

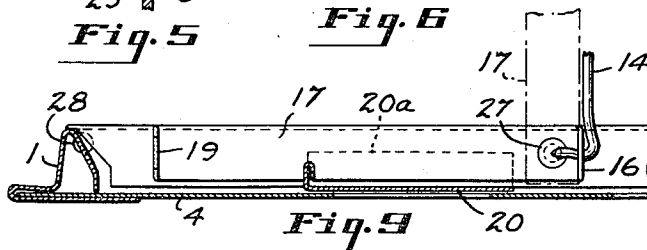
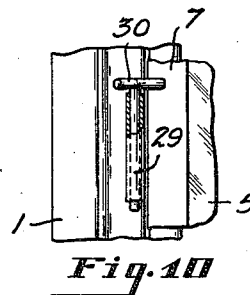
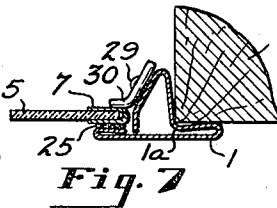
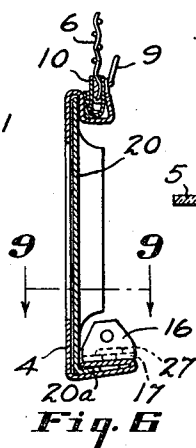
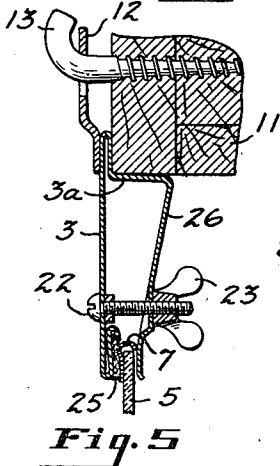
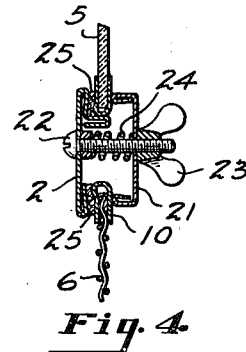
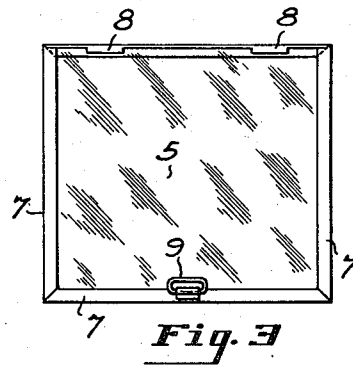
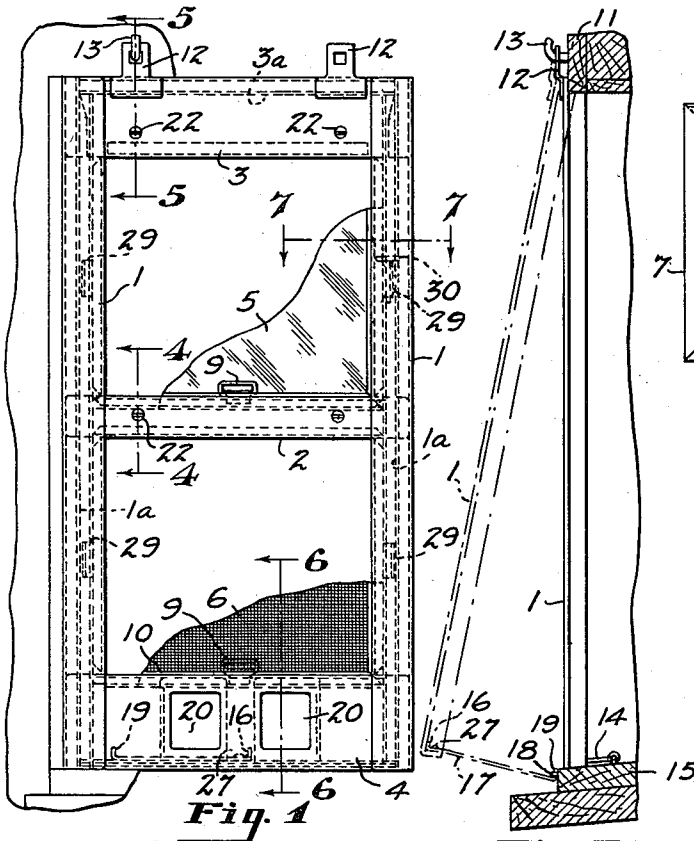
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2,013,824

COMBINATION STORM AND SCREEN SASH

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COMBINATION STORM AND SCREEN SASH

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12 Claims. (Cl. 20—55)

This invention relates to building closures and more particularly to a combination storm and screen sash.

In the past it has been common practice to equip building windows and doors with screens in wooden or metal frames during the summer months and to remove the frames at the beginning of the winter season. During the winter months glass window panes are often so encrusted with frost on the inside that it is not only substantially impossible to secure proper light thru them but the frost itself on the pane is equivalent in chilling effect to an ice surface of the same dimensions over which the air currents in the building flow and cause the dissipation of large quantities of heat which it is one of the objects of the present invention to conserve.

The combination storm and screen sash forming the subject of the present invention provides a sash frame formed of sheet metal in which screen mesh panels may be easily mounted for use during the warm months and may be replaced with glass panels adapted for forming a dead air space between window panes and the sash panels for heat insulation and absence of frosted panes during the winter season. Ample provision is made for substantially any desired degree of ventilation during either season.

An object of the present invention is to provide a combination storm and screen sash adapted for providing an improved open mesh screen for summer use and that is easily and quickly converted into a storm sash for conserving heat and permitting increased illumination and comfort during the winter season.

A further object is to provide a sash equipped with seasonal interchangeable panels and adapted for being easily and firmly mounted in a window frame or a door frame.

Another object is to provide an improved form of all season sash having interchangeable panels and an adjustable ventilator.

Another object is to provide a combination storm and screen window sash comprising a sash frame housing the outside corners of a window casing and adapted for receiving removable panels and that may be mounted in a window casing or may have its panels changed from inside a room.

Another object is to provide an improved combination storm and screen sash having interchangeable all-season panels and being easily and inexpensively manufactured of sheet metal and being simple in construction, installation and in operation.

With the above and other objects in view, which will be apparent from the following detailed description, the present invention may be said to consist in certain features of construction and combination of parts which will be understood

readily by those skilled in the art to which the invention appertains.

In the drawing, which illustrates a suitable embodiment of the invention,

Fig. 1 is an elevational view from outside a building of the combination storm and screen sash mounted in a window casing;

Fig. 2 is a side elevational view of the sash shown in Fig. 1 in full lines with parts of the window casing shown in section and the sash shown open in dot and dash lines;

Fig. 3 is a plan view of a glass panel;

Fig. 4 is an enlarged sectional view taken along the line 4—4 of Fig. 1;

Fig. 5 is an enlarged sectional view taken along the line 5—5 of Fig. 1;

Fig. 6 is an enlarged sectional view taken along the line 6—6 of Fig. 1;

Fig. 7 is an enlarged sectional view taken along the line 7—7 of Fig. 1;

Fig. 8 is an enlarged sectional view of a side frame with weather stripping mounted thereon;

Fig. 9 is an enlarged sectional view taken along the line 9—9 of Fig. 6; and

Fig. 10 is an enlarged elevational view from inside of a panel supporting device partially broken away.

The combination storm and screen sash shown in the accompanying drawing comprises a sash frame that is preferably formed of non-corrosive sheet metal and that comprises a pair of hollow side frames 1, a middle cross frame 2, a hollow top cross frame 3 and a bottom cross frame 4, that are secured together by suitable means as by welding. Pairs of interchangeable panels, such as the glass panel 5 for winter use and the screen panel 6 for summer use, are adapted for being removably and interchangeably mounted in the sash frame. The glass panel 5 comprises a glass pane that preferably has a panel bead 7 positioned around its periphery for the purpose of making the handling of the panel more safe, and preferably has tongues 8 turned over one edge of the glass pane in the panel 5 for the purpose of easily replacing a broken glass pane. A suitable hand grip 9 is secured to the panel bead 7 by welding or otherwise and provides a hand grip on the panel when it is being installed or removed from the sash frame. The screen panel 6 has a panel bead 10 along its periphery for purposes of making a sturdy panel and also for stiffening the wire. The panel bead 10 also has a hand grip 9 secured thereto along the bottom indoor side of the panel.

The sash frame may be secured to a window or door casing 11 in any suitable manner, as by the hinge 12 and the hinge hook 13. The side frames 1 and the top cross frame 3 are channeled longitudinally at 1a and 3a respectively for the close fitting reception of the peripheral outer corner of the closure casing 11. A sill hook 14 that has a

screw eye member screwed into the window sill 15, or other suitable means, passes thru an aperture in the upturned end 16 of the sash frame support 17 and serves to secure the sash frame in the casing 11. A sill staple 18, or other suitable means, serves to hold the upturned end 19 of the sash frame support 17 in position when the sash is open during pleasant winter days. A more restricted winter ventilation for colder days is provided by the pair of sliding ventilation panels 20, that slidably cover ventilation apertures thru the bottom cross frame 4 of the sash frame. Each of the ventilation panels 20 preferably has an upturned end for providing a hand grip for moving the panel and an outwardly turned lower edge 20a for improving its mounting.

The middle cross frame 2 is shaped as shown in section in Fig. 4 of the drawing and provides a lower rest for the upper panel and an upper rest for the lower panel. The rolled edges of a U-shaped cross strip 21 are caused to press against the panel beads 7 and 10 by the bolt 22 and wing nut 23 assembly. A coil spring 24 is preferably positioned about the bolt 22 and serves to yieldingly press the cross strip 21 away from the middle cross frame 2. The bolt 22 is positioned above the center line of the middle cross frame 2 and the cross strip 21 to allow sufficient room for the upper edge of the lower panel to be moved upwardly therein when removing or installing the lower panel in the sash frame. A felt strip 25 is interposed between the outdoor side of the panel beads 7 and 10 and the middle cross frame 2 for the purpose of providing a cushioning and weather excluding seal.

The top cross frame 3 is shaped in section as shown in enlarged section in Fig. 5 of the drawing. A spring strip portion 26 of the top cross frame 3 is disposed on the indoor side of the sash frame and its lower edge serves to press the panel bead 7 against the felt strip 25 which may be secured in place by being clamped by an edge of the sheet metal forming the parts of the sash frame, as shown in Fig. 5, or may be secured thereto by means of shellac, rivets or other suitable means. The pressure of the spring strip portion 26 of the top cross frame 3 may be increased in regions of high wind velocities by the addition of the bolt 22 and wing nut 23 assembly if desired. In the use of the bolt and wing nut or similar assembly, the bolt 22 is spaced properly above the panel bead 7 of the panel 5 to provide a suitable aperture for the entrance of the panel 5 during its installation or withdrawal from the sash frame. The hinge 12 may be secured to the spring strip portion 26 of the top cross frame 3 or elsewhere about the sash frame, as where it is desired that the sash opens from the side or that the hinge does not appear on the outside of the building.

The bottom cross frame 4 is shaped as shown in section in Fig. 6. The upper edge of the bottom cross frame 4 comprises an upwardly opening groove provided with a felt strip 25 on its outdoor side and adapted for receiving the lower edge of the panel bead 10, and a downwardly opening groove that serves as an upper guide for the ventilation panels 20. The lower edge of the bottom cross frame 4 is bent back on itself to form a lower guide for the ventilation panels 20 and to form a close fit between the ventilation panels 20 and the inner side of the bottom cross frame 4 for preventing the entrance of appreciable quantities of wind and water during storms. An outwardly turned edge 20a of the ventilation

panel 20 assists in strengthening the mounting of the panel. The sash frame support 17 is pivotally secured to the turned back portion of the bottom cross frame 4 by means of the rivet 27. Drainage apertures 28, as shown in Fig. 9 of the drawing, may be formed thru the lower edge of the bottom cross frame 4, if desired, for draining away water entering thru the screen panels during summer showers or otherwise.

The side frames 1 are shaped as shown in section in Figs. 7 and 8 of the drawing. A felt strip 25 is secured to the side frames in such a manner as to contact the outdoor side of the panel bead 7. Suitable means may be provided, such as the tubular sheath 29, which is welded to the side frame 1 and which houses the pin 30 with bent head that contacts the indoor side of the panel bead 7, for supporting the indoor side of the panel 5 against the side frame 1.

Modifications of the described construction may be made if desired without departing from the present invention as for example, the middle cross frame 2 may be omitted from the sash frame, as for small window and door panels, and suitable supporting means interposed between the upper and lower ends of the continuous sash mounted therein for giving the sash proper support between its two ends. For wide windows the side frame 1 may be given a double channel construction and panels mounted beside each other if desired. Weather stripping 31 may be applied as desired, by welding the weather stripping to parts of the sash frame such as the cross frames or by interlocking the weather stripping about the shaped side frames as shown in Fig. 8.

It is to be understood that the particular constructions of sash frame, panels, attachments and the like shown and described are presented for purposes of illustration and explanation and that various modifications in the particular shapes, constructions, applications of parts, accessories and the like may be used without departing from the invention as defined in the appended claims.

What I claim is:

1. A sash comprising a hollow sash frame of substantially non-corrosive sheet metal having a panel receiving aperture provided therein, in combination with a plurality of panels for use according to season and adapted for being interchangeably mounted in said panel receiving aperture, and threaded means for releasably and interchangeably securing said panels in said panel receiving aperture in said sash frame in rigid and immovable relation therewith.

2. A building closure sash comprising a hollow and substantially non-corrosive sash frame having a panel receiving aperture provided therein and adapted for fitting closely in a building closure casing, a plurality of interchangeable panels for use according to season and adapted for being mounted in said panel receiving aperture in said sash frame in rigid and immovable relation therewith, threaded means for releasably securing said panels successively in said panel receiving aperture in said sash frame in rigid and immovable relation therewith, and means for mounting said closure sash in a building closure casing.

3. A closure sash comprising a hollow and substantially non-corrosive sash frame having a panel receiving aperture provided therein, a panel adapted for being mounted in said panel receiving aperture in said sash frame, a panel bead disposed along the periphery of said panel,

a hand grip secured to said panel bead, and threaded means for securing said panel in said sash frame in rigid and immovable relation therewith.

5 4. A closure sash comprising a hollow sash frame of sheet metal having a panel receiving aperture provided therein, a plurality of panels for use according to season and adapted for being interchangeably mounted in said panel receiving aperture, means for securing said panel in said panel receiving aperture comprising a cross strip releasably contacting said panel, and threaded means for increasingly pressing said cross strip against said panel for securing said panel tightly in said sash frame in rigid and immovable relation therewith.

5. A closure sash comprising a hollow sash frame of substantially non-corrosive sheet metal having a panel receiving aperture provided therein, a panel adapted for being removably mounted in said panel receiving aperture in said sash frame in rigid and immovable relation therewith, a top cross frame forming a part of said sash frame, a spring strip portion forming a part of said top cross frame and yieldingly holding said panel in said panel receiving aperture, threaded means engaging said spring strip portion of said top cross frame for clamping said spring strip portion against said panel, and a bottom cross frame forming a part of said sash frame and having an upwardly opening groove forming a lower rest for said panel.

6. A closure sash, comprising a sash frame having a panel receiving aperture therein, a glass panel removably positioned in said panel receiving aperture in said sash frame and consisting of a glass portion and a panel bead disposed along a portion of the peripheral edge of said glass portion, a tongue forming a part of said panel bead and adapted for being bent away from the edge of the glass portion of said glass panel for the replacement of said glass portion thereof, and means for removably securing said glass panel in said sash frame in rigid and immovable relation therewith.

7. A closure sash for substantially wind sealing a building opening, comprising a metal sash frame having a sash receiving aperture provided therein, a panel removably mounted in said panel receiving aperture in said sash frame in rigid and immovable relation therewith, a panel bead forming the peripheral edge of said panel, wind sealing means for substantially wind sealing said panel bead with said sash frame, and threaded means for adjustably engaging said panel bead with said wind sealing means.

8. A closure sash removably mounted in a building window opening having a substantially continuous corner along the top and the side casings thereof, comprising a hollow sash frame of shaped sheet metal having a panel receiving aperture therein, a panel in the panel receiving aperture in said sash frame, a top cross frame forming a part of said sash frame and channeled longitudinally for the reception of the corner of said top casing, threaded means engaging said top cross frame for rigidly and immovably securing the top part of said panel in said panel receiving aperture, a cross frame positioned below said top cross frame and forming a part of said sash frame and supporting the lower part of said panel, and threaded means engaging said lower cross frame for securing the lower part of said panel in said sash frame in rigid and immovable relation therewith.

9. A closure sash, comprising a metal sash frame having an upper panel receiving aperture and a lower panel receiving aperture therein, a plurality of panels adapted for being interchangeably disposed within said panel receiving apertures in said sash frame in rigid and immovable relation therewith, a hollow top cross frame forming a part of said sash frame and into the interior of which an edge of said upper panel is disposed, a middle cross frame forming a lower rest for the lower edge of said upper panel and against which the upper edge of said lower panel is positioned, a cross strip adjustably carried by said middle cross frame and engaging the lower edge of said upper panel and the upper edge of said lower panel, threaded means adjustably pressing said cross strip against the lower edge of said upper panel and the upper edge of said lower panel, and a bottom cross frame forming a part of said sash frame and providing an upwardly opening groove forming a lower rest for said lower panel.

10. A closure sash for a building opening, comprising a hollow sash frame of shaped sheet metal having a panel receiving aperture therein, a panel adapted for insertion in the panel receiving aperture in said sash frame, a top cross frame forming a part of said sash frame and serving as an upper support for said panel in the panel receiving aperture in said sash frame, a lower cross frame forming a part of said sash frame and serving as a lower support for said panel, a side frame forming a part of said sash frame and serving as a lateral rest for said panel, a tubular sheath rigidly carried by said side frame and permanently attached thereto, and a pin removably mounted in said tubular sheath and adapted for serving with said side frame as a lateral support for said panel.

11. A closure sash for positioning in a building opening, comprising a metal sash frame having a panel receiving aperture provided therein, a panel adapted for being removably mounted in said panel receiving aperture in said sash frame in rigid and immovable relation therewith, a top cross frame forming a part of said sash frame, a spring strip portion of said top cross frame yieldingly holding said panel in said panel receiving aperture, threaded means engaging said spring strip portion of said top cross frame for clamping said spring strip portion of said top cross frame against said panel, a bottom cross frame forming part of said sash frame and providing an upwardly opening groove forming a lower rest for said panel, and said bottom cross frame being apertured for purposes of drainage.

12. A closure sash for positioning in a building opening, comprising a sheet metal sash frame having a panel receiving aperture provided therein, a panel adapted for being removably mounted in said panel receiving aperture in said sash frame in substantially rigid relation therewith, a top cross frame forming a part of said sash frame, a spring strip portion of said top cross frame yieldingly holding said panel in said panel receiving aperture, threaded means engaging said spring strip portion of said top cross frame for clamping said spring strip portion of said top cross frame against said panel, a bottom cross frame forming part of said sash frame and providing an upwardly opening groove forming a lower rest for said panel and drainage means forming a part of said bottom cross frame.