Sept. 19, 1933. R. T. AXE 1,927,781

WINDOW FRAME AND SASH CONSTRUCTION

Filed May 1, 1931 2 Sheets-Sheet 1

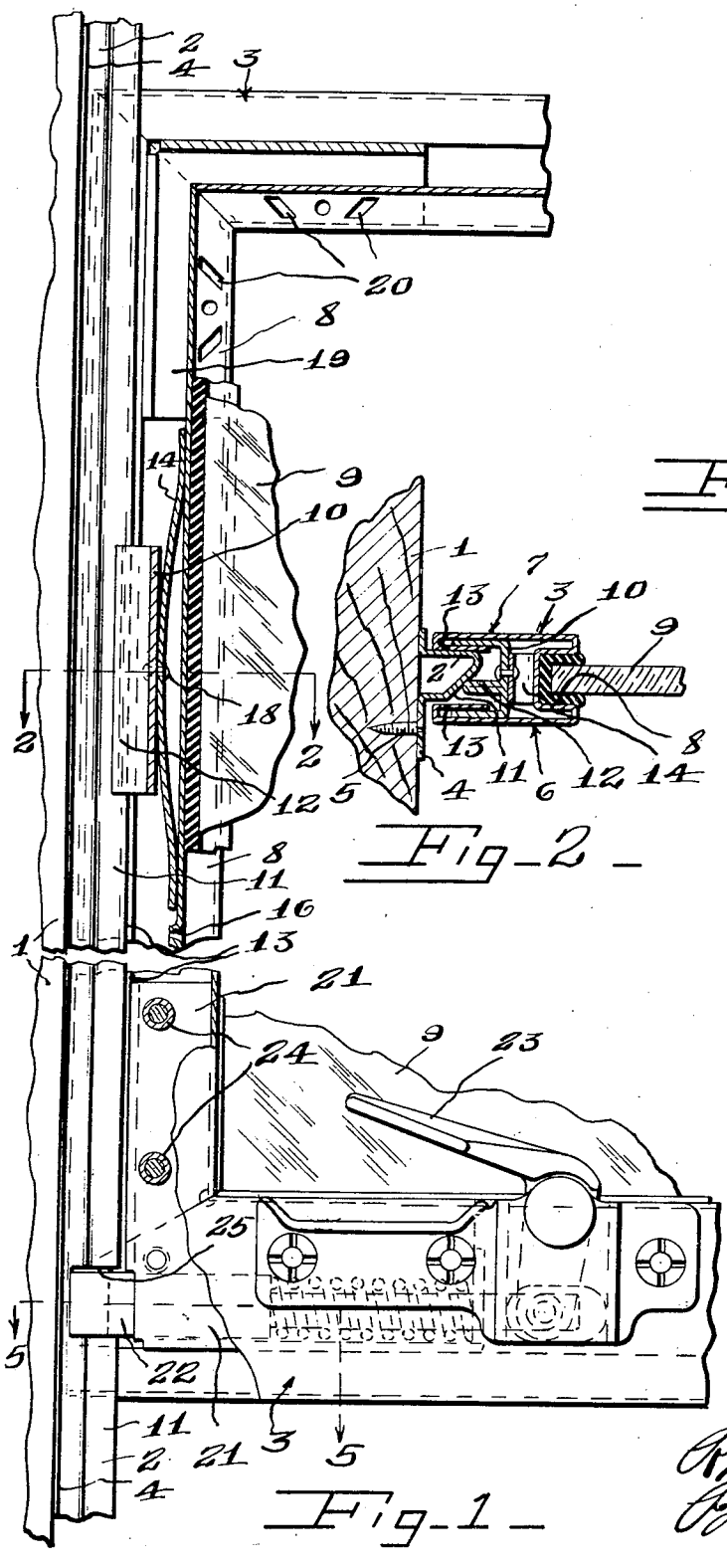


Fig. 1.

Fig. 2.

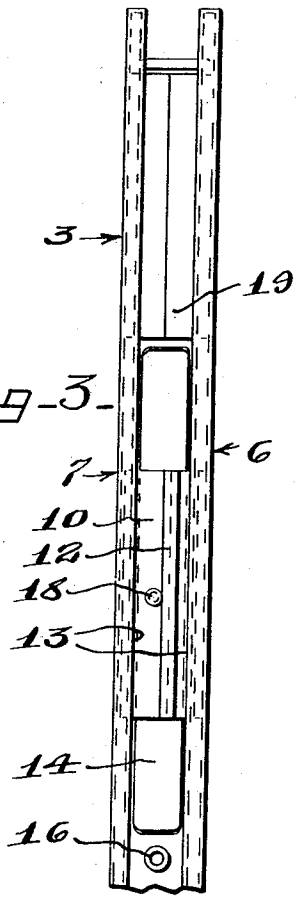


Fig. 3.

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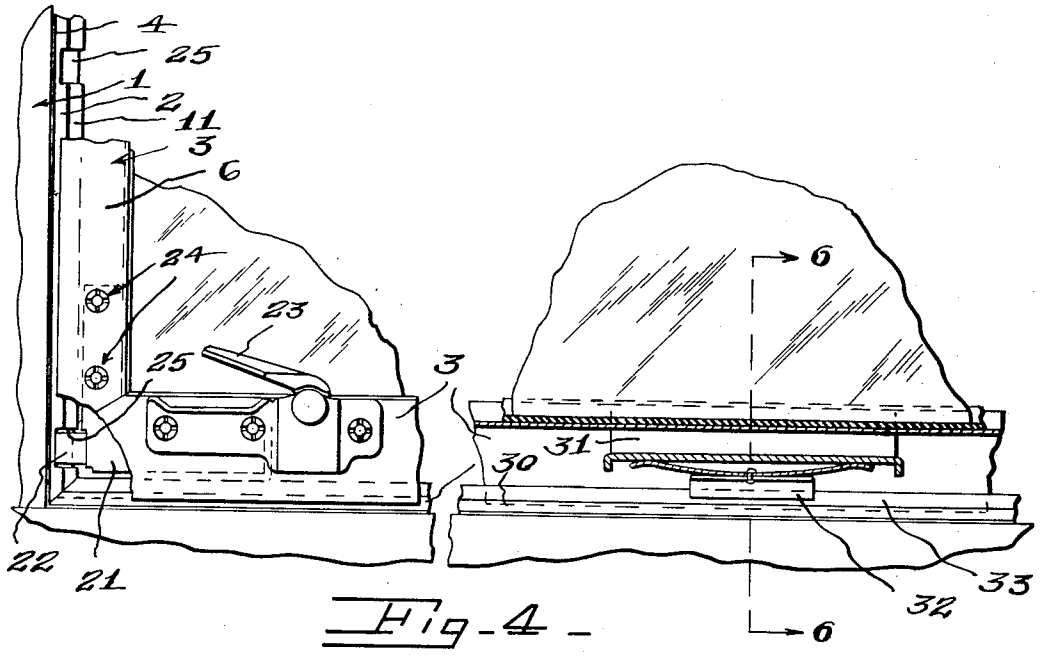


Fig-4-

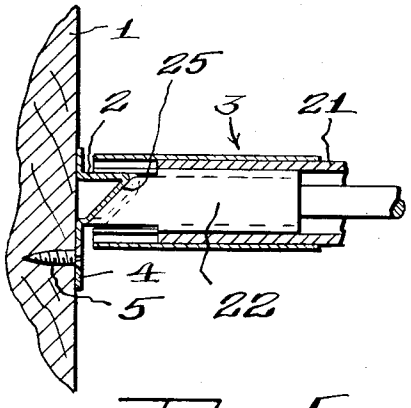


Fig-5-

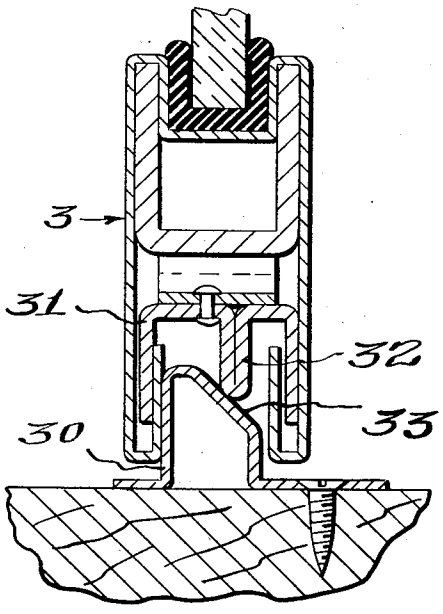


Fig-6-

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UNITED STATES PATENT OFFICE

1,927,781

WINDOW FRAME AND SASH CONSTRUCTION

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Application May 1, 1931. Serial No. 534,342

8 Claims. (Cl. 189—73)

This invention relates to window frame and sash constructions, particularly constructions which are especially adapted for motor vehicles, railway cars etc., and has for its object, a particularly simple and efficient means for holding the sash weather tight and against rattling, which means is housed within the sash.

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, partly in section, of a window frame and sash embodying my invention.

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

Figure 3 is a fragmentary edge view of the sash.

Figure 4 is a fragmentary elevation, partly in section, of the sash showing the weather strip and tightening means as located in the bottom rail of the sash.

Figure 5 is a sectional view on line 5—5, Figure 1.

Figure 6 is an enlarged sectional view on line 6—6, Figure 4.

This window construction comprises generally, a window frame having an inwardly extending guide ribs on one or more members thereof, as on each of its upright sides, a sash having one or more of its members, as each of its stiles, and/or the bottom rail, formed with a channel opening through its edge for receiving the rib, an insert in each channel for thrusting against the rib therein, and means tending to thrust the insert against the rib. The insert has a projection coacting with the inner edge of the rib, the projection and the rib having means which act on each other inclined plane fashion to thrust the sash bodily in one direction against the rib and hence, tighten the sash against air drafts and rattling. Usually, the rib is provided with its inner edge beveled, and the insert thrusts against the beveled edge.

Also, the invention includes a sash holder, or latch, acting inclined plane fashion on the rib to thrust the sash in the same direction as it is thrust by the coaction of the insert and the rib.

1 designates a window frame having an inwardly projecting guide rib 2 for the window sash 3. The rib here shown is formed up of sheet metal having base flanges 4 overlying the window frame and secured thereto in any suitable manner, as by screws 5. There is a guide rib extending along each upright side of the window frame for coacting with the stiles of the sash, and also if desired, along the sill of the window frame for coacting with the bottom rail of the sash. The sash is formed with a channel opening through each edge thereof for receiving the rib 2, and usually, because a particularly strong, light and compact sash is desirable, the sash is formed up of sheet metal to have front and rear walls 6, 7, a reentrant groove 8 for receiving the pane 9, the front and rear walls forming the sides of a channel, which opens through the edge of the sash for receiving the rib 2.

10 designates one of the inserts extending lengthwise of each stile, and in some instances, lengthwise of the bottom rail. One or more inserts may be located in each channel. In sash members of comparatively short height or length, one insert is used. In longer sash members, a plurality are used, each insert having means for coacting with the end edge of the rib 2 for holding the sash weather tight and against rattling, the insert and the rib having means acting inclined plane fashion tending to thrust the sash bodily in one direction to hold one side of the channel snugly against one side of the rib.

In the illustrated embodiment of my invention, the inner edge of each rib is formed beveled, as at 11, and the insert is provided with a projection or strip arranged edgewise to the beveled edge, and coacting therewith. The insert is here shown in the form of a channel, U-shaped in general form, with the side flanges of the U formation located adjacent the inner faces of the front and rear walls 6, 7 of the sash, the intermediate part of the U formation being provided with a projecting flange 12 preferably extending parallel to the plane of the sash, the end of which projecting flange coacts with the beveled edge 11 of the rib 2. The channel insert 10 is inserted and removed by an endwise action, and the side flanges of the U formation are slidably interlocked with the front and rear walls 6, 7.

As here illustrated, the front and rear walls are provided with inturned marginal flanges 13 opposed to and spaced apart from the major parts of the front and rear walls 6, 7, and the side flanges of the insert 10 extend into the spaces between the flanges 13 and the major portions of the front and rear walls 6, 7.

The inserts are thrust outwardly to cause the projection 12 to thrust against the beveled edge

11 at all times, and as here illustrated, the insert 10 is carried by a leaf, or bow spring 14 located in the sash member and thrusting with its ends against the outer side of the bottom of the reentrant channel 8, and carrying the insert at its apex portion. The spring is held from undue displacement in any suitable manner, as by shoulders 16 punched out from the bottom of the channel 8, and by other inserts, as corner inserts. Any number of inserts may be used, depending on the length of the stile. The inserts are secured to the springs in any suitable manner, as by rivets 18.

19 designates corner inserts at the upper corners of the sash, these being usually permanently secured in position as by indenting as at 20, or compressing the side walls of the glass receiving channel 8 onto flanges of the insert, or compressing the flanges of the inserts between the walls of the reentrant channel 8, and the front and rear walls of the sash. This manner of permanently securing the corner inserts in position, forms no part of this invention.

21 are corner inserts located at the lower corners of the sash and the arm thereof in the bottom rail of the sash carrying latch mechanism including a sliding bolt 22, which is operated by a finger lever 23. This corner iron 21 is removable with the bottom rail from the stiles, for the purpose of removing and replacing a broken glass, and is secured in the stile by removable fastening members, as screws 24.

The sliding bolt is beveled, as shown in Figure 5, and coacts with beveled notches 25 in the rib 2, and acts incline plane fashion to thrust the sash in the same direction as it is thrust by the coaction of the rib, and the projection or flange 12 of the insert 10. The construction of the sash holder, or latch, forms no part of this invention.

In Figures 4 and 6, the sill of the window frame is shown as formed with a rib 30 corresponding to the rib 2, and the bottom rail is provided with an insert 31 corresponding to the insert 10, and having a flange 32 coacting with the beveled edge 33 of the rib, so that the rib 30 along the bottom rail serves as a weather strip, and the insert acts to hold the sash tight along the rib on the rail.

In operation, during raising and lowering of the sash, the inserts 10 slide along the rib, and owing to the fact that the ribs are beveled at their edges, the sash is pressed in one direction at a right angle to its plane and thus held tight under all conditions. Also, owing to the rib 30 and the insert 31, the sash is held tight against the rib 30 on the sill when the sash is closed. Also, the locking bolt 22 acts on the ribs 2 in conjunction with the inserts 10 to hold the sash tight against rattling.

What I claim is:

1. The combination with a window frame having a projecting guide rib along each side thereof, of a sash having hollow sheet metal stiles formed with front and rear walls forming the side walls of a channel opening through the outer edge of the stile, an insert in the channel, U shaped in general form, and having the sides of the U formation adjacent the front and rear walls of the stile, and means on the intermediate portion and spaced apart from the side flanges of the U formation for coacting with the end face of the rib.

2. The combination with a window frame having guide ribs along each side thereof, the rib having its inner edge beveled, of a hollow sheet metal sash having front and rear walls forming the side walls of a lengthwise channel opening through the outer edge of the sash member in which the channel is formed, an insert, U shaped in general form, extending lengthwise of said member, with the sides of the U formation adjacent the front and rear walls of said member, and the intermediate portion provided with a projecting lip engaging at its edge the beveled edge of the rib, and spring means thrusting the insert outwardly.

3. The combination with a window frame having projecting guide ribs along each side thereof, the rib having its inner edge beveled, of a hollow sheet metal sash including a member having front and rear walls constituting the opposing walls of a channel opening through the edge of said member, the front and rear walls having reentrant flanges opposed to and spaced from the major portions of the front and rear walls, and an insert extending lengthwise of the channel and being U shaped in cross section, with the sides of the U formation extending into the spaces between the flanges and the major portions of the front and rear walls, the intermediate part of the U formation having means for coacting with the beveled edge of the rib.

4. The combination with a window frame having projecting guide ribs along each side thereof, the rib having its inner edge beveled, of a hollow sheet metal sash including a member having front and rear walls constituting the opposing walls of a lengthwise channel opening through the edge of said member, the front and rear walls having reentrant flanges opposed to and spaced from the major portions of the front and rear walls, and an insert extending lengthwise of the channel and being U shaped in cross section, with the sides of the U formation extending into the spaces between the flanges and the major portions of the front and rear walls, the intermediate part of the U formation having a projecting lip engaging at its edge with the beveled face of the rib.

5. The combination with a window frame having a projecting guide rib along each side thereof, of a sash including stiles, each stile having a lengthwise channel opening through the outer edge of the stile an insert in the channel, the insert and the guide rib having coacting means for thrusting the sash in a direction at a right angle to the plane of the sash and thereby holding one of the walls of the channel against one side of the rib, a spring thrusting the insert outwardly and a sash holder coacting with the rib, the sash holder and the rib having inclined plane means coacting to thrust the sash in the same direction as the thrust of the insert and the sash.

6. The combination of a window frame having a projecting rib formed with its inner edge beveled transversely in one direction from one side to the other; of a sash having a channel extending lengthwise of one of its members, the channel opening through the edge of said member, and a spring pressed insert in the channel having an outwardly projecting lengthwise flange spaced apart from the side walls of the channel and arranged at substantially a right angle to the bottom of the channel, said guide rib substantially fitting the channel, the edge of said flange coacting with the beveled edge of the rib intermediate of the side walls of the channel.

7. In a window construction, the combination with a window frame having an inwardly extending guide rib at each side thereof, the rib

having its inner edge beveled from one side to the other, of a sash having each of its stiles formed with a lengthwise channel opening through its outer edge for receiving the rib, an insert in each channel and having an outwardly extending flange located between and spaced from the side walls of the channel substantially parallel to the plane of the sash, said rib being of substantially the width of the channel and said flange thrusting at its outer edge against the beveled edge of the rib intermediate of the side walls of the channel, and spring means for thrusting the insert outwardly to hold the edge of the flange against the rib.

8. The combination with a window frame and a sash mounted in the frame, the frame and sash including coacting members, one having a projecting guide rib formed with its inner edge transversely beveled from one side to the other, and the other coacting member having a channel extending lengthwise thereof and opening through its edge toward the first member, and a spring pressed insert in the channel having a flange located midway between the walls of the channel and spaced apart therefrom, and extending in a direction parallel to the plane of the sash, and coacting at its edge with the beveled edge of the rib, said rib and its beveled edge being substantially the width of the channel.

ROY T. AXE.