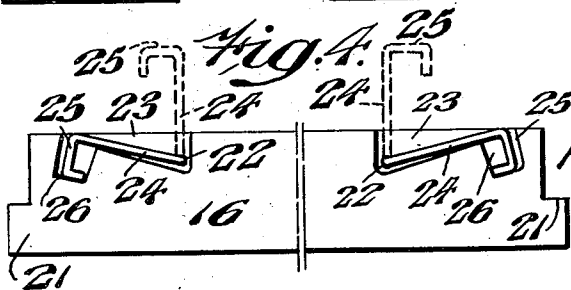
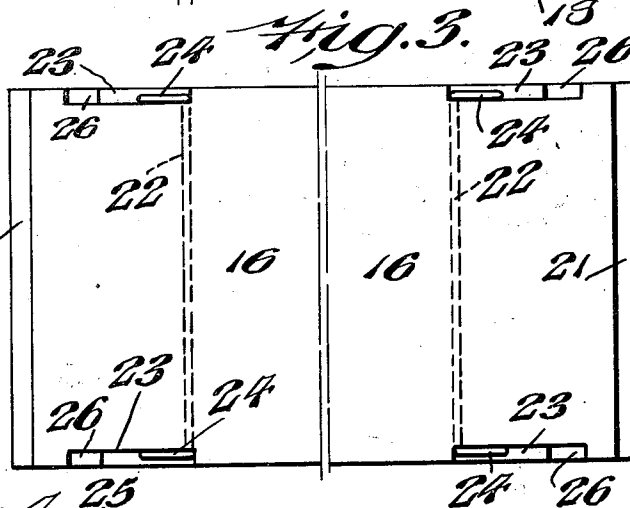
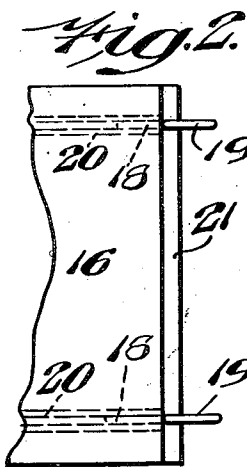
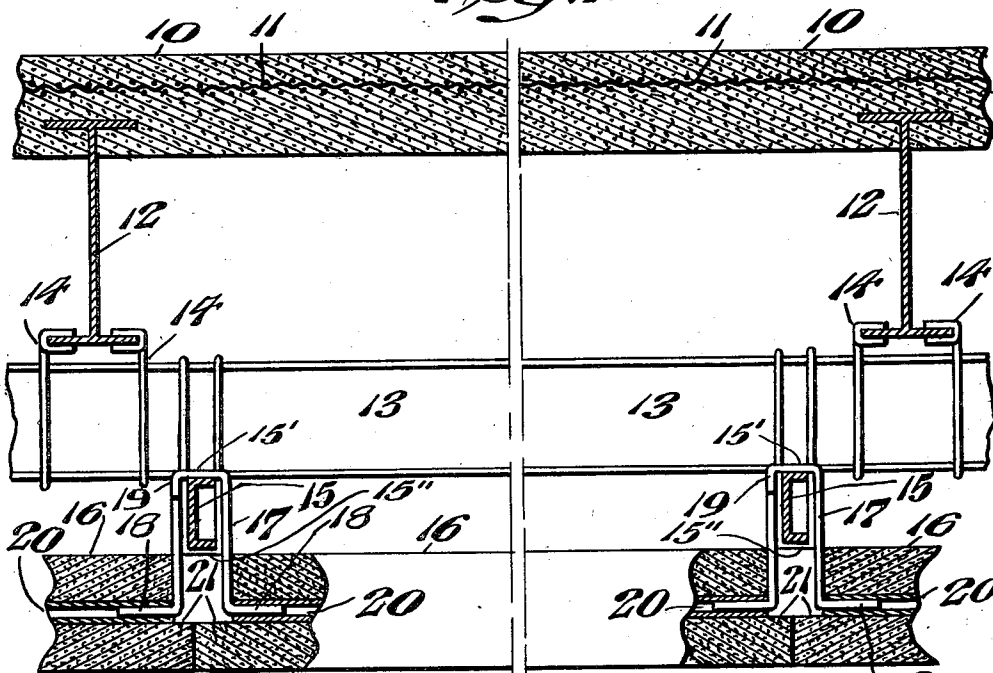


F. M. VENZIE

BUILDING STRUCTURE

Fig. 1.



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BUILDING STRUCTURE

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Fig. 5.

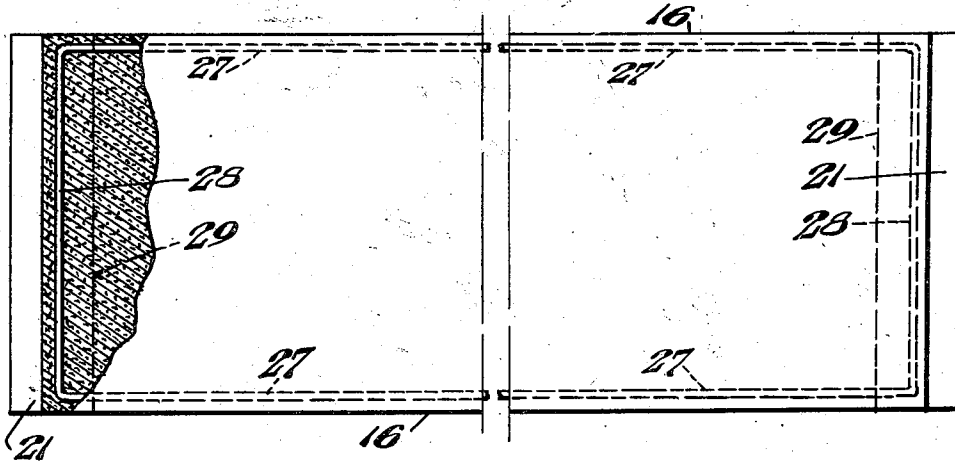


Fig. 6.

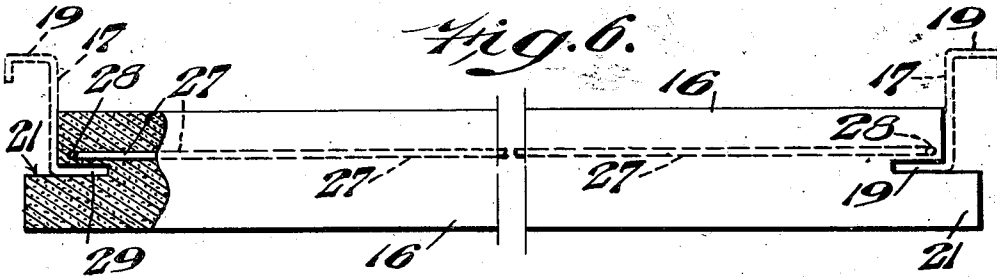
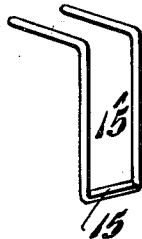


Fig. 7.



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BUILDING STRUCTURE

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22 Claims. (Cl. 72-118)

This invention, generally stated, relates to a building structure and has more especial relation to cementitious slabs forming a ceiling construction as supported by a floor of concrete or the like.

The leading object of the present invention may be said to reside in the provision of means whereby unskilled labor may more readily and efficiently erect cementitious ceiling slabs to reduce building costs.

A further object of the present invention resides in the provision of ceiling slabs of cementitious material provided with hook-like suspension devices whereby the slabs may be quickly and easily suspended from plasterer's channels.

A further object of the present invention is to provide cementitious ceiling slabs of the character stated in which the hook-like suspension elements have hinged relation with respect to the slabs, whereby the hook-like elements may be moved to inoperative position so as to be capable of assuming a horizontal, relatively flat-like position to facilitate the storage, packing, and shipping of the slabs by the manufacturer.

A still further object of the present invention is to provide a slab structure of the character stated which is entirely constructed of fire-proofing material, is sound proof, very strong and very cheap to erect, and in which metallic, hook-like suspension elements are provided for the suspension of the slab structure from auxiliary plasterer's channels as supported by main plasterer's channels, which in turn are suspended from floor beams, or floor itself.

Other and further objects of the present invention reside in the provision of the general arrangement, combination, and connection of parts for attaining the results sought by the foregoing objects.

The invention consists of the novel construction hereinafter described and finally claimed.

The nature, characteristic features and scope of the invention will be more fully understood from the following description taken in connection with the accompanying drawings forming part hereof, and in which:

Fig. 1 is a fragmentary view partly in longitudinal section of a ceiling construction embodying the invention;

Fig. 2 is a fragmentary view in plan of the ceiling slab shown at the extreme left hand end of Fig. 1;

Fig. 3 is a top or plan view of a ceiling slab equipped with suspension hooks differing slightly from those disclosed in Figs. 1 and 2;

Fig. 4 is a view in side elevation of Fig. 3;

Fig. 5 is a top or plan view of a slab equipped with still another form of suspension hooks;

Fig. 6 is a view in side elevation of Fig. 5, and

Fig. 7 is a view in perspective of a channel support.

For the purpose of illustrating my invention I have shown in the accompanying drawings several forms thereof which are at present preferred by me, since the same has been found in practice to give satisfactory and reliable results, although it is to be understood that the various instrumentalities of which my invention consists can be variously arranged and organized and that my invention is not limited to the precise arrangement and organization of the instrumentalities as herein shown and described.

Referring now to the drawings in detail, the reference numeral 10 designates a flooring usually of concrete or the like, preferably reinforced as at 11. A flooring of this character is usually supported by floor beams designated 12. Supported by the beams 12 are plasterer's channels 13, the latter being attached to the floor beams 12 by means of hangers 14 which may be of any preferred design. The plasterer's channels 13 in turn support auxiliary plasterer's channels 15 which are arranged at right angles to the main plasterer's channels 13 and are supported by means of hangers 15' which may be of any desired design. Below the auxiliary plasterer's channels 15 are arranged the ceiling slabs designated 16 and which are of cementitious or other fire-proofing material. These ceiling slabs are suspended from the auxiliary plasterer's channels 15 by means of hook-like members of which several forms are disclosed in the drawings.

Referring now more particularly to Figs. 1 and 2 of the drawings, a ceiling slab 16 is provided at opposite ends with spaced removable hooks. These hooks are of metal and preferably formed from a single piece of wire, each hook comprising an elongated, vertically disposed stem 17, the lower end of which is bent at right angles to the stem to provide a foot 18, and the upper end of the stem 17 is bent over horizontally at right angles to the stem and in a direction opposite to the foot 18 to provide a hook 19 for engaging over an auxiliary plasterer's channel 15. The foot 18 of the hook is adapted for removable insertion in horizontally arranged tubing 20 of metal which is embedded in each ceiling slab 16 and spaced apart, as clearly shown in Fig. 2. Each end of a slab 16 is cut away laterally to provide a ledge 21, the

upper surface of which is substantially flush with the tubing 20 and the marginal surfaces of which abut similar surfaces on adjacent slabs, as clearly shown in Fig. 1. In practice with a foot of the hook positioned within the tubing the hook may be moved about the horizontal axis of a foot, whereby the hook may be moved from horizontal position to vertical position to engage an auxiliary plasterer's channel 15. This provides what may be termed a pivotally disposed hook-like suspension element which may be moved to flatwise position with respect to a ledge 21, whereby the manufacturer may more readily pack, store, and ship the slabs 16. As clearly shown in Fig. 1, the hooks of adjacent slabs 16 are so positioned that they may engage over an auxiliary plasterer's channel 15 in opposite directions.

Referring now to Figs. 3 and 4, the side walls of opposite ends of the slabs 16 are cut away to provide hook-accommodating recesses. Each of these hooks is also formed of one piece of wire and comprises an elongated, laterally disposed portion 22 which extends entirely through a slab 16 and projects into the opposed cut-away portions 23, at which point the said portion 22 is bent at an angle to provide arms 24 terminating in hooks 25. These hooks 25 in inoperative position are accommodated by the recesses 26 of the cut-away portions 23, as clearly illustrated in Fig. 4. These hooks 25 are adapted to engage over the tops of auxiliary plasterer's channels 15 in the suspension of the tiles. Thus, for packing, storage, and shipping purposes the hook-like members are moved to the position shown by full lines in Fig. 4, and for erection purposes are moved to the position shown by dotted lines in Fig. 4.

Referring now to Figs. 5 and 6, a ceiling tile 16 has embedded therein a reinforcing member usually wire, the parts 27 of which parallel the sides of a tile and the parts 28 of which parallel the end walls of a tile, the entire reinforcement constituting a generally rectangular shaped element. It is to be noted in this respect that the parts 28 of the reinforce element are arranged immediately above the slotted portions 29 with each end of a tile to reinforce a tile structure at its ends. The slots 29 are flush with the tops of the ledges 21, see Fig. 6. These slots 29 in conjunction with the ledges 21 provide means for the removable reception of hooks shown by dotted lines in Fig. 6. These hooks are similar in all respects to those hooks shown in Fig. 1 and the same reference numerals have been applied thereto. It will be understood that these hooks may be either entirely removed with respect to the slots 29, or may be positioned upon the tops of the ledges 21 to assume a flat-wise position. It will be readily understood that in positioning the slabs the workman has simply to introduce the foot of a hook with respect to a slot 29 and thereafter move the hook about the horizontal axis of the foot portion thereof so that the stem 17 is positioned vertically, whereby the hook 19 may be caused to engage over an auxiliary plasterer's channel 15.

In practice the ledges of adjacent slabs abut endwise, so that a space is present between said slabs to accommodate the stems of the hooks as shown in Figs. 1 and 6, in which case the stems to abut against the vertical cut-away portions of the slabs, thus tending to prevent endwise or swaying movement of the slabs when the hooks

engage over the plasterer's channels. In Figs. 3 and 4 the stems of the hooks abut against the cut-away vertical portions of the slabs and tend to steady the slabs both laterally and longitudinally considered in suspended position.

While the main plasterer's channels 13 are shown as being supported from floor beams 12, it is to be understood that I have in mind supporting the channels directly from the flooring by means of suitable hangers when found convenient so to do. Also, while I may employ any convenient form of auxiliary channel hanger I prefer to use the type best seen in Fig. 7. This one piece wire hanger 15' is provided with a flattened cross-arm 15'' so that a snug fit may be obtained for the channel iron 15, thereby to permit the ceiling slabs 16 to abut against the undersides of said channels 15 which is desirable. In using these hangers the ends are first placed over the channels 13 and then clinched over the same by means of a hammer to bring the tops of the auxiliary channels 15 close up under the bottoms of the main channels 13.

What I claim is:

1. In a building construction, a floor of cementitious material supported upon beams, main plasterer's channels suspended from said beams, auxiliary plasterer's channels arranged at right angles to said main plasterer's channels, and suspended therefrom, ceiling slabs of cementitious material arranged below and suspended from said auxiliary plasterer's channels by means of hooks the end of each slab having a laterally disposed portion for endwise abutting against an adjacent slab, and a plurality of hooks pivotally connected to each slab, each hook being movable about its horizontal axis arranged adjacent each end of a slab, the pivot points of said hooks being arranged in a plane above said portion of a slab adapted for said endwise abutment.

2. In a building construction, a floor of cementitious material supported upon beams, main plasterer's channels suspended from said beams, auxiliary plasterer's channels arranged at right angles to said main plasterer's channels and suspended therefrom, ceiling slabs of cementitious material arranged below and suspended from said auxiliary plasterer's channels by means of hooks the end of each slab having a laterally disposed ledge portion for endwise abutting against an adjacent slab, and a plurality of hooks pivotally connected to each slab, each hook being movable about its horizontal axis arranged adjacent each end of a slab, the pivot points of said hooks being arranged in a plane above said ledge portion of a slab adapted for said endwise abutment.

3. In a building construction a floor of cementitious material supported upon beams, main plasterer's channels suspended from said beams, auxiliary plasterer's channels arranged at right angles to said main plasterer's channels and suspended therefrom, ceiling slabs of cementitious material arranged below and suspended from said auxiliary plasterer's channels by means of detachable hooks, the end of each slab having a laterally disposed portion for endwise abutting against an adjacent slab, and a plurality of hooks pivotally connected to each slab each hook being movable about its horizontal axis, arranged adjacent each end of a slab, the pivot points of said hooks being arranged in a plane above said portion of a slab adapted for said endwise abutment.

4. In a building construction a floor of ce-

mentitious material supported upon beams, main plasterer's channels suspended from said beams, auxiliary plasterer's channels arranged at right angles to said main plasterer's channels and
 5 suspended therefrom, ceiling slabs of cementitious material arranged below and suspended from said auxiliary plasterer's channels by means of hooks, the end of each slab having a laterally disposed portion for endwise abutting against
 10 an adjacent slab, and a plurality of hooks pivotally connected to each slab, each hook being movable about its horizontal axis arranged adjacent each end of a slab, the pivot points of said hooks being arranged in a plane above said
 15 portion of a slab adapted for said endwise abutment, each of said hooks being arranged to lie in a plane below the upper face of a slab when said hooks are in inoperative position.

5. In a building construction, a floor of cementitious material supported upon beams, main plasterer's channels suspended from said beams, auxiliary plasterer's channels arranged at right angles to said main plasterer's channels and suspended therefrom, ceiling slabs of cementitious
 25 material arranged below and suspended from said auxiliary plasterer's channels by means of hooks, the end of each slab having a laterally disposed ledge portion for endwise abutting against an adjacent slab, a plurality of hooks pivotally connected to each slab, each hook being movable
 30 about its horizontal axis arranged adjacent each end of a slab, the pivot points of said hooks being arranged in a plane above said ledge portion of a slab adapted for said endwise abutment,
 35 and means embedded within a slab substantially in parallelism with said ledge portions for reinforcement of said ledge portions, the lateral portion of said means having longitudinal extensions.

40 6. In a building construction, a floor of cementitious material supported upon beams, main plasterer's channels suspended from said beams, auxiliary plasterer's channels arranged at right angles to said main plasterer's channels and
 45 suspended therefrom, ceiling slabs of cementitious material arranged below and suspended from said auxiliary plasterer's channels by means of hooks, the end of each slab having a laterally disposed portion for endwise abutting against an adjacent
 50 slab, and a plurality of hooks pivotally connected to each slab, each hook being movable about its horizontal axis arranged adjacent each end of a slab, the pivot points of said hooks being arranged in a plane above said portion of a slab
 55 adapted for said endwise abutment, and sockets embedded in a slab at each end thereof to receive the lower ends of said hooks.

7. In a building construction, a floor of cementitious material, main plasterer's channels suspended from said floor, auxiliary plasterer's channels arranged at right angles to said main plasterer's channels, and suspended therefrom, ceiling slabs of cementitious material arranged below and suspended from said auxiliary plasterer's channels by means of hooks, the end of each slab having a laterally disposed portion for endwise abutting against an adjacent slab, and a plurality of hooks pivotally connected to each slab, each hook being movable about its horizontal axis arranged adjacent each end of a slab, the pivot points of said hooks being arranged in a plane above said portion of a slab adapted for said endwise abutment.

8. In a building construction, a floor of cementitious material supported upon beams, main

plasterer's channels suspended from said beams, auxiliary plasterer's channels arranged at right angles to said main plasterer's channels and suspended therefrom, ceiling slabs of cementitious material arranged below and suspended from said auxiliary plasterer's channels by means of hooks, the end of each slab having a laterally disposed portion for endwise abutting against an adjacent slab, and a plurality of hooks pivotally connected to each slab, each hook being movable about its horizontal axis arranged adjacent each end of a slab, the pivot points of said hooks being arranged in a plane above said portion of a slab adapted for said endwise abutment, each hook being formed from a single piece of wire and having its pivotal end embedded in a slab.

9. In a building construction, a finished floor, a support beneath said floor, surfacing units, and hook forming means pivoted within said units for movement about a horizontal axis, for connecting said units to said support after the completion of said floor.

10. In a building construction, a plurality of abutting surfacing units, a support parallel to the line of abutment of said units, and hooks including foot portions removably pivoted to said units for movement about a horizontal axis within the edges of said unit and engaging said support.

11. In a building construction a floor; supporting means for said floor; a surfacing unit; means for supporting said surfacing unit; means for connecting said last named means to said floor supporting means; and hooks removably and pivotally connected to said surfacing unit for connecting said unit to its support.

12. In a building construction a floor; supporting means for said floor; a surfacing unit; means for supporting said surfacing unit; means for connecting said last named means to said floor supporting means; and means removably pivoted to said surfacing unit for movement about a horizontal axis for connecting said unit to its support.

13. In a building construction, a support, fireproof cementitious slabs, a re-enforcement within each of said slabs; and members adapted to hang said units from said support and pivotally engaging said units beneath and out of contact with said re-enforcement.

14. In a building construction a support; a fireproof slab positioned with its uppermost surface below the lowest portion of said support; a tubular passageway in said slab and means engaging the walls of said passageway and said support for connecting said slab to said support.

15. In a building construction a support; a fireproof slab positioned with its uppermost surface below the lowest portion of said support; a re-enforced tubular passageway in said slab; and means engaging the walls of said passageway and said support for connecting said slab to said support.

16. In a building construction a support; a fireproof slab positioned with its uppermost surface below the lowest portion of said support; a tubular passageway in said slab; and means removably engaging the walls of said passageway and said support for connecting said slab to said support.

17. In a building construction, a support; a multiplicity of fireproof surfacing units depending from said support; and hooks, operable from beneath said support and connected to said units for movement about a horizontal axis, for connecting said units to said support.

18. In a building construction, a support; a multiplicity of fireproof surfacing units depending from said support; and hooks, operable from beneath said support and connected to said units for movement about a horizontal axis at a right angle to the longitudinal axis of said support, for connecting said units to said support.

19. In a building construction, a support; a multiplicity of fireproof surfacing units depending from said support; and hooks, operable from beneath said support and connected to said units for movement about an axis parallel to the longitudinal axis of said support, for connecting said units to said support.

20. In a building construction, a support; a multiplicity of fireproof surfacing units depending from said support; and hooks, operable from beneath said support and connected to said units for movement about a horizontal axis for con-

necting said units to said support, said hooks being detachable from said unit when inoperative.

21. In a building construction, a support; a multiplicity of fireproof surfacing units depending from said support; and hooks, operable from beneath said support and connected to said units for movement about a horizontal axis for connecting said units thereto, said hooks lying within the planes defining the major surfaces and edges of said units when inoperative.

22. In a building construction, a plurality of abutting surfacing units, a support parallel to the line of abutment of said units, and hooks including means pivoted to said units for movement about a horizontal axis within the edges of each of said units and engaging said support.

FREDERICK M. VENZIE.