Sept. 15, 1959 G. C. HAYMAN 2,903,758

WEATHER-STRIP

Filed Jan. 22, 1957

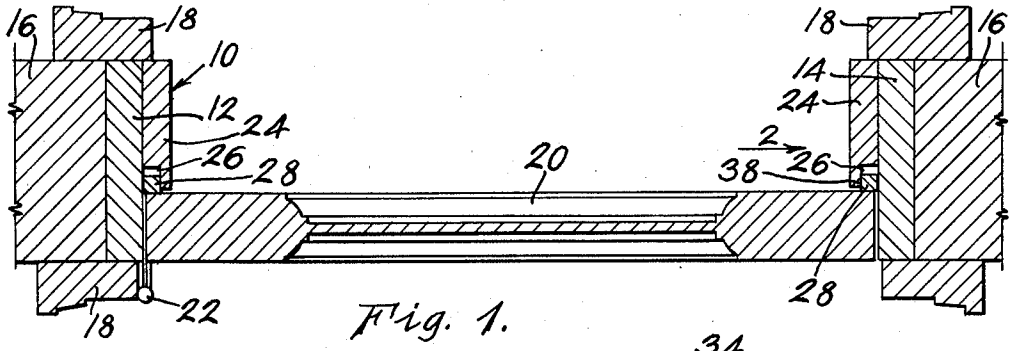


Fig. 1.

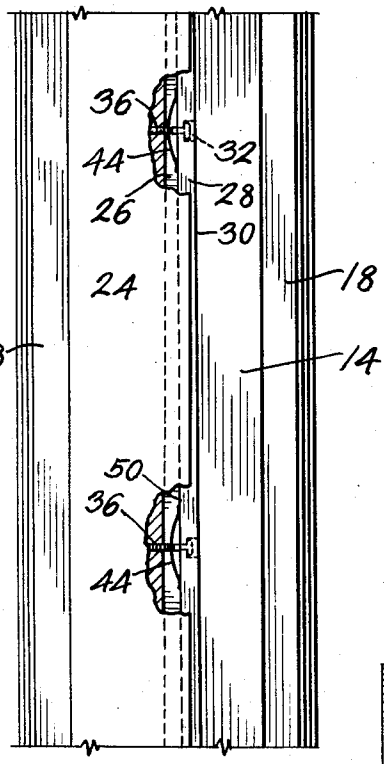


Fig. 2.

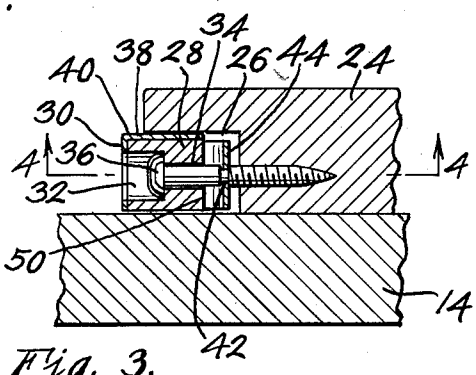


Fig. 3.

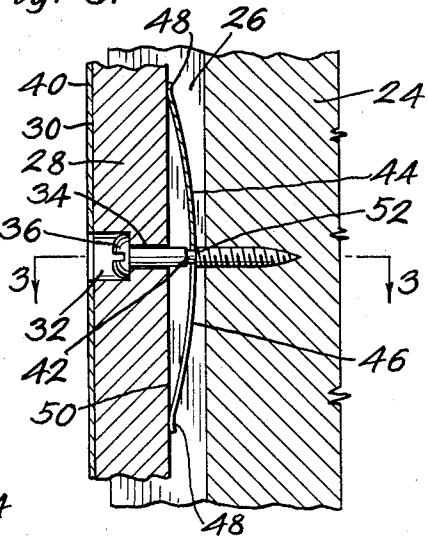


Fig. 4.

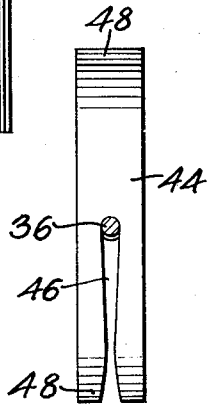


Fig. 5.

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WEATHER-STRIP

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7 Claims. (Cl. 20—68)

This invention relates to weather-strips and, more particularly, to improvements in weather-strips of the general type disclosed and claimed in my United States Patent 2,615,214, issued October 28, 1952.

In my patent, above identified, it has been found that a weather-strip made in accordance with the construction shown therein possesses several disadvantages which substantially limit its usefulness for the purposes intended. As disclosed in said patent, the jambs and lintel of a door frame are provided with rabbets facing outwardly toward a door hung in the door frame. A wooden sealing strip is positioned in the rabbets along the sides and top of the frame and urged into sealed contact with the door when in closed position by a plurality of arcuate leaf springs placed between said strip and the bottom of the rabbet. The springs, however, were positioned such that the ends were in contact with the bottom of the rabbet while the arcuate intermediate section bore against the rear face of the sealing strip. Thus, as the door forced the sealing strip toward the bottom of the rabbet, the springs became more tightly compressed frequently making it difficult to latch the door.

A further difficulty was that the strip had to be adjusted to project varying distances beyond the rabbet in order to seal tightly against the door; however, such adjustments required compressing some of the springs until the strip became quite hard to press deeper into the rabbet while others were loose and perhaps even out of contact with the strip. Obviously, this was a very unsatisfactory arrangement which rendered accurate adjustment of the strips virtually impossible.

Also, the springs were attached to the bottom of the rabbet and entirely independent of the sealing strip. This required separate fasteners for the strip and made the springs hard to insert or replace.

In addition, other spring members were considered necessary to hold the sealing strip spaced from the inside face of the rabbet. These springs were awkward to insert and oftentimes became dislodged to fall into the space between the sealing strip and base of the rabbet.

It is, therefore, the principal object of the present invention to provide an improved weather-strip for doors.

A second object of the invention is to provide a spring-pressed wooden sealing strip that can be adjusted within a rabbet independently of the springs.

Another object of the invention is the provision of a wooden sealing strip mounted in a rabbet in a door frame that includes a plurality of springs under substantially equal compression irrespective of the position of the strip relative to the bottom of the rabbet.

Further objects of the invention are to provide a spring-pressed weather-strip having a noved connection between the strip and springs; a weather-strip that is simple to install and repair; and, a sealing member for doors and the like which is inexpensive, airtight, rugged and decorative in appearance.

Other objects will be in part apparent and in part pointed out specifically hereinafter in connection with

the description of the drawing that follows, in which:

Figure 1 is a horizontal section taken through a wooden door frame showing the weather-strip of the present invention mounted in place between the jambs and door;

Figure 2 is a fragmentary elevation of one of the jamb members as seen in the direction of arrow 2, Figure 1, portions thereof having been broken away to expose the weather-strip;

Figure 3 is an enlarged transverse section taken along line 3—3 of Figure 4;

Figure 4 is a section taken along line 4—4 of Figure 3; and,

Figure 5 is a plan view of the spring to an enlarged scale.

Referring now to the drawing, reference numeral 10 indicates, in a general way, a wooden door frame of the type having jambs 12 and 14 and a lintel, not shown, of similar construction. The frame is fastened in the conventional manner to door bucks 16 which define the door opening. Trim strips 18 of any common design provide a finished appearance for the frame. A door 20 is hung within the door frame 10 on butts 22, as shown.

The jambs and lintel are each provided with a longitudinal door stop 24 having a rabbet 26 opening toward the door when in closed position. A wooden sealing strip 28, having a width slightly less than the width of the rabbet and a thickness less than the depth of said rabbet, is inserted therein to form the improved weather-strip of the present invention. The outer or sealing face 30 of the sealing strip is provided with a plurality of longitudinally spaced depressions 32 and openings 34 registering therewith to receive screws 36 which are screwed into the stop 24 at the base of the rabbet as shown most clearly in Figures 3 and 4. Sealing face 30 and the adjoining face 38 of the sealing strip that lies adjacent the outside of the rabbet are preferably overlayed with a covering 40 of relatively soft material such as felt, cloth, synthetic fabrics and the like which will form an airtight seal with the mating surface of the door.

With specific reference to Figures 3 and 4, it will be seen that the screws 36 are provided with an annular groove 42 on the shank intermediate the ends thereof. An arcuate leaf spring 44 having a longitudinal slot 46 is placed on the shank of the screw and restrained against longitudinal movement relative thereto by the groove. The spring is arranged on each screw such that the ends 48 of the spring lie in contact with the rear or inside face 50 of the sealing strip and force it outward against the head of the screw.

Now, an examination of Figures 2, 3 and 4 will show that the sealing strip 28 can be adjusted relative to the rabbet by merely adjusting the depth of insertion of screws 36 within the stop 24; however, such adjustment is carried out entirely independent of the spring 44 which remains under constant compression except when the door is closed. Thus, the distance that the sealing face 30 of the sealing strip projects beyond the rabbet can be adjusted to conform with any irregularities in the mating surfaces of the door without affecting the compression in the springs. For example, the lower screw in Figure 2 is shown adjusted to extend the sealing strip well beyond the rabbet; whereas, the upper screw has been threaded further into the stop thus pulling the strip deep into the rabbet without disturbing the compression of either spring which remains substantially the same. This adjustment of the sealing strip relative to the rabbet at each screw enables said strip to be positioned in relation to the door such that all the springs will be compressed substantially the same amount when the door is closed. When the strip is pressed into the rabbet by the door, the spring will, of course, compress against the shoulder 52 on the

screw shank adjacent the groove 42 rather than the bottom of the rabbet. The sealing strip is also preferably spaced slightly from the jamb, as shown in Figure 3, to prevent said strip from binding or squeaking as it works in and out of the rabbet.

With reference now to Figure 5, it will be seen that the slot 46 in the spring extends longitudinally from one end to approximately the center and becomes slightly wider toward the center. The width of the slot near the center is less than the diameter of the screw shank but greater than the diameter of said shank within the groove. Toward the end of the spring, however, the slot narrows until it is less than the diameter of the screw shank within the groove which means the slot must be forced open slightly to place the spring on the screw. When the screw is threaded into the stop it bears against the sides of the slot in the spring and tends to walk the spring off the shank. With the slot narrowed, however, the screw shank will become wedged in the slot and, therefore, cannot be removed therefrom by merely turning the screw.

The weather-strip thus formed extends the length of both jambs and across the lintel to provide a weather-tight seal on three edges of the door. The sealing strip, covering, screws and springs may be rapidly and easily removed from the rabbet as a unit for repair or replacement. Adjustment of the sealing strip relative to the door requires only that the screws be turned to change the degree at which said strip extends beyond the rabbet. Proper adjustment of the sealing strip will insure that all the springs will be compressed equally when the door is closed and latched.

Having thus described the several useful and novel features of the weather-strip of the present invention it will be seen that the many useful objects for which it was designed have been achieved. Although I have illustrated but one specific form of the invention in the accompanying drawing, I realize that certain changes and modifications may be made therein by those skilled in the art without departing from the true scope thereof; hence, it is my intention that the measure of protection afforded hereby shall be limited only in so far as said limitations are expressly set forth in the appended claims which follow.

What is claimed is:

1. In a door frame having a door hung therein for hinged movement, a weather-strip comprising: a door stop rib attached within the frame in position to provide an abutment for the door when closed, said rib including a rabbet opening toward the door; a plurality of screw fasteners attached to the door stop rib at spaced points and arranged to project outwardly toward the door at approximately right angles to the bottom of the rabbet, said fasteners including a head on the outer end thereof and a shank provided with an annular groove spaced from the bottom of the rabbet; a sealing strip sized to fit within the rabbet and mounted on the shank of the screw fasteners for inward and outward movement relative to the rabbet, screw fasteners and door; and, an arcuate leaf spring means centrally attached to the shank of the screw fasteners within the annular groove, the center of said spring means acting against the shank of the screw fastener and the ends of said arcuate leaf spring normally urging the sealing strip against the head thereof, the door when closed contacting the sealing strip and forming a weather-tight seal therewith by forcing said strip toward the bottom of the rabbet thereby compressing the spring means against the shank of the screw fastener.

2. A device in accordance with claim 1 in which the sealing strip is provided with a compressible fabric covering on the door receiving face thereof.

3. A device in accordance with claim 1 in which the spring means is provided with a slot therein of sufficient size to receive the shank of the screw fastener within the annular groove, said spring being centrally mounted on the shank such that the ends of said spring bear against the inside of the sealing strip.

4. A device in accordance with claim 1 in which the outside face of the sealing strip is provided with depressions sized to receive the head of the screw fastener in recessed relation.

5. A device in accordance with claim 1 in which the sealing strip is spaced from at least one side of the rabbet.

6. A device in accordance with claim 3 in which the slot in the spring tapers from the shank-receiving section thereof to a point at which the width of said slot is less than the diameter of said shank within the annular groove.

7. In a door frame having a door hung therein for hinged movement, a weather-strip comprising: a door stop rib attached within the frame in position to provide an abutment for the door when closed, said rib and frame cooperating to form a rabbet therebetween opening toward the door; a plurality of screw fasteners attached to the door stop rib at spaced points and arranged to project outwardly toward the door at approximately right angles to the bottom of the rabbet, said fasteners including a head on the outer end thereof and a shank provided with an annular groove spaced from the bottom of the rabbet; a sealing strip sized to fit within the rabbet and mounted on the shank of the screw fasteners for inward and outward movement relative to the rabbet, screw fastener and door; and, an arcuate leaf spring having a slot therein centrally mounted on the shank of each screw fastener within the annular groove, the ends of said spring contacting the inside face of the sealing strip and acting against the shank of the screw fastener to urge said sealing strip outward into the contact with the head of said screw fastener, the door in closed position contacting the sealing strip to form a weather-tight seal therewith by urging said strip inwardly thereby compressing the leaf springs between the inside face of said strip and the shank of the screw fastener.

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