E. G. BUDD.
METALLIC WINDOW FRAME.
APPLICATION FILED DEO. 17, 1906.

INVENTOR
Edward J. Budd

ATTORNEY
To all whom it may concern:

Be it known that I, Edward G. Budd, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a certain new and useful Improvement in Metallic Window-Frame, of which the following is a specification.

This invention relates to metallic window-frames for use in the construction of fireproof buildings, railway cars and the like.

The object of the invention is to provide an improved frame of this character, the improvements being directed particularly to the construction whereby an attractive appearance is obtained and to the means for securing the panel of glass within the frame. The frame consists of four sections, each formed from a strip of sheet-metal pressed to a substantially rectangular cross-section to provide open space between opposite sides thereof and having an integral flange extending inwardly of the frame. These sections are secured together at their ends to form a rectangular frame. In order to obtain ample strength at the joints between the several sections, I make their ends overlap, but this is done without increasing the width of the frame at the joints, the entire frame being of uniform thickness.

For this purpose, certain of the sections are reduced in thickness at their ends and these reduced portions are inserted between the sides of the other members of the frame at the ends thereof and the entire overlapping surfaces are secured together as by soldering or brazing. By securing the ends of the sections together in this way without using rivets and by filling the slight depressions along the lines of the junctions of adjacent sections with solder, the parts are secured together firmly and the joints between them are concealed. When the parts are secured together thus, a flange is provided extending inwardly of the frame, which serves to position the panel of glass. For holding the glass against this flange, I provide locking strips and means for securing them to the frame, this means being so constructed that it can be readily applied to hold a glass in place while working from one side thereof only. By this construction, the fragments of a broken pane of glass can be removed and a new pane inserted very quickly, the work being done by a single operator working from one side of the window only.

The preferred embodiment of my invention is illustrated in the accompanying drawings, in which

Figure 1 is an elevation of a window broken away in part, Fig. 2 is a section on line 2—2 of Fig. 1, Fig. 3 is a section on line 3—3 of Fig. 2, Fig. 4 is a section on line 4—4 of Fig. 1 and Figs. 5 and 6 are detail views illustrating a modification.

Referring to the drawings, 1 indicates the rectangular metallic frame and 2 the panel of glass secured therein.

The frame 1 consists of four frame sections, each formed from a strip of sheet-metal, preferably steel, pressed to a substantially rectangular section, to provide open space between the opposite sides thereof. At one edge of the strip 3 from which the section is formed, a flange 4 is provided, and at the other edge a fold 5, such that when the strip is brought to its final configuration the fold 5 incloses the flange 4 and the flange and fold together constitute a flange 6 extending inwardly of the frame. The top and side sections of the frame may be similar in cross-section, but the bottom section is preferably of greater width, its lower edge being shaped as desired to cast with the window sill.

In securing the sections together, the ends are overlapped and the overlapping portions secured together, but, in order that the frame may be of uniform thickness throughout, I do this by reducing the thickness of certain of the sections at the ends thereof, so that these portions of reduced thickness may be inserted between the side walls of the other sections. Thus, referring to Fig. 4, one of the side sections of the frame is shown as reduced in thickness at its lower end by depressing each of the sides 7, 7 thereof along the lines 8, so that the thickness of the section is reduced at its end by an amount equal to twice the thickness of the metal employed. This being done, the end of the side section can be inserted between the sides 7, 9 of the bottom section of the frame. In this position the parts are secured together by soldering or welding together the entire overlapping surfaces along the sides 7, 7 and 9, 9. When this has been done, the slight depressions on the outer sides of the frame along the lines 8 is filled with solder, and this solder scraped down flush with the surface of the frame, in order to entirely conceal the joint between the two sections.

The frame thus constructed is of uniform thickness throughout, the sections thereof are securely united by having their ends overlapped and these overlapping portions secured together, and a flange is provided extending inwardly of the frame, which serves to position the sheet of glass.

In order to hold the glass against the flange 6, I provide locking strips 10, angular in cross-section, one face thereof being adapted to lie against the glass and the other against the inner side of each frame section. The strips 10 are held in position by fasteners 11 passing through corresponding openings provided in the strips and the frame sections. Each of these fasteners has a head 12 at one end and at the other end is longitudinally slotted to provide a plurality of fingers 13 which are bent as shown in the drawings, so that when the fasteners are inserted in position these fingers will hold them firmly therein. On the shank of the fastener and lying against the head is a washer 12, of compressible material.
In assembling the parts, a strip of any suitable compressible material 14 may be positioned about the edges of the pane of glass, and this being done the glass is inserted within the frame against the flange 6. The 5 strips 10 are then laid against the packing 14 and pressed against it until the openings through the strips align with the openings in the frame sections and the fasteners 11 are then passed through these openings. The fasteners are forced to their final positions by compressing the washers 12' between the heads thereof and the locking strips and as they reach these positions, the fingers at the ends thereof snap outwardly against the interior of the sections and prevent the fasteners from being withdrawn, except by the application of considerable force. In this way the parts can be quickly assembled and the glass is held securely between the flange 6 and strip 10. All the work of securing the glass within the frame is performed from one side of the frame, so that in cases where this construction is employed upon a railway car the work of removing the broken fragments of a glass and substituting a new one can be performed by a single workman, who does not have to enter the car. If desired, a weather-strip 15 may be secured to the lower edge of the bottom section of the frame by fasteners of the type used in securing the locking strips 10 in place.

In Figs. 5 and 6, I have shown a modified form of fastener consisting of a cylindrical body 16 having a cupped head 17 riveted to one end thereof and a piece 18 having a plurality of radially disposed spring fingers riveted to the other. This fastener is inserted in the opening in the locking strip and frame and forced into the same flattening out the cupped head 17 somewhat until the ends of the fingers 18 spring out against the interior of the frame section and prevent the fastener from being removed. The head 17 thus exerts a tension on the fastener tending to hold it rigidly in position.

Having described my invention what I claim and desire to secure by Letters Patent of the United States is as follows:

1. The combination of a frame having an inwardly extending flange and consisting of four sheet-metal frame sections secured together at their ends and means for securing the joints between adjacent frame sections, a pane of glass positioned by said flange, locking strips for the glass and means for securing the locking strips to the frame sections, substantially as described.

2. The combination of a frame having an inwardly extending flange and consisting of sheet-metal frame sections, the ends of certain of said sections underlapping the ends of certain other sections and the entire underlapping surfaces being secured to the surfaces overlying the same, a pane of glass positioned by said flange, locking strips for the glass and means for securing the locking strips to the frame sections, substantially as described.

3. The combination of a frame of uniform thickness throughout, consisting of sheet-metal frame sections each having a flange therein, the ends of certain of said sections being reduced in thickness and inserted and secured within the ends of certain other sections, a pane of glass positioned by said flanges on the frame sections, locking strips for the glass, and means for securing the locking strips to the frame sections, substantially as described.

4. The combination of a metallic frame having an inwardly extending flange, a glass positioned by said flange, a locking strip for holding the glass in position and a plurality of fasteners extending through openings in the locking strip and frame and adapted to be sprung into position for holding the locking strip to the frame, each of said fasteners having a plurality of spring-dingers at its end which, when the fastener is in position, engage the interior surface of the frame, substantially as described.

5. The combination of a hollow metallic frame, having an inwardly extending flange, a glass positioned by said flange and devices extending through openings in said frame and adapted to be sprung into position to coat with the interior walls of said frame for securing said glass in place, substantially as described.

6. The combination of a metallic frame having an inwardly extending flange, a glass positioned by said flange, a locking strip for holding the glass in position and devices having compressible heads and spring-actuated parts for securing said strip to the frame, substantially as described.

7. The combination of a frame having an inwardly extending flange, a glass positioned by said flange, a locking strip for the glass and fasteners for securing said strip to the frame having compressible heads and resilient parts, the latter being adapted to secure the fastener in position, substantially as described.

This specification signed and witnessed this 14th day of December, 1900.

EDWARD G. BUDD.

Witnesses:
R. M. FRIED,
P. J. TUCKER.