June 2, 1942. R. A. LOGEMAN 2,285,165

BUILDING FLOOR

Filed Jan. 17, 1940

Fig. 1.

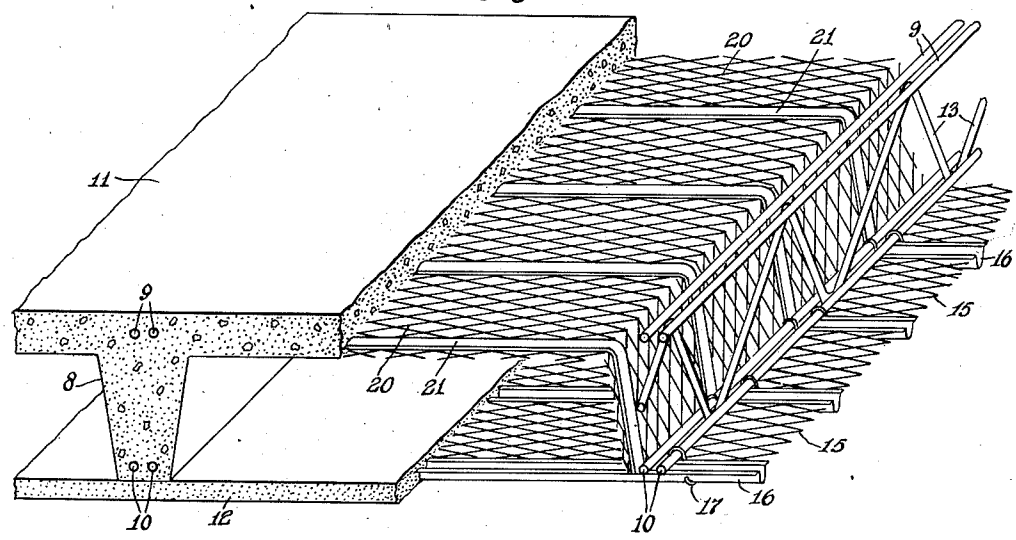


Fig. 2.

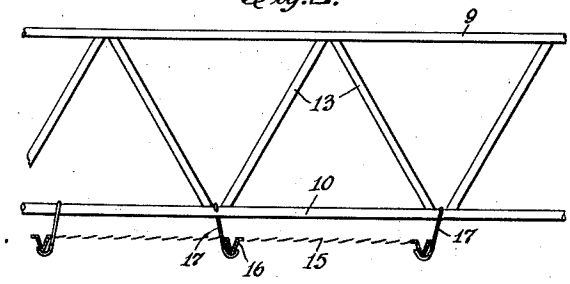


Fig. 3.

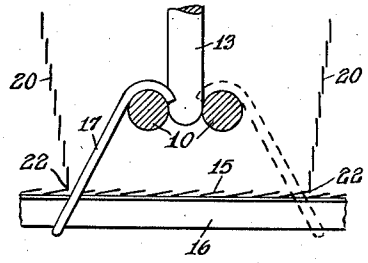


Fig. 4.

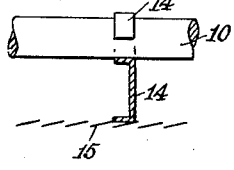
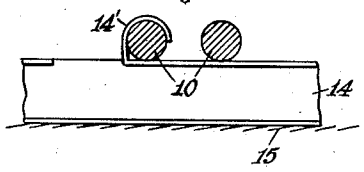


Fig. 5.



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BUILDING FLOOR

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Application January 17, 1940, Serial No. 314,220

1 Claim. (Cl. 72—66)

This invention relates to building floors of the reinforced concrete type, as distinguished from building floors supported from steel I-beams or bar joists which are fire protected by being surrounded with concrete or other materials. The general object of the invention is to provide a new and improved reinforced concrete floor construction which will be light and strong and will for the most part use standard materials, will be cheap to build because it requires no temporary forms during erection, and will have full fire-proof qualities. In addition to the advantages just mentioned, the present invention offers the further advantage that it can provide, as a part of the floor construction, a base for a plaster ceiling below the floor if such a ceiling is desired.

The invention will be understood from the following description taken in connection with the accompanying drawing, showing preferred forms of the invention, in which like parts are referred to by the same or similar reference characters. Fig. 1 is a perspective view, partly in section, of a portion of a reinforced concrete floor and ceiling construction embodying the invention; Fig. 2 is a side elevation of a portion of one of the reinforcing trusses showing the means for supporting, from the bottom chord of the truss, the base for the ceiling plaster; Fig. 3 is a fragmentary sectional end elevation of a truss showing the supports for the base for the ceiling plaster and how the pans are supported thereby; Fig. 4 is a fragmentary sectional elevation, showing means for preventing sagging of the trusses during erection of the floor; and Fig. 5 is a sectional elevation of the construction shown in Fig. 4 and at right angles to the latter.

In the left-hand portion of Fig. 1 there is illustrated the complete floor and ceiling construction embodying the invention, comprising concrete ribs 8 reinforced by open-web trusses having upper and lower chords 9 and 10, a concrete slab 11 and the plaster ceiling 12. In such a floor construction, as the trusses are arranged in parallel from one to three feet apart from center to center, additional reinforcing of the slab is ordinarily unnecessary. The trusses shown in the drawing are of a well-known form which are too light to support the load without the aid of concrete, characterized by pairs of parallel bars 9 and 10 forming the top and bottom chords to which are welded the zigzag bar 13 forming the web, as best shown in Figs. 1 and 2. While this form of reinforcing truss is particularly well adapted for carrying out the invention, it is of course to be understood that other forms of reinforcing truss may be used, for example, the slitted and expanded-web I-beam type hereinafter mentioned.

Referring now to the right-hand portion of Fig. 1 and to Figs. 2 and 3, the parts which are assembled prior to the pouring of the concrete will now be described. It will be understood, of course, that the parallel trusses are supported at their ends by the walls or frame of the building. As above stated, such trusses are too light to support the load without the aid of concrete. Therefore, to prevent sagging of said trusses during erection there is provided, as shown in Figs. 4 and 5, a supporting member such as a channel beam 14 having a height equal to the space which is to be left between the bottom chords 10 of the trusses and the top of the ceiling-base 15 hereinafter described. The supporting member 14 is shown in Figs 4 and 5 supported from the bottom chords 10 of the trusses and extending transversely thereof in the space between the bottom chords 10 of the trusses and the ceiling-plaster base 15. The supporting members 14 may be supported in a simple and efficient manner, by means of a clip 14' partially cut out of the top flange of the supporting member 14 and bent upwardly and over the top of one of the bars 10 of the bottom chord of each truss. It will be understood that after the ceiling-base 15 has been hung from the trusses (in the manner about to be described) temporary supports may be placed at intervals beneath the supporting member 14 for the purpose of preventing sagging of the trusses during erection of the floor.

After the trusses have been set in parallel relation, the next step in the erection of the floor is to suspend from the lower chords 10 of the trusses an element of the structure which serves both as a base for the ceiling plaster 12 and as a supporting means for the pans (hereinafter described) which serve to support the concrete slab 11 when wet and which give the floor its hollow construction. As shown in Figs. 1, 2 and 3, the supporting element just mentioned may consist of a well-known form of expanded metal lath 15 provided wtih stay ribs 16. As shown, this metal lath 15 is suspended from the bottom webs of the trusses by means of wire hooks 17, the hooked ends of which are in planes at right angles to one another. One end of the hook 17 is passed through an opening in the metal lath 15 adjacent a stay rib 16 and into engagement therewith; after which the other

end of the hook is passed over one of the bars 10 of the bottom chord of the truss. In this way, the metal lath 15 is supported in a plane below the bottom of the truss. The space thus left between the bottom of the trusses and the metal lath 15 (which may be about three-quarters of an inch) is important, as it permits downward flowing of the concrete under the bottoms of the trusses, as will be hereinafter described. It will be recognized that it is a simple matter to suspend the metal lath 15 from the trusses by means of the hooks 17, in the manner shown in the drawing; and that when the metal lath is so supported it will be substantially rigid and not liable to movement during the pouring of the concrete.

After the metal lath 15 has been suspended in the manner which has just been described, the pans are arranged between and spaced from the trusses with the edges of said pans resting upon the metal lath 15 as shown in Fig. 3 from which it will be evident that the edges of the pans are spaced laterally from said trusses and away from the edges of pans on the other side of said trusses, thereby leaving the expanded metal ceiling-plaster base beneath said trusses uncovered by said pans. It will of course be understood that the pans may be of any suitable and well-known material such as solid sheet metal, expanded sheet metal, composite pressed wood, asbestos and cement composition, etc. In the drawing, the pans are shown as comprising expanded metal lath 20 provided with stay ribs 21, similar to the metal lath 15 provided with the stay ribs 16 which serves as the base for the plaster ceiling. In Fig. 3, the bottom edges 22 of the pans are shown resting upon the metal lath 15 along the lines adjacent the hooks 17; and these hooks should be so set that they will serve to space the bottom edges of the pans a short distance laterally away from the bottom chords of the trusses. As hereinbefore mentioned, temporary supports or posts are placed at intervals beneath the supporting members 14 to prevent sagging of the trusses.

After the trusses, the base for the ceiling plaster and the pans 20 have been arranged in the manner just described, the wet concrete may be poured over the pans 20 and around, through and under the trusses so as to form the ribs 8 and the floor slab 11. It will be noted that the concrete completely surrounds the trusses, and that it is supported when wet between the trusses by the pans 20, and by that portion of the ceiling base (expanded metal lath 15) which is beneath the trusses and between the edges of the pans. Thus the pans 20 and ceiling base 15 serve as a mold for the concrete. After the concrete has set, the plaster 12 may be applied to the under side of the metal lath 15 in the usual way to provide a finished ceiling. It will be understood that the bonding of the plaster 12 to the expanded metal lath 15 is not interfered with by the fact that beneath the trusses the concrete has entered the interstices in the metal lath throughout a strip a few inches wide. Thus, there is provided a combined floor and ceiling construction having full fire-proof qualities.

From the foregoing description, it will be understood that the present invention provides either merely a floor construction or a combined floor and ceiling construction which is simple and light and has full fire-proof qualities. It is of course to be understood that the invention may be carried out with the use of trusses, pans and ceiling bases other than those herein illustrated. It is believed, however, that in most cases the materials herein described will give the most satisfactory and economical results.

What is claimed is:

A floor and ceiling construction comprising a plurality of parallel openwork concrete reinforcing trusses too light to support the load without the aid of concrete, an expanded metal ceiling-plaster base suspended from said trusses and spaced away from the bottom thereof, pans arranged between and spaced from said trusses with the edges of said pans spaced laterally away from said trusses and away from the edges of pans on the other side of said trusses and resting upon said ceiling-plaster base thereby leaving the ceiling-plaster base beneath said trusses uncovered by said pans, concrete completely surrounding said trusses and when wet supported on said pans and directly on said ceiling-plaster base beneath the trusses, and a supporting member attached to the bottoms of said trusses and extending transversely thereof and interposed in the space between the bottoms of the trusses and the ceiling-plaster base whereby said trusses may be temporarily supported by posts beneath the points where said supporting member traverses the bottoms of the trusses.

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