United States Patent

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[54] **WINDOW CONSTRUCTION**
6 Claims, 4 Drawing Figs.

[52] **U.S. Cl.** **52/217,** 49/505, 52/476
[51] **Int. Cl.** **E06b 1/20**
[50] **Field of Search** 52/217, 214, 213, 208, 476; 49/505

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ABSTRACT: A window construction primarily for replacement of defective windows in existing buildings, including adjustable members or expanders for accommodation to a wide variety of sizes and shapes of wall openings.

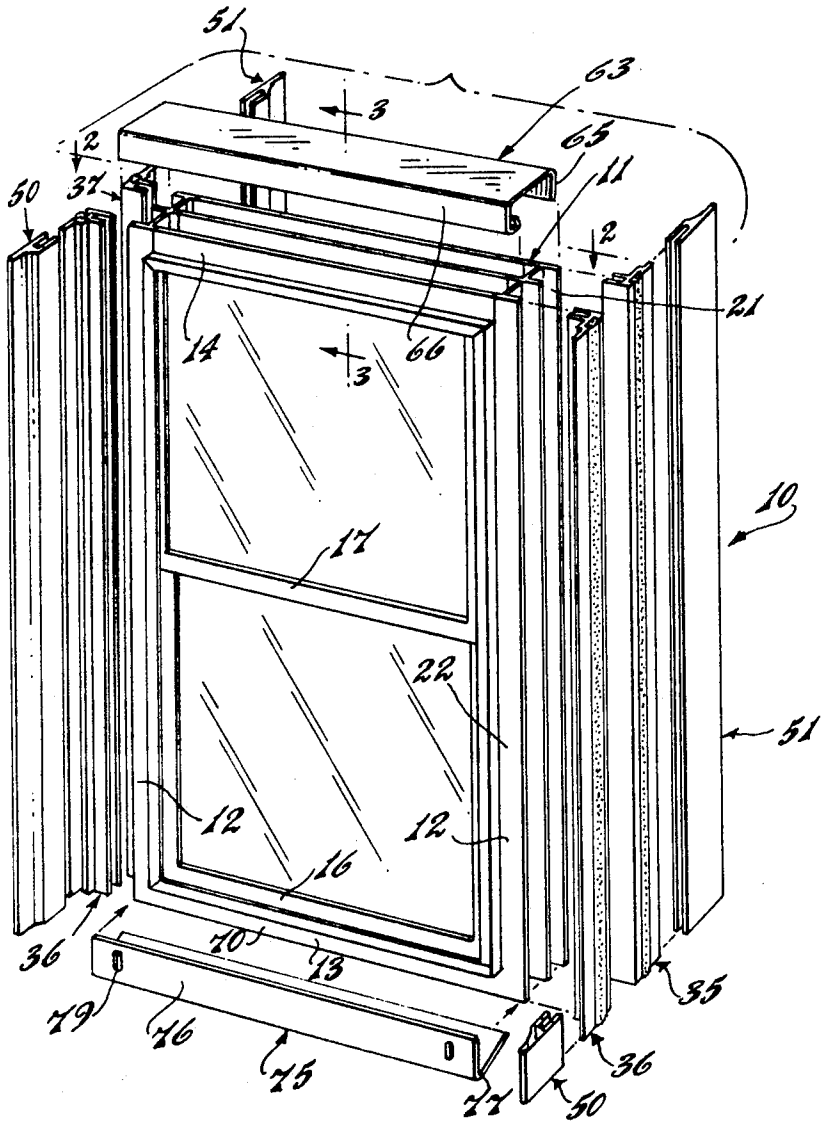


Fig. 1.

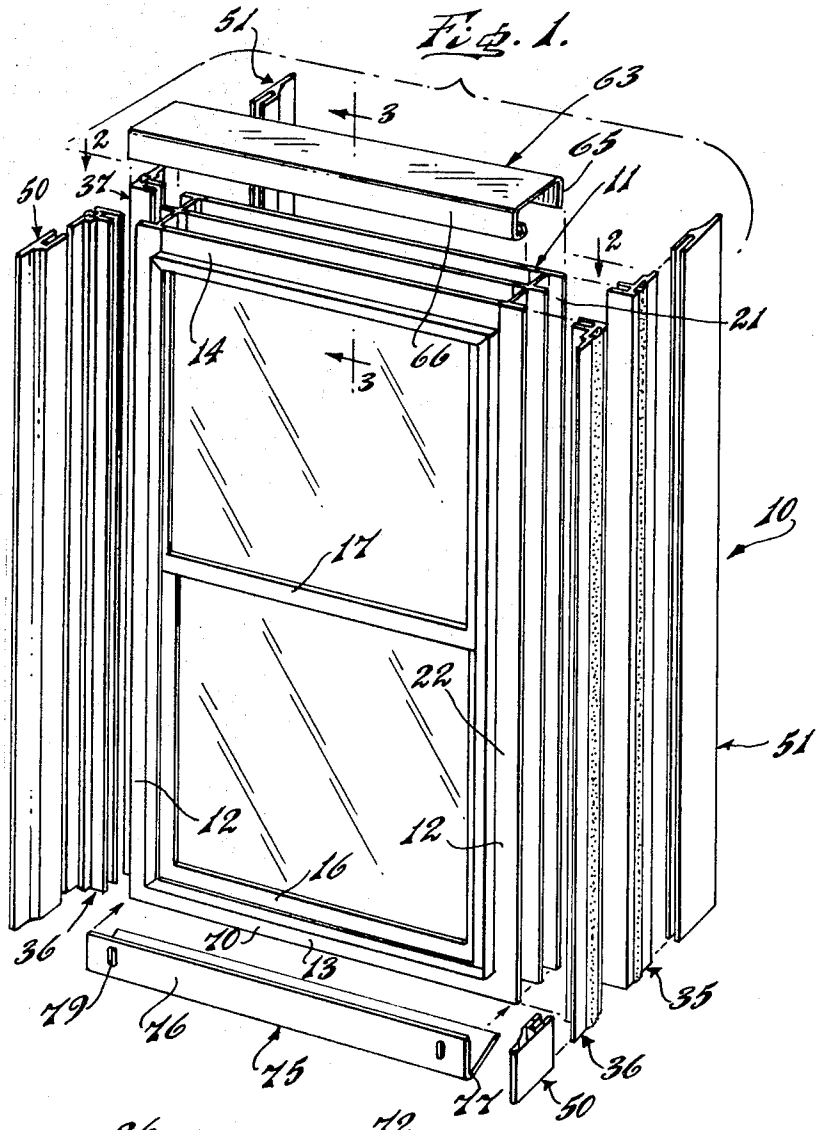
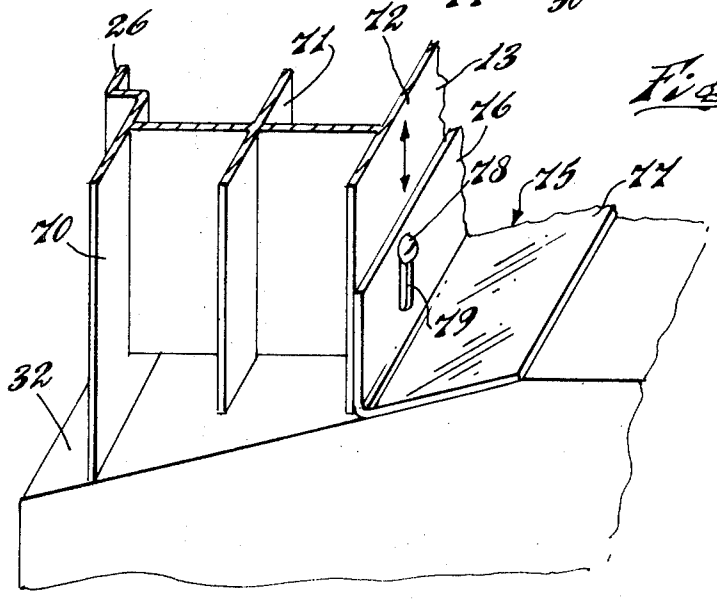


Fig. 4.



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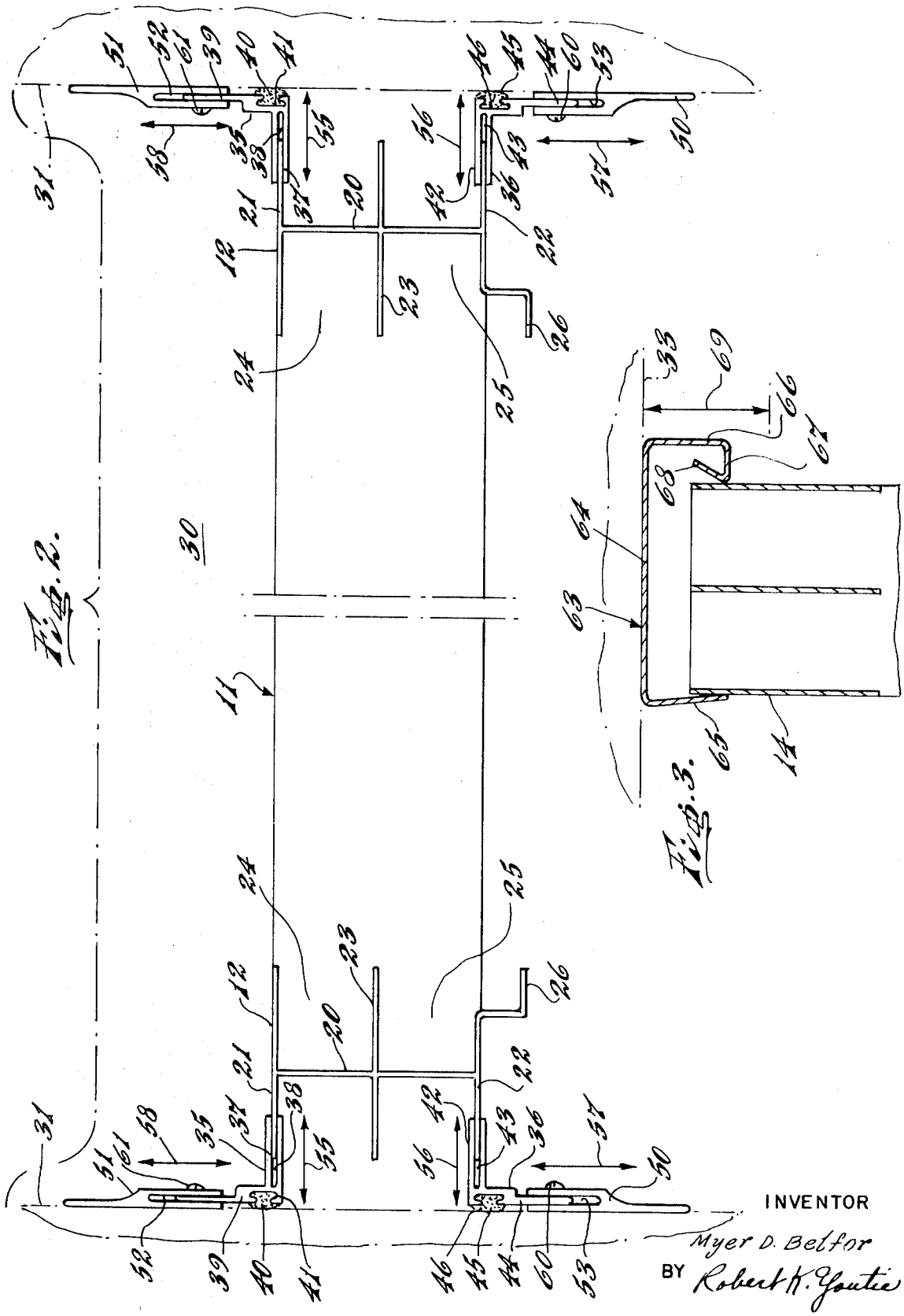


Fig. 2.

Fig. 3.

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WINDOW CONSTRUCTION

BACKGROUND OF THE INVENTION

As is well known to those versed in the art, there is presently increased utilization of prime windows being installed in existing buildings as replacement windows. Such prime windows, both as replacement and original installations have advantageously been fabricated of relatively durable and maintenance free material, such as aluminum, or the like. Toward reduction in costs of manufacture, shipments and warehousing, it is desirable to fabricate such prime windows in a minimum number of sizes, while affording the installer a complete range of sizes and shapes for use in substantially all building wall openings. Heretofore, it was necessary that the windows be custom fabricated to fit in desired window openings, or that substantial cutting and fitting be performed by the installer to insure proper fit of the closest size prime window.

SUMMARY OF THE INVENTION

Accordingly, it is an important object of the present invention to provide a prime window construction for use both in the original window market and the replacement window market, whereby a relatively small number of stock sizes and shapes of windows may be employed with unique structural features to fit in a complete size range of building wall openings.

It is another object of the present invention to provide a unique and improved prime window construction including simple and efficient means for accurately fitting one of a relatively few stock sizes and shapes of windows in substantially any size and shape of window opening, so as to compensate for variations in window opening width, height and thickness.

Other objects of the present invention will become apparent upon reading the following specification and referring to the accompanying drawings, which form a material part of this disclosure.

The invention accordingly consists in the features of construction, combinations of elements, and arrangements of parts, which will be exemplified in the construction hereinafter described, and of which the scope will be indicated by the appended claims.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is an exploded perspective view showing a window construction in accordance with the teachings of the present invention.

FIG. 2 is a generally horizontal sectional view taken approximately along the line 2–2 of FIG. 1, illustrating the window construction there assembled and located in a building wall opening.

FIG. 3 is a partial sectional elevational view taken generally along the line 3–3 of FIG. 1, also showing the window construction thereof assembled and located in a building wall opening.

FIG. 4 is a partial perspective view, illustrating a lower interior portion of the instant window construction.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now more particularly to the drawings, and specifically to FIG. 1 thereof, a window construction of the present invention is there generally designated 10, and includes a generally rectangular open frame 11. The open frame may include a pair of generally parallel, laterally spaced vertical frame pieces or side members 12, and a pair of generally parallel, vertically spaced lower and upper frame members 13 and 14. The side frame members 12 and lower and upper frame members 13 and 14 are suitably fixedly secured together to define a substantially rigid open framework. Suitably mounted within the frame 11 may be a pair of window sashes 16 and 17 vertically slidable in suitable channels, and if desired a screen may also be provided.

More specifically, the frame side, lower and upper members 12, 13 and 14 may be of aluminum extrusions, or other suitable manufacture, say of a double H-shaped cross-sectional configuration. For example, as best seen in FIG. 2, the side frame members 12 may each include a central web 20, and interior and exterior flanges 21 and 22 on the interior and exterior side edges of the web 20, respectively. As thus far described, including the web 20 and flanges 21 and 22, each frame member 12 may be considered as a column of I-beam cross-sectional configuration. However, an additional intermediate flange 23 is provided on each frame side member 12, extending in opposite directions from the web 20 spaced mediately between the interior and exterior flanges 21 and 22. By this construction, the interior flange 21 and laterally inwardly from the web 20, and the laterally inwardly extending portion of intermediate flange 23 combine to define an interior channel 24, while the exterior flange 22 extending laterally inwardly from the web 20, and the laterally inwardly extending portion of intermediate flange 23 combine to define therebetween an outer channel 25. If desired, the exterior flange 22 may have its laterally inwardly extending portion formed with an offset lip 26, the lips of both exterior flanges 22 combining to define tracks for slidably receiving a screen panel, or the like.

The lower and upper frame members 13 and 14 are similarly fabricated of double H-shaped cross-sectional stock, for example as seen in FIG. 3, so as to define interior and exterior channels for the lower and upper edges of the sash panels 16 and 17.

As seen in FIG. 2, the window frame 11 is located in a window opening 30, the window opening being of generally rectangular configuration and bounded between side bounding surfaces 31, a lower bounding surface 32, see FIG. 4, and an upper bounding surface 33. That is, the side frame members 12 extend vertically along generally vertical respective side bounding surfaces 31 of the wall opening 30, while the lower frame member 13 extends generally horizontally along the lower bounding surface 32 of the window opening, and the upper frame member 14 extends generally horizontally along the upper bounding surface 33 of the window opening. The interior flanges 21 of the side frame members 12 extend laterally outwardly toward and terminate short of the respectively adjacent side bounding surfaces 31; and, the exterior side member flanges 22 similarly extend laterally outwardly toward and terminate short of respectively adjacent side bounding surfaces 31.

Interior and exterior width compensation members are respectively designated 35 and 36, and each associated with a respective interior and exterior flange 21 and 22. More specifically, each width compensation member 35 and 36 may be of an angle bar formation having a generally right angular cross-sectional configuration defined by a pair of angularly disposed walls. Each inner width compensation member or angle bar 35 may include a laterally extending wall 37 formed with a longitudinally extending edge groove 38. At substantially right angles to the lateral wall 27 is an inwardly extending wall 39. The wall 37 is disposed with its edge groove 38 in receiving relation with the laterally outwardly extending flange 21, and the wall 39 in generally facing relation with the side bounding surface 31. The wall 39 of width compensation member or angle bar 37 is thus in facing relation with side bounding surface 31 and movable toward and away from the latter by adjustment of flange 21 in receiving edge groove 38. A sealing strip 40, say of high density pile material may be engaged in an outwardly facing groove 41 formed in the wall 39 for effective sealing engagement with the side bounding surface 31.

Similarly, the width compensation angle bar 36 is formed in one laterally extending wall 42 with an edge groove 43 adjustably receiving the exterior flange 22, while the other angle bar wall 44 is adjustable in facing relation with the side bounding surface 31 toward and away from the latter. The angle bar wall 44 may carry a sealing member or weather strip 45, say of high density pile material, in a groove 46 for sealing engagement with the side bounding surface 31.

As best seen in FIG. 2, the width compensation angle bars 35 and 36, on both sides of the window frame 11, are adjustable laterally inwardly and outwardly for achieving a proper overall width for accurate fit in the building wall opening 30.

In addition, according to the thickness of the building wall containing the opening 30, it may be desired to expand or contract the thickness of the window construction 10. Toward this end, there are provided exterior and interior thickness compensation strips 50 and 51, each respectively associated with an exterior and interior width compensation member 36 and 35. More particularly, each interior thickness compensation strip 51 may extend along each interior width compensation member 35, and the thickness compensation strip is formed along one edge with a longitudinally extending edge groove 52 in receiving relation with the inwardly extending wall 39 of respectively adjacent angle bar 35. The interior thickness adjustment strips 51 are selectively shiftable to receive more or less of the associated angle bar wall 39 in the receiving groove 52, to locate the respective thickness compensation strip as desired.

Similarly, each exterior thickness compensation strip 50 is formed along one edge with a longitudinally extending, generally coplanar groove 53 in adjustably receiving relation with the outwardly extending wall 44 of the adjacent angle bar 36. The exterior thickness compensation strips 50 are thereby adjustable for exterior thickness compensation, as desired by the installer.

In an overall view, the width compensation members or angle bars 35 and 36 are adjustable laterally inwardly and outwardly, as indicated by respective arrows 55 and 56, while the thickness compensation strips 50 and 51 are selectively adjustable in the direction of respective arrows 57 and 58 to occupy greater or lesser thickness relative to that of the wall opening 30. Upon proper adjustment of the compensation members 35, 36, 50 and 51, they may be effectively secured in the desired position, as by exterior fasteners 60 extending through exterior strips 50 and angle bars 36, and interior fasteners 61 extending through interior strips 51 and interior angle bars 35. The fasteners 60 and 61 may penetrate the side bounding surfaces 31, if desired.

A top piece is generally designated 63 and engages adjustably over the upper frame member 14. The top piece 63 is of channel-shaped configuration, including an upper wall or web 64, and interior depending wall 65, and an exterior depending wall 66. In addition, the exterior depending wall 66 is provided with a lower flange 67 extending generally toward the wall 65, and further formed with a lip 68 extending from the flange 67 obliquely upwardly and outwardly toward the wall 66. The top piece 63 is advantageously fabricated of resilient material for snug embracing engagement about the upper side of upper frame member 14, as seen in FIG. 3. Also as seen in FIG. 3, the top piece 63 is adjustable vertically in the direction of arrows 69 to locate the top wall 64 in engagement with the upper bounding surface 33 of the wall opening 30. This effectively closes any space between the upper frame member 14 and upper bounding wall opening surface 33, so that the top piece effectively defines a height compensating member. While the top piece walls 65 and 66 have been recited as interior and exterior, respectively, it is appreciated that they may be reversed, if desired.

As best seen in FIG. 4, the lower bounding surface 32 of the wall opening is the window sill, and conventionally of an outward declination. For this purpose, the exterior flange 70 of the lower frame member 13 may depend beyond the intermediate flange 71 and interior flange 72. Preferably, the exterior flange 70 depends considerably beyond the intermediate and interior flanges 71 and 72, so that the exterior flange has its lower edge resting on the lower bounding surface 32, while the lower edges of the intermediate and interior flanges are spaced above the sill, for the normal range of sill angles. However, to compensate for any opening or clearance between the sill or lower bounding surface 32 and the lower edge of interior flange 13, there is provided a lower compensating strip, generally designated 75. The lower compensating strip 75 may be of angulate cross-sectional configuration, having one wall 76 generally upstanding and in facing engagement with the interior surface of interior flange 72. The remaining wall 77 of angulate lower compensation strip 75 is engageable with the lower bounding surface or sill 32, as by deformation of the wall 77 into engagement with the sill, or by suitable adjustment of the strip 75. Such adjustment may be effected by means of fasteners, as at 78 extending through vertical openings or slots 79 into the lower interior flange 13.

Thus, in addition to the width and thickness adjustments described hereinbefore in connection with FIGS. 1 and 2, it will now be appreciated that height adjustment or compensation is effected both at the upper and lower frame members, as described in connection with FIGS. 3 and 4.

From the foregoing, it is seen that the present invention provides a window construction which greatly facilitates installation, eliminating the need for ladders or scaffolds, which is highly versatile for installation in widely varying shapes and sizes of window openings, and which otherwise fully accomplishes its intended objects.

Although the present invention has been described in some detail by way of illustration and example for purposes of clarity of understanding, it is understood that certain changes and modifications may be made within the spirit of the invention.

I claim:

1. A window construction for mounting in a generally rectangular building wall opening having upper, lower and side bounding surfaces; said window construction comprising a generally rectangular frame for approximate conforming location in said opening; said frame including a pair of side members for extension along said side bounding surfaces and upper and lower members for extension along said upper and lower bounding surfaces; a pair of inner and outer flanges on each of said side members extending toward the adjacent side bounding surface, width compensating angle bars extending along each of said flanges and having an edge groove in one wall adjustably receiving the associated flange for movement of its other wall into facing engagement with the adjacent side bounding surface, and a thickness compensating strip extending along each of said angle bars and having an edge groove adjustably receiving the other wall of the adjacent angle bar for movement along the adjacent side bounding surface toward and away from said frame.

2. A window construction according to claim 1, in combination with a channel-shaped top piece engaged about said upper frame member and vertically adjustable thereon for movement toward the upper bounding surface of said wall opening.

3. A window construction according to claim 1, in combination with weather stripping carried by each of said angle bars on its other wall for interposition between the latter and the adjacent side bounding surface.

4. A window construction according to claim 1, in combination with a lower height compensating strip of angular cross section having one strip wall secured to the lower frame member and the other strip wall in facing engagement with the lower bounding surface of said building wall opening.

5. A window construction for mounting in a generally rectangular building wall opening, having upper, lower and side bounding surfaces; said window construction comprising a generally rectangular frame for approximate conforming location in said opening; said frame including a pair of side members for extension along said side bounding surfaces and upper and lower members for extension along said upper and lower bounding surfaces; a pair of inner and outer flanges on each of said side members extending toward the adjacent side bounding surface, width compensating angle bars extending along each of said flanges and having an edge groove in one wall adjustably receiving the associated flange for movement of its other wall into facing engagement with the adjacent side bounding surface, a thickness compensating strip extending along each of said angle bars and having an edge groove adjustably receiving the other wall of the adjacent angle bar for

movement along the adjacent side bounding surface toward and away from said frame, a lower height compensating strip of angulate cross section having one strip wall secured to the lower frame member and its other strip wall in facing engagement with the lower bounding surface of said building wall opening, and a channel-shaped top piece in embracing engagement about the upper frame member and vertically adjustable thereon toward the upper bounding surface of said building wall opening.

6. A window construction according to claim 5, said top piece comprising a top wall for facing engagement with the

upper bounding surface of said building wall opening, inner and outer walls depending from said top wall on the inner and outer sides of said upper frame member, a lower flange on the lower edge of one of said inner and outer walls extending toward said upper frame member, and a lip on said lower flange extending obliquely upwardly and away from said frame, said top piece being integrally fabricated of resilient material for gripping engagement with said upper frame member.