

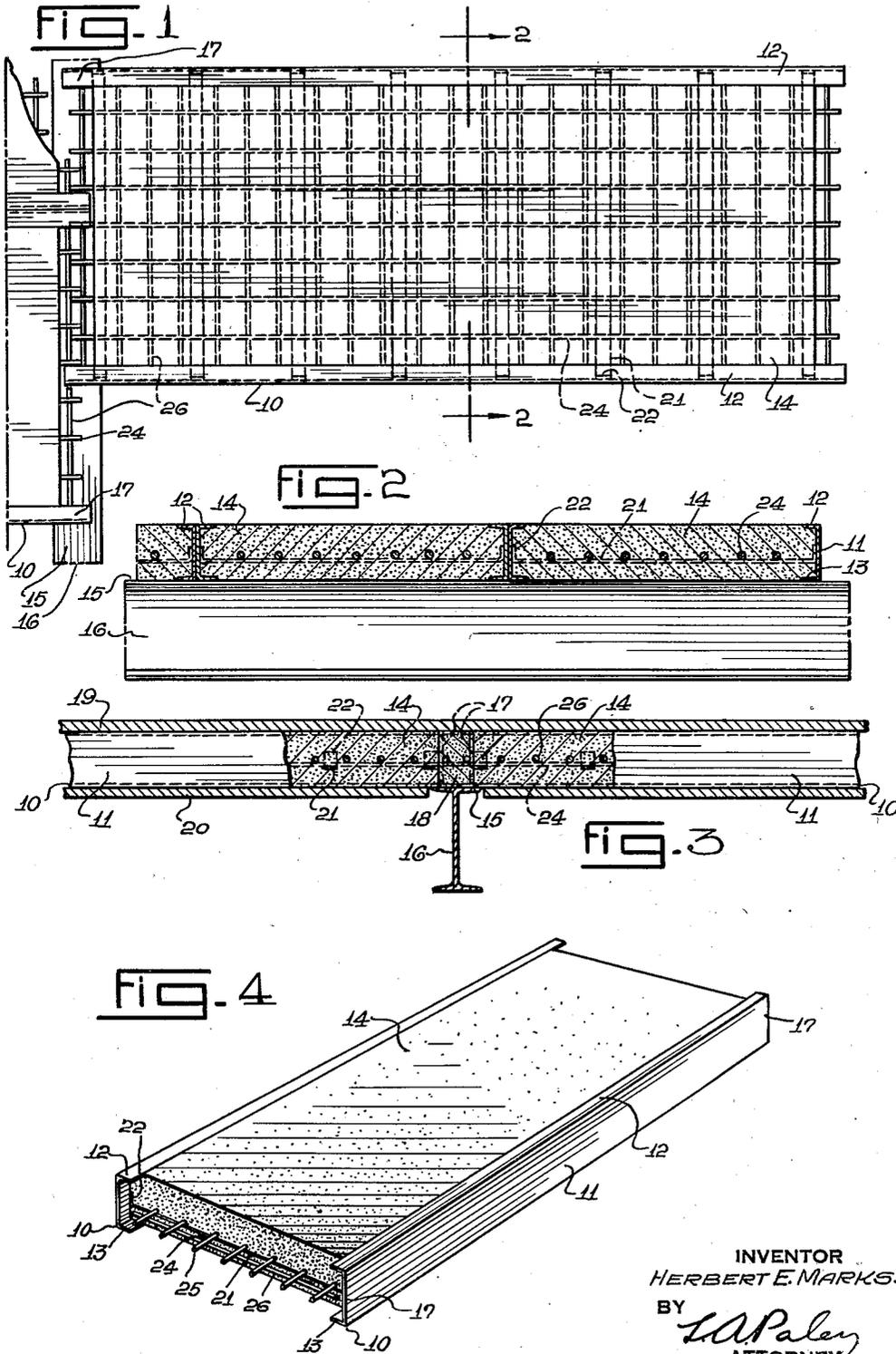
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SLAB FLOOR OR ROOF CONSTRUCTION

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SLAB FLOOR OR ROOF CONSTRUCTION

Original application filed May 14, 1928, Serial No. 277,425. Divided and this application filed October 14, 1932. Serial No. 637,702.

This invention relates to slab floors or roofs of the type used in fireproof apartments, hotels, office buildings, factories, and the like, in which slabs rest upon the tops of floor beams or roof purlins hereinafter referred to collectively as beams.

In floors and roofs of this type considerable difficulty has been encountered by reason of the relatively small bearings afforded by the tops of the beams for the ends of the slabs. The tops of the beams are so small that, even when the slabs are of exact size and the beams accurately positioned and straight from end to end, there is no excess bearing surface for the ends of the slabs. But these conditions do not prevail in practice. Not infrequently the slabs are of irregular size, the beams are not accurately positioned, and they are not straight from end to end. Under these practical conditions inadequate bearing support is afforded for the ends of many slabs. The slabs are often not properly reinforced at their edges and the edges are subject to chipping and damage during shipment and erection.

An object of this invention is to provide a floor or roof of the type described in which provision is made for adequately supporting all of the slabs regardless of the customary irregularities met in practice, and also to provide a floor or roof of this type in which the slabs may be connected to each other to form a continuous structure, and in which the slabs may be connected to their supporting beams to tie the latter together.

Another object of the invention is to provide a gypsum slab with edges encased in metal channels so that the slab edges are properly reinforced and are not subject to damage during shipment and erection; also to improve building constructions in other respects hereinafter specified and claimed.

Reference is to be had to the accompanying drawing, forming a part of this specification, in which

Fig. 1 is a plan view of my improved floor slabs,

Fig. 2 is a sectional elevation through the slabs taken on line 2—2 of Fig. 1,

Fig. 3 is a sectional elevation through a

floor constructed by the use of my improved floor slab, and

Fig. 4 is a perspective view of one of the floor slabs.

This application is a divisional application carved from my original application, Serial No. 277,425, filed May 14, 1928, entitled "Slab floor or roof construction".

In the practice of this invention a floor or ceiling is formed of pre-formed slabs which extend between spaced beams and which are provided with longitudinally extending channel bars having their ends projecting beyond the ends of the slabs and resting upon the tops of the beams for supporting the slabs and the loads which they carry. The slabs are so constructed or arranged on the beams that the projecting ends of the bars of the slab in one bay are offset with relation to those of adjacent bays, rendering the full width of the top flanges of the beams available for supporting each slab. The projecting ends of the bars may be, and preferably are, connected to the tops of the beams to tie them together and thus avoid the necessity of providing special tie rods between the beams. In the space above the tops of the beams and between the adjacent ends of the slabs, filler bodies of cementitious material are poured.

Edge bars 10 are preferably in the form of channel strips having vertical webs 11, upper flanges 12, and lower flanges 13. A slab 14 of cementitious material, such as gypsum, is formed between the bars 10 with the outer faces of the flanges 12 and 13 lying in the plane of the faces of the slab 14. The flanges 12 and 13 preferably extend inwardly toward the center of the slab so that the backs or edges of the webs 11 can be arranged in closely abutting relation as seen in Fig. 2, little or no grouting material being needed between such channel bars. The ends of the channel bars 10 extend substantially beyond the ends of the slab 14, so that such bar ends rest on top of the upper flanges 15 of a supporting beam 16. As seen in Fig. 1, the slabs are arranged in staggered relation so that the projecting ends on the bars 10 of one slab in one bay

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are offset with relation to those of the adjacent bay, the top flanges 15 of the beam 16 thus being available for supporting each slab over the full length of the projecting ends 17 of the bars 10. It will be seen that the channel bars 10 form edge facings and reinforcements for the slab 14 so as to add substantially to the longitudinal strength of said slab and also to protect the edges of the slab against chipping during shipment and erection. By reason of the fact that the outer faces of flanges 12 and 13 lie in the plane of the bases of the slab 14, the bar flanges 13 rest directly upon the beam flanges 15, with a metal to metal contact, while the ends of the slabs 14 also partly rest upon the beam flange 15 and form a grouting space for the reception of a poured, cementitious grouting material 18. By reason of the full bearing of the ends 17 of channel bars 10 on the beam flanges 15, the slabs are adequately supported regardless of irregularity in sizes and in the positions or spacings of the beams 16, such as prevail in practice. When the slabs 14 are formed of gypsum, or cinder concrete, facing materials such as upper plates, boards, or sheets of heat insulating or waterproofing material 19 may be nailed directly to the upper faces of the slabs 14 after erection, while similar facing sheets 20 may be nailed to the lower faces of the slabs 14.

The channel bars 10 are preferably anchored to the slabs 14 by bars 21 which extend between the channel webs 11 and may be secured in any suitable way to the inner faces of said webs 11, such as by turning the ends of the bars upwardly to form flanges 22, which can then be welded directly to the inner faces of the webs 11 prior to pouring the slabs 14. The connecting bars 21 thus form a substantial transverse reinforcement for the slabs 14, and a longitudinal reinforcing mat of reinforcing bars 24 may be laid on top of the bars 21 prior to casting of the slab 14, the ends 25 of the bars 24 preferably extending beyond the ends of the slab 14, a distance substantially equal to the length of the projecting channel ends 17. Cross rods 26 welded across the longitudinal bars 24 serve to position the longitudinal bars 24 in spaced relation, and one of the cross bars 26 preferably extends into the space between adjoining slab ends so that the grouting material 18 embeds the ends 25 of rods 24 and cross rods 26, to lock the slabs together into a monolithic construction. The lower channel flanges 13 are preferably welded to the tops of the beam flanges 15 to insure a rigid and rugged building construction.

I would state in conclusion, that while the illustrated example constitutes a practical embodiment of my invention, I do not wish to limit myself precisely to these details, since manifestly, the same may be consid-

erably varied without departing from the spirit of the invention as defined in the appended claims.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:—

1. A pre-formed building slab for building constructions, comprising a body of gypsum, channel bars forming supports and edge facings for two opposite sides of said slab, the flanges of said channel bars extending inwardly of the slab and having the outer surfaces of said flanges lying substantially flush with the outer faces of said slab, the webs of said channel bars being substantially smooth so that the channel bars of adjoining slabs can be arranged with the webs thereof in closely abutting relation, and metallic, reinforcing members embedded in said slab and extending between said channel bars.

2. In a floor construction, a plurality of pre-formed gypsum building slabs arranged in a plane, a pair of channel bars having inwardly turned flanges in the planes of the slab surfaces and forming edge facings for opposite edges of each of said slabs, the outer surfaces of the webs of said channel bars being substantially smooth, the webs of adjoining channel bars lying in closely abutting relation, reinforcing members embedded in each slab between said channel members, and means for supporting said slabs.

3. A pre-formed building slab for building constructions, comprising a body of gypsum, channel bars forming supports and edge facings for two opposite sides of said slab, the flanges of said channel bars extending inwardly of the slab and having the outer surfaces of said flanges lying substantially flush with the outer faces of said slab, the webs of said channel bars being substantially smooth so that the channel bars of adjoining slabs can be arranged with the webs thereof in closely abutting relation, and metallic, reinforcing members embedded in said slab and extending between said channel bars, said reinforcing members, being attached to the inner faces of the webs of said channel bars intermediate said flanges.

4. A pre-formed building slab for building construction, comprising a body of gypsum, channel bars forming edge facing for two opposite sides of the slab, the flanges of said channel bars lying in the planes of the slab surfaces and extending inwardly of the slab, and reinforcing means embedded in said slab and extending between said channel bars, said reinforcing means being attached adjacent the inner faces of said channel bars intermediate said flanges.

5. A pre-formed building slab for building construction, comprising a body of gypsum, channel-shaped bars forming supports

and edge facing for two opposite sides of said slab, the flanges of said bars lying in the planes of the slab surfaces and extending inwardly of the slab so that the bars of adjoining slabs can be arranged with the webs thereof in closely abutting relation, and means embedded in said slab and extending between said bars, said means being attached to said bars and anchoring the same against displacement and reinforcing said slab.

6. A pre-formed, elongated, building slab for building constructions, comprising a body of gypsum, channel bars forming edge facing for the two longitudinal, opposite edges of said slab, said bars having webs of a character to permit the edges of adjoining slabs to lie in closely abutting relation, said bars having inturred flanges at least partly embedded in said slab and lying flush with the outer faces of said slab, and a metallic reinforcing member embedded in said slab and extending between the webs of said channel bars so as to reinforce said slab transversely of said channel bars, said bars serving to reinforce said slab longitudinally thereof when said slab is supported by supporting structural members.

7. A slab floor or roof, comprising a plurality of spaced beams having upper, outstanding flanges, pre-formed slabs extending between said beams, channel bars forming reinforcing supports and edge facings for two opposite edges of each slab, the ends of said channel bars extending substantially beyond the ends of said slabs and resting directly on said beam flanges, the webs of the channel bars of adjoining slabs lying in closely abutting relation, and grouting material formed above said beam flanges in the space between the ends of said slabs.

8. A slab floor or roof, comprising a plurality of spaced beams having upper, outstanding flanges, pre-formed slabs extending between said beams, channel bars forming reinforcing supports and edge facings for two opposite edges of each slab, the webs of the channel bars of adjoining slabs lying in closely abutting relation, reinforcing members connecting said channels and embedded in the slab, the ends of said channel bars and said reinforcing members extending substantially beyond the ends of said slabs above said beam flanges, and grouting material formed above said beam flanges and around the ends of said channel bars and reinforcing members.

9. A slab floor or roof, comprising a plurality of spaced beams having upper, outstanding flanges, pre-formed slabs extending between said flanges, channel bars forming reinforcing supports and edge facings for two opposite edges of each slab, the webs of the channel bars of adjoining slabs lying in closely abutting relation, the ends of said channel bars extending substantially beyond the ends of the slabs and supported on said

beam flanges, grouting material formed above said beam flanges in the space between the ends of said slabs, and a facing material secured to one face of said slabs.

10. A slab floor or roof, comprising a plurality of spaced beams having upper, outstanding flanges, pre-formed slabs extending between said beams, channel bars forming reinforcing supports and edge facings for two opposite edges of each slab, the ends of said channel bars extending substantially beyond the ends of said slabs and resting directly on said beam flanges, and grouting material formed above said beam flanges in the space between the ends of said slabs.

11. A pre-formed building slab for building constructions, comprising a body of gypsum, channel bars forming supports and edge reinforcements for two opposite sides of said slab, the flanges of said channel bars extending inwardly of the slab and having the outer surfaces of said flanges lying substantially flush with the outer faces of said slab.

12. In a floor or roof construction, a plurality of pre-formed gypsum slabs arranged in a plane, a pair of channel bars having inwardly turned flanges in the planes of the slab surfaces and forming edge reinforcements for opposite edges of each of said slabs, the outer surfaces of the webs of adjoining channel bars lying in closely abutting relation, and means for supporting said slabs.

13. A slab floor or roof, comprising a plurality of spaced beams, pre-formed slabs extending between said beams, and channel bars forming reinforcing supports and edge facings for two opposite edges of each slab, the ends of said channel bars extending substantially beyond the ends of said slabs and resting directly on said beams, the webs of the channel bars of adjoining slabs lying in closely abutting relation.

14. A slab floor or roof, comprising a plurality of spaced beams, pre-formed slabs extending between said beams, and channel bars forming reinforcing supports and edge facings for two opposite edges of each slab, the webs of the channel bars of adjoining slabs lying in closely abutting relation, reinforcing members connecting said channels and embedded in the slab, the ends of said channel bars and said reinforcing members extending substantially beyond the ends of said slabs above said beams.

15. A slab floor or roof, comprising a plurality of spaced beams, pre-formed slabs extending between said flanges, channel bars forming reinforcing supports and edge facings for two opposite edges of each slab, the webs of the channel bars of adjoining slabs lying in closely abutting relation, the ends of said channel bars extending substantially beyond the ends of the slabs and supported

on said beams, and a facing material secured to one face of said slabs.

16. A preformed building slab for building constructions comprising a body of gypsum, metallic members forming supports and edge reinforcements for two opposite sides of said slab, said metallic members having portions extending inwardly of the slab, the outer surfaces of said portions lying substantially flush with the outer faces of said slab.

17. In a floor or roof construction, a plurality of preformed gypsum slabs arranged in a plane, a pair of metallic members forming supports and edge reinforcements for two opposite edges of each of said slabs, said metallic members having inwardly turned portions in the planes of the slab surfaces, the adjacent surfaces of adjoining metallic members lying in closely abutting relation, and means for supporting said slabs.

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