No. 876,556. PATENTED JAN. 14, 1908.

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METALLIC WINDOW SASH.

APPLICATION FILED MAR. 27, 1907.

Fig. 1

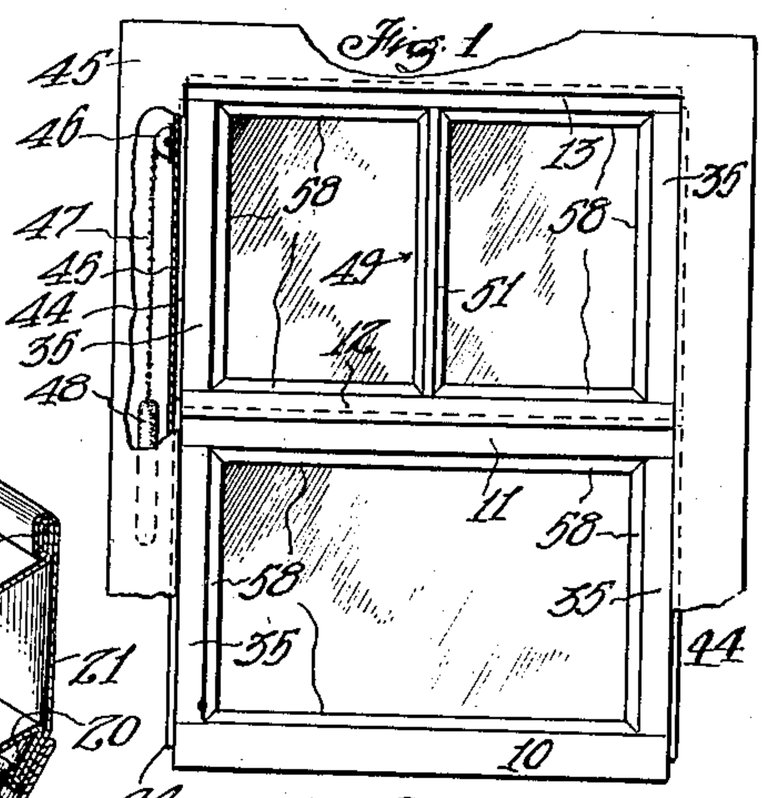

Fig. 2

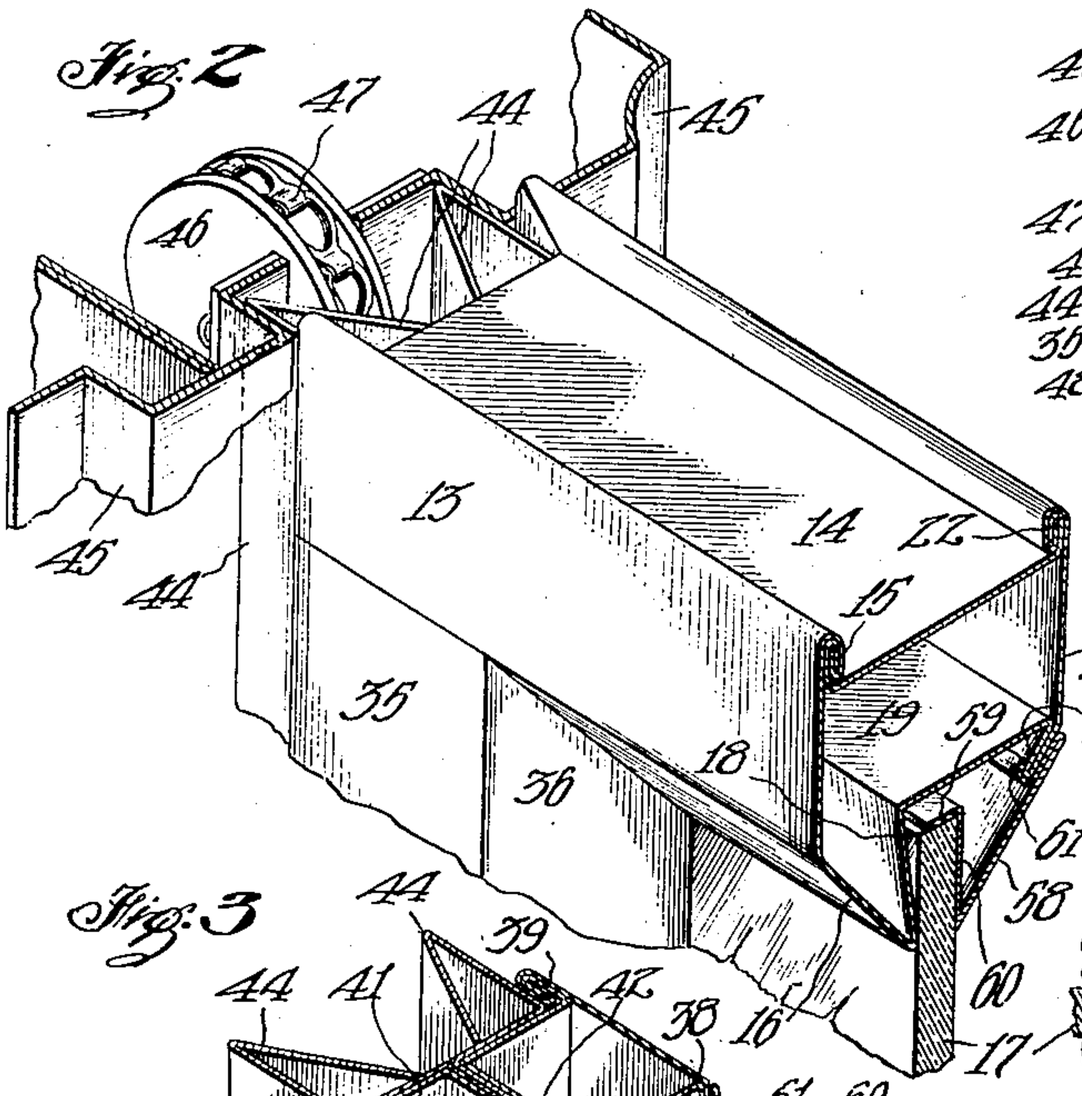

Fig. 3

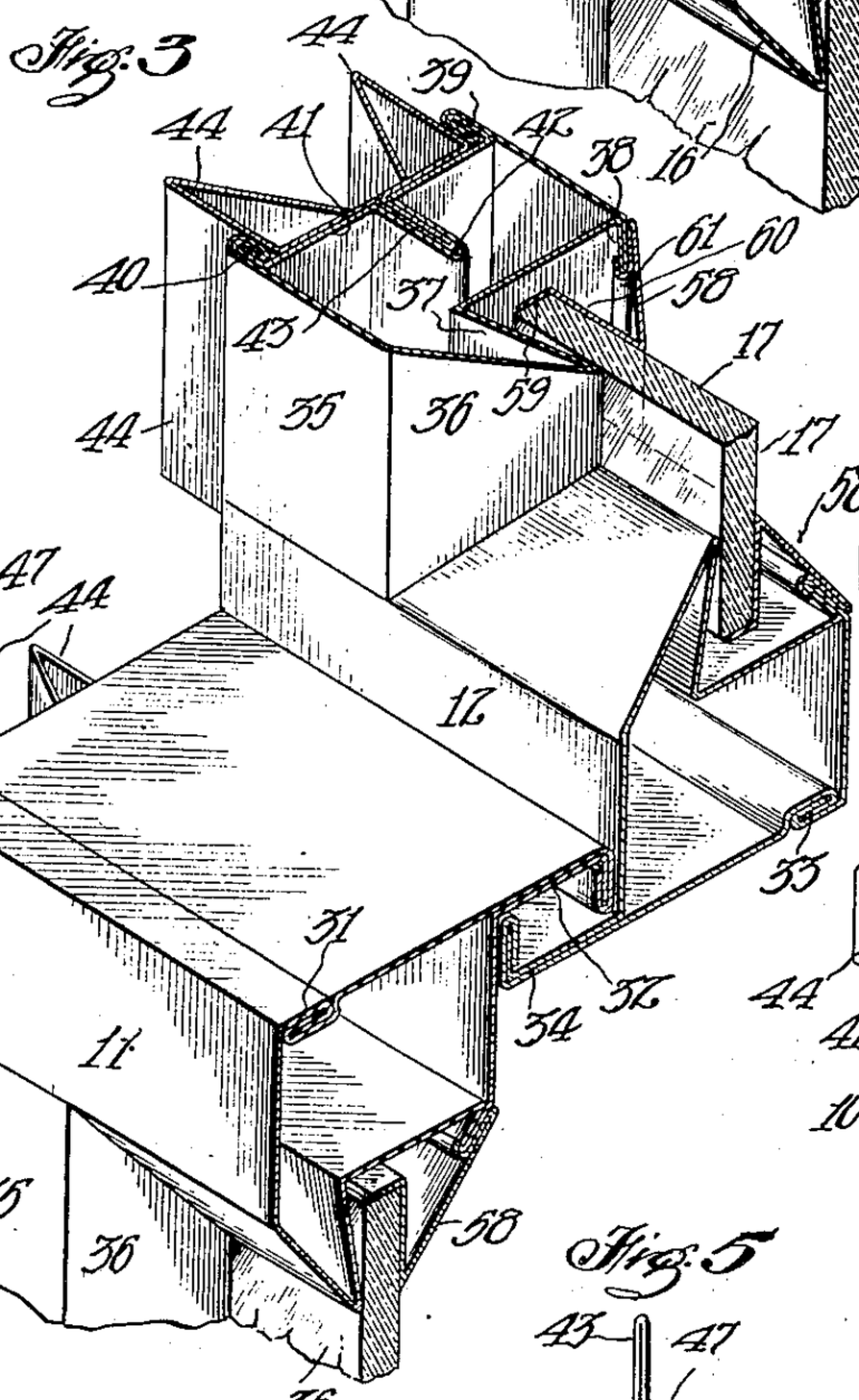

Fig. 6

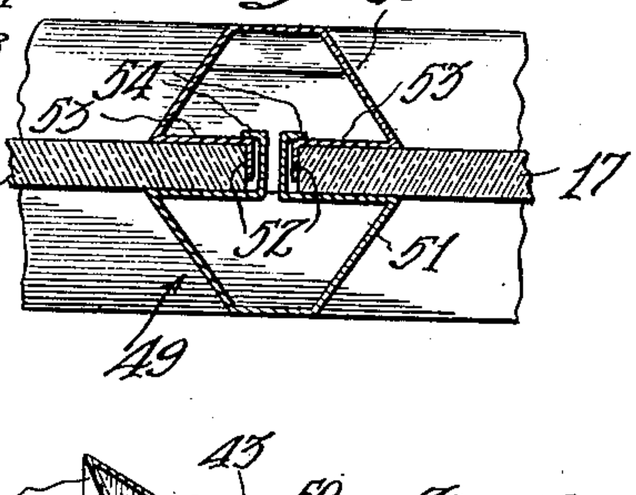

Fig. 4

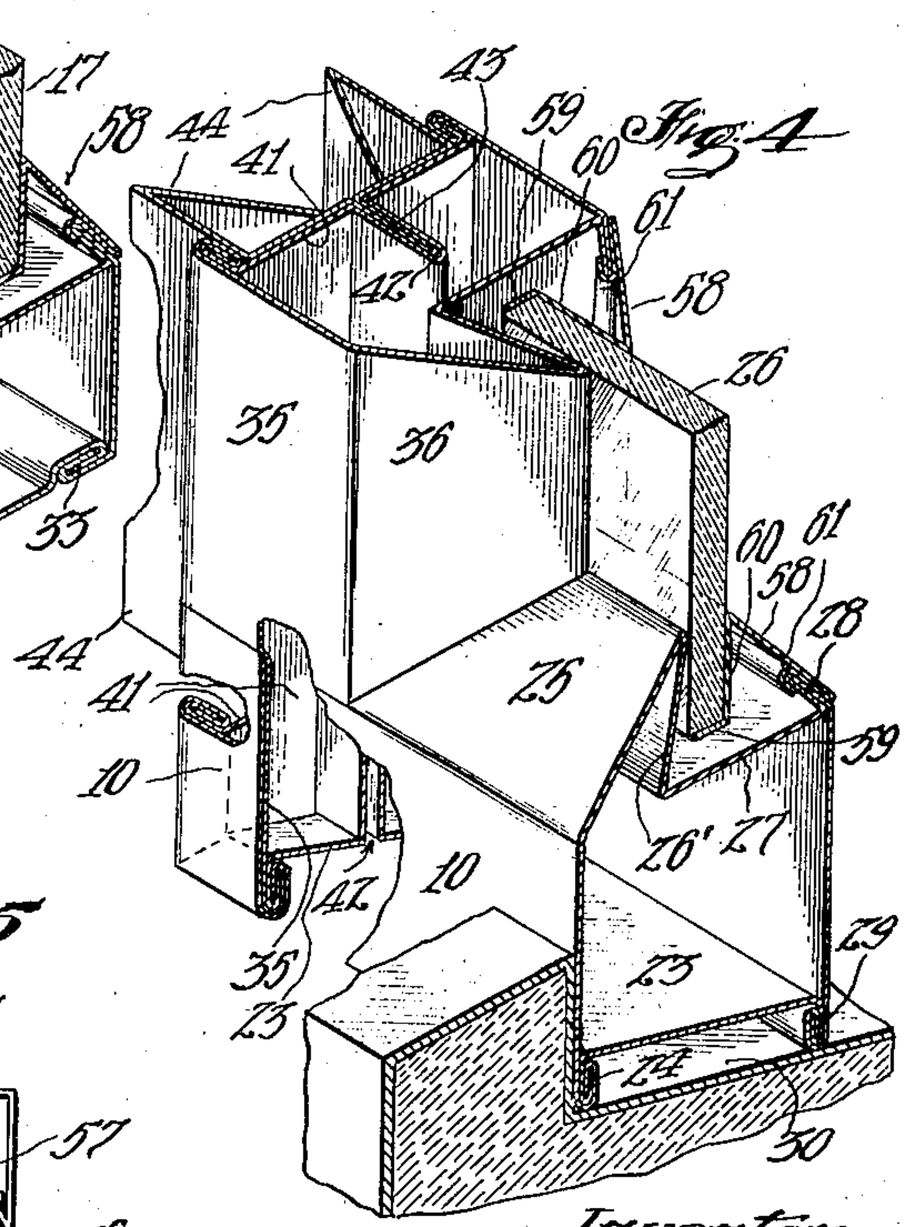

Fig. 5

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METALLIC WINDOW-SASH.

No. 876,556. Specification of Letters Patent. Patented Jan. 14, 1908.

Application filed March 27, 1907. Serial No. 364,791.

To all whom it may concern:

Be it known that I, EDWARD H. JOHNSON, a citizen of the United States, residing at Los Angeles, county of Los Angeles, State of California, have invented new and useful Improvements in Metallic Window-Sashes, of which the following is a specification.

My invention relates to a window sash formed of sheet metal and the object thereof is to provide a window sash which will be light, and at the same time rigid, and in which the glass can be quickly secured therein or taken out of the same. I accomplish this object by the sash described herein and illustrated in the accompanying drawings in which:

Figure 1 is a front elevation of an upper and lower window sash embodying my invention, with a portion of the surrounding frame shown. Figs. 2, to 6 are sectional fragmentary parts of the sash to show the details of construction.

In the drawings 10 is the bottom rail and 11 is the top rail of the bottom frame of my improved sash frame when the window consists of two frames, and 12 is the bottom rail, and 13 is the top rail of the top frame of my improved sash frame. The upper edge of the inner face of the top rail of the top sash frame is connected to the top plate 14 by a double roll lap seam 15. The inner face of the top rail is vertical from its junction with the top plate a suitable distance which is as far as desired, when the sheet metal of which it is composed is bent at an angle to the vertical line downwardly as best shown at 16 in Fig. 2 until it reaches the point at which it will engage the pane of glass 17, it is then bent upwardly and a little off the vertical line so as to leave a space between the pane of glass and the metal as shown at 18. The sheet is then bent on a line parallel with the top plate as shown at 19, and is then bent downwardly and inwardly and then doubled back on itself to form the locking ledge 20. It is then bent upwardly parallel with the inner face of the rail to form the outer face of the top rail and is then united to the top plate by a double roll lap seam 22.

The bottom rail of the bottom sash is connected to the bottom plate 23 by a double roll lap seam 24. The inner face of the bottom rail is vertical from its junction with the bottom plate a suitable distance, which is as far as desired, when the sheet metal of which it is composed is bent at an angle to the vertical line upwardly as shown at 25 in Fig. 4 until it reaches the point at which it will engage the pane of glass 26. It is then bent downwardly and a little off the vertical line so as to leave a space between the pane of glass and the metal as shown at 26′. The sheet is then bent on a line at right angles with the inner face as shown at 27, and is then bent upwardly and inwardly and then doubled back on itself to form the locking ledge 28. It is then bent downwardly parallel with the inner face of the rail to form the outer face of the bottom rail and is then united to the bottom plate by a double roll lap seam 29. When the ledge 30 of the window casing slopes downwardly and outwardly, as is usual, the outer face of the bottom rail of the bottom frame will be wider than the inner face. The top rail of the bottom sash frame is formed in the same manner as the top rail of the top sash frame, except that the top plate is connected to the inner face of the top rail by horizontal double roll lap seam 31 instead of a vertical seam as shown at 15, and extends beyond the inner face of the rail to form a closure ledge 32, the inner face being projected as shown, and forming a part of the closure ledge.

The bottom rail of the top sash frame is formed in the same manner as the bottom rail of the bottom sash frame, except that the double roll lap seam 33 is in the same plane as the bottom plate which is extended beyond the inner face of the bottom rail and with the projected inner surface forms a closure ledge 34 which laps the closure ledge 32 of the other frame, and makes a dust proof joint between the two sash frames. These closure ledges can be omitted if desired. The side rails of the different frames are all of the same construction, and I will describe only one side of the top frame as the others are constructed in the same manner. The inner vertical surface 35 projects upwardly back of the inner surface of the top rail, and is connected at the top with the top edge of the top rail by a double roll lap seam.

The outer edge of side rail 35 is bent between the top and bottom rails to form with the edge closure strip a double lap seam as shown at 40. At the top and bottom rails that portion of the metal which below forms the lap seam is cut away and the ends of the end rails are bent around back of the side

pieces and with the edge closure strips are formed into double lap seams. The upper end is cut away so as to fit the bevel of the top rail, and the side rail from its vertical face which lies in a plane parallel with the vertical face of the top rail is bent inwardly on an angle as best shown at 36 until it reaches the point at which it will engage the pane of glass 17. It is then bent backwardly and a little off the plane of the vertical face so as to leave a space between the pane of glass and the metal as shown at 37. The sheet is then bent on a line at right angles with the vertical face and extending away therefrom and is then bent backwardly and inwardly and then doubled back on itself to form a locking ledge 38. It is then bent parallel with the vertical inner face. The outer edges of the sheet are united by the double roll lap seams 39 and 40 to the end closure plate 41. The end closure plate is bent so as to form guide groove 42 into which is received guide tongue 43 of the detached retaining strip 44 which travels in the usual guideways of the window frame 45 and holds the sash frames from separating therefrom. Groove 42 is closed by the top plate but is open at the bottom, so that if desired the top sash could be lowered its full extent thereby bringing with it the retaining strip. The retaining strip could then be secured against moving upwardly when the upper sash could then be raised and taken out of the window frame. It will be understood that this retaining strip is a little shorter than the vertical side rails.

The window frame is provided with pulleys 46 over which pass chains 47 having one end secured to the weight 48, by means of which the weight of the sash frame is counterbalanced, and the other end secured to the retaining strip. Where there are a plurality of panes in the sash frame they are separated by mullions 49. These mullions are composed of an outer member 50 and an inner member 51. The inner member is composed of a single piece of sheet metal, the edges of which are parallel and form supporting ledges 52 which support or bear against the edges of the glass. From the supporting ledges the members bend in opposite directions to form bearing ledges 53 and from the bearing ledges the metal may be bent in any appropriate shape. The outer member is of substantially the same form as the inner member except that the edges are projected beyond the other member and are turned to form catches 54 which are sprung over the other member when the part is put in place.

To secure the chain to the retaining strip a groove 55 is cut in the inner portion of the retaining strip as shown in Fig. 5 and a small opening 56 is made in one side and pin 57 is passed through opening 56 and through the end of the chain, when the pin is pulled up into grooves 55 where it is securely retained in its place. After the sash is formed as before described locking strips 58 are provided for securing the glass to the sash. These locking strips are formed of a single piece of sheet metal one edge of which 59 bears against and supports the edge of the glass and I will call that part of the same the supporting ledge. The next portion 60 bears against the face of the glass and I will call it the bearing ledge. From the bearing ledge the metal is turned at an angle and runs to the outer face of the sash and is then doubled back on itself and the edge turned over to form the locking pocket 61 which engages the locking ledge of the sash.

It will be observed that the pane of glass must be of the size to pass within the locking ledges of the sash and that the supporting ledges of the locking strips are preferably in the same plane as the top of the locking ledge. After the parts are constructed as before described I place a locking strip on the lower edge of the pane of glass and then place the glass and locking strip in position in the frame which holds the glass in place therein. I then put in side locking strips and after that I put in place the top locking strip. The last side locking strip put in place and the top locking strip have to be sprung into position, and when it is desired to remove the glass from the sash with a thin knife these strips can be removed by springing them until they will come out. After the locking strips and glass are secured in place a small amount of putty can be secured upon the top edge of the locking strip to cement the glass thereto to make a water-tight joint. By this construction it will be seen that at all the corners of the sash frame there is a double row of lap joints along two edges where the side and end rails overlap each other and thereby making an extremely rigid joint and forming a brace in two directions. It will also be observed that the locking strips also bear against the edges of the glass and upon the locking ledges of the sash frame, thus still further bracing the sash frame, so that when the glass is in place the frame is as rigid as a wooden frame with the glass secured therein by putty.

Having described my invention what I claim is:

1. A metal window sash frame having the ends of the end rails on the outside of the ends of the side rails and bent back around the outside edges of the side rails and having the ends of the side rails terminating on a line with the outside edges of the end rails and secured thereto by lap seams.

2. A metal window sash frame composed of side and end rails having vertical parallel faces and intermediate portions bent to form bearing ledges and locking ledges, each rail being formed of a continuous piece of metal,

the ends of said rails overlapping; closure plates for the outer portions of said rails, all of said parts being secured together by lap seams; and locking strips provided with bearing and supporting ledges and locking pockets.

3. In a metal window sash frame side rails having vertical parallel faces and intermediate portions bent to form bearing ledges and locking ledges, each rail being formed of a continuous piece of metal; closure plates for the outer portions of said rails, said closure plates being formed of continuous strips of metal bent in the center to form guiding grooves, in combination with retaining strips having tongues adapted to enter said guiding grooves.

4. The combination of a metal window sash frame having guide grooves in the vertical edges thereof, said grooves being open at the bottom and closed at the top; and detached retaining strips having guide tongues projecting into the grooves of the sash frames.

In witness that I claim the foregoing I have hereunto subscribed my name this 19th day of March, 1907.

EDWARD H. JOHNSON.

Witnesses:
G. E. HARPHAM,
S. B. AUSTIN.