R. E. FRAME & C. G. HARRINGTON.

METALLIC DOOR.

APPLICATION FILED OCT. 30, 1908.

941,068. **Patented Nov. 23, 1909.**

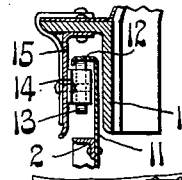
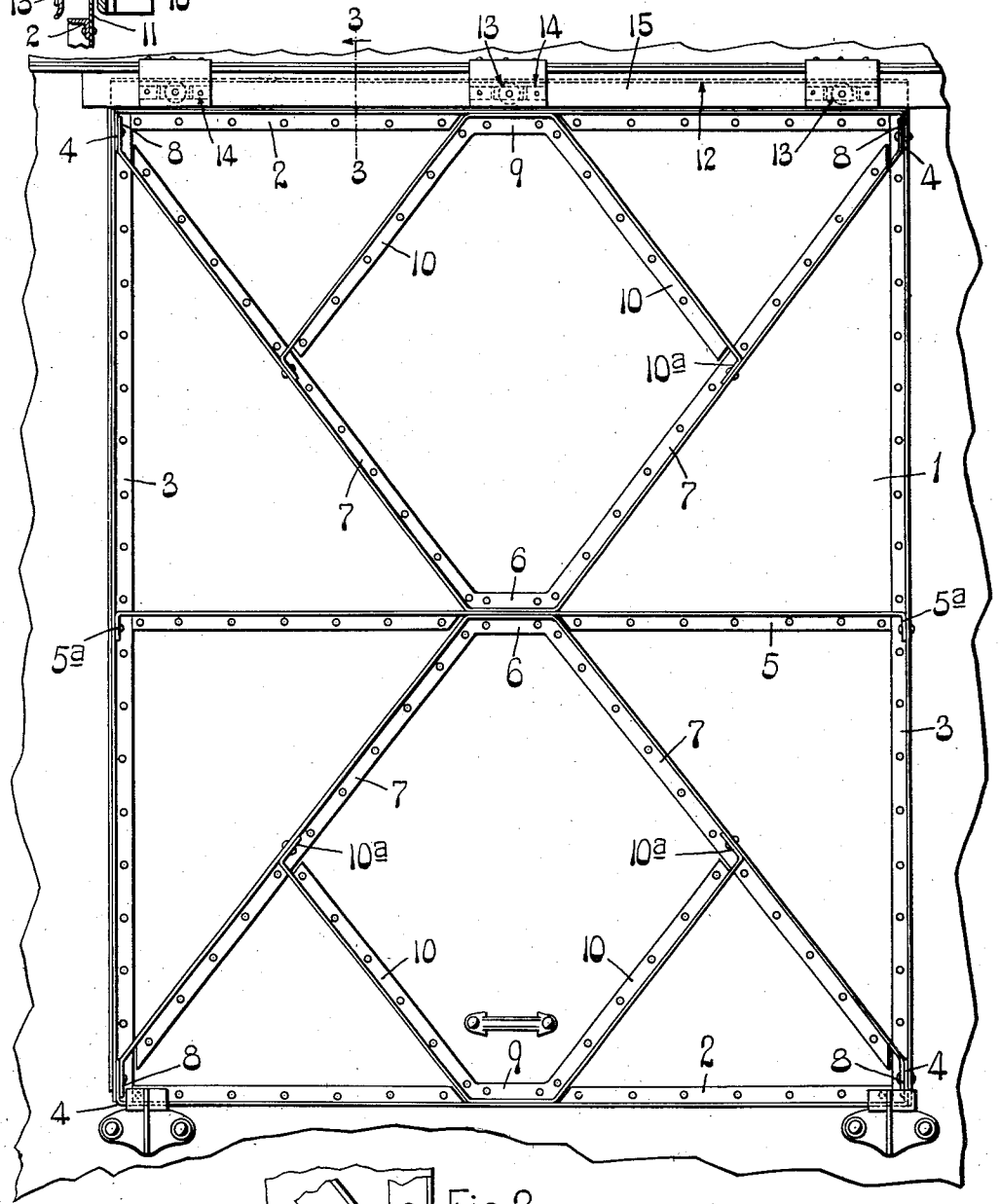


Fig. 3.

Fig. 1.



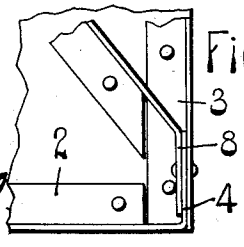


Fig. 2.

Witnesses
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UNITED STATES PATENT OFFICE.

ROBERT E. FRAME, OF ST. LOUIS, AND CLEMENT G. HARRINGTON, OF MAPLEWOOD, MISSOURI, ASSIGNORS TO AMERICAN CAR & FOUNDRY COMPANY, OF ST. LOUIS, MISSOURI, A CORPORATION OF NEW JERSEY.

METALLIC DOOR.

941,068. Specification of Letters Patent. Patented Nov. 23, 1909.

Original application filed January 31, 1908, Serial No. 413,641. Divided and this application filed October 30, 1908. Serial No. 460,329.

To all whom it may concern:

Be it known that we, ROBERT E. FRAME and CLEMENT G. HARRINGTON, both citizens of the United States, residing at St. Louis, Missouri, and Maplewood, St. Louis county, Missouri, respectively, have invented a certain new and useful Improvement in Metallic Doors, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side elevation of a metallic door constructed in accordance with our invention; Fig. 2 is an enlarged detail view of a portion of said door for the purpose of more clearly illustrating the way in which the flanged members on the edge portions of the door and the ends of the X-shaped brace are connected together; and Fig. 3 is a vertical sectional view taken on approximately the line 3—3 of Fig. 1.

This invention relates to metallic doors, and has for its object to provide a metallic door that is light and strong and which can be produced at a low cost.

The door herein illustrated is adapted to be used on a box-car and this present application is a divisional of our pending application Serial No. 413,641, filed January 31, 1908, which covers a box-car provided with a door of the construction herein illustrated.

Referring to the drawings which illustrate the preferred form of our invention, 1 designates a metallic plate having flanged members, preferably commercially-rolled angles 2, secured to its outer face along the upper and lower edges thereof, and flanged members 3 along the side edges thereof. These flanged members or angles 2 and 3 have their meeting ends connected together, preferably, by means of integral attaching flanges 4, on the angles 2, said flanges being produced by shearing off portions of the vertical legs of the angles 2 and then bending up the remaining portions of the laterally projecting legs of said angles to produce attaching flanges 4 that lie against the laterally projecting legs of the angles 3, as shown clearly in Fig. 2, said attaching flanges 4, of course, being secured by rivets or other suitable fastening devices to the laterally projecting legs of the angles 3 with which they contact.

The plate 1 is strengthened by a transversely extending flanged member, preferably an angle 5, and by an approximately X-shaped brace which consists of two continuous flanged members each of which is bent to produce a horizontally disposed portion 6 and inclined portions 7 that diverge in opposite directions from the portion 6, the horizontally disposed portion 6 of said members lying on opposite sides of the laterally projecting leg of the angle 5. The outer ends of the inclined portions 7 of said X-shaped brace are connected to the angles 3 on the side edges of the door by integral attaching flanges 8 which are produced by shearing off the vertical legs of the inclined portions 7 of the brace and bending the laterally projecting legs of said inclined portions so that they will lie against the attaching flanges 4 on the angles 2 at the upper and lower edges of the door. The same rivet or fastening device that is used to connect the attaching flanges 4 to the angles 3, is also utilized to connect the attaching flanges 8 of the X-shaped brace to said parts. The flanged members which form said X-shaped brace are riveted to the outer face of the plate 1, and the transversely extending flanged member 5 is also preferably riveted to the outer face of said plate. Portions of the vertical leg of said transversely extending member 5 are sheared off so that the laterally projecting leg of said member can be bent to produce integral attaching flanges 5^a, as shown in Fig. 1, and a portion of the vertical leg of said member 5 is cut away to receive the horizontal portion 6 of one member of the X-shaped brace. The door is preferably provided with additional braces which reinforce and strengthen the inclined portions of the X-shaped brace, each of said additional braces consisting of a flanged member, preferably an angle, that is bent to form a horizontally disposed portion 9 and inclined portions 10 that diverge in opposite directions from said horizontally disposed

portion. The horizontally disposed portions 9 of said auxiliary braces bear upon the laterally projecting flanges or legs of the angles 2, and the outer ends of said inclined portions 10 are connected to the inclined portions 7 of the X-shaped brace, as shown in Fig. 1. The vertical legs of the angles 2 are preferably cut away to receive the horizontally disposed portions 9 of said auxiliary braces, and the vertical flanges or legs at the outer ends of the inclined portions 10 are cut away so that the laterally projecting legs of said inclined portions can be bent to form integral attaching flanges 10^a that are connected by rivets or other fastening devices to the laterally projecting legs of the inclined portions 7 of the Z-shaped brace.

The door herein described is provided at its upper edge with a hanger member 11 which preferably consists of an integral portion of the plate 1 that extends vertically above the upper edge of the door proper and which is bent outwardly, as shown in Fig. 3, so as to form a flange 12 that rests on supporting rollers 13. These supporting rollers are journaled in brackets 14 which are preferably arranged inside of a hood member 15 connected to a laterally projecting flange on the upper side plate 16 of the car on which the door is used, and the flange 12 on the hanger member is curved downwardly slightly so as to prevent the door from moving laterally relatively to the supporting rollers.

Having thus described our invention, what we claim as new and desire to secure by Letters Patent is:

1. A door which consists of a metal plate having flanged members secured to the edge portions thereof, the meeting ends of said flanged members being connected together, a flanged brace extending transversely of said door, and an approximately X-shaped brace consisting of two flanged members bent to form horizontally disposed portions which engage the transversely extending brace, and inclined portions diverging in opposite directions therefrom and secured at their outer ends to the flanged members on the edge portions of the plate.

2. A door consisting of a metal plate having flanged members secured to its edge portions, the meeting ends of said members being connected together, a brace extending transversely of said plate, an approximately X-shaped brace secured to the corner portions of the frame which said flanged members form, and auxiliary braces having inclined portions which extend oppositely to the inclined portions of the X-shaped brace and are secured thereto.

In testimony whereof, we hereunto affix our signatures in the presence of two witnesses, this 27th day of October, 1908.

ROBERT E. FRAME.
CLEMENT G. HARRINGTON.

Witnesses:
WELLS L. CHURCH,
GEORGE BAKEWELL.