J. T. SIMPSON.

DOOR AND WINDOW STRUCTURE.

APPLICATION FILED SEPT. 8, 1910.

Patented Oct. 1, 1912.

1,039,830.

Fig. 1

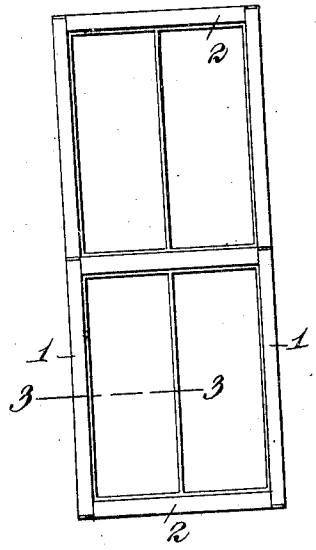


Fig. 2

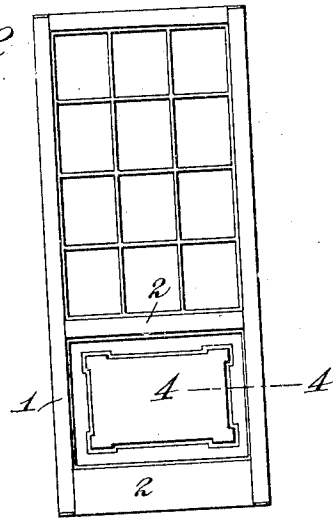


Fig. 3

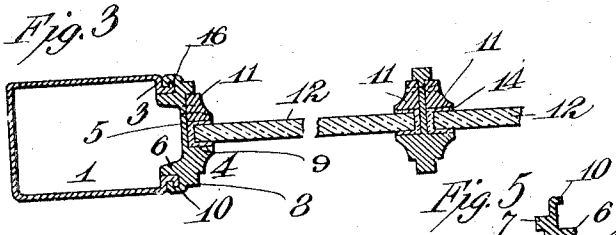


Fig. 4

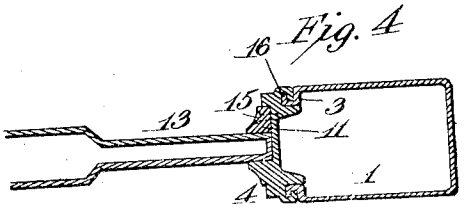


Fig. 5

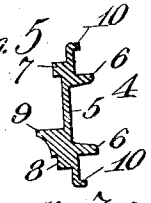


Fig. 6

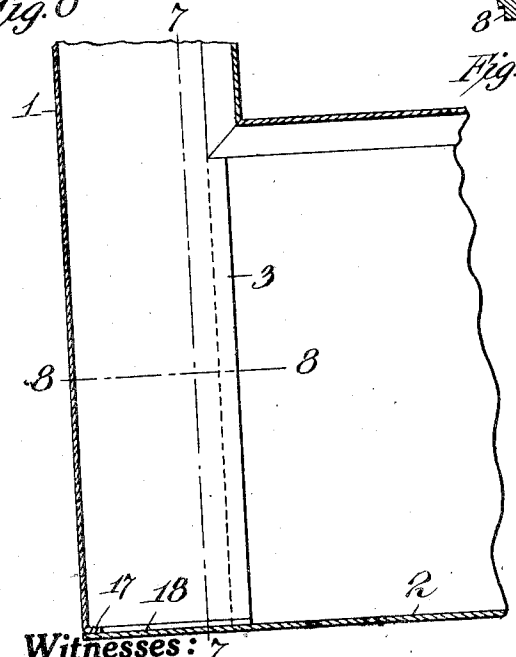


Fig. 7

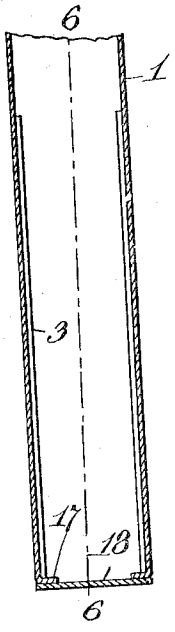
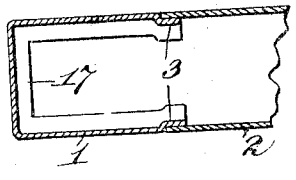


Fig. 8



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UNITED STATES PATENT OFFICE.

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DOOR AND WINDOW STRUCTURE.

1,039,830. Specification of Letters Patent. Patented Oct. 1, 1912.

Application filed September 8, 1910. Serial No. 581,024.

To all whom it may concern:

Be it known that I, JOHN T. SIMPSON, a citizen of the United States, and residing in Newark, in the county of Essex and State of New Jersey, have invented a certain new and useful Door and Window Structure, of which the following is a specification.

The object I have in view is the production of a door or window structure, which may be made entirely of metal, and which will be cheap to construct, which will comply with the requirements of cities where fireproof doors and windows must be used in certain structures, and with other advantages as will more fully appear from the following specifications and accompanying drawings, considered together or separately.

In the drawings: Figure 1 is an elevation of two windows embodying my invention. Fig. 2 is an elevation of a door embodying my invention. Fig. 3 is a section on the line 3—3 of Fig. 1. Fig. 4 is a section on the line 4—4 of Fig. 2. Fig. 5 is a section of the vertical and horizontal member which engages with the sash or panel. Fig. 6 is an enlarged view of the lower corner of a window or door, the said view being taken on the line 6—6 of Fig. 7. Fig. 7 is a section, at right angles, of Fig. 6, taken on the line 7—7 of Fig. 6. Fig. 8 is a section on the line 8—8 of Fig. 6.

In all of the views, like parts are designated by the same reference characters.

In carrying out my invention I provide stiles 1, 1 and rails 2, 2, all the parts being properly proportioned for the purpose for which they are intended. The stiles and rails are made of sheet material, preferably sheet steel, rolled in proper cross section. The cross section of the stiles is shown in Figs. 3 and 4. The cross section of the rails is substantially the same. The edges 3 are bent inward and run parallel with the sides of the stile, and are then bent outward and upward, as shown, forming a gutter of hooked cross section with a lip 16, as shown. The inner face of the stile, which engages with the sash or panel, is formed of a member 4 of peculiar cross section, best illustrated in Fig. 5. This member 4 has a web 5 and flanges 6, 6 on one side of the web. On the other side it is provided with a flange 7, a flange 8, and a larger intermediate flange 9. The edge of this flange 9 toward the flange 8 may be beveled or chamfered, as shown, to create an ornamental appearance. The edges of the member are bent at 10. The size of the member is such that when used in connection with the stile and rails as described, the edges 3 of the latter will rest upon the outer faces of the two flanges 6, 6. The two parts are secured together by bending the edges 10 into contact with the hooked gutters 3, 3.

Figs. 3 and 4 illustrate the position that the edges 10 will assume after they have been bent. The bending operation may be conveniently done in a continuous operation by rolling, the flanges 6, 6 serving as supports to sustain the bases of the gutters 3 when the edges 10 are being forced into position. The flanges 7, 8 and 9 support the glass of the window or the panel of the door. I prefer to make the support as shown in my co-pending application for patent, executed as of even date herewith filed September 8, 1910, Serial No. 581,023. For use in windows or doors in which putty is liable to be shaken out, I prefer to use moldings 11, which lie between the glass 12, or panel, and the flange 7, clamping the glass or panel against the flange 9. Suitable filling material 14 (as putty) may be placed around the edge of the glass. The molding is secured in position by rivets or pins 15.

The joint between the stile and the rails is made as follows: That portion of the gutter 3 which comes in contact with the rail is straightened out, as shown in Fig. 8, the lip 16, as shown in Figs. 3 and 4, being obliterated. The edge of the rail, therefore, rests against the gutter, forming a flush outer surface and at the same time forming a foundation or base for the wall of the rail. The lower edges of the stile are flanged inwardly at 17, and the bottom of the rail is carried out at 18 in engagement with such flanged portion. The parts are suitably soldered or brazed together, it being apparent that the edge 3 and flange 17 will form a backing for the joint. I prefer to employ the well known method of acetylene-oxygen welding.

In accordance with the provisions of the patent statutes I have described the principle of my invention, together with the apparatus which I now consider to represent the best embodiment thereof; but I desire to have it understood that the ap-

paratus shown is merely illustrative and that the invention can be carried out in other ways.

Having now described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. A door or window having a stile or rail formed of a sheet metal body, the edges of which are bent to form gutters, and a member with a web and flanges, the edges of the web being bent into the gutters, said gutters resting against the flanges.

2. A door or window having a stile or rail formed of a sheet metal body, and a member formed of a web and flanges, the edges of the web being rolled into engagement with the edges of the body, holding the latter against the flanges.

3. A door or window having a stile or rail formed of a sheet metal body, the edges of which are bent to form gutters, and a member with a web having projections to receive and hold panels of metal or glass, said web having outer and inner pairs of flanges, the inner flanges forming seats to support and aline the gutter portion of the stile or rail, and the outer flanges being adapted to be bent over and into the gutters, locking the stile and member securely together.

4. A member for securing hollow stiles or rails for a door or window, with a web having projections to receive and hold panels of metal or glass, said web having outer and inner pairs of flanges, the inner flanges forming seats to support and aline the gutter portion of the stile or rail, and the outer flanges being adapted to be bent over and into the gutters, locking the stile and member securely together.

This specification signed and witnessed this 30th day of August, 1910.

JOHN T. SIMPSON.

Witnesses:

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