

June 10, 1930.

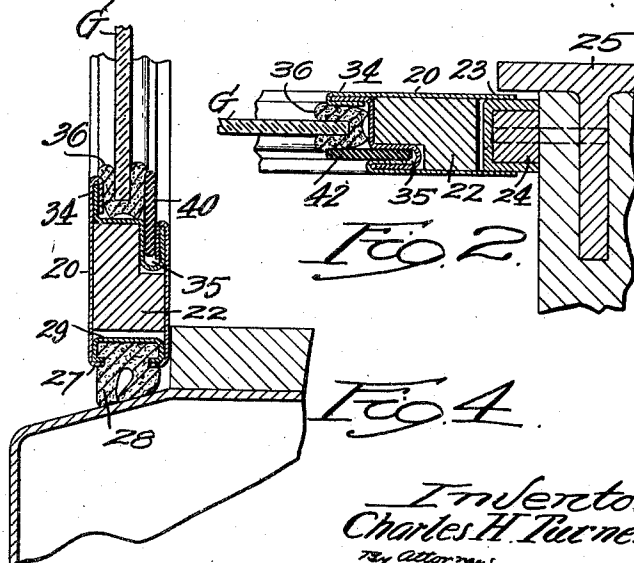
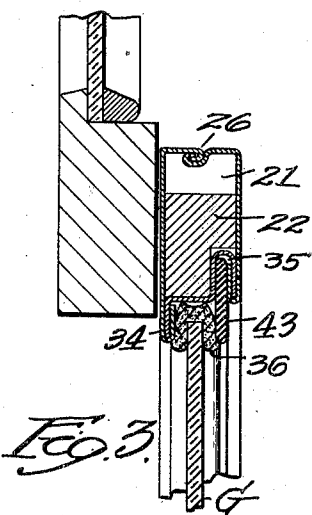
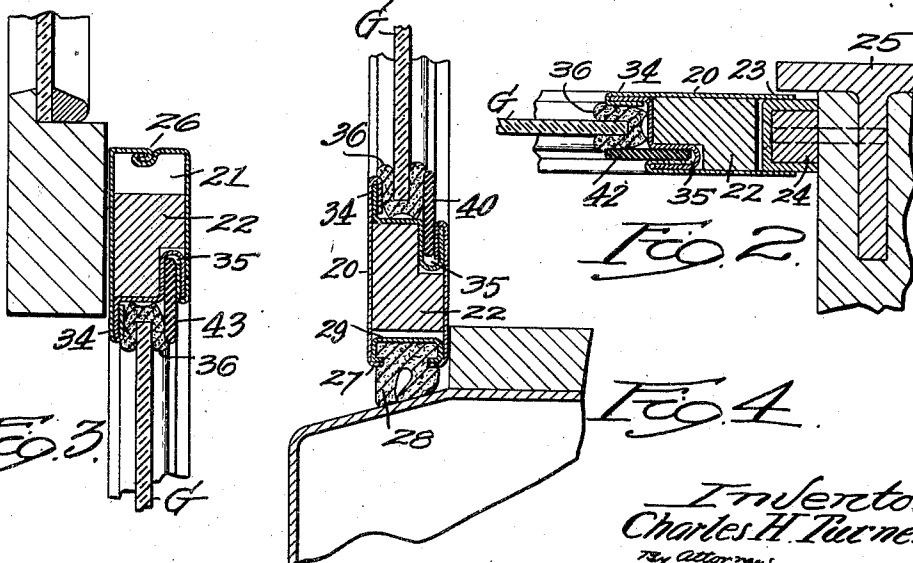
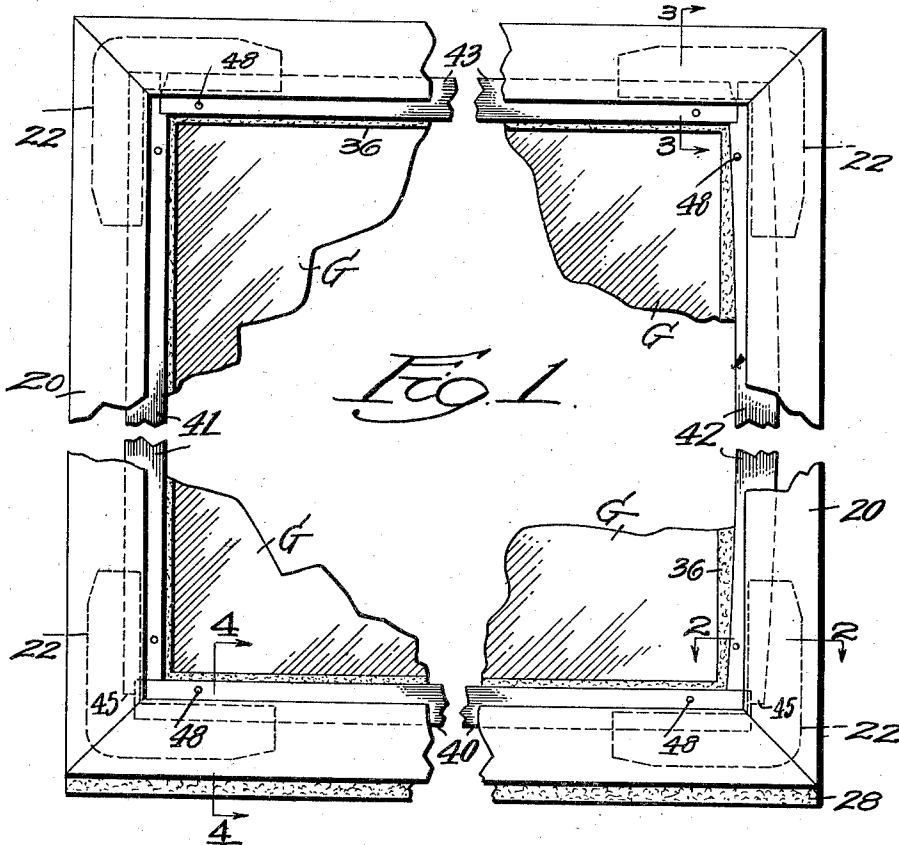
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1,763,489

METAL WINDOW SASH

Filed May 11, 1927

2 Sheets-Sheet 1



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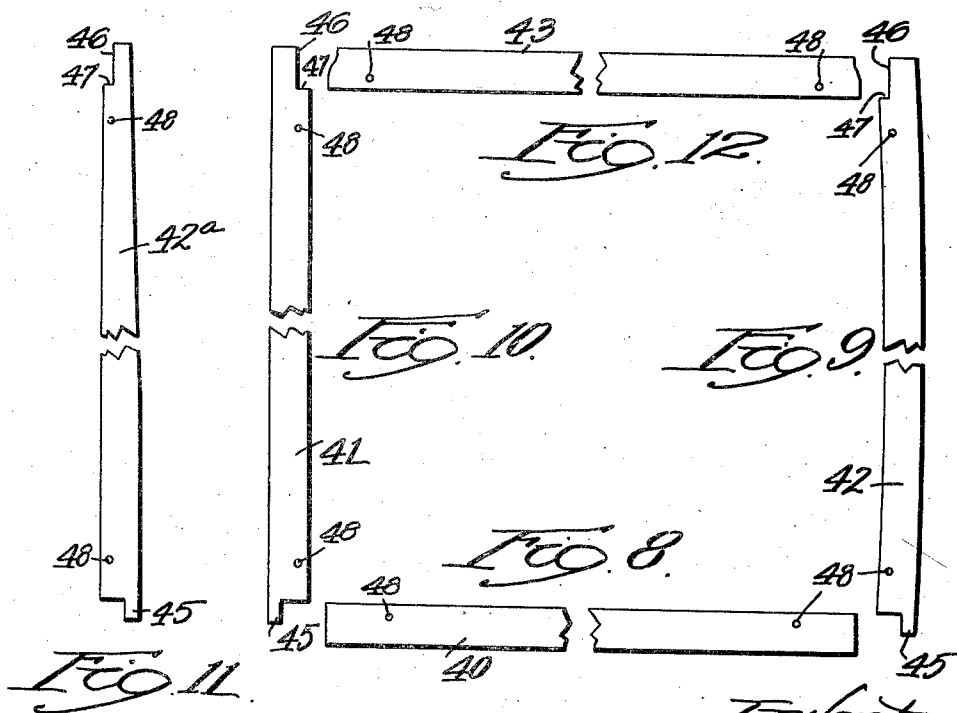
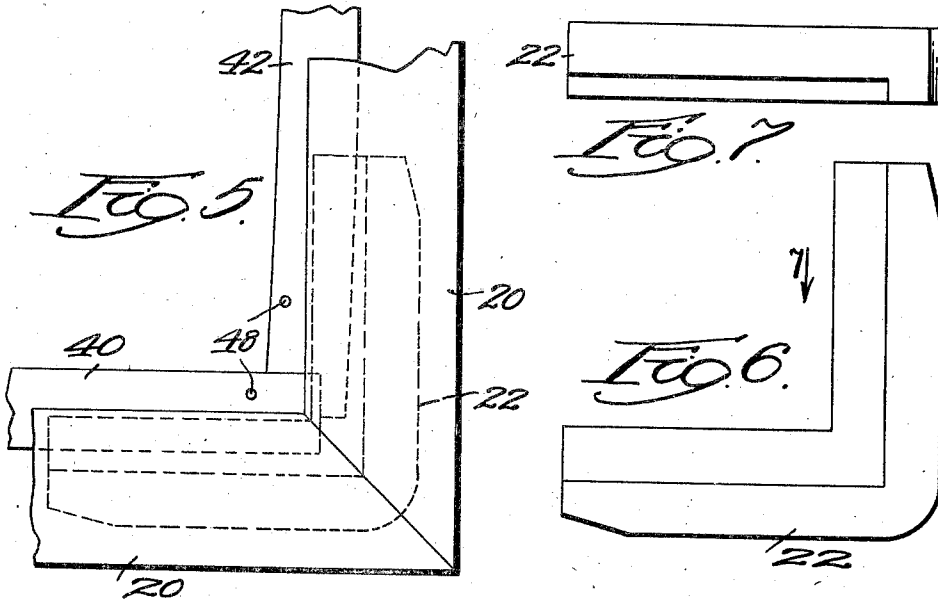
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METAL WINDOW SASH

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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

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METAL WINDOW SASH

Application filed May 11, 1927. Serial No. 190,603.

This invention relates to a metal window sash and particularly to the provision of means for securing and retaining glass therein. The problem of retaining glass in a metal window sash and of conveniently replacing the same has proved very troublesome and many efforts have been made to find a satisfactory solution.

A general object of my invention is to provide a construction in which the sash may be made up as a continuous unitary structure, without requiring separation thereof into two or more parts for insertion of the glass therein.

A further object is to provide a construction in which the glass may be removed or replaced while the sash remains in its usual operative position within the window casing.

My invention further relates to the provision of simple and convenient locking means for holding the glass in the sash, to the provision of effective cushioning devices for the glass, to an improved sash construction and to certain arrangements and combinations of parts which will be hereinafter described and more particularly pointed out in the appended claims.

A preferred form of the invention is shown in the drawings in which

Fig. 1 is a front elevation of my improved window sash;

Fig. 2 is a partial sectional plan view, taken along the line 2—2 in Fig. 1;

Figs. 3 and 4 are partial sectional elevations taken along the lines 3—3 and 4—4 in Fig. 1;

Fig. 5 is an enlarged partial front elevation of one corner of the sash;

Fig. 6 is a front elevation of one of the corner braces or connectors;

Fig. 7 is a plan view thereof;

Fig. 8 is a side view of the bottom locking bar;

Fig. 9 is a side view of one of the side locking bars;

Fig. 10 is a similar view of the opposite side locking bar;

Fig. 11 is a similar view of a slight modification thereof; and

Fig. 12 is a side view of the top locking bar.

Referring to the drawings my improved metal window sash comprises frame members 20, which are permanently assembled to be continuous around the entire sash. These frame members are preferably made up of sheet brass or other suitable metal, bent or pressed to the cross sectional outlines indicated in Figs. 2, 3, and 4.

While I have indicated the frame members 20 as made from a certain number of pieces of sheet metal, it will be understood that the construction may be varied and that the different frame members may be made of one, two or more pieces of sheet metal as may be preferred under different conditions.

I preferably provide recesses 21 in the frame members 20 to receive corner pieces 22 (Figs. 6 and 7) which fit snugly in said recesses and firmly retain the frame members in accurate alignment, also stiffening and strengthening the sash at the corners thereof.

Fig. 2 shows a section of one of the side frame members, with the sides of the frame member extended outward, as indicated at 23 to provide extensions at each side of a sash guide 24 mounted on a casing frame 25.

In Fig. 3, I have shown a cross section of the top frame member, with the sides of the member bent inward and locked together to form a smooth continuous top edge for the frame, as indicated at 26.

In Fig. 4, I have shown a cross section of the bottom frame member, with the sides projected downward and bent inward to provide lugs or flanges 27 to receive a cushioning member or backing strip 28. A reinforcing flange member 29 may be inserted between the projected portions 27.

The specific construction of the outer edge portions of the frame members forms no part of my present invention and is shown for purposes of illustration only.

At the inner edges of each sash member 20 I provide an inwardly projecting flange 34 (Fig. 2) and also a depressed groove or recess 35. The glass G is retained in position against the flanges 34 and is preferably provided with a U-shaped cushioning member 36 which fits around the edge of the glass and forms a yielding engagement with the flanges

34 and with the inner edge walls of the members 20.

After the glass is thus inserted in the sash, locking bars 40, 41, 42 and 43 are inserted in the grooves 35 in predetermined order as will be hereinafter described. The side bars 41 and 42 are provided with short projecting lugs 45 at one end and with notches or recesses 46 providing shoulders 47 at the opposite ends. The ends of the top bar 43 are cut away on an upward curve as indicated in Fig. 12 and all of the locking bars are provided with small holes 48 near one or both ends thereof for purposes to be described.

Having described the details of construction of my improved window sash, I will now describe the method of assembling the parts to secure the glass in the frame.

The cushioning member 36 is applied around the four sides of the glass G and the glass is then inserted in the frame with a portion of the cushioning member seated against the inwardly projecting flange 34. The locking bars are then inserted in the following order:—

The bottom bar 40 is first slipped in the groove 35 along the bottom frame member, as indicated in Figs. 1 and 4. A side bar 41 is then inserted by hooking its end lug 45 over the end of the bar 40, as indicated in Fig. 1, and then swinging the bar into place about the lug 45 as a pivot. The side bar 42 is then similarly inserted, as indicated in Figs. 1 and 2, and the top bar 43 is then placed in position by inserting the left hand end into the notch 46 of the bar 41 and causing it to engage the shoulder 47. The opposite end of the bar 43 engages the inner face of the bar 42 and forces the bar yieldingly outward as the bar 43 is pushed upward. If necessary, additional force may be exerted against the bar 42 to swing it outward to permit the upward movement of the bar 43.

As soon as the end of the bar 43 passes the shoulder 47, the bar 42 will snap inward, locking the bar 43 in position. In order that the bar 42 may yieldingly remain in locking engagement with the bar 43, the bar 42 is preferably given a slight longitudinal curve, as indicated in Fig. 9, the bar being straightened as the bar 43 is snapped into position.

In Fig. 11, I have indicated a slightly modified construction in which the side bar 42^a is bevelled or tapered on the rear edge at its upper end so that it may be readily forced outward when the bar 43 is inserted.

Having inserted the locking bars as above described, it will be seen that each bar is locked by two of the other bars and that they are thus firmly retained in position, securing the glass from accidental displacement.

If it is desired to remove the glass, the bars may be removed in the reverse order, first

forcing the upper end of the bar 42 outward sufficiently to clear the end of the bar 43. A rod or pin may then be inserted in an adjacent hole 48 and the bar 43 may be thus drawn out of its groove 35. The bars 42, 41 and 40 may thereafter be removed by similar use of a pin inserted in holes 48.

It should be particularly noted that the insertion or removal of the glass may be performed without removing the sash from the window casing, an item of very substantial importance, particularly when the invention is used in connection with highly finished structures, such as a railway car.

Having thus described my invention and the advantages thereof, I do not wish to be limited to the details herein disclosed otherwise than as set forth in the claims but what I claim is:—

1. A metal window sash comprising a sash frame having grooves along its inner edges and having inwardly projecting flanges, and locking bars seated in said grooves and effective to hold a glass in position against said flanges, said bars having locking adjustment with each other by which they are mutually retained in glass-holding position, and one of said bars being resilient to permit movement thereof out of locking position.

2. A metal window sash comprising a sash frame having grooves along its inner edges and having inwardly projecting flanges, and locking bars seated in said grooves and effective to hold a glass in position against said flanges, certain of said bars having notched ends effective to receive the ends of other bars and preventing inward movement thereof from glass-holding position and one of said other bars being resilient to permit retention thereof in operative position and being yieldingly movable from its position of engagement with an adjacent notched end.

3. A metal window sash comprising a sash frame having grooves along its inner edges and having inwardly projecting flanges, and locking bars seated in said grooves and effective to hold a glass in position against said flanges, said frame comprising recessed frame members connected at the corners and held in alignment by reinforcing corner members extending adjacent to and beyond said grooves which fit in said recesses and extend as integral units along said recesses at each side of each corner of said frame.

4. A metal window sash comprising a sash frame having grooves along its inner edges and having inwardly projecting flanges and locking bars seated in said grooves and effective to hold a glass in position against said flange, each of said bars having its ends in engagement with two adjacent bars, one of said bars being resilient and shaped to permit flexing into and out of engagement with its adjacent bars.

5. A metal window sash comprising a sash

frame having grooves along its inner edges
and having inwardly projecting flanges, and
locking bars seated in said grooves and ef-
fective to hold a glass in position against said
5 flanges, two of said bars having notched ends
effective to receive the ends of other bars, an-
other of said bars having rounded ends ef-
fective to engage the notches in adjacent bars
and another of said bars having squared ends
10 adapted to fit the remaining notches in adja-
cent bars, said notches, rounded ends and
squared ends effective to form a lock and pre-
vent inward movement of the bars from
glass-holding position.

15 In testimony whereof I have hereunto af-
fixed my signature.

CHARLES H. TURNER.

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