Feb. 11, 1941. C. H. SCOTT 2,231,775

ROOF AND FLOOR STRUCTURE

Original Filed April 10, 1939

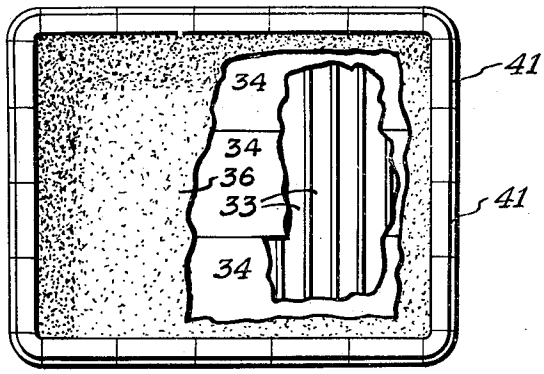

FIG. 2.

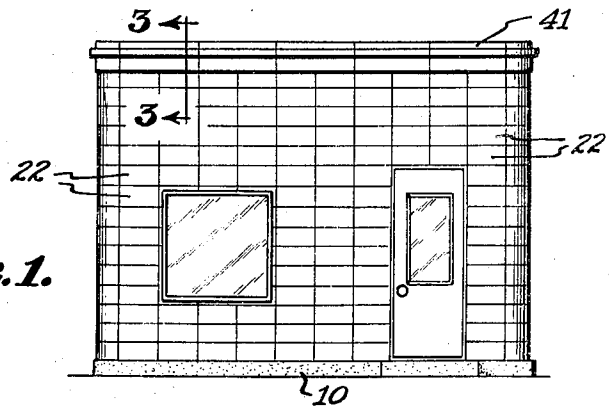

FIG. 1.

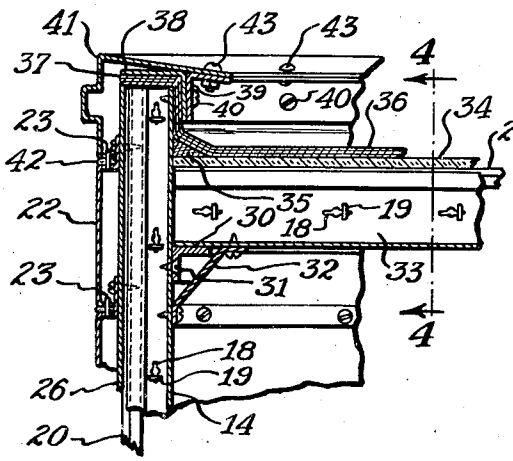

FIG. 3.

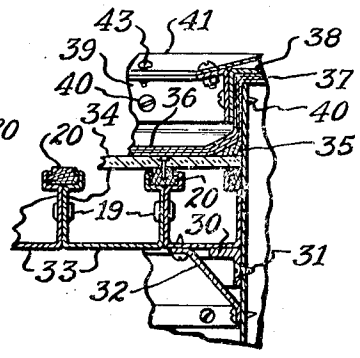

FIG. 4.

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ROOF AND FLOOR STRUCTURE

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Original application April 10, 1939, Serial No. 266,945. Divided and this application April 29, 1940, Serial No. 332,193

10 Claims. (Cl. 108—1)

This invention relates to building structures and particularly to structures of the type in which the various units are prefabricated along standardized lines so that the work of erecting a building may be performed by relatively unskilled labor and in a very short time. More particularly the invention relates to roof or floor structures adapted for use in that type of building or other types of buildings. This application is a division of my copending application Serial No. 266,945, filed April 10, 1939.

It is an object of my invention to provide a structure as outlined above which will involve a number of standardized parts of simple design and which will be inexpensive to manufacture. It is another object of my invention to provide such a structure in which the various elements are fastened together in a simple manner, and in which the fastening means insures registry of the parts and in which the fastening means are concealed from view, whereby the structure from either the inside or the outside presents a smooth finish. A further object of my invention involves the provision of an arrangement whereby if it should become desirable to move the building to a different location substantially the entire structure can be salvaged and rebuilt elsewhere. It is a still further object of my invention to provide a structure which may be thoroughly insulated and which while both inside and outside walls may be made from steel, will not cause a high heat loss through the walls because there is no metal contact between the inside and outside walls.

These and other objects of my invention which will be described in more detail hereinafter or which will be apparent to one skilled in the art upon reading these specifications, I accomplish by that certain construction and arrangement of parts of which I have shown a number of exemplary embodiments.

Reference is now made to the drawing forming a part hereof, and in which:

Figure 1 is a front elevation of an exemplary building to which my invention is applicable.

Fig. 2 is a roof view of the structure of Fig. 1, with parts of the roof material broken away to show the roof deck.

Fig. 3 is a cross sectional view taken on the line 3—3 of Fig. 1.

Fig. 4 is a cross sectional view taken on the line 4—4 of Fig. 3.

For the purposes of this disclosure I have shown my invention in connection with a small building such as may be suitable for gasoline stations and the like. It will be understood, of course, that a building according to my invention may be made of much greater size and may be modified as to shape and floor plan in any desired way. Furthermore, I have shown my invention as applied to a roof structure of a one-story building but it will be clear that it may be used with numerous modifications as an intermediate ceiling and floor structure. In Fig. 1 I have shown an exemplary small rectangular building embodying the invention. The details of construction of this building are set forth in considerable detail in my copending application Serial No. 266,945 mentioned above and I will, therefore, not describe the general structure thereof in more detail than is necessary for an understanding of the manner in which the present invention may be applied thereto.

The building rests upon a concrete foundation or footing indicated in Fig. 1 at 10 and as described in said copending application is of a prefabricated type which may be simply assembled at the building site. Referring more particularly to Figs. 3 and 4, the vertical members 20 are nailing strips which serve as a heat insulative connection between the inner and outer panels. The inner panels are indicated at 14 and the outer panels at 26, porcelain enamel finishing panels are indicated at 22 as disclosed in said copending application. The members 14 are fastened together by means of H-shaped keys 19 cooperating with slots 18.

Near the tops of the walls, I provide angle irons 30 which may be fastened as by self-threading screws 31 to said side walls. If desired, finished strips 32 may be applied to conceal the angle irons 30 and to give the interior of the building a smoother appearance. The roof deck preferably consists of a number of beams 33 having the cross sectional appearance clearly shown in Fig. 4. That is, they are of general channel shape. The limbs of the channel having inturned edges so that when a pair of the beams 33 are placed side by side and fastened by the slot and key arrangement 18 and 19 mentioned above, a channel is formed in which the insulating strips or nailing battens 20 are disposed. The members 20 are formed as described in said copending application to fit in said channels with a portion thereof extending out beyond the metallic channel elements so that material may be nailed to the members 20 which material may be metal without producing metal to metal communication between the interior and the exterior of the building. The beams 33 are laid across the

building resting upon the angles 30 and any desired material may be nailed to the nailing strips 20 as indicated at 34 if the deck structure is to be an intermediate one constituting the ceiling of one room and the floor of the room above, the material 34 may be flooring material or sub-flooring material.

In the case of roof deck however, as shown, the material 34 is preferably some type of building board.

Wooden finishing strips of triangular cross section are disposed, as shown at 35 and preferably a three-ply mopped on roofing is applied as shown at 36. This roofing material is preferably extended up over the side walls as indicated at 37, and an angle member 38 is provided to hold the roofing material in place. A second angle 39 is preferably fastened as by means of a self-threading screw 40 passing through the angles 39 and 37 through the roofing and into the side walls as clearly shown in Figs. 3 and 4. The angle 39 provides means of attachment for a cornice member indicated generally at 41. The member 41 may, of course, be of any desired configuration and the lower flange thereof at 42 is arranged to correspond to the lower edges of the panels 22. In the embodiment shown, the panels 22 are provided with studs 23 engaging in slots 24 or succeeding wide panels and thus the flange 42 will be provided with appropriate slots 24. The inner edge of the cornice 41 may simply be fastened to the angle 39 as by means of nuts and bolts indicated at 43.

It is to be understood that the description given above is exemplary in its nature and that the structure may be modified in numerous respects which will suggest themselves to one skilled in the art. It will also be clear that as pointed out above, the structure is equally applicable to an intermediate floor as to a roof deck. It will be understood, therefore, that I do not intend to limit myself otherwise than as pointed out in the claims which follow.

Having now fully described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. A deck for a building having horizontal ledge elements comprising a plurality of beams laid across said ledges, said beams comprising generally channel shaped elements having hook-like portions spaced from the planes of said panels, said hook-like portions defining when in assembled relationship substantially tubular members having longitudinal openings therein, fastening battens seated in said tubular members and extending through said openings and sheathing material fastened to said fastening battens.

2. An intermediate floor construction for a building having horizontal ledge elements comprising a plurality of beams laid across said ledges, said beams comprising generally channel shaped elements having hook-like portions spaced from the planes of said panels, said hook-like portions defining when in assembled relationship substantially tubular members having longitudinal openings therein, fastening battens seated in said tubular members and extending through said openings and flooring material fastened to said fastening battens.

3. A roof deck construction for a building having horizontal edge elements comprising a plurality of beams laid across said ledges, said beams comprising generally channel shaped elements having hook-like portions spaced from the planes of said panels, said hook-like portions defining when in assembled relationship substantially tubular members having longitudinal openings therein, fastening battens seated in said tubular members and sheathing material fastened to said fastening battens, a plural ply mopped on roofing laid on said sheathing material and extending over the tops of the walls of said building.

4. A roof deck construction for a building having horizontal edge elements comprising a plurality of beams laid across said ledges, said beams comprising generally channel shaped elements having hook-like portions spaced from the planes of said panels, said hook-like portions defining when in assembled relationship substantially tubular members having longitudinal openings therein, fastening battens seated in said tubular members and sheathing material fastened to said fastening battens, a plural ply mopped on roofing laid on said sheathing material and extending over the tops of the walls of said building and a cornice member extending over said roofing material and over the tops of said side walls and joining the tops of the outer walls.

5. In a construction according to claim 1, means for releasably fastening adjacent beams together comprising slots in the arms of said channel shaped elements, said slots having enlarged central portions and said slots being accurately spaced from the planes of the webs of said channels and a plurality of H-shaped fastening keys, the cross portion of the H being of a width to form a drive fit in the end portions of said slots whereby said keys may be inserted into said slots, rotated through an angle of substantially 90 degrees and driven into the ends of the slots to fasten two beams together and coincidentally to register the planes of the webs thereof, the length of the cross member being substantially equal to twice the gauge of the beams whereby said beams are also drawn tightly together.

6. In a construction according to claim 2, means for releasably fastening adjacent beams together comprising slots in the arms of said channel shaped elements, said slots having enlarged central portions and said slots being accurately spaced from the planes of the webs of said channels and a plurality of H-shaped fastening keys, the cross portion of the H being of a width to form a drive fit in the end portions of said slots whereby said keys may be inserted into said slots, rotated through an angle of substantially 90 degrees and driven into the ends of the slots to fasten two beams together and coincidentally to register the planes of the webs thereof, the length of the cross member being substantially equal to twice the gauge of the beams whereby said beams are also drawn tightly together.

7. In a construction according to claim 3, means for releasably fastening adjacent beams together comprising slots in the arms of said channel shaped elements, said slots having enlarged central portions and said slots being accurately spaced from the planes of the webs of said channels and a plurality of H-shaped fastening keys, the cross portion of the H being of a width to form a drive fit in the end portions of said slots whereby said keys may be inserted into said slots, rotated through an angle of substantially 90 degrees and driven into the ends of the slots to fasten two beams together and coincidentally to register the planes of the webs thereof, the length of the cross member being substantially equal to twice the gauge of the

beams whereby said beams are also drawn tightly together.

8. In a construction according to claim 1, means for releasably fastening adjacent beams together comprising slots in the arms of said channel shaped elements, said slots having enlarged central portions and said slots being accurately spaced from the planes of the webs of said channels and a plurality of H-shaped fastening keys, the cross portion of the H being of a width to form a drive fit in the end portions of said slots whereby said keys may be inserted into said slots, rotated through an angle of substantially 90 degrees and driven into the ends of the slots to fasten two beams together and coincidentally to register the planes of the webs thereof.

9. In a construction according to claim 2, means for releasably fastening adjacent beams together comprising slots in the arms of said channel shaped elements, said slots having enlarged central portions and said slots being accurately spaced from the planes of the webs of said channels and a plurality of H-shaped fastening keys, the cross portion of the H being of a width to form a drive fit in the end portions of said slots whereby said keys may be inserted into said slots, rotated through an angle of substantially 90 degrees and driven into the ends of the slots to fasten two beams together and coincidentally to register the planes of the webs thereof.

10. In a construction according to claim 3, means for releasably fastening adjacent beams together comprising slots in the arms of said channel shaped elements, said slots having enlarged central portions and said slots being accurately spaced from the planes of the webs of said channels and a plurality of H-shaped fastening keys, the cross portion of the H being of a width to form a drive fit in the end portions of said slots whereby said keys may be inserted into said slots, rotated through an angle of substantially 90 degrees and driven into the ends of the slots to fasten two beams together and coincidentally to register the planes of the webs thereof.

CHARLES H. SCOTT.