

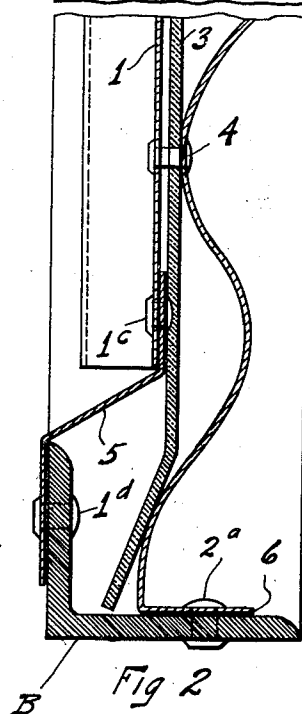
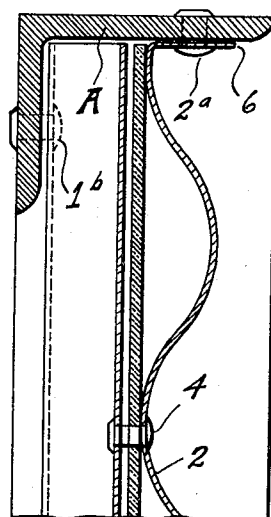
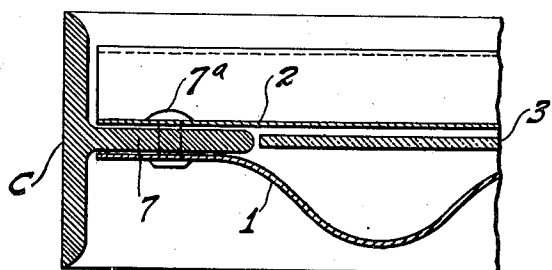
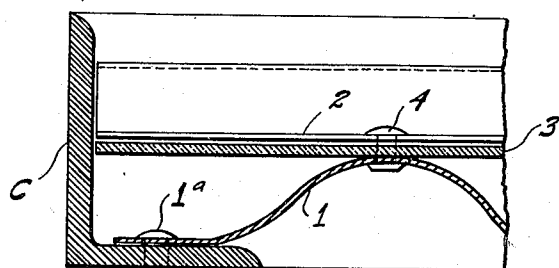
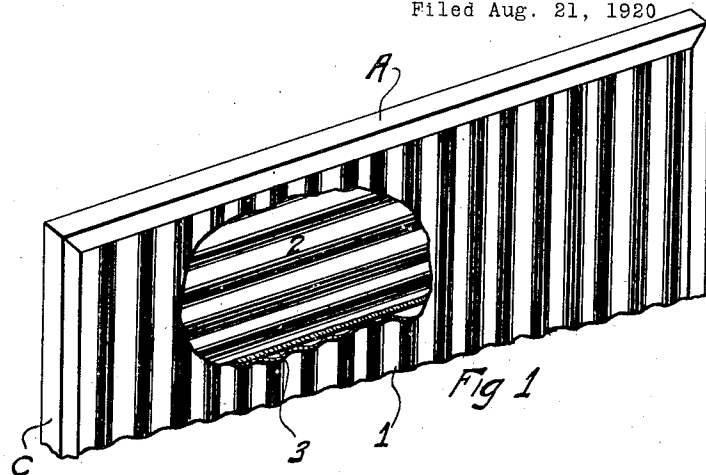
Apr. 10, 1923.

H. C. WALDMAN

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FIRE DOOR

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UNITED STATES PATENT OFFICE.

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FIRE DOOR.

Application filed August 21, 1920. Serial No. 405,122.

To all whom it may concern:

Be it known that I, HERMAN C. WALDMAN, a citizen of the United States, residing at St. Louis, Missouri, have invented a certain new and useful Improvement in Fire 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.

10 This invention relates to metal fire doors.

One objectionable feature of a fire door provided with a built up frame composed of flat metal bars encased in strips of sheet metal bent around said bars and riveted to the panel of the door, is that it is apt to be bent or twisted out of shape when a truck strikes the edge of the door or strikes against one of the flat faces of the door. After being bent or twisted out of shape the door will not fit snugly against the well, thus making the door unfit for the purpose for which it is intended, due to the fact that fire can pass through the opening between the door and the wall adjacent to which the door is arranged.

Another objectionable feature of fire doors provided with built up frames is that they are costly to manufacture, due to the fact that they are of such design that considerable hand riveting and bending is required during the process of constructing the door.

Moreover, it is difficult and sometimes impossible to satisfactorily repair a fire door of the construction above referred to whose frame has been distorted or whose panel has become damaged.

One object of my invention is to provide a fire door that is superior to the fire doors now in general use, in that it is stronger, more rigid and of such construction that there is little liability of its being bent out of shape by a truck bumping against the door edgewise or flatwise.

Another object is to provide a rigid fire door that can be manufactured at a low cost, due to the fact that the parts of same are of such design that they can be shaped, assembled and then connected together by means of a riveting machine. Other objects and desirable features of my invention will be hereinafter pointed out.

Figure 1 of the drawings is a perspective view of a portion of a fire door constructed in accordance with my invention.

Figure 2 is a vertical sectional view of said door.

Figure 3 is a horizontal sectional view of a portion of said door; and

Figure 4 is a horizontal sectional view, illustrating a portion of a door provided with a frame made up of T irons.

In the form of my invention herein illustrated the panel of the door is composed of two sheets of corrugated iron 1 and 2 arranged on opposite sides of a sheet of asbestos 3. The sheets of corrugated iron are so arranged that the ribs or corrugations of same are arranged at right angles to each other, as shown in Figure 1, and said sheets are connected together at numerous points by means of rivets 4, as shown in Figures 2 and 3.

The frame of the door is composed of four flanged members connected together in any preferred manner at the corners of the door and secured by rivets or other suitable fastening devices to the sheets or plates that form the panel of the door. In the form of my invention illustrated in Figures 1, 2 and 3 the frame is made up of angle bars and comprises a top member A, a bottom member B and two side members C, the top member A being so arranged that the vertical flange at the front side of same projects downwardly over the corrugated sheet 1 that forms the front side of the panel of the door. The front sheet 1 of the panel is connected at its side edges by means of rivets 1^a to the inwardly-projecting flanges of the side members C of the frame, as shown in Figure 3. The upper edge of the sheet 1 terminates at the underside of the horizontal flange of the top member A of the frame and the upper edge portion of said sheet is secured by rivets or other suitable fastening devices 1^b to the vertical flange of the member A, as shown in Figure 2. At the lower edge of the sheet 1 is a transversely-disposed plate 5 that projects forwardly and downwardly over the vertical flange of the bottom member B of the frame, said plate 5 being connected by fastening devices 1^c to the sheet 1 and by fastening devices 1^d to the vertical flange of the bottom frame member B. The corrugated sheet 2 that forms the rear side of the panel of the door is provided at its lower edge with an integral flange 6 that is secured by means of rivets 2^a to the top side

of the horizontal flange of the bottom member B of the frame, and said sheet 2 is also provided at its upper edge with an integral flange 6 that is secured by fastening devices 5 2^a to the underside of the horizontal flange of the top member A of the frame. The side edges of the sheet 2 terminate short of the flanges of the members C that form the sides of the frame, as shown in Figure 3.

10 When the door is provided with a frame composed of T irons, as shown in Figure 4, the top, bottom and side members of the door frame are so arranged that the center flanges 7 of same project inwardly, thereby 15 permitting the corrugated sheets 1 and 2 of the panel to be secured to said center flanges by means of rivets 7^a or other suitable fastening devices.

A fire door of the construction above described is superior in many respects to a fire door having a built up frame composed of flat bars encased in strips of sheet metal bent around said bars and riveted to the panel of the door. It is much stronger and 25 more rigid than a door provided with a built up frame, due to the fact that its frame is composed of flanged members, preferably commercially rolled bars, that will not bend or twist out of shape when a truck or other 30 object strikes the edge of the door or strikes against one of the flat faces of the door. If the sheets constituting the panel of the door become damaged they can be replaced easily by cutting a few rivets, arranging a new 35 sheet in the frame and then riveting the sheet to the frame of the door. By constructing the frame of the door from commercially rolled, flanged members I am enabled to use comparatively light weight 40 members and still obtain a frame that has sufficient stiffness and strength to prevent the door from being bent out of shape during ordinary usage. As light weight members are used to form the frame of the door, 45 the expansion and contraction of the metal in the door is considerably less than in a fire door whose frame is built up of flat heavy bars. This is a very desirable characteristic of my fire door, as it tends to prevent the rivets from bursting the corrugated sheets forming the panel, due to excessive expansion and contraction. The sheets constituting the panel of the door are connected 50 to the frame in such a manner that there is no liability of fire passing through the joints between the panel and the frame in which the panel is set, and still another desirable feature of my door is that it can be manufactured at a very low cost, due to its simple 55 construction and to the fact that riveting machines can be used for connecting the panel to the frame of the door.

Having thus described my invention, what

I claim as new and desire to secure by Letters Patent, is:

1. A fire door having a rigid, rectangular frame composed of four commercially rolled, flanged members, and a panel in said frame composed of a plurality of sheets connected 70 together within their marginal edges and having their top and bottom edge portions directly connected to said frame.

2. A fire door provided with a rigid frame composed of commercially rolled flanged members, a substantially rectangular-shaped 75 panel in said frame comprising a front corrugated sheet and a rear corrugated sheet, means for connecting said sheets together within their peripheral edges, integral flanges on opposed peripheral edge portions 80 of one of said sheets which are connected to oppositely-disposed members of the frame, and means for rigidly connecting the four edge portions of the other sheet to said frame. 85

3. A fire door provided with a panel composed of a plurality of corrugated sheets arranged so that the ribs on one sheet are disposed at right angles to the ribs on the 90 other sheet, and a frame for said panel comprising a commercially rolled member arranged at right angles to the corrugations of one of said sheets and provided with a flange that laps over the upper ends of the ribs of said sheet. 95

4. A fire door provided with a frame composed of flanged members, a panel in said frame composed of corrugated sheets, one having its ribs disposed vertically and the 100 other horizontally, horizontally-disposed flanges on opposed edges of one of said sheets arranged parallel to the ribs thereon and connected to two opposed members of the frame, and fastening devices that secure the opposed edge portions of the other sheet to flanges on the other two members 105 of the frame which are disposed at right angles to the horizontally-disposed flanges on the sheet first referred to.

5. A fire door provided with a frame composed of flanged members, a panel in said frame comprising a front sheet provided with vertically-disposed corrugations and a rear sheet provided with horizontally-disposed corrugations, integral flanges at the 110 upper and lower edges of the rear sheet which are connected to the top and bottom members of the frame, fastening devices passing through the side edge portions of the front sheet and the side members of the frame, and a transversely-disposed plate arranged at the lower edge of the front sheet and connected to the bottom member of the frame. 115

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