June 2, 1953 A. HOROWITZ 2,640,570

SUPPORTING CONSTRUCTION FOR BUILDING LAYERS

Filed Feb. 26, 1948

FIG. 3.

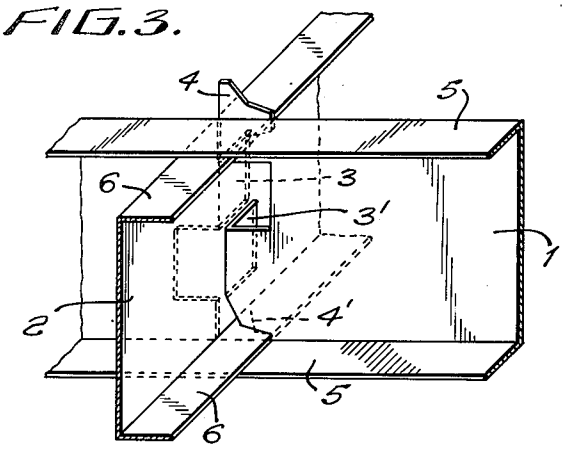


FIG. 2.

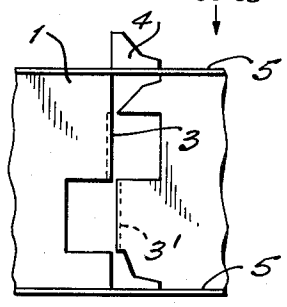


FIG. 2a.

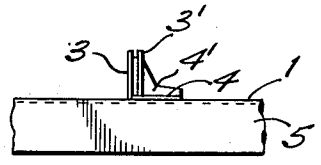
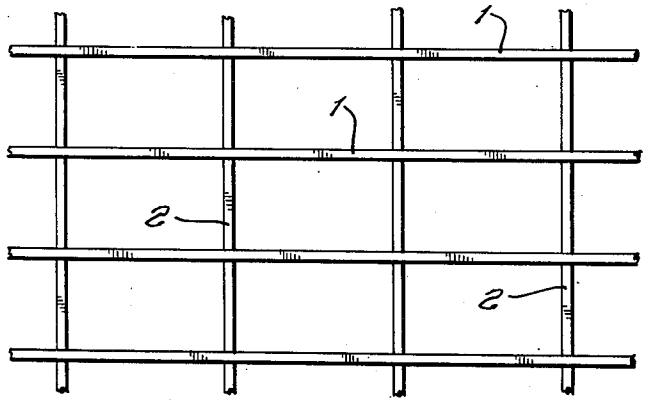


FIG. 1.



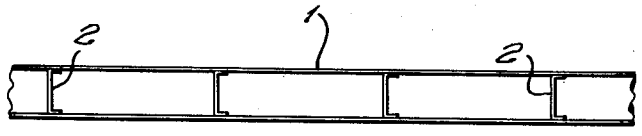


FIG. 1a.

INVENTOR.
ALEXANDRE HOROWITZ
BY
Michael S. Striker
Agt.

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SUPPORTING CONSTRUCTION FOR BUILDING LAYERS

Alexandre Horowitz, Eindhoven, Netherlands

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1 Claim. (Cl. 189—82)

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This invention relates to a supporting construction for floors, roofs, ceilings or similar building layers.

An object of the present invention is to provide a supporting construction which enables to compose the flooring or the building layer of other elements than wooden boards, such as e. g. light and relatively weak building slabs or covering panels of wood fibre, straw fibre, asbestos cement, wood cement and the like.

According to the invention this is attained by that the supporting construction comprises a grillage of at least two intersecting bar systems, one of which being adapted to support directly the building layer and the bars thereof being so interspaced as to correspond with the span length suitable for the said building layer, the intersecting bars of different bar systems extending one through another and being secured together at the points of intersection, so as to assure an intimate cooperation of the different bar systems and to enable a convenient transmission and distribution of the spot loads which may occur in the building construction.

Another object of the invention is to execute the bars which are penetrated by the bars of another system in such a manner that the intersecting bars may be readily and rigidly secured together by means of tongues which are formed from the webs of the penetrated bars.

A further object of the invention is to secure the said tongues to the webs of the penetrating bars by means of spot welding.

A still further object of the invention is to dimension the bars of the intersecting systems in such a manner that the flanges of the penetrating bars exactly fit between and bear against the flanges of the penetrated bars.

Other objects, features and details of the invention will become evident from the following description with reference to the accompanying drawings, in which a preferred embodiment of the supporting construction according to the invention has been illustrated by way of example and in which:

Figs. 1 and 1*a* show a supporting grillage comprising two bar systems intersecting each other at right angles, in plan view and in front elevation respectively,

Figs. 2 and 2*a* show a penetrated bar on a larger scale, in front elevation and in plan view respectively,

Fig. 3 is a perspective view of two intersecting bars of the grillage.

The illustrated supporting grillage comprises only two intersecting bar systems, viz. the bars 1

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and the bars 2 perpendicular thereto, although it is of course possible to make use of a greater number of intersecting bar systems.

The bars 1 are intended to support directly the flooring slabs, not shown, and to this end these bars are spaced at such distances as to correspond with the admissible span length for the slabs. The bars 1 are constituted by thin-walled U-shaped profiles, the webs of which are apertured in order to enable the bars 2, which are also U-shaped, to extend uninterruptedly through the bars 1. The apertures in the bars 1 are formed by that tongues 3, 3' of rectangular shape and tongues 4, 4' of polygonal shape are bent up from the material of the web. As clearly shown in Figs. 2, 2*a* and 3, both rectangular tongues 3, 3' are bent backwards so as to lie on either side of the web of the bar 2, the tongue 3 bearing against the left hand face and the tongue 3' against the right hand face thereof. This presents the advantage that the resistance against collapsing of the relatively flexible U-profile 1 is increased. The tongues are secured to the web of the U-profile 2 by spot welding.

The polygonal tongue 4 is bent upwards so as to form a connecting member protruding from the grillage and adapted to pierce into the flooring slab or covering material. The tongue 4' is bent backwards so as to bear against the lower face of the lower flange of the bar 2. If it is desired to coat also the lower side of the grillage, the tongue 4' may be bent in downward direction so as to project from the lower side of the grillage in a similar way as the tongue 4.

The flanges 6 of the bars 2 exactly fit between the flanges 5 of the bars 1 and may be secured thereto at the point of intersection.

It has appeared that for a minimum distance of 10 cm. between the bars of the grillage, a distance between the supporting beams of 1 m. and a uniform load of 200 kg./m.^{2} or a spot load of 100 kg., the grillage will have a total weight of only 4 kg./m.^{2}, which proves that a good supporting construction may be obtained in an economic way.

The invention is not limited to the example shown. For instance, instead of by means of tongues bent up from the material of the webs, the junction of the intersecting bars may be effected by separate securing means, such as angle irons and the like. Instead of by spot welding, the connection may also be realised by riveting or otherwise. Furthermore, bars of other shapes and profiles may be adopted, while the material for the bars is not restricted to metal only. The flooring or the covering layer of the grillage needs

not be composed of loose building slabs, but may also be formed as a single unit after positioning the grillage.

What I claim is:

A floor structure comprising, in combination, a first set of spaced substantially parallel beams each being composed of a web and a pair of flanges, and said webs of said first set of beams each having at a plurality of spaced points spaced inwardly from the outer edges thereof a pair of tongues struck outwardly therefrom so as to form a plurality of openings in said webs, said plurality of openings in said web of one beam of said first set of beams being in alignment with the openings in the web of the other beams of said first set of beams, and said tongues all extending in the same direction from said webs and being perpendicular to said webs and each pair of tongues respectively extending from web portions at opposite edges of the opening formed by each pair of tongues, and the latter being substantially parallel to each other so as to form a space between each pair of tongues; and a second set of spaced, substantially parallel beams each having webs of a thickness substantially equal to the spaces between said pairs of tongues and of lesser width than the width of the webs of said first beams, said second set of beams extending through said aligned openings in said first set of beams and having flanges substantially perpendicular to the flanges of said

first set of beams and located between and adjacent to the latter, said tongues of said first set of beams overlying opposite sides of said webs of said second set of beams and being welded thereto so that said first and second set of beams perpendicularly intersect each other and are connected together at their intersections.

ALEXANDRE HOROWITZ.

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