

J. A. WHEELER.
FIREPROOF DOOR.
APPLICATION FILED JUNE 9, 1911.

1,048,923.

Patented Dec. 31, 1912.

Fig. 1.

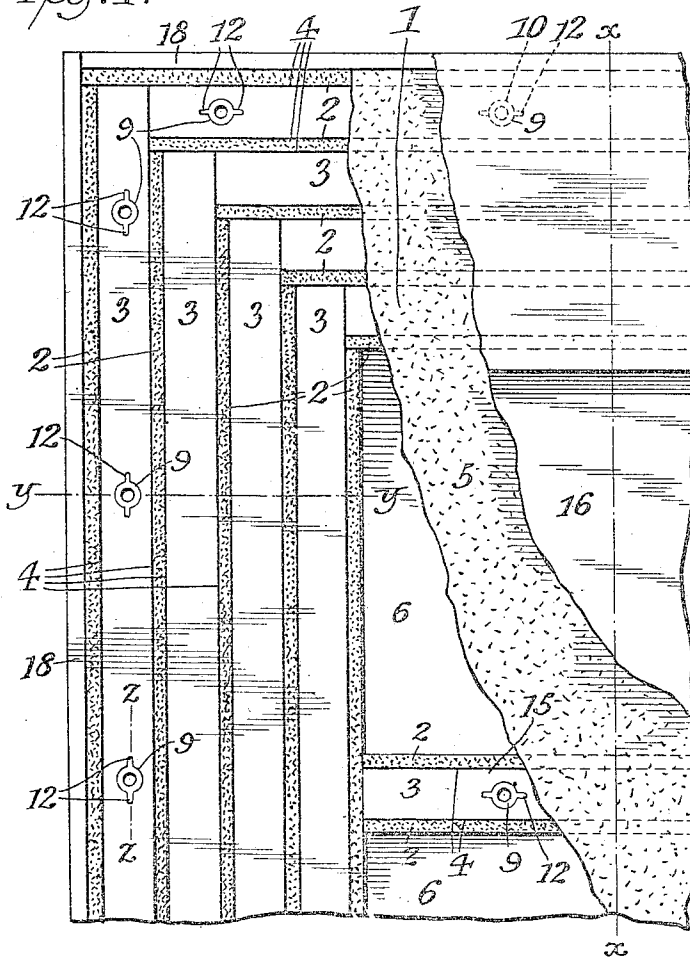


Fig. 2.

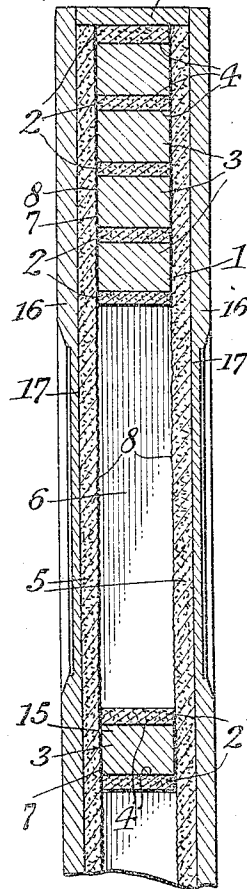


Fig. 3.

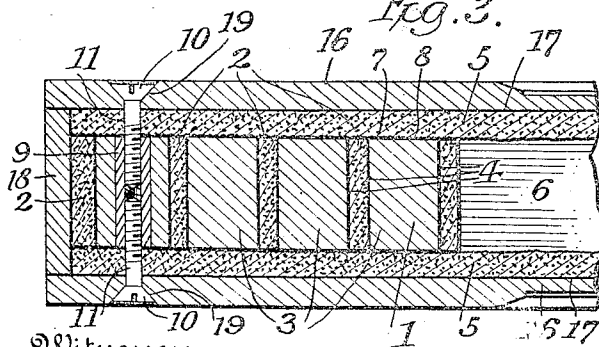
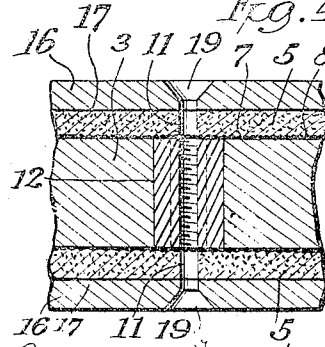


Fig. 4.



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UNITED STATES PATENT OFFICE.

JAMES A. WHEELER, OF SOMERSET COUNTY, NEW JERSEY.

FIREPROOF DOOR.

1,048,923.

Specification of Letters Patent.

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Application filed June 9, 1911. Serial No. 632,105.

To all whom it may concern:

Be it known that I, JAMES A. WHEELER, a citizen of the United States, and resident of the county of Somerset and State of New Jersey, have invented certain new and useful Improvements in Fireproof Doors, of which the following is a specification.

This invention relates to fireproof doors, and it has for its object to provide a simple and improved door of this character which can be readily and inexpensively manufactured and which will possess advantages in point of durability, rigidity of structure, strength, lightness, resistance to fire, effectiveness and general efficiency.

In the drawings—Figure 1 is a face or plan view of a portion of a door embodying my improvements, part of the facing members being broken away to show the interior construction. Fig. 2 is a detail cross-section on the line $x-x$ of Fig. 1. Fig. 3 is a detail cross-section on the line $y-y$ of Fig. 1. Fig. 4 is a detail cross-section on the line $z-z$ of Fig. 1, showing one of the screw sockets.

Corresponding parts in all the figures are denoted by the same reference characters.

Referring to the drawings, 1 designates the main frame of the door, which consists of laminated alternate bars or strips of fireproof material and wood. This frame is preferably of rectangular form, so that it extends entirely around the rectangular outline of the door at the outer edge portions thereof. The fireproof bars or strips are formed of a rigid non-metallic composition undeformable by heat, and I prefer to use for this purpose the composition which is commercially known as "alignum" and which is constituted by a suitable filler including asbestos and combined with a fireproof binder to produce a plastic substance which is molded into shape and compressed and dried in a rigid structure. The alternate laminated arrangement is such that the fireproof strips, shown at 2, inclose or cover the opposite surfaces of the intermediate wood bars or strips, shown at 3. It will be understood that, within the scope of my invention, the construction is not restricted to the employment of wood for the inclosed strips 3, but that any other suitable analogous material may be used.

In the preferred arrangement, as herein shown, the frame 1 embodies first an outer strip 2 of fireproof material, within which

extends a wood bar or strip 3, another strip 2 of fireproof material being placed to extend against the opposite side of said wood strip 3. Against said last named strip 2 of fireproof material another wood strip 3 extends, and against the latter another strip 2 of fireproof material extends, and so on until the desired width of the rectangular main frame 1 is produced by the laminated and alternated strips 2 and 3.

In practice, a lamination consisting of four wood strips 3 and five fireproof strips 2 will generally afford the desired width for the frame 1, and preferably the wood strips are of greater width than the fireproof strips, it being only necessary to interpose thin fireproof strips between the wood strips to insure the fireproof protection of the latter. At all adjoining surfaces of the laminated strips 2 and 3, the strips are adhesively secured in connection by glue or any other suitable adhesive material, as shown at 4. At opposite sides of the main frame 1 are provided plates or sheets of fireproof material, corresponding to the fireproof character of the strips 2, and likewise formed of a rigid non-metallic composition undeformable by heat and these sheets 5 cover the entire outer faces of the main frame 1 at opposite sides and also preferably extend over the general area of the door. Those sides of the wood strips 3 of the laminated main frame 1 which are not covered and inclosed by the intervening fireproof strips 2 are thus covered and inclosed by the outer fireproof sheets 5, so that the wood strips 3 are entirely inclosed at all sides by the fireproof material constituting the intervening strips 2 of the main frame 1 and the side sheets 5 of the door structure. The extension of the side sheets 5 over the general area of the door, in spaced position by means of the intervening laminated main frame 1, provides an air space, as at 6, forming air chambers within the body of the door structure in the space surrounded by the frame 1, which enhances the fireproof quality of the door, as will be readily understood.

The inner faces of the side sheets 5 which respectively extend over the opposite sides of the laminated main frame 1 are adhesively secured to the latter by glue or other suitable adhesive substance extending over the adjoining surfaces, as at 7, and the inner faces of the side sheets 5 are preferably roughened, as at 8, to facilitate their ad-

hesive connection with the frame 1. To afford greater strength and enhance the resistance of the door structure to warping or strain in any direction, the side sheets 5 are also preferably directly and securely fastened to the laminated main frame 1, by means of screws or other suitable fastening devices. In the preferred construction for this purpose, the wood strips 3 are provided at suitable points with metallic threaded sockets, 9, which receive screws, 10, passing through openings, 11, provided in the side sheets 5. The metallic sockets 9 preferably extend entirely through the wood strip 3, on a plane transversely of the main frame 1, so that they receive in their opposite ends the screws entering from the side sheets 5 at the respective opposite sides of the door structure, though if desired separate metallic sockets may of course be employed at opposite sides of the wood strips 3.

In practice, the metallic sockets 9 may be simply driven in bores or openings provided in the wood strips 3, and the sockets are preferably provided with lateral flanges or webs, as at 12, which enter the sides of said bores and operate to retain the socket piece 9 in position and against turning under the screw action. To further enhance the strength of the door structure and brace it against strain, cross braces, as at 15, are preferably provided within the middle space surrounded by the main frame 1 and constitute a supplementary interior framework. These cross braces correspond in laminated construction to the main frame 1 and are correspondingly constituted by wood strips 3 at opposite sides of which extend fireproof strips 2, the strips being adhesively secured as hereinbefore set forth. The cross braces constituting the supplementary frame 15 may be arranged at suitable points, as desired, and extend preferably from one side portion to the other side portion of the main surrounding frame 1. It will be understood that the side sheets 5 also cover the cross braces 15 at opposite sides, and are adhesively secured thereto, as hereinbefore set forth, so that the wood strips 3 of the cross braces 15 are also entirely inclosed within the fireproof material constituted by the strips 2 and the side sheets 5. Said cross braces are preferably also correspondingly provided with metallic sockets 9, for the direct and secure fastening thereto of the fireproof side sheets.

From the foregoing description, it will be understood that my improved fireproof door structure provides a simple and inexpensive construction which, while exceedingly light, insures extreme rigidity and strength as well as durability and resistance to fire. The improved construction enables the employment, as the main element of construction, of strips of wood or other combustible

material, the latter being so laminated with the fireproof strips 2 and entirely inclosed at all sides by said strips 2 and by the fireproof side sheets 5 that the wood strips are entirely protected against the action of fire, it being understood that under action of extreme heat the inclosed wood strips could not burn, because of the surrounding fireproof material, which is rigid and non-metallic and undeformable by heat and at most would only char under high temperature, and that therefore the door structure is maintained and will not break down under the action of heat.

The side sheets 5 may be suitably paneled or ornamented at their exterior surfaces, to provide any desired finish to the door, or veneering may be applied to the surface of said side sheets as herein shown, to form the outer door surface. The veneering is preferably constituted by thin sheets of suitable material, as at 16, suitably paneled or ornamented, and adhesively secured, as at 17, to the outer surface of the fireproof side sheets 5, at opposite sides of the door. The veneering may also be provided at the outer edge of the main laminated frame 1, as shown at 18. When the external veneering is employed, as just set forth, the securing screws 10 may also pass through openings, 19, in the veneering sheets, to provide an additional means for securing the latter in position.

I do not desire to be understood as limiting myself to the detail construction and arrangement of parts as herein shown and described, as it is manifest that variations and modifications therein may be resorted to, in the adaptation of my invention to varying conditions of use, without departing from the spirit and scope of my invention and improvements. I therefore reserve the right to all such variations and modifications as properly fall within the scope of my invention and the terms of the following claim.

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

An improved fireproof door, comprising the framework 1 constituting the edge portion of the door and composed of the laminated and alternated bars 3 of wood or combustible material and the bars 2 formed of a rigid non-metallic composition undeformable by heat, said laminated combustible and non-combustible bars extending parallel with the edge of the door and being adhesively secured together at their opposing surfaces side by side in a rigid homogeneous structure, and the side plates 5 formed of a rigid non-metallic composition undeformable by heat and secured to the respective outer faces of said laminated edge framework, said side plates extending over the entire outer opposite faces of said laminated edge framework and over the door area be-

tween the opposite sections of said framework respectively at opposite sides of the door and thus bridging the space between the opposite sections of said edge framework, whereby said bars 2 of the laminated edge framework and the edge portion of said side plates 5 conjointly inclose and cover all the surfaces of said combustible bars 3 and the main portion of said side plates 5 incloses an internal air space ex-

tending between the opposite sections of said laminated edge framework, substantially as and for the purpose set forth.

In testimony whereof I have signed my name in the presence of the subscribing witnesses.

JAMES A. WHEELER.

Witnesses:

BESSIE COSTIGAN,
CHARLES A. TAUSSIG.