(No Model.)

T. L. BANKS.

FIREPROOF FLOOR, CEILING, &c.

No. 529,153. Patented Nov. 13, 1894.

Fig. 1.

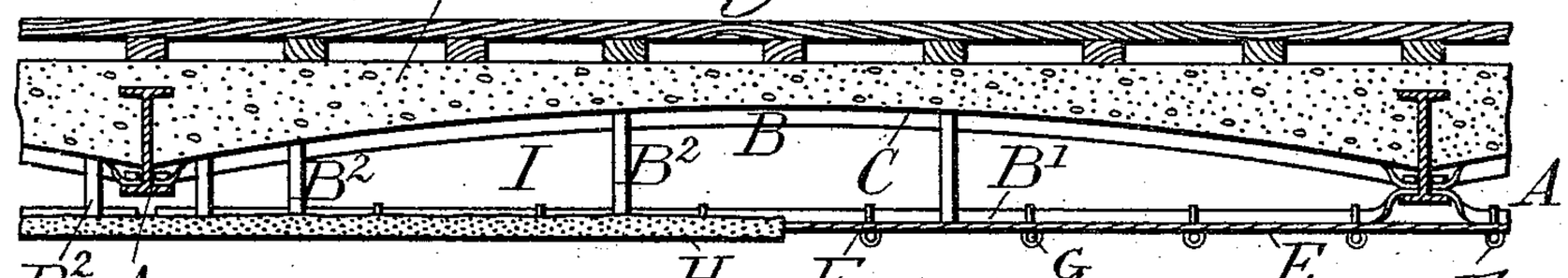


Fig. 2.

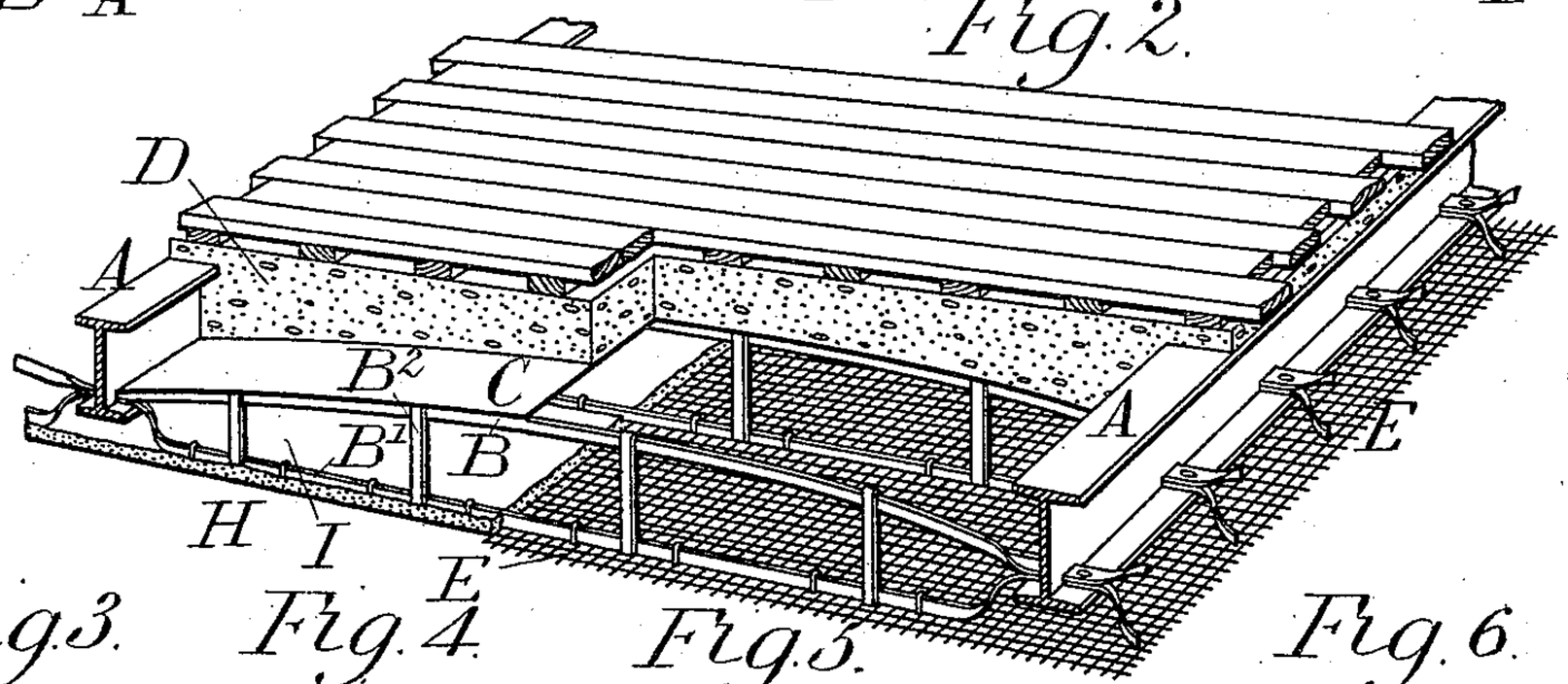


Fig. 3.

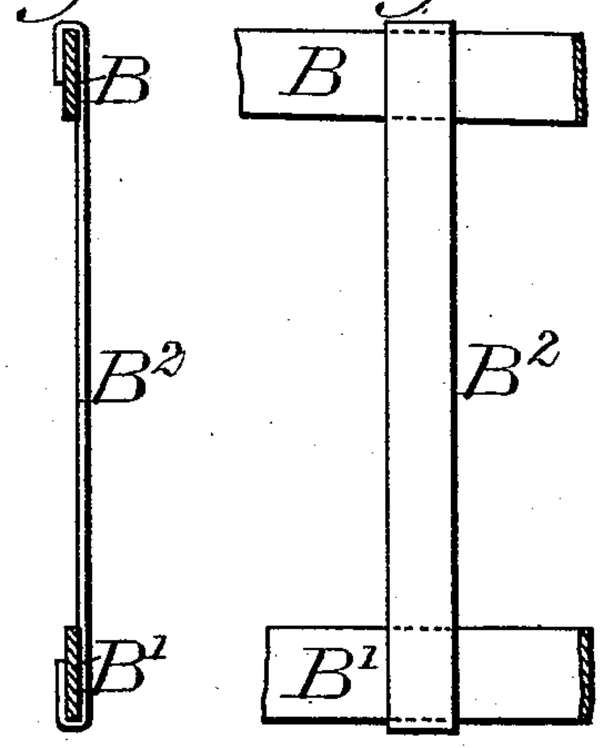


Fig. 4.

Fig. 5.

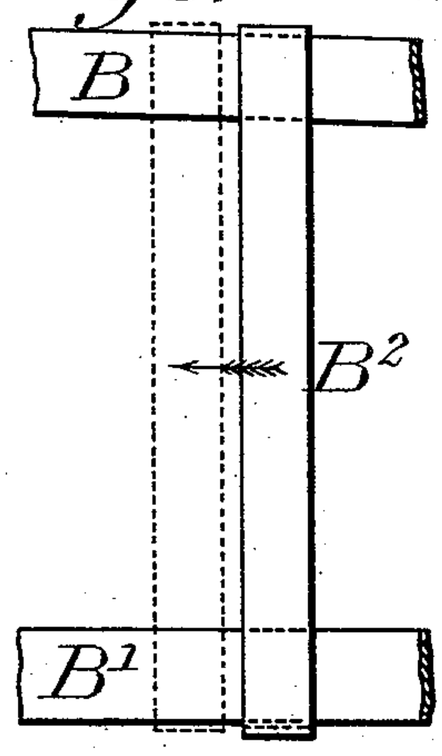


Fig. 6.

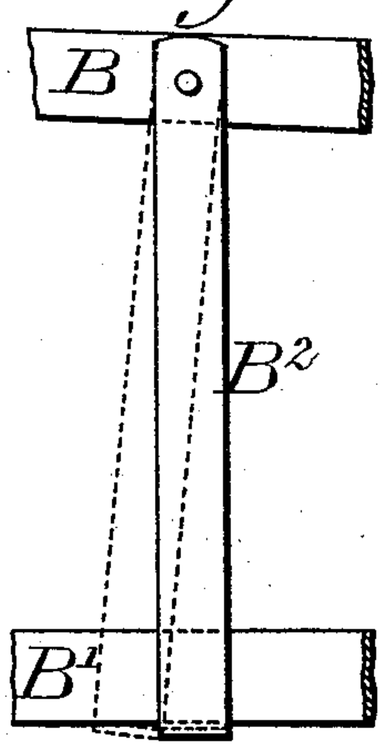


Fig. 7.

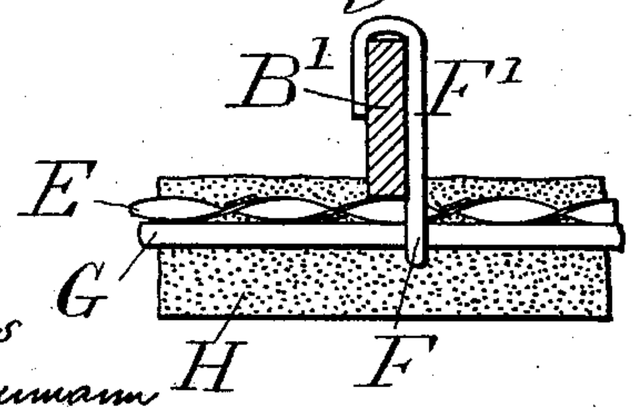


Fig. 8.

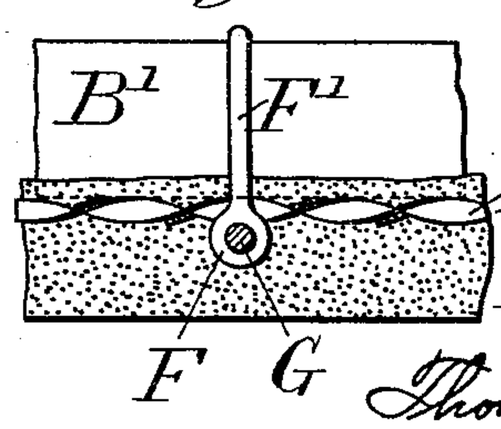
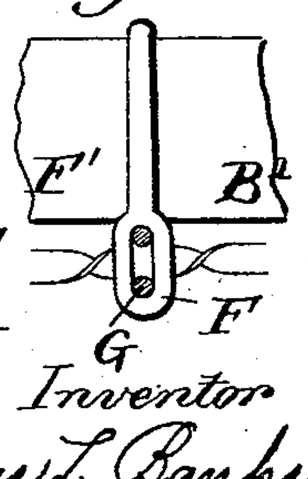


Fig. 9.



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UNITED STATES PATENT OFFICE.

THOMAS LEWIS BANKS, OF LONDON, ENGLAND.

FIREPROOF FLOOR, CEILING, &c.

SPECIFICATION forming part of Letters Patent No. 529,153, dated November 13, 1894.

Application filed July 24, 1894. Serial No. 518,442. (No model.) Patented in England May 19, 1893, No. 10,044, and June 21, 1893, No. 12,227.

To all whom it may concern:

Be it known that I, THOMAS LEWIS BANKS, a citizen of England, residing at Lindores, 3 Branstone Road, Kew Gardens, London, in the county of Surrey, England, have invented certain new and useful Improvements in Fireproof Floors, Ceilings, and Like Structures, (for which I have received Letters Patent in Great Britain, No. 10,044, dated May 19, 1893, and No. 12,227, dated June 21, 1893,) of which the following is a specification.

My invention relates to that description of fire proof floors or ceilings in which the structure is composed of iron or steel girders or joists combined with iron or steel intermediate supports and concrete filling, the ceiling being constructed of metal lathing serving as key for the plaster.

I will describe my improved construction of such floors with reference to the accompanying drawings, in which—

Figure 1 shows a cross section; Fig. 2, a perspective view; Figs. 3 to 6, enlarged details of the suspension bars of the arched centering; and Figs. 7, 8 and 9, enlarged details of the suspension loop for carrying the ceiling.

My invention consists mainly in the use for ceilings or floors of the kind above referred to of arched supports or centers B B′ B^2 which may be of light steel castings but which are preferably built up of separate parts, namely, an upwardly arched steel bar B, and a horizontal bar B′, which is suspended from B by means of suspension bars B^2. The arched bars are supported at their ends by the iron or steel joists A. They are of an upright rectangular section as shown at Figs. 3 and 4, the ends being by preference bent down as shown, for facilitating the fixing thereof to the joist flange by bolts. The horizontal bars B′ may also be bent at the ends so as to be fixed to the flanges of the joists by the same bolts that secure the bars B, as shown at the right hand end of Fig. 1, or they may extend below the joists A and be secured to the ends of B by the end suspension bars B^2. The bars B^2 which may be either of flat, angle or T section are either bent into hook shape at both ends so as to hook over both the arched bar B and the horizontal bar B′, or the upper end may be secured to B by a bolt or rivet as at Fig. 6 and only the lower end bent into hook form.

Upon the upper surface of the arched bars is laid either metal lathing or thin sheet iron C, or other suitable rigid fire proof covering, and upon this is filled in the concrete D to any required depth, layers of metal lathing or hoop iron being if necessary embedded in the concrete.

To the horizontal bars B which may be either of a flat angle, or T section the metal lathing E for the ceiling is secured by means of loops or eyes F, the hooked stems F′ of which are hooked over the bars B′ while through the eyes are passed metal rods G and upon these is laid the metal lathing E, which is by preference of the construction described in my application bearing equal date herewith and bearing the serial number 518,444. If necessary, the loops or eyes F may be of a sufficiently elongated form to allow of a second set of rods being inserted through them above the metal lathing so as to hold this securely in position between the two sets of rods as illustrated in Fig. 9. The plastering H for the ceiling being then applied to the lathing, it will be seen that a hollow space I is left above the same which may be utilized for ventilation or for containing gas or water pipes, or electrical conductors. The space I will also have the effect of preventing the ceiling from dropping in case of fire, as although the bar B′ may become heated to such an extent that if it lost its support it would fall, the air space I will effectually prevent the arched bar B from becoming injuriously heated, so that it will still afford effectual support to the bar B′. The arched bars B will only have to support the ceiling when the concrete filling has once set. When the concrete is first filled in, its weight may cause the bars B to be slightly deflected. In this case, the lower hooked ends of the suspension bars B^2 will sink away from the bars B, as shown at Fig. 5, so that in order to tighten them up again, it will be necessary either to shift the bars slightly toward the center of the arch as indicated in dotted lines, or, when the upper end is fixed by a bolt or rivet as at Fig. 6, the tightening up can be attained by shifting the lower end into a slightly angular

position, as shown, so as to be brought in contact with the bar B′ again. The bar B′ is thus effectually supported in an undeflected horizontal position for carrying the ceiling, notwithstanding the deflection of the arched bar B as above referred to.

Having thus described the nature of my invention and the best means I know for carrying the same into practical effect, I claim—

1. In fire-proof floors and ceilings, the combination with joists or girders of arched metal supports, a metal covering for carrying the concrete, rods such as G suspended from bars of the supports and metal lathing carried by the said rods for supporting the plaster ceiling, substantially as described.

2. In fire-proof floors and ceilings, the combination with joists or girders of arched metal supports, each composed of an arched bar, a horizontal bar and shiftable suspension bars, a metal covering for carrying the concrete, and means for suspending the plaster ceiling from the horizontal bar, substantially as described.

3. In fire-proof floors and ceilings, the combination with joists or girders of arched metal supports, a metal covering for carrying the concrete, eyes or loops suspended by hooked stems from the arched metal support, rods passed through the said eyes or loops, and metal lathing laid upon the said rods for supporting the plaster ceiling, substantially as described.

4. An arched support for a fire-proof floor or ceiling composed of an arched bar adapted to be supported at its ends on joists or girders, a horizontal bar connected to the arched bar by shiftable suspending bars, eyes or loops suspended by hooked stems from the horizontal bar, and rods passing through the said eyes or loops for supporting the metal lathing of the ceiling, substantially as described.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 12th day of July, A. D. 1894.

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