Aug. 30, 1938. R. B. MILLARD 2,128,375

BUILDING CONSTRUCTION

Filed Jan. 13, 1938

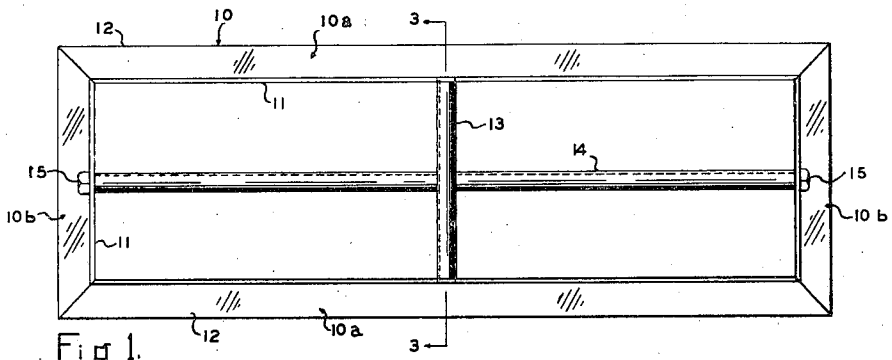


Fig 1.

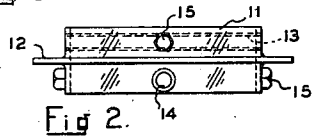


Fig 2.

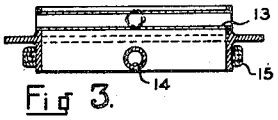


Fig 3.

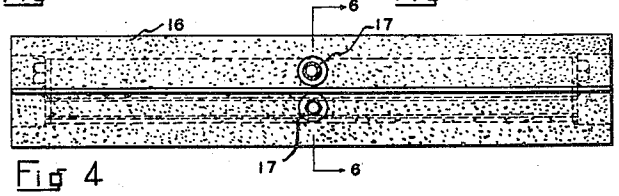


Fig 4

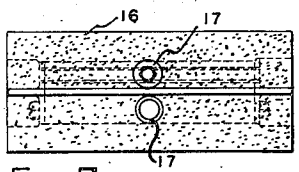


Fig 5

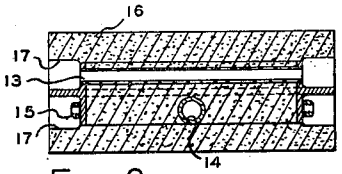


Fig 6.

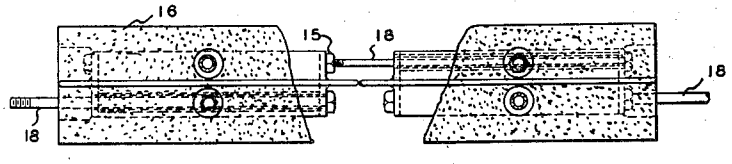


Fig 7.

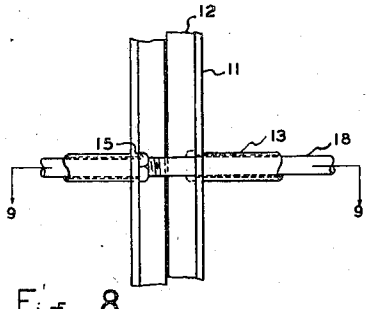


Fig 8

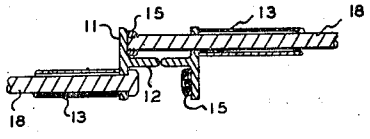


Fig 9.

INVENTOR
R. B. MILLARD

BY

ATTORNEY

Patented Aug. 30, 1938 2,128,375

UNITED STATES PATENT OFFICE

2,128,375

BUILDING CONSTRUCTION

Raymond B. Millard, Tulsa, Okla.

Application January 13, 1938, Serial No. 184,814

2 Claims. (Cl. 72—68)

This invention relates to a building construction, and particularly to a cementitious slab or panel for use in a floor or wall structure.

A principal object of the present invention is to provide a simple, efficient, and relatively inexpensive unitary slab or panel of fire-proof or insulating nature, which is strong and durable, and having parts so arranged that companion slabs may be coupled together both along the sides or ends in order to provide a highly stable composite structure.

Other objects and advantages of this invention will become apparent from the following detailed description when read in conjunction with the accompanying drawing.

In the drawing:

Fig. 1 is a plan view of the supporting metal structure of the slab prior to embedding same in the cementitious material forming the final slab.

Fig. 2 is an end view thereof.

Fig. 3 is a sectional view of the metal structure taken along line 3—3 of Fig. 1.

Fig. 4 is a side view of the completed slab.

Fig. 5 is an end view thereof.

Fig. 6 is a section through a slab taken along line 6—6 of Fig. 4.

Fig. 7 is an end view, showing the manner in which a pair of completed slabs are coupled together, part of the cementitious material of the slabs being broken away for purposes of clarity.

Fig. 8 is a fragmentary view in plan illustrating the manner of tying together companion slab parts at a juncture point, and

Fig. 9 is a cross-sectional view taken along line 9—9 of Fig. 8.

Referring to the drawing and particularly to Figs. 1, 2 and 3, which show the metal framework of the structure of this invention, the numeral 10 designates generally the metal frame, having parallel side pieces 10*a* and end pieces 10*b*, all of which are constructed of T-irons and joined together to form a substantially rectangular frame. All of the T-iron pieces are arranged with their flanges 11 extending vertically with respect to the thickness of the slab, and with their respective webs 12 extending laterally outward from the perimeter of the rectangular structure.

A hollow sleeve 13, positioned vertically above web 12, extends across the interior of the frame between side pieces 10*a*, the opposite ends of sleeve 13 registering with suitable apertures provided in the opposite flanges 11 above web 12. A second hollow sleeve 14 extends across the interior of the frame between the end pieces 10*b* and is positioned below web 12, the opposite ends of sleeve 14 registering with suitable apertures provided in the flanges of the end pieces below the webs thereof.

A threaded nut 15, such as a conventional hexagon nut, is fixedly attached to the outer face of each of flanges 11, on the side of webs 12 which is opposite with respect to each of the apertures registering with the ends of sleeves 13 and 14. That is, for each aperture or sleeve end opening through one of the flanges, on one side of the web, there is a corresponding nut attached to the flange on the opposite side of the web. The nuts 15 are shown in vertical alignment with respect to the corresponding aperture or sleeve end, and although this is the preferred arrangement, the nuts may be spaced laterally along the flange from the corresponding aperture. However, in every case, the individual nuts of each pair thereof should be positioned directly opposite each nut on the corresponding flanges.

By the described arrangements of sleeves and nuts, a symmetrical structure is provided, which is adapted to permit relatively easy and simple connection of one slab to another, as will be more fully described hereinafter.

The above described frame is embedded completely within a cementitious slab 16, which is formed by pouring cementitious material, such as concrete, plastic insulating or refractory material, into a form provided for this purpose and arranged so that the outer edges of webs 12 will be flush with the edges of the finished slab. The pouring form is cored so as to provide in the finished slab tubular openings 17 about each of the nuts 15 and about the apertures which register with the ends of sleeves 13 and 14. Openings 17 are provided for the purpose of permitting the insertion of connecting bars 18, when companion slabs are to be connected together.

Figs. 7, 8 and 9 illustrate the manner in which two of the finished slabs are connected together in forming a continuous wall or floor structure. As shown, the slabs are joined together along their longer edges.

The jointure is effected by laying the slabs alongside each other, one end of sleeve 13 being placed opposite a nut 15 on the adjacent side of the next slab. One of the connecting bars 18, which is in the form of an elongated cap screw or carriage bolt having a head at one end and threads at the other, is inserted, threaded end first, through the opposite end of sleeve 13 and the threads screwed into nut 15, until the slabs are drawn together with suitable tightness. It

will be understood, of course, that the connecting bars 18, used in effecting this particular jointure, are of such length that when made up into nut 15, the head of the bar will exert pressure against its adjacent flange 11 to effect the required tight connection.

If the slabs are to be connected together at their ends, the connection is made in exactly the same manner, the connecting bar 18 being inserted, however, through sleeve 14, and will be of the proper length for this purpose.

The sleeves 13 and 14 will serve also as stiffening members for the slabs, and for this purpose, the ends thereof are generally welded to the edges of the corresponding apertures.

By arranging the T-iron frame with the webs extending outwardly toward the edges of the slab, a structure of superior strength and stiffness is thus provided.

What I claim and desire to secure by Letters Patent is:

1. An article of the character described comprising a pre-cast slab of cementitious material, having embedded entirely therein a reinforcing frame made up of parallel side and end pieces all formed of T-iron and all having outwardly extending webs, hollow sleeves extending between the opposite sides and end pieces and opening to the outer faces of the corresponding flanges, the sleeves extending in one direction being below the web and the sleeves extending in the opposite direction being above the web, threaded nuts attached to the outer faces of the flanges, one of said nuts being provided for each sleeve end and positioned on the opposite side of the web with respect to said sleeve end, and a plurality of apertures in the cementitious material extending from the outer edges of the slab, and registering with each of said nuts and sleeve ends to permit access thereto.

2. In a building construction, pre-cast slabs of cementitious material, each slab having embedded therein a metal reinforcing frame made up of parallel side and end pieces, all formed of T-iron and all arranged with outwardly extending webs, hollow sleeves extending between the opposite side and end pieces and opening to the outer faces of the corresponding flanges, the sleeves extending in one direction being below the webs and the sleeves extending in the opposite direction being above the webs, threaded nuts attached to the outer faces of the flanges, one of said nuts being provided for each sleeve end and positioned on the opposite side of the web with respect to said sleeve end, a plurality of apertures in the cementitious material, one of which registers with each of said nuts and sleeve ends and extend from the corresponding outer edge of each slab to its respective nut or sleeve end, a sleeve of one slab registering with a nut of an adjacent slab, and a threaded connecting bar extending through said last mentioned sleeve into threaded connection with said last mentioned nut.

RAYMOND B. MILLARD.