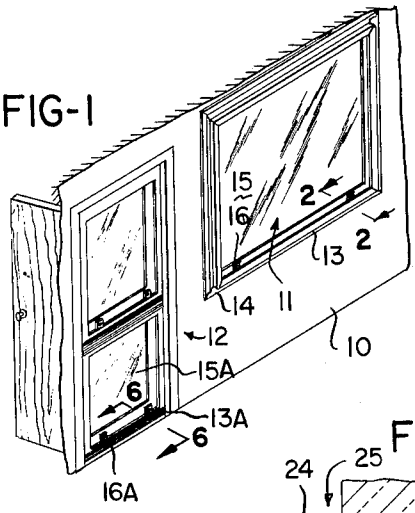
June 28, 1966 D. R. JOHNSON 3,257,758

PANEL LOCKING MEANS AND METHOD

Filed June 28, 1963

FIG-1



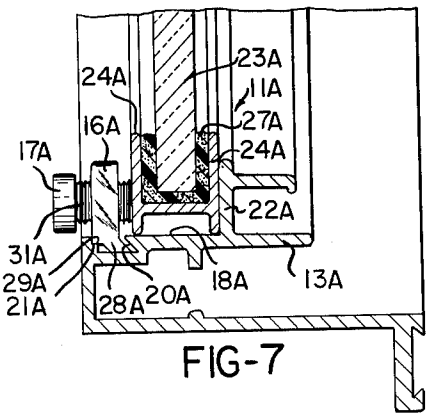


FIG-7

FIG-4

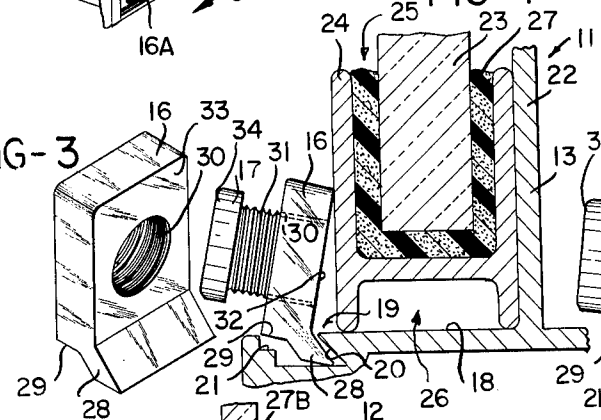


FIG-5

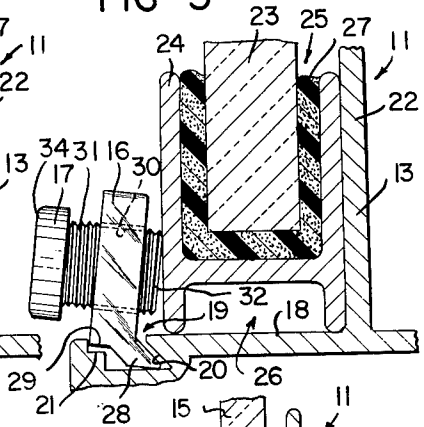


FIG-3

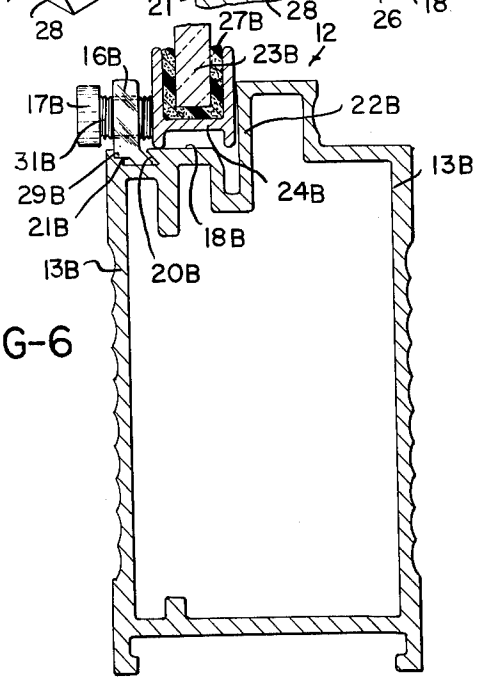


FIG-6

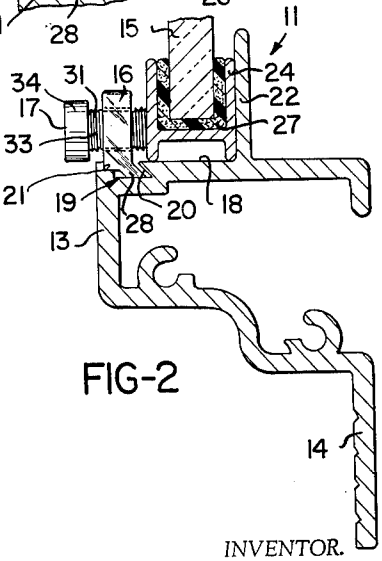


FIG-2

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PANEL LOCKING MEANS AND METHOD

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12 Claims. (Cl. 49—463)

This invention relates to an improved panel locking means and to an improved method of locking such a panel means or the like as well as to improved parts for such a panel locking means or the like.

It is well known that various manufacturers have been striving to provide suitable framing structures for detachably mounting storm windows and the like in place against various standard types of existing windows as well as to provide framing means for forming a storm door or the like that can be readily converted to a screen door or the like.

In particular, while the framing members for such application can be permanently secured in place to the building or the like, it is desirous that the glass panels for forming the panel means of the storm windows and storm doors be effectively locked in place when utilized and still be easily removable during the summer and the like so that screened panels can be utilized in place thereof.

According to the teachings of this invention, such improved panel locking means is provided wherein the panels can be readily and easily locked in place for the desired purpose thereof and, thereafter, can be readily and easily removed when desired.

In particular, one embodiment of this invention comprises framing members which can be readily secured to an existing building or the like to carry the desired panel means, the framing member having a groove provided therein and a flange means spaced from the groove to be engaged by the desired panel means. Thereafter, a locking member of this invention can be interlockingly disposed in the groove of the framing member and by a mere adjustment of an adjusting member carried by the locking member, the adjusting member can engage the panel means to not only hold the panel means against the flange means of the framing member, but also to hold the locking member in place, whereby it is a relatively simple operation to lock the desired panel means in the framing members of this invention.

Subsequently, when it is desired to remove the panel means, the user merely adjusts the adjusting member so that the locking member can be removed to permit the panel means to be removed from the framing members of this invention.

Accordingly, it is an object of this invention to provide an improved panel locking means having one or more of the novel features of this invention as set forth above or hereinafter shown or described.

Another object of this invention is to provide improved parts for such a locking means or the like.

A further object of this invention is to provide an improved method for locking a panel means in place, the method having one or more of the novel features of this invention as set forth above or hereinafter shown or described.

Other objects, uses and advantages of this invention are apparent from a reading of this description, which proceeds with reference to the accompanying drawings forming a part thereof and wherein:

FIGURE 1 is a schematic, fragmentary, perspective view illustrating a typical building application utilizing the features of this invention.

FIGURE 2 is an enlarged, fragmentary, cross-sectional view taken on line 2—2 of FIGURE 1.

FIGURE 3 is a perspective view of the improved locking member of this invention.

FIGURE 4 is an enlarged fragmentary view similar to FIGURE 2, illustrating one of the steps in the method of this invention.

FIGURE 5 is a view similar to FIGURE 4, illustrating another step in the operation of this invention.

FIGURE 6 is a view similar to FIGURE 2, illustrating another embodiment of this invention.

FIGURE 7 is a view similar to FIGURE 2 and illustrates still another embodiment of this invention.

While the various features of this invention are hereinafter described and illustrated as being particularly adaptable for locking storm windows or glass panel means in place, it is to be understood that the various features of this invention can be utilized singly or in any combination thereof to lock other types of panel members in place, as desired.

Therefore, this invention is not to be limited to only the embodiments illustrated in the drawings, because the drawings are merely utilized to illustrate one of the wide variety of uses of this invention.

Referring now to FIGURE 1, FIGURE 1 illustrates a typical building 10 having a storm window 11 and a storm door 12 formed according to the teachings of this invention.

In particular, it can be seen from FIGURE 2 that the storm window 11 for the picture window of the building 10 is provided by framing members 13 of this invention which are adapted to be disposed completely around the periphery of the existing window and be secured to the wall of the building 10 by suitable fastening members passing through mounting plate portions 14 of the framing members 13, whereby the framing members 13 provide a framing means for a storm window panel means 15 in a manner hereinafter described.

The panel means 15 of this invention is held in place in the framing members 13 of this invention by a plurality of locking members 16 of this invention interconnected to the framing members 13 in a manner hereinafter described and movably carrying adjusting members 17 utilized to detachably secure the panel means 15 in place.

Therefore, it can be seen that the panel locking means of this invention comprise a relatively few parts while still readily permitting the user to lock the panel means 15 in place or to remove the panel means 15 when desired.

The particular details of the panel locking means of this invenion will now be described.

As illustrated in FIGURES 2, 4 and 5, the framing member 13 includes a panel means receiving surface 18 interrupted by a groove 19, the groove 19 having a portion 20 thereof undercutting the surface 18 for a purpose hereinafter described and disposed opposite a right angled

portion 21 of the frame member 13 that is defined by the groove 19 for a purpose hereinafter described.

Each framing member 13 has an outwardly directed abutment or flange means 22 spaced inwardly from the groove 19 for a purpose hereinatfer described.

The panel means 15 of this invention can be formed in any suitable manner and of any suitable material. However, the embodiment of the panel means 15 illustrated in the drawings comprises a glass panel 23 suitably framed about the outer periphery thereof by panel retaining members 24, each panel retaining member 24 being substantially H-shaped and defining opposed outwardly facing channels 25 and 26.

The glass panel 23 is received in the channel 25 of each panel retaining member 24 and is secured therein by a suitable sealing material 27 in the manner illustrated in FIGURE 4 to not only secure the panel 23 to the retaining member 24 but also to provide an airtight sealing means and cushioning means therebetween.

The completed panel means 15 of this invention is adapted to be inserted in the framing members 13 in the manner illustrated in FIGURES 2, 4 and 5 whereby the retaining members 24 of the panel means 15 abut against the flange means 22 of the framing members 13 and are disposed inboard of the grooves 19 of the framing members 13.

The locking members 16 of this invention each comprises a substantially rectangular block, as illustrated in FIGURE 3, having an outwardly directed projection 28 at one of the corners thereof to be complementally received in the undercut portion 20 of the groove 19 of the framing members 13 in a manner hereinafter described, while the opposed corner 29 of the locking member 16 is complementary to the angled portion 21 of the framing members 13. Each locking member 16 has a threaded bore 30 passing therethrough and threadedly receiving an externally threaded portion 31 of the adjusting member or screw 17.

When it is desired to lock the panel means 15 in the framing members 13, the adjusting member 17 of a particular locking member 16 can be backed outwardly until the free end 32 of the threaded portion 31 of the adjusting member 17 is disposed flush with the surface 33 of the locking member 16 in the manner illustrated in FIGURE 4.

Thereafter, by holding the enlarged head 34 of the adjusting member 17, the locking member 16 can be disposed at an angle in the manner illustrated in FIGURE 4 and inserted substantially transversely downwardly into the groove 19 until the projection 28 of the locking member 16 is disposed in the position illustrated in FIGURE 4.

Subsequently, the user rotates the adjusting member 17 to cause the free end 32 thereof to begin to project outwardly beyond the surface 33 of the locking member 16 and engage the panel retaining member 24.

Such rotational movement of the adjusting member 17 relative to the locking member 16 can be effected by one hand as the locking member 16 is prevented from rotating by the cooperation between the projection 28 of the locking member 16 and the undercut portion 20 of the groove 19.

Thereafter, further threading of the adjusting member 17 into the locking member 16 causes the locking member 16 to begin to move outwardly from the panel means 15 in the manner illustrated in FIGURE 5 and cause the projection thereof to be more fully received in undercut portion of the groove 19 while the corner 29 thereof approaches the angled portion 21 of the framing member 13.

Subsequently, the adjusting member 17 is threaded into the locking member 16 in such a manner that the locking member is disposed in the position illustrated in FIGURE 2, whereby the corner 29 of the locking member 16 is fully received against the angled portion 21 of the framing member 13 while the projection 28 thereof is fully received in the undercut portion 20 of the groove 19.

In this manner, further pivotal movement of the locking member 16 relative to the framing member 13 is terminated and the adjusting member 17 can be further tightened into the locking member 16 to fully compact the panel retaining member 24 against the flange means 22, whereby the panel means 15 is firmly held against the flange means 22 of the framing members 13.

With the locking member 16 now disposed in the position illustrated in FIGURE 2, it can be seen that the locking member 16 cannot be transversely removed from the groove 19 because of its interlockinbg relation with the groove 19 while the adjusting screw 17 is disposed in the position illustrated in FIGURE 2.

Thus, the locking member 16, adjusting member 17, panel means 15 and framing member 13 cooperate together to positively lock the panel means 15 to the framing means 13 in a relatively simple and inexpensive manner.

In the aforementioned method of locking the panel means 15 in place, it can be seen that the adjusting member 17 not only holds the panel means 15 against the flange means 22 of the framing member 13 but the same also moves the locking member 16 into its interlocking relation with the groove 19 of the framing member 13.

While the method of locking the panel means 15 in place has been described in connection with one locking member 16, it is to be understood that other locking members 16 are utilized in the same manner to completely hold the panel means 15 in place in the framing members 13.

Further, while the above-described method of locking the panel means 15 in place has been described in connection with the adjusting member 17 already being assembled to the locking member 16, it is to be understood that the method of this invention could be performed by disposing the locking member 16 in the groove 19 of the framing member 13 while the adjusting member 17 is completely separated therefrom. Thereafter, the adjusting member 17 can be assembled to the locking member 16 in such a manner that the same engages the panel retaining means 24 to compact the same against the flange means 22 and to hold the locking member 16 in its interlocking relation with the groove 19, whereby the final assembly will still be the same as illustrated in FIGURE 2.

While the panel locking means of this invention has heretofore been described in connection with framing members 13 for use for framing conventional picture windows or conventional double-hung windows, it is to be understood that the framing members 13 of this invention can be modified to provide framing means for other types of windows.

For example, reference is made to FIGURE 7 wherein another panel locking means of this invention is provided and is particularly adaptable for providing storm window means for casement windows, basement windows, and the like.

The panel locking means illustrated in FIGURE 7 is substantially the same as the panel locking means illustrated in FIGURE 2, except that the framing member thereof has been modified to adapt the same to a casement window arrangement. Therefore, the parts of the panel locking means of FIGURE 7 that are similar to the panel locking means of FIGURE 2 are indicated by like reference numerals followed by the reference letter "A."

As illustrated in FIGURE 7, the panel locking means comprises a panel means 15A, a locking member 16A, an adjusting member 17A and a frame member 13A, the frame member 13A having the abutment or flange means 22A and groove 19A in the same manner previously described, while the remaining portion of the frame mem-

ber 13A is modified from the structure of the framing member 13 previously described, to permit the same to adapt itself to other building structures.

Therefore, it can be seen that the panel locking means of FIGURE 2 and FIGURE 7 operate in the same manner to provide the above advantages of this invention.

While the panel locking means of this invention have heretofore been described in connection with windows, it is to be understood that the panel locking means of this invention can be utilized with the storm door structure 12 of the building 10 of FIGURE 1.

In paricular, reference is made to FIGURE 6 illustrating the panel locking means of the door 12, the panel locking means for the door 12 being substantially identical to the panel locking means illustrated in FIGURE 2, except that the framing member has been modified to permit the same to provide framing structure for a storm door or the like. Therefore, the parts of the panel locking means illustrated in FIGURE 6 that are similar to the panel locking means illustrated in FIGURE 2 are indicated by like reference numerals followed by the reference letter "B."

As illustrated in FIGURE 6, the framing member 13B is modified over the framing member 13 previously described to permit the framing member 13B to provide structure for forming the storm door 12, the framing member 13B, however, still having an abutment or flange means 22B spaced from the locking member receiving groove 19B whereby the framing member 13B functions in the same manner as the framing member 13 for locking the panel means 15B in place by the locking member 16B and adjusting member 17B.

Therefore, it can be seen that the novel features of the panel locking means of this invention can be utilized with different framing structure to provide the desired results.

Further, while the panel means 15 of this invention have been described as being storm windows or the like, it is to be understood that the panel means 15 could comprise other panel structure as desired.

Therefore, it can be seen that this invention provides not only improved locking means and method but also provides improved parts for such panel locking means or the like.

While the form of the invention now preferred has been disclosed as required by the statutes, other forms may be used, all coming within the scope of the claims which follow.

What is claimed is:

1. In combination, a member having a groove, an abutment means disposed spaced from said groove, a panel means or the like disposed against said abutment means and between said abutment means and said groove, a locking member disposed in said groove, and an adjusting member movably carried by said locking member and engaging said panel means to hold said panel means against said abutment means, said groove having an undercut portion and said locking member having an outwardly directed projection disposed in said undercut portion whereby said locking member cannot be pulled transversely out of said groove when said adjusting member is holding said panel means against said abutment means.

2. A combination as set forth in claim 1 wherein said adjusting member has a threaded portion and said locking member has a threaded bore threadedly receiving said threaded portion of said adjusting member.

3. A combination as set forth in claim 1 wherein said panel means comprises a panel and frame member receiving said panel, said frame member engaging said abutment means and being engaged by said adjusting member.

4. A combination as set forth in claim 3 wherein said frame member is substantially H-shaped.

5. In combination, a member having a groove, an abutment means disposed spaced from said groove, a panel means or the like disposed against said abutment means and between said abutment means and said groove, a locking member interlockingly disposed in said groove, and an adjusting member movably carried by said locking member and engaging said panel means to hold said panel means against said abutment means, said groove having an undercut portion and said locking member having an outwardly directed projection disposed in said undercut portion whereby said locking member cannot be pulled transversely out of said groove when said adjusting member is holding said panel means against said abutment means, said groove defining an angled portion of said first named member that is disposed opposite said undercut portion and said locking member having an angled portion complementally engaging said angled portion of said first named member.

6. In combination, a member having a groove, an abutment means disposed spaced from said groove, a panel means or the like disposed against said abutment means and between said abutment means and said groove, a locking member inserted transversely in said groove, and an adjusting member movably carried by said locking member and engaging said panel means to hold said panel means against said abutment means and to hold said locking member in an interlocking position in said groove, said groove having an undercut portion and said locking member having an outwardly directed projection disposed in said undercut portion whereby said locking member cannot be pulled transversely out of said groove when said adjusting member is holding said panel means against said abutment means.

7. In combination, a framing member having a groove and a flange means spaced from said groove, a panel means or the like disposed against said flange means and between said flange means and said groove, a locking member disposed in said groove, and an adjusting member movably carried by said locking member and engaging said panel means to hold said panel means against said flange means, said groove having an undercut portion and said locking member having an outwardly directed projection disposed in said undercut portion whereby said locking member cannot be pulled transversely out of said groove when said adjusting member is holding said panel means against said flange means.

8. A combination as set forth in claim 7 wherein said adjusting member has a threaded portion and said locking member has a threaded bore threadedly receiving said threaded portion of said adjusting member.

9. A combination as set forth in claim 7 wherein said panel means comprises a panel and panel retaining member reeciving said panel, said panel retaining member engaging said flange means and being engaged by said adjusting means.

10. A combination as set forth in claim 9 wherein said panel retaining member is substantially H-shaped.

11. In combination, a framing member having a groove and a flange means spaced from said groove, a panel means or the like disposed against said flange means and between said flange means and said groove, a locking member interlockingly disposed in said groove, and an adjusting member movably carried by said locking member and abutting said panel means to hold said panel means against said flange means said groove having an undercut portion and said locking member having an outwardly directed projection disposed in said undercut portion whereby said locking member cannot be pulled transversely out of said groove when said adjusting member is holding said panel means against said flange means, said groove defining an angled portion of said frame member that is disposed opposite said undercut portion and said locking member having an angled portion complementally engaging said angle portion of said frame member.

12. In combination, a framing member having a groove and a flange means spaced from said groove, a panel

means or the like disposed against said flange means and between said flange means and said groove, a locking member inserted transversely in said groove, and an adjusting member movably carried by said locking member and engaging said panel means to hold said panel means against said flange means and to hold said locking member in an interlocking position in said groove, said groove having an undercut portion and said locking member having an outwardly directed projection disposed in said undercut portion whereby said locking member cannot be pulled transversely out of said groove when said adjusting member is holding said panel means against said flange means.

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