Feb. 20, 1934. J. A. GOELLNER 1,948,108

WEATHER STRIP

Filed April 19, 1933

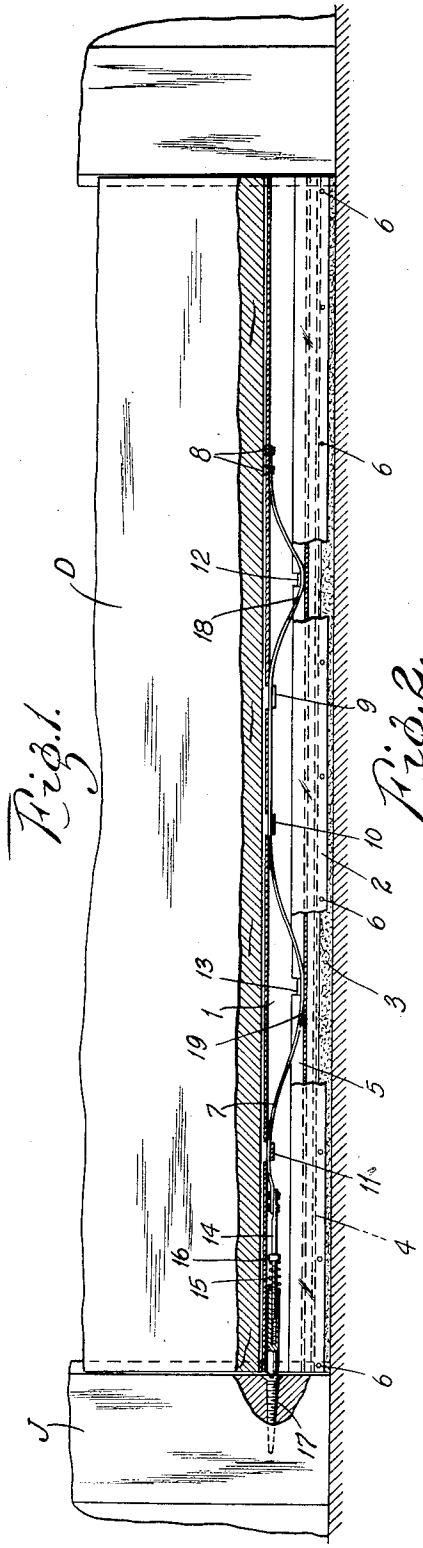


Fig. 1.

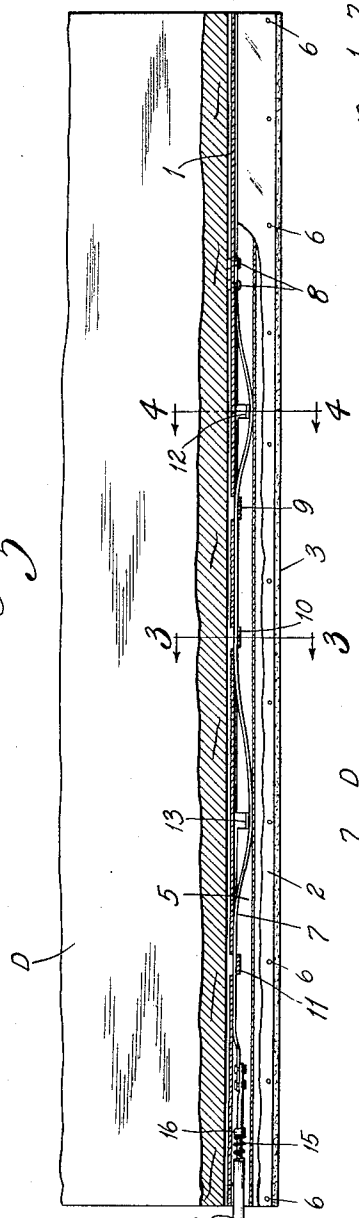


Fig. 2.

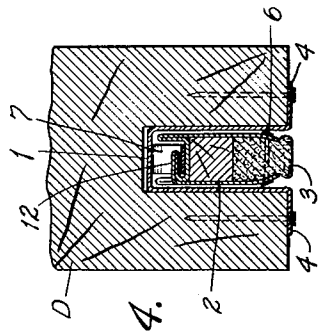


Fig. 4.

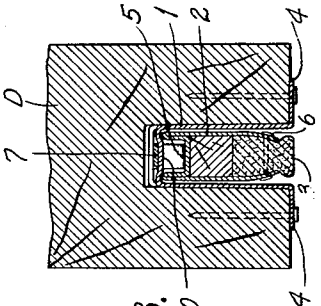


Fig. 3.

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WEATHER STRIP

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5 Claims. (Cl. 20—68)

This invention relates to weatherstrips of the type having a sealing member adapted to be movably mounted upon a door or window sash and provided with means for automatically throwing the weatherstrip into operative or inoperative position by closing or opening the door or window.

The principal object of the present invention is a simple, efficient weatherstrip which can be readily applied to various designs of windows and doors. Other objects are to cheapen the cost of manufacturing such weatherstrips, to vary the throw of the sealing member and to attain other advantages hereinafter appearing.

The invention consists principally in the improved manner of operating the movable sealing member of the weatherstrip; and it is also consists in the combinations and arrangements of parts hereinafter described.

In the accompanying drawing, which forms part of this specification and wherein like symbols refer to like parts wherever they occur,

Fig. 1 is a part elevation and part vertical section of the lower portion of a door provided with a weatherstrip embodying my invention, the door being shown closed,

Fig. 2 is a similar view of the door in its opened position,

Fig. 3 is a vertical cross-section through the opened door on the line 3—3 in Fig. 2; and

Fig. 4 is a vertical cross-section through the opened door on the line 4—4 in Fig. 2.

In the accompanying drawing, my weatherstrip is illustrated as applied to a swinging door D, but it is also applicable to other types of swinging or sliding closures. Said weatherstrip comprises a metallic casing 1, which is mounted in a longitudinal groove provided therefor in the bottom of the door D, and a metallic sealing member or bar 2, which is mounted to slide vertically in said casing and is provided along its bottom with a strip 3 of felt or other yieldable material. As shown in the drawing, the casing 1, which lines the groove in the bottom of the door, is of substantially inverted channel-shaped section and has outstanding base flanges 4 that are nailed or otherwise secured flatwise to the door on opposite sides of the groove therein. The sealing bar 2, which fits within the channel in the casing 1, is also of substantially inverted channel-shaped section and has a longitudinal groove 5 in its top; and the felt strip 3, which extends along the bottom of said bar, extends into the downwardly opening channel thereof and is held therein by horizontal rivets 6.

The sealing bar 2 is adapted to be projected from or retracted into the casing 1 by means of an elastic strip 7, preferably of spring steel, located in said casing between the top thereof and the top of said bar. This spring extends longitudinally of the casing and has its outer end rigidly supported therein by rivets 8 that secure said end flatwise to the underside of the top wall of said casing. The top of the casing 1 is provided with a plurality of seats 9, 10 and 11 for slidably supporting the spring 7 at points located intermediate the ends thereof, each support or seat being formed by making two longitudinal cuts across the top of the casing and pressing the metal between said cuts downwardly far enough to permit the spring to slide thereover. As shown in the drawing, the spring 6 has two sliding connections 12 and 13 with the sealing bar 2, the connection 12 being located intermediate the rivets 8, which constitute a fixed support for the end of said spring, and the adjacent spring support 9 and the connection 13 being located intermediate the spring supports 10 and 11. The sliding connections 12 and 13 between the spring 6 and the sealing bar 2 are preferably made by bending a portion of the side wall of the top channel 5 of said sealing bar inwardly over the spring to slidably hold the same in said channel.

The free end portion of the spring 7 has one end of a sectional plunger 14 riveted or otherwise rigidly secured thereto. The outer section of this plunger extends beyond the corresponding end of the casing 1 and is threaded on the inner section. By this arrangement, the inner section of the plunger 14 may be manipulated to regulate the distance that the plunger projects beyond the end of the casing. A coil spring 15 is interposed between the inner end of the outer plunger section and a shoulder 16 on the inner plunger section and thus serves to yieldably hold the outer plunger section in the desired position of adjustment. As shown in the drawing, the weatherstrip is mounted in the door with its operating plunger at the hinged edge thereof and adapted, when the door is closed, to be forced against the head of a screw 17 mounted on the adjacent jamb member J of the door frame.

The operation of the weatherstrip hereinbefore described is as follows: When the door is opened, the spring 7 is relieved on endwise pressure and thus serves to hold the sealing bar 2 in the casing 1 with its lower edge substantially flush with the bottom of the door. When the door is closed, the plunger 14 at the hinged edge thereof is forced against the door jamb J and thus puts an endwise pressure on the spring 7.

This endwise pressure on the long spring forces the portions thereof that are located between the supports 8 and 9 and the supports 10 and 11 to bow or bend downwardly, as at 18 and 19, respectively, and thus force the sealing bar downwardly in the casing into engagement with the floor or sill. When the door is swung open, the pressure on the plunger is released, thereby permitting the spring to recover its original shape, and thus draw the sealing bar up into the casing.

In order to permit the outer end portion of the sealing bar to clear a rug or other floor covering located close to the door sill, it is desirable that the outer end portion of said bar shall be retracted at the beginning of the opening movement of the door and shall not be projected until said door is almost closed. This is accomplished by making the span of the outermost pair of spring supports 8 and 9 less than the span of the innermost pair of spring supports 10 and 11, so that the portion of the spring which forms the outer bow 18 is shorter and stiffer than the portion of the spring which forms the inner bow 19. With this arrangement, the outer bow is formed last during the closing movement of the door and flattens out at a faster rate than the inner bow during the opening movement of the door. In other words, the shorter and stiffer portion of the spring is the last portion to bow during the closing movement of the door and is the first portion to flatten out during the opening movement of the door.

Obviously, the hereinbefore described weatherstrip admits of considerable modification without departing from the invention. Therefore, I do not wish to be limited to the specific construction and arrangement shown.

What I claim is:

1. A weatherstrip comprising a laterally movable mounted sealing bar and means for actuating said bar, said means comprising an elastic strip and pairs of supports for said strip spaced apart longitudinally thereof, the support at one end of said strip preventing endwise movement thereof and the other supports permitting such movement, and means for slidably connecting said strip to said bar at points intermediate the supports of each pair, the span of the pair of supports at one end of said strip being less than the span of the pair of supports at the other end of said strip.

2. A weatherstrip comprising a laterally movable mounted sealing bar and means for actuating said bar, said means comprising an elastic strip having one end fixed and having the portion intermediate its ends slidably supported by pairs of supports spaced apart longitudinaly of said strip, said strip having a slidable connection with said bar intermediate the supports of each pair, the span of the pair of supports at one end of said strip being less than the span of the pair of supports at the other end of said strip.

3. A weatherstrip comprising a channel-shaped casing, a sealing bar therein, an elastic strip interposed between said casing and said sealing bar with one end anchored to the former, said casing being provided with pairs of longitudinally spaced supports slidably supporting said strip, and means for slidably connecting said strip to said sealing bar at points intermediate the supports of each pair, the span of the pair of supports at one end of said weatherstrip being less than the span of the pair of supports at the opposite end thereof.

4. A weatherstrip comprising an inverted channel-shaped casing having outstanding base flanges, a sealing bar mounted in said casing, and a longitudinal spring interposed between said sealing bar and said casing with one end fixed to the latter, said spring being provided with at least two longitudinally spaced downwardly bowed portions and said sealing bar having a longitudinal groove in its top adapted to receive said bowed portions, said groove having portions of its side wall bent inwardly over said bowed portions to retain them in said groove, the top wall of said casing being slit transversely and pressed downwardly to form seats for slidably supporting said springs adjacent to the ends of the bowed portions thereof.

5. A weatherstrip comprising an inverted channel-shaped casing having outstanding base flanges, a sealing bar mounted in said casing, and a longitudinal spring interposed between said sealing bar and said casing with one end fixed to the latter, said spring being provided with at least two longitudinally spaced downwardly bowed portions and said sealing bar having a longitudinal groove in its top adapted to receive said bowed portions, said groove having portions of its side wall bent inwardly over said bowed portions to retain them in said groove, the top wall of said casing being slit transversely and pressed downwardly to form seats for slidably supporting said springs adjacent to the ends of the bowed portions thereof, one of the bowed portions of said spring being longer than the other bowed portion thereof.

JOHN A. GOELLNER.