Dec. 15, 1936. H. A. FABER 2,064,790

WALL CONSTRUCTION

Filed Jan. 30, 1936

Fig. 1.

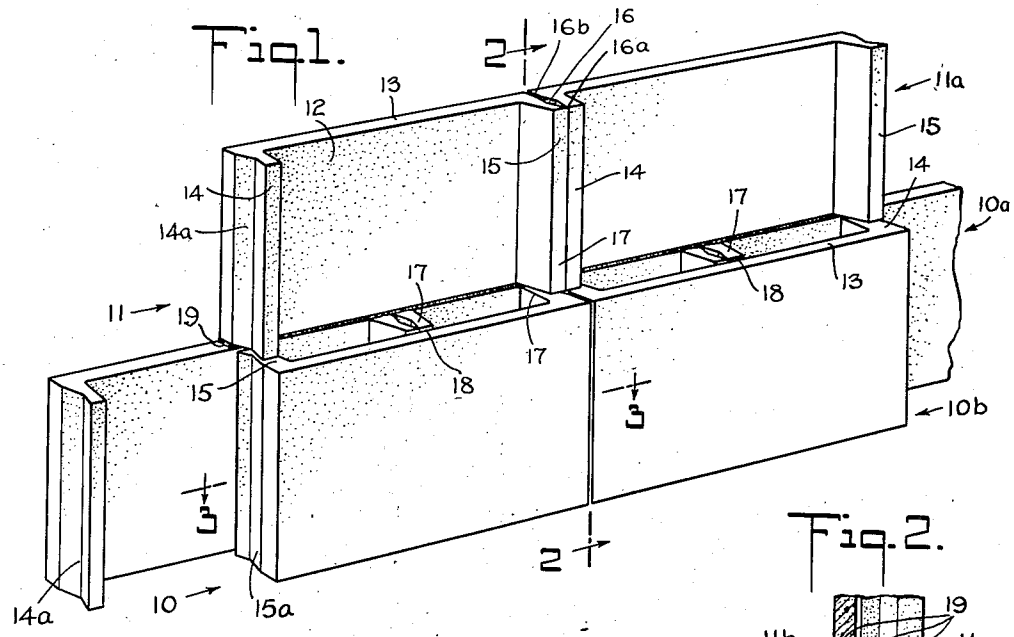


Fig. 2.

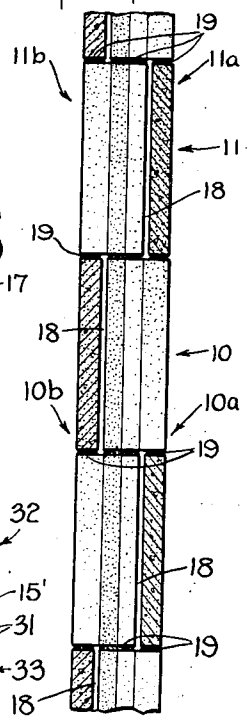


Fig. 3.

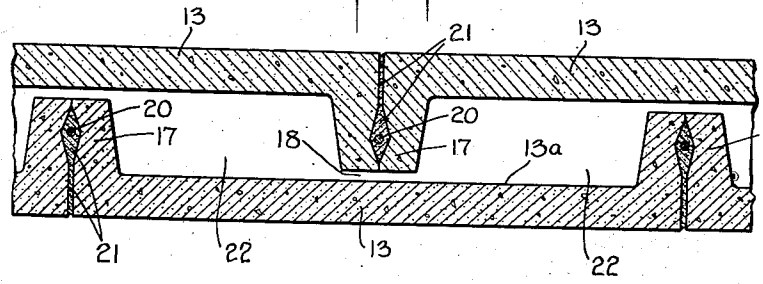
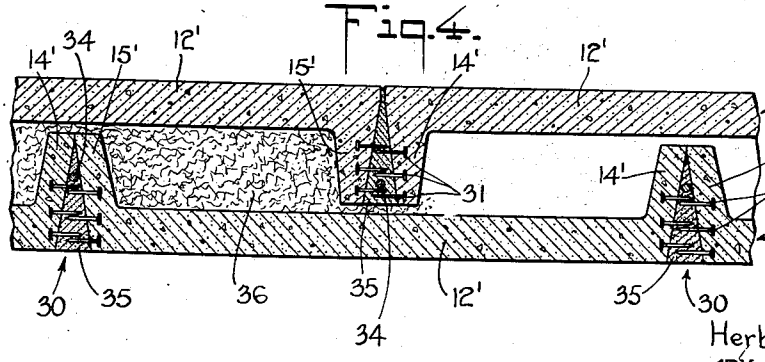


Fig. 4.



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WALL CONSTRUCTION

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6 Claims. (Cl. 72—39)

This invention relates to a wall construction, and more particularly to a wall construction comprising a plurality of pre-shaped building units assembled and united together to form an integral wall structure inclusive of studs.

The invention has among its primary objects, the provision of a wall construction that is strongly and rigidly tied together, and one that may have a relatively limited number of connection points between its inner and outer faces to afford maximum insulating qualities therefor, the wall construction being capable of assemblage from a plurality of pre-shaped building units, desirably units of a cementitious material, and being adapted to receive adequate reinforcing means.

Embodiments of the present invention include two wall sections, spaced apart from each other and having studs therebetween, each stud being compositely formed of elements which extend into the space between wall sections alternately from the respective wall sections and integral respectively therewith, means of connection between the two sections and their component stud elements being afforded at locations of alternation in the studs. Such means of connection afford a zone of stud continuity coextensive with the length of individual composite studs.

Preferred forms of the invention include wall structure comprising pre-shaped building units, assembled horizontally to form courses and vertically to provide variant wall height.

The building units are advantageously of a wide channel formation having the flanges thereof integral with the body section and configurated on their outer faces to cooperate with like faces of horizontally adjacent units in securing joinder and bonding of the associated units. Such configurations may be of the form, and the joinder and bonding together of the associated units may be accomplished, substantially as set forth in my co-pending application for U. S. Patent Ser. No. 54,044, filed December 12, 1935, and entitled "Wall construction".

In assembling the wall structure horizontally, units are placed side by side to form one course section having a plurality of stud elements extending from a face of same. The other course section is formed in the same manner as the first, but is positioned in opposing and preferably spacial relation thereto, with each stud of one section disposed preferably centrally of and in a channel-between-studs of the other section, the stud extremities being desirably spaced apart slightly from the channel bottom to effect maximum insulating qualities for the wall.

In building up the wall structure vertically, each additional course is assembled as before described, but is positioned in staggered relation to the course immediately therebelow; that is to say, each stud element of any one course section rests on a stud element extending from the opposing course section of the course immediately therebelow, and serves to bridge any space that might be left between that stud element and its opposite channel bottom.

The stud elements extending from opposing wall section faces therefore overlap respectively in alternating relationship from bottom to top of the completed wall structure and provide means whereby the thus compositely formed wall studs may be rigidly tied together to result in an effective tying together of the wall structure proper.

Further features and objects of the present invention will be apparent from the following detailed description and the accompanying drawing, in which:

Fig. 1 is a view in perspective showing one embodiment of the present invention in the process of construction.

Fig. 2 is a vertical section taken on the line 2—2 of Fig. 1, additional section courses being shown in place to represent a portion of a completed wall construction. Parts in the background are omitted for clarity.

Fig. 3 is a horizontal section taken on the line 3—3 of Fig. 1, on an enlarged scale, showing additional units in place, and joints between units bonded together.

Fig. 4 is a view similar to that of Fig. 3, illustrating another embodiment of the present invention in which the individual building units are joined and bonded together as set forth and claimed in my above referred to co-pending application for U. S. patent, Ser. No. 54,044, filed December 12, 1935.

Referring to the drawing, and particularly to Figs. 1, 2 and 3, two partially assembled representative courses of a wall construction embodying a preferred form of the present invention are indicated at 10 and 11 respectively.

Each of the courses 10 and 11, is desirably assembled from building units, such as those shown at 12, pre-shaped to a channel form, including the intermediate web portion 13 and side flanges 14 and 15 extending from the two lateral sides of the web portion 13. The side-flanges 14 and 15 are advantageously coextensive with each other,

and coextensive lengthwise with the lateral sides of the web portion 13. The outer faces 14a and 15a of the flanges 14 and 15, respectively, of any one unit are configurated for association with like configurated faces of similar units to provide, when so associated, means for receiving bonding and reinforcing material. The faces 14a and 15a, each, as here shown, include a groove running the full length of the face, being narrower than the face and spaced apart from the edges thereof, to form, when associated as above described, a passage 16, for receiving bonding and reinforcing material, the passage 16 being preferably closed vertically at the free ends of the flanges, as shown at 16a, by contact of a portion of the face 14a of one unit with a corresponding portion of the adjacent face 15a of an associated unit, and said passage extending horizontally, in reduced width, as at 16b, to the outer face of the units.

Each course is assembled in two sections as indicated at 10a and 10b, and also at 11a and 11b, each section desirably comprising pre-shaped units 12 in side by side alignment, with the flange 14 of one unit so associated with the flange 15 of an adjacent unit as to form stud elements 17 and to permit subsequent reinforcing and grouting operations to tie adjacent units together at such locations.

The two course sections are positioned in opposing and preferably spacial relationship with each other, each stud element 17 of one section extending into, and preferably centrally thereof, a channel-between-studs of the other section. The free extremities of the studs 17 are desirably spaced apart from the channel bottoms 13a, as at 18 for a purpose hereinafter made apparent.

In erecting the wall structure vertically, each additional course is assembled, in the manner heretofore described, on top of respective units of the next lower course, mortar 19 or the like, being desirably interposed therebetween at all points of contact. Each course section in the additional courses, however, is positioned in staggered relationship with the course section immediately therebelow, whereby each stud element 17 of a course section, as at 11a, is so positioned over a channel-between-studs of the course section immediately therebelow, as in 10a, as to partially rest upon, in vertical alignment, a stud element 17 of the course section oppositely positioned thereto and immediately therebelow, as at 10b; the individual stud sections 17, integral alternately with one or the other of the wall sections comprising the course sections 10a, 11a etc., and the course sections 10b, 11b etc. respectively, forming, collectively, composite studs of the completed wall structure.

Because of the alignment vertically of the stud elements 17, the passages 16 run continuously vertically through their respective composite studs.

After the wall structure has been erected to the desired height, reinforcing means, such as the rods 20, are inserted into the passages 16, desirably from the top, and may be grouted into place by means of the bonding or grouting material 21, such material also flowing into the passage extensions 16a. If desired, the passage extensions 16a may be pointed up from the outside to facilitate the filling of same.

The above operation effectively ties the two wall sections together to produce an integral wall structure having the qualities of strength and rigidity and yet possessing to a high degree insulating characteristics resulting from the voids 22 there included. Insulation may also be enhanced by taking advantage of the fact that the only required connection between the two wall sections in the completed wall is at locations of alternation in the composite studs.

Fig. 4 illustrates another embodiment of the present invention in which the building units 12' are similar to those shown at 12 in Figs. 1, 2 and 3, the side flanges 14' and 15' however, being configurated to provide, when associated with like configurated faces, wedge-shaped openings 30; and the said flanges further desirably including a plurality of joinder elements such as the nails 31 having their heads embedded in the material of the flanges and portions of their shanks extending into the wedge-shaped openings, as fully described and claimed in my before referred to co-pending application Ser. No. 54,044.

In this embodiment each course section of the type indicated at 32 is assembled in place, including positioning of the reinforcing rods 34 between the rows of joinder elements 31 in the wedge opening 30 and insertion of the grouting material 35 therearound, before the corresponding course section of the type indicated at 33 is assembled.

The reinforcing rods 34 are long enough to tie several courses together, and therefore additional course sections 32 are assembled around the upstanding rods. The course sections 33 may be built up vertically to any suitable height before positioning the reinforcing rods and grouting same in place.

If desired, all embodiments of the present invention may include sound proofing or other insulating material, as indicated at 36, Fig. 4, packed in the voids between wall sections.

Whereas, I have described my invention by reference to specific forms thereof, it will be understood that many changes and modifications may be made without departing from the spirit of the invention as defined in the following claims.

I claim:

1. A wall construction comprising two substantially co-extensive wall sections disposed in spaced opposing relation to each other, and composite studs therebetween, each of said composite studs including stud elements integral respectively and alternately with one or the other of said wall sections, and extending from the inner face of same, the extending stud elements overlapping mutually from bottom to top of said wall to provide zones of stud continuity between the two wall sections, and means extending through the length of said zones of stud continuity for tying together the individual stud elements and therewith the two wall sections.

2. A wall construction comprising two substantially co-extensive wall sections disposed in spaced opposing relation to each other, and composite studs therebetween, each of said composite studs including stud elements integral respectively and alternately with one or the other of said wall sections, and extending from the inner face of same, the extending stud elements overlapping mutually from bottom to top of said wall to provide zones of stud continuity between the two wall sections, and reinforcing tie rods extending through the length of said zones of stud continuity for tying together the individual stud elements and therewith the two wall sections.

3. A wall construction of the character of a reinforced concrete construction, comprising two substantially co-extensive wall sections disposed

in spaced opposing relation to each other, and composite studs therebetween, each of said composite studs including stud elements integral respectively and alternately with one or the other of said wall sections, and extending from the inner face of same, the extending stud elements overlapping mutually from bottom to top of said wall to provide zones of stud continuity adapted to receive reinforcing rods; reinforcing rods disposed within said zones and operative to tie together the individual stud elements and therewith the two wall sections, and grouting material bonding said reinforcing rods with the wall structure.

4. A wall construction comprising two substantially co-extensive wall sections disposed in spaced opposing relation to each other, each of said wall sections being assembled of pre-shaped building units, of channel formation comprising a web portion and side flanges extending substantially mutually coextensive from lateral sides of said web portion, mutually adjacent flanges of associated units being disposed to form stud elements, the stud elements of one wall section coordinating with stud elements of the other wall section to form a plurality of composite studs having a zone of stud continuity running from bottom to top of the completed wall structure and between said wall sections, recess defining means comprehending the length of each of the mutually opposing faces of said mutually adjacent flange elements, said recess defining means being configurated and placed on respective flange faces for mutual coordination in defining recesses coextensive lengthwise respectively with respective stud elements, and continuing recesses coextensive lengthwise with and comprehended by respective zones of stud continuity, and means disposed within said continuing recesses for uniting the individual building units and the two wall sections into a rigid wall structure.

5. A wall construction of the character of a reinforced concrete construction comprising two substantially co-extensive wall sections disposed in spaced opposing relation to each other, each of said wall sections being assembled of pre-shaped building units of channel formation comprising a web portion and side flanges extending substantially mutually coextensively from lateral sides of said web portion, mutually adjacent flanges of associated units being disposed to form stud elements, the stud elements of one wall section coordinating with stud elements of the other wall section to form a plurality of composite studs having a zone of stud continuity running from bottom to top of the completed wall structure and between said wall sections, recess defining means comprehending the length of each of the mutually opposing faces of said mutually adjacent flange elements, said recess defining means being configurated and placed on respective flange faces for mutual coordination in defining recesses coextensive lengthwise respectively with respective stud elements, and continuing recesses coextensive lengthwise with and comprehended by respective zones of stud continuity, and reinforcing tie rods disposed within said continuing recesses for uniting the individual building units and the two wall sections into a rigid wall structure.

6. A wall construction comprising pre-shaped blocks of channel formation, each of said blocks consisting of an intermediate web portion and unitary side-flanges extending respectively from respective lateral sides of said web portion, said side-flanges extending substantially coextensive with one another and coextensive lengthwise with the lateral sides of said web portion, said blocks being positioned relative to one another to form two substantially coextensive wall sections disposed in opposing spaced relation to each other, the side-flanges of said blocks cooperating to form composite studs between wall sections, each of said composite studs including stud elements integral respectively and alternately with one or the other of the wall sections.

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