

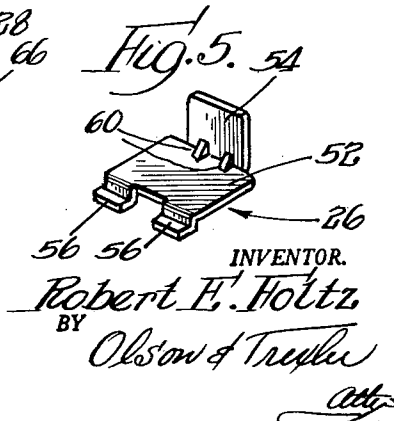
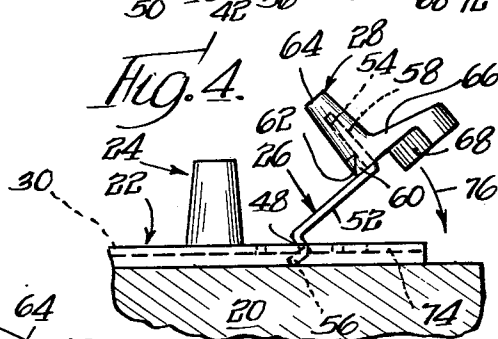
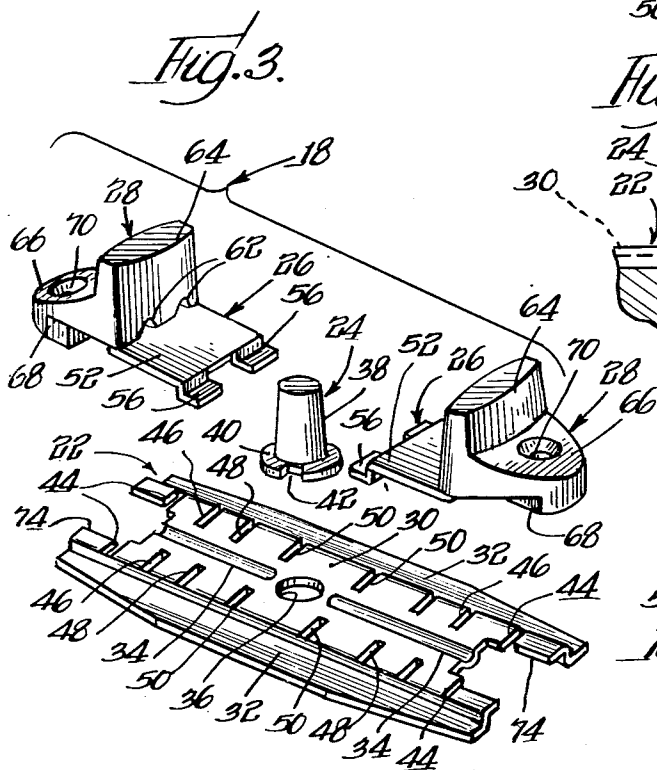
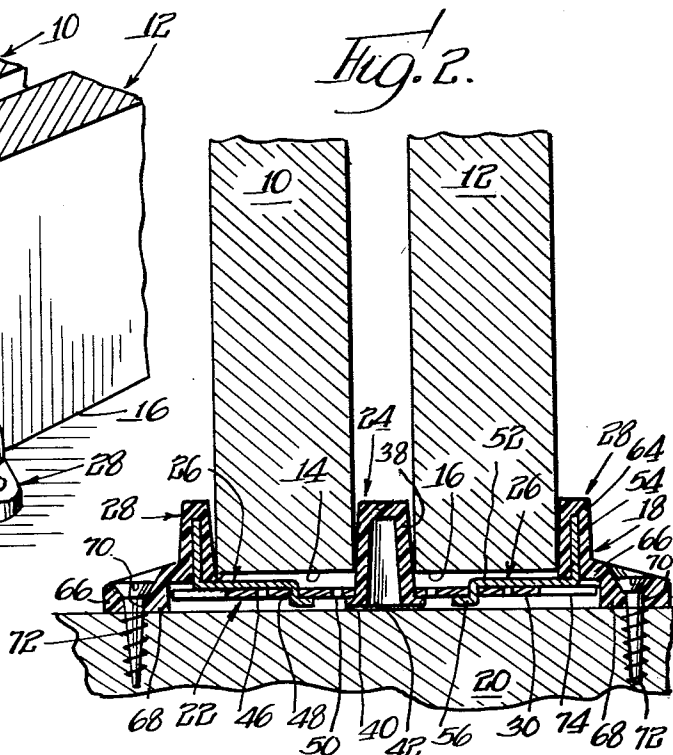
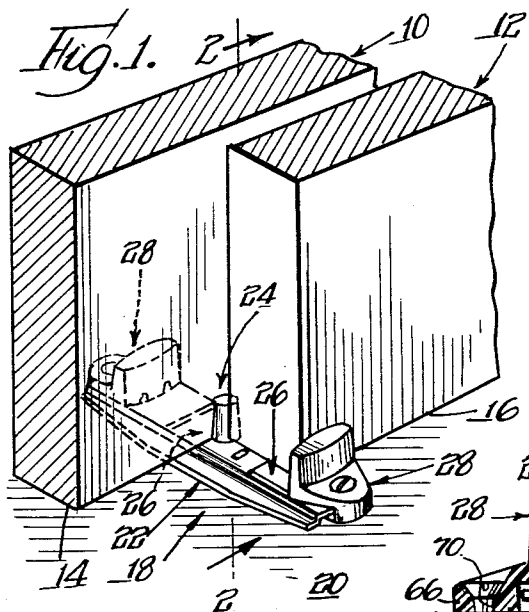
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DOOR GUIDE

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DOOR GUIDE

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This invention relates generally to guides for by-passing doors and especially to door guides that have been rendered adjustable in order to accommodate by-passing doors of different thickness.

Adjustable door guides of the type described have been known and used heretofore; and these prior art devices commonly comprise a floor-engaging base element and two or more door-directing, guide-tip elements. Each of the guide-tip elements is slidable with respect to the base element, this slidable relationship being established in order to afford the desired adjustability. In practice, the slidable arrangement of the guide-tip elements permits an infinite degree of adjustability and places the burden for achieving proper clearance for a door of any given thickness on the skill and judgment of the mechanic installing the guides. Frequently, maximum smoothness of door operation is not achieved.

Therefore, an important object of the present invention is to provide a new and improved adjustable door guide which overcomes the limitations of the prior art by automatically establishing proper door clearances.

Another object of the invention is to provide an adjustable door guide having guide-tip elements which are selectively positionable in any one of a plurality of predetermined locations, the predetermined locations corresponding with proper spacing for doors of the various standard thicknesses.

Prior art door guides that provide adjustability are ordinarily fabricated entirely of a resinous plastic material. Since the base element of such a door guide has a substantial length compared with its width, this construction results in a rather flexible unit. The flexibility inherent in these units requires use of a separate fastener in order to secure the base properly to the floor, or alternatively, requires fasteners that are common to both the tip elements and the base. Either of these arrangements gives rise to a complicated installation procedure.

Accordingly, a further object of the invention is to provide an adjustable door guide that is easy to install.

A still further object of the invention is to provide an adjustable door guide of strong construction.

And a still further object of the invention is to provide an adjustable door guide which is affixable to the floor with a minimum number of fasteners.

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

A structure in accord with the invention includes a rigid base element adapted to be positioned in contact with the floor beneath a pair of by-passing doors, including an elongated plate extending transversely of the doors spaced-apart from the floor and from the bottom edges of the doors, the elongated plate defining a central aperture and a plurality of slots, the slots being spaced at predetermined intervals on opposite sides of the aperture along the elongated dimension of the plate; an upstanding post received in the aperture of the elongated plate to present anti-friction surface means to confronting portions of the doors; arms adapted to be selectively positioned on the base element overlying opposite end portions of the plate, each of the arms having locking tongue means projecting from one end in dependently offset relationship, the tongue means being selectively insertable in the slots swingably to mount the arms to the base; an

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anti-friction guide-tip element fixed in upstanding relationship to the opposite end of each of the arms whereby to constrain the bottom edge of each of the doors between the post and one of the guide-tip elements, the guide-tip elements being adjustably spaceable from the post by selectively positioning the arms whereby to accommodate doors of various standard thicknesses; and screw means passing through vertical bores in the guide-tip elements to engage the floor and secure the base and guide-tip elements thereto.

In order that the principle of the invention may be readily understood, a single embodiment thereof applied to a pair of by-passing doors but to which the application is not to be restricted, is shown in the accompanying drawing wherein:

FIG. 1 is a perspective view of a portion of a by-passing door installation incorporating an adjustable door guide 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 in the base element; and

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

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 in compliance with the conventional devices and procedures employed for by-passing doors. 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 at 18 is positioned in contact with the floor 20 adjacent the bottom edges 14 and 16.

Continuing with 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 element 22, a post 24 and a pair of arms 26, each arm 26 having a guide-tip element 28 fixed to one end. The base element 22 includes an elongated plate 30 which is advantageously spaced above floor 20 and beneath the bottom edges 14 and 16 of doors 10 and 12. The lateral edges of plate 30 terminate in dependently offset, floor-engaging flanges 32, flanges 32 coextending with plate 30 and providing the means whereby plate 30 is spaced above the floor 20. The plate 30 is also provided with debossed, longitudinal ribs 34. Base element 22 is arranged to be relatively rigid, being desirably fabricated from a suitable sheet metal.

An aperture 36 of generally circular shape is centrally formed in plate 30 between the ribs 34 for purposes of fixedly mounting the post 24 to the base element 22. Post 24 is appropriately arranged to cooperate with aperture 36 in this mounting; and as is well shown in FIG. 3, post 24 is provided with tapering sidewalls 38 as by being formed in a generally frusto-conical shape. The tapering sidewalls 38 of post 24 wedgedly engage the edges of aperture 36 to provide a frictional mounting of the post 24 to the base element 22. Advantageously, post 24 is provided with a laterally extending bottom flange 40, flange 40 being selected to be of greater diameter than aperture 36 in order to prevent complete passage of the post 24 through the aperture in one direction. The post 24 is, in addition, desirably arranged to be hollow, as is shown in FIG. 2, and to have notches 42 provided in the flange 40 for ease in manufacture and handling of the post. Post 24 is 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.

With continued reference to FIG. 3, the plate 30 will be seen provided with four sets of slots, each set comprising two pairs of slots, one pair being disposed on each side of the aperture 36 along the elongated dimension of plate 30. As will become apparent, each set of slots is arranged to provide a spacing of the guide-tip elements 28 from post 24 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 1 3/4 inch thickness. The next set of slots proceeding towards post 24, slots 46, is arranged to provide proper spacing for 1 3/8 inch doors. The next set of slots, slots 48, is adapted to accommodate 1 1/8 inch thickness doors; and the set of slots nearest the center post 24, slots 50, is adapted to provide proper guide spacing for doors 3/4 inch thick. As will be recognized, doors having other thickness 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 dependently offset relationship. This arrangement allows the tongues 56 to be situated beneath plate 30 while plate 52 overlies plate 30 after the tongues 56 have been inserted through an appropriate set of slots in the plate 30. It is also important to point out that when plate 52 overlies plate 30 in juxtaposition thereto, having tongues 56 inserted through an appropriate set of slots and situated beneath the plate 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.

The blade 54 of an arm 26 is employed in fixing a guide-tip element 28 to the arm 26, blade 54 entering and frictionally engaging a cooperatively shaped slot 58 formed in the element 28. Advantageously, arm 26 incorporates lugs 60 bridging the angle between the plate 52 and the blade 54. Lugs 60 enter matching notches 62 formed in tip element 28 in order to position element 28 positively with respect to the arm 26.

Each of the guide-tip elements 28 includes a guide-tip proper 64 and a projection 66 which extends axially beyond the arm 26 to extend a toe 68 generally beneath the plane defined by the plate 52. The toe 68 is arranged to depend sufficiently below plate 52 to engage floor 20 conveniently when plate 52 overlies plate 30. This arrangement is well shown in FIG. 2. In addition, guide-tip element 28 is adapted to be fastened to the floor 20; 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 a flat-headed wood screw 72. Furthermore and as will be seen in FIG. 3, the opposite ends of plate 30 are fashioned with relieved portions or recesses 74, recesses 74 being adapted to pass the toes 68 when tongues 56 are disposed in the innermost set of slots, slots 50.

As is indicated in FIG. 2, when the guide-tip elements 28 are assembled to the arms 26 and the arms 26 are assembled to plate 30, the elements 28 cooperate with the post 24 in defining glide paths for the doors 10 and 12. Accordingly, the guide-tip elements 28 are fabricated 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 construction of the invention, it is important now to state how the illustrated embodiment operates. After the two doors 10 and 12 have been hung in compliance with the customary pro-

cedures employed for by-passing doors, the base element 22 having post 24 inserted in the aperture 36 will be positioned on the floor 20 beneath the bottom edges 14 and 16 of the doors transversely thereof. In such position, there should be clearance between plate 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.

When proper spacing exists between the bottom edges of the doors and the floor 20, the base element 22 will be positioned beneath the doors in readiness to be affixed to the floor. Before the door guide is affixed to the floor, the two arms 26 will be appropriately positioned on plate 30; and the mechanic installing the guide, 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 being inserted into slots 48 to cooperate with 1 1/8 inch doors. There, the tongues 56 are first urged into the slots from a vertical direction until the end of plate 52 abuts the upper surface of plate 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 floor 20 and plate 52 abuts plate 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 and urged into threaded engagement with the floor 20. 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 30, fasteners 72 not only secure the guide-tip element 28 to the floor but also secure 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 glide paths of doors 10 and 12. It is also important to point out that, according to the features of the invention, no fasteners are necessary beneath or between the doors 10 and 12 where access with a screwdriver or other tools is difficult.

From the foregoing descriptions, it will be recognized that the door guide of the invention is arranged to be adjustable into a number of predetermined positions, each of which positions is adapted to accommodate a door of a certain standard thickness, the several predetermined positions being arranged to be positive in nature in order to insure proper clearance for the doors in the completed installation.

The specific example herein shown and described is to be considered as illustrative only. Various changes in structure will, no doubt, occur to those skilled in the art; and these changes are to be understood as forming a part of this invention insofar as they fall within the spirit and scope of the appended claims.

The invention is claimed as follows:

1. An adjustable door guide comprising: rigid base means adapted to be positioned beneath the bottom edges of a plurality of by-passing doors; means defining an anti-friction surface centrally upstanding from said base means; a plurality of first locking means on said base means, a portion of said locking means being disposed at predetermined discrete lateral spacings from one side of said second mentioned means and the remainder of said locking means being disposed at similar spacings on the opposite side of said second mentioned means; a plurality of upstanding guide-tip elements; and second locking means on each of said guide-tip elements interengageable with selected first locking means for positively and selectively positioning said guide-tip elements with respect to said second mentioned means, each of said discrete spacings corresponding with the width of a glide path for a door of different, standard thickness whereby

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automatically to define glide paths of proper clearance for doors of said standard thicknesses.

2. An adjustable door guide according to claim 1 and further comprising fastener means securing said guide-tip elements to the underlying floor structure outwardly from said doors, said second locking means applying an upward force on said base means inwardly of the cooperating first locking means and a downward force outwardly thereof, said second locking means additionally blocking lateral movement of said base means at the cooperating first locking means, whereby said fasteners simultaneously secure said guide-tip elements and said base means to said floor structure.

3. An adjustable door guide for use in restricting the transverse movement of the bottom edges of a plurality of by-passing doors, said door guide comprising: rigid base means adapted to be positioned in contact with the floor beneath said doors, said base means including an elongated plate extending transversely of said doors and being spaced-apart from said floor and from the bottom edges of said doors, said plate defining a plurality of slot means spaced at predetermined intervals on opposite sides of the mid-point of said plate along the elongated dimension of said plate; an upstanding post centrally fixed on said plate to present anti-friction surface means to confronting portions of said doors; arms adapted to be selectively positioned on said base means overlying opposite end portions of said plate, each of said arms having locking tongue means projecting from one end in dependently offset relationship to underlie said plate, said tongue means being selectively insertable in said slot means swingably to mount said arms to said base means; and an anti-friction guide-tip element fixed in upstanding relationship to the opposite end of each of said arms whereby to constrain the bottom edge of each of said doors between said post and a said guide-tip element, said guide-tip element being adjustably spaceable from said post by selectively positioning said arms whereby to accommodate doors of various thickness.

4. A door guide according to claim 3 wherein said post and said guide-tip elements are fabricated from a polyamide type molding resin and wherein said base means and said arms are fabricated from sheet metal.

5. An adjustable door guide for use in restricting the transverse movement of the bottom edges of a plurality of by-passing doors, said door guide comprising: rigid base means adapted to be positioned in contact with the floor beneath said doors, said base means including an elongated plate extending transversely of said doors and being spaced-apart from said floor and from the bottom edges of said doors, said plate defining a central aperture and a plurality of slot means, said slot means being spaced at predetermined intervals on opposite sides of said aperture along the elongated dimension of said plate; an upstanding post received in said aperture to present anti-friction surface means to confronting portions of said doors; arms adapted to be selectively positioned on said base means overlying opposite end portions of said plate, each of said arms having locking tongue means projecting from one end in dependently offset relationship to underlie said plate, said tongue means being selectively insertable in said slot means swingably to mount said arms to said base means; and an anti-friction guide-tip element fixed in upstanding relationship to the opposite end of each of said arms whereby to constrain the bottom edge of each of said doors between said post and a said guide-tip element, said guide-tip elements being adjustably spaceable from said post by selectively positioning said arms whereby to accommodate doors of various thickness.

6. An adjustable door guide in accordance with claim

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5 wherein said post has tapered sides which wedgedly engage the edges of said aperture.

7. An adjustable door guide for use in restricting the transverse movement of the bottom edges of a plurality of by-passing doors, said door guide comprising: rigid base means adapted to be positioned in contact with the floor beneath said doors, said base means including an elongated plate extending transversely of said doors and being spaced-apart from said floor and from the bottom edges of said doors, said plate defining a plurality of slot means spaced at predetermined intervals on opposite sides of the mid-point of said plate along the elongated dimension of said plate; an upstanding post centrally fixed on said plate to present anti-friction surface means to confronting portions of said doors; arms adapted to be selectively positioned on said base means overlying opposite end portions of said plate, each of said arms having locking tongue means projecting from one end in dependently offset relationship to underlie said plate, said tongue means being selectively insertable in said slot means swingably to mount said arms to said base means; an anti-friction guide-tip element fixed in upstanding relationship to the opposite end of each of said arms whereby to constrain the bottom edge of each of said doors between said post and a said guide-tip element, said guide-tip elements being adjustably spaceable from said post by selectively positioning said arms whereby to accommodate doors of various thickness; and fastener means associated with said guide-tip elements for engaging said floor and securing said door guide thereto.

8. An adjustable door guide according to claim 7 wherein said fastener means are screws which are adapted to pass through vertical bores fashioned in said guide-tip elements, said screws being disposed exclusively outside of the glide paths of said doors.

9. An adjustable door guide for use in restricting the transverse movement of the bottom edges of a plurality of by-passing doors, said door guide comprising: rigid base means adapted to be positioned in contact with the floor beneath said doors, said base means including an elongated plate extending transversely of said doors and being spaced-apart from said floor and from the bottom edges of said doors, said plate defining a plurality of slot means spaced at predetermined intervals on opposite sides of the mid-point of said plate along the elongated dimension of said plate, said predetermined intervals corresponding with proper guide spacing for doors of various standard thicknesses; an upstanding post centrally fixed on said plate to present anti-friction surface means to confronting portions of said doors; arms adapted to be selectively positioned on said base means overlying opposite end portions of said plate, each of said arms having locking tongue means projecting from one end in dependently offset relationship to underlie said plate, said tongue means being selectively insertable in said slot means swingably to mount said arms to said base means; an anti-friction guide-tip element fixed in upstanding relationship to the opposite end of each of said arms whereby to constrain the bottom edge of each of said doors between said post and a said guide-tip element, said guide-tip element being adjustably spaceable from said post by selectively positioning said arms whereby to accommodate doors of various thickness; and fastener means associated with said guide-tip elements for engaging said floor and securing said door guide thereto.

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