

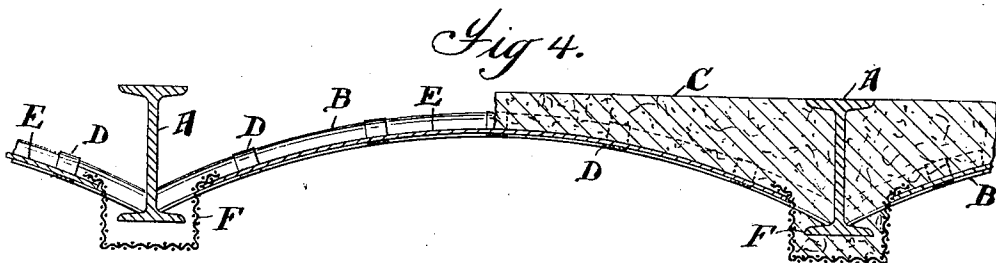
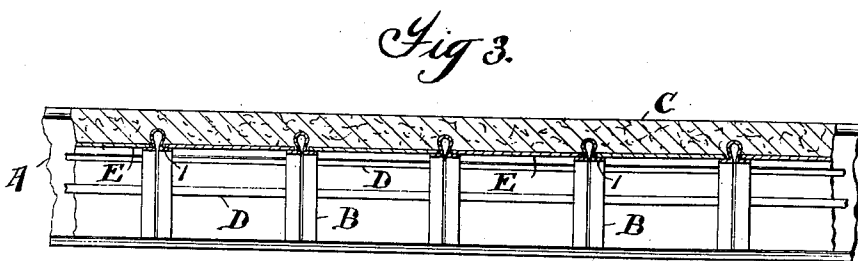
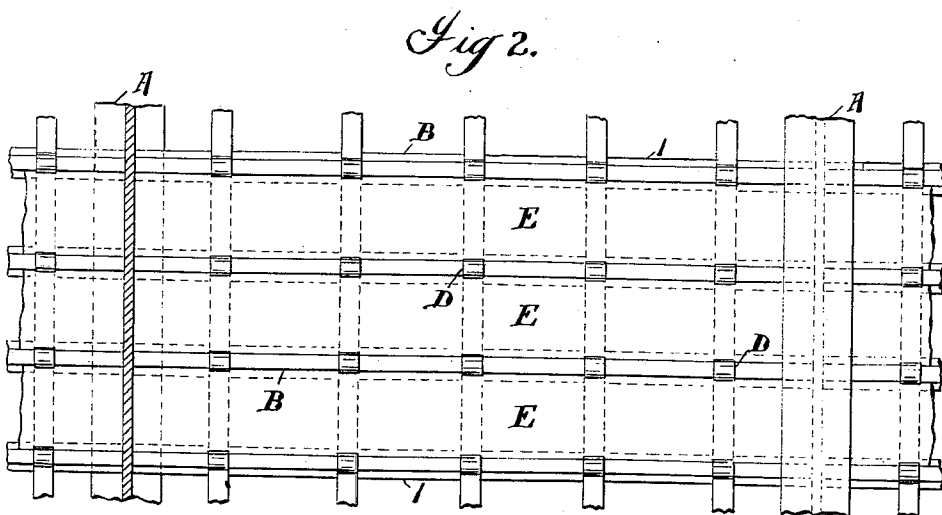
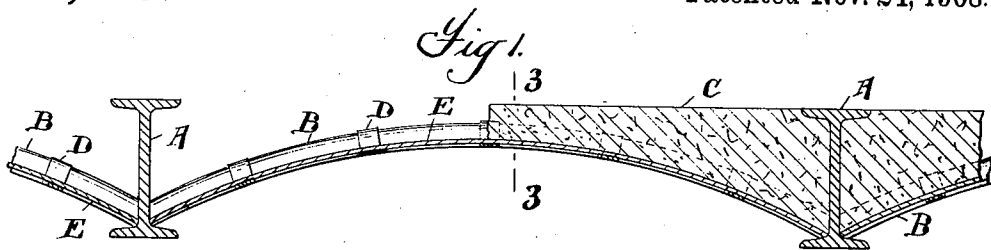
A. L. A. HIMMELWRIGHT.

FIREPROOF STRUCTURE.

APPLICATION FILED MAR. 29, 1905.

904,535.

Patented Nov. 24, 1908.



Witnesses  
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# UNITED STATES PATENT OFFICE.

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## FIREPROOF STRUCTURE.

No. 904,535.

Specification of Letters Patent.

Patented Nov. 24, 1908.

Application filed March 29, 1905. Serial No. 252,671.

*To all whom it may concern:*

Be it known that I, ABRAHAM L. A. HIMMELWRIGHT, a citizen of the United States, residing at New York city, county of New York, and State of New York, have invented certain new and useful Improvements in Fireproof Structures, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention relates to the construction of fireproof floors, ceilings, arches and similar structures of that class in which a temporary framework or centering is usually employed to support the concrete or other plastic material forming the floor or other structure, the general object of the invention being to provide a cheap, light, and efficient substitute for the temporary centering. In such structures the concrete is frequently strengthened by metal bars extending between the beams and supported thereby, upon onto the centering or onto tile blocks or open work metal that is sometimes used in place of the centering. The present invention employs such metal bars, in combination with thin strips of wood or equivalent material, which is supported on these bars at such frequent intervals as to afford sufficient strength to support the concrete during filling in and setting, these thin strips remaining as a permanent part of the structure, so that the expense and delay of using temporary centering is avoided, and all danger of injuring the floor in removing the centering, which exists with many forms of temporary centering, is entirely avoided, while the thin strips form a very cheap, light and easily laid substitute for the tile blocks and metal plates or reticulated metal heretofore used in place of temporary centering.

The metal bars by which the strips are supported are preferably T-bars, thus providing flanges on opposite sides on which the strips are laid, and securing with light bars the vertical strength desired to aid in supporting the concrete, and these T-bars are preferably spaced and held in position by spanners of such form that the portions between the bars lie approximately in the plane of the bar flanges, so that the strips of wood or equivalent material may extend in one piece from beam to beam, and still be very thin, on ac-

count of the frequent support afforded by the spanners.

A construction embodying the invention in its preferred form will first be described in connection with the accompanying drawings forming a part of this specification, and the features forming the invention will then be pointed out in the claims.

In the drawings—Figure 1 is a section transversely to the beams showing a fireproof floor embodying the invention, with the concrete omitted from part of the view. Fig. 2 is a sectional plan with the concrete omitted. Fig. 3 is a section longitudinally of the beams on the line 3 of Fig. 1. Fig. 4 is a view similar to Fig. 1, showing a modified construction with the floor concrete extending around the bottom flanges of the beams.

Referring to the drawings, A are the beams, shown as of the common I form, and B the metal bars extending from beam to beam and acting to support and strengthen the floor concrete C. These bars are shown as similar to those of patents granted to John W. Rapp, Nos. 537,483, 557,147 and 631,941, this form of bar being preferred on account of the strength and lightness, but it will be understood that bars of other form may be used in connection with the present invention. The bars B are supported on the bottom flanges of the beams, as usual in such constructions, with spanners D, shown as formed of metal strips looped over the tops of the bars so as to bring the spanners approximately on the level of the bar flanges, these spanners acting as convenient spacers for the bars B and to hold the bars in position. Upon the flanges 1 of the bars B and on the spanners D are supported thin strips E, which are preferably of thin wood, and are shown as extending the full length of the span, and, in the curved arch shown, are sprung into position between the beams. The bars B are preferably placed at such distances and the strips E made of such width that a single strip will fill the space between adjacent bars, but it will be understood that this is not essential.

The invention may be used without the concrete extending about the bottom flanges of the beams, as shown in Fig. 1, or, as shown in Fig. 4, the concrete may be extended downward about the lower flanges of the beams so as to protect the beam flanges

below the metal bars B. In the construction shown, this is done by extending a sheet of wire or other metal lathing F around the bottom flanges of the beams, and filling in the floor concrete C to fill this space. In this case, the strips E will not extend to the beams but be omitted between the ends of the lathing F and the beams, so that the concrete may be filled in onto the lathing between the bars B, the strips E, if bent into place, being secured to the spanners D so as to hold them in position. The strips E afford a very convenient means for attaching this lathing F, as it may simply be nailed to the strips, or, if preferred, it may be supported from the bars B and spanners D.

The underside of the floor and beam protection may be finished with plaster or otherwise, as desired, or the usual suspended ceiling of metal lathing and plaster may be supported from the beams below the floor and beam protection.

While I preferably use thin boards as the strips E to support the concrete in carrying out my invention, on account of the excellent result secured with very thin boards, and their cheapness, it will be understood that other equivalent materials may be used in place of an ordinary wooden board, such as fiber board, press board, or other non-metallic composition boards, so made as not to be affected by the wet concrete, and such materials are to be considered equivalents of wood in the constructions claimed and within my invention.

It is found in practice that a large saving is secured by my invention, not only in the cost of the material, but in the expense for labor in building the structure, as compared with previous practice, while there is no appreciable increase in weight of the structure by the strips, as they may be very thin and light, they not being used to add to the strength of the complete structure but need be only of sufficient strength to support the concrete during filling in and setting.

What I claim is:—

1. The combination with beams or the like, of metal bars extending between the

beams and supported thereby, metal strips extending longitudinally of the beams between and supported by said bars, thin strips of wood or equivalent material extending transversely to the beams and supported on said metal bars and strips, and a filling of concrete or similar plastic material supported by said bars and strips.

2. The combination with flanged beams, of bars extending between the beams and supported thereby, thin strips of wood or equivalent material supported by the bars and arranged to cover the space between the bars and terminating to leave this space uncovered near the beams, a metallic concrete support extending downward from the ends of the strips and about the bottom flanges of the beams, and a filling of concrete or similar plastic material supported by the bars and strips and filling the space about the bottom flanges of the beams within the concrete support.

3. The combination with flanged beams, of T bars extending between the beams and supported thereby, metal strips extending over the bars and between the bars in substantially the same plane as the bar flanges, thin strips of wood or equivalent material supported by said flanges and metal strips, and a filling of concrete or similar plastic material supported by said bars and strips.

4. The combination with flanged beams, of T bars extending between the beams and supported thereby, metal strips extending over the bars and between the bars in substantially the same plane as the bar flanges, thin strips of wood or equivalent material of a length substantially that of the distance between the beams and laid transversely to the beams on said flanges and metal strips, and a filling of concrete or similar plastic material supported by said bars and strips.

In testimony whereof, I have hereunto set my hand, in the presence of two subscribing witnesses.

ABRAHAM L. A. HIMMELWRIGHT.

Witnesses:

J. A. GRAVES,  
C. J. SAWYER.