SLIDE ASSEMBLY FOR SLIDING DOORS

LA VERN E. RUDOLPH

INVENTOR.

BY

USING
3,168,355 SLIDE ASSEMBLY FOR SLIDING DOORS
La Vern E. Rudolph, 283 W. 16th St., Holland, Mich.
Filed Jan. 9, 1961, Ser. No. 81,491
3 Claims. (Cl. 308—3)

This invention relates to the construction of equipment for mounting sliding doors. It is conventional practice to support a sliding door panel on a track or rail at the bottom. This guide is normally engaged either by a groove in the bottom of the door, or by a more elaborate assembly including rollers or fixed slides. At the upper portion of the door, it is also conventional practice to mount a spring-loaded retractable slide for engaging a rail or groove in the structure above the door. On the installation of the door, it is quite simple to depress this retractable member sufficiently to move the door laterally into final position, which is accomplished by the slide snapping into full engagement with the rail or groove.

It is often desirable to remove the door for finishing operations subsequent to fitting, or for any one of a number of reasons. Unless special provision is made, it is very difficult to re-retract the slide member unless undue clearance is provided between the top edge of the door and the surrounding fixed structure. It is the purpose of this invention to provide an assembly that can be retracted easily without special provision being made which would interfere with the appearance of the entire door assembly. In one form of the invention, a retractable shoe is mounted in a housing provided with a hole in the side for access with a tool. The recess in the top edge of the sliding door in which the device is normally mounted is intersected with an opening appearing normally on the inside face of the door, and in alignment with the housing opening. The housing formation is such as to adapt itself readily to the shape of a recess resulting from the operation of a conventional router operation. A modified form of the invention uses a similarly-shaped housing, but provides for the retraction of the device through the insertion of a thin strip of material between the door and the surrounding fixed structure for working the sliding shoe into retracted position. The several features of the invention will be discussed in further detail through an analysis of the particular embodiments illustrated in the accompanying drawings. In the drawing:

FIGURE 1 presents a sectional elevation of the preferred form of the invention.

FIGURE 2 presents an exploded view showing the components of the slide device shown in FIGURE 1.

FIGURE 3 illustrates a modified form of the invention.

FIGURE 4 illustrates a further modification of the invention.

Referring to FIGURE 1, the sliding door panel 10 is provided with a recess 11 machined in the top edge, and which receives the housing 12 of the slide device. This housing has the parallel sides 13 and 14, and the semi-cylindrical ends 15 and 16. The combination of the sides 13 and 14 with the ends as continuation of these side surfaces lends itself to a perfect fit with the shape of the recess 11, which is the typical shape formed by a conventional router bit.

The sides 13 and 14 are provided with central openings as shown at 17 and 18, and the inside face 19 of the outer flange 20 machined in it which is disposed directly opposite the opening 18. The housing 12 has openings in both the faces 13 and 14 to remove the necessity for close attention as to which way the device must be inserted in the recess 11.

A shoe 21 is slidably received in the housing 12, and has the projecting tongue 22. Shoulders are shown at 23 and 24 along the opposite sides of the tongue 22, and the shoe has a recess 25 on the opposite side from the tongue 22. The recess 25 is shaped to fit closely over the end of the coil spring 26, which urges the slide to a position in which the tongue 22 normally projects beyond the top surface 27 of the housing. The lower end of the spring 26 bears directly on the bottom of the housing, in the modification shown in FIGURES 1 and 2, but may be itself directly against the bottom of the recess 11 if the housing 12 is formed as a continuous extrusion without a bottom.

The fixed door structure indicated at 28 will be provided with a groove 29 which will either partially or fully receive the tongue 22. In the modification shown in FIGURE 1, a shallow groove depth is indicated. This arrangement is preferred, since the reduced depth of cut for the groove has a smaller tendency to cause distortion of the door structure 28.

Whenever it becomes desirable to remove the door from its assembled position, it is possible to insert a tool such as a nail, awl, or small screw driver through the openings 29 and 18 a sufficient distance to engage the spring 26. When this has been accomplished, a downward movement of the tool will bring the spring to engage the shoe 21 into the retracted position because of the effect of gravity on the shoe, and also because of the firm grip between the upper end of the spring 26 and the recess 28.

In the preferred form of the recess 25, a portion 31 is formed to extend beyond the end of the spring 26 so that the tool can be inserted at a position in which the greatest possible compression of the spring can be achieved.

FIGURE 3 illustrates a modified form of the invention in which a housing 32 is utilized having essentially the same shape as that of the housing 12. The cross-section of the shoe 33 is similar in that it includes the projecting tongue 34 with shoulders as shown at 35. The shoe 33 is biased toward projecting position by the action of the leaf spring 36 secured in position preferably by a screw as indicated at 37, or by a projection which may be left on the plastic material of which the slide 33 would normally be made. This projection may be headed over in the form of a rivet after the spring 36 has been assembled to it.

The retraction of the slide 33 is different from that of the modification shown in FIGURES 1 and 2. The shoulders 35 and the tongue 34 are in part defined by a surface indicated at 38 which preferably intersects both of these portions. When formed in this way, a thin card may be inserted between the upper edge of the door and the fixed structure surrounding the door and moved to the right (or the door moved to the left with respect to it) so that the edge of the card rides along the surface 38 and causes the progressive retraction of the unit to the point where the tongue 34 is no longer engaged. In cases where the shoulder 35 bears directly against the fixed structure, it is necessary that the surface 38 intersect not only the tongue but also the shoulders. The plane indicated at 39 represents the machined surface of the fixed door structure, and the top edge 40 of the housing 32 will normally be in alignment with the top edge of the sliding door in which the device is mounted.

The modification shown in FIGURE 4 has an arrangement for retaining the sliding shoe when not engaged in a groove. The housing 41 has the in-turned flanges 42 and 43 conforming in curvature to the rounded outer edges on the shoulders 44 and 45, which prevent withdrawal of the slide 46 after the device is assembled to the door 47. Prior to this, the relatively thin walls of the housing 41 permit enough lateral deflection to facilitate removing the slide. The lower end of the spring 48 is located by the boss 49, in this modification.

The particular embodiments of the present invention which have been illustrated and discussed herein are
for illustrative purposes only and are not to be considered as a limitation upon the scope of the appended claims. In these claims, it is my intent to claim the entire invention disclosed herein, except as I am limited by the prior art.

I claim:

1. A retractable door slide, comprising: a housing; a shoe slidably mounted in said housing, said shoe having a projecting tongue and a shoulder along at least one side thereof, said tongue normally projecting from said housing, said tongue and shoulder being partially defined by a surface inclined to the plane of said shoulder; and biasing means urging said shoe to increased projection from said housing.

2. A retractable door slide, comprising: a housing, at least one side of said housing having a central opening therein; a shoe slidably mounted in said housing, said shoe having a projecting tongue and a shoulder along at least one side thereof, said tongue normally projecting from said housing, and said shoe having a recess on the opposite side thereof from said tongue; and biasing means urging said shoe to increased projection from said housing, said biasing means including a coiled compression spring having one end thereof tightly received in said recess, said spring being disposed opposite the central opening in the side of said housing.

3. A retractable door slide, comprising: a housing, at least one side of said housing having a central opening therein; a shoe slidably mounted in said housing, said shoe having a projecting tongue, said tongue normally projecting from said housing; and biasing means urging said shoe to increased projection from said housing, said biasing means including a coiled compression spring, said spring being disposed opposite the central opening in the side of said housing.

References Cited in the file of this patent

UNITED STATES PATENTS

1,121,573 Wetzel ---------------- Dec. 15, 1914
2,144,782 Swanson ---------------- Jan. 24, 1939
2,317,312 Swanson ---------------- Apr. 20, 1943
2,584,874 Haas ------------------ Feb. 5, 1952
2,896,274 Chris ------------------ July 28, 1959