H. B. COPELAND.

FASTENING DEVICE FOR SLABS FOR WALLS, CEILINGS, &c.

APPLICATION FILED OCT. 29, 1906.

916,916.

Patented Mar. 30, 1909.

2 SHEETS—SHEET 1.

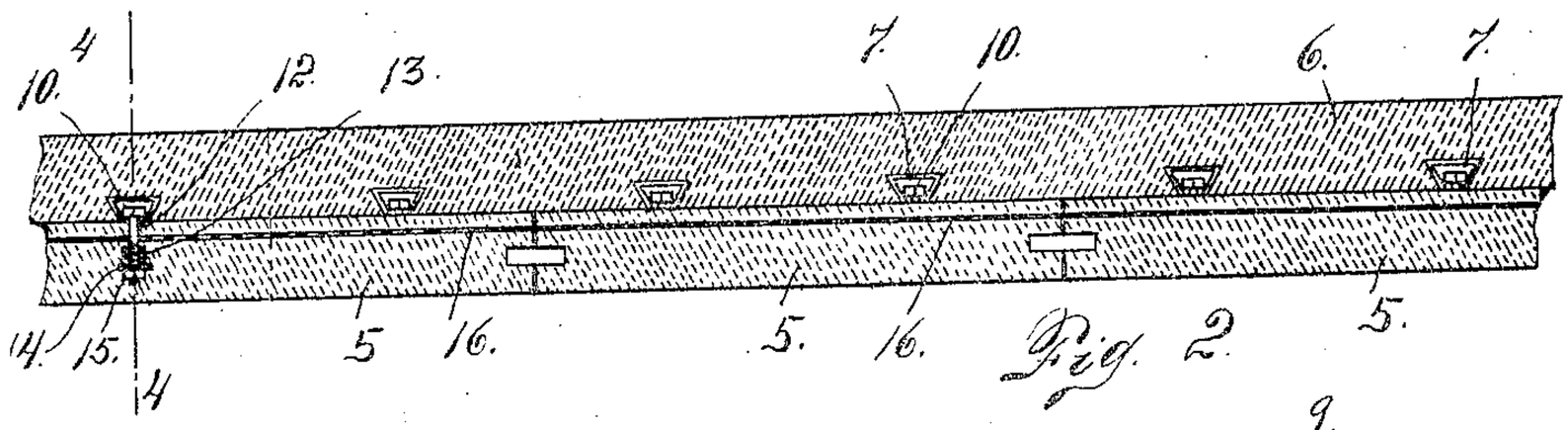

Fig. 2.

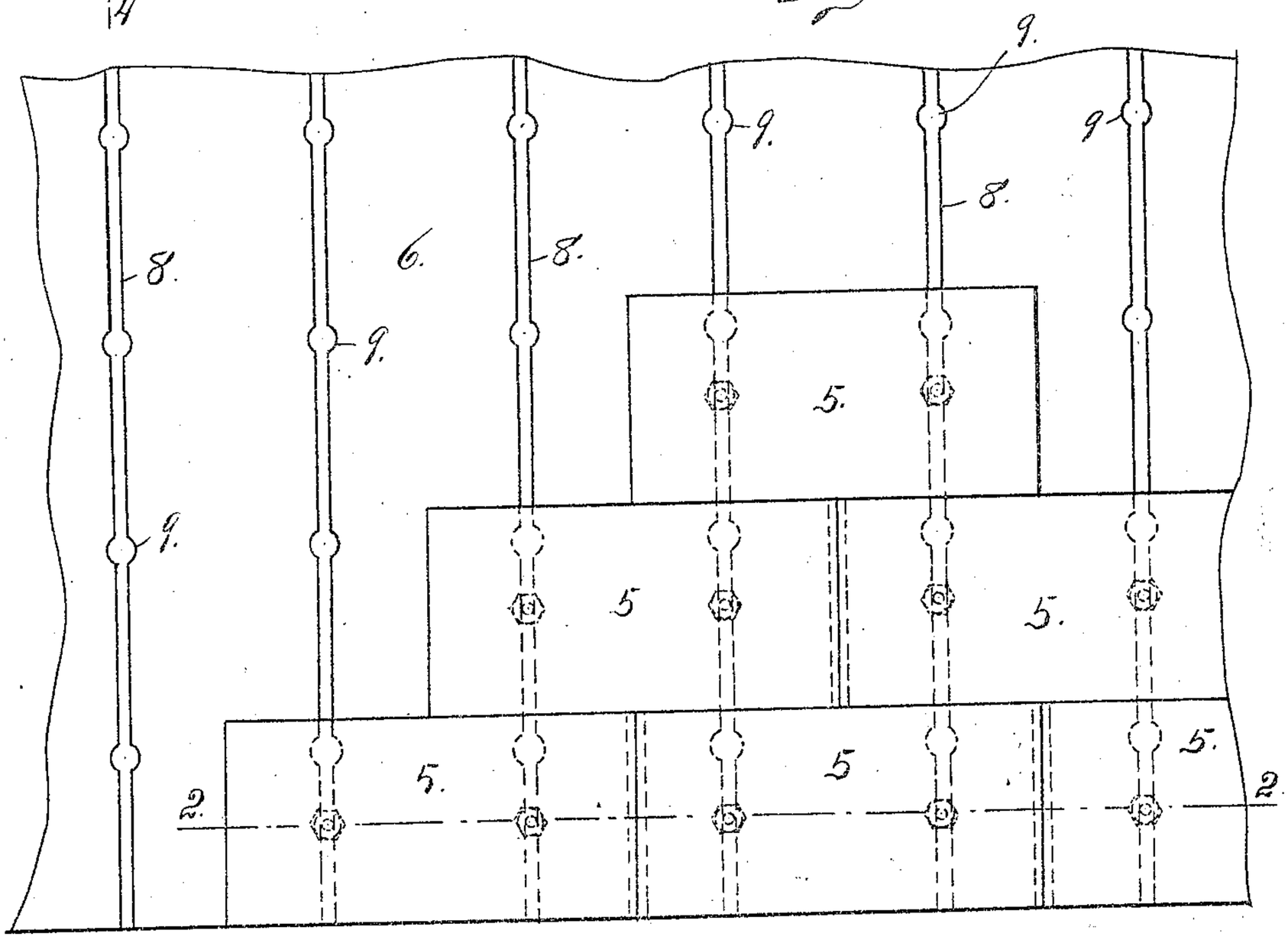

Fig. 1

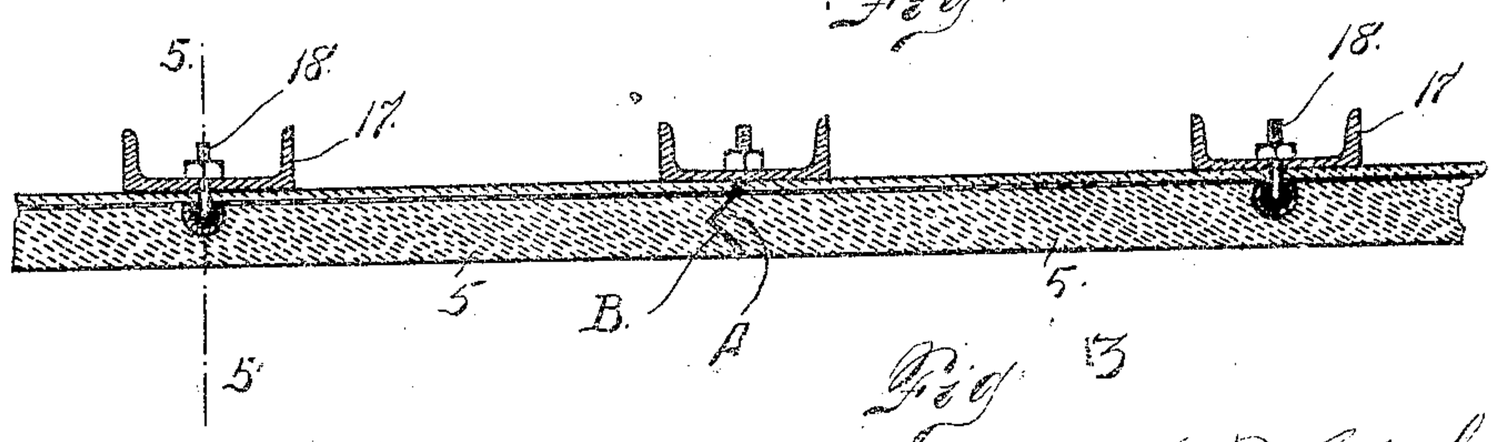

Fig 3

Witnesses

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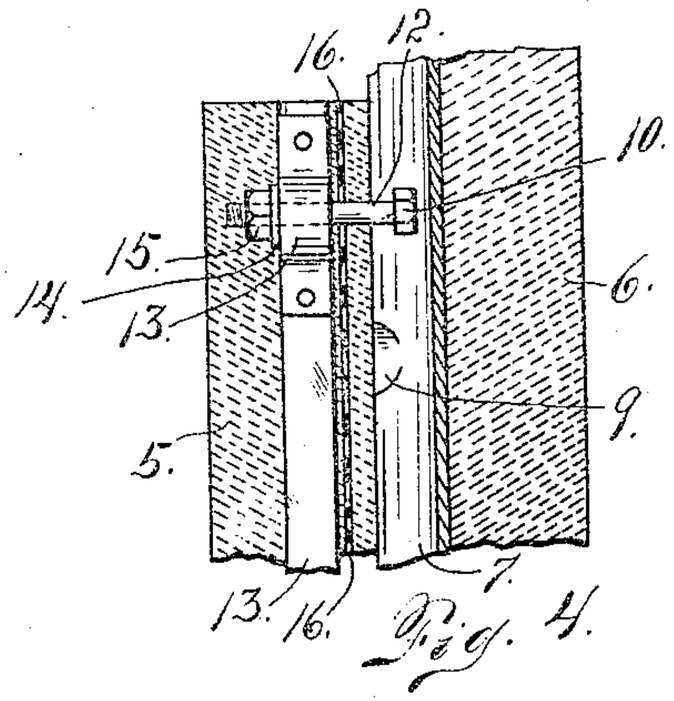

Fig. 4.

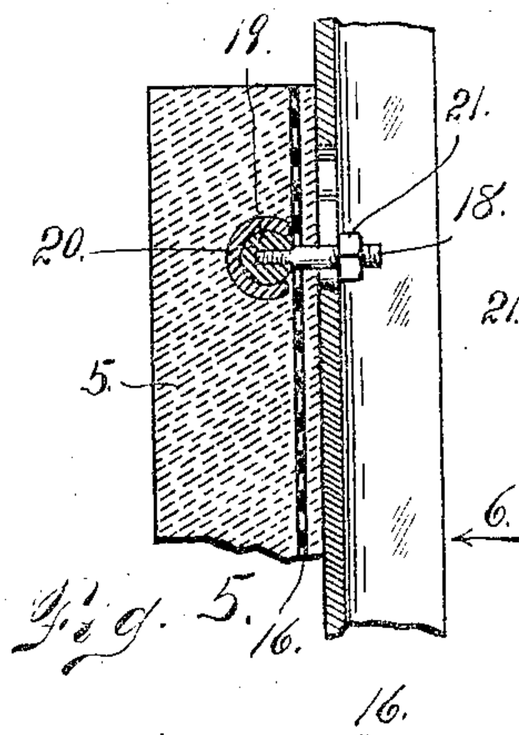

Fig. 5.

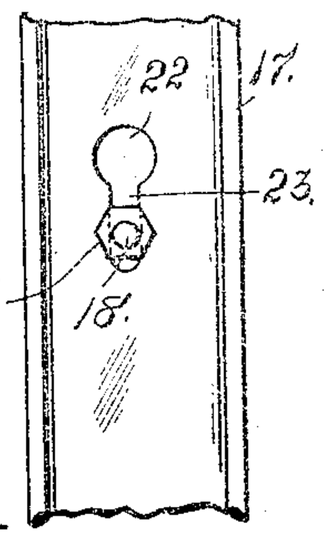

Fig. 6.

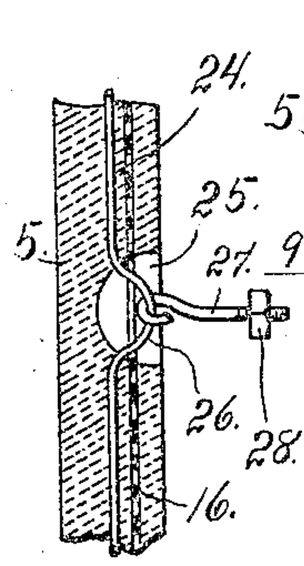

Fig. 7.

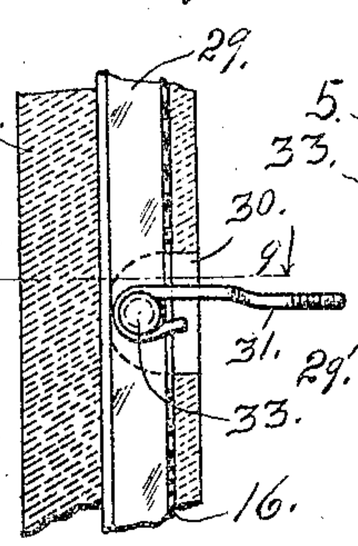

Fig. 8.

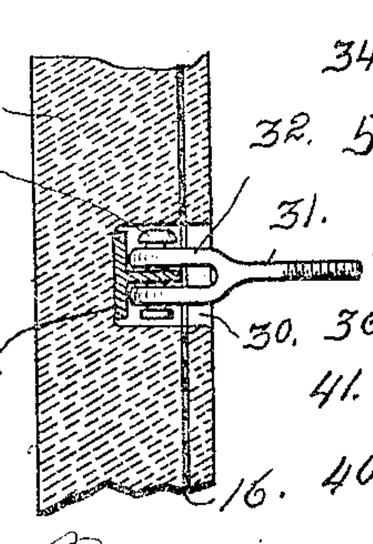

Fig. 9.

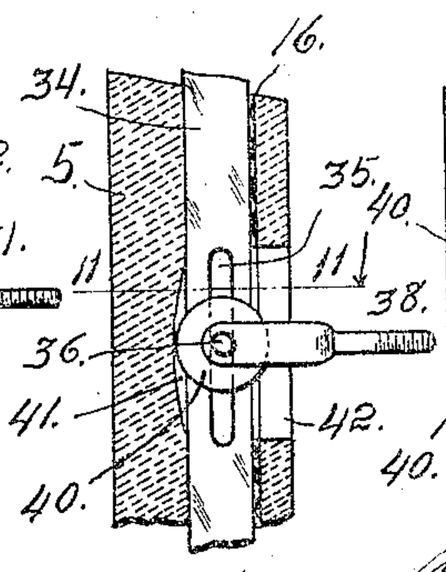

Fig. 10.

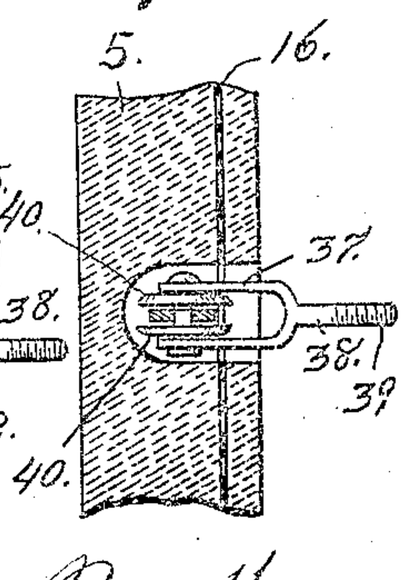

Fig. 11.

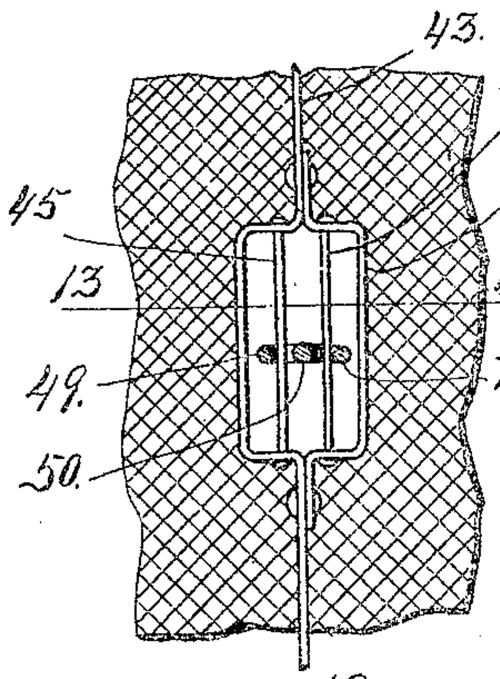

Fig. 12

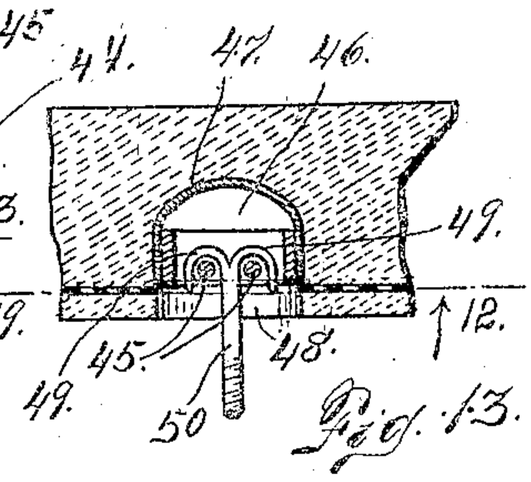

Fig. 13.

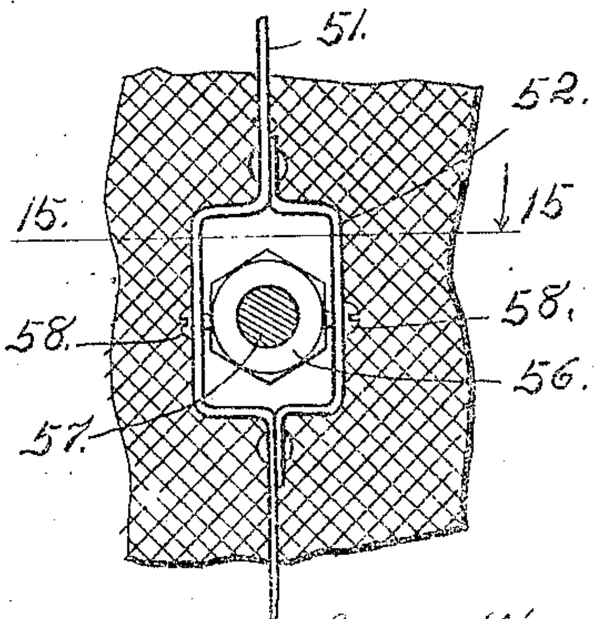

Fig. 14.

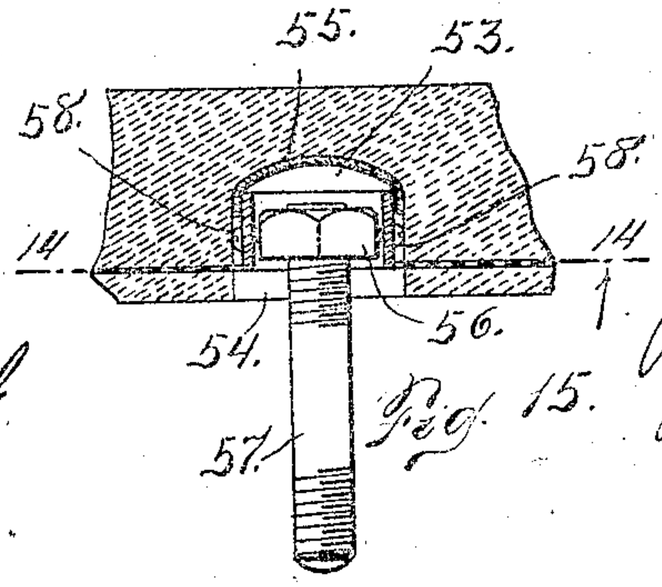

Fig. 15.

Witnesses

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UNITED STATES PATENT OFFICE.

HUGH BLACK COPELAND, OF DENVER, COLORADO.

FASTENING DEVICE FOR SLABS FOR WALLS, CEILINGS, &c.

No. 916,916. Specification of Letters Patent. Patented March 30, 1909.

Application filed October 29, 1906. Serial No. 341,071.

To all whom it may concern:

Be it known that I, HUGH BLACK COPELAND, a citizen of the United States, residing in the city and county of Denver and State of Colorado, have invented certain new and useful Improvements in Fastening Devices for Slabs for Walls, Ceilings, &c.; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in slabs for walls of the general class set forth in my previous patents numbered 669,041 and 815,513, and dated Feb. 26th, 1901 and March 20th, 1906, respectively.

In my improved construction I make the slab or section having embedded therein a fastening bar and also having another fastening device which is connected at one extremity with the said bar and at its opposite extremity to the studdings or supporting structure of the building. The latter fastening devices may be connected in such a manner as to permit a sliding movement in a vertical direction, or they may be pivotally connected by means of a universal joint to permit a movement in either direction.

Having briefly outlined my improved construction, I will proceed to describe the same in detail reference being made to the accompanying drawing in which is illustrated an embodiment thereof.

In this drawing, Figure 1 is a front view of a supporting wall showing a number of sections of my improved wall, in place. Fig. 2 is a horizontal section taken on the line 2—2 Fig. 1. Fig. 3 is a similar section, showing a different supporting means for the slab and a different manner of connecting the fastening devices. Fig. 4 is a vertical section taken on the line 4—4 Fig. 2. Fig. 5 is a similar section taken on the line 5—5 Fig. 3. Fig. 6 is a rear face view of Fig. 5 or a view looking in the direction of arrow 6 in Fig. 5. Figs. 7 and 8 are vertical sections taken through the wall showing different means for fastening the slabs in place. Fig. 9 is a section taken on the line 9—9 Fig. 8. Fig. 10 is a section similar to Figs. 7 and 8 showing still another fastening means. Fig 11 is a horizontal section taken on the line 11—11 Fig. 10. Fig. 12 is a section taken on the line 12—12 Fig. 13 viewed in the direction of the arrow. Fig. 13 is a horizontal section taken on the line 13—13 Fig. 12. Fig. 14 is a view similar to Fig. 12 but showing a different construction of fastening means. Fig. 15 is a section taken on the line 15—15 Fig. 14.

The same reference characters indicate the same parts in all the views.

Let the numeral 5 designate sections of the wall. These sections may consist of slabs of any desired shape or surface area. In Figs. 1 and 2 these sections 5 are secured to a wall 6 having vertical ways 7 preferably composed of vertically disposed tubes cast in the wall and provided with slots 8 open in front and provided with enlargements 9, to receive heads 10 of bolts 12, which bolts have their opposite extremities cast in the sections and entirely concealed in front. As shown in Fig. 2, the threaded extremity of the bolt is passed through a bar 13 which is bifurcated where the bolt enters it, a washer 14 and a nut 15 being connected with the bolt in the rear of the bar. These bolts are connected with the bars, and the latter are supported in position in the mold at the time the sections 5 are manufactured. In this event the sections are provided with the bolts 12 protruding from their rear faces and adapted to enter openings 9 of the ways 7. In constructing the wall the sections are so arranged, that after inserting the bolt heads in openings 9, the sections are allowed to move so that the bolts will be out of register with the openings 9, whereby they are held securely in place. In Fig. 2 of the drawing the tubes forming the ways 7 are approximately triangular in cross section. It is evident, however, that these tubes may be of any desired shape in cross section, whereby they are adapted to fit bolt heads of any shape. The construction just described is shown on a larger scale in Fig. 4. The sections are preferably provided with a layer of wire mesh 16 suitably located.

In Fig. 3 vertically disposed channel bars 17 form the supporting structure; and in this view bolts 18 are employed whose inner extremities are provided with ball and socket joints and are cast or molded in the sections 5 when the latter are manufactured. In Fig. 5 the construction is shown more in detail and on a larger scale. The ball and socket joint consists of a casing 19 in which

the ball extremity 20 of the bolt is located. The shank of the bolt protrudes from the section in the rear and a nut 21 may be applied thereto. The channel bars 17 are preferably provided with enlarged openings 22 adapted to receive the nut extremity of the bolt. From these openings, slots 23 extend. These slots are of sufficient width to allow the shank of the bolt to pass freely, but too narrow to allow the nut 21 to pass. Hence after the nut is inserted in the opening 22, the section may move downwardly until the nut is locked in place, thus securely holding the wall section in place.

As shown in Fig. 3 of the drawing, the vertical edges of the wall sections are provided with V-shaped tongues and grooves designated A and B, respectively. These vertical edges, however, may be united in any suitable manner.

In the form of construction shown in Fig. 7, the wall section is molded with a rod 24 in place and intersecting the socket 25 open in the rear, the said rod being bent outwardly in the socket as shown at 26 and into which a fastening bolt 27 may be hooked. This bolt as shown in the drawing is provided with a nut 28, and may be used in connection with any suitable support.

In the form of construction shown in Figs. 8 and 9, a bar 29, T-shaped in cross section is illustrated. This bar intersects a socket 30 opened in the rear and in which is located the bifurcated extremity 32 of a bolt 31 whose threaded shank protrudes rearwardly. The bifurcated end of this bolt straddles the central member of the T-shaped bar and is connected therewith by a pin 33 which passes through registering openings formed in the bifurcated part of the bolt and the central member of the bar, whereby the bolt is pivotally connected with the bar. The socket 30 is of sufficient size to permit the bolt a limited degree of oscillating movement, to allow for the settling of the wall independently of the support or vice versa, without cracking or injuring the wall.

In the form of construction shown in Figs. 10 and 11, a flat bar 34 is embedded in the wall section and provided with a vertical slot 35 adapted to receive a pin 36 which also passes through the bifurcated arms 37 of a bolt 38 having a rearwardly protruding shank 39. On opposite sides of the bar 34 are located disks 40, the said disks being located between the bar and the arms 37 of the bolt. This bolt 38 permits an oscillating and also a vertical movement, the rearward opening 42 leading to the socket 41, being sufficiently elongated to permit the bolt to move vertically bodily if circumstances should require.

In the form of construction shown in Figs. 12 and 13 a bar 43 is cast in the slab or section and provided with a rectangular member 44 through which passes two pins 45. In this member 44 is located a socket 46 provided with a metal lining 47, said socket being open in the rear as shown at 48. The pins 45 are located intermediate the top and bottom of the socket and are adapted to receive the double hooks 49 of a bolt 50 whose threaded extremity protrudes rearwardly from the slab or section. In molding this slab, the cavity or chamber 46 is left open in the rear, so that the fastening bolt 50 may be inserted and connected with the pins 44. By virtue of this construction the bolts need not be in position when the slab is manufactured, since there is room enough between the two pins 45 to insert the hook-shaped extremity of the bolt when turned so that the hooks shall occupy a position at right angles to that shown in Fig. 13. After the bolt head has been inserted in the position stated, by giving it a quarter turn it will be in the position shown in the last named figure, whereby it engages the pins 45 and is held securely in place for fastening purposes.

In the form of construction shown in Fig. 14, a bar 51 provided with a rectangular member 52, is embedded in the section or slab when the same is manufactured. This member 52 is located in a chamber 53 opened in the rear as shown at 54, the said chamber being provided with a metal lining 55. Before the slab is manufactured, the head 56 of a bolt 57, is trunnioned in the opposite sides of the member 52. As shown in the drawing the bolt head is trunnioned in the member 52 on opposite sides by screws 58. The shank of this bolt thus protrudes rearwardly from the slab after the latter is manufactured.

From the foregoing description the use of my improved slab will be readily understood. It may be employed for ceilings and floors as well as vertical or other walls, and it may be connected with any suitable support, and by any of the various fastening devices heretofore explained as well as others of similar character.

It is practicable to illustrate only a few of the various fastening devices that may be employed in connection with my improved slabs.

Having thus described my invention, what I claim is:

1. A slab having a cavity formed in its rear face, a fastening device composed of a bar embedded in said slab substantially parallel to the faces thereof and passing through said cavity and another fastening device having one extremity connected with said fastening bar, substantially as described.

2. A slab for walls being provided with a recess located in its rear surface, a metal member embedded therein and passing

through said recess, the said member being parallel with the faces of the slab, and a fastening device having one extremity suitably connected with said metal member, substantially as described.

3. A slab for walls having a metal lined cavity located in its rear face, a metal member passing through said cavity and disposed longitudinally of said slab and being parallel with the faces thereof, and a fastening device having one extremity located in the cavity and suitably connected with the metal member, substantially as described.

4. A slab for walls having located in its rear face a metal-lined cavity, a metal member passing through said cavity and parallel with the faces of the slab, and a fastening device disposed transversely of the slab and suitably connected with the said metal member, substantially as described.

5. A slab having a cavity formed in its rear face, a metal bar embedded in said slab and parallel with the faces thereof, said bar being provided with integral fastening portions which pass through said cavity, and a fastening device having one extremity suitably connected with the metal bar, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

HUGH BLACK COPELAND.

Witnesses:
DENA NELSON,
A. J. O'BRIEN.