

Dec. 17, 1929.

H. E. MARKS

1,739,977

SLAB CEILING CONSTRUCTION

Filed May 14, 1928

2 Sheets-Sheet 1

Fig. 1.

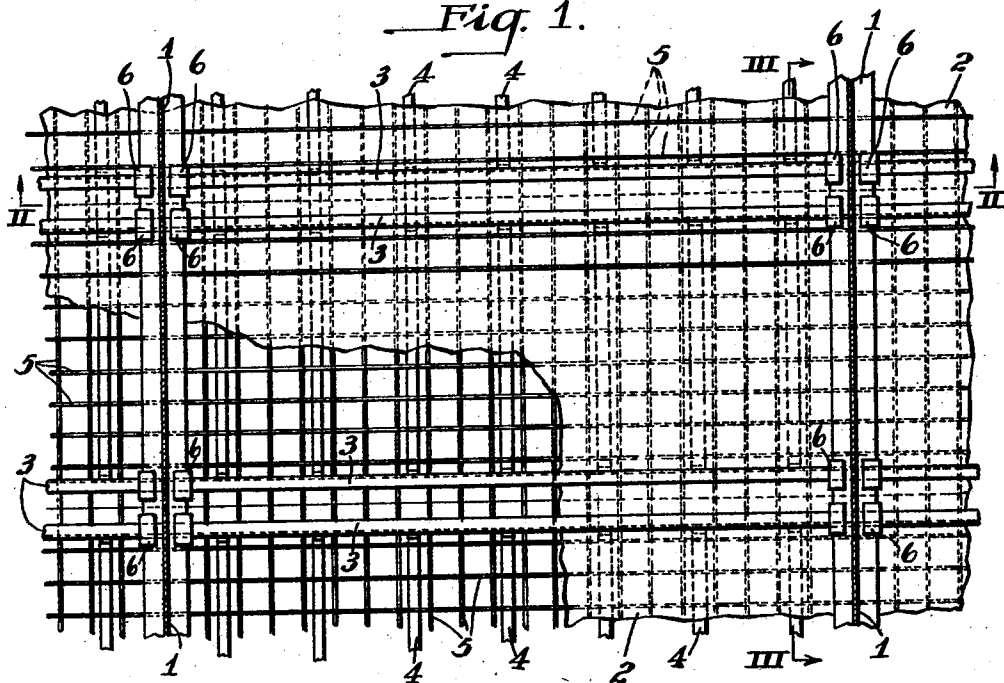


Fig. 2.

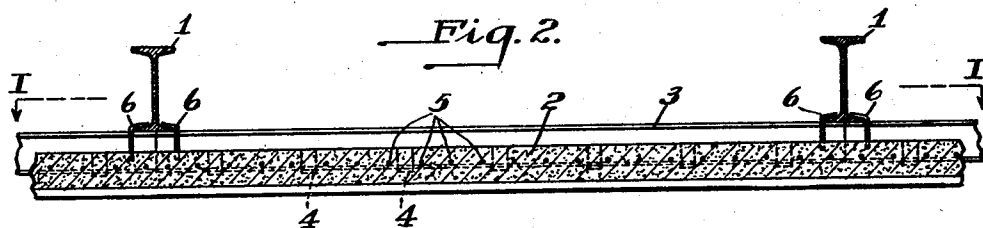
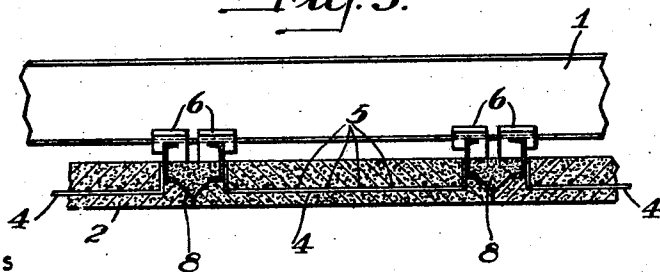


Fig. 3.



WITNESSES

A. B. Wallace.

INVENTOR

Herbert E. Marks
By Brown & Bitchler
his Attorneys.

Dec. 17, 1929.

H. E. MARKS

1,739,977

SLAB CEILING CONSTRUCTION

Filed May 14, 1928

2 Sheets-Sheet 2

Fig. 4.

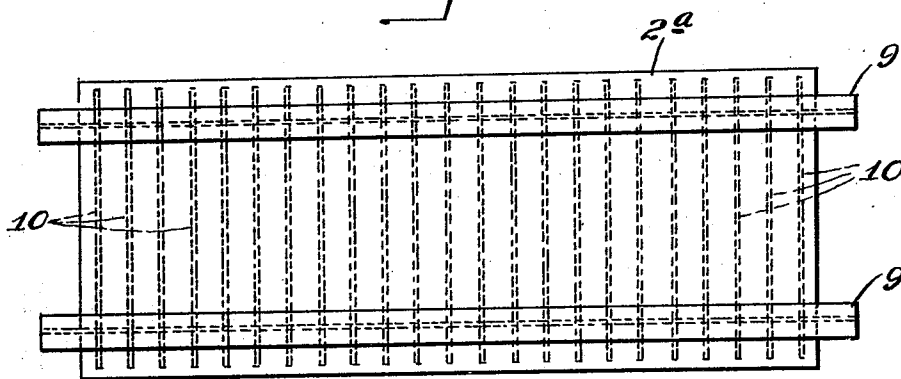


Fig. 5.

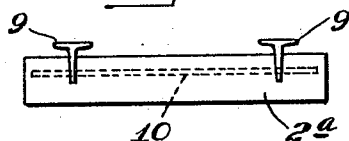


Fig. 6.

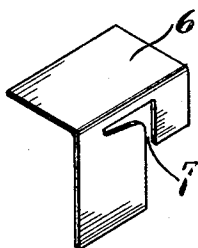
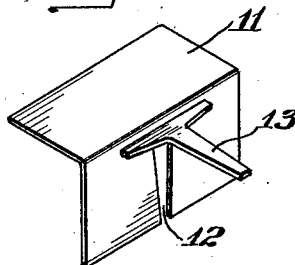


Fig. 7.



WITNESSES

W. Wallace

INVENTOR

Herbert E. Marks
By Brown & Brice
his Attorneys

UNITED STATES PATENT OFFICE

HERBERT E. MARKS, OF SEWICKLEY, PENNSYLVANIA

SLAB CEILING CONSTRUCTION

Application filed May 14, 1928. Serial No. 277,426.

The invention relates to slab ceilings of the type used in fire-proof apartments, hotels, office buildings, factories and the like, in the construction of which ceilings slabs are attached directly or indirectly to floors, roofs or equivalent beams, hereinafter referred to collectively as beams.

The object of the invention is to improve the construction of slab ceilings of the type described, and to provide a simple, easily applied and secure fastening means for attaching the slabs to their supporting beams.

The invention is illustrated in the accompanying drawings, of which Fig. 1 is a top plan view of a portion of a slab ceiling, the plane of view being indicated by the line I—I, Fig. 2; Fig. 2 a vertical sectional view taken on the line II—II, Fig. 1; Fig. 3 a vertical sectional view taken on the line III—III, Fig. 1; Fig. 4 a top plan and Fig. 5 an end elevation, respectively, of a modified form of ceiling slab; and Figs. 6 and 7 perspective views of forms of clips for attaching ceiling slabs to floor beams.

In the practice of this invention there are provided pre-formed ceiling slabs of cementitious material, such as gypsum, concrete, and the like, having molded in them longitudinally extending bars which project above the tops of the slabs and which are preferably provided at their upper edges with horizontally disposed flanges. The slabs are arranged beneath floor beams with the upper edges or flanges of the bars bearing against the lower flanges of the beams to properly and uniformly space the slabs from the beams. Clips are provided for engaging the upwardly projecting portions of the slab bars and the lower flanges of the beams for attaching the slabs to the beams, the clips preferably being in the form of bent plates having vertical legs provided with slots for telescopically engaging flanges of the slab bars, and having horizontal legs extending over the tops of the lower flanges of the beams. Preferably, the slab bars are molded in the slabs at their sides, and the lower portions of the slabs below the bars preferably project outwardly to form a trough between the sides of adja-

cent slabs. When clips of the form just explained are used, their vertical legs extend downwardly into these troughs, and a fill of cementitious material placed in the troughs anchors the clips in their slab-attaching positions. To firmly hold the bars in the slabs, anchoring members engage the bars within and extend transversely of each slab.

Referring now to the embodiment of the invention illustrated particularly in Figs. 1, 2 and 3, a pair of floor beams 1 are shown in the spaced relationship in which they normally exist in floors. Beneath the beams there are pre-formed slabs 2, each having a channel 3 molded in it at each side extending the full length of the slab. The upper portions of the channels project above the upper faces of the slabs, and the channels are preferably arranged with their flanges extending outwardly from the sides of the slabs. As shown particularly in Fig. 3, the lower portion of each side of each slab below channel 3 projects upwardly beyond the tops of the slabs to form troughs between the adjacent sides of the slabs, which troughs are filled with a body of cementitious material for a purpose presently to be explained.

The slab-supporting bars are preferably anchored in the slabs by members extending transversely of the slabs. For this purpose, in the form of slab shown in Figs. 1, 2 and 3, metal strips 4 are welded or otherwise attached to channels 3, the strips having their ends bent upwardly adjacent to the webs of the channels to make such connections. If desired, wire fabric or other reinforcing material 5 may be incorporated in the slabs, and when this is done the reinforcing material may conveniently be supported by strips 4 during the molding of the slabs.

The preferred form of clips for attaching the ceiling slabs to the beams is, as shown in Fig. 6, a bent plate 6, having a vertical leg provided with a slot 7 shaped to receive the upper outstanding flange and the upper portion of the web of a channel 3, and having a horizontal leg adapted to rest upon the upper face of the bottom flange of a beam 1. In attaching a ceiling slab 2 to beams 1

by means of clips 6, a clip is telescopically received by the upper portion of each end of each channel 3, the slab is then positioned below the lower flanges of adjacent beams with the upper flanges of bars or channels 3 adjacent to the lower faces of the beams, and clips 6 are then moved towards the beams into binding engagement with the bottom flanges of the beams. After the slabs have been thus erected and attached, fills 8 of cementitious material are placed in the troughs formed between the sides of adjacent slabs, the fills being of such depth as to encase the lower portions of the vertical flanges of the clips 6 so that when the fills set the clips become firmly locked in their slab-attaching positions.

In Figs. 4 and 5 there is illustrated a modified form of slab 2^a, in which the slab-supporting bars are formed of T's 9 having their webs molded in the slab and their heads or flanges projecting above its upper surfaces. To anchor the T's in the slab, their webs are preferably provided with a series of perforations which receive rods 10 extending transversely of and molded in the slab. In Fig. 7 there is shown a form of clip for attaching slabs of the form shown in Figs. 4 and 5 to beams 1. The clip comprises a bent plate 11 having a vertical leg provided with a T-shaped slot 12 adapted to receive the upwardly projecting portions of T's 9. If desired, the metal stamped from clip 11 to form slot 12 may be bent upwardly to form a horizontally disposed tongue 13 which may be welded or otherwise secured to the top of a T to hold the clip in its slab-attaching position.

According to the provisions of the patent statutes, I have explained the principle and mode of operation of my invention, and have described what I now consider to be its best embodiments. However, I desire to have it understood that, within the scope of the appended claims, the invention may be practiced otherwise than as specifically illustrated and described.

I claim as my invention:

1. A slab ceiling comprising a plurality of spaced beams, slabs of cementitious material extending between said beams below their lower flanges and having longitudinally extending bars molded in them and projecting above their upper faces, and clips engaging the upwardly projecting portions of said bars and the bottom flanges of said beams for attaching the slabs to the beams.

2. A slab ceiling comprising a plurality of spaced beams, slabs of cementitious material extending between said beams below their lower flanges and having molded in them longitudinally extending bars provided above the tops of the slabs with horizontally disposed flanges, and clips engaging the bottom flanges of said beams and the flanges of

said bars for attaching the slabs to the beams.

3. A slab ceiling comprising a plurality of spaced beams, slabs of cementitious material extending between said beams below their lower flanges and having molded in them longitudinally extending bars provided above the tops of the slabs with horizontally disposed flanges, and clips provided with slots telescopically engaging the flanges of said bars and having horizontal legs engaging the upper faces of the lower flanges of the beams for attaching the slabs to the beams.

4. A slab ceiling comprising a plurality of spaced beams, slabs of cementitious material extending between said beams below their lower flanges and having molded in them longitudinally extending bars provided above the tops of the slabs with horizontally disposed flanges, the upwardly projecting portions of said bars spacing the slabs from the lower flanges of the beams, and clips engaging the bottom flanges of said beams and provided with slots telescopically engaging the flanges of said bars for attaching the slabs to the beams.

5. A slab ceiling comprising a plurality of spaced beams, slabs of cementitious material extending between said beams below their lower flanges and having bars molded in them at their sides, said bars projecting upwardly above the upper faces of the slabs and having horizontally disposed flanges at their upper edges and clips engaging the flanges of said bars and the lower flanges of said beams for attaching the slabs to the beams.

6. A slab ceiling comprising a plurality of spaced beams, slabs of cementitious material extending between said beams below their lower flanges and having bars molded in them at their sides, said bars projecting upwardly above the upper faces of the slabs and having horizontally disposed flanges at their upper edges, the lower portions of the sides of the slabs projecting outwardly beyond their tops to form troughs between the sides of adjacent slabs, clips engaging the flanges of said bars and the lower flanges of said beams for attaching the slabs to the beams, and fills of cementitious material in said troughs engaging said clips and anchoring them in their slab-attaching positions.

7. A slab ceiling comprising a plurality of spaced beams, slabs of cementitious material extending between said beams below their lower flanges and having bars molded in them at their sides, said bars projecting upwardly above the upper faces of the slabs and the lower portions of the sides of the slabs below the bars projecting outwardly to form troughs between the sides of adjacent slabs, clips engaging said bars and the lower flanges of said beams for attaching the slabs to the beams, and fills of cementitious material in said troughs engaging said clips

and anchoring them in their slab-attaching positions.

8. A slab ceiling comprising a plurality of spaced beams, slabs of cementitious material extending between said beams below their
5 lower flanges and having bars molded in them at their sides, said bars projecting upwardly above the upper faces of the slabs and having horizontally disposed flanges at their upper
10 edges the lower portions of the sides of the slabs projecting outwardly beyond said bars to form troughs between the sides of adjacent slabs, and clips having vertical legs provided with slots telescopically engaging the
15 flanges of said bars and having horizontal legs engaging the upper faces of the lower flanges of the beams for attaching the slabs to the beams.

In testimony whereof, I sign my name.

20 HERBERT E. MARKS.

25

30

35

40

45

50

55

60

65