Jan. 3, 1961 S. LANDON 2,967,001

DOOR STRUCTURE FOR A ROTARY CONTAINER

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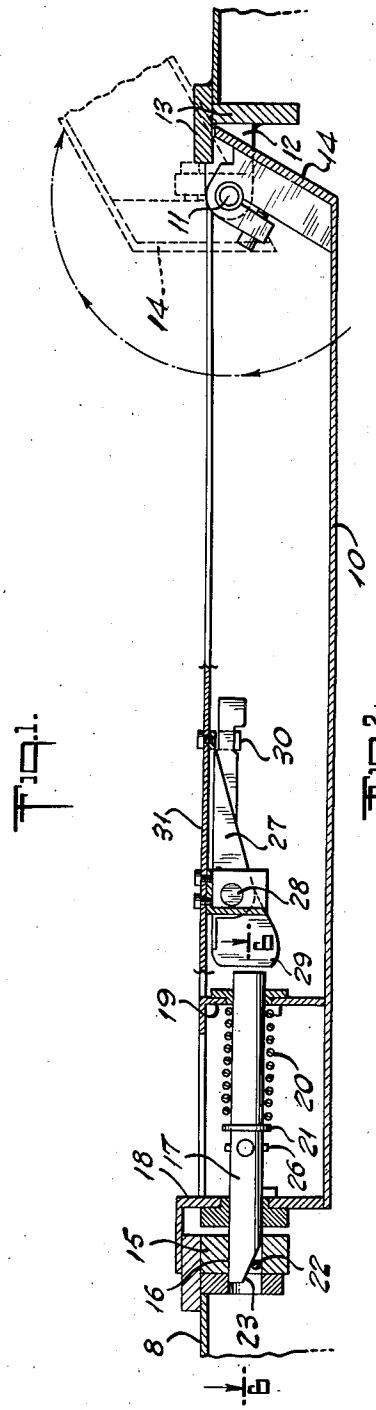


Fig. 1.

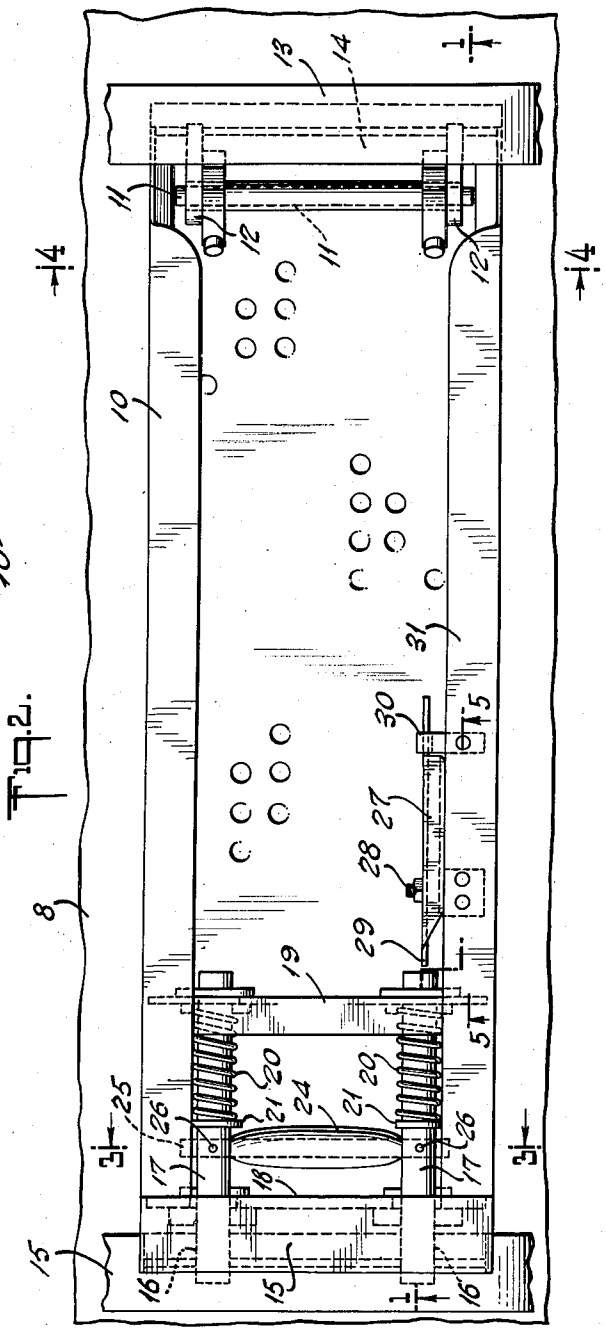


Fig. 2.

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Fig. 4.

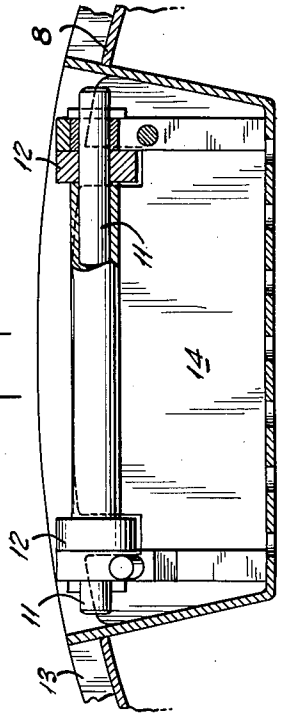


Fig. 6.

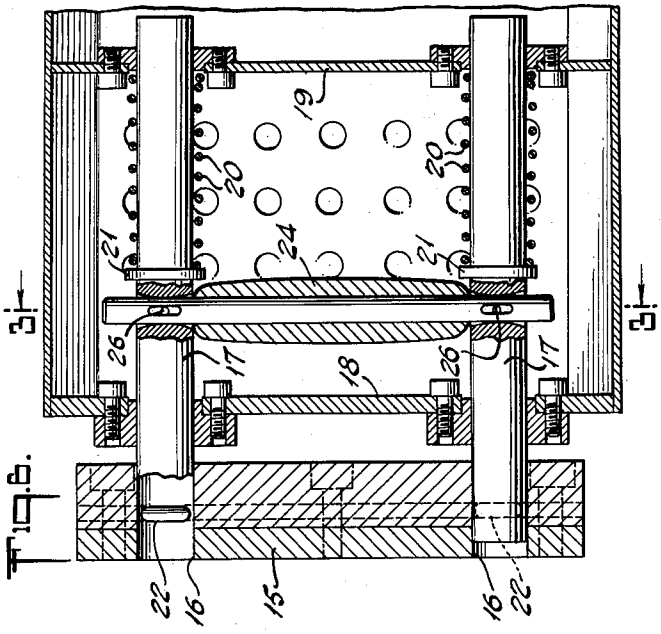


Fig. 3.

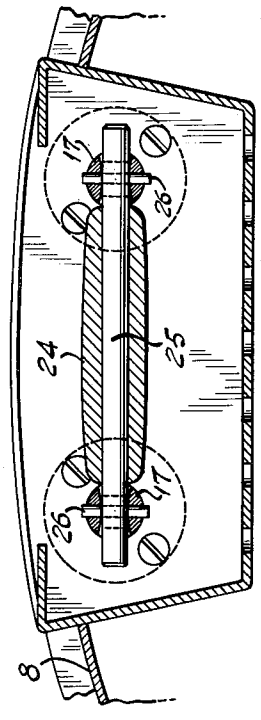


Fig. 5.

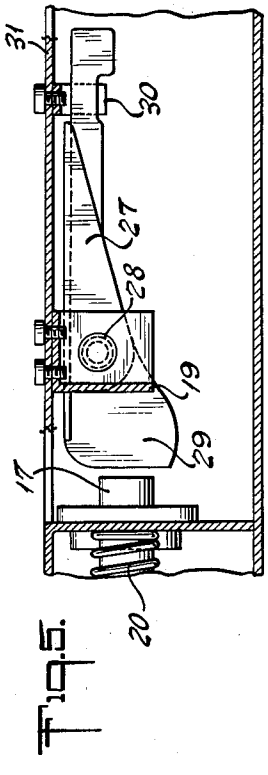
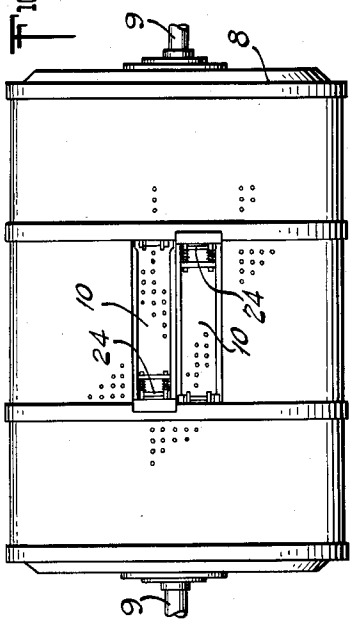


Fig. 7.



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United States Patent Office

2,967,001

Patented Jan. 3, 1961

2,967,001

DOOR STRUCTURE FOR A ROTARY CONTAINER

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Filed Dec. 30, 1958, Ser. No. 783,863

5 Claims. (Cl. 220—55)

This invention relates to a door structure for a rotary container and is particularly adapted for use as a hinged door for the rotary clothes container of a washing and drying machine of the type in which the container is rotated at high speed for the extraction of moisture from the clothes contained therein.

One object of the present invention is to provide a door structure having improved means for ensuring against the possibility of the door opening under centrifugal force. Another object is to provide improved means whereby, during the operation of the rotary machine, the door is locked in the closed position and chattering or vibration of the locking means under high centrifugal force is prevented. Still another object of the invention is to provide the locking means with twin bolts each provided with an inclined plane and an engaging roller and means whereby movement of said bolts in relation to each other is permitted so that both bolts are effectively engaged by said rollers.

With these and other objects in view, the invention consists in the novel construction and arrangement of parts hereinafter described, illustrated in the accompanying drawings and particularly pointed out in the appended claims, it being understood that various changes in the constructional details may be made without departing from the spirit of the invention or sacrificing any of the advantages thereof.

In the accompanying drawings:

Fig. 1 is a longitudinal section of the door taken on the line 1—1 Fig. 2.

Fig. 2 is a plan view of the door.

Fig. 3 is a cross-section of the door taken on the lines 3—3 Figs. 2 and 6.

Fig. 4 is a similar view taken of the line 4—4 Fig. 2.

Fig. 5 is a sectional view taken on the line 5—5 Fig. 2.

Fig. 6 is a horizontal section taken on the line 6—6 Fig. 1, and

Fig. 7 is an outside view of the rotary container with a door opening closed by two similar doors.

The rotary drum 8 shown in Fig. 7 is of cylindrical form and has end trunnions 9 which are mounted in bearings, not shown, for rotation about a horizontal axis and two hinged doors 10 are arranged side by side with their hinges at opposite ends.

Referring to Figs. 2–6, each of the said doors 10 is formed as a channel structure with its open part facing outwardly from the said drum. The right hand end of the door 10 in Figs. 1 and 2 is shown with a hinge rod 11 engaging brackets 12 secured to the frame 13 of the drum, and the adjacent end wall 14 of the channel member is inclined as shown in Fig. 1 so that, when the door is opened, as shown in dotted lines, the inclined end 14 is substantially perpendicular to the surface of the drum with the result that the drum opening is not unduly restricted.

At the opposite end of the door, the door frame structure 15 is provided with openings 16 to receive two parallel bolts 17 mounted in the end part 18 of the door

and in a partition wall 19, and having springs 20 engaging shoulders 21 on the bolts so that the bolts are normally pressed outwardly into the said openings 16. Each of the said openings is provided with a roller 22 adapted to engage an inclined face 23 on the inner surface of the end part of the bolt.

The two parallel bolts 17 are connected with each other by means of a handle 24 having a spindle 25 connected by pin-and-slot devices 26 to the said bolts, as best shown in Figs. 3 and 6, so that the twin bolts are free to move slightly with respect to each other to ensure close engagement of the inclined surface 23 of each bolt with its roller 22 under the influence of the spring 20.

The door is also provided with a safety device, see particularly Fig. 5, consisting of a pivoted member 27 carried by a pivot pin 28 and having an abutment 29 in line with the inner end of one of the bolts 17 and having its opposite end retained by a hook device 30 on a flange 31 of the door, when the safety device is in its locking position.

To open the doors to give free access to the interior of the rotary drum the safety device 27 is released from the hook 30 and is then turned counter-clockwise, Fig. 5, so that the end 29 is swung away from the adjacent end of the bolt 17 and the twin bolts may then be moved by means of the handle 24 against the action of the springs 20 until their ends are withdrawn from the openings 16 in the frame 15 and the door may then be swung outwardly on the hinge 11 into the position shown in dotted lines in Fig. 1.

The drawings and the above description disclose the best mode in which I have contemplated embodying my invention, but I desire to be in no way limited to the details of such disclosure for, in the further practical application of this invention, many changes in the structural details may be made as circumstances require or experience suggests without departing from the spirit of the invention within the scope of the appended claims.

What I claim is:

1. A door structure for a rotary container, comprising a door frame in the container, a hinged door in the frame, two parallel bolts spaced from each other and carried by the door and having projecting ends normally extending beyond the edge of the door, openings spaced from each other in the door frame and arranged to receive the projecting ends of said bolts, springs normally pressing said bolts into said openings, inclined surfaces formed on the projecting ends of said bolts, rollers arranged in the said openings for engagement with said inclined surfaces to hold the opposite surfaces of the projecting ends in close contact with the walls of said openings, an operating handle connected with both of said bolts for the withdrawal of said bolts from said openings against the action of said springs to permit the opening of the door, and pin-and-slot connecting means between both of said bolts and the said handle to permit slight movement of the two bolts with respect to each other to insure equal pressure of both of said rollers upon said inclined surfaces.

2. A door structure according to claim 1 comprising a safety device pivoted in the door structure in line with one of the said bolts to prevent movement of the bolts from the locking position and a hook member for holding the pivoted device in its safety position when the door is subjected to centrifugal force.

3. A door structure provided with safety locking means and comprising a door frame, a hinged door of channel form, two parallel bolts mounted on the door with two normally projecting ends, openings spaced from each other in the door frame and arranged to receive the said projecting ends, springs mounted on said bolts and

normally pressing the bolts into said openings, inclined faces formed on the inner side surfaces of the projecting ends of the bolts, rollers arranged in the said openings for engagement with said inclined faces to hold the outer side surfaces of said projecting ends in close contact with the walls of the said openings, an operating handle for the withdrawal of said bolts from said openings against the action of said springs, and a pin-and-slot connecting means between the handle and each of said bolts to permit slight angular movement of the handle with respect to said bolts and longitudinal movement of the bolts with respect to each other to insure equal pressure of both of said rollers against said inclined faces.

4. A door structure for a rotary drum subjected to centrifugal force, comprising a door frame in the side of the drum, a channel shaped door with its open side facing outwardly from the said drum, a hinge at one end of the channel structure of the door for carrying one end of the door in said frame, an inclined wall at the hinged end of the channel door to avoid restriction of the door frame when the door is swung outwardly to its open position, two parallel locking bolts at the opposite end of the channel door, spring means pressing said bolts into the locking position, a handle for the withdrawal of the bolts to permit opening of the door, pin and slot connections between the said handle and said bolts to permit slight relative movement of the bolts with respect to each other, inclined surfaces on the end parts of the locking bolts, and rollers carried by the door frame and engaging said inclined surfaces to press the bolts outwardly in the direction of centrifugal force to prevent vibration of the door when the drum is rotated at high speed.

5. A door structure for a rotary cylindrical drum subjected to centrifugal force, comprising a door frame in the cylindrical wall of the drum, a channel shaped door arranged in said frame with its open side facing outwardly from said drum, hinge means at one end of the channel structure for carrying one end of the door in said frame, an inclined end wall at the hinge end of the door structure of avoid restriction of the door frame when the door is swung outwardly to its open position, two parallel locking bolts located at the opposite end of the channel structure, spring means for pressing the said bolts into the locking position in said door frame, a handle connected by pin and slot means to both of said bolts for the withdrawal thereof to permit opening of the door, flat inclined surfaces on the end parts of the locking bolts, and rollers carried by the door frame and engaging said inclined surfaces to press the bolts in the direction of the centrifugal force to prevent vibration of the door when the drum is rotated at high speed.

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