

May 10, 1960

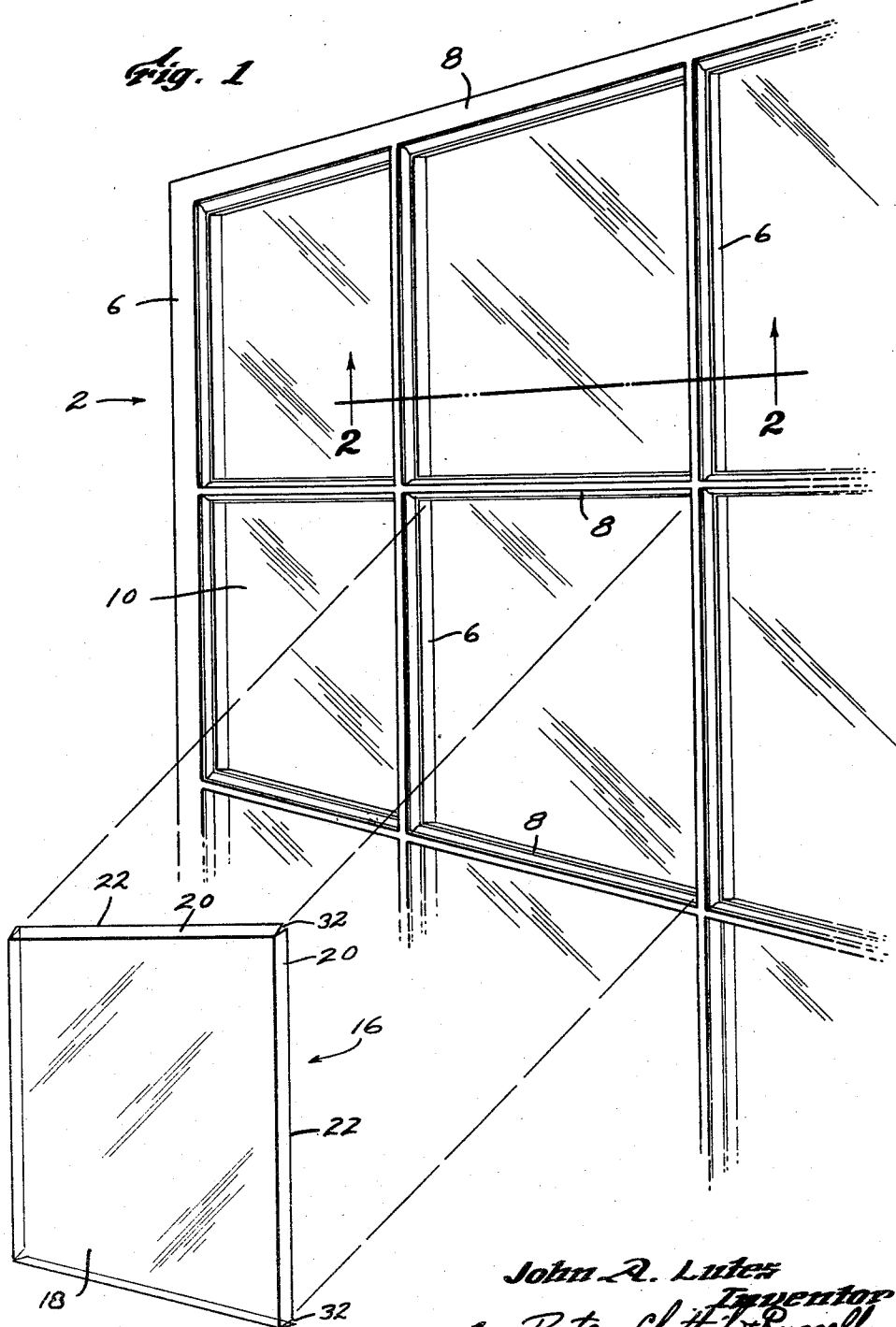
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2,935,769

WINDOW INSULATING DEVICE

Filed March 25, 1959

2 Sheets-Sheet 1



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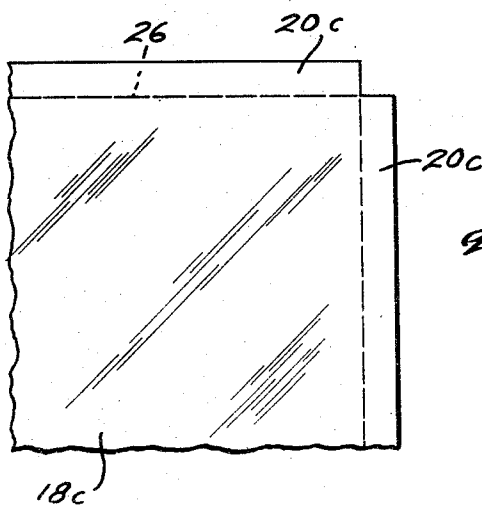
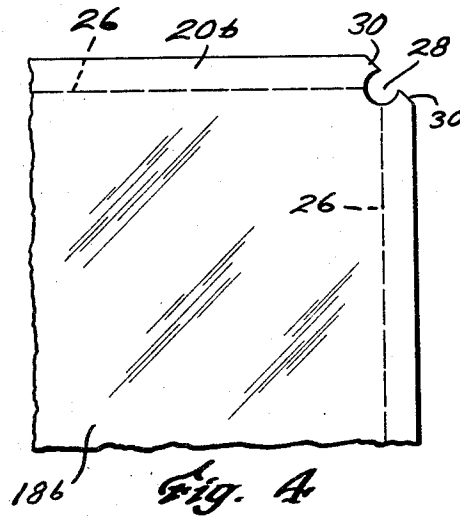
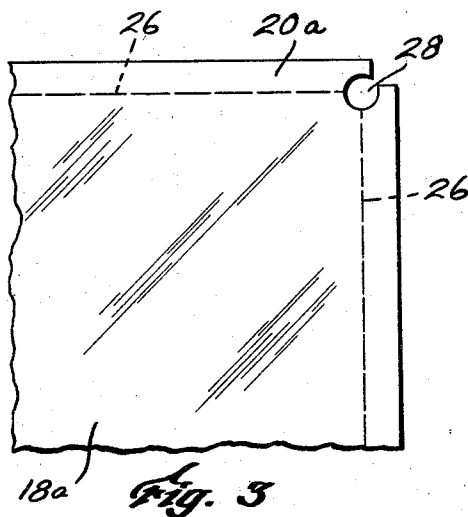
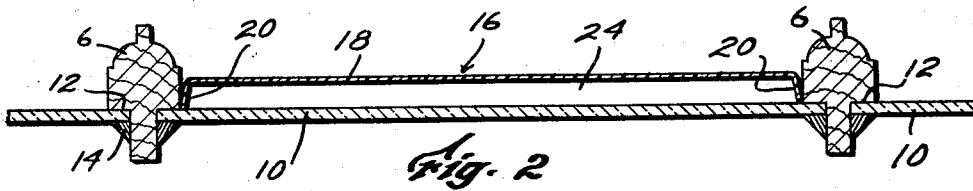
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WINDOW INSULATING DEVICE

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2 Sheets-Sheet 2



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WINDOW INSULATING DEVICE

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4 Claims. (Cl. 20—56.5)

This invention relates to storm windows and more particularly to the use of a supplementary pane of transparent material positioned in spaced relationship to a window pane, whereby to provide a dead air space therebetween which functions as an insulating medium for heat and sound.

There are already many different forms of removable storm windows. These different forms generally fall into two basic types. One type is adapted to be attached to the window frame. The other type is adapted to be attached directly to a window sash. Both types are expensive and difficult to install. Moreover, they are not adaptable to all types of windows, as, for example, concave window units made up of a plurality of small flat panes of glass.

The object of this invention is to provide storm window units which are free of the limitations of conventional storm windows.

A more specific object of this invention is to provide supplementary glazing sheets which are adapted to be readily attached to window sashes so as to form double window units with each pane of glass carried by said sashes.

Other objects and many of the attendant advantages of the present invention will be readily appreciated as the same becomes better understood by reference to the following detailed description when considered in connection with the accompanying drawings, wherein:

Fig. 1 is a perspective view of a portion of a colonial-type window sash and a glazing sheet designed to form a double window unit with one of the glass panes of said sash;

Fig. 2 is a sectional view taken along line 2—2 of Fig. 1; and

Figs. 3, 4, and 5 are fragmentary views of different forms of the same invention.

Essentially, the present invention comprises the provision of transparent resilient plastic sheets whose edges are set or bent back at an angle close to but less than 90 degrees to the plane of the sheet, the intumed edges functioning to frictionally grip the adjacent edges of a window sash whereby to hold the sheet in parallel spaced relation with a glass pane carried by the sash.

Turning now to Figs. 1 and 2, there is shown a portion of a conventional colonial-type window sash 2 which comprises a plurality of vertically extending frame members 6 and horizontal frame members 8 which form a lattice work defining a plurality of rectangular openings or windows in which are secured glass panes 10. The frame members 6 and 8 are grooved on their outside surfaces to provide shoulders 12 which function as stops for the glass panes. These panes are held against the stops by conventional glass fasteners (not shown) and sealed off by putty 14.

For each pane of glass 10, I provide a resilient transparent supplementary pane 16 formed of sheets of suitable commercially available plastics such as polyvinyl

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acetate and polymerized acrylic resin. "Lucite" and "Plexiglas" are suitable brands of acrylic resin.

Supplementary panes 16 are formed from blanks consisting of a rectangular planar body portion 18 provided with marginal tabs 20 which are bent back by a molding device to form intumed side walls. The latter are set at an angle less than 90 degrees to the plane of body portion 18. This angle should be at least 45 degrees.

The free edges 22 of the side walls define a rectangle slightly larger than the rectangular opening defined by frame members 6 and 8. Thus, in order to mount supplementary pane 16 in one of the window openings, it is necessary to flex the tabs or side walls 20 inward to an angle of approximately 90 degrees. Once pane 16 is seated in a window opening, the sides 20 bear against the surrounding frame members to keep it in place. Sides 20 also function as spacers so as to keep body portion 18 in spaced relation to the adjacent window pane 10, thereby forming a relatively dead air space 24.

It is not necessary that tabs be bent back by molding. Instead, they may be bent back at the time of installation. In this case, the blanks are scored so as to make it easy for the user to bend back the tabs.

Figs. 3, 4, and 5 illustrate three different forms of blanks in unfolded form. Body portions 18a, 18b, and 18c and marginal tabs 20a, 20b, and 20c respectively are delineated by score lines 26. Preferably, the blanks are scored only on one surface. The embodiment of Fig. 5 corresponds to the embodiment illustrated in Fig. 1, having tabs of the same shape. The embodiments of Figs. 3 and 4 are somewhat different. In Fig. 3, a hole 28 is punched at each corner of the blank, each hole being common to the body portion 18a and the adjacent ends of the two tabs 20a. Holes 28 serve two purposes. First of all, they reduce the tendency of the body portion to crack at the corners. Secondly, they provide enlarged passageways which permit the air space 24 to breathe and allow escape therefrom of any moisture which may condense or be trapped therein.

The embodiment of Fig. 4 is the same as the embodiment of Fig. 3 except that the corners of tabs 20b are chamfered as shown at 30. This helps improve breathing of the dead air space and also helps reduce damage to the corners of the tabs.

The embodiments of Figs. 1 and 5 depend for breathing on the narrow spaces 32 (Fig. 1) left between the tabs even when the panes are mounted in a window. These spaces are adequate for breathing, particularly when the tabs are bent back at an angle close to 45 degrees. These spaces decrease in size as the tabs are bent back at greater angles.

Of course, the blanks shown in Figs. 3 and 4 need not be left unfolded. Instead, the tabs may be bent back at the time of manufacture, in which case, it is not necessary to provide score lines 26.

It is to be noted that although the storm panes of this invention are removably held in place solely by the pressure exerted on the frame members by the intumed tabs, it is possible, if desired, to secure them in place permanently by means of an adhesive or other suitable means. It is further contemplated that the storm panes of this invention may be tinted to reduce glare from sunlight.

The advantages of the present invention are many. First of all, the supplementary panes can be made from flat commercially available sheets of transparent plastic in a single operation. Secondly, they are cheap to manufacture. Thirdly, they are easy to install and remove and require no special tools. Fourthly, they are light and easy to handle. Fifthly, they can be made to fit any type of wooden sash and many types of metal sashes. Sixthly, they are unbreakable; and since they can be mounted on

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the inside of a sash, they act as a protection against flying glass. Seventhly, they prevent loss of heat since plastics, and particularly polyvinyl acetate and polyacrylic resins such as polymethylmethacrylate, are good insulators of heat. Eighthly, they will not "frost up" to obscure visibility.

Obviously, many modifications and variations of the present invention are possible in the light of the above teachings. Therefore, it is to be understood that the invention is not limited in its application to the details of construction and arrangement of parts specifically described or illustrated, and that within the scope of the appended claims, it may be practiced otherwise than as specifically described or illustrated.

I claim:

1. A window having means defining a rectangular opening, a pane of glass secured in said opening, and a rectangular supplementary pane formed of a resilient transparent plastic removably mounted in said opening, said supplementary pane having intumed edges in frictional engagement with said means whereby to hold said supplementary pane in said opening, said supplementary pane spaced from said pane of glass by said intumed edges.

2. A window comprising a sash having a frame defining a rectangular opening, a glass pane in said opening, means sealing the edges of said glass pane to said frame, a supplementary pane formed of a resilient transparent

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plastic positioned in said opening, said supplementary pane having edges normally intumed by an angle of slightly less than 90 degrees, said supplementary pane held in said opening by frictional engagement of said edges with said frame, said supplementary pane spaced from said pane of glass by said intumed edges.

3. In combination with a window sash comprising horizontal and vertical frame members defining a rectangular window opening, and a pane of glass secured in said opening, the improvement comprising a supplementary transparent pane of rectangular shape formed of a resilient transparent plastic, said transparent pane having marginal tabs at each side bent back at an acute angle to the plane thereof, said supplementary pane located in said opening and spaced from said pane of glass by said tabs, said tabs in frictional engagement with said frame members whereby to hold said supplementary pane in place.

4. The combination of claim 3 wherein said tabs provide small apertures at the corners of said supplementary pane, whereby to permit air and moisture to escape from between said glass and supplementary panes.

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