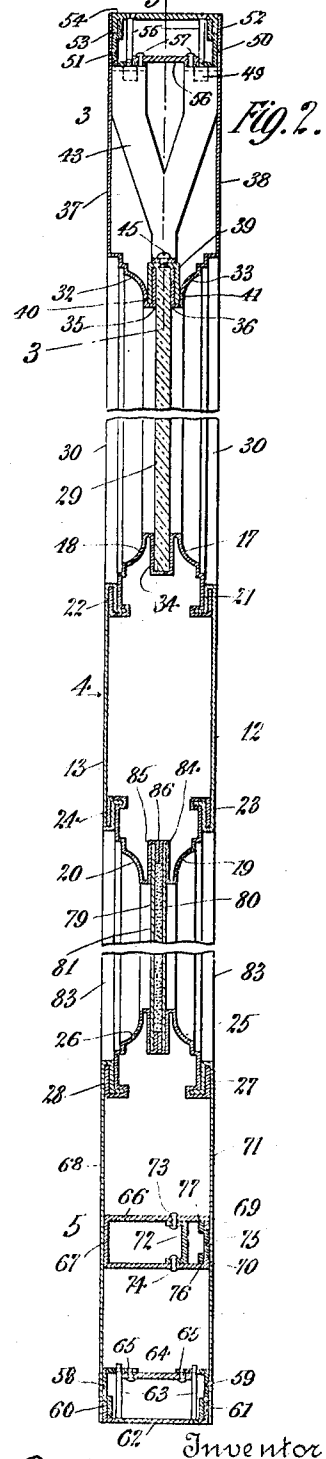
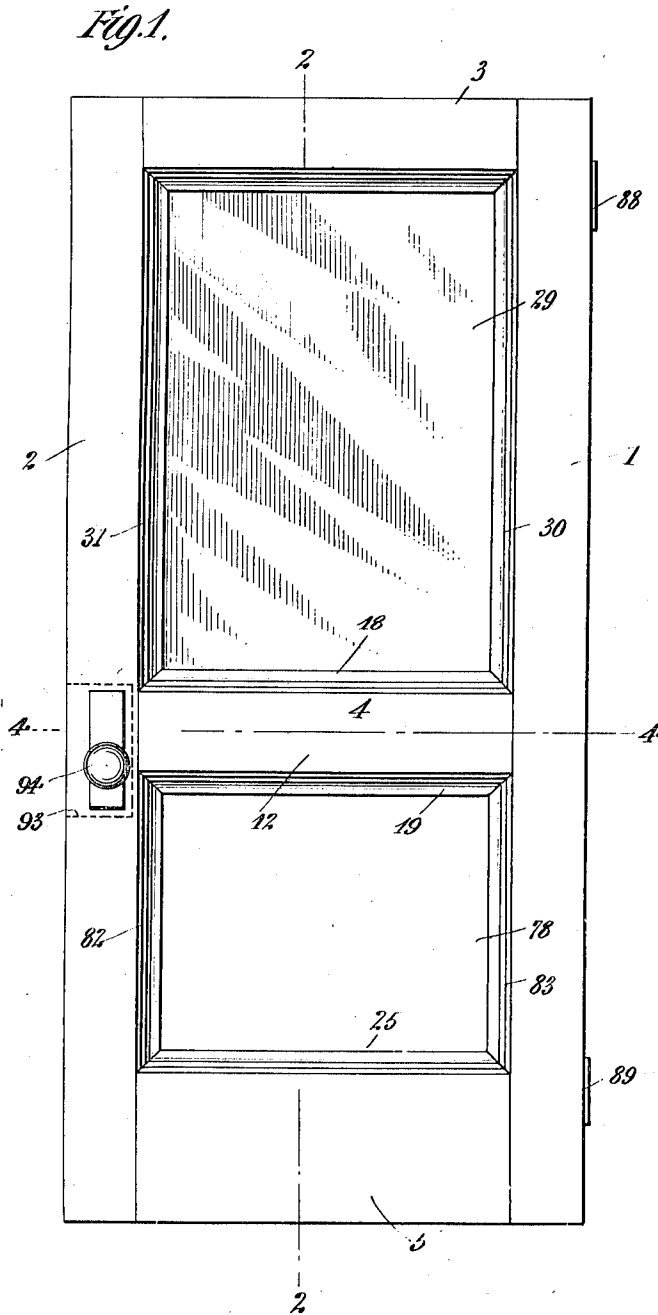


A. JOHNSON.
SHEET METAL DOOR AND THE LIKE.
APPLICATION FILED MAY 1, 1911.

1,039,292.

Patented Sept. 24, 1912.

2 SHEETS—SHEET 1.



Witnesses:
Frauncs Ober
John H. Dowling

Inventor
Andrew Johnson.
By his Attorney,
Willis Fowler.

A. JOHNSON.
SHEET METAL DOOR AND THE LIKE.
APPLICATION FILED MAY 1, 1911.

1,039,292.

Patented Sept. 24, 1912.

2 SHEETS—SHEET 2.

Fig. 3.

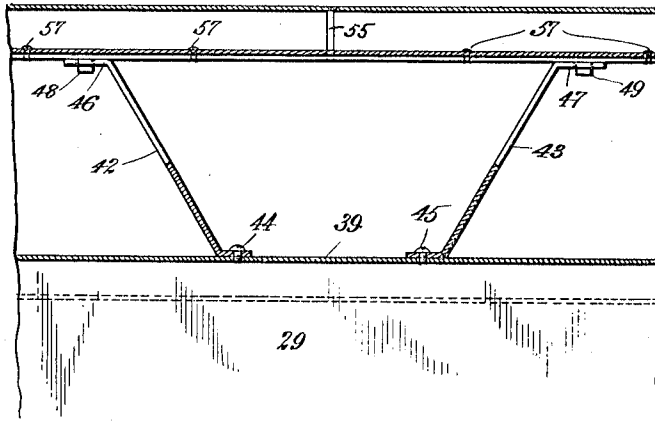


Fig. 4.

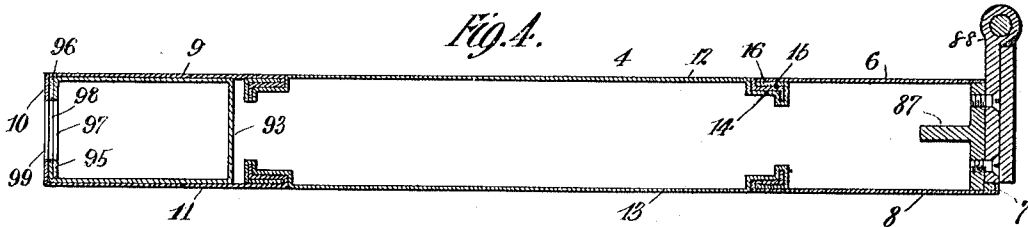
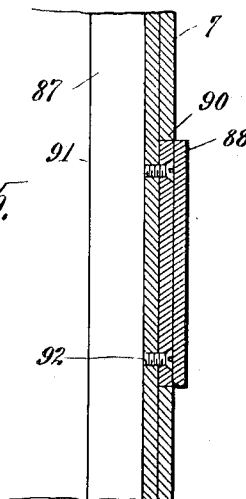


Fig. 5.



Witnesses:
Francis O. [Signature]
John H. Dowling

Inventor
Andrew Johnson
By *Willie Porter* Attorney.

UNITED STATES PATENT OFFICE.

ANDREW JOHNSON, OF JAMESTOWN, NEW YORK.

SHEET-METAL DOOR AND THE LIKE.

1,039,292.

Specification of Letters Patent.

Patented Sept. 24, 1912.

Application filed May 1, 1911. Serial No. 624,316.

To all whom it may concern:

Be it known that I, ANDREW JOHNSON, a subject of the King of Sweden, residing in Jamestown, Chautauqua county, State of New York, have invented certain new and useful Improvements in Sheet-Metal Doors and the Like, of which the following is such a full, clear, and exact description as will enable any one 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.

My invention relates to doors, and the like, that are made from sheet metal which is formed into shape rolled and welded so as to make a substantial structure.

The particular objects of the invention are to construct a door of this class, of comparatively light weight and at the same time with high power of resistance to strains and warping and to make the same of great durability.

With these and other objects in view my invention consists of the various novel and peculiar arrangements and combinations in the different parts of the structure, all as hereinafter fully set forth and then pointed out in the claims.

I have illustrated types of my invention in the accompanying drawings, wherein;

Figure 1 is side view of my improved door, shown on reduced scale compared with the remaining figures of the drawings. Fig. 2, is a vertical central sectional view, the plane of the section being indicated by line 2—2, Fig. 1. Fig. 3, is a vertical sectional view of the top rail, the plane of the section being indicated by line 3—3, Fig. 2. Fig. 4, is a horizontal sectional view, the plane of the section being through the central rail, as indicated by line 4—4, Fig. 1. Fig. 5, is a vertical sectional view on a plane through the hinge-stile, and at right angles to the section of Fig. 4.

Referring to the drawings, in which like numbers of reference designate like parts throughout, 1 is the hinge-stile, 2 the lock-stile, and 3, 4, and 5, are the top, central and bottom rails, respectively, with the panels disposed between such parts and ornamental molding formed along the inner edges of the stile and rails and around such panels. The stiles, rails, moldings and usually the panels are made of sheet metal, such for example as steel, formed into hollow bodies as will now be described.

The hinge-stile is a hollow member having the three sides 6, 7 and 8, and the lock-stile is substantially similar to this and has the three sides 9, 10, and 11. The rail plates are united by their ends to the inner edges of the stiles by means of interlocking joints, as will be understood from Fig. 4, wherein is shown a horizontal sectional view of the center rail 4, comprising the plates 12 and 13. The joint between the respective ends of the rail plates 12, and 13, and the adjacent edges of the stiles is the same and is formed by fashioning the end of the rail plate into a hollow L-shaped groove 14, into which is placed the solid L-shaped part 15, formed on the edge of the stile, the back or inner face 16, of the groove member lying flatly against the inner face of the side 6 of the stile and the ends of both the interlocking L-shaped parts 14 and 15, respectively, projecting inwardly and at right angles to the inner faces of both the rail plate and stile. These interlocking joints are rolled under pressure and provide a firm joint and this same character of joint as 14, 15 and 16, is formed between the upper and lower edges of the rail plates 12 and 13, respectively, and the moldings 17, 18 and 19, 20, as indicated in Fig. 2 at the points 21, 22, 23 and 24, respectively. The rail plates of the upper and lower rails 3 and 5, are likewise secured by their ends to the inner edges of the stiles 1 and 2, and the upper edges of the plates of the lower rail 5, are united to the moldings 25 and 26, respectively, by this same character of joint, as shown in Fig. 2 at the points 27 and 28, respectively. The vertical moldings at each side of the door panels are also secured to the inner edges of the stiles, 1 and 2, by means of this same character of interlocking joint.

The glass panel 29 in the upper part of the door is held in place by the vertical side moldings 30, 31, which are duplicated on the opposite side of the door and the moldings 17, 18 at the lower end of the panel and the moldings 32, 33 at the upper end of the panel. It will be noted that the moldings 17, 18 in which the lower edge of the panel 29 is firmly set are formed from one piece of metal, which is made up into a substantially three sided hollow body, the free ends of which are formed into the hollow L-shaped groove, of the peculiar form of tongue and groove joint hereinabove described and referred to by the numerals 14,

15 and 16, Fig. 4. The two side moldings 30 as well as the corresponding side moldings 31, may also be made in one piece the same as 17 and 18, whereby there is provided a firm socket or depression 34 (see Fig. 2) in which the lower edge of the glass is firmly set. The upper edge of the glass panel 29 is held by flanges 35, 36, which project upwardly from the lower edge of the moldings 32 and 33, respectively, and these two moldings, it will be observed, are formed integral with the rail plates 37 and 38, respectively, of the top rail, though of course these moldings may be united to the rail plates by means of interlocking joints if preferred.

The upwardly extending flanges 35, 36 which clamp the upper edge of the glass, are embraced by a channel iron 39, which is inverted with the sides projecting downwardly and fitting into sockets 40 and 41, respectively, which are formed between the moldings 32 and 33 and said flanges 35 and 36. A snug fit is made between these respective parts and the channel iron extends at least the full width of the glass panel and is supported and braced in its horizontal position by means of the brackets 42 and 43 which are Y-shaped and depend from a substantial part of the structure in the upper part of the top rail, as will be hereinafter described. The lower end of the brackets are attached to the upper side of the channel iron 39 by means of screws 44 and 45, respectively, and the upper forked ends of the brackets are bent at 46 and 47 and extend through perforations in lugs 48 and 49, respectively, the lugs being secured to the under side of the horizontally extending wing of the angle irons 50 and 51, respectively, the vertical wings of which are welded to the inner faces of the top rail plates 37 and 38, respectively. The bent ends 46 and 47 are hooked through the perforations in the lugs 48 and 49 and are held in place therein by reason of the lower ends of the brackets being secured to the channel iron 39. When glass is not used in the panel and is replaced by steel plates, these brackets 42 and 43 may be omitted.

The vertical wings of the angle irons 50 and 51 are provided with inwardly extending offsets 52 and 53, respectively, as shown in Fig. 2, in order to receive the downwardly extending sides of the channel iron 54, flush with the outer sides of said wings. The channel iron 54 is placed in inverted position in the upper end of the upper rail, and is held in place by screws 55, the threaded ends of which take into threaded sockets in the horizontal wings of the angle irons 50 and 51, respectively. A strengthening bar 56 is placed horizontally on the upper sides of the horizontal wings of the angle irons 50 and 51, respectively, and is removably secured thereto by means of screws 57.

By virtue of having the brackets 42 and

43 hooked in the eyes 48 and 49, and having both the strengthening bar 56 and the channel iron 54, which forms a closure for the upper end of the door, both detachable, I am enabled to readily gain access to the interior of the upper rail and as the brackets are also detachable by virtue of the screws 44 and 45, likewise the channel gripping iron 39, the interior of this part of the door is made easily accessible for the purpose of painting the same, to protect the parts against rust.

The lower end of the door is closed in the same way as the upper end by means of angle irons 58, 59, having off-sets 60 and 61, respectively. The channel iron 62 is removably secured to the horizontal wings of the angle irons by means of screws 63 and the strengthening bar 64 secured by screws 65 to the horizontal wings of the angle irons, all similarly to that described for the upper end of the door.

Within the lower rail 5 is placed a channel iron 66, the back of which is welded at 67 to the inner face of the lower rail plate 68, while the outer end of the channel iron is provided with inwardly projecting flanges 69, 70, respectively, which are welded to the inner face of the adjacent rail plate 71. Within the channel iron 66, near the center thereof is inserted a small channel iron 72, which has its open side projecting toward the closed side of the channel iron 66, and which has its two side wings riveted to the channel iron 66 by means of rivets 73 and 74, respectively. The open end of the channel iron 66 is closed by a still smaller channel iron 75, which has laterally extending flanges 76 and 76, respectively, which take under the inwardly extending flanges 69 and 70 of the main channel iron 66, and the back of the channel iron 75 is spot-welded to the inner face of the rail plate 71. In this way the three channel irons which are thus associated are securely united to the two rail plates of the lower rail and serves to greatly strengthen these plates which are often of considerable depth.

The lower panel 78 of the door, which is generally made of sheet metal, is in the present instance composed of two similar plates 79 and 80 with a thick layer of fire proof material 81, such as asbestos, placed between the two plates, as shown in Fig. 2. These plates are thus kept out of contact and rendered more fire proof than is the case where the two metal plates come together. This lower panel 78 is held in place by means of the upper and lower moldings 19, 20 and 25, 26 and the vertical side moldings 82, 83, which are arranged in pairs as indicated in Fig. 2. These moldings of the lower panel are constructed substantially alike and a description of one pair will suffice for all of them. The moldings 19

and 20 are, as previously stated, united at their outer edges to the rail plates by means of the interlocking joints hereinbefore described. The inner ends of these moldings are provided with a rearwardly extending hook-shaped flange 84, 85, respectively, the nose, or end of the hooked part of which are brought together at 86 and form an abutment for the edge of the layer of fire proof material 81, while the edges of the sheet metal plates 79, 80 are inserted in the hooked part 85 and 84, respectively. These hooked ends of the moldings are spot-welded together at 86 (see Fig. 2).

A T-bar 87 is placed within the hinge stile with the back of the bar spot-welded to the inner face of the side 7 of the stile, as shown in Fig. 5. One wing of each of the two pairs of hinges 88 and 89, is let into the opening 90 in the side 7 of the stile, and this wing is secured to the T-bar 87 by means of screws 91 and 92.

A lock box 93 is placed in the lock stile 2, the ordinary latch of the lock being operated by the knob 94 and this box 93 is made of a strip of sheet metal which is bent into a rectangular shaped hollow body with the two ends 95 and 96 overlapping each other, so as to form a double wall at that end of the body, and this box is welded within the lock stile to the inner surface thereof as indicated in Fig. 4, the double walled end of the lock box being placed outermost and formed with the registering openings 97 and 98 to register with an opening 99 in the side 10 of the lock stile.

I wish to be understood as not limiting my invention to the precise construction herein shown, as it is manifest that various modifications may be made in different parts thereof without however departing from the spirit of my invention.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. A sheet metal door or the like having a hollow rail, two oppositely arranged channel-irons located within said rail with their wings projecting toward and engaging each other, the said irons having their backs welded to the inner faces of the respective plates forming the stile, and a member placed within one of said channel irons and secured fast to each wing of said iron, substantially as described.

2. A sheet metal door or the like having hollow rails and stiles provided with a glass panel, moldings secured to said rails and stiles and engaging and holding said glass, the pair of moldings engaging the lower end of the glass being formed of one piece of sheet metal and provided with a deep central socket receiving the lower edge of the glass, the moldings engaging the upper edge of the glass being provided with upwardly ex-

tending flanges for taking against opposite sides of the glass, and an inverted channel iron placed over said two flanges and means for supporting said channel iron within the hollow rail, said means comprising angle irons secured within the upper part of said top rail and brackets depending therefrom and secured to said channel iron.

3. A sheet metal door or the like having hollow rails and stiles and provided with a glass panel, moldings secured to said rails and stiles and engaging and holding said glass, the pair of moldings engaging the upper edge of the glass being provided with upwardly extending flanges, and an inverted channel iron placed over said flanges, angle irons secured within the upper end of the upper rail, brackets secured to said channel iron and removably attached to said angle irons by means of hooked ends on the brackets and perforated lugs on said angle irons.

4. A sheet metal door or the like having a hollow rail at the end of the door, a pair of angle irons welded within said hollow end at respective places thereof, one wing extending outwardly toward the end of the door and provided with an off-set, a channel iron inserted within the hollow end with its wings projecting inwardly and taking into off-sets of the angle iron, and screws for detachably securing said channel iron to the wings of the angle irons.

5. A sheet metal door or the like having a hollow rail at the end of the door, a pair of angle irons welded within said hollow end to the respective sides thereof, one wing extending outwardly toward the end of the door and provided with an off-set, a channel iron inserted within the hollow end with its wings projecting inwardly and taking into off-sets of the angle iron, fasteners for detachably securing said channel iron to the wings of the angle irons, and a strengthening bar placed within said angle irons and secured thereto by detachable fasteners.

6. A sheet metal door or the like having a hollow rail, a channel iron inserted between the two plates of said rail and having the back thereof welded to the inner face of one of said plates, the ends of said channel iron being provided with inwardly projecting flanges, a second channel iron provided on its ends with laterally projecting flanges and inserted within the opening of said first channel iron with the flanges thereof engaging the inwardly extending flanges of said first channel iron and with the back of said second channel iron welded to the inner face of the other plate of said rail.

7. A sheet metal door or the like having a hollow end rail, oppositely arranged angle irons placed within said rail near the outer edge thereof and each having the back of one wing welded to the inner face of one of

the plates forming said rail with the other wing extending inwardly, the wings of said angle irons which are welded to said plates being provided at their outer ends with offsets, a channel-iron placed across the open end of said rail with its wings projecting inwardly into said offsets on the angle irons and detachable fasteners connecting said channel-iron with the innermost wings of said angle-irons, substantially as described.

8.-A sheet metal door or the like having a hollow lock stile, a lock box inserted within said stile and formed of a strip of sheet metal bent on itself and forming a four-sided rectangular shaped hollow body with the two ends of the strip overlapping each other so as to form a double thickness of material at the one end of said body, and said body being welded within the lock stile with the double walled end of said body outermost and provided with openings registering with the lock opening in said hollow stile.

9. A sheet metal door or the like having hollow rails and stiles and provided with a glass panel, panel retaining moldings secured to said rails and stiles and engaging and holding said glass, the pair of moldings engaging the upper edge of the glass being provided at their inner ends with upwardly extending flanges between which the glass panel is inserted and formed with a

socket at the base of each flange, an inverted channel iron placed over said flanges with the lower ends of the channel iron embracing said flanges and fitting snugly into the sockets at the base of the flanges of said moldings, and means for securing said channel iron in fixed position within the upper stile, substantially as described.

10. A sheet metal door or the like having a hollow end rail, oppositely arranged angle irons placed within said rail near the outer edge thereof and each having the back of one wing welded to the inner face of one of the plates forming said rail with the other wing extending inwardly, the wings of said angle irons which are welded to said plates being provided at their outer ends with offsets, a channel iron placed across the open end of said rail with its wings projecting inwardly into said offsets on the angle irons, a member secured between the innermost wings of said angle irons, and detachable fasteners connecting said channel-iron with the innermost wings of said angle irons, substantially as described.

In testimony whereof, I have hereunto set my hand in the presence of the two subscribing witnesses.

ANDREW JOHNSON.

Witnesses:

CHAS. LUNDQUIST,
OLOF A. OLSON.