April 19, 1960 A. T. KUNKEL 2,932,861

PIVOTED HINGE-TYPE WINDOW

Filed Dec. 28, 1956

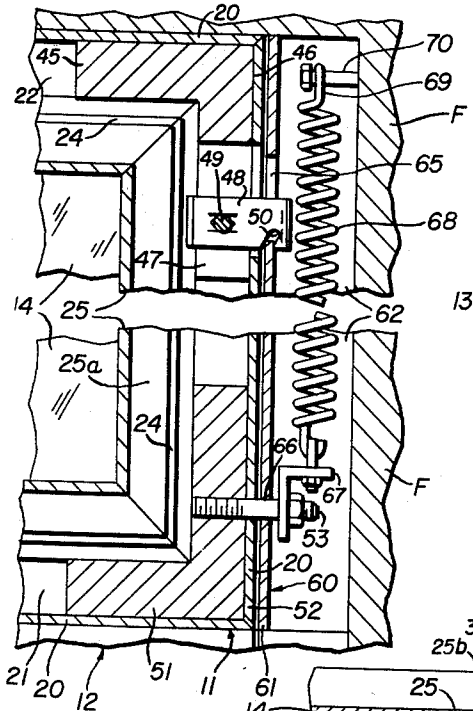


FIG. 3

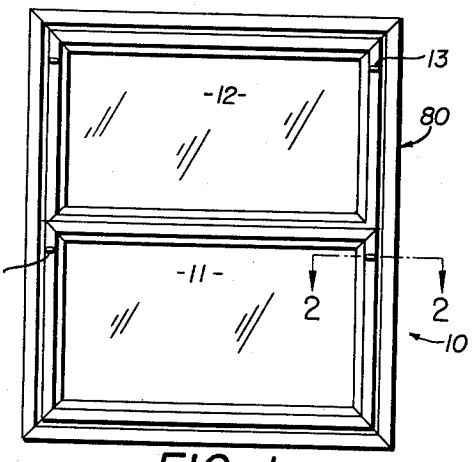


FIG. 1

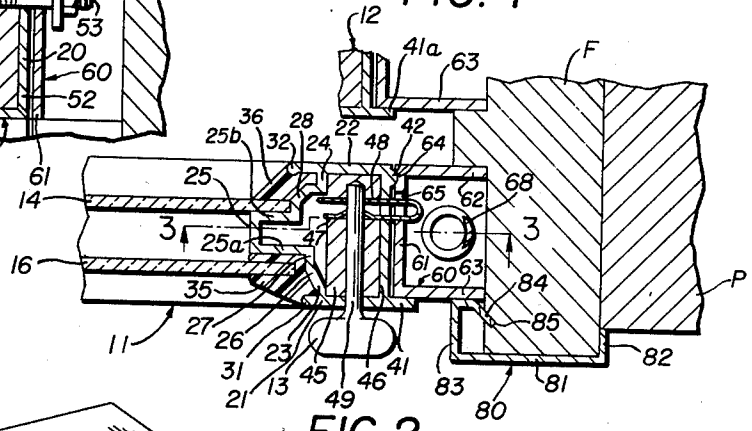


FIG. 2

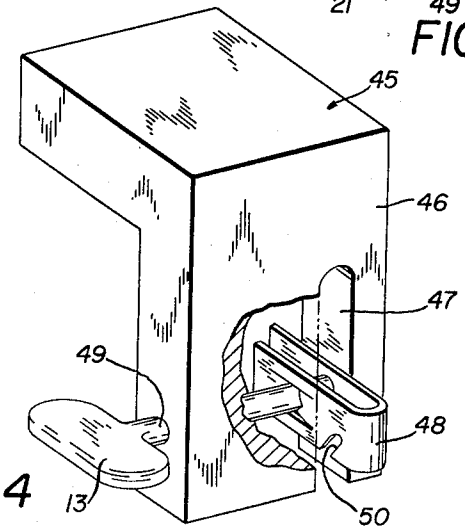


FIG. 4

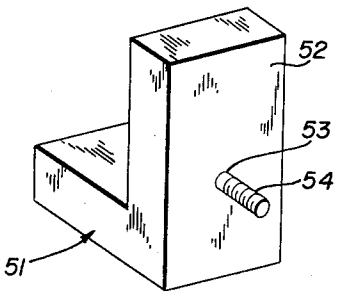


FIG. 5

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United States Patent Office 2,932,861 Patented Apr. 19, 1960

2,932,861

PIVOTED HINGE-TYPE WINDOW

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Application December 28, 1956, Serial No. 631,284

2 Claims. (Cl. 20—49)

This invention relates to the art of window sash construction and in particular has reference to improvements in the art of pivoted-hinge windows.

In the art of window sashes, it has long been known that a double hung type of window can be provided wherein the individual sash components are capable of being raised and lowered vertically and are further capable of being hinged along one edge so as to be capable of swinging inwardly into the room for the purpose of facilitating cleaning thereof. In the past this type of window, conveniently referred to hereinafter as a pivoted hinge window, has been made with a solid frame, with a pivotal connection being between this solid frame and the surrounding guide track in various ways.

There has been recently introduced a new and improved type of window sash unit that features the use of a hollow frame member that is preferably a plastic extrusion that is joined together at its corner portions in the manner set forth in the United States Letters Patent 2,742,690, issued to Aloysius T. Kunkel on April 24, 1956.

In the past it has been impossible to utilize hollow frame windows in the art of pivoted-hinge windows due to the fact that the thin wall sections thereof were not capable of withstanding repetitive usage. Additionally, this thin wall section precluded the use of conventional locking means that prevented the window from inadvertently swinging inwardly during the normal period of usage.

It has been discovered that if the pivoting and locking mechanisms required in such windows are positioned in association with the corner reinforcements of the type set forth in the above referred-to Kunkel Patent 2,742,690, that sufficient rigidity will be provided to facilitate repetitive swinging and locking of the hollow frame unit. It has further been found that if a window of this type is operatively associated with a guide channel of similar material, improved results can be obtained with respect to the housing of the customary balancing apparatus employed to stabilize the position of the window units during use.

It accordingly becomes the principal object of this invention to provide an improved type of vertically slidable and horizontally swingable type of pivoted hinge sash unit having hollow frame members.

It is a still further object of this invention to provide an improved type of vertically slidable, horizontally swingable window unit having an improved type of balance incorporated therein and further characterized by the provision of an improved type of removable stop member.

These and other objects of the invention will become more apparent upon a reading of the following brief specification considered and interpreted in the light of the accompanying drawings.

Of the drawings:

Figure 1 is an elevational view of the improved window with the component parts in closed position.

Figure 2 is a section taken on the lines 2—2 of Figure 1.

Figure 3 is a sectional view taken on the lines 3—3 of Figure 2, parts being broken away.

Figures 4 and 5 are perspective views of the reinforcing inserts utilized internally of the corner regions of the window.

Referring now to the drawings, and in particular to Figure 1 thereof, a window frame **10** is shown having an upper sash frame **12** and a lower sash frame **11**, the arrangement being such that the sash frame members **11** and **12** are both slidable vertically of the frame **10** and are further capable of being pivoted horizontally of the frame **10** upon operation of key members **13, 13.**

Because the sash members **11** and **12** are substantially identical in construction, the description of one sash member **11** will be set forth as typical, with it being understood that unless otherwise mentioned, the remaining sash is of corresponding construction.

Considering first the detailed structure of sash frame elements, the same are shown as being of the type set forth in co-pending application Serial No. 579,971, filed April 23, 1956, by Aloysius T. Kunkel. Accordingly, a representative frame member is shown in Figure 2 of the drawing as being hollow in cross-sectional configuration so as to include a base wall **20**, that is defined at its opposed edges by side wall sections **21** and **22** respectively, with the internal surfaces of the reinforcing corner inserts being intended to contact the wall sections **20, 21** and **22.**

The fourth, or remaining side of the reinforcing corner insert is shown having the opposed edge surfaces thereof contacting transverse walls **23** and **24** that extend inwardly toward each other from the side walls **21** and **22**, respectively. The inboard edges of the transverse wall sections **23** and **24** co-act with a central hollow rib **25** of inverted U-shaped configuration to seal and support the edge of the pane members **14** and **16** respectively. To this end, the wall section **23** is shown merging with an inclined wall section **26** that extends obliquely to connect with a transverse section **27** that in turn interconnects with upright wall 25^a of rib **25.** In like manner, the remaining transverse wall **24**, as well as upright wall 25^b of rib **25**, are shown interconnected with an angularly disposed wall section **28.** For the purpose of preventing shifting of the panes **14** and **16** when the same are seated, the wall sections **21** and **22** are shown as having projecting ribs **31** and **32** respectively that may terminate in bulbous tip portions, if desired.

The actual retention of the panes **14** and **16** with respect to the hollow frame members is effectuated by the use of resilient glazing strips **35** and **36** that are respectively applied against the sash members **14** and **16** to seat the same with respect to the frame member, as shown in the drawings. In addition to the aforementioned component parts, the base section **20** may also include a lip **41** as well as a longitudinally extending protuberance **42**, with these members **41** and **42** being designed for co-action with the guide channel **60**, as will presently be described.

Considering next the structure of the upper insert designated **45** and shown best in Figure 4 of the drawings, it will be seen that the same is of right angle configuration and is provided on face **46**, with a through slot **47**, within which may be received a strike plate **48**, the arrangement being such that the strike plate **48** is doubled upon itself into U-shaped configuration so as to be receivable about the shaft **49** of key **13.** Additionally, the strike plate **48** may have a notch **50** provided thereon for engagement with the guide channel **60**, it being understood that the entire strike plate **48** will be rotated and recessed within the slot **47** upon turning of the key **13.**

The lower insert, that has been designated by the numeral 51 in Figure 5 of the drawings, is similarly shaped, and accordingly, is of right angle configuration so as to have a face 52 thereof receive a stud 53, the free end 54 of which is threaded so as to permit interconnection with certain component parts of the guide channel 60 to thus permit pivotal movement as will presently be described.

To this end, the guide channel 60 is shown as being of generally U-shaped cross-sectional configuration and includes a base portion 61 and opposed leg portions 62 and 63, with the vertical height of this unit corresponding substantially to the height of the window section associated therewith, as shown in Figure 2 of the drawings.

For the purpose of co-acting with certain component parts of the assembled sash unit 11, the guide channel 60 further includes a longitudinally extending groove 64 as well as a slot 65 that is provided in base section 61 adjacent the uppermost end thereof, as best shown in Figures 2 and 3 of the drawing, with this slot 65 being intended for engagement by notch 50 of the strike plate 48, as best shown in Figure 3 of the drawing.

Adjacent the lowermost or opposed end of the guide channel 60, there is provided an aperture 66 through which the stud 53 may be received so as to permit attachment thereon of the flange 67, with the flange 67 serving to anchor one end of the spring balance 68. The spring balance 68 that is illustrated herein has its uppermost end 69 apertured so as to receive a bolt 70 that is passed therethrough for engagement with the surrounding frame F, and in this manner the spring balance 68 is anchored at its opposed ends between the flange 67 and the bolt 70, with the former (flange 67) being attached to the lowermost edge of the sliding unit 11 through stud 53, while the latter (bolt 70) is attached to the frame F. In this manner the unit 11 may be positioned at any desired vertical height within the frame opening and also the balance, as a result of attachment to bolt 70, does not interfere with swinging feature of the window.

While the frame F may be of any standard type, the preferred embodiment of the invention disclosed herein contemplates the use of an improved type of combination stop and trim member that is generally designated by the numeral 80 in Figure 2 of the drawings. This member 80 includes a base section 81 defined at its opposed edges by leg sections 82 and 83, the arrangement being such that the leg section 82 abuts against the plaster surface P, while the leg 83 has a return flange 84 that is bent inwardly so as to abut against the frame F and the guide channel 60, as best shown in Figure 2 of the drawings. A groove 85 is preferably provided in frame F for reception of the end of flange 84.

The construction of the second window unit 12 has been previously indicated as being substantially identical to that of the just described unit 11. It is to be noted, however, that in the preferred embodiment shown, the leg portions 62 and 63 thereof are slightly longer than those provided in the guide channel 60 that is associated with the window unit 11. It accordingly follows that the over-all width of the window 12 would be somewhat less so that the projecting ends of the flange 41a thereof will clear the guide channel 60 that is associated with the window unit 11. It is believed apparent, however, that the windows could be made of identical size by eliminating the lip 41 and replacing the same with a second bead and groove arrangement in this region between the wall sections 20 and 61.

In use or operation of the improved window unit, it will first be assumed that the component parts have been assembled as shown in the drawings, and further that the spring balance 68 has been installed as shown in Figure 2 of the drawings. It will also be assumed that a condition of normal usage is intended, and accordingly, the strike plate 48 will be in the horizontal position of Figures 2, 3 and 4 so as to lock the sash 11 against horizontal swinging movement with respect to the guide channel 60. At this time the window may be operated in normal fashion, and may be manually lifted and closed as desired.

When it is desired to swing the window horizontally for cleaning or other purposes, it is merely necessary that the key 13 be turned 90 degrees counterclockwise of Figures 2 and 4, at which time the notch 50 will be released from its engagement about the wall portion 61, with the result that the entire strike will rotate counterclockwise and will become recessed within the slot 47. At this time the window may be freely pivoted about stud 53.

When the window has been cleaned and it is desired to restore the same to a condition of normal usage, it is merely necessary that the same be horizontally swung so that the protuberance 42 engages within the longitudinal groove 64, and at this time the key 13 may be turned clockwise 90 degrees so as to move within the slot 65, whereupon the notch 50 will grip the lower edge portion of the wall section defined by the slot 65. Upon continued rotational movement, the wall sections 20 and 61 will be drawn closer together as a result of the inclined direction of the notch 50, and when full rotational movement has been completed, the component parts will be in the tightly abutted and sealed condition of Figure 2.

At this time normal operation of the window unit may be resumed.

It will be seen from the foregoing that there has been provided a new and novel type of vertically slidable, horizontally swingable window unit of double-hung construction that features the use of sash members having hollow frame members reinforced at their corners. It has been shown how the reinforcing inserts, in addition to providing rigidity to the sash units, also serve as a point of mounting for the various components that interconnect the sash member and the sliding channel associated therewith.

It has also been shown how there has been provided a new and novel type of combination trim and stop unit that is easily positionable so as to insure that the window unit may be accurately raised and lowered.

While a detailed description of the invention has been set forth in accordance with the dictates of the Patent Statutes, it is to be understood that the invention is not intended to be so limited. Accordingly, where detailed recitations of size, composition or configuration have been recited, it is to be understood that the same are intended to have a full range of equivalence, and in this regard the use of hollow frames of configurations other than those set forth herein is contemplated.

Accordingly, other modifications of the invention may be resorted to without departing from the spirit hereof or the scope of the appended claims.

What is claimed is:

1. A window construction for use with a frame having a window opening that includes opposed elongated stile receiving surfaces, comprising; a frame; a window sash having opposed side rails; a pair of elongate stile members, each pivotally connected at one longitudinal end thereof to said sash adjacent a corner section thereof and each being adapted to overlie one said side rail thereof in coplanar relationship therewith; and means for releasably associating said stiles in coplanar, longitudinally shiftable relationship with said stile receiving surfaces, whereby said sash and said stiles may be shifted longitudinally of said stile receiving surface as a unit while said sash may pivot relatively of said stiles and said frame; said sash member being defined by a plurality of hollow frame members arranged in quadrilateral configuration and being joined together by right angle inserts received interiorly thereof adjacent the frame; at least one said corner insert being provided with a hinge pin that extends though said hollow insert and pivotally receives said stile on its projecting end.

2. A window construction for use with a frame hav-

ing a window opening that includes opposed elongated stile receiving surfaces, comprising; a frame; a window sash having opposed side rails; a pair of elongate stile members, each pivotally connected at one longitudinal end thereof to said sash adjacent a corner section thereof and each being adapted to overlie one said side rail thereof in coplanar relationship therewith; and means for releasably associating said stiles in coplanar, longitudinally shiftable relationship with said stile receiving surfaces, whereby said sash and said stiles may be shifted longitudinally of said stile receiving surface as a unit while said sash may pivot relatively of said stiles and said frame; said sash member being defined by a plurality of hollow frame members arranged in quadrilateral configuration and being joined together by right angle inserts received interiorly thereof adjacent the frame; at least one said corner insert being provided with a pivotable strike plate that extends through said hollow frame and has its projecting end releasably engageable with said stile upon pivotal movement of said strike relatively of said insert and said frame.

References Cited in the file of this patent

UNITED STATES PATENTS

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2,585,601	Trombetta	Feb. 12, 1952
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