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FIRE-RETARDING DOOR

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Fig. 1

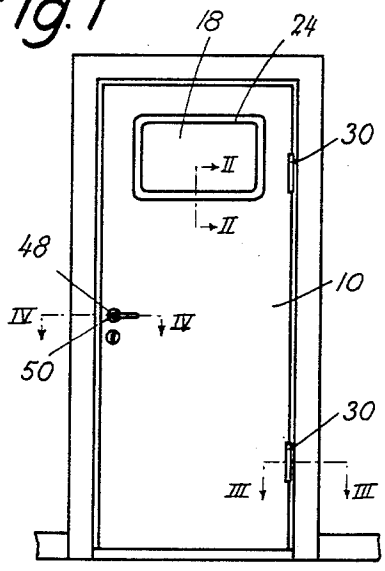


Fig. 2

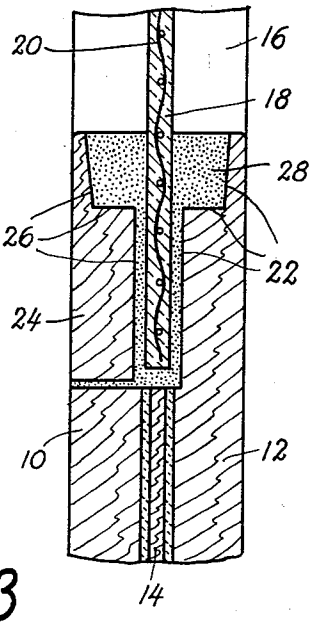


Fig. 3

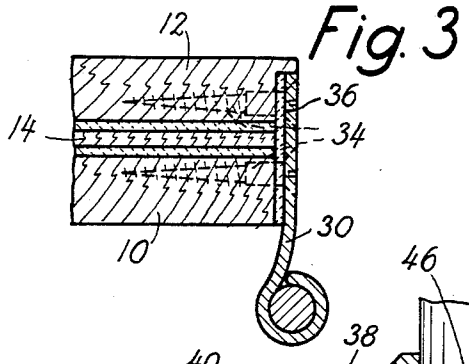
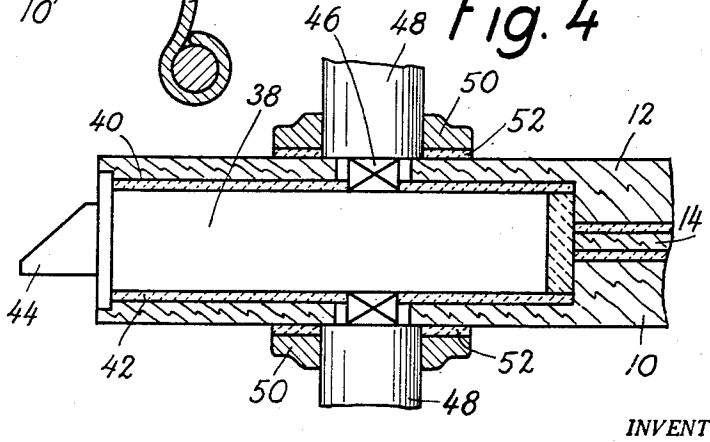


Fig. 4



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FIRE-RETARDING DOOR

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1 Claim. (Cl. 20—35)

The invention relates to a fire-retarding door made of a board, consisting of wooden material wherein incombustible material has been inlaid.

When the incombustible material has been inlaid in an expedient manner in the wooden material of the board, such door will be capable of resisting a fire for a rather long time, so that it can be used as a front door for flats in multi-storied houses so as to prevent a fire from spreading rapidly from the staircase to the flats or vice versa. Furthermore the door can be designed without difficulties in such a way that it hardly can be distinguished from an ordinary door. Also public buildings and hospitals will provide an extensive field for the use of such a door.

The board constituting the door will be capable of resisting a fire for half an hour or more, which has been ascertained by tests carried out in accordance with the international norms. When using the board as a door in connection with dwelling flats and elsewhere as mentioned in the foregoing, it would be expedient if also the furnishing ordinarily used for doors, such as hinges, locks, panes and the like fittings of heat-conducting material, could be used without the formation of such furnishing of paths, by which the heat and consequently the fire can easily advance, and also that especially the insertion of panes in the door should be possible, all in substantial accordance with the prevailing practice. By the present invention this is made possible.

In accordance with the above stated the main object of the invention is to provide a fire-retarding door for dwelling houses, public buildings and hospitals, which has a neat appearance and fufills aesthetical requirements.

Another object of the invention is to indicate a door of the above kind which can be provided with ordinary fittings of heat-conduction material without impairing its ability to resist fire.

A further object is to provide a fire-retarding door which can be produced at approximately the same expenses as an ordinary wooden door.

With the above and other objects in view the present invention consists in the combination and arrangement of parts, hereinafter more fully described, illustrated in the accompanying drawings and more specifically pointed out in the claims, it being understood that changes may be made in the form, size, proportions and details of construction without departing from, or sacrificing any of the advantages of the invention.

The invention will be explained in detail in the following, reference being had to the drawing, wherein:

Fig. 1 is a side view of a door with surrounding frame,

Fig. 2 is a section at a larger scale through part of the door at an aperture, wherein a pane has been inserted, the section being taken on the line II—II in Fig. 1,

Fig. 3 is a section through the door on the line III—III in Fig. 1, where a hinge is provided, and

Fig. 4 is a section through the door on the line IV—IV in Fig. 1, where a lock with handles is provided.

In all the embodiments shown, the door is made of

two layers of wood **10** and **12**, between which a protection **14** against burning through is inserted, see Figs. 2–4. This protection may e.g. consist of heat-insulating incombustible material, preferably asbestos, arranged in the wood in two layers, or zones, in such manner that in each layer, or zone, bodies of wood are enclosed by said material, the bodies of wood in one layer being displaced in relation to those in the other layer. Between these two layers or zones is interposed a continuous layer of wood. Hereby is obtained that the connection between adjoining layers always can be performed by gluing wood to wood so that no cleavage will occur between the individual layers, even under intense influence of heat. In case of fire at one of the sides of the door, the spreading of the fire through the door will be retarded or stopped by the protective layer **14**.

In the door is provided an aperture **16**, wherein there is inserted a pane **18**, consisting of glass with inlaid wire mesh **20**, see Fig. 2. Along the circumference of the aperture **16** a rebate has been made with faces **22** of special shape, as appears from the figure. The pane is secured by means of a list **24** extending along its margin. The faces **26** of the said list, which confronts the pane, have a shape similar to that of the faces **22**. The space formed between the faces **22** and **26** is filled with an incombustible material **28**, which may e.g. be a slurry of asbestos fibres, the fluid component of which is water-glass. The latter acts as a binding agent between the asbestos fibres themselves and betwen the fibres and the wood. The pane **20** is so inserted in the material **28** that its margin on either side and its edge are surrounded by the material. It is expedient that the pane **18**, as shown, is in the same plane as the protective layer **14**. By shaping the faces **22** and **26** as indicated above is obtained that the thickness of the incombustible material **28** is increased at the edge of the wood, which limits the aperture **16**, whereby the resistance against fire is increased.

The presence of water-glass in the incombustible material has proved to provide a good adhesion of the said material to the wood. Therefore, it is not necessary to secure the list **24** by means of screws. When the wood at one or the other side of the pane margin burns away, the incombustible material will remain undamaged, and the connection of this material with the wood on the opposite side will be secured by the content of water-glass, so that the pane does not fall out.

The door will normally be covered with veneer on either side. For aesthetical reasons it may be expedient to place a layer of veneer also on the incombustible material **28** at the aperture **16**. This has not been shown in the figure.

Instead of asbestos, other refractory materials, e.g. inorganic substances, preferably of mineral origin, such as mica, kieselguhr, kaolin, and fire-clay, may constitute the solid component of incombustible material. The refractory material should have a high capacity for heat insulation.

In Fig. 3 a hinge flange **30** is attached to the edge of the door by means of screws **34**. Between the hinge flange and the material of the door, a strip **36** of incombustible material, e.g. asbestos, has been inserted.

In Fig. 4 the numeral **38** denotes a door lock, which is received in a recess **40** at the edge of the door. The recess is so dimensioned that space is provided for a lining **42** of incombustible material between the lock **38** and the surrounding wood. This material **42** may consist of asbestos sheets or asbestos strips or of an asbestos slurry as mentioned in connection with Fig. 2. In Fig. 4 **44** designates the foremost end of the bolt, which is actuated in the usual way by turning a quadrangular bar

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46, to the ends of which the door handles 48 have been attached.

The numeral 50 denotes annular rosettes screwed on to the door in support of the handles 48. If said rosettes consist of metal, rings 52 of asbestos sheet may be inserted thereunder.

The invention may find other applications than those illustrated in connection with the shown embodiments. It is preferably to be used for all such fittings or other parts of heat-conducting material, which occupy space between the two side faces of the door or extend into the chink between the door and its surrounding frame.

The wooden material of the door may be natural wood as well as material substituting such food, e.g. wood fibre board.

It is to be understood that the expression "furnishing," used in the foregoing specification and in the appended claims, covers all such parts of heat conducting material, which are suitable or necessary for the use of the door as such, such as hinges, locks, panes or the like.

I claim:

A fire-retarding door consisting of two layers of wooden material forming the side faces of the door, a non-metallic protective material for protection against fire arranged centrally between said layers of wooden material, said non-metallic material incorporating incombustible heat-insulating material extending to the edges of the door, hinges of metal connected to one edge of the door, strips of incombustible heat-insulating material inlaid between said hinges and said edge of the door, and a door lock of metal inserted in a recess at the opposite edge of the door, said lock being embedded in incombustible heat-insulating material.

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