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COMBINED SCREEN AND STORM WINDOW

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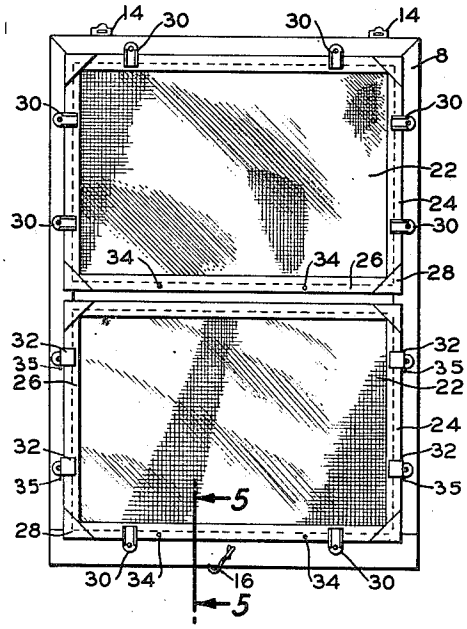

FIG. 1.

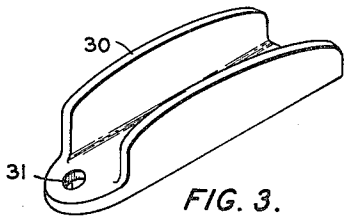

FIG. 3.

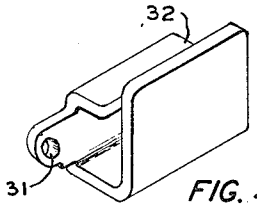

FIG. 4.

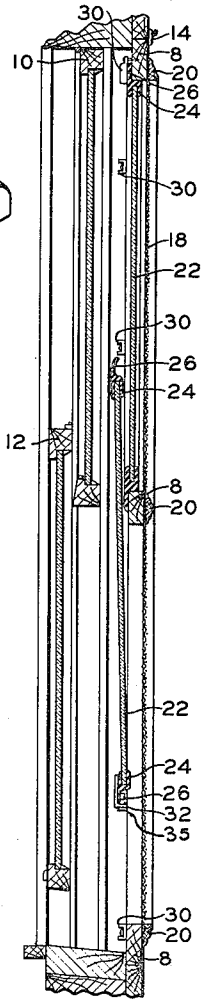

FIG. 2.

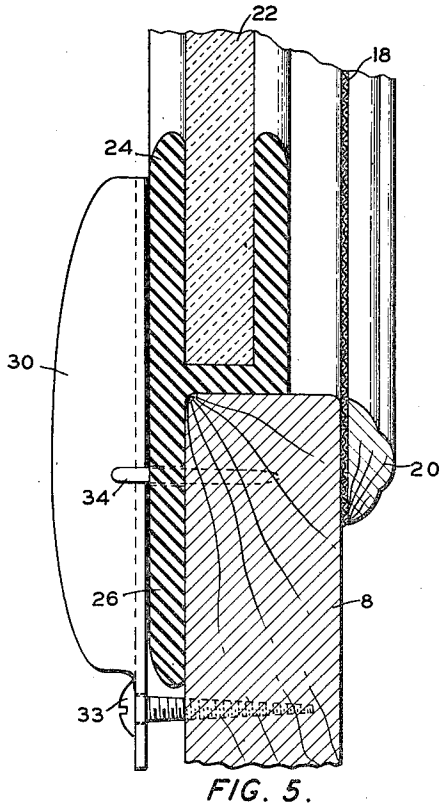

FIG. 5.

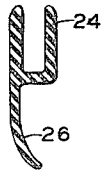

FIG. 6.

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COMBINED SCREEN AND STORM WINDOW

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6 Claims. (Cl. 160—106)

This invention relates to windows. In a more specific aspects this invention relates to removable inserts for window screen to convert same to a combination screen and storm window. In a still more specific aspect it relates to a combined screen and storm window, having a plurality of panels, for use on a usual double-hung window.

Screens and storm windows, and devices combining the same, for house windows, office windows, and the like, are old in the art. All of the ones known in the art before our invention have disadvantages. They are expensive to build, or difficult and inconvenient to use.

We have invented a storm window insert for insertion into a panel of a window screen on the inside thereof. With our storm window inserts a window screen becomes a combined screen and storm window. The storm window insert of our invention comprises, a storm pane of glass or other suitable transparent material, such as transparent plastic, having weatherstripping or weatherseal around the outside theerof. The weatherseal is preferably adapted to overlap the frame of the window screen, and preferably the overlapping portion is concave on the side contacting the screen frame, so that when pressed against the screen frame by means holding the storm window insert in place a good seal against the elements is realized. In another and a preferred modification of the apparatus of our invention, we provide holes in the weatherseal, preferably in the portion overlapping the screen frame, which coincide with pilot pins in the screen frame, so that the storm window insert is easily guided into place.

The storm window inserts of our invention are particularly advantageously used with multiple panel screens used on double-hung windows, or windows having only a lower portion which raises to give ventilation, etc. In an important and very advantageous modification and adaptation of the storm window insert of our invention, we provide holding means, pivotally attached to the screen frame to hold the storm window inserts in place. We prefer to use clips movable by finger pressure. In the lower panel of the screen, we preferably provide clips having channels oppositely disposed on the sides of the screen frame and pivotally attached thereto, so that the storm window insert can easily be removed, raised and rested in the channels of the clips. The upper portion of the insert rests between the screen frame and the upper part of the window. This is a very advantageous feature, since it allows for ventilation through the screen during warm spells in the winter with the storm window insert raised. A pair of these channel clips are desirably oppositely positioned at a point near the top of the lower panel insert, so that the storm window insert can be raised clear up for the summer, allowing for maximum ventilation and storage of the storm window insert. The inserts for the upper panels of the screen can be left in place the year around, thus eliminating any storage problem.

The apparatus of our invention has many advantages. The storm window inserts can be made, sold and used with new screws, or the home or office owner can utilize his present window screens as the frame for the storm window panes of our invention. Maintenance and storage of separate storm windows are eliminated. Ventilation can be controlled throughout the year. When used with existing screens, the appearance of the house is not altered, since the trim color remains the same. The combination of insert storm panes and the screen provides a very efficient storm window, creating a dead air space, thus minimizing heat loss and eliminating excessive moisture condensation on the window. The storm window panes are behind the screen covering, thus being protected from hail and other objects. The screen which is in front of the storm panes diffuses light rays, eliminating glare which is common to other storm windows.

It is an object of our invention to provide a new and improved combined screen and storm window.

It is another object of our invention to provide removable storm window inserts for window screens.

Other objects and advantages of the apparatus of our invention will become apparent to one skilled in the art upon reading this disclosure.

In the drawings which accompany and are a part of this disclosure, Fig. 1 is a plan view from the inside of a two panel window screen, showing a preferred specific embodiment of the apparatus of our invention, with the storm window inserts of our invention in place.

Fig. 2 is a cross-sectional side view through a double-hung window and a window screen, having the storm window inserts of our invention in place for winter use when it is desired to have some ventilation.

Fig. 3 is a perspective view of the clips which we prefer to use to hold the upper panel insert in place and to hold the lower edge of the lower panel insert in place.

Fig. 4 is a perspective view of the clips having a channel which we prefer to use on the sides of the lower panel insert to hold same in place for full storm window use, and to hold the insert in raised position as shown in Fig. 2.

Fig. 5 is an enlarged view taken on line 5—5 of Fig. 1.

Fig. 6 is a cross-sectional view through our preferred weatherseal or weatherstripping.

To further describe the apparatus of our invention reference is now made to the drawings, whereon the same reference numerals are used to indicate like or similar structure and/or parts. The drawings depict preferred specific embodiments of the apparatus of our invention, and it is to be understood that such drawings and the following description are not to unduly limit the scope of our invention.

Referring now to the drawings, the insert storm panes of our invention are held by a usual two panel screen frame 8 of wood, metal or other suitable material, which is used with a usual double hung window, having an upper portion 10 which lowers and a lower portion 12 which raises. The insert storm panes and frame 8 form the storm window of our invention. Screen frame 8 has the usual hangers 14 and hook 16 attached thereto, and screening material 18 on the outside, which can be wire mesh, plastic mesh, or other suitable material. Screening material 18 is held on frame 8 by the usual molding 20.

As shown, the insert storm panes of our invention fit into the panels of frame 8 on the inside thereof. The insert storm panes comprise a pane of glass or other suitable transparent material 22, around the outside of which is mounted a weatherseal or weatherstrip, which has a channel portion 24 into which the edge of the glass pane fits and a portion 26 which overlaps screen frame 8, as shown in detail in Fig. 5. The weatherseal is preferably made of a pliable material, such as a pliable rubber, plastic, and the like. We find that the weatherseal can very conveniently be rubber made by extrusion, so that the channel portion 24 is integral with the overlapping

portion 26. The weatherseal can be mounted on panes 22 in any suitable manner, rubber tape 28 connecting the ends at the corners being desirable.

The insert storm panes are preferably held in place in frame 8 by clips pivotally attached to frame 8. Clips 30, which are provided with finger holds for easy turning, hold the upper insert pane in place, and the same type of clip is used to hold the lower edge of the lower insert in place. Clips 32 on the sides of the lower insert pane hold the pane in place and act to hold the lower pane in a raised position, such as the position shown in Fig. 2, where the lower pane rests in the channels of the two lower clips 32 and between the window 10 and the upper insert. Member 24 rests on the shoulder portion of clips 32 with member 26 extending down into the channels of clips 32, as shown. The shoulder portion support means of clips 32 has been found to be very advantageous, distributing the weight of the lower insert when raised and preventing cutting of the weatherseal over long periods of use. This position of the lower insert is desirable for winter use. With the insert in this position and window 12 raised, ventilation can be had during unseasonably warm weather. In the summer the lower insert can be raised further and supported by the upper two clips 32. This position allows for full ventilation and stores the storm pane for the summer. The upper storm window insert is left in the panel of frame 8. If desired, the lower insert can be left in place and the upper insert can be lowered and supported by clips 32. Clips 30 and 32 have holes 31 therein, through which screws 33, or other suitable means, pass to mount the clips on frame 8.

In Fig. 1 the clips 30 and 32 are shown holding the inserts in place in the panels of frame 8. To remove the inserts, for cleaning, raising, etc., the clips are turned 90 degrees. If it is desired to hold the lower insert in a raised position, clips 32 at the desired height are turned back to the position shown in Fig. 1 and the insert rested in the channels. Pins 35, or other suitable means, in frame 8 support clips 32 which hold the inserts. Provision for two raised positions of the insert is shown. More positions can be provided, if desired, by installing additional clips 32.

We have found it very advantageous to make the overlapping portion 26 of the weatherseal concave on the side contacting frame 8. When the insert storm panes are in place, and the clips 30 and 32 are firmly holding them in place, portion 26 flattens out, making a very good seal. We have found the seal much better than with any other shape of overlapping portion. Our preferred concave shape is best shown in Fig. 6.

Pilot pins 34 are set in frame 8, preferably two or more for each of the inserts in the lower portion thereof, as shown. Holes are formed in the overlap portion 26 of the weatherseal, coinciding with pilot pins 34. We have found that this means of guiding the insert storm windows into place is very convenient, and correct alignment with frame 8 is easily accomplished.

As will be evident to those skilled in the art, various modifications of this invention can be made, or followed, in the light of this disclosure and discussion, without departing from the spirit or scope of the disclosure or from the scope of the claims.

We claim:

1. A combined screen and storm window for a double-hung window, which comprises, in combination, a window screen frame having an upper and a lower panel and having screen material on the outside thereof, a removable transparent storm pane having a pliable weatherseal around the outside thereof inserted into each of said upper and lower panels on the inside of said screen frame, said weatherseal overlapping said screen frame and being concave on the side of said overlapping portion contacting said screen frame, a plurality of clips pivotally attached to said screen frame adapted to hold said upper storm pane in place in said frame, a plurality of oppositely disposed clips having channels pivotally attached to the sides of said screen frame adapted to hold said lower storm pane in place in said frame and to hold said lower storm pane in at least two raised positions whereby the upper portion of said lower storm pane rests between said upper storm pane and the upper portion of said double-hung window, and a plurality of pilot pins in said screen frame coinciding with holes in said overlapping portion of said weatherseal adapted to guide each of said storm panes into place.

2. A combined screen and storm window for a window, which comprises, in combination, a window screen having a plurality of panels with an upper panel and a lower panel, a plurality of removable transparent storm panes having a weatherseal around the outside thereof adapted to fit one each into said panels on the inside thereof with said weatherseal overlapping and contacting said screen frame therearound, a plurality of clips pivotally attached to said screen frame adapted to hold an upper one of said storm panes in place, and a plurality of oppositely disposed clips having mounting means therewith and pivotally attached to said screen frame adapted to hold said lower one of said storm panes in place and to hold same in a raised position with the lower edge of said lower storm pane mounted in said mounting means of said clips whereby an upper portion of said lower one of said storm panes rests between said screen frame and said window.

3. The apparatus of claim 2 wherein said screen frame has a plurality of pilot pins therein coinciding with holes in said overlapping portion of said weatherseal adapted to guide said storm panes into place.

4. The apparatus of claim 2 wherein said overlapping portion of said weatherseal is concave on the side contacting said frame.

5. A combined screen and storm window for a window, which comprises, in combination, a window screen having a plurality of panels with an upper panel and a lower panel, a removable transparent storm pane having a weatherseal therearound adapted to fit into each one of said panels on the inside thereof with said weatherseal overlapping said screen frame therearound, a plurality of holding members attached to said screen frame adapted to hold an upper one of said storm panes in place in its screen panel and adapted upon adjusting to allow for the removal of said storm pane from its screen panel, and a plurality of oppositely disposed holding members having mounting means therewith attached to said screen frome adapted to hold said lower one of said storm panes in place in its screen panel and to hold same in a raised position with the lower edge of said lower storm pane mounted in said mounting means of said holding members whereby an upper portion of said lower one of said storm panes rests between said screen frame and said window.

6. A combined screen and storm window for a double-hung window, which comprises, in combination, a window screen frame having an upper and a lower panel and having screen material on the outside thereof, a removable transparent storm pane having a pliable weatherseal therearound inserted into each of said upper and said lower panels on the inside of said screen frame, said weatherseals having a channel portion mounting the edge of said storm panes and a projecting portion which overlaps said screen frame therearound and which is concave on the side of said overlapping portion contacting said screen frame, a plurality of clips pivotally attached to said screen frame and projecting inwardly therefrom and holding said upper storm pane in place in said frame, a plurality of oppositely disposed clips having shoulder portions and channels pivotally attached to the sides of said frame, projecting inwardly therefrom and holding said lower pane in place in said frame, said last-named clips being adapted to hold said lower storm pane in at least two raised positions with the lower side of

said channel portion of said weatherseal resting on said shoulders of said last-named clips and said projecting portion of the lower portion of said weatherseal in said channels of said last-named clips whereby the upper portion of said lower storm pane rests between the upper portion of said double-hung window and said upper storm pane, and a plurality of pilot pins in said screen frame coinciding with holes in said overlapping portions of said weatherseal, said pilot pins being adapted to guide each of said storm panes into place in said screen frame.

References Cited in the file of this patent

UNITED STATES PATENTS

684,610	Marshke	Oct. 15, 1901
1,946,169	MacKenzie	Feb. 6, 1934
2,047,366	Fuelle	July 14, 1936
2,069,268	Otto	Feb. 2, 1937
2,378,163	Thomas	June 12, 1945
2,595,975	Nothdurft	May 6, 1952
2,612,947	Jenks	Oct. 7, 1952