

(No Model.)

J. H. GRAY.
METAL COLUMN.

No. 488,274.

Patented Dec. 20, 1892.

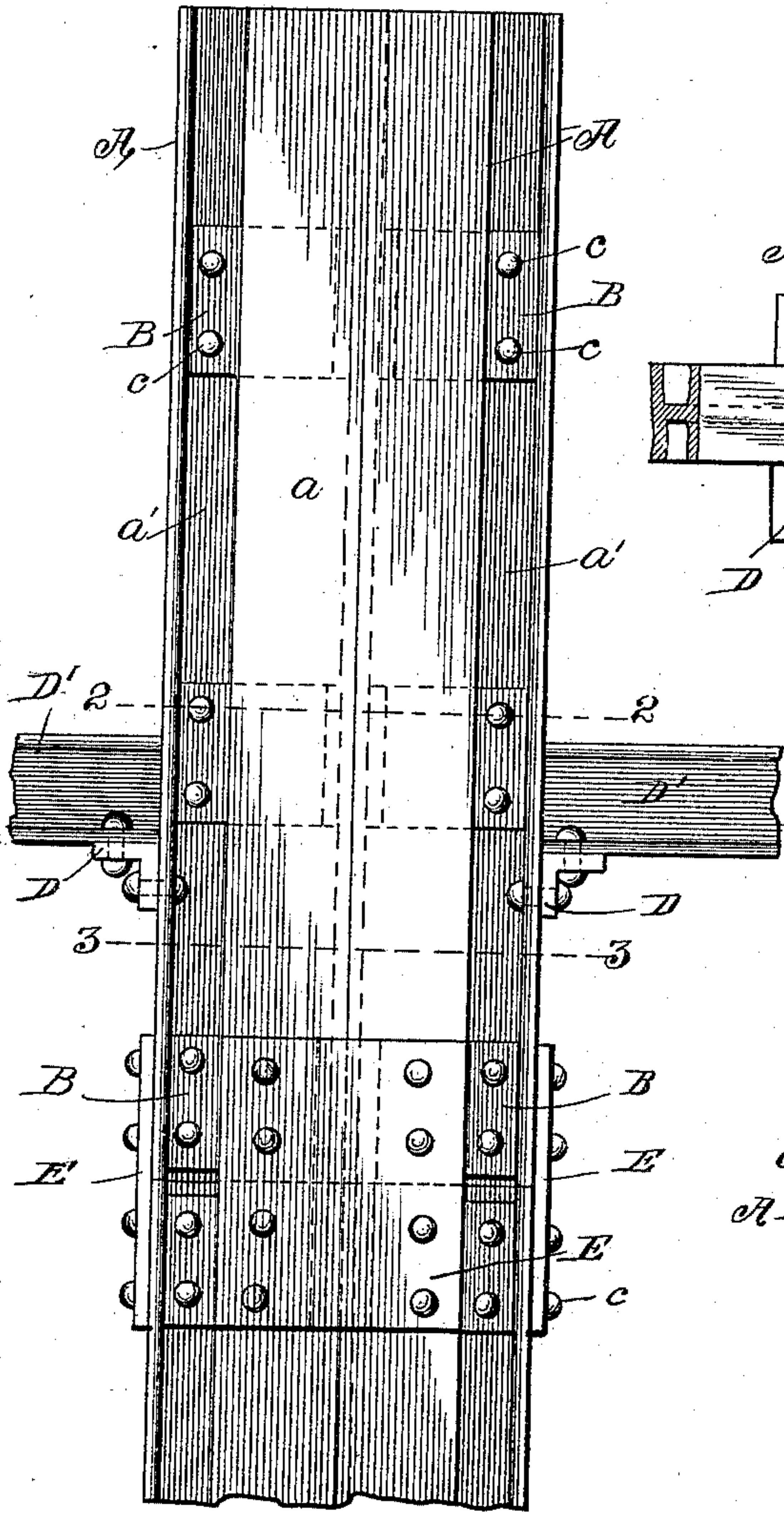


Fig 2.

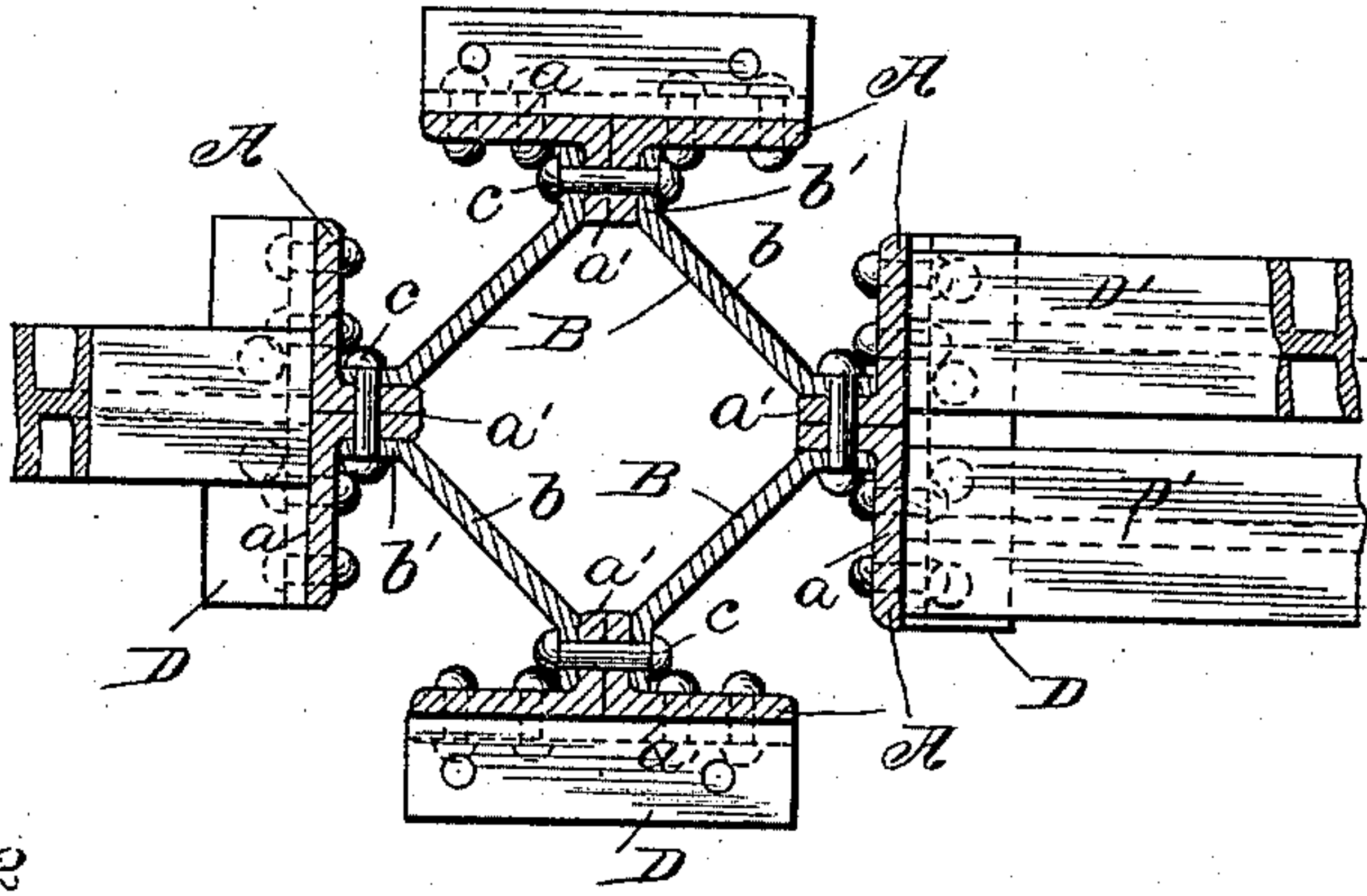


Fig 3.

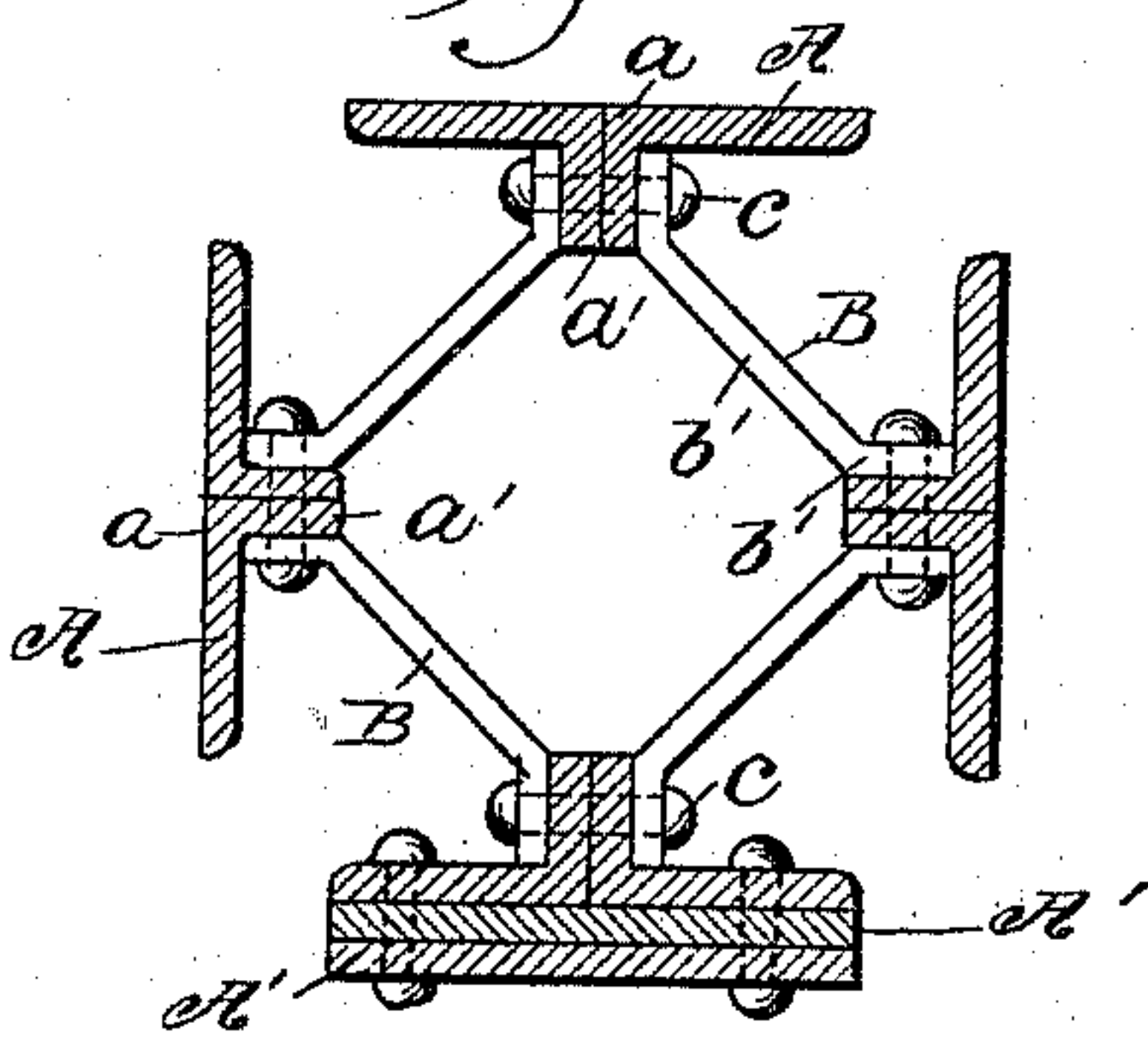


Fig 1

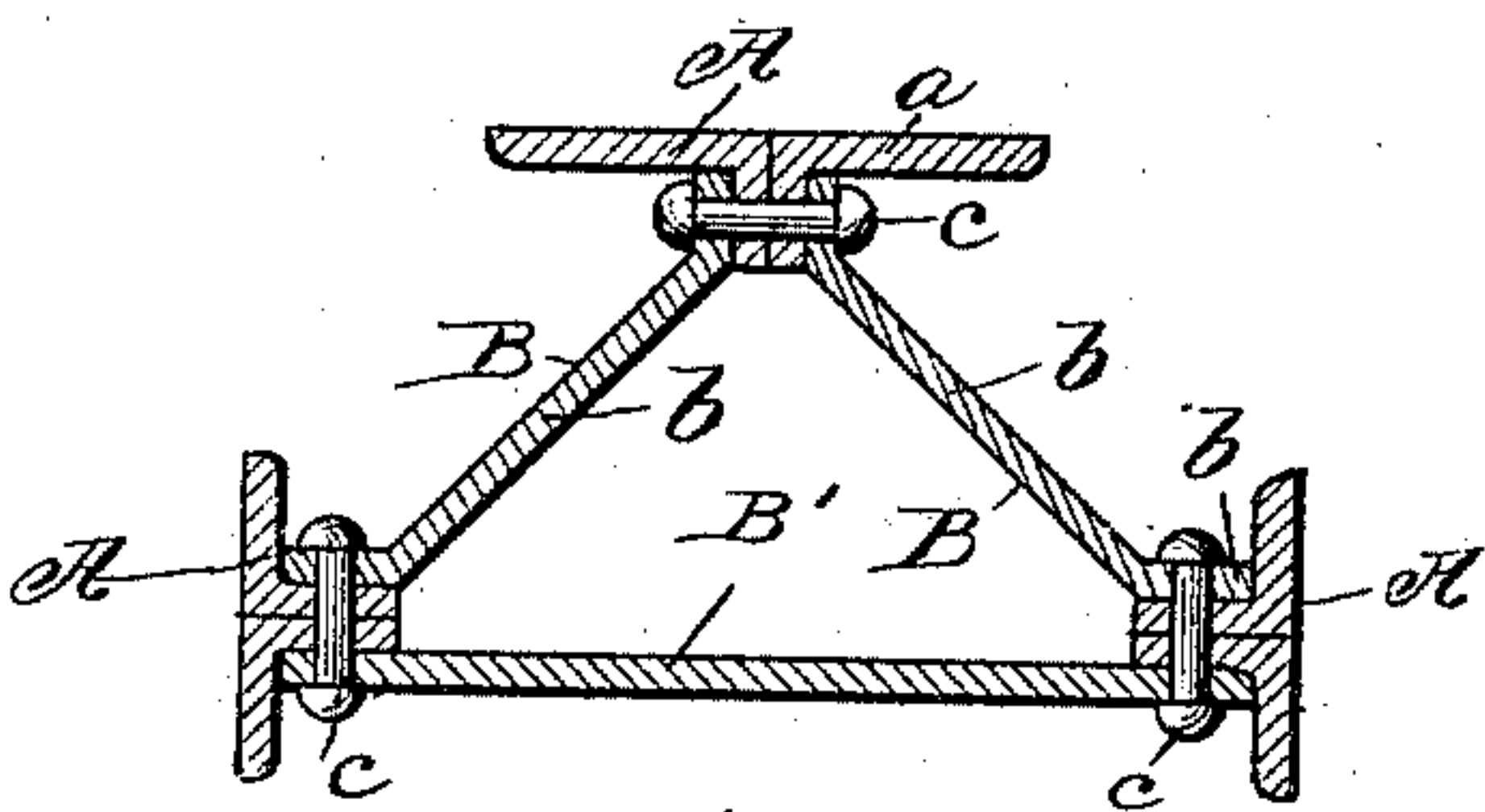


Fig 4.

Witnesses:
John L. Timison.
Martin A. Olsen.

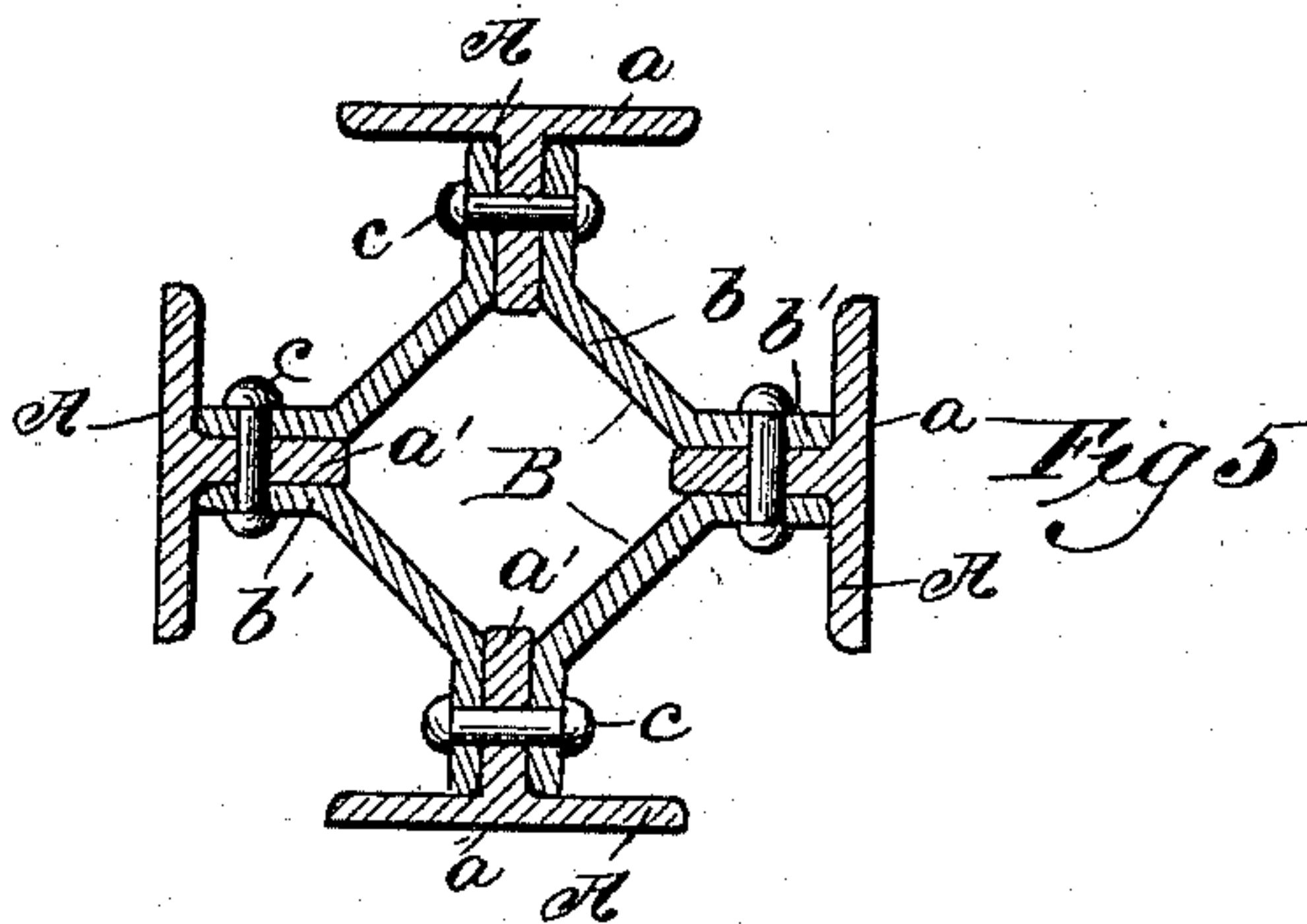


Fig 5

Inventor:

John H. Gray
by Leonard Watson
his Atty.

UNITED STATES PATENT OFFICE.

JOHN H. GRAY, OF CHICAGO, ILLINOIS.

METAL COLUMN.

SPECIFICATION forming part of Letters Patent No. 488,274, dated December 20, 1892.

Application filed July 9, 1892. Serial No. 439,486. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. GRAY, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have
5 invented a certain new and useful Improvement in Metal Columns, which is fully set forth in the following specification, reference being had to the accompanying drawings, in which—

10 Figure 1 is a side elevation of a column embodying my invention in one form. Fig. 2 is a plan section of the same, taken on the line 2—2 of Fig. 1. Fig. 3 is a plan section, taken on the line 3—3 of Fig. 1 and illustrating the
15 mode of strengthening the column. Fig. 4 is a plan sectional view, illustrating a modified form. Fig. 5 is a similar view, illustrating another modification.

This invention relates to metal columns
20 designed more particularly for architectural purposes, although adapted of course to other uses and has for its objects, among other things, to provide a structure of this nature which shall be comparatively inexpensive in
25 cost of making and setting up, which shall have all its sides accessible after the column is set up to permit the ready attachment of the beams or other structural elements which the column is designed to support and which
30 shall have the metal, of which it is composed, distributed in the most advantageous manner, so as to carry the maximum load with the minimum amount of metal in the column.

To these ends the invention consists in certain novel features which I will now proceed
35 to describe and will then particularly point out in the appended claims.

In the drawings I have shown, in Figs. 1, 2 and 3, a column embodying my invention
40 in one form. In this construction the column is composed of four upright members, A, so arranged that the opposite pairs are parallel to each other and the adjacent pairs would, if produced, intersect each other at a right angle.
45 Each of the members A is composed of a body portion, *a*, having the form of a flat rectangular plate presenting a smooth plane outside face, and a central longitudinal rib, *a'*, extending from the back of the part *a* toward
50 the center of the column a short distance. In the form of column shown in Figs. 1, 2 and 3 each member A is composed of two angle bars,

each having a long web and a short web and placed with their short webs abutting against each other and with their long webs in line 55 with each other, the two latter forming the part *a* of the member A, while the two former constitute the rib *a'*. The two angle bars are secured together to form the member A by means of rivets or bolts passing through the 60 two halves of the rib *a'*.

The several members A are united to form the complete column by means of straps, B, located one between each pair of the members A, extending diagonally between each 65 pair of members and having their ends or edges secured to the sides of the ribs *a'*, as shown in Figs. 2 and 3. In the construction shown these straps are interrupted or located at intervals along the height of the column, 70 but they may be continuous along the entire length of the column, if desired. They may be either straight, as shown, or curved in cross-section and in case they are straight each strap will consist of a straight diagonal 75 body portion, *b*, having end portions, *b'*, bent at an angle of one hundred and thirty-five degrees to fit against the sides of the ribs *a'*. The rivets, *c*, in the construction shown in the drawings, pass not only through the ends 80 of the straps B, but also through the two halves of the ribs *a'*, and thus serve to unite all the several elements of the column into a rigid whole.

It is obvious that instead of building up 85 the members A of two angle bars they may each be composed of a single T-bar and such a construction is shown in Fig. 5 of the drawings and will be readily understood without a detailed description. 90

It will be noted that a column constructed in the manner described possesses in a high degree the merit of economy, since the structural forms of which it is composed are readily obtainable or may be manufactured at a 95 minimum of cost. Moreover, the column is a hollow column or pillar which it is admittedly the most desirable form. The metal which is to carry the load being distributed around the outside of the column where the load is 100 placed upon the column so that the load carrying portion of the column is under the load to be carried. Again it will be noted that the outer faces of the column are readily accessi-

ble both externally and internally, so that the brackets, beams or other structural elements to be attached to the column may be readily connected therewith.

5 In Figs. 1 and 2 of the drawings I have illustrated one mode of connection in which L-shaped brackets, D, are riveted or bolted to the face portions *a* of the members A, the beams, D', being riveted or bolted to the
10 brackets in an obvious manner.

In case it is desired to strengthen a portion or the whole of the column this may readily be accomplished by riveting or bolting to the outer face or faces of one or more of the mem-
15 bers A, strengthening plates, A', as shown in Fig. 3. It will be noted that this mode of reinforcing the carrying parts is exceedingly simple and inexpensive, while at the same time of superior efficiency since each plate is
20 added in a direction away from the neutral axis of the column, thus giving it a relatively great efficiency in proportion to the amount of metal added.

The form of column shown in Figs. 1, 2, 3
25 and 5 of the drawings is one which will be most generally used, but where the columns are to be located in the side walls or other places where all four sides of the column are not intended to receive a load, one of the
30 members A may be omitted and the two members A, which remain opposite each other, will be connected by straight straps, or a straight plate, B', as shown in Fig. 4 of the drawings. By the employment of this modified form in
35 places where it is deemed advantageous or desirable the cost of the column is reduced and the surplus weight of metal dispensed with.

Superposed columns may be joined together
40 either at the floor line or at any other point without interfering with the finish or fire proofing of the columns in the manner shown in Fig. 1 of the drawings, by the employment

of four straps or splicing plates, E, and suitable rivets or bolts.

It is obvious that various details of the construction shown and described may be modified without departing from the principle of my invention and I therefore do not wish to be understood as limiting myself strictly to the precise construction shown in the draw-
50 ings and hereinbefore set forth.

What I claim is:—

1. A metal column, comprising upright members so arranged that the opposite members are parallel and the adjacent members at
55 right angles to each other, each upright member comprising a flat body portion having a central rib on its rear face, and straps or diagonals having their edges secured to said ribs and connecting the adjacent upright
60 members, substantially as described.

2. A metal column, hollow in its center and having its load carrying portion at a distance from the neutral axis and composed of up-
right members, the opposite ones parallel to
65 each other, and the adjacent ones at right angles to each other and separated by intervening spaces, each upright member having a central longitudinal rib on its rear face, and diagonal connecting members having their
70 edges secured to said ribs, substantially as described.

3. A metal column, comprising upright members arranged with the opposite ones parallel and the adjacent ones at right angles, and
75 each composed of two L-shaped angle pieces united to form a flat body with a central rib on its rear face, and diagonal connecting members having their edges secured to said ribs, substantially as described.

JOHN H. GRAY.

Witnesses:

CARRIE FEIGEL,
LEONARD WATSON.