April 23, 1963 W. A. BECKER ETAL 3,086,326

WINDOW FRAME MOUNTING CONSTRUCTION

Filed Nov. 9, 1959 2 Sheets-Sheet 1

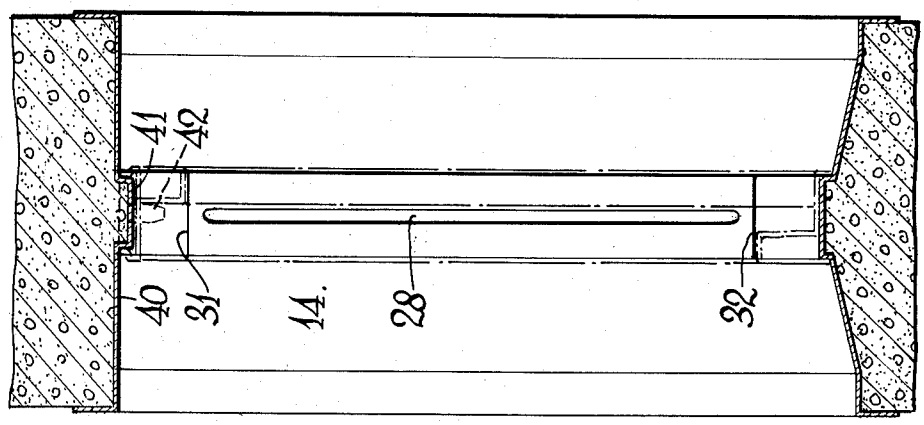


FIG. 5.

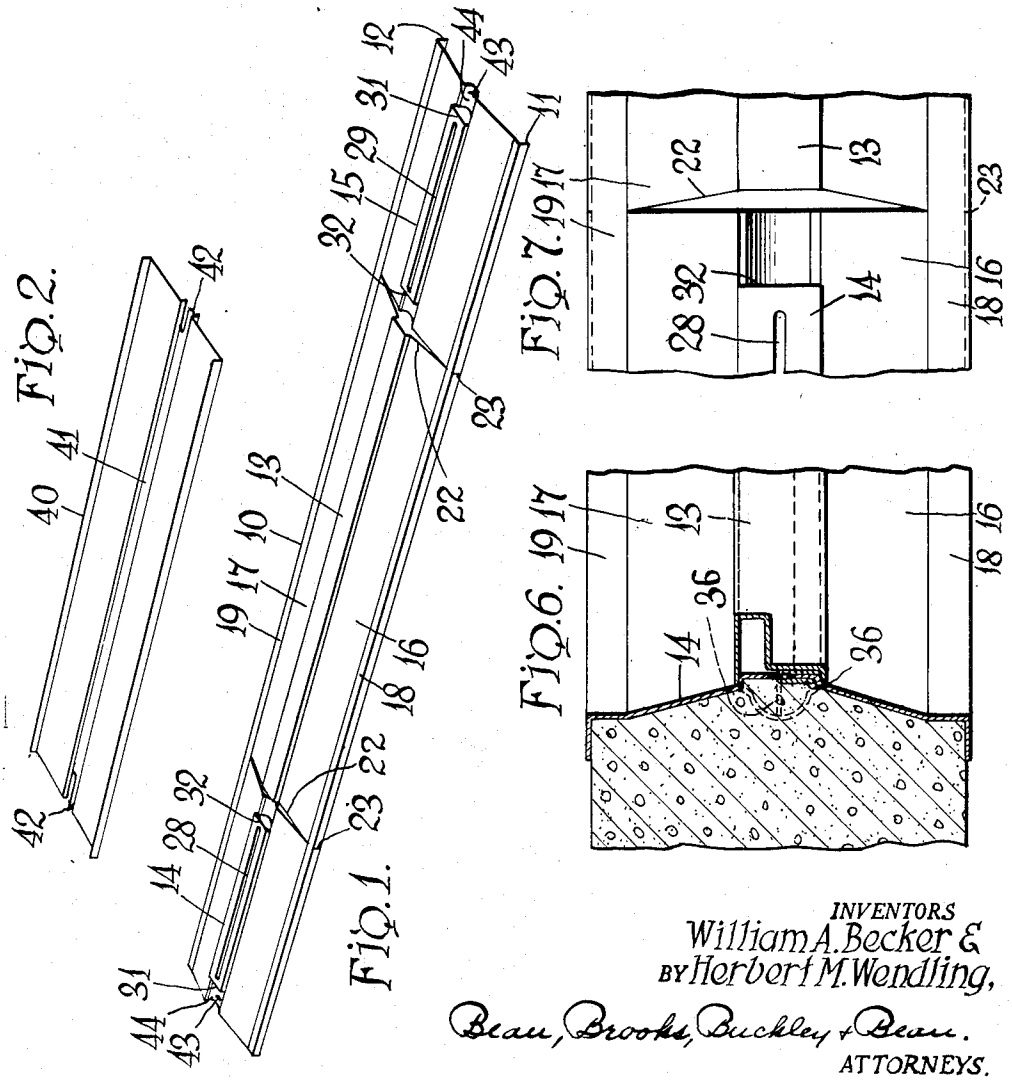


FIG. 1.

FIG. 2.

FIG. 7.

FIG. 6.

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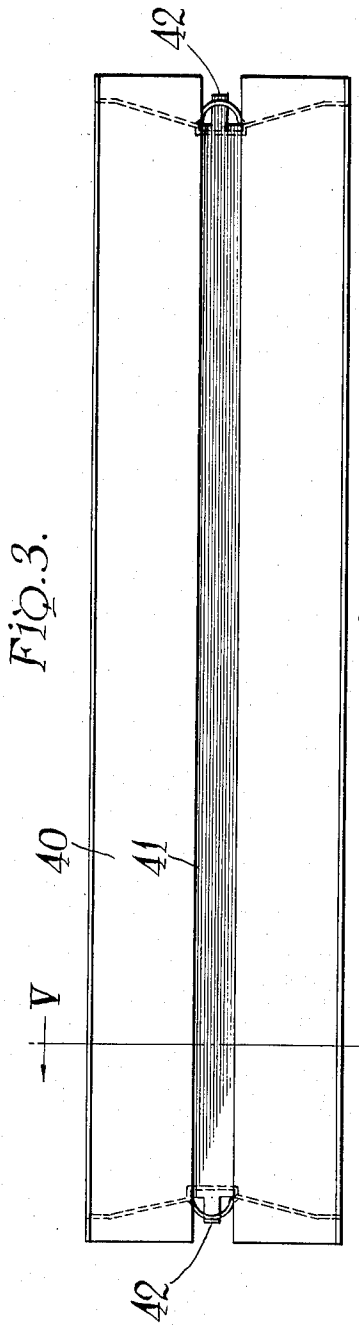


FIG. 3.

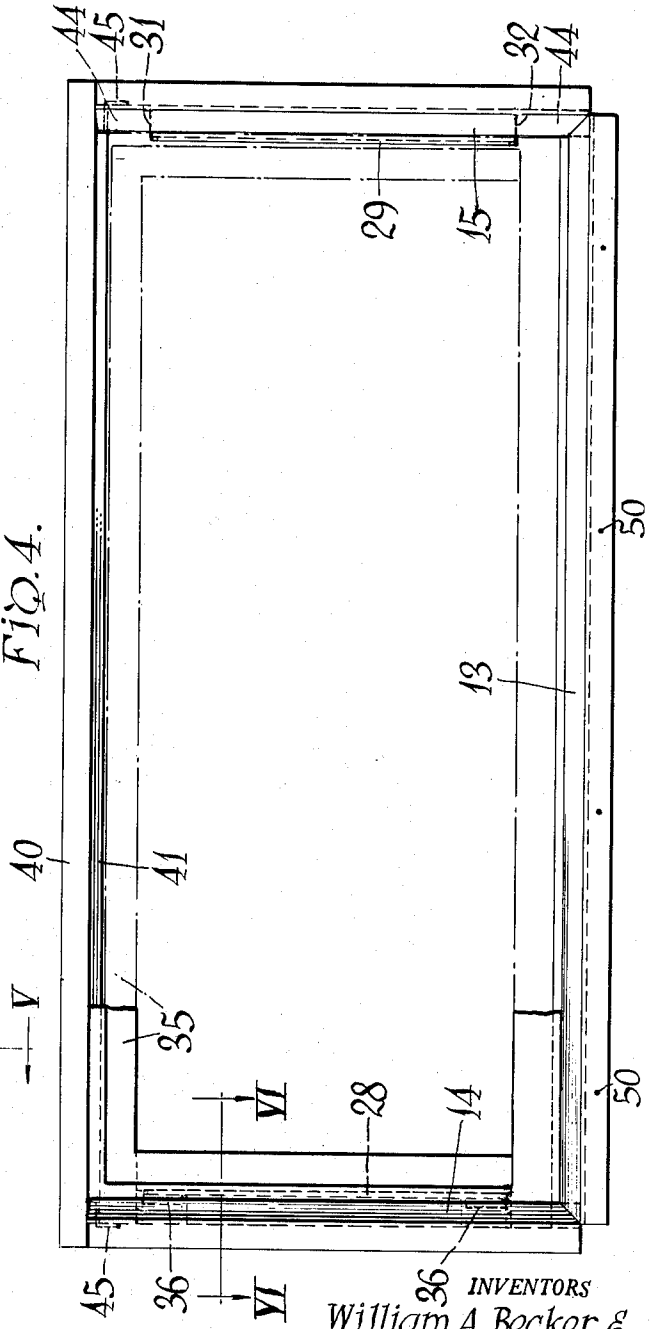


FIG. 4.

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WINDOW FRAME MOUNTING CONSTRUCTION

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This invention relates to means for mounting metal window frames in masonry wall structures and for molding window openings in poured masonry walls.

Windows in masonry walls most commonly comprise prefabricated continuous sheet metal frames which have associated therewith window sash units of one kind or another. In basement windows of dwelling houses, merely as a typical instance, a masonry wall may be of the order of eight or ten inches thick and the metal window frame to be associated therewith or incorporated therein may be approximately two inches in thickness or even less. Accordingly, whatever method is employed in mounting the window frame, there is a substantial ledge about the window frame at one side or the other or at both sides.

In some instances these ledges comprise the masonry wall surface itself or a continuation thereof. In such cases special bucks or mold members must be incorporated with the forms, in the case of a poured masonry wall, to form the aforesaid ledges and also to support the window frame during pouring. In other instances sheet metal bucks or forms are incorporated in the construction of the window frames and serve as molds for the window openings in the masonry wall, to form the aforesaid ledges, the sheet metal bucks or forms thus comprising a part of the window frame structure and remaining in position permanently to form integral portions of the window structure in the finished wall. In such cases the window ledges have a permanent metal faced surface.

This latter method of forming a window opening and mounting a window frame therein presents substantial advantages and provides a highly desirable window mounting structure but is subject to certain economic and practical disadvantages. In the first place, prefabricated frames which include window bucks or mounting units of this kind are extremely bulky, being larger in lateral and vertical expanse than the usual window frame and as thick as the masonry wall itself. Shipment, storage and handling of such units is accordingly unduly costly.

Furthermore, assembling a window frame in a buck or mold of this permanent or integral type or constructing a combined frame and buck is difficult, whether the frame be made unitary with the buck or assembled therewith before or after mounting the buck in the form used in pouring the masonry wall. In the latter case difficulty of assembly is usually aggravated by variations due to normal and necessary manufacturing tolerances in both the buck or form and the window frame and also due to unavoidable twisting, bending and general distortion of the sheet metal buck or form between the time of its manufacture and the time when the frame unit is assembled therewith.

While usable in walls of precast concrete blocks and walls of other types, the integral bucks or window form units of the present invention are of the greatest advantage in the case of masonry walls which are poured in situ and the construction and use thereof will therefore be discussed primarily in connection with walls of this type.

Window constructions of the type contemplated herein are most commonly employed in providing windows in

poured basement wall structures and in such instances the tops of the window frames are usually substantially level with the top surfaces of the poured basement wall. Accordingly, in such instances the window buck or window opening mold member of the present invention, in the form in which it is ultimately used, comprises a U-shaped member engaged with the side and bottom edges of the window frame.

The structure which surrounds the window frame is completed along the top edge by the usual sill plate which rests upon the top surface of the poured basement wall. In some instances the masonry wall extends upwardly beyond the top level of the window frame and to provide for such cases a further member may be incorporated with the aforesaid U-shaped member in assembling the same with a window frame, as will presently appear.

Referring particularly to the aforesaid U-shaped member which forms the sides and bottom of the window frame support and the window opening molding means of the present invention, the design and construction is such that the same is prefabricated in the form of a continuous linear structural member so made that the side portions may be readily bent up to form the desired U-shaped structure at the time that the buck member is being assembled about a window frame at the job site. Thus the continuous linear structural members can be shipped in stacked and nested form in such a way that a great many of them occupy approximately the space of a single completely formed window buck and frame unit of the prior art. The additional top members, when required, may be similarly stacked and nested and occupy similarly small space.

A further significant advantage of the linear structural members of the present invention which are bent about the window frame at the time of assembly therewith, resides in the ease and facility with which the buck members are assembled with the frames. There is no necessity for sliding the frame into a buck structure or for otherwise fitting the same. The frame is merely assembled over interfitting formations of the central portion of the linear member and the ends of the latter are bent upwardly about the frame member to fit against the sides of the latter.

A single specific embodiment of the window buck and frame supporting structure of the present invention is illustrated in the accompanying drawings and described in detail in the following specification. However, it is to be understood that various mechanical modifications may be made therein without departing from the principles of the invention and the scope thereof is not limited to the embodiment thus set forth by way of example nor otherwise than as defined in the appended claims.

In the drawings:

FIG. 1 is a perspective view of one form of the linear structural member employed in providing a window frame support or buck for masonry walls;

FIG. 2 is a similar perspective view of an auxiliary top member therefor which is employed in some instances;

FIG. 3 is a top plan view of an assembled buck structure employing the components of FIGS. 1 and 2;

FIG. 4 is an elevational view of the assembled buck structure of FIG. 3;

FIG. 5 is a vertical cross-sectional view through a poured masonry wall provided with the form of the window opening mold and frame supporting structure of FIGS. 1 through 4 taken on the line V—V of FIG. 3;

FIG. 6 is a similar fragmentary cross-sectional view on the line VI—VI of FIG. 4; and

FIG. 7 is a fragmentary top plan view of a portion of the linear buck member of FIG. 1 showing the portion

thereof which is ultimately bent at right angles to form the structure illustrated in top plan cross-section in FIG. 6.

Like characters of reference denote like parts throughout the several figures of the drawings and, referring particularly to FIG. 1, the linear structural member which forms the major component of the structure of the present invention comprises a generally channel-shaped member **10** having terminal flanges **11** and **12** at right angles to the main body or web portion and an upwardly formed central channel formation **13**. This superposed central channel formation extends substantially throughout the length of the linear member to form similar channel formations **14** and **15** in line with the main channel formation **13**. The channel formations **13**, **14** and **15** provide rail formations along the member **10**.

The portions of the web of linear member **10** adjacent to the central channel formation **13** flare downwardly and outwardly as at **16** and **17** in FIG. 1 and terminate in flat marginal ledges **18** and **19** which merge with the terminal flanges **11** and **12**, respectively. This cross-sectional structure of the member **10** appears best at the bottom of FIG. 5 and in FIG. 6.

Sheet metal window frames of the type with which the present mold and support means cooperate generally have outstanding marginal flanges at their inner and outer faces which form outwardly opening channels along the top, bottom and sides of the window frame. The central superposed channel formations **13**, **14** and **15** of the linear structural member **10** are of a width to fit snugly within the flanges of such conventional channel formations of the window frame. A representative sheet metal window frame of this general type is shown in our prior copending patent application, Serial No. 653,696, filed April 15, 1957 now Patent No. 2,949,985, dated August 23, 1960.

As shown in detail in FIG. 7, linear member **10** is provided with a pair of slit formations **22** which extend transversely across the flared portions **16** and **17** and the superposed channel formation **13** and terminate at the inner edges of the flat marginal ledges **18** and **19**. The outer edges of the slits **22**, that is the edges toward the channel formations **14** and **15**, extend at right angles to the side edges of the linear member **10** in a straight line. The inner edges of the slits **22** extend at angles corresponding to the angles of the flared portions **16** and **17** as clearly shown in FIG. 7.

The marginal flanges **11** and **12** are slit as at **23** in line with the straight line edge portions of the slits **22**, leaving the flat marginal ledges **18** and **19** as the sole connecting strip portions between the center section of the linear member **10** which forms the bottom of the buck and the two outer sections which form the side walls of the buck or mounting member.

The portions **14** and **15** of the superposed central channel formation are slotted as at **28** and **29**, respectively, and these channel formations stop short of the outer ends of the linear member **10** and also stop short of the slit formations **22**. The terminal portions of the channel formations **14** and **15** which are thus formed provide upper and lower ledges **31** and **32** in the buck or mounting member when the same is in its ultimate condition of assembly with a window frame.

A window frame of the type herein contemplated is shown fragmentarily at the left-hand end of FIG. 4 at **35**, and it may be noted that the top and bottom members thereof extend generally the full width of the frame so that these top and bottom members extend into the aforesaid outwardly opening channels at the side of the frame. Thus the upper ledges **31** of the channel formations **13** and **14** of the linear member **10** abut the bottom of the top member of the window frame **35** and the lower ledges **32** abut the top of the bottom member of the frame **35**.

After the linear members **10** are delivered at the job site and the forms for producing a poured masonry wall are being prepared, a window frame **35** is placed upon a

linear member **10** with the bottom channel formation of the window frame straddling or fitting over the central channel or rail formation **13** of the linear member. The workman then merely bends up the two end portions of linear member **10** which only requires bending of the connecting strip portions of the ledges **18** and **19** and the channel portions **14** and **15** of such end portions automatically seat within the outstanding channel formations of the side edges of the window frame, the channel portions or rail formations **14** and **15** of member **10** being contained snugly within the channel formations of the window frame both sideways and vertically, as indicated in the preceding paragraph.

The window frame members **35** are provided with flanges which project laterally outwardly therefrom in a medial plane as shown in dash lines at **36** in FIG. 6 and these flanges, upon bending up the end portions of the linear member **10**, project through the slots **28** and **29** of the channel formations **14** and **15** of the end portions of linear member **10**. These flanges of the frame member are then bent over by hammering or otherwise, as indicated in full lines at **36** in FIG. 6.

If the window is being installed so that its upper edges are substantially at the same level as the top of the poured wall, the assembly thus formed is complete and ready for mounting in or in conjunction with the form for pouring the wall. If the masonry wall continues over the top level of the window frame then the further component illustrated in perspective in FIG. 2 is applied to complete the buck or permanent mold assembly.

The member shown in FIG. 2 comprises a shallow channel member **40** having a relatively narrow longitudinal channel formation **41** extending lengthwise thereof. The ends of the central channel formation **41** of channel member **40** are notched inwardly, as shown in FIG. 2 to form a pair of outwardly projecting tongues **42**.

In applying the channel member **40** to the top of the buck assembly previously described the longitudinal channel formation **41** thereof is disposed within the upwardly facing channel of the frame member **35** and the tongues **42** project through slots **43** formed in half-round depressions **44** which lie outwardly of the ledges **27** of channel portions **14** and **15**. The tongues **42** are then bent downwardly as indicated at **45** in FIG. 4 to secure the entire buck or mold structure about the window frame **35**. The depressed formations **44** serve to hold back concrete during pouring of a wall to prevent the concrete from flowing into the top channel member of window frame **35**.

When the end sections of the linear member **10** are bent upwardly at right angles as aforesaid, the flaring portions **16** and **17** of the end sections of linear member **10** are disposed in a vertical direction and extend downwardly below the flaring portions **16** and **17** of the central portion of linear member **10**. Due to the matching angularity of the inner edges of the slits **22**, the vertical flaring portions **16** and **17** lie directly against the tapered edges of the slits **22**. This provides a rigid and securely closed corner joint for molding a window opening in a poured masonry wall and also for providing a rigid and secure support for the window frame in the ultimate structure.

When the assembled buck and frame structure is to be mounted in wooden forms the flanges **11** and **12** of the buck member are merely nailed to interior surfaces of the forms. When the forms are subsequently removed the nails are merely nipped off. Flanges **11** and **12** may be perforated to facilitate nailing as indicated at **50** in FIG. 4.

When the buck and frame structure is to be mounted in metal forms the top framing structure may merely be wired to cross ties extending across the top of the form, the wires being removed after the wall has been poured about the buck or mold structure.

We claim:

1. In a wall having a window opening and window frame structure, a buck member open at the top and having a bottom portion spanning the width of the opening and terminating in side portions extending upwardly along the spaced sides of the opening to substantially the top thereof, each portion comprising a web side portions of substantially the width of the wall and marginal flanges at the inner and outer edges of said web lying substantially in the planes of the interior and exterior surfaces of the wall with said wall extending between said flanges, each of said webs having medial longitudinal rail formations projecting inwardly of the opening in a direction oppositely to said flanges, and a window frame having outwardly opening channel formations along its bottom and side edges receiving the rail formations of said buck member therein for retaining said frame within said buck member, whereby said frame and buck members cannot be disassembled excepting by relative upward movement of the frame, and locking means between the frame and buck member preventing relative upward movement of said frame relative to said buck member.

2. In a wall having a window opening and window frame structure, a buck member open at the top and having a bottom portion spanning the width of the opening and terminating in side portions extending upwardly along the spaced sides of the opening to substantially the top thereof, each portion comprising a web side portions of substantially the width of the wall and marginal flanges at the inner and outer edges of said web lying substantially in the planes of the interior and exterior surfaces of the wall with said wall extending between said flanges, each of said webs having medial longitudinal rail formations projecting inwardly of the opening in a direction oppositely to said flanges, and a window frame having outwardly opening channel formations along its bottom and side edges receiving the rail formations of said buck member therein for retaining said frame within said buck member, whereby said frame and buck members cannot be disassembled excepting by relative upward movement of the frame, means preventing relative upward movement of said frame relative to said buck member, a top member likewise comprising a web portion of substantially the width of the wall and marginal flanges and a medial rail formation similar to the marginal flanges and rail formations of said buck member, the top channel of said frame fitting upwardly over the rail formation of said top member, and interlocking means on said top member and said buck member retaining the same in assembled relation about said window frame.

3. In a poured masonry wall having a window opening and window structure, a buck member open at the top and having a bottom portion spanning the width of the opening and terminating in side portions extending upwardly along the spaced sides of the opening to substantially the top thereof, each portion comprising a web of substantially the width of the wall and marginal flanges at the inner and outer edges of said web lying substantially in the planes of the interior and exterior surfaces of the wall with said wall extending between said flanges, each of said webs having medial longitudinal rail formations projecting inwardly of the opening in a direction oppositely to said flanges, and a window frame having outwardly opening channel formations along its bottom and side edges receiving the rail formations of said buck member therein for retaining said frame within said buck member, said buck member bottom and side portions before assembly comprising a continuous longitudinal member whereby assembly is effected by disposing the bottom flanges over the rail formations medially of said members and bending the ends of said members upwardly against the sides of the window frame whereby the rail formations adjacent to said sides enter the channels at said sides, whereby said frame and buck members cannot be disassembled excepting by relative upward movement of the frame, and locking means between the frame and buck member preventing relative upward movement of said frame relative to said buck member.

4. In a poured masonry wall having a window opening and window structure, a buck member open at the top and having a bottom portion spanning the width of the opening and terminating in side portions extending upwardly along the spaced sides of the opening to substantially the top thereof, each portion comprising a web of substantially the width of the wall and marginal flanges at the inner and outer edges of said web lying substantially in the planes of the interior and exterior surfaces of the wall with said wall extending between said flanges, each of said webs having medial longitudinal rail formations projecting inwardly of the opening in a direction oppositely to said flanges, and a window frame having outwardly opening channel formations along its bottom and side edges receiving the rail formations of said buck member therein for retaining said frame within said buck member, said buck member bottom and side portions before assembly comprising a continuous longitudinal member whereby assembly is effected by disposing the bottom flanges over the rail formations medially of said members and bending the ends of said members upwardly against the sides of the window frame whereby the rail formations adjacent to said sides enter the channels at said sides, whereby said frame and buck members cannot be disassembled excepting by relative upward movement of the frame, means preventing relative upward movement of said frame relative to said buck member, a top member likewise comprising a web portion of substantially the width of the wall and marginal flanges and a medial rail formation similar to the marginal flanges and rail formations of said buck member, the top channel of said frame fitting upwardly over the rail formation of said top member, and interlocking means on said top member and said buck member retaining the same in assembled relation about said window frame.

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