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3,550,338

WALL STRUCTURE

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2 Sheets-Sheet 1

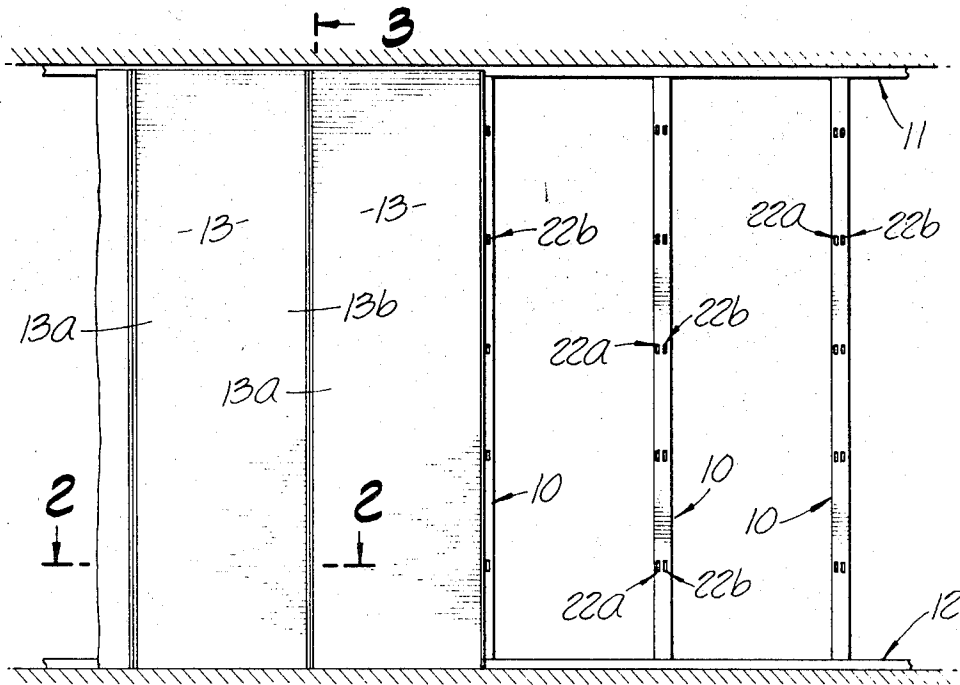


FIG. 1.

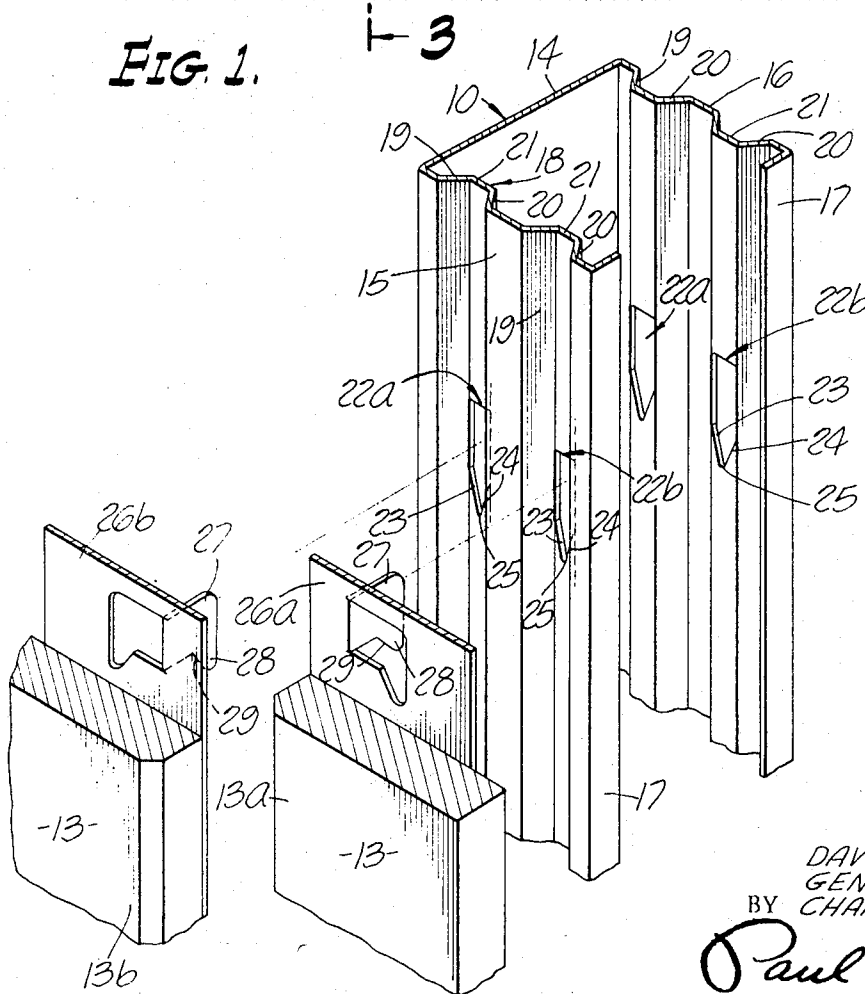


FIG. 4.

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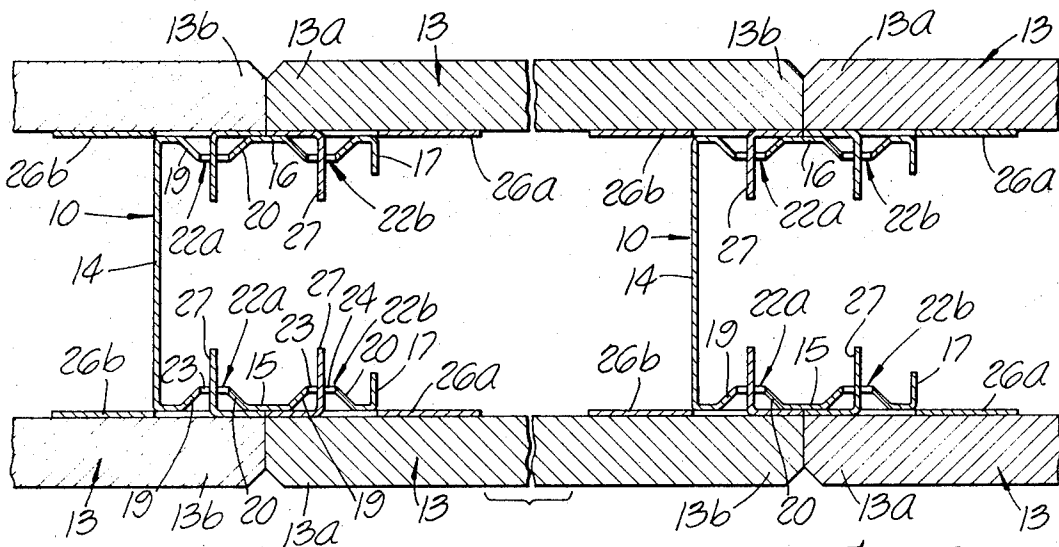


FIG. 2.

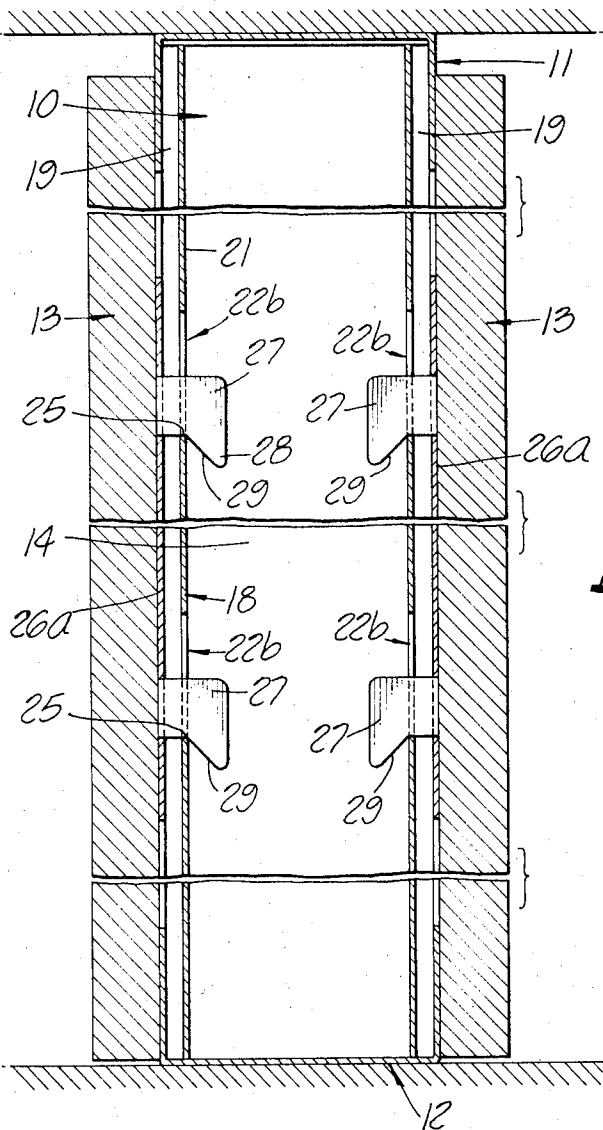


FIG. 3.

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WALL STRUCTURE

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7 Claims

ABSTRACT OF THE DISCLOSURE

A removable partition or wall structure in which channel-shaped studs are supported in spaced relation by channel ceiling and floor runners, the parallel legs of the studs providing side surfaces having laterally spaced pairs of slots at longitudinally spaced intervals, the slots being arranged in the bottom wall of longitudinal channels in the stud having flanking side walls converging towards the slots, and the slots having lower end edges converging downwardly towards a point substantially coincident with the longitudinal axis of the slot, wall forming panels being removably mounted on the studs with adjacent marginal hook members projecting rearwardly from the panels, the hook members of one panel being positioned to extend into one set of the slots of the slot pairs and the hook members of the other adjacent panel being arranged to extend into the other set of the slots of the slot pairs, the hook members having a lower rear camming edge coacting, upon downward movement of the panel, with the lower end converging edges of the associated slots to draw the panels against the stud and move the confronting margin edges of the adjacent panels into abutting relation. The flanking side walls at each slot aid in guiding the hook member into the slot.

BACKGROUND OF THE INVENTION

The present invention relates to wall structures or partitions.

Heretofore, it has been known generally to provide cooperative hook and slot connections for removably attaching wall panels to spaced stud members, but these known arrangements have in the main been rather complicated and not entirely satisfactory, particularly in those cases where it is desired to install the walls of partitions in such manner that they may be readily changed and altered, when desired, without the necessity of having to use tools for such purpose. In one prior known construction, special panel retaining clips have been provided which were arranged to be inserted between the abutting edges of adjacent panels, these clips having panel engaging portions and rearwardly extending hooks engageable in slot openings provided in the supporting studs. In such arrangement, the clips were visible and had to be covered by concealing molding which, in many instances, was undesirable and provided projections on the exposed wall surface.

In the present invention, the structural arrangement has been greatly simplified by providing panel boards which have hanging strips laminated to the back sides along the marginal edges, hook elements being punched from the strips so as to extend rearwardly, these hooks being adapted for insertion into slots provided in the stud faces, camming and guiding surfaces being provided on the hooks, slots, and flanking sides of the slots, which all coact in such a way as to greatly facilitate the ease of assembling and demounting the wall structure. As so arranged, the exposed surface of the panels is devoid of projections and presents a pleasing wall structure in which the panels are intimately associated and tightly held in

position, yet may be quickly changed in its entirety, or partially by the removal of particular panels.

SUMMARY OF THE INVENTION

The present invention relates generally to wall and partition structures of the panel type such as used in building structures, and is more particularly concerned with improvements in the mounting means for permitting the panels to be attached and removed from supporting studs with ease and without the necessity of having to utilize tools for such purpose.

It is one object of the herein described invention to provide a removable wall structure or partition in which panels are removably attached to supporting studs by simple means without the necessity of having to utilize special tools; and which permits one or more panels to be easily detached and replaced when desired.

A further object of the invention resides in the provision of an improved wall structure in which panels are removably attached by unique hook and slot means, wherein flanking inclined surfaces are provided at the slots for guiding the associated hook into a proper position therein during assembly of the panels.

Another object is to provide a simple wall structure having panels removably attached to supporting members by concealed hook members which cammingly cooperate to guidingly force adjacently positioned panels into a final mounting position with their marginal edges in abutting relation, and the respective panels into engagement with the support members.

Further objects and advantages of the invention will be brought out in the following part of the specification, wherein detailed description is for the purpose of fully disclosing a preferred embodiment of the invention without placing limitations thereon.

BRIEF DESCRIPTION OF THE DRAWINGS

Referring to the accompanying drawings, which are for illustrative purposes only:

FIG. 1 is a fragmentary side elevation of a wall structure or partition embodying the features of the present invention; certain of the panel members of the wall being removed to disclose details of construction;

FIG. 2 is a horizontal section taken substantially on line 2—2 of FIG. 1;

FIG. 3 is a vertical section, taken substantially on line 3—3 of FIG. 1; and

FIG. 4 is an enlarged fragmentary exploded perspective view illustrating the manner in which the wall surface forming panels are removably attached to stud supporting members.

DESCRIPTION OF A PREFERRED EMBODIMENT

Referring more specifically to the drawings, for illustrative purposes, the invention is shown in FIG. 1 as being embodied in a typical wall structure or partition of the type contemplated according to the broad concepts of the invention. The wall structure or partition comprises laterally spaced studs 10 which have their upper and lower ends frictionally retained in rigid channel-shaped upper and lower runners 11 and 12 of a suitable metal such as steel, these runners being removably mounted on the ceiling and floor with the open sides of their channels in confronting relation to receive the respective ends of the studs. The studs are cut to appropriate lengths and may be mounted by being twisted or manipulated into the desired position extending between the ceiling and floor. The studs provide appropriate supports for removably mounted panel members 13 which are attached to the studs by means which will hereinafter be explained in detail.

As best seen in FIG. 4, the studs are each fabricated

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from a suitable metal such as galvanized steel to form an elongate channel having a bottom wall 14 and spaced leg portions formed by side walls 15 and 16 which terminate at their outer edge margins in an inwardly turned flange portion 17 in each case.

The side walls of the stud are provided with laterally spaced longitudinally extending channel portions 18, two of these channel portions being shown in each of the side walls of the stud. Each channel is formed by inwardly converging channel side walls 19 and 20 which extend from the plane of the outer surface of the stud side wall inwardly to a channel bottom 21 extending in parallel relation to the stud side wall plane.

The bottom walls 21—21 of the two adjacent channels are provided with a laterally aligned pair of elongate slots 22a and 22b, each of these slots having a pointed bottom formed by side edges 23 and 24 which converge downwardly to a point as indicated at 25, this point being substantially coincident with the longitudinal axis of the slot. Similar pairs of slots are also formed in the stud side wall 16, and as shown in FIG. 1, pairs of these slots are provided in longitudinally spaced relation of the studs.

The panel members 13 are shown in FIG. 1 as being vertically mounted on the studs. It will be appreciated, however, that in its broad concept the present invention is not limited to such mounting of the panels. The panels may be constructed of any suitable material but are preferably fabricated of plaster, gypsum board, asbestos, or other fireproof materials, and may vary in area, shape and composition within wide limits. The panels 13 are indicated as having side marginal edge portions 13a and 13b in each case, and in mounted position adjacent wall panels will have their edge margins positioned in overlying relation to the outer surface of the associated side wall of the stud to which the panels are to be attached.

As best shown in FIG. 4, the marginal edges of the panels are provided with hanging strips 26a and 26b preferably fabricated from a material such as steel and laminated or otherwise secured to the back of the panel margin so as to extend therealong. The hanging strips are punched or otherwise worked to provide rearwardly projecting hooks 27 at spaced intervals therealong corresponding to the spacing between the pairs of stud slots. Each of the hooks 27 is formed at its outer end with a downwardly extending pointed portion 28 having a rear inclined camming edge 29. While these hooks are disclosed as being formed in connection with a hanging strip which may extend substantially the length of the panel, it will be appreciated that the hooks may be formed upon a series of aligned plate members secured along the panel edge margins.

Briefly, the installation of a wall or partition according to the present invention is readily accomplished without the need of using special tools. The ceiling and floor runners 11 and 12, respectively, are securely attached in a manner to assure complete movability, these runners being positioned at the desired wall location. The channel studs are then twisted into place with their ends respectively extending into the ceiling and floor runners at the approximate center-to-center spacing which corresponds to the panel width. To mount the panels, the panel to be mounted is placed in a raised initial first position which permits entrance of the hooks 27 thereon into the appropriate elongate slots of adjacent studs upon which the panel is to be mounted. Entrance of the hooks into the slots is facilitated by the guiding action of the flanking channel wall surfaces 19 and 20 at each slot. With the hooks extending into the slots, the panel is now moved downwardly to a second final mounting position. During this movement, the hook 27 in the slot will be guided to the desired position by means of the converging side edges 23 and 24 at the bottom of the slot with a camming action, while the camming edge 29 of the hook will operate to force the panel into surface engagement

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with the outer surface of the adjacent stud side wall. As a result of these two camming actions, the mounted panels will be automatically forced into abutment engagement of their marginal edges, and into a solid mounting position on the stud supports. The paneling on the opposite side of the studs will be mounted in the same manner. However, it may be desirable to leave one side of the partition open until the completion of electrical or other work in the wall structure. During the downward movement of the panels to final mounted position, a slight space will result at the top ends of the panels between the panel ends and the ceiling. This is easily concealed by a ceiling trim. Likewise, other trims may be applied to the wall structure as desired. With the arrangement just described, it will be appreciated that single panels may be removed with ease from the wall structure to provide openings to the interior thereof at any desired position.

From the foregoing description and drawings, it will be clearly evident that the delineated objects and features of the invention will be accomplished.

Various modifications may suggest themselves to those skilled in the art without departing from the spirit of our invention and, hence, we do not wish to be restricted to the specific form shown or uses mentioned, except to the extent indicated in the appended claims.

What is claimed is:

1. A removably mounted wall structure, comprising:

- (a) at least one elongated metallic stud having a side surface extending longitudinally thereof, said surface having a plurality of longitudinally spaced slots therein;
- (b) a wall panel mounted on one side of said stud with a marginal face portion at one edge thereof extending along and overlapping said surface; and
- (c) generally flat spaced hook members fixedly carried by and projecting edgewise rearwardly from said marginal face portion of said panel adapted to enter said slots in an initial first position of said panel, said hook members and associated slots having coacting camming portions, the camming portion on one of said hook members and slots being arranged to pull said marginal face portion rearwardly against said side surface as said panel is moved downwardly from said initial first position to a lower final position, and the camming portion on the other of said hook members and slots being arranged to move said panel laterally to abut its edge against an adjacent panel as said panel is moved downwardly from said initial first position to said lower final position.

2. A wall structure according to claim 1, wherein the camming portions comprise coengageable edges on each hook member and the associated slot.

3. A wall structure according to claim 2, wherein the slot edges comprise a pair of downwardly converging edges terminating at a point substantially coincident with the longitudinal axis of the slot.

4. A wall structure according to claim 2, wherein the hook members are struck from a plate member attached to the rear surface of the panel and have a lower inclined camming edge.

5. A wall structure according to claim 1, wherein the stud has flanking inclined surfaces at each slot for guiding the hook members into the associated slots at said first position of said panel.

6. A wall structure according to claim 5, wherein the flanking inclined surfaces are formed by the side walls of a longitudinally extending channel of the stud, and the slots are positioned in a bottom wall of the channel.

7. A removably mounted wall structure comprising:

- (a) a plurality of laterally spaced metallic studs having a side surface extending longitudinally thereof, said surfaces having laterally spaced pairs of slots therein at longitudinally spaced intervals;
- (b) wall panels mounted on one side of said studs with

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adjacent marginal face portions at one edge thereof extending along and overlapping said surface of one of said studs; and

- (c) generally flat spaced hook members fixedly carried by and projecting edgewise rearwardly from said marginal face portions of said panels adapted to enter similar slots of each pair in an initial first position of said panel, said hook members and associated slots having coacting camming portions, the camming portion on one of said hook members and slots being arranged to pull said marginal face portion rearwardly against said side surface as said panel is moved downwardly from said initial first position to a lower final position, and the camming portion on the other of said hook members and slots being arranged to move said panel laterally to abut its edge against the edge of the adjacent panel in its final lower position, as said panel is moved downwardly from said initial first position to said lower final position.

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