March 11, 1952 D. J. BURCH 2,588,697

WEATHERSTRIP FOR METAL CASEMENT WINDOWS

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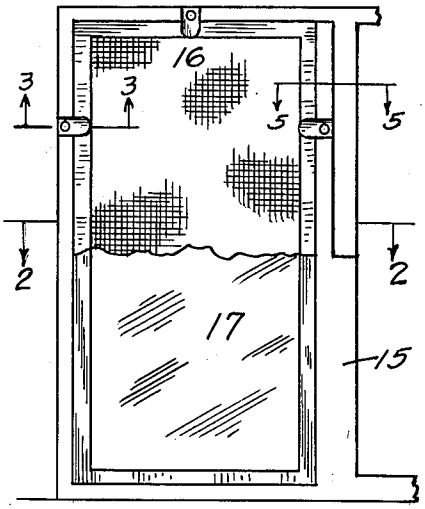


FIG. 1.

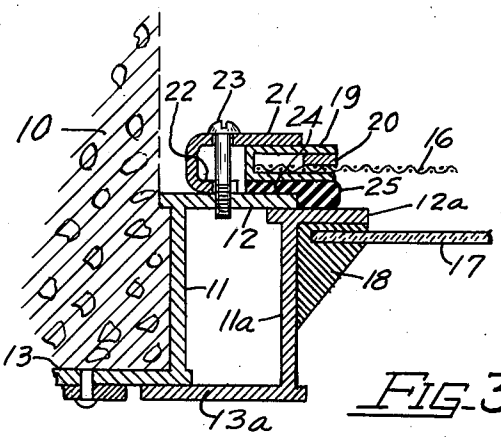


FIG. 3.

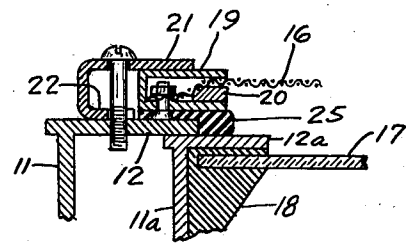


FIG. 4.

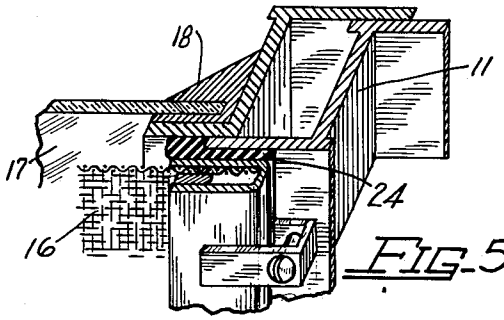


FIG. 5.

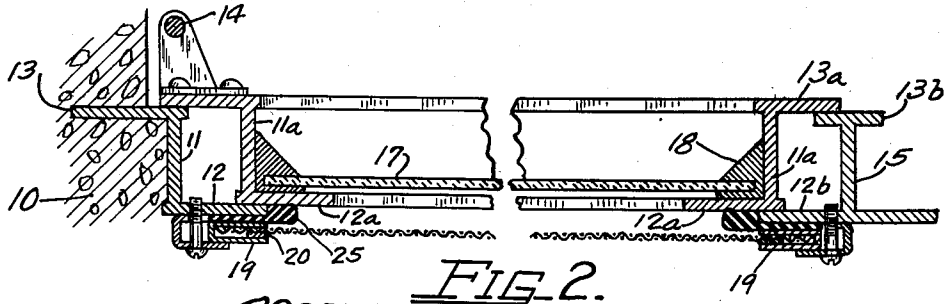


FIG. 2.

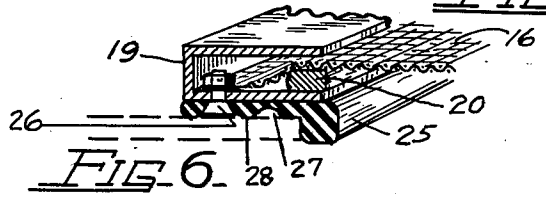


FIG. 6.

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WEATHERSTRIP FOR METAL CASEMENT WINDOWS

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3 Claims. (Cl. 160—40)

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This invention relates to improvements in metal casement windows and relates more particularly to a weather strip therefore.

Metal casement windows are constructed from steel or aluminum bars of various cross-sectional shapes. When aluminum is used, the frame members are, in most cases, extruded through dies and, as a result, have surfaces that are quite straight and smooth.

It has been found that metal casement windows will allow both air and fine dust to pass unless some form of seal or weatherstrip is employed.

A large number of weatherstrip means have been proposed and several have been patented.

It is the object of this invention to produce a weatherstrip means that forms part of a screen frame and which serves to effect a dust and airtight seal between the window frame and the sash.

The above and any other objects that may become apparent as the description proceeds are attained by means of construction and an arrangement of parts that will hereinafter be described in detail, for which purpose reference will now be had to the accompanying drawing in which the invention has been illustrated and in which:

Figure 1 is a front elevational view of a conventional window frame and sash, showing the invention applied thereto;

Figure 2 is a section taken on line 2—2, Figure 1;

Figure 3 is a cross section taken on line 3—3, Figure 1;

Figure 4 is a section, similar to the one shown in Figure 3, and shows a modified form of construction;

Figure 5 is a view partly in perspective and partly in section, taken on line 5—5, Figure 1, and

Figure 6 is a section through the screen frame showing the resilient compressible seal strip in place thereon.

In the drawing reference 10 designates a building wall to which the window frame is attached. For the purpose of this description, the window frame has been shown as formed from a member having, what may be loosely defined, as a Z-shape cross section and which, as shown in the several sections, consists of a web 11 from opposite edges of which flanges 12 and 13 extend in parallel planes. The sash frame has been shown as formed from a similarly shaped member having a web 11*a* and oppositely extending flanges 12*a* and 13*a*. For the purpose of this explanation, the frame members and the sash members may be identical in size and shape.

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Flange 13 of the window frame is usually embedded in the window wall, as indicated in Figure 2. The window sash has been shown as attached to the frame by a hinge whose pivot has been designated by 14. If the window is wide, it is usually formed in two sections separated by a mullion 15.

In the further description, the construction shown in Figures 2 to 6 will be considered.

The frame and sash members are so related as to size that when the inner surface of flange 13*a* contacts the outside surface of flange 13, the outer surface of flange 12*a* will contact the inner surface of flange 12. For various reasons, the double closure formed by the two pairs of flanges will not prevent an appreciable quantity of air and dust from passing. An additional seal is therefore desirable and will now be described.

In most cases where casement windows are used, they open outwardly or upwardly when viewed in Figure 12 and the wire screens 16 are therefore applied to the inside of the window frame. The window sash is, of course, glazed and the glass pane has been designated by numeral 17. The pane is secured to the sash in the usual manner and is held in place by putty 18.

The wire screen is secured in metal frame 19 of elongated U-shaped cross section, as shown in the several views. The screen edges are secured in the frame by means of splines 20, in a well-known manner. Such screens are held in place by clips of various shapes that are secured by screws. In the drawing, the holding clips have been shown as broadly U-shape with one stem or side shorter than the other. Referring now more particularly to Figure 3 where the shape of the clip is most clearly shown, the long side has been designated by 21 and the shorter side by 22, the securing screw is designated by 23. Side 21 rests on the outer surface of screen frame member 19 and urges it towards the outer surface of flange 12.

The air and dust leakage takes place between the adjacent surfaces of flanges 12 and 12*a*, and it is the object of this invention to form a resilient seal that will prevent air and/or dust from passing at the point indicated.

In Figure 6, frame member 19 and the seal strip have been shown to a somewhat larger scale than in the other figures, and in this view, which is a cross section, the seal strip 24 has been shown as attached to the under surface of frame 19 and extends the entire length thereof. One edge of the seal strip is provided with a rib

25 that normally extends to a point beyond the inner surface of flange 12. The seal strip may be attached to the frame member by means of a suitable adhesive, or it may be vulcanized to the frame member, or it may be attached to it by screws 26 which may also serve to secure the screen in the frame. The seal strip is provided with grooves 27 for the heads of the screws and to provide narrow ridges 28 that can be readily compressed.

It will be observed that the seal strip has a width substantially the same as the width of member 19 and that the latter is so positioned that the ridge 25 will be beyond the edge of flange 12, and it will therefore contact the outer surface of flange 12*a* and be slightly deformed by the latter when the sash is in closed position.

Since the seal strip is permanently attached to one side of screen frame 19, and since the latter is of such size relative to flange 12 that rib 25 will rest entirely on the surface of flange 12*a*, it will be in operative position whenever the screen frame is in position.

The seal strip may be made from any suitable material such as natural or synthetic rubber or plastic and must be resilient so that when the rib is compressed by the sash, it will conform to any and all irregularities and form a tight seal. Since the difference in air pressure on opposite sides of the seal is small, the seal may be readily compressible and may therefore be made, in part at least, from sponge rubber or very soft rubber or plastic.

Having described the invention what is claimed as new is:

1. A combined window screen and air and dust seal for use with metal casement windows, comprising, a screen frame of elongated U-shape cross section arranged with the opening facing inwardly to receive the edges of a wire screen, and a resilient dust-seal strip secured to the inner surface of the said screen frame, the inner edge of the seal strip having a laterally projecting rib forming a deformable seal member.

2. A combined window screen and air and dust seal for use on metal casement windows of the type having a window frame with an inwardly extending flange and a sash frame provided with

a flat surface for engagement with one side of the flange when the sash is in closed position, said surface extending inwardly beyond the edge of the flange forming a ledge, the screen frame having one side provided with a seal strip adapted to be positioned between it and the flange, the seal strip having the side facing said flange provided with a rib extending laterally along one edge of the flange, the rib being normally thicker than the flange wherefore it will project beyond the opposite side of the flange to a position to be engaged by the flat surface of the sash when the latter is in closed position, and means comprising screws for securing the screen frame and the seal strip to the flange.

3. In a metal casement window having a frame provided with an inwardly extending flange, and a sash frame having a flat surface for engagement with one side of the flange when the sash is in closed position; means for effecting an air and dust-tight seal between the two frame members, said means comprising a seal strip of resilient rubber-like material positioned against the opposite surface of the flange from that facing the sash frame, the latter extending inwardly beyond the edge of the flange, the seal strip having a rib projecting laterally from one side along one edge, the rib being thicker than the flange wherefore it will be engaged by the flat surface of the sash frame when the latter is in closed position, and means for securing the seal strip to the flange, comprising a metal frame of substantially the same width as the strip positioned against its outer surface and means comprising screws for attaching the last-named frame to the flange and holding it from movement in response to the force exerted thereon by the sash frame when in closed position.

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