Sept. 24, 1940. A. E. WATERMAN 2,215,894

IRONCLAD DOOR

Filed June 11, 1938 2 Sheets-Sheet 1

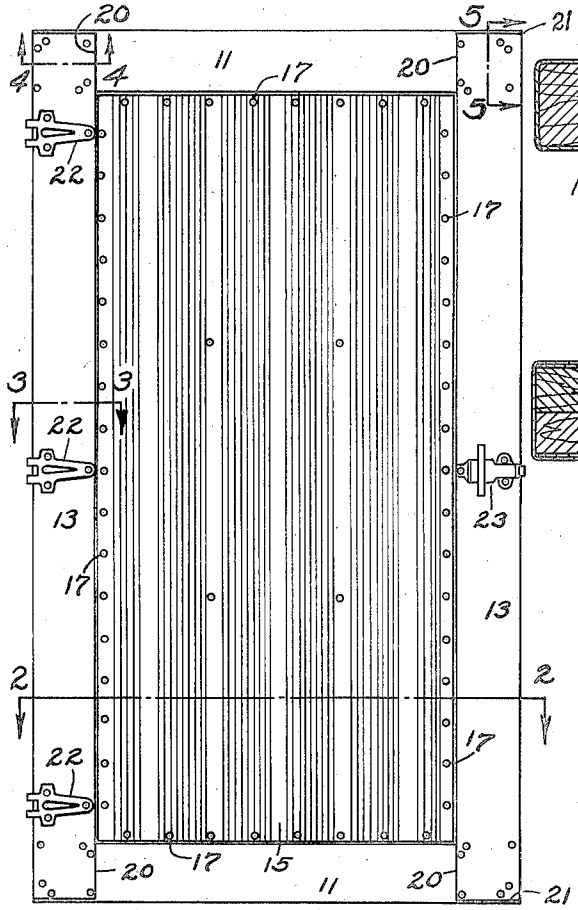


FIG. 1

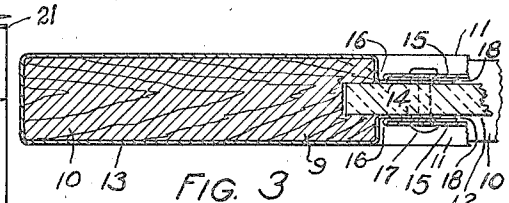


FIG. 3

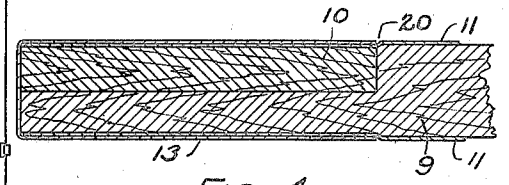


FIG. 4

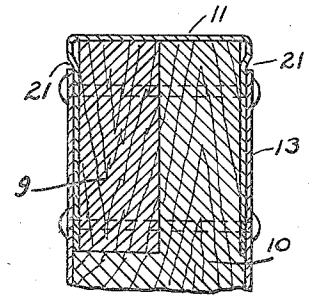


FIG. 5

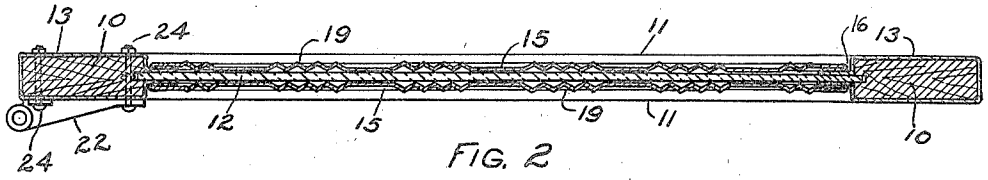


FIG. 2

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IRONCLAD DOOR

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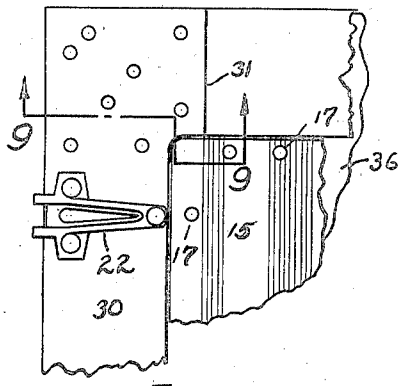


FIG. 6

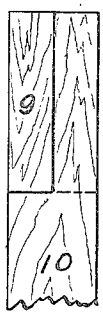


FIG. 8

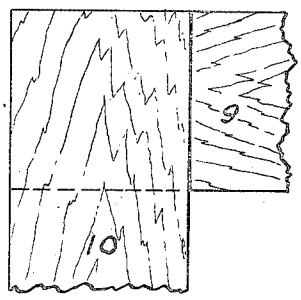


FIG. 7

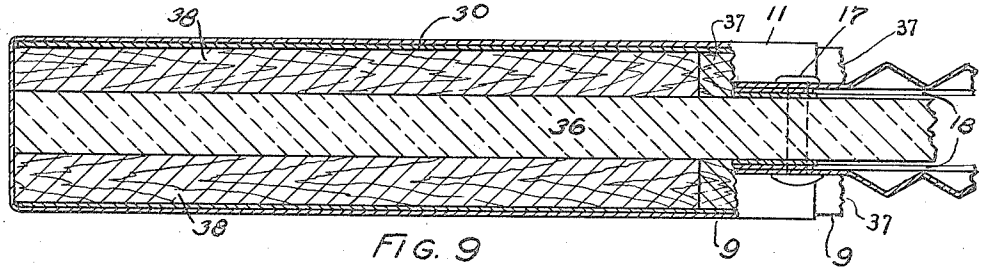


FIG. 9

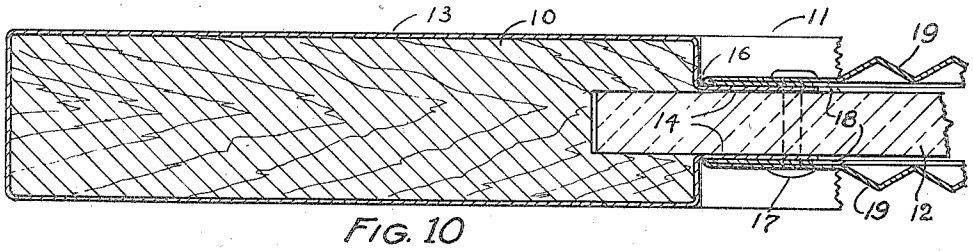


FIG. 10

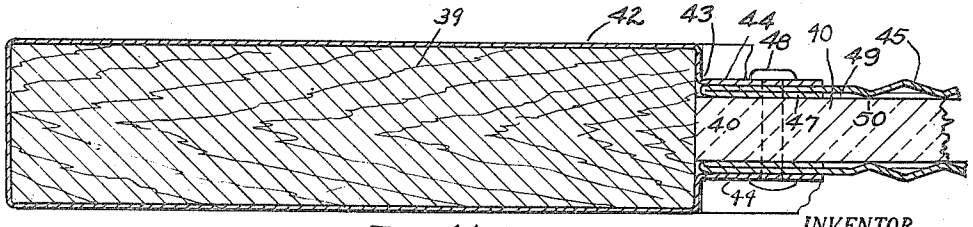


FIG. 11

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Patented Sept. 24, 1940

2,215,894

UNITED STATES PATENT OFFICE

2,215,894

IRONCLAD DOOR

Arthur E. Waterman, Fort Atkinson, Wis., assignor to James Manufacturing Company, Fort Atkinson, Wis., a corporation of Wisconsin

Application June 11, 1938, Serial No. 213,126

2 Claims. (Cl. 20—35)

The present invention relates to doors, particularly applicable to farm buildings for housing livestock and an object of the present invention is to provide a door which is light, strong, semi fireproof and easily manufactured at low cost.

One of the objects of the present invention is to provide a door which is designed to retard heat transfer from the exterior to the interior or vice versa.

A further object of the present invention is to provide a door which has a pleasing appearance and can be made to harmonize with the exterior of a building having outside metal sheathings.

To these and other useful ends my invention consists of parts and combinations of parts, or their equivalents, as hereinafter described and claimed and shown in the accompanying drawings in which:

Fig. 1 is a front elevation of the preferred form of my invention.

Fig. 2 is a transverse sectional view taken on line 2—2 of Figure 1.

Fig. 3 is a transverse sectional view taken on line 3—3 of Figure 1.

Fig. 4 is a transverse sectional view taken on line 4—4 of Figure 1.

Fig. 5 is a transverse sectional view taken on line 5—5 of Figure 1.

Fig. 6 is an enlarged fractional elevation of a modification.

Fig. 7 is an enlarged fractional elevation illustrating the preferred form of joint between the frame members.

Fig. 8 is an end view of the joint shown in Figure 7.

Fig. 9 is a transverse sectional view taken on line 9—9 of Figure 6 showing a modified form of frame and panel members.

Fig. 10 is an enlarged fractional sectional view as shown in Figure 2.

Fig. 11 is a sectional view of a modification.

As thus illustrated, the preferred form of my invention is illustrated in Figures 1 to 5 inclusive and Figures 7, 8 and 10 and comprises side door frame members 10—10 and upper and lower frame members 9—9. Members 9 and 10 are preferably made from wood pieces which are joined together at their ends as illustrated in Figures 7 and 8.

I provide a panel 12 which is adapted to fill the space within the frame and occupy grooves on the inner surface of the frame members as clearly illustrated in Figures 3 and 10 and is preferably made of insulating board or the like. I provide metal sheathings 11—11 which are adapted to surround frame members 9 and sheathings 13—13 which are adapted to surround members 10 as clearly indicated in Figures 1, 2, 3 and 10. The inner edges of members 11 and 13 are bent over the inner edges of members 9 and 10 and then inwardly a short distance as at 14 so as to embrace panel 12 (see Figure 10).

I provide panel sheathing members 15—15 which fill the space within the frame, the edges being preferably folded as at 16 terminating adjacent the inner edge of member 14. The edges of sheathing members 15 rest preferably on the outer surface of members 14 and are secured to the assembly preferably by means of spaced rivets 17, these rivets passing through the assembly as illustrated to thereby form a strong and rigid joint between the frame and panel.

It will be noted that members 15 are separated from panel 12 by a dead air space as at 18. Panel sheathings 15 are corrugated preferably as illustrated in Figure 2 wherein the corrugations 19 are V-shaped as illustrated and preferably spaced in groups of two near the edges of the panel and four in each of the other groups, the groups being spaced preferably as illustrated in Figures 1 and 2.

Thus it will be seen that a considerable dead air gap is provided between the panel sheathings and the panel thereby to add to the insulating properties of the door.

It will be noted by referring to Figures 1 and 4 that sheathings 13 embrace the ends of sheathings 11. That is, at the frame joints which are illustrated in Figures 7 and 8 there is a double thickness of sheathings on each side. In order to make a smooth frame face, members 11 are offset as at 20 (see Figure 4). Members 11 are also offset as at 21. In order to accomplish the desired results, members 10 are made slightly narrower than members 9 and the lap joint, including the double thickness of sheathings are bound together by means of a number of rivets as clearly illustrated in Figure 1.

Thus it will be seen that the entire frame of my improved door is completely inclosed by sheathings, that the panel is embraced for a short distance by the frame sheathings and that this assembly is embraced on opposite sides by the edges of the panel sheathings and secured together by means of spaced rivets or bolts forming a very rigid structure.

As thus constructed, the side frame members of the door provide a suitable surface upon which the hinges and latches may be secured by means of bolts or otherwise. In Figure 1 I have illus-

trated three half hinges 22 and a latch mechanism 23 as being secured to the frame by means of bolts 24, which, it will be noted, (see Figure 2) extend entirely through the frame structure thus the door is not only simple, strong and neat in appearance, but also provides a suitable background upon which to fasten the hinges and latches.

In Figures 6 and 9 I illustrate a modification wherein the panel 36 is made the full size of the door and the frame is formed by means of strips 37 and 38 which are secured to the panel as illustrated. Strips 38 form the side frame members and strips 37 form the top and bottom frame members. In this design, side frame member sheathings 30 terminate as at 31. The remainder of the inner edges of members 30 are bent down so as to form flanges which are similar to flanges 14 in the other figures. This sheathing design may also be used on the frame members as illustrated in the other figures, the advantage being that the sheathing 30 extends a short distance over the joint formed by the splice in the frame members.

In Figure 10 I illustrate in enlarged form the preferred structure as shown in Figures 2 and 3. In Figure 11 I illustrate a structure which is similar to that shown in Figures 1, 2 and 3 except that the panel 40 is not mortised into the frame members. In this design the side frame members are designated by reference numeral 39 and the panel is designated by numeral 40 the side frame member sheathing by numeral 42 having a bend as at 43 and inwardly extending flanges 44. Panel sheathings 45 are identical to the sheathings illustrated in the other figures except that their edges are placed under flanges 44 and the entire structure held together by means of rivets 48, the dead air space 49 being somewhat less than dead air space 18, air space 49 being formed by the folded ends 47 of the sheathing panel. This space is such as will cause the apex of the corrugations to contact the panel as at 50.

Clearly many minor details changes may be made without departing from the spirit and scope of my invention as recited in the appended claims.

Having thus shown and described my invention, I claim:

1. A door of the class described, comprising a frame formed from four rectangular in cross section strips of wood, the ends being lapped forming a rectangular frame, a panel having considerably less thickness than the thickness of the frame and adapted to close the opening therein, four U-shaped metal sheathings each adapted to embrace the outer edge and sides of a frame member for the full length or width of said frame, the sides of adjacent ends of said U-shaped sheathings being lapped one over the other, a number of bolts or rivets adapted to bind the lapped parts of said sheathings and frame together, the inner edges of said frame sheathings being folded around the inner corners of the frame members and then being bent inwardly forming relatively narrow flanges which lie on opposite sides of said panel, panel sheathings positioned on opposite sides of the panel their edges lying on said flanges, said flanges, panel sheathings and panel being secured together by spaced bolts or rivets.

2. A door of the class described, comprising a rectangular frame having a panel therein of considerably less thickness than the thickness of the frame, four U-shaped metal sheathings each adapted to embrace on outer edge and sides of a frame member for its full length or width, the sides of adjacent ends of said U-shaped sheathings being lapped one over the other, a number of bolts or rivets adapted to bind the lapped parts of said sheathings and frame together, the inner edges of said frame sheathings being folded around the inner corners of the frame members and then being bent inwardly forming relatively narrow flanges, panel sheathings positioned on opposite sides of the panel their edges lying against said flanges, said flanges, panel sheathings and panel being secured together by spaced bolts or rivets.

ARTHUR E. WATERMAN.