Jan. 21, 1964 R. E. FOLTZ 3,118,169

DOOR GUIDE

Filed March 10, 1961

Fig. 1.

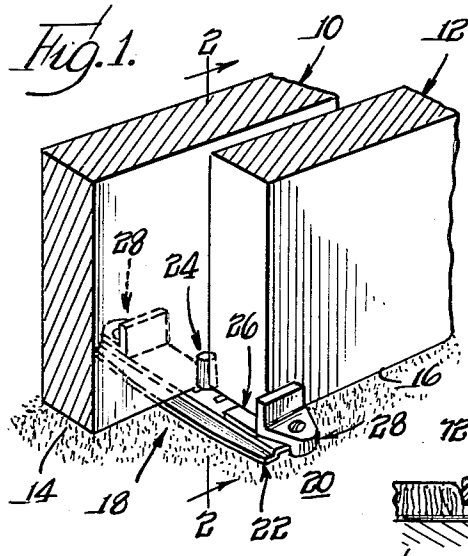


Fig. 2.

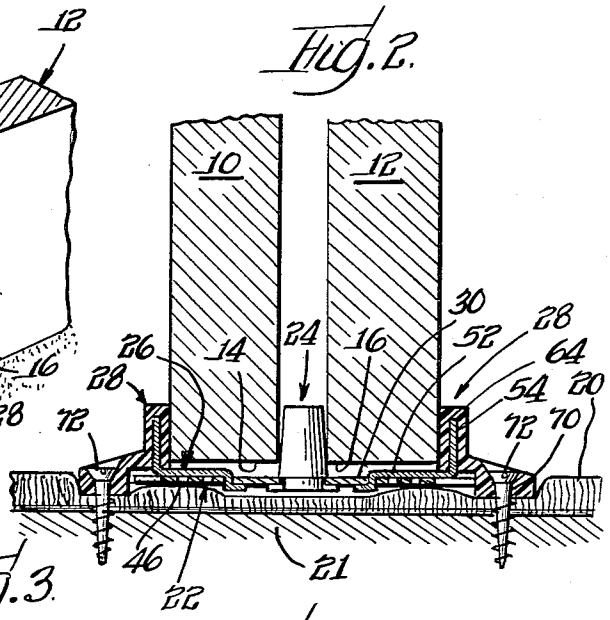


Fig. 3.

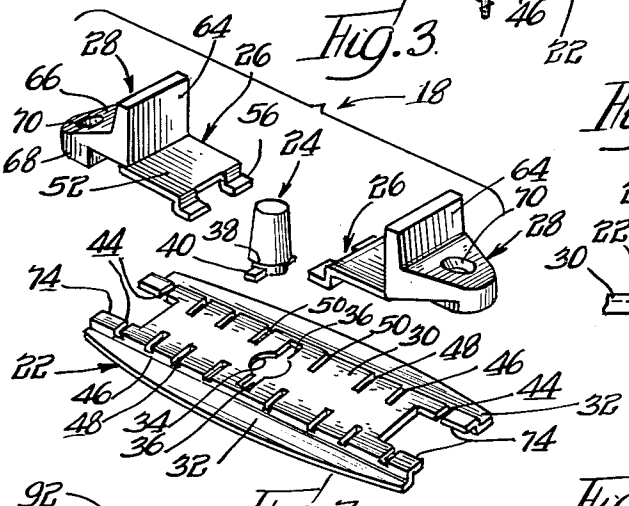


Fig. 4.

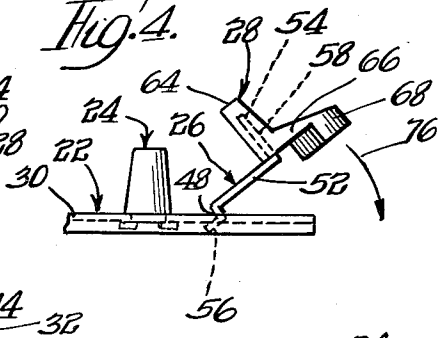


Fig. 7.

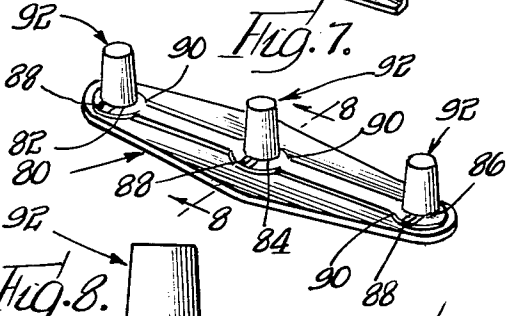


Fig. 8.

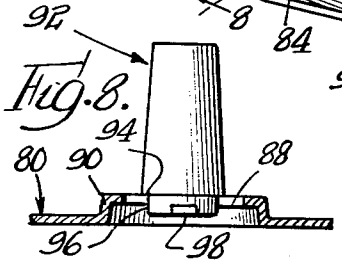


Fig. 6.

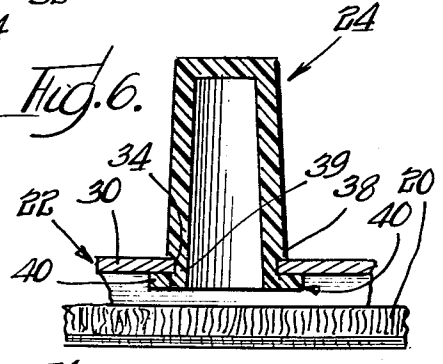
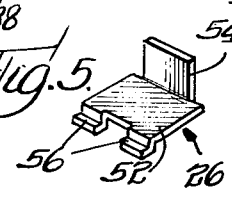


Fig. 5.



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DOOR GUIDE

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This invention relates generally to builders' hardware and more particularly to guides for by-passing doors.

In by-passing door installations, it is general practice to direct the movement of the lower edges of adjacent doors with a guide. One common form of door guide includes a plate and upstanding anti-friction guide members; and the guide members are usually assembled to the plate by entering appropriate apertures in the plate from beneath, the upward passage of the guide members being arrested by a radially extending flange formed thereon. However, much wall-to-wall carpeting is modernly arranged to extend into closets and other rooms closed off by the use of by-passing doors. Accordingly, the door guide in such installations must be positioned overlying the carpeting; and since the carpeting does not present a solid support for the guide members, accidental stepping on the guide member can dislodge it from the plate. Any resulting canting of the guide member frustrates proper movement of the doors, and actual jamming of a door can occur.

Therefore, an important object of the present invention is to provide a door guide which surmounts the foregoing problem.

A more general object of the invention is to provide a new and improved door guide.

Another object of the invention is to provide a door guide in which the guide members are axially locked in position.

Yet another object of the invention is to provide a door guide in which guide members are easily and positively assembled to the base plate.

A further object of the invention is to provide an adjustable door guide that can be successfully mounted over compressible floor coverings.

Additional objects and features of the invention pertain to the particular structure, materials and arrangements whereby the above objects are attained.

A structure in accord with the invention includes a base plate having a central, circular aperture and a slot extending radially outwardly from the edge of the aperture; and an anti-friction member having a shoulder portion for abutting the upper surface of the plate, a bushing portion slidably and rotatably receivable in the aperture and a lug radiating from the bushing portion spaced apart from the shoulder portion and adapted to pass freely through the slot when the bushing portion is aligned over the aperture and when the lug is aligned with the slot, sliding of the bushing portion into the aperture and rotation of the anti-friction member relative to the plate locking the member against axial movement.

The invention, both to its structure and mode of operation, will be better understood by reference to the following disclosure and drawing forming a part thereof, wherein:

FIG. 1 is a perspective view of a portion of a by-passing door installation incorporating a door guide constructed in compliance with the present invention;

FIG. 2 is an enlarged view taken through the section 2—2 of FIG. 1;

FIG. 3 is an enlarged view of the door guide of FIG. 1, showing the door guide in a partially disassembled state;

FIG. 4 is a side elevational view showing the positioning of one of the arms on the base element;

FIG. 5 is a perspective view of one of the arms with the corresponding guide-tip element removed;

FIG. 6 is an enlarged, side elevational view in cross section showing the cooperation of the center post and the base plate;

FIG. 7 is a perspective view of a modified guide plate constructed in accordance with the invention; and

FIG. 8 is an enlarged view taken through the section 8—8 of FIG. 7.

Referring now in detail to the drawing, specifically to FIGS. 1 and 2, a pair of by-passing doors will be seen indicated generally by the numerals 10 and 12 respectively. The doors 10 and 12 are hung for lateral movement employing conventional devices and procedures. Since such hanger devices comprise no part of the present invention, they are not illustrated nor will they be described herein. In order to restrict the transverse movement of the bottom edges 14 and 16 of doors 10 and 12 respectively, an adjustable door guide illustrated generally at 18 is positioned in contact with carpeting 20 overlying a floor surface 21 as is shown in FIG. 2.

Continuing with general reference to FIGS. 1 and 2 and with particular reference to FIG. 3, the adjustable door guide 18 will be seen to include a base plate or element 22, a central post 24 and a pair of arms 26, each arm 26 having a guide-tip element 28 fixed upstandingly to one end. The base element 22 includes an elongated plate portion 30 which is advantageously spaced above and between a pair of dependingly off-set floor-engaging flange portions 32, flange portions 32 being integral with the plate portion 30. Base element 22 is arranged to be relatively rigid and, as a consequence, is desirably fabricated from a suitable sheet metal.

An aperture 34 of generally circular shape is centrally formed in plate 30 for purposes of securely mounting the post 24 to the base element 22; and in accordance with a feature of the present invention, two slots 36 extend radially outwardly from the edge of aperture 34. While a single slot 36 may be employed, two or more of the slots arcuately spaced apart are preferred; and in accordance with the showing in the drawing, two slots 36 may be advantageously situated across a diameter of the aperture 34.

The post 24 is appropriately arranged to cooperate with aperture 34 and with slots 36. Therefore and as is well shown in FIG. 6, post 24 is provided with an annular shoulder portion 38 for abuttingly engaging the upper surface of plate portion 30. The post 24 also includes a cylindrical bushing portion 39 which is situated adjacent the shoulder portion 38 and which is slidably and rotatably receivable in the aperture 34. In addition, the post 24 comprises two lugs 40 which radiate from the bushing portion 39 spaced apart from the shoulder portion 38 by a distance approximating the thickness of plate portion 30. The lugs 40 are arranged to pass freely through the slots 36 and, accordingly, are disposed about the bushing portion 39 in an arcuate spacing corresponding to the arcuate spacing of the slots 36.

The post 24 is readily assembled to the base element 22 by aligning the bushing portion 39 over the aperture 34 and by aligning the lugs 40 with the slots 36. Subsequently, a sliding of the bushing portion 39 into the aperture 34 eventually results in the shoulder portion 38 en-

gaging the plate portion 30 of base element 22. Thereupon, rotation of the post 24 relative to the base element 22 turns the lugs 40 out of alignment with the slots 36; and the post 24 is effectively locked to the base element 22 by the edges of aperture 34 being constrained between the shoulder portion 38 and the lugs 40, as is well shown in FIG. 6. It is important to note that, in this position, axial movement of the post 24 is positively blocked in either vertical direction. Accidental stepping on the post 24 cannot therefore dislodge the post from the base element or permit canting thereof.

Post 24 is desirably arranged to be hollow, as is shown in FIG. 6, and is furthermore intended to present an anti-friction surface to confronting portions of doors 10 and 12. Hence, post 24 is desirably fabricated from a material of low frictional coefficient, polyamide type molding resins having proved useful in this regard.

Returning to FIG. 3, the plate portion 30 will be seen provided with four sets of lateral slots, each set comprising two pairs of slots, one pair of each set being disposed on each side of the aperture 34 along the elongated dimension of plate portion 30. As will become apparent, each set of slots is arranged to provide a desired spacing of the guide-tip elements 28 from post 24, specifically a spacing that is proper for a given standard door thickness. Accordingly, the extremely positioned set of slots, slots 44, is adapted to provide proper spacing for doors of 1¾ inch thickness. The next set of slots proceeding inwardly toward the center post, slots 46, is arranged to provide proper spacing for 1⅜ inch doors. The subsequent set of slots, slots 48, is adapted to accommodate 1⅛ inch thickness doors; and the set of lateral slots nearest the center post, slots 50, is adapted to provide proper guide spacing for doors ¾ inch thick. As will be recognized, doors having other thicknesses can be similarly accommodated by the provision of other, suitably positioned slots.

Turning to FIG. 5, an arm 26 will be seen to comprise a plate 52 terminating in a perpendicularly disposed blade 54 at one end and terminating in a pair of spaced tongues 56 at the other end. Tongues 56 advantageously project from plate 52 in dependingly offset relationship. This arrangement allows the tips of tongues 56 to be situated beneath the plate portion 30 while plate 52 itself overlies the plate portion 30 after the tongues have been inserted through an appropriate set of the lateral slots in plate portion 30. It is also important to point out that, when plate 52 overlies plate portion 30 in juxtaposition thereto and when tongues 56 have been inserted through an appropriate set of slots to be situated beneath the plate portion 30, arm 26 is effectively locked to the base element 22. For facility in their manufacture and in order to provide a strong relatively rigid part, arms 26 are desirably fabricated from a suitable sheet metal.

With reference to FIG. 4, the blade 54 of an arm 26 is employed in fixing a guide-tip element 28 to the arm 26. The blade 54 may enter and frictionally engage a cooperatively shaped slot 58 formed in the element 28, or it may have the element 28 molded about it.

Each of the guide-tip elements 28 includes a guide-tip proper 64 and a projection 66 which extend axially beyond the arm 26 to depend a toe 68 generally beneath the plane defined by the plate 52. This is shown in FIGS. 3 and 4. Furthermore, the toe 68 is arranged to depend sufficiently below plate 52 to engage the carpeting 20 or the floor surface 21 if no carpeting is provided. FIG. 2 shows the former arrangement with the plate 52 usefully overlying the plate portion 30. In addition, each guide-tip element 28 is adapted to be fastened in a fixed position; and for this purpose, the projection 66 is provided with a vertical bore 70 which advantageously passes the shank of a suitable fastener, such as wood screw 72. Moreover and with reference to FIG. 3, the opposite ends of plate portion 30 are desirably fashioned with relieved portions or recesses 74, the recesses 74 being adapted

to pass the toes 68 when tongues 56 are disposed in the innermost set of slots, slots 50.

As is shown in FIG. 2, when the guide-tip elements 28 are assembled to the arms 26 and when the arms 26 are assembled to the plate portion 30, the elements 28 cooperate with the post 24 in defining guide paths for the doors 10 and 12. Accordingly, the guide-tip elements 28 are fashioned to present anti-friction surfaces to adjacently positioned portions of the doors. Fabrication of the guide-tip elements from polyamide type molding resins has proved useful in this regard.

Having thus described one embodiment of the invention, it is important now to state how the illustrated construction operates. After the two doors 10 and 12 have been hung in compliance with the customary procedures employed for by-passing doors and after the post 24 has been assembled to the base element 22 as hereinabove described, the base element will be positioned overlying the carpeting 20 in the path of movement of the doors 10 and 12. As will be recognized, in the absence of carpeting 20, the base element 22 may be positioned directly on the floor surface 21.

With the base element 22 positioned beneath the bottom edges 14 and 16 of doors 10 and 12 transversely thereof, there should be sufficient clearance between the plate portion 30 and the bottom edges 14 and 16 adequately to accommodate the presence of the plates 52 of arms 26. If this relationship does not exist, of course, the door hangers will have to be readjusted to ensure proper clearance, taking into consideration the compressibility of the carpeting 20.

When proper spacing exists beneath the bottom edges of the doors, the base element 22 will be positioned beneath the doors overlying the carpeting 20 in readiness to be affixed in position. Before the door guide is fastened, the two arms 26 will be appropriately positioned on plate portion 30; and the mechanic installing the guide 18, given knowledge of the thickness of the doors 10 and 12, will be able to select the proper set of slots into which the tongues 56 of the arms 26 are to be inserted.

In FIG. 4, the tongues 56 of an arm 26 are shown entering slots 48 to cooperate with 1⅛ inch doors. The tongues 56 are first urged into the slots from a generally vertical direction until the end of plate 52 abuts the upper surface of plate portion 30. Thereafter, the arm 26 with the guide-tip element 28 affixed thereto will be swung in the direction indicated by arrow 76 until the toe 68 confronts the carpeting 20 and plate 52 abuts the plate portion 30.

With the door guide 18 properly positioned beneath the edges 14 and 16 of doors 10 and 12, screws 72 will be passed through the apertures 70, urged through the carpeting 20 and into threaded engagement with the floor surface 21. Because of the positively positioned arrangement established between base element 22 and the arms 26, achieved by virtue of the locking relationship of tongues 56, plate 52 and the corresponding slots in plate portion 30, screws 72 not only secure the guide-tip element 28 to the floor but also fasten the base element 22 thereto and thereby the entire door guide.

As will become apparent, the two screws 72 are readily accessible by virtue of their disposition exclusively outside of the guide paths of doors 10 and 12. It is also important to point out that, according to the features of the invention, no fasteners are required beneath or between the doors 10 and 12 where access with a screwdriver or other tool might be difficult.

Turning now to FIGS. 7 and 8, a modified form of the invention will be seen to comprise a base plate 80 having three circular apertures 82, 84 and 86 spaced along its longitudinal dimension. The circular apertures 82, 84 and 86 are spaced apart a selected distance to provide proper guidance for two by-passing doors. Furthermore, the apertures 82, 84 and 86 have lateral slots 88 extending radially outwardly from the edges from the

apertures. Advantageously, the apertures and their corresponding slots are fashioned in raised portions or bosses 90 formed in the base plate 80.

A complete door guide is formed from the base plate 80 by assembling three guide posts 92 to the plate 80, one post being assembled at each of the apertures 82, 84 and 86. The guide posts 92 may take similar shape and form as shown. Alternatively, the center guide posts may take generally circular transverse section whereas the end guide posts may take generally elliptical transverse section.

As is shown in FIG. 8, a guide post 92 includes an annular shoulder portion 94 which is adapted to engage the upper surface of a boss 90. The guide post 92 also includes a cylindrical bushing portion 96 situated adjacent the shoulder portion 94. In similar manner to the construction of post 24, the post 92 includes lugs 98 extending radially from the bushing portion 96. The lugs 98 are adapted to pass through the slots 88 and to confine portions of the boss 90 against the shoulder portion 94 upon rotation of the post 92. As will be recognized, assembly and function of a post 92 is similar to the assembly and function of the post 24.

While particular embodiments of the invention have been shown, it should be understood, of course, that the invention is not limited thereto since many modifications may be made; and it is, therefore, contemplated to cover by the appended claims any such modifications as fall within the true spirit and scope of the invention.

The invention is claimed as follows:

1. In a guide for sliding doors, the combination comprising: a base plate adapted to be fixed in position beneath the lower edges of said doors, said plate having a central aperture and a slot extending radially outwardly from the edge of said aperture; and an anti-friction member having an axially elongated post portion which defines surface means and having a shoulder portion underlying the post portion for abutting the upper surface of said plate, said member further having a bushing portion underlying said shoulder portion to be slidably and rotatably receivable in said aperture, said member additionally having a lug radiating from said bushing portion spaced apart from said shoulder portion and adapted to pass freely through said slot, whereby said member is assemblable to said plate by aligning said bushing portion with said aperture and by aligning said lug with said slot, subsequent sliding of said bushing portion into said aperture and rotation of said member relative to said plate locking said member against axial movement, said post portion upstanding from said plate interjacent said doors upon assembly with said plate to contact opposed faces of said doors slidingly with said surface means and to maintain said doors in horizontally spaced relationship.

2. In a guide for sliding doors, the combination comprising: a base plate adapted to be fixed in position beneath the lower edges of said doors, said plate having a central aperture and a plurality of arcuately spaced slots extending radially outwardly from the edge of said aperture; and an anti-friction member having an axially elongated post portion and a shoulder portion underlying the post portion for abutting the upper surface of said plate, said member further having a bushing portion underlying said shoulder portion to be slidably and rotatably receivable in said aperture, said member additionally having a plurality of lugs corresponding with said slots in number and arcuate spacing, said lugs radiating from said bushing portion spaced apart from said shoulder portion and adapted to pass freely through said slots, whereby said member is assemblable to said plate by aligning said bushing portion with said aperture and by aligning said lugs with said slots, subsequent sliding of said bushing portion into said aperture and rotation of said member relative to said plate locking said member against axial movement, said post portion upstanding from said plate interjacent said doors upon assembly with said plate to contact opposed faces of said doors slidingly and to maintain said doors in horizontally spaced relationship.

3. In a guide for sliding doors, the combination comprising: a rigid plate adapted to be fixed in position beneath the lower edges of said doors, said plate having a central, circular aperture and a slot extending radially outwardly from the edge of said aperture; and an anti-friction member having an axially elongated post portion and an annular shoulder portion underlying the post portion for abutting the upper surface of said plate, said member further having a bushing portion underlying said shoulder portion to be slidably and rotatably receivable in said aperture, said member additionally having a lug radiating from said bushing portion spaced apart from said shoulder portion and adapted to pass freely through said slot, whereby said member is assemblable to said plate by aligning said bushing portion with said aperture and by aligning said lug with said slot, subsequent sliding of said bushing portion into said aperture and rotation of said member relative to said plate locking said member against axial movement, said post portion upstanding from said plate interjacent said doors upon assembly with said plate to contact opposed faces of said doors slidingly and to maintain said doors in horizontally spaced relationship.

4. In a guide for sliding doors, the combination comprising: a base plate adapted to be fixed in position beneath the lower edges of said doors, said plate having a plurality of horizontally spaced apart circular apertures, each of which has a slot extending radially outwardly from the edge thereof; and an anti-friction member received in each of said apertures, each of said members having an axially elongated post portion which defines curved surface means and having a shoulder portion underlying the post portion for abutting the upper surface of said plate, each of said members further having a bushing portion underlying said shoulder portion to be slidably and rotatably receivable in one of said apertures, each of said members additionally having a lug radiating from said bushing portion spaced apart from said shoulder portion and adapted to pass freely through the corresponding slot, whereby a said member is assemblable to said plate by aligning said bushing portion with a said aperture and by aligning the corresponding lug and slot, subsequent sliding of said bushing portion into said aperture and rotation of said member relative to said plate locking said member against axial movement, the post portions of said members upstanding from said plate in horizontally spaced relationship to contact vertical faces of said doors slidingly with the curved surface means thereof and to define individual guide tracks for said doors.

5. In a guide for sliding doors, the combination comprising: a base plate adapted to be fixed in position beneath the lower edges of said doors, said plate having a plurality of horizontally spaced apart, circular apertures, each of which has a plurality of arcuately spaced slots extending radially outwardly from the edge thereof; and an anti-friction member received in each of said apertures, each of said anti-friction members having an axially elongated post portion and a shoulder portion underlying the post portion for abutting the upper surface of said plate, each of said members further having a bushing portion underlying said shoulder portion to be slidably and rotatably receivable in one of said apertures, each of said members additionally having a plurality of lugs corresponding in number and arcuate spacing to the slots of one of said apertures, said lugs radiating from said bushing portion spaced apart from said shoulder portion and adapted to pass freely through the slots of the corresponding aperture, whereby said members are assemblable to said plate by aligning the respective bushing portions with the respective apertures and the lugs with the corresponding slots, subsequent sliding of the bushing portions into the apertures and rotation of the members relative to the plate locking the members against axial move-

ment, the post portions of said members upstanding from said plate in horizontally spaced relationship to contact vertical faces of said doors slidingly and to define individual guide tracks for said doors.

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