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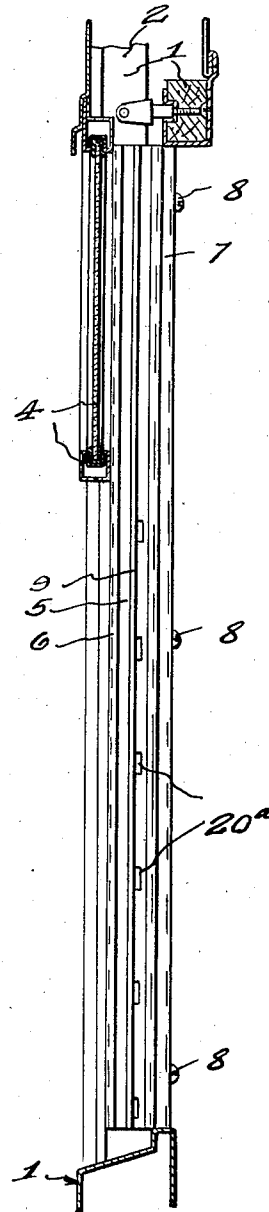
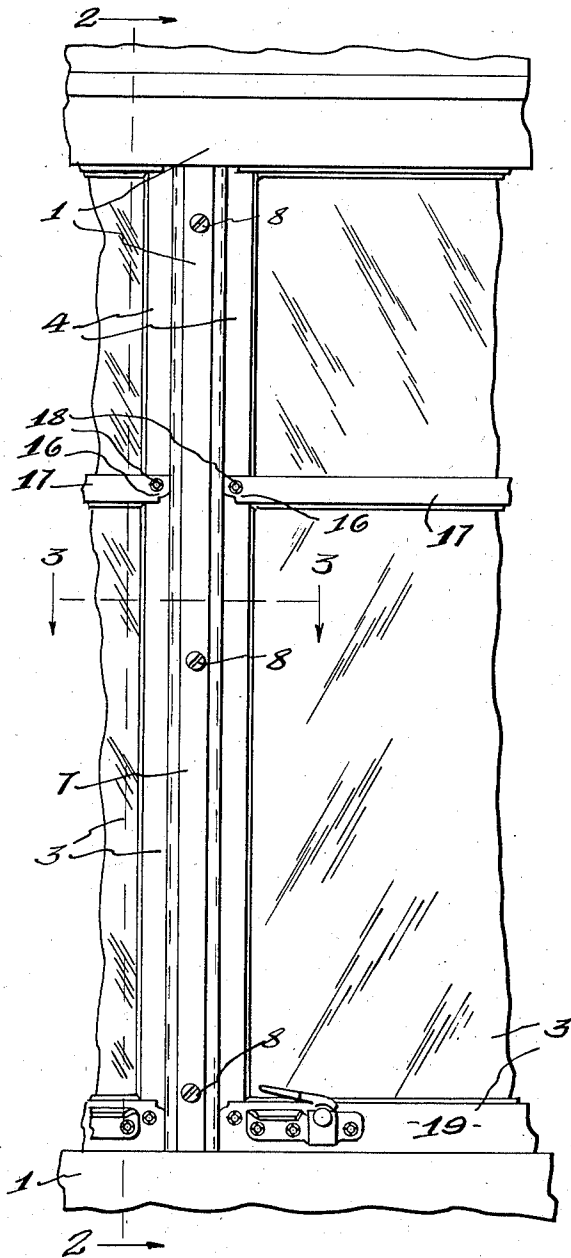
O. M. EDWARDS ET AL.

2,116,754

WINDOW CONSTRUCTION

Filed Feb. 13, 1937

3 Sheets-Sheet 1



INVENTORS.
Oliver W. Edwards and Russell B. Nelson
 BY *Boydell & Thompson.*
 ATTORNEYS.

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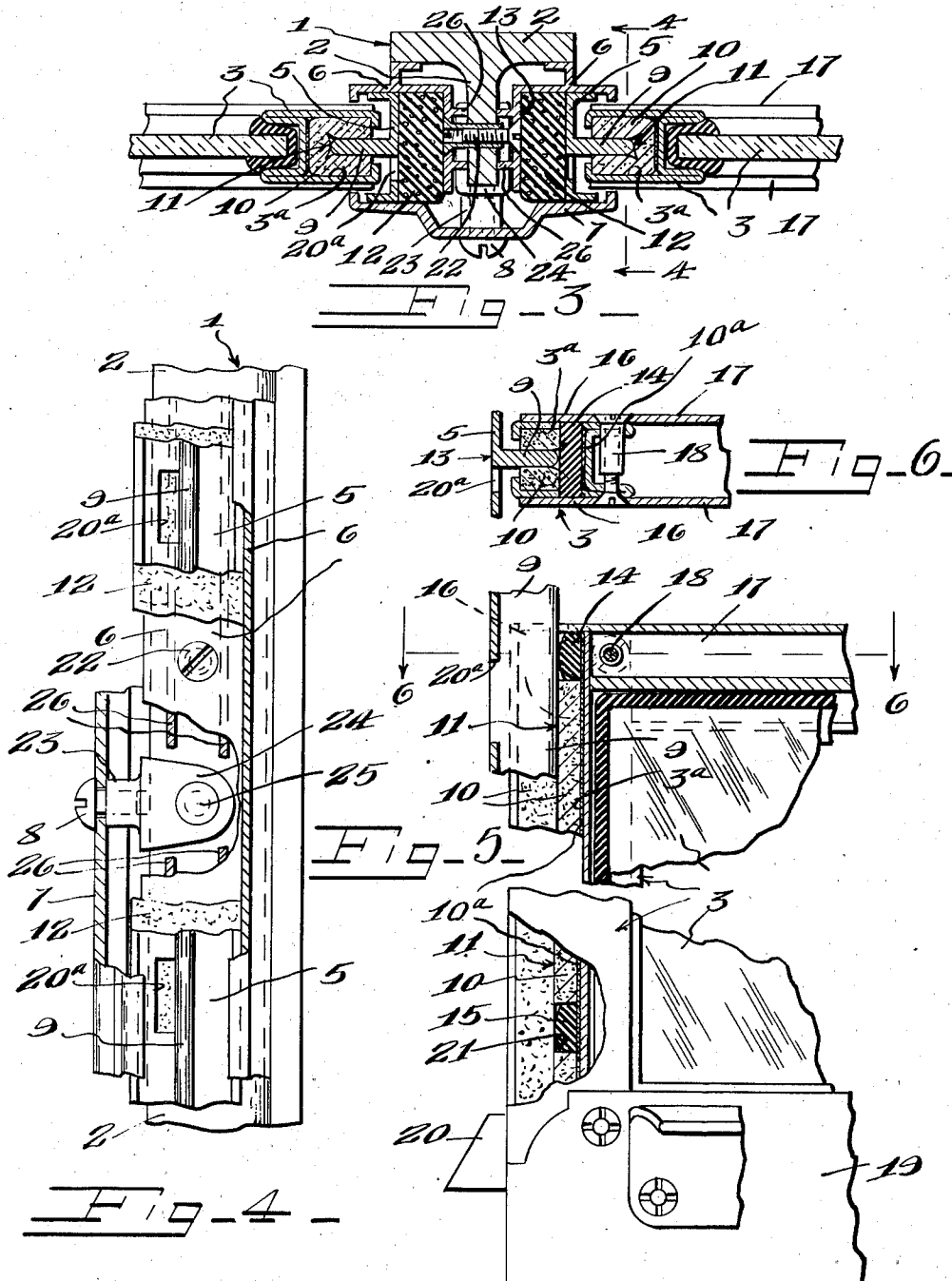
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WINDOW CONSTRUCTION

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3 Sheets-Sheet 2



INVENTORS.
Olive M. Edwards & Russell B. Nelson.
BY *Rodell & Thompson.*
ATTORNEYS.

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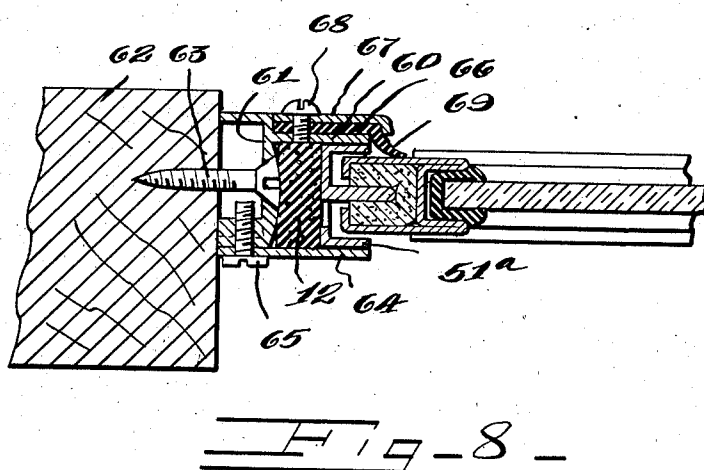
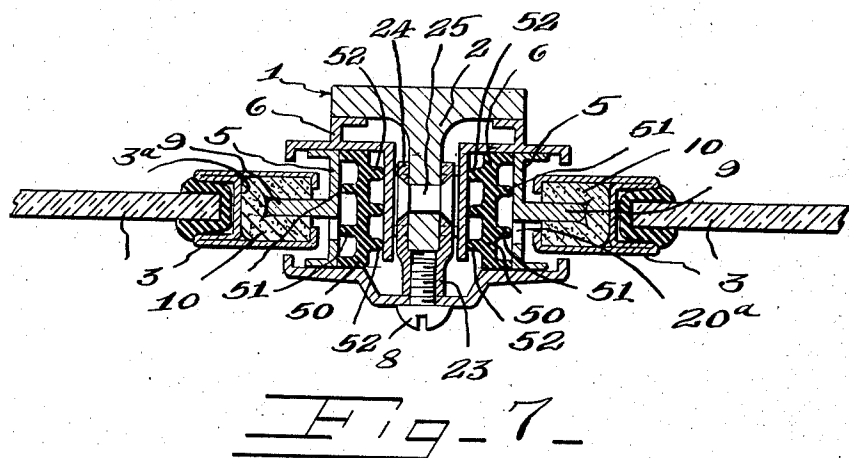
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WINDOW CONSTRUCTION

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3 Sheets-Sheet 3



INVENTORS.
Olin M. Edwards & Russell B. Nelson
BY *Bodell & Thompson*
ATTORNEYS.

UNITED STATES PATENT OFFICE

2,116,754

WINDOW CONSTRUCTION

Oliver M. Edwards, Syracuse, and Russell B. Nelson, Onondaga, N. Y., assignors to The O. M. Edwards Company, Inc., Syracuse, N. Y., a corporation of New York

Application February 13, 1937, Serial No. 125,614

11 Claims. (Cl. 189—73)

This invention relates to window constructions, particularly window structures for buses, railway cars, and the like, and has for its object a particularly simple and economical window construction or assembly embodying sash guide members which are automatically adjustable in a direction edgewise of the window structure to compensate for misalignments, within limits, of the window frame or the sash or both and for variations in the widths of standard sized sashes without applying to the sash, during its sliding or opening and closing movement, a braking effect, but at the same time holding the sash from looseness and rattling, all whereby the sash is easily operable and works uniformly under all conditions and at the same time is nonrattling and weather tight.

Window structures embodying sash guide members, which are adjustable in a widthwise direction, are of three classes, in one of which the sash guide is spring-pressed toward the edge of the sash and freely movable in an edgewise direction under the action of the spring or springs. An illustration of this type of sash is shown in Hoyt Patent No. 1,045,555 issued November 26, 1912. In this type of window, the spring-pressed guide member has a marked braking or brake-shoe effect on the sash and the operation of the sash, during its raising and lowering, is constantly varying under different atmospheric conditions. Another type is shown in Axe Patent No. 1,974,637 issued September 25, 1934 in which the guide member, after being adjusted to compensate for misalignments, etc. is firmly clamped in its adjusted position. See also Axe Patent No. 1,922,010 issued August 8, 1933. Another class is that shown in the application of Oliver M. Edwards, Serial Number 15,649, filed April 10, 1935 in which springs are employed to automatically effect the adjustment in contradistinction to manipulating the guide members to their adjusted position, and in which the guide member, after the springs have automatically adjusted it, is clamped in position to relieve the guide member of the spring pressure, so that the guide member does not have a varying brake-shoe effect on the sash during raising and lowering thereof.

The object of this invention is a window structure which has all of the advantages and none of the disadvantages of the three types above referred to, that is, the sash guide is automatically adjusted by a cushion acting uniformly on the guide member throughout the length thereof instead of localizing the pressure at spaced apart

points, so that the guide member does not exert a brake-shoe action and yet is not clamped in its adjusted position but is free to, at all times, adjust itself edgewise relative to the sash.

Another object of the invention is a window structure in which the sash and the guide member have slidably interfitting tongue and groove means with a non-metallic weather strip in the groove and coating with the tongue to hold the sash and the guide out of metal to metal contact, together with means for holding or preventing the tongue of said means from wearing the non-metallic weather strip, where it thrusts against the same. It will be understood that the sash and sash guides are usually formed of metal.

The invention consists in the novel features and in the combinations and constructions hereinafter set forth and claimed.

In describing this invention, reference is had to the accompanying drawings in which like characters designate corresponding parts in all the views.

Figure 1 is a fragmentary elevation of a window structure embodying this invention, right and left hand portions of adjacent windows of a car structure being shown.

Figure 2 is a sectional view on line 2—2, Figure 1.

Figure 3 is an enlarged sectional view on line 3—3, Figure 1.

Figure 4 is a fragmentary elevation, partly in section, taken approximately on the plane of line 4—4, Figure 3.

Figure 5 is a fragmentary elevation, partly in section, illustrating the inserts of harder material than the weather strip for coating with the tongue or rib of the guide to relieve the weather strip of undue wear or relieve the weather strip of the thrust of the tongue of the guide member.

Figure 6 is a sectional view on line 6—6, Figure 5.

Figure 7 is a view similar to Figure 3 illustrating a modified form of the invention.

Figure 8 is a sectional view, similar to Figure 3, illustrating my invention as applied to a different form of post structure from that shown in Figure 3.

1 designates the window frame which includes post structures 2 between the windows or at the sides of a single window. 3 designates the sash, this being capable of being raised and lowered. 4 is an upper stationary sash with which bus windows are usually provided. The stationary

sash forms no part of this invention and may be omitted.

5 5 designates sash guide members, these being carried by the post structure, there being one at each lateral edge of the sash 3. The guide 5 is here shown as mounted in a channel member 6 applied to the post structure 2, and usually one side of the channel 6 is demountable for the purpose of removing and replacing the sash or the guide member. The demountable side comprises 10 a plate 7 which is clamped to the post structure by screws 8, and forms a facing or trim for the post structure on the interior of the car body. For the intermediate posts, the plate 7 is formed 15 double and coacts with the guide members 5 on both sides of the post.

The guide member 5 and the sash 3 are formed with interfitting means, and one of these parts is formed with a groove or channel for receiving 20 a tongue or rib on the other of the parts, and a U-shaped weather strip is located in the groove or channel for receiving the tongue of the guide. In the illustrated embodiment of my invention, the guide is formed with the tongue or rib and 25 the sash with the groove or channel 3^a in the edge thereof in which the U-shaped weather strip is located.

Each guide member 5 is formed with a base from the intermediate portion of which the 30 tongue or rib 9 extends, the base slidably engaging opposite sides of the channel 6 and being freely movable in a direction edgewise of the sash therein.

10 designates a fibrous or non-metallic U-shaped weather strip in the groove or channel 35 of the stile of the sash 3 and the rib extends between the sides of the U formation with the end of the rib coacting at 11 with the bottom or intermediate portion of the U-shaped strip. 40 Heretofore the guide members, as before pointed out, have either been hand adjusted in an edgewise direction relatively to the sash and then firmly clamped in their adjusted position, or have been spring-pressed at spaced apart 45 points, so that they act brake-shoe fashion or have been spring-pressed at spaced points, and after the adjusted position determined, firmly clamped in the adjusted position.

In this sash, the guide member is freely movable at all times but is pressed outwardly uniformly at all points throughout its length or a length at least equal to the height of the sash, when the sash is closed, so that the guide is pressed in an edgewise direction uniformly at all 55 points throughout its length with an easy pressure, and the automatic adjusting action takes place at all times without the brake-shoe effect. The means for effecting this consists of a resilient cushion 12 forming a backing for the guide member 5 and located between the base of the guide member 5 and the bottom of the channel 6, the cushion being preferably carried by the guide member as a unit therewith and usually cemented thereto, as at 13. Preferably, the cushion 12 is a strip of soft sponge rubber extending 60 throughout the height or length of the guide member 5. In the form seen in Figure 7, the cushion member 50 is formed of a strip of rubber having lengthwise ribs or projections 51, 52 on opposite sides thereof, the projections or ribs on one side alternating with those on the other, the ribs being for the purpose of making the strip easily resilient.

In order to relieve the U-shaped weather strip 75 10 of the thrust of the rib 9, wear pieces or

inserts of a harder material than the U-shaped weather strip are provided at spaced apart points in the groove of the sash and preferably near the upper and lower ends of the sash, these wear pieces coacting with the edge of the rib or tongue 9. 14 and 15 designate respectively the wear strips or inserts, these being usually of bakelite or fiber with a rounding surface, the apex of which engages the end edge of the rib 9. The wear piece or insert 14 at the upper end of the sash extends transversely through the side walls of the channel or groove 3^a with the ends in openings in said walls, and through the intermediate part of the U-shaped strip 10. The ends are covered or held in position by the end portions 16 of the walls 17 of the top rail of the sash, which are held assembled to the stile of the sash by the sleeve screws 18. Thus, the insert 14 holds the weather strip 10 from sliding relatively to the sash during raising and lowering 20 of the sash. The lower wear piece or insert 15 is located above the bottom rail 19 of the sash, so as not to interfere with the sash holder mechanism including the latch bolt 20. This lower wear piece or insert is merely mounted in a transverse perforation 21 in the intermediate portion of the U-shaped weather strip. It is placed in the perforation 21 before the strip 10 is placed in the groove of the stile of the sash. The weather strips 10 are formed with a soft 30 metal backing strip 10^a stitched to the intermediate part of the U formation of the strip. The fiber portion only is cut out to form the perforations for the inserts 14, 15, so that the backing strips close the bottoms of the perforations for the inserts 14, 15. The latch bolts 20 coact with openings 20^a in the bases of the guides 5.

In the structures shown in Figures 3 and 7, the post consists of a T-shaped body and the channel members 6 are located on opposite sides of the leg of the T formation and secured thereto in any suitable manner, as by sleeve screws 22. The screws 8, which secure the face plate 7 to the post structure, thread into plugs 23 which are applied to the leg of the T formation, these plugs having a bifurcated base 24, the branches of which are extended over the sides of the leg of the T formation, and are secured thereto, as by rivets 25. These branches 24 make projections on opposite sides of the leg of the T formation, and in order that 60 the bottom of the channels 6 may thrust against the leg of the T formation, these bottoms are provided with lengthwise spacers or ribs 26 thrusting against the sides of the leg of the T formation, and these ribs are cut away, as seen in Figure 4, in order that the bottom of the channel 6 may span over the branches 24. The plugs are long enough to prevent the plate 7 from tightly clamping against the guide 5 and the rubber cushion 12 when the screws 8 are tightened, in order that the guide 5 and cushion 12 may be freely slidable in the channel 6 to effect the automatic adjustment.

In Figure 8, the frame or post structure is shown as a pillar rectangular in general form in cross section to which the guide member is applied.

In Figure 8, 60 designates the guide channel having a base plate 61 secured to the post 62 by screws 63, and 64 is the demountable side of the channel 60, this being secured in position by a screw 65 threading through the same and into the base 61. In order to make the sash weather tight, or to guard against and prevent moisture and water from entering or beating into the 7

guide channel 60 or into the guide member 51^a and its rubber backing, a weather strip 66 is provided on the outer side of the sash and the window frame, this strip being clamped between a retaining plate 67 and the outer wall of the channel 60. A screw 68 extends through the retaining plate 67 through the strip 66, and threads into the outer side wall of the channel. The weather strip 66 has a lip 69 tensioned to press against the outer side of the stile of the sash.

In Figure 8, the base of the guide channel is shown as formed convex and the cushion strip 12 as rectangular in cross section and normally engaging, if not under compression, only on the apex portion of the convex bottom of the channel, and when compressed, free to distort into the spaces at the sides of the convex base portion or the spaces at the end of the arc of the convex portion. Owing to the convex formation of the base and the rectangular formation of the cushion 12, the cushion 12 exerts a slow easy resiliency under pressure.

In operation, the guides 5 and their rubber backing can be placed with the tongues of the guides in juxtaposition in the weather strip of the sash, and then the sash and the guides placed in the channels 6 and the face plate 7 applied. During raising and lowering of the sash, if there are any misalignments out of the vertical in the post structure, the rubber backing or cushion compensates for such misalignments, and also presses the guide 5 to its full extent in an edgewise direction to hold the edge of the tongue or rib close to the bottom of the intermediate portion of the weather strip, regardless of variations that may occur in the widths of standard sashes or window openings. The variations are usually due to fitting the window frames to the window openings. If there is any misalignment, the cushion permits the guide member to slide in and out, but as the re-action of the rubber cushion is very light and evenly distributed, the pressure is not localized or applied with a binding or braking effect at any point, and the guide is not pressed with a brake-shoe effect against the sash, and yet the guide always has a compensating movement. The inserts 14, 15 relieve the weather strip 10 of wear at the edge of the rib or tongue, allowing merely a touching contact between the end of the rib or tongue and the weather strip, and these inserts further contribute toward eliminating or avoiding the brake-shoe action.

We claim:—

1. In a window construction, a window frame, a sash slidable in the frame, a guide member carried by the frame and coacting with the sash to guide the same, the guide member being adjustable in a direction widthwise of the sash to compensate, within limits, for misalignments and for relative variations in the widths of the sash and the window frames, and a resilient cushion forming a backing for the guide member and extending lengthwise thereof at least the height of the sash, when the sash is closed, whereby the guide member is cushioned uniformly at all points throughout its length.

2. In a window construction, a window frame, a sash slidable in the frame, a guide member carried by the frame and coacting with the sash to guide the same, the guide member being adjustable in a direction widthwise of the sash to compensate, within limits, for misalignments and for relative variations in the widths of the sash and the window frames, and a resilient cushion forming a backing for the guide member and extending

lengthwise thereof at least the height of the sash, when the sash is closed, whereby the guide member is cushioned uniformly at all points throughout its length, said cushion being secured to the guide member as a unit therewith.

3. In a window construction, a window frame, a sash slidable in the frame, a guide member carried by the frame and coacting with the sash to guide the same, the guide member being mounted in the frame automatically adjusting itself in an edgewise direction relatively to the sash to conform to misalignments and variations in the widths of the sash and window frame, and a resilient cushion forming a backing for the guide member and extending lengthwise thereof at least the height of the sash, when the sash is closed, said cushion being secured to the guide member as a unit therewith.

4. In a window construction, a window frame including a post structure and a channel member carried by the post structure and extending lengthwise thereof, a guide member in the channel and slidably coacting with the opposite sides of the same, whereby the guide member is automatically adjustable to conform to misalignments and variations in the widths of the sash and window frames, a sash extending into the channel between the sides thereof and out of contact therewith, the sash and the guide member having slidably interfitting means, and a cushion in the channel between the guide member and the bottom of the channel and forming a backing for the guide member, the cushion extending lengthwise of the guide member at least the height of the sash, when the sash is closed.

5. In a window construction, a window frame including a post structure and a channel member carried by the post structure and extending lengthwise thereof, a guide member in the channel and slidably coacting with the opposite sides of the same, whereby the guide member is automatically adjustable to conform to misalignments and variations in the widths of the sash and window frames, a sash extending into the channel between the sides thereof and out of contact therewith, the sash and the guide member having slidably interfitting means, and a cushion in the channel between the guide member and the bottom of the channel and forming a backing for the guide member, the cushion extending lengthwise of the guide member at least the height of the sash, when the sash is closed, and being secured to the guide member as a unit therewith.

6. In a window construction, a window frame, a guide member carried by the frame, a sash member movable along the guide member, one of said members being formed with a lengthwise groove in the edge thereof and the other with a tongue extending into the groove, a U-shaped weather strip of non-fibrous material in the groove and receiving the tongue between the branches thereof, the tongue thrusting toward the bottom portion of the weather strip, and spaced apart wear pieces of a harder material than the weather strip mounted in the groove and coacting with the edge of the tongue.

7. In a window construction, a window frame having a channel member, a sash guide member in the channel, a sash movable in the channel along the guide member and formed with a channel in the edge thereof, a U-shaped weather strip in the last-mentioned channel, the guide having a tongue extending between the opposite branches of the U-shaped weather strip and thrusting toward the intermediate portion of

the strip, and spaced apart wear pieces of harder material than the weather strip and engaging the end edge of the tongue at spaced points along the channel of the sash for relieving the strip of the thrust of the tongue.

- 5 8. In a window construction, a window frame having a channel member, a sash guide member in the channel, a sash movable in the channel along the guide member and formed with a groove
10 in the edge thereof, a U-shaped weather strip in the groove, the guide having a tongue extending between the opposite branches of the U-shaped weather strip and thrusting toward the intermediate portions of the strip, and spaced
15 apart wear pieces of harder material than the weather strip and engaging the end edge of the tongue at spaced points along the channel of the sash for relieving the strip of the thrust of the tongue, said pieces being inserts in the weather
20 strip and located in the groove near the upper and lower ends of the sash.

9. In a window construction, a window frame having a channel member, a sash guide member in the channel, a sash movable in the channel
25 along the guide member and formed with a groove in the edge thereof, a U-shaped weather strip in the groove, the guide having a tongue extending between the opposite branches of the U-shaped weather strip and thrusting toward the intermediate portion of the strip, and spaced
30 apart wear pieces of harder material than the weather strip and engaging the end edge of the tongue at spaced points along the groove for

relieving the strip of the thrust of the tongue, and means for thrusting the guide member in an edgewise direction toward the edge of the sash.

10. In a window construction, a window frame, a sash slidable in the frame, a guide member carried by the frame and coacting with the sash to guide the same, the guide member being adjustable in a direction widthwise of the sash to compensate, within limits, for misalignments and for relative variations in the widths of the sash and the window frames, and a resilient cushion consisting of a strip of sponge rubber forming a backing for the guide member and extending lengthwise thereof at least the height of the sash, when the sash is closed, whereby the guide member is cushioned uniformly at all points throughout its length.

11. In a window construction, a window frame, a sash slidable in the frame, a guide member carried by the frame and coacting with the sash to guide the same, the guide member being adjustable in a direction widthwise of the sash to compensate, within limits, for misalignments and for relative variations in the widths of the sash and the window frames, and a resilient cushion formed with projections on the inner and outer sides thereof, the projections on one side alternating with those on the other, said cushion forming a backing for the guide member and extending lengthwise thereof at least the height of the sash, when the sash is closed.

OLIVER M. EDWARDS.
RUSSELL B. NELSON.