(No Model.)

C. C. GILMAN.

CONSTRUCTION OF FIRE PROOF FLOORS AND CEILINGS.

No. 338,517. Patented Mar. 23, 1886.

Fig. 1.

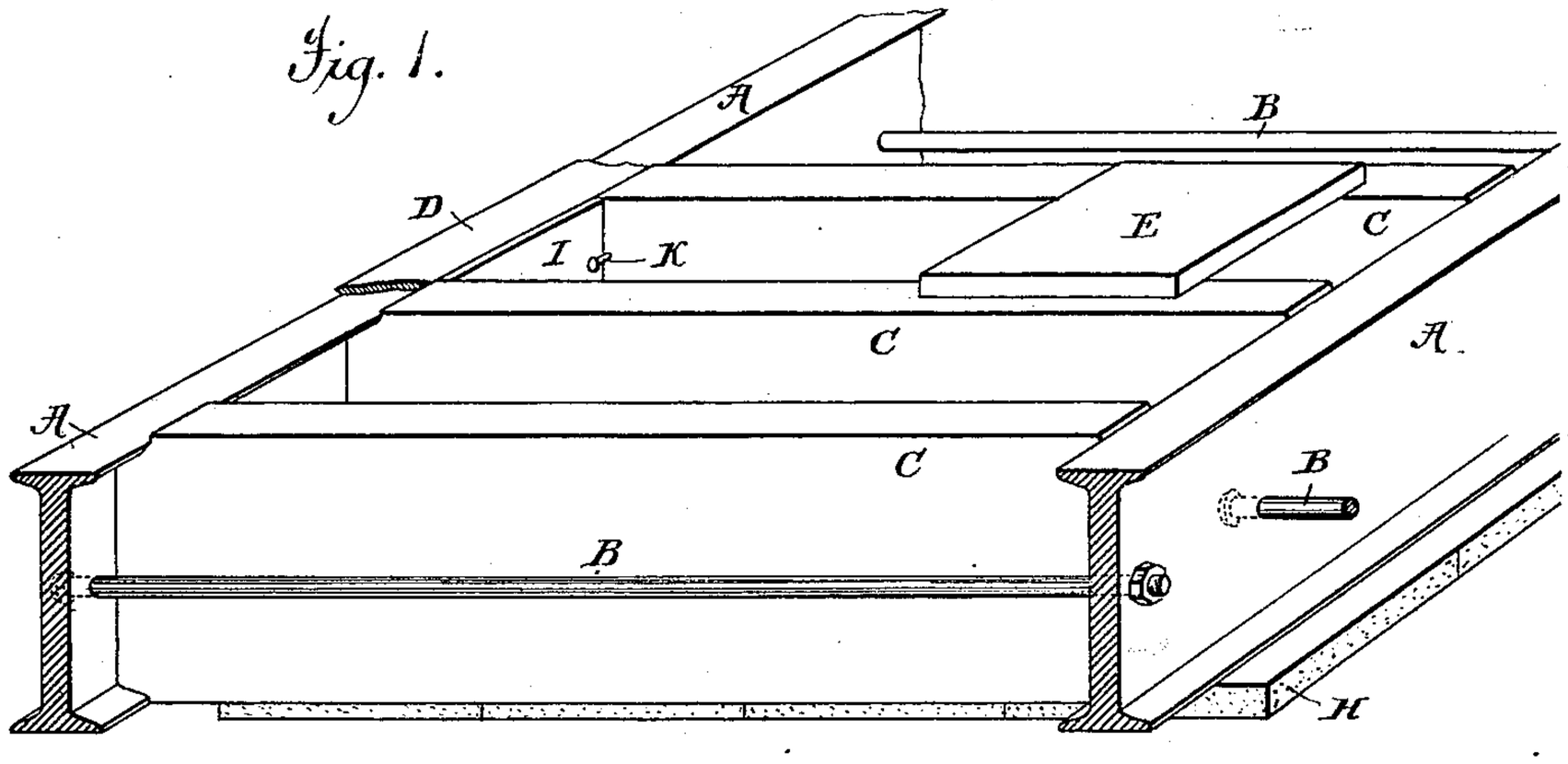


Fig. 2.

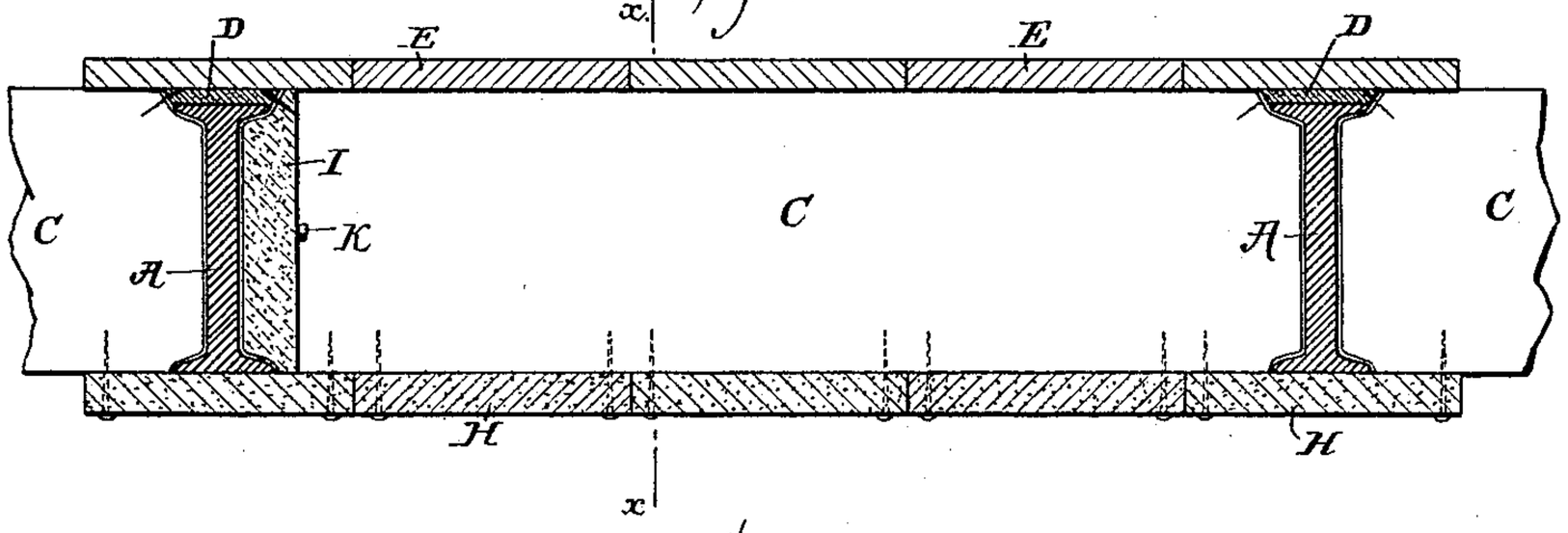
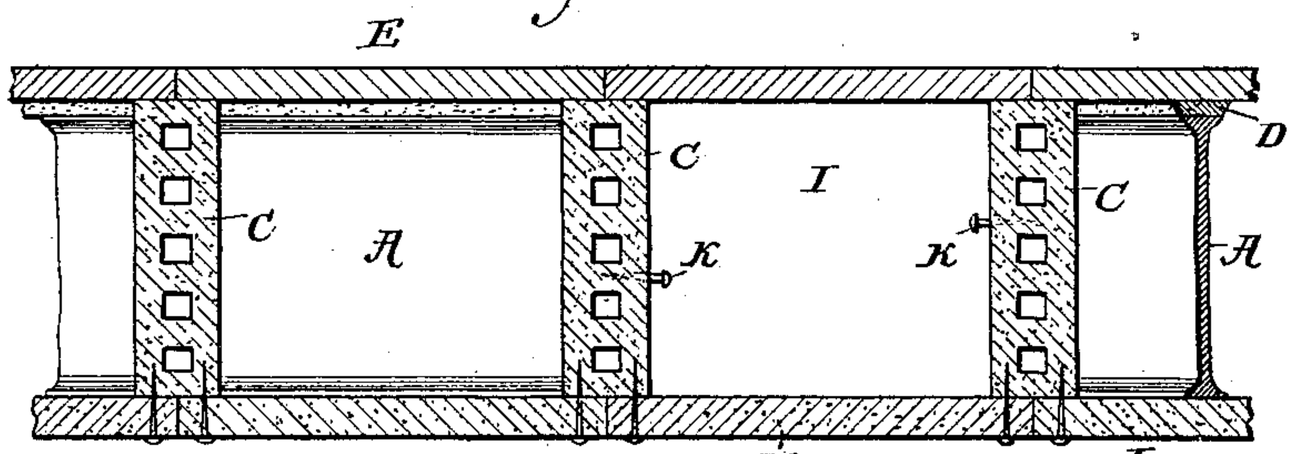


Fig. 3.



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UNITED STATES PATENT OFFICE.

CHARLES CARROLL GILMAN, OF ELDORA, IOWA.

CONSTRUCTION OF FIRE-PROOF FLOORS AND CEILINGS.

SPECIFICATION forming part of Letters Patent No. 338,517, dated March 23, 1886.

Application filed October 22, 1885. Serial No. 180,568. (No model.)

To all whom it may concern:

Be it known that I, CHARLES CARROLL GILMAN, a citizen of the United States, and a resident of Eldora, Hardin county, Iowa, have invented a new and useful Improvement in the Construction of Fire-Proof Floors and Ceilings, of which the following is a specification.

The objects of my invention are, first, to construct a fire-proof floor and ceiling which shall be strong, simple, light, and comparatively inexpensive; and, second, to effectually protect the iron floor-beams against the action of fire and water. I accomplish these objects by the construction hereinafter described and claimed.

In the accompanying drawings, forming part of this specification, Figure 1 represents a perspective view of a construction embodying my invention. Fig. 2 represents my invention in transverse cross-section, and Fig. 3 is a longitudinal cross-section between the iron beams on line *x x* of Fig. 2.

The fireproofing material I employ in the construction illustrated is porous terra-cotta or terra-cotta lumber. This material is absolutely fire-proof, and will not crack nor disintegrate when subjected to the combined action of heat and water. In this respect it is far superior to the ordinary terra-cotta. The latter, if in a heated state, will, especially when water is applied thereto, crack in all directions and fall from its place of attachment, thus exposing the part it was designed to protect.

In the drawings, A represents iron **I**-beams placed any appropriate and desirable distance apart—say five feet. Said beams are connected with each other by the ordinary tie-rods, B, having a head or flange on one end and a screw-thread for the application of a nut on the other. In the space between said beams I place blocks or joists C, of porous terra-cotta or terra-cotta lumber. These joists I make in one piece, either solid or hollow, preferably hollow, as shown, and cut them, if necessary, with a saw, to the proper length and to fit the flanges of the **I**-beams, as illustrated in the drawings. The said joists are placed a greater or less distance apart, according to the strength of floor required. I have shown them spaced about one foot apart, each joist having a thickness of about four inches.

In placing said joists in position the nuts on the ends of the tie-rods are loosened and the **I**-beams spread apart a sufficient distance to permit the insertion of said joists. The latter are temporarily supported, either from above or below, in any sufficient manner, and when a series of them are placed in position the nuts on the ends of the tie-rods are turned forward, so as draw the **I**-beams toward each other until the joists abut against the webs of said beams, so that the ends of the former may be supported on the flanges of the latter. This construction, because of the absence of all joints, renders the use of mortar or cement unnecessary.

The joists may be placed side by side; but for the sake of lightness in the construction I prefer to leave a space between them, as before described. A protecting-strip, D, of porous terra-cotta, is laid on the upper flange of the **I**-beams and nailed to the adjacent joists, which extend above said flanges. A flooring of ordinary tiles, E—say sixteen inches square—may now be laid on and cemented to the upper surface of the joists, as illustrated in the several figures; or a flooring of boards may be substituted therefor. I preferably make the joists, when spaced, so that their under surfaces shall be on a line or flush with the lower flanges of the iron beams, for this obviates the necessity of a protecting-strip for the flanges aforesaid. To protect said flanges I use ceiling-blocks H, of porous terra-cotta, about sixteen inches square, which I nail to the joists on each side of said beams, as clearly shown in Fig. 2. The entire ceiling is formed of similar blocks, H, nailed to the joists, as indicated in Figs. 2 and 3, and to these blocks the plastering may be subsequently applied.

In order that the iron beams may be covered or protected at all points, I insert blocks I, of porous terra-cotta, between the joists at their ends, as shown in the several figures. These blocks I may be held in place against the iron beams by nails K driven into the joists and acting as stops, as shown, or said blocks may be nailed or cemented to said joists. The blocks I also serve to retain the joists in position.

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

1. The combination, with iron beams and porous terra-cotta joists, each of one piece extending across the space between beams, of tie-rods holding said beams against said joists, to retain the latter in position, substantially as described.

2. The combination, with iron beams and porous terra-cotta joists, each of one piece extending at intervals across the space between beams, of tie-rods holding said beams against said joists, to retain the latter in position, substantially as described.

3. The combination, with iron beams and porous terra-cotta joists, each of one piece extending at intervals across the space between beams, and flush with the under surface of the same, of tie-rods and porous terra-cotta ceiling-blocks secured to said joists, forming a ceiling, and covering the under surface of said beams, substantially as described.

4. The combination, with iron beams and porous terra-cotta joists, of separating-blocks of porous terra-cotta interposed between said joists at their ends and protecting the said beams, substantially as described.

5. The combination, with iron beams and porous terra-cotta joists, of separating-blocks of porous terra-cotta interposed between said joists at their ends, and secured to said joists, substantially as described.

6. The combination, with iron beams and porous terra-cotta joists flush with the under surface of said beams, of porous terra-cotta ceiling-blocks secured to said joists and covering the under surface of said beams, and separating-blocks of the same material, substantially as described.

7. The combination, with iron beams and porous terra-cotta joists flush with the under surface of said beams, of porous terra-cotta ceiling-blocks secured to said joists and covering the under surface of said beams, porous terra-cotta strips and separating-blocks, as D and I, and a flooring, substantially as described.

In testimony whereof I have signed my name in the presence of two witnesses.

CHARLES CARROLL GILMAN.

Witnesses:
SAML. G. SLOAN,
EDWIN A. JAGGARD.