Nov. 27, 1951 G. T. CLEMENTS 2,576,777

WINDOW CONSTRUCTION

Filed Feb. 23, 1950 2 SHEETS—SHEET 1

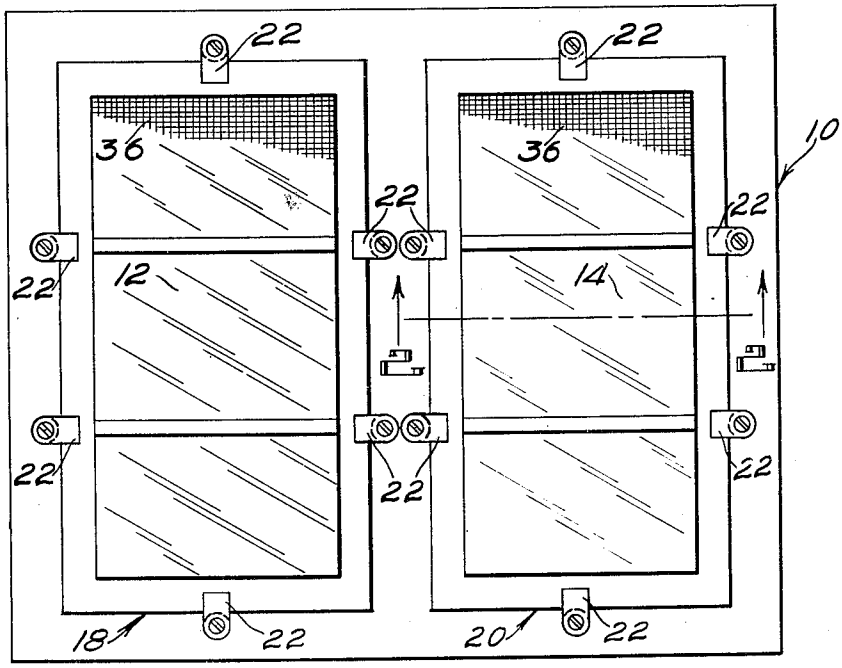


FIG. 1

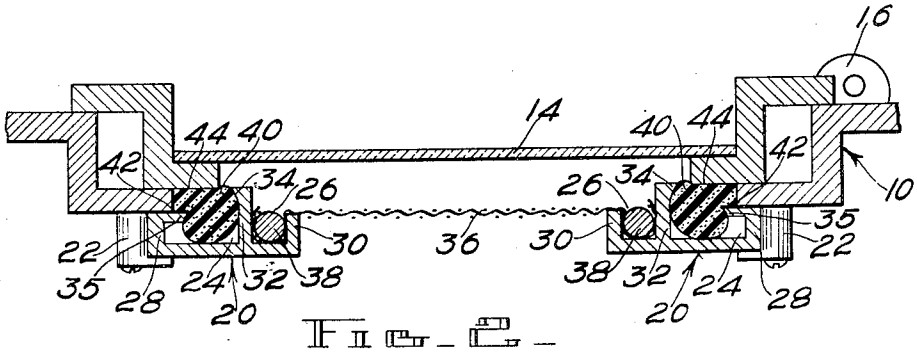


FIG. 2

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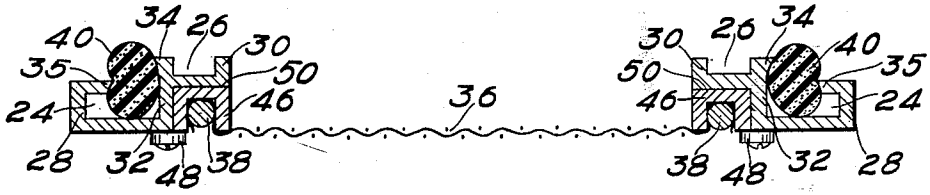


FIG. 3

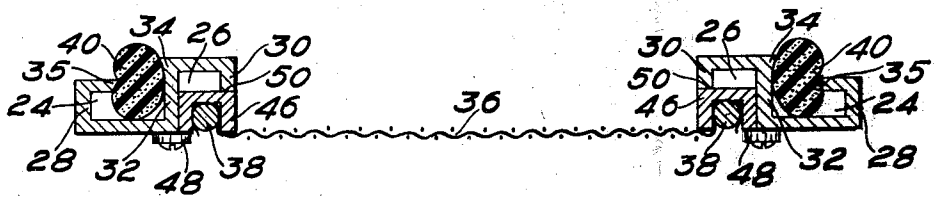


FIG. 4

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WINDOW CONSTRUCTION

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9 Claims. (Cl. 160—40)

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This invention relates generally to window construction and more particularly to a means for sealing and insulating a window casement.

A knowledge of the prior art reveals that the problem of providing a satisfactory seal between the stationary portion of a casement and the swingable or slidable sash therein has long plagued the building industry. This is especially true of metal construction where no attempt is made to seat accurately the cooperating frame members of the stationary casement and movable sash panels.

This situation is further aggravated because of the manner in which the frame members warp and twist out of alignment as a result of distorting stresses set up during installation or occasioned by subsequent changes in temperature. Because of this distortion, all installations of metal sash must be constantly re-aligned to prevent large gaps from appearing between stationary and movable frame members and producing excessive drafts.

This periodic adjustment of metal sash is both costly and troublesome, and regardless of how carefully the operation is performed, it can never produce a satisfactory and effective seal between the casement and movable sash panels. It is for this reason, primarily, that metal window casements have never received the degree of acceptance in non-commercial construction that was originally predicted for them. However, once this shortcoming has been rectified, it is certain that with the structural advantages this type of casement has to offer, it will be greatly preferred by the home builder over the conventional old type of sliding wood sash.

It is therefore the primary object of the invention to provide an effective and efficient seal between the stationary and movable portions of a window.

Another object of the invention is the provision of a draft free and dust tight seal between the stationary casement and the movable sash of a window.

Still another object of the invention is to provide a draft free and dust tight resilient seat for movable window sash that will adjust automatically to compensate for any deformities or irregularities in cooperating members of both the sash and casement.

Yet another object of the invention is the provision of a window screen having a convenient and effective means for sealing the movable sash in the casement.

A further object of the invention is the provision of a frame for attachment to a metal window casement, providing both an integral screen and a draft free and dust tight seat for each of the movable sash members.

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A still further object of the invention is the provision of a frame adapted for mounting on metal casements so as to provide both a draft free and dust tight seat and a detachable screen panel for each of the movable sash members.

Additional features and advantages of the invention will become apparent after a thorough consideration of the detailed description composed with reference to the accompanying drawings constituting a part of this application, and in which:

Fig. 1 is an elevation view of a metal window casement embodying the applicant's invention.

Fig. 2 is an enlarged section view taken substantially on plane 2—2 in Fig. 1 illustrating the preferred embodiment of the invention.

Fig. 3 is a section view, similar to Fig. 2, showing a modification of the invention detached from the window casement.

Fig. 4 is a section view similar to Fig. 3, showing a further modification of the invention also detached from the window casement.

Broadly stated the invention contemplates the provision of a molding adapted to be mounted on the stationary window casement so as to provide a resilient surface for seating movable sash members. More particularly the invention comprehends the production of a frame attachable to the inside of a metal window casement providing both a resilient surface for seating swingable sash members and a screen panel, either integral or detachable as desired, for each of the movable sash.

For a detailed description of the invention, reference is made to Fig. 1 of the drawings in which numeral 10 designates a metal casement having a pair of outwardly swingable sash 12 and 14 each supported at the outer edge by two spaced hinge members such as 16. A pair of frames 18 and 20 are fitted around each opening in the casement 10 and held securely in position by a plurality of spaced locating and locking clamps such as 22.

The frames 18 and 20 are constructed of molding having a pair of channels 24 and 26 defined by marginal flanges 28 and 30 respectively and separated by a common divider wall 32. A pair of oppositely disposed retaining lips 34 and 35 are provided along the free edge of the divider wall and flange 32 and 28 respectively, for reasons which will appear later in the discussion. A screen 36 is fitted over each of the frames 18 and

20 and secured thereto by means of splines 38 forced into the shallow inner channels 26 shown in Fig. 2.

A resilient cord 40, substantially circular in cross section and made of sponge rubber, or other suitable material, is fitted into each of the outer channels 24 in the frames 18 and 20 and adapted to enter into a sealing engagement at 42 and 44 with members of the casement and sash when the latter is in the closed position illustrated in Fig. 2. The resilient cord 40 was designed with an axially symmetrical cross section so that it could be rotated should the exposed portion ever deteriorate or become worn.

To facilitate this rotation, the molding is designed so that the downwardly disposed lips 34 and 35 on the flange and wall members 28 and 32 respectively hold the resilient cord 40 securely in position without the use of any adhesive. Therefore, when it is desired to rotate the resilient strip 40 it may be done by the simple expedient of manually removing the cord and reinserting it with a new surface exposed. This feature enables the installation to be maintained and serviced with no excessive time consuming operations or costly replacements.

This completes a description of the structural details comprising the preferred embodiment of the disclosed invention; however, to facilitate a more thorough comprehension of the subject matter involved, the additional embodiments illustrated will be discussed in detail.

The modification shown in Fig. 3 differs from the preferred embodiment in that the screen 36 is mounted on a detachable grooved frame 46 secured to the casement molding by a plurality of spaced clamps such as 48. The cross section of the molding is also modified slightly so as to provide a recessed seating shoulder 50 for supporting and locating a removable screen frame 46. In all other respects, the modification illustrated in Fig. 3 is similar in both structure and operation to the preferred embodiment shown in Fig. 2.

The further modification illustrated in Fig. 4 differs structurally from the modification shown in Fig. 3 in that the shallow channel 26 provided by the casement molding is outwardly disposed. This design is somewhat more flexible, as it provides for mounting the screen material 36 alternately in the shallow channel 26, as in the preferred embodiment of Fig. 2, without the necessity of removing the molding from the casement 10.

This completes a discussion of the structural details relating to the invention; however, to insure a better understanding of the subject matter, a discussion will now be directed to the manner in which the device operates so as to perform its intended function and accomplish the objectives set forth in the introductory portion of the specification.

In operation, when the swingable sash 12 and 14 are moving to a closed position, the frame members of the sash engage the outer surface of the resilient cord 40. When the sash 12 and 14 reach the closed position illustrated in Figures 1 and 2, the resulting pressure on the resilient cord 40 forces it into a simultaneous sealing engagement at 42 and 44 with the frame members of the casement and sash 10 and 14 respectively.

This action produces a double seal and renders the joint between cooperating sash and casement members substantially draft free and dust tight. The disclosed method of sealing the swingable sash 12 and 14 on resilient material also prevents any irregularities or distortion in the individual sash or casement members from producing the troublesome air gaps present on all installations of metal casements.

In practice, the installation of inside screens on a metal casement is greatly simplified by use of the applicant's invention, because allowable tolerance on the dimensions of both casement openings and screen can be increased appreciably without producing objectional air gaps. This is due entirely to the resilient action of the cord 40 against the inner edge of the frame members defining the openings in the casement 10.

From the foregoing discussion, it is evident that the applcant's structure makes possible the realization of all the extravagant objectives previously set forth. The applicant accordingly feels that he has fulfilled a long felt need in the building trade, and in so doing, has made a real, lasting and extremely valuable contribution to the window construction art. However, while the invention has been described with reference to the structural details of a limited number of embodiments, it will be appreciated by those skilled in the art, that the principles involved are susceptible of numerous other applications.

Therefore, what I claim as new and wish to secure by Letters Patent is:

1. In window construction, a casement having at least one movable sash, a frame detachably mounted on the window casement, means on the frame providing a resilient seat for the movable sash and a screen covered frame detachably mounted on the first mentioned frame.

2. In window construction, a casement having at least one movable sash, a frame for each of the movable sash detachably mounted on the inner side of the casement, means on the frame providing a resilient seat for the corresponding sash and a screen covered frame detachably mounted on each of the first mentioned frames.

3. In window construction, a casement having at least one movable sash, a frame for the movable sash detachably mounted on the inner side of the casement, strips of resilient material on the frame providing a seat for the movable sash and a screen covered frame detachably mounted on the first mentioned frame.

4. In window construction, a casement having at least one movable sash, a frame for the movable sash detachably mounted on the inner side of the casement and having a pair of open channels, resilient cord in one of the channels adapted to provide a seat for the movable sash and screen on the frame secured in the other channel.

5. In window construction, a casement having at least one movable sash, a frame for the movable sash detachably mounted on the inner side of the casement and having a pair of outwardly opening channels, resilient cord in one of the channels providing a seat for the movable sash and screen on the frame secured in the other channel.

6. In window construction, a casement having at least one swingable sash, a frame for the swingable sash detachably mounted on the inner side of the casement and having a pair of outwardly opening continuous channels around the frame, a substantially round resilient cord in one of the channels providing a seat for the swingable sash when the latter is in a closed position, and a screen covering the frame and secured in the other channel of the frame.

7. In window construction, a casement having at least one opening, a movable sash over the opening, a frame around the opening detachably

mounted on the inner side of the casement and resilient means on the frame providing a seat for the movable sash when the latter is in a closed position and deforming simultaneously with the closing of the sash whereby the sash engages the casement along the edge defining the opening therein.

8. A rail comprising an elongated member, a longitudinally extended channel in the member, a resilient cord in the channel and a second channel having a removable spline for holding screen material.

9. A rail comprising an elongated member having therein a longitudinally extended channel,

oppositely disposed lips overhanging the channel and a resilient cord in such channel adapted to be removably secured therein by means of the overhanging lips.

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The following references are of record in the file of this patent:

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