

June 20, 1967

P. CRAIN

3,325,944

WINDOW SEALING DEVICE

Filed June 23, 1965

2 Sheets-Sheet 1

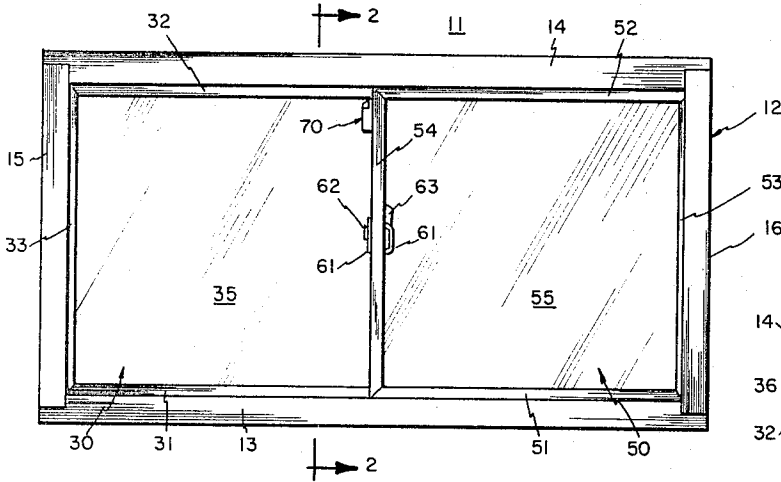


Fig. 1.

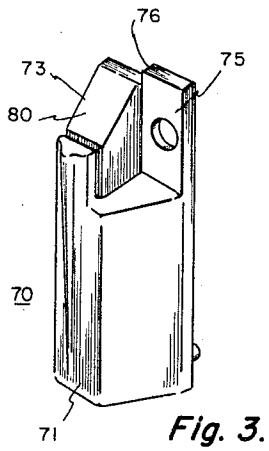


Fig. 3.

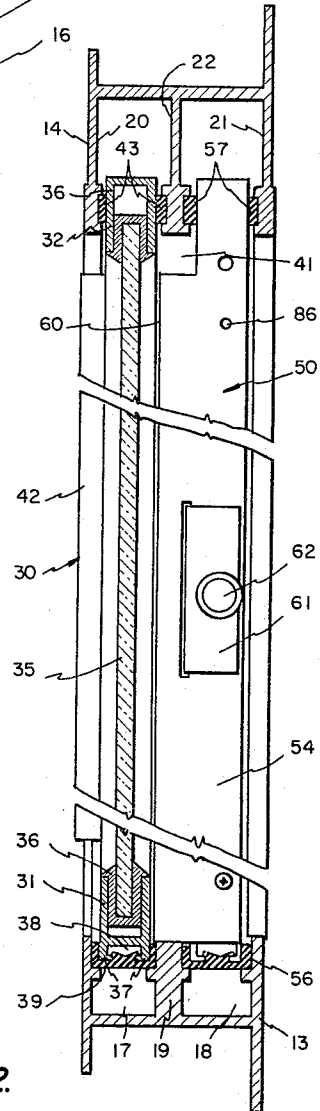


Fig. 2.

INVENTOR.  
PHILIP CRAIN

BY *R. J. Frank*  
ATTORNEY.

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2 Sheets-Sheet 2

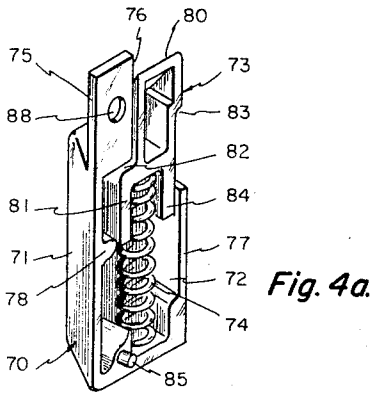


Fig. 4a.

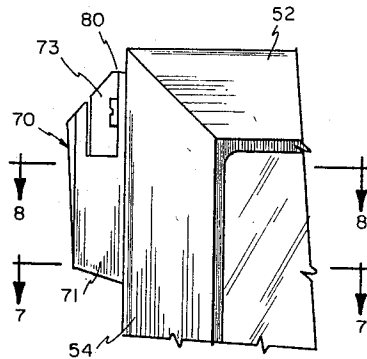


Fig. 6.

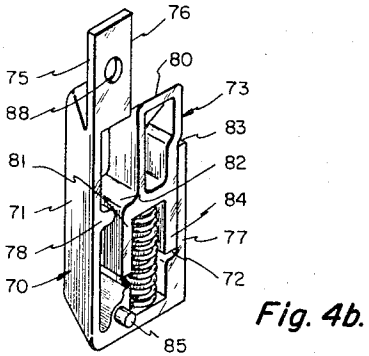


Fig. 4b.

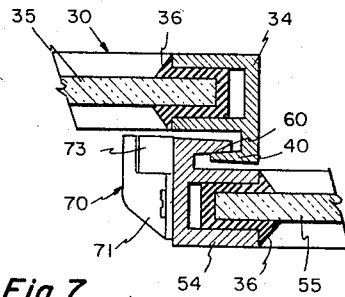


Fig. 7.

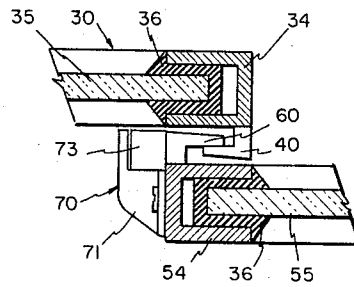


Fig. 8.

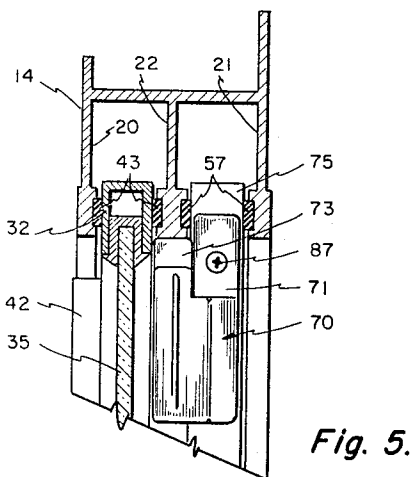


Fig. 5.

INVENTOR.  
PHILIP CRAIN

BY *R. J. Frank*  
ATTORNEY.

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3,325,944

**WINDOW SEALING DEVICE**

Philip Crain, Valley Stream, N.Y., assignor to Allen-Stevens Corp., a corporation of New York  
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 7 Claims. (Cl. 49-424)

This invention relates to windows having horizontal sashes and in particular to means for sealing the sashes of such windows against the infiltration of air and dirt.

In windows of the type employing horizontal dual sliding sashes it is customary for the inner stiles to overlap and be provided with interlocking flanges which extend between the head and sill of the window frame. Clearance openings are provided at the upper extremities of the stiles so that the sashes may be installed in and removed from the inner and outer channels of the frame. If the clearance openings were not provided, the ends of the interlocking flanges would strike the intermediate walls between the inner and outer channels of the window frame preventing insertion of the sashes in the channels and their removal therefrom.

While the clearance openings are necessary if the sashes are to be removable, they also provide a passageway for the infiltration of air and dirt into the room where the window is installed. Therefore, it is highly desirable that a device be provided for sealing the clearance openings when the sashes are in place and that this device also permit easy removal of the sashes for cleaning and replacement.

One known method for sealing the clearance openings is to provide a continuous weatherstrip between the overlapping stiles of the sliding sashes. The weatherstrip generally extends from one end to the other of the interlocking flanges and also covers the clearance openings thereby acting as a barrier to prevent the passage of air there-through. While this method of sealing is fairly effective when the window is new, the weatherstrip tends to deteriorate with time, use and adverse weather conditions, eventually permitting air to leak between the stiles. Also, since mohair and other filamentary materials used for weather stripping are not rigid, it is difficult to obtain a positive air-tight seal.

Accordingly, it is an object of my invention to provide a window incorporating a dual horizontal sliding sash having a positive sealing device which prevents the infiltration of air and dirt through the clearance openings at the ends of the interlocking stiles.

Another object is to provide a sealing device for windows having horizontal sliding sashes which provides a positive seal yet permits the sash to be removed and replaced easily and quickly.

Still another object is to provide a sealing device for windows having horizontal sliding sashes which is substantially unaffected by use and adverse weather conditions.

In accordance with the present invention the clearance opening at the top of the overlapping stiles is covered by a sealing device fastened to the inner stile of the sash located in the outer channels of the window frame. In general, the sealing device or gap cover comprises a guide means fastened to one of the overlapping stiles and a sealing member which is movable with respect to the guide. When the sealing member is in a first position it extends beyond the end of the stile to cover the clearance opening and when in a second position is withdrawn to a position proximate with the end of the stile to permit removal of the sash. In one embodiment, the gap cover comprises a housing member having an internal channel, a translatable sealing member which slides within the internal channel of the housing member, and resilient means

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in the form of a spring positioned between the wall of the internal channel and the sealing member.

With the outer sash in its normal position in the window frame, the spring urges the sealing member upward so that its outer end contacts the intermediate wall between the inner and outer channels of the head of the frame. To remove the sash, the sash is pushed upward pressing the sealing member downward into the housing compressing the spring. The lower end of the sash is thereby lifted out of the channel and the sash may be removed from the frame by swinging the lower end away from the frame and then pulling the sash downward.

The above objects of and the brief introduction to the present invention will be more fully understood and further objects and advantages will become apparent from a study of the following description in connection with the drawings, wherein:

FIG. 1 is a front elevational view of a window employing my sealing device;

FIG. 2 is a vertical fragmentary sectional view taken along the line 2-2 of FIG. 1 showing portions of the inner and outer sliding sashes before installation of the gap cover;

FIG. 3 is a perspective view of the outside of my gap cover;

FIGS. 4a and 4b are rear internal views of the gap cover showing the sealing member fully extended and withdrawn respectively;

FIG. 5 is an enlarged vertical partial sectional view showing the gap cover installed on the sash;

FIG. 6 is an enlarged side view showing the gap cover affixed to the sash, and

FIGS. 7 and 8 are sectional views of the sash and gap cover taken along the lines 7-7 and 8-8 respectively of FIG. 6.

Referring to FIGS. 1 and 2 of the drawings, there is shown a window 11 having a frame 12 which comprises a sill 13, a head 14 and jambs 15 and 16. The components of the frame 12 are fabricated from extrusion shapes, the sill 13 including an inner channel 17 separated from an outer channel 18 by an intermediate wall 19. Similarly, head 14 includes an inner channel 20, and outer channel 21 and an intermediate wall 22.

An inner sliding sash 30 is mounted slidably within the inner channel 17 of sill 13 and the corresponding inner channel 20 of head 14. Sash 30 includes rails 31 and 32 and stiles 33 and 34 which encompass a glass pane 35. The pane 35 is separated from the rails 31, 32 and stiles 33, 34 by a plastic insulating material 36 which may for example be composed of nylon. Rail 31 is provided at its lower end with two interturned flanges 37 which form a channel 38 in which a nylon runner 39 is secured. Runner 39 has a V-shaped section extending inside channel 38 and U-shaped end sections which separate the rail 31 from the inner wall of sill 13 and intermediate wall 19.

The stile 34 of the inner sliding sash 30 is provided with an interlocking portion or flange 40 which is best shown in FIGS. 7 and 8 of the drawings. The flange 40 extends vertically only partway to the intermediate wall 22 leaving a clearance space 41 between the top of the flange 40 and wall 22 (see FIG. 2). The clearance space 41 permits the sash 30 to be inserted in the frame 12 since the flange clears the intermediate wall 22 between the inner and outer channels 20 and 21 of the head 14. A projecting handle 42 is also secured to stile 34 of the inner movable sash 30 and, when grasped, permits the sash to be slid back and forth in the associated channels 17 and 20. A similar handle (not shown) is secured to stile 33. Channels 20 are provided with continuous weatherstripping 43 formed from mohair or other filamentary material which acts as a barrier, together with

runner 39, against the infiltration of air and dirt into the room.

An outer movable sash 50 is slidably mounted within channels 18 and 21 and includes lower and upper rails 51 and 52 respectively and stiles 53 and 54 encompassing glass pane 55. Sash 50 is provided with a runner 56 secured to lower rail 51, the runner 56 and weatherstrip 57 in upper channel 21 preventing the infiltration of air and dirt in the same manner as described in connection with inner sash 30. The stile 54 of movable sash 50 overlaps the stile 34 of sash 30 and is of the same general configuration. Stile 54 includes an interlocking flange 60 adapted to engage the corresponding interlocking flange 40 on stile 34 of sash 30. Flange 60 extends vertically only partway to the intermediate wall 22 as in the case of flange 50 to permit sash 50 to be inserted and removed from its channel without striking intermediate wall 22. A latch receptacle 61 is fastened by a rivet 62 to stile 54, receptacle 61 being engaged by a latching member 63 secured to stile 34 when it is desired to lock the sashes in a closed position.

As shown in FIG. 2 there is a relatively large space 41 between the top of the interlocking flanges 40 and 60 and the intermediate wall 22 which, if not closed, will permit the entry of air, dirt and moisture into the room. In accordance with my invention, the space 41 is covered by the gap cover 70 illustrated in FIGS. 3, 4a and 4b of the drawings. The gap cover, which may be made of aluminum, comprises a housing member 71 having an internal channel 72. A sealing member 73 is slidably mounted within the internal channel 72 of housing member 71, member 73 being held in the position shown by a helical spring 74 seated against the lower wall of internal channel 72.

The housing member 71 is provided with a tongue 75 extending from the hollow portion forming the internal channel 72. Side 76 of tongue 75 acts as a guide together with side portion 77 and projection 78 of housing member 71 to limit lateral motion of sealing member 73.

Sealing member 73 is provided with a tapered tip 80 having a width equal to or slightly greater than that of the intermediate wall 22. A first leg 81 extends below tip 80 and, when assembled with housing 71, contacts the portion of the housing below the tongue 75 when the sealing member 73 is in the position shown in FIG. 4a. That is, the upward travel of member 73 is limited by the ledge 82 striking the lower part of tongue 75. The downward travel of member 73 into the channel compresses the spring 74 and is limited by ledge 83 formed by the indentation of leg 84 striking the top of side portion 77.

Referring to FIG. 2 (showing the sashes before installation of the gap cover) and FIGS. 5-8 depicting the gap cover installed, the assembled gap cover 70 is secured to stile 54 of sash 50 by inserting pin 85 in hole 86 and by a sheet metal screw 87 inserted through hole 88 in tongue 75. As shown, the top surface of the tapered tip 80 of sealing member 73 is forced against the intermediate wall 22 by spring 74 thereby effectively sealing the clearance opening 41. When sash 50 is to be removed from the frame, it is lifted upward pressing sealing member 73 downward against spring 74. The sash may then be swung outward, pulled down and removed. The outer sash 50 is replaced by inserting the upper rail 52 into the channel 21 of head 14 thereby pressing the tip 80 of sealing member 73 against the bottom of intermediate wall 22. The sealing member is thus forced downward into the housing member 71 until the rail 52 is inserted far enough into channel 21 to permit the lower rail 51 to clear the top of sill 13. The lower rail 51 is then slipped into lower channel 18 and sealing member 73 forced upward by spring 74 to cover the gap 41. The other sash 30 is inserted and installed in exactly the same way since it is similar to sash 50 except that it does not include a gap

cover, the clearance space 41 above the flange 40 also being covered by gap cover 70.

While the invention has been disclosed with reference to a sliding window it shall be understood that it is equally applicable to sliding doors of similar construction.

As many changes could be made in the above construction and many different embodiments could be made without departing from the scope thereof it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

What is claimed is:

1. In combination with a window of the type including inner and outer sashes having overlapping stiles and a clearance opening between the top of said stiles and the head of said window, a device for sealing said clearance opening comprising
  - (a) guide means, said guide means being secured to the overlapping stile of one of said sashes, and
  - (b) a sealing member movably secured to said guide means, said sealing member being movable to a first position extending beyond the top of said stile to cover said clearance opening and to a second position proximate the top of said stile to permit removal of the sash from said window.
2. In combination with a window of the type including inner and outer sashes having overlapping stiles and a clearance opening between the top of said stiles and the head of said window, a device for sealing said clearance opening comprising
  - (a) guide means, said guide means being secured to the overlapping stile of one of said sashes near the top thereof,
  - (b) a sealing member translatably mounted to said guide means, said sealing member being translatable to a first position extending beyond the top of said stile to cover said clearance opening and to a second position proximate the top of said stile to permit removal of the sash from said window, and
  - (c) resilient means for maintaining said sealing member in said first position and permitting said sealing member to be translated to said second position.
3. In combination with a window of the type including inner and outer sashes having overlapping stiles and a clearance opening between the top of said stiles and the head of said window, a device for sealing said clearance opening comprising
  - (a) a housing member, said housing member being secured to the overlapping stile of one of said sashes, said housing member having a channel therein,
  - (b) a translatable sealing member slidably mounted within the channel of said housing member, and
  - (c) resilient means positioned between said housing and said translatable sealing member, said resilient means forcing said sealing member over said clearance opening when extended and being compressible to permit said sealing member to be withdrawn into said channel.
4. In combination with a window of the type including inner and outer sashes having overlapping stiles and a clearance opening between the top of said stiles and the head of said window, a device for sealing said clearance opening comprising
  - (a) a housing member, said housing member being secured to the overlapping stile of one of said sashes, said housing member having an internal channel therein,
  - (b) a translatable sealing member slidably mounted within the channel of said housing member, and
  - (c) a spring positioned between said translatable sealing member and a surface of said internal channel, said spring forcing said sealing member over said clearance opening when extended and being compressible to permit said sealing member to be withdrawn into said channel.

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5. In combination with a window of the type including inner and outer sashes having overlapping stiles and a clearance opening between the top of said stiles and the head of said window, a device for sealing said clearance opening comprising

- (a) a housing member, said housing member being secured to the overlapping stile of one of said sashes, said housing member having an internal channel,
- (b) a translatable sealing member slidably mounted within said internal channel, said sealing member including a tapered tip and first and second legs extending below said tip, and
- (c) helical spring means positioned between the first and second legs of said sealing member and the lower end of said internal channel, said helical spring means forcing the tip of said sealing member over said clearance opening when extended and being compressible to permit said sealing member to be withdrawn into said internal channel.

6. In combination with a window of the type including inner and outer sashes slidably mounted within inner and outer channels having an intermediate wall therebetween, said sashes having interlocking stiles and a clearance opening between the top of said stiles and said intermediate wall, a device for sealing said clearance opening comprising

- (a) a housing member, said housing member being secured to the overlapping stile of one of said sashes, said housing member having an internal channel and a tongue extending from the portion of said housing member including said internal channel,
- (b) a translatable sealing member slidably mounted within said internal channel and adjacent said tongue, said sealing member including a tapered tip and first and second legs extending below said tip, the lateral motion of said sealing member being limited by said tongue, and
- (c) helical spring means positioned between the first and second legs of said sealing member and the lower end of said internal channel, said helical spring means forcing the tip of said sealing member over said clearance opening when extended and being compressible to permit said sealing member to be withdrawn into said internal channel.

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7. In combination with a window of the type including inner and outer sashes slidably mounted within inner and outer channels having an intermediate wall therebetween, said sashes having interlocking stiles and a clearance opening between the top of said stiles and said intermediate wall, a device for sealing said clearance opening comprising

- (a) a housing member, said housing member being secured to the overlapping stile of said outer sash, said housing member having first and second parallel sides, a lower end connecting said first and second sides and an upper end, said housing member further having a tongue extending from said upper end and a projection located within the internal channel formed by said first and second sides and said upper and lower ends,
- (b) a translatable sealing member slidably mounted within said internal channel, said sealing member including a tapered tip and first and second legs extending below said tip, said first and second legs sliding adjacent said first side and said projection respectively and said tip sliding adjacent said tongue, and
- (c) helical spring means positioned between the first and second legs of said sealing member and the lower end of said internal channel, said helical spring means forcing the tip of said sealing member over said clearance opening when extended and being compressible to permit said sealing member to be withdrawn into said internal channel.

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DAVID J. WILLIAMOWSKY, *Primary Examiner*,  
 REINALDO P. MACHADO, *Examiner*,  
 J. K. BELL, *Assistant Examiner*,