April 15, 1930. J. F. RUTH 1,754,439

WINDOW

Filed June 23, 1928

Fig. 1.

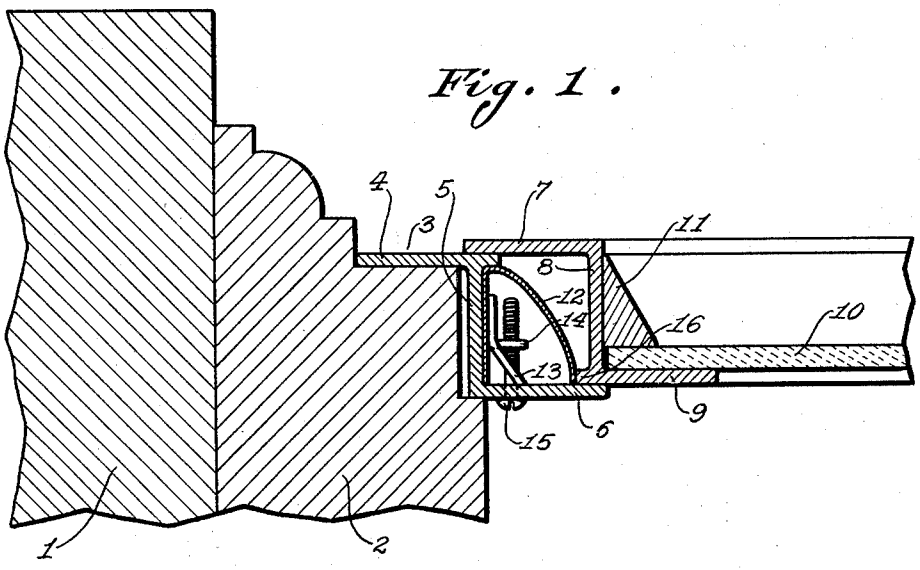


Fig. 2.

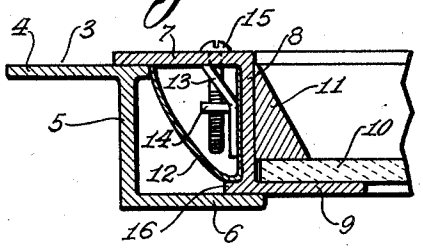


Fig. 3.

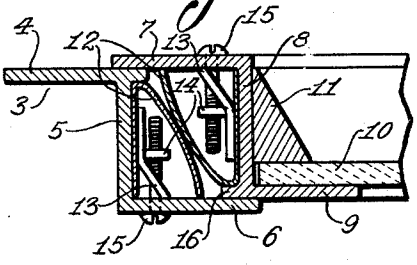
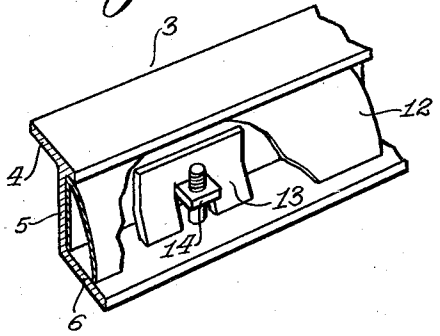


Fig. 4.



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UNITED STATES PATENT OFFICE

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WINDOW

Application filed June 23, 1928. Serial No. 287,659.

This invention pertains to metal windows, and more particularly to windows such as casement windows, which open or close on a hinge or pivot.

One of the objects of this invention is to provide a window of this type with a weatherstrip which will effectively seal the same against the weather.

Another object is to provide a weatherstrip which will make yielding engagement with the window in such a manner as to provide a weather-tight seal.

Another object is to provide a weatherstrip for such a window of novel form and simple construction.

Another object is to provide novel means for mounting such a weatherstrip in place.

Another object is to provide such a weatherstrip and mounting means which will be cheap to construct, simple to install, and effective and durable in service.

Further objects will appear from the following description, taken in connection with the accompanying drawing, in which—

Figure 1 is a fragmentary sectional view of a window embodying this invention;

Figures 2 and 3 are similar views, showing other embodiments of this invention; and

Figure 4 is a perspective detail showing the method of securing the weatherstrip in place.

Referring to the drawing, 1 designates the wall of the building and 2 is the window frame, which may be of wood or other suitable material with which the window opening is lined. A metal window frame 3 is arranged to line the opening of the frame 2. The frame 3 may be constructed of rolled steel or similar material and may have generally a Z section, as shown in Figure 1, although other angular sections may also be used. The frame may be mounted in place, as illustrated, with one flange 4 of the Z forming the outer face of the window frame, shown at the top in Figure 1. A web 5 extends toward the inside of the building, while an inner flange 6 forms the inside face of the window frame.

The window sash may be constructed of rolled steel of similar section, having an outer face 7, a web 8 and an inner face 9. The glass 10 may be mounted in the sash against the flange 9 and held in place by putty 11 or other suitable fastening. The sash swings on a pivot or hinge (not shown) moving outwardly, in the case shown in the drawing, from the position illustrated, when the window is opened. Upon opening or closing the window, therefore, the flanges 7 and 9 come into abutting engagement with the corresponding flanges of the frame 3.

A weatherstrip 12 is provided in the form of a strip of flexible material, such as thin metal folded lengthwise, so as to have generally a U-shaped cross-section. One leg of the U may be made straight, as illustrated in the drawing, while the other leg is curved and extends outwardly to a position to be engaged by the edge of the sash as will presently be more fully explained.

The strip 12 is held in place by a clip 13, which is generally rectangular in form and has an obtuse bend lengthwise of its middle portion. Near the middle of the clip 13, a lug 14 is cut from the material thereof, bent upwardly, and provided with an internal thread adapted to receive a tensioning screw 15. The screw 15 is passed through a hole drilled in one of the faces, as, for instance, the face 6 of the angular frame 3, and engages the clip inside the angle. The weatherstrip 12 is inserted with its straight side between one end of the clip 13 and the web 5 so as to lie against said web. One end of the clip 13 then engages the inside of said strip, while the other end rests upon the inside face of the flange 6 at a point beyond where the screw 15 passes through said flange. It will be seen, therefore, that in this arrangement one end or abutment of the clip 13 engages the weatherstrip 12, while the other end rests on the other face of the angle, and the screw 15 provides a tensioning member adapted to apply tensioning force between the ends of the clip. This has the effect of forcing the clip firmly against both faces of the angle and, therefore, to press the strip 12 firmly into engagement with the web so as to secure the same rigidly in place.

One part of the strip 12 is, therefore, held firmly against the frame 3, while the other

edge extends outwardly to a point close to the flange 6. This outer edge is in a position to be engaged by the edge of the sash when the latter is closed. This engagement takes place by a sliding movement, which presses the strip 12 inwardly against its resiliency so that, when the window is closed, the weatherstrip bears against the edge thereof with a firm yielding pressure all along that edge. This provides a tight joint through which it is practically impossible for air to be forced.

It is clear, of course, that the strip 12 may be mounted upon the sash instead of upon the frame 3. This construction is illustrated in Figure 2. Since both the sash and the frame have the same cross-section, the engagement of the weatherstrip will be the same in both cases.

In the embodiment of Figure 3, weatherstrips are placed upon both the frame and the sash. In this case, they will either engage each other, as shown in Figure 3, or each will engage the edge of the other member in cases where the lip 16 is long enough.

It will be seen, therefore, that this invention provides a window construction which is not only extremely simple to install and cheap to manufacture, but which makes a very effective weather seal. The outwardly extending edge of the strip 12 lies close to the flange 6 so that, when the window is open, there is no sharp edge of the strip 12 exposed, and it is practically impossible to come into accidental contact with this edge. When the window is closed, the strip is pressed with a yielding pressure against the sash. This pressure is at right angles to the movement of the window and, accordingly, the strip is in such a position that the bending incident to such engagement is not such as to cause a permanent set in the strip 12.

The clip 13 provides an ideal fastening for such a strip, as it may be mounted on the frame before the strip 12 is put in place. The screw 15 is made long enough to permit tipping up the outer end of the clip so that the strip may be inserted therebeneath. The head of the screw 15 is on the inside face of the frame where it is easily accessible for operation to tighten the clip. The clip 13 rests at its lower end on the flange 6, while the screw 15 applies its force between the ends of the clip so as to force the other end firmly against the strip 12.

With the window frame and sash construction as illustrated in the drawing, in which the two angle sections abut each other with the angles facing one another, a space is provided within the angles, and the sealing strip, being mounted within this space, is hidden from view and protected against injury. The fastening clips 13, being mounted within the fold of the strip, are also hidden from view, so that all exposed parts present a smooth and orderly appearance.

It is obvious that various changes may be made, within the scope of the appended claims, in the details of construction without departing from the spirit of this invention. It is, therefore, to be understood that this invention is not to be limited to the specific details shown and/or described.

Having thus described the invention, what is claimed is:

1. In a window having a frame and a sash movable to abutting engagement with said frame, a sealing strip of flexible material on one of said members and having a part extending along the line of movement of the co-operating edge of the other member so as to be wiped thereby and fastening means for said strip accessible for operation from an exposed face of one of said members.

2. In a window having a frame and a sash movable to abutting engagement with said frame, a sealing strip of flexible material folded lengthwise and adapted to engage the edge of the sash, and fastening means for said strip located within the fold thereof but accessible for operation from an exposed face of said frame.

3. In a window having a frame of angular section and a sash movable to abutting engagement therewith within the angle thereof, a sealing strip of flexible material mounted in said angle on one of said members and yieldingly engaging the edge of the other member so as to be wiped thereby, and fastening means for said strip accessible for operation from outside of said angle.

4. In a window having a frame of angular section and a sash movable to abutting engagement therewith within the angle thereof, a sealing strip of flexible material folded lengthwise and mounted in said angle with its edges protected thereby, and fastening means located within the fold of said strip and accessible for operation from outside of said angle.

5. In a window, a frame of angular section, a sash of angular section movable to abutting engagement therewith with their angles facing one another, a sealing strip mounted within said angles on one of said members and having a flexible edge positioned for wiping engagement with the edge of the other member, and fastening means for said strip accessible for operation from the outside of said angle.

6. In a window, a frame of angular section, a sash of angular section movable to abutting engagement therewith with their angles facing one another, a sealing strip mounted within said angles and having a flexible edge positioned for wiping engagement with one of said angles, and fastening means for said strip operable from an exposed face of one of said angles.

7. In a window, a frame of angular section, a sash of angular section movable to

abutting engagement therewith with their angles facing one another, a sealing strip of flexible material folded lengthwise mounted within said angles and provided with an outstanding flexible edge engaging the edge of the sash, and means within the fold thereof for securing said strip.

8. In a window, a frame of angular section, a sash of angular section movable to abutting engagement therewith with their angles facing one another, a sealing strip of flexible material folded lengthwise mounted within said angles and provided with an outstanding flexible edge engaging the edge of the sash, and means within the fold thereof for securing said strip operable from an exposed face of one of said angles.

9. In a window, a frame of angular section, a sash of angular section movable to abutting engagement therewith with their angles facing one another, a sealing strip of flexible material folded lengthwise mounted in one of said angles and provided with an outstanding flexible edge engaging the other, and means for securing said strip concealed thereby but operable from an exposed face of one of said angles.

10. In a window having a frame of angular section and a sash movable to abutting engagement therewith within the angle thereof, a sealing strip of flexible material mounted within and against a face of said angle so as to cover and obstruct access to said face, and fastening means operable from an exposed face of said angle adapted to clamp said strip against said inaccessible face.

11. In a window having a frame of angular section and a sash movable to abutting engagement therewith within the angle thereof, a sealing strip mounted in said angle against one face thereof, and a securing clip for said strip having abutments adapted for engagement with said strip and the other face of said angle and tensioning means adapted for applying force between said abutments.

12. In a window having a frame of angular section and a sash movable to engagement therewith within the angle, a sealing strip of flexible material folded lengthwise and mounted within said angle with one of its folds against the face thereof, and a securing clip having an abutment engaging said fold to press the same against said face, a second abutment engaging the other face of said angle, and tensioning means adapted to apply force between said abutments.

13. In a window having a frame of angular section and a sash movable to engagement therewith within the angle, a sealing strip of flexible material folded lengthwise and mounted within said angle with one of its folds against the face thereof, and a securing clip having an abutment engaging said fold to press the same against said face, a second abutment engaging the other face of said angle, and tensioning means adapted to apply force between said abutments and operable from an exposed face of said angle.

14. In a window having a frame of angular section and a sash movable to engagement therewith within the angle, a sealing strip of flexible material folded lengthwise and mounted within said angle with one of its folds against the face thereof, a securing clip having an abutment engaging said fold to press the same against said face, a second abutment engaging the other face of said angle, and a screw engaging said clip between said abutments and operable from an exposed face of said angle.

15. In a window provided with a frame having an angular section, a sealing strip mounted in the angle thereof, and a securing clip engaging said strip at one end and a face of said angle at the other and tensioned between its ends.

16. In a window provided with a frame having an angular section, a sealing strip mounted in the angle thereof against one face thereof, and a securing clip engaging said strip at one end and the other face of said angle at the other and tensioned between its ends.

17. In a window provided with a frame having an angular section, a sealing strip mounted in the angle thereof against one face thereof, a bent securing clip engaging said strip at one end and the other face of said angle at the other, and a screw engaging said clip to tighten the same.

18. In a window provided with a frame having an angular section, a sealing strip mounted in the angle thereof against one face thereof, a bent securing clip engaging said strip at one end and the other face of said angle at the other, and a screw engaging said clip to tighten the same and operable from an exposed face of said angle.

19. In a window having a frame and a sash movable in abutting relation therewith, a flexible sealing strip of substantially U section adapted for attachment to one of the members with one of its legs positioned for wiping engagement by the other member, and fastening means engaging said strip between its legs and accessible for operation from an exposed face of one of the members.

20. In a window having a frame and a sash movable in abutting relation therewith, a flexible sealing strip of substantially U section adapted for attachment to one of the members with one of its legs positioned for wiping engagement by the other member, and fastening means engaging one leg of said strip and accessible for operation from an exposed face of one of the members.

In testimony whereof, I affix my signature this 14th day of June, 1928.

JOHN F. RUTH.