

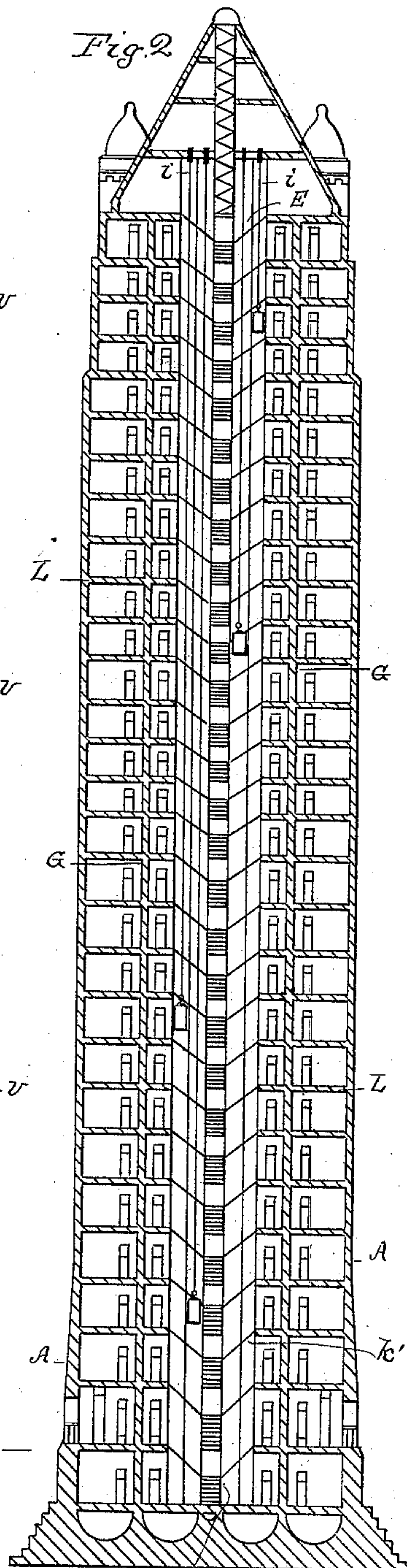
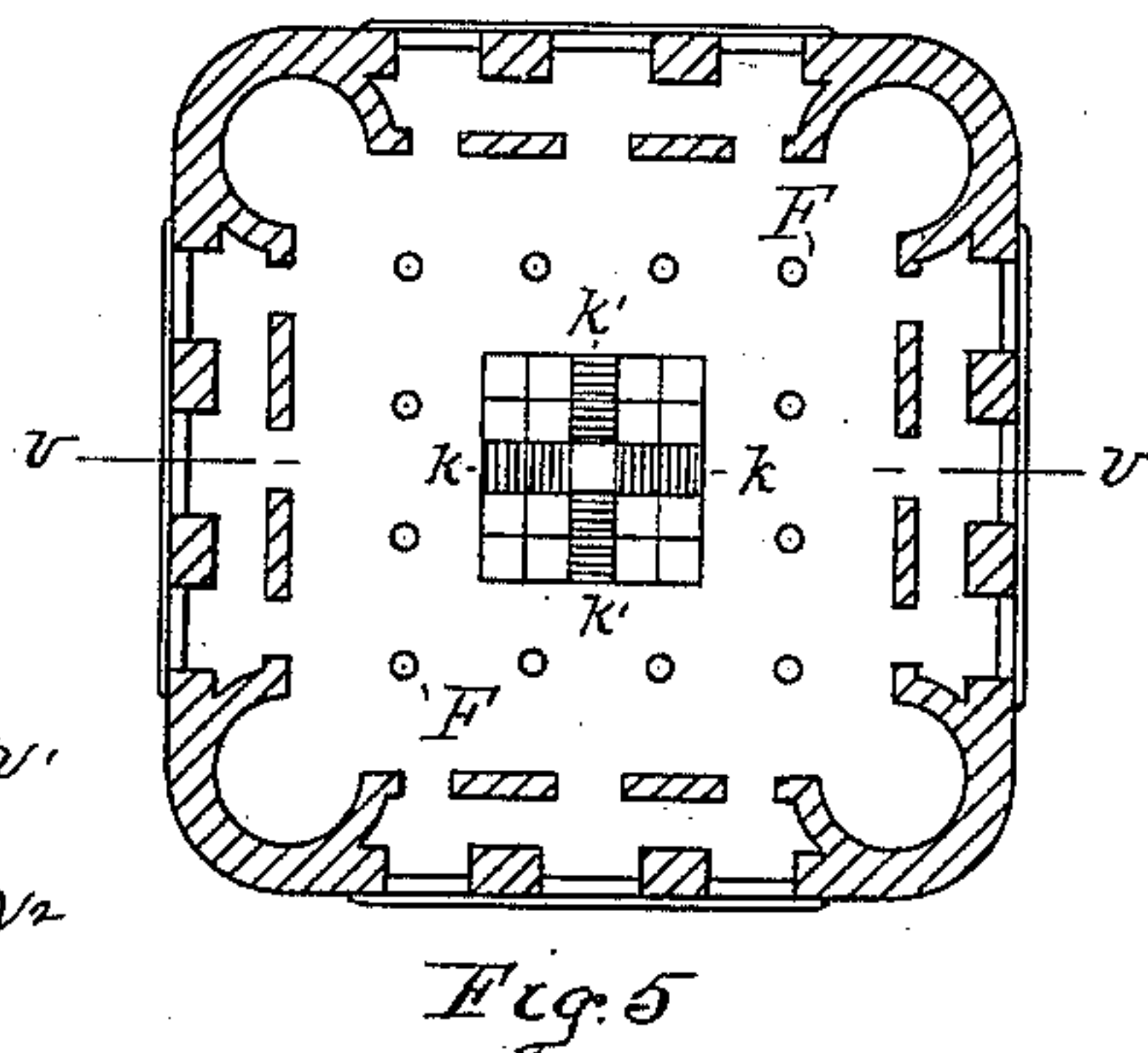
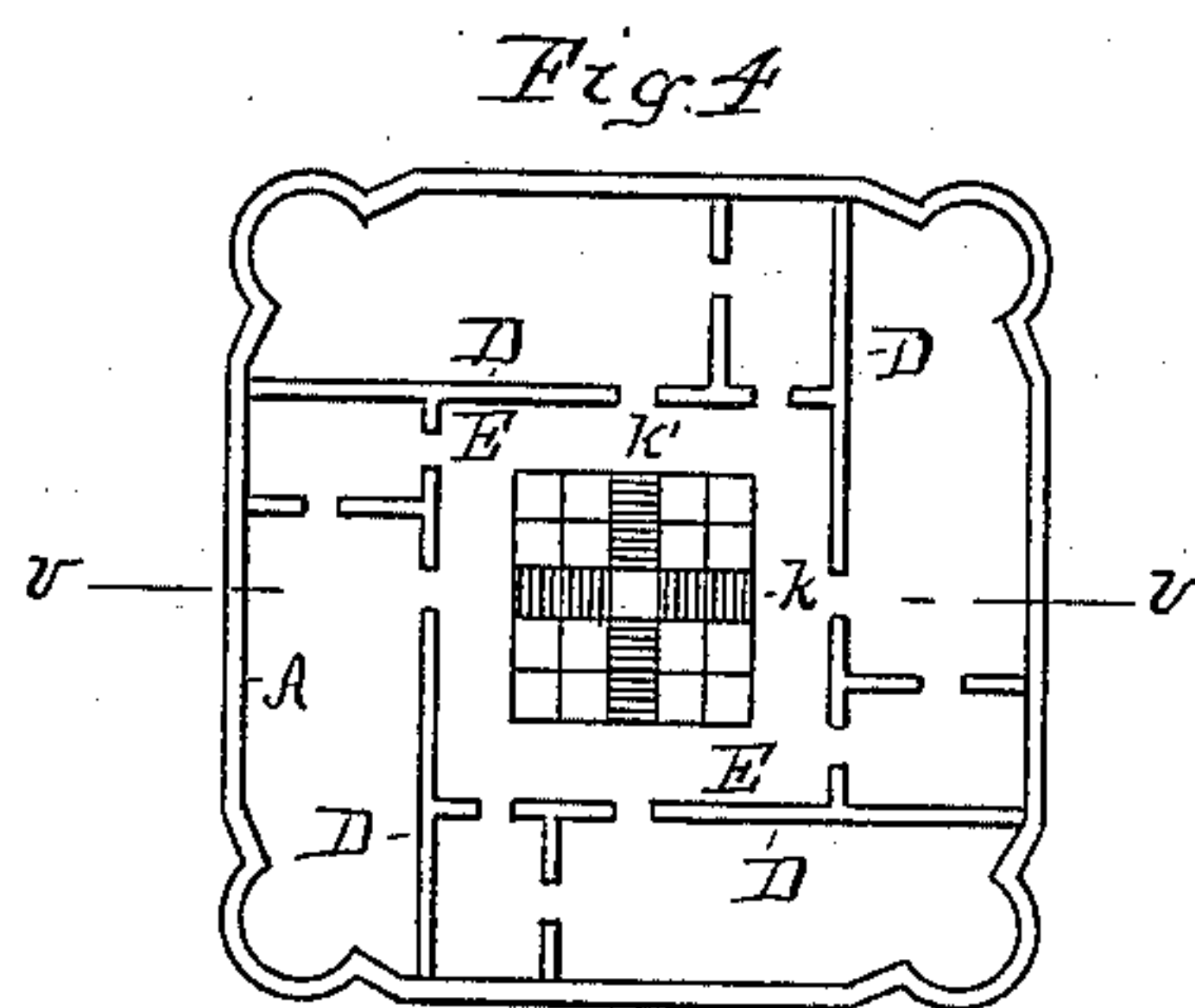
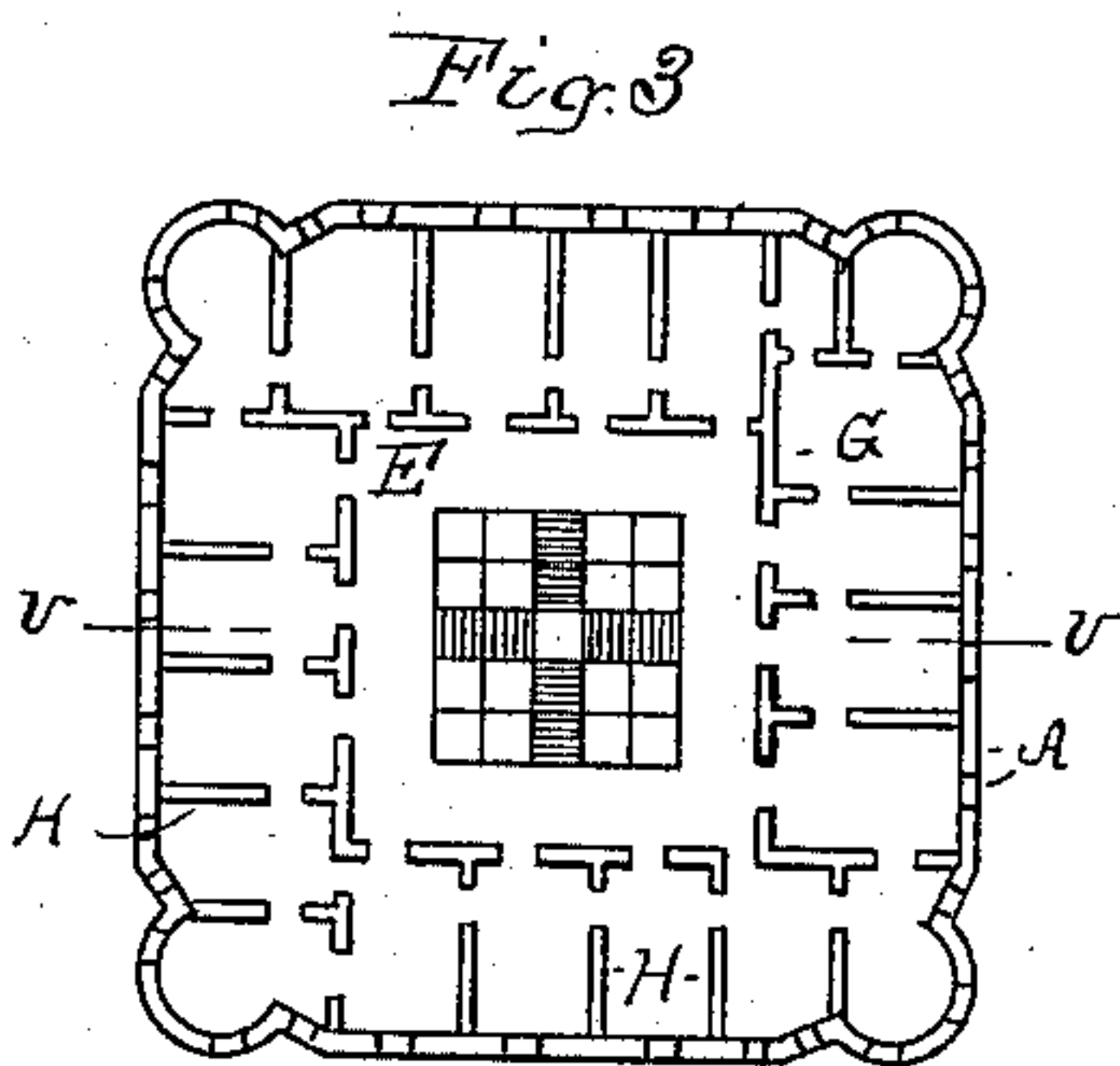
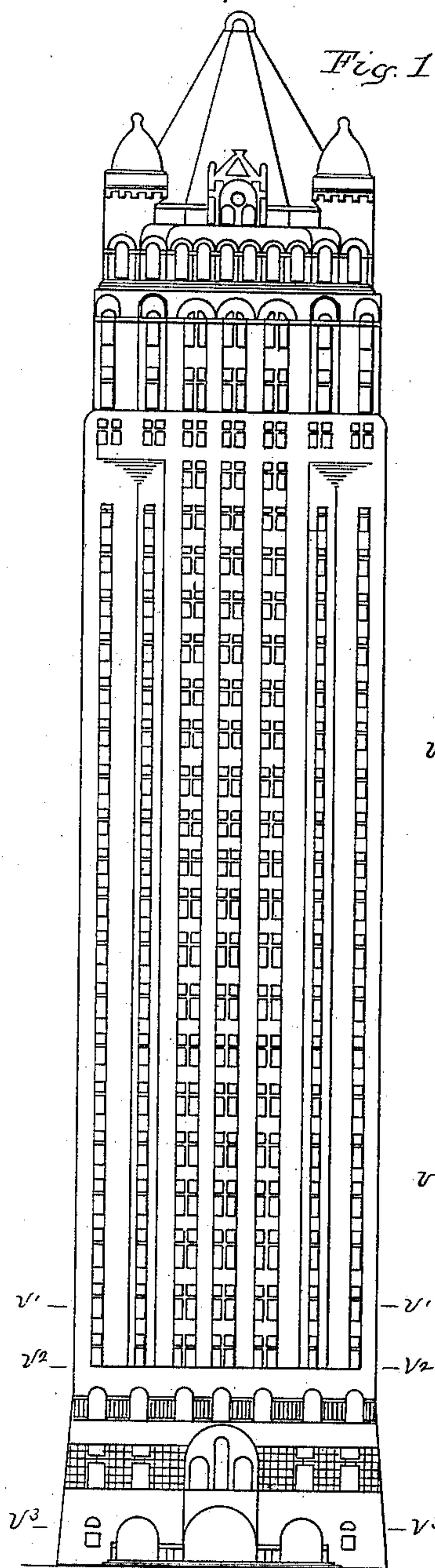
(No Model.)

5 Sheets—Sheet 1.

L. S. BUFFINGTON.
IRON BUILDING CONSTRUCTION.

No. 383,170.

Patented May 22, 1888.



Witnesses.
W. Churchill
H. C. Thompson.

Leroy S. Buffington.
By his Attorney
P. H. Lunckel.

(No Model.)

5 Sheets—Sheet 2.

L. S. BUFFINGTON.
IRON BUILDING CONSTRUCTION.

No. 383,170.

Patented May 22, 1888.

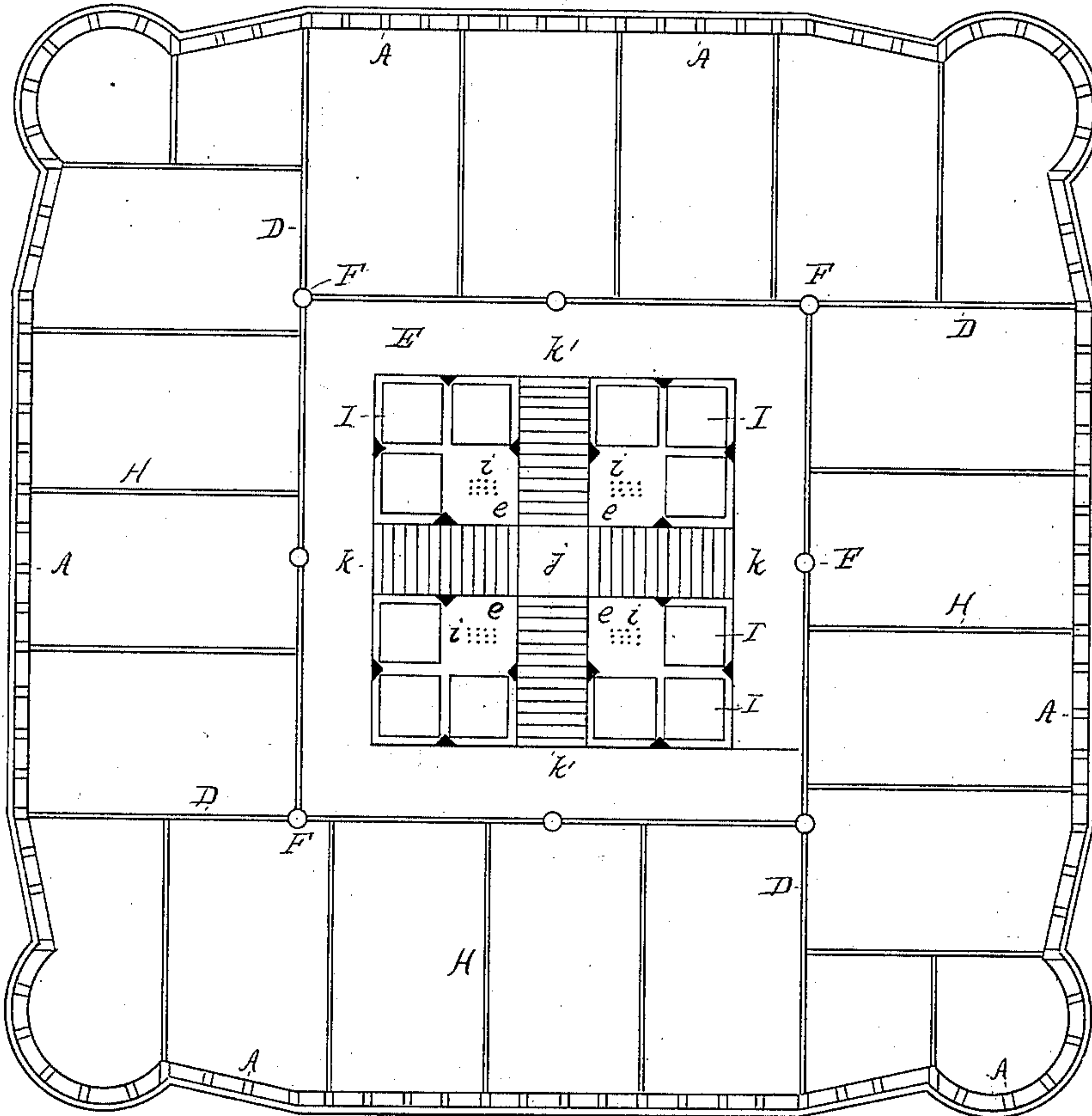


Fig. 6

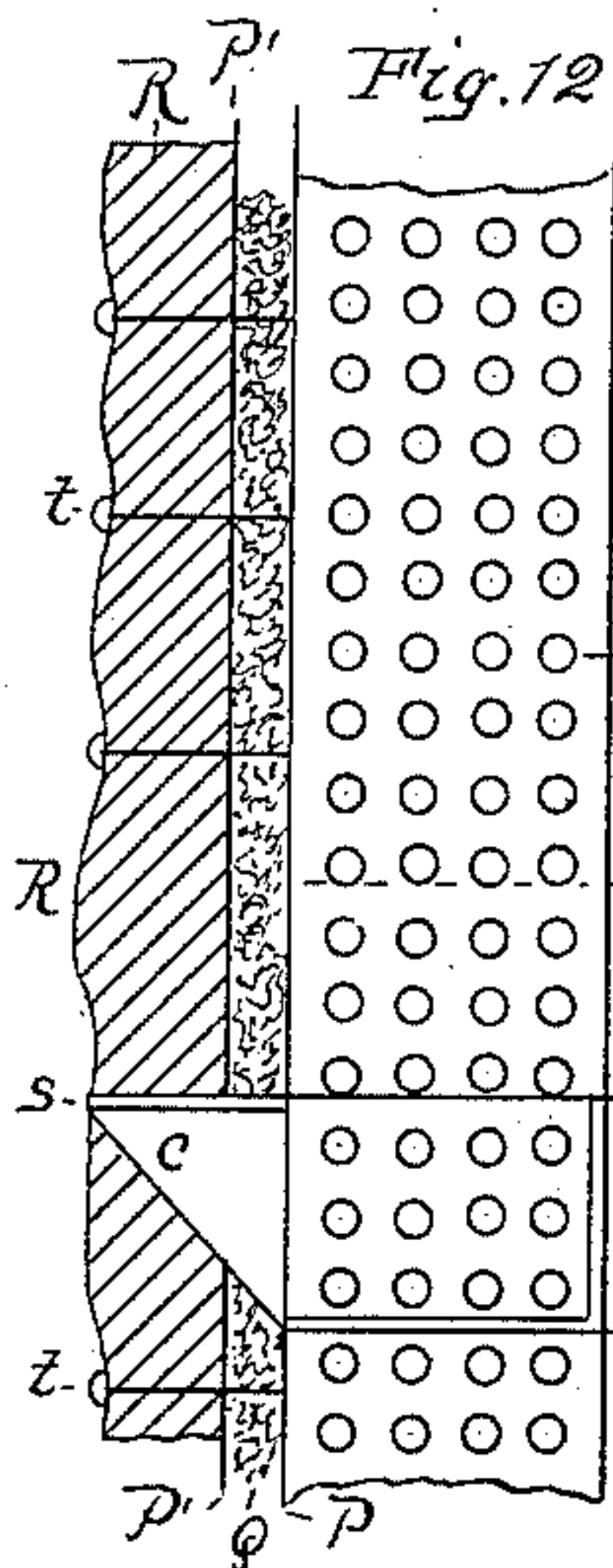


Fig. 12

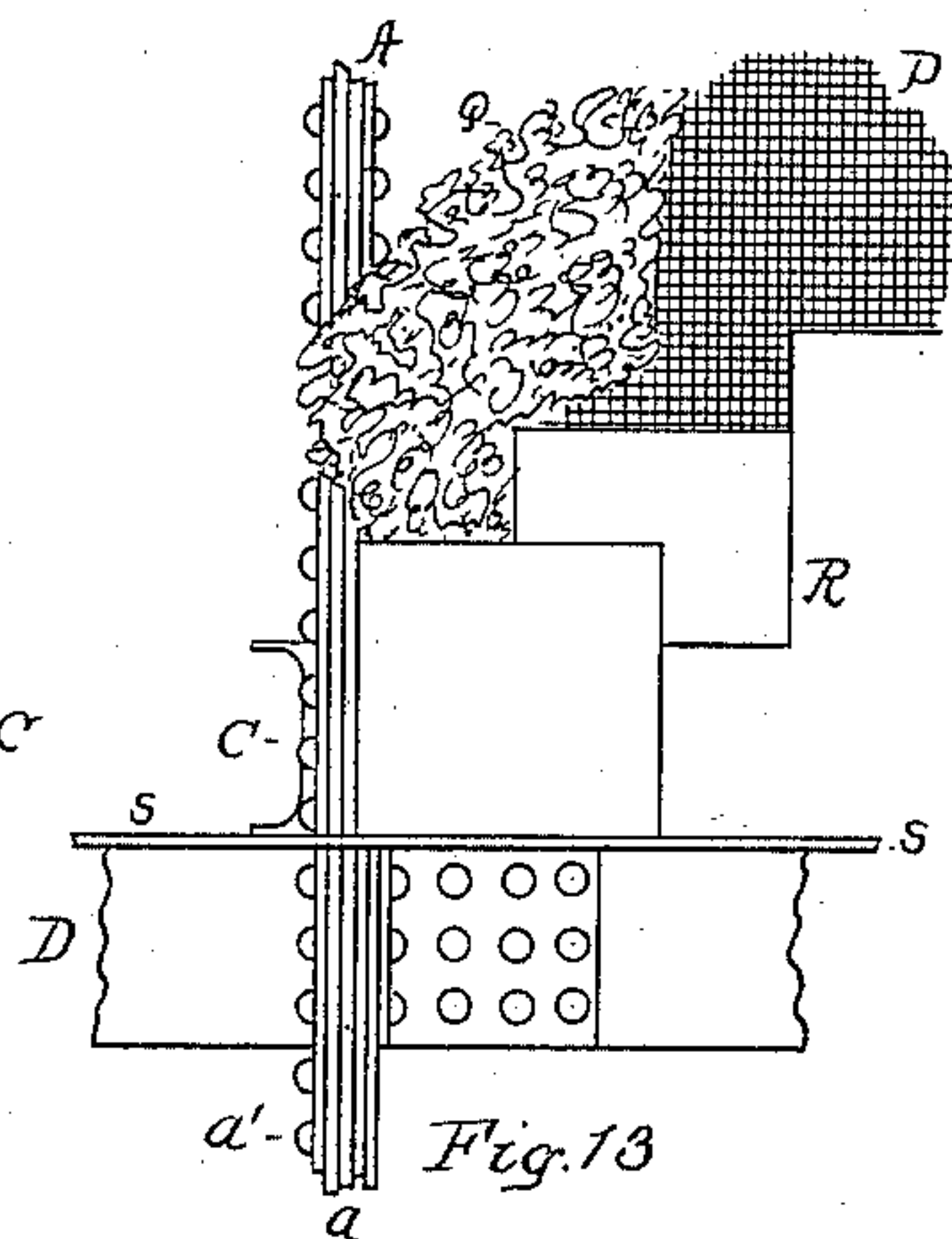


Fig. 13

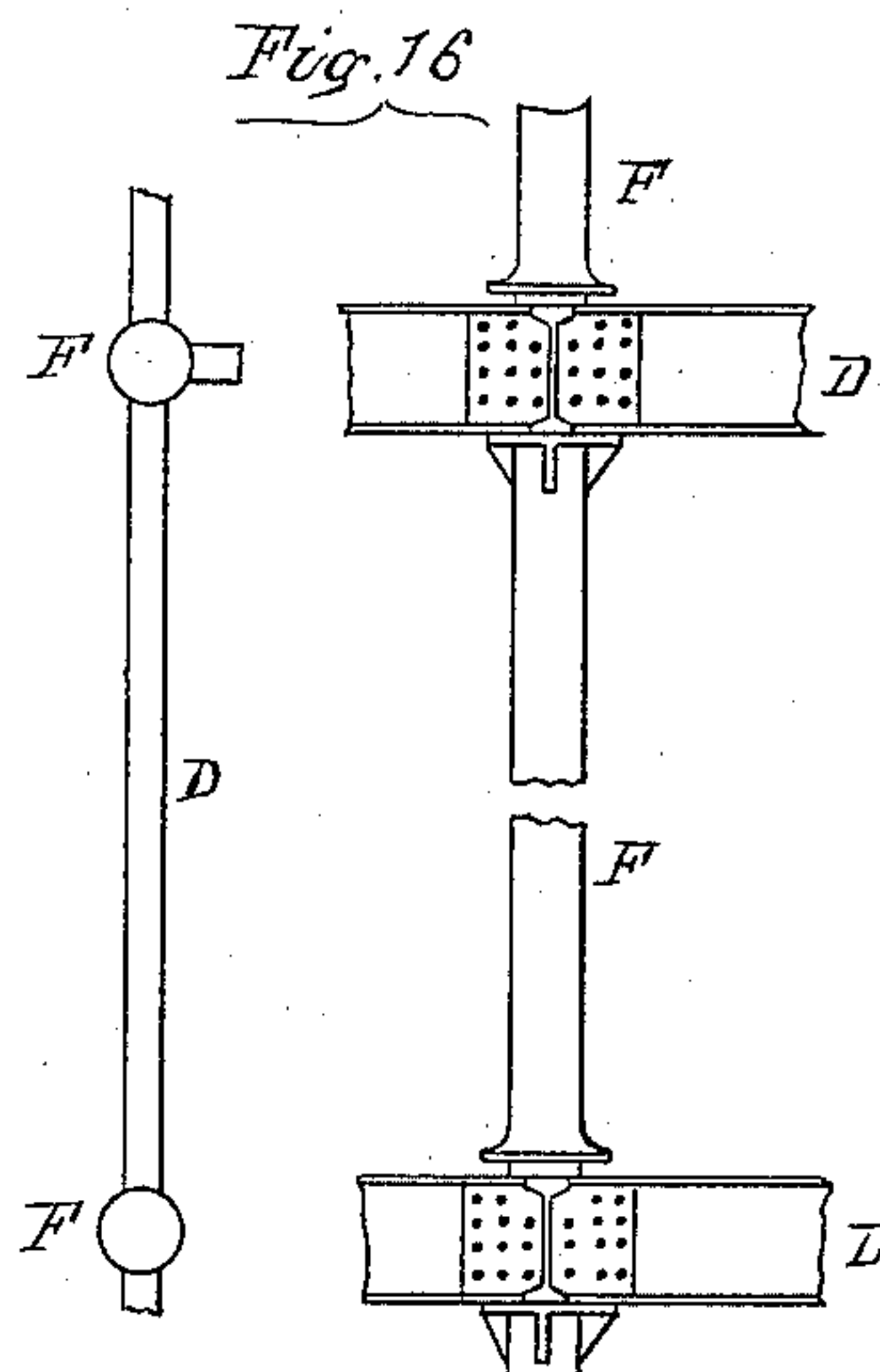


Fig. 16

Witnesses.
C. L. Churchill.
W. C. Thompson.

Inventor,
Leroy S. Buffington.
By his Attorney
P. H. Funchel.

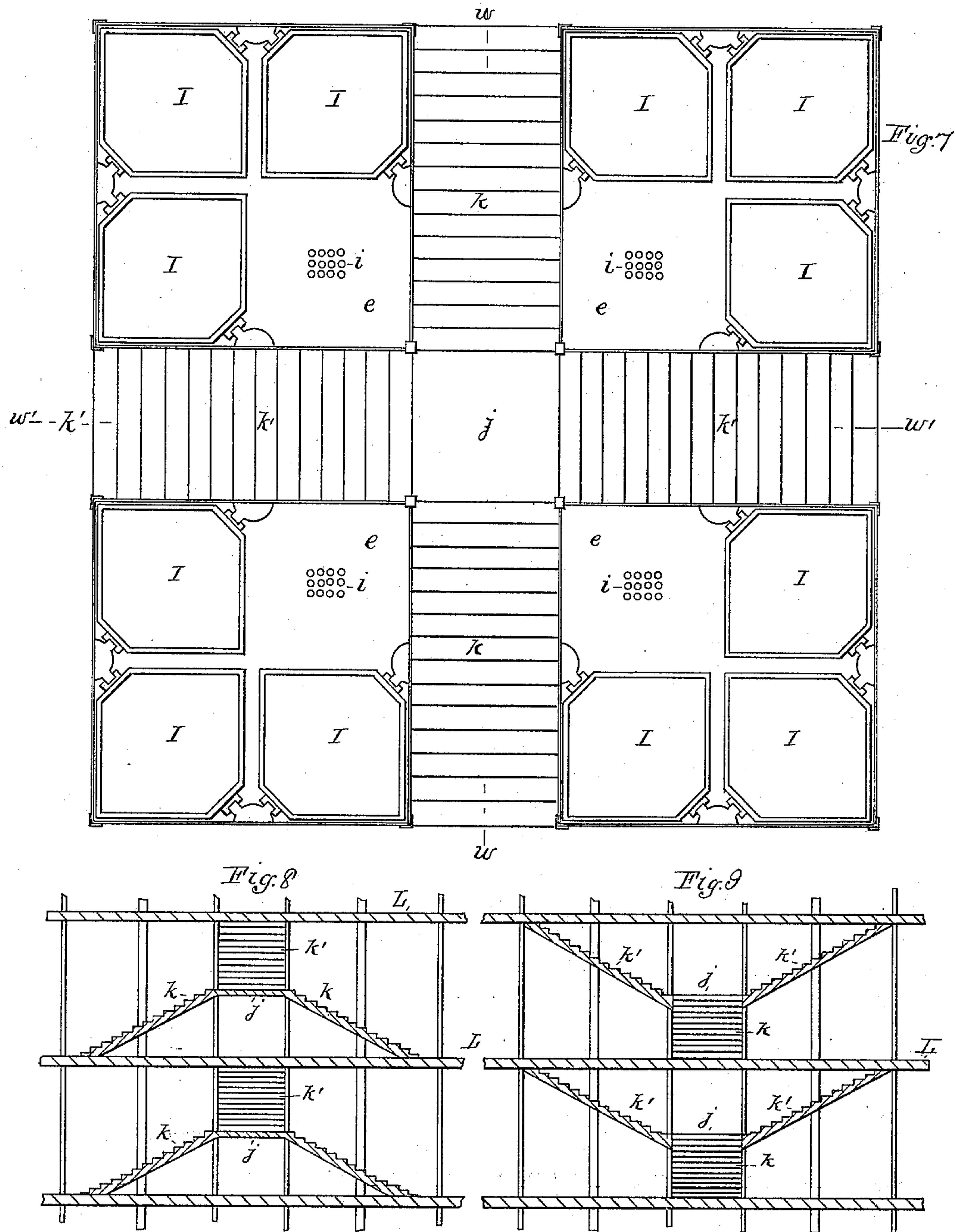
(No Model.)

5 Sheets—Sheet 3.

L. S. BUFFINGTON.
IRON BUILDING CONSTRUCTION.

No. 383,170.

Patented May 22, 1888.



Witnesses.
C. Churchill
H. C. Thompson.

Inventor.
Leroy S. Buffington.
By his Attorney
P. H. Gunkel.

(No Model.)

5 Sheets—Sheet 4.

L. S. BUFFINGTON.
IRON BUILDING CONSTRUCTION.

No. 383,170.

Patented May 22, 1888.

Fig. 10

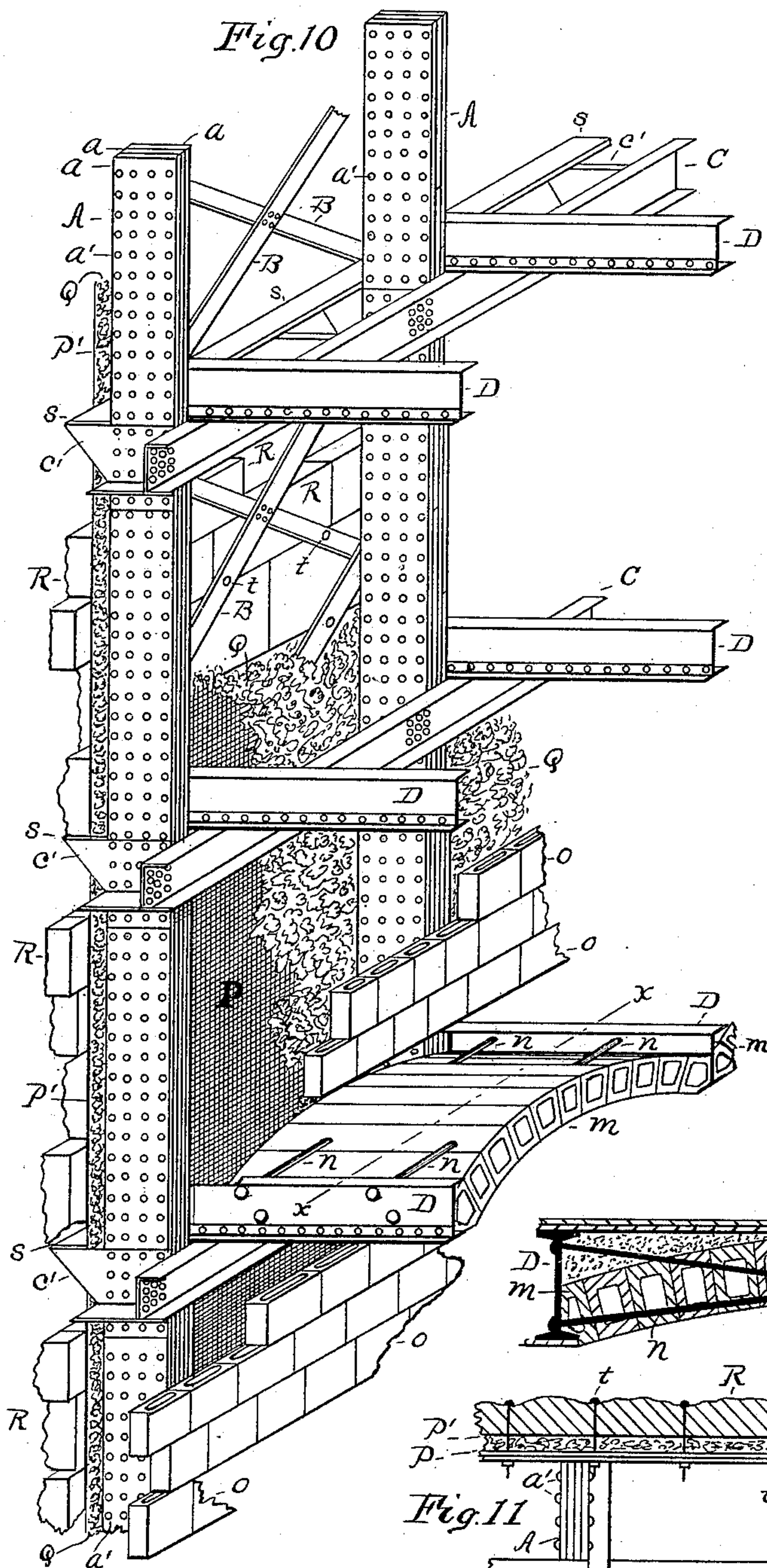


Fig. 15

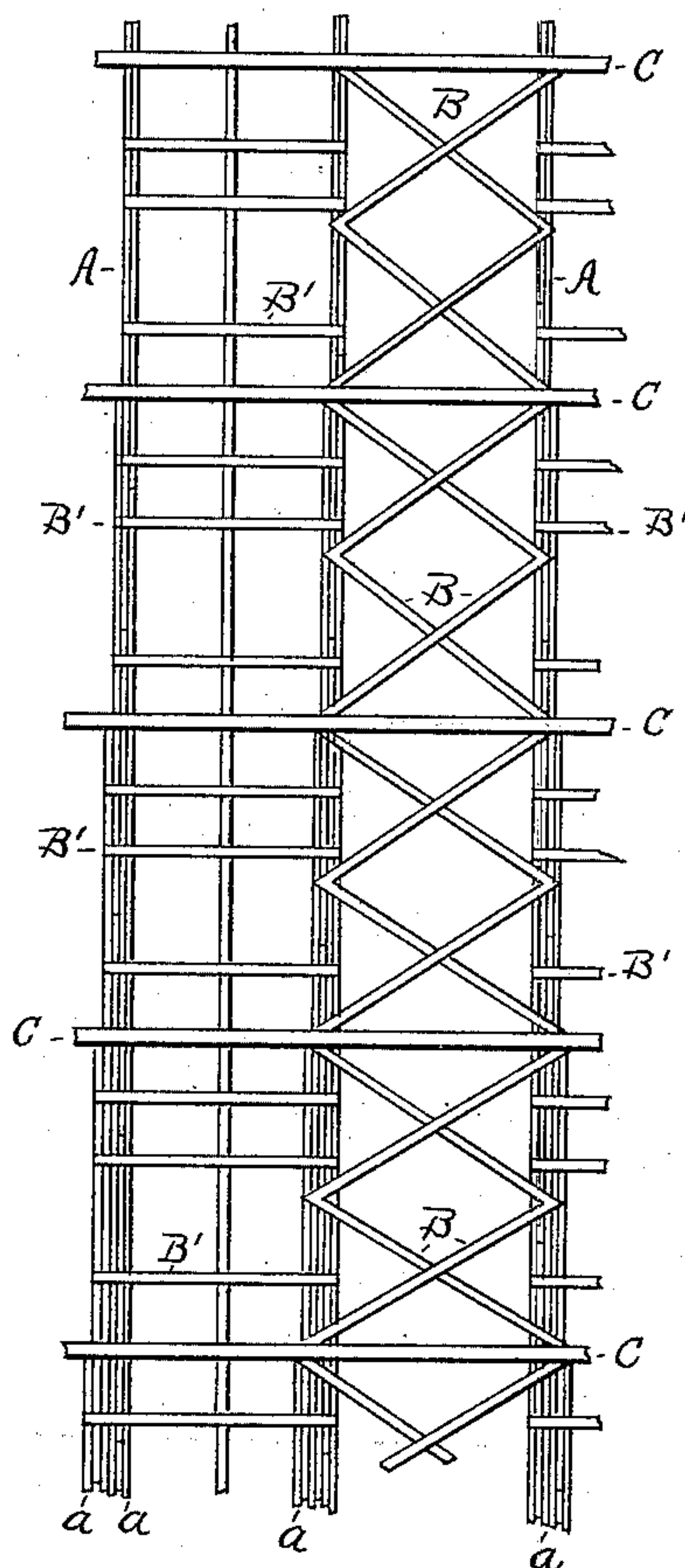


Fig. 14

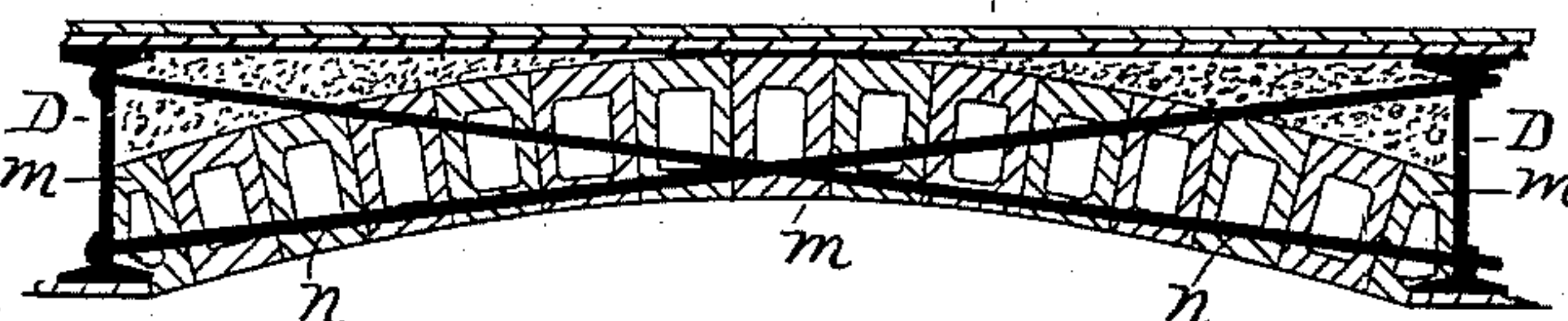
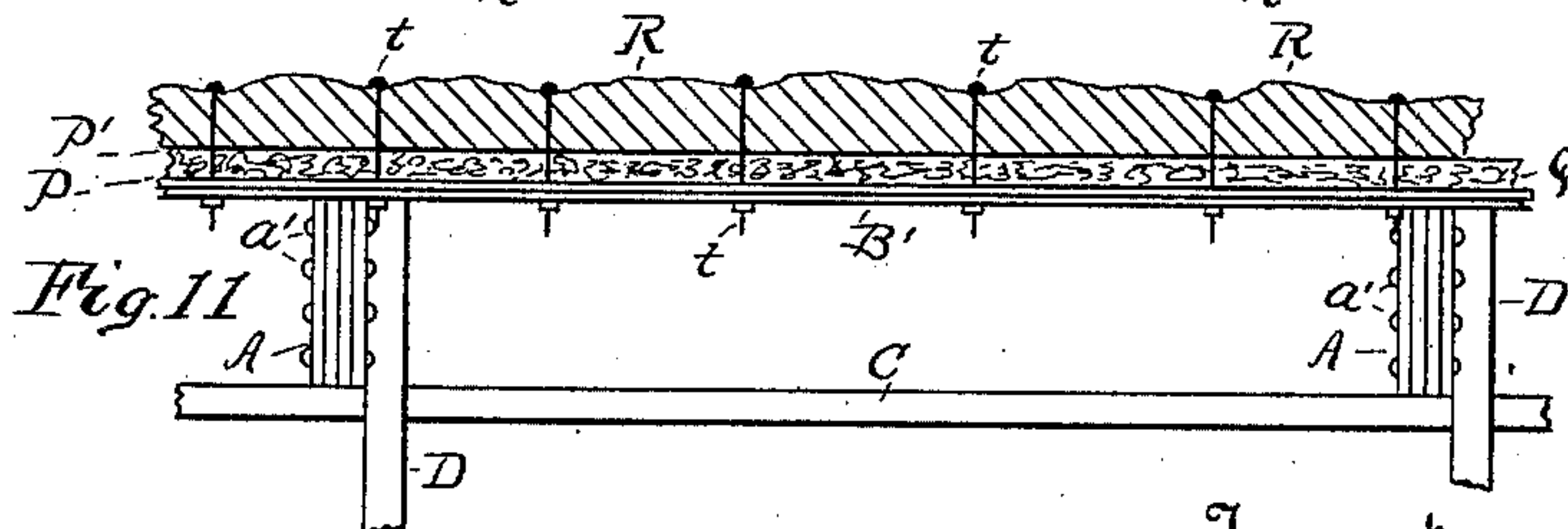


Fig. 11



Witnesses
C. Churchill.
H. O. Thompson.

Inventor,
Leroy S. Buffington.
By his Attorney
P. H. Gunkel.

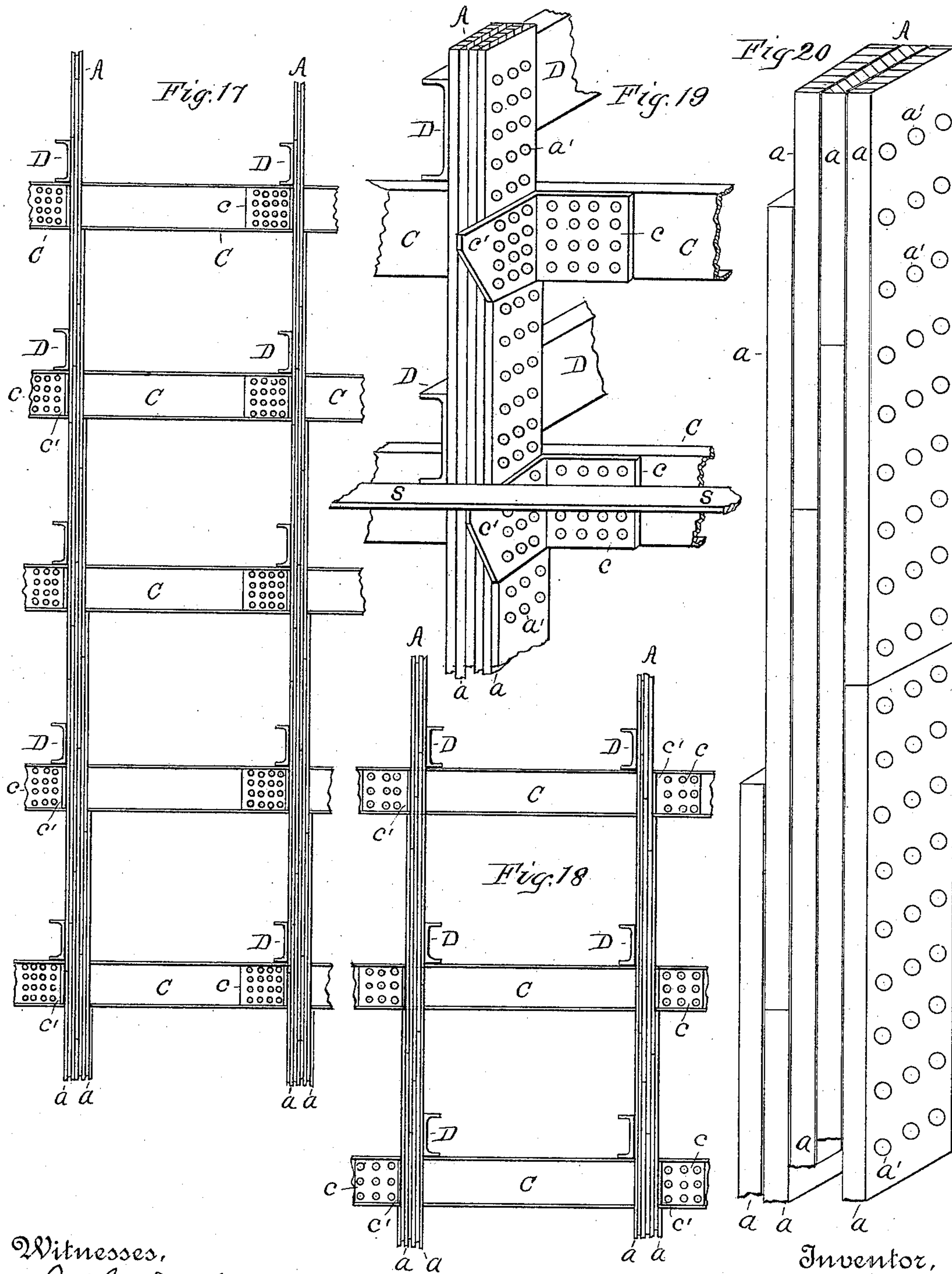
(No Model.)

5 Sheets—Sheet 5.

L. S. BUFFINGTON.
IRON BUILDING CONSTRUCTION.

No. 383,170.

Patented May 22, 1888.



Witnesses,

J. L. Dobbin,
C. A. Holt.

Inventor,

Leroy S. Buffington.

By His Attorney

P. H. Gunkel.

UNITED STATES PATENT OFFICE.

LEROY S. BUFFINGTON, OF MINNEAPOLIS, MINNESOTA.

IRON-BUILDING CONSTRUCTION.

SPECIFICATION forming part of Letters Patent No. 383,170, dated May 22, 1888.

Application filed November 14, 1887. Serial No. 255,142 (No model.)

To all whom it may concern:

Be it known that I, LEROY S. BUFFINGTON, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Iron-Building Construction, of which the following is a specification.

My invention relates to fire-proof buildings composed chiefly of iron; and the objects of the invention are mainly, first, the construction of an iron building in a manner that will practically obviate undue expansion and contraction during the extremes of heat and cold; second, a novel construction and arrangement of the main structure and of the stairs and elevator-shafts, whereby there is attained the necessary strength and stability, together with compactness and the utilization of the space to the best advantage, and third, an improved plan of floors, and means of bracing the iron beams in fire-proof floors in such structure.

The invention consists in the novel construction and combinations of parts, hereinafter fully described, and particularly pointed out in the claims; and the improvements are illustrated in the accompanying drawings, in which—

Figure 1 is an elevation of a building embodying my improvements. Fig. 2 is a central vertical sectional elevation of the same on the lines *vv* of Figs. 3, 4, and 5. Figs. 3, 4, and 5 are plan views on the lines *v'v'*, *v²v²*, and *v³v³*, respectively, of Fig. 1. Fig. 6 is an enlarged floor plan on the line *v³v³* of Fig. 1. Fig. 7 shows on a still larger scale the arrangement of stairs and elevators shown in Fig. 6. Figs. 8 and 9 are sectional views of the stairs on the lines *ww* and *w'w'*, respectively, of Fig. 7. Fig. 10 is a perspective view of a portion of the building-wall, showing in detail the construction and arrangement of the parts, and also the floor construction. Fig. 11 shows the wall construction in horizontal section. Figs. 12 and 13 also show the same in vertical sectional and front views, respectively, and on a larger scale. Fig. 14 is a vertical sectional view, enlarged, of the floor on the line *xx* of Fig. 10. Fig. 15 is a front elevation of a portion of the wall-framing, and Fig. 16 shows in elevation one of the interior columns serving as floor-supports.

Figs. 17 and 18 are front elevations of two of the posts and the girts and beams, showing different modes of arranging the parts. Fig. 19 is a perspective view from the exterior of a portion of a post, the girts, beams, angle-plates, and shelf for the veneer; and Fig. 20 is a perspective view, enlarged, of a portion of one of the posts, showing the manner of securing the plates and breaking joints.

In the several views, *A A* designate laminated framing-posts composed of plates *a*, of iron or steel, laid together so as to break joints, and secured together by bolts or rivets *a'*. The plates should be relatively long, and those for the lower portion of the posts of unequal length, so that as other plates are added they may overlap and break joint throughout the entire length of the structure. The posts are made to suitably diminish in thickness for the successive stories by omission of an outer plate, *a*, at proper intervals, so that the general shape of the posts will be tapering from foundation to roof, and they can of course be constructed in this manner of any desired height, regard being had to the size and proper proportioning of the plates in the structure, and thus form, when braced, a continuous skeleton or frame extending from bottom to top of the structure.

The framing-posts *A* are braced by diagonal braces *B*, in the bays between the windows, and by horizontal braces *B'*, in the bays in which the windows are placed, and they are also connected at each floor by horizontal girts *C*, which extend entirely around the structure, and are made continuous by connecting their ends by fish-plates, or by overlapping and riveting, and are fastened to the posts by angle-plates *c*; and the framing is further connected and strengthened by a system of horizontal ties, *D*, at each floor, which also form a part of the floor-support both longitudinally and transversely. These ties *D* have one end fastened to the posts *A* and the other end fastened to a tie, *D*, extending in transverse direction, and a rectangular opening, *E*, is thus formed in the center of the structure. (See Fig. 6.) At the junction of the ties, and at such other intervals as may be necessary, are columns *F*, extending to and supporting the ties *D* of the floor next above.

Interior walls or partitions, *G*, may be built

up from the ties D to the next floor, and the space between such walls and the outer building-walls may be divided by partitions H, as shown, or in such other arrangement as desired.

In the angles of the central space, E, are arranged the elevators I. Three elevators may be conveniently arranged in each angle, with their cables *i* operating in the interior space, *e*, between the elevator-walls and stairs.

K K' are double pairs of stairs placed at right angles to each other across the space intermediate the elevators, the one, K, leading to a landing, *j*, midway of the story, and the other, K', at right angles to the former and leading to the floor above.

The floors L are supported on the iron beams D, which rest on girts C, and are connected by tie-rods *n*, extending diagonally from the upper and lower portions of the beam, respectively, to the lower and upper portions of the adjacent beams, as shown in Figs. 10 and 14. An arched terra-cotta or other fireproofing material, *m*, is built in between the beams in the usual way, and the tie-rods prevent the spreading or twisting of the beams D, and the interior of the framing is covered with a fireproof tiling, *o*, or other material in the ordinary manner.

Around the entire exterior of the framing, except the window spaces, is a sheathing, P, of wire lath or other suitable material for the inner support of a thick covering, Q, of mineral wool or other non-conducting substance, and this is in turn covered on its exterior surface by a second sheathing, P', of wire lath or other suitable material, and R is an exterior veneering, of stone or other suitable material, supported at each story (and at closer intervals when necessary) by shelves *s*, that rest upon and are secured to projecting portions *c'* of the angle-plates *c*, and the veneering is secured at proper points by anchor-rods *t*, that are made fast to the braces B B'.

Having fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. A building having a continuous skeleton of metal, a covering of veneer, and a non-conducting packing between the skeleton and veneer, for the purpose set forth.

2. In a building-frame, a continuous diminishing laminated post formed of layers of metal plates secured together and arranged to break joints and decreasing in number toward the top.

3. In iron-building construction, the combination, with a framing composed of continuous laminated posts suitably connected by braces and girts, of tie-beams secured thereto and to one another, substantially as set forth.

4. In iron-building construction, the combination, with a framing composed of continuous laminated framing-posts suitably connected by braces, of an exterior covering of

non-conducting material, for the purpose set forth.

5. In iron-building construction, the combination, with a framing composed of laminated posts suitably connected by braces and girts, of an exterior covering of non-conducting material, and a stone or other veneering exterior thereto and supported on shelves secured to the framing, substantially as set forth.

6. In a frame for a building of two or more stories, a series of tapering posts extending from base to top of the frame and formed of metal plates in layers secured with their flat sides together and arranged to break joints, and braces and girts for connecting and securing the posts, substantially as set forth.

7. In a building-frame, a series of continuous framing-posts composed of metal plates secured with their flat sides together and breaking joints, in combination with girts and tie-beams secured thereto at each floor, substantially as set forth.

8. The combination, with the laminated posts, of the continuous girts secured thereto, and the tie-beams, also secured thereto and to one another, substantially as set forth.

9. The combination, with the framing-posts and braces, of the wire lath or equivalent coverings, the non-conducting packing and the veneering supported by the shelves, and anchor-rods, substantially as and for the purposes set forth.

10. The combination, with the building-frame composed of the laminated posts, girts, tie-beams, and pillars, arranged to form a central well, of the elevator shafts and stairs arranged therein, substantially in the manner set forth.

11. The combination, with the building-frame constructed with a central well, of elevator shafts arranged in the corners of such well and flights of stairs rising from opposite sides of such well to a central landing, and other flights rising from said landing to the other sides of such well, substantially as set forth.

12. The combination, with the posts and girts forming the outer frame, of the beams having their outer ends resting on the girts and secured to the posts, and their inner ends secured to beams that are transverse to them, the pillars therefor, and the diagonal tie-rods, substantially as set forth.

13. The combination, with the posts and girts, of the angle-plates connecting them and forming supports for the veneer shelves.

14. The combination, with the posts and their braces, of the plates forming the shelf-supports, the shelves, the veneer, and the anchor-rods, substantially as set forth.

LEROY S. BUFFINGTON.

Witnesses:

M. T. HANLEY,
HARVEY ELLIS.