

(No Model.)

2 Sheets—Sheet 1.

M. F. McCARTHY.
FIREPROOF STRUCTURE.

No. 520,490.

Patented May 29, 1894.

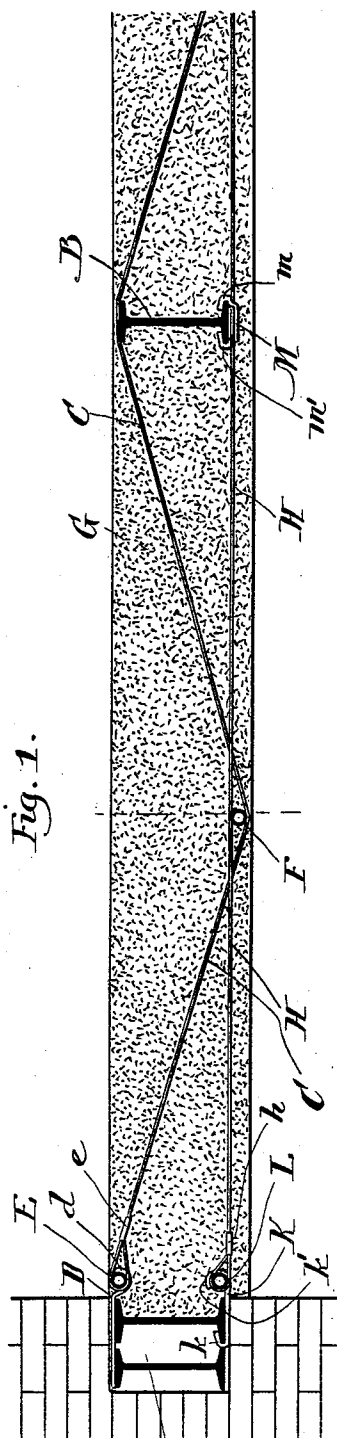


Fig. 1.

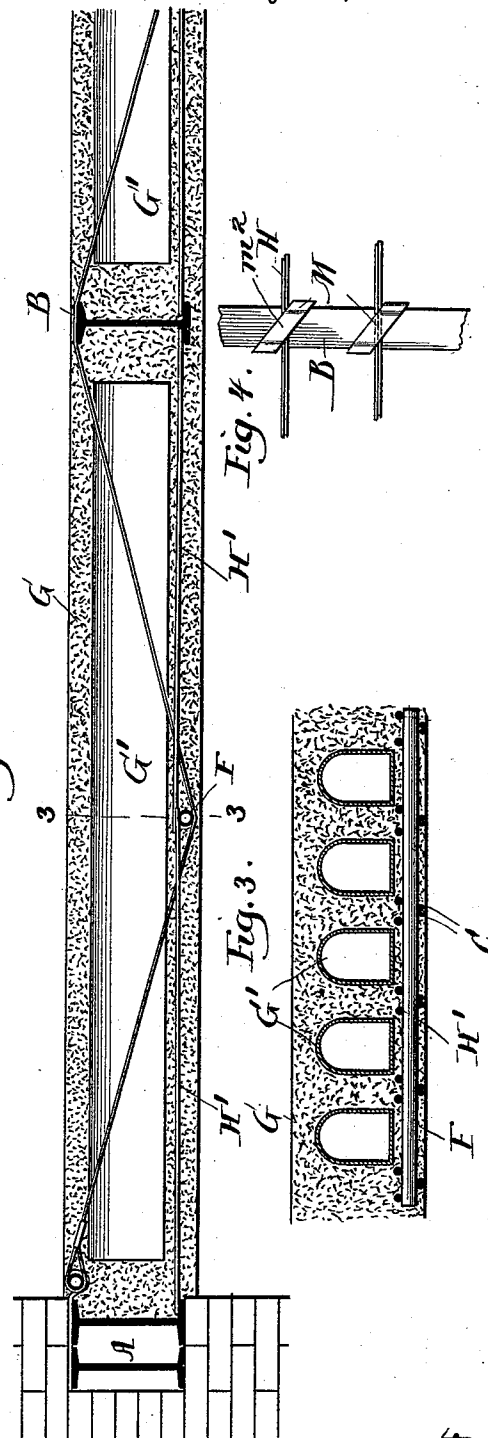


Fig. 2.

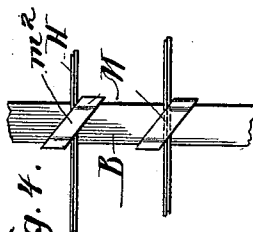


Fig. 4.

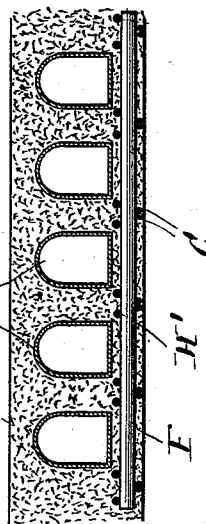


Fig. 3.

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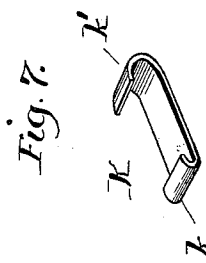
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2 Sheets.—Sheet 2.

M. F. McCARTHY.
FIREPROOF STRUCTURE.

No. 520,490.

Patented May 29, 1894.



Witnesses:
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Inventor:
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UNITED STATES PATENT OFFICE.

MITCHELL F. MCCARTHY, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE SUSPENSION ARCH FIRE PROOFING COMPANY, OF ILLINOIS.

FIREPROOF STRUCTURE.

SPECIFICATION forming part of Letters Patent No. 520,490, dated May 29, 1894.

Application filed May 23, 1893. Serial No. 476,272. (No model.)

To all whom it may concern:

Be it known that I, MITCHELL F. MCCARTHY, a citizen of the United States, residing at Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Fireproof Structures, of which I do declare the following to be a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

The present invention has relation to that type of fire proof floors, ceilings, and the like, consisting of metal beams which serve in connection with wire strands or supports, to sustain a plastic mass of concrete or like material in which the beams and strands or supports are embedded.

The object of this invention is to provide improved means whereby a floor, ceiling, or the like of great strength and durability can be produced.

This object of invention is accomplished by the novel features hereinafter described, illustrated in the accompanying drawings and particularly pointed out in the claims at the end of this specification.

Figure 1 is a view in vertical longitudinal section through a fire proof floor embodying my invention. Fig. 2 is a view similar to Fig. 1 showing a modified form of the invention. Fig. 3 is a view in cross section on line 3—3 of Fig. 2. Fig. 4 is a detail inverted plan view of a portion of one of the central beams shown in Fig. 1. Fig. 5 is a view in vertical longitudinal section through a fire proof floor embodying one form of my invention. Fig. 6 is an inverted plan view of the construction shown in Fig. 5. Fig. 7 is a detail perspective view of one of the anchor plates. Fig. 8 is a detail perspective view of one of the hook plates for the bottoms of the beams.

In Letters Patent of the United States No. 455,687, granted to the United States Fire Proofing Company, as my assignee, July 7, 1891, there is illustrated, described and claimed, a fire proof structure in which the plastic mass comprising the floor, ceiling, or the like is sustained by the metal beams and by wire strands drooped between the beams and embedded in the plastic mass. In the

form of my present invention, illustrated in Fig. 1 of the accompanying drawings, the metal beams A and B are suitably sustained by the walls of the building and between these beams A and B is held the plastic mass G of concrete or like material. To the tops of the beams A, are suitably connected the anchor plates D having hooked ends *d* that receive the supplemental cross rod E preferably of gas pipe, and to the rod E the ends of the wire strands C will be connected, the ends of the strands C being preferably fastened by means of metal clips *e*. The anchor plates D and the supplemental rod E, are described and claimed in an application filed by me in the Patent Office of even date herewith and I do not wish therefore, to be understood as claiming these features in the present invention. The strands C are depressed and across the centers between the series of beams extends the rod F preferably of gas pipe, the strands C also extending over the beams B. The strands C and the rods F will be used in required numbers, and these rods and strands will be set in position under tension as defined in my above mentioned application. In order to more effectively sustain the body of concrete G, I employ a series of strands or supports H, which in the form of the invention illustrated in Fig. 1 of the drawings, have their ends connected to the bottom anchor plates K, preferably by means of the cross rod L, this cross rod L being by preference of gas pipe. The ends of the strands or supports H are passed over the rods L and are securely held by means of clips *h*. The bottom anchor plates or bars K are formed of the hooks *k* to engage one of the bottom flanges of the beams A, the opposite ends of the bars or plates K being formed with the hooks *k'* (see Fig. 7), that engage the cross rods L. The strands or supports H are connected to the bottoms of the beams B by means of the hook plates M (see Fig. 4), these plates being formed with the hooks *m* and *m'* arranged out of alignment and preferably with the depressed portion *m*² to permit the wire to pass between the body of the plates M and the bottom of the beam B. The strands or supports H preferably extend over the cross rod F, this rod serving to assist in supporting the strands H.

It will be understood that the strands H will be placed under tension and when these strands and as well also, the strands C and the rods F are set in proper position, the concrete mass G will be filled in about the strands and the beams, as shown in Fig. 1, and the tension device will be retained in position until the plastic mass becomes sufficiently hard to retain the strands under tension. It will be understood, of course, that in filling in the plastic mass, a temporary staging will be placed beneath the beams, as set forth in my above mentioned application or in the Letters Patent No. 455,687. The strands or supports H, will serve to greatly aid in sustaining the mass of concrete G and in guarding against all danger of the cracking of the concrete under severe strain.

In the form of the invention illustrated in Figs. 2 and 3 of the drawings, the plastic mass G is shown as interspersed with hollow tiles G' and in this form of my invention, as that last above described, the depressed wires C are shown as drooped between the beams A and B. In this form of the invention, however, the lower part of the plastic filling G has extended there through the supports H' which consist of rods that rest upon the base flanges of the beams A and B and upon the cross rod F that is sustained by the depressed strands C. The supports H', when embedded in the mass of concrete, will serve to effectively aid in supporting and preventing the cracking of the concrete mass beneath the strands C.

In the form of my invention shown in Figs. 5 and 6 of the drawings, the plastic mass G and hollow tiles G' are supported by the strands H that extend between and are sustained by the bottoms of the beams A and B. The strands H are preferably connected to the bottoms of the beams A by anchor bars or plates K in the same manner as in the construction shown in Fig. 1 of the drawings. A supplemental rod L being preferably employed over which are passed the ends of the strands H, these ends being securely held in place by metal clips h. The strands H are connected to the bottoms of the beams B by means of hook plates M similar to the hook plates M' illustrated in Figs. 5 and 8 of the drawings. That is to say, the plates M' are formed with hooks m and m' arranged out of

alignment to permit the passage of the strands H and preferably also, are formed with the depressed portion m² to enable the strands to freely pass between the bodies of the plates and the beams B. It will be understood, of course, that the strands H will be set in position under strain or tension and the concrete mass G and hollow tile H will be filled in between the beams and about the strands, upon a temporary staging erected beneath the beams A and B in manner well understood in the art. This form of my invention will be found well adapted for use, particularly where the space between the beams A and B is not very great, as the strands or supports H will serve to effectively aid in sustaining the plastic mass G and hollow tiles G' and the load that may be placed thereupon. It will be understood, of course, that any desired shape can be given to the strands or supports H and these may be used in such number and arrangement as will be best suited for the structures for which they are employed.

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

1. In fire proof structures, the combination with the beams of a series of depressed strands extending over the tops of said beams, cross rods upon said strands and a series of strands or supports extending over said cross rods and supported by the base flanges of said beams, substantially as described.

2. In fire proof structures, the combination with the beams of a series of strands extending between and beneath the bottoms of said beams and hook plates extending beneath and across said strands and having hooks m and m' for engaging the bottoms of the beams, said hook plates serving to connect the strands with the beams, substantially as described.

3. In fire proof structures, the combination with the beams of strands extending between the beams, a cross rod to which the ends of said strands are connected, and anchor bars or plates K having hooks to engage the beams and the cross bar, substantially as described.

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Witnesses:

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