

T. BAILEY.
FIREPROOF BUILDING CONSTRUCTION.

No. 576,712.

Patented Feb. 9, 1897.

Fig. 1.

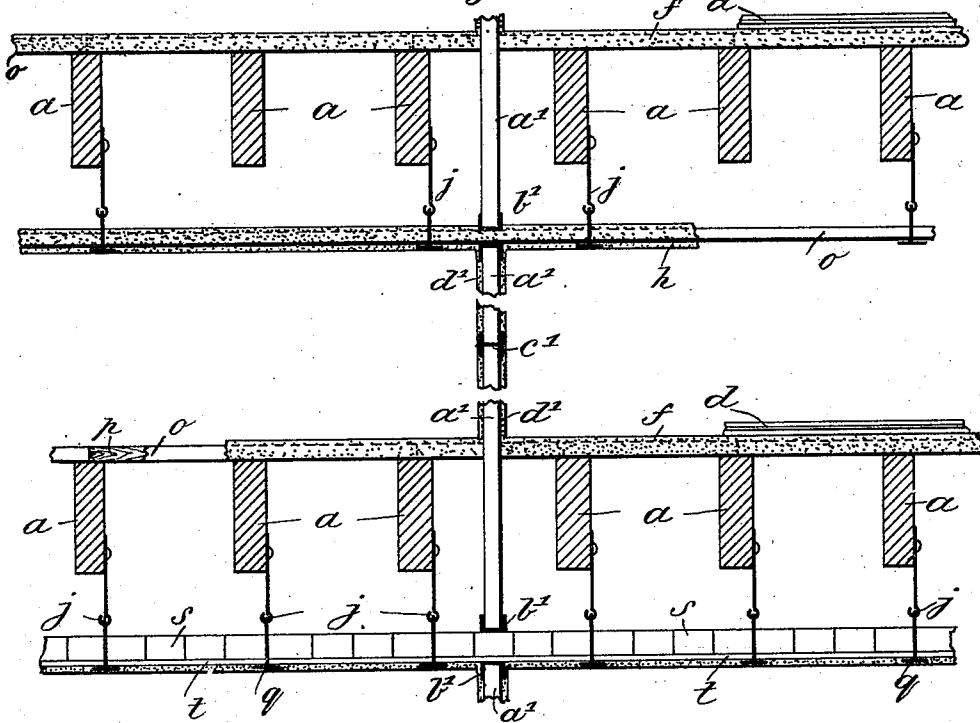


Fig. 2.

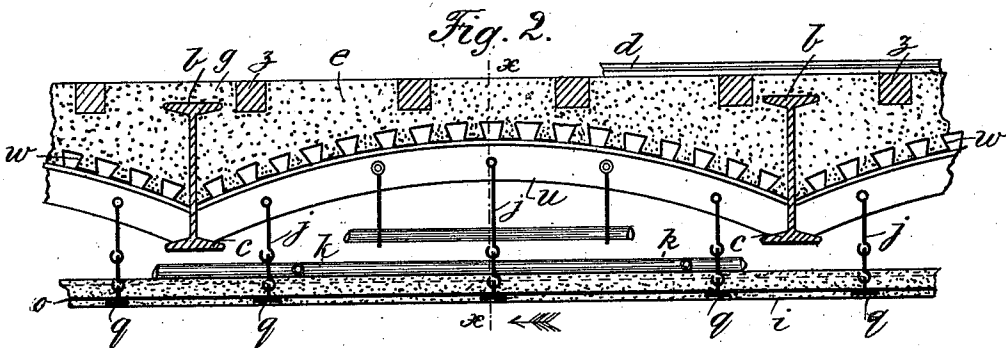
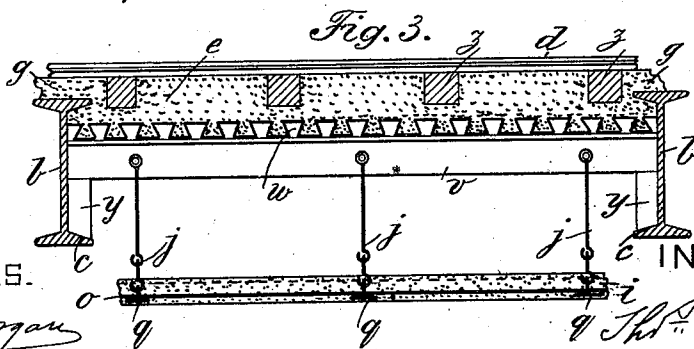


Fig. 3.



WITNESSES.

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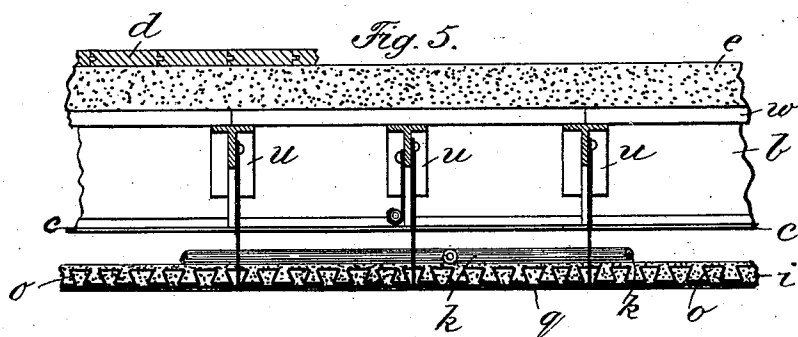
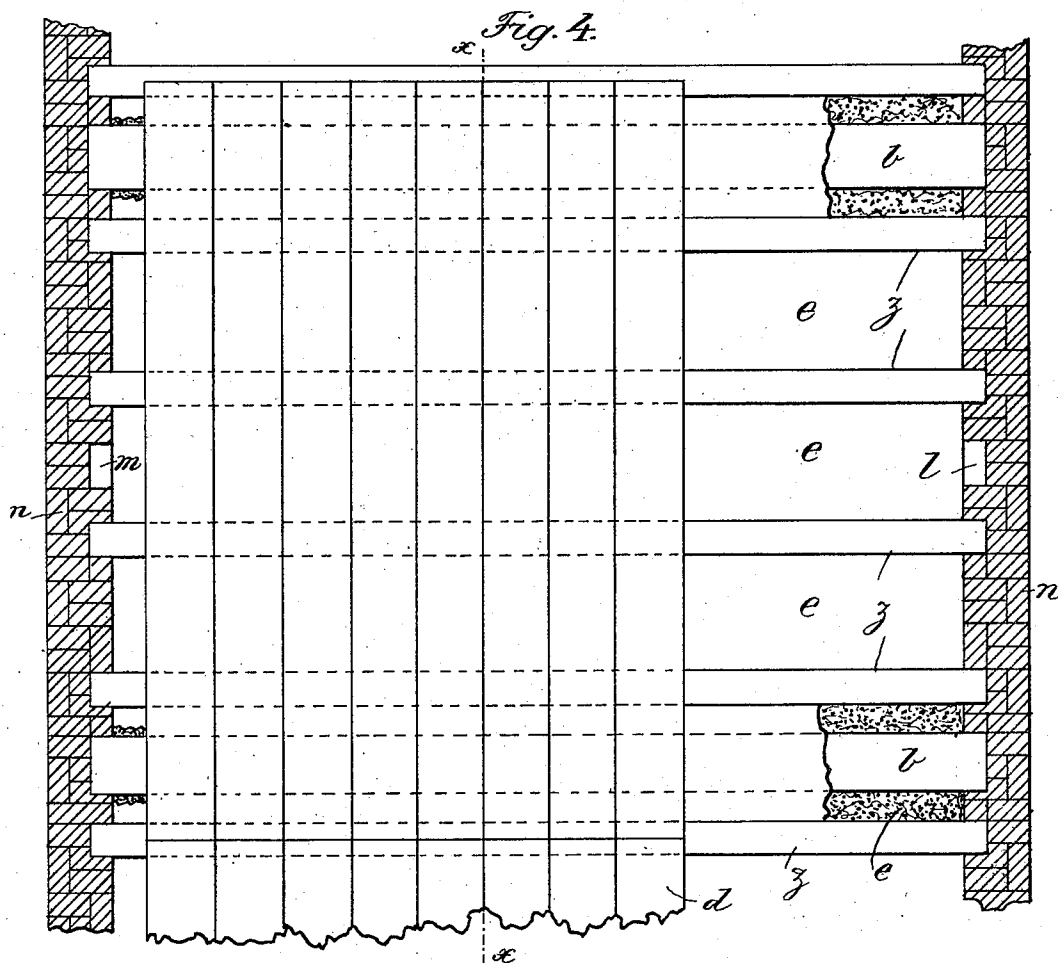
(No Model.)

2 Sheets—Sheet 2.

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UNITED STATES PATENT OFFICE.

THOMAS BAILEY, OF NEW YORK, N. Y.

FIREPROOF-BUILDING CONSTRUCTION.

SPECIFICATION forming part of Letters Patent No. 576,712, dated February 9, 1897.

Application filed January 18, 1896. Serial No. 575,939. (No model.)

To all whom it may concern:

Be it known that I, THOMAS BAILEY, a citizen of the United States, and a resident of New York city, in the county and State of New York, have invented certain new and useful Improvements in Fireproof-Building Construction, of which the following is a specification.

The essential objects of my invention are to construct floors generally so as to be more effectively protected from fire, and to provide for piping and wiring to better advantage in the first place, and for being more accessible afterward for alterations and repairs, and my invention also comprises an improved construction of fireproof partitions, as hereinafter described, reference being made to the accompanying drawings, in which—

Figure 1 represents transverse sections of floors in which wood beams are used and a section of a fireproof partition. Fig. 2 is a transverse section of a floor and ceiling according to my improvement with arched beam-filling. Fig. 3 is a transverse section of my improved floor and ceiling when the beam-filling is flat. Fig. 4 is a plan view of a floor with parts in horizontal section. Fig. 5 is a section of part of a floor on line *x x*, Figs. 2 and 4.

In Fig. 1 I represent the ordinary wood-supporting beams *a*, which are still preferred in many forms of building, but in the other figures I represent the more modern construction, consisting, essentially, of metal beams *b*, with fireproof filling between the beams supported on the lower flanges *c* of said beams.

As now constructed with wood beams *a* the wood flooring *b* is laid directly on the wood beams, and the ceiling of lath and plaster is attached directly to the under sides of the beams, whereby on the upper side the entire floor structure is directly exposed to fire and on the under side the plaster affords but little protection, and in the present iron-beam construction wood beams are placed on the iron beams transversely to receive the floor-boards *d*, which are thus laid parallel with the beams. In case of fire above the floor the iron beams are directly exposed to heat and liable to bend and twist. Whether I use wood or iron beams I provide a fireproof cover as *f* or *g*, of suitable thickness, above

the upper edges of the beams for protection against burning the wood beams or overheating the iron beams, and on this cover I lay the wood floor *d*, and under the beams I suspend a substantial fireproof ceiling, as *h* or *i*, in any approved way, as by hooks *j* or other means, said ceiling being suspended at a distance below the beams, affording ample space for circulation of air and for laying the water, gas, and other pipes, as *k*, and electric wires on, or suspending them above it under the beams, where they can be run in any direction to better advantage than when laid between the beams, from which it is difficult to direct them crosswise of the beams, as they must be in many cases, and the electric wires being laid on the fireproof ceiling will be free of contact with the wood beams and danger of fire will be greatly reduced without the necessity of incasing them in tubes. Together with this provision for free circulation of air between the ceiling and the floor inlet and outlet flues *l* and *m* may be provided in the walls *n* in any suitable way, whereby cool air will constantly circulate between the ceilings and the floor for the protection of the floor-beams even when the contents of the room may be burning.

The protective cover *f*, of fireproof material, for the wood beams may consist of any approved form of metallic support resting on the beams and carrying a layer of plaster or cement; but I prefer to use dovetail corrugated metallic sheets *o*, covered on one or both sides with the protective material and supported at the extremities of the ribs on the beams. The protective plaster interlocks with the ribs and grooves of the sheets in a way to make substantial covering. Where it is desirable to nail the floor-boards *d*, dovetail wood pieces *p* may be driven in the grooves of the sheets to receive and hold the nails, or they can be nailed through the protective cover into the beams.

For the ceiling I will suspend any approved form of flanged bars, as T-bars *q* or I-bars, having flanges on which to support slabs or plates of the protective material, which may be of any approved construction, but for which I also prefer to use dovetail corrugated sheets *o*, covered with the protective material, which in this instance will be applied on both sides.

These slabs being thus made are very substantial and adapted for the support of workmen while laying the pipes and wires in the first place before the beam-filling is put in, and they afford a sectional construction of the ceiling easily removable in sections from below when repairs or alterations of the pipes or wires may afterward be required, it being only required to break the coating of plaster applied under the slabs and bars for the finish along said bars and at the meeting edges of the corrugated plates. Instead of the above-described construction of the ceiling, terra-cotta or other bricks *s* may be laid on supporting-bars *t*, arranged at intervals apart along the flanges of the bars *q*, which may also be readily removed in sections for access to the piping and wires.

The protective filling *e* between the metal beams may be supported on arched *T* or other flanged bars *u* or like straight bars *v*, placed at suitable intervals apart along the lower flanges of the beams *b*, with dovetail corrugated sheet-metal plates *w* resting on the bars to hold the protective filling *e* above; but plain sheets may be used in lieu of the corrugated sheets, the sheets being sufficiently thicker for strength and the bars *u* and *v* being placed closer together, or bricks or tiles may be used. When straight bars, as *v*, are used, the ends may be placed on short legs *y*, standing on the flanges *c* of the floor-beams to limit the thickness of the protective filling *e* for avoiding unnecessary weight of the same. When arched bars *u* are used, there will be little or no excess of this part of the filling. The weight of the filling material being thus largely reduced as compared with the common arrangement, in which it is usually about the full depth of the beams, more of the weight-supporting power of the floor may be utilized for goods upon the floor.

For protection of the upper edges of the iron beams from fire of the wood floor and the wood beams on which the floor-boards are laid, beams, as *z*, may be laid in the protective filling parallel with the iron beams and wholly cover the iron beams with the protective material instead of placing the wood beams crosswise on the iron beams, and thereby not only protect the iron beams more effectually, but also have an economical advantage in the matter of the wood floors in buildings of comparatively narrow widths in which the iron beams traverse the building the shortest way from wall to wall, so that the floor-boards, being laid lengthwise in the longest dimension from wall to wall, will finish at the end with less waste of material to be cut off on account of excess of length at the finish.

The improvement which I have now made in the construction of fireproof partitions is illustrated in Fig. 1, wherein *a'* represents the metallic portion of the partition as dovetail corrugated sheets set with the ribs and grooves upright and extending from ceiling to ceiling

and thereat arranged in channel-bars *b'*, whereby the space between the floor and ceiling is also partitioned, as a means of preventing the spreading of fire in the space, and the partitions of the different stories are preferably placed one above another, so that the weight of the entire series of partitions is supported on the foundation and the floors are relieved of it, whereby the weight-supporting power of the floors may be further utilized for goods. As the width of the corrugated partition-sheets is less than the height between ceilings, they will be spliced by means of I-bars *c'*. The partitions may, however, be supported on the floors, when desired.

The sides of the partition-sheets *a'* will be plastered, as at *d'*, the plaster being anchored in the dovetail grooves.

I claim as my invention—

1. The combination with a floor, of a ceiling consisting of a separate structure adapted for and having arranged thereon the usual systems of piping and wiring of buildings, and suspended at an appropriate distance from the floor therefor substantially as described.

2. The combination with a floor, of a ceiling consisting of a separate sectional structure adapted for removal of the sections separately, and also adapted for and having arranged thereon the usual systems of piping and wiring of buildings, and suspended at an appropriate distance from the floor therefor substantially as described.

3. The combination with a floor, of a suspended ceiling consisting of a separate sectional structure composed of flanged suspended bars, transverse supports for protective material carried on the flanges of said suspended bars, and protective material carried on the supports therefor substantially as described.

4. The combination with a floor, of a suspended ceiling consisting of a separate sectional structure composed of flanged suspended bars, transverse bars supported on the flanges of said suspended bars, and tiles or slabs of protective material supported on said transverse bars substantially as described.

5. The combination in fireproof-building construction of independent protected floors and ceilings, the latter suspended below the beams, and fireproof partitions which extend upward from one ceiling to another through the floor for also partitioning the space between the floor and the suspended ceilings substantially as described.

Signed at New York city, in the county and State of New York, this 31st day of December, A. D. 1895.

THOMAS BAILEY.

Witnesses:

W. J. MORGAN,
A. P. THAYER.