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DOOR AND THE LIKE

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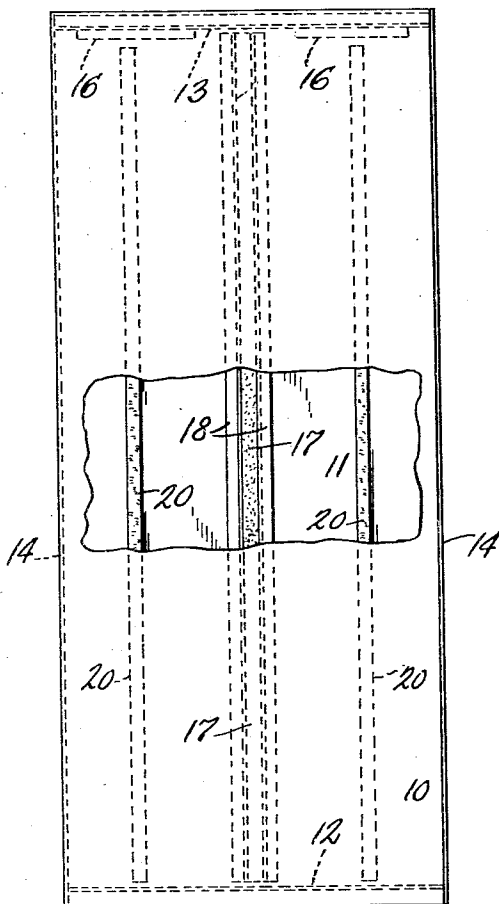


Fig. 1.

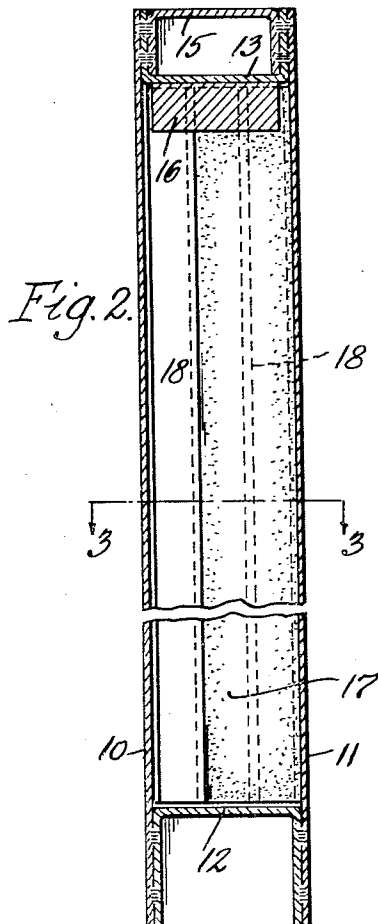


Fig. 2.

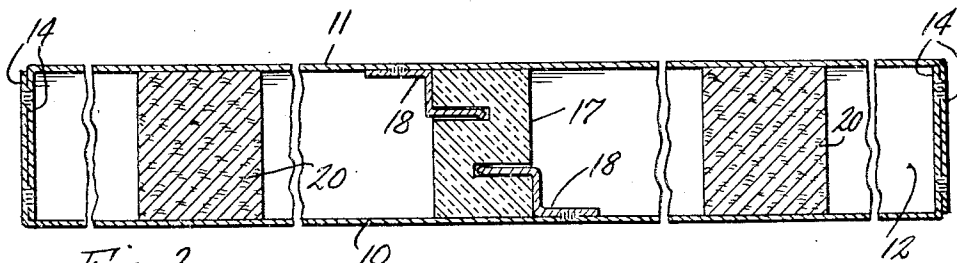


Fig. 3.

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DOOR AND THE LIKE

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3 Claims. (Cl. 189—46)

This invention relates to doors, and more particularly to improvements in hollow metal doors of the flush type such as used, for instance, as elevator doors, fire doors or barriers for isolating a compartment or space to reduce fire hazards or to lessen sound transmission from one room or space to another.

Such doors, as heretofore commonly constructed, have spaced apart, opposite metal face plates between which are secured one or more metal flanged or channel bars or spreaders for retaining the face plates in the intended spaced relation and strengthening or stiffening the door. The spreader bar or bars may be secured, as by spot welding or otherwise, on the inner face of one face plate before assembling the plates in the door, but according to the practice heretofore commonly followed, the other face plate at least, is secured to the spreader or spreaders by flash welding. This frequently results in badly warping the plate or burning its outer surface so as to leave welding pits or depressions, and considerable time and labor are required to fill such depressions or cavities and produce a smooth, flat finished surface on the plate.

One object of this invention is to provide a hollow door of novel construction which obviates the necessity for such filling and finishing operations and simplifies and reduces the cost of manufacture of the door. Another object is to produce a door of a novel construction which increases its efficiency in retarding the transmission of either or both heat and sound through the door.

Further objects and advantages of the invention will appear from the following specification of the preferred embodiment of the invention, shown in the accompanying drawing, and the novel features of the invention are set forth in the appended claims.

In said drawing:

Fig. 1 is a front elevation of a door embodying the invention, a portion on one face plate being broken away.

Fig. 2 is a broken, vertical, sectional elevation thereof on an enlarged scale.

Fig. 3 is a broken, horizontal section thereof on line 3—3, Fig. 2.

The door comprises opposite, parallel face plates 10 and 11 which are spaced apart and may be secured or connected to each other at the edges of the door by suitable edge members. In the construction illustrated in the drawing, these face plates are welded at their lower ends to a bottom cross bar 12 of channel shape arranged

between the plates with its flanges extending downwardly and at their upper ends the plates are welded to a similar top cross bar 13 arranged with its flanges extending upwardly. At their opposite side edges the face plates are connected by inbent flanges 14 on the plates which overlap and are spot welded to each other. The top edge of the door shown is reinforced by a filler bar 15 and door hanger blocks 16. The invention, however, is not concerned with the manner of securing or connecting the face plates at the edges of the door, and they may be secured at their edges in any usual or suitable way.

Between the edges or marginal portions of the door, the plates are held apart and stiffened by means of one or more non-metallic spreaders or members 17. The door shown has one such spreader arranged lengthwise or vertically in the middle portion of the door and extending practically to the full height of the door, but one or more spreaders may be employed, as may be required, depending upon the size or width of the door. The spreader 17 may be made of material, such for example as hard asbestos board which is non-flammable or fireproof, and also sound-deadening, but for doors which are not required to have the spreaders made of non-combustible material, they may be made of other suitable material, such as wood, compressed fibrous material or other composition building material which has the necessary sound-deadening or insulating characteristics. Each spreader 17 is secured in place so as to tie the opposite face plates of the door together against spreading or separation, as by metal bars or members 18 fixed to the inner sides of the face plates and connected to the spreader 17. As shown, two Z-shaped bars 18 are arranged at opposite sides of the spreader with one secured, as by spot welding, to the inner side of one face plate, and the other similarly secured to the other face plate, and these bars have flanges which project towards each other into narrow grooves formed in the opposite edges of the spreader. In this way the spreader is secured in place between the face plates and holds them apart, and is also tied to each face plate so that the face plates are prevented from spreading or separating from the spreader. The spreader is thus securely connected to and provides a firm bond between the face plates and constitutes a stiffening and strengthening means for the door between the marginal portions thereof, but there is no metal member extending from one to the other of the

face plates which can function as a conductor for heat or sound from plate to plate.

The securing bars 18 for the spreader can be spot welded on the inner surfaces of the face plates 10 and 11 before the latter are assembled in the door, and since the spot welding can be performed expeditiously and inexpensively by a spot welding machine and the spot welds do not pit or deface the exterior surfaces of the face plates, this means of securing the spreader in place obviates the labor and expense for filling and finishing the outer surfaces of the face plates, which has been heretofore necessary where metal spreaders, secured by flash welding to at least one of the face plates, have been employed. The flanges of the securing bars 18 can be engaged in their grooves in the spacing member, as by slipping the flanges endwise into the grooves in the spacing member, or by moving them laterally into the grooves before the face plates of the door are connected to each other at their edges.

In addition to the spreader or spreaders 17 secured in place between the face plates, as described, other spacing inserts or members 20 of cork or other suitable sound-deadening material may be used between the face plates of the door in the areas between the edges of the door and the spreaders, or between the latter. These inserts 20 may, if desired, be secured in place as by gluing them to the inner surfaces of the face plates.

We claim as our invention:

1. A door or the like comprising opposite spaced apart metal face plates which are secured in place at the edge portions of the door, and means for holding said plates in the intended spaced relation intermediate the secured edge portions of the plates, comprising metal securing bars one attached to the inner side of each face plate, and a separate spreader bar of non-metallic sound-deadening material arranged between the face plates and holding them spaced apart, said securing bars extending parallel with said spreader bar and having lengthwise tongues engaging complementary tongues on the spreader bar by which the face plates are tied together against separation, each spreader bar tongue having a thickness greatly exceeding that of said securing bar tongues, whereby the spreader bar provides a strong tie connection for said face plates.

2. A door or the like comprising opposite spaced apart metal face plates which are secured in place at the edge portions of the door, and means for holding said plates in the intended spaced relation intermediate the secured edge portions of the plates, comprising metal securing bars one attached to the inner side of each face plate, and a separate spreader bar of non-metallic sound-deadening material arranged between and abutting against the inner sides of the face plates for spacing them apart, said securing bars extending parallel with the spreader bar and each having a longitudinal side flange removably engaging in a longitudinal groove in a side of the spreader bar, whereby the face plates are tied together against the spreader bar, said groove being remotely spaced away from the face plate to which the securing bar having the related flange is attached by a distance greatly exceeding the thickness of said securing bar flange, thereby providing a thick, strong tongue portion on the spreader bar between said flange and said face plate.

3. A door or the like comprising opposite spaced apart metal face plates which are secured in place at the edge portions of the door, and means for holding said plates in the intended spaced relation intermediate the secured edge portions of the plates, comprising securing bars one attached to the inner side of each face plate, and a separate spreader bar of non-metallic sound-deadening material arranged between and abutting against the inner sides of the face plates for spacing them apart, said securing bars extending parallel with and at opposite sides of the spreader bar and having longitudinal side flanges removably engaging in longitudinal grooves in opposite sides of the spreader bar, whereby the face plates are tied together against the spreader bar, each of said grooves being remotely spaced away from the face plate to which the securing bar having the related flange is attached by a distance greatly exceeding the thickness of said securing bar flange, thereby providing a thick, strong tongue portion on the spreader bar between said flange and said face plate.

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