UNITED STATES PATENT OFFICE

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FIRE RETARDANT DOOR

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3 Claims. (Cl. 20—35)

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This invention relates generally to fire-retardant material, but more specifically to fire-retardant doors.

The main object of the invention resides in the provision of a fire-retardant door having a central panel novelty secured in the frame thereof whereby the door when heated by exposure to a high temperature and chilled as by a water jet or other fire extinguishing elements will not through warping or other conditions form gaps between the elements of said door to result in the formation of openings between the spaces or rooms separated by the door.

A further object of the invention resides in the provision of a fire-retardant door wherein the frame elements carrying metal sheetings are pre-fabricated and wherein the panel member carrying metal sheetings is also pre-fabricated.

A further object of the invention resides in the provision of a fire-retardant door wherein the sheeting of the pre-fabricated parts contribute to the formation of tight joints in the assembly thereof.

These objects and other incidental ends and advantages of the invention will hereinafter appear in the progress of the disclosure and as pointed out in the appended claims.

Accompanying this specification are drawings showing a preferred form of the invention wherein corresponding reference characters designate corresponding parts throughout the several views and wherein:

Figure 1 is a front view in elevation showing the fire-retardant door in assembled and operable condition.

Figure 2 is a sectional view of a portion of the door through the plane 2—2 of Figure 1.

Figure 3 is a fragmentary view in perspective showing a corner of the door.

Figure 4 is a sectional view of a portion of the door along the plane 4—4 of Figure 1.

Figure 5 is a sectional view of the upper end of a stile member shown in Figure 1 along the planes 5—5 thereof.

Figure 6 is an enlarged sectional view of the upper end of the stile member along plane 6—6 of Figure 2 showing the means of sheathing the end face thereof.

In accordance with the invention and the preferred form shown in the drawings, the fire-retardant door generally designated by numeral 10 is comprised of a frame and a central panel. The frame consists of a pair of stiles 11, 11a and a pair of rails 12 and 12a. A central panel 13 is provided to cooperate with the frame for junct

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tion therewith, said panel 13 being cut out on the sides and ends thereof to form a plurality of spaced and preferably evenly distributed tenons 14 adapted for forming joint elements with corresponding mortises 15 disposed in the inner walls of stiles 11, 11a and rails 12, 12a.

The door frame elements and the panel 13 are provided with non-inflammable sheetings such as sheet steel, said sheetings being applied independently to the door frame elements as each stile and rail and the panel before assembly.

Stiles 11, 11a and rails 12, 12a of the door frame are formed from heat non-conducting material such as wood, the mortises 15 cut out from the inner walls being formed in the conventional manner. The sheeting for the surfaces of the stiles and rails consists of the provision of a primary metallic channel 19 for the outer faces and portions of the adjacent side walls of the stiles and rails, said channel 19 terminating at the inner ends in pre-formed clincher heads 20.

Clincher heads 20 receive offset legs 21 of a metallo and channelled member 22 for the inner faces and the adjacent side wall portions of the stiles 11, 11a and rails 12, 12a. Heads 20 also receive offset legs 23a superposing legs 24 for anchorage purposes with heads 20, said legs 23a forming part of a third metallic sheathing channelled member 23, the sides of which at the inner ends abut the sides of channelled member 22 and the base of which at an inverted and intermediate channelled portion 24 rests on the base of channelled member 22 as best shown in Figure 4.

The side and bottom walls of inverted channelled portion 24 form the frictional engagement means for the perimetric edges and adjacent walls of panel member 13 at the areas adjacent the tenons 14. The base of channelled member 22 and the base of inverted channel portion 24 of channelled member 23 wherever positioned over the mortises 15 at the inner walls of stiles 11, 11a and rails 12, 12a are cut out to admit the tenons 14 of panel 13 within the said mortises all as best shown in Figure 2, the cut outs being indicated respectively by numerals 22a and 24a.

Panel 13 is also provided with metallic face sheetings 17, 17.

The end faces of the stiles 11, 11a adjacent the mortises 15 are sheathed preferably by flanged extensions or tongues 25 proceeding from the offset legs 24a of inverted channel portion 24 as shown in Figure 6. The full end faces of rails 12, 12a are sheathed by the plate 26.

Production of the door as described anticipates
the initial pre-cutting and forming of the stiles 11, 11a and rails 12, 12a including the formation of mortises 15; and the initial and pre-cutting of panel 13 including tenons 14. The tenons 16 and mortises 15 are the integrating means for the formation of said door while the sides of inverted channel portions 24 also frictionally hold the edges of panel 13 in place. All the component parts of the door such as the stiles 11, 11a, rails 12, 12a and panel 13 are separately sheathed prior to unification thereof by suitable assemblage. It is to be noted that the clincher heads 20 of channel 19 are compressed against the elements of channels 22 and 23 before engagement of mortises 15 and tenons 14, said compression integrating the sheathing about all the faces of the stiles and rails before assembly. We wish it understood that minor changes and variations in the material, integration, location and number of parts may all be resorted to without departing from the spirit of the invention and the scope of the appended claims.

We claim:

1. In a fire-retardant door including a panel member having the edges thereof provided with tenons, stile and rail frame members having arranged therein mortises to receive said tenons, fire-proof sheathing mounted on said panel and arranged to abut the mortise walls of the stile and rail frame members at the tenons of said panel, and fire-proof sheathing enveloping said stile and rail members said second mentioned sheathing having openings adjacent the mouths of the mortises.

2. In a fire-retardant door including a panel member having the edges thereof provided with tenons, stile and rail frame members having arranged therein mortises to receive said tenons, fire-proof sheathing mounted on said panel and arranged to abut the mortise walls of the stile and rail frame members at the tenons of said panel, fire-proof sheathing enveloping said stiles and rail members said second mentioned sheathing having openings adjacent the mouths of the mortises and a fire-proof gripping member secured to said second mentioned sheathing to frictionally engage the sheathed front and rear walls of the said panel inwardly of said tenons, the said gripping member having openings in registration with the said sheathing openings to permit penetration of the tenons into the mortises.

3. In a fire-retardant door, a central non-metallic panel having spaced tenons along the edges thereof, metallic sheathing on the front and rear faces of said panel, a non-metallic frame comprised of similar non-metallic stiles and rails each provided at the inner edges with spaced mortises for engagement with corresponding tenons of said panel, metallic sheathing for the external faces of the stiles and rails and provided with openings at the inner walls opposite said mortises, an auxiliary metallic reception sheathing member for each of said stiles and rails secured to the sheathing thereof and having an inverted channel formed at the base thereof, the base of said inverted channel abutting the first mentioned sheathing inner walls and having openings in registration with the first mentioned sheathing openings for penetration therethrough of said tenons, the side walls of said inverted channel frictionally engaging the sheathed front and rear faces of said panel and the base of said inverted channel receiving the edges of said sheathed panel adjacent the tenons.

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