Nov. 26, 1957 A. W. DURR 2,814,078

STORM WINDOW

Filed Sept. 20, 1954 2 Sheets-Sheet 1

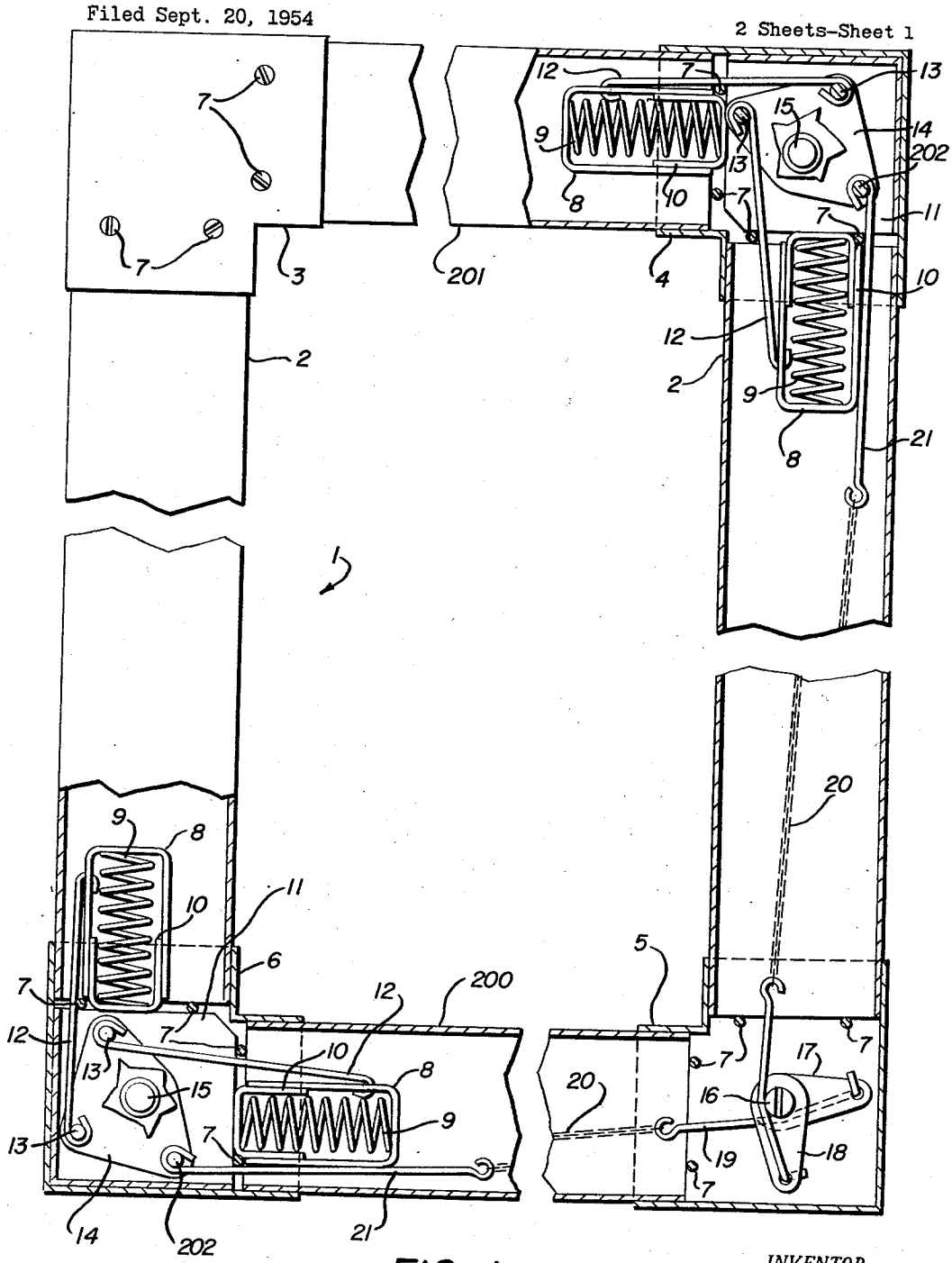


FIG. 1

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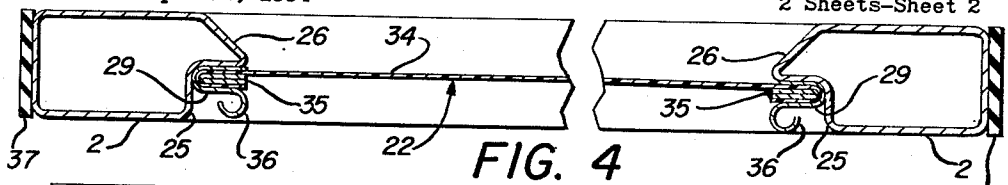
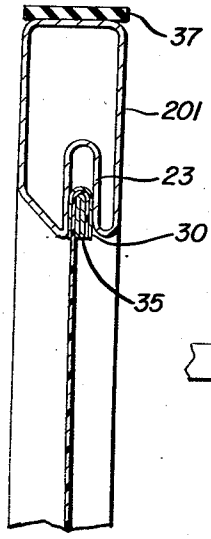


FIG. 4



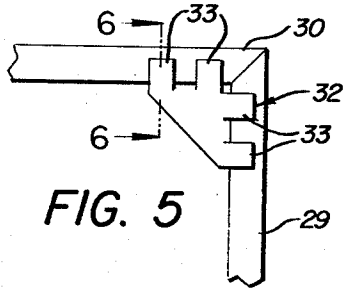


FIG. 5

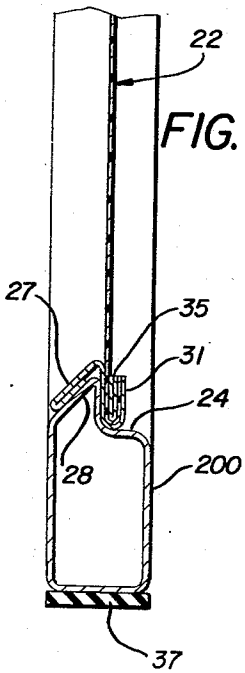


FIG. 3

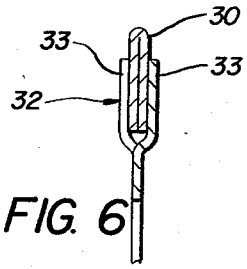


FIG. 6

FIG. 2

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STORM WINDOW

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10 Claims. (Cl. 20—55)

This invention relates to storm windows, and particularly to novel adjustable size frame means, and storm window means for use in association therewith.

One of the very important problems in the manufacture of storm windows commercially today is that these storm windows normally had been made up to individual order and to measured sizes for specific installations. Hence storm windows and frames have been quite costly articles so that all persons requiring storm windows have not felt economically able to purchase and/or install such items. Such tailored manufacture of storm window units has been necessary due to the widely different sizes of windows in various homes and because the window frames or casings may become out of square or have other irregularities occur therein due to warping, sagging or other aging conditions in the window frame or building in which the frame is positioned.

The general object of my invention is to provide a new, improved storm window frame which is readily and easily adjustable in both height and width in the manufacture of the frame.

Another object of the invention is to provide storm window frames and windows that can be produced as standard items at reduced cost to the consumer.

A further object of the invention is to provide a storm window that can be purchased as a standard unassembled kit wherein the rails for the frame and storm panel can be cut to proper size after which the components can be readily assembled into a window frame and storm panel of desired size.

Further objects of the invention are to provide a special locking or sealing flange on a storm panel that continually engages a complementary contoured beveled edge on the storm window frame itself and to use a panel receiving recess in the frame to aid in sealing the joint between the frame and the panel; to provide telescoped portions in a storm window frame to aid in obtaining a spring pressure engagement of a storm window frame with a window frame in which it is positioned; and to provide a storm window frame that can be made from any suitable material and which is of neat, attractive appearance with operating mechanism holding the storm window frame in place being enclosed within parts of the storm window frame.

The foregoing and other objects and advantages of the invention will be made more apparent as the specification proceeds.

For a better understanding of the present invention, reference should be had to the accompanying drawings wherein:

Fig. 1 is an elevation, partially broken away and shown in vertical section, of a storm window frame embodying the principles of the invention and shown in a locked or reduced size position;

Fig. 2 is a fragmentary vertical elevation, partially shown in section, of the storm window frame with the window frame in released position;

Fig. 3 is a vertical section through a window sash and frame unit of the invention;

Fig. 4 is a horizontal section taken through a window sash and frame unit of the invention;

Fig. 5 is an elevation of a portion of a corner of a window panel; and

Fig. 6 is an enlarged section on line 6—6 of Fig. 5.

When referring to corresponding parts in the accompanying drawings and specification, corresponding numerals are used to facilitate comparison between such similar parts.

The present invention in general relates to a storm window comprising a plurality of hollow frame means, corner brackets engaging end portions of the frame means to make a closed open center frame therefrom wherein the corner brackets at a pair of diagonally opposed corners engage the frame means with telescopic joints, and spring means connect the frame means to the corner brackets to urge the frame means outwardly with relation thereto and increase the overall outer dimensions of the frame. A control shaft is journalled in one of the corner brackets and means extend through the frame means and connect the control shaft to the spring means to compress such springs and reduce the overall size of the frame when the control shaft and associated members are properly operated to permit the frame to be inserted into an opening in a building window frame.

With reference to the details of the construction shown in the drawings, an auxiliary or storm window is shown and is illustrated as a whole by the numeral 1. This storm window 1 comprises a plurality of hollow frame rails that initially may be of standard length and be cut to size prior to assembly by the person assembling and installing the storm window, and that comprise side rails 2, 2, a bottom rail 200 and an upper rail 201 that are secured together by a plurality of longitudinally split corner brackets 3, 4, 5 and 6. Preferably the ends of the frame rails are secured to the corner brackets 3 and 5 and a unit is made therefrom by cap screws 7, or the like, to form an immovable joint therewith. However, as one important feature of the invention, the opposite ends of the frame rails 2, 2, 200 and 201 are telescopically engaged with the corner means or brackets 4 and 6 so that a variation in the overlap of the frame rails with the corner brackets will provide a size adjustment of the storm window frame means in both length and width when the unit is being positioned in or removed from a frame opening.

The corner brackets 4 and 6 are of similar construction and one such corner will be described in detail to show how the various frame components can be relatively moved or adjusted with relation to each other. Each of the side rails 2, 2, is shown as having a substantially tubular, or U-shaped bracket 8 secured, as by spot welding, thereto and with such bracket being positioned adjacent the ends of the frame rail engaging the corner bracket 4 or 6. Such bracket 8 provides one portion of a receptacle or enclosure for a conventional coil spring 9 that engages the bracket 8 to urge the frame rail 2 outwardly of the corner bracket. The opposite end of the coil spring 9 is seated upon a second positioning bracket 10, which also may be of tubular or U-shape in section, and with such second positioning bracket 10 being welded or otherwise suitably secured to a positioning plate 11 suitably positioned within each of the corner brackets 4 and 6 and with each plate 11 having a pair of the positioning brackets 10 secured thereto and extending therefrom in substantially normal relationship to each other, as best shown on Fig. 1, of the drawings.

The bottom rail 200 and upper rail 201 likewise have brackets 8 secured thereto at the ends thereof adjacent

the corner brackets 4 and 6. The positions of the frame rails, and the action of the coil springs 9 are determined by control links 12 and one end of each of a pair of control links 12 is pivotally engaged with one of the brackets 8 in one of the side rails 2 and bottom rail 200, for example. The opposite ends of these control links 12 are shown pivotally engaged with pins or rivets 13 that are secured to the corners of suitable members such as generally triangular control means, or control plates 14 with one control plate 14 being journalled in each of the corner brackets 4 and 6 by positioning pins 15, usually extending through the complete corner bracket 4 or 6. It thus will be seen that arcuate movement of the control plates 14 will vary the relationship of the positioning bracket 8 to the frame rails and produce relative telescopic movement of such frame rails with relation to the corner brackets and change the frame size.

Another important feature of the invention is that the entire frame size or temporary adjustability of the frame means of the invention is controlled by a unitary member provided in this instance in association with the corner bracket 5 of the storm window 1. The corner bracket 5 has a shaft 16 suitably journalled therein and such shaft 16 has a pair of crank arms 17 and 18 secured thereto and extending therefrom at right angle relationship to each other. Fig. 1 also clearly shows that crank arm 17 has connector means, such as a link 19 pivotally secured thereto that engages, through a chain 20 or equivalent member, with a second connector link 21 one end portion of which is pivotally secured to a control plate 14 as by a pin or rivet 202. Likewise the control arm 18 is connected to the control plate journalled in the corner bracket 4 so that arcuate movement of the control shaft 16 can cause arcuate movement of both control plates for moving, or compressing the control springs 9 and serving to draw the ends of the rails 2, 2, 200 and 201 telescopically within the corner brackets 4 and 6 so that the overall size of the storm window is reduced. The storm window and control means are shown in their locked, or compressed condition, and it will be seen that it is desirable to have the adjustable frame means retain their locked position when once moved thereto in order to facilitate moving the storm window means to and from operative position. Such action is secured because of the offset relationship provided between the crank arms 17, 18 and the connecting links 19 and the oppositely directed forces set up thereby on the positioning shaft 16 provided in the storm window assembly.

Fig. 2 best shows the released positioning of the control plates 14 and associated means which show the relative adjustment or outer positions of the frame rails with relation to the positioning corner brackets in order to fit snugly, for example, in a window frame.

With reference to the storm window and panel assembly in Figs. 3 and 4, Fig. 4 clearly shows that the side rails 2, 2 are both of the same sectional shape and are adapted to receive a window panel, screen panel or the like 22 snugly therebetween, while the panel also is engaged with a downwardly directed open recess 23 formed in the top rail 201. Such panel 22 abuts against a shoulder 24 provided on the bottom rail 200. It will be noted that the recess 23 is appreciably deeper than the length of the panel 22 engaged therewith in order to permit the storm window panel to be slid into and out of such recess when engaging the panel with the storm window frame or when disengaging it therefrom. It should be noted that both the frame rails 2, 2 have laterally inwardly directed shoulders 25 provided thereon which terminate in laterally inwardly directed ribs 26 normally formed integrally with the hollow frame rails 2, 2. These ribs 26 each have one surface extending normally from the shoulders 25 and immediately adjacent thereto to provide a seat for the panel 22. The panel is of a size to bear against the adjacent edges of the ribs 26 to form an air-tight seal therewith. The rails for the panel 22 are initially made of a desired length and are cut to size for assembly with a given size storm window frame and the shoulders 24, 24 and the rib 26 thereon. A further feature of the panel 22 is that it has an outwardly positioned, downwardly directed flange 27 provided along the lower edge thereof, as shown in Fig. 3. This flange 27 is shaped complementary to the outer surface of a rib 28 usually formed integrally with the bottom rail 200 so that the panel 22 is held against the components of the storm window frame by the tapered engagement of the rib and flange with changes in size of the storm window frame means. It will be realized that any conventional materials may be used in making the panel 22 and the frame components thereof to aid in obtaining a sealed engagement of such panel with the storm window frame means.

The panel 22 may have glass, screening, plastic sheeting or other suitable material in the center thereof, and secured in place by conventional means. To secure side rails 29, 29 of the panel to the top rail 30 and the bottom rail 31, corner plates 32 are provided and secure such rails together. As shown in Figs. 5 and 6, the corner plates 32 have a plurality of fingers 33 extending therefrom with adjacent fingers being bent or struck to extend in opposite directions so that the fingers may engage walls, or side edges of the rails 29, 30 or 31, which are generally U-shape in section, to form the panel 22. A plastic sheet 34 is anchored to the panel rails by center bars or rails 35 snugly and slidably received in the open centers of the rails 29, 30 and 31, with the sheet 34 usually covering opposed surfaces of the center bars 35. Reinforcing rolled edges 36 are provided on the side rails 29, 29.

Sponge strips 37 made from any desired conventional material may be used to seal around the edges of the frame rails when the storm window frame is operatively positioned in a window opening. The strips 37 normally would be cemented to the storm window frame rails.

An end of the shaft 16 is slotted and exposed through the storm window frame assembly so that a screw driver or similar member can be engaged therewith to turn the shaft and move the frame components to reduced size, or to release the frame for expansion into holding engagement with a window frame.

From the foregoing, it will be seen that there has been a storm window provided by the invention which window and panel therein can easily be made of correct size for a given window from a standard window assembly kit. This storm window can be made up easily to proper size and it will readily adjust or adapt itself to individual window frame sizes and conditions so as to have tight engagement therewith. The window panel used in practice of the invention will maintain its sealed engagement with the frame means provided therefor with slight variations in frame size inasmuch as the top and bottom of such panel members would normally be engaged snugly with the top and bottom rail means provided in the storm window and this would hold the lateral margins of the window panel 22 or of a screen panel snugly against the side frame members. By provision of this type of a storm window unit, the engagement of which with its window frame is readily controllable from one corner thereof, more assembly line technics can be used in the production and installation of storm windows so that an economical but desirable structure is provided and the objects of the invention are achieved.

While one complete embodiment of the invention has been disclosed herein, it will be appreciated that modification of this particular embodiment of the invention may be resorted to without departing from the scope of the invention as defined in the appended claims.

What I claim is:

1. An auxiliary window comprising frame means having telescopically engaging diagonally opposite corner por-

tions, and means positioned at another corner portion of said frame means and connecting to said telescopically engaging corner portions to move such corner portions relative to the remainder of said frame means and control the size of said frame means from said another corner portion.

2. An auxiliary window comprising frame means including corner brackets having hollow frame rails telescopically engaged therewith, and means positioned at another corner of said frame means and connecting to said telescopically engaged rails to move such rails and change the size of said frame means from said another corner, said means lying within said hollow frame rails.

3. A storm window frame comprising a plurality of frame rails, corner brackets engaging the ends of said frame rails to make a closed frame therefrom, at least some of said corner brackets engaging said frame rails telescopically, spring means connecting said frame rails to said corner brackets and normally urging said frame rails outwardly with relation thereto to tend to increase the overall dimensions of the frame, and unitary control means connected to said spring means for compressing said spring means and temporarily reducing the overall size of the frame.

4. A storm window frame comprising a plurality of hollow frame means, corner brackets engaging ends of said frame means to make a closed frame therefrom, said corner brackets at a pair of diagonally opposed corners engaging said frame means telescopically, spring means connecting said frame means to said corner brackets and urging said frame means outwardly with relation thereto to tend to increase the overall dimensions of the frame, and means connecting to said spring means to compress said spring means and reduce the overall size of the frame.

5. A window frame comprising a plurality of hollow frame means, corner brackets engaging ends of said frame means to make a closed frame therefrom, said corner brackets at a pair of diagonally opposed corners engaging said frame means telescopically, spring means connecting said frame means to said corner brackets and urging said frame means outwardly with relation thereto to tend to increase the overall dimensions of the frame, a control shaft journalled in another of said corner brackets, and means extending through said frame means and connecting said control shaft to said spring means to compress said spring means and reduce the overall size of the frame.

6. A storm window comprising a plurality of frame rails, a pair of diagonally opposed corner brackets secured to said rails, a second pair of diagonally opposed corner brackets telescopically engaging said frame rails with a pair of frame rails extending from each of said brackets and forming a right angle therewith, spring means securing said frame rails to said second pair of corner brackets and urging said frame rails along their axes away from the said corner bracket with which such frame rails are engaged, control means pivotally carried by each of said second pair of corner brackets, link means connecting said control means to said spring means positioned thereadjacent to control the telescoped portions of said frame rails, control members, and means connecting said control members to said control means whereby the sections of an entire quadrilateral frame can be pulled together in both length and width simultaneously.

7. A storm window comprising a plurality of frame rails, a pair of diagonally opposed corner brackets secured to said rails, a second pair of diagonally opposed corner brackets telescopically engaging said frame rails with a pair of said frame rails extending from each of said brackets and forming a right angle therewith, spring means securing said frame rails to said second pair of corner brackets and urging said frame rails along their axes away from the said corner bracket with which such frame rails are engaged, control plates pivotally carried by each of said second pair of corner brackets, link means connecting said control plates to the said spring means positioned thereadjacent to control the telescoped portions of said frame rails, control means journalled in one of said first-named pair of said corner brackets, and means connecting said control means to said control plates whereby an entire quadrilateral frame can be pulled together or be expanded in both length and width simultaneously by said control means.

8. In an auxiliary window, frame means including corner brackets and hollow frame rails, at least one of said hollow frame rails telescopically engaging a said corner bracket, connector means received within said one hollow frame rail and extending at least the length thereof, a member pivotally positioned in the said corner bracket in which one end of said one hollow frame rail is telescopically received, said connector means engaging said member and operatively engaging said one hollow frame rail for moving it farther into engagement with said bracket, and means engaging said connector means adjacent the opposite end of said one hollow frame rail to move such rail and said one bracket with relation to each other.

9. In an auxiliary window, frame means including corner brackets and frame rails, at least one of said frame rails telescopically engaging a said corner bracket, connector means carried by said one frame rail and extending at least the length thereof, a member pivotally positioned in the said corner bracket in which one end of said one frame rail is telescopically received, said connector means engaging said member and operatively engaging said one frame rail for moving it farther into engagement with said bracket, spring means for urging said one frame rail to move out of engagement with said bracket, and means engaging said connector means adjacent the opposite end of said one frame rail to move said one rail and said one bracket with relation to each other against the resistance of said spring means.

10. Apparatus as in claim 8, wherein a pair of corner brackets each telescopically engage a pair of hollow frame rails, members are pivotally positioned in each of said brackets, said connector means extend to a common third corner bracket, and means engaging said connector means at said third corner bracket for unitary control of the size of a quadrilateral frame made by the apparatus.

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