May 15, 1945. O. H. COURSON 2,375,974

SASH GUIDE AND SUPPORT

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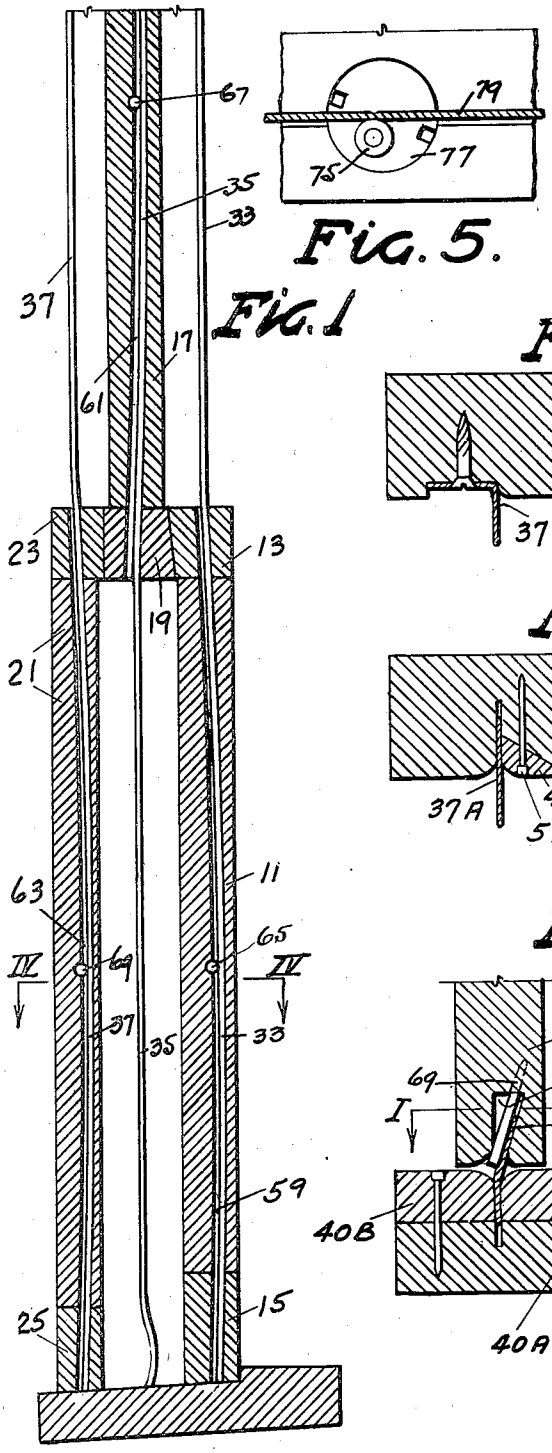


Fig. 1

Fig. 5.

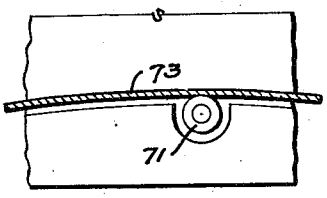


Fig. 6.

Fig. 4.

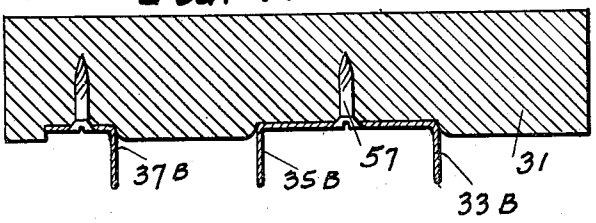


Fig. 3.

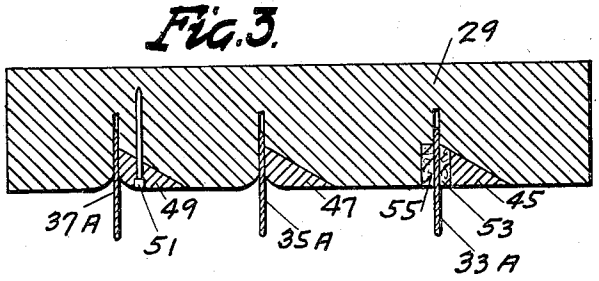
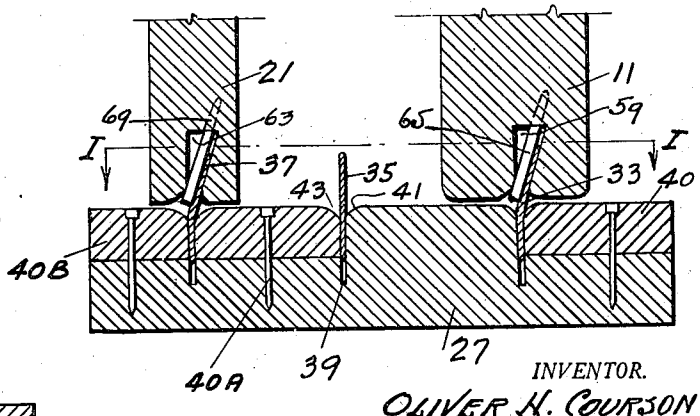


Fig. 2.



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Fig. 8.

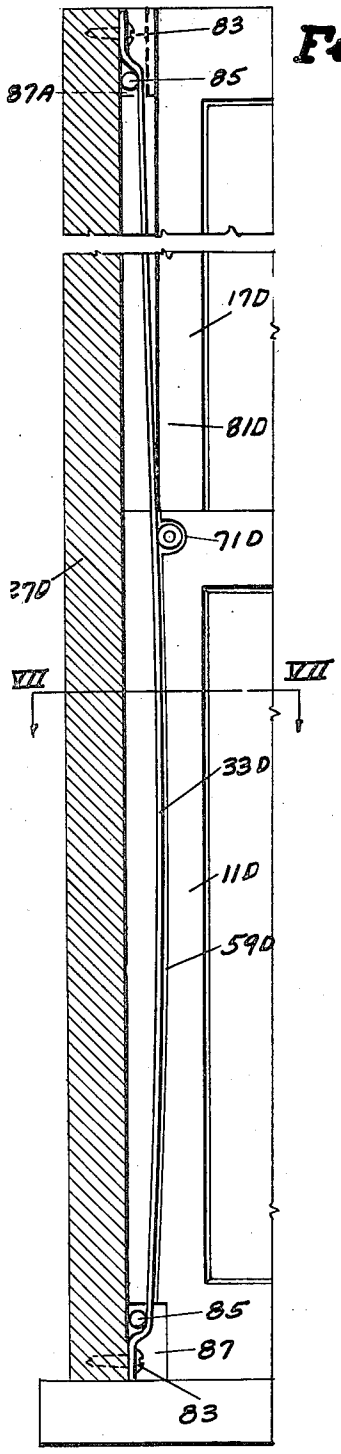


Fig. 7.

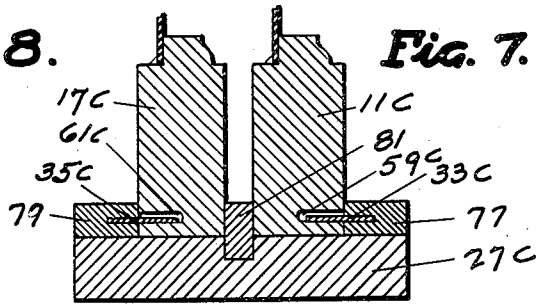


Fig. 9.

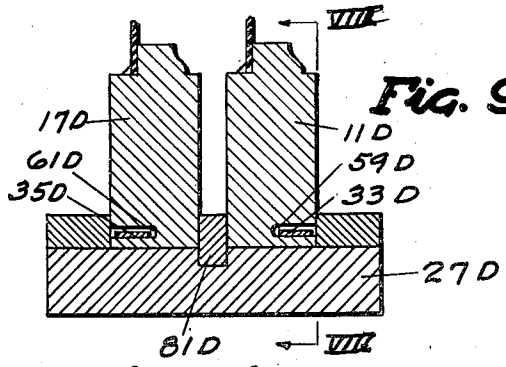


Fig. 10.

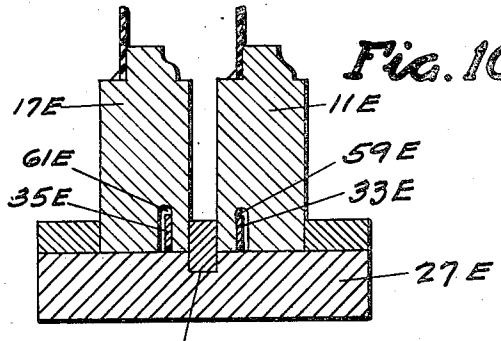
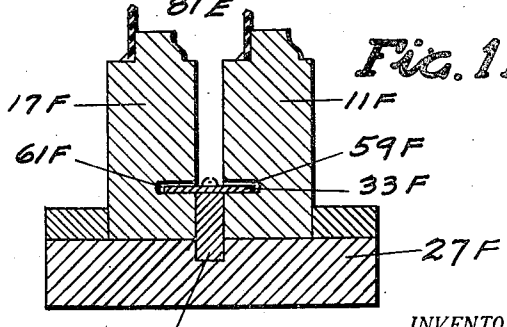


Fig. 11.



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Patented May 15, 1945

2,375,974

UNITED STATES PATENT OFFICE

2,375,974

SASH GUIDE AND SUPPORT

Oliver H. Courson, Memphis, Tenn.

Application July 2, 1943, Serial No. 493,185

11 Claims. (Cl. 20—52)

This invention relates to slides for sashes, such as window sashes, together with the complementary sashes for use with such slides.

Window sashes of ordinary type are usually mounted for sliding upward and downward in oppositely grooved frame members, there ordinarily being a confining rail on the inner side of the lower sash, a separating stile between the two sashes, and a rail on the outer side of the upper sash, these three rails forming grooves for the upper and lower sashes respectively. Where a screen is added additional rails or stiles are provided for such screen sash.

Shrinkage, where wooden sashes are used, ordinarily so loosens the sashes in the window frame that they rattle between the rails and additionally pull away from the frame itself leaving edge spaces through which air may enter in very considerable amounts, extremely objectionable during cold weather, it ordinarily being found necessary to put felt or rubber strips along the rails to prevent such rattling and prevent undesired entrance of air.

If the rails themselves so closely confine the sash as to prevent rattling when the sashes are dry, swelling due to rain of both rail and sash practically immobilize the sash and are a source of constant trouble, and even where metal sash and rails are employed it is extremely difficult to accomplish that nicety of adjustment which will provide necessary tightness and at the same time allow free sliding movement.

The weight of the sash is counter-balanced by springs or weights in order that the sash may remain at the position to which it is shifted or raised and in extremely heavy sash such provision will ordinarily still have to be made.

The objects of the present invention are:

To provide means for so mounting the sash in the frames that they will be substantially sealed against the undesired inflow of air therepast and that they will be held against rattling;

To provide means for so mounting the sash that a substantially uniform sliding tension be accomplished and maintained.

The means by which this and other objects are accomplished, and the method of their accomplishment, will readily be understood from the following specification upon reference to the accompanying drawings, in which:

Fig. 1 is a sectional elevation taken as on the line I—I of Fig. 2 adjacent the edge of the sash and looking toward the frame at one side of the window.

Fig. 2 is a typical cross section taken as on the line II—II of Fig. 1 showing a portion of the window frame and fragmentary portions of the side edges of the lower sash and an additional sash, such as a screen.

Fig. 3 shows the oppositely faced frame member with modified means for securing the flexible slides in place; and

Fig. 4 an additional securing method therefor.

Fig. 5 shows an edge view of a fragmentary portion of a sash and adjustable roller means for tightening or loosening the slide in the groove of the sash, and for increasing or decreasing friction in such groove point; and

Fig. 6 a similar fixed position roller.

Fig. 7 is a typical horizontal cross section of a fragmentary portion of a window, taken as at the level of the line VII—VII of Fig. 8, with the upper sash, however, lowered so that the section may cut both sashes, showing a modification in which face portions of the sash are grooved, and the slides are conformingly positioned.

Figs. 8 to 10 inclusive show a modified type of structure in which support of the sash is accomplished by frictional engagement with flexible supporting members which have end supports only; Fig. 8 being a sectional elevation taken as on the line VIII—VIII of Fig. 9, showing a face view of the side rails of an upper and lower sash and a section of the window frame against which the edges of the sashes abut.

Fig. 9 is a section taken as on the line VII—VII of Fig. 8, with the upper sash moved to overlapping relation with the lower sash; and

Figs. 10 and 11 are additional sections showing modifications in the positioning of the supporting slide.

Referring now to the drawings in which the various parts are indicated by numerals:

11, 13 and 15 are respectively side, top and bottom rails of the bottom sash of a window frame. 17 and 19 are respectively a portion of the side and the bottom rail of the top sash and 21, 23 and 25 the side, top and bottom rails as of a screen sash. 27, 29 and 31 are respectively window frame members between an opposite pair of which the window sashes and screen sash are disposed.

In my device, thin flexible strips 33, 35 and 37 extend preferably from top to bottom of the window frame, these strips, hereinafter designated as slides, being preferably thin, flat strips of resilient metal, though they may be thin, flat strips of resilient plastic or other suitable material. Preferably the window frame members are slotted from top to bottom and the slides driven

tightly into the slots until a desired amount only is left projecting, the slots, as the slot **39** in the window frame **27**, being preferably deeper than the inserted portion of the slides to provide necessary, or desired, adjustment. These slots extend straight from top to bottom of the sash so that the slides, as the slides **37** held by the slot **39**, are initially straight, and insofar as that portion which is in the slots is concerned, are maintained by the slots in such straight line. The edges of the slots, as the edges **41** and **43** of the slot **39**, are preferably rounded to permit somewhat greater transverse flexing of the slides. The slots for the slides may be largely, or entirely, accomplished by strips **40**, **40**—A, and **40**—B which are secured against the slides after they are placed, as by nailing to the groove member **27**, or in any other usual or desired manner.

In Fig. 3, slides **33**—A, **35**—A and **37**—A are shown as secured by moulding strips **45**, **47** and **49** respectively, which strips may be secured in place, as by nails or brads, as the brad **51** shown securing the slide **49**. These strips may be faced, as is the strip **45**, with resilient material **53**, and if desired the slot broadened and also faced by an opposite strip **55** of similar material, this material being a material such as soft rubber or water-proof felt which will permit a certain amount of lateral displacement of the slide. If desired, as shown in Fig. 4, the slides **33**—B, **35**—B may be the opposite flanges of a channel secured in place to the frame member **31** by screws, as the screw **57**; or the slides, as the slide **37**—B, may be one of the legs of an angle similarly secured.

It is preferred that the slides extend continuously from top to bottom of the window frame, and they are thus shown. It is obvious, however, that it may not be possible to assemble the sashes in the frame where continuous slides are used unless it be done at the time the frame is being constructed, and in such event, it may be found necessary to form the slides each in two pieces, one of which would be inserted, for example, above the top of the bottom sash, the sash raised and the lower half of the slide put in place, but such being an obvious construction is not here shown.

The edges of the side rails, and the ends of the top and bottom rails of the sashes are grooved from top to bottom with flatly arcuate grooves **59**, **61** and **63** respectively, the section plane on which Fig. 1 is taken cutting these grooves, but not the slide; and Fig. 1 showing the groove curvature and the relation of the slides therein. The grooves are of the cross section shown in Fig. 2, being wider than the thickness of the slides, and preferably having one side inclined. The slides as deflected may lie against and hug that side of the groove. The grooves also are deeper than the slides and the approach edges of the grooves are preferably rounded.

About midway longitudinally of the grooves, pins **65**, **67** and **69** are inserted on the convex side of the grooves **59**, **61** and **63** respectively to deflect the slides **33**, **35** and **37** laterally out of line toward and slidably against the concave sides of the grooves, this causing the slides to hug the grooves from top to bottom of the sash and seal against passage of air.

In Fig. 6 a roller **71** is shown as used in place of the pin for deflecting the slide **73**.

In Fig. 5 a similar roller **75** is shown mounted in a rotatable head **76** which may be turned to increase or lessen the pressure of the roller on the slide **77**.

In use, the sash may be raised or lowered, the pin or roller sliding or rolling, as the case may be, along the slide and holding that part of the slide within the upper and lower confines of the sash slidably against the concave side of the slot.

It will be obvious that the opposite sides of the sash are similarly mounted, though the slides only are shown.

In Fig. 7, slides **33**—C, **35**—C are shown as secured in suitable slots in stiles **79** which slidably confines the side rails **11**—C, **17**—C of the lower and upper sash respectively against an interposed or center stile **81**, the slides projecting from the stiles into grooves **59**—C and **61**—C which correspond substantially to the grooves **59** and **61** of Figs. 1 and 2, except that they are cut into the front and back faces of the sash rails, rather than into the edges of these rails, as previously shown.

In Figs. 8 and 9, slides **33**—D, **35**—D are shown which are free throughout their length from edge engagement, the slides being secured at their respective upper and lower ends as by screws **83** to the window frame members **27**—D. The slides preferably are stretched and tightened, and at the same time spaced outward from the frame members by blocks, as the dowel pins **85**, which are forced under the slides after the slide ends have been securely fastened.

The faces of the sash rails **11**—D, **17**—D are channelled from top to bottom with grooves **59**—D, **61**—D respectively, which grooves extend arcuately from top to bottom of the sash, the grooves bowing, or convexing away from the frame **27**—D as they extend toward the mid point of the sash from top and bottom. Adjacent the top of the lower sash, and, though not shown, the bottom of the upper sash, is a roller, as the roller **71**—D which confines the strip **33**—D against the convex side of the groove at the top end of the sash, confining at the lower end being accomplished by displacement of the slide away from the frame as the lower end of the sash approaches the lower secured end of the slide. **87** is a cut-away portion or chamber at the bottom of the lower sash in which the groove **59**—D terminates, a similar chamber **87**—A being provided at the upper end of the upper sash.

Fig. 10 shows a substantially identical arrangement, except that the slides **33**—D, **35**—D are laterally at right angles to the frame, and are fastened at their upper and lower ends to the center stile **81**—E, and the grooves **59**—E and **61**—E are conformingly in the edges of the sash **11**—E, **17**—E.

Fig. 11 shows a single slide **33**—F for two sashes, the slide being of width to span between the sash **11**—F and **17**—F and into facing grooves **59**—F, **61**—F respectively cut therein.

It will be understood that the slides **33**—D, **35**—D to **33**—F inclusive may be of other cross section than thin and flat, provided only that they be resilient and flexible.

In this form of the device the sashes are supported in desired position by frictional engagement of the slides with the sash grooves and may be shifted at will to desired positions.

It will be understood that in all forms of the device the sash shifts straight upward and downward along the slides without lateral deviation of the sash.

I claim:

1. In combination with a frame, as a window frame, a sash disposed for sliding movement

therein, said sash having arcuately bowed grooves extending from top to bottom thereof along opposite sides of said sash; slides extending co-extensively with and along the path of sliding movement of said sash, and secured against longitudinal movement to members of said frame; each said slide being a thin, flat strip of resilient, flexible material, and its complementary said groove being of depth and width to loosely receive said strip, and means carried by said sash, bearing locally against said slide to confine said slide slidably against one side of said groove.

2. In combination with a frame, as a window frame, a sash disposed for sliding movement therein, said sash having arcuately bowed grooves extending from top to bottom thereof along opposite sides of said sash; slides extending co-extensively with and along the path of sliding movement of said sash, and secured against longitudinal movement to members of said frame; each said slide being an elongated strip of resilient, flexible material, and its complementary said groove being of depth and width to loosely receive said strip, and means carried by said sash, bearing locally against said slide to confine said slide slidably against one side of said groove.

3. In combination with a frame, as a window frame, a sash disposed for sliding movement therein; a sash, having along its opposite sides grooves extending co-extensively with and along the path of sliding movement of said sash from top to bottom of said frame; slides, each a thin, flat strip of resilient, flexible material having an edge portion from end to end thereof, secured to said frame member along said path and the opposite edge portion projecting from said frame member, said grooves being of width and depth to loosely receive the projecting edge portion of said slide, and being arcuately bowed from end to end in amount to deflect the said slide portions respectively therein from said paths substantially throughout the length of said grooves, and means carried by said sash locally confining said slides slidably each against one side of its said groove.

4. A frame and sash construction in accordance with claim 3, in which said means carried by said sash locally confining said slides slidably each against one side of its said grooves are pins disposed substantially at the mid point longitudinally of said grooves.

5. The combination with a frame, as a window frame, and a sash having longitudinal grooves extending from top to bottom thereof along its opposite sides, said sash being disposed for sliding movement in said frame; of mounting means for said sash including oppositely disposed slides secured to a member of said frame and extending co-extensively with and along the path of sliding movement of said sash, and respectively disposed in said sash grooves; each said slide being a thin strip of resilient, flexible material, each said sash groove being of depth and width to loosely receive a said slide, and being arcuately bowed from top to bottom of said sash to deflect the said slide therein from said path substantially throughout the length of said groove, and means carried by said sash bearing locally against said slide to confine said slide slidably against one side of said groove.

6. The combination with a frame, as a window frame, and a sash disposed for sliding movement in said frame, of means for mounting said sash including grooves in opposite sides of said sash, slides, engaged respectively in said grooves, said slides being secured at their opposite ends, respectively each to a said frame member, said slides extending from top to bottom of said frame along the path of sliding movement of said sash, each said slide being an elongated strip of resilient flexible material; said grooves being of depth and width to loosely receive a said slide and being arcuately bowed from top to bottom of said sash to deflect the said slide from said path throughout the length of said groove, and a roller carried by said sash adjacent one end thereof bearing against said slide to confine said slide slidably against the convex side of said groove.

7. The combination with a frame, as a window frame, and a sash disposed for sliding movement in said frame, of means for mounting said sash including grooves formed in opposite sides of said sash, said grooves extending from top to bottom of said sash, slides engaging in said grooves, said slides being secured at their opposite ends respectively each to a said frame member, and extending from top to bottom of said frame along the path of sliding movement of said sash, each said slide being an elongated thin, flat strip of resilient, flexible material; said grooves being of depth and width to loosely receive a said slide and being arcuately bowed from top to bottom of said sash to deflect the said slide from said path throughout the length of said groove, and a roller carried by said sash adjacent one end thereof bearing against said slide to confine said slide slidably against the convex side of said groove.

8. The combination with a frame, as a window frame, a sash disposed for sliding movement therein, said sash having along opposite sides, arcuate grooves extending from top to bottom thereof, said grooves having concave walls diverging, toward their bottoms, radially outward with respect to the longitudinal curvature of said grooves; slides extending along the path of sliding movement of said sash from top to bottom of said frame, each said slide being a thin, flat strip of resilient, flexible material, having an edge portion from end to end thereof secured to a said frame member along said path, and an opposite edge portion projecting from said frame member and accomplishing engagement with a said groove, and means disposed substantially at the mid point longitudinally of said groove, bearing against said slide to confine same slidably against the concave side of said groove.

9. The combination with a frame, as a window frame, a sash disposed for sliding movement therein, said sash, having along opposite sides, arcuate grooves extending from top to bottom thereof, said grooves having concave walls diverging, toward their bottoms, radially outward with respect to the longitudinal curvature of said grooves; slides extending along the path of sliding movement of said sash from top to bottom of said frame, each said slide being a thin, flat strip of resilient, flexible material, having an edge portion from end to end thereof secured to a said frame member along said path, and an opposite edge portion projecting from said frame member and accomplishing engagement with a said groove; and a roller journalled in said sash substantially at the mid point longitudinally of said groove and bearing against said slide to confine same slidably against the concave side of said groove.

10. The combination with a frame, as a window frame, a sash disposed for sliding movement

therein, said sash, having along opposite sides, arcuate grooves extending from top to bottom thereof, said grooves having concave walls diverging, toward their bottoms, radially outward with respect to the longitudinal curvature of said grooves; slides extending along the path of sliding movement of said sash from top to bottom of said frame, each said slide being a thin, flat strip of resilient, flexible material, having an edge portion from end to end thereof secured to a said frame member along said path, and an opposite edge portion projecting from said frame member and accomplishing engagement with a said groove; and a pin secured in said sash, substantially at the mid point longitudinally of said groove, bearing against said slide to confine same slidably against the concave side of said groove.

11. The combination with a frame, as a window frame, having side members and a sash disposed for sliding movement therein, said side members having slots extending from top to bottom thereof, and thin, flat strips of resilient material extending substantially throughout the length of said slots, each said strip respectively having a side portion secured in a said slot and the opposite side portion thereof projecting from said frame member; said sash having complementary grooves in opposite edge portions thereof respectively receiving the projecting portions of said strips, said grooves being transversely of width and depth to loosely receive said portions, and being arcuately curved from top to bottom of said sash to deflect said projecting strip portions and cause frictional engagement therewith.

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