

July 7, 1942.

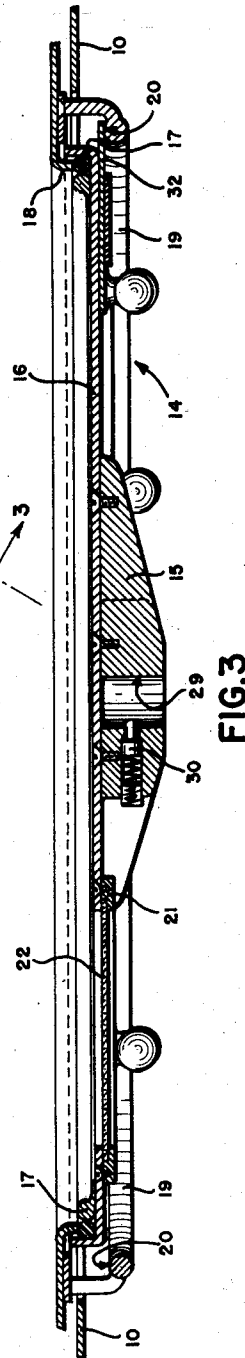
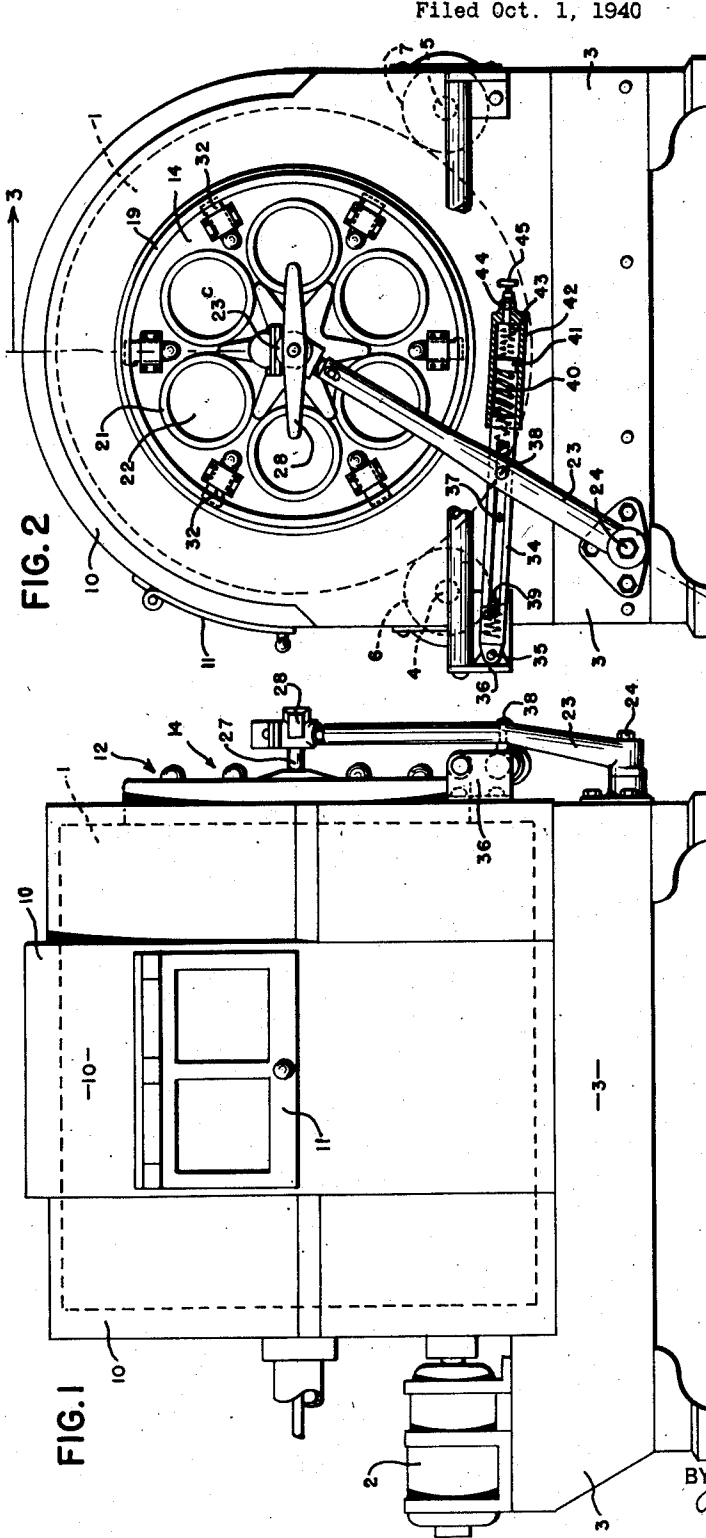
L. ZIMARIK

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DOOR CONSTRUCTION FOR WASHING MACHINES AND THE LIKE

Filed Oct. 1, 1940

2 Sheets-Sheet 1



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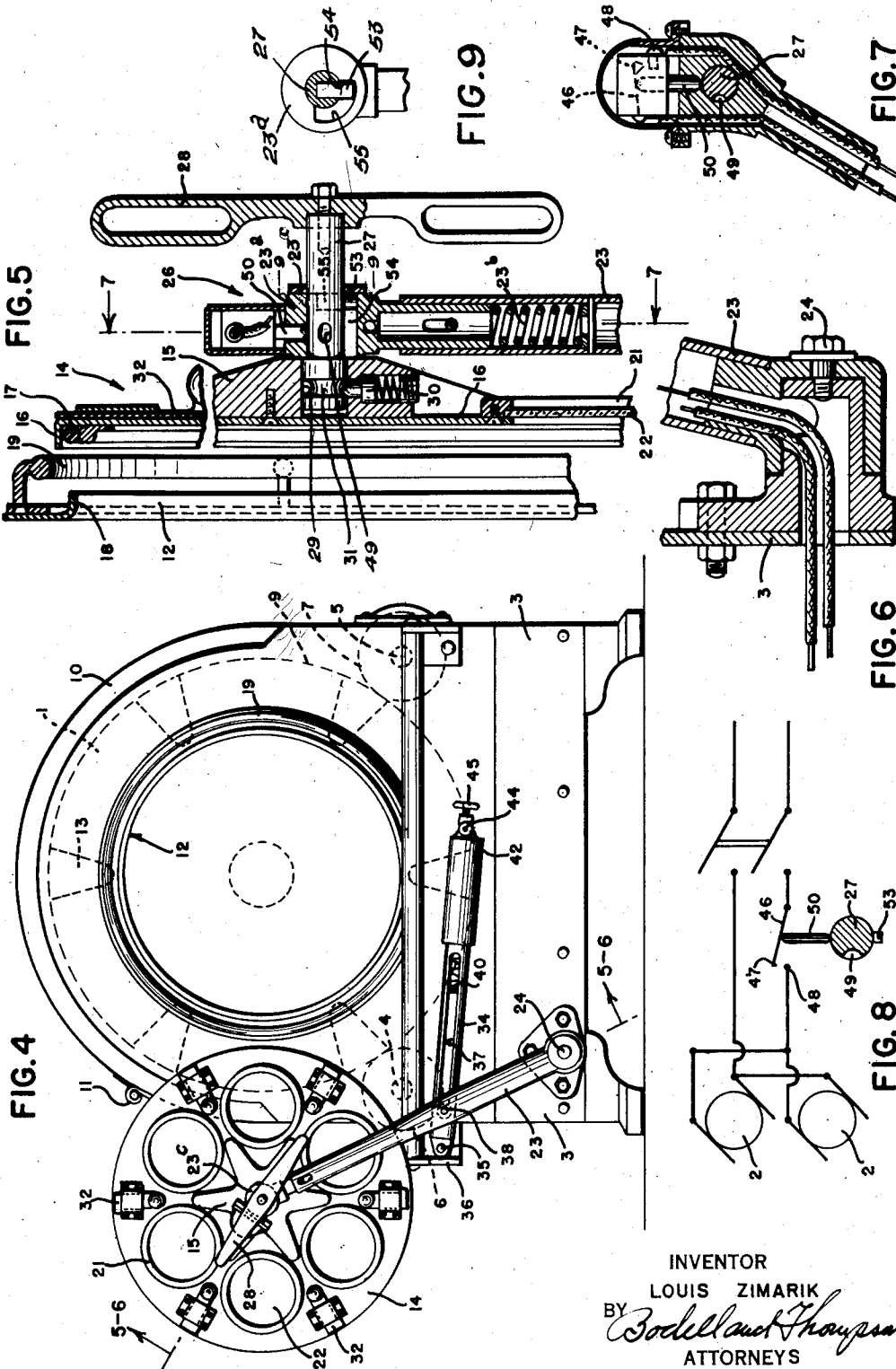
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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

2,288,930

DOOR CONSTRUCTION FOR WASHING MACHINES AND THE LIKE

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Application October 1, 1940, Serial No. 359,266

20 Claims. (Cl. 68—144)

This invention relates to machines in which articles are subjected to treatment by a fluid or liquid in a rotatable container or a container movable about an axis, and having a loading and unloading door opening in one end, and has for its object a door for the door opening, which rotates with the container and door supporting and operating mechanism or carrier operable to free the door from the container and shift it to open position.

It further has for its object a supporting and operating door carrier mechanism which is detachable from the door, when the door is closed, and also means by which, when the door is fully closed, the container can be rotated by the driving mechanism only when the door support or carrier is uncoupled from the closed door, or means by which the door can not be rotated by the container when the door is open.

Other objects appear through the specification.

The machine in which the invention is illustrated as embodied in a machine for cleansing articles, as a washing machine, such as is used in laundries, and dry cleaning establishments, but the door construction is usable in any machine in which articles are treated or subjected to processes or treatments, as for example, in dyeing, tanning, and other machines, in which articles are tumbled during the treatment thereof. The machine for brevity's sake will hereinafter be referred to as a washing machine.

The invention consists in the novel features and in the combinations and constructions hereinafter set forth and claimed.

In describing this invention, reference is had to the accompanying drawings in which like characters designate corresponding parts in all the views.

Figure 1 is a side elevation, parts being omitted of a washing machine embodying this invention.

Figure 2 is a front elevation looking to the left in Figure 1.

Figure 3 is an enlarged diametrical sectional view through the door and the contiguous portion of the container or drum, Figure 3 being taken approximately on line 3—3, Figure 2.

Figure 4 is an elevation similar to Figure 2 showing the door in open position.

Figures 5 and 6 are enlarged detail sectional view taken on the plane of line 5—6, Figure 4, Figure 5 showing the coupling between the upper end of the swinging carrier arm or support for the door and the door, and the switch operated

by the coupling for controlling the flow of current to the motors forming part of the actuating mechanism for the container; and Figure 6 being an enlarged sectional view through the lower pivoted end of the swinging carrier arm for the door.

Figure 7 is an enlarged sectional view on line 7—7, Figure 5.

Figure 8 is a diagrammatic view illustrating the wiring system, and particularly the control of the flow of current to the electric motor by switches operated by the operation of the support or mounting for the door, Figure 8 also showing the means for preventing closing of the switch in the motor circuit except when the door carrier is uncoupled from the door.

Figure 9 is a sectional view on the plane of line 9—9, Figure 5.

The washing machine here shown is of the so-called shell-less type and embodies a container 1 usually cylindrical in general form and mounted to rotate about a substantially horizontal axis. In the washing operation, the container is usually rotated a predetermined number of times in one direction, then a predetermined number of times in the opposite direction, this alternate operation being repeated through the entire treating or washing period.

As here shown, there are two electric motors, as 2 (Figure 1), mounted upon the base 3 of the machine and having their shafts connected respectively to shafts 4, 5 extending on opposite sides of the lower portion of the container 1 and provided with rollers 6, 7 respectively, which frictionally engage the peripheral track surfaces 9 on the end zones of the container or drum 1. The motors are reversible in order to reverse the rotation of the container 1. The reversing mechanism forms no part of this invention.

The machine here illustrated is also provided with a trough or shield 10 around the intermediate portion or zone thereof, this covering dump valves in the peripheral wall of the container. The shield is provided with a suitable door 11 for the purpose of inspecting the valves. This shield and the dump valves forms the subject matter of my pending application, Serial Number 343,231, filed June 29, 1940.

The container 1 is formed with an axial loading and unloading door opening 12 in one end, this being of as large radius as possible, and it being here shown as of a radius equal to the distance from the axis of the drum to the apices of internal ribs 13 in the drum, the ribs being for the purpose of tumbling the articles in the con-

tainer during the rotation of the container and also agitating the cleansing fluid and working it through the tumbling articles. It will be understood that a predetermined amount of cleansing liquid, solvent or agent is supplied to the container 1, which performs its work during the rotation of the container. At the end of any treating operation, the dump valves in the peripheral wall of the container 1, covered by the shield 10, are opened, and the liquid flows or is thrown out, while the drum 1 is rotating, into the shield 10 which communicates with a suitable drain, not shown.

14 designates the door for closing the opening 12, this door being supported to have successive axial and lateral opening movements, and successive lateral and axial closing movements. The door is discoidal in general form and is here illustrated as comprising a hub and an annular or discoidal web or body 16 provided with an inwardly facing annular channel at its rim for receiving a gasket 17, the gasket coacting, when the door is closed, with an outwardly extending lip or flange 18 on the end wall of the container 1 around the door opening 12. The end wall of the container 1 is also formed with an annular flange 19 around the door opening, the flange terminating in an inwardly extending lip 20 for a purpose to be hereinafter explained. The door is also preferably provided with an annular series of frames 21 in which transparent panels 22 are mounted.

The support or carrier for the door is entirely independent of the container 1 and is movable laterally relatively to the container to carry the door into and out of alinement with the door opening. The carrier includes a coupling which is axially shiftable to carry the door axially into and out of fully closed position. The coupling is operable to uncouple from the door, when the door is closed, and permits the door support or carrier to be swung laterally out of the way of the door at one side of the container.

As here illustrated, the carrier comprises a swinging arm 23 pivoted at 24 to the frame base 3 and extending upwardly therefrom, the pivot being located below the container 1 and at one side of the vertical plane of the axis of the container. 26 designates a coupling carried at the upper end of the swinging arm 23, this being an axially movable stud 27 mounted in a head 23^a at the upper end of the arm 23 and having a suitable operating handle 28, the stud 27 being movable into an axial bore 29 in the hub 15 of the door. It is interlocked therein by a releasable latch here shown as an impositive locking means, as a spring-pressed poppet 30, mounted radially in the hub 15 and coacting with a peripheral groove 31 in a head at the inner end of the spindle 27, the poppet and the walls of the groove being shaped to coact with a camming action. By impositive locking means is meant a latch means which will unlatch or release when sufficient force is applied thereto to overcome a yielding force tending to hold it latched.

In operation, assuming that the door is closed or is in the position shown in Figure 3, the coupling 26 is pulled outwardly or to the right (Figure 5) moving the door axially from closed position (Figure 3) to that shown in Figure 5, and then the door is moved laterally causing the carrier 23 to swing from the position shown in Figure 2, to that shown in Figure 4. To close the door, it is swung from the position shown in

Figure 4 to that shown in Figure 2, and the coupling 26 shifted inwardly axially relatively to the arm 23, shifting the door axially therewith from the position shown in Figure 5 to that shown in Figure 3, and then the bolts or locking means to be presently described, operated to locked position, and the operating member 28 pulled axially outward overcoming the holding action of the spring-pressed poppet 30, and thus freeing the coupling member and the carrier 23 from the door, so that the arm 23 and coupling member can be swung into the position shown in Figure 5, but with the door remaining in closed position on the container 1.

The bolts or locking means comprises radially movable, and preferably, manually operable, latches or bolts 32 suitably mounted on the door and shiftable radially outward into a position in which they interlock behind the lip 20 of the flange 19, as seen in Figure 3, in a radial position of the door.

Buffer means are provided for cushioning the lateral opening and closing movements of the door and the carrier 23, as the door and the carrier approach the ends of the lateral opening and closing movements. This buffer means, as shown in Figures 2 and 4, comprises a member or bar 34 pivoted at one end at 35 to a bracket 36 carried by the base 3 and extending transversely of the arm 23, it having a lengthwise slot 37 through which extends a pin or follower 38 on the carrier 23. Buffer springs 39, 40 are carried by the member 34 at opposite ends of the slot, which the pin or follower encounters when it approaches the middle of its movement in either direction. The buffer spring 40, which cushions the lateral closing movement of the door toward closed position and locates it substantially in axial alinement with the door opening acts against a piston 41 in an air dash pot cylinder 42 carried by the member 34, the piston being preferably backed up by a spring 43. Also, the air dash pot cylinder has an air outlet port 44 which may be opened more or less by a regulating valve 45. The valve 45 is usually a tapered, needle or bleeder valve.

The head 23^a in which the coupling stud 27 is mounted is yieldingly mounted on the arm 23 to have a radial compensating movement relative to the axis of the carrier to permit the door to center relatively to the door opening. The buffer springs 39, 40 and the dash pot of the guide bar 34 also permit a centering action of the door in lateral directions and the head 23^a permits an up and down centering movement of the door. The head 23^a, as shown in Figure 5, slidably coacts with the carrier arm 23 against the resistance of a spring 23^b. The head 23^a is shown as having a stem telescoping in the upper end of the arm 23.

The means for controlling the actuation of the container 1 by the motors 2 and permitting the actuation only when the door is closed and when the carrier is uncoupled from the door, comprises a switch in the circuit for the electric motors, which switch is closed by operation of the coupling 26 and is closable thereby only when the coupling 26 or stud 27 thereof is uncoupled from the hub 15 of the door.

46 (Figure 7) designates a movable switch member mounted in the head 23^a at the upper end of the carrier arm 23 and having a contact 47 coacting with a contact 48. The switch arm is actuated by the turning movement of the stud 27 when in a predetermined axial position. As

seen in Figures 5 and 7, the stud 27 is formed with a peripheral notch or socket 49 which coacts with a plunger 50 mounted radially in the head 23^a at the upper end of the arm 23, which plunger thrusts against the switch arm 46. The plunger 50, when seated in the socket 49, permits the switch arm 46 to close, and when out of the socket and riding on the periphery of the stud 27, as seen in Figure 7, opens the switch arm 46. The socket 49 is out of circumferential alinement with the plunger 50, when the door is closed, as in Figure 3, and is in circumferential alinement when the coupling is uncoupled from the door, and is movable into and out of radial alinement with the plunger by rocking the stud 27 only when the stud is uncoupled from the closed door, or when the door is open, as seen in Figure 5. Axial movement inwardly, or to the left (Figure 5) first causes the door to close from the position shown in Figure 5 to that shown in Figure 3, this carrying the socket 49 out of circumferential alinement with the plunger 50. However, if the operator now wants to uncouple the carrier arm 23 from the door and swing the carrier arm 23 laterally, to the left, out of the way, while the door is closed, he must operate the bolts or latches 32 into locked position, in order that the coupling member may be pulled axially to the right (Figure 5) to unlatch the stud 27 or dislodge the poppet 30 from the groove 31. If he should pull the coupling to the right without locking the latches 32, the door would shift axially to open position (Figure 5) and carry the socket 49 into circumferential alinement with the plunger 50. Thus, the motor switch 46 can not be closed, when the door is closed and the carrier 23 coupled thereto.

Means are provided for preventing closing of the switch arm 46 in the motor circuit by turning the coupling 26 or stud 27 thereof when the door is closed and the carrier coupled thereto. This means, as here illustrated, comprises a key pin 53 (Figures 5 and 8) radial with the stud 27 within the head 23^a and movable into a lengthwise key slot 54 in the head 23^a when the stud 27 is shifted to the left (Figure 5) to close the door 16, and hence locking the stud 27 from turning to close the switch 47. When the door is closed and locked by the bolts 32 and the stud 27 shifted to the right to uncouple from the door, the pin 53 enters an arcuate shaped recess 55 in the head 23^a, at the end of the key slot, so that the stud 27 can be given a partial turn radially to aline the socket 49 with the plunger 50 and close the switch 46. Thus, the container can not be rotated when the door is in closed position, unless the carrier is uncoupled from the door or the door can not be rotated by the container when the door is open. The recess 55 is closed by an annular cover or washer 23^c at the end of the head 23^a around the stud 27.

As seen in Figures 6 and 7, the wires of the motor circuit extend upwardly through the carrier arm 23.

In operation, assuming that the door is open in the position shown in Figure 4, the operator swings the carrier 23 from the position shown in Figure 4 to that shown in Figure 3, but with the door in axially open position, as shown in Figure 5, in which position the switch 46 is open, because of the socket 49 being out of radial alinement with the plunger 50. The operator then pushes inwardly on the handle 28 of the coupling member 26, closing the door from the position shown in Figure 5 to that shown in Figure 3,

the pin 53 moving into the key slot 54. He then operates the locking members or bolts 32 into locked position. The coupling member 26 is then pulled out to uncouple it from the door. It can then be given a partial turn as the pin is now in the recess 55, to permit the switch 46 to close. The motor or container can be stopped at any time that the carrier 23 is uncoupled from the door by a partial turning of the coupling member 26 to dislodge the plunger 50 from the socket 49 and must be given a partial turn to aline the pin 53 with the slot 54 to open the switch 46 and stop the container before the carrier can be coupled to the closed door.

What I claim is:

1. In a washing machine including a suitable frame, a container for a fluid and the articles to be treated thereby, the container being rotatable about a substantially horizontal axis and having a door opening in one end; the combination of a door for said opening, door supporting means mounted independently of the container and including portions having successive axial and lateral movements relative to the container to successively shift the door axially from closed position and laterally and axially into closed position, and means for locking the door in closed position independently of the supporting means.

2. In a washing machine including a suitable frame, a container for a fluid and the articles to be treated thereby, the container being rotatable about a substantially horizontal axis and having a door opening in one end; the combination of a door for said opening, door supporting means mounted independently of the container to have successive axial and lateral movements relative to the container to move the door successively axially from closed position and rectilinearly laterally and to carry the door rectilinearly into axial alinement with the door opening and axially into closed position in the opening, means for locking the door in closed position independently of the door supporting means, the door supporting means including a coupling detachably interlocking with the door.

3. In a washing machine including a suitable frame, a container for a fluid and the articles to be treated thereby, the container being rotatable about a substantially horizontal axis and having a door opening in one end; the combination of a door for said opening, door supporting means mounted independently of the container to have successive axial and lateral movements relative to the container when the door is closed and successive lateral and axial movement to move the door into alinement with the door opening and into closed position in the door opening, means for locking the door in closed position independently of the door supporting means, said door supporting means comprising a swinging carrier arm pivoted at one end to the frame and having means at its other end for coupling to the door substantially coaxially with the axis of the container when the door is closed, the coupling means being operable to uncouple from the door to permit swinging of the carrier arm laterally independently of the door.

4. In a washing machine including a suitable frame, a container for a fluid and the articles to be treated thereby, the container being rotatable about a substantially horizontal axis and having a door opening in one end; the combination of a door for said opening, door supporting means mounted independently of the container to have successive axial and lateral movements relative

to the container when the door is closed and successive lateral and axial movement to move the door into alignment with the door opening and into closed position in the door opening, means for locking the door in closed position independently of the door supporting means, said door supporting means comprising a carrier having coupling means operable to interlock with the door substantially coaxially with the axis of the container and being operable axially out of interlocking engagement with the door when the door is closed to permit shifting of the carrier out of register with the door.

5. In a washing machine including a suitable frame, a container for a fluid and the articles to be treated thereby supported by the frame to move about a substantially horizontal axis and having a door opening in one end; the combination of a door for said opening having successive axial and lateral opening movements and successive lateral and axial closing movements, and a carrier independent of the container for supporting the door during its opening and closing movements and including a member for coupling the carrier and the door together, said member being shiftable axially to uncouple the carrier from the door when the door is in closed position.

6. In a washing machine including a suitable frame, a container for a fluid and the articles to be treated thereby supported by the frame to move about a substantially horizontal axis and having a door opening in one end; the combination of a door for said opening having successive axial and lateral opening movements and successive lateral and axial closing movements, and a carrier independent of the container for supporting the door during its opening and closing movements and including a member for coupling the carrier and the door together, said member being shiftable axially to uncouple the carrier from the door when the door is in closed position, the coupling member coacting with the door co-axially thereof.

7. In a washing machine including a suitable frame, a container for a fluid and the articles to be treated thereby supported on the frame to move about a substantially horizontal axis and having a door opening in one end; the combination of a door for said opening having successive axial and lateral opening movements and successive lateral and axial closing movements, a carrier independent of the container for supporting the door during its opening and closing movements and including a coupling for coupling the carrier and the door together and operable to uncouple the carrier from the door when the door is in closed position, the coupling coacting with the door coaxially thereof and being shiftable axially to shift the door axially into and out of final closed position, and means for locking the door in closed position independently of the carrier.

8. In a washing machine including a suitable frame, a container for a fluid and the articles to be treated thereby supported by the frame to move about a substantially horizontal axis and having a door opening in one end; the combination of a door for said opening having successive axial and lateral opening movements and successive lateral and axial closing movements, and a carrier independent of the container for supporting the door during its opening and closing movements including a coupling between the carrier and the door operable to uncouple the car-

rier from the door when the door is in closed position, the coupling coacting with the door coaxially thereof and being shiftable axially to shift the door axially into and out of final closed position, releasable latch means between the coupling and the door, and means for locking the door in closed position.

9. In a washing machine including a suitable frame, a container for a fluid and the articles to be treated thereby supported by the frame to move about a substantially horizontal axis and having a door opening in one end; the combination of a door for said opening having successive axial and lateral opening movements and successive lateral and axial closing movements, a carrier independent of the container for supporting the door during its opening and closing movements and including a coupling between the carrier and the door operable to uncouple the carrier from the door when the door is in closed position, the coupling coacting with the door coaxially thereof and being shiftable axially to shift the door axially into and out of final closed position, the coupling being interlocked with the door by impositive locking means operable to unlock upon axial movement of the coupling member away from the door when the door is locked in closed position, and means for locking the door in closed position independently of the carrier.

10. In a washing machine including a suitable frame, a container for the fluid and the articles to be treated thereby supported by the frame to move about a substantially horizontal axis and having a door opening in one end; the combination of a door for said opening having successive axial and lateral opening movements and successive lateral and axial closing movements, a carrier for the door independent of the container for supporting the door during its closing and opening movements, a coupling between the carrier and the door operable to uncouple the carrier from the door, when the door is in closed position, means for actuating the container about its axis, and means operated by the coupling for controlling the rotation of the container by the actuating means.

11. In a washing machine including a suitable frame, a container for the fluid and articles to be treated thereby supported by the frame to move about a substantially horizontal axis and having a door opening in one end; the combination of a door for said opening having successive axial and lateral opening movements and successive lateral and axial closing movements, a carrier for the door independent of the container for supporting the door during its closing and opening movements, a coupling between the carrier and the door including a member operable to uncouple the carrier from the door when the door is in closed position, means for actuating the container about its axis including an electric motor, and a feed circuit therefor, a normally open switch in said circuit, means operated by the coupling member for preventing closing of the switch when the door is closed and the coupling is coupled to the door, and means for locking the door in closed position independently of the carrier and the coupling.

12. In a washing machine including a suitable frame, a container for the fluid and articles to be treated thereby supported by the frame to move about a substantially horizontal axis and having a door opening in one end; the combination of a door for said opening having successive axial and lateral opening movements and succes-

alve lateral and axial closing movements, a carrier for the door independent of the container for supporting the door during its closing and opening movements, a coupling between the carrier and the door operable to uncouple the carrier in closed position, the coupling including an axially movable stud and releasable latch for interlocking with the door when axially aligned with the door, the coupling including a stud having a partial rotary movement, means for actuating the container about its axis including an electric circuit, a normally open switch in said circuit, the stud having means for closing the switch on partial rotary movement thereof, means for preventing the partial rotary movement of the stud to close the switch when the stud is coupled to the door and the door is closed, and means for locking the door in closed position independently of the carrier and the stud.

13. In a washing machine including a suitable frame, a container for the fluid and articles to be treated thereby supported by the frame to move about a substantially horizontal axis and having a door opening in one end; the combination of a door for said opening having successive axial and lateral opening movements and successive lateral and axial closing movements, a carrier for the door independent of the container for supporting the door during its closing and opening movements, a coupling between the carrier and the door operable to uncouple the carrier from the door, when the door is in closed position, the coupling including a stud mounted in the carrier, the stud having an axial movement in and out of coaction with the door and also a partial rotary movement, the door and the stud having releasable latch means for holding them coupled and operable to unlatch upon axial movement of the stud away from the closed door, means operable to lock the door in closed position, mechanism for actuating the container about its axis including an electric motor and a circuit therefor, a normally open switch in said circuit, means operable by a partial rotary movement of the stud to close and open the switch when the stud is uncoupled from the door.

14. In a washing machine including a suitable frame, a container for the fluid and articles to be treated thereby supported by the frame to move about a substantially horizontal axis and having a door opening in one end; the combination of a door for said opening having successive axial and lateral opening movements and successive lateral and axial closing movements, a carrier for the door independent of the container for supporting the door during its closing and opening movements, a coupling between the carrier and the door operable to uncouple the carrier from the door, when the door is in closed position, the coupling including a stud mounted in the carrier, the stud having an axial movement in and out of coaction with the door and also a partial rotary movement, the door and the stud having releasable latch means for holding them coupled and operable to unlatch upon axial movement of the stud away from the closed door, means operable to lock the door in closed position, mechanism for actuating the container about its axis including an electric motor and a circuit therefor, a normally open switch in said circuit, means operable by a partial rotary movement of the stud to close and open the switch when the stud is uncoupled from the door, and means for preventing partial rotary movement

of the stud to close the switch when the stud is coupled to the closed door.

15. In a washing machine including a suitable frame, a container for the fluid and articles to be treated thereby supported by the frame to move about a substantially horizontal axis and having a door opening in one end; the combination of a door for said opening having successive axial and lateral opening movements and successive lateral and axial closing movements, a carrier for the door independent of the container for supporting the door during its closing and opening movements, a coupling between the carrier and the door operable to uncouple the carrier from the door, when the door is in closed position, the coupling including a stud mounted in the carrier, the stud having an axial movement in and out of coaction with the door and also a partial rotary movement, the door and the stud having releasable latch means for holding them coupled and operable to unlatch upon axial movement of the stud away from the closed door, means operable to lock the door in closed position, mechanism for actuating the container about its axis including an electric motor and a circuit therefor, a normally open switch in said circuit, means operable by a partial rotary movement of the stud to close and open the switch when the stud is uncoupled from the door, and means for preventing partial rotary movement of the stud to close the switch when the stud is coupled to the closed door, the last means including a coacting pin and key slot on the stud and door, the slot extending in a direction lengthwise of the stud, and a recess at the end of the slot for receiving the pin, the pin slidably fitting the slot to prevent partial rotary movement of the stud when the pin is in the slot and the recess being wide enough to permit partial rotary movement when the pin is out of the slot.

16. In a washing machine including a suitable frame, a container for a fluid and the articles to be treated thereby, the container being rotatable about a substantially horizontal axis and having a door opening in one end; the combination of a door for said opening having successive axial and lateral opening movements and successive lateral and axial closing movements, means independent of the container for supporting the door during its opening and closing movements, said means comprising a carrier having means operable to interlock with the door substantially coaxially with the axis of the container and being operable out of interlocking engagement with the door when the door is closed to permit shifting of the carrier out of register with the door, and buffer means supported by the frame and coacting with the carrier as the carrier approaches the limit of its door opening and closing operation.

17. In a washing machine including a suitable frame, a container for a fluid and the articles to be treated thereby, the container being rotatable about a substantially horizontal axis and having a door opening in one end; the combination of a door for said opening having successive axial and lateral opening movements and successive lateral and axial closing movements, and means independent of the container for supporting the door during its opening and closing movements, said means comprising a swinging carrier pivoted at one end to the frame below and laterally relatively to the axis of the container and having a coupling member at its upper end located substantially coaxially with the

axis of the container, when the door is closed, and shiftable out of coupling engagement with the door when the door is closed, and means for locking the door closed independently of the coupling member and the carrier.

18. In a washing machine including a suitable frame, a container for a fluid and the articles to be treated thereby, the container being rotatable about a substantially horizontal axis and having a door opening in one end; the combination of a door for said opening having successive axial and lateral opening movements and successive lateral and axial closing movements, means independent of the container for supporting the door during its opening and closing movements, said means comprising a swinging carrier pivoted at one end to the frame below and laterally relatively to the axis of the container and having a coupling member at its upper end located substantially coaxially with the axis of the container, when the door is closed, operable out of coupling engagement with the door, and buffer means for coacting with the carrier at the end portions of its door opening and closing movements, means for locking the door in closed position independently of the carrier and the coupling member.

19. In a washing machine including a suitable frame, a container for a fluid and the articles to be treated thereby, the container being rotatable about a substantially horizontal axis and having a door opening in one end; the combination of a door for said opening having successive axial and lateral opening movements and successive lateral and axial closing movements, means independent of the container for supporting the door during its opening and closing movements, said means comprising a swinging carrier pivoted at one end to the frame below and laterally relatively to the axis of the container and having a coupling member at its up-

per end located substantially coaxially with the axis of the drum, when the door is closed, and operable out of coupling engagement with the door, buffer means comprising a part extending transversely of the swinging carrier and formed with a lengthwise slot and cushioning means in opposite portions thereof adjacent the ends of the slot, the carrier having a follower extending through the slot and arranged to engage the cushioning means, and means for locking the door in closed position independently of the carrier and the coupling member.

20. In a washing machine including a suitable frame, a container for a fluid and the articles to be treated thereby, the container being rotatable about a substantially horizontal axis and having a door opening in one end; the combination of a door for said opening having successive axial and lateral opening movements and successive lateral and axial closing movements, means independent of the container for supporting the door during its opening and closing movements, said means comprising a swinging carrier pivoted at one end to the frame below and laterally relatively to the axis of the container and having a coupling member at its upper end located substantially coaxially with the axis of the drum, when the door is closed, and operable out of coupling engagement with the door, buffer means comprising a part extending transversely of the carrier and pivoted at one end to the frame, the part being formed with a lengthwise slot, cushioning means carried by said part adjacent opposite ends of the slot, the carrier having a follower extending through the slot and coacting with the cushioning means, and means for locking the door in closed position independently of the carrier and the coupling member.

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