Jan. 19, 1932. N. GARRETT 1,841,581

METHOD OF BUILDING WALLS

Original Filed Dec. 18, 1926 2 Sheets-Sheet 1

Fig. 1.

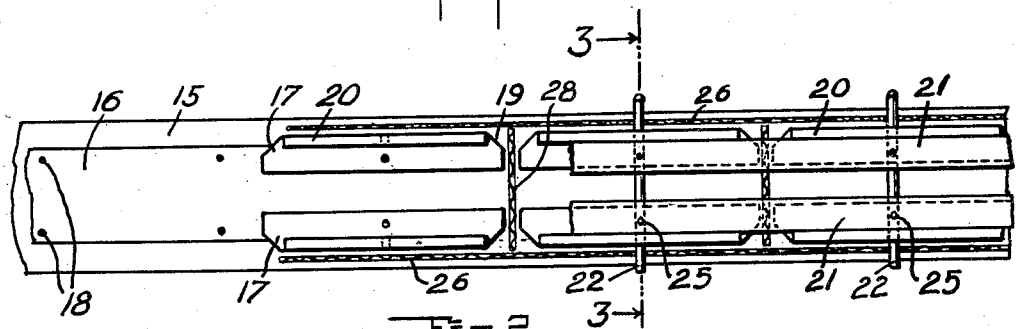


Fig. 2.

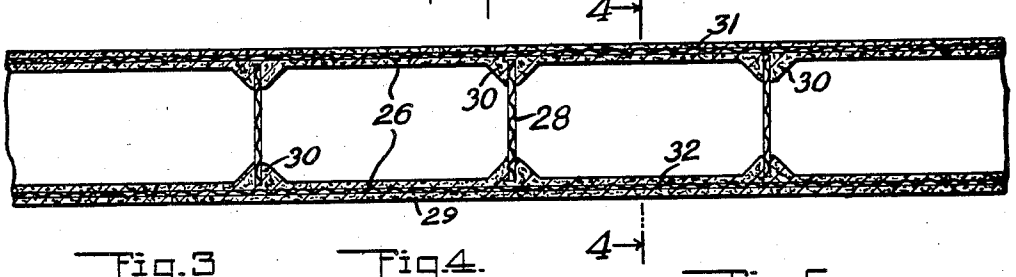


Fig. 3

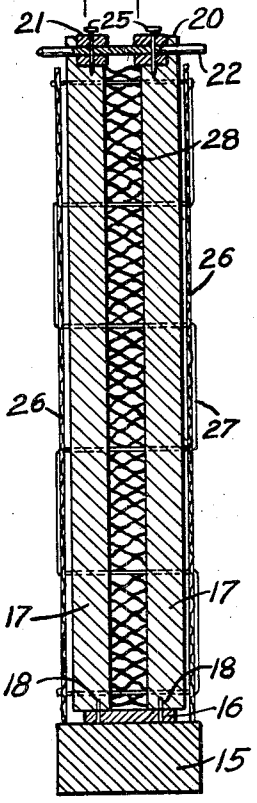


Fig. 4.

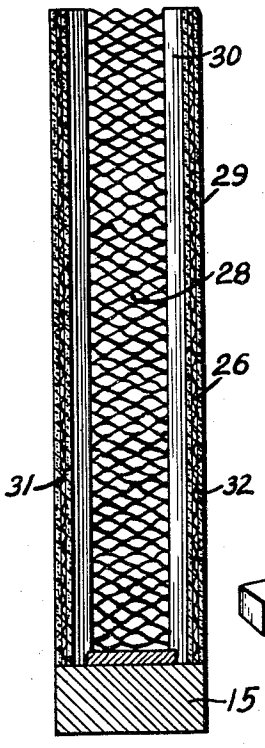


Fig. 5.

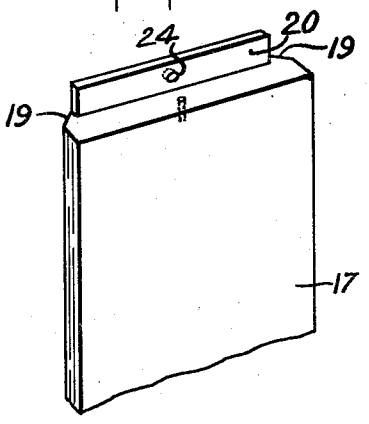
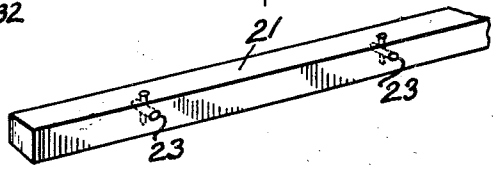


Fig. 6.



INVENTOR

Neal Garrett

Jan. 19, 1932. N. GARRETT 1,841,581

METHOD OF BUILDING WALLS

Original Filed Dec. 18, 1926 2 Sheets-Sheet 2

Fig. 7.

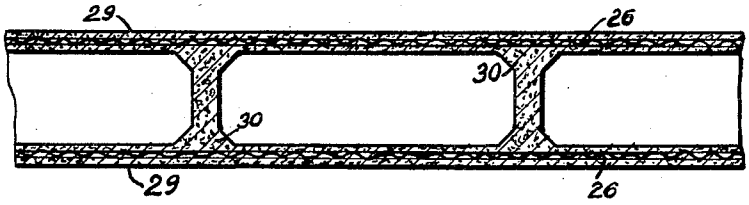


Fig. 8.

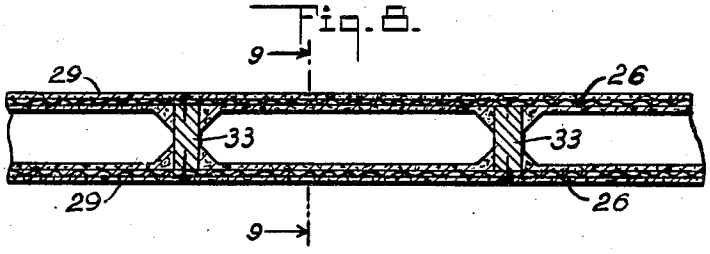
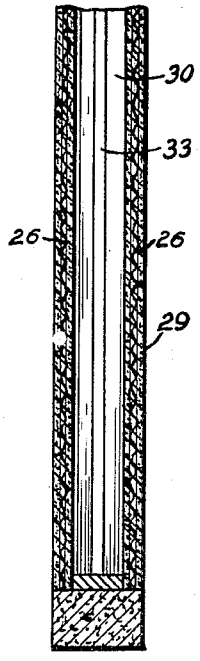


Fig. 9.



INVENTOR

Neal Garrett

Patented Jan. 19, 1932 1,841,581

UNITED STATES PATENT OFFICE

NEAL GARRETT, OF GLENDALE, CALIFORNIA

METHOD OF BUILDING WALLS

Original application filed December 18, 1926, Serial No. 155,699. Divided and this application filed September 5, 1931. Serial No. 561,395.

My invention relates to building walls and is a division of my application Serial No. 155,699, filed Dec. 18, 1926. This application includes subject matter claimed in my applications Serial No. 170,377, filed Feb. 23, 1927, and Serial No. 257,357, filed Feb. 27, 1928.

The purpose of my invention is to provide a method for making walls of relatively thin layers of fire-proof materials integrally joined together to form walls which are substantial and yet very light so as to cause relatively small dead load stress in buildings and relatively small impact stress in buildings due to earthquake shocks.

An object of my invention is to provide a method for building walls characterized by spaced, relatively thin, cementitious slabs, and in which the conventional frame members such as studs are eliminated by the use of light slab connecting members and light transversely extending portions of cementitious material integrally joining and bracing the slabs.

In the drawings

Figure 1 is a view showing in top plan one form of wall building apparatus embodying my invention;

Figure 2 is a fragmentary horizontal sectional view showing one form of building wall embodying my invention;

Figure 3 is a vertical sectional view taken on the line 3—3 of Figure 1;

Figure 4 is a vertical sectional view taken on the line 4—4 of Figure 2;

Figure 5 is a fragmentary detail perspective view showing one of the forms embodied in the apparatus shown in Figures 1 and 3;

Figure 6 is a fragmentary detail perspective view of one of the alining members embodied in the apparatus;

Figure 7 is a view similar to Figure 2, showing another form of wall embodying my invention;

Figure 8 is a view similar to Figure 7, showing a third form of wall embodying my invention;

Figure 9 is a vertical sectional view taken on the line 9—9 of Figure 8.

Referring specifically to the drawings, and particularly to Figures 1 and 3, the apparatus employed in the present instance comprises a base 15 formed of any suitable material and preferably having the cross-sectional contour of a rectangle. Upon the upper side of this base is a strip 16 of wood or other suitable material provided for the purpose of producing a level base upon which is adapted to be set a plurality of forms 17. These forms are arranged in upright position, with their lower edges provided with holes in which is received the upper ends of pegs 18 secured within the strip 16. In this manner the forms are held upon the base and in edge to edge relation as illustrated in Figure 1 to produce two form walls disposed in spaced parallel relation. The forms 17 are placed upon the base so as to provide intervening gaps between the vertical edges of any two adjacent forms, with the vertical edges beveled as indicated at 19 for a purpose to be described hereinafter.

To maintain the upper edges of the forms 17 in proper spaced relation and in longitudinal alinement so as to effectively cooperate with the base pegs 18 in rigidly holding the forms in parallel spaced relation, I construct the upper edges of the forms with upstanding flanges 20 offset with respect to the inner faces of the forms to provide ledges on which alining members 21 are seated. The alining members may be formed of wood of any suitable length, preferably of such length as to span a plurality of forms in the manner illustrated in Figure 1. These members 21 are rigidly and detachably secured to the forms and to each other by means of pins 22 extended through openings 23 in the members and registering openings 24 in the flanges 20. Nails or other suitable fastening members 25 are extended vertically through the members 21 and the pins 22 as illustrated in Figure 3, for the purpose of locking the members to the pins and to thereby maintain the members contiguous to the flanges 20, whereby the upper edges of the forms 17 will be rigidly held in longitudinal alinement and in proper spaced relation to the other series of forms.

I provide between the vertical edges of ad-

jacent forms transversally disposed strips of webbing 28. The positioning of these webbings is clearly illustrated in Figure 1, and it will be noticed that they are of sufficient width to substantially span the space between the planes of the form faces.

Reinforcing elements 26 are held against the form faces by cords 27, entwined with respect to the mesh as illustrated in Figure 3, and extending through the gaps between the forms. The irregular and elastic properties of most types of reinforcing is such that even though cords 27 are tight, the average spacing of the reinforcing elements 26 from the form 17 will be substantially as shown in the drawings. Cords 27 may also be considered as connecting members.

In carrying out my method, cementitious material is plastered against the outer faces of the forms 17 and over the reinforcing elements 26 so that when the material has set such elements will be embedded therein to thoroughly reinforce the resultant wall. The cementitious material is applied laterally in such manner as to form an even coat over the outer faces of the forms, the material at the gaps between the forms, because of the beveled edges 19, producing truncated projections 30 (Figure 2), which are coextensive in height with the walls and in which the vertical edges of the webbing strips 28 are embedded. After the cementitious material has been allowed to set and sufficiently harden, the apparatus can be removed from the wall by first withdrawing the nails 25 to allow the removal of the pins 22, and then removing the alining members 21. With the latter removed it will be clear that the several forms 17 can be lifted from between the confronting sides of the wall. The resultant structure thus formed is a double wall, the two parts of which are indicated at 31 and 32 in Figures 2 and 4 and a continuous dead air space therebetween.

By forming openings at different intervals in the pins 22, varying the width of the base strip 16, and setting the pins 18 the desired distance apart, the apparatus can be adjusted to form a wall of any desired thickness. A wall of any height or length may be made by discontinuing the plastering operation where desired.

Many different materials may be used as tie members in place of the webbings 28. For example, a stud 33 may be inserted in each gap between the forms in place of the webbing 28, and the reinforcing elements 26 nailed upon the studding so that in the complete wall the studs will appear as illustrated in Figures 8 and 9. In this adaptation the studding may be used to assist in holding and alining the forms. It is obvious that the studding may be erected and reinforcing placed over them and the forms subsequently inserted, this being an obvious variation of my invention.

It is sometimes desirable to embed the slab connecting members in cementitious material or to use instead of the type of webbings 28, transversely extending portions of cementitious material. When it is desired to do this, the cementitious material may be forced through the gaps between the forms and from the outer sides of the forms until the material from one side meets that of the other, thus forming a webbing of cementitious material, as shown in Figure 7. If the webbings 28 are used with this variation of my method they provide reinforcing for the transversely extending portions of cementitious material. It is to be understood that there are other methods of procedure by which transversely extending reinforcing may be embedded in plastered material. The method here set forth is particularly adapted for the formation of narrow walls and partitions because in this case it is easy to force the portions of the cementitious material from one side of the forms into contact with that applied to the other side of the forms.

Reinforcing 26 is preferably foraminous sheet material, such as wire mesh or expanded metal of a type adapted to reinforce layers of plastered material.

The vertical ridges formed on the backs of the slabs provide sufficient bracing for the slabs so that a wall may be made without the use of the slab connecting members. Such a wall is more sound proof and to be desired for some cases where the added strength derived by bracing the slabs together is not necessary. To build a single slab according to my invention it is only necessary to eliminate the operations incident to building one of the slabs.

In constructing my wall I leave in place only materials that were heretofore used for making nonsupporting plastered coatings. I am the first to use plastered slabs as reliable parts of building structures.

My construction differs from conventional construction in that instead of first erecting permanent structural stress bearing frame members and later covering the frame members with plastered slabs, I form the structure progressively, tying the slabs together or forming the brace members for the slabs as they are plastered and causing the slabs and the slab connecting members or the brace members to form a structure that takes the place of the conventional type of construction.

It is considered impossible to form by the pouring method, at one continuous operation, a structure having the proportions of a structure that can be formed at one continuous operation by the method herein described. Poured slabs contain air bubbles and water pockets which are not to be found

in slabs formed by trowelling cementitious material against vertical form faces. Plastered slabs are generally formed by a plurality of laterally applied layers in which a richer film of cementitious material is brought to the surface of each layer, thereby producing slabs much less brittle and more resistant to shocks than in a wall formed by the pouring method.

The term cementitious material is used to refer to any material in a soft state which is capable of hardening, or to any material which was at one time in a soft state and has hardened.

While I have described preferred forms of my invention, it is to be understood that the drawings and the description thereof are to be considered as illustrative of, rather than limitative upon, the broader claims because it will be apparent to those skilled in the art that changes in method may be made without departing from the scope of my invention.

I claim:

1. A method of making walls characterized by two spaced cementitious slabs that includes erecting foraminous sheet materials in place to reinforce the slabs and to join the slabs at spaced intervals, and plastering cementitious material over said foraminous sheet materials to form two spaced slabs and transversely extending portions of plastered material joining the slabs at spaced intervals.

2. A method of making walls characterized by spaced cementitious slabs that includes erecting two spaced vertical sheets of slab reinforcing; providing a form between said sheets of slab reinforcing, said form having openings extending therethrough transversely with respect to said sheets of slab reinforcing; plastering cementitious material against the exterior faces of the sheets of slab reinforcing to form spaced wall slabs; protruding portions of the cementitious material through the reinforcing and into said openings from each side of the form until the protruded portions of cementitious material from one slab contact the protruded portions of cementitious material from the other slab to form inwardly extending portions of plastered material joining the slabs at spaced intervals; and removing the forms.

NEAL GARRETT.