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No. 861,572. PATENTED JULY 30, 1907.

E. G. BUDD.

METALLIC DOOR.

APPLICATION FILED OCT. 24, 1906.

Fig. 1.

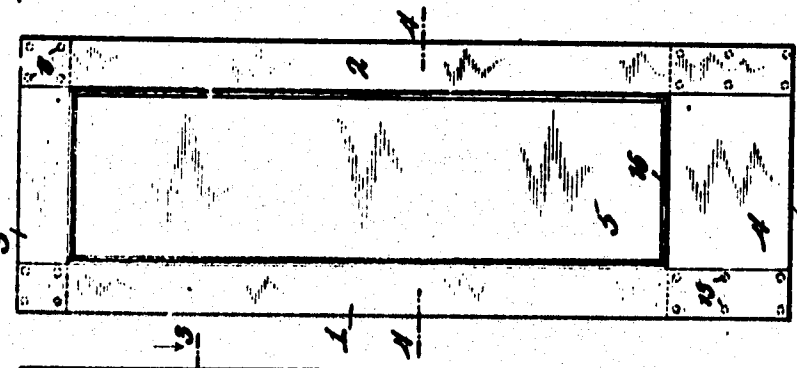


Fig. 2.

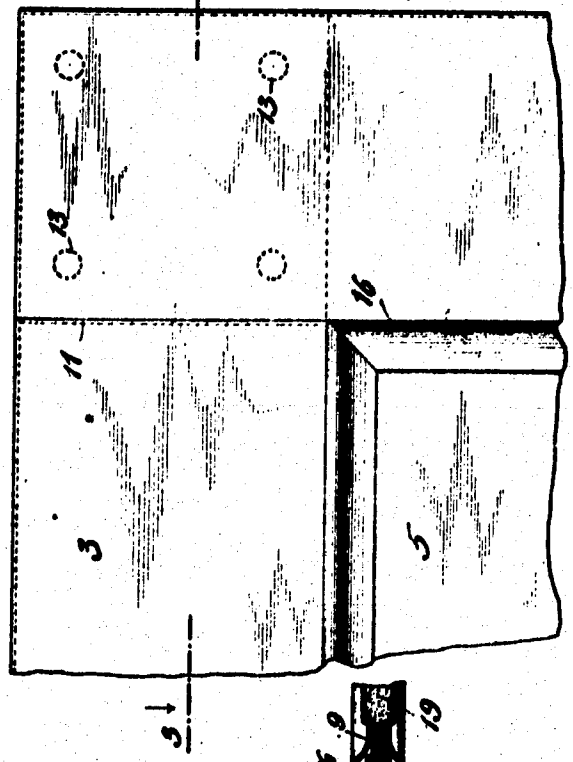


Fig. 3.



Fig. 4.

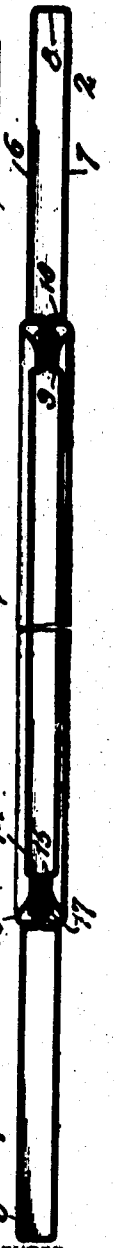
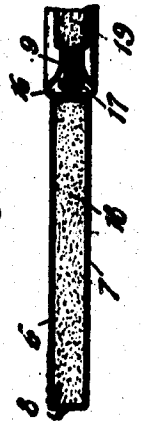


Fig. 5.



WITNESSES:

T. P. Lanham.

INVENTOR

Edward G. Budd

BY

J. C. Edmonds

ATTORNEY.

UNITED STATES PATENT OFFICE.

EDWARD G. BUDD, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO HALE-KILBURN METAL COMPANY, OF PHILADELPHIA, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

METALLIC DOOR.

No. 861,572. Specification of Letters Patent. Patented July 30, 1907.

Application filed October 24, 1906. Serial No. 340,332.

To all whom it may concern:

Be it known that I, EDWARD G. BUDD, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a certain new and useful Improvement in Metallic Doors, of which the following is a specification.

This invention concerns building construction and relates, more particularly, to fire-proof doors made wholly of metal.

The object of the invention is to improve the construction of such metallic doors to the end that a door is provided which possesses ample strength, which is of attractive appearance and which can be manufactured at small cost.

My improved door comprises a rectangular frame consisting of side, top and bottom sections formed of sheet-metal and secured together at their ends and one or more panels inclosed by and secured to the sections of this outer frame. The sections of the frame are so rigidly secured together that relative movement of the parts thereof is effectually prevented but additional strength is imparted to the frame by the panel or panels secured thereto. The panel is fastened firmly to the frame by rivets, but these rivets do not show from the exterior. A molding of attractive design is provided, bounding the panel and so arranged as to completely conceal the rivets by which the parts are united. This gives the door an attractive appearance and, in furtherance of this object, the proportions customary in wooden doors are preserved by making the thickness of the outer frame uniform throughout and the width of the bottom section greater than that of the other sections.

The preferred embodiment of my invention is illustrated in the accompanying drawings, in which

Figure 1 is an elevation of the door, Fig. 2 is an enlarged elevation of a portion thereof, Fig. 3 is a section on line 3—3 of Fig. 2, Fig. 4 is an enlarged section on line 4—4 of Fig. 1, and Fig. 5 is a view in section of a modified form of my invention.

Referring to the drawings, the door comprises a rectangular outer frame, consisting of side sections 1 and 2, a top section 3 and bottom section 4 and one or more panels 5 inclosed by said frame. Each of the frame sections consists of a single piece of sheet-metal, preferably steel, pressed to a rectangular section to provide parallel, oppositely-disposed sides 6 and 7, a closed outer edge 8 and a closed inner edge having an inwardly extending flange 9 thereon. The inner edge and flange are preferably formed by bending the side edges of the piece inwardly toward each other, as indicated at 10, and then outwardly to provide portions at the extreme side edges of the piece which lie side by side and which together constitute the inwardly extending flange 9. Each member of the frame is therefore of rectangular cross-section with open space between opposite sides thereof, thus affording ample strength to resist twisting strains, a closed outer edge and a closed inner edge having an integral, inwardly extending flange thereon.

The side sections 1 and 2 are of uniform cross-section throughout and, preferably, they and the top section 3 are of the same width while the bottom section 4 is of considerably greater width, as shown in Fig. 1. The top and bottom sections 3 and 4 are of the same thickness as the side sections intermediate their ends, but at their ends they are contracted so as to provide end portions which will fit snugly between the opposite sides of the side sections 1 and 2. Thus, it will be seen that the sides of the top section 3 are bent along the line 11, Fig. 2, to form flanges or ribs 12, Fig. 3, such that the end of each of the sides 6 and 7 of the top section 3 is displaced from the middle portion thereof by a distance equal to the thickness of the metal employed. The end of the top section 3 opposite that shown in Fig. 2 and both ends of the bottom section 4 are similarly contracted. At the end of each of the frame sections, the closed inner edge portion 10 and the inwardly extending flange 9 are cut away for a distance back from the end equal to the overlap of one section over another and the end of the flange 9 is cut at an angle of forty-five degrees to the length of the section.

In assembling the outer frame, the ends of the top and bottom sections are inserted between the sides 6 and 7 of the side sections at the ends of the latter, separators 13 having been inserted and secured between the sides of the top and bottom as shown. When the parts have been brought to the proper relative positions as shown in the drawings, they are firmly united, preferably by brazing or soldering together the entire overlapping surfaces. The slight depressions along the lines 11 at the joints of the sections are filled, as with solder, to provide a plane surface for the entire outer frame and conceal the joints.

The panel 5 consists of two rectangular sheet-metal plates, each pressed to provide a rib 14, an integral strip 15 parallel to but displaced from the central portion of the plate and an integral outwardly turned portion 16 forming a molding at each of the side edges of the plate. The panel plates are mounted in position with the strips 15 lying against the flanges 9, one on either side thereof, and rivets 17 are passed through openings in the strips and flanges and their ends turned over to hold the parts firmly together. In pressing the

panel plates into form, the molding portions 16 are given any suitable curvature or other design, as that shown in the drawings, but they are not bent to their final positions until the riveting of the panel plates is completed and the ends of these portions are cut at an angle of forty-five degrees to the length thereof. After the riveting is completed, the portions 16 are bent around until their outer edges engage the ribs 14 and are secured in this position by springing them against the ribs or by soldering them thereto or to the strips 15. The portions 16 thus form a bead around the panel and also conceal the rivets by which the parts are secured together. If desired, the strips 16 for the molding may be separate pieces instead of being integral with plates 5.

In Fig. 5, I have shown a slight modification of the structure shown in the other figures, in which the parts of the frame and panel are filled instead of being hollow. A block of asbestos is indicated at 18 filling the section of the frame and spacing the sides thereof apart. Such a block may be used in place of the separators 13, its thickness being that of the door less four thicknesses of the metal employed where the sections overlap and less two thicknesses of the metal intermediate the overlapping portions. Instead of the block of asbestos, I may fill the frame or panel or both with asbestos or cork 19 in granular form in order to reduce the vibration and prevent the door from carrying sound.

I do not wish to be understood as limited to the exact construction herein shown and described, as various modifications can be made therein, as the provision of a frame member extending between the sides near the middle of the door and two smaller panels instead of one large one; such modifications I consider within the scope of my invention, and I aim to cover them by the terms of the claims appended hereto. Furthermore, I do not wish to be understood as using the term "door" herein with a narrow scope, as the principles of my invention are applicable to swinging and folding doors and to metallic paneling adapted to be stationarily mounted in and to form part of a wall, and also to windows employing my improved frame construction with an interior panel consisting of a plate of glass.

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

1. The combination of a frame formed of four frame sections having overlapping ends secured together, said securing means being concealed, and a panel formed of two panel plates lying parallel to each other and secured within said frame, substantially as set forth.

2. The combination of a frame of uniform thickness throughout formed of sheet-metal frame sections having overlapping ends and secured together at said ends, and a panel formed of two sheet-metal panel plates lying parallel to each other and secured within said frame, substantially as set forth.

3. The combination of a frame formed of four frame sections secured together at their ends and having inwardly extending flanges thereon, and a panel formed of two panel plates lying parallel to each other and secured to said flanges on opposite sides thereof, substantially as set forth.

4. The combination of a frame formed of four frame sections secured together at their ends and having inwardly extending flanges thereon, and a panel formed of two panel plates lying parallel to each other and riveted to said flanges on opposite sides thereof, and means concealing said rivets, substantially as set forth.

5. The combination of a frame formed of four frame sections secured together at their ends and having inwardly extending flanges thereon, and a panel formed of two panel plates lying parallel to each other and riveted to said flanges on opposite sides thereof, the edges of said panel plates being bent back upon the plates to conceal said rivets, substantially as set forth.

6. The combination of metallic frame sections secured together at their ends and each having an inwardly extending flange thereon, a panel secured to said flanges, and a molding concealing the joint between the frame and panel, substantially as set forth.

7. The combination of metallic frame sections secured together at their ends and each having an inwardly extending flange thereon, a panel secured to said flanges, and a molding integral with the panel concealing the joint between the frame and panel, substantially as set forth.

8. The combination of metallic frame sections secured together at their ends and each having an inwardly extending flange thereon, a panel positioned by said flanges, rivets securing said panel to said flanges and a metallic molding concealing the joint between the frame and panel, substantially as set forth.

9. The combination of metallic frame sections secured together at their ends and each having an inwardly extending flange thereon, a metallic panel secured to said flanges adjacent to the edges of the panel and integral portions at the edges of the panel bent back upon the panel to conceal the joint thereof with the frame, substantially as set forth.

10. The combination of four frame sections formed of sheet-metal and secured together at their ends and a panel secured thereto, said frame being of uniform thickness throughout and the joints between the sections being concealed, substantially as set forth.

11. The combination of four frame sections formed of sheet-metal and secured together at their ends with the end of one section underlapping the end of another, said frame being of uniform thickness throughout, and a panel secured to said frame, substantially as set forth.

12. The combination of a frame of uniform thickness throughout and a panel secured thereto, said frame comprising four frame sections formed of sheet-metal, the ends of certain of said sections being reduced in thickness and underlapping the ends of certain other sections, and means securing the ends of said frame sections together, substantially as set forth.

13. The combination of four frame sections formed of sheet-metal and secured together at their ends with the end of one section underlapping the end of another, said frame being of uniform thickness throughout, means securing said sections together, means concealing the joints between adjacent sections and a panel secured to said sections, substantially as set forth.

14. The combination of a frame of uniform thickness throughout and comprising four frame sections and a panel secured thereto, the ends of certain of said sections underlapping the ends of certain other sections and the entire surface of the underlapping portions of said frame members being secured to the portions of the frame members lying directly thereover, substantially as set forth.

15. The combination of a rectangular frame and a panel secured thereto, said frame being of uniform thickness throughout and consisting of four sheet-metal frame sections, each pressed to a substantially rectangular cross-section with open space between opposite sides thereof and to provide an integral flange at one edge to which said panel is secured, substantially as set forth.

16. The combination of four hollow sheet-metal frame sections secured together at their ends, a panel lying within and secured to said frame, and blocks of sound deadening material within said hollow sections spacing the sides of the sections apart, substantially as set forth.

17. The combination of four frame sections formed of sheet-metal and secured together at their ends, means concealing the joints between adjacent sections and a panel lying within said frame and secured thereto, substantially as set forth.

18. The combination of a frame of uniform thickness throughout formed of four sheet-metal frame sections se-

cured together at their ends and each having an integral flange extending inwardly of the frame, and a part lying within said frame and positioned by said flange, substantially as set forth.

19. The combination of a frame of uniform thickness throughout formed of four sheet-metal frame sections having overlapping ends secured together, each of said sections having an integral flange extending inwardly of the frame and a part lying within said frame and positioned by said flange, substantially as set forth.

20. The combination of a rectangular frame and a part secured thereto, said frame consisting of four sheet-metal frame sections each pressed to a substantially rectangular cross-section with open space between opposite sides thereof and to provide an integral flange at one edge for connection with said part, and said sections being secured together with the end of one section overlapping the end of another, substantially as set forth.

This specification signed and witnessed this 18th day of October, 1906.

EDWARD G. BUDD.

Witnesses:
M. GETZ,
WALTER M. SWOPE.