July 2, 1940. J. P. GOODFELLOW 2,206,183

WEATHER STRIP

Filed June 20, 1938

Fig. 1.

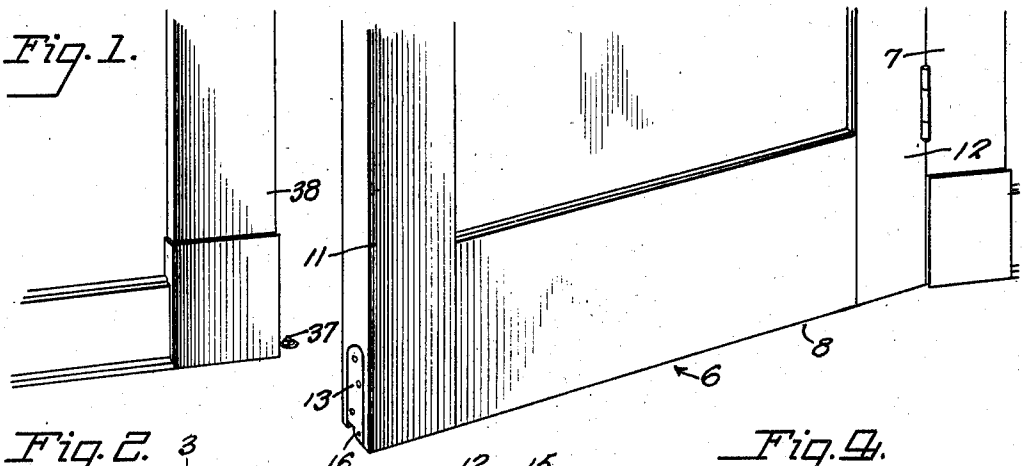


Fig. 2.

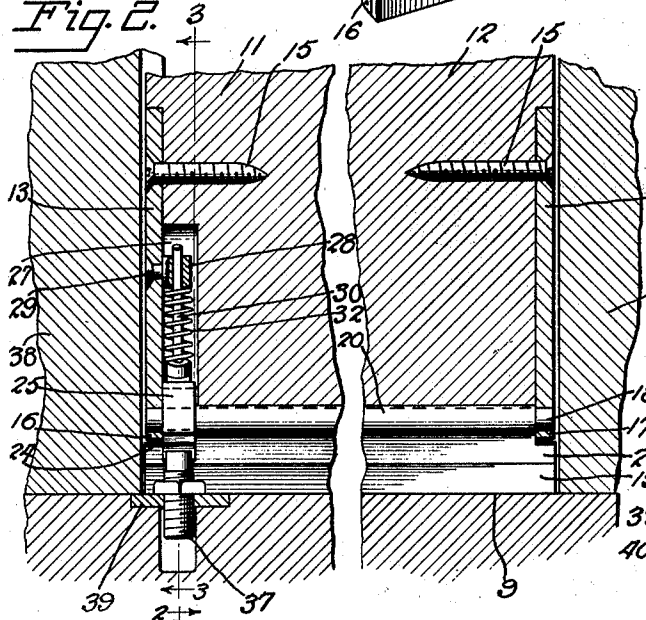


Fig. 4.

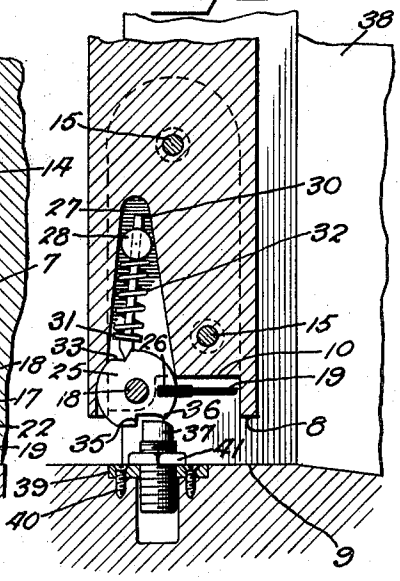


Fig. 3.

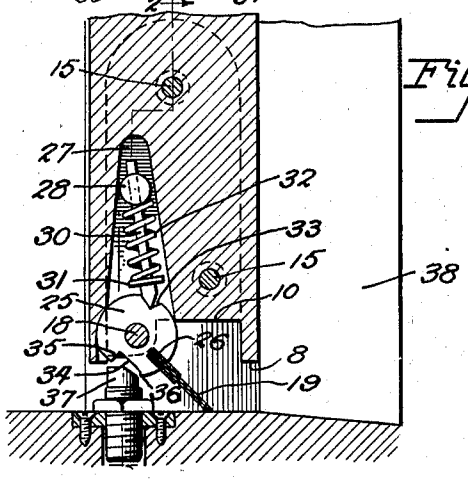
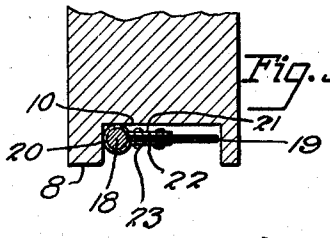


Fig. 5.



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WEATHER STRIP

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Application June 20, 1938, Serial No. 214,758

1 Claim. (Cl. 20—67)

This invention relates to that class of weather strips in which the strip or shutter is hinged to the bottom edge of a door and is held in inoperative position when the door is open, and is automatically moved into and held in operative position when the door is closed.

The main object of the invention is to provide a new and improved weather-strip construction to eliminate the use of the raised floor sill or threshold in common use to provide clearance for the lower edges of doors in swinging over carpets and other floor coverings.

A further object is to provide a weather-strip construction of this type in which the weather strip and its operating mechanism are concealed in the lower edge of the door while the latter is in open position.

Other objects of the invention will become apparent as the detailed description thereof proceeds.

In the drawing:

Figure 1 is a fragmentary perspective view of the lower part of a door illustrating the only part of the weather strip visible while the door is in open position;

Figure 2 is a fragmentary section of the weather strip mechanism taken lengthwise through the lower ends of the stiles and the bottom rail of the door;

Figure 3 is a fragmentary transverse section taken on the line 3—3 of Figure 2;

Figure 4 is a section similar to Figure 3, but showing the strip operating mechanism in a different position; and

Figure 5 is a fragmentary, vertical section taken transversely of the strip and its pivot support in the positions occupied thereby while the door is open.

As shown in the drawing, the door 6 is hinged at one of its edges to the stile 7 of a door frame. The lower edge 8 of the door is shown in Figures 2, 3 and 4 as spaced away from the surface of the floor 9 at a distance necessary to secure clearance for the bottom edge of the door in swinging over carpets or other floor coverings. Usually, this clearance space would be occupied by a threshold which this invention is intended to eliminate. The lower edge of the door is provided with a groove 10; and the lower ends of the outer edges of the stiles 11 and 12 of the door are countersunk to receive the hanger plates 13 and 14, respectively. These hanger plates, when in operative position, are flush with the said outer edges of the respective stile 11 and 12 and are secured in position by means of the screws 15 with their lower ends flush with the bottom of the groove 10.

The hangers 13 tnd 14 are formed in pairs having apertured lugs 16 and 17 projecting downwardly from the lower ends of the hangers to receive in their apertures the opposite ends of a pivot rod 18, the axis of which forms the pivot axis for a weather strip 19 made of any suitable elastic material. To secure the strip 19 to the rod 18, a sheet metal strip 20 is bent around the rod 18 for the greater part of its periphery and is then extended on opposite sides of the strip 19 to form the clamping plates 21 and 22 which may be suitably secured to the strip 19 by rivets or other suitable securing means 23. The clamping plates and strip form a shutter for sealing the lower ends of outside or inside doors against wind, rain, snow or dust.

As shown in Figure 2, the clamping strips 21 and 22 and the strip 19 are recessed to a depth equal to the thickness of the hanger plate 14 to permit the shutter to extend across the stop shoulder formed by the rabbet of the door jamb 7 at the hinged side of the door. At the striking side of the door, the clamping strips 21 and 22 are cut away to form a recess 24 around the downwardly projecting lug 16 on the hanger plate 13. This recess 24 is extended inwardly a sufficient distance to receive the trip cam 25. This means that the recess in the shutter at the striking edge of the door has a depth equal to the combined thicknesses of the hanger plate 13 and the trip cam 25.

The trip cam 25 is larger in diameter than the diameter of the rod 18, and is provided with a radial slot 26 fitting snugly over the three thicknesses of material formed by the weather strip 19 and clamping plates 21 and 22. Directly above the trip cam 25 and back of the hanger plate 13, the edge of the striking stile 11 of the door is provided with a recess 27 into which projects a spring abutment 28 formed integral with or suitably secured to a stud 29 pivoted in the hanger plate 13. The abutment 28 is bored transversely of its pivot axis to receive slidably the upper end of a pin 30, provided near its lower end, with a flange 31 adapted to form a support for the lower end of a compression spring 32, the upper end of which contacts with the abutment 28.

Below the flange 31, the pin 30 is ground or shaped to a chisel edge seated in a notch 33 formed in the upper part of the trip cam 25. The lower part of the trip cam 25 is provided

with a recess 34 shaped to form a striking shoulder 35 and a lug 36. The recess 34, with its striking elements 35 and 36, is shaped to correspond to the shape of the upper end of a trip stud 37 located in suitable position in the rabbet recess of the door jamb 38. The trip stud is externally screw threaded to engage the internal screw threads of a plate 39 set flush with the surface of the floor 9 and suitably secured thereto by means of the screw 40. The trip stud 37 is adapted to be adjusted vertically in the plate 39 and locked in adjusted position by means of a lock nut 41.

The door is shown in Figures 2 and 3 in its closed position and with the shutter 19 in operative contact with the floor 9. In Figure 4, the door is shown in position where the trip cam has been operated by the trip stud as the door is swung outwardly from closed position to move the shutter 19 upwardly into concealed position in the groove 10. Continued outward movement of the door from the position shown in Figure 4 would leave the shutter 19 in the concealed position shown in Figure 4; and the shutter would be so held during the open position of the door by the pressure of the pin 30 against the trip cam in a direction laterally displaced with respect to the common pivot axis of the rod 18 and cam.

Closing movement of the door from open position to that shown in Figure 4 will first cause the projection 36 to slide over the flat top of the trip stud 37 with the shoulder 35 moving into contact with the sharp edge of the trip stud. Continued movement of the door inwardly to closing position causes the shoulder 35 to engage the sharp edge of the trip stud 37 and rocks the trip cam 25 about its pivot axis into the closing position shown in Figures 2 and 3 of the drawing. While the door is closed, the pressure of the spring 32 on the flange 31 of the pin 30 maintains the trip cam in the position shown in Figures 2 and 3, the axis of the pin 30 being then laterally displaced to the opposite side of the pivot axis of the rod 18 from that occupied in the open-door position shown in Figure 4.

In order to avoid the necessity for using a very heavy construction of pivot rod 18 and clamping means for securing the shutter 19 thereto, the groove 10 is formed so that the outer periphery of the sheet which clamps the shutter 19 to the rod 18 is in slight frictional contact with the square corner formed by the intersecting edges of the groove 10 adjacent the pivot rod 18. The assembled shutter is flexible along its free edge and rigid lengthwise. When this shutter is in open-door position, it need only be stiff enough to support its own weight. When the door is closed, a plane bisecting the said corner angle is substantially coincided with the plane of the shutter 19 containing the pivot axis of the rod 18. The intersecting sides of the said corner angle act as a V-block to hold the shutter rigid in all directions. This construction makes it possible to have close seating contact without binding and a minimum of friction.

The invention as disclosed herein is exceptionally simple, light and inexpensive. It is to be understood, however, that it is not to be considered as limited to the details of construction shown in the drawing nor in any other way except as indicated by the scope of the claim appended hereto.

What I claim is:

In a weather strip for the bottom edge of a door including a pivoted shutter, means for operating the shutter comprising a member secured to the shutter, said member having a double faced peripheral cam, one face radial to the axis of the shutter and the other face perpendicular to the first face whereby said member can be rocked in opposite directions in passing a strike member secured to the floor, said member having a detent diametrically opposed to the cam and a spring impelled pivoted and slidable pin engaging said detent whereby the member is resiliently held at each extreme of the cam throw.

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