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METALLIC DOOR AND THE LIKE.

APPLICATION FILED FEB. 23, 1912.

1,171,444. Patented Feb. 15, 1916.

Fig. 4.

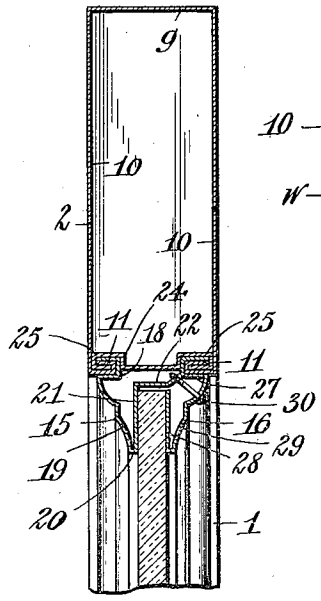
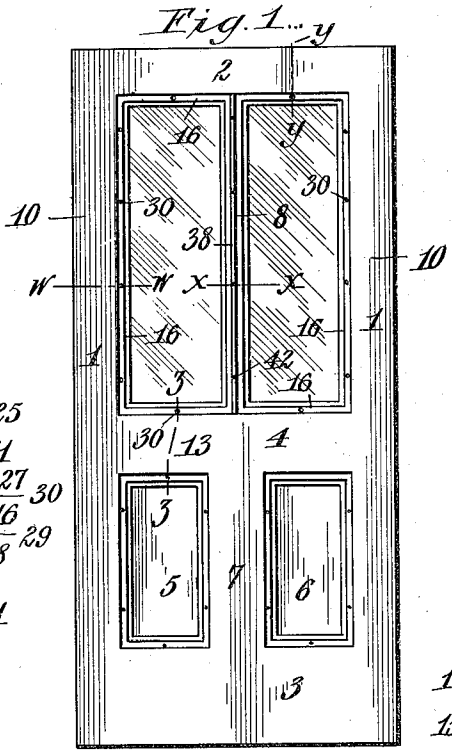


Fig. 1.



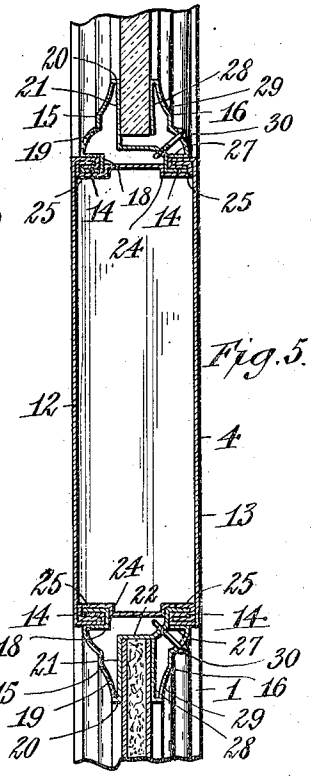


Fig. 5.

Fig. 2.

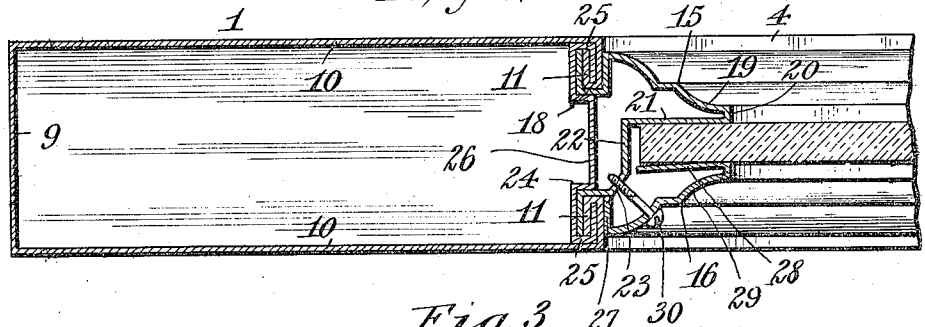
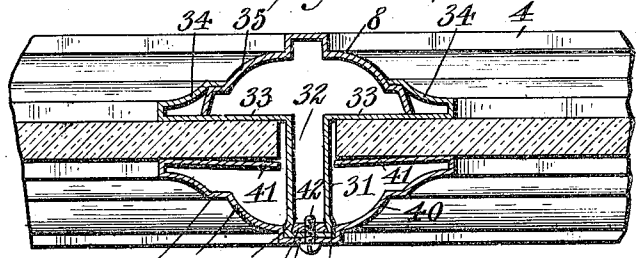


Fig. 3.



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UNITED STATES PATENT OFFICE.

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METALLIC DOOR AND THE LIKE.

1,171,444. Specification of Letters Patent. Patented Feb. 15, 1916.

Application filed February 23, 1912. Serial No. 679,442.

To all whom it may concern:

Be it known that we, CARL W. LARSON and CARL OLOFSON, both residents of Jamestown, in the county of Chautauqua and State of New York, have invented certain new and useful Improvements in Metallic Doors and the like, of which the following is a specification.

Our invention relates to sheet metal doors and the like, and one object of the invention is the production of a glazed or other metallic door wherein the inner edges of the metallic plates forming the stiles and the rails are reinforced by a stiffening member interlocked therewith and with a molding forming a backing for a pane of glass or panel.

Another object of our invention is the provision of means for holding a panel or pane of glass against a backing-molding which is interlocked with the inner edges of the metallic plates forming the stiles and rails by means of concealed seams.

To these ends the invention consists in the novel parts and in the construction, formation and arrangement of the several parts of the structure to be hereinafter described and particularly set forth in the subjoined claims.

In the drawings,—Figure 1 is a side elevation of a door embodying our invention. Fig. 2 is an enlarged horizontal section taken on line *w*—*w*, Fig. 1. Fig. 3 is an enlarged horizontal section taken on line *x*—*x*, Fig. 1. Fig. 4 is a vertical section taken on line *y*—*y*, Fig. 1, on an enlarged scale. Fig. 5 is a vertical section taken on line *z*—*z*, Fig. 1, on an enlarged scale.

Referring to the drawings in which like numerals of reference refer to like parts in the several figures, the numeral 1 designates the stiles, 2 the top rail, 3 the bottom rail and 4 the intermediate rail; said rails being welded, riveted or otherwise secured at their ends to the stiles. While we have shown a door having two panels 5, 6, between the intermediate rail 4 and the bottom rail 3 separated by a short stile 7, this is merely one of many types of doors to which my invention may be applied. The short stile 7 is welded or otherwise secured at its ends to the rails 3 and 4.

Connecting the upper rail 2 with the intermediate rail 4 is a mullion 8 between which and the inner edges of the opposite stiles 1, panes of glass are held. Although we have shown a single mullion arranged vertically, it is apparent that mullions may be arranged horizontally or otherwise, as that is merely a matter of design, and as parts of our invention do not relate to the mullion, a single pane of glass may be used instead of the two panes shown; or, if desired, a metal or other panel may be substituted for the glass. Therefore, hereinafter, unless otherwise specifically mentioned, the term panel shall be understood as meaning in a broad sense a pane of glass, panes of glass with a mullion or mullions separating them, or a metallic or other panel.

In the construction of our improved door, each of the stiles 1 which extend from top to bottom is formed of a single sheet of metal bent or rolled lengthwise to provide an outer edge wall 9 and opposite side walls 10 which are bent inward at their inner marginal portions, thence toward the edge wall 9 and finally outward toward the side walls, thus providing hook-shaped or channeled portions 11 at the inner edges of said stiles within the area of the same.

The top and bottom rails 2 and 3, respectively, are formed exactly like the stiles 1, while the intermediate rail is constructed of two separate sheets of metal 12, 13, each having its opposite longitudinal edges bent or rolled to form hook-shaped or channel portions 14, lying wholly within the space inclosed by the walls of the rail.

Panel retaining moldings 15, 16, are provided to retain a panel in the space bounded by the stiles 1 and rails 2 and 4, which panel, in this instance, is shown as two panes of glass separated by the mullion 8. These moldings are dissimilar in construction, the molding 15 being affixed to the stiles and rails and serving as a backing while the molding 16 is removable and serves to clamp or fasten the glass or other panel against the backing-molding 15. The molding 15 is formed of comparatively narrow strips of metal bent or fashioned to provide along one of their edges outwardly opening channels 18 which receive the channeled portions of the stiles and rails at one side of the door. From the channeled portion of the molding a receding wall 19 extends which may be given any shape to ornament the door;

this wall being the face of the molding and may therefore be termed the "facing wall." From the inner edge of the facing or receding wall, the sheet of metal is bent at a right-angle to the face of the door, as at 20, thence outward toward the stiles to provide a flat bearing wall 21 for the glass or other panel, thence transversely, as at 22, and obliquely, as at 23, thence outward parallel with the bearing wall 21 to lie against the inner face of the channeled portions on the opposite side of the stiles and rails, and finally transversely and in contact with the sides of said channeled portions.

A combined reinforcing and locking member 24 closes the inner edges of the stiles and consists of a narrow strip of metal having its opposite marginal portions bent or rolled into channels 25 which are interlocked with the marginal portions of the backing molding 15 and the stiles and rails, thus preventing spreading of said stiles and rails. Medially, each reinforcing or locking member has a depressed or offset portion 26 forming a channel, the sides of which bear against the opposite marginal portions of the backing molding; or in other words the channel or offset portion lies between the interlocking seams and prevents the side walls of the stiles being pressed inward.

The fastening molding 16 is formed of a narrow strip of metal having two flat walls 27, 28, disposed at right-angles to each other, or substantially so, and connected by a wall 29 fashioned to provide an ornamental exposed face or facing wall. The wall 27 lies in contact with the inner edge of the stiles and rails while the wall 28 bears against the glass or other panel. In order to secure the fastening-molding 16 in place, screws 30 are provided that pass through the facing wall 29 and take into the oblique wall of the backing-molding 15. The backing-molding may be made in piece with the panel, and may therefore be appropriately termed a panel molding as well.

The mullion 8 is formed of three parts with a reinforcement; one part of which we will term the body portion and designate 31, is formed of a strip of metal bent or rolled into deep channel portion 32 from which extend laterally in opposite directions two backing walls 33 against which the panes of glass are placed, which backing walls have their marginal portions re-bent to form two oppositely arranged retainer flanges 34 serving to hold in place a finishing molding 35. The side walls of the channel portion are offset or flared where they meet the rear wall, as at 36, and placed against said rear wall with its edges in contact with the offset or flared portions of said side walls is a reinforcing strip 37.

The panes of glass are set against the backing-walls of the body portion of the mullion and held thereagainst by a fastening molding 38 having a depressed portion 39 on its inner side fitting onto the channel portion of said body portion, from which it is directed inward toward the panes of glass, as at 40, and re-bent to provide a pair of flanges 41 that bear against the glass to hold them rigidly in place. Screws 42 are passed through the central portion of the securing molding and take into the body-portion of the mullion and the reinforcing strip held therein. The inwardly-directed portion 40 of the moldings are fashioned or rolled to provide an ornamental surface and are made yielding so that the panes of glass will be forcibly engaged and held.

In the construction of the door, the stiles 1 are formed and the vertical portions of the backing-molding 15 are properly positioned thereon by sliding the channeled marginal portions thereof onto the channels of the stiles from either end, after which the locking and reinforcing members 24 are slid into the stiles so that their marginal channels interlock with those of the stiles and the marginal portions of the backing-molding. By the use of suitable tools or machinery the interlocking seam thus formed is rolled, thus assuring a very light and exceedingly stiff construction in which the sides of the stile cannot be pressed in or separated. Moreover, the seam thus formed is concealed and all possibility of rust forming is eliminated. By thus forming the stile and connecting the molding, it is not necessary to weld the parts entering into the construction and no rivets are required. The top and bottom rails are similarly formed and the intermediate rail likewise, except that the backing-molding and locking and reinforcing members are secured to both longitudinal edges of the intermediate rail. The intermediate rail is then placed between the stiles 1 and the ends welded or otherwise secured to the stiles, after which the center stile 7 and panels 5 and 6 may be secured to the intermediate rail and stiles 1. The bottom rail 3 next follows in order in the formation of the door and is also welded or riveted at its end to the stiles.

When two or more panes of glass are to be used, the mullions are next secured in place, after which the top rail 2 is secured to the stiles 1 and to the upper end of the mullion if there be one. The ends of the stiles are then closed in any approved manner, after which the panes of glass are set in place against the backing-molding of the stiles 1, top-rail 2 and intermediate rail 4, also against the backing walls 33 of the mullion. The fastening moldings 16 and 38 are finally secured in place to complete the door.

If desired, the short center stile 7 may be constructed like the intermediate rail 4 and the panels 5 and 6 fastened similar to

the panes of glass, as the construction provided for fastening the glass panel can also be used in fastening metal or other panels in place.

It is apparent that the principle of our invention can be embodied in various constructions, and we do not therefore wish to be limited to the construction shown and described, but hold ourselves at liberty to make such changes as fairly fall within the scope of our invention.

Having thus described our invention, what we claim is,—

1. A door or the like formed of sheet metal and having hollow stiles and rails with opposite side walls, the inner marginal portions of said side walls being bent inward and into the form of a channel, a panel molding having its marginal portions engaging the channels of said side walls, and a reinforcing strip for each stile and rail, said reinforcing strips having their marginal portions bent into channels interlocking with the channels of said side walls with the marginal portions of said panel molding between the two and being also bent to form offsets in contact with the marginal portions of said panel moldings where they engage the channels of said side wall.

2. A door or the like formed of sheet metal and having hollow stiles and rails with opposite side walls, the inner marginal portions of said side walls being bent inward and into the form of a channel, a panel molding having its marginal portions engaging the channels of said side walls, and a reinforcing strip for each stile and rail, said reinforcing strips being arranged transversely between said side walls and having their marginal portions bent into the form of channels interlocking with the channels of said side walls with the marginal portions of said panel molding between the two and being also bent medially into the form of a channel lying between the interlocking seams.

In testimony whereof, we have affixed our signatures in the presence of two subscribing witnesses.

CARL W. LARSON.
CARL OLOFSON.

Witnesses:
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JOHN A. WESTMAN.