Aug. 24, 1937. H. GLASER 2,091,036

WINDOW CONSTRUCTION

Filed July 13, 1936

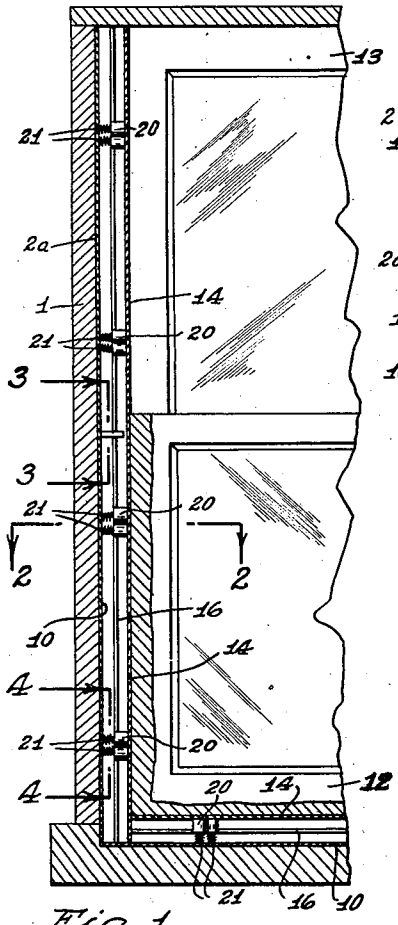


Fig. 1.

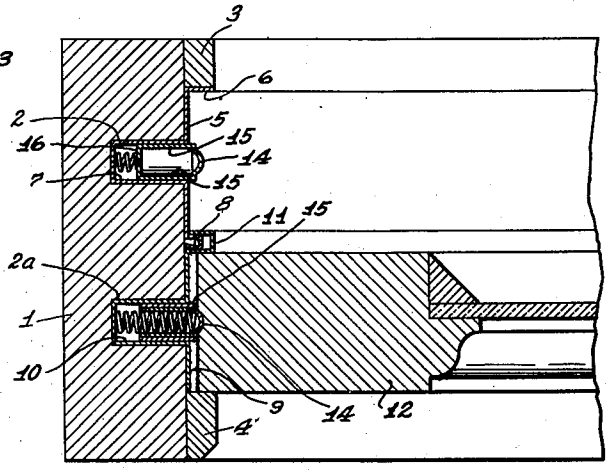


Fig. 2.

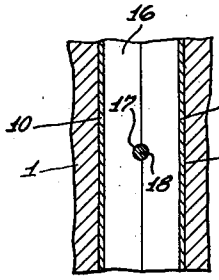


Fig. 3.

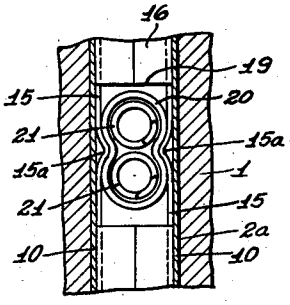


Fig. 4.

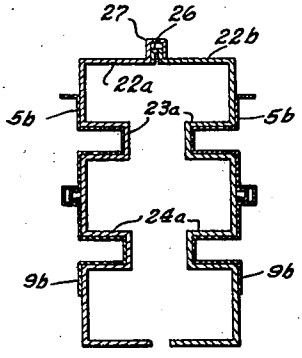


Fig. 6.

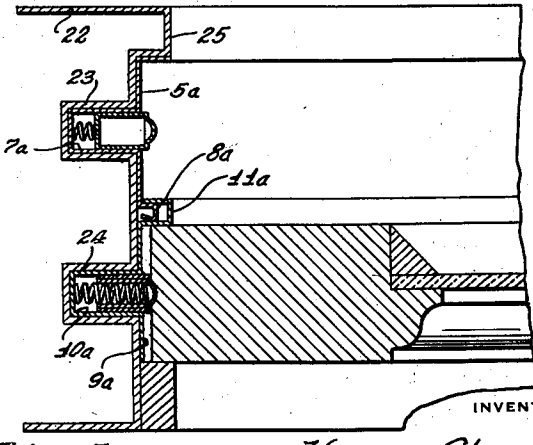


Fig. 5.

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WINDOW CONSTRUCTION

Harry Glaser, Detroit, Mich.

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4 Claims. (Cl. 20—52)

This invention relates to weather strips designed particularly for use in windows of the sliding sash type.

The primary object of the present invention is to provide a weather strip for windows having sliding sash which, in addition to functioning as a weather strip, also functions to hold the sash in various positions of adjustment without requiring the use of conventional counterbalance weights.

Another object of the invention is to provide a window frame structure, adapted for reception of a weather strip of the character referred to above, which is so constucted as to facilitate assembly of the sash therein. In this connection metal slides are provided for the reception of the two sash members which are ordinarily provided in windows of this character, the parts forming the slides for the upper sash being separate from those forming the slides for the lower sash and having interlocking parts which provide a parting strip between the two sash members. The metal slides are formed of comparatively thin sheet metal which is somewhat resilient in character and the interlocking parts are so formed that the natural resiliency of the metal formation presses against the adjacent surfaces of the sash to hold the sash in firm contact with the inner and outer sash stops.

Still another object of the invention is to provide a weather strip comprising an elongate strip movably mounted in a groove in the side of a window frame and having spring means pressing it inwardly of the frame and into a groove in the sash. Coil springs are utilized to provide the desired pressure and in this connection the invention provides a novel and inexpensive means for supporting the springs.

With the above and other ends in view the invention consists in matters more particularly pointed out hereinafter with reference to the accompanying drawing, in which

Figure 1 is a fragmental vertical section of a window;

Figs. 2, 3, and 4, are sections taken respectively on lines 2—2, 3—3, and 4—4 of Fig. 1;

Fig. 5 is a section similar to Fig. 2, illustrating a metal window frame, and

Fig. 6 is a section illustrating another type of window frame construction.

Like characters of reference are employed throughout to designate corresponding parts.

The numeral 1 designates the vertical side member of a window frame, the side member having two, parallel, spaced apart vertical grooves 2 and 2a formed in the inner side thereof. Secured adjacent the outer edge of the frame member 1 is the outer sash stop 3 and adjacent the inner edge is the inner sash stop 4. A metal strip 5 extends vertically of the side member 1 and has an outwardly directed flange 6 covering the inner face of the outer stop 3 and a channel formation 7 received in the groove 2. The sides of the channel formation 7 are shown as extending at right angles to the plane of the strip 5, but originally these walls extend at an obtuse angle thereto so that they are slightly compressed when inserted in the groove 2. Compressing the channel formation 7 in this manner induces friction with the sides of the groove 2 which will hold the formation in the groove and thus retain the strip 5 against the inner face of the frame member. The strip 5 also has a U-shaped formation 8 at its inner vertical edge, this formation extending inwardly of the window opening. It will be noted, however, that the distance which the formation 8 extends into the window opening is comparatively small.

A second strip 9, somewhat similar to the strip 5, has a channel formation 10 frictionally fitting in the groove 2a, after the manner described above with respect to the channel formation 7. The inner vertical edge of the strip 9 has a U-shaped formation 11 which has an interlocking relationship with the U-shaped formation 8. The formation 11 extends into the window opening a sufficient distance to provide a parting strip and the lower sash 12 is mounted between the parting strip 11 and the inner stop 4. The upper sash 13 is mounted between the flange 6 and the parting strip 11.

It is apparent, upon reference to Fig. 2, that the channel formation 10 in the groove 2a holds the strip 9 from shifting laterally of the frame member 1. Therefore, by forming the wall of the parting strip 11 which engages the sash 12 at an acute angle relative to the plane of the strip 9 when the sash is placed therein it tends to deform the strip and this deformation causes the parting strip to resiliently press the sash against the inner stop 4. The window sash 12 is firmly engaged by both the parting strip and the inner stop and provides a weatherproof construction.

Received in each of the channel formations 7 and 10 is a weather strip, formed of sheet metal, and extending the entire height of the frame member 1. The weather strip has an inner wall 14 which is slightly rounded to fit into a similarly shaped groove in the adjacent vertical edge of the sash 12 or 13, as the case may be. The weather strip has two parallel side walls 15 slidably engaging the side walls of its channel formation 7 or 10, as the case may be. The weather strip also has a rear wall 16, formed by bending the edges of the side walls 15 inwardly. Approximately intermediate its ends the wall 16 has an aperture 17 through which a pin 18 extends to support the strip with respect to the side member 1, the pin 18 func-

tioning to hold the strip against vertical movement while permitting it to move inwardly or outwardly of the channel formation in which it is received.

At spaced apart points, preferably as shown in Fig. 1, the wall 16 is provided with openings 19. In line with each opening is provided a spring support 20 of a form resembling a figure 8. The side walls 15 are deformed inwardly at 15a to engage the sides of the spring support to retain it with respect to the weather strip. In each spring support 20 two coil springs 21 are mounted, and these springs function to press the inner edge 14 of the strip into the groove in the adjacent edge of the sash. In addition to providing a weatherproof construction the springs 21 induce sufficient friction between the weather strip and the sash that the sash will remain in various positions of vertical adjustment without the use of counterbalancing weights.

It will be understood that the complete window frame comprises two frame members 1 and that the structure described above will be duplicated on both sides. A similar structure will be provided at the top of the window frame for the upper sash 13 and at the bottom or sill for the lower sash 12.

In assembling the above described window construction the outer stop 3 is secured in place and the strip 5 is placed with its channel formation extending into the groove, the weather strip being assembled in the channel formation prior to placing the strip 5 in the frame. The sash 13 is then snapped into place between the weather strips on opposite sides of the frame. In order to place the sash 13 between the two weather strips it is necessary for the edges of the sash to clear the U-shaped formation 8 on the strips 5. This is made possible by first placing one edge of the sash in engagement with its weather strip and then pressing upon the sash so as to compress the springs 21 so that the weather strip is forced back into the channel formation 7 to permit the edge of the sash 13 to engage the strip 5. At this time the other edge of the sash may be moved past the other formation 8 and snapped into engagement with its weather strip. After the sash has been snapped into place the springs 21 acting at opposite sides thereof will centralize the sash relative to the window frame. That is, there will be a small clearance between the edge of the sash and the adjacent strip 5 as illustrated in Fig. 2.

After assembly of the sash 13 as above described the strips 9 are put in place with the formation 11 interlocking with the formation 8 and providing a vertical parting strip. The sash 12 is then snapped between the weather strips supported by the strip 9 and the inner stops 4 secured in place.

In order that it will be apparent that the weather strip above described may be used in combination with a metal window frame the same has been illustrated in Fig. 5. The metal window frame 22 is formed by rolling a strip of metal to provide a cross sectional configuration embodying two vertical channels 23 and 24 and an integral outer stop 25. The facing strip 5a having a channel formation 7a received in the channel 23 is assembled in the manner above described and a second strip 9a has a channel formation 10a and a parting strip forming part 11a interlocking with a U-shaped formation 8a on the strip 5a.

The metal window frame structure shown in Fig. 6 shows the parting frame member for separating and supporting two adjacent sets of window sash. In this case, two vertical side members 22a and 22b are formed with channel formations 23a and 24a for the reception of strips 5b and 9b such as above described. To hold the outer edges of the frame members 22a and 22b together the member 22b is provided with a bead 26 over which the U-shaped formation on the member 22a fits. The inner edges may be secured together in like manner or by use of an ornamental strip.

Although specific embodiments of the invention have been illustrated and described it will be understood that various changes may be made within the scope of the appended claims without departing from the spirit of the invention, and such changes are contemplated.

What I claim is:—

1. In combination with a window frame having spaced apart grooves therein, metallic strips having channel formations received in said grooves, said channel formations normally having a contour such that they are compressed by insertion into said grooves whereby to induce friction to hold said formations therein, said strips having interlocking parts retaining the same together with one of said interlocking parts comprising a parting strip, sash slidable between pairs of said strips, weather strips received in said channel formations, and springs pressing said weather strips into engagement with said sash.

2. In combination with a window frame having spaced apart grooves therein, metallic strips having channel formations received in said grooves, said strips having interlocking parts retaining the same together with one of said interlocking parts comprising a parting strip, said interlocking parts being resiliently compressible, sash slidable between pairs of said strips, said sash normally compressing said parting strip whereby the latter exerts yieldable pressure thereagainst weather strips received in said channel formations, and springs pressing said weather strips into engagement with said sash.

3. In combination with a window frame having spaced apart grooves, weather strips formed of sheet metal and having a substantially rectangular form when viewed in section, said weather strips being disposed in said grooves, sash members received in said frame, and spring means for pressing said weather strips outwardly of said grooves, said spring means comprising 8-shaped supports, a pair of coil springs in each support, and deformations on said weather strip engaging said supports to secure them adjacent openings in said weather strip.

4. In combination with a window frame having spaced apart grooves, weather strips formed of sheet metal and having a substantially rectangular form when viewed in section, said weather strips being disposed in said grooves, sash members received in said frame, and spring means for pressing said weather strips outwardly of said grooves, the inner walls of said weather strips having beads thereon adapted to be received in grooves in the edges of said sash, said spring means comprising 8-shaped supports, a pair of coil springs in each support, and deformations on said weather strip engaging said supports to secure them adjacent openings in said weather strip.

HARRY GLASER.