

No. 762,472.

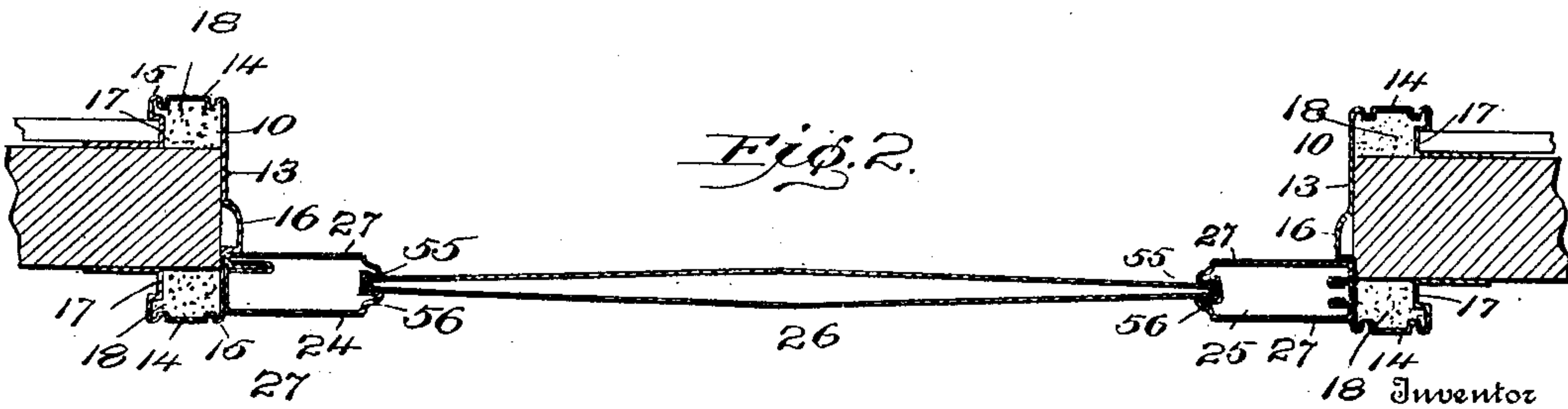
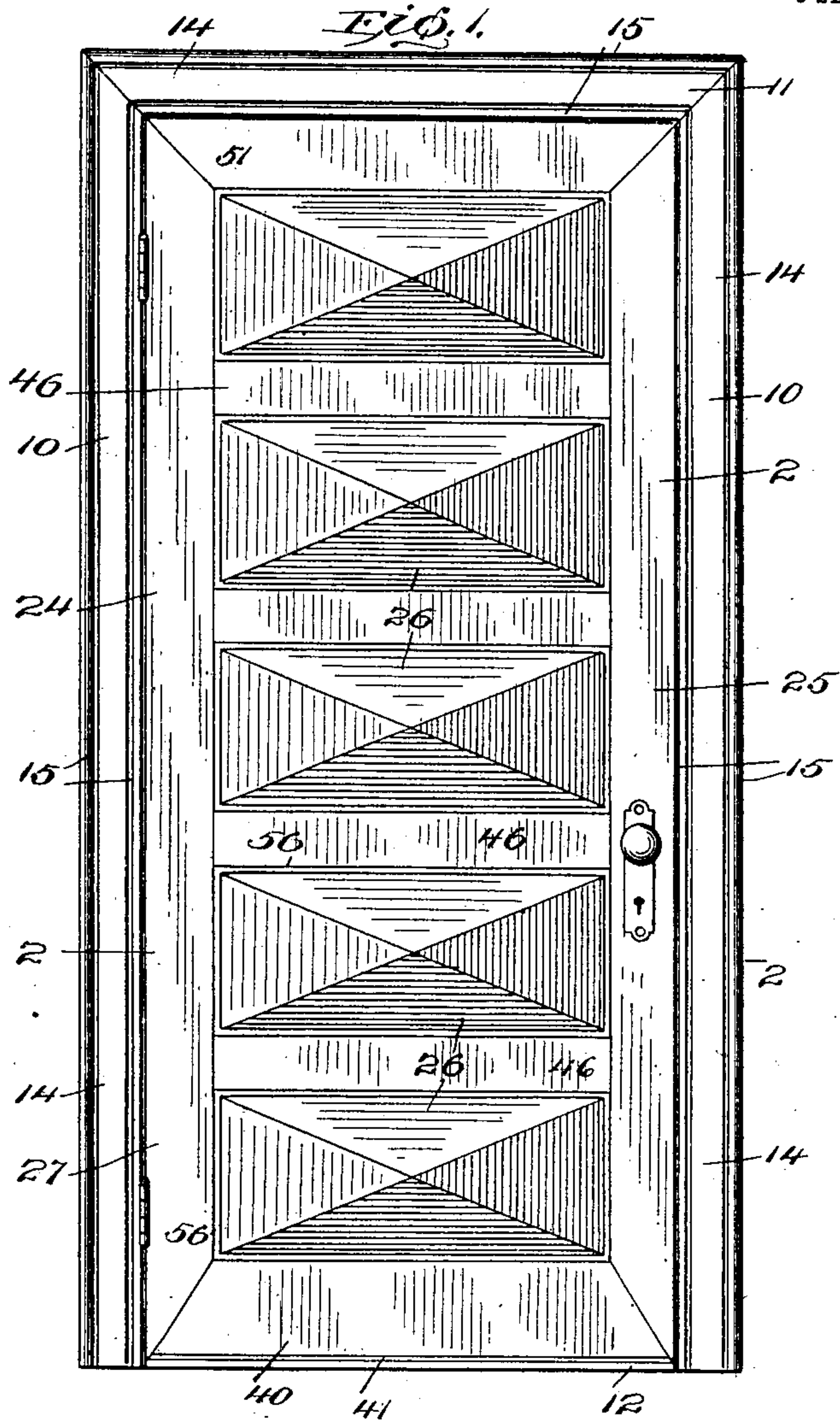
PATENTED JUNE 14, 1904.

G. DOWMAN.
FIREPROOF CONSTRUCTION.

APPLICATION FILED NOV. 30, 1903.

NO MODEL.

3 SHEETS—SHEET 1.



Witnesses

J. M. Fowler Jr.
J. H. Burgess

George Sawman

By Grant Burroughs?

Attorney

No. 762,472.

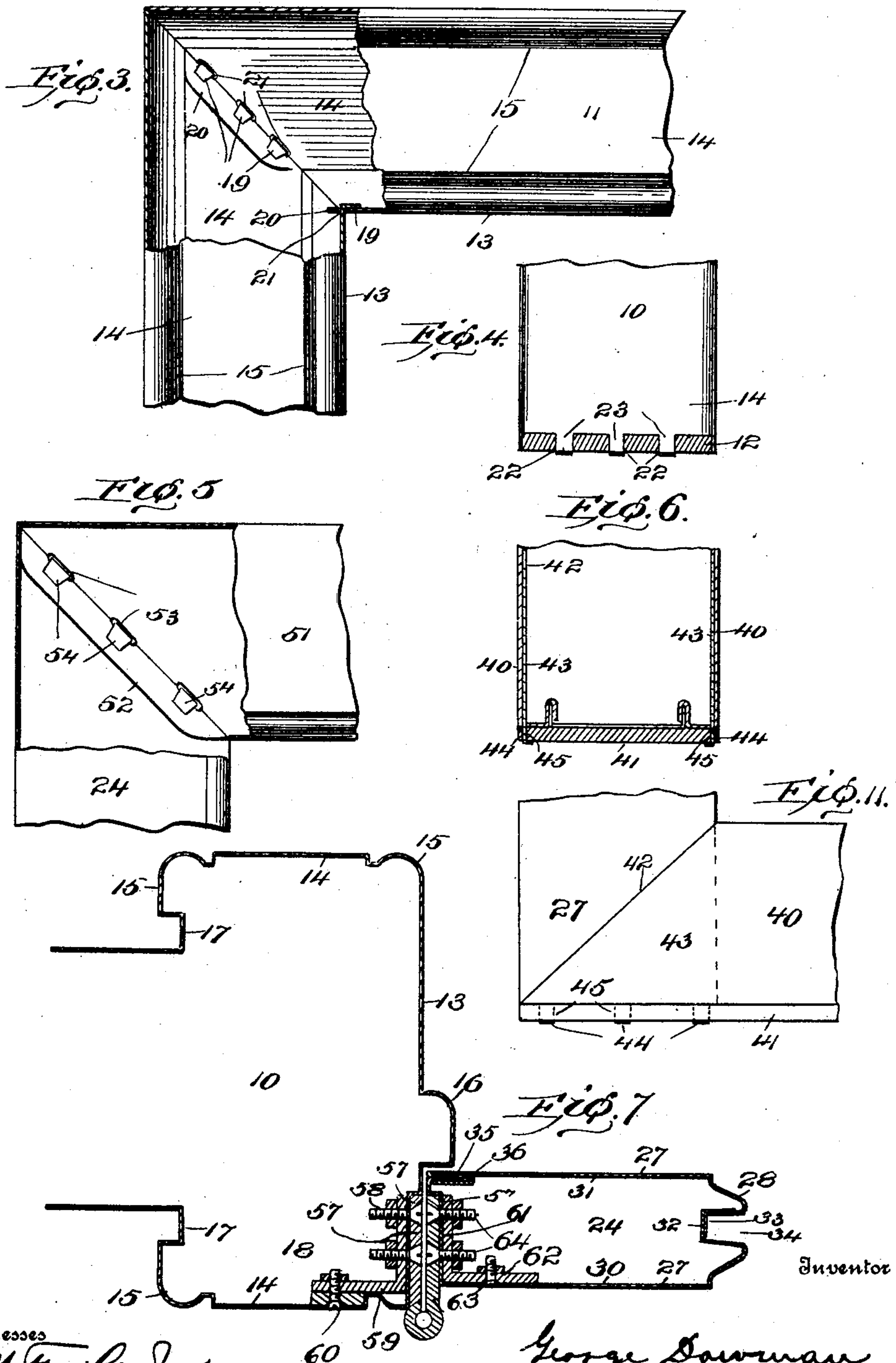
PATENTED JUNE 14, 1904.

G. DOWMAN.
FIREPROOF CONSTRUCTION.

APPLICATION FILED NOV. 30, 1903.

NO MODEL.

3 SHEETS—SHEET 2.



Witnesses
J. M. Fowler Jr.
J. H. Burgess.

George Dorman
Grant Burroughs
Attorney

No. 762,472.

PATENTED JUNE 14, 1904.

G. DOWMAN.
FIREPROOF CONSTRUCTION.

APPLICATION FILED NOV. 30, 1903.

NO MODEL.

3 SHEETS—SHEET 3.

Fig. 8.

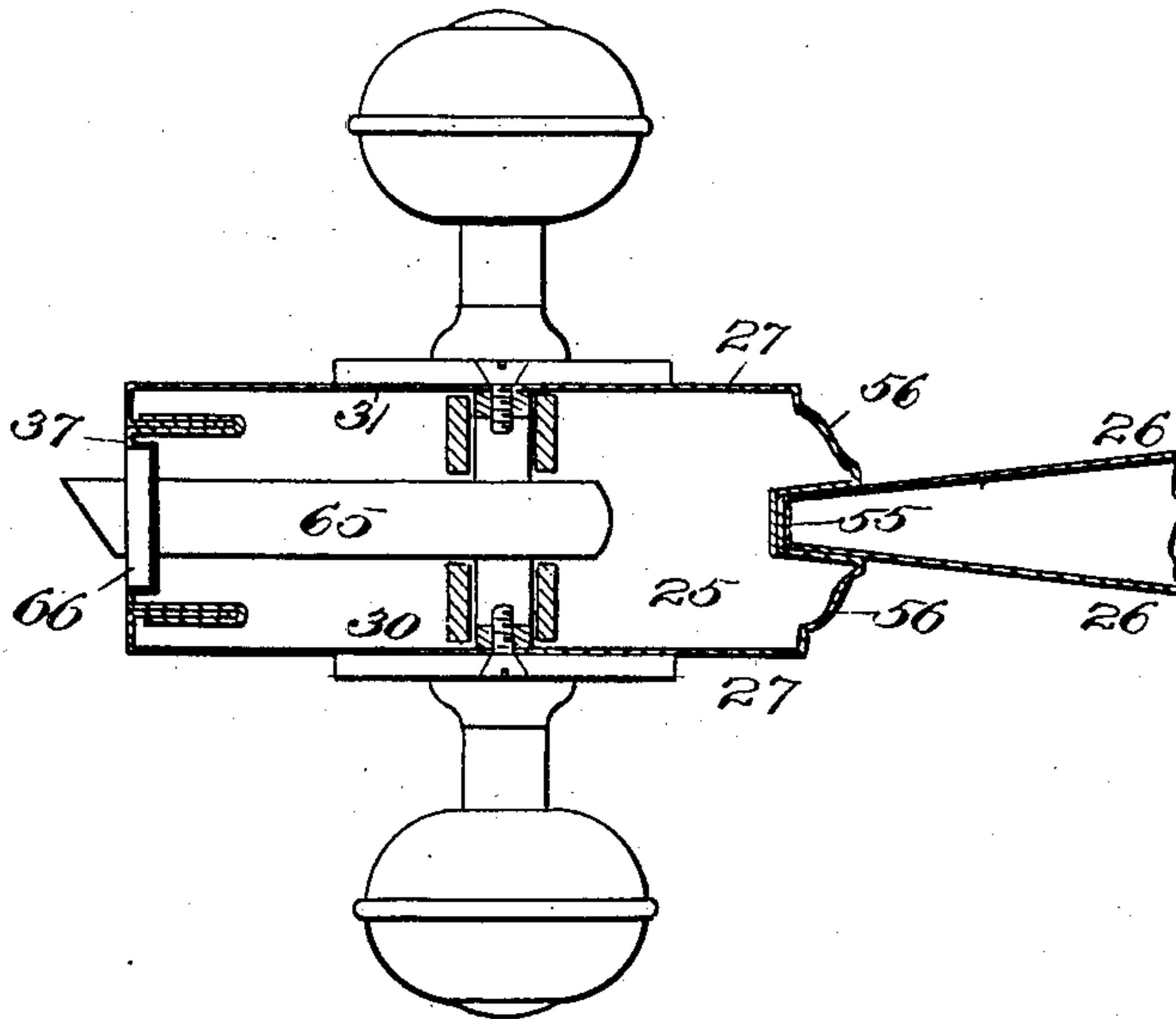


Fig. 9.



Fig. 10.

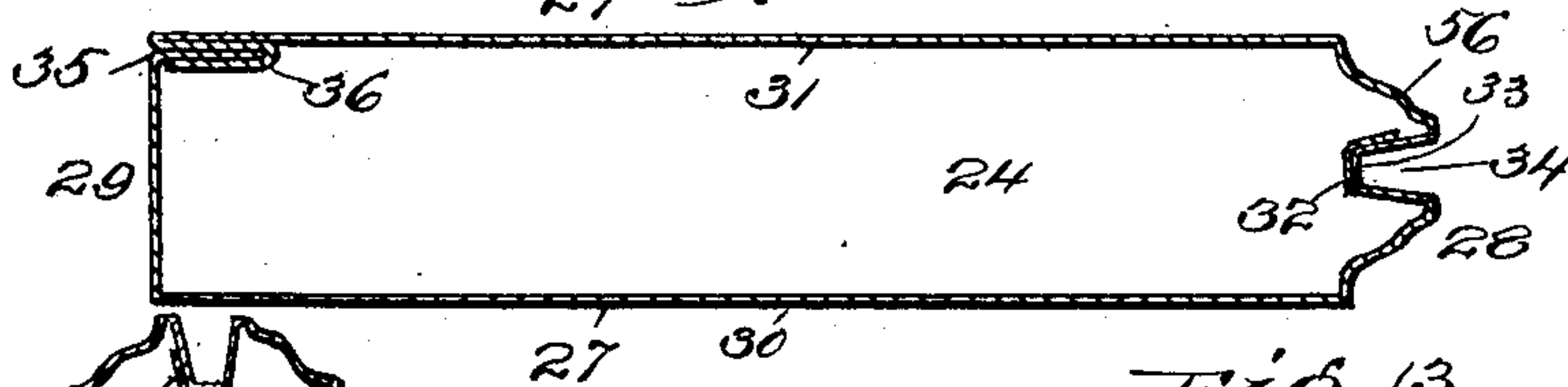


Fig. 12.

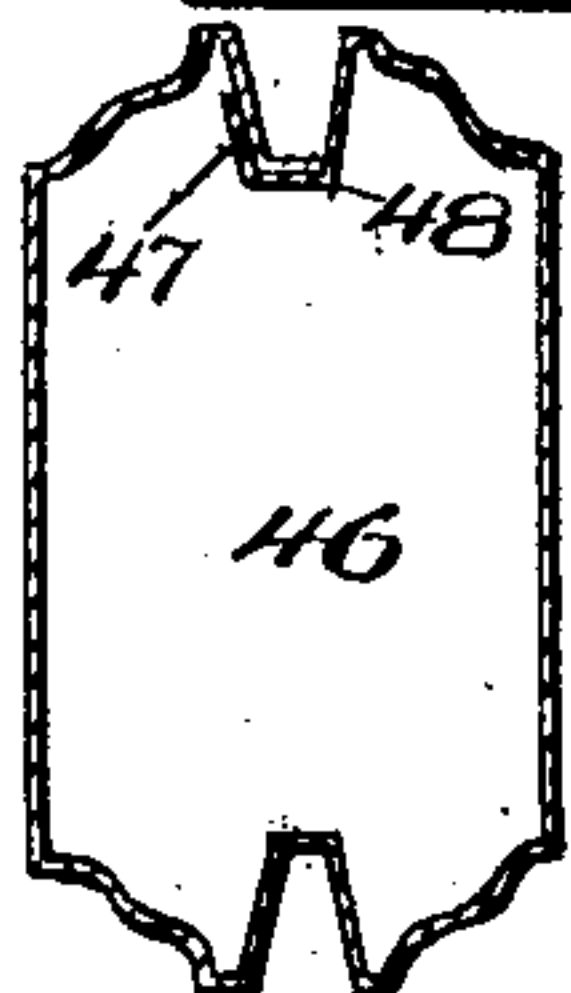
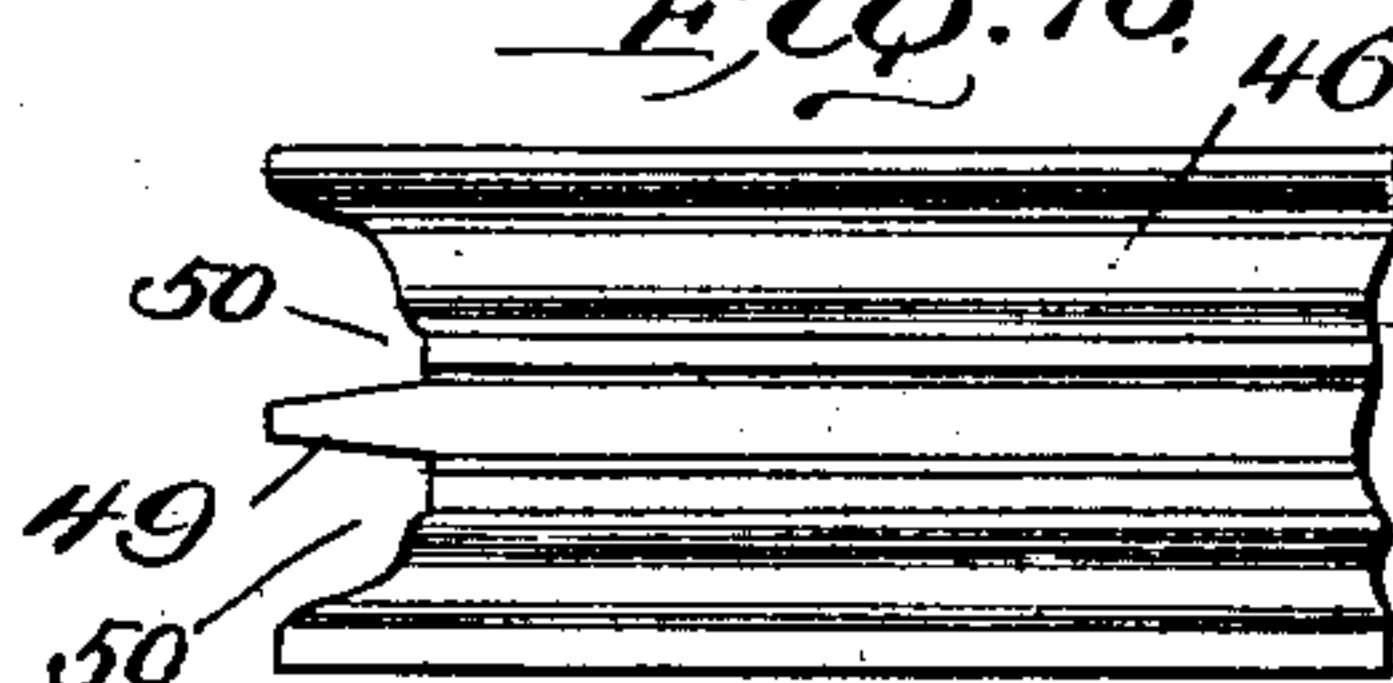


Fig. 13.



Inventor

George Dorman

By Grant Burroughs,
Attorney

Witnesses

J. M. Fowler Jr.
J. W. Burroughs

UNITED STATES PATENT OFFICE.

GEORGE DOWMAN, OF ATLANTA, GEORGIA, ASSIGNOR TO DOWMAN-DOZIER MANUFACTURING COMPANY, OF ATLANTA, GEORGIA.

FIREPROOF CONSTRUCTION.

SPECIFICATION forming part of Letters Patent No. 762,472, dated June 14, 1904.

Application filed November 30, 1903. Serial No. 183,205. (No model.)

To all whom it may concern:

Be it known that I, GEORGE DOWMAN, a citizen of the United States, and a resident of Atlanta, in the county of Fulton and State of Georgia, have invented certain new and useful Improvements in Fireproof Construction, of which the following is a full, clear, and exact description, such as will enable those skilled in the art to which they appertain to make and use the same, reference being had to the accompanying drawings, forming a part of this specification.

The invention relates to improvements in fireproof construction, and more particularly to doors and casings made of sheet metal. Many of such doors in common use, owing to the requirements of their constructions, have several of their component parts made solid. Consequently they are not substantially hollow throughout and advantage cannot be taken of an air-space or one filled with heat-non-conducting material, separating the two sides of the door and extending over the entire area of the same. Some have such a space, but are of such complicated and costly construction as to render their extensive use objectionable. This is especially so when the component parts of the door are secured together by riveting. To permit the latter method of securing, it is necessary to use many different pieces of metal, so that the riveting-tools can be manipulated. This also renders the construction cumbersome, complicated, and costly.

The invention in the present instance has for its object the production of a door having all of its principal component parts hollow, so that advantage can be taken of the space intervening between the two sides and extending over the entire area of the same, one in which the component parts are of simple construction and can be easily assembled and secured together without riveting, and one which is of sufficiently cheap construction as to render its use practical in ordinary fireproof construction.

It also has for its object the production of a casing made of sheet metal that can be easily

constructed, put in place, and efficient in its purpose.

The invention consists in the novel construction, combination, and arrangement of parts, such as will be hereinafter fully described, pointed out in the appended claims, and illustrated in the accompanying drawings.

In the drawings, in which similar reference characters designate corresponding parts, Figure 1 is a front elevation of a door and casing embodying the invention. Fig. 2 is a cross-sectional view on the line 2 2 of Fig. 1. Fig. 3 is an enlarged detail view showing the joint between the upper end of one of the jambs and the lintel. Fig. 4 is a similar view showing the joint between the lower end of one of the jambs and the threshold-plate. Fig. 5 is a detail view showing the joint between the upper end of one of the stiles and the upper transverse rail of the door. Fig. 6 is a detail view showing the joint between the lower end of a stile and the lower transverse rail. Fig. 7 is a detail sectional view through the jamb and hanging stile adjacent to the hinge connecting the two. Fig. 8 is a similar view through the lock-stile adjacent to the catch. Figs. 9 and 10 are respectively detail sectional views of the hanging and lock stiles. Fig. 11 is a detail view showing the joint between the lower end of the stile and the lower rail. Figs. 12 and 13 are respectively sectional and plan views of one of the intermediate rails.

The casing consists of the jambs 10, the lintel 11, connecting the upper ends of the jambs, and the threshold-plate 12, joining the lower ends of the jambs. The jambs and lintel are of sheet metal and fit over the edges of the aperture in the wall forming the doorway. Each jamb and the lintel has a face and the sides 14 integral with one another and is substantially U shape in cross-section. The sides have projections extending from the plane of the wall to simulate door-posts. The corners of the lintel and the jambs, as at 15, are shaped to give the usual ornamental beaded appearance and in their faces are formed the usual door-stops 16. In the sides

14 near their inner edges and adjacent to the door-post projections are the recesses 17, into which the plaster dressing of the wall is continued to give a finished appearance to the structure. In the space between the projections of the sides 14 and the wall, as at 18, cement is introduced to hold the casing in place. The inner edges of the sides are continued beneath the plaster for a short distance, so as to be hidden by the same. The connection between the upper end of a jamb and an end of the lintel is a miter-joint. Projecting from the upper edges of the face 13 and sides 14 of the jamb, where the miter is formed, are the tongues 19. The ends of the face 13 and the sides 14 of the lintel are continued into the jamb, as at 20, and have slots 21 formed therein adjacent to the miter. The tongues 19 pass through the slots 21 and are turned back against the inner surfaces of the lintel and are clenched against the same. When the two parts are brought together to form the joint, having been previously cut and shaped, the tongues can be readily inserted in the slots. Tools can be introduced into the casing from its inner side to clench the tongues. In this way a joint is formed without riveting and which at the same time will be sufficiently strong to hold the two parts together. The jambs are secured at their lower ends to the threshold-plate 12, secured to the flooring in any suitable way. The lower ends of the faces of the jambs are cut away to permit the entrance of the ends of the plate, and in the latter are the slots 22, through which pass the tongues 23 on the lower edges of the faces and are clenched against the under side of the plate. The sides of the jamb extend over the end of the plate and hide the same. In this way the lower ends of the jambs are securely held in place and in their proper relative positions.

The door consists of the hanging stile 24 and the lock-stile 25, connected by the transverse rails, to form the framework, and in the latter are placed the panels 26. Each stile comprises the parallel flat faces 27, the grooved inner edge 28, and the flat outer edge 29. The hanging stile 24 is made of two pieces of sheet metal 30 and 31, each of which primarily forms one of the sides or faces 27. The inner edge of the member 30 is U-shaped, as at 32, and the inner edge of the member 31 is L-shaped, as at 33. These two inner edges register with each other with the L-shaped edge inside of the U-shaped one, and both together form the groove 34, which receives the edge of the panel hereinafter to be described. When the panel is in place, the two edges are locked together, so as to be inseparable without the removal of the panel. The outer edge of the member 30 is bent inwardly to form the tongue 35, which engages with the narrow socket or groove 36, formed by

folding the outer edge of the member 31 back and forth on itself. The two outer edges of the members may be held in engagement by screws passing through them or by any other suitable means. The member 30 also forms the flat outer edge 29 of the stile.

The lock-stile 25 is substantially formed of a single piece of sheet metal shaped to form the sides or faces 27 and the grooved inner edge 28. Each edge of the plate is bent, as at 38, to form part of the outer edge 29 of the stile, and it is also bent back on itself to form the narrow socket or groove 39. The edges of the plate forming the sockets or grooves project into the interior of the stile, and they are coupled together by the yoke 37, which is a strip of metal extending along the edge 29 of the stile, with its longitudinal edges bent inwardly and engaging with the sockets or grooves 39. The intermediate part of the yoke is flat and is flush with the parts 38 of the main plate to form the outer edge of the stile. While the engaging parts of the yoke and main plate are shown as extending into the stile at right angles to the edge 29, yet they can be formed so as to converge or to diverge as they enter.

The lower transverse rail 40 connects the lower ends of the stiles, and it has substantially the same construction as the lock-stile 25. It has the same parallel sides or faces, grooved inner edge, flat outer edge, and coupling-yoke. Its lower edge, however, is reinforced by the metal strip 41. The connections between the ends of the rail and the lower ends of the stiles are miter-joints, as at 42. The lower end of each stile is continued beyond the miter, as at 43, and has projecting from its edge the tongues 44, which pass through the lower edge of the rail and through the slots 45 in the metal strip 41 and are clenched against the under side of the latter.

The intermediate transverse rails 46 are all alike. Each has the same thickness as the stile, as have the other members comprising the framework. It is formed of a single piece of sheet metal, the edges of which are joined together in the same way as the inner edges 32 and 33 of the members of the hanging stile 24, the joint consisting of the L-shaped edge 47, engaging with the U-shaped edge 48. In the upper and lower edges of the rail are the grooves to receive the edges of the adjacent panels, one of the grooves being formed by the interlocking edges 47 and 48. In the ends of the rail are the tongues 49, shaped to fit the grooves in the inner edges of the stiles, and they are recessed and shaped, as at 50, to fit over the edges of the stiles outside of the grooves.

The upper transverse rail 51 joins the upper ends of the stiles, and it also has substantially the same construction as the lock-stiles 25. It has the same parallel sides or faces,

grooved inner edge, flat outer edge, and the coupling-yoke. The connections between the ends of the rail and the upper ends of the stiles are also miter-joints. The sides of the rail, as at 52, are continued into the stiles and have slots 53 formed in the same adjacent to the miter. Tongues 54 on the upper edges of the sides of the stiles pass through the slots 53 and are clenched, thereby securely connecting the rail and stiles. Access to the tongues 54 to clench the same can be had by removing the yoke in the upper edge of the rail.

Each of the panels 26 is formed of two pieces of sheet metal suitably stamped or shaped to give the desired ornamental appearance. The edges of these plates are bent inwardly, as at 55, and overlap each other when the two members are assembled. The panels are placed in the grooves in the edges of the stiles and rails, and when so placed the two plates comprising them are locked together by the sides of the grooves, with which they engage, and in turn they lock together the engaging edges of the stiles and rails, as hereinbefore described. The stiles and rails are shaped adjacent to the panels as at 56, to give the usual ornamental appearance.

In assembling the several parts the stiles are first secured to the lower rail. Then the panels and intermediate rails are successively and alternately placed between the upper ends of the stiles and moved downwardly into place. The formation of the grooves in the inner edges of the stiles, the tongues on the ends of the intermediate rails, and the shape of the edges of the panels permit the movement of the several parts to their respective places. After this the upper rail is secured between the upper ends of the stile and the whole thereby securely held in place.

The hanging stile 24 and the adjacent jamb of the casing adapt the structure to the hinges in ordinary use. Before the jamb is filled in the leaf 57 of the hinge is secured to the face 13, which is recessed to receive it adjacent to the door-stop 16. Bolts 58 pass through the hinge-leaf, the jamb-face, and an arm of the angle-iron 59, placed on the opposite side of the jamb-face. Nuts are turned onto the bolts and clamp the several parts together. The angle-iron is further fastened by the bolt 60 passing through its other arm and the side of the casing. Before the two members comprising the hanging stile are assembled the other leaf 61 of the hinge is secured in place. In the angle of the member 30 inside of the face 27 is secured the angle-iron 62 by the bolt 63 passing through an arm of the same and the side of said member. The face of the member is recessed to receive the hinge-leaf, and through the latter and the angle-iron pass the bolts 64, clamping the leaf to the casing and the iron. After the hinge has been secured the two members 30 and 31 are secured together. The two leaves of the hinge are

connected by the usual pintle. It is to be observed that the tongue-and-groove joint between the two members of the stile is to the side of the hinge connection and does not interfere with the same.

In the lock-stile of the door is mounted the usual catch mechanism, comprising the bolt 65 and means for operating the same. In the yoke 37 is seated the bolt-plate 66, and through it works the bolt. The bolt-plate is entirely within the yoke and is free from the engaging edges of the latter.

While the herein-described embodiment of the invention is the preferred one, yet it can be departed from to a considerable extent without departing from the spirit of the invention.

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

1. In fireproof construction, a door comprising hollow sheet-metal stiles with grooves in their inner edges, hollow sheet-metal rails having tongues engaging with said grooves and provided with grooves in their edges, and hollow sheet-metal panels with their edges engaging with the grooves in said stiles and said rails.

2. In fireproof construction, a door comprising hollow sheet-metal stiles with grooves in their inner edges, hollow sheet-metal rails having tongues engaging with said grooves and provided with grooves in their edges, and hollow sheet-metal panels composed of opposite plates with their edges overlapping and engaging with the grooves in said stiles and said rails.

3. In fireproof construction, a door comprising hollow sheet-metal stiles with grooves in their inner edges and one of said stiles having the edges of the metal forming it interlocked and having its groove in said interlocking edges, hollow sheet-metal rails having tongues engaging with said grooves and provided with grooves in their edges, and hollow sheet-metal panels with their edges engaging with the grooves in said stiles and said rails.

4. In fireproof construction, a door comprising hollow sheet-metal stiles with grooves in their inner edges and one of said stiles having the edges of the metal composing the same bent to form sockets, a yoke having its ends engaging with said sockets, hollow sheet-metal rails having tongues engaging with the grooves in said stiles and provided with grooves in their edges, and hollow sheet-metal panels with their edges engaging with the grooves in said stiles and said rails.

5. In fireproof construction, a door comprising hollow sheet-metal stiles with grooves in their inner edges and one of said stiles having the edges of the metal forming it interlocked and having its grooves in said interlocking edges and the other of said stiles having the edges of the metal composing the same bent to form sockets, a yoke having its ends en-

gaging with said sockets, hollow sheet-metal rails having tongues engaging with the grooves in said stiles and provided with grooves in their edges, and hollow sheet-metal panels with their edges engaging with the grooves in said stiles and said rails.

6. In fireproof construction, a door comprising hollow sheet-metal stiles with grooves in their inner edges, hollow sheet-metal top and bottom rails with grooves in their inner edges and connected at their ends with the ends of the stiles by miter-joints, intermediate hollow sheet-metal rails with grooves in their opposite edges and provided with tongues at their ends engaging with the grooves in the inner edges of the stiles, and hollow sheet-metal panels formed of opposite plates with their edges bent inwardly and overlapping to hold the plates apart and engaging with the grooves in the edges of said stiles and said rails.

7. In fireproof construction, a door comprising hollow sheet-metal stiles with grooves in their inner edges, hollow sheet-metal top and bottom rails with grooves in their inner edges and connected at their ends with the ends of said stiles by miter-joints and with the end of one member forming a joint extended into the other member and said end having slots adjacent to the miter-joint and the end of the other member provided with tongues passing through said slots and clenched, intermediate hollow sheet-metal rails with grooves in their opposite edges and provided with tongues engaging with the grooves in the inner edges of the stiles, and hollow sheet-metal panels formed of opposite plates with their edges bent inwardly and overlapping each other to hold the plates apart and engaging with the grooves in the edges of the stiles and rails.

8. In fireproof construction, a hollow stile formed of sheet metal with the edges of the latter interlocked and shaped to form a groove, a hollow sheet-metal rail having a groove in its edge and provided with tongues engaging with the groove in said stile, and a hollow sheet-metal panel with edges engaging the grooves in said stile and in said rail.

9. In fireproof construction, a hollow stile formed of sheet metal with one of the edges of the metal substantially U-shaped and the other edge substantially L-shaped and placed in the groove formed by the U-shaped edge, a hollow sheet-metal rail having a groove in its edge and provided with tongues engaging with the groove in the stile formed by the engaging edges of the metal forming the stile, and a hollow sheet-metal panel with edges engaging the grooves in the stile and in the rail.

10. In fireproof construction, a hollow sheet-metal stile with edges interlocked and forming a groove, a hollow sheet-metal rail having a groove in its edge and provided with tongues engaging with the groove in said stile, and a hollow sheet-metal panel composed of oppo-

site plates with their edges bent inwardly to hold said plates apart and engaging with the grooves in said stile and in said rail.

11. In fireproof construction, a hollow stile with a groove in its inner edge and formed of sheet metal with the edges of the metal bent to form sockets, a yoke with its ends engaging said sockets, a hollow sheet-metal rail with a groove in its edge and provided with tongues engaging with the groove in the edge of said stile, and a panel engaging with the grooves in the edges of said stile and said rail.

12. In fireproof construction, a hollow stile with a groove in its inner edge and formed of sheet metal with the edges of the metal bent to form sockets, a yoke having its ends engaging with said sockets, a hollow sheet-metal rail having a groove in an edge and provided with tongues engaging with the groove in the inner edge of said stile, and a hollow sheet-metal panel engaging with the grooves in the edges of said stile and said rail.

13. In fireproof construction, a hollow stile with a groove in its inner edge and formed of sheet metal with the edges of the metal bent to form sockets, a yoke having its ends engaging with said sockets, a hollow sheet-metal rail having a groove in an edge and provided with tongues engaging with the groove in the inner edge of said stile, and a hollow panel composed of opposite plates with their edges bent inwardly and overlapping and engaging with the grooves in the edges of said stile and said rail.

14. In fireproof construction, a grooved hollow sheet-metal stile comprising parallel sides and inner and outer edges, a grooved hollow sheet-metal top or bottom rail also comprising parallel sides and inner and outer edges, said stile and said rail being connected by a miter-joint and the sides of one of the members so connected continued into the other member and having slots adjacent to the miter-joint, tongues on the other member passing through said slots and clenched, a grooved intermediate rail provided with tongues engaging with the groove in said stile, and a hollow panel composed of opposite plates with their edges bent inwardly and overlapping and engaging with the grooves in said stile and said rail.

15. In fireproof construction, a jamb substantially U shape in cross-section and having projections in its sides to simulate door-posts and provided with recesses adjacent to said projections to receive the edges of the plaster coating for the wall, a threshold-plate extending into the lower end of said jamb and provided with slots, and tongues on the lower end of said jamb passing through said slots and clenched against the under side of said plate.

16. In fireproof construction, a hollow sheet-metal jamb or stile having an angle formed by its face and a side, an angle-iron placed in

said angle inside of the face, a hinge-leaf placed on the outside of the face of the stile or jamb opposite to said angle-iron, and means for securing the angle-iron, face, and hinge-leaf together.

17. In fireproof construction, a hollow sheet-metal stile formed of two pieces and one of said pieces having an angle formed by the face of the stile and one of its sides, an angle-iron placed in the angle so formed inside of the face, a hinge-leaf placed outside of the face opposite to said angle-iron, means for securing the angle-iron, face of the stile, and hinge-leaf together, and means for securing together the two pieces forming the stile.

18. In fireproof construction, a hollow sheet-metal jamb provided with a recess at its lower end, a threshold-plate extending into said recess and provided with slots, and tongues on the lower end of said jamb and passing through said slots and clenched against the under side of said plate.

19. In fireproof construction, a hollow sheet-metal jamb having a face and sides, a hollow sheet-metal lintel also having a face and sides and connected with said jamb by a miter-joint, one of the members so joined having its face and sides continued into the other member and provided with slots adjacent to

the miter-joint, tongues on the ends of the face and sides of the other member passing through said slots and clenched, a threshold-plate extending into the lower end of said jamb and provided with slots, and tongues on the lower end of said jamb and passing through said slots and clenched against the under side of said plate.

20. In fireproof construction, a hollow sheet-metal rail, a hollow sheet-metal stile connected with said rail by a miter-joint and having its end projecting through the rail to its outer edge, a reinforcing-plate on the outer edge of said rail, and tongues on the end of said stile and passing through said plate and clenched.

21. In fireproof construction, a hollow stile formed of sheet metal with the edges of the metal composing it bent to form sockets, a yoke having its ends engaging with said sockets and provided with a recess intermediate of its ends, and a bolt-plate seated in said recess.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

GEORGE DOWMAN.

Witnesses:

G. P. DOZIER,
J. J. MAIER.