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E. D. WAHL

2,216,332

INSULATING WINDOW

Filed Jan. 14, 1938

Fig. 1.

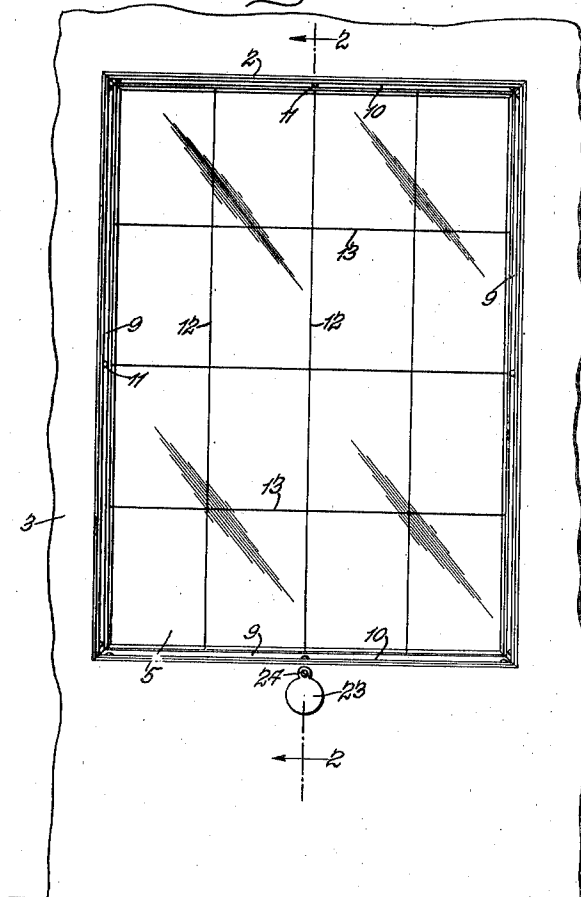


Fig. 2.

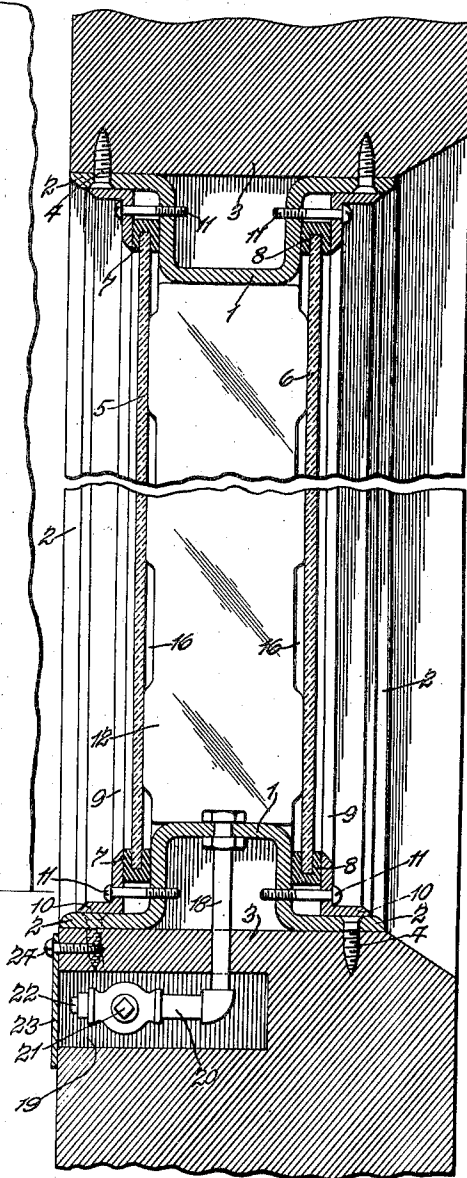
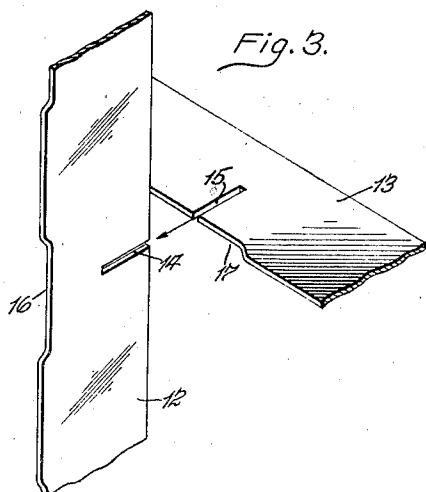


Fig. 3.



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INSULATING WINDOW

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2 Claims. (Cl. 189-64)

This invention relates to insulating windows comprising spaced panes of glass appropriately mounted so as to provide an intervening insulating space.

5 An object of the invention is to provide an insulating window comprising a sash frame mounted in a window frame opening and having an inwardly extended or extruded portion along its upper, lower and vertical sides holding the
10 window panes spaced apart, in combination with novel means for supporting the window panes in said frame in a relationship preventing passage of air into and from the space separating said panes.

15 Another object of the invention is to provide an improved insulating window in which the spaced window panes are held in proper spaced relationship by bracing elements supported between them and engaging the adjacent surfaces of the
20 panes to strengthen them without interfering with the free flow of air from and to the different parts of the space.

Another object of the invention is to provide an improved insulating window having the win-
25 dow panes separated by an intervening space, in combination with means for admitting air into or withdrawing air from said space as desired.

Other objects of the invention will be made apparent by the following description, reference being made to the annexed drawing, in which—

30 Fig. 1 is an inner side elevation of my improved insulating window.

Fig. 2 is an enlarged vertical sectional view approximately on the line 2-2 of Fig. 1.

35 Fig. 3 is a perspective view of parts of vertical and horizontal spacers or braces mounted between the two window panes.

The window sash frame in which the spaced glass panels are mounted includes top, bottom, and
40 vertical side portions. This frame may be a unitary element including inwardly extended or extruded portions 1 and laterally extended attaching flanges 2 seating against the walls 3 of the window frame in which the window is
45 mounted. Fasteners 4 extend through the attaching flanges 2 and into the walls 3, thereby rigidly securing the window sash frame within the window opening.

The inner pane 5 and the outer pane 6 in the
50 embodiment shown are of equal dimensions and have their margins enclosed in elastic sealing gaskets 7 and 8, respectively, seating against the inner and outer sides of the inwardly extended or extruded portions 1 of the window sash frame.

55 These sealing gaskets are rigidly clamped against

the sides of the inwardly extended or extruded portions 1 by clamping frames, each of which is angular in cross-section and comprises an inwardly extended flange 9 engaging the outer surfaces of the sealing gaskets 8, and outwardly extended flanges 10 seating against the attaching
5 flanges 2 of the window sash frame and covering and concealing the fasteners 4. These clamping frames are rigidly attached to the window sash frame by removable and replaceable fasteners 11
10 passing through the flanges 9 and into and through the sides of the inwardly extended or extruded portions 1. Thus, the panes 5 and 6 are immovably supported by hermetic sealing gaskets which prevent air from passing into or from the
15 space between said panes.

The window panes are strengthened and braced by vertical spacers or braces 12 having their upper and lower ends contacting or adjacent to the upper and lower portions of the window sash frame; and by horizontal spacers or braces 13 interlocked
20 with the spacers or braces 12 by notches 14 in said spacers 12 and notches 15 in the spacers 13. The edges of the spacers 12 are provided with notches 16 and the edges of the spacers 13 are provided with notches 17, thereby preventing the
25 formation of closed cells and providing for free movement of the air from and to any part of the space separating the panes 5 and 6.

A pipe 18 has one end attached to the window
30 sash frame and opening into the space between the window panes. Said pipe extends into a compartment 19 in one of the walls 3 and is provided with a laterally extended portion 20 in said compartment. A valve 21 in the pipe portion 20 provides means for opening and closing said pipe for
35 admission of air into the space between the panes 5 and 6 or for withdrawal of air therefrom. The outer end of the pipe portion 20 is provided with means 22 for attachment with a tube or hose connected with any appropriate pump device (not
40 shown) for forcing air into the space between the panes 5 and 6 or for withdrawing air from said space. At the conclusion of such operation, the valve 21 should be closed before the pump device
45 is detached from connection with the part 22. A closure 23 for the compartment 19 is mounted on a support 24 for movement to positions to open and close said compartment.

It is now apparent that this invention attains
50 all of its intended objects and purposes in an economical, efficient and satisfactory manner. The entire device may be manufactured and installed at comparatively low cost and maintained
55 as a permanent window device through all sea-

sons. However, if desired, either one of the window panes may be removed without disturbing the other. The invention may be varied within the scope of equivalent limits without departure from the nature and principle thereof.

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I claim:

1. An insulating window comprising a rigid frame having inwardly extended pane-spacing portions along its upper, lower and vertical sides, outwardly extended attaching flanges integral with the opposite sides of said portions, fasteners extending through said flanges at opposite sides of said portions and rigidly attaching said frame within a window opening, a pair of window panes having their margins extending at opposite sides of said portions, elastic sealing means inclosing the margins of said panes, angular clamping frames concealing and preventing access to said fasteners, and removable and replaceable fasteners passing through said clamping frames inwardly into said pane-spacing portions between said sealing means and said flanges for clamping said last named frames closely against said sealing means to form hermetic joints.

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frame having inwardly extended pane-spacing portions along its upper, lower and vertical sides, fasteners extending through opposite marginal portions of said frame and rigidly attaching said frame within a window opening, a pair of window panes having their margins extending at opposite sides of said portions, elastic sealing gaskets enclosing the margins of said panes, angular clamping frames concealing and preventing access to said fasteners, removable and replaceable fasteners passing through said clamping frames inwardly into said pane-spacing portions between said gaskets and said flanges for clamping said last named frames closely against said gaskets to form hermetic joints, a series of laterally spaced vertical braces between said panes and having their upper and lower ends adjacent to said upper and lower spacing portions and having unobstructed notches in their edges for the passage of air and also having supporting notches, and a series of horizontal braces seated in said supporting notches in vertically spaced relationship and having notches in their edges for the passage of air.

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