United States Patent

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[73] Assignee **Panelfold Doors, Inc.**

[54] **TRACK SEAL FOR FOLDING DOORS WITH ALIGNED SEAL FLAPS**
4 Claims, 4 Drawing Figs.

[52] **U.S. Cl.** **160/40,** 16/95, 49/412, 160/84, 160/199
[51] **Int. Cl.** **E06b 7/16**
[50] **Field of Search** ..... 160/40, 179, 84 V, 84 H, 199; 16/93, 95, 87, 87.4, 87.6; 49/409, 412, 490, 496

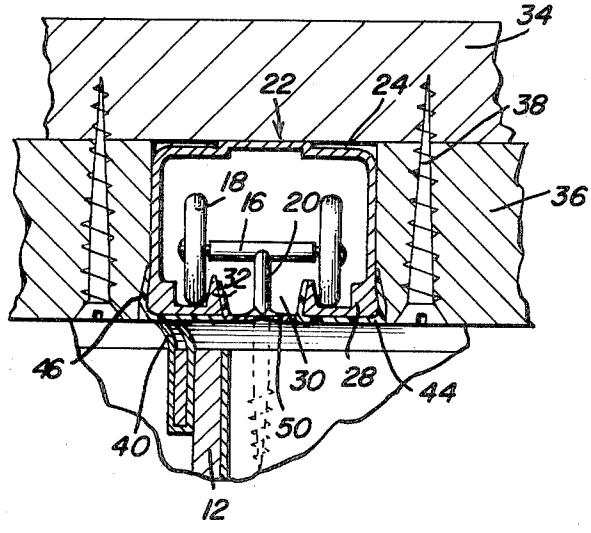
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ABSTRACT: A continuous flexible seal for the entrance slot of a channel-shaped track supporting a folding door therefrom whereby the supporting rods for the door extending through the entrance slot of the track will be sealed by a pair of opposed and aligned flexible sealing strips having adjacent edges substantially in engagement with each other throughout their length to preclude communication between the two sides of the door by sound and air entering the track on one side of the door and exiting on the other side thereof.



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Fig. 1

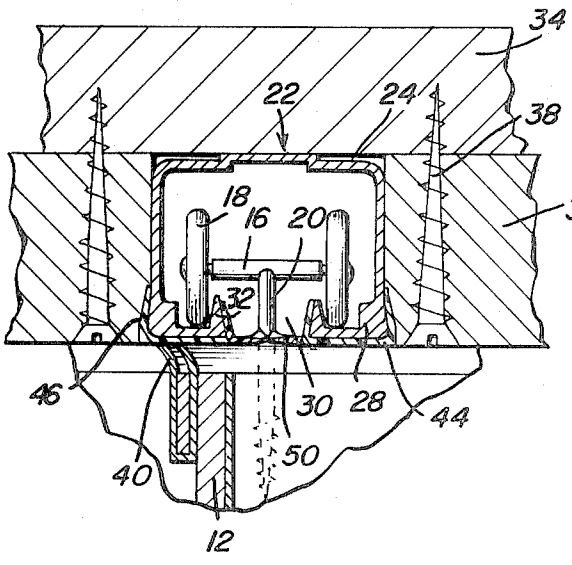


Fig. 2

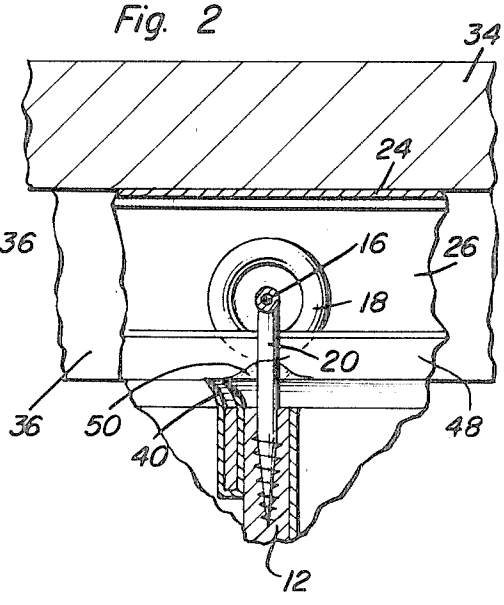


Fig. 3

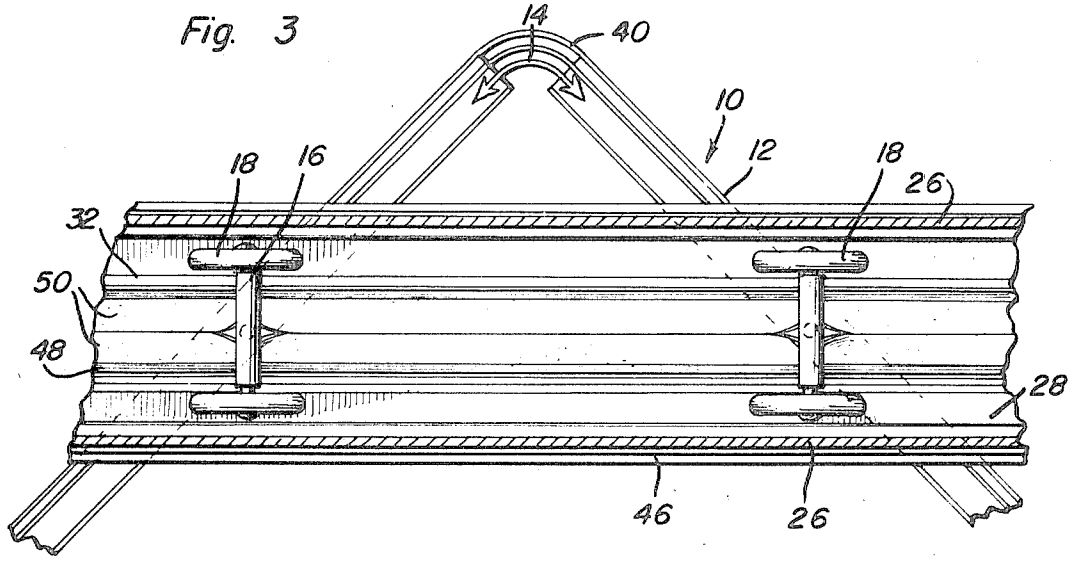
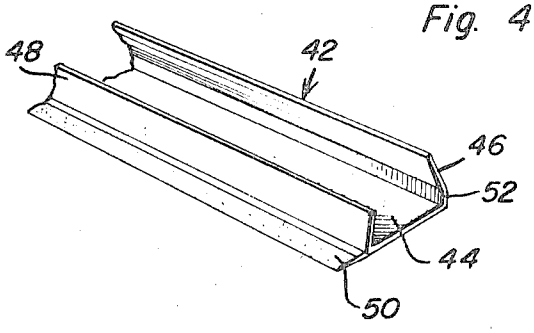


Fig. 4



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TRACK SEAL FOR FOLDING DOORS WITH ALIGNED SEAL FLAPS

The present invention generally relates to a track seal for folding panel doors including improvements in that construction disclosed in my prior U.S. Pat. No. 3,349,829, issued Oct. 31, 1967 for "Track Seal for Folding Doors."

Seal devices have been provided for overhead supporting tracks to prevent communication between opposite sides of a folding door by effectively sealing the entrance slot to the track while yet permitting movement of the supporting hanger rod which interconnects the carrier within the track nd the supported door.

The present invention has for its main object the provision of an attachment to a channel-shaped track in the form of a continuous channel-shaped mounting member having a projecting flexible flange thereon which extends partially across the entrance slot to the track and coacts with a similar flange extending inwardly from the opposite side of the entrance slot for the track so that as the two flexible flanges are disposed alongside of or in engagement with each other, they form an effective seal for the entrance slot but yet enable movement of the hanger rods with minimal drag being exerted on the hanger rods during their movement when opening or closing the door.

Another object of the invention is to provide a track seal in which the channel-shaped body of the track seal is of a relatively rigid plastic material for snapping onto the channel-shaped track structure without the use of external fastening devices thereby facilitating the assembly of the track seal with the track.

Still another object of the present invention is to provide a track seal in accordance with the preceding objects in which the lower surface of the track seal is substantially smooth and adapted to form a continuation of an adjoining surface which is engaged by flexible sealing flaps at the top edge of each panel of a folding door so that a relatively smooth surface is provided for the sealing flaps or strips normally extending above the top edge of the folding door.

Yet another object of the present invention is to provide a track-sealing device which is simple in construction, easy to attach, effective for its purposes and relatively inexpensive to manufacture.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

FIG. 1 is a transverse, sectional view illustrating the track seal of the present invention assembled with a track, adjacent surfaces contiguous thereto and a portion of the upper edge of a folding door.

FIG. 2 is a longitudinal sectional view of the construction of FIG. 1 illustrating the manner in which the hanger rod extends through the track seal.

FIG. 3 is a top plan sectional view of the construction of FIG. 1 illustrating the relationship of the sealing flange to the hanger rod.

FIG. 4 is a perspective view of a portion of a track seal element.

Referring now specifically to the drawings, the folding door is generally designated by the numeral 10 which includes a plurality of rigid panels 12 interconnected by a flexible hinge strip 14 such as that illustrated in my prior U.S. Pat. No. 3,131,753, issued May 5, 1964 for "Folding Door With Flexible Joint." Supporting the upper edges of the panels 12 is a plurality of wheeled carriers or dollies 16 which may be referred to as hangers and which include wheels or rollers 18 and a depending hanger rod or stem 20 that is attached to the upper edge of the panels 12 in a well-known manner so that the panels 12 may move from a closed or extended position in which they are in a shallow accordion fold to an open retracted position in which the panels 12 are stacked one against the the other.

The hangers 16 are supported in an overhead track generally designated by numeral 22 and which includes an upper wall or flange 24 and depending parallel sidewalls or flanges 26 that terminate in inwardly extending lower flanges 28. The flanges 28 where they connect with the sidewalls 26 are thickened for rigidity and the flanges terminate in spaced relation to each other to define a continuous slotlike opening 30 through which the hanger rod 20 extends and which enables the hanger rod 20 to move longitudinally of the track 22. The inner edge of each of the flanges 28 is provided with an upwardly extending flange 32 that is inclined upwardly and laterally outwardly so that the two inner surfaces of the flanges 32 diverge upwardly from each other as best illustrated in FIG. 1.

The track 22 is supported from an overhead supporting structure 34 and a sealing structure 36 is disposed on either side of the track 22 in substantially flush relationship to the lower surface of the flanges 28 of the track 22. Any suitable fasteners 38 are provided for supporting the ceiling 36 from the overhead support thus providing a recessed structure for the track which is relatively neat and attractive in appearance.

The door 10 also includes continuous flexible sealing strips 40 extending upwardly from the upper edge of the panels 12 with the sealing strips 40 being continuous and attached to the door panels in any suitable manner such as disclosed in my prior U.S. Pat. NO. 3,349,829. The upper free continuous edge of each sealing strip 40 engages the undersurface of the ceiling 36 so that a continuous and complete seal is maintained between the panel door 10 and the overhead supporting structure for retarding or precluding passage of air, sound and light from one side of the folding door to the other.

Mounted on each of the flanges 28 is a track-sealing device generally designated by numeral 42 which includes and which is generally channel shape in configuration nd provided with a bottom horizontally disposed flange 44, an upwardly extending outer flange 46 and an upwardly extending inner flange 48 of unitary construction and preferably of plastic material with the outer flange 46 being longer than the inner flange 48. The flanges 46 and 48 taper slightly in thickness and also converge upwardly towards each other for clamping and gripping engagement with the surfaces of the lower portion of the sidewall 26 and the inclined surface of the flange 32 which defines the entrance slot.

Extending alongside of and integral with the juncture between the bottom flange or web 44 and the flange 48 is a sealing flange 50 which is constructed of plastic material and tapers laterally outwardly to a substantially feather edge that is highly flexible but yet shape sustaining so that the hanger rod 20 may extend shape the adjacent free edges of the flanges 50 and move longitudinally along the entrance slot 30 with a relatively small frictional drag being exerted on the hanger rod 20. As illustrated in FIGS. 2 and 3, where the hanger rod 20 goes between the adjacent edges of the flanges 50, a relatively effective seal is maintained although there will be a slight separation of the adjacent edges of the sealing flanges 50 immediately adjacent the hanger rod 20.

As illustrated in FIGS. 1 and 4, the outer flange 46 is longer than the inner flange and has a relatively short transition flange 52 which conforms the flange 46 with the exterior surface of the track wall 26 which flares slightly outwardly at its lower end. The convergence of the flanges 46 and 48 and the upward convergence of the corresponding surfaces which they engage serve to securely retain the track seal 42 in position on the track without the use of any fasteners for this purpose. As illustrated, the adjacent ceiling 36 also conforms with the track and track seal 42 so that the lower surface of the ceiling 36, the lower surface of the bottom web 44 and the lower surface of the sealing flange 50 will be all substantially flush for engagement with the sealing strips or flaps 40 attached to the door panels 12. The sealing flange 50 is substantially more pliable and flexible than the remainder of the track seal which is relatively rigid but sufficiently flexible to snap onto the overhead track. The flange 50 is integral with the juncture between the bottom web 44 and the lower edge of the flange 48 and is

flexible throughout its lateral extent and provided with a feather edge to lightly engage the hanger rod **20** so that the door may be opened and closed with the exertion of substantially the same force that would be necessary to open and close the door if the track seal were not employed. The track seal may be colored in any suitable manner to be compatible with the surrounding ceiling structure as well as the associated door structure this providing a neat and attractive structure which serves to conceal the track and provide a closure for the entrance slot **30**.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention.

What is claimed as new is as follows:

1. A combination track seal and overhead supporting track for a folding panel door having hanger assemblies movably disposed in the track and a rod extending downwardly from each hanger assembly to a panel, said track including a longitudinal entrance slot movably receiving said hanger rods, said slot being defined by a pair of spaced depending channel-shaped portions of the track having upwardly converging surfaces, said track seal comprising sealing means mounted on said track and forming a closure for the entrance slot, said sealing means including a pair of laterally extending flexible sealing flanges bridging the slot with meeting edges disposed in alignment with each other for permitting the rod to pass therethrough while in substantial sealing engagement with the periphery of the rod to substantially prevent entry of air, noise and light into the track, said sealing means including a pair of substantially channel-shaped members constructed of resilient material and each including a bottom web and upwardly converging inner and outer flanges for gripping engagement with said depending channel-shaped portions of the track, said sealing flaps being integral with the channel-shaped member and being constructed of flexible plastic material having a high degree of flexibility as compared with the channel-shaped member.

2. The structure as defined in claim **1** wherein the outer upwardly converging flange is longer than the inner upwardly converging flange with the flanges corresponding to the convergence of the surfaces of the depending channel on the track for snap engagement therewith.

3. The combination as defined in claim **8** In combination, a supporting track having in-turned edges defining an entrance slot, a plurality of supporting assemblies movably disposed in said track, each assembly including a support rod extending through said slot, a plurality of closure panels each having an end edge connected with a support rod, hinge strip means flexibly connecting side edges of adjacent panels, a continuous seal means along the end edge of said panels, a sealing surface generally flush with the track and engaged by said seal means to provide a seal between the end edge of the panels and the sealing surface, and seal means mounted flush with the sealing surface and closing the entrance slot to the track thereby forming a complete seal for the end edge of the panels, said track seal means including a pair of continuous flexible seal flaps having flexible edges aligned with the entrance slot of the track for enabling passage of and movement of the support rods along the track and substantially sealing the rods in any position thereof, said flexible edges being disposed with the adjacent edges thereof in alignment and tapering to a thin and highly flexible edge to facilitate flexing of the edge around the support rods whereby very little of the adjacent edges spaced from the rods will be held in deflected position by the rods, said supporting track including depending channel-shaped portions defining the in-turned edges thereof and the entrance slot, each depending channel-shaped portion of the track having upwardly converging external surfaces, each of said continuous flexible seal flaps having a channel-shaped mounting structure including upwardly converging flanges of resilient but substantially more rigid material than the seal flaps for frictional clamping engagement with the converging surfaces of the depending channel-shaped portion of the track, said seal flaps extending inwardly from the inner edge of the web portion of the channel-shaped mounting structure.

4. The combination as set forth in claim **3** wherein the bottom surface of the channel-shaped mounting structure and sealing flaps are substantially flush with the sealing surface engaged by the seal means along the end edge of the panels of the door.

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