April 21, 1942. H. EDWARDS 2,280,389

WINDOW CONSTRUCTION

Filed May 6, 1940

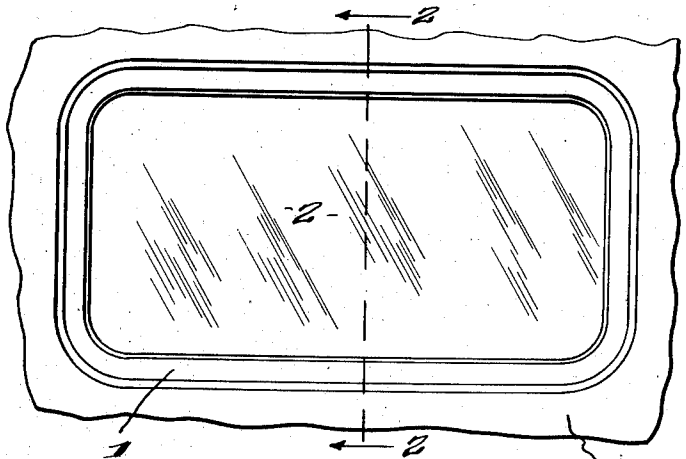


Fig-1-

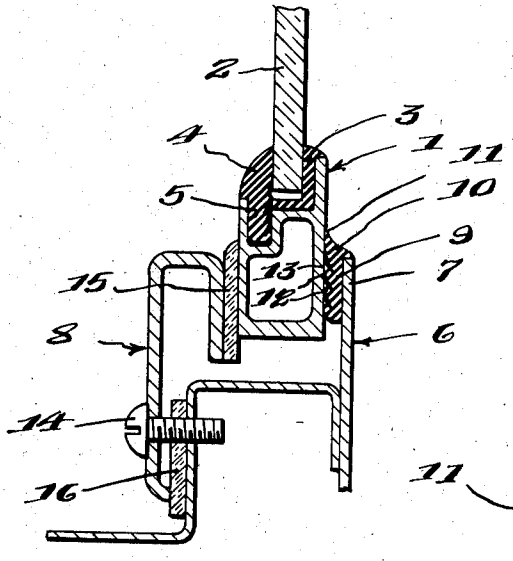


Fig-2-

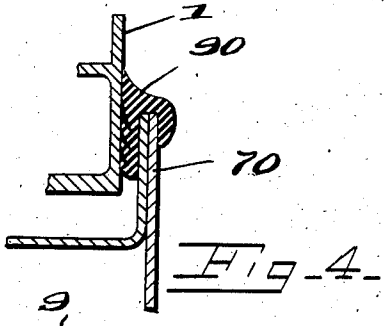


Fig-4-

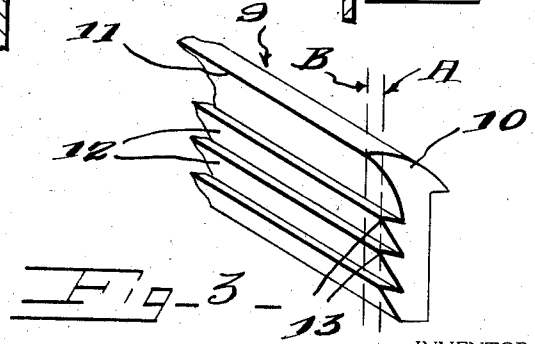


Fig-3-

INVENTOR.

BY Harold Edwards,
Bodell & Thompson.
ATTORNEYS.

Patented Apr. 21, 1942

2,280,389

UNITED STATES PATENT OFFICE

2,280,389

WINDOW CONSTRUCTION

Harold Edwards, Syracuse, N. Y., assignor to The O. M. Edwards Company, Inc., Syracuse, N. Y., a corporation of New York

Application May 6, 1940, Serial No. 333,451

2 Claims. (Cl. 189—75)

This invention relates to window constructions, particularly windows for railway cars, buses and the like, and has for its object a weather-tight seal between the sash and the frame, which tightly coacts with the frame throughout the entire circumferential line around the margin of the frame, which strip is continuously and tightly engaged with the side of the sash through flexibility of the strip rather than compressibility, that is, flexibility that can readily conform to irregularities throughout the entire length of the margin of the sash, and also the sash tightly and evenly clamped throughout its margin with less force and skill or attention than when the same is clamped against a strip or backing that compresses, and even though the clamping force is not uniform throughout the extent of the sash. The weather strip also serves as an insulating strip against the transfer of heat or cold by conduction from the window frame through the sash.

More specifically, it has for its object a sealing strip having a flexible resilient lip at its outer edge, which is engaged and flexed by the sash, when being tightened or clamped, in advance of flexible projections on the strip, as barbs extending parallel to the lip, the barbs being flexed and tensioned after the lip has been initially flexed or tensioned.

The invention consists in the novel features and in the combinations and constructions hereinafter set forth and claimed.

In describing this invention, reference is had to the accompanying drawing in which like characters designate corresponding parts in all the views.

Figure 1 is an elevation of the window.

Figure 2 is an enlarged sectional view on line 2—2, Figure 1.

Figure 3 is an enlarged fragmentary isometric view of the sealing and insulating strip between the sash and the window frame.

Figure 4 is a fragmentary sectional view illustrating a different form of sealing and insulating strip from that shown in Figure 2, and applicable to a slightly different car body construction from that shown in Figure 2.

The feature of the invention is the sealing and insulating strip, which seals against the sash by the flexibility of parts thereof, when the sash is clamped in the window opening or in the frame, in contradistinction to sealing by compressibility, and also a sealing and insulating strip in which the flexibility compensates for irregularities and ununiform pressure requires less force to seal the sash than when the sash is clamped throughout its extent against a compressible sealing strip. It will be understood that some of the sashes are extremely large, say sixty inches long and thirty inches wide, and hence great force is required to clamp such a sash flatwise against a compressible sealing strip, while on the other hand, the sash can be firmly clamped and sealed against a sealing strip with flexible portions, and the flexible portions will conform to any irregularities and compensate for different clamping pressures at different points throughout the extent of the sash frame. In this connection, it will be understood that the clamping means are individual units, as for example, screws spaced several inches apart, and also that the workman will not exercise care in tightening up all the screws evenly, and hence when a compressible sealing strip is used, the sash is more often than otherwise liable to not be sealed at points along the extent of the sash, due to the unequal tightening of the screws and the excessive force required to clamp the screws tightly in position. With the flexible sealing strip, the flexibility will compensate for unequal tightening of the screws or other spaced apart clamping devices.

1 designates the sash, usually of metal, and formed with a channel for receiving the margin of the glass pane 2, the channel being provided with a sealing or lining strip 3 usually of rubber. In this embodiment of my invention, the glass pane is shown as held in place by a rubber glazing strip 4 seated in a groove 5 in the sash 1.

6 designates, generally, the portion of the car body forming the window frame confining the window opening, this being in modern car constructions formed of sheet metal. The window frame includes a wall or flange 7 opposed to one face, as the outer face, of the sash 1.

8 designates, generally, the clamping means for clamping the sash 1 in the frame or window opening toward the wall 7.

9 designates the sealing strip between the sash 1 and the wall 7, this including a base portion interposed between the wall 7 and the sash and formed with a bead or head 10 located beyond the edge of the wall 7, the bead or head being capable of fulcruming or thrusting edgewise on the same. The bead or head 10 has a flexible resilient lip 11 pressing against the opposing side of the sash and capable of flexing, as the sash is tightened toward the wall 7. The strip 9 is also formed on the base portion thereof, which is located between the wall 7 and the

confronting side of the sash 1, with one or more flexible portions 12, these being shown as in the form of barbs in cross-section and so formed as to flex instead of compress toward the base of the strip 9, during the clamping action of the sash. Normally, the lip 11 projects beyond the vertical plane of the apices or edges 13 of the barbs, as indicated by the lines A—B, Figure 3, so that the lip is flexed or tensioned in advance of the flexing and tensioning of the barbs 13.

In Figure 4 is shown a window frame construction, in which the wall 70, corresponding to the wall 7, is composed of two overlapping strips, and the sealing strip 30 is formed with a groove for receiving the edge of the double wall 70 providing a shroud or shield covering the crevice between the sheets or plates of the wall 70.

The clamping strip 8 is clamped to the car body or window frame, by means of clamping means spaced apart around the window opening, here shown as screws 14. In order to prevent the transfer of heat or cold, and hence prevent condensation of moisture on the inner side of the sash, an insulating strip 15 is interposed between the clamping strip 8 and the outer side of the sash 1, and also preferably a heat insulating strip 16 is interposed between the clamping means 8 and the contiguous portion of the car body or window frame. Thus, with the sealing strip 9, the conduction of cold or heat from the outside of the car body through the metal sash and the window frame to the inside of the car body or window frame, and hence the consequent condensation of moisture on the inner side of the sash is absolutely prevented.

By reason of the sealing strip 9 against which the sash is clamped, operating to seal and hold the sash by flexibility of parts thereof in contradistinction to compressibility of the entire strip, the sash is not only firmly held in position, but is weather-tight throughout the entire extent thereof against drafts, rain and moisture, and on account of the flexibility, the sash is sealed continuously throughout its extent, regardless of the ununiformity in tightening of the screws 14.

What I claim is:

1. In a window construction, the combination with a window frame confining a window opening, a sash mounted in the frame, the frame having a wall opposed to one side of the sash, and means for clamping the sash toward said wall; of a strip of compressible resilient material including a base interposed between said wall and the opposing side of the sash and being provided with a plurality of flexible resilient projections to engage the sash and flex individually relatively to the base of the strip during tightening of the sash toward said wall to conform to and compensate for irregularities in the surface of the sash and of said wall, the strip being also formed with a head located beyond the edge of said wall and provided with a flexible resilient lip for engaging the sash in advance of the engagement of the projections with the sash during the tightening action of the sash toward said wall.

2. In a window construction, the combination with a window frame confining a window opening, a sash mounted in the frame, the frame having a wall opposed to one side of the sash, and means for clamping the sash toward said wall; of a strip of compressible resilient material including a base interposed between said wall and the opposing side of the sash and being provided with a plurality of flexible resilient projections to engage the sash and flex individually relatively to the base of the strip during tightening of the sash toward said wall to conform to and compensate for irregularities in the surface of the sash and of said wall, said projections being substantially continuous throughout the lengthwise dimension of the strip, the strip being also formed with a head located beyond the edge of said wall and provided with a flexible resilient lip for engaging the sash in advance of the engagement of the projections with the sash during the tightening action of the sash toward said wall, the head thrusting against the edge of the frame wall.

HAROLD EDWARDS.