Nov. 11, 1952 J. G. STERLING 2,617,141

SLIDING DOOR HANGER ASSEMBLY

Filed Jan. 19, 1950

Fig. 1.

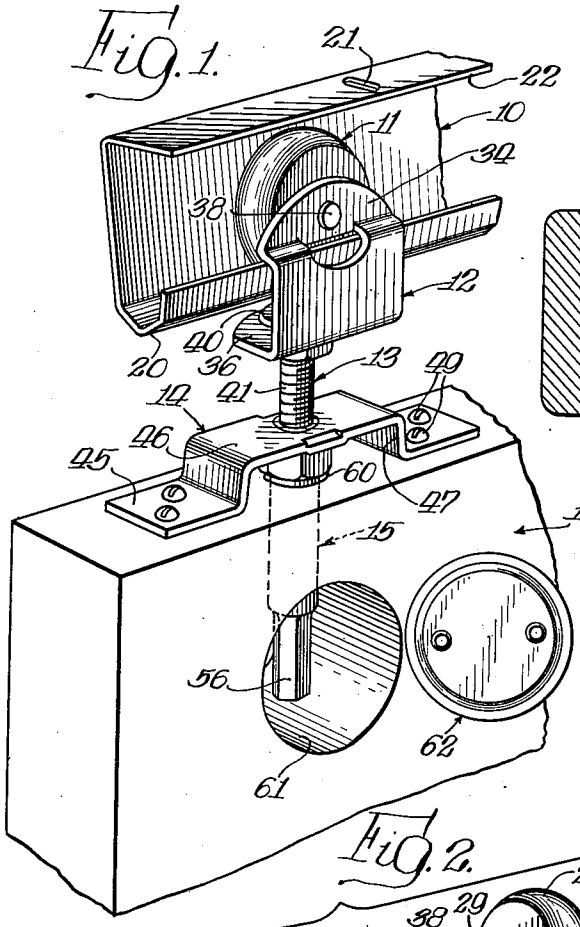


Fig. 3.

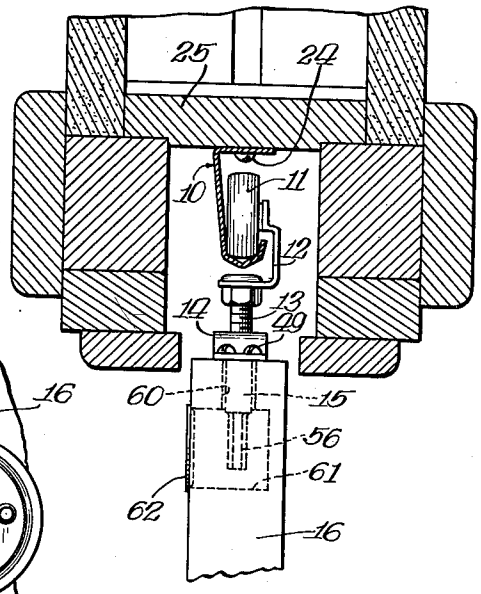


Fig. 2.

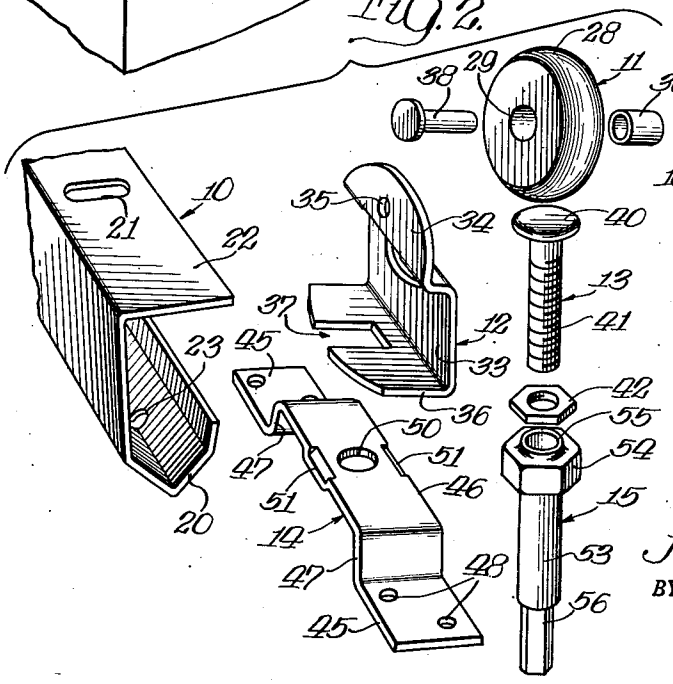
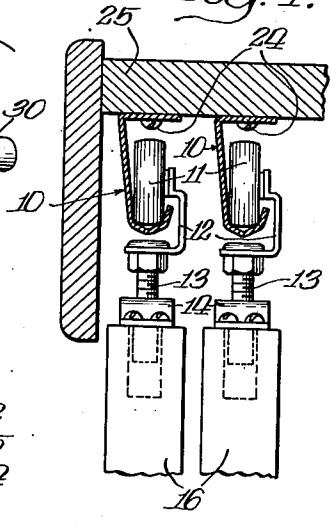


Fig. 4.



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SLIDING DOOR HANGER ASSEMBLY

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4 Claims. (Cl. 16—105)

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My invention is primarily concerned with a new and improved door hanger assembly, adapted to be used with sliding panel doors or the like, embodying several new and useful structural features heretofore unknown in this art whereby a novel and useful door hanger assembly capable of quick and easy installation and adjustment is made possible.

There have been numerous sliding door hangers presented to the public in the past, the particular design features of which are too numerous to mention herein; however a common problem to all such hangers is that of adjusting the hanging position of the hanging door for free sliding movement without removing wood trim such as door stops and jambs in order to make the hangers accessible for adjustment. Lack of operational simplicity and ruggedness have also been important factors in delaying complete commercial success of this desirable type of door hanging. Also, the lack of a successful roller track that can be readily assembled to the door framing, has caused much delay in the public's acceptance of this method of door hanging over the conventional hinge and pin arrangement.

It is one of the objects of my invention to present a new and useful, easily installed, sliding door hanger assembly whereby the hanging position of the door or panel it is supporting may be readily adjusted without removing the door from the hanger assembly and without the necessity of removing wood trim, door stops, a door jamb or the like.

It is a further object of my invention to present a new and useful type of roller track that may be readily assembled or hung to a door framing by means of wood screws or the like.

It is a still further object of my invention to disclose a new type of adjustable hanger assembly capable of being locked in its adjusted position while the door is being supported thereon, whereby proper, quick and substantially permanent adjustment of the door hanging position may take place.

The above and other objects of my invention will appear from time to time as the following specification unfolds in which, in order to acquaint those familiar with this art with features of construction and the use and operation of my device, I have described a certain preferred embodiment thereof, readily more understandable with reference to the accompanying drawing wherein:

Figure 1 represents a perspective view of a door hanger made in accordance with my invention;

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Figure 2 is an exploded view of the hanger assembly showing the relation of the various parts thereof;

Figure 3 is an end view of a door suspended by the hanger assembly; shown in Figure 1, displaying the means for adjusting the vertical position of the door; and

Figure 4 is another end view similar to Figure 3 showing an alternate means for mounting and adjusting the positioning of the door.

Referring now to Figures 1 and 2 of the drawings, the hanger assembly shown therein is comprised generally of a guide roller track 10, a wheel roller 11, a roller bracket 12, and adjusting stud 13, a mounting bracket 14, and an adjusting sleeve 15 adapted to be suitably mounted to a door 16.

The guiding roller track 10 may be of any suitable metal, such as sheet steel, capable of being formed, as by a bending machine, to the desired shape shown in the drawing. The track should preferably have a substantial V-shaped bottom rail portion 20 for contacting the periphery of the guide roller 11. Suitable oblong slots 21 may be formed along an upper flanged portion 22 of the track member in registering relation with suitable oblong apertures 23 formed along the apexual portion of the V rail 20. The slots 21 are of a width suitable for receiving screws 24 for mounting the track to an overhead door frame member 25, so that the track will be suspended therefrom. The apertures 23 are normally of a size suitable for receiving the blade and shank of a screw driver therethrough whereby the screws 24 may be readily inserted into the frame 25 to hold the track securely in position. Lateral adjustment of the track's position on the frame member 25 may be accomplished by shifting the position of the slots 21 on the screws 24 imbedded in the frame member 25.

The roller 11 is preferably a solid wheel herein made of plastic, such as phenolic material, having a rounded rim portion 28 adapted to partially mate with the V-shape rail 20 of the track 10, so that the roller will roll in contact with the rail along two contact paths or traces located substantially along the upper reaches of the V-rail's inner faces, as shown in Figures 3 and 4. A central cylindrical opening 29 may be axially bored through the roller to receive a suitable sleeve bearing 30, herein made of oil impregnated bronze for permanency and silent operation.

The roller bracket 12 may be of slightly heavier gage metal than that used in the track member 10 and comprises generally a central shallow

channel portion 33 with an upwardly extending tongue 34, having a centrally disposed hole 35 therein; and a lower lip 36 extending at right angles from the lower edge of the channel portion 33. A slot 37 is disposed centrally of the lip 36 and is of sufficient width and depth to receive the adjusting stud 13 therein for purposes which will appear later herein. An ordinary flat headed rivet 38 may be employed to connect the bracket 12 with the roller 11, by inserting the rivet through the sleeve bearing 30, pressed into the opening 29 of the roller; the rivet shank will then protrude through the hole 35 of the bracket tongue 34 and may be upset in a conventional manner, to hold the roller to the bracket tongue 34 allowing sufficient lateral clearance, so that the roller may rotate freely on the rivet as an axle.

The adjusting stud 13 is herein shown as an ordinary flatheaded carriage bolt type having a flattened head 40 and a threaded shank 41. A locking nut 42 threads onto the shank 41 in assembly to hold the portions of the bracket lip 36 bordering the edges of the slotted opening 37 thereof, firmly between the upper surface of the nut 42 and the underside of the flat head 40 to provide a detachable mount for the roller bracket 12 with the adjusting stud 13.

The mounting bracket 14 is preferably of metal of the same gage as the roller bracket 12 and may comprise generally a suitable length of strip metal, such as steel, having a foot portion 45 formed at each end with an adjacent central platform 46 disposed parallel to, but offset upwardly from the feet. Vertically disposed interconnecting webs 47 reach between the feet 45 and the central portion, the entire bracket being one continuous strip of metal bent into this desired shape. Each foot 45 may contain suitable holes 48 for receiving holding screws 49 therethrough for connecting the mounting bracket to the top of the door 16. A circular hole 50 may be located centrally of the platform 46 for receiving the upper end of the adjusting sleeve therein. A locking nib 51 may extend downwardly from each side of the platform 46 opposite the hole 50 to engage an upper hexagonal head 54 of the adjusting sleeve 15 to lock that nut in its adjusted position when the weight of the door is being supported by the hanger assembly.

The adjusting sleeve 15 is preferably of metal and may comprise generally a hollow tubular shank portion 53 having a threaded interior, adapted to receive the threaded shank 41 of the adjusting stud; an upper hexagonal head 54 having an upper annular raised guide shoulder 55 formed therewith, which is adapted to be received by the central circular hole 50 of the mounting bracket 14; and a lower hexagonal wrenching post 56, adapted to be engaged by any suitable wrench for adjusting the vertical take-up of the hanger assembly. In assembly, the adjusting sleeve 15 threads onto the adjusting stud 13 below the mounting bracket 14, so that the annular guide 55 of the sleeve 15 lies within the circumference of the central hole 50 of the bracket 14.

Use and operation

In mounting a hanger assembly of the type described above on a door or panel two adaptations of my hanger assembly may be used, as shown in Figures 1, 3 and 4 of the drawings. The preferred way is that shown in Figures 1 and 3, wherein a hole 60 is drilled downwardly from the top of the door a distance and diameter suitable to receive the adjusting stud and sleeve. A second larger access hole 61 may then be drilled in one face of the door so as to interfere and meet the lower extremities of vertical hole 60. A similar system of mounting holes should be placed in the top of the door opposite each hanger, and at least two hanger assemblies used on each door with the track being substantially twice the length of the door width. A suitable circular cover plate 62 may be used to cover over the aperture 61, preferably located in the back face of the door. It will be readily perceived that with the roller mounted on the track, the mounting bracket fastened to the top of the door, and the adjusting stud and sleeve inserted in the vertical hole 60 near the top margin of the door, the vertical hanging position of the door may be readily adjusted by turning the adjusting sleeve on the adjusting stud by means of a wrench inserted through the access hole 61 to engage the wrench post 56 of the adjusting sleeve.

Figure 4 shows an alternate method of mounting the hanger to the door, similar to the method just described, except for the elimination of the access hole 61 and the cover plate 62.

In this system the vertical hole 60 is drilled in the top of the door and the adjusting sleeve 15 cut off about ¼ of an inch below the upper hex head 54 prior to insertion therein. Also, the adjusting stud may be shortened if desired. The assembly is then mounted to the door in the aforedescribed manner, but adjustment of the hanging position of the door is now affected by engaging the hex head 54 of the adjusting sleeve with a suitable wrench in its position between the bottom of the platform 46 of the mounting bracket and the top of the door.

If desired, double sliding panels may be mounted using my hanger assembly, as indicated in Figure 4. As noted before, ease of assembling the roller track 10 to the overhead frame member 25 is made possible through use of the slots 23 in the bottom rail 20 which are adapted to allow insertion of a screw driver therethrough. It should be further noted that the rollers 11 engage the rail portion 20 of the track members 10 along two parallel paths positioned sufficiently high on the inner surface of the track rail, so that the screw driver apertures 23 do not interfere with smooth rolling motion of the rollers over the rails. Further, notice should be made of the fact that the weight of the door hanging on the mounting bracket always tends to pull the locking nibs 51 in engagement position with the hex head of the adjusting sleeve, to lock that sleeve in its adjusted position while still allowing the sleeve to be turned by wrench means to ride over the nibs when it is desired to adjust the hanging position of the door.

Thus, it is seen that I have presented a new and useful sliding door hanger assembly capable of being readily installed and easily adjusted, and having a simple but rugged construction.

While I have herein displayed a preferred form in which the principles of my invention may appear, it will be readily understood that numerous changes, modifications and substitutions of equivalents may be employed without departing from the spirit and scope of my invention, and, therefore, I do not wish to be limited to the specific embodiments herein illustrated, except as may appear in the following appended claims.

I claim:

1. In a hanger assembly for supporting a door panel for sliding movement along an overhead track, the combination comprising, a roller adapted to have rolling engagement with said track, a

roller bracket supporting said roller for rotational movement about a horizontal axis, a lower lip on said bracket having an aperture formed centrally therein, a mounting bracket, having a central aperture therethrough, positioned in vertical spaced relation below said lip and adapted to be fastened securely to the upper end of a door, axially adjustable fastening means interconnecting said two brackets, comprising a threaded stud bolt extending through said aperture in said lip and having an outwardly flared upper head end engaging the upper surface of said lip adjacent said aperture therein, a nut member threaded on said stud and engageable with the under surface of said lip to secure said stud's head end to said roller bracket, the lower end of said stud being received loosely through said central aperture formed in said mounting bracket; and an internally threaded sleeve member threaded on said stud beneath said mounting bracket, said sleeve having an enlarged upper head portion abuttingly engaging the under surface of said mounting bracket adjacent said aperture therein thereby to receive the hanging weight of said door thereon, and wrench gripping surfaces on said sleeve for facilitating torsional rotation of said sleeve on said stud to adjust the vertical spacing of said two brackets.

2. In a hanger assembly of the class described for mounting a door or panel for lateral sliding movement along an overhead rail track, the combination comprising, roller means adapted to have rolling engagement with said track, bracket means rotatably supporting said roller, a lower horizontal lip portion formed on said roller bracket and having a slotted aperture opening inwardly of one edge thereof, a mounting bracket having a central aperture therethrough and adapted to be secured to the upper end of a door, adjustable connecting means interjoining said two brackets and comprising a threaded stud bolt dependingly mounted to said roller bracket and having its lower end extending through said central aperture formed in said mounting bracket, and a sleeve member threadingly mounted on said stud bolt beneath said mounting bracket, said sleeve having a polygonal upper head, the upper surface of which frictionally engages the lower surface of said mounting bracket adjacent said aperture therein; and a pair of downwardly depending locking nibs formed on said mounting bracket adjacent opposite sides of said aperture therein, said nibs being engageable with opposite polygonal surfaces of said sleeve's head for locking the same against free rotational movement about said stud, said sleeve's head overriding said nibs when torsional force is applied to said sleeve thereby to permit vertical threading adjustment of said sleeve on said stud for adjusting the vertical spacing of said two brackets and the hanging elevation of said door.

3. A hanger assembly for use in mounting a door for sliding movement along an overlying track rail, comprising in combination, a roller bracket, a track engaging wheel supported by said roller bracket at one side thereof and adjacent its upper end, for rotational movement about a horizontal axis; a lip portion formed at the lower end of said bracket and extending beneath said wheel in parallel spaced relation to said wheel's rotational axis, said lip having a centrally disposed slotted aperture extending inwardly from one edge thereof; a mounting bracket mountable to the upper end of said door and having an upwardly offset central platform section, said platform having a central circular aperture formed therein; a pair of depending locking nibs formed on opposite sides of said platform adjacent said aperture therein, a threaded stud bolt reaching dependingly between said two brackets, said bolt having a flattened upper head portion, the lower surface of which is engageable with the upper surface of said lip adjacent said slotted aperture therein and a threaded elongated shank portion receivable in said lip's slotted aperture and insertable through said platform's central aperture, a locking nut threadingly engageable with said bolt's shank and mounted thereon between said platform and said lip, said nut serving, under torsional tightening engagement with the underside of said lip to lock said lip and bolt head together; an adjusting sleeve threadingly mounted on said bolt shank below said platform, an annular bearing shoulder formed at the upper end of said sleeve, receivable within the limits of said aperture in said platform, and a polygonal enlarged head on said sleeve immediately adjacent said bearing shoulder, said head abutting the underside of said platform adjacent said aperture therein and lockingly engaging with said nibs to prevent threading movement of said sleeve along said bolt shank when the weight of said door is transmitted to said sleeve head through said mounting bracket.

4. In a hanger assembly adapted to mount a door or the like for sliding movement along an overhead track, a wheel roller, a roller bracket rotatably mounting said wheel for rolling movement along said track, an adjusting stud detachably mounted to said roller bracket and hanging downwardly therefrom, a locking nut threaded onto said stud for holding said bracket between a head portion of said stud and said nut, a mounting bracket mountable to the upper end of said door and receiving said stud through a central aperture thereof, a tubular adjusting sleeve threaded onto said stud beneath said mounting bracket, the upper end of said sleeve comprising an annular shoulder which is insertably receivable in the central aperture of said mounting bracket, an enlarged head portion extending laterally outward of said sleeve, adjacent said shoulder at the upper end thereof, said head abuttingly engaging the underside of said bracket adjacent said aperture, and the lower end and shank of said sleeve being insertable in a suitable vertical bore extending downwardly from the upper end of the door; and a plurality of wrench gripping surfaces formed at the lower end of said sleeve adapted to be gripped for adjustable threading of said sleeve on said stud through a suitable access port in one face of the door whereby said hanger assembly may be adjusted to change the door's vertical hanging position without removing said assembly.

JOHN G. STERLING.

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