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E. C. HOGE

ROOF AND FLOOR CONSTRUCTION

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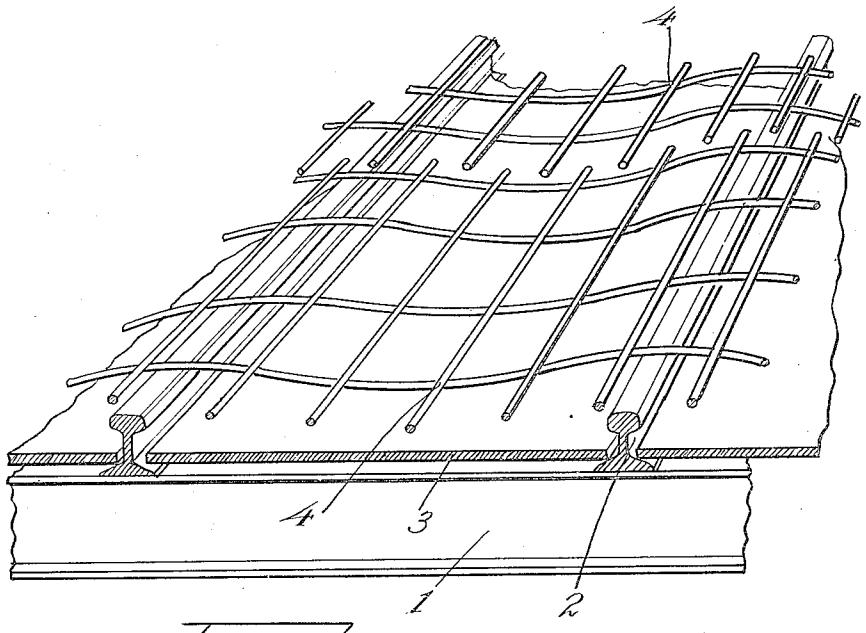


Fig. 1

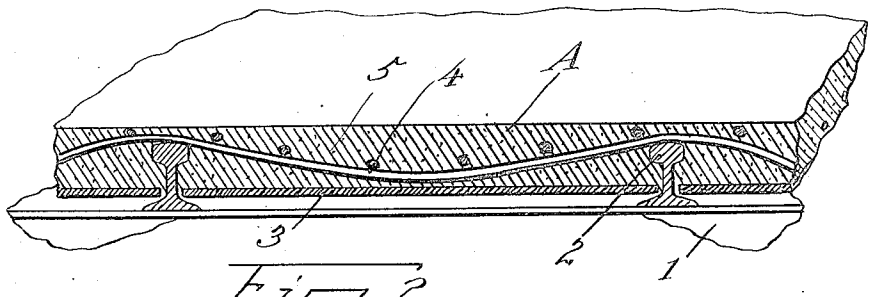


Fig. 2.

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UNITED STATES PATENT OFFICE.

EDWARD CLYDE HOGE, OF CINCINNATI, OHIO.

ROOF AND FLOOR CONSTRUCTION.

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To all whom it may concern:

Be it known that I, EDWARD CLYDE HOGE, a citizen of the United States, and a resident of Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Roof and Floor Constructions, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to the construction of roofs and floors for buildings of monolithic character.

Arthur H. Bromley in his patent in the United States No. 631,105, describes and illustrates a floor or roof construction using as a center or dome-shaped slab support, certain preformed, fairly thin slabs of plaster composition. These slabs need not be removed from the supporting beams, according to the Bromley invention, but become incorporated with the cementitious material or concrete poured upon them, and provide an underneath finish which can be given a finishing coat of plaster.

My invention utilizes the principle of the Bromley invention and deals with improvements therein.

Thus it is my object to provide for a form of support for the plaster slabs or centers that possesses great strength without requiring the use of an excessive weight of metal in the roof or floor. It is also my object to arrange for a reinforcing fabric or interlaced strands or rods of metal, which is so arranged over the plaster slab supporting devices as to form a reinforced arch within the poured body of the roof or floor, which arch is carried by the structural members on which the plaster slabs are set.

I am aware that there are many various devices employing essentially the Bromley invention, and my invention herein is advisedly a refinement resulting in a maximum of both economy in construction and strength and permanence in use.

Among other things I employ as a structural element in the support of the plaster slabs, what are known as rail bars, which vary from T-bars or angles in just those qualities which make them particularly useful in a construction of the present character.

These objects and advantages I accomplish by that certain construction and arrangement of parts to be hereinafter more specifically pointed out and claimed.

In the drawings,

Figure 1 is a sectional perspective showing the form work and reinforcing fabric of a roof or floor.

Figure 2 is a like view showing the completed floor or roof.

In forming a roof or floor the usual practice in fire-proof construction embodies the erection or laying of girders or trusses 1 in the form of channel bars, I-beams, or the like. According to my invention a method is provided of laying a roof or floor on such beams, in which the form work beneath the poured slab is adapted to remain permanently in place.

The essential portions of my form work comprises a series of rail bars 2, which unlike I-beams, have a wide base and a top resembling the ball of a railroad rail and of less width than the base together with a series of flat or slightly curved slabs or boards 3 of gypsum plaster composition.

The rail bars are laid transversely of the girders and suitably held in place, the spacing of the said rail bars being such as to provide a support for the ends of the composition boards, said boards resting on the lower flanges of the rail bars.

More particularly where flat composition boards are used, and any extra support is needed for holding them at points intermediate I will provide a false work of usual form to support the boards along their median line between the rail bar flanges, while the poured slab is setting.

Having set up the rail bars and filled the spaces between them with composition boards resting on the base flanges of the bars, I will preferably lay a strip of tough paper or other linear member (not shown) over the joints between boards, to prevent leakage of the poured slab while setting.

I then lay sheets or assembled flexible mats of metal reinforcement 4 transversely of the rail bars, so that they extend continuously across the rail bar structure. As a matter of economy the sheets or mats need not be made continuous along the spaces parallel to the rail bars, as this is unnecessary, and will save the trouble and excessive metal required to form a lap joint between the said sheets or mats.

In laying the sheets transversely of the

rail bars I take particular care to bring the sheets down into juxtaposition with the composition boards, centrally of that portion thereof which lies between the supporting flanges of the bars. The ordinary wire mesh sheets, which will preferably be used, will naturally tend to form the arch-like loops shown in the drawings, because of resting on the balls of the rail bars and the central portions of the composition boards.

Having so set up the metal reinforcement, the floor or roof may be poured with suitable cementitious material, so as to form a slab 5 just covering the metal reinforcement where it lies on top of the bars.

When set, the slabs between the bars will be supported from the bars by means of the reinforced arches resulting from the arched formation of the metal reinforcement. It will also be evident that the parts A having their greatest thickness centrally between the bars, are "swung" from the bars by means of the loops of metal reinforcement upon which we have imagined that they rest.

The rail bars thus support the slabs between them, and the bars are supported on the trusses of the building frame, so that the load and strains are carried in the most effective manner.

The rail bars provide an ideal metallic formation for supporting a load on their tops, and a load on their bases, and at the same time reinforcing lengthwise slabs of material engaging their lateral faces. There is no tendency of the metal reinforcement to shear where it lies on the balls, and the added thickness in the balls over other forms gives much greater resistance to bending or twisting strains.

I thus form a floor or roof with a minimum of weight and a maximum of strength, and I form it in an economical manner.

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

1. A roof or floor structure for buildings comprising interspaced metal girders with metal bars having base flanges and an expanded top laid in interspaced relation transverse the girders, composition boards supported on the flanges of the cross bars to form a permanent under surface, and a support for the poured portion of the roof or floor while setting, and continuous metal reinforcement extending transversely of the cross bars and substantially contacting with but not secured to the boards between the cross bars, and resting on the tops of the bars, and a poured body filling the spaces between the cross bars and extending above the cross bars, as and for the purpose described.

2. A roof or floor structure for buildings comprising interspaced metal girders with metal rail bars laid in interspaced relation transverse the girders, composition boards supported on the flanges of the rail bars to form a permanent under surface and a support for the poured portion of the roof or floor while setting, and continuous metal reinforcement extending transversely of the bars and substantially contacting with but not secured to the boards between the rail bars, and resting on the tops of the rail bars, and a poured body filling the spaces between the rail bars and extending above the rail bars, as and for the purpose described.

3. A roof or floor structure for buildings comprising interspaced metal girders with metal bars having base flanges and an expanded top laid in interspaced relation transverse the girders, composition boards supported on the flanges of the cross bars to form a permanent under surface, and a support for the poured portion of the roof or floor while setting, and continuous metal reinforcement extending transversely of the cross bars and substantially contacting with but not secured to the boards between the cross bars, and resting on the tops of the cross bars, and a poured body filling the spaces between the cross bars and extending above the cross bars, said metal reinforcement being formed in a series of loops of greatest height at the tops of the cross bars, and of greatest depth along the median line of the composition boards between the cross bars, as and for the purpose described.

EDWARD CLYDE HOGE.