

(No Model.)

2 Sheets—Sheet 1.

H. R. KEITHLEY.
BUILDING CONSTRUCTION.

No. 574,434.

Patented Jan. 5, 1897.

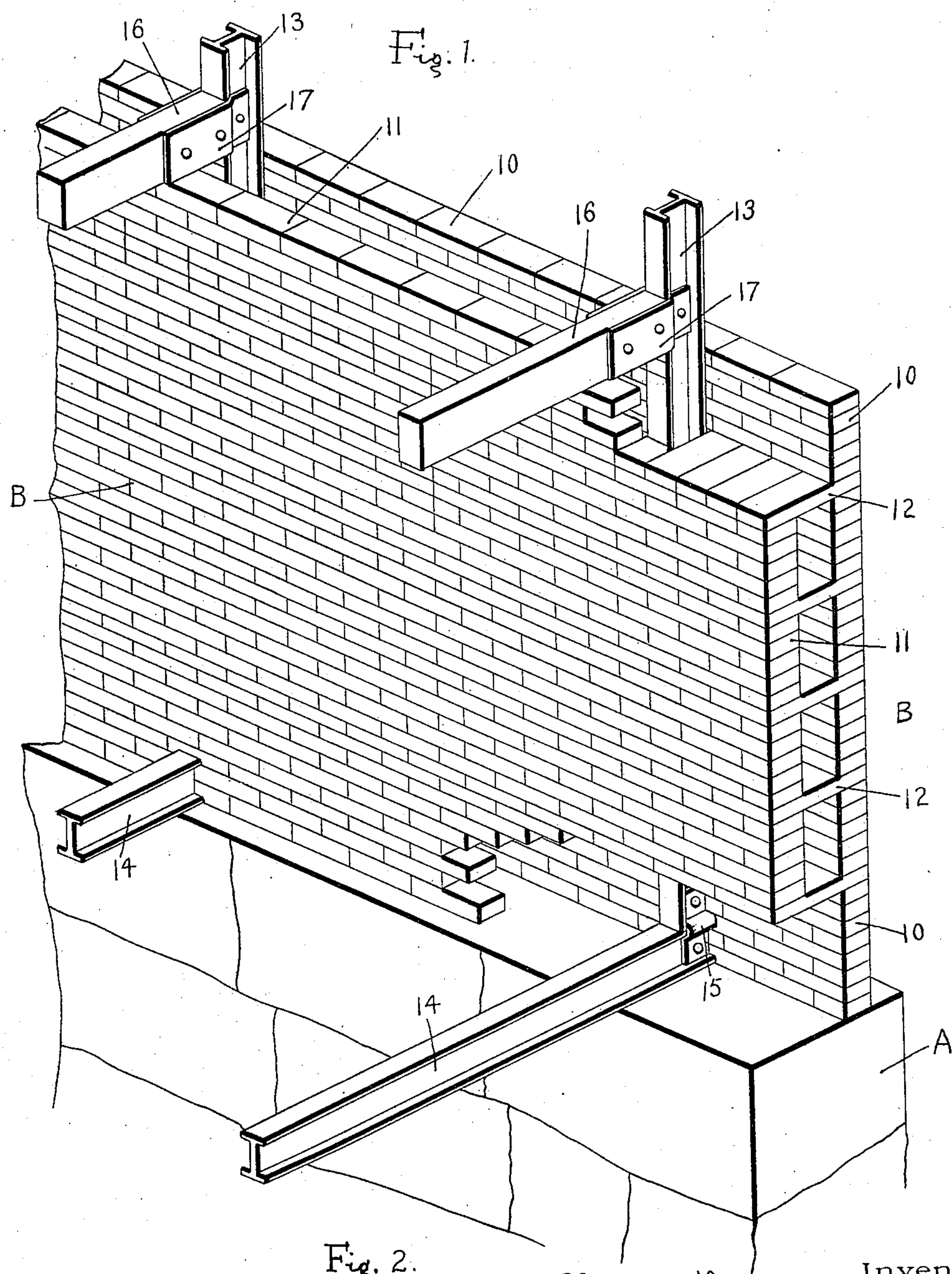
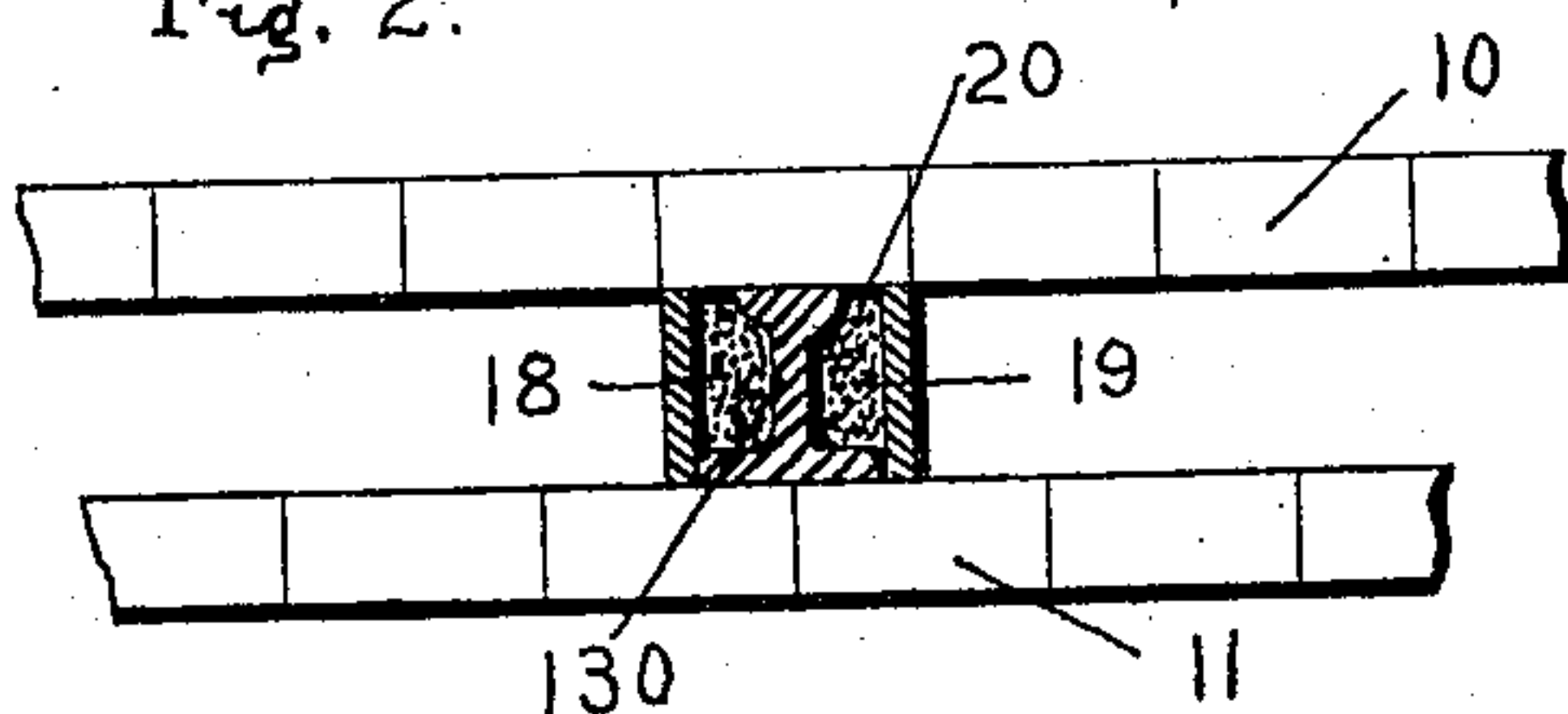


Fig. 2.



Witnesses.

W. J. Baldwin
E. M. Healy.

Inventor.

H.R. Keithley.

By
Southgate & Southgate
Attorneys.

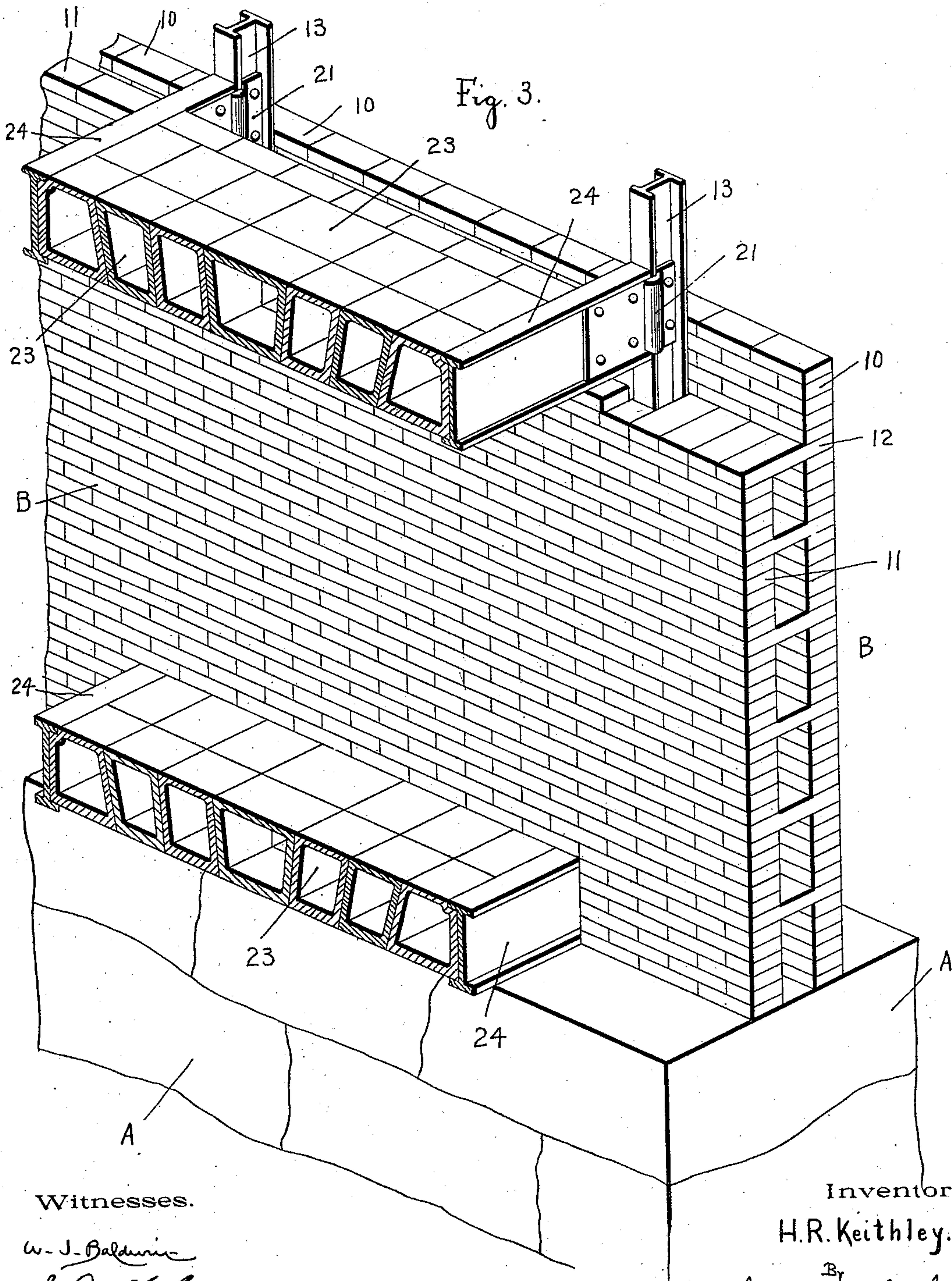
(No Model.)

2 Sheets—Sheet 2.

H. R. KEITHLEY.
BUILDING CONSTRUCTION.

No. 574,434.

Patented Jan. 5, 1897.



Witnesses.

W. J. Baldwin
E. M. Healy

Inventor.
H. R. Keithley.

By
Southgate & Southgate,
Attorneys.

UNITED STATES PATENT OFFICE.

HERBERT R. KEITHLEY, OF NEW YORK, N. Y.

BUILDING CONSTRUCTION.

SPECIFICATION forming part of Letters Patent No. 574,434, dated January 5, 1897.

Application filed June 29, 1896. Serial No. 597,296. (No model.)

To all whom it may concern:

Be it known that I, HERBERT R. KEITHLEY, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented a new and useful Improvement in Building Construction, of which the following is a specification.

My invention relates to an improved construction for buildings; and the especial object of my invention is to provide a strong, efficient, and economical construction for comparatively low buildings.

To these ends my invention consists of the parts and combinations of parts, as herein described, and more particularly pointed out in the claims at the end of this specification.

In the accompanying two sheets of drawings, Figure 1 is a perspective view, partially broken away, illustrating a building constructed according to my invention. Fig. 2 is a detail view illustrating a modified form; and Fig. 3 is a view similar to Fig. 1, illustrating the way a fireproof building may be constructed according to my invention.

A building constructed according to my present invention comprises hollow masonry walls and an iron or steel supporting-frame located within and inclosed by said hollow masonry walls, to which frame the horizontal floor girders or beams are secured.

In practice preferably the masonry walls are formed by inner and outer layers of bricks, which are bonded or tied together by header-courses formed of tying-bricks, so that a space is left between the inner and outer layers of the wall, in which space vertical supporting-beams are arranged, and to which beams the floor beams or girders for the successive floors are preferably connected or fastened. I may further support the floor beams or girders on the inner part of the masonry walls, and although this arrangement is preferably used it is not necessarily used in all buildings constructed according to my invention. By means of this construction it will be seen that the iron or steel frame or vertical beams will greatly reinforce and strengthen the masonry walls and that the floor beams or girders for the separate floors will perform the additional function of strongly bracing the structure. It also will be seen that my

construction will not increase the space taken up by the walls and floors; also by mounting the vertical supporting-beams upon a suitable foundation they will act to help support the structure.

By making the floor beams or girders of steel and placing them about six feet apart and by using between them the ordinary terra-cotta fireproofing I can construct a fireproof building.

By making the wall hollow and inserting the steel supporting-frame therein about one-third of the brick in each wall is saved. This saving, together with the cost of wooden floor-joists, will about pay for the entire cost of the steel frame.

The cost of the pine flooring laid on the terra-cotta fireproofing remaining about the same, a fireproof building of this hollow-wall construction can be built for about the only extra cost of the fireproof terra-cotta flooring, as the steel framing is paid for in the saving of brick and wood floor-joists.

Referring to the drawings and in detail, A designates a foundation which may be of any of the ordinary constructions. Built on the foundation A is a masonry wall B. The wall B comprises an outer layer 10 and an inner layer 11 of brick. These layers or facings 10 and 11 are bonded together by means of header-courses 12. The bricks employed in the header-courses are preferably of extra or special length, so as to leave a space between the inner and outer layers.

In practice I have employed bonding or tying bricks of such a length that substantially a five-inch space will be left between the inner and the outer layers of the wall. Located in the space between the outer layers 10 and the inner layers 11 are vertical beams 13, which vertical beams may be braced together or not laterally, as desired. At their lower ends the vertical beams 13 may be anchored or secured in any desired manner. As illustrated in Fig. 1, the beams 13 are connected at their lower ends to the floor beams or girders 14 for the first floor by means of clamping-plates, as 15. By this construction the vertical beams will act as supporting-beams to help sustain the weight of the building.

The beams or girders for supporting the

successive stories may be made of iron, steel, or wood, and, as illustrated, the same are connected to the vertical beams 13 by means of clamping-plates, as 17.

5 The floor beams or joists above the first floor may rest on the inner face of the masonry wall, if desired, to have an additional support thereby, although this feature is not necessary to the broad scope of my invention. By
10 adopting this construction the floor beams or girders for the successive floors will form ties for connecting the outer walls of the building.

A common cause for the collapse of build-
15 ings has heretofore arisen from the fact that the girders or beams for the successive floors are ordinarily simply embedded or placed in sockets formed in the masonry of the outer walls. Where this construction is used, there
20 is nothing to prevent the outer walls from springing or warping, and when this happens the floor-beams will be drawn out of their sockets, causing the structure to collapse.

25 By fastening the ends of the floor beams or girders for the successive floors to vertical beams which are inclosed within the outer wall it will be seen that not only will the vertical beams strengthen and reinforce the outer
30 walls, but the entire structure will be so firmly tied together that the outer walls cannot spring or warp.

In Fig. 1 I have illustrated a building construction in which the ordinary I or building
35 beams are employed to form the vertical beams, which are inclosed between the inner and outer layers 10 and 11. In practice I may use the ordinary T or railroad rails for this purpose. When the tread or upper part
40 of an ordinary track-rail has been slightly worn off, the rail is considered as worn out and unfit for railroad purposes. These second-hand rails can be purchased very cheaply on the market, and much more cheaply than
45 the ordinary I-beams, and are equally applicable to building constructions of my invention. These discarded railroad-rails may be used either in the form in which they can be purchased on the market or can be rerolled
50 to have a uniform or desired cross-section.

In Fig. 2 I have illustrated a construction in which the vertical beams are inclosed or coated, so as to protect them from the atmosphere and prevent them from rusting. Referring to this figure, it will be seen that the railway-track rails 130 are placed between the layers 10 and 11 of the wall B in a manner similar to that described with reference to Fig. 1. In order to prevent the beams 130
60 from rusting, they may be inclosed or coated, so as to be protected from the atmosphere. As illustrated, vertical planks or boards 18 and 19 are arranged one on each side of each beam 130, and a filling of concrete 20 is employed to fill the space between the boards 18 and 19. By means of this construction
65 it will be seen that the beams 130 will be fully

protected from the atmosphere or moisture and will be prevented from rusting.

In Fig. 3 I have shown a view similar to Fig. 1, except that all the floor girders or joists are made out of steel beams, as 24 24, and are secured to the vertical beams 13 by means of clamping-plates 21, and between the floor beams or girders, the ordinary terra-
75 cotta fireproof flooring is laid, as indicated at 23. By this construction I can economically construct a fireproof building which shall have all the advantages before described and shall be of low cost, as before
80 specified.

It will be seen that a building constructed according to my invention possesses not only the advantages of great strength and economy in erection, but also that the walls will pre-
85 sent a smooth and uniform surface, which can be very readily finished in the ordinary manner.

I am aware that changes may be made in building constructions by those who are
90 skilled in the art without departing from the scope of my invention as expressed in the claims. I do not wish, therefore, to be limited to the forms which I have herein shown and described; but

What I do claim, and desire to secure by Letters Patent, is—

1. In a building construction, the combination of a hollow masonry wall, an iron or steel supporting-framework located within and in-
100 closed by said wall, and horizontal floor beams or girders secured to said vertical frame, substantially as described.

2. In a building construction, the combination of a masonry wall comprising inner and
105 outer layers, a steel or iron frame located between said inner and outer layers, and floor beams or girders connected to the said frame, substantially as described.

3. In a building construction, the combination of a masonry wall comprising inner and
110 outer layers, vertical beams located in the space between said layers, floor beams or girders for the various floors, and means for connecting said beams or girders to the ver-
115 tical beams, substantially as described.

4. In a building construction, the combination of a masonry wall comprising inner and
120 outer layers, headers or bricks for bonding said layers together, vertical beams located in the space between said layers, beams or girders for the various floors, and means for fastening said floor beams or girders to the vertical beams, substantially as described.

5. In a building construction, the combination of a masonry wall, comprising inner and
125 outer layers, a steel or iron frame located between said inner and outer layers, and floor beams or girders connected to the said frame, and resting on the inner layer of said masonry
130 wall, substantially as described.

6. In a building construction, the combination of a masonry wall comprising inner and outer layers, vertical beams located in the

space between said layers, and a casing of concrete for inclosing each of said vertical beams, substantially as described.

5 7. In a building construction, the combination of a masonry wall comprising inner and outer layers of brick, headers or bricks for bonding said layers together, T or railroad-track rails located in the space between said layers and forming vertical strengthening-
10 beams, a casing of concrete for each of said beams, beams or girders for the various floors, and means for fastening said floor beams or girders to the vertical beams, substantially as described.

8. In a building construction the combination of a masonry wall comprising inner and outer layers, vertical beams located in the space between said layers, floor beams or girders connected to said vertical beams, and a fireproof flooring carried by said floor beams or girders, substantially as described. 15 20

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

HERBERT R. KEITHLEY.

Witnesses:

MURRAY CORRINGTON,
MAUCE. SPILLANE.