

Dec. 13, 1955

J. O. KEMP

2,726,420

DOOR HANGER ASSEMBLY

Filed Sept. 17, 1954

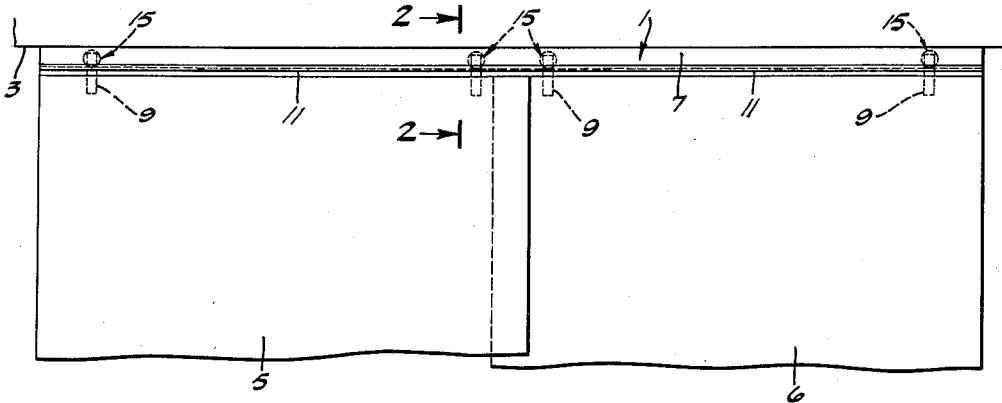


FIG. 1.

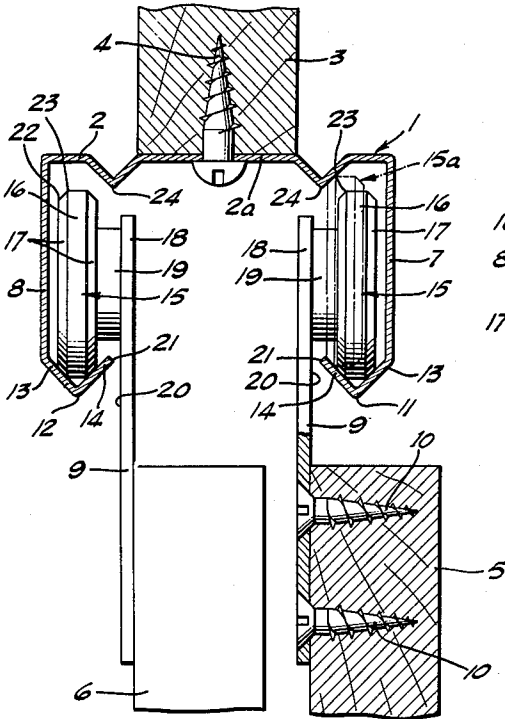


FIG. 2.

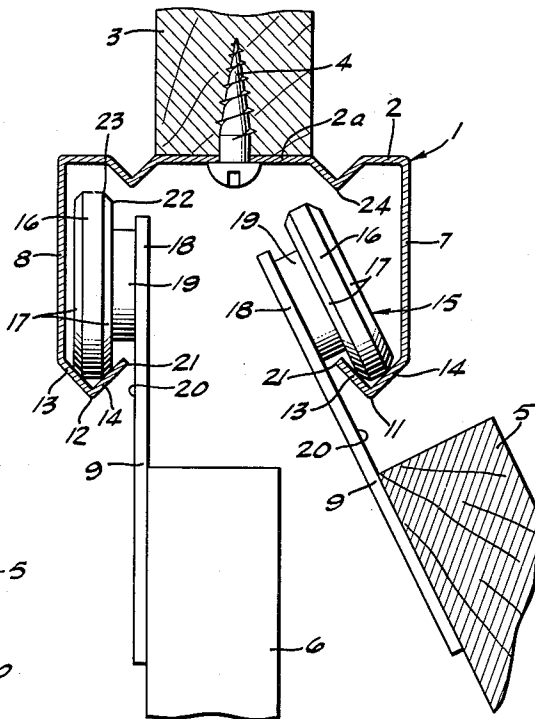


FIG. 3.

JAMES O. KEMP
INVENTOR.

BY *Francis S. Ammen*

ATTORNEY

1

2,726,420

DOOR HANGER ASSEMBLY

James O. Kemp, Los Angeles, Calif.

Application September 17, 1954, Serial No. 456,751

7 Claims. (Cl. 16-87)

This invention relates to a hanger assembly including a door on rollers and a horizontal run-way supporting the same, and while the invention may be employed for supporting any door or doors, in the present specification it is described as being employed for supporting two adjacent doors such as are employed for closing the front of a wardrobe in which articles of clothing are supported in clothing stores, department stores, or the like.

This hanger assembly includes an elongated guide rail which in the present instance is attached to the under side of a supporting rail. These guide rails include an upwardly disposed plate-like web, the outer edges of which are provided with downwardly extending walls which have inwardly disposed edges that operate as run-ways for the rollers attached to the roller brackets that support the doors.

Although when such a guide rail is installed, it may be accurately leveled so that both of its edges are at the same level, in places, particularly in countries subject to earthquakes such an installation may be found, after passage of a few years, to be slightly out of level. In that case if the supporting rails for the doors have flat forward faces running on a horizontal flat face of their run-way, they offer little resistance to rotation, and in an old installation on this account, one or the other of the doors may tend to gravitate down the run-way towards its lower end.

For this reason it is desirable to give the faces of the rails that support the door and the contacting faces of the run-way that they engage, a co-operating form that will operate to develop a slight frictional resistance due to the weight of the door and shifting of the doors, and presses them down into their run-way.

In the present instance this frictional resistance is developed by giving the run-way a substantial V-shape cross-section and providing the rollers with beveled side edges that conform to the angle of the inner supporting faces of the V-form cross-section of the run-way. In this way, by reason of the fact that the flat faces of the rollers between their beveled faces is unsupported by the run-way, a noticeable friction will be developed by the downward pressure of the beveled faces against the inner sides of the V-form cross-section of the run-way.

However, due to the friction developed on the inner inclined extension of the run-way, sometimes there is a tendency for the rollers to climb up on their inclined faces, which climbing effect should be avoided, and might result in one or more of the rollers climbing up sufficiently to become derailed from its run-way. In this upward climbing undesirable movement the roller will maintain itself in a substantially vertical plane.

One of the objects of this invention is to provide a guide rail such as referred to above with guard means extending along the guide rail adjacent to the hanger plate of the upper sides of the rollers, which would operate to prevent a derailment of the rollers in the manner outlined above.

In some installations of a hanger assembly for doors such as referred to above, for example, in a small room it may not be possible to run the supporting rolls for the doors into the open ends of the guide rail, as, of course, in order to accomplish this it would be necessary to have clearance beyond the open end of the guide rail at least equal to the width of the door.

For this reason, another object of this invention is to provide a construction and coordination between the

2

rollers and the guide rail which will enable either one of a pair of doors to be hung into the guide rail by holding the door in an inclined position and then shoving the rail brackets carrying their rollers into the clearance space within the guide rail, then hooking the rollers into their rollway, and permitting the door to move back into the vertical plane in which it would naturally hang.

Further objects of this invention will be evident from a careful reading of the specification and study of the accompanying drawing.

The invention consists in the novel parts and combinations of parts to be described hereinafter, all of which contribute to produce an efficient door hanger assembly.

A preferred embodiment of the invention is described in the following specification, while the broad scope of the invention is pointed out in the appended claims.

In the drawing:

Figure 1 is a side elevation of two doors such as wardrobe doors, the lower portions of which are broken away.

Figure 2 is a vertical section taken on the line 2-2 of Figure 1 looking toward the rollers that are located toward the right edge of the left hand door, as viewed in Figure 1.

Figure 3 is a view similar to Figure 2, but showing the left hand door in the position that it must assume when the rollers are being placed in their runway in the guide rail, or when the door is about to be removed from the guide rail.

Referring more particularly to the parts, the hanger assembly includes a guide rail 1 which is of a substantially inverted U-shaped cross-section, which is preferably formed of elongated plate material, which is pressed or rolled to give the cross-section indicated. It includes a substantially horizontal top-plate extension 2 which is adapted to be secured to supporting means, such as a fixed supporting rail 3, which in the present instance is of wood and secured in place by bolt screws, or wood screws 4, which pass up through openings in the middle portion 2a of this hanger plate 2; and in practice these screws can be located approximately six inches apart, or closer together than that if the doors 5 and 6 are unusually heavy.

When the rail 1 has to support two doors such as illustrated, it is symmetrical with respect to the medial vertical plane passing up through the supporting rail 3, so that the section of the guide rail is symmetrical with respect to that rail 3.

The guide rail includes two downwardly extending side extensions or walls 7 and 8, the former of which is toward the front of the wardrobe.

Each door is hung on two hanger plates 9, the lower end of which are attached to the rear face of its corresponding door by bolts or screws, such as the screws 10 shown in Figure 2. At the lower end of each side wall 7 and 8 a runway such as the runways 11 and 12 are formed. In the present instance these are formed integral with their corresponding side wall. In accordance with the invention these runways are of V-form cross-section so as to present two inclined and divergent flanges with inclined faces 13 and 14, upon which the rollers rest. Each of these rollers is in the form of a relatively thick disc with a substantially cylindrical or "flat" face 16 located between two beveled faces or narrow cheeks 17. The bevel of these cheeks 17 is on substantially the same incline or angle as that of the inside supporting surfaces 13 and 14 of each runway 11. Between each roller and the shank 18 of its corresponding hanger plate a bushing 19 is provided which enables the adjacent face 20 of each hanger plate to leave substantially good clearance between it and the adjacent tip 21 of the runway.

By reason of the upper divergence of the faces 13 and 14 of the runways and the fact that the middle portion

3

of the runway at the angle thereof, gives no support to the cylindrical faces 16 of the rollers it will be evident that the beveled faces 17 will exert a wedging action downward due to the weight of the doors, which is concentrated on the lines of tangency between the inclined faces 13 and 14 and the beveled faces or zones 17.

This, of course, tends to develop friction along the lines of contact, which friction is enhanced by the fact that on account of the conical form of these surfaces 17 the circumference at the side faces and at the points 22 will describe a shorter movement than occurs at the points 23 where the circumference is greater. This tendency to develop friction is desirable because it results in a resistance to movement of the doors along the guide rails. While this resistance is not sufficient to require great force to move the doors along the rails by a person opening the doors, nevertheless it is sufficient to keep the doors, or one of them at least, from rolling down its guide rail if it happens that one end of the guide rail is slightly below the level of the other end.

But the use of these conical faces 17 has a slight objection which is that the rollers in rotating may tend to ride upwardly on the inclined faces 14 that are disposed inwardly toward the middle vertical plane of the hanger assembly. If this were permitted to continue to a great extent it could effect the derailing of one or other of the rollers supporting the door, that is to say, the rollers can ride up the innermost inclined face, and pass out of the runway.

In order to prevent any such accidental derailing of the rollers I provide a longitudinally extending guard in the form of an integral longitudinal rib or abutment 24 corresponding to each door. These abutments extend longitudinally and are located in an inwardly offset position away from the plane of the paths of the rollers when running in their runway 11 and 12. These abutments are preferably of V-form in cross-section, and in the present instance are integral with the material of the hanger plate of the guide rail.

In Figure 2 the outline of the roller 15 is indicated in dotted lines 15a in a position it would have when the guard 24 would function to keep it in its runway. These integral guard abutments incidentally give a desirable stiffening effect to the rail 1.

In Figure 3 one of the doors is illustrated at the right in a tilted and inclined position such as it would assume in being hung into the rail 1 or in being removed for any reason. In order to enable the doors to be tilted sufficiently to hang their rollers into the runways, the angle included between the inclined flanges that form each runway should be approximately 90 degrees, substantially as indicated at the right in Figure 3.

Many other embodiments of this invention may be resorted to without departing from the spirit of the invention.

I claim and desire to secure by Letters Patent:

1. In a wardrobe door and hanger assembly for the same, the combination of an elongated guide-rail having a top-plate extension for attachment to a fixed supporting rail, said guide-rail having a downwardly extending side wall with an inwardly disposed extension at its lower edge, said last named extension including a channel form runway presenting an inwardly disposed flange with an inclined guide face for supporting the roller on its side remote from said downwardly extending side wall, a roller bracket for attachment to the door with a roller carried thereby, the lower edge of said roller running on, and supported by, said inclined guide face; said top plate extension having an integral longitudinally extending guard rib projecting downward therefrom, located above the upper side of said roller and disposed in a plane removed laterally inward from the vertical medial plane of the roller with respect to the said channel form runway, and in a position to engage the inner face of said roller if and when the roller rides upwardly on said in-

4

wardly disposed guide face, thereby preventing the roller from riding up the same and out of said runway.

2. A wardrobe door and hanger assembly therefor according to claim 1, in which the said longitudinally extending guard rib is located at sufficient height above the said runway to enable the upper edge of the roller to clear the underside of said guard if and when the said door is swung outwardly while the roller is supported in said runway.

3. A wardrobe door and hanger assembly for the same according to claim 1, in which the said channel-form runway is a single runway of substantially V-form in cross section, and in which the lower edge of the guard rib is located beyond the path of movement of the uppermost point on the roller when the upper edge of the roller is tilted outwardly while the lower edge is held at the bottom of its runway.

4. A wardrobe door and hanger assembly therefor according to claim 3, in which the angle included between the portions of the inwardly disposed extension defining the V-form cross-section approximates 90 degrees, thereby permitting the said tilting movement of the said roller.

5. A wardrobe door and hanger assembly therefor according to claim 1, in which the said channel form runway and the said guard rib extension are of substantially V-form in cross-section.

6. A wardrobe door and hanger assembly according to claim 1, in which the said channel form runway is of substantially V-form in cross-section, and the said roller has beveled faces beveled at an angle substantially conforming to the angle of the inner faces respectively of said V-form cross-section, the underside of the said roller being unsupported by the runway between the said beveled faces, whereby frictional resistance is developed to overcome any tendency of the door and hanger assembly to gravitate down the runway if the same is longitudinally on an incline.

7. In a hanger assembly for supporting two wardrobe doors in adjacent planes, the combination of an elongated plate-form guide rail having an uppermost centrally disposed hanger-plate capable of seating against the underside of a supporting rail, with means for securing the same to the supporting rail; said hanger-plate having two integral laterally spaced downwardly extending side walls with integral inwardly disposed roller runways on the same adjacent their lower edges, said runways being of substantially V-form cross-section, roller brackets with rollers carried thereby positioned in said runways respectively, said uppermost disposed hanger-plate having downwardly offset integral V-form guard rib extensions extending longitudinally with said guide rail, said guard rib extensions being disposed inwardly and laterally out of line from the vertical medial plane of said runways respectively, and located alongside the path of the upper edges of the rollers if and when the said rollers climb up on the innermost side of said V-form runways, and operating to prevent the rollers from moving laterally out of their respective runways.

References Cited in the file of this patent

UNITED STATES PATENTS

795,241	Weiss	July 18, 1905
1,549,925	Sarkisian	Aug. 18, 1925
1,621,717	Grant et al.	Mar. 22, 1927
1,750,444	Vallen	Mar. 11, 1930
2,554,294	Conroy et al.	May 22, 1951

FOREIGN PATENTS

253,671	Great Britain	June 24, 1926
---------	---------------	---------------

OTHER REFERENCES

American Builder, volume 76, Number 3, March 1954, page 12.