July 8, 1958 S. A. WATSON 2,841,836

WINDOW GLASS CONSTRUCTIONS AND FASTENERS FOR SAME

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Fig. 2

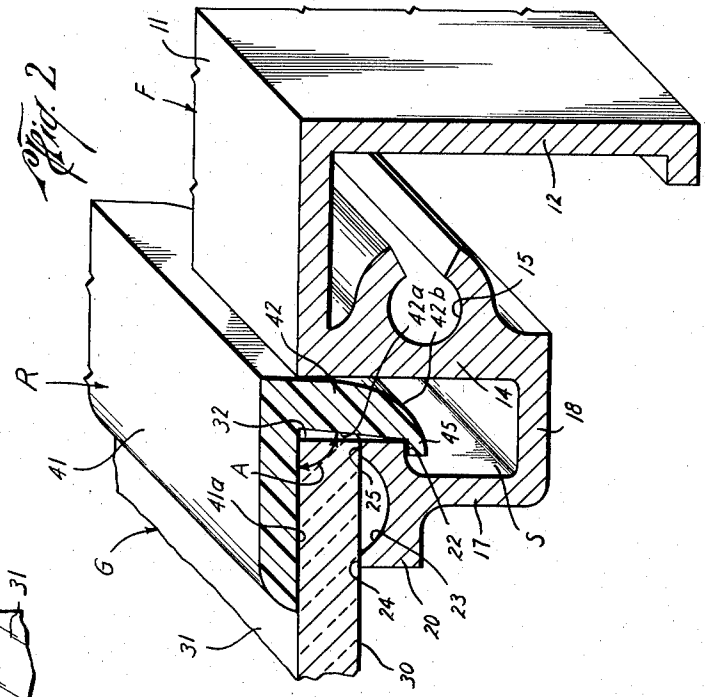


Fig. 1

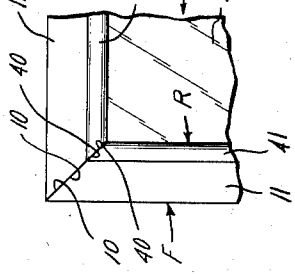


Fig. 3

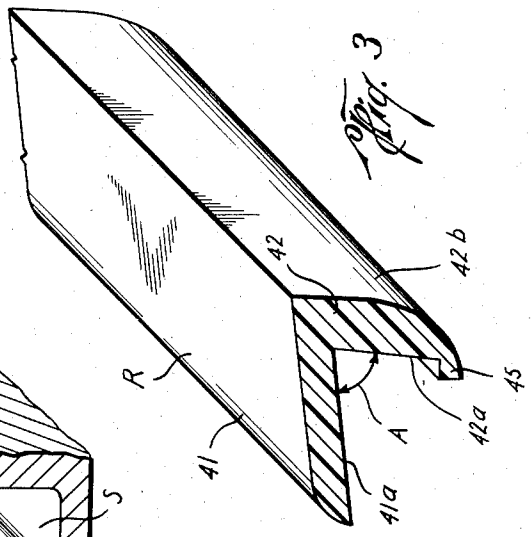
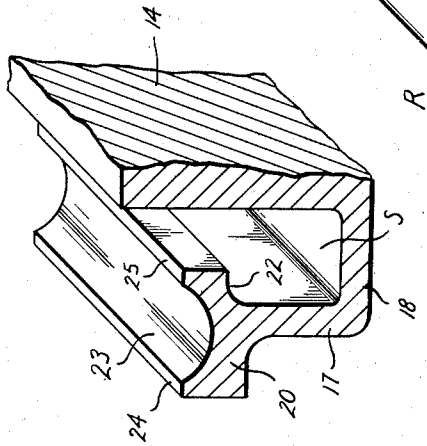


Fig. 4



Searcy A. Watson
INVENTOR.

BY J. Vincent Martin
Joe E. Edwards
B. R. Travel
ATTORNEYS

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WINDOW GLASS CONSTRUCTIONS AND FASTENERS FOR SAME

Searcy A. Watson, Houston, Tex.

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2 Claims. (Cl. 20—56.4)

This invention relates to new and useful improvements in window glass constructions and fasteners for same.

An object of this invention is to provide a new and improved construction for facilitating the mounting and removal of a pane of glass from a window frame or the like.

An important object of this invention is to provide a new and improved fastener for retaining a pane of glass in a window frame or the like, wherein the fastener is adapted to be pressed into position for holding the pane of glass in the frame and is also releasable from such holding position for permitting the removal of the glass from the frame.

Another object of this invention is to provide a new and improved fastener for releasably retaining a pane of glass in a window frame or the like, wherein the fastener is formed with two legs which normally extend so as to form an acute angle therebetween; the legs being made of a resilient material which permits the legs to be spread apart so that the inherent resiliency of the material constantly urges said legs toward each other for retaining the pane of glass in the frame.

A further object of this invention is to provide a new and improved window construction, wherein a fastener serves to releasably hold the glass in the window frame, and wherein means are provided for positioning sealing material such as putty between the glass and the frame, such sealing material being readily accessible for removal or replacement when the glass is removed from the frame.

The construction designed to carry out the invention will be hereinafter described, together with other features thereof.

The invention will be more readily understood from a reading of the following specification and by reference to the accompanying drawings forming a part thereof, wherein an example of the invention is shown, and wherein:

Figure 1 is an elevation illustrating a portion of the window glass construction of this invention.

Figure 2 is an isometric sectional view illustrating the improved window glass construction of this invention in the assembled position.

Figure 3 is an isometric sectional view illustrating the improved fastener of this invention.

Figure 4 is an isometric sectional view of a portion of the frame of the improved window construction of this invention.

In the drawings, the letter F designates a window frame or other frame which has a section or pane of glass G connected therewith by means of a fastener or retainer R (Figure 1). As will be explained in detail, the fastener or retainer R is so constructed and so positioned with respect to the frame F and the glass G that it is merely pressed into retaining position and can be readily released from such position when it is desired to remove the glass G for replacement or otherwise.

Considering the invention more in detail, the particular frame F illustrated for use in the improved window construction of this invention is composed of a plurality of frame sections, each of which has an inclined or mitered end **10** (Figure 1) for abutment with a corresponding inclined end **10** of an adjacent frame section. The face **11** of each frame section lies in substantially the same plane as the pane or section of window glass G and, ordinarily, the faces **11** of each frame section would be disposed on the inside of the house or building so as to be visible to a person on the inside. Side portions **12** and **14** are parallel to each other and perpendicular to the face portion **11**. A longitudinal groove which is substantially circular in a cross section and which is identified by the numeral **15** forms a part of the side **14** of the frame section (Figure 2) and is provided for receiving a screw or other attaching means which extends from an adjacent frame section and therefore provides one means for attaching the frame sections of the frame F together, but such attaching means forms no part of the present invention, since any means for attaching the sections of the frame F together can be used.

The side **14** actually forms one side of the channel section of the frame which is disposed inwardly of the side **14** and includes a support portion **17** which is parallel to the side **14** and which is connected to the side **14** by a bottom portion **18**. The support portion **17** is connected with and supports a flange **20** which is perpendicular to the support portion **17** and is coextensive therewith. The inner part of the flange **20** extends into the space or channel S which is formed between the side **14** and the support portion **17**, and a longitudinal lip or shoulder **22** is provided on the flange **20**, the purpose of which will be more evident hereinafter. The flange **20** is formed with a longitudinal recess **23** which is disposed between glass receiving strips **24** and **25**. Such strips **24** and **25** lie in the same plane and are for the purpose of receiving the outer surface **30** of the pane of glass G (Figure 2). The recess **23** is filled with putty or other sealing material when assembling the glass G on the strips **24** and **25**, whereby a fluid tight seal between the glass G and the frame F is provided.

The fastener or retainer R is formed in sections which correspond with the sections of the frame F and accordingly when the frame F is formed with four sections to make a square or rectangle, as is true in the usual case, the fastener R will likewise be formed in four sections each of which has an inclined end **40** which is positioned adjacent a similar inclined end **40** on the adjacent section of the fastener R. A portion of one section of the fastener R is illustrated in Figures 2 and 3, with Figure 3 illustrating the section of the fastener R separate from the rest of the window construction of this invention and Figure 2 illustrating the fastener R in the assembled position for retaining the glass G connected to the frame F. The fastener R has a front leg **41** which is visible to a person on the inside of the house or building in which the window glass construction of this invention is positioned. A glass retaining leg **42** is connected to the front leg **41** and is coextensive in length with the leg **41**. At the opposite end of the leg **42** from that end which is connected to the leg **41**, there is provided a gripping flange **45** which is adapted to be positioned below the longitudinal shoulder or lip **22** for retaining the glass G in position on the frame F, as will be explained more in detail.

Preferably, each section of the fastener R is formed with the legs **41** and **42**, and the flange **45** in one piece by molding, extrusion or otherwise. The material of the fastener R is a plastic of the phenol formaldehyde type or vinyl resin type, or any other suitable material which

is sufficiently resilient to permit the spreading apart of the legs **41** and **42** while being sufficiently still so that the legs **41** and **42** are themselves not flexible to any appreciable extent. The legs **41** and **42** are molded or otherwise formed with the angle A therebetween which is preferably less than ninety degrees, i. e., an acute angle. The material of which the fastener R is made is sufficiently resilient so that as the angle A is increased from its normal amount (Figure 3) and approaches a right angle by the spreading apart of the legs **41** and **42**, the inherent resiliency of the material causes the legs **41** and **42** to be urged toward each other.

Such spreading of the legs **41** and **42** with respect to each other occurs when the fastener R is assembled (Figure 2) with the leg **42** extending downwardly into the channel S and the flange **45** below the shoulder **22**. When the fastener R is in the assembled position, the inner surface **41***a* of the leg **41** is in contact with the inner surface **31** of the glass G and the angle A is enlarged so that the inner surface **42***a* is substantially parallel to the end **32** of the glass G. It will be noted that the outer surface **42***b* of the leg **42** is curved so that the lower end (Figure 2) of the leg **42** is of a reduced thickness in the vicinity of the flange **45** to permit the insertion of the leg **42** into the channel S. Similarly, with the curved surface **42***b* of the leg **42**, an upward force can be applied to the leg **41** for lifting same whereby the leg **42** is moved out of the channel S. Such lifting of the leg **41** can be accomplished by inserting a wedge shaped member such as a screw driver between the surface **31** of the glass G and the inner surface **41***a* of the leg **41**.

The operation or use of the improved window glass construction and fastener therefor is believed evident from the foregoing description. Thus, when it is desired to assemble the window glass G in the frame F, putty or other sealing material is distributed in the putty groove **23** of each section of the frame F. Then, the glass G is positioned in contact with the strips **24** and **25**. The putty or other sealing material in the grooves or recesses **23** provides a fluid-tight seal so that water, air and other elements of the weather are prevented from passing between the glass G and the frame F.

With the glass G in position on the frame F, the fastener R is pressed into its holding position. Although the sections, generally four in number, which together form the fastener R, can be inserted together during assembly thereof with the frame F and the glass G, preferably each straight section or side of the fastener R is separately positioned so that the adjacent inclined edges **40** are in contact or substantially in contact (Figure 1). The fastener R may thus be pressed into the channel S by the application of pressure thereto with the hands or, it may be desirable to use a roller or similar known apparatus for applying a moderate amount of pressure to the fastener R. The pressure is required because the angle A is less than the angle A which is formed after the legs **41** and **42** have spread apart during assembly. Thus, as the fastener R is forced downwardly into the groove S, the legs **41** and **42** are spread relative to each other so that there is a constant tendency for the leg **42** to move toward the glass G (to the left in Figure 2) which results in a frictional engagement of the flange **45** with the metallic flange **20** of the frame F. Such urging of the leg **42** toward the glass G during its insertion also serves to urge the flange **45** underneath the shoulder **22** when the fastener R has reached its lowered position with the surface **41***a* of the leg **41** in contact with the surface **31** of the glass G. At such time, the legs **41** and **42** are still maintained in a spread condition as compared to the original condition (Figure 3) so that the glass G is maintained in firm engagement with the surfaces **24** and **25** of the frame F and is locked or held against movement away from the frame F by reason of the flange **45** gripping below the shoulder **22**.

When it is desired to remove the fastener R from the glass G to replace the glass G, or for any other reason, a wedge member such as a screw driver is slipped between the surface **31** of the glass G and the surface **41***a* of the leg 41 of the fastener R. Such wedging action results in a lifting of the fastener R which causes the flange **45** to slide upwardly and move away from the shoulder **22** so as to be disengaged therefrom. In other words, as the upward force is applied to the leg 41, the leg **42** is moved upwardly and laterally away from the glass G. Such movement is possible because of the reduced lower portion of the leg 42 provided by the curved surface **42***b* thereof.

It is believed evident from the foregoing description that an improved window glass construction and fastener therefor has been provided which permits the assembly and disassembly of a pane of glass readily and without any special tools or special skill.

The foregoing disclosure and description of the invention is illustrative and explanatory thereof and various changes in the size, shape and material, as well as in the details of the illustrated construction, may be made within the scope of the appended claims without departing from the spirit of the invention.

What is claimed is:

1. A fastener for releasably attaching a pane of glass to a window frame or the like, comprising an L-shaped member having intersecting and connecting inner surfaces which form an acute angle therebetween, one of said inner surfaces being flat to engage a pane of glass, the other of said inner surfaces having a flange at its outer end projecting inwardly and forming a shoulder for engagement with a window frame, and the outer surface of the leg having the flange being tapered towards its outer end and forming a reduced thickness at said outer end.

2. A combination of a window frame and a fastener, comprising a window frame having a supporting surface for a pane of glass and a channel adjacent thereto, a lateral shoulder on said frame extending into said channel and positioned inwardly of said supporting surface, a pane of glass on said supporting surface, a fastener attaching said pane of glass to said frame, said fastener including an L-shaped member having intersecting and connecting inner surfaces which form an acute angle therebetween, one of said inner surfaces being flat and in engagement with said pane of glass, the other of said inner surfaces having a flange at its outer end projecting inwardly and forming a shoulder in engagement with said lateral shoulder of said window frame, and the outer surface of the leg having the flange being tapered towards its outer end and forming a reduced thickness at said outer end for positioning in said channel.

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