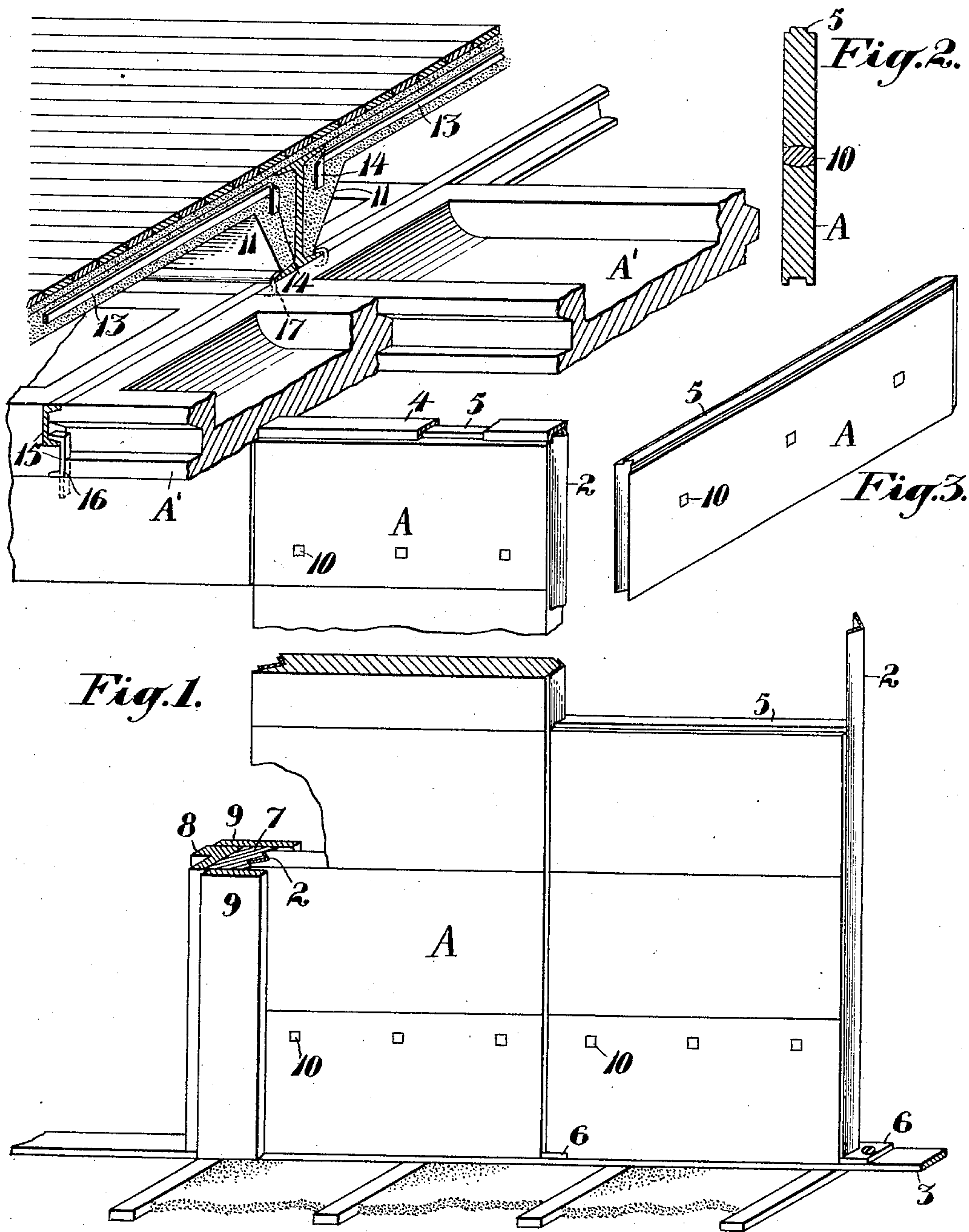


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C. M. DEPEW & H. E. MCCOY.
FIREPROOF BUILDING CONSTRUCTION.

APPLICATION FILED AUG. 29, 1904.



Witnesses:-
J. C. Fiedner
J. A. Ansee

Inventors
Charles M. Depew
Hollis E. McCoy
By Geo. H. Strong atty

UNITED STATES PATENT OFFICE.

CHARLES M. DEPEW AND HOLLIS E. McCOY, OF SAN FRANCISCO,
CALIFORNIA.

FIREPROOF BUILDING CONSTRUCTION.

SPECIFICATION forming part of Letters Patent No. 783,029, dated February 21, 1905.

Application filed August 29, 1904. Serial No. 222,539.

To all whom it may concern:

Be it known that we, CHARLES M. DEPEW and HOLLIS E. McCOY, citizens of the United States, residing in the city and county of San Francisco and State of California, have invented new and useful Improvements in Fireproof Building Constructions, of which the following is a specification.

Our invention relates to improvements in fireproof building constructions, and particularly in flooring, ceiling, and partition structures. Its object is to simplify, cheapen, and lighten construction without in any way detracting from the stability and permanence of the finished structure.

The invention consists of the parts and the construction and combination of parts, as hereinafter more fully described and claimed, having reference to the accompanying drawings, in which—

Figure 1 is a view in perspective of a portion of the interior of a building, showing our improved construction. Fig. 2 is a section of a building block or panel with wood nailing-pieces. Fig. 3 is an elevation of a block like that of Fig. 2.

In carrying out our invention we prefer to use slabs or panels, as A, in our partitions and ceilings in lieu of the usual concrete, plaster, and furring, employing suitable means to retain these slabs or panels in position. We have discovered that a tile, panel, or slab made of a mixture of pumice or like matter and Portland cement, gypsum, "hard-wall" plaster, or equivalent is not only strong, durable, and fireproof, but is from fifty to seventy-five per cent. lighter than an equivalent amount, by bulk, of ordinary tile material, plaster, or concrete. Preferably our tiles for flooring are made from a mixture of about seventy-five per cent., by weight, of pumice and about twenty-five per cent., by weight, of Portland cement as a binder. For ceilings and walls the same proportion of calcined plaster-of-paris or so-called "hard-wall" plaster is used instead of Portland cement, being cheaper and quite as serviceable for that particular purpose. These slabs, blocks, or panels may be of any suitable size. For parti-

tions, which are usually desired thin, the panels may be forty-eight inches by sixteen inches by two inches and have their opposite longitudinal edges provided with suitable means for making a tight joint when one panel is laid upon another, as shown in Fig. 1.

The ends of the panels have a V-shaped groove at one end running in the direction of the width of the panel to receive the angle-iron studs 2, which form the upright supports for the partition, while the opposite end of a panel has beveled edges to fit into the hollow of other angle-iron studs.

In practice where it is desired to set up one of our fireproof partitions a strip of iron 3 is secured to the floor along the line to be followed by the partition, and a corresponding channel-iron 4 is attached to the ceiling in the same vertical plane with strip 3. The latter and channel-iron 4 form respective top and bottom supports for the ends of the angle-iron studs or uprights 2, and the channel 4 affords a slot for the lateral tongues 5 on the topmost panels A to engage in. An angle-iron stud is first placed in position, with one end resting on the floor-strip 3 and the upper end trimmed to fit the groove in the channel-iron 4. The foot of the stud is then secured against displacement by suitable means, as the anchor-plate 6, having a V-shaped notch to fit about the stud, the plate being fastened to the floor-strip by a screw. With a stud thus in position the panels or slabs A are laid one on another with their recessed ends embracing and extending slightly beyond the extreme edges of the studs 2, so that when the cracks between the abutting ends of the panels or between the panels and the wall are closed the iron-work will be entirely incased and protected from fire and moisture. The ends and edges of the panels are tipped with a suitable quick-drying cement or plaster as they are put in, which fills all the interstices and allows the joints to be cleaned off flush as the work progresses. When a set of panels has been put in clear to the ceiling, the last panel being slipped in between the next succeeding one and the channel 4, a second angle-iron stud is placed in position and suitably se-

cured, the work proceeding where a long partition is needed as above described. If a door is desired in a partition of this character, a suitable frame is inserted, as shown
 5 in Fig. 1, consisting of a rough jamb 7, fitting the angle of the support 2 and projecting beyond each side of the paneling an eighth of an inch or so, corresponding to the thickness of the wall finish. A finished jamb 8 against
 10 which the door closes is then fastened to the front of the jamb-piece 7, the frame being completed by the finishing-strips 9.

The use of angle-iron uprights is advantageous over channels and other forms of supports because of their lightness, their unusual
 15 rigidity, their uniform straightness, and the interlock that their outside and inside angles afford with the fireproof panels.

In order to provide means for securing base-boards, wainscoting, moldings, and the like
 20 to the fireproof paneling, some of the panels may have wooden plugs 10 inserted into them, into which plugs nails may be driven. These plugs are placed at suitable intervals and preferably extend transversely through the panels
 25 to have their exposed ends flush with the sides of the panel. To prevent a plug being dislodged from the panel, as when a nail is being driven in, the plugs are provided with
 30 suitable anchor means, about which the material of the panel sets in the molding of the panel. For convenience the plugs are here shown with an enlarged portion intermediate of their ends, which enlarged portion is so
 35 supported in the plaster of the panel as to prevent any longitudinal movement of the plug. This same panel structure is used in ceiling construction, and the floor foundations or arches 11 consist of a mixture of pumice
 40 and Portland cement, as above described. The arches between the I-beams are laid in in much the usual fashion by filling in the material upon a suitable mold, which gives the desired form to the arch; but instead of using
 45 expanded metal embedded in the concrete to give strength and rigidity we employ a series of metal strips 13 about five-eighths of an inch by one-eighth of an inch by six or seven feet, according to the space between the I-beams,
 50 disposed in the following manner: These strips 13 are placed on edge and embedded in the fireproofing 11, the ends of each of the strips having portions 14 at its ends bent at right angles, as shown, with the parts 14 lying in a
 55 plane or planes parallel with the main body of the strip. When the arch is about half completed, these strips are put in on edge and parallel with each other and at suitable intervals, the parts 14 being pushed down into the
 60 plastic fireproofing and serving to maintain the verticality of the strips. The strips are then covered by the completion of the arch. Preferably the strips should extend nearly from I-beam to I-beam, so that the ends of
 65 the strips will be within the space between

the upper and lower flanges of opposing beams. For ceilings panels, as A', of pumice and a suitable binder, as before described, are used. These panels are laid up against the under
 70 side of the I-beams and secured by suitable means, as the channels 15 and clips 16, the panels being carefully matched and the joints cemented to offer a smooth exposed surface. The channels 15 run crosswise of the I-beams and are suspended therefrom by the clips 17.
 75 The panel-clips 16 are first hooked over the lower flange of a channel and the dependent portion (shown in Fig. 1) bent up under the panels. The panels have their ends shaped correspondingly and the clips 15 are held in
 80 place on the channels merely by the pressure of the abutting panels.

By virtue of the foregoing construction and the use of tiles, panels, and arches having pumice or equivalent as their chief ingredient
 85 in lieu of the ordinary heavy concrete plastering and furring it is possible, in the first place, to use a correspondingly light steel framework. Buildings as commonly constructed must have very heavy steel frames
 90 with massive girders to sustain alone the weight of the concrete and tiling used. Secondly, we are enabled correspondingly to lessen the cost of building; thirdly, to provide thin deadened but strong and fireproof
 95 floors, ceilings, and partitions, and, fourthly, to complete a building without having to wait from thirty to sixty days for a lot of concrete and plaster to dry. With our construction it is possible to whiten and finish the walls and
 100 ceilings the same day they are put up.

It is obvious that various changes may be made in the herein-described invention without departing from its principle, and we do not wish to be understood as limiting our-
 105 selves beyond the requirements of the prior art and the reasonable construction of the claims.

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

1. In building construction, a flooring and ceiling structure comprising suitable supports, arches between said supports, said arches
 115 composed of a composition having pumice as its principal ingredient suitable metal reinforces embedded in said arches channel-irons secured to the under side of said supports, clips suspended from said channel-irons, and panels matching said channel-irons and clips
 120 and held in place thereby.

2. In building construction, a flooring and ceiling structure comprising suitable supports, arches between said supports, said arches
 125 composed of a composition having pumice as its principal ingredient, suitable metal reinforces embedded in said arches, said reinforces including strips of metal placed on edge and having turned-down portions adjacent to said supports channel-irons secured to and beneath
 130

said supports, bendable clips loosely suspended from the lower flanges of said channel-irons, and panels or blocks matching said channel-irons and engageable by said clips.

5 3. In building construction, a flooring construction consisting in combination with I-beam or equivalent supports, of arches of plastic material, and strips of metal stood on edge and embedded in said material, said strips
10 having their ends bent at right angles to lie in a plane parallel with the bodies of the strips.

4. In building construction, a flooring construction consisting in combination with I-beam or equivalent supports, of arches of plastic material, and strips of metal stood on edge
15 and embedded in said material, said strips having their ends bent at right angles to lie in a plane parallel with the bodies of the strips, said bent end portions disposed proximate to the I-beams and included between the
20 upper and lower flanges thereof.

5. A reinforce for arches and the like consisting of a metal strip having little inherent rigidity in the direction of its thickness, the
25 ends of said strip being bent to stand at an

angle with, but in a plane substantially parallel with the body of the strip.

6. In a building construction, the combination with the floor-girders of a ceiling comprising a series of conjoinable fireproof panels, and means for securing the panels to said
30 girders, said last-named means including channel-irons hung from the under side of the girders and bendable clips suspending from said channel-irons.
35

7. In a building construction the combination with the floor-girders of channel-irons secured to the under side of said girders, fireproof panels matching said channel-irons and bendable clips loosely suspended from the
40 channel-irons and foldable beneath the panels to support the latter.

In testimony whereof we have hereunto set our hands in presence of two subscribing witnesses.

CHARLES M. DEPEW.
HOLLIS E. McCOY.

Witnesses:

S. H. NOURSE,
HENRY P. TRICOU.