

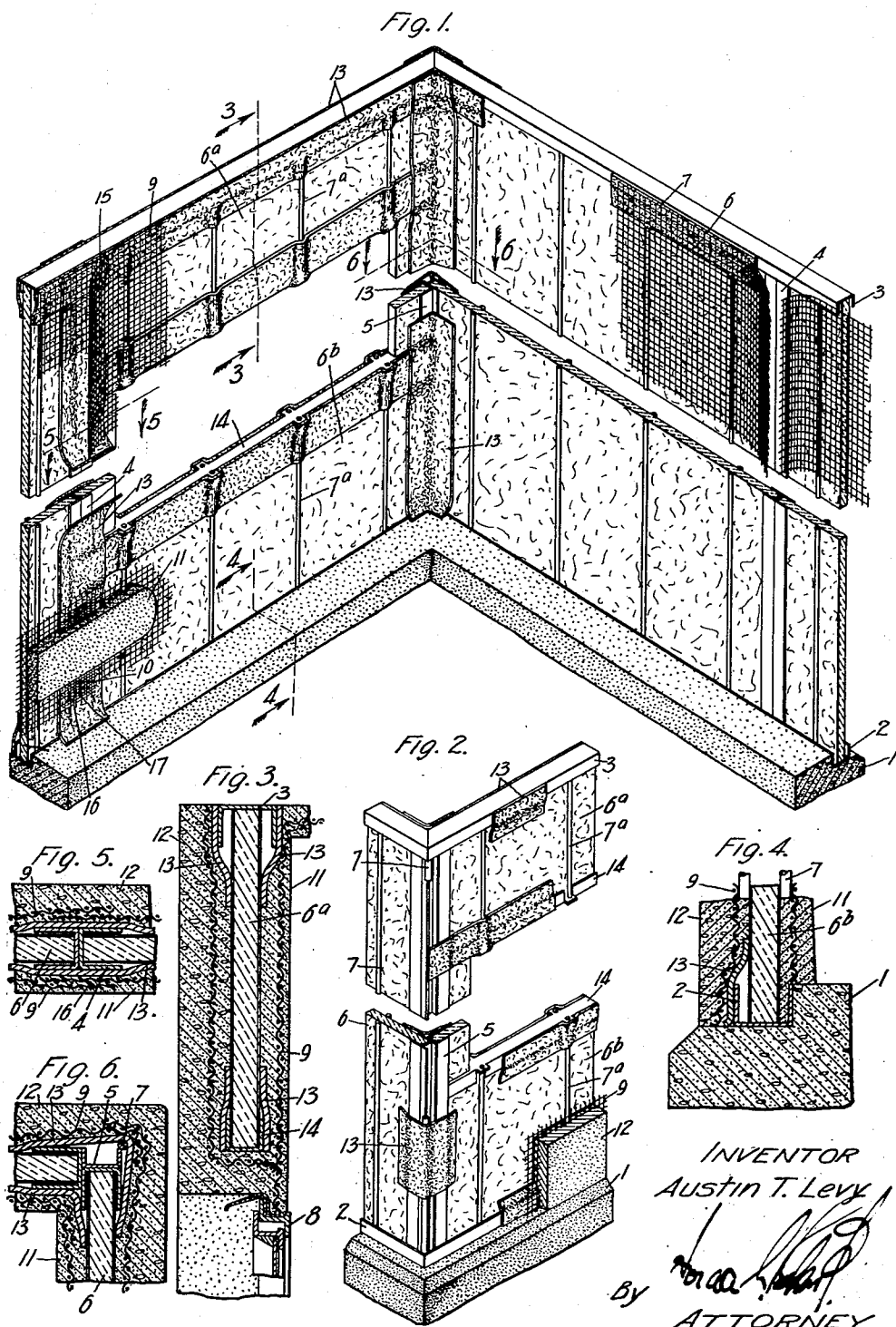
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PREFABRICATED BUILDING

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PREFABRICATED BUILDING

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8 Claims. (Cl. 72-16)

My invention relates to prefabricated buildings.

In such buildings, comprising walls of insulating panel boards mounted in panel apertures in a steel frame of channel construction, and wherein the opposite faces of the panels and frame are covered with clinched coatings of cementitious material spaced from the panel board by reinforcing and spacing metal rods connected in or to top and bottom frame channels, difficulty has in some instances been encountered due to dampness of the inner wall surface. Upon study of this difficulty, I find that this dampness occurs along metal parts of the wall structure. However, it does not follow the complete outline of the metal part, instead being confined to those frame members which extend from the outside of the wall through to the inside of the latter. Moreover, it appears only under those weather conditions when the outdoor temperature is substantially lower than the temperature within the house. From these facts, I have determined that the dampness is due to condensation resulting from a marked difference in the temperatures acting on the opposite faces of these connected metal parts of the frame.

My invention has for its object to eliminate such difficulties. A further object is to provide an improved means for preventing the marked difference in temperature acting on the inside and outside metal surfaces in such manner as to prevent condensation on the inside cementitious surface of the building. A still further object of my invention is to provide means for obtaining these results, which may be readily applied to the wall and in process of erection and with a minimum of expense and difficulty. These and other objects and advantages of my improvements will, however, hereinafter more fully appear.

In the accompanying drawing, I have shown for purposes of illustration, one embodiment which my invention may assume in practice.

In the drawing,—

Figure 1 is a perspective view of the inside of a wall of the construction in question, portions of the same being shown in various stages of completion and certain parts being broken away to facilitate illustration;

Fig. 2 is a detail perspective view of a portion of the outside of the wall shown in Figure 1;

Fig. 3 is a sectional view on line 3-3 of Figure 1 as it would appear in the completed wall;

Fig. 4 is a like section on line 4-4 of Figure 1;

Fig. 5 is a like section on line 5-5 of Figure 1, and

Fig. 6 is a like section on line 6-6 of Figure 1.

In this illustrative construction, the wall includes a foundation 1 and a steel frame thereon including a bottom channel 2, top channel 3, intermediate channel studs 4 and a channel corner stud 5, and insulating panel units 6, the latter being mounted in a usual manner in the panel apertures provided and carrying reinforcing and anchoring material spacing rods 7. Certain of these panels 6 also include door and window closures, a window frame 8 being shown for example in one of the same, and this panel comprising top and lower panel sections 6a, 6b connected with the window frame, and also if desired to adjacent studs, to form a unit and each carrying shorter rods 7a corresponding to the rods 7. Here, while none of these panels 6 per se comprise my present invention, it will also be understood that all of these panel units 6 carry on their opposite faces separate sheets of anchoring material, such as wire mesh 9, suitably spaced from the panel boards by the rods 7 and attached thereto and adapted to overlap at their lateral edges over the studs and to be attached together after assembly, by lacing or sewing, as indicated at 10. Also, it will be understood that in the completed wall, suitable continuous coatings of cementitious material, such as plaster 11 on the inside of the wall and stucco 12 on the outside thereof, are disposed over the entire area of the anchoring material 9, including the overlapped portions mentioned, while being clinched by the anchoring material to the several units into a unitary wall.

In my improvements, I insulate the metal frame in an improved manner. More particularly, I provide insulating means on metal parts which would otherwise make it possible for changes of temperature to be communicated by conduction between inner and outer metal surfaces of the wall frame. Preferably, the insulating means provided comprise strips of suitable insulating material such, for example, as a composition of woolen felt or the like, although, if desired, ends of woolen cloth may be utilized. Also, this insulating material is preferably applied on both surfaces of any metal part which extends through the wall frame. Thus, I provide suitable strips of felt or other suitable material 13 which cover both side walls of the upper channel 3 and preferably protrude

slightly below the latter walls, suitably attaching these strips to the metal of the channels or to the insulating board of the panel by adhesive or tacks, respectively, or both of these means.

5 Further, I also apply similar strips 13 over both faces of the several intermediate and corner studs 4 and 5 and similarly cover the marginal portions of the window aperture, i. e. the adjacent edges of the panels 6a and 6b which, respectively, overlie and underlie the aperture for the window frame 8, and which herein also include channel members 14 extending to both sides of the wall surface. Also, where as herein, the rods 7a on the panel sections 6a, 6b have ends received in projections on the flanges on the transverse closure aperture forming channels 14 connected between adjacent studs, I also lay the felt over both the members 14 and these rod ends. When the lower channel 2 has the foundation extending to the top thereof on the inside, I also cover the outside wall of this channel. Thus, it will be observed that all exposed outside and inside metal members, other than intermediate portions of the rods, are covered with felt, and that each metal member having one face on the outside wall and another connected face on the inside wall, has each face thereof insulated by the felt.

In applying my improved insulating means to the through connected metal frame members, after the panel unit is assembled with the anchoring material thereon, the anchoring material carried on each face of the panel unit and forming a part thereof, is rolled out along its edges, as indicated at 15, to expose the metal surfaces to be covered. Then, the insulating material is applied to these exposed metal parts and suitably attached as above described, in such manner as to retain the strips of felt in the desired position. Thereupon, the edges of the anchoring material are rolled back into its original position with the edges thereof overlapping, as indicated at 16, and these overlapping portions are suitably connected as necessary by so-called lacing or sewing with wire or the like, as indicated at 17. Thereupon, the anchoring material being again in the relation it would have occupied previous to the application of the felt or other strips, the cementitious inner and outer coats 11, 12 are applied in the usual manner.

As a result of my improved construction, it is found that, due to the action of the strips 13 on the through connected metal frame members, the inner walls are freed from objectionable condensation causing dampening of the plaster thereof. Further, it will be noted that while the outer strip tends to keep up the temperature of the outer portion of the through connected metal members, and thereby reduce the cooling of the connected inner portion of these members, the inner insulating strips also act to minimize the transmission of heat from the interior of the house to the outer metal surfaces. Also, it will be evident that when the insulating strips are covered with the anchoring material, the latter continues to perform its anchoring function, while the whole structure is united into unitary form by the usual cementitious inner and outer plaster and stucco coatings.

It will here of course be understood that the thickness of the felt or other strips utilized, will vary with the weather extremes to be met, but in practice, I find that thicknesses of from about one-quarter to three-eighths of an inch are satisfactory. Further, it will, of course, be under-

stood that in lieu of a single thickness of felt, for example, several thicknesses of other material such as woolen cloth may be provided, and also that other materials than woolen felt or woolen cloth may be used in lieu thereof, if desired, although such woolen materials are preferred since they enable the strips to be relatively thin and thus minimize problems in connection with the overlying anchoring material.

While I have in this application specifically described several embodiments which my invention may assume in practice, it will be understood that the same are shown for illustrative purposes, and that the invention may be modified and embodied in various other forms without departing from its spirit or the scope of the appended claims.

What I claim as new and desire to secure by Letters Patent is:—

1. In a prefabricated building, a wall structure comprising a metal frame presenting panel apertures, panel means in said apertures, a clinched cementitious coating overlying said panel means and frame, and condensation preventing means between portions of said frame and said clinched coating.

2. In a prefabricated building, a wall structure comprising a metal frame presenting panel apertures and having connected portions on the opposite faces of the wall frame, panel means in said apertures, a clinched cementitious coating overlying said panel means and frame, and condensation preventing means between said portions of said frame and said clinched coating and substantially conforming to said portions.

3. In a prefabricated building, a wall structure comprising a metal frame presenting panel apertures and having connected portions on the opposite faces of the wall frame, panel means in said apertures, clinched cementitious coatings overlying opposite faces of said panel means and frame, and condensation preventing means between said portions and said clinched coatings and substantially conforming to said portions and overlying opposite faces thereof.

4. In a prefabricated building, a wall structure comprising a metal frame presenting panel apertures and having connected portions on opposite faces of the wall frame, panel means in said apertures, anchoring means covering said panel means and frame, strips of insulating material enclosed within said anchoring material and covering the inside surface of said connected portions, and cementitious coatings covering said anchoring means and clinched thereby.

5. In a prefabricated building, a wall structure comprising a metal frame presenting panel apertures and having connected portions on opposite faces of the wall frame, panel means in said apertures, anchoring means covering said panel means and frame, strips of insulating material enclosed within said anchoring material and covering the outside surface of said connected portions, and cementitious coatings covering said anchoring means and clinched thereby.

6. In a prefabricated building, a wall structure comprising a metal frame presenting panel apertures and having connected portions on opposite faces of the wall frame, panel means in said apertures, anchoring means covering said panel means and frame, strips of insulating material enclosed within said anchoring material and covering both surfaces of said connected portions, and cementitious coatings covering said anchoring means and clinched thereby.

7. In a prefabricated building, a wall structure comprising a metal frame including spaced metal studs and spaced transverse members cooperating therewith to present a plurality of panel apertures, said studs and transverse members including elements having connected portions on opposite faces of the wall frame, panel means in said apertures, insulating strips covering said portions on each face of the wall, anchoring means covering said panel means and frame and overlying said insulating strips, and cementitious coatings clinched by said anchoring means.

8. In a prefabricated building, a wall structure comprising a metal frame presenting panel apertures and having connected portions on opposite faces of the wall frame, panels in said panel apertures including a panel having a closure aperture having like marginal portions, condensation preventing strip means covering all of said portions, anchoring material on the opposite faces of said panels covering the latter and said frame and overlying said strip means, and cementitious coatings clinched by said anchoring means.

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