

May 28, 1946.

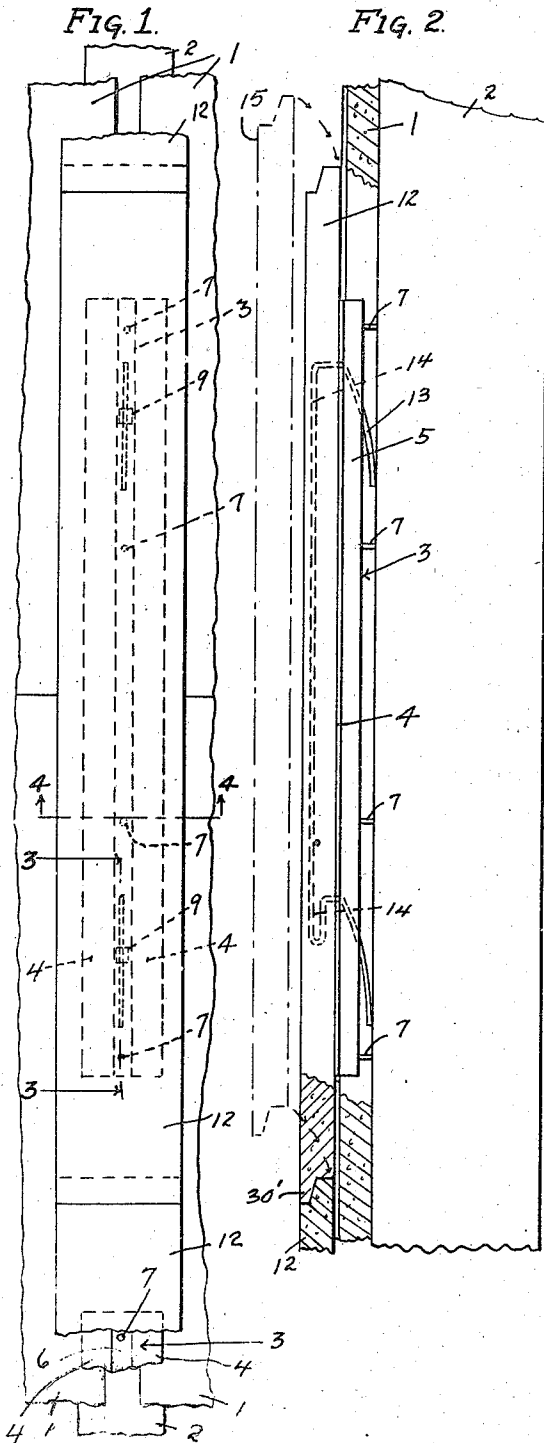
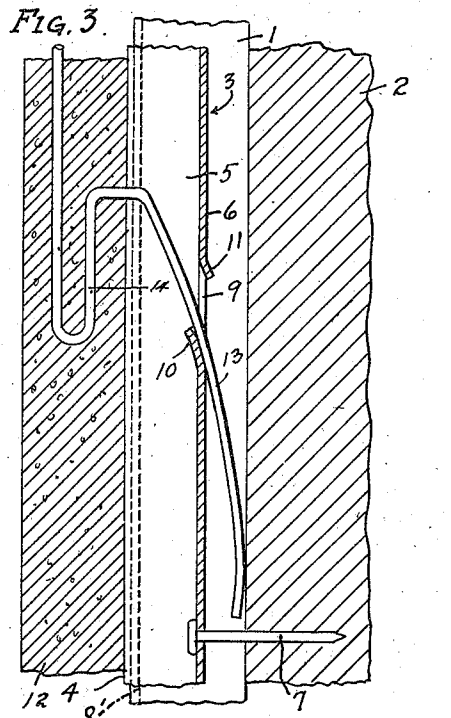
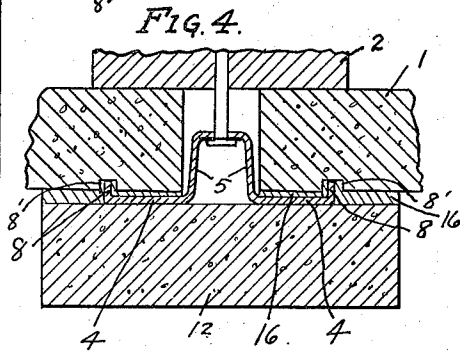
R. FELLOM

2,401,062

BUILDING CONSTRUCTION

Filed June 15, 1942

2 Sheets-Sheet 1



INVENTOR.
ROY FELLOM
BY
Boyken, Motters & Beckley

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2 Sheets-Sheet 2

FIG. 5.

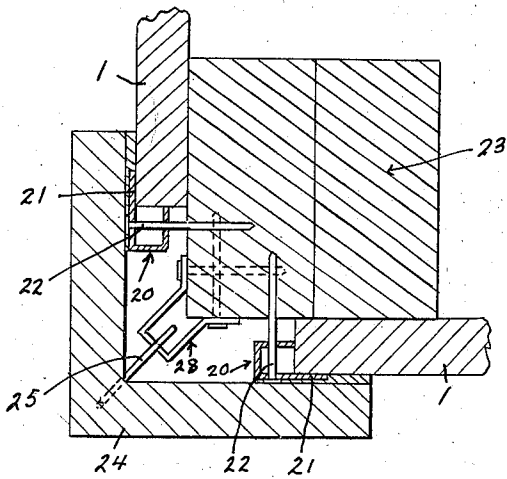


FIG. 6.

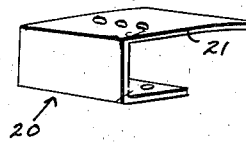


FIG. 7.

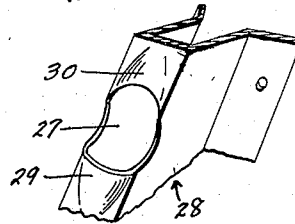


FIG. 8.

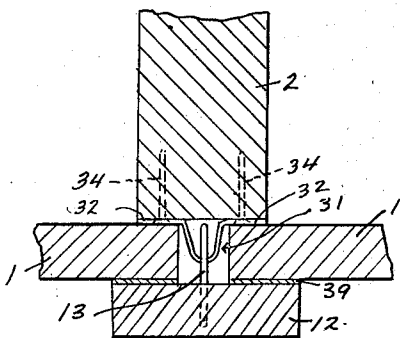


FIG. 10.

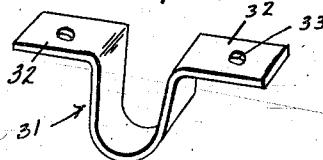


FIG. 9.

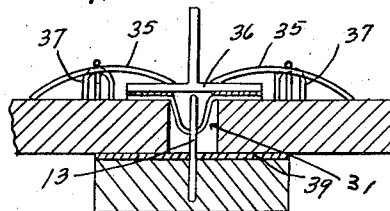


FIG. 11.

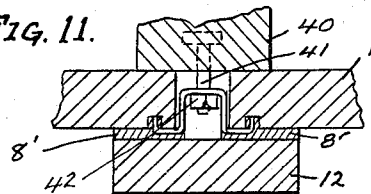
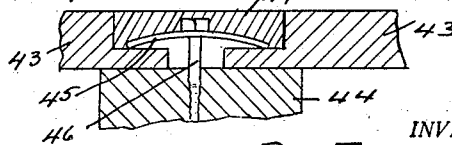


FIG. 12.



INVENTOR.

ROY FELLOM

BY

Boyken, Mohler & Beckley.

UNITED STATES PATENT OFFICE

2,401,062

BUILDING CONSTRUCTION

Roy Fellom, San Francisco, Calif.

Application June 15, 1942, Serial No. 447,026

6 Claims. (Cl. 72-20)

This invention relates to building construction in general, and particularly to the type of construction in which side wall, roof, or floor forming slabs or panels of pre-formed material are employed.

One of the objects of this invention is improved means for quickly securing pre-formed slabs in position against studding, rafters or joists in a building for forming the walls, roof, floor, or the like.

Another object of the invention is the provision of improved means for quickly securing pre-formed slabs of cementitious or composition material in position on studding, rafters or joists and which means includes pre-formed strips adapted to cover the cracks between adjacent slabs so as to prevent access of moisture to such cracks.

A still further object of the invention is improved means for covering cracks between adjacent wall-forming slabs when the latter are in position against frame members in the building and which crack covering means carries elements that are adapted to slidably and wedgedly engage other elements separable therefrom and in engagement with the slabs in a manner for tightening the said means against the slabs, and which means when in position engaging the slabs will not become loosened from the slabs but will always maintain a tight engagement therewith irrespective of earth tremblors and variations in temperature.

Other objects and advantages will appear in the description and drawings.

In the drawings:

Fig. 1 is a fragmentary elevational view of the slabs of an outside wall with my covering strip in position over the adjacent edges and marginal portions of two vertical rows of slabs.

Fig. 2 is a part section, part elevational edge view of the slabs and strip of Fig. 1 showing the position of the slabs and strip and the means connecting the slabs and strip to the studding.

Fig. 3 is an enlarged sectional view taken along line 3-3 of Fig. 1, with one attaching element carried by the covering strip being shown in elevation.

Fig. 4 is a sectional view along line 4-4 of Fig. 1.

Fig. 5 is a sectional view through a corner of a building showing the elements used for connecting a corner strip over the adjacent walls at said corner.

Fig. 6 is an enlarged perspective view of one of the attaching elements for a corner strip.

Fig. 7 is a perspective view of another attaching element for a corner strip, shown in section at one end.

Fig. 8 is a fragmentary sectional view showing a form of the invention slightly different from that of Fig. 4.

Fig. 9 is a fragmentary sectional view showing a form of the invention employed where structural steel studding is used, as distinguished from the wooden studs shown in the preceding views.

Fig. 10 is an enlarged perspective view of one of the elements used in the form of invention shown in Figs. 8, 9.

Fig. 11 is a fragmentary sectional view showing a form of the invention that may be employed in connection with concrete studding.

Fig. 12 is a fragmentary sectional view of a still further form of the invention showing a form of the invention that is suitable for securing floor forming slabs on joists.

In detail the wall-forming slabs 1 are preferably of substantially rectangular shape and are of a size sufficient to extend between the adjacent studs of each pair thereof with the two opposite marginal portions of each slab partially overlying each of such adjacent studs. These slabs may be of cement, concrete or of composition material. The studding is shown at 2.

Between the adjacent edges of the vertical rows of slabs is a channel strip 3 of sheet metal. Each such strip is formed with flanges 4 that extend oppositely outwardly from the free edges of the sides 5 of the channel, and which flanges overlie the adjacent marginal portions of the adjacent slabs of the pair of rows between which the channel strip is positioned (Fig. 4).

The bottom 6 of each strip 3 is formed with openings for nails 7 that secure the strip to the stud over which the strip is positioned. The depth of the channel of strip 3 is less than the thickness of the slabs engaged by flanges 4 hence causing the flanges 4 to tightly hold the slabs engaged by said flanges against the stud to which strip 3 is nailed. The resiliency of the channel strip 3 will result in a slight yieldability of the flanges sufficient to hold the slab in engagement with the studding irrespective of earth tremblors or wide changes in temperature.

The bottom 6 of each strip 3 is also formed with openings 9 spaced longitudinally of each strip. These openings are relatively large and may be slightly elongated longitudinally of each strip, and the lower marginal portion 10 adjacent each opening (when the strip is vertical) is bent slightly into the space between sides 5 of the

strip (Fig. 3) while the upper marginal portion 11 is bent slightly outwardly. The purpose of this structure is to provide guide means on the channel for an attaching element carried by the crack closing strip later to be described.

The flanges 4 of each strip 3 are bent to the same side of the flanges as the sides 5 as best indicated at 3 in Fig. 4, and these portions 8 are adapted to fit relatively freely into grooves 8' that are respectively formed in the marginal portions of the slabs over which the flanges 4 are extended. Thus when portions 8 are in grooves 8' the superposed slabs in each row are aligned and any appreciable movement of the slabs toward and away from the sides 5 of each channel strip is prevented.

Covering the space between the slabs of adjacent rows and also covering each channel strip 3 including flanges 4 thereof, is a covering strip 12. Each strip 12 extends slightly outwardly of the flanges 4 and projecting from the side of each strip 12 that faces the channel strip covered thereby are hook-like elements 13. These elements are preferably the projecting ends of a relatively heavy reinforcing wire that is embedded in strip 12 and that extends longitudinally thereof, since strip 12 is preferably of cement, concrete or molded material. The projecting elements 13 are spaced apart substantially the same distance as openings 9 in the bottom 6 of each strip, and extend slantingly downwardly and outwardly. Preferably that portion 14 of each wire element 13 that is within each strip 12 and adjacent element 13 is positioned within the strip to lie in substantially opposed relation to each element 13 so as to resist any tendency of the wire to pull out of the strip when a pulling force is applied to elements 13.

Upon positioning each covering strip 12 over channel strip 3 in position indicated in dot-dash line at 15 in Fig. 2, the free ends of elements 13 will rest on bottom 6 of the channel, and as the strip 12 is moved downwardly said ends will be guided over the inwardly bent marginal portion 11 of each opening 9 through the bottom 6 of the channel strip and into the space between said bottom and the studding adjacent thereto. Further downward movement of the strip 12 will result in a progressively increased tightening of the cover strip 12 against the flanges 4 and a tightening of the strip against slabs 1. Since elements 13 are resilient, the studding, slabs 1 and strips 12 are yieldably held in assembled relation.

Between flanges 4 and slabs 1, where the former overlie the adjacent slabs of the adjacent rows thereof, I preferably place a plastic substance 16 commonly known to the trade as "mastic" and this substance also is disposed between the portions of each strip 12 that overlies the said slabs. This substance hardens somewhat but is waterproof and retains a certain degree of plasticity.

While some of the claims call for strips 12 as being drawn into substantial engagement with the slabs by the action of elements 13, it is to be understood that the sealing substance is preferably used between the slabs and strips 12 to function as sealing gaskets, and as the substance 16 has an adhesive quality, once it is "set" it will also contribute materially to holding the strips 12 to slabs 1.

At the corners of a building where the adjacent side walls end, I provide generally U-shaped clips 20 (Figs. 5, 6) each having a short and a long leg. The longer leg 21 overlies the marginal portions of slabs 1 while the free edge of the shorter

leg engages the edge of each slab. The legs are perforated with aligned openings for nails 22, hence when the nails in one pair of aligned openings is driven into corner studding 23 the slabs will be securely held against the studding and the engagement between the shorter leg of each clip and the slab held by the longer leg 21 will prevent any substantial tilting of the clip. Each clip is of sheet metal and slightly resilient, thus providing a yieldable securement of the corner slabs to studding 23.

The corner covering strips 24 are angle strips of preferably the same material as strips 12, and are provided with elements 25 identical with the elements 13 of the strips 12 and which elements 25 project into the 90° angle between the sides of each strip 24. These elements 25 on each strip 24 are adapted to slide through holes 27 in the bottom of a channel strip 28 (Fig. 7) upon the corner cover strips 24 being positioned over the corner of the building and being moved downwardly in the manner used for securing strips 12 in position. The legs of each channel strip 28 are secured to the corner studding 23 with the open side of the channel over the corner of the studding; thus the outside of the bottom of the channel faces the elements 25, which is the reverse of the position of strips 3. The inclination of the portions 29, 30 of each channel 27 (Fig. 9) that corresponds with portions 10, 11 of each strip 3 is such as to guide elements 25 into the space between the corner studding and the bottom of strip 28.

It is pertinent to note that the opposite end edges of each strip 12 are rabbeted at opposite sides so that a downwardly projecting lip or extension 30' at the lower end of each strip will fit into a complementary recess in the upper edge of the strip therebelow so as to insure against leakage at the joints thus formed. Corner strips 23 are similarly formed at their opposite end edges (not shown).

In some instances it is found desirable to attach the covering strips 12 to individual U-shaped clips secured to studding 2 as best seen in Fig. 8. One of such clips is best shown in Fig. 10, and merely consists of a U-shaped element 31, the sides of which are bent oppositely outwardly as at 32 to provide extensions having perforations 33 therein for nails 34. The open side of each such strip faces the studding 2 and the extensions 32 are secured tightly against the studding by said nails. The slabs 1 extend at their adjacent margins over the extensions 32 and the loop formed by the U of each clip extends between the adjacent edges of the slabs (Fig. 8).

These clips 31 are spaced on studding 2 so that elements 13 will engage in the loops provided by said clips and upon downward movement of the covering strip 12 the wedging, but yieldable engagement between the elements 13 and the clips will cause the strip 12 to be drawn tightly against the slabs 1.

The principal difference between the type of construction shown in Fig. 8 and that of the construction in Fig. 4 is that the clips 31 do not have flanges that yieldably hold the slabs to the studding, but the elements 13 and strips 12 perform this function entirely.

Where steel studding is used, as shown in Fig. 9, the same strips 31 may be employed, although the holes 33 are superfluous and can be omitted. The slabs are held in place against the studding, (with the extensions of the clips 31 between the slabs and studding) by clamping elements 35

that engage the flanges 36 of the studding and the slabs, and which elements are yieldably held in clamping relation by loops 37 carried by the slabs, all as fully shown and described in my co-
 pending application, Serial No. 377,808, filed
 February 7, 1941, now U. S. Patent No. 2,332,705.

The elements 13 of the slabs 12 thus engage in the loops of the elements 31 in the same manner as described for Fig. 8, but in this instance the yieldable elements that clamp the slabs to the
 studding also function to secure the clips 31 in
 position, although the clips 31 may be previously
 secured to the studding in any desired manner,
 such as by spot welding or by welding in holes
 33 if the latter are retained.

In both of the forms indicated in Figs. 8 and 9, it is preferable to provide "mastic" 39 between the strips 12 and slabs 1 to insure a waterproof seal.

In Fig. 11 the studding indicated at 40 is of concrete and has the heads of bolts 41 imbedded therein with the threaded ends of the bolts projecting from the studding. These bolts take the place of the nails 7 of the form of the invention shown in Figs. 1 to 4, but otherwise the structure is the same as shown in Fig. 4. Nuts 42 in channel strip 3 on the threaded ends of bolts 41, securing the strip in position.

In Fig. 12 I show a pair of floor slabs 43 positioned with their adjacent marginal portions on a floor joist 44. The said marginal portions are rabbeted to provide recesses in the upper sides of the slabs at their adjacent edges. Said recesses receive the opposite ends of an upwardly bowed strip 45 that extends across the crack between the adjacent slabs. This strip is secured to the joist 44 by a screw 46 that passes through the space between the slabs, and as the screw is tightened the strip will yieldably force the marginal portions of the slabs into tight engagement with the joist. After the slabs are secured to the joist, the recess in which the strip and screw head are positioned is filled with cement 47 or other suitable material so that the floor surface will be level.

It is obvious that certain modifications may be made in the various forms of the invention herein described, but in all of said forms it is pertinent to note that the slabs, whether for side walls, roof or floor, are yieldably held in position, and in the case of the side walls and roof structure, the force of gravity alone contributes to holding the slabs and the strips 12 in tightly assembled yieldable relationship by reason of the particular structure used.

Having described my invention, I claim:

1. Building wall construction comprising an elongated wall-frame member; a pair of substantially rectangular wall-slabs alongside each other with their adjacent marginal portions spaced apart and supported against said member leaving a crack between said slabs extending longitudinally of said member; an element positioned in said crack and extending transversely thereacross and spaced from said member; a strip extending longitudinally of said crack covering the latter and extending over said marginal portions; means securing said element to said member; a relatively resilient and elongated metal member secured to said strip at one end and extending divergently therefrom and into the space between said element and said member yieldably engaging said element for yieldably securing said strip to said member in position covering said crack.

2. Building wall construction comprising an elongated wall frame member; a pair of substantially rectangular wall-slabs alongside each other with their adjacent marginal portions spaced apart and supported against said member leaving a crack between said slabs extending longitudinally of said member; a generally U-shaped element positioned in said crack with its base end adjacent and spaced from said member; oppositely outwardly extending projections on the legs of said element at their free ends extending over the said marginal portions; means securing said element to said member with said projections in engagement with said marginal portions for securing said marginal portions against said member; a strip extending longitudinally of said crack covering the latter and extending over said marginal portions and over said projections; means secured to said strip extending between the legs of said element and through the base end into the space between said base end of the latter and said member and into releasable engagement with the side of said base end that faces said member for releasably securing said strip against said projections and in a position over said crack and over said element.

3. Building wall construction comprising an elongated frame member; a pair of substantially rectangular wall-slabs alongside each other with their adjacent marginal portions spaced apart and supported against said member leaving a crack between said slabs extending longitudinally of said member; a channel-strip within said crack extending longitudinally thereof; flanges on the sides of said channel-strip extending over the surfaces of said marginal portions that face outwardly of said member; means securing said channel-strip to said member; openings formed in the bottom of said channel strip; a covering-strip extending over said crack and longitudinally thereof; a plurality of elongated, relatively resilient metal elements carried by said strip and projecting therefrom and through said openings to positions respectively extending over the side of said bottom that faces toward said member and in engagement with said bottom for securing said covering strip to said channel strip.

4. Building wall construction comprising an elongated frame member; a pair of substantially rectangular wall-slabs alongside each other with their adjacent marginal portions spaced apart and overlying said member leaving a crack between said slabs extending longitudinally of said member; a substantially U-shaped element disposed within said crack with its sides adjacent the adjacent edges of said slabs that extend along said marginal portions; means securing said channel element to said member with the base of the said element within said crack and spaced from said member; a covering strip extending over said crack and longitudinally thereof and extending over the sides of said marginal portions that face outwardly of said member; means yieldably securing said strip to said member and substantially against said sides of said marginal portions including a yieldable element secured to said strip and extending into the space between the base of said U-shaped element and said member in a direction generally longitudinally of said strip.

5. In a side wall for a building including generally vertical studding and substantially rectangular pairs of adjacent wall-forming slabs disposed alongside each other with their adjacent

marginal portions extending over each studding; means spacing said marginal portions apart and securing said respective pairs of adjacent slabs to each studding comprising a channel-element disposed between the said marginal portions with its base adjacent the studding and secured thereto, and flanges on the sides of said element overlying the said marginal portions outwardly of said studding; a covering strip extending longitudinally of each studding and over the sides of said adjacent marginal portions that face outwardly of said studding; means secured to each strip and removably connected to the base of each element yieldably securing said strips to said studding and against said marginal portions, and means including said channel element securing said marginal portions to each other.

6. In a side wall for a building including a vertical studding and a pair of wall forming substantially rectangular slabs alongside each other with their adjacent marginal portions spaced apart and overlying said studding leaving a crack between said slabs extending longitudinally of said studding; a substantially U-shaped element disposed within said crack with its sides adjacent

the adjacent edges of said slabs that extend along said marginal portions; oppositely outwardly extending projections on said element at the free ends of the legs thereof extending over the sides of said marginal portions that face outwardly of said studding; recesses formed in the said sides of said marginal portions; said projections having end portions extending into said recesses; openings formed in the bottom of said U-shaped element; a covering strip extending over said crack and longitudinally thereof and over the said marginal portions; means on said covering strip extending divergently downwardly therefrom and slidably through the said openings in the bottom of said U-shaped element securing said covering strip against said slabs and to said U-shaped element, said last mentioned means comprising elongated rod-like members secured at one of their ends to said covering strip and spaced from said covering strip at their opposite ends; and guide means on said bottom for guiding said opposite ends of said rod-like members through said openings, and means securing said U-shaped element to the studding.

ROY FELLOW.