

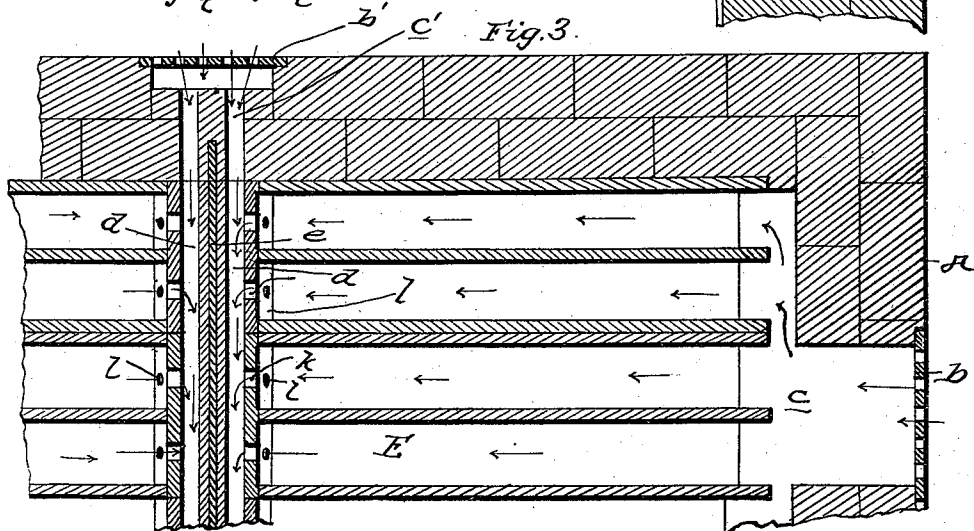
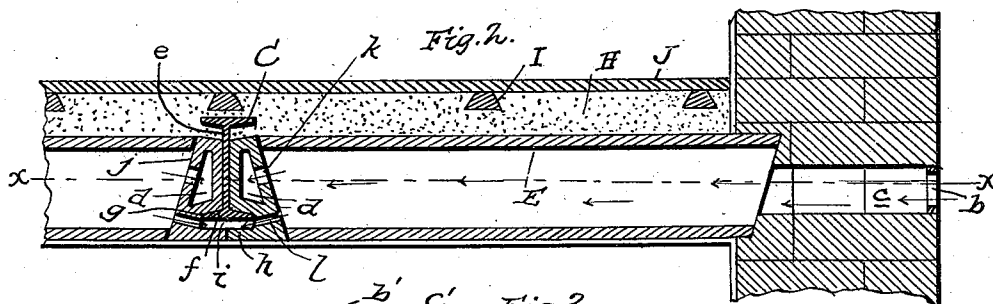
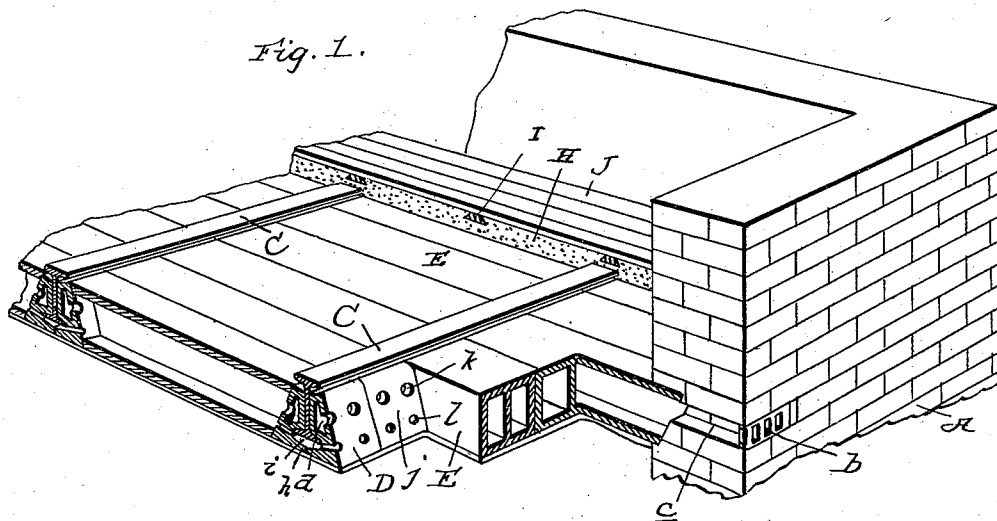
(No Model.)

G. RUSHFORTH.
FIREPROOF BUILDING.

No. 556,375

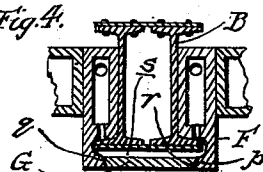
Patented Mar. 17, 1896.

Fig. 1.



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Fig. 4.



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UNITED STATES PATENT OFFICE.

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FIREPROOF BUILDING.

SPECIFICATION forming part of Letters Patent No. 556,375, dated March 17, 1896.

Application filed December 20, 1895. Serial No. 572,799. (No model.)

To all whom it may concern:

Be it known that I, GEORGE RUSHFORTH, a citizen of the United States, residing at Stockton, in the county of San Joaquin and State of California, have invented certain new and useful Improvements in Fireproof Buildings; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to fireproof buildings, and more particularly to floors therefor; and it has for its general object to provide a strong fireproof floor made up principally of hollow ventilated tiles of fire-clay or the like, which are so shaped as to combine lightness, cheapness, and strength, and one which embodies but a minimum amount of iron or steel beams and concrete and is consequently cheap and light, and which has the hollow ventilated tiles so arranged as to strengthen their connection to the beams and girders and to enable them to thoroughly protect the said beams and girders against the action of fire.

Other objects and advantages of the invention will be fully understood from the following description and claims, when taken in connection with the annexed drawings, in which—

Figure 1 is a perspective view of a portion of a building and my improved floor with parts in section and other parts broken away. Fig. 2 is a detail transverse section. Fig. 3 is a detail horizontal section taken in the plane indicated by the line *x x* of Fig. 2, and Fig. 4 is a detail section illustrating the manner in which the tiles are arranged with relation to a box-girder made up of connected I-beams to thoroughly protect the same from the action of fire.

Referring by letter to said drawings, A indicates the walls of a building, which may be of stone or masonry and of the ordinary construction, except that they are provided at proper intervals with ventilators or foraminous castings *b b'*, and with air-conduits *c c'*, communicating with the same for a purpose presently described.

B (see Fig. 4) indicates a box-girder made up of connected I-beams, of which any suitable number may be employed, and which may have their ends arranged in and tied to

the walls A in the ordinary or any approved manner.

C indicates the I-beams, which are disposed at right angles to the girder B and are connected with said girder and the walls A in any approved manner, and D indicates the hollow tiles of fire-clay or other suitable material which are designed to protect the I-beams C against the action of fire, and are also designed to support one end of what I will, for convenience of description, denominate the "transverse tiles" E, hereinafter described.

The tiles D, which may be of any suitable length, are arranged end to end on opposite sides of the I-beams C, as shown, and they have their hollow portions *d*, which communicate with the conduits *c'*, arranged against the webs *e* of the beams and upon the base-flanges *f* thereof, and also have recesses *g* below their hollow portions to receive said base-flanges *f* and the flanges *h*, which meet at a point below the said base-flanges *f* and serve to form air-spaces *i* below the beams, as better shown in Fig. 2. Said tiles D further have their outer walls *j* inclined downwardly and outwardly or away from the I-beams, for a purpose presently described, and in said walls *j* they are provided with the apertures *k l*, the former of which serve to admit air to the hollow portions *d* of the tiles, while the latter serve for the admission of air to the spaces *i* below the I-beams. In virtue of this construction and arrangement it will be seen that the tiles D are securely connected with the I-beams without the employment of fastening devices and are adapted, being thoroughly ventilated or supplied with air from the outside of the building, to thoroughly protect the beams from the action of fire, which is an important advantage and a desideratum in fireproof construction. This construction and arrangement of the tiles D and the tiles E, hereinafter described, further admits of the employment of a less number and lighter beams than are usually employed, and consequently renders the floor much lighter and less susceptible to the action of fire than the ordinary fireproof construction, although equally as strong and as capable of withstanding weight and strain as the latter.

As better shown in Fig. 2 of the drawings,

the transverse hollow tiles E have their inner ends beveled in conformity to the inclined walls *d* of the tiles D, so as to enable said tiles D to support said ends, and the outer ends of said tiles E are arranged in the walls A, as shown, and each one of them communicates with each air-conduit *c*, of which there may be any suitable number, as better shown in Fig. 3. The air entering from the outside of the building through ventilators *b* passes through the tiles E in direct communication with said ventilators, and from thence through the apertures *d l* in tiles D into said tiles D, and thence out of the tiles D into the transverse tiles E, which are in direct communication with an air-conduit *c*.

F (see Fig. 4) indicates hollow tiles, which are arranged parallel to the tiles E and on opposite sides of the girder B, and are designed, in conjunction with a base tile-plate G, to protect said girder against the action of fire. The said hollow tiles F rest upon the base-flanges of the I-beams comprised in the girder B, and communicate at one end with apertures *d l* in tiles D, and they are provided with flanges *p*, which extend inwardly below the girder-beams and have their edges beveled downwardly and inwardly, as indicated by *q*. These beveled edges *q* are designed to support the tile-plate G, which has its edges *r* similarly beveled and is arranged, as shown, so as to form an air-space *s* below the girder. This construction and arrangement of tiles F G protects the girder against the action of fire, and as effectually as the tiles D protect the beams C, and like the connection of the tiles D to the beams the connection of the tiles F G to the girder is effected without the employment of fastening devices.

The construction and arrangement of tiles, beams and girders described is further advantageous, since it admits of the employment of but a minimum amount of concrete, which is objectionable for the reasons that it is a dead-weight and does not possess the fire-resisting qualities of fire-clay, of which material the tiles are, as before stated, constructed.

II indicates the bed of concrete, which is arranged in the usual manner upon the beams, girders and tiles, but is of a less thickness than is rendered necessary by the usual fireproof-floor construction. I indicates dovetail sleepers laid in the concrete in the ordinary manner, and J indicates wood flooring placed upon the concrete and sleepers and connected to the latter in the ordinary or any suitable manner.

From the foregoing it will be appreciated that my improved fireproof floor while capable of resisting as great weight and strain as the ordinary construction is much lighter and cheaper than the same and is equally as easily constructed, if not more so, and is more nearly fireproof; and it will also be appreciated that these are important advantages in the class to which my invention appertains.

I have described the construction and relative arrangement of the parts of my improved floor in order to impart a full, clear, and exact understanding of the same. I do not desire, however, to be understood as confining myself to such construction and arrangement, as such changes or modifications may be made in practice as fairly fall within the scope of my invention.

In lieu of a wood floor placed on sleepers, any suitable flooring may be employed.

Having described my invention, what I claim is—

1. In a fireproof floor construction, the combination of a beam or a girder, hollow tiles arranged end to end on opposite sides of the beam or girder and resting on the base-flanges thereof, and extending in the same direction as said beam or girder, and a communication between the interior of said hollow tiles and the open air, substantially as specified.

2. In a fireproof floor construction, the combination of an I-beam, hollow tiles arranged end to end on opposite sides of the beam or girder and parallel thereto and resting on the base-flanges thereof and having recesses receiving said base-flanges and also having the flanges *h*, extending below the beam and forming an air-space *i*, and a communication between the interior of the hollow tiles and the space *i*, and the open air, substantially as specified.

3. In a fireproof floor construction, the combination of an I-beam, hollow tiles arranged end to end on opposite sides of the beam and parallel thereto and resting on the base-flanges thereof and having their outer side walls inclined downwardly and outwardly and provided with perforations, the transverse hollow tiles having their inner ends beveled in conformity to the side walls of the first-named tiles and bearing thereon and communicating with the perforations thereof, and a communication between one or more transverse tiles and the open air, substantially as and for the purpose described.

4. In a fireproof floor construction, the combination of an I-beam, hollow tiles arranged end to end on opposite sides of the beam and parallel thereto and resting on the base-flanges thereof and having their outer side walls inclined downwardly and outwardly and provided with perforations *k*, *l*, and also having recesses receiving the base-flanges, and flanges extending below the beam and forming the air-space *i*, a communication between the interior of the hollow tiles and the space *i*, and the open air, the transverse hollow tiles having their inner ends beveled and bearing on the inclined walls of the first-named tiles and communicating with the perforations *k*, *l*, thereof, and a communication between one or more of the transverse hollow tiles and the open air, substantially as and for the purpose set forth.

5. In a fireproof floor construction, the combination of the walls of a building having con-

duits *c*, *c'*, communicating with the open air, a girder supported by the walls of the building, beams connected with the girder and the walls, hollow tiles communicating with the
5 conduits *c'*, and arranged end to end on opposite sides of the beams and parallel thereto and resting on the base-flanges thereof and having their outer sides inclined downwardly and outwardly and provided with perfora-
10 tions *k*, *l*, and also having recesses receiving the base-flanges, and flanges extending below the beams and forming the air-spaces *i*, the transverse hollow tiles *F*, arranged on opposite
15 sides of the girder and parallel therewith and communicating with the openings *k*, *l*, in the

first-named tiles and bearing on the flanges of the girder and having the flanges *p*, provided with beveled edges, the tile-plate *G*, engaging said edges *p*, of the tiles *F*, and forming a space below the girder and the hollow
20 tiles having their inner ends beveled and bearing on the inclined walls of the first-named tiles and communicating with the perforations *k*, *l*, thereof, substantially as specified.

In testimony whereof I affix my signature 25
in presence of two witnesses.

GEORGE RUSHFORTH.

Witnesses:

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EDGAR M. BRANSFORD.