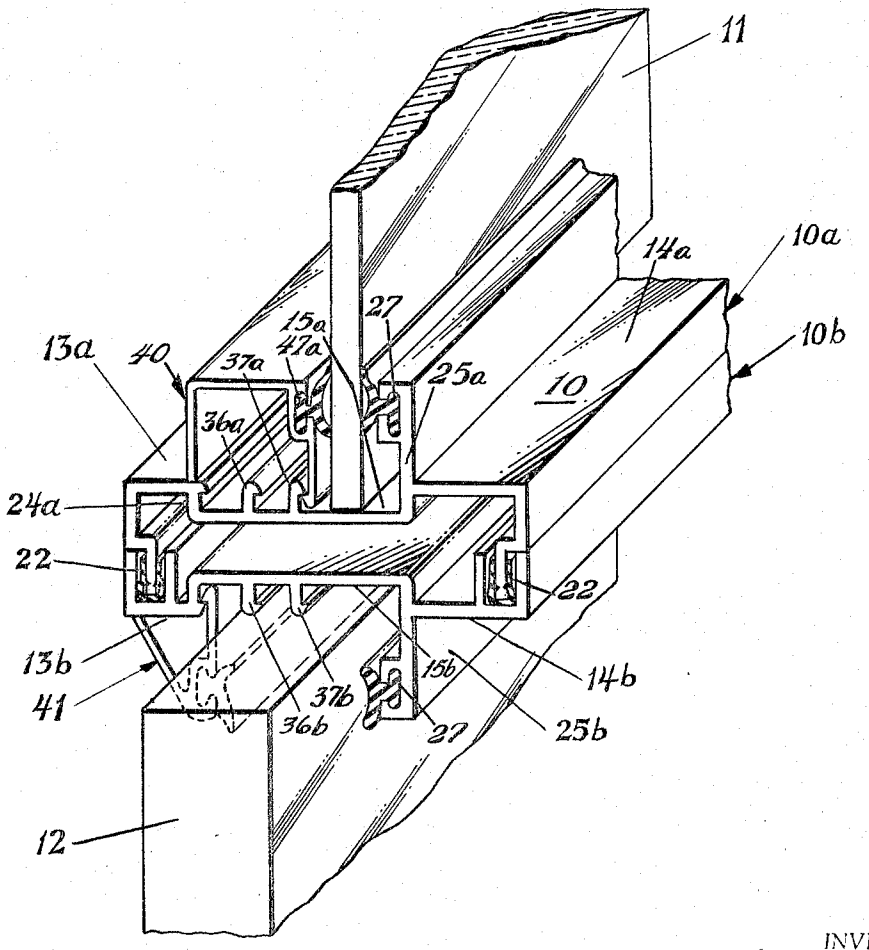
Aug. 8, 1967 D. C. MUESSEL 3,334,463

FRAMING MEMBER AND PANEL STOP FOR ACCOMMODATING PANELS OF VARIOUS THICKNESSES

Filed Jan. 6, 1964 2 Sheets-Sheet 1

Fig. 1



INVENTOR.
Dan C. Muessel

BY
Mason, Kolehmainen
Rathburn & Wyss

Aug. 8, 1967 D. C. MUESSEL 3,334,463

FRAMING MEMBER AND PANEL STOP FOR ACCOMMODATING PANELS OF VARIOUS THICKNESSES

Filed Jan. 6, 1964 2 Sheets-Sheet 2

Fig. 2

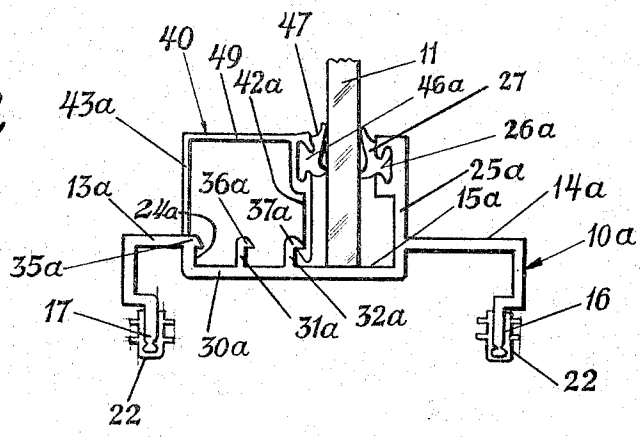


Fig. 3

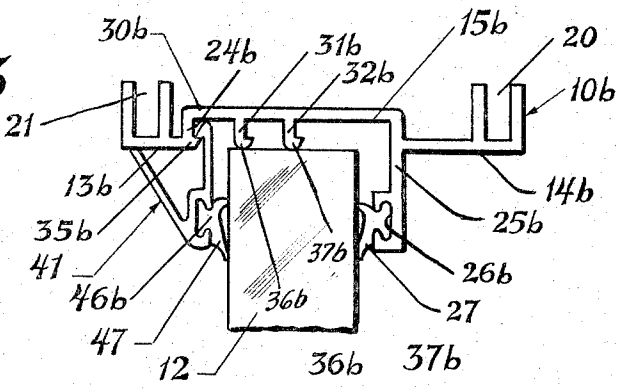
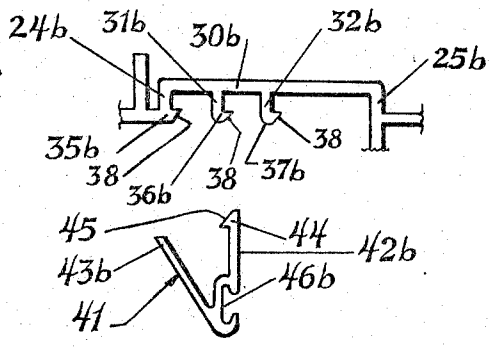


Fig. 4



INVENTOR.
Dan C. Muessel

BY
Mason, Kolehmainen, Rathburn & Wyss

United States Patent Office 3,334,463 Patented Aug. 8, 1967

3,334,463

FRAMING MEMBER AND PANEL STOP FOR ACCOMMODATING PANELS OF VARIOUS THICKNESSES

Dan C. Muessel, Niles, Mich., assignor to American Metal Climax, Inc., New York, N.Y., a corporation of New York

Filed Jan. 6, 1964, Ser. No. 335,936
3 Claims. (Cl. 52—501)

The present invention relates to a building wall construction, and, more particularly, to a novel frame and panel construction and to a new and improved framing member provided with improved panel stop means The framing member according to the present invention is particularly useful in fabricating building walls and wall frames, and in securing panel members in the frames.

Because of its many advantages over other types of building construction, the curtain wall type of building construction has been widely used in recent years. Metallic members of the curtain wall form frames which retain panels such as glass glazing and the like. For various reasons it is frequently necessary to use panels of different thicknesses. Frequently, it has been necessary to provide a large number of differently shaped and dimensioned members which are ordinarily used in the fabrication of one building in order to provide for the accommodation of panels of various thicknesses. In order to reduce the number of different types of parts which must be provided, it would be desirable to minimize the number of differently shaped structural members which are needed, while at the same time providing for the accommodation of various size panel thicknesses.

Additionally, in many of the prior known panel glazing systems, difficulty has been experienced in the use of panel or glass stops in securing or interlocking the stop with the frame member. Consequently, it would be desirable to provide a panel or glass stop which can readily be interfitted with a framing member without the exposure of screws or other fastening devices.

An object of the present invention is to provide a new and improved building wall construction having the above-mentioned advantages.

A further object of the present invention is to provide a new and improved metal frame structure.

Yet a further object of the present invention is to provide a new and improved metal frame structure which is readily adaptable to receive a plurality of various size panel thicknesses.

Yet a further object of the present invention is the provision of a metal frame structure of the type employing a frame member and a panel stop and which provides more readily for the interlocking of the panel stop with the frame member.

Further objects and advantages of the present invention will become apparent as the following description proceeds and the features of novelty which characterize the invention will be pointed out with particularity in the claims annexed to and forming a part of this specification.

In accordance with these and many other objects of the present invention, there is provided a new and improved building wall construction utilizing a novel framing member and a novel panel stop. More specifically, the framing member, according to the present invention, is a unitary element comprising in cross section a jamb surface with a depression defined therein. The depression in the jamb surface includes a pair of end leg portions and a bottom portion. Moreover, a plurality of intermediate leg portions are provided in the depression. One of the end leg portions and the intermediate leg portions are provided with toe portions coplanar with the jamb surface which form lips extending toward the other end leg portion and the toe portions define a camming surface on their inner surface which faces the second end leg portion and which is inclined downwardly toward the second end leg portion.

Additionally, in accordance with the present invention, a novel panel or glass stop member is provided for interlocking engagement with the framing member. More specifically, the panel stop member is of open inverted cross section having first and second legs. In one embodiment, the panel stop member is of generally inverted U-shape. In another embodiment, the panel stop member is illustrated as being of somewhat V-shaped inverted cross section. One of the legs is provided with a toe portion forming a lip extending toward the other leg, and the surface of the toe portion which faces the other leg defines a camming surface inclined upwardly toward the second leg and adapted to cam over the camming surface of the leg portions of the framing member and to snap over the toe portions of the framing member. The toe portion of the glass stop in this manner will extend into the depression of the framing member and interlockingly engage with a selected one of the leg portions of the framing member. The second leg of the glass stop has an end, spaced apart from the first end of the first leg, and seated on the jamb surface of the framing member.

It will be appreciated that by proper dimensioning of the width of the jamb surface, and the spacing of the first and intermediate leg portions, and by dimensioning of the spacing of the ends of the legs on the glass stop, that the glass stop may selectively be used with a number of different ones of the leg portions on the framing member to provide for various thicknesses of panel elements. Additionally, various glass stops may be provided wherein the leg ends have various spacings to adapt the glass stops for use with various ones of the leg portions of the framing member.

It will further be appreciated that advantageously the above-described structure provides for the easy and ready snapping of the glass stop by first placing one leg of the glass stop on the jamb surface, and then forcing the other leg of the glass stop, which is the leg provided with the toe portion, over the camming surfaces of the respective toe portions to interlock the glass stop with a selected one of the leg portions of the framing member. By the pivotal rotation of the glass stop about its line of engagement with the jamb surface, over-center travel of the glass stop toward the panel element is minimized providing for quick and easy assembly and retention of a panel in the frame structure.

According to yet another feature of the present invention, the framing member is provided with means along its longitudinal edges for interfitting with a complementary framing member of similar configuration. In this manner there is provided a split frame structure, or mullion, so that if desired panels of the building wall construction may be prefabricated prior to their erection into place, and additionally to make some provision for the expansion of the metallic elements.

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

FIG. 1 is a fragmentary isometric view of a building wall construction according to the present invention;

FIG. 2 is an end view of one of the frame structures illustrated in FIG. 1;

FIG. 3 is an end view of another of the frame structures illustrated in FIG. 1; and

FIG. 4 is an exploded, fragmentary view of the frame structure of FIG. 3, illustrating the depression in the frame member and the glass stop.

In accordance with the present invention, there is provided a building wall structure, as illustrated in FIG. 1, and including a split mullion or frame member **10** supporting on one side a thin panel **11**, here shown of glass, and supporting a thicker panel **12** on the other side.

The split mullion **10**, according to the present invention, is formed of a pair of interfitted extruded unitary metal framing members **10***a* and **10***b*, which contain complementary means along their longitudinal edges for interfitting the framing members together to provide the split mullion **10**. More specifically, the framing members **10***a* and **10***b* are provided with respective jamb surfaces **13***a*, **13***b* and **14***a*, **14***b*. The jamb surfaces **13***a*, **13***b* and **14***a*, **14***b* are separated by respective shallow channel-shaped depressions **15***a*, **15***b* intermediate the transverse ends of the framing members **10***a* and **10***b*. Additionally, the framing member **10***a* is provided adjacent its longitudinal edges with a pair of offset tongues **16** and **17** and the framing member **10***b* is provided with parts along its longitudinal edges forming complementary grooves **20** and **21** to receive the tongues **16** and **17**. Sealing gaskets **22** are provided on the tongues **16** and **17** to provide for weatherproofing the tongue-and-groove connection between the framing members **10***a* and **10***b*, and to allow for limited transverse movement of the framing members toward and away from each other to accommodate expansion and contraction of the wall structure. The gaskets **22** may be of the type described and claimed in the copending application Ser. No. 142,242, filed Oct. 2, 1961, now abandoned, a division of U.S. Patent No. 3,037,591, granted June 5, 1962.

To provide a first stop for the panels **11** or **12**, the depressions **15***a* and **15***b* of the respective framing members **10***a* and **10***b* are defined by a first end leg **24***a*, **24***b* and a second end leg **25***a*, **25***b*, respectively. The second end leg extends upwardly from the depression above the jamb surfaces **14***a*, **14***b* and is provided with a suitable sealing groove **26***a*, **26***b* adjacent its outer end which retains a respective sealing gasket **27**. The depressions **15***a*, **15***b* are additionally defined by a bottom wall or bight portion **30***a*, **30***b*.

In order to provide for means selectively to accommodate various thicknesses of panel members, a plurality of intermediate legs **31***a*, **31***b* and **32***a*, **32***b* are provided in the depression **15***a*, **15***b*, extending upwardly from the bight portion **30***a*, **30***b*. The first end legs **24***a*, **24***b* and the intermediate legs **31***a*, **31***b* and **32***a*, **32***b* are provided with toe portions **35***a*, **35***b*; **36***a*, **36***b*; and **37***a*, **37***b*, which, as best illustrated in FIG. 4, define camming surfaces **38** on the inner faces confronting the second end legs **25***a*, **25***b*, and which camming surfaces are inclined inwardly and downwardly toward the second end leg.

To retain the panels **11**, **12** within their respective depression **15***a*, **15***b*, there are provided suitable panel or glass stops **40**, **41**. The glass stops **40**, **41** are formed of extruded somewhat resilient metal of open inverted cross section and, as illustrated, the glass stop **40** is of somewhat inverted U-shape while the glass stop **41** is of generally V-shape in cross section. Each of the glass stops **40** and **41**, as best illustrated in FIGS. 2 and 4, are provided with a pair of legs **42***a*, **42***b* and **43***a*, **43***b*. The first leg is provided at its free end with a toe portion **44**, FIG. 4, defining a lip extending toward the other leg **43***a*, **43***b*. The face of the toe portion **44** confronting the other leg defines a camming surface **45** inclined upwardly in the open section toward the other leg and adapted to snap over one of the camming surfaces **38** in one of the framing members **10***a*, **10***b*. The first leg **42***a*, **42***b* is further provided at its other end with a sealing channel **46***a*, **46***b* adapted to retain a sealing gasket **47**. The other leg **43***a*, **43***b* is provided with a first end adapted to seat on the respective jamb surface **13***a* and **13***b* and is operatively connected at its other end to the first leg **42***a*, **42***b*. In the embodiment of the glass stop, illustrated in FIG. 2, the legs **43***a* and **42***a* are interconnected by a transverse leg or bight portion **49**, while in the embodiment of glass stop, illustrated in FIGS. 3 and 4, the ends of the legs **43***b* and **42***a* are directly connected together.

It will be appreciated that each of the glass stops **40** and **41** are dimensioned so that the spacing between the ends of the open legs is such that the glass stop may be used in a plurality of selective positions to engage one of the intermediatee legs **31***a*, **31***b*; **32***a*, **32***b* or the first end leg **24***a*, **24***b*. More specifically, the glass stop **40**, illustrated in FIG. 2, can be used with either of the intermediate legs **31***a*, **32***a*; while the glass stop **41**, illustrated in FIGS. 3 and 4, is dimensioned for use with either the first end leg **24***b* or the intermediate leg **31***b*. It will be understood, of course, by enlarging the jamb surface **13***a*, that a single glass stop could be utilized with any or all of the intermediate legs and the first end legs. Additionally, it will be seen that the vertical or projected length of the first legs **42***a*, **42***b* of the glass stops **40** and **41** are slightly longer than the vertical length or vertical projection of the second legs **43***a*, **43***b* of the glass stops **40** and **41** so that with the free end of the second legs **43***a*, **43***b* resting on the jamb surfaces **13***a*, **13***b*, the toe portions **44** of the respective glass stops extend within the associated depressions **15***a*, **15***b* of the framing members **10***a* and **10***b*; and the toe portions **44** of the glass stops will interlock with the selected toe portions **35***a*, **35***b*; **36***a*, **36***b*; or **37***a*, **37***b*.

Advantageously, the present framing member structure according to the present invention permits a single framing member **10***a*, **10***b* to accommodate various thicknesses of panel elements **11**, **12**. This may be accomplished either by the use of a single glass stop or by the provision of various size glass stops. In other words, the glass stop **40** is selectively positionable with either of the intermediate legs, and the glass stop **41** is positionable with the intermediate leg **31***a*, **31***b* or the first end leg **24***a*, **24***b*. Additionally, various thicknesses of sealing gaskets **27** and **47** may be associated with the framing members **10***a*, **10***b* and with the glass stops **40** and **41** to provide for small variations in the thicknesses of the panel members.

Advantageously, the glass stops **40** and **41** may be readily assembled with a framing member **10***a*, **10***b* without the use of exposed screws or fastening devices. Specifically, the selected glass stop **40** or **41** is placed with the end of the second leg **43***a*, **43***b* on the respective jamb surface **13***a* or **13***b*, and the camming surface **45** of the glass stop is snapped over the selected camming surface **38** of a framing member to interlock the toe portion **44** of the glass stop **40** or **41** with a respective toe portion **35***a*, **35***b*; **36***a*, **36***b*; **37***a*, **37***b* of a frame member. It will be observed that the over-center travel of the gasket **47** toward a respective panel **11**, **12** during assembly of the glass stop **40** or **41** with a respective framing member is minimized so that the glass stop is readily assembled with a minimum of effort.

Although the present invention has been described by reference to various embodiments thereof, it will be apparent that numerous other modifications and embodiments will be devised by those skilled in the art which will fall within the true spirit and scope of the present invention.

What is claimed as new and desired to be secured by Letters Patent of the United States is:

1. A frame structure comprising, in combination, a framing member comprising in cross section a shallow channel shaped depression intermediate its ends defined by first and second end leg portions and a bottom portion, a jamb surface extending from the top of said first leg portion outwardly away from said depression, said second leg portion extending upwardly from said depression above said jamb surface, and at least one intermediate leg portion extending upwardly from said bottom portion intermediate said end leg portions, said first end leg portion and said intermediate leg portion having toe portions coplanar with the jamb surface forming lips extending

toward said second leg portion, said toe portions defining a camming surface on their inner surfaces which face said second end leg portion inclined downwardly toward said second end leg portion and inwardly toward said bottom portion and sealing portions adjacent the end of said second leg portion for retaining sealing gasket means; and additionally including a panel stop member formed of extruded, somewhat resilient, metal of open inverted cross section having a first end leg and a second leg, said first leg being provided with a toe portion at a first end forming a lip extending toward said second leg, the surface of the last-mentioned toe portion which faces said second leg defining a camming surface inclined upwardly toward said second leg and adapted to snap over the camming surface of said leg portions, said first leg being provided adjacent its other end with sealing portions adapted to retain sealing gasket means, said last-mentioned toe portion extending into said depression and interlockingly engaging the toe portion of a selective one of said leg portions; said second leg having a first end spaced apart from said first end of said first leg and seated on said jamb surface, and having its second end operatively connected to the second end of said first leg.

2. A frame structure comprising, in combination, a framing member comprising in cross section a jamb surface, a depression defined in said jamb surface by first and second end leg portions and a bottom portion, said second leg portion extending upwardly from said jamb surface, and at least one intermediate leg portion extending upwardly from said bottom portion intermediate said end leg portions, said first end leg portion and said intermediate leg portion having toe portions coplanar with the jamb surface forming lips extending toward said second end leg portion, said toe portions defining a camming surface on their inner surfaces which face said second end leg portion inclined downwardly toward said second leg portion; and additionally including a metal panel stop member of open inverted cross section having a first end leg and a second leg, said first leg being provided at a first end with a toe portion forming a lip extending toward said second leg, the surface of the last-mentioned toe portion which faces said second leg defining a camming surface inclined upwardly toward said second leg and adapted to cammingly snap over the camming surface of said leg portions, said last-mentioned toe portion extending into said depression and interlockingly engaging the toe portion of a selective one of said leg portions; said second leg having a first end spaced apart from said first end of said first leg and seated on said jamb surface, and having its second end operatively connected to the second end of said first leg.

3. A building construction comprising an extruded metal framing member defined in cross section by a shallow channel shaped depression intermediate its ends defined by first and second end leg portions and a bottom portion, a jamb surface extending from the top of said first leg portion outwardly away from said depression, said second

end leg portion extending upwardly from said depression above said jamb surface, and at least two intermediate leg portions extending upwardly from said bottom portion intermediate said end leg portions, said first end leg portion and said intermediate leg portions having toe portions coplanar with the jamb surface, forming lips extending toward said second end leg portion, said toe portions defining a camming surface on their inner surfaces which face said second end leg portion inclined downwardly toward said second end leg portion and inwardly toward said bottom portion, and sealing portions adjacent the ends of said second leg portion; a panel stop member formed of extruded, somewhat resilient, metal of open inverted cross section having a first end leg and a second end leg, said first end leg being provided with a toe portion at a first end forming a lip extending toward said second leg, the surface of the last-mentioned toe portion which faces said second leg defining a camming surface inclined upwardly toward said second leg portion, said first leg being provided adjacent its other end with sealing portions adapted to retain sealing gasket means, said last-mentioned toe portion extending into said depression and interlockingly engaging the toe portion of a selective one of said leg portions, said second leg having a first end spaced apart from said first end of said first leg and seated on said jamb surface, and having its second end operatively connected to the second end of said first leg; said second leg of said extruded metal framing member and said first leg of said panel stop member being spaced apart to define a panel receiving groove; a panel member having an edge received within said groove; and sealing gasket means carried in confronting relationship by said sealing portions resiliently engaging respective sides of said panel means.

References Cited

UNITED STATES PATENTS

1,873,350	8/1932	Smith	52—502
2,765,057	10/1956	Stiefvater	52—498
2,970,397	2/1961	Roseman	49—505 X
3,037,591	6/1962	Pulling et al.	52—498 X
3,038,568	6/1962	Morgan	52—495 X
3,081,849	3/1963	Hubbard	52—498 X
3,090,085	5/1963	Brown	52—397
3,093,217	6/1963	Doede	52—498 X
3,147,518	9/1964	Horgan	52—476
3,196,998	7/1965	Owen	52—293 X

FOREIGN PATENTS

564,762	2/1958	Belgium.
643,541	6/1962	Canada.
1,137,170	1/1957	France.

FRANK L. ABBOTT, *Primary Examiner.*

RICHARD W. COOKE, JR., *Examiner.*

M. O. WARNECKE, *Assistant Examiner.*