United States Patent

[11] 3,587,705

[72] Inventor **Charles M. Zappone**
841 Pellis Road, Greensburg, Pa. 15601

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[54] **REPLACEMENT WINDOW UNIT**
6 Claims, 9 Drawing Figs.

[52] **U.S. Cl.** **160/91, 49/63**
[51] **Int. Cl.** **E06b 3/32**
[50] **Field of Search** ..... 160/89, 90, 91, SS; 49/437, 438, 501, 61, 63; 52/202

[56] **References Cited**

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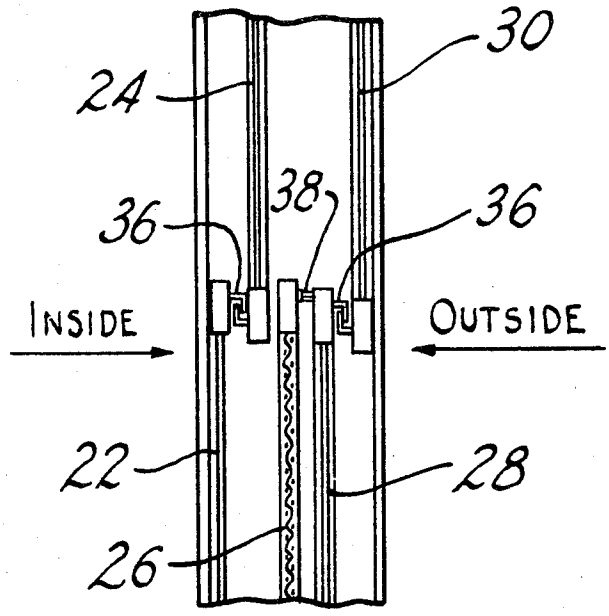
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Primary Examiner—David J. Williamowsky
Assistant Examiner—Philip C. Kannan
Attorney—Marcus W. Dodd

ABSTRACT: This is a replacement window unit primarily designed for rehabilitation of older dwelling houses. The invention is primarily related to effectuating a five track unit wherein two storm panels, a screen panel and two regular glass panels are all embodied in one unit traveling on parallel tracks each panel being independently adjustable and having a latch mechanism operable only from the inside so that the window may not be operated by burglars substantially from the outside. Being of compact thickness with adjacent panels substantially touching or effectively touching, each panel is easily and simply removable from the frame. The frame is adjustable to fit the window opening provided, and the windows are in a tight, rattle-free relationship to the frame.

Five track windows have not been produced in the prior art because in accordance with the usual design principles, such a window would be quite impractical. For example, either the window would have to be very thick with the tracks widely spaced apart or else it would be impossible to adjust the outside panel as for example moving it out of the top position without removing all of the other panels in front of it or else by providing operable catches or releases on the outside of the window making it readily available to be opened by a burglar.

A feature helping to solve this problem is a system of stepped downwardly sloping toward the outside, top and bottom interior frame surfaces. Thus when the outside lower panel is in the raised position, the lower portion thereof having the catch lever mechanism thereon is exposed below the bottom of the upper section. Likewise the sides are stepped inwardly toward the outside of the building. The many features of the invention which provide an operable unit of this type will be explained in the detailed description.



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SHEET 1 OF 2

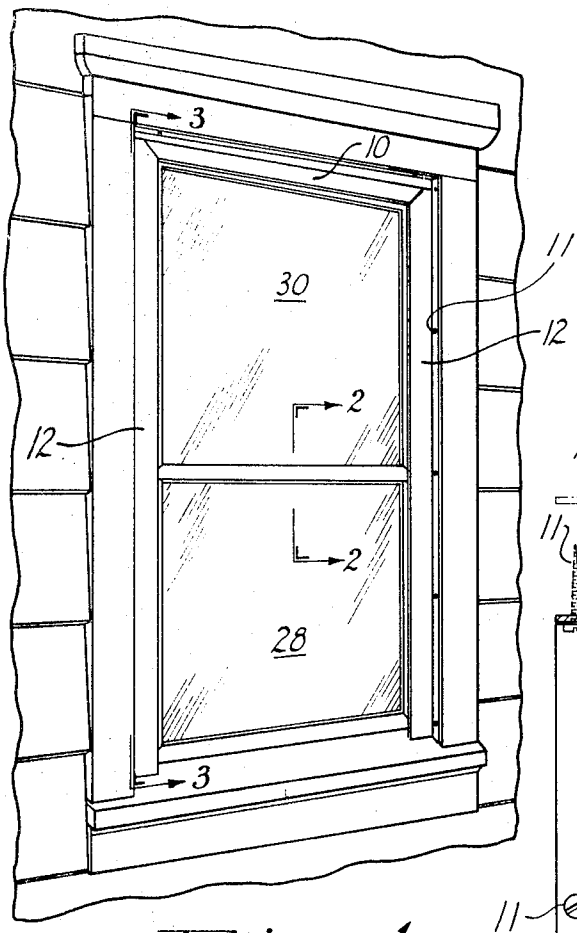


Fig. 1

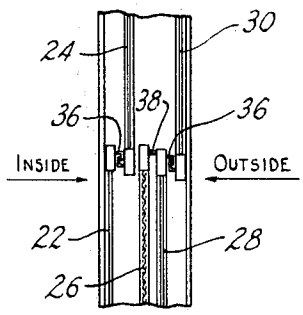


Fig. 2

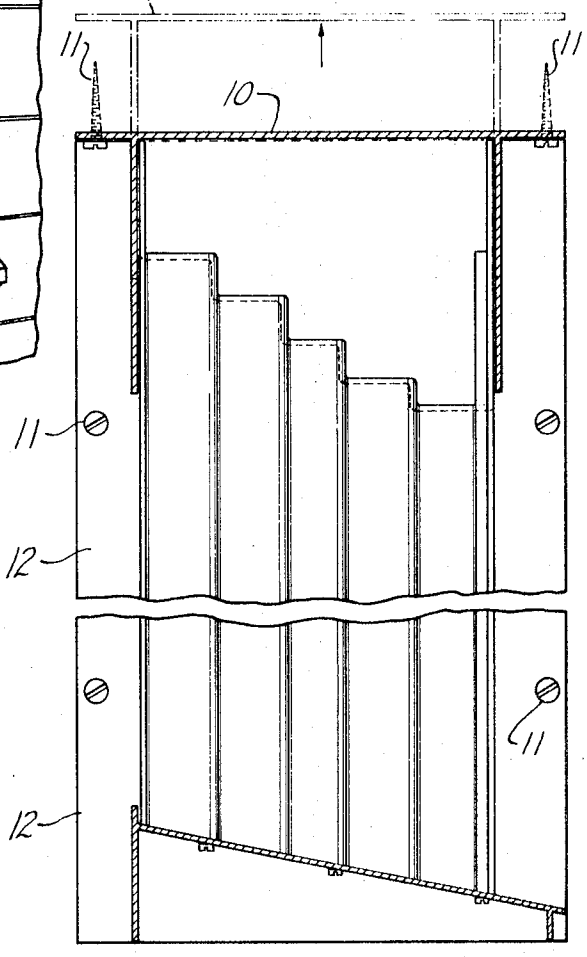


Fig. 3

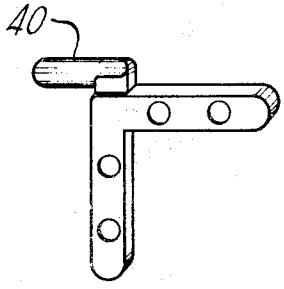


Fig. 5

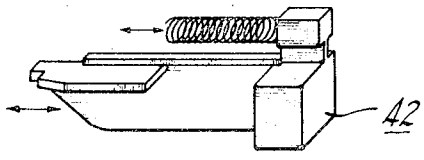


Fig. 6

INVENTOR.
CHARLES M. ZAPPONE
BY Marcus W Dodd
ATTORNEY

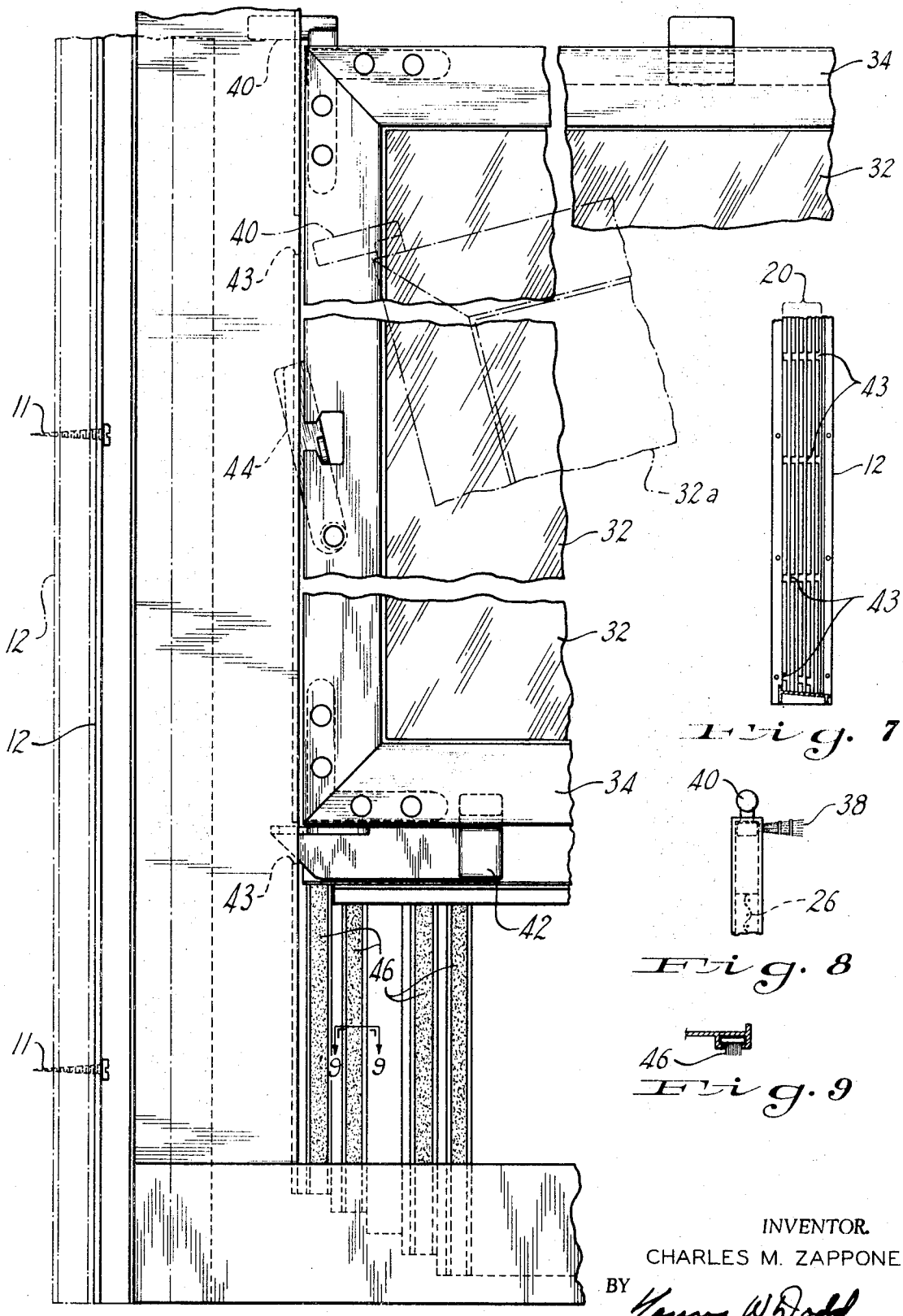


Fig. 4

Fig. 7

Fig. 8

Fig. 9

INVENTOR.
CHARLES M. ZAPPONE
BY Vaune W Dodd
ATTORNEY

REPLACEMENT WINDOW UNIT

SUMMARY OF PRIOR ART

Combined screen and storm window units have been described such as Boyle, U.S. Pat. No. 2,711,789, Bongiovanni, U.S. Pat. No. 2,760,607 and Milone, U.S. Pat. No. 2,640,535. These relate to additional units to be attached to an existing standard window so as to supply screen and storm panels. There have also been replacement windows supplied as s unit comprising two standard panels in a frame. However, no practical window unit has been devised which comprises standard panels, storm panels and a screen in one integrated unit.

SUMMARY OF THE INVENTION

This is a replacement window unit primarily designed for rehabilitation of older dwelling houses but also useful in mass production construction of prefabricated or similar structures wherein a five track unit is provided comprising two standard window panels, two storm window panels and a screen panel all contained within a framework which is adjustable within reasonable limits to meet the configuration of the opening to be filled. Each panel is independently adjustable and has a latch mechanism operable only from the inside of the dwelling so that the window may not be operated by burglars from the outside. The whole structure is compact, adjacent panels being located as to be substantially in contact with each other and the frame itself is adjustable so as to be easily assembled. The individual panels have a slide latch at the inside bottom thereof and permanently fixed top swivel corner members. The panel may be easily removed by releasing the bottom catches, swinging the frame inward and then rotating the panel slightly, as shown by **32** A in FIG. **4**. The top of the frame containing the panels and the bottom of the frame are sloped downwardly toward the outside so that as the outer panel is raised up the the top, the latch mechanism at the bottom of that panel is still exposed so that it may be released. The latches are of a spring-loaded type so that if a panel in the open condition should become loose, it will fall to the next notch **43** below on the frame and catch there rather than slamming all the way to the bottom with the possibility of breakage. Thus, the panels themselves can be made of relatively light material since there is substantially no chance of large shock. There is also provided a window arrangement which may be easily operated without the use of counter balancing weights. In addition, high friction devices are provided on the sides of each panel for clearing the tolerances between the window and the frame so that the frame may be adjusted outward to fit the actual space provided.

While the foregoing is a summary of the invention, the invention itself will be best understood from the appended claims when read in connection with the following specification and the accompanying drawings in which:

FIG. **1** is a view in perspective of a window in accordance with my invention, in place.

FIG. **2** is a cross-sectional view taken along the line **2—2** of FIG. **1**, of the interface region between the upper and lower panels.

FIG. **3** is a cross-sectional view partially cut away taken along the line **3—3** of FIG. **1**.

FIG. **4** is a partial showing in elevation and partially in section of apparatus in accordance with my invention and also showing a fragmentary corner **32** A in outline of a panel in accordance with my invention in a condition of being twisted for removal from the frame.

FIG. **5** is a view of the swivel retaining corner used on the panels in accordance with my invention at the upper corners of the panel.

FIG. **6** is an isometric view of a latch mechanism in accordance with my invention.

FIG. **7** is a partial showing of the bottom of a window in accordance with my invention looking from the inside at the track with the panels removed and showing the notches **43** in the frame which are engaged by the trigger slide catches.

FIG. **8** is a partially cut away diagrammatic showing of a screen weather seal in accordance with my invention.

FIG. **9** is a partially cutaway cross-sectional view of a window weather seal in accordance with my invention taken along **9—9** of FIG. **4**.

DESCRIPTION OF SPECIFIC EMBODIMENTS

In accordance with my invention I provide a window unit comprising a frame and five panels therein. The frame is comprised of a top piece, a bottom piece and two side pieces. The panels comprise four glass panels and a screen panel each of which is mounted in a panel frame comprising top piece **10**, and two side pieces **12** fastened rigidly together at the corners. The window frame pieces are fitted to engage snugly together but are free to move so as to fit the window opening and are supported by being attached to the window frame by screws **11**. Thus the Replacement Window Frame is adjustable and depends for its configuration not on its own inherent connections but on the supporting surfaces of the building. The window frame pieces are of metal preferably aluminum or similar weather resistant material.

Each of the side pieces has five vertical grooves or tracks **20** therein in which the panels ride. The two side pieces cooperate to form a support for the windows and guide and retaining means for the panels. The panels are organized with two normal window panels **22, 24** on the inside, a screen panel **26** in the center and two storm panels **28, 30** on the outside. As shown in FIG. **4**, each of the window panels comprises a sheet of glass **32** retained in an aluminum panel frame **34** which extends around the circumference of the window panel. At the bottom of the two upper window panels and at the top of the two lower window panels, there are provided interlocking weather seal members **36** cooperating so that when the upper and lower panels are in the closed position, there is a weathertight seal between the upper and lower panels. Likewise on the upper portion of the frame of the screen panel **26**, there is a longitudinal outwardly extending lip or brush **38** which contacts the adjacent storm panel to make an insect-tight seal.

At the top of each of the panels on either corner thereof, is provided a swivel corner member **40** which is rigidly attached to the panel frame and which holds the panel in position when the panel is in place in an upright position. However, the swivel corner piece allows the easy removal of the panel from the frame. By swinging the lower end of the window outward, the window may then be tilted and the swivel corner pieces freed from engagement with the frame.

At the lower end of each of the panels is provided at each corner thereof, a spring-loaded trigger **42** as shown in FIGS. **4** and **6**, which serves to maintain the panel in an aligned position with the track and normal movement of the window and which also serves as a lock for holding the panel in a predetermined, vertical position. The triggers **42** are located on the inside of the window so that they may not be operated by a burglar from the outside. Therefore the window is by its basic nature a substantially tamperproof window.

The frame of the window is made in adjustable manner so that it can be widened, or lengthened to fit the actual size and shape of the opening in the building and along each side of each panel I provide a friction joint sash wedge **44** which is moved in tightly against the bottom of the groove in the frame in which the panel is riding, so as to tighten the panel with respect to the frame and prevent wind rattling.

The screen panel is provided with an insect seal **38** at the top thereof which contacts the lower storm window panel when the lower storm window panel is in the lowered position so as to prevent insects from climbing up between the outside of the screen and the cavity above the screen. Likewise at the top of the upper storm panel and at the bottom of the lower storm panel, I provide a weather seal **46** for contacting the

window sill to produce a weathertight joint. Alternatively, the weather seals for the storm panels may be located on and attached to the top and bottom of the window frame.

The top and bottom inside of the window frame is organized in a step-downward-toward-the-outside configuration. Thus since all of the panels are of the same length, when all five panels are resting on the bottom of the frame, each succeeding panel toward the outside is a little lower than the preceding inner panel. By means of this organization, when both the lower storm panel and the upper storm panel are in the raised position, the trigger latches on the upper storm panel will be exposed below the lower edge of the lower storm panel, so that it may be readily operated. If all five panels are in the raised position, all 10 trigger latches will be exposed and operable.

In like manner, the sides of the window frame are in stepped configuration so that each succeeding panel moving toward the inside of the building is larger than the preceding panel. This facilitates insertion and removal of the panels.

I claim:

1. A window unit comprising a frame having top and bottom pieces and having two side pieces having five grooves in each extending vertically and cooperating to form tracks for five window panels to be retained therein and there between and to be free to move in a vertical direction, normal window panes located on adjacent tracks on the inside first two of said tracks, a screen panel located on a third of said tracks, and two storm panels located on adjacent tracks being the fourth and fifth of said tracks, the said panels being of substantially equal length, the interior (upper) portion of said frame being stepped downward toward the outside on the inside thereof at the top and bottom in regions corresponding successively to the said tracks, and horizontal slide catches on the lower portion of said panels operable from the inner side of said window.

2. Apparatus as described in claim 1 wherein at each upper corner of each of said panels there is a rodlike projection generally on the plane of said panel and extending parallel to the top edge of said panel for retaining said panel in its track.

3. Apparatus as described described in claim 1 where the said frame is adjustable in width and length by at least 1 percent of the width of said frame the said frame comprising four pieces joined in a slidable condition at the corners and relying on exterior support to maintain their relationship and a moveable wedge member is provided near the vertical center of each panel on the edge thereof for producing a tight relationship between said panel and said frame.

4. Apparatus as described in claim 1 wherein all of said panels are substantially the same length.

5. Apparatus as described in claim 1 wherein there is a notch in said frame corresponding to the trigger latches in each of said panels and corresponding to the raised position of each of said panels and the lowered position of each of said panels and an intermediate position for each of said panels.

6. Apparatus as described in claim 1 wherein successive tracks inside the sides of the frame are of stepped configuration.