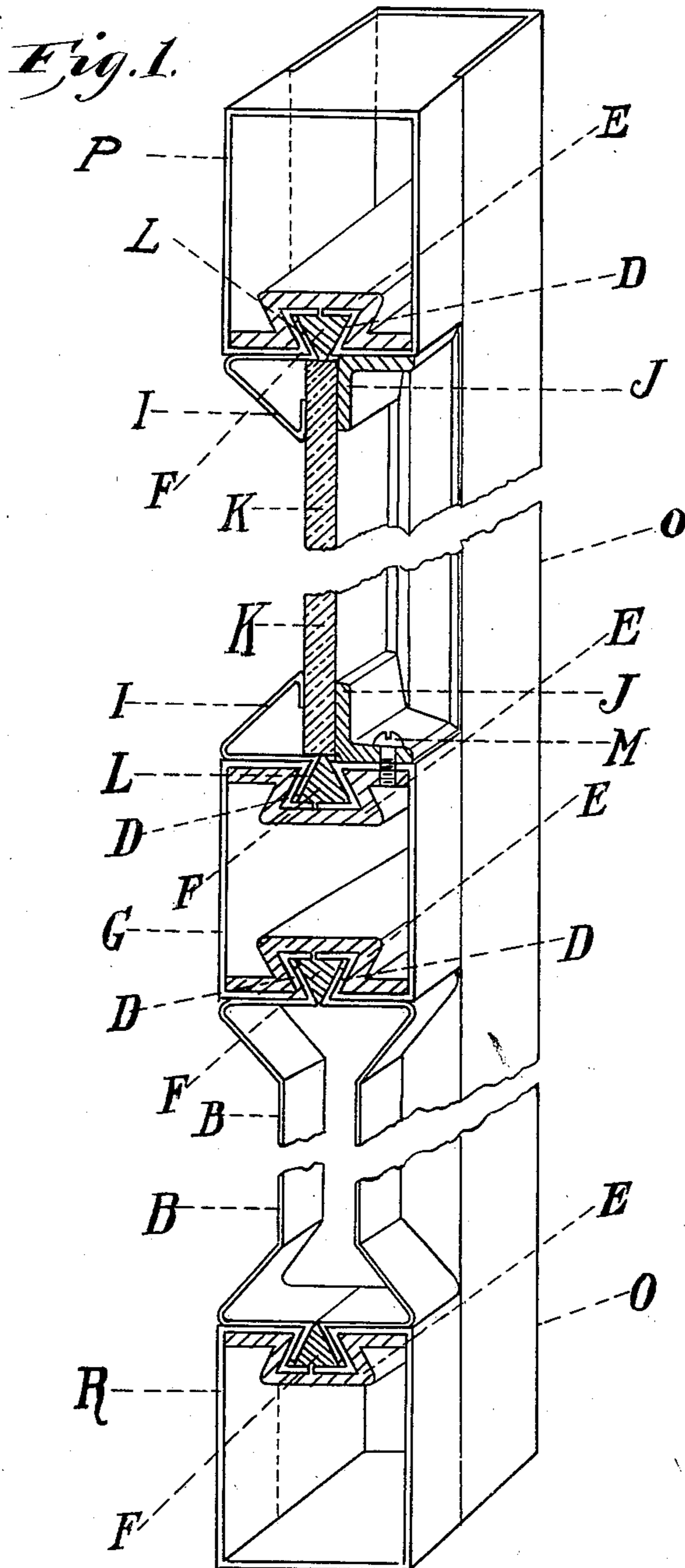


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PATENTED AUG. 13, 1907.

J. A. WOLLE.
METAL STRUCTURE.
APPLICATION FILED JAN. 23, 1907.

2 SHEETS—SHEET 1.



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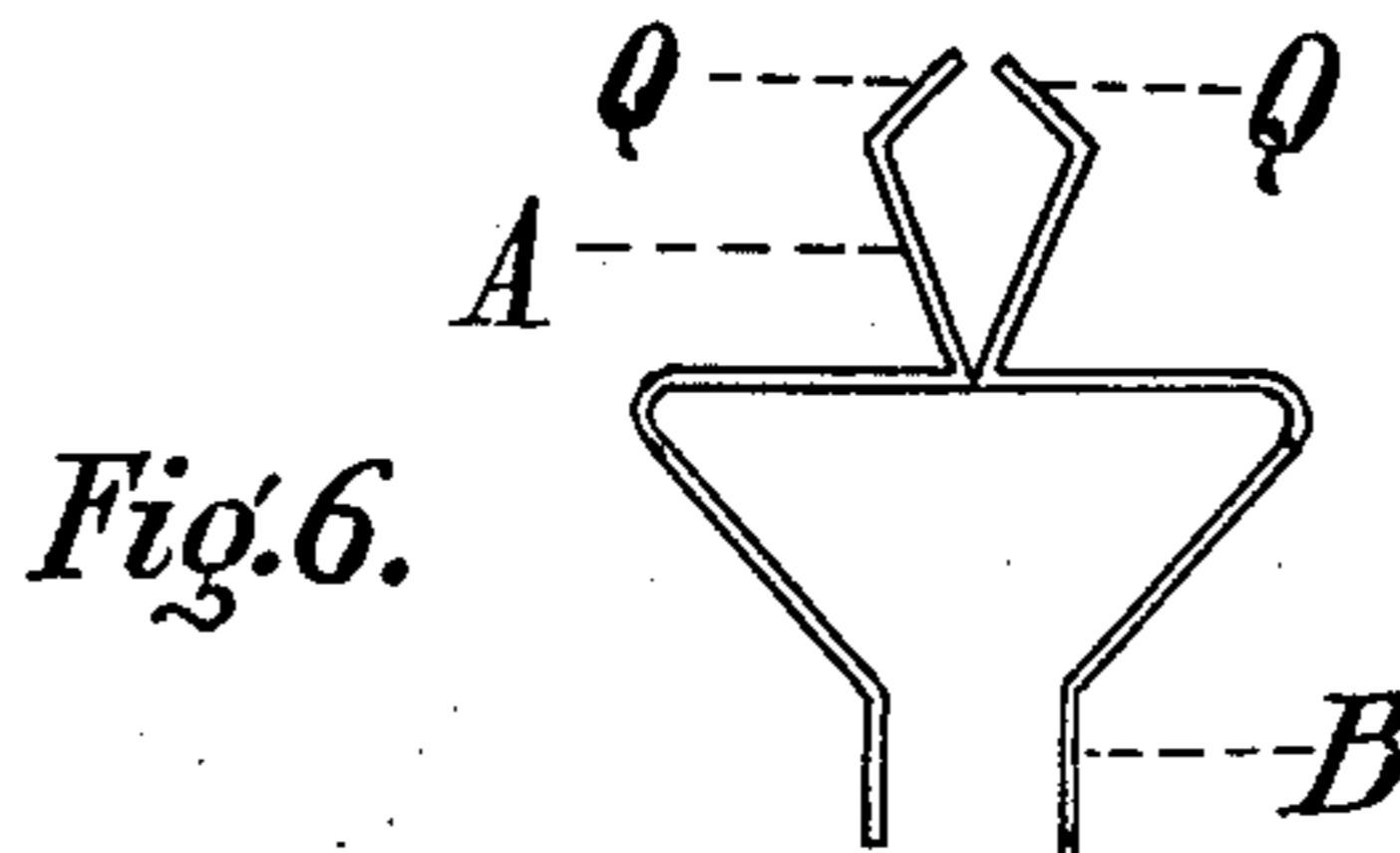
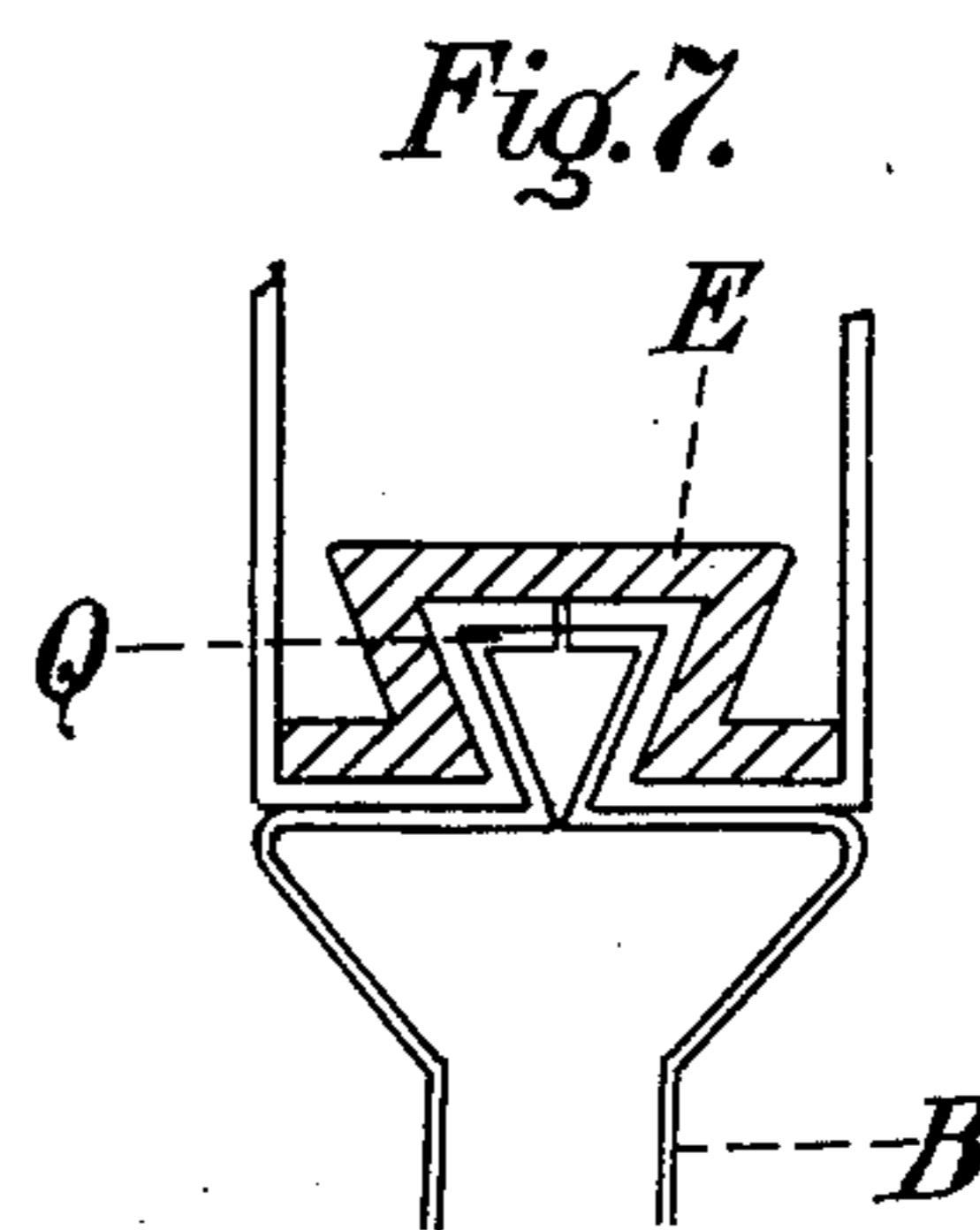
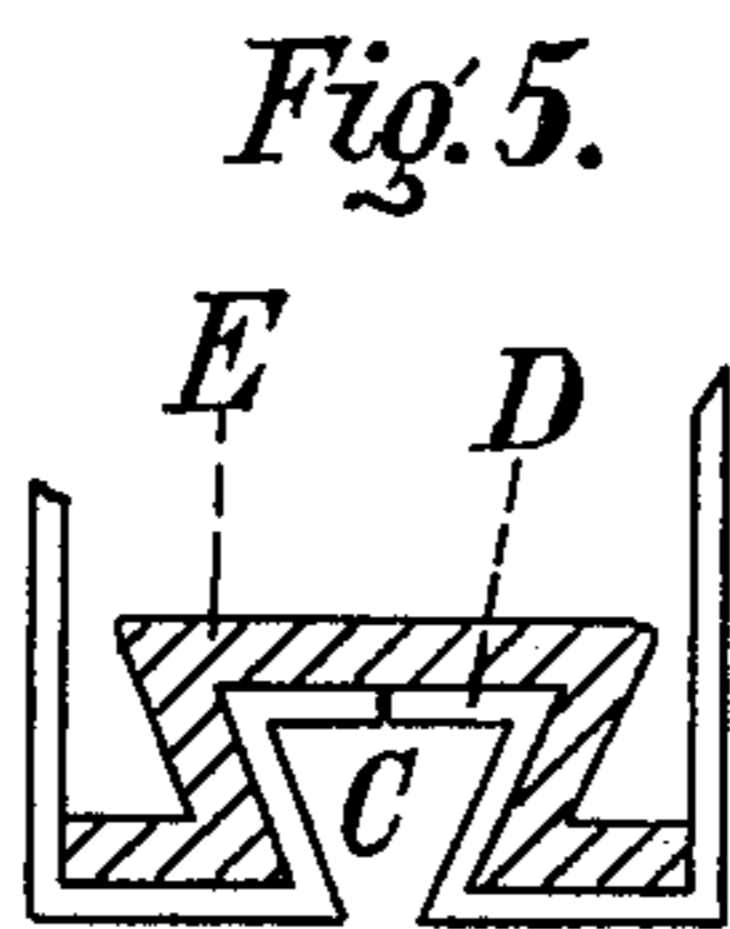
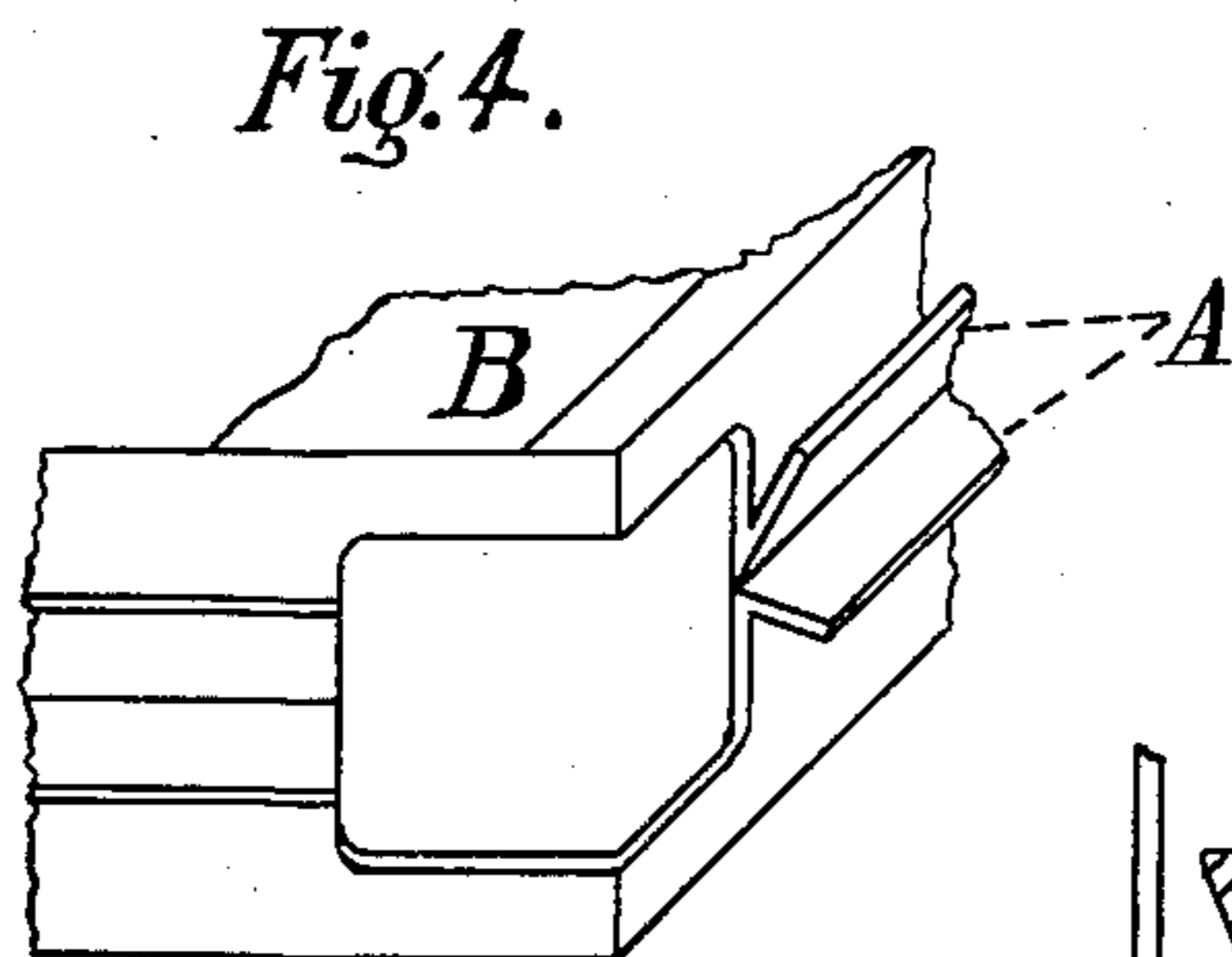
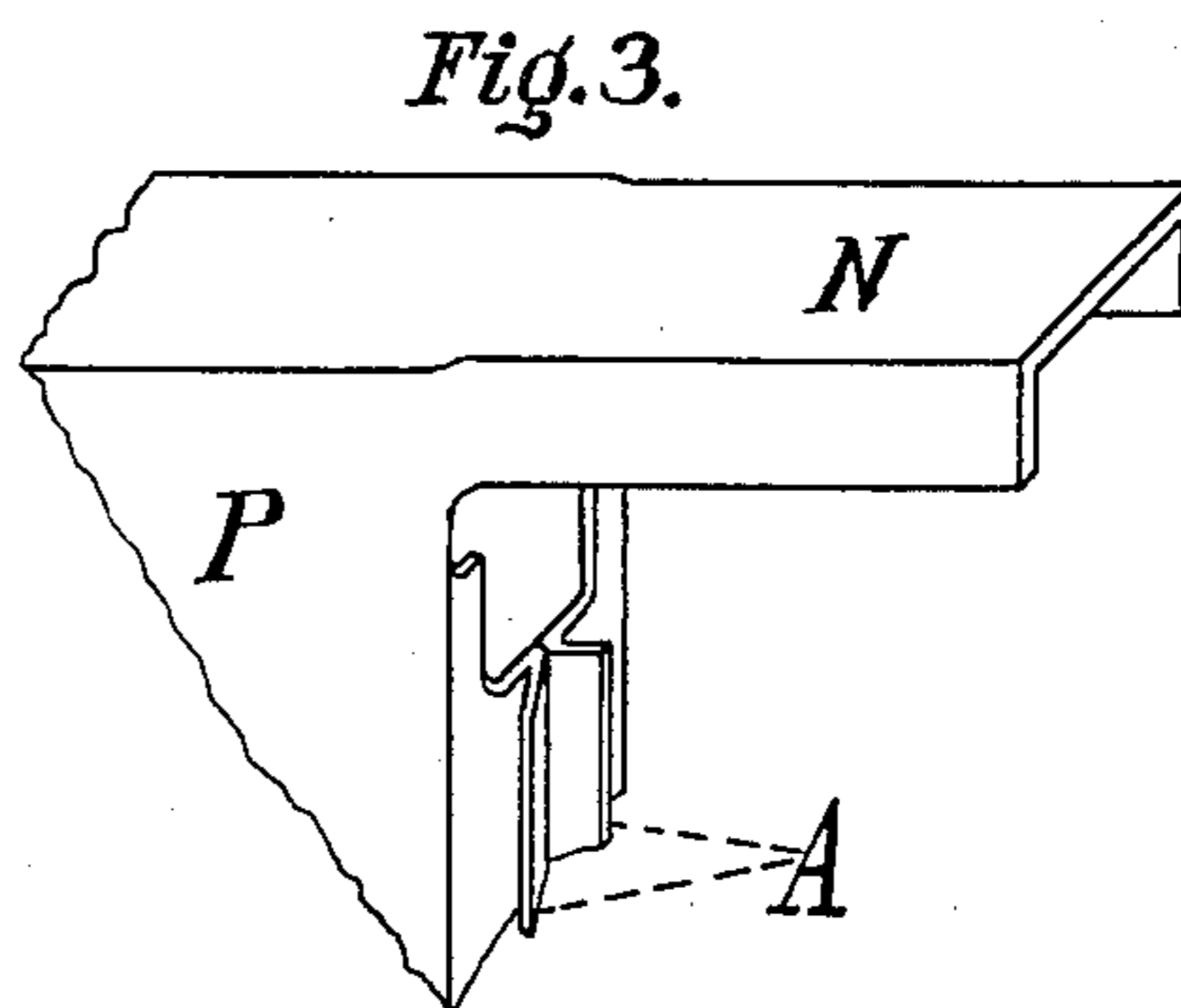
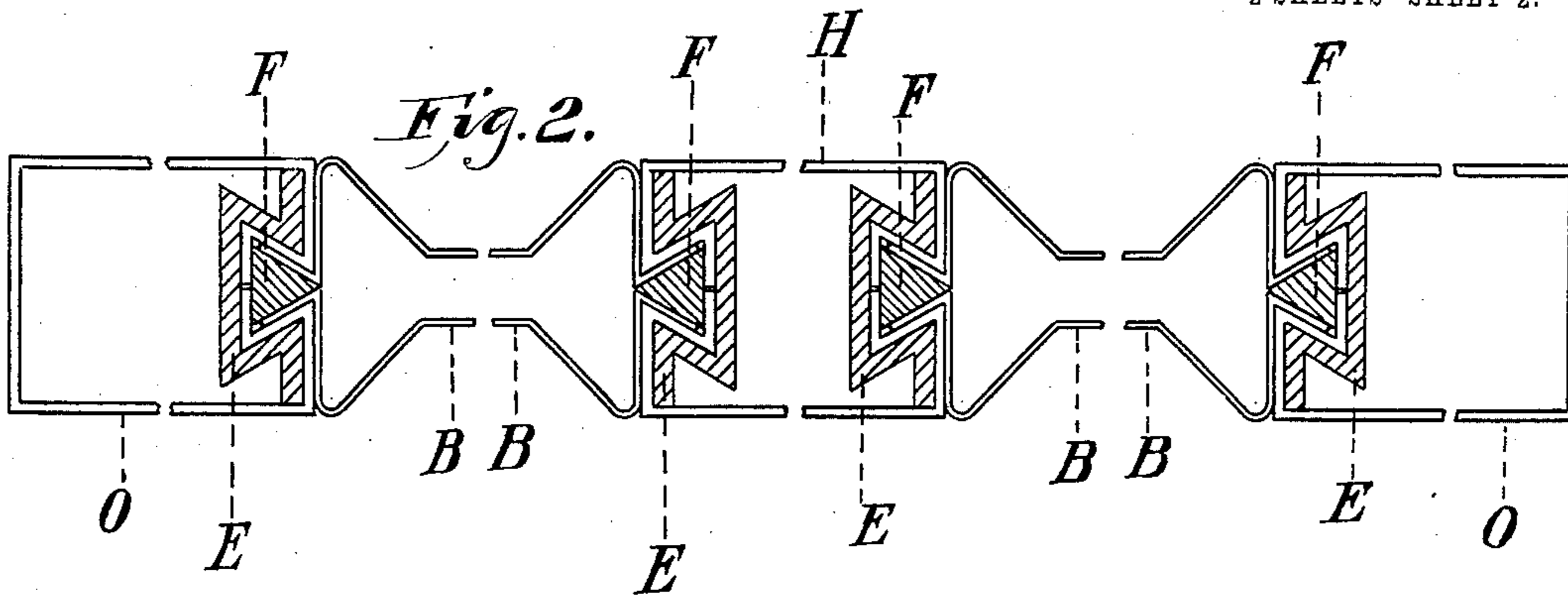
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No. 862,956.

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2 SHEETS—SHEET 2.



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METAL STRUCTURE.

No. 862,956.

Specification of Letters Patent.

Patented Aug. 13, 1907.

Application filed January 23, 1907. Serial No. 353,717.

To all whom it may concern:

Be it known that I, JOSEPH ARTHUR WOLLÉ, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Metal Structures, of which the following is a specification.

The invention relates to an improvement in metal structures and particularly to a highly efficient means of joint construction, whereby the parts of a metal structure, such as a door, window, shutter, or the like, may be conveniently and securely connected.

The main object of the present invention is the provision of cooperating locking members on the respective parts of the structure, which are so constructed and arranged as to provide for the ready and convenient assembling of the parts without the use of extraneous fastening medium, the particular formation of the locking members insuring a firm and secure interlocking of the parts when connected.

The invention in the preferred embodiment of details will be described in the following specification, reference being had particularly to the accompanying drawings, in which

Figure 1 is a broken perspective of a portion of a door, illustrating the application of the invention, and showing more particularly the use of the invention with both a metal panel and a glass panel. Fig. 2 is a transverse section through a door, illustrating the use of the invention with two metal panels. Fig. 3 is a perspective showing the formation of the end portion of one of the end rails of a door. Fig. 4 is a broken perspective illustrating one corner of the improved panel. Fig. 5 is a broken section through one of the rails. Fig. 6 is a similar view showing a portion of the improved panel and illustrating the arrangement of the panel-locking member with which the finally-applied rail coacts. Fig. 7 is a vertical sectional view illustrating in part the panel and rail shown in Figs. 5 and 6, and illustrating these parts in connected relation.

In carrying out the details of the present invention it will be noted that the panels, assuming the structure a door, as illustrated, are formed with male locking members, while the cooperating portions of the rails are formed with female locking members.

The panel B, illustrated for convenience as of the sheet metal type, may be constructed in any desired outline or ornamental configuration, being however, for the purposes of this invention, formed on the marginal edges with projecting tongues A. In forming these tongues the respective sections of sheet metal used in making up the panel are projected beyond their meeting line in forming the marginal edges of

the panel to provide the tongues A, each tongue standing normally at an acute angle with the section with which it is connected. The rails, also made up of sheet metal sections, are formed with female locking members C, the terminals D of each sheet metal section being bent inwardly at an acute angle to the section and then laterally to abut the corresponding edge of the adjacent section. The female locking member thus formed is approximately of V-shape with the walls thereof spaced at the relatively outer ends to provide for the cooperation of the male locking member A. The female locking member C is reinforced by a clencher strip E, extending throughout the length of the female member and bearing against the relative outer surface of said member throughout its entire sectional area, said clencher strip being additionally formed with projections to bear against the inner surface of the marginal portions of the rails and abut against the surface walls of the rails, as clearly shown in Fig. 5. In assembling the parts of the structure, with this particular form of interlocking means, the male member A is engaged by obvious endwise relative movement with the particular female member C of the rails. After such cooperative arrangement, a wedge-strip F corresponding in sectional contour to the sectional contour of the female member, is inserted between the tongues of the male member, and driven home. The wedge serves to effectively spread the tongues A to the extreme limit within the female member C, thus binding the respective cooperating marginal edges of the rails and panels in close contact and absolutely preventing any subsequent independent movement of these parts.

The male locking member A is preferably not coextensive with the full length of the panel marginal edge with which it is connected, terminating short of the respective ends of said edge, as shown in Fig. 4. The marginal edge of the panel is preferably cut away for the greater portion of its width beyond the terminals of the male locking member to provide for convenience in securing the parts.

With the rails and panels of hollow construction I prefer that the end panels P of the structure be formed with longitudinally-disposed end projections N, which, when the parts are assembled, will overlie and cover the open ends of the side rails to form an inclosed structure, the projections N being preferably formed with laterally-disposed side flanges to embrace the side walls of the connected rails whereby to permit desired brazing for completing the connection.

In a structure connected as described it will be obviously impossible to use the wedge F in the final connection, and for this purpose the male locking member A arranged to provide the final connection, is preferably

formed with terminal relatively inwardly projecting lips Q. These lips are together equal in length to the greatest transverse dimension of the female member C, and when this specifically formed male member is inserted within the female member, pressure is applied to the rail to force the lips Q into approximate alinement transverse the female member, with the effect to spread the tongues A in practically an identical manner as with the wedge.

10 In Fig. 1 is illustrated a structure including a glass panel, and for securing this in place a slightly modified form of fastening means is necessary. The cooperating rails to receive and support the glass panel K are formed exactly as in the previously described construction, including the female locking member reinforced by the clencher strip. With the glass panel I use a locking member I having a tongue L, similar to one of the tongues A, a laterally-projected portion approximately coextensive with one-half of the width of the marginal edge of the rail, and an outer face arranged at an incline to the lateral portion and terminating in an inwardly bent lip to bear directly against the glass panel K. The locking member I is secured in each of the rails forming the boundary of the opening for the reception of the glass panel, by inserting the tongue L within the female member of the panel and securing the same in place by the wedge strip F. The panel K is now inserted, bearing against the intumed lips of the members I, and binding members J, comprising L-shaped strips of appropriate lengths and widths, are secured against the opposite side of the glass panel through the medium of screws M passed through one section of the binding member and preferably seating in the clencher strip beyond the same. The panel K is thus secured in position between the respective rails, it being understood that the invention contemplates the use of any resilient medium, as strips of rubber or the like, with which the edges of the panel may be embedded to avoid breakage.

It is of course to be understood that in the event the door has an intermediate rail between upper and lower panels, the relatively horizontal marginal edges of the intermediate rail will have female members to receive the male members of the panels while the relatively vertical edges of said intermediate rail will have male locking members to cooperate with the female locking members on the side rails.

The invention is equally applicable to metal structures in which the parts are of solid construction instead of hollow as illustrated. In this solid arrangement, the female locking members are cast with the respective parts or cut into them by any desired means,

while the male locking members are formed in any desired manner on the marginal edges of the cooperating parts.

While illustrating and describing the invention as primarily adapted for the construction of doors, it is fully apparent that it is equally applicable to all metal structures comprising disconnected parts which are arranged for interlocking assemblage to provide a completed whole. It is therefore to be understood that the invention contemplates the formation of any metallic structure of this character, and, further, that any and all modifications and changes from the preferred embodiment of details illustrated and described, that may fall within the scope of the appended claims, are considered to be within the spirit of my invention.

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

1. A metallic structure made up of connected parts, cooperating locking means formed on the respective parts, and means to secure said locking means in locking cooperation. 70
2. A metallic structure made up of connected parts, cooperating locking means formed on the respective parts, and wedges arranged to secure said means in locking cooperation. 75
3. A metallic structure made up of connected parts, male locking means formed on one of said parts, a cooperating female locking means formed on another of said parts, and a wedge to bind the male locking means within the female locking means. 80
4. A metallic structure including rails and panels, movable tongues formed on the panel, means formed in the rails for receiving the tongues, and wedges to spread the tongues with said rail-receiving means. 85
5. A metallic structure made up of connected parts, one of said parts being formed with projecting flexible tongues, the material of the other part to provide a socket disposed wholly within the plane of said part, and a wedge to spread the tongues within and bind them against the opposing walls of the socket. 90
6. A metallic structure including rails and panels, said rails being formed with approximately V-shaped sockets disposed wholly within the plane of the rails, panel-supporting members adapted to be inserted within said sockets, and wedges to cooperate with the sockets and secure the panel-supporting members therein. 95
7. A metallic structure made up of connected parts, one of said parts being formed with projecting flexible tongues, the other part being formed to provide a socket to receive the tongues, a clencher-strip arranged within said latter part to reinforce the walls of the socket and independent means for binding the tongues against the walls of the socket. 100

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses. 105

JOSEPH ARTHUR WOLLÉ.

Witnesses:

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E. W. ANSTICE.