(No Model.)

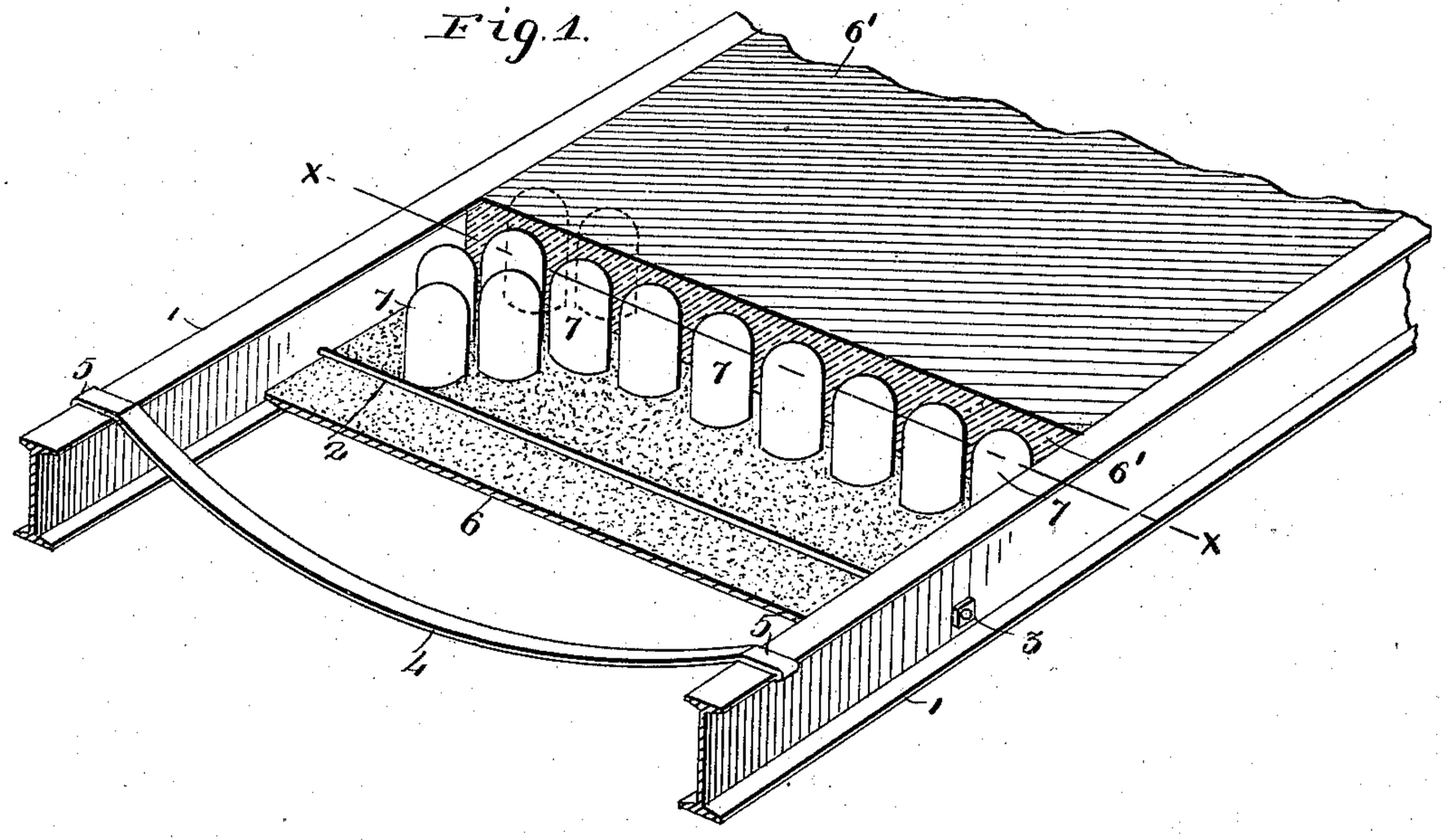
2 Sheets—Sheet 1.

J. JAMETON.

FIREPROOF FLOOR.

No. 584,875. Patented June 22, 1897.

Fig. 1.



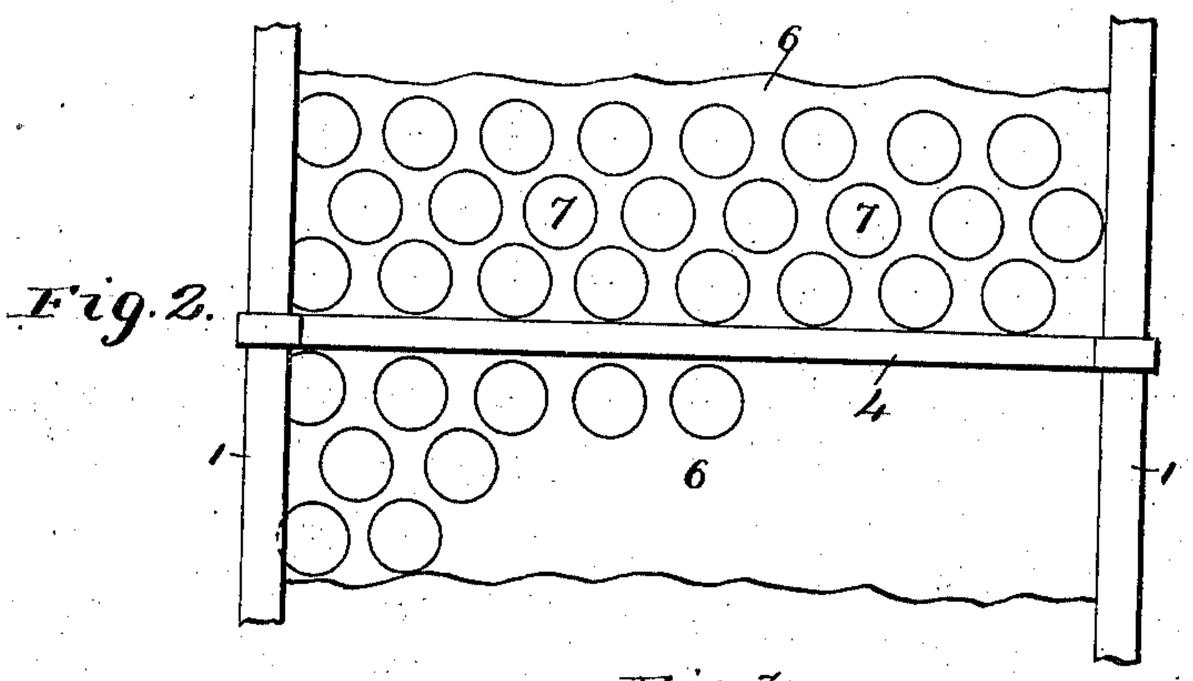


Fig. 2.

Fig. 3.

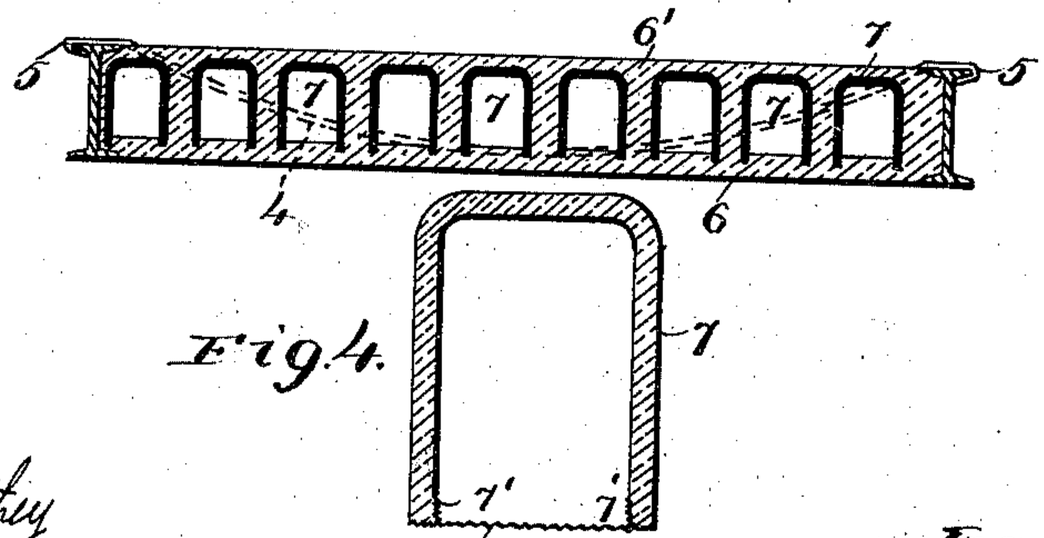


Fig. 4.

Witnesses
Alfred A. Mathey
W. B. Wells

Inventor
Jean Jameton.
By his Attorneys,
Keller & Starck

(No Model.)

2 Sheets—Sheet 2.

J. JAMETON.

FIREPROOF FLOOR.

No. 584,875. Patented June 22, 1897.

Fig. 5.

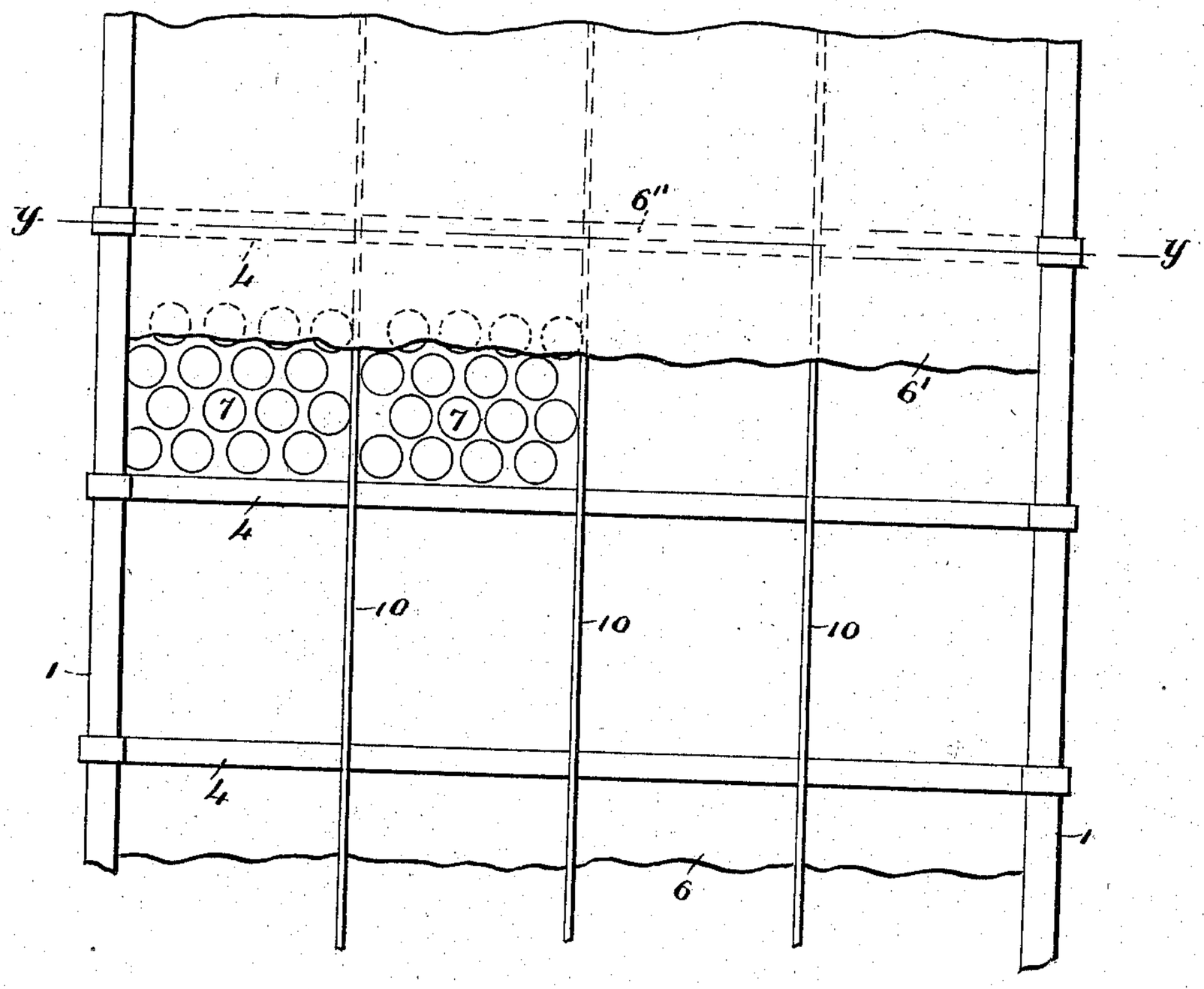
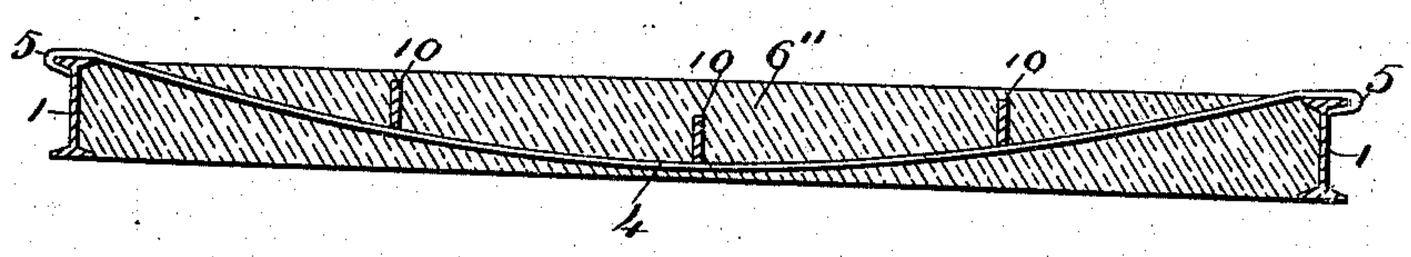


Fig. 6.



Witnesses
Alfred A. Mulhern
H. B. Wells

Inventor
Jean Jameton.
By his Attorneys
Keller & Starek

UNITED STATES PATENT OFFICE.

JEAN JAMETON, OF ST. LOUIS, MISSOURI.

FIREPROOF FLOOR.

SPECIFICATION forming part of Letters Patent No. 584,875, dated June 22, 1897.

Application filed January 15, 1897. Serial No. 619,353. (No model.)

To all whom it may concern:

Be it known that I, JEAN JAMETON, a citizen of the United States, residing at St. Louis, State of Missouri, have invented certain new and useful Improvements in Fireproof Floors, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention has relation to improvements in fireproof flooring; and it consists in the novel construction to be more particularly set forth in the specification and pointed out in the claims.

In the drawings, Figure 1 is a perspective view of a section of the floor, disclosing at the same time the interior construction thereof. Fig. 2 is a top plan view of the forward portion shown in Fig. 1, showing the cups, however, disposed on both sides of the strap. Fig. 3 is a section on the line *x x* of Fig. 1. Fig. 4 is an enlarged vertical section of one of the cups adapted to be embedded in the cement. Fig. 5 is a plan of a construction employed for floors of unusual depth, and Fig. 6 is a section on *y y* of Fig. 5.

The object of my invention is to construct a fireproof floor entering into the construction of buildings of the steel-cage type which shall not only be light, thereby materially reducing the aggregate weight which the metallic beams between which the flooring is disposed are obliged to support, but which at the same time shall be strong and durable and adapted to resist to a maximum the various strains to which it may be subjected. By my present improvement a very high building will possess the advantage both of stability and lightness, while the general strength of the flooring thereof will in no wise be diminished. In detail the invention may be described as follows:

Referring to the drawings, 1 1 represent the main supporting metallic beams of the floor, generally, though not necessarily, united at the bases by a series of tie-rods 2, provided with terminal nuts 3, and the upper flanges of the webs of the beams being connected by a series of concave metallic straps 4, each strap having a gripping end 5, by which said flange is embraced. The bases of the straps are substantially on a line connecting the lower edges of the webs, as best seen in section in Figs. 3 and 6. In constructing the flooring which forms the main feature of my invention I first dispose a layer of cement 6 between the lower flanges of the webs of the beams, (the cement being of course temporarily supported by scaffolding, not shown,) and while the said layer is still comparatively soft I embed therein a series of inverted substantially tubular or cylindrical cups 7, the lower edge and the adjacent portion of the interior surface of each cup being roughened (see 7′, Fig. 4) to effect a better union between the cup and the cement. The cups break joint, as best seen in Fig. 2, whereby they effect a closer and firmer bond with the remaining portion of the cement 6′, constituting the main body of the cement floor. The upper layer 6′ is of course laid in between the several cups in time before the lower layer 6 has had time to harden, so that when the floor is complete the layers 6 and 6′ form a single body or mass.

As seen from the drawings, the bottoms (closed bottoms) of the cups are disposed a suitable distance below the upper surface of the cement floor, thereby enabling the latter to be finished off smoothly, but in addition the said bottoms are disposed along a plane at which the compression to which the flooring is subjected by reason of any weight it may carry is greatest, so that the said closed bottoms are in a position to resist to best advantage said compression strain. The lower layer, however, being subjected to tension, there is no particular occasion to make the cups closed at that point, as the tension is taken up by the tie-rods and the straps above referred to.

It is apparent that by the present construction the cement portion of the floor is reduced considerably in weight, while at the same time its strength is in no wise impaired, and thus is secured the element of lightness for high buildings of this class without in any wise weakening the flooring thereof. It may be added, too, that the closing of the cups at both ends would not constitute a departure from the spirit of my invention.

By "cement" I of course mean the prevailing concrete compositions which enter into this class of constructions—for example, plaster-of-paris, hydraulic lime, gravel, granite,

mortar, &c.—and which form what are known as "concrete" flooring. It is my practice to generally dispose the cups on each side of the straps 4, thereby leaving in the line of the length of each strap or immediately over each strap a solid rib of concrete 6", such rib constituting in effect a supporting beam or girder for the support of the flooring on each side thereof.

As seen from the drawings, it is obvious, too, that the portion of concrete or cement which enters the cup above the lower edge thereof materially strengthens the walls of such cup against any possible crushing force to which said walls may at any time be subjected.

For heavy flooring I prefer the construction best illustrated in Figs. 5 and 6—that is to say, the straps 4 are connected by a series of bars 10, laid on the straps and running across the same and parallel with the beams 1, thereby dividing the spaces between any two straps into a series of sections, within each of which the cups are laid and disposed in the manner already described. In this way I form a firm bond between the various elements entering into the composition and construction of the floor.

The cups employed are in their general nature tubular—that is, cylindrical or prismatic—being circular, elliptical, or polygonal in cross-section and with their closed ends or bases disposed substantially in the same plane, the bases so disposed forming a surface which (on the principle of an arch) resists to the best advantage the compression strain to which the floor is subjected and which by reason of the particular form of cups used naturally occupies a position or plane at the proper distance below the upper surface of the flooring. However, in light-floors, where the compression strains are slight, the "cups" may be open at both ends, in which case the construction would resolve itself into a mere tube or pipe open at both ends, but always disposed with its axis substantially at right angles to the plane of the upper surface of the floor. The omission of the closed bottom falls within the spirit of my invention, the open tube being a generic construction for the specific form of cups already referred to, the latter being the preferred form for floors designed to carry heavy loads.

The present construction is characterized by the specific disposition of the cups or tubes within the cement—viz., that each tube is set within the cement with the axis thereof at an angle to the upper plane or surface of the floor. The prevailing size of this angle is ninety degrees by reason of the preferred vertical disposition of the axis of the tube, although it is apparent that with arched floors or roofs, wherein the surface of such floor is slightly curved, this angle would in a measure depart from a right angle unless the tube or cup were actually set perpendicular to such curved surface. The length of each tube or cup should of course be sufficient that when they are all properly embedded within the cement they may effectually resist the compression strains above referred to, and though the tube may be open at both ends, still, by reason of the integrity of its peripheral walls—that is, by reason of the fact that the peripheral walls are closed—the latter resist such strains to the best advantage.

Having described my invention, what I claim is—

1. In a floor, suitable supporting-beams, a layer or body of cement supported between the same, and a series of hollow tubes embedded in said cement with the axis of each tube disposed at an angle to the upper surface of the floor, substantially as set forth.

2. In a floor, suitable supporting-beams, a layer or body of cement supported between the same, and suitable substantially tubular cups embedded in said cement, the closed ends of the cups being adjacent to the upper surface of the flooring, and their open ends being disposed adjacent to the lower surface of the floor, substantially as set forth.

3. In a floor, suitable supporting-beams, a layer of cement supported between the same, and suitable substantially tubular cups placed in an inverted position and embedded in said cement, the said cups breaking joint with one another, substantially as set forth.

4. In a floor, suitable supporting-beams, a layer or body of cement supported between the same, suitable cups closed at one end embedded in the mass of cement, the closed bottoms of the cups being disposed in a plane a suitable distance below the upper surface of the flooring whereby the strains of compression are best resisted by the cups, and suitable means for otherwise taking up the tension strains to which the flooring is subjected, substantially as set forth.

5. In a floor, a suitable cup closed at one end, and having a roughened surface at the edge of the open end and along a portion of the interior surface thereof adjacent to said edge, substantially as set forth.

6. A fireproof floor, comprising suitable beams having upper and lower flanges and intermediate webs, a mass or body of cement supported by the lower flanges between the webs, a series of cups closed at one end embedded in said cement, the closed ends of the cups being located in a plane a suitable distance below the upper surface of the flooring, the lower edges of the cups and the interior surface adjacent to said lower edges being roughened, the said cups being disposed in the cement to break joint with one another, and suitable straps having terminal gripping ends adapted to seize the upper flanges of the beams, the said straps being concave downward, the bases of the straps being substantially in line with the lower edges of the webs of the beams, substantially as set forth.

7. In a floor, suitable supporting-beams, a layer or body of cement or concrete supported between the same, straps connecting the beams, cups embedded in the cement on each side of each strap thereby leaving a solid rib of concrete immediately over, or in line of the length of each strap, substantially as set forth.

8. In a floor, suitable supporting-beams, a layer of concrete supported between the beams, straps connecting the said beams, a series of bars connecting the straps and running across said straps, thereby forming a series of sections or areas, and suitable cups embedded in the concrete within the several sections, substantially as set forth.

9. In a floor, suitable supporting-beams, a layer or body of cement supported between the same, and a series of hollow tubes embedded in said cement with the axis of each tube disposed substantially at right angles to the upper surface of the floor, and with the adjacent end of the tube disposed in a plane substantially parallel to such surface, substantially as set forth.

10. In a floor, suitable supporting-beams, a layer or body of cement supported between the same, and a series of hollow tubes embedded in said cement with the axis of each tube disposed substantially at right angles to the upper surface of the floor, and with the upper ends or those adjacent to said surface disposed in a plane substantially parallel to said upper surface of the floor, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

JEAN JAMETON.

Witnesses:
EMIL STAREK,
ALFRED A. MATHEY.