Jan. 13, 1959 E. L. ANDERSON 2,867,860

VENTILATING WINDOW STRUCTURE

Filed Nov. 26, 1956 4 Sheets-Sheet 1

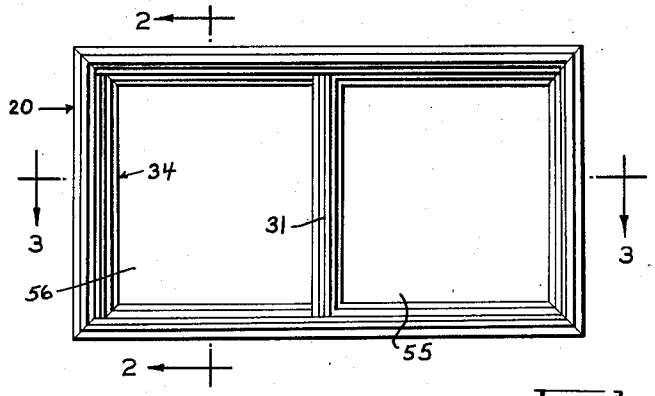

Fig.1

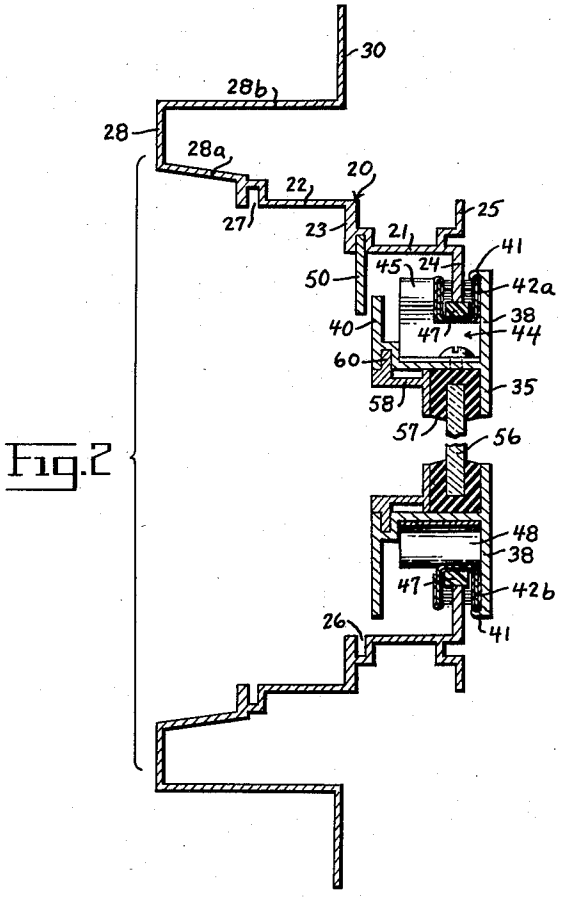

Fig.2

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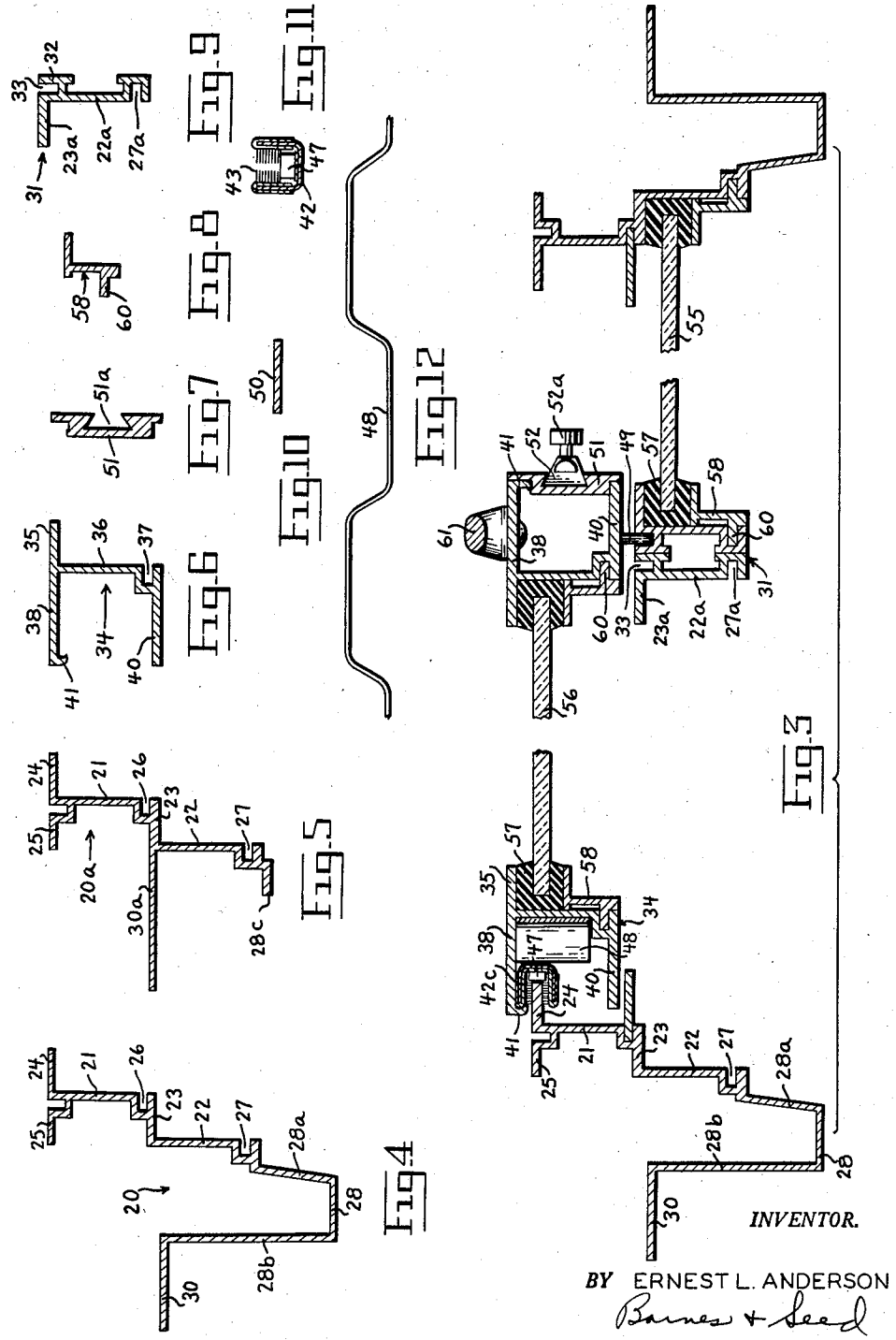

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VENTILATING WINDOW STRUCTURE

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Fig 13

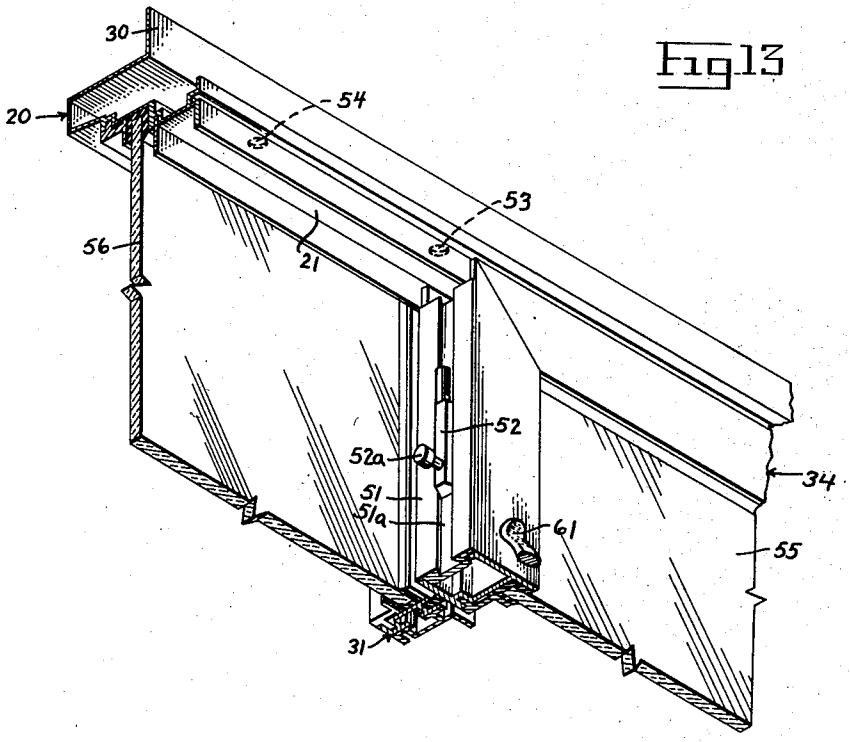


Fig 14

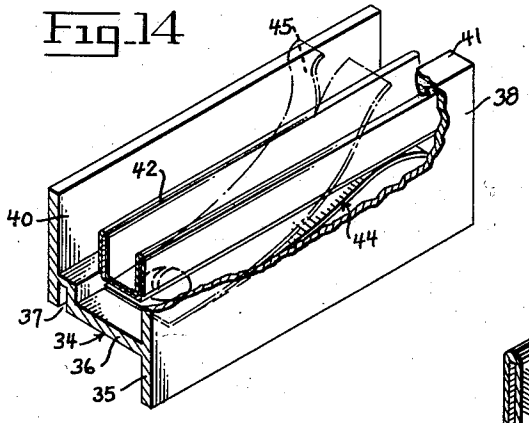
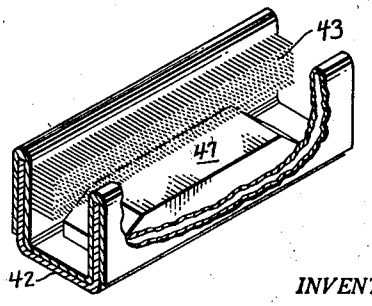


Fig 15



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VENTILATING WINDOW STRUCTURE

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Fig. 16

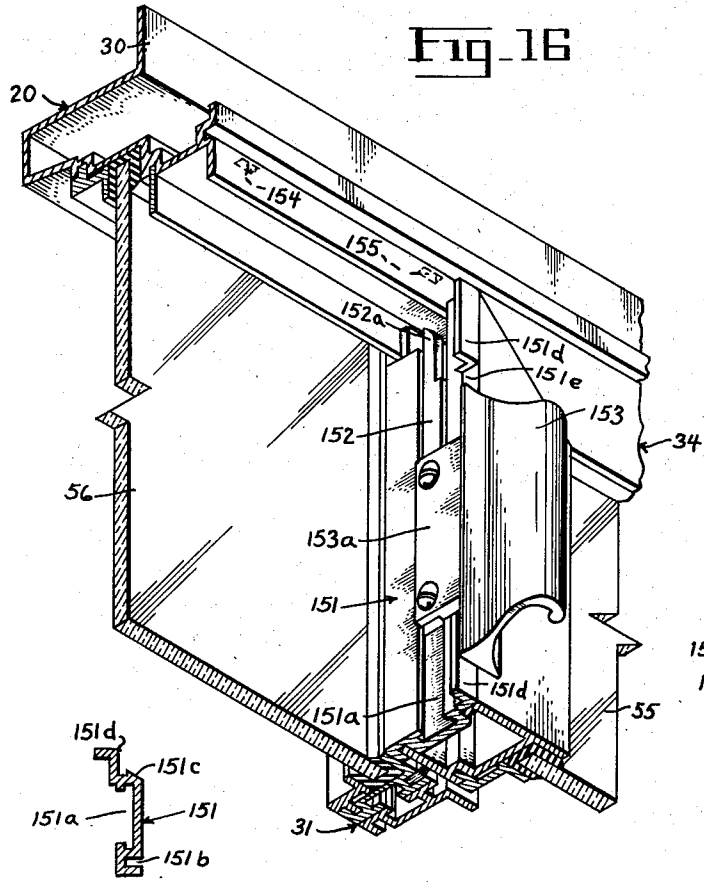


Fig. 17

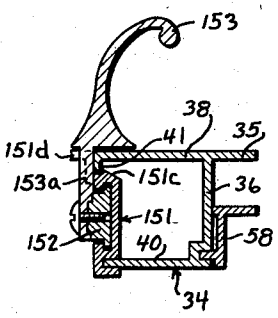


Fig. 18

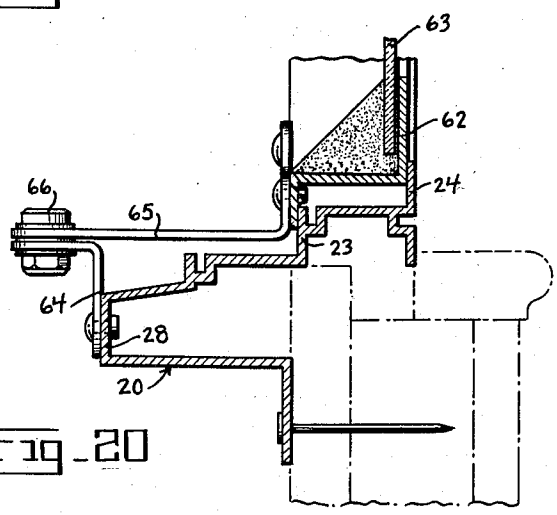
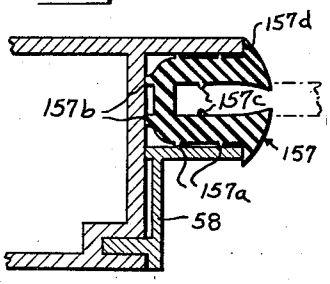


Fig. 20

Fig. 19



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VENTILATING WINDOW STRUCTURE

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Application November 26, 1956, Serial No. 624,460

11 Claims. (Cl. 20—52.2)

The present invention relates generally to ventilating windows having both fixed and sliding panes, and more particularly to windows of this type having a unitary border frame which not only defines a vent opening and one or more light openings for fixed panes, but also serves as the track for a unitary sliding vent frame to selectively cover the vent opening.

My invention aims to provide an improved such window of simple and economical construction in which the sliding vent frame is thoroughly weather stripped.

A further aim is to provide such a window in which the primary border frame is extremely versatile in that it can be used not only for sliding vents, but for hinged vents, all fixed panes, or a combination thereof.

Still another object is to provide an improved such window which can be readily assembled and in which the sliding vent frame can be easily removed for cleaning from the inside of the room.

With the foregoing objects and advantages in view, and which will appear and be understood in the course of the following description and claims, the invention consists in the novel construction and in the adaptation and combination of parts hereinafter described and claimed.

In the accompanying drawings:

Figure 1 is an elevational view of my improved window as viewed from the outdoor side when having a single fixed pane along side of the vent opening.

Figs. 2 and 3 are vertical and horizontal sectional views taken along the lines 2—2 and 3—3, respectively, of Fig. 1.

Figs. 4–10 are cross-sectional views through the various frame bars from which my window is constructed, Fig. 5 being an alternative of Fig. 4.

Fig. 11 is a cross-sectional view through one of the weather strip channels.

Fig. 12 is a fragmentary side elevational view of the spacing strip at the sill of the vent frame.

Fig. 13 is a fragmentary perspective view partly in section to illustrate the locking mechanism in particular.

Fig. 14 is a fragmentary perspective view to an enlarged scale showing the weather strip channel (without bristles) and leaf spring arrangement at the head of the vent frame, and with the relaxed position of the leaf spring being indicated by broken lines.

Fig. 15 is an enlarged fragmentary perspective view illustrating a short length of the weather strip channel and particularly one of the nylon shoes therein.

Fig. 16 is a view similar to Fig. 13 and illustrating a modified handle arrangement for the slide bolt.

Fig. 17 is a horizontal sectional view through the handle assembly of Fig. 16.

Fig. 18 is a cross-sectional view of a modification of the insert bar shown in Fig. 7.

Fig. 19 is a cross-sectional view of a modified glazing bead shown in operative position without the pane in place; and

Fig. 20 is a fragmentary vertical sectional view showing

the border frame being used with a hinged vent frame fabricated from the sliding vent frame material.

In order to avoid confusion in terminology I shall hereinafter use the words inside, outside, inwardly and outwardly as meaning that the object is closer or further from the center of the window in the general plane of the window, and not that the object is further toward the indoor or outdoor side of the window.

Continuing now to a description of the illustrated embodiment, the primary border frame is fabricated from lengths of a single extruded shape shown in Fig. 4 and designated 20. Facing inwardly toward the center of the window, the frame 20 presents inner and outer step flanges 21, 22 which are interconnected by a riser flange 23. At its indoor edge the inner step flange 21 has an inwardly directed riser flange 24 defining the light opening and an outwardly directed trim bead 25. The outdoor sides of the step flanges 21, 22 jog outwardly to form inwardly faced rabbets 26, 27. As is a common practice, the frame 20 may be formed with a generally U-shaped decorative molding bead 28 which has a short leg 28*a* joining the outer step 22 and a long leg 28*b* merging with an outwardly directed nailing flange 30.

In the example illustrated in Fig. 1 the primary frame bars 20 define a rectangular light opening which is vertically bridged across its outer step and riser 22, 23 by a two-piece muntin bar whose backed halves are numbered 31. These halves each have step and riser flanges 22*a*, 23*a* and a rabbet 27*a* which correspond to flanges 22, 23 and outer rabbet 27, respectively, of the bars 20. Each half 31 also projects oppositely of the step flange 22*a* by a bead 32 to provide a groove 33 facing indoors. Since the muntin bar does not bridge the inner step and riser 21, 24, the head and sill sections of the latter are uninterrupted throughout their full length thereby leaving these sections of the inner riser free to serve as tracks for a sliding vent frame.

The vent frame is primarily fabricated from a bar 34 shown cross-sectionally in Fig. 6. At its inner side the vent frame has a riser flange 35 defining the vent light opening and a step flange 36 formed at its outdoor side with a rabbet 37. Extending outwardly as channel legs from the side edges of the step flange 36 are flanges 38, 40, the former of which has its free edge turned outdoors to provide a retainer or stop 41. Desirably this stop should be no wider than the jog forming the inner rabbet 26.

A channel weather strip 42*a* having bristles 43 rooted to its inner side faces is housed in the head section of the vent frame and is urged upwardly toward the stop 41 by leaf springs 44. These springs are anchored at one end of the step flange 36 and each has its free end longitudinally slit at a distance from the indoor edge corresponding to the width of the weather strip 42. The outdoor finger 45 of the resulting two fingers is bent upwardly somewhat to engage the outdoor face of the weather strip to cooperate with the indoor vent flange 38 for holding the weather strip against lateral motion while at the same time permitting vertical movement of the weather strip with respect to the vent frame. As best shown in Fig. 15, the base of the weather strip 42 is fitted with nylon shoes 47 for riding against the head inner riser 24 of the primary frame.

Complementing the upper weather strip channel 42*a* is a similarly shoed weather strip 42*b* which is stapled to the ridges of a corrugated spacer 48. This spacer seats against the base of the step flange 36 of the vent's sill section and has sufficient resiliency to permit the weather strip 42*b* and the spacer as a unit to be pressed into place above the stop 41 of the sill section. In this manner no auxiliary fastening means is required to hold

the spacer and weather strip unit in place. The meeting jamb section of the vent frame is similarly equipped with a weather strip, denoted **42***c*. Weather stripping of the vent is completed by a brush strip **49** which is seated in one of the mutin bar grooves **33**. It is also desirable to provide the head and outer jamb of the vent opening with flashing or valance strips **50** which are fitted into the inner rabbet **26** and overlap the vent frame slightly when such is in its closed position. The other jamb section of the vent frame is fitted with an insert **51** formed with a beveled keeper groove **51***a* for guiding a slide bolt **52** having a handle **52***a*. This bolt selectively cooperates with keeper openings **53**, **54** cut in the inner step **21** of the head of the primary frame. Opening **53** is engaged by the bolt to lock the vent in a fully closed position whereas keeper opening **54** can be engaged by the bolt to lock the vent in a partially open night latch position.

As best shown in Fig. 3, the fixed pane **55** for the primary frame is set outdoors of the sliding vent, and namely between the outer step flange **22** of the primary frame and the corresponding step flange **22***a* of the muntin bar. The fixed pane **55** and the vent pane **56** can be putty glazed in position or can be supplied with a rubber or vinyl glazing gasket **57** as shown. In the latter instance the panes are held in position against the respective riser flanges by glazing beads **58** of an unequal Z-shape which have outwardly directed retainer flanges **60**. These flanges fit into the rabbets **27**, **27***a* in the case of the fixed panes **55** and fit into the rabbets **47** of the vent for containing the vent pane **56**.

To install the vent frame in the primary frame, it is first lifted to seat the upper weather strip **42***a* on the head section of the inner riser flange **24**. Then, the vent frame is urged upwardly to depress the leaf springs **44** sufficiently to permit the extreme lower edge of the vent frame to clear the border frame. The upward pressure on the vent frame is then released to permit the lower weather strip **42***b* to seat itself on the inner riser flange **24**. With the vent thus in place smooth and quiet sliding action is achieved by virtue of the fact that the nylon shoes **47** are the tracking surfaces of the vent. A handle **61** is mounted on one of the jamb sections of the vent frame for manually sliding the vent frame.

As shown in Fig. 16, instead of having separate handles **52***a* and **61** for the slide bolt **52** and vent frame, a single handle **153** can be utilized to slide the vent and throw the bolt. This handle **153** projects indoors of the vent frame and has a flat vertical foot **153***a* which is secured to a modified bolt **152**. The latter rides in a modified keeper **151** having a longitudinal rabbet **151***b* directed oppositely from its keeper groove **151***a*. Facing generally in the same direction as the latter is a beveled face **151***c* which is intended to wipe the stop **41** of the vent frame. The outer face of stop **41** is desirably rounded so that the keeper **151** can be forced into position with its rabbet **151***b* over the flange **40** of the vent frame and its beveled face **151***c* wedged past the rounded stop **41**. Along its indoor edge the keeper **151** has an L-flange **151***d* which projects indoors of the mouth of the groove **151***a* to lie flush with the indoor face of the vent flange **38**. This L-flange is slotted at **151***e* to receive the foot **153***a* of the handle **153**. The slot **151***e* is longer than the foot **153***a* to permit limited travel of the bolt **152**. At its upper end the latter is formed with a projecting finger **152***a* for selective reception by keeper openings **154**, **155** in the bead of the primary frame.

In Fig. 19 I have illustrated a modified glazing gasket **157** in a relaxed state, that is to say, without a pane. The gasket has external ribs **157***a* along its sides and ribs **157***b* along its bottom. These ribs permit flexibility in the size of the pane received. Gripping of the pane is aided by an opposed pair of inner ribs **157***c* and by way of the fact that the mouth of the gasket is narrowed. Out-turned flanges **157***d* are provided to seat on the inner edge of the frame and the inner edge of the glazing bead **58**.

One of the chief advantages of my improved ventilating window is the great versatility of the primary border frame in that it can be used for uniformity in the same building, not only for a sliding vent, but also for a hinged vent or for a window having nothing but fixed panes. In the latter instance the panes can be set against the inner riser flange **24** and the inner rabbet **26** used for the glazing bead. If such a window is to have more than one light it can be subdivided by extending lengths of the muntin bar between the inner step and riser flanges **21**, **24**. Screens or storm sash can be set in place against the outer risers **23** while the inner risers are serving as tracks for sliding vents or to receive fixed panes. As shown in Fig. 5 by frame bar **20***a*, the frame **20** can be modified to eliminate the molding **28**. In this instance a nailing strip **30***a* can extend from the outer riser flange **22** and a slight outdoor trim bead **28***c* may be provided.

In Fig. 20 I have illustrated the use of a hinged vent **62** which is fabricated from Z-bars and has its pane **63** putty glazed for purposes of example. It will be noted that the hinges for the vent have one arm **64** riveted to the center section of the molding bead **28** of the primary border frame and a complementing longer arm **65** riveted to the bent frame. These hinge arms are connected by a pivot pin **66** so that the vent frame can swing from an open position to a closed position wherein the two outer and inner legs of the Z-bar vent frame contact the outer and inner riser flanges **23**, **24**.

It is thought that the invention will have been clearly understood from the foregoing detailed description of my now preferred illustrated embodiment. Changes within the spirit of my teachings may be resorted to without departing from the invention and it is accordingly my intention that the hereto annexed claims be given a scope in their construction fully commensurate with the broadest interpretation to which the employed language admits.

What I claim, is:

1. In a ventilating window structure, a primary border frame having continuous inner and outer concentrically spaced step flanges and continuous inner and outer horizontally spaced riser flanges, said outer riser flange connecting said step flanges and said inner riser flange extending inwardly toward the window center from the indoor edge of said inner step flange, said inner riser flange having its head and sill portions as close to the window center as any other head and sill parts of said primary border frame lying indoors of said inner step flange, a muntin bar crossing said border frame outdoors of said inner riser flange and together with such frame defining a vent opening, said bar providing a riser flange cooperating with said outer riser flange to define a light opening for a fixed pane and providing a step flange merging with said outer step flange to make a continuous step flange concentric of said light opening, and a vent frame indoors of said muntin bar and tracking on said inner riser flange of the primary border frame at the head and sill thereof for selectively opening and closing said vent opening.

2. The window structure of claim 1 in which said vent frame has upwardly and downwardly faced weather strip channels at the head and sill, respectively, straddling the inner riser flange of the primary border frame at the head and sill thereof.

3. The window structure of claim 2 in which said weather strip channel at the head is sufficiently movable vertically relative to said vent frame as to permit said weather strip channel at the sill to clear the sill portion of the inner riser flange of the primary border frame, and spring means between the base of said weather strip channel at the head and the head of the vent frame proper yieldingly resisting such relative movement thereof.

4. The window structure of claim 2 in which said vent frame has a weather strip channel along the meeting jamb thereof facing the respective jamb of the primary border frame and arranged to straddle the inner riser flange portion of said respective jamb when the vent frame is in a closed position, and weather strip means between said muntin bar and said vent frame.

5. The window structure of claim 1 in which the jamb section of said vent frame which is adjacent said light opening for the fixed pane has a slide bolt mounted thereon for vertical sliding movement to and from said inner step flange, the latter having a keeper opening therein arranged to receive the slide bolt when the vent frame is in a closed position.

6. The window structures of claim 5 in which said slide bolt has a handle projecting indoors of the vent frame for manually operating the slide bolt and for manually sliding the vent frame.

7. The window structure of claim 1 in which said vent frame has an outwardly faced circumferential channel, and upwardly and downwardly faced weather strip channels mounted in said channel at the head and sill, respectively, and straddling the inner riser flange of the primary border frame at the head and sill thereof.

8. The window structure of claim 7 in which said outwardly faced circumferential channel is deeper than said weather strip channels, a spacer between the floor of said circumferential channel and said weather strip chanenl at the sill, and spring means between said floor and said weather strip channel at the head, the latter said weather strip channel being sufficiently vertically movable relative to said vent frame in opposition to said spring means as to permit said weather strip channel at the sill to clear the sill portion of the inner riser flange of the primary border frame.

9. In a ventilating window structure a sliding vent comprising a vent frame having an outwardly faced border channel at the sill thereof having leg flanges with one of said leg flanges turned inwardly a minor part of the width of the channel to provide a stop narrowing the width of the mouth of the channel, and the other leg flange of the channel being inwardly offset at the floor of the channel a distance corresponding to the width of said stop, a longitudinally corrugated spacer strip having a width approximating the narrowed mouth of the channel, and an outwardly faced weather strip channel secured to said spacer strip along one side thereof and having a combined depth with the spacer strip as great as the depth of said channel beneath said stop, said spacer strip being adapted to be yieldingly compressed for insertion of the spacer strip channel as a unit into said border channel.

10. In a ventilating window structure, a sliding vent comprising a vent frame having an outwardly faced border channel, a leaf spring seated against the floor of said border channel by one of its ends and having its other end longitudinally slitted to provide a spring finger and a retainer finger, said retainer finger being bent away from the floor of the channel with respect to said spring finger, and an outwardly faced weather strip channel narrower than said border channel and seated against said spring finger to be held against lateral movement by said retainer finger and the side wall of said border channel which is adjacent said strip finger.

11. The window structure of claim 10 in which the outer edge of said side wall of the border channel bends back and overlies the weather strip channel a short amount to serve as a stop for limiting spring-urged outward movement of the weather strip channel with respect to the vent frame.

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