June 2, 1959 F. C. BRENGMAN 2,888,719

WINDOW CONSTRUCTION

Filed Aug. 10, 1956 2 Sheets-Sheet 1

Fig. 2.

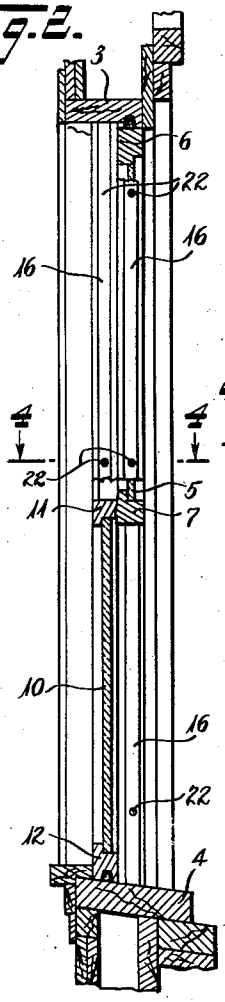
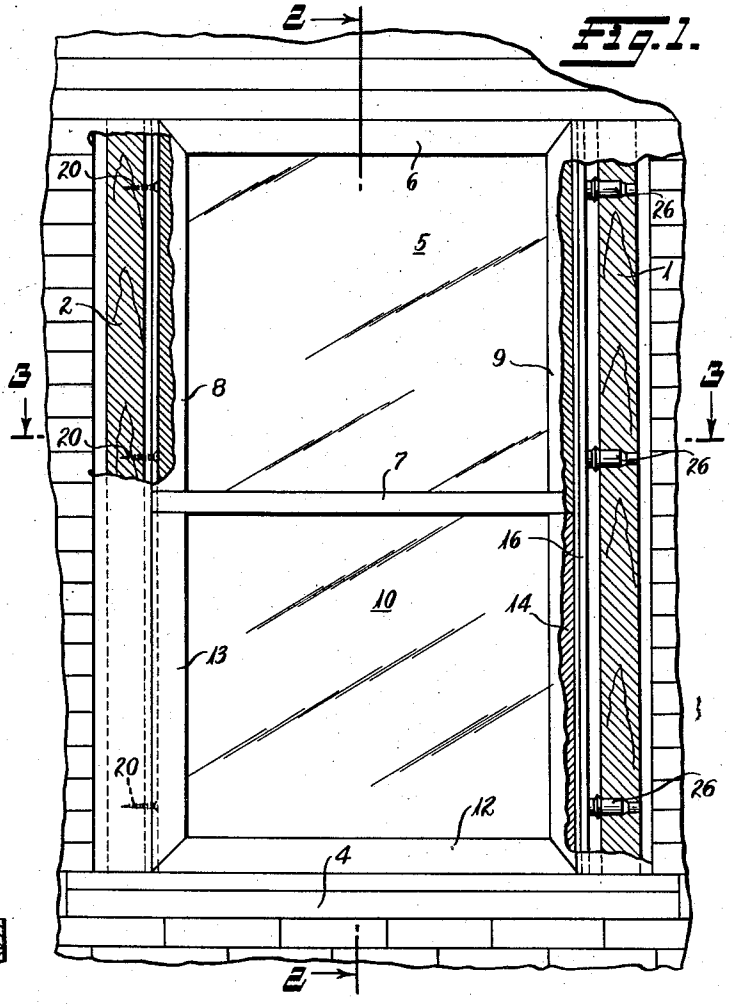


Fig. 1.



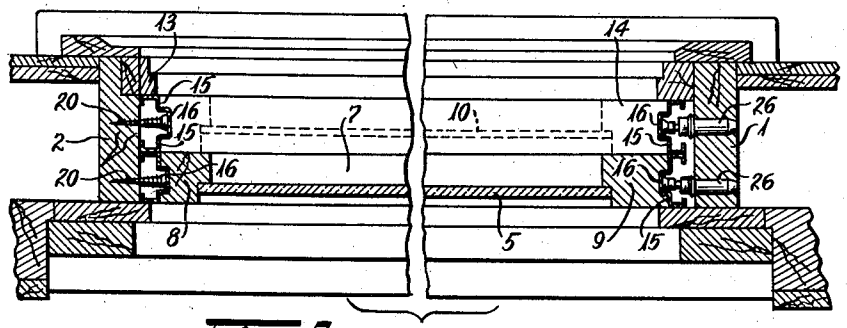


Fig. 3.

INVENTOR.
Fred C. Brengman
BY
Alexander Howell
ATTORNEYS

June 2, 1959 F. C. BRENGMAN 2,888,719

WINDOW CONSTRUCTION

Filed Aug. 10, 1956 2 Sheets-Sheet 2

Fig. 4.

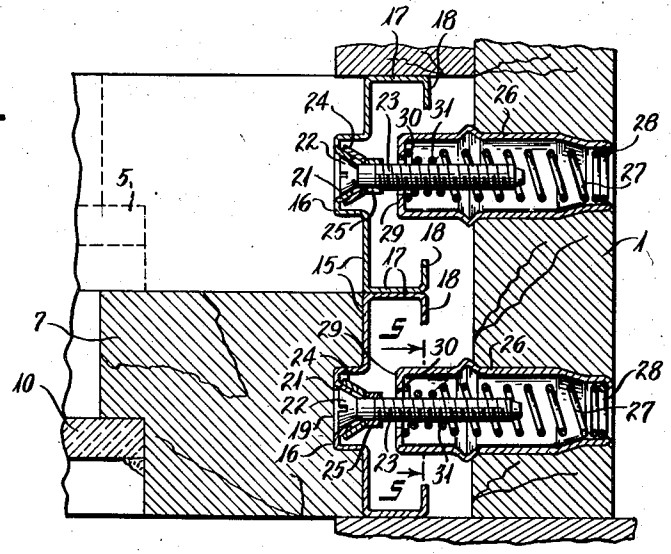


Fig. 5.

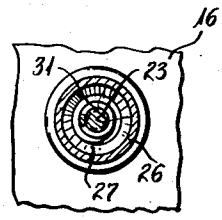


Fig. 6.

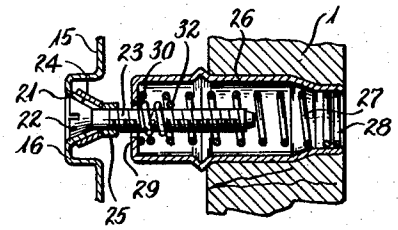
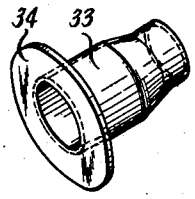


Fig. 7.



INVENTOR.
Fred C. Brengman
BY
Alexander Stowell
ATTORNEYS

United States Patent Office 2,888,719 Patented June 2, 1959

2,888,719

WINDOW CONSTRUCTION

Fred C. Brengman, Lancaster, Ohio, assignor to The Athens Flooring Company, Athens, Ohio, a corporation of Ohio

Application August 10, 1956, Serial No. 603,334

7 Claims. (Cl. 20—52.2)

This invention relates to improvements in window construction in which two or more sashes are slidably mounted in the window frame, my invention relating primarily to the construction of the slides supported by the window frame and which engage the said sashes in their sliding movement.

One object of the invention is to provide a window construction wherein the sashes may be removably mounted in the window frame, and the slides which engage the sashes may be adjusted to various positions to accommodate variations which may occur in the window frame, per set, and also to accommodate various widths of sashes even though the frame may become warped or distorted.

A further object is the provision of novel threaded members for moving the slide bearing inwardly or outwardly from one of the sash stiles to maintain substantially constant pressure on the sash stile notwithstanding the distance of the stile from the frame.

Other minor objects of the invention will be hereinafter set forth.

I will explain the invention with reference to the accompanying drawings, which illustrate some practical embodiments thereof, to enable others familiar with the art to adopt and use the same; and will summarize in the claims, the novel features of construction, and novel combinations of parts, for which protection is desired.

In said drawings:

Figure 1 is an elevational view of a window embodying my invention, certain parts thereof being shown in section;

Fig. 2 is a vertical section on the line 2—2, Fig. 1;

Fig. 3 is an enlarged horizontal section on the line 3—3, Fig. 1;

Fig. 4 is an enlarged horizontal section on the line 4—4, Fig. 2;

Fig. 5 is a transverse section on the line 5—5, Fig. 4;

Fig. 6 is an enlarged detail through a modified form of spring box, including the spring and adjusting screw anchored in the adjustable slide rail; and

Fig. 7 is a perspective view of a modification of the housing.

As shown in Fig. 1, my invention includes a window frame having upright side jambs 1 and 2, header 3 and sill 4 mounted in a wall opening, and in said window frame are mounted the slidable window sashes 5 and 10. Upper sash 5 includes a top rail 6, a bottom rail 7, and oppositely disposed stiles 8 and 9. Bottom sash 10 includes a top rail 11, a bottom rail 12, and oppositely disposed stiles 13 and 14.

On the inner faces of the frame jambs 1 and 2 are a pair of parallel slide rails which engage the opposed faces of the stiles 8—9 and 13—14 of the sashes 5 and 10. The slide rails at the opposite sides 1 and 2 of the window frame are generally similarly constructed, and each comprises a metallic plate 15, having the outwardly pressed

trough-shaped portion 16, said plate 15 having side flanges 17, the outer ends of flanges 17 being inturned as at 18, as clearly shown in Fig. 4. The trough-shaped portions 16 serve as guide ribs which engage grooves 19 in the opposed faces of the stiles 8—9 and 13—14 of the sashes 5 and 10.

On one side of the window frame, as shown in Fig. 1, the slide rails 15—18 are secured in fixed position relatively to the jamb 2 of the window frame by means of screws 20 or the like which extend through the trough-shaped portions 16 and into the jamb 2 of the window frame; while at the opposite side of the window frame the slide rails 15—18 may be moved inwardly or outwardly with respect to the sash stiles 9 and 14. At this latter side of the window the trough-shaped portions 16 of the slide rails 15—18 are provided with pressed countersunk holes 21 receiving the countersunk heads 22 of screws 23. Conical shaped collars 24 engage the undersides of the countersunk holes 21 and are maintained in position to hold the heads 22 of the screws 23 within the countersunk holes 21 by means of collars 25 which are crimped around the screws 23 adjacent the heads 22 and which engage the inner ends of the collars 24. The trough-shaped portions 16 slidably engage the customary grooves in the outer faces of the window sash stiles.

As shown in Figs. 4 and 5, screws 23 enter spring boxes, each of which consists of two parts, i.e., a tubular housing 26 which is pressed into the jamb 1 of the window frame, and a spring 27 of the hour-glass type which is securely anchored at its base or inner end within the housing 26 by compressing the housing around deadend coils 28 of spring 27, the outer end of each spring 27 engaging the inturned end 29 of housing 26 which end is provided with an opening 30 for the passage of screw 23.

In Figs. 4 and 5, each spring 27 has disposed between its outermost coil, which is of major diameter, and the next adjacent coil of major diameter one or more coils 31 of restricted diameter forming a helix which receives and engages the threads of screw 23, so that when screws 23 are rotated the slide rail 15 will be adjusted towards or from the window frame thus allowing the window sash to be moved inwardly or outwardly of the window frame thereby permitting the sash to be tightened or loosened as desired. Such arrangement moreover provides that the window sash may be removed from the window frame without necessitating removal of inside stops from the window frame.

Fig. 6 discloses a modification of the spring 27, in which the outer end of the spring is reduced in diameter as at 32 for several inturned coils disposed within the outer end of the major length of spring 27, so that coils 32 form a helix adapted to engage the threads of screw 23, for performing the same function as the reduced diameter helix formed by coils 31 shown in Figs. 4 and 5 and described above.

In some embodiments the spring 27 shown in Fig. 6 may be used without a tubular housing 26, such as shown in Figs. 4, 5 and 6, which has an end annular flange 29. In such embodiments a modified form of housing may be used, as shown in Fig. 7, in which the housing 33 has its inner end conforming with that shown in Figs. 4, 5 and 6, and has a peripheral flange 34 adapted to seat on the outer face of the jamb 1 of the window frame. The spring 27 such as shown in Fig. 6 may be somewhat shorter than the spring 27 of Fig. 4, and similarly anchored in the housing but need not contact a housing end wall such as 29 of Fig. 4. This modified housing (Fig. 7) permits adjustments to be made with respect to

the slide rail 15—18, although the same may not permit sufficient travel to allow the sash to be readily removed from the window frame without first removing at least one inside stop from the window frame.

My device may be used with the weatherstrip slide rails of a double-hung window to allow proper adjustment of the sash at all times. When assembled, the parts would be as shown in Figs. 3 and 4. To remove the window sash from the window frame it is only necessary to raise the sash 10 a short distance or lower the sash 5 a short distance and then exert side pressure toward the spring box mounted slide rails 15—18 of an amount sufficient to permit the opposite stile to clear the stationary mounted slide rail, then swing the sash out of the frame. To install the sash in the frame simply place the groove in the stile over the trough 16 of the slide rail 15—18 on the spring mounted side; then exert pressure outwardly toward the slide rail 15—18 until the sash has travelled a sufficient distance to allow the stile on the opposite side to clear the stationary mounted slide rail and swing the sash into position within the frame. Both of these operations take advantage of the ability of the springs 27 to flex enough to allow the sash to be installed or removed with a minimum of effort. Alternatively, the window may be removed by uncovering the heads 22 of screws 23 and threading the screws inwardly until trough-shaped portions 16 disengage from the grooves in the window sashes to permit the window sashes to be swung outwardly or inwardly with respect to the window frame. After the window has been replaced in position the screws 23 may be rotated to move the slide rails 15—18 toward the stiles of the sashes until the proper engagement of the slide rails with the sash stiles has been effected, this movement being effected because of the threading of the screws 23 in the helix coils 31 or 32 of springs 27 which are anchored in housings 26 or 33.

The sashes which are to be mounted in the window frame illustrated are often of various widths and my present construction is so designed that variations within the limits of the adjusting feature may be compensated for. It also frequently happens that the window frame itself becomes distorted or twisted and this distortion or twisting may also be compensated for within the limits of the adjusting feature.

After the sash has been installed it may swell due to moisture and it may have some tendency to bind in the guide rails or slide rails. This is avoided by the present invention because the slide rails which are held in position by the screws 23 may be moved inwardly toward the sash stiles against the compression of the springs 27 so that there is thus an automatic compensation for any swelling or spreading of the sash itself.

I do not limit my invention to the exact forms shown in the drawings, for obviously changes may be made therein within the scope of the claims.

I claim:

1. A window device comprising: a slide rail adapted to engage one stile of a window sash; at least one screw rotatably mounted on said slide rail in substantially fixed axial relation therewith; a substantially tubular housing having a first end portion adapted to be secured in a recess in one jamb of a window frame; a unitary spring-fastener member in said housing comprising an enlarged compressible spring section disposed toward said first end portion of the housing integral with a reduced coil section forming a relatively tightly wound and relatively noncompressible helix which is disposed towards the other end of said housing and receives the thread on said screw; a part of said housing being reduced in section adjacent said first end thereof thereby anchoring a portion of said compressible spring section in the housing; said other end of the housing having an inturned portion which retains the spring-fastener member, including said enlarged compressible and reduced coil sections, entirely within the housing.

2. A window device as defined in claim 1 wherein: said spring-fastener member further comprises an additional enlarged continuation of said reduced helix coil section which forms a second unanchored spring section that is also disposed within said housing and normally engages said retaining portion at said other end of the housing, whereby said spring-fastener member is of substantially hour-glass shape.

3. For a window construction: a substantially tubular housing having a first end portion adapted to be secured in an aperture in a jamb of a window frame; a unitary spring-fastener member in said housing comprising an enlarged compressible spring section disposed towards said first end portion of the housing integral with a reduced coil section forming a relatively tightly wound and relatively noncompressible helix which is disposed towards the other end of said housing and is adapted to receive the thread on a screw; said housing having a lesser internal cross section adjacent said first end thereof, a portion of said compressible spring section being thereby anchored in the housing; said other end of the housing having an inturned portion which retains the spring-fastener member, including said enlarged compressible and reduced coil sections, entirely within the housing.

4. In a window construction: a window frame having a pair of vertically disposed jambs, a header, and sill; at least one window sash slidably mounted in said frame, said sash having a top rail, a bottom rail, and oppositely disposed stiles adjacent the jambs of said window frame; a slide rail disposed on each of said jambs in sliding engagement with one of said sash stiles, at least one of said slide rails being movable with respect to the jamb on which it is disposed; a plurality of threaded screws rotatably mounted in said movable slide rail in substantially fixed axial relation therewith; the jamb adjacent the movable slide rail having a plurality of recesses therein; a plurality of substantially tubular housings each having a first end portion secured in one of said jamb recesses; a unitary spring-fastener member in each of said housings comprising an enlarged compressible spring section disposed towards said first end portion of the housing integral with a reduced coil section forming a relatively tightly wound and relatively noncompressible helix which receives the thread on one of said screws, said helix being disposed towards the other end of its housing; each of said housings having a lesser internal cross section adjacent said first end thereof, a portion of said compressible spring section being thereby anchored in the housing; said other end of each of the housings having an inturned portion which retains the spring-fastener member, including said enlarged compressible and reduced coil sections, entirely within the housing.

5. For a window construction: a slide rail adapted to engage one stile of a window sash; at least one fastening member rotatably mounted on said slide rail in substantially fixed axial relation therewith, said member having a thread thereon; a housing having a portion adapted to be secured to a jamb of a window frame; a unitary spring-fastener non-rotatably mounted in said housing including an enlarged spring section anchored in said housing adjacent one end of said spring-fastener, and a relatively tightly wound and relatively noncompressible coil section forming a helix which receives the thread on said rotatable member on the slide rail, said helix coil section being reduced in size and constituting an intermediate portion of said spring-fastener, said spring-fastener comprising an additional enlarged continuation of the coil of said reduced helix section forming a second spring section at the other end of said spring-fastener.

6. A window device as defined in claim 1, wherein: said combined spring-fastener is unitary, said compressible spring section is enlarged and anchored in said housing adjacent one end of said spring-fastener, and said helix coil portion is reduced in size and extends axially

within said enlarged spring section towards the anchored end thereof from the other end thereof.

7. A device for a window construction as defined in claim 3, wherein: said spring-fastener member further comprises an additional enlarged continuation of said reduced helix coil section which forms a second unanchored spring section that is also disposed within said housing and normally engages said retaining portion at

said other end of the housing, whereby said spring-fastener member is of substantially hour-glass shape.

References Cited in the file of this patent

UNITED STATES PATENTS

2,631,336	Weissman	Mar. 17, 1953
2,667,668	Osten	Feb. 2, 1954
2,718,035	Schwerak	Sept. 20, 1955