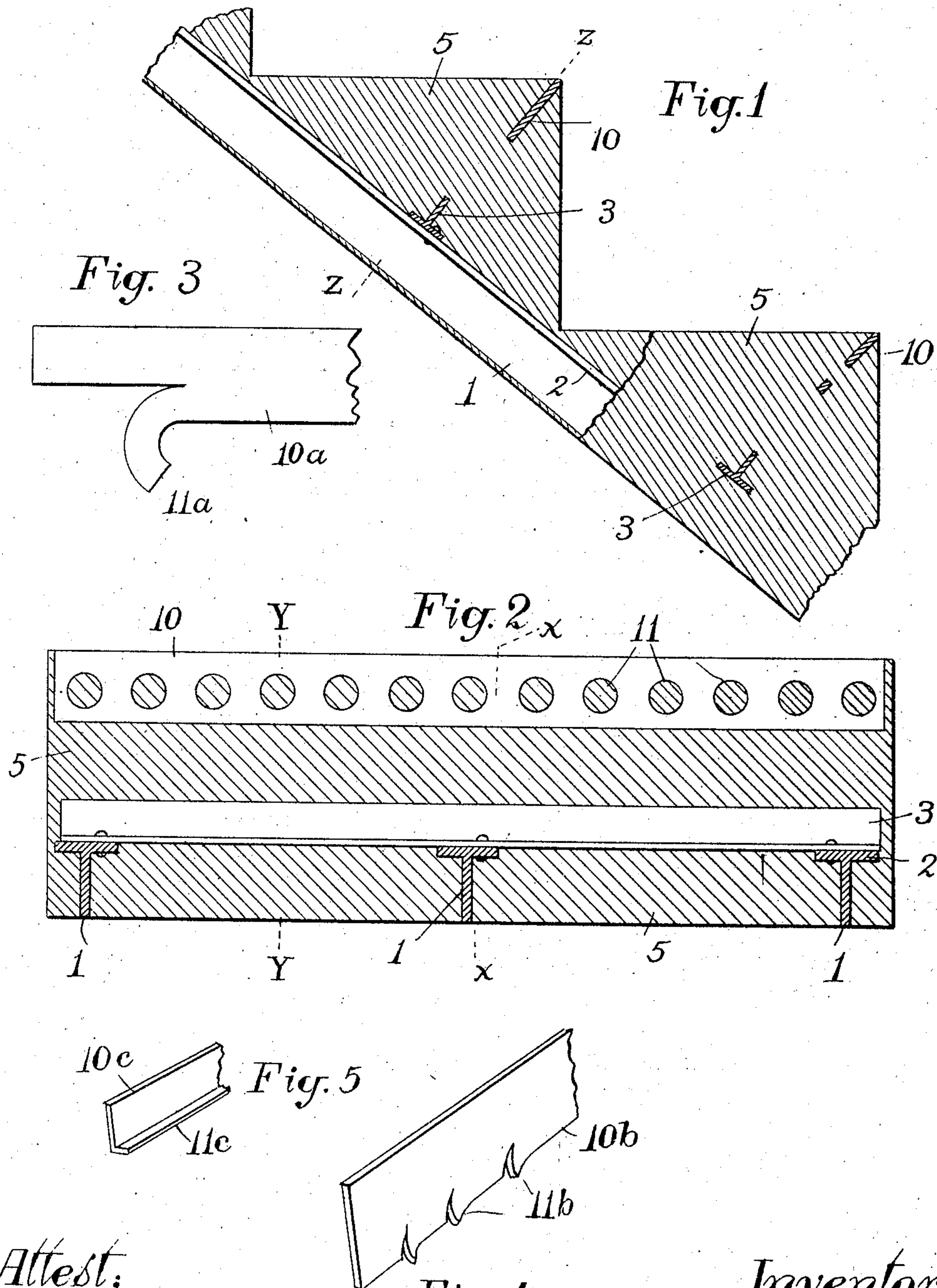


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PATENTED JAN. 24, 1905.

J. PICCARDI.
FIREPROOF STAIRWAY.
APPLICATION FILED OCT. 17, 1904.



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UNITED STATES PATENT OFFICE.

JOSEPH PICCARDI, OF BOSTON, MASSACHUSETTS.

FIREPROOF STAIRWAY.

SPECIFICATION forming part of Letters Patent No. 780,811, dated January 24, 1905.

Application filed October 17, 1904. Serial No. 228,700.

To all whom it may concern:

Be it known that I, JOSEPH PICCARDI, a citizen of the United States, and a resident of Boston, in the county of Suffolk, State of Massachusetts, have invented certain new and useful Improvements in Fireproof Stairways, of which the following is a full, clear, and exact description.

The object of this invention is the construction of a fireproof stairway wherein steel or iron beams and cement are combined to produce the maximum of strength with the minimum of exposure of the metal and in which the tread and risers are of solid cement having the wearing edge thereof protected by an embedded strip of metal.

Referring to the drawings forming part of this specification, Figure 1 is a sectional side elevation of a portion of a stairway embodying my invention, the upper part being on the line X X in Fig. 2 and the lower part being on the line Y Y in said figure. Fig. 2 is a sectional view of the same on the line Z Z in Fig. 1. Fig. 3 is a side view of an end of the wearing-strip made in a modified form. Fig. 4 and Fig. 5 are perspective views of other modifications of the same.

The main structural part of this stairway consists of the T-beams 1, preferably three in number, extending longitudinally up the proposed flight of stairs. These beams are preferably located with the flange 2 uppermost, as shown in Figs. 1 and 2, for the reason hereinafter set forth. Upon these beams is placed a number of much slenderer T-beams 3, bolted or riveted thereto, as represented in Fig. 2. These beams having been secured in position, the work of applying the cement is begun by first securing a temporary planking or plaster-board close beneath the under edges of the T-beams 1 and also a suitable board at the exposed side of the stairs. Then the cement 5 is laid in, other boards being secured in position to shape the risers of the stairs and the upper surfaces being leveled off to constitute the treads. Before, however, enough cement has been laid in to bring up the treads to the proper level, but after the risers are each substantially built up, the edging-strips 10 are introduced in position, as shown in Fig. 1.

These are preferably thin bars of iron about two inches wide and a quarter of an inch thick, but nearly equal in length to the width of the steps, as shown in Fig. 2. These edging-strips, while reaching substantially across the stairs, are inclined at an angle of approximately forty-five degrees with respect to the risers and treads of the stairs, as shown in Fig. 1, and after being located upon the cement already laid to form the risers the remainder of the cement is placed thereon to complete each step. As shown, these strips are located to present an edge of each at the outer junctures of the risers and treads for the purpose of providing the exposed cement corners with a metallic protection. Thus arranged, any blow tending to fracture such corners is resisted by the metal and the life of the stairway increased many fold.

To more strongly bind together the two bodies of cement constituting the outer sections of the risers and treads and also to insure against the possibility of the edging-strips being withdrawn from their places in the cement, I prefer to perforate each strip more or less, as shown in the drawings, and especially in Fig. 2. As the cement penetrates such openings the cement above and below such strips is thereby made more nearly continuous, and hence more coherent.

Other methods of keeping such strips securely fixed in the cement may be devised—as, for illustration, those shown in Figs. 3, 4, and 5. In Fig. 3 a part of the ends of the strips 10^a are curved downward and inward, as 11^a, to constitute retaining-hooks. In Fig. 4 the under edge of said strip 10^b is serrated and such teeth 11^b given lateral bends for the same purpose, and in Fig. 5 it will be seen that the entire under edge of the strip 10^c is bent laterally, forming a confining and strengthening flange 11^c. This last construction is perhaps the most economical for the reason that the small L-beams or even the T-beams of commerce can be utilized without further labor than sawing them to proper lengths.

Although I have shown and described T-beams alone for the longitudinally-extended beams of the stairway, I do not restrict myself

thereto, as other types of beams can be used with almost equal utility, such as L-beams or U-beams. Whichever type is employed, the best results are produced, as far as protection from the weakening effects of fire are concerned, by locating the horizontal section of each uppermost and the vertical member or flanges beneath in order to present an edge instead of a flat surface to the surface of the protecting cement. I also wish to make it clear that where I speak of the steps being composed of cement I employ the term "cement" to include any form of hardening plastic material, as plaster, plaster and broken stone united, cement and broken stone mixed, concrete, &c.

As shown in the drawings, the main body of the structural iron is wholly protected by the concrete or cement from any possibility of being weakened by a fire, since the mere line of metal which might be exposed were the T-beams 1 to have their lower edges come through the cement, as indicated in Fig. 2, is insufficient to receive enough heat to materially weaken the beams as a whole. To remove even this bare possibility, however, I prefer to have the concrete or cement come below and cover such otherwise exposed edges, as shown in Fig. 1. Thus made the stairway is absolutely fireproof, there being no surface of metal to be struck by the flames.

What I claim as my invention, and for which I desire Letters Patent, is as follows, to wit:

1. A fireproof stairway composed of a plurality of metal beams arranged longitudinally of the stairway and suitably tied together, and cement supported by and enveloping the same; each beam being formed with a horizontal and a vertical section as viewed from one end, and such horizontal sections being uppermost in order to present but a narrow edge of each beam to the surface of the cement.

2. A fireproof stairway composed of a plurality of metal T-beams arranged longitudinally of the stairway and suitably tied together, and cement supported by and enveloping the same; said beams being located with the vertical flange beneath.

3. A fireproof stairway composed of a plurality of metal T-beams arranged longitudinally of the stairway, slender metal beams riveted or bolted thereto transversely, and cement supported by and enveloping the same;

the longitudinal beams being located with their vertical flanges downward.

4. A step composed of cement having a metallic strip presenting its edge along the corner of the step, and anchoring means for said strip embedded in the cement.

5. In a stairway, the combination with cement steps, of metallic strips incorporated therein; each strip presenting an edge to the exposed corner of a step but having the remainder thereof wholly embedded in the cement.

6. In a stairway, a step composed of cement having a flat elongated strip of metal embedded therein; the faces of the latter being at substantially an angle of forty-five degrees with respect to the tread and riser of the step, and presenting one edge at the exposed corner thereof.

7. A step composed of cement having a strip of metal embedded therein and presenting an edge to the exposed corner of the step; said strip being formed to engage the cement and be thereby locked against removal therefrom.

8. A step composed of cement having a strip of perforated metal embedded therein and presenting an edge to the exposed corner of the step.

9. A step composed of cement having a strip of flat perforated metal embedded therein and presenting an edge to the exposed corner of the step; said strip having its faces inclined at an angle of approximately forty-five degrees with respect to the tread and riser.

10. A stairway composed of a plurality of metal beams arranged longitudinally thereof and suitably tied together; cement supported by and enveloping the same and constituting the steps thereof; and metal strips embedded in the cement; an edge of each strip being presented to the exposed corner of a step and extending substantially the length thereof.

11. A stairway composed of a plurality of metal beams arranged longitudinally thereof; and cement shaped into steps and wholly enveloping said beams, and thereby rendering the same absolutely fireproof.

In testimony that I claim the foregoing invention I have hereunto set my hand this 15th day of October, 1904.

JOSEPH PICCARDI.

Witnesses:

WILLIAM A. LEAVY,
A. B. UPHAM.