April 16, 1940. M. H. WOLF 2,197,167

STORM WINDOW

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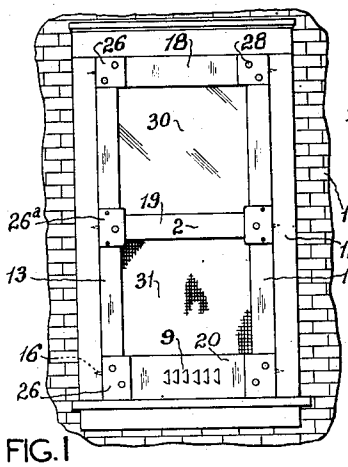


FIG. 1

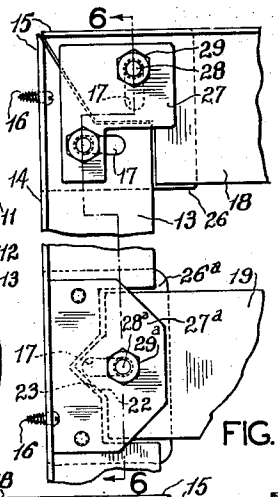


FIG. 4

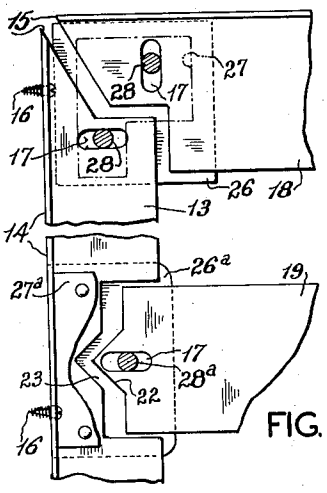


FIG. 5

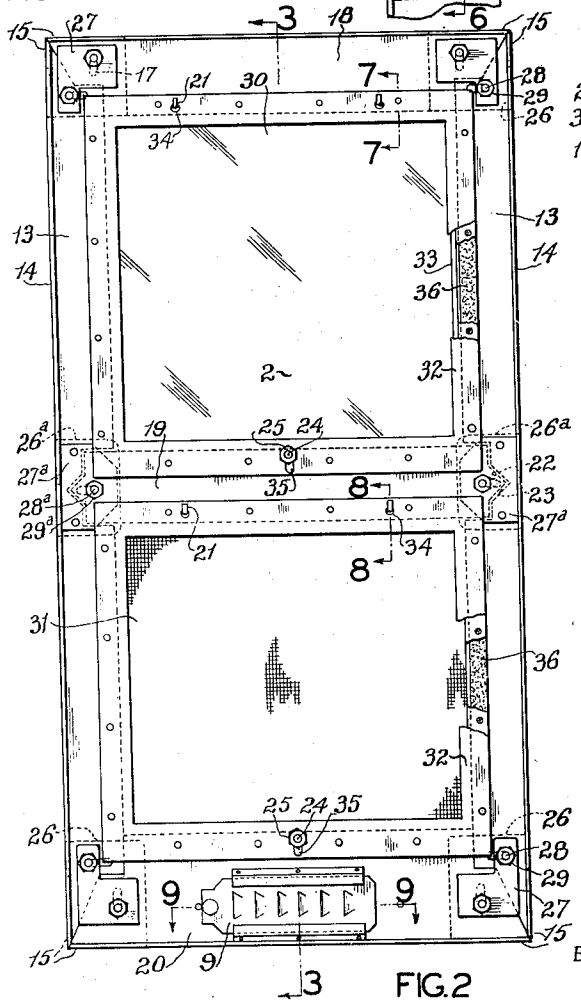


FIG. 2

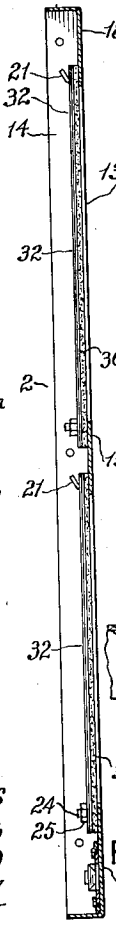


FIG. 3

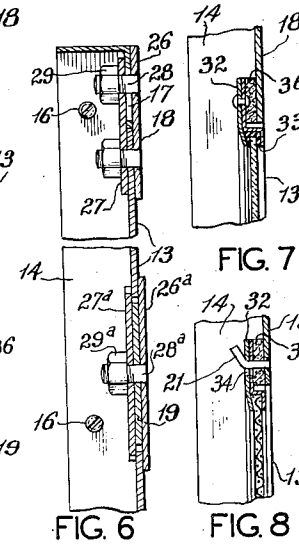


FIG. 6

FIG. 7

FIG. 8

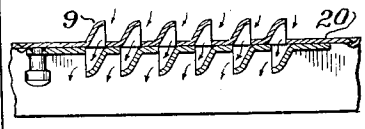


FIG. 9

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STORM WINDOW

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4 Claims. (Cl. 189—64)

This invention relates to auxiliary windows and particularly to the type known as storm windows, which supplement the regular window sashes of a building and which are adaptable to receiving panes of glass for inclement weather or for receiving screen panels for summer weather.

An object of the invention is to provide a metal sash of the type mentioned, which is adjustable in width and height so as to compensate for the warping or the shrinking of the frame in which it is to be inserted.

Another object of the invention is to inexpensively make such window out of simple metal stampings and which can be economically shipped disassembled or knocked-down, and which can be assembled at the job quickly and without the use of special tools or equipment.

Still another object is to construct an adjustable metal frame which will accommodate either glass or screen panels to conform to climatic or weather conditions, and which panels may be quickly and easily removed for cleaning or replacement.

A further object is to provide such auxiliary windows with a trim and neat appearance, so that they do not appear bulky or clumsy and which do not disfigure the existing windows when viewed either from the outside or the inside.

A still further object is to provide a window of the type mentioned with adjustable louvers for ventilating purposes.

These and other objects and features will become apparent from a study of the following description and accompanying drawing, in which like parts are designated by like reference characters, and in which:

Figure 1 is a front elevation of the window of this invention, attached to an ordinary sash, as viewed from the outside of a building;

Figure 2 is an elevation showing the inside of the window in greater detail;

Figure 3 is a sectional view taken along the lines 3—3 of Figure 2;

Figure 4 is an enlarged view of the corners, ends and attachment means used to connect the vertical segments and horizontal sections of the frame together;

Figure 5 is a view similar to that of Figure 4, excepting that the segments and sections are in partially expanded assembly;

Figure 6 is a sectional view of Figure 4, taken along the lines 6—6 of that figure;

Figure 7 is a partial sectional view taken along the lines 7—7 of the Figure 2;

Figure 8 is a partial sectional view taken along the lines 8—8 of the Figure 2; and

Figure 9 is a partial sectional view of a louver taken along the lines 9—9 of the Figure 2.

Again referring to the drawing, the Figure 1 illustrates the outside of a building 11, in which there is a conventional window sash 12 and to which there is attached the auxiliary storm window 2 constituting this invention.

The vertical rail or side segments 13 are made of sheet metal and formed with longitudinal flanges 14 and eccentrically mitered ends 15. The flanges 14 are of sufficient height and thickness to strengthen the segments 13 without materially increasing its weight. The side segments 13 also have elongated slots or holes 17 at each end to accommodate the clamp members which will subsequently be explained and described in detail. On the side of, at about the center of the segment 13 and opposite the side having the flange 14, there is a notch 23 or portion cut away to adjustably accommodate the irregular ends of the middle section 19, hereinafter referred to.

The top rail or horizontal section 18 is made substantially the same as a vertical side segment 13. That is, it also has a longitudinal flange 14 and elongated holes 17 at each of its eccentrically mitered ends 15. In addition, it has two simple hooks 21 firmly attached to its inside surface, on which may be hung the panel members which also will be later described and explained in detail.

The middle rail or horizontal section 19 is flat. Both of its ends 22 are somewhat irregular, have substantially the shape illustrated and made to fit the cut away portion or notch 23 of the vertical side segment 13. It also has near each end, elongated holes 17 to accommodate the clamp members referred to. Near the bottom of the middle section 19, there are two hooks 21 like those which are attached to the top horizontal section 18. Near the top of this same section 19, there is attached a bolt 24 or other suitable fastening means for securely attaching the aforementioned panel members, after they have been hung on the hooks 21 of the top section 18. If an ordinary bolt 24 is used to fasten the panel member in place, a simple nut 25 may be used to fit it or possibly a winged nut or even a more decorative knurled knob.

The bottom rail or horizontal section 20 is similar to the other two sections 18 and 19, except that it has a bolt 24 to correspond with the hooks 21 of the middle member section 19 and

also has a simple ventilating means in the form of an adjustable louver 9 of conventional design. The construction, assembly and operation of the louvers 9 need not be mentioned in detail as persons familiar with the art are well acquainted with them.

The segments 13 and sections 18, 19 and 20 are attached together with clamp-plates 26 and 27. The character 26 indicates the outside plate to which there is firmly attached by either welding or peening processes two bolts 28. These bolts pass through the elongated holes 17 of the segments 13 and sections 18 or 20, pass through the inside plate 27 and then securely fastened with nuts 29.

If the original sash 12 to which this auxiliary window 2 is being fitted, is old and warped or slightly off standard as to shape and size, the side segments 13 and the sections 18, 19 and 20 may be assembled somewhat as indicated in the Figure 5, that is the elements may be clamped together with the plates 26 and 27 separated to accommodate either extra width, extra length or both. The eccentrically mitered ends 15 and the unique method of attaching the clamp-plates 26 and 27, permits this kind of separated assembly without much of the separation of the parts to be visible or to materially weaken the structure.

The middle section 19 is similarly attached or connected to the side segments 13 with similar clamp-plates 26*a* and 27*a*, and bolts and nuts 28*a* and 29*a* respectively, the two clamp-plates covering the notches, separation or elongated slots.

The removable panel members may be of two styles. The drawing shows the top member having a glass pane 30 and the bottom member having a screen or wire mesh 31. The construction of the top member is simple and consists of a suitable metal frame 32 which securely holds the glass pane 30 within a rubber weatherstrip 33. This may be a knock-down construction and can be easily assembled on the job. The upper portion of the frames 33 are provided with openings 34 for receiving the hooks 21. The lower portion of the frames 32 are suitably provided with slots 35 for accommodating the bolts 24.

The panel member supporting the screen 31 is very similar to the other member except that its frame 32 need not have the rubber weatherstrip 33. The frames 32 being of the same size and of similar construction are interchangeable or replaceable.

In order to make the assembled parts weatherproof and storm resisting, a gasket 36 made of strips of felt, rubber or other suitable material is inserted between the frames 32 and the segments 13 and sections 18, 19 and 20. This gasket 36 can very easily be cemented to the segments and sections and are hidden from view when a panel member is inserted.

In the actual construction of the article, the louver 9 may be in any of the other, or in all of the horizontal sections and the window may be constructed to accommodate only one panel member or even three or four instead of with the two members as shown.

To briefly summarize the advantages of the instant invention over the devices of the prior art it may be pointed out: First, that the frame when assembled and installed is expandable and adjustable in all directions after it is installed as well as it is at the time of installation. Those prior art sashes which provide for expansion or adjustment to accommodate frames which are irregular at the time of installation do not have the flexibility needed to automatically adjust themselves to windows which become more irregular after installation. In such instances a window frame which changes in shape even in a small degree after the auxiliary frame is installed, badly effects the auxiliary frame causing it to warp. It also causes the glass or screen panels to fit poorly and very often such minor changes cause rattles and weather leaks. Some of the prior art devices expand or are adjustable to compensate for vertical changes in the main window frame, others to compensate for horizontal variations. However, there are none which embody the features of this invention and which are adjustable simultaneously in a vertical, horizontal and even diagonal direction at the corners.

Secondly, the auxiliary frame of this invention can be easily packed and shipped. It should be noted that the vertical rails or segments and the horizontal rails or sections are perfectly straight and may be conveniently nested together for inexpensive packing and carrying. Heretofore the auxiliary frames were assembled at the time of manufacture and then transported to the place of installation in large rectangular form. With the instant device any person with relatively little experience can easily carry a number of kits to the place of installation and quickly assemble as many as are needed right on the job. Such packing and the simplicity of installation and adjustment is particularly desirable for selling auxiliary windows of this type through ordinary retail channels or by mail order methods.

It will now be clear that there is now provided, a storm or auxiliary window of the type described and which accomplishes the objects of this invention. While the invention has been described in its preferred form and while certain terms and specific language have been used, it is to be understood that the embodiment of the invention as described and shown, is merely illustrative of the broad idea and is not to be considered in a limiting sense. It is further obvious that various changes may be made by those skilled in the art without departing from the spirit of the invention as no limitations are intended other than those imposed by the scope of the appended claims.

I claim:

1. In a window, an auxiliary frame, comprising in combination, vertical segments having eccentrically mitered ends and horizontal slots therein contiguous to the said segment ends, horizontal sections having eccentrically mitered ends matching the segment ends, the said horizontal sections having vertical slots therein contiguous to the section ends, and pairs of clamp plates having means for engaging the said vertical and horizontal slots and flexibly joining the segments and the sections together.

2. In a window, an auxiliary frame, comprising in combination, vertical segments having eccentrically mitered ends and horizontal slots therein contiguous to the said segment ends, horizontal sections having eccentrically mitered ends matching the segment ends, the said horizontal sections having vertical slots therein contiguous to the section ends, pairs of clamp plates having means for engaging the said vertical and horizontal slots, and means on the horizontal sections for retaining panel members thereon.

3. In a window, an auxiliary frame, comprising in combination, vertical side segments having mitered ends, notched ends, horizontal slots therein contiguous to the mitered ends, and central holes therein contiguous to the notched sides; hori-

zontal top and bottom sections having mitered ends matching the segment mitered ends and vertical slots therein contiguous to the ends thereof; the said side segments and top and bottom sections having outer flanges thereon; a horizontal mid-section having pointed ends matching the notched sides of the vertical segments and horizontal slots therein contiguous to the pointed ends thereof; pairs of corner clamp plates having means for engaging the vertical and horizontal end slots and flexibly joining the top and bottom sections to the side segments; pairs of central clamp plates having means for engaging the central holes of the side segment and the horizontal slots of the mid-section and flexibly joining the mid-section to the said side segments; and means on the outer flanges for attaching the said segments and sections to the said window.

4. In a window, an auxiliary frame, comprising in combination, vertical side segments having mitered ends, notched sides, horizontal slots therein contiguous to the mitered ends, and central holes therein contiguous to the notched sides; horizontal top and bottom sections having mitered ends matching the segment mitered ends and vertical slots therein contiguous to the ends thereof; the said side segments and top and bottom sections having outer flanges thereon; a horizontal mid-section having pointed ends matching the notched sides of the vertical segments and horizontal slots therein contiguous to the pointed ends thereof; pairs of corner clamp plates having means for engaging the vertical and horizontal end slots and flexibly joining the top and bottom sections to the side segments; pairs of central clamp plates having means for engaging the central holes of the side segment and the horizontal slots of the mid-section and flexibly joining the mid-section to the said side segments; means on the outer flanges for attaching the said segments and sections to the said window; and means on the said horizontal sections for retaining panel members thereon.

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