

May 29, 1951

E. W. HOPKINS
WEATHER STRIP

2,555,192

Filed July 15, 1948

2 Sheets-Sheet 1

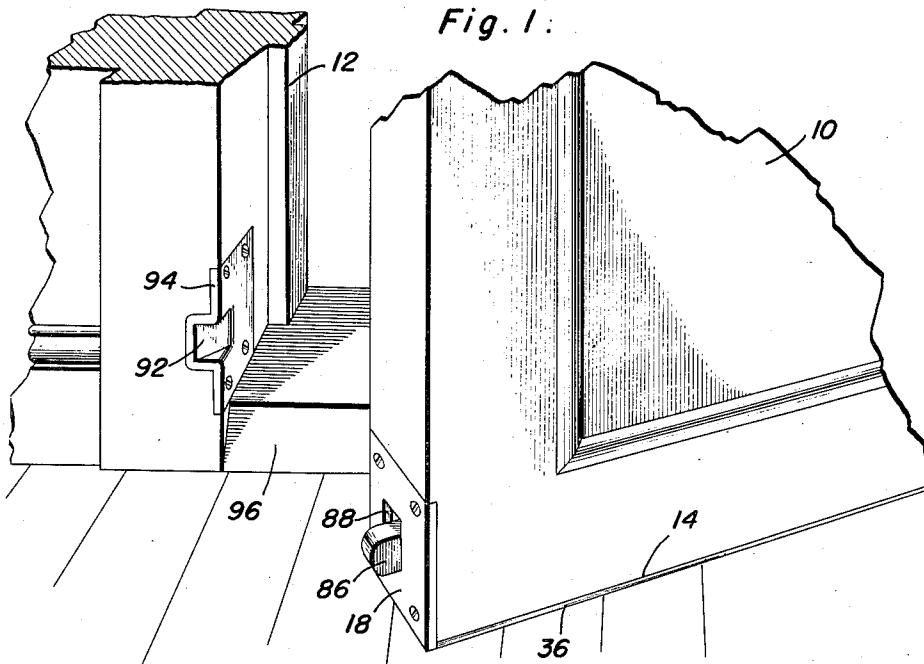
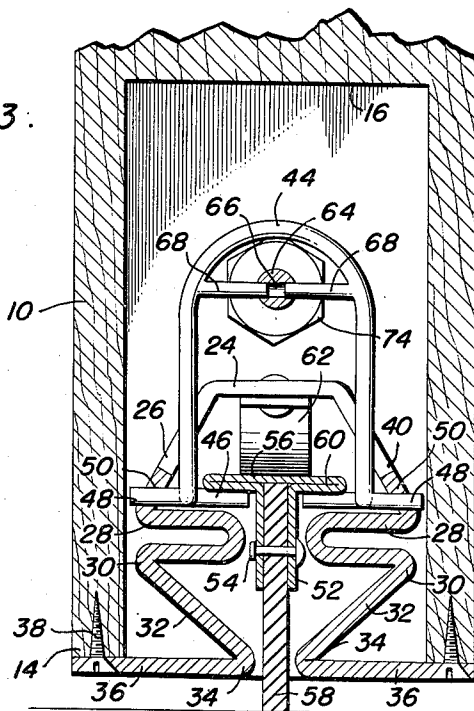


Fig. 3:



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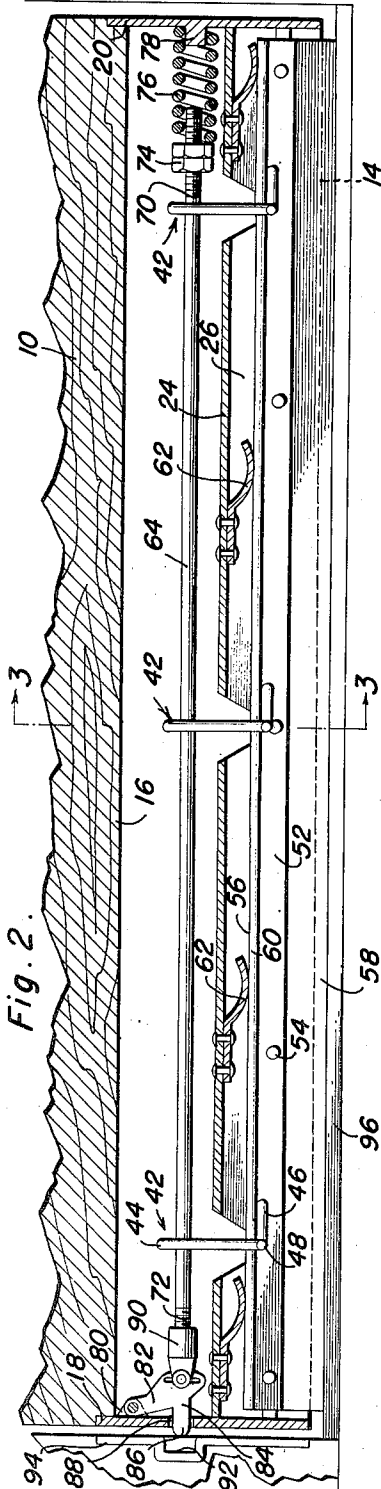
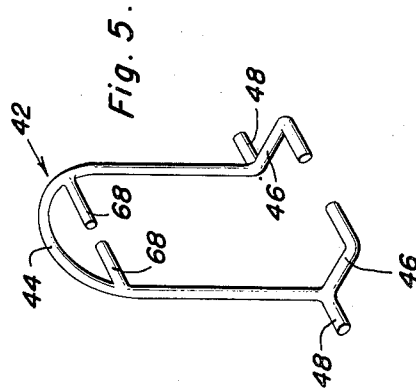
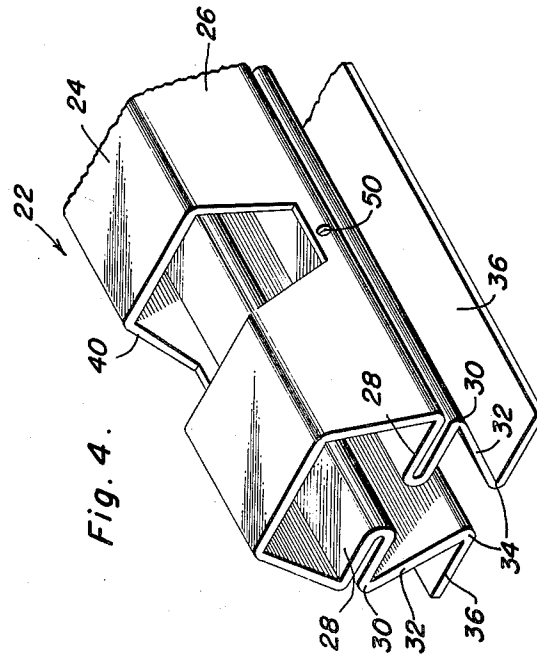
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WEATHER STRIP

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2 Sheets-Sheet 2



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WEATHER STRIP

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5 Claims. (Cl. 20—68)

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This invention relates to new and useful improvements in weather stripping and the primary object of the present invention is to provide a concealed weather stripping attachment for doors, windows or the like that is movable to a closed and sealed position simultaneously with the closing movement of the structural element on which the same is applied.

Another important object of the present invention is to provide a vertically movable sealing strip that is supported upon a group of pivotal members, means for urging the pivotal members in one direction for raising the sealing strip, and novel and improved means for actuating the pivotal members to lower the sealing strip as the door or window on which the same is applied is moved to a closed position.

A further object of the present invention is to provide a weather stripping attachment for doors and the like including a movable sealing strip, and adjustable resilient means acting upon an actuating member to lower the sealing strip within selected limits.

A still further aim of the present invention is to provide a weather strip that is simple and practical in construction, strong and reliable in use, small and compact in structure, neat and attractive in appearance, relatively inexpensive to manufacture, and otherwise well adapted for the purposes for which the same is intended.

Other objects and advantages reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming part hereof, wherein like numerals refer to like parts throughout, and in which:

Figure 1 is a fragmentary perspective view of a door structure and showing the present invention applied thereto, and showing the door in an open position;

Figure 2 is a longitudinal vertical sectional view taken substantially through the center of Figure 1, and showing the door in a closed position;

Figure 3 is an enlarged transverse vertical sectional view taken substantially on the plane of section line 3—3 of Figure 1;

Figure 4 is a fragmentary perspective view of the support member used in conjunction with the present invention; and

Figure 5 is a perspective view of one of the pivotal members used in conjunction with the present invention.

Referring now to the drawings in detail, wherein for the purpose of illustration, there is disclosed a preferred embodiment of the present in-

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vention, the numeral 10 represents a hinged or pivotal structural element or main support, such as a door or the like that is movable toward a fixed frame or casing 12.

The lower marginal edge 14 of the door 10 is provided with a vertical recess or chamber 16 in which there is mounted a housing or a pair of end plates 18 and 20 that close the ends of the chamber 16. The lower edges of the end plates 18 and 20 terminate in plane that is coplanar with the lower marginal edge 14 of the door 10.

The numeral 22 represents the support member that is used in conjunction with the present invention generally. This member 22 is formed from a single strip of bendable material such as aluminum or the like, and includes a substantially inverted channel-shaped portion 24, the inclined leg portions 26 of which are turned inwardly to provide longitudinal, channeled strips 28 that are spaced parallel to each other and to the web portion of the portion 24.

Integrally formed with the lower longitudinal edges 30 of the channeled strips 28 are inwardly directed, downwardly converging strips 32 the lower portions of which are turned outwardly as at 34 to provide horizontal extensions 36 that are removably secured by fasteners or the like 38 to the marginal edge 14.

The portion 24 is provided with a plurality of longitudinal spaced, notches 40 that receive pivotal members which are designated generally by the numeral 42. The pivotal members 42 each includes a substantially U-shaped frame 44 the leg portions of which are angulated to provide substantially L-shaped extensions 46 that are disposed in a plane perpendicular to the longitudinal axis of the frame 44.

Projecting laterally from the legs of the frames 44, are pivot pins or trunnions 48 that pivotally engage apertures 50 provided in the legs 26 of the portions 24, adjacent and below the notches 40, as shown best in Figure 4 of the drawings.

Fixed between the spaced parallel leg portions 52, by rivets or the like 54 of a further elongated channel strip 56, is the inner portion of a longitudinal, resilient sealing strip 58, and it is noted that the leg portions 52 and strip 58 are disposed between the strips 28 and the bends 34 of the strips 32, as shown best in Figure 3 of the drawings.

The leg portions 52 are turned outwardly adjacent the web portion of the strip 56 to provide horizontal portions 60 that bear upon the L-shaped extensions 46.

A plurality of longitudinal spaced, leaf springs

62 are anchored at one of their ends to the web portion of the channeled shaped element 24 and the free ends of these springs 62 bear upon the web portion of the channel strip 56 to resiliently urge the same downwardly upon the L-shaped extensions 46 so that the pivotal members 42 will be disposed in a substantially vertical plane with the strip 58 in a lowered position.

The numeral 64 represents an actuating member or bar that is provided with a plurality of longitudinally spaced, transverse apertures 66 that pivotally engage lugs 68 that are rigidly attached to or which form an integral part of the legs of members 42.

Both terminals 70 and 72 of the bar 64 are externally threaded and one terminal, for example, terminal 70 receivably engages a pair of nuts 74.

A coil spring 76 embraces the terminal 70, one end thereof engages the nuts 74, and its remaining end engages a lug 78 that projects inwardly from the end plate 20 to urge the actuating rod in one direction and the pivotal members 42 in an inclined position relative to the support member 22 and strip 58 whereby the strip 58 will be raised to permit the door to be pivoted to a closed position.

Fixed to the inner face of end plate 18, is a pair of spaced ears 80 that pivotally engage an arm 82 which is integrally formed with a contact or bearing member 84 having an outer end portion 86 that slidably engages a guide opening 88 in the end plate 18.

An internally threaded socket 90 receivably engages the externally threaded terminal 72 of the actuating bar 64 and is pivoted to the contact member 84, by a suitable pin carried by the socket 90 that is received in a slot provided in the member 84.

In practical use of the present invention, the door 10 being in an open position as shown in Figure 1 of the drawings, the end 86 of the contact members 84 extends outwardly from the guide opening 88, the pivotal members 42 are inclined and the strip 58 is raised. As the door 10 is moved to a closed position, as shown best in Figure 2 of the drawings, the outer end 86 of the contact member 84 will engage the inclined recessed and bearing surface 92 of an anchor member 94 that is removably secured to the frame 12, to force the outer end of the contact member 84 inwardly, the actuating bar 64 toward the end plate 20, the pivotal members 42 to a substantially vertical position, and the strip 58 to a lower position to engage the threshold 96.

Obviously, by omitting the lifting device, the present weatherstrip can be employed in conjunction with check-rail windows, overhead doors and the like.

In view of the foregoing description taken in conjunction with the accompanying drawings it is believed that a clear understanding of the construction, operation and advantages of the device will be quite apparent to those skilled in this art. A more detailed description is accordingly deemed unnecessary.

It is to be understood, however, that even though there is herein shown and described a preferred embodiment of the invention the same is susceptible to certain changes fully comprehended by the spirit of the invention as herein described and the scope of the appended claims.

Having described the invention, what is claimed as new is:

1. A weather strip comprising a substantially

channel shaped support, a sealing strip mounted for vertical movement between the legs of said support, means carried by the web of said support normally urging said sealing strip to a lowered position, a plurality of U-shaped swingable members overlying the sealing strip and receiving the sealing strip between their legs, said swingable members having lateral projections at the ends thereof, said support having apertures in the legs thereof receiving said lateral projections, a longitudinally movable actuating bar having a plurality of longitudinally spaced openings, lugs on the legs of said swingable members received in said openings, means urging said bar in one direction to incline said swingable members, and means carried by said swingable members supporting said sealing strip.

2. A weather strip comprising a substantially channel shaped support, a sealing strip mounted for vertical movement between the legs of said support, means carried by the web of said support normally urging said sealing strip to a lowered position, a plurality of U-shaped swingable members overlying the sealing strip and receiving the sealing strip between their legs, said members having lateral projections at the ends thereof, said support having apertures in the legs thereof receiving said lateral projections and also having openings receiving the legs of said members, a longitudinally movable actuating bar having a plurality of longitudinally spaced openings, lugs on the legs of said swingable members received in said openings, means urging said bar in one direction to incline said swingable members, and extensions carried by the legs of said swingable members underlying and supporting said sealing strip.

3. The structure of claim 1 and horizontal strips on the legs of said support for limiting endwise movement of said sealing strip.

4. A weather strip comprising a channel shaped support including a web portion and a pair of spaced leg portions joined by said web portion, channel strips on the leg portions of said support, said channel strips having lower portions, attaching flanges on the lower portions of said channel strips for attachment to the lower edge of a door, a substantially T-shaped sealing strip holder having a horizontal portion and a vertical portion, the vertical portion of said holder being received between said channel strips for vertical sliding movement, a resilient strip carried by and depending from the vertical portion of said holder, a plurality of longitudinally spaced substantially U-shaped swingable members, each of said swingable members having a web portion and a pair of leg portions joined by said web portions, lateral projections on the leg portions of said swingable members, the leg portions of said support having a plurality of longitudinally spaced apertures therein for receiving said lateral projections, a longitudinally movable actuating bar spaced above the web portion of said support and received between the leg portions of said swingable members, said bar having longitudinally spaced transverse openings therein, lugs on the leg portions of said swingable members received in said transverse openings, means on the leg portions of said swingable members underlying and supporting the horizontal portion of said holder, and means urging said bar in one direction with the swingable members inclined relative to said support, the web portion and leg portions of said support

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having slots therein receiving the leg portions of said swingable members.

5. The combination of claim 4 wherein said means on the leg portions of said swingable members include L-shaped extensions disposed perpendicular to said swingable members.

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