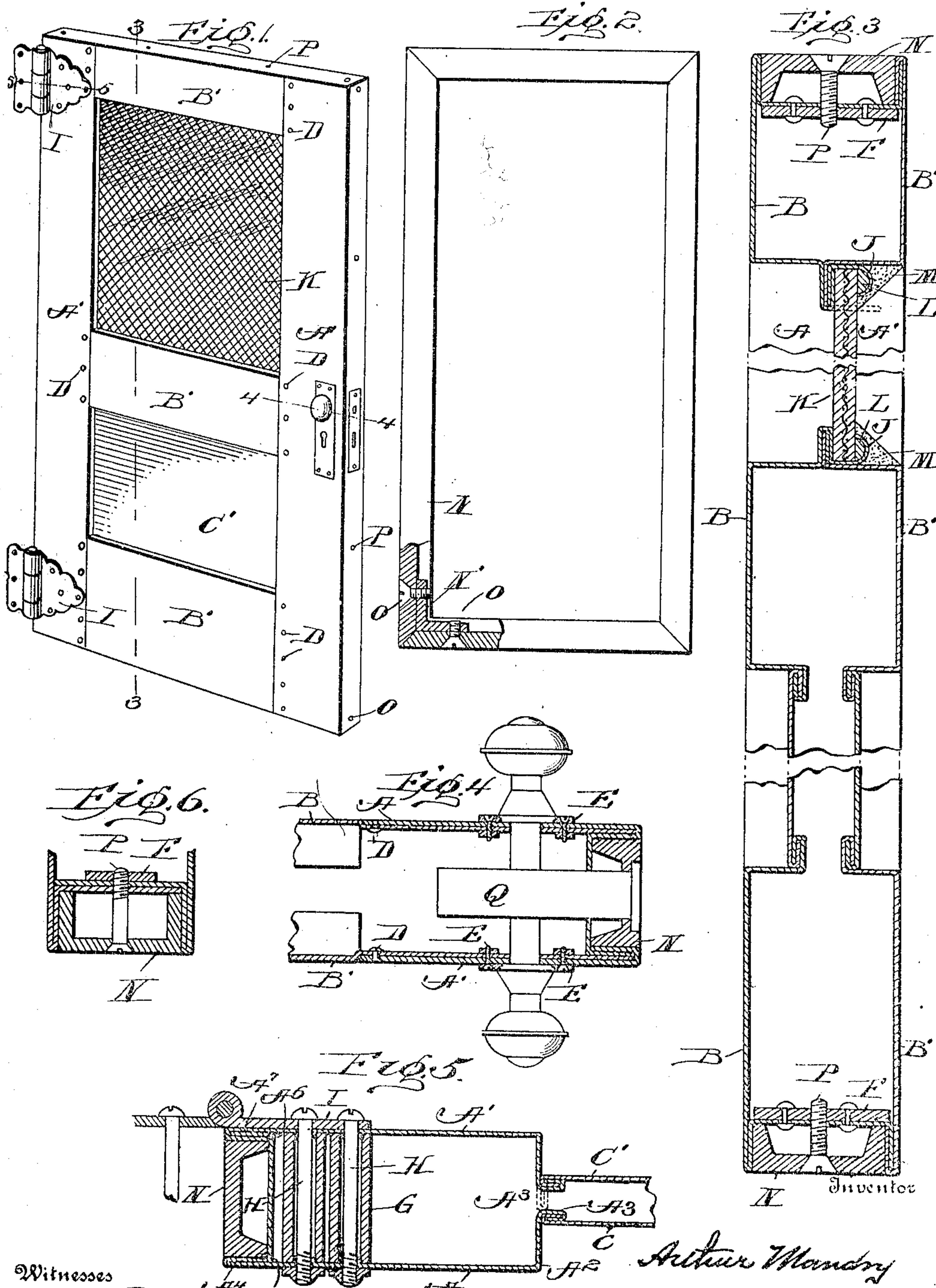


No. 849,742.

PATENTED APR. 9. 1907.

A. MANDRY.  
METAL DOOR.

APPLICATION FILED DEC. 21, 1906.



Witnesses  
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# UNITED STATES PATENT OFFICE.

ARTHUR MANDRY, OF NEW ORLEANS, LOUISIANA.

## METAL DOOR.

No. 849,742.

Specification of Letters Patent.

Patented April 9, 1907.

Application filed December 21, 1906. Serial No. 348,905.

*To all whom it may concern:*

Be it known that I, ARTHUR MANDRY, a citizen of the United States, residing at New Orleans, in the parish of Orleans and State of Louisiana, have invented certain new and useful Improvements in Metal Doors, of which the following is a specification.

My invention relates to doors constructed wholly of incombustible material, such material being metal unless glass be desired for certain panels.

The object of the invention is to provide doors of this class that shall be pleasing in appearance and unusually light, strong, and inexpensive and easily made from stock materials. This object is attained by forming of sheet metal distinct halves or faces of the door, uniting them in such manner as to secure a marginal channel between them, and fixing in the channel rigid bars constituting a sort of framework for supporting and strengthening the sheet-metal portions.

In the accompanying drawings, Figure 1 is a perspective view showing a door as it appears in use. Fig. 2 is a side elevation of a rigid frame which stiffens and supports the sheet-metal portions. Fig. 3 is a vertical section on the line 3 3, Fig. 1. Fig. 4 is a transverse section through the lock-stile, showing the lock and knobs in place. Fig. 5 is a like section of the opposite stile, showing the attachment of a "surface hinge" or butt. Fig. 6 is a cross-section of the marginal portion of the door, showing a modified construction.

The door is hollow, and each face-wall is made up of rigidly-joined pieces of sheet-metal or stile strips A A', rail-strips B B', and panel-plates C C'. The stile-strips A of one compound face-sheet have the portions which belong to parts of the stile above and below a certain glass panel bent as shown in Fig. 5, for example, one marginal portion being bent at A<sup>2</sup> to form one angle of the stile and then at some distance from the first bend bent back upon itself to form a hook, which is shown in dotted lines in a temporary position.

Near the opposite side the strip is bent back upon itself at A<sup>4</sup>, bent at right angles at A<sup>5</sup>, and again at right angles at A<sup>6</sup>, the mar-

ginal portion A<sup>7</sup> then lying in a plane parallel to the body of the strip and at a distance therefrom approximately equal to the thickness of the door to be formed, the successive bends forming of the strip a channel alongside the visible portion of the stile. That portion of the stile-strip alongside the glass-panel space has its inner side bent three times at right angles, as shown, its free marginal portion being left temporarily in a plane perpendicular to the plane of the body of the strip.

The other stile-strip A is bent in the same manner, as is also the lower rail-strip B. The upper rail-strip B has its upper side bent like the outer side of the lower strip or the outer side of the stile-strips A; but its lower side is bent like that part of the stile-strip which is to lie alongside the glass-panel space. The middle or lock-rail strip has its upper margin bent like the other parts surrounding the glass-panel space and its lower side bent like the upper side of the lower rail-strip or the adjacent sides of the stile-strips. Where the inbent portions of the strips would interfere, one member has such portions cut away.

The body portions of the rail-strips pass under the stile-strips, being offset slightly, so that the outer faces of the two may be flush. The members of this face-sheet are assembled by bringing the stile and rail members into proper relation and riveting the overlapped parts at D D, then putting the panel-sheet C in place with its flanges in the hooks A<sup>3</sup>, and bending the latter over and hammering them down into the position shown in full lines.

The corresponding or opposite face-sheet is made up in the same manner, except that its marginal portions or the outer sides of the stiles and rails are simply bent once at right angles, forming perpendicular flanges along the margins of the sheet as a whole, and except also that the inbent flanges alongside the glass-panel space are narrower than the corresponding flanges of the sheet first described and lack the last bend of the latter.

Before the two face-sheets are put together the lock and knob plates E are fixed in place, threaded plates or nuts F are fixed in place at intervals along the inner face of



the part forming the bottom of the channel already mentioned, and tubes or perforated hinge-blocks G are fixed to one of the sheets in position to receive bolts H, which pass through the door and secure thereto hinges I when the door has been completed. The second sheet is now placed upon the first in such manner that its marginal flanges extend over the free edges of the channel-walls, and these flanges are bent down over said walls and properly hammered. The wide flanges of the sheet A which lie in the glass-panel space are also folded down over the corresponding but narrower flanges of the sheet A' and hammered, forming a rib against which the face of the glass may rest. In folding down these flanges a strip J, of soft metal, has one margin placed in position to be held by the flange, and its remaining marginal portion projects outward perpendicularly from the rib. The glass K, which is preferably "wire-glass," is placed upon the rib at the proper time, and the free margin of the soft-metal strip is bent against its outer face to hold it in place, a small molding L often being used as a permanent form held by the strip, and the whole, if desired, being covered with putty M. It is not essential that these soft-metal strips be continuous.

The two face-sheets being united in the manner set forth, we have a hollow door of thin metal provided with an outwardly-open continuous channel in its edges. Without additions such door would have a fair degree of rigidity, since it has many transversely-located webs, of which the marginal ones connect the two face-sheets and have a width substantially equal to the thickness of the door. In the channels in this door's edges is placed the frame. (Shown detached in Fig. 2.) This frame preferably consists of channel-bars N, mitered at the angles and rigidly connected by angle-irons N'. To put the frame in place, each angle-iron may be fixed to one bar by bolts O, and the four bars being then placed in the channels other bolts O are inserted binding the whole firmly together.

At intervals along the bars other bolts P are inserted to engage the threaded plates before mentioned and draw the sheet forming the bottom of the groove firmly against the inner side of the channel-bars.

The channel-bar when in place has its outer face flush with the edges of the face-sheets and extending from the one to the other, and it follows that it is well adapted to receive any ordinary butt, as well as the surface hinge shown. The bar in the free edge of the door is cut away to receive a lock Q, and the lock and knobs are fixed in place in the usual manner.

It is obvious that the construction set forth may be varied in many ways without passing

the proper boundaries of my invention. I have shown in Fig. 6 a modification wherein the two face-sheets are readily detached from the frame and from each other by simply removing the bolts that pass inward through the channel-bars. Here the sheets are not directly interlocked; but the marginal portion of the second sheet is also carried across the bottom of the channel and bolts pass through both. This construction is used only when the upper panel is made like the lower one of the illustrations.

What I claim is—

1. A hollow door having for its opposite face-walls distinct sheets of thin metal, said sheets being connected at some distance from their corresponding margins by integral transverse metal webs.

2. A metal door having two face-sheets of thin metal connected on each of the four sides of the door by integral webs at some distance from their margins and parallel thereto, and further having a rigid-metal frame secured in the channels formed by said sheets and webs.

3. In a thin-metal door, the combination with two suitably-spaced face-sheets bent inward upon themselves to double their marginal thickness and connected together at some distance from their margins by integral interlocking flanges or webs, and rigid-metal bars flush with the margins of said plates and filling the spaces between their edges, respectively.

4. A metal door having for its opposite faces distinct sheets each made up of rigidly-connected thin-metal members and provided near all its outer margins with integral webs for rigidly securing it to its companion while holding it at some distance therefrom, and further provided with a rigid-metal frame lying without said webs, wholly within the planes of said margins and filling the space between the two sheets.

5. A door having distinct face-sheets of thin metal bent inward and interlocked around the margin of a panel-opening and between the planes of the sheets, to form a panel-supporting rib or seam, and provided with a projecting soft-metal strip locked in said seam, substantially as set forth.

6. In a thin-metal door, the combination with two metal sheets forming portions of the faces of the door, respectively, and provided with corresponding, alining perforations, of tubes extending perpendicularly from one sheet to the other and each having its bore in registry with a perforation in each of said sheets, substantially as set forth.

7. The combination with two separately-formed, connected face-sheets each made up of stile, rail and panel members simulating the like parts of wood doors, the stile and rail

members being overlapped but made externally flush by offsetting, and the pairs of rail and stile members being connected near the margins of the door by integral flanges or  
5 webs, and rigid bars filling the spaces between said margins.

In testimony whereof I have signed my

name to this specification in the presence of two subscribing witnesses.

ARTHUR MANDRY.

Witnesses:

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A. P. LE BLANC.