March 12, 1935. G. F. KOTRBATY 1,993,791

FLOOR MEMBER

Original Filed Jan. 16, 1931

Fig. 1.

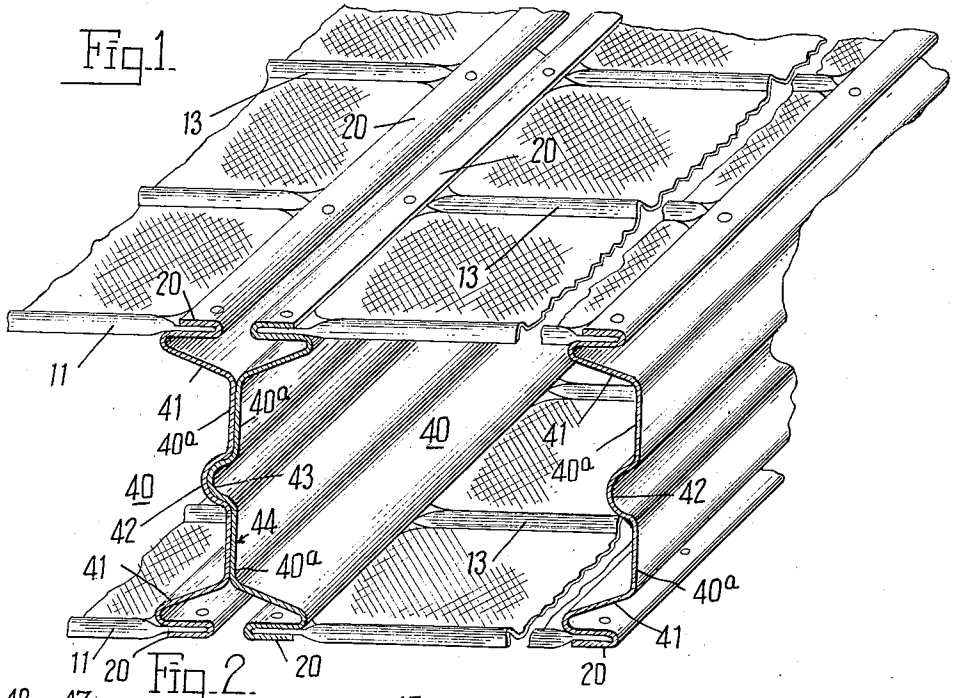


Fig. 2.

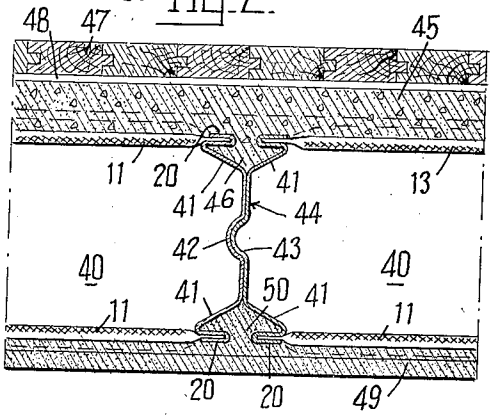


Fig. 3.

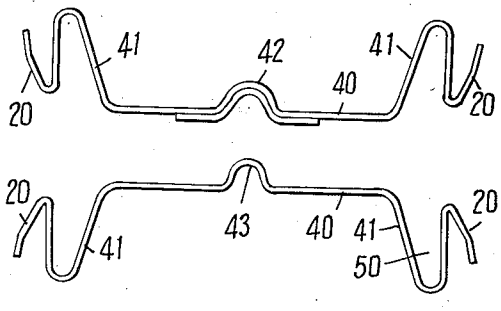
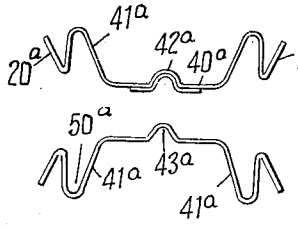


Fig. 4.



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1,993,791

FLOOR MEMBER

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Original application January 16, 1931, Serial No. 509,237, now Patent No. 1,968,045. Divided and this application July 23, 1934, Serial No. 736,489

7 Claims. (Cl. 72—66)

This invention relates to improved floor and roof grid units for building constructions. This application is a division of my application Ser. No. 509,237, filed January 16, 1931, for Building construction, and allowed November 3, 1933, now matured into Patent 1,968,045 of July 31, 1934.

The present invention is directed primarily to the formation of a novel construction unit or grid element which is adapted to be preformed, and is so constituted and arranged as to permit a plurality of them to be readily associated into any desired type of flooring or roofing constructions.

It is a feature of the present invention to provide preformed building units having improved combination structural members forming parts of composite I-beams.

It is also a feature of the present invention to provide such preformed, self-supporting, open-ended building unit structures of spaced composite I-beam members with top and bottom panels of suitable structural material held between and by the beam members.

Another feature of the present invention resides in improved interlocking of abutted beam members of self-supporting units to form composite I-beams and adapted to include monolithically bonded keying sections.

Further features of the present invention include floor and roof constructions of interlocked, self-supporting open-ended building units, having structural hardenable plastic surfacings applied and bonded to the surfaces of the units.

These and other desirable features and advantages of the present invention will be described in the specification and illustrated in the drawing, certain structural forms being shown by way of example only, for, since the underlying principles may be incorporated in other structural members, it is not intended to be limited to the forms and combinations here shown, except as such limitations are clearly imposed by the appended claims.

In the drawing, like numerals refer to similar parts throughout the several views, of which

Fig. 1 is a perspective view, partly in broken section, of a plurality of abutted floor and roof construction members;

Fig. 2 is a transverse cross-section through a floor and ceiling showing the finished structures formed from the members illustrated in Fig. 1;

Fig. 3 is a cross-section, in exploded view, of floor grid beam members; and

Fig. 4 is a modified form of the structures shown in Fig. 3, as adapted for roof and partition constructions.

Referring now to the drawing, there is shown in Figs. 1 and 2, a floor grid member 40, which comprises top and bottom sections 11 of transversely ribbed, foraminous metal sheets, having ribs 13. Owing to the heavier loads imposed on the floor surfaces of such members it is preferred to use a heavier weight material on the top side which supports the floor loads, whereas the bottom side, serving as a ceiling support, can be made of any light gauge material of suitable strength.

The combined floor and ceiling members are supported and spaced from each other by means of interposed web members 40*a*, which comprise flange portions 41 which terminate in clip members 20, and centrally disposed depressed portions or grooves 42. To facilitate the abutment of adjoining members, the sections 42 on one side of a floor member may be inverted to form a tongue portion 43 adapted to abut and engage the grooves 42, thus forming a composite I-beam 44, having flange portions 41 and web portions 40, as above noted.

When the floor members have been properly abutted together, a suitable plastic coating 45 of cement, or concrete, or other cementitious material, is poured thereover to a desired thickness. This coating will flow into and between the flanges 41 forming a monolithic key member 46 which serves, when set, to hold the flange portions together and also to act as a stiffener of the composite flange thus formed, being in fact an integral component part of the composite beam member. The top or compression member of the composite beam is thus more firmly bonded and enabled to withstand and transmit the compression strains imparted by the imposed loads. It will also be noted that section 46 of the composite flange is also an integral part of the monolithic floor covering 45, thus serving to bridge the floor sections immediately above adjacent grid sections and distribute the imposed loads evenly on either side.

A suitable floor covering 47 of wood may be applied on top of the concrete covering 45, the wooden members being suitably secured to wood or metal sleepers 48 embedded in the concrete. If desired, the top floor covering may be made of linoleum, tiling, asphalt base materials, or any other suitable floor covering. The bottom or ceiling portion of the structure may have the usual coatings of lime, cement, gypsum, or other suitable plastic materials 49 applied thereto. This material is also flowed into and between the bottom flange portion 41, as indicated generally at

50, thus serving as an additional anchor for the plastic coating. The member 50 thus formed also acts as a stiffener for the composite flange member, as has been described above. Where desired, any suitable non-plastic coating material may be applied or suitably secured to the ceiling portion by means of wood, or metal sleepers, or furring strips, clipped to the flanges or tied to the foraminous portions of the members 11.

In Fig. 4 there is shown the web portions of roof grid members which are similar in construction to the floor grid members described above and illustrated in Figs. 1, 2 and 3. Owing to the lighter loads normally imposed on roof members as compared to floor members, the part may be structurally smaller and of lighter gauge material, but are usually similar in configuration and design. These members comprise web members 40*a*, having flange portions 41*a* terminating in the usual clip members 20*a*. Alternate tongue and groove depressions 43*a* and 42*a* are provided in these members, and are adapted to coact to form composite I-beams, as previously noted. Channels 50*a* are formed in these members between the sections 41*a* and the clip members 20*a*. These channels serve to receive and key hardenable plastics forming keying sections in the composite structures.

The improved floor and roof grids of the present disclosure may be used as such in a variety of building constructions, although they are peculiarly adapted and intended for use in improved building constructions as covered in the parent application, above identified.

It will now be appreciated that there has been disclosed novel flooring and roofing constructions, including self-supporting, open-ended grid units having mating web portions adapted to form composite I-beams, and other portions adapted to receive structural plastic materials serving to interlock abutted units together.

What is claimed is:

1. An open-ended, self-supporting flooring, ceiling and roofing grid unit, comprising longitudinally tongued and grooved spaced side sections provided with flanged edges, the said flanged edges being recessed to form structurel plastic-receiving members and being further provided with edge clip portions; and panel members held by and between the said edge clips.

2. An open-ended, self-supporting flooring, ceiling and roofing grid unit, comprising longitudinally tongued and grooved spaced side sections provided with flanged edges, the said flanged edges being recessed to form structural plastic-receiving members and being further provided with edge clip portions; and foraminous floor and ceiling panel members held by and between the said edge clips.

3. An open-ended, self-supporting flooring, ceiling and roofing grid unit, comprising tongued and grooved spaced side sections provided with flanged edges, the said flanged edges being recessed to form structural plastic-receiving members and being further provided with edge clip portions; and panel members held by and between the said edge clips, the respectively abutted and mated side sections being adapted to be locked together by structural plastics disposed in the channels formed by coacting recesses.

4. An improved flooring, ceiling and roofing construction member forming a composite I-beam and comprising tongued and grooved, butted continuous metallic mating sections provided with flanged edges, the said abutted flanges being recessed to form structural plastic-receiving keyways and being further provided with edge clip portions adapted to receive and hold top and bottom panels whereby to form self-supporting constructional units.

5. An improved flooring, ceiling and roofing construction member forming a composite I-beam and comprising abutted continuous metallic mating sections provided with flanged edges, the said abutted flanges being adapted to form structural plastic-receiving keyways and being further adapted to receive top and bottom panel members whereby to form self-supporting constructional units.

6. An improved monolithic flooring, ceiling structure comprising a self-sustaining metallic core formed of members held together by a continuous surfacing of concrete, the said members being formed of self-supporting metal units comprising spaced side and end walls joined in unitary construction, the said end walls including means for securing the side walls thereof, the said securing means being adapted to form concrete keying sections with other like means on abutted structures.

7. An improved flooring, ceiling structure comprising a self-sustaining metallic core formed of abutted members, the said members being open-ended and comprising separate web and panel sections secured together to form self-supporting units, the web sections being so configured and arranged as to fit and mate with like sections of abutted members and also to form locking means for the panel sections thereof, and interlocking means for the abutted members comprising cementitious plastic disposed between and engaging the said several panel locking means.

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