 and 7.

This trigger is pivoted as at 64 between the walls of a clevis member 65 which is secured to cylinder partition 22 as by means of rivets 66. Thus the trigger is capable of a limited up-and-down rocking movement and is provided at one end with an abutment 67 adapted to lie in the pathway which the hook 42 must follow in moving from door releasing to door locking position. The trigger is normally held in such interfering position, that is, in its upper position, by means of a spring 68. Means is provided for depressing the trigger so that its abutment 67 will lie below the path of the hook 42 when the door is closed, thus enabling operation of the latch lever when the door is in closed position. The means for depressing the trigger is a rib 69 formed upon the latch keeper 56, which is so disposed that when the door is moved to closed position the rib 69 will engage the end of the trigger and carry the trigger to its inoperative position, as shown in full lines in Fig. 7. The trigger as shown in that figure lies in its depressed or inoperative position.

In order that during the operation of the machine, while the latch lever is in its door locking position, the vibration of the cylinder will not tend inadvertently to release the latch lever, the upper side of the trigger is provided with a rounded detent member 70 adapted to be received within a recess 71 formed on the underside of the latch hook. The trigger spring 68 will hold this detent within the recess 71 with sufficient pressure to prevent the latch lever from jarring loose, but the pressure of the spring 68 may be easily overcome by the operator when he desires to turn the latch lever to door releasing position.

So far I have only described parts related with latch mechanism for holding the door in closed position. Other means, however, are provided for retaining the door in open position in order to make it easy to load and unload a compartment of the cylinder. Such means consist of a simple bolt 72 mounted to slide in a housing 73 secured in the upper rear corner of the latch pocket by means of rivets 74, as clearly shown in Figs. 4 and 5. One only of these bolts need be provided to each door and I have positioned such a bolt in the lefthand pocket 31 on the drawings. This bolt is urged to the left as shown in Fig. 5 by means of a spring 75 and is provided at its left or outer end with a beveled surface 76 adapted to cooperate with a beveled surface 77, Figs. 3 and 8, of a bolt keeper 78 which is secured by means of rivets 79 to the transverse partition wall 21 at a point near the upper edge of the door opening. This position is clearly shown in Fig. 3. A perspective view of the keeper is shown in Fig. 8, and it will be seen that it is provided with a bolt receptacle 80 into which the bolt is pressed by its spring 75 when the door has been raised to the proper level. As the door lifts the beveled surface 76 of the bolt first comes in contact with the beveled surface 77 of the keeper, then slides over surface 81 of the keeper and springs into receptacle 80, in which position the bolt prevents lowering of the cylinder door. The bolt may, however, be retracted against the pressure of spring 75 manually by means of a post 82, which is secured to the bolt 72 and passes through a slot 83 provided in bolt housing 73.

It will be noted that in Figs. 2 and 5 I have also shown a bolt keeper 78 positioned adjacent the lower edge of the door opening. The use of this keeper is optional and when used is secured to partition 21 in the same manner as the upper keeper. In this position, however, the keeper serves no purpose in preventing movement of the door, as the receptacle 80 is open at the top and the bolt may be lifted clear of it at any time without retraction. Its only purpose when used is to serve as a guard for the end of the bolt to prevent goods being washed from becoming entangled with the bolt and damaged thereby.

As stated above, a preferred embodiment of my invention is disclosed in Figs. 9 to 14 of the drawings. In these figures, it will be understood, the means for holding the door in open position, namely, bolt 72 and its keeper 78, is unchanged, but certain features of the latch mechanism for holding the door closed are different. In these figures a latch lever 90 is mounted in identically the same manner as is the latch lever 41 hereinbefore described. As the mounting of latch lever 90 upon its pivot 91 is clearly shown in Fig. 13, it is thought that no further detailed description is necessary in this regard. It should be noted, however, that in this modification I have shown means for positively but resiliently holding the latch lever either in door locking or door releasing position. This means comprises a compression spring 92 housed within telescoping sleeves 93 and 94. Sleeve 94 is provided with a bearing member 95 seated so as to rock freely in a socket 96 formed upon a socket bracket 97 attached to the partition 22 by means of rivets 98. Sleeve member 93 is pivotally attached to latch lever 90 by means of a pin 99 which passes through an extension 100 of sleeve 93 and through a clevis 101 formed at the back of the hook portion 102 of the latch lever, as will be clearly understood by reference to Figs. 9, 11 and 12. The back of the hook 102 is also provided with an abutment 104 adapted to engage the side of sleeve

extension 100 to limit the outward swing of the latch lever 90 when it is thrown to door releasing position.

The compression spring 92 serves as a toggle spring to complete the throw of the latch lever 90 in either direction after the parts have been moved beyond a line passing through the pivotal points of lever 90 and sleeve bearing 95. This construction ensures that the latch lever will be thrown to its extreme inward position when the door is locked and to its extreme outward position when the door is unlocked, and it resiliently prevents inadvertent movement of the latch lever from either of its said positions. Hook 102 cooperates with a keeper 105 having a keeper post 106 identical in every respect with the similar parts shown in the earlier views of the drawings.

In this form of my invention, however, I have provided quite different means for preventing movement of the latch lever from door releasing to door locking position when the door is in other than closed position. This means comprises a plunger 107 normally pressed upwardly away from cylinder partition 22 by means of a compression spring 108 which bears against the underside of the plunger and against partition 22. This spring is surrounded by a sleeve 109 which serves as a guide for plunger 107. In Fig. 13 plunger 107 is shown in a depressed position, in which position it is held by the engagement therewith of an abutment member or shelf 110 secured as by rivets 111 to partition wall 31, that is, to the outer end wall of latch pocket 31. Latch lever 90 is provided with a wing 112 having a portion of its underside cut away to form an abutment surface 113 adapted to cooperate with plunger 107 to hold the latch lever in door releasing position when the cylinder door is open.

This operation of these parts is clear from the drawings, for it will be seen that if the door is raised the abutment member 110 will lift clear of plunger 107, permitting the same to rise through the expansion of compression spring 108 into engagement with the undersurface of wing 112, where it is undercut to form the abutment 113. In this position the side of the plunger will engage abutment 113 to prevent movement of the latch lever into door locking position for as long as the door remains open. This means for preventing operation of the latch lever functions in many respects as does the trigger in Figs. 1 to 8, but is more positive and has certain structural and mechanical advantages thereover.

In operation, referring first to Figs. 1 to 7 of the drawings, starting with the supposition that doors of both cylinder and tub are closed and that the machine has completed treatment of a batch of goods, in order to remove a batch of goods from any pocket of the cylinder it is first necessary, after stopping rotation thereof, to raise the tub door appropriate to that pocket. When this has been done the operator may reach with his two hands the pair of latch levers occupying respectively latch pockets 31 and 32 of the door and swing them outwardly to the position shown in Fig. 4. This releases the door and permits it to be raised to its fully opened position where the bolt 72 engaging receptacle 80 of keeper 78 holds it against falling. The goods may now be removed from the compartment and a new batch substituted, after which the operator may release bolt 72 by means of post 82 and pull the door down to its closed position. Then the pair of latch levers belonging to that door may be thrown to their door locking position with their handles fully received within their respective latch pockets. This position of the two handles is best shown in Figs. 2 and 3.

As soon as the cylinder door has been raised slightly, as just described, the trigger 63, which up to this time has been held down by the wing 69 of keeper 56 will be rocked by its spring 68 to a position to prevent latch lever 41 being thrown to door locking position. It will be remembered that in the door releasing position handle 43 extends outwardly through the door opening of the tub to prevent closing of the tub door. As has been mentioned hereinbefore, it is often desirable to control the power circuit of the machine by means of switches positioned to cooperate with each of the tub doors so that even a slight raising of any tub door will prevent normal power operation of the washer cylinder. With such an arrangement, it is impossible to apply power to cause normal cylinder rotation while the cylinder door is open. When, however, the cylinder door is again brought to closed position, the trigger will be removed from its interfering position, as hereinbefore described, and the latch lever may be swung to its locking position, in which position it not only overlies the keeper 56 but also has a camming action upon the keeper post 55 to force the outer edge of the door against the strips framing the outer edge of the door opening; and it will be observed that the trigger member serves also by means of the cooperating detent parts 70—71 to prevent accidental shifting of the latch lever from door locking to door releasing position.

With regard to the form of my invention shown in Figs. 9 to 14, it is thought that there is no need for further description of operation, as such operation is quite obvious from what has gone before.

It should be understood that an operator may change the position of the cylinder even though a cylinder door is open, by manually depressing either triggers 63 or plungers 107 (as the case may be) and turning the latch levers to door locking position. The cylinder may then be "inched" to its new position by hand or in any other suitable manner.

In the foregoing description and the claims of this specifiction applicant has referred to the inwardly and upwardly facing surfaces of the latch keeper 56. By "inwardly facing" is meant the surface of post 55 which is turned toward the interior of the cylinder. By "upwardly facing" is meant the upper surface of the latch keeper lying behind the post 55.

From the foregoing it will be understood that my invention is one well adapted to attain the ends and objects hereinbefore set forth in a thoroughly efficient manner, and has other advantages inherent in the form and structure thereof. It will be seen that all of the parts employed in either form of my door locking mechanism are simply designed and may be easily manufactured, and that their installation may be readily accomplished without the need of more than ordinary skill.

As many possible embodiments may be made of the above invention without departing from the scope thereof, it is to be understood that all matter herein set forth or shown in the accompanying drawings is to be interpreted as illustrative and not in a limiting sense.

I claim:

1. The combination with a washing cylinder

having a door slidable circumferentially of the cylinder to cover an opening therein, of a latch keeper mounted on said door, a latch pivotally mounted on said cylinder and movable into co-operative relation with said keeper to lock said door in closed position and movable out of co-operative relation with said keeper to release said door, and movable means on said cylinder normally held in a position to prevent operation of said latch from door releasing to door locking position.

2. The combination with a washing cylinder having a door slidable circumferentially of the cylinder to cover an opening therein, of a latch keeper mounted on said door, a latch pivotally mounted on said cylinder and movable into co-operative relation with said keeper to lock said door in closed position and movable out of co-operative relation with said keeper to release said door, and spring biased movable means on said cylinder normally held in a position to prevent operation of said latch from door releasing to door locking position.

3. The combination with a washing cylinder having a door slidable circumferentially of the cylinder to cover an opening therein, of a latch keeper mounted on said door, a latch pivotally mounted on said cylinder and movable into co-operative relation with said keeper to lock said door in closed position and movable out of co-operative relation with said keeper to release said door, means on said cylinder normally acting to prevent movement of said latch from door releasing to door locking position, and means on said door adapted to actuate said last means for rendering the same inoperative when said door is moved to closed position.

4. The combination with a washing cylinder having a door slidable circumferentially of the cylinder to cover an opening therein, of a latch keeper mounted on said door, a latch pivotally mounted on said cylinder and movable into co-operative relation with said keeper to lock said door in closed position and movable out of co-operative relation with said keeper to release said door, a trigger pivotally mounted on said cylinder in the path of travel of said latch and adapted to restrain said latch from door locking position when said door is open, and means on the door for moving said trigger to enable said latch to be operated when said door is closed.

5. The combination with a washing cylinder having a door slidable circumferentially of the cylinder to cover an opening therein, of a latch keeper mounted on said door, a latch pivotally mounted on said cylinder and movable into co-operative relation with said keeper to lock said door in closed position and movable out of co-operative relation with said keeper to release said door, and an abutment movable on said cylinder to a position to lock said latch in door releasing position when said door is open, and means for rendering said abutment inoperative to lock said latch when said door is closed.

6. In a machine of the class described, in combination, an outer tub, a cylinder rotatably mounted in said tub, means comprising a radial partition within said cylinder for forming a compartment therein, a door slidably mounted circumferentially of said cylinder for giving access to said compartment, and an internal hollow rib on said door cooperating with an opening in said door and with said partition to form a housing for door locking mechanism, said mechanism comprising a latch lever pivotally mounted on said partition and a keeper secured to said rib, said latch lever being movable into and out of engagement with said keeper when said door is closed.

7. In a machine of the class described, in combination, an outer tub, a cylinder rotatably mounted in said tub, means comprising a radial partition within said cylinder for forming a compartment therein, a door slidably mounted circumferentially of said cylinder for giving access to said compartment, an internal hollow rib on said door cooperating with an opening in said door and with said partition to form a housing for door locking mechanism, said mechanism comprising a latch lever pivotally mounted on said partition and a keeper secured to said rib, said latch lever being movable into and out of engagement with said keeper when said door is closed, a door on said tub adapted to register with said cylinder door, a handle on said latch lever adapted in one position to project through said opening in said cylinder door to prevent closing of said tub door when said latch lever is disengaged from said keeper, and in a second position to lie within the circumference of said cylinder when said latch is engaged with said keeper, and means normally preventing movement of said handle to said second position so long as the cylinder door remains open.

8. In a machine of the class described, in combination, an outer tub, a cylinder rotatably mounted in said tub, means comprising a radial partition within said cylinder for forming a compartment therein, a door slidably mounted circumferentially of said cylinder for giving access to said compartment, an internal hollow rib on said door cooperating with an opening in said door and with said partition to form a housing for door locking mechanism, said mechanism comprising a latch lever pivotally mounted on said partition and a keeper secured to said rib, said latch lever being movable into and out of engagement with said keeper when said door is closed, and means mounted on said door within said housing for holding said door in open position.

9. In a washing machine of the class described, in combination, a cylinder having an opening therein, a door mounted to slide circumferentially over said opening, means framing exteriorly the outer edges of said opening, a latch keeper secured in a recessed portion of said door adjacent its lower edge upon a portion of said door disposed inwardly of said opening, and a latch lever mounted on said cylinder at the lower edge of said opening to pivot in a substantially radial plane into cooperative relation with said keeper, said keeper and said latch having surfaces adapted to engage to lock said door in closed position and other surfaces adapted to engage to force the edges of said door outwardly against said framing means to prevent play of said door in a radial direction.

10. In a washing machine, in combination, a tub having a closable opening in the wall thereof, a cylinder rotatably mounted in said tub, a a partition extending longitudinally of said cylinder and intersecting the circumference thereof, an opening in said cylinder having an edge adjacent said partition and registerable with said tub opening, a door mounted to slide circumferentially over said cylinder opening toward and away from said partition intersection, means forming pockets adjacent the lower corners of said door, said pockets being open toward the

exterior of said cylinder and having a side in each formed by said partition when the door is closed, each of said pockets having positioned therein locking means for said door comprising a movable part on said partition and a fixed part on said door, a spring-biased means adapted normally to render said movable part of said locking means incapable of movement into the circumferential plane of said fixed part when the door is open, and means on said movable part adapted to prevent closing of said tub opening under said normal conditions.

11. In a washing machine, in combination, a tub having a door, a cylinder rotatably mounted in said tube and having a sliding door adapted to register with said tub door, a latch member mounted on said cylinder and movable to one position to hold the cylinder door closed and movable to a second position to enable said cylinder door to be opened, releasable means on the cylinder in the path of travel of the cylinder door for normally preventing actuation of said latch member when the door is in other than closed position, and means on said cylinder door for operating said releasable means when said door is moved to closed position.

12. The combination with a washing machine cylinder having a door slidable circumferentially of the cylinder to cover an opening therein, of a latch keeper mounted on said door, a latch pivotally mounted on said cylinder and movable into cooperative relation with said keeper to lock said door in closed position and movable out of cooperative relation with said keeper to release said door, an abutment on said cylinder, and a spring member interposed between said abutment and said latch and forming with said latch a toggle movable by and with said latch from side to side beyond the straightline position of said toggle to seat said latch and resiliently retain the same in either its locking or releasing position.

13. In a washing machine, in combination, a tub having a door, a cylinder rotatably mounted in said tub and having a sliding door adapted to register with said tub door, a latch member mounted on said cylinder and movable to a position to hold said cylinder door in closed position and also movable to a door-releasing position, a spring biased abutment movably mounted on said cylinder and when said door stands open engageable by said latch member to hold said member in its said door-releasing position, and means on said door adapted to engage said abutment as said door is being closed and move said abutment out of engageability by said latch member, whereby the latch member is released for movement to its door-holding position.

14. In a washing machine, in combination, a tub having a door, a cylinder rotatably mounted in said tub and having a sliding door adapted to register with said tub door, a latch member mounted on said cylinder and movable to a position to hold said cylinder door in closed position and also movable to a door-releasing position, a spring biased abutment movably mounted on said cylinder and when said door stands open engageable by said latch member to hold said member in its said door-releasing position, means on said door adapted to engage said abutment as said door is being closed and move said abutment out of engageability by said latch member, whereby the latch member is released for movement to its door-holding position, and means on said latch member for preventing the closing of said tub door when said latch member is in door-releasing position.

WILLIAM STROBRIDGE.