Feb. 17, 1931. H. G. WOEHLER 1,793,382

METALLIC DOOR

Filed March 5, 1928 2 Sheets-Sheet 1

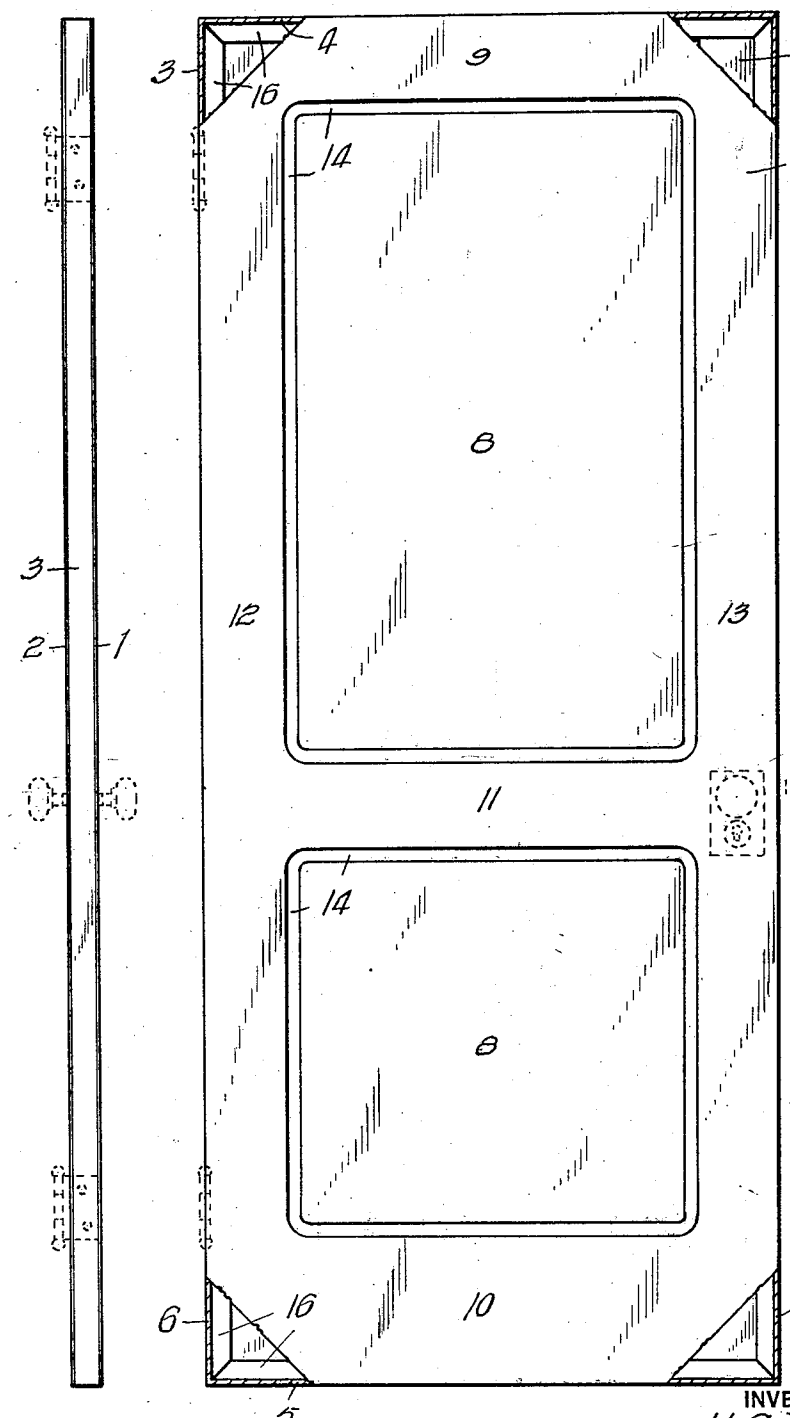


Fig. 2. Fig. 1. Fig. 3.

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Fig. 4.

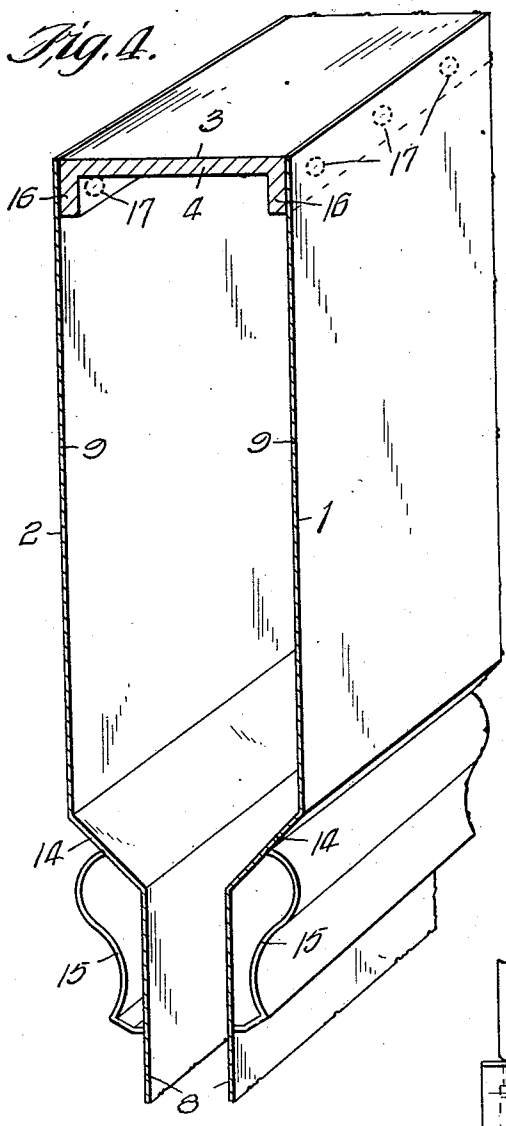
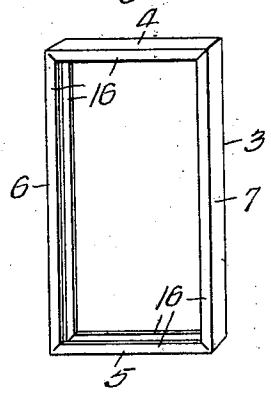


Fig. 5.



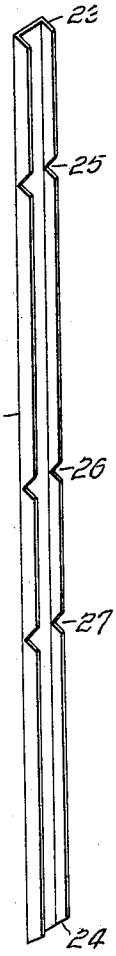


Fig. 6.

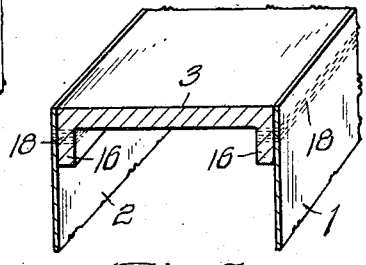


Fig. 7.

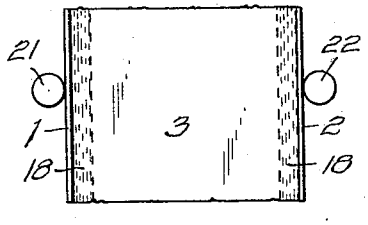


Fig. 9.

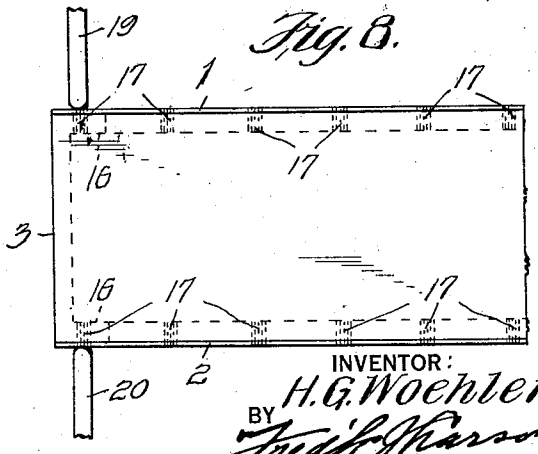


Fig. 8.

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UNITED STATES PATENT OFFICE

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METALLIC DOOR

Application filed March 5, 1928. Serial No. 259,192.

My present invention relates to metallic doors and similar structures and the method of making same, and, it is a distinct and practical improvement in the art of metal door structures to overcome certain practical objections to, and defects in, the now known metallic door structures and methods of making same.

A further object of the invention is to provide a three piece structure, two pieces of which are in surface contact along their edge portions with an edging member and which are electrically welded, such as spot, or roll welded, along their contacting surfaces to form a unit thereof.

A further object of the invention is to provide a metallic structure consisting of two like door side members with the panel sections, cross-rail sections and stile sections stamped as a unit from a single sheet of metal, applying said door side members to an edging member in surface contact therewith along their edge portions and then electrically welding said door side members and channel member together along their contacting surfaces.

Another and essential object of the invention is directed to an improved method of reducing the cost of manufacturing metallic door and similar structures without effecting the durability and strength and appearance of the door.

Other objects and features of the invention will appear from the following description and will be particularly pointed out in the claim hereto appended.

In the drawings, accompanying this specification:

Fig. 1, is a front elevation of a metallic door embodying the features of my present invention.

Fig. 2, is a rear edge elevation of the door.

Fig. 3, is a front edge elevation of the door.

Fig. 4, is a detail in perspective of a portion of a door, the several members being shown as joined by spot welding.

Fig. 5, is a view in perspective of the door edging member.

Fig. 6, is a view in section of the channel edging member before it is formed into a rectangular edging frame member.

Fig. 7, is a detail in perspective of a portion of a door, the several parts of which are shown united by roll welding.

Fig. 8, is a view showing the method of spot welding, electrically, edge portions of the door side members to an edging member along their contacting surfaces.

Fig. 9, is a view showing the method of roll welding, electrically, the edge portions of the door side plates to an edging member.

Referring to the drawings, the reference characters 1 and 2 designate preferably, although not necessarily, two like metallic sheets, panels, sheathings, or side plates of a door, or similar structure. It will be noted that the structure is made up of two sheet metal plates spaced apart any desired distance, preferably, although not necessarily, by an endless edging member 3, which member 3 forms the top 4, bottom 5, and side edge face sections 6 and 7 of the door, while the sheet metal members 1 and 2 form the front and back sides, or faces of the door, as will be apparent from Fig. 1.

The two sheet metal members 1 and 2 which form the inner and outer side faces of a door or like structure, are each formed from a single metal stamping and each plate is so formed as to include one or more depressed panel sections 8, a top cross-rail section 9, a lower cross-rail section 10 and when desired an intermediate cross-rail section 11 where more than one depressed panel section is desired, the two vertical stile sections 12 and 13 and the molding sections 14, which molding sections are disposed between the cross-rail sections, the stile sections and the panel sections, as clearly shown in Fig. 1. The panel section or sections 8 may be cut out without exercising invention, to receive a glass section, or sections, not shown, if so desired.

When desired, additional independent molding sections 15 may be added to the door, as shown in Fig. 4 and can be secured at their outer edges to the integral molding sections 14, and at their inner edges secured to the panel section, or sections 8. The outer and inner edges of the independent molding

sections 15 may be joined along their side edges with the integral moldings 14 and the panel sections 8 by welding, brazing, soldering, or any of the other methods well known in the art. In Fig. 4, I have shown both the integral moldings 14, which by means of dies are pressed into the desired form and which form may be of other design than that illustrated, and the independent moldings 15 which are applied to the door, the form of which may also be of other design than that illustrated, as is manifest. Where the independent moldings 15 are employed, they may be mated and joined together at their ends in any suitable manner, as will be understood by those skilled in the art of metallic door manufacture.

The door side plates 1 and 2, which include the panel sections, the cross-rail sections and the upright stile sections are applied to the outer faces of the flanges 16 of the edging member 3 which is preferably, although not necessarily in the form of a channel iron member frame and in surface contact therewith along their outer edge portions, with the edges of the plates 1 and 2 lying flush with the outer faces of the edging member 3, as clearly shown in Figs. 1 and 4.

The edge portions of the plates 1 and 2 which are in surface contact with the edging member 3, are welded to the outer faces of the flanges 16 of the channel member 3, by a number of spot welds 17, as shown in Fig. 4, or by roll welds 18, as shown in Fig. 7, which welds are disposed, preferably, near the four edges of the door side plates 1 and 2. As will be understood, in the electrical metal working art, the two door side plates 1 and 2 with the channel edging member 3 therebetween are assembled and suitably held between two current carrying spot weld electrodes 19 and 20, see Fig. 7, or the two current carrying roll weld electrodes 21 and 22, see Fig. 9, and an electrical current passed from one electrode to the other through the two plates 1 and 2 and intermediate edging member 3 located between either spot weld electrodes 19 and 20, or the roll weld electrodes 21 and 22, which effects the welding of the two door side plates 1 and 2 simultaneously to the flanges 16 of the door edging member 3. The spot welding process is repeated the desired number of times and the spots made, which are designated 17 are spaced the desired distance apart to provide a metallic door, or similar metallic structure, which will be practical, durable and comparatively inexpensive, light and neat in appearance. The roll welding process is repeated along each edge of the door, as is manifest. It will be noted that I do not spot or roll weld one door side plate to the channel door edging member 3 and then the other, but preferably spot or roll weld the edge portions of both door side plates 1 and 2 to the channel door edging member 3 simultaneously.

From Fig. 6 of the drawing, it will be observed that I preferably employ a single strip of channel iron of the desired length and bevel the ends thereof, as at 23 and 24, and then provide the flanges 16 thereof at predetermined points along their length with opposed V-shaped notches 25, 26 and 27 to divide the strip into the four door edge face sections 4, 5, 6 and 7 so that the channel strip may be readily bent to form a rectangular frame to act as the edging member for the door.

It is apparent that the space within the door between the edging member 3 and the side plates 1 and 2 may be filled with a suitable packing, if desired and that suitable interior bracing may also be employed without the exercise of invention; hence it is not deemed necessary to illustrate the same.

From the foregoing description, it is apparent that I have shown a metallic door structure, and set out the method of forming the same, which enables one to produce a metallic door or similar structure, at greatly reduced cost over the metallic door constructions now in use, in that I employ three door pieces, namely a door edging member and two door side plates, and, join them together at their contacting surfaces by spot or roll welding and with both door side plates welded to the edging member simultaneously. It is apparent that I obviate a great deal of labor in assembly and eliminate the connection of the many metal parts of the door which are now joined in numerous expensive ways.

The many advantages of the herein described invention will readily suggest themselves to those skilled in the art to which it appertains.

From the foregoing description, it is evident that a simple metallic structure and the method of forming same for the purpose has been disclosed, but it is to be understood that I do not desire to restrict, or limit myself to the very details of the construction shown and described, which is merely illustrative, it being obvious that changes, not involving the exercise of invention, may be made without conflicting or departing from the spirit of the invention within the scope of the appended claim.

What I claim is:

A metallic door comprising a pair of spaced integral sheet metal members constituting the front and back of said door, a panel section in said sheet metal members, molding integral with said members surrounding said panel forming a reinforcing and decorative element, a rectangular frame secured to the peripheries of said sheet metal members constituting an edging for said door and said sheet metal members being of such gauge that

said sheet metal members can maintain themselves throughout their area in proper relative spaced relation supported only at the peripheries thereof to said edging.

In testimony whereof, I have hereunto affixed my signature.

HENRY G. WOEHLER.