(No Model.)

M. F. McCARTHY.

FIREPROOF STRUCTURE.

No. 514,955. Patented Feb. 20, 1894.

Fig. 1.

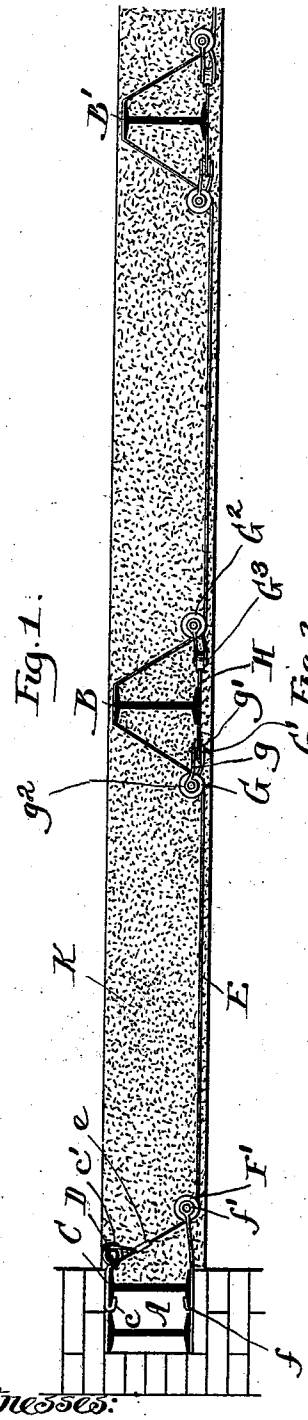
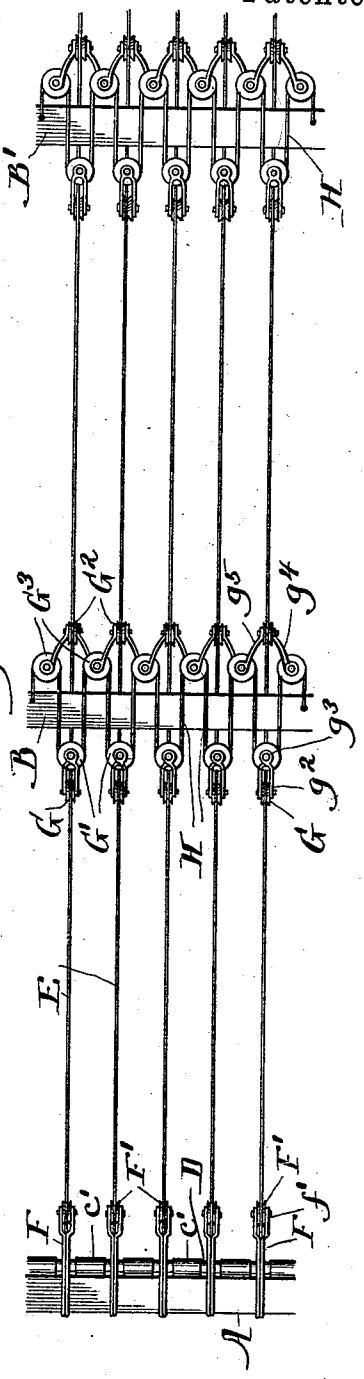


Fig. 2.



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FIREPROOF STRUCTURE.

SPECIFICATION forming part of Letters Patent No. 514,955, dated February 20, 1894.

Application filed May 23, 1893. Serial No. 475,274. (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 more particularly to that class of fire proof structures in which the floors, ceilings, and the like are constructed of a filling of concrete or like material sustained by transverse beams and by wire strands carried by said beams, an example of this type of structure being illustrated in Letters Patent No. 455,687, granted to the United States Fire Proofing Company, as my assignee, July 7, 1891.

The object of the present invention is to provide a simple and effective means whereby the concrete filling may be sustained and more particularly is my invention directed to provide means whereby the wire strands may be laid under proper tension and in position to effectively sustain the filling. This object I have accomplished by the novel features of construction, hereinafter described, illustrated in the accompanying drawings, and particularly defined in the claims at the end of this specification.

Figure 1 is a view in vertical section through a fire proof floor embodying the invention. Fig. 2 is an inverted plan view of a part of the floor, the concrete filling being omitted.

A, B and B′ designate the metal beams that will be suitably sustained by the walls of the building. To the outer beam A are connected the anchor plates C, these plates having downwardly turned lips *c* to engage the upper and outer flanges of the beam A having at their opposite sides, up-turned lips *c′* to retain the cross bar D to which will be connected the ends of the wire strands E, the ends of these strands being fastened by metal clips *e*, as shown. To the bottom of the beam A are connected the pulley bars F, these bars being preferably constructed of stout wire bent as shown, so as to form the lip *f* that engages the base flange of the beam A and being bent also as shown, to form the eyes *f′*, to receive the journal of the pulley F′. The wire strands E will pass beneath the pulleys F′ and thence in substantially horizontal direction, to and beneath the pulleys G that are carried by the pulley blocks as shown. The blocks for the pulleys G, are preferably formed of the plates or wires *g* and *g′*, each of these plates being formed with a horizontal eye g^2 at one end, to receive the journal of the pulley G and at its opposite end with an eye g^3 to receive the journal of the pulley G′. Upon the opposite side of the beam B, similar pulleys G^2 and G^3 will be placed and in like manner also, pulleys G, G′, G^2 and G^3 will be placed adjacent the bases of the succeeding beams B, B′, &c.

The blocks for the pulleys G^2 and G^3 are preferably constructed as shown, that is to say, each of these blocks comprises the bars g^4 and g^5, the ends of which are provided respectively, with vertical and horizontal eyes to receive the journals of the pulleys G^2 and G^3 and the bars g^4 and g^5 are by preference arranged as shown, in Fig. 2, in order to permit the wire strand H to more freely pass around the pulleys. The wire strands E after passing beneath the pulleys F′ will extend beneath the pulleys G and thence upward and over the top of the beam B, thence downward beneath the pulleys G^2 upon the opposite side of the beam B, thence in horizontal direction between the beams B and B′ and thence beneath the pulleys G adjacent the beam B′, thence over the beam B′ and so on throughout the floor of the building. Around the horizontal pulleys G′ and G^3 adjacent the bottom of the beam B extends the tension wire H and in like manner a tension wire H extends around the series of horizontal pulleys adjacent the bottoms of the beams B′, &c.

In laying the strands E their ends will first be connected to the beam A and will then be passed beneath the pulleys F′ and around the pulleys G over the beam B, down and around the pulleys G^2 and the tension wires H will then be passed around their appropriate pulleys G′ and G^3. By means of suitable mechanism, tension will then be exerted upon the tension wires H and by this means the strands E will be drawn abruptly downward, as shown,

adjacent the beams B, B', &c., until the desired tension is given to such strands. When the proper tension has been given to the strands E, the free ends of the tension strands H will be fastened in convenient manner, as by passing them through holes drilled in the base flanges of the beams or in any other suitable way.

My purpose in forming the pulleys of the separate bars g, g', g^4 and g^5, as shown, is to enable the wire strands to be more readily placed in position upon the pulleys, it being understood, of course, that when either of the bars g, g', &c., is removed from the journal of the pulleys, the pulleys can be placed in engagement with the strands, after which the bars g, g', &c., can be re-placed and will be held by a pin passing through the journals of the pulleys or in other convenient manner. When the wire strands E and the tension wires H have thus been set in position, the mass of concrete will be filled in about the beams, the wires and the pulleys, as shown in Fig. 1, it being understood, of course, that a suitable temporary staging will be erected beneath the beams, in order to sustain the concrete mass until it has sufficiently hardened. It will be understood also, that the ends of the wire strands E will be securely retained so that these strands will be maintained under proper tension given thereto. When the wire strands E are thus brought to proper tension, and held in the position shown, they will serve to effectively sustain the mass of concrete K.

It is manifest that other convenient means may be employed for attaching the ends of the wire strands E, instead of the anchor plates C and that the precise construction of pulley blocks and bars may be varied without departing from the spirit of the invention.

A further advantage incident to abruptly depressing the strands E adjacent to the beams and retaining the strands in such depressed position by means of supplemental wires, is that these supplemental wires serve not only to hold the main strands, but as well also afford a substantial support for the mass of concrete above them and adjacent the bottoms of the beams.

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

1. A fire proof structure comprising the combination with the beams of strands E depressed abruptly adjacent the beams and supplemental strands connected to said main strands adjacent the bottoms of the beams and serving to hold said main strands in depressed position, substantially as described.

2. A fire proof structure comprising the combination with the beams of the series of main strands E, pulleys for holding said strands in depressed condition adjacent the lower portions of the beams and tension wires or strands for drawing said main strands downward to give the desired tension thereto, substantially as described.

3. In fire proof structures, the combination with the beams of the main strands E abruptly depressed between the beams and passing over the tops thereof, pulleys G around which said main strands pass and pulleys G' connected to said pulleys G, and tension wires or strands H passing around said pulleys G' and beneath the beams, substantially as described.

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