Aug. 11, 1953 H. P. PETERSEN 2,648,458

SLIDING DOOR CONSTRUCTION FOR WASHING MACHINES

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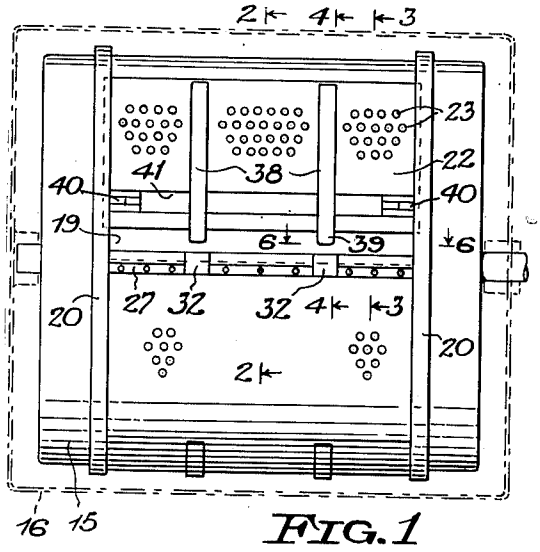


FIG. 1

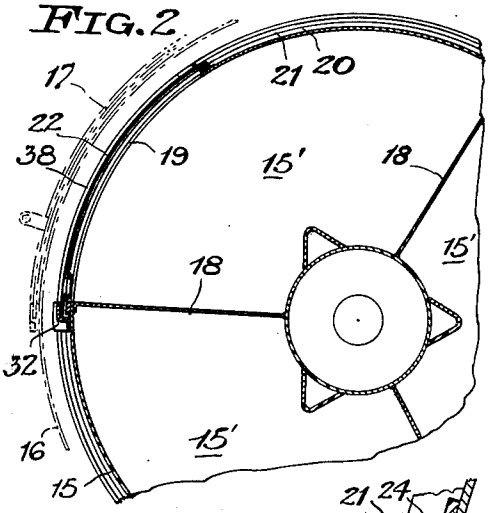


FIG. 2

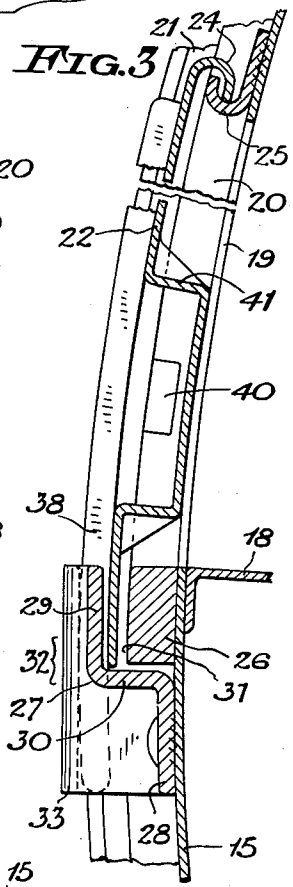


FIG. 3

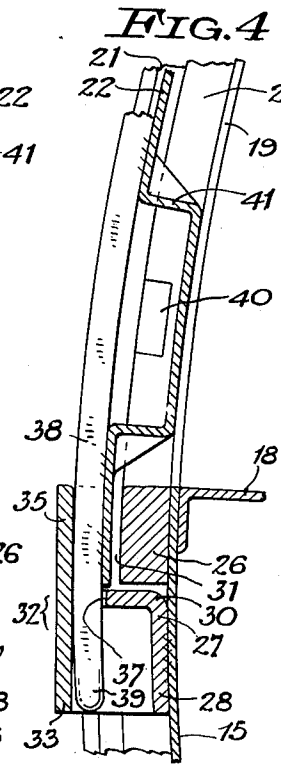


FIG. 4

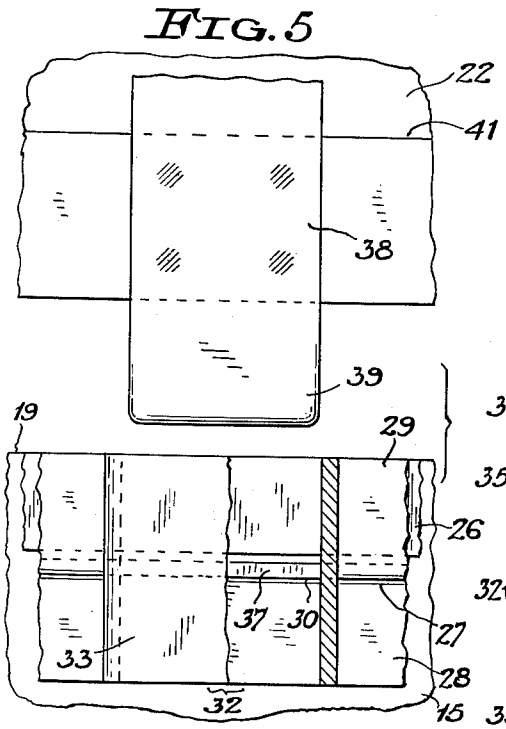


FIG. 5

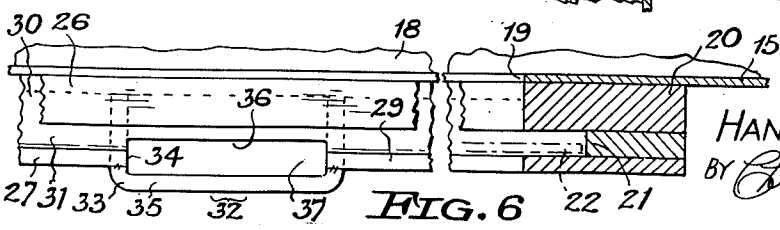


FIG. 6

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SLIDING DOOR CONSTRUCTION FOR WASHING MACHINES

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2 Claims. (Cl. 220—41)

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The present invention relates to sliding door construction, such as for washing machine cylinders and the like.

The rotatable cylinders or drums of certain types of laundry washing machines are equipped with sliding doors of sheet metal, such as thin stainless steel. Difficulty has heretofore been experienced in effecting proper closing of a door of this type, and the free edge of the door has been subject to battering and sharpening, exposing the operator to injury.

An object of the invention is to provide an improved sliding door construction for washing machine cylinders and the like which will insure smooth closing of the sheet metal door and avoid damage to the free edge of the door.

Another object is to provide simple and durable guiding and aligning means for the sliding sheet metal door which will minimize wear on the door.

The invention further consists in the several features hereinafter described and claimed.

In the accompanying drawing,

Fig. 1 is a side elevation of a washing machine cylinder including a door construction of the invention, a sliding door thereof being shown in partly open position, and an enclosing tub for the cylinder being shown in broken lines;

Fig. 2 is a transverse sectional view of a cylinder taken generally on the line 2—2 of Fig. 1, parts of the tub being shown in broken lines;

Fig. 3 is a detail transverse sectional view taken generally on the line 3—3 of Fig. 1, the sliding door being in closed position;

Fig. 4 is a detail transverse sectional view taken generally on the line 4—4 of Fig. 1, the sliding door being in closed position;

Fig. 5 is a detail outside view of door aligning means, parts being shown in section, and the door being partly open, and

Fig. 6 is a detail sectional view taken generally on the line 6—6 of Fig. 1.

In the drawing, 15 designates a washing machine cylinder or drum adapted to rotate on a horizontal axis in a stationary cylindrical tub 16. The tub is coaxial with the cylinder and has one or more of the usual arcuate sliding doors 17, Fig. 2, in its upper front quadrant.

The rotatable cylinder, which is constructed largely of sheet metal, such as stainless steel, is here shown to be of the multiple-compartment type, such as the Y-type with three compartments 15', and includes radial shelf-forming partitions 18. The peripheral wall of the cylinder is provided at each compartment with a door opening or doorway 19 of generally rectangular

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shape, the two opposite side edges of the doorway extending in a peripheral direction, and the two longitudinal edges extending horizontally in parallel relation to the cylinder axis. Each cylinder compartment when in its loading and unloading position has its doorway disposed in the upper front quadrant of the cylinder in register with the tub doorway, and the lower edge of the compartment doorway is then at approximately the same level as the cylinder axis, as seen in Fig. 2. The outer ends of the shelf-forming partitions 18 are flush with the bottom edges of the cylinder doorways.

Arcuate metal track members 20, such as of stainless steel, are secured to the outside of the cylinder along the opposite side edges of each cylinder doorway and form door-guiding channels or trackways 21. An arcuate sheet metal door 22, such as of stainless steel, is provided for each cylinder doorway and has its opposite side edges slidably guided in the trackways 21 for opening and closing the doorway. The slidable door is here shown to have liquid-passing perforations 23. As best seen in Fig. 3, the top or rear edge of each slidable door 22 is preferably provided with an inturned flange or hook 24, engageable with a stop flange or hook 25 extending along the top edge of the corresponding doorway so as to limit the closing movement of the door.

A frame member 26 in the form of a metal bar of rectangular cross-section is welded or otherwise rigidly secured to the peripheral sheet metal wall of the cylinder along the lower edge of each cylinder doorway and has an upper edge flush with the doorway edge and with the outer end of the corresponding shelf-forming partition 18. A second frame member 27, preferably in the form of a Z-bar, extends parallel to the bar 26 and has a lower flange 28 rigidly secured, as by welding or riveting, to the outer side of the cylinder below the bar 26. The Z-bar has an outwardly offset upper flange 29 which is spaced outwardly from the bar 26 by a web portion 30, the upper edge of the flange 29 being aligned with the front edge of the cylinder doorway. The bar 26 and the upper flange 29 of the Z-bar form an upwardly opening channel 31 adapted to receive the lower or free edge of the slidable door 22, as best seen in Fig. 3. The Z-bar is provided with one or more door-aligning guides or sockets 32, two spaced guides being shown in the present instance. The outer side of each guide is formed by a vertical channel member 33 fitting against and secured to the Z-bar, as by

welding, the Z-bar flange 29 being cut away at 34, and the web 35 of the channel member forming, in effect, an outwardly offset portion of the flange 29. The web 30 of the Z-bar 27 is cut away at 36, thus forming with the web 35 of the channel member an elongated rectangular slot 37 extending parallel to the Z-bar.

Each slidable cylinder door has welded or otherwise secured to its outer surface a pair of parallel arcuate guide bars 38 of rectangular cross-section extending in a circumferential direction. The guide bars have tongue-like ends 39 which project from the free edge of the door and are adapted to enter the respective guides or sockets 32 of the Z-bar, and to pass through the slots 37, the guide bar ends having rounded edges. The guide bars are considerably thicker than the door sheet and are preferably formed of non-corrodible metal such as stainless steel. The door has the usual latches 40 for holding the door in closed position, and these latches are preferably mounted in the opposite end portions of a rectangular channel 41 formed in the door near and parallel to the free edge of the door. The channels 41 also serve to stiffen the door and are bridged by the guide bars 38 which maintain the arcuate shape of the door. The width of each Z-bar slot 37 is slightly greater than the thickness of the projecting end of the associated guide bar.

In the use of the machine, the cylinder compartments 15' are loaded in succession, and when each compartment is in loading position the slidable door thereof is suitably held in open position, as by friction. When the operator closes the door the rounded projecting ends 39 of the guide bars 38 on the door enter the guides or sockets 32 and pass through the slots 37 to the final position shown in Fig. 4. During the closing travel of the door the rounded guide bar ends are smoothy brought to their final position by the cam action of the guide bar ends with the inner walls of the guide channels 33 and the edges of the slots 37, and the free edge of the door is thus caused to enter the doorway channel 31 without danger of striking the entrance edges of this channel. By this arrangement, the free edge of the door and the cooperating edge of the doorway are protected against damage, such as battering and sharpening. In the full closed position of the door, the free edge of the door is preferably slightly spaced from the web 30 of the Z-bar 27 because of the engagement of the stop hook 24 at the upper end of the door. In some instances, however, the free edge of the closed door may abut against the web 30.

What I claim as new and desire to secure by Letters Patent is:

1. In a door construction, a washing machine cylinder having a peripheral wall with a doorway and with trackways along opposite edges of said doorway, an arcuate sheet metal door slidably mounted on said peripheral wall for opening and closing said doorway and having opposite edges slidable along said trackways, said door having a free edge disposed adjacent to a third edge of said doorway when the door is in closed position, a channel extending along said third edge of the doorway for receiving the free edge of the door in the closed position of the door, a guide bar rigidly secured to said door and having an end portion projecting from said free edge, and a guide socket on said casing adjacent to said channel and receiving said bar end portion with a cam action during the closing travel of the door, said socket having opposite guide surfaces spaced in a direction transverse to said doorway a dimension slightly greater than the thickness of said guide bar and cooperating with said guide bar during the entry of said bar into said socket to define a path of closing movement for the free edge of said door intermediate of and spaced from the opposite sides of said channel for smoothly entering said free edge of the door into said channel.

2. In a door construction, a sheet metal casing having a doorway, a sheet metal door slidably mounted on said casing to open and close said doorway and having a free edge adapted to lie adjacent an edge of the doorway in the closed position of the door, a pair of inner and outer bars secured to the outer side of said casing along said doorway edge and forming a channel adapted to receive the free edge of the door, said outer bar having a web portion forming the bottom of said channel and provided with a slot, and said outer bar having a guide portion extending adjacent to the entrance of the channel and forming a wall of said slot, and a guide bar rigidly secured to the outer side of said door and having an end portion projecting from the free end of said door, said bar end portion adapted to pass along said guide portion and into said channel and said slot during the closing travel of said door to guide the free edge of the door into said channel.

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