

(No Model.)

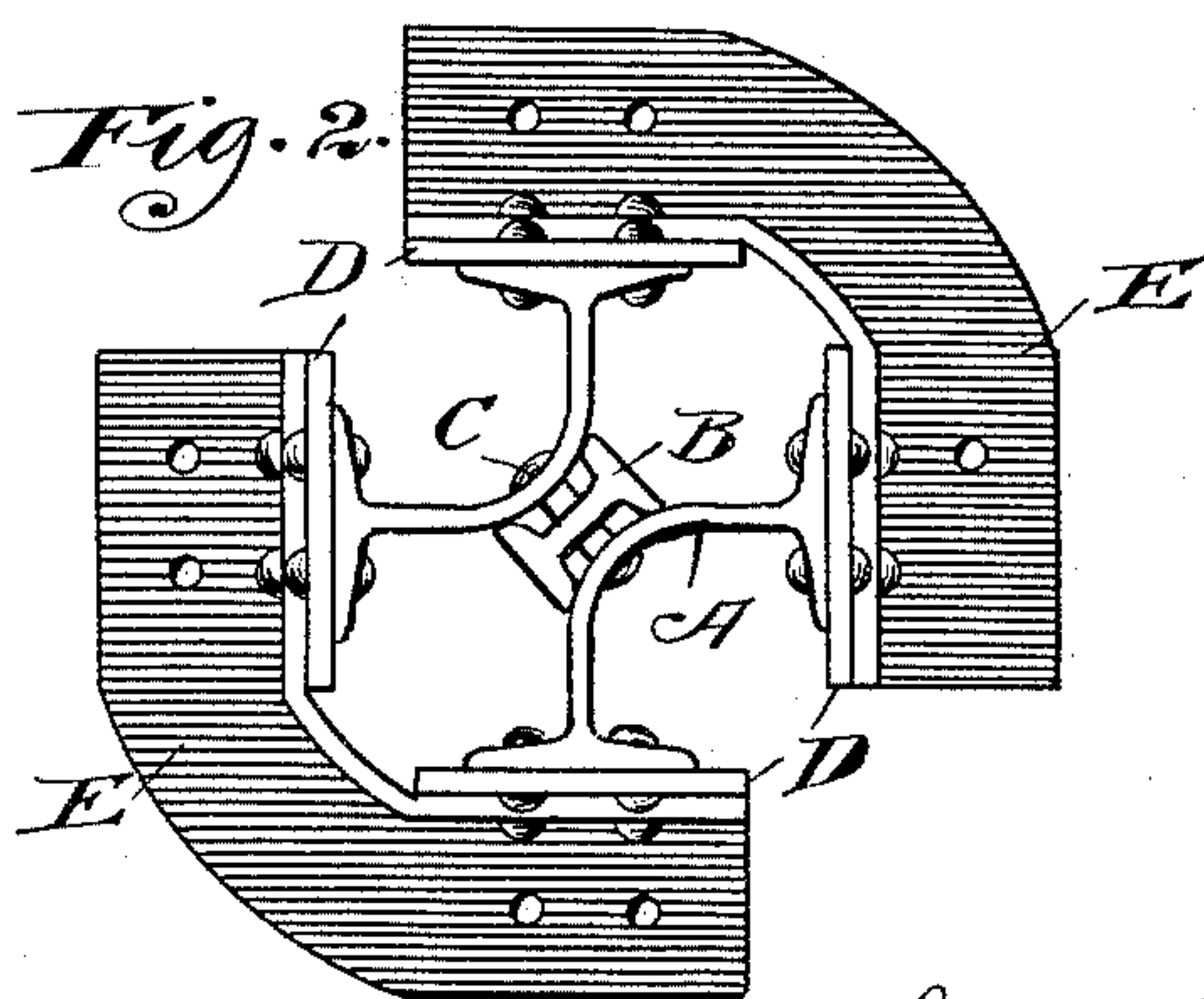
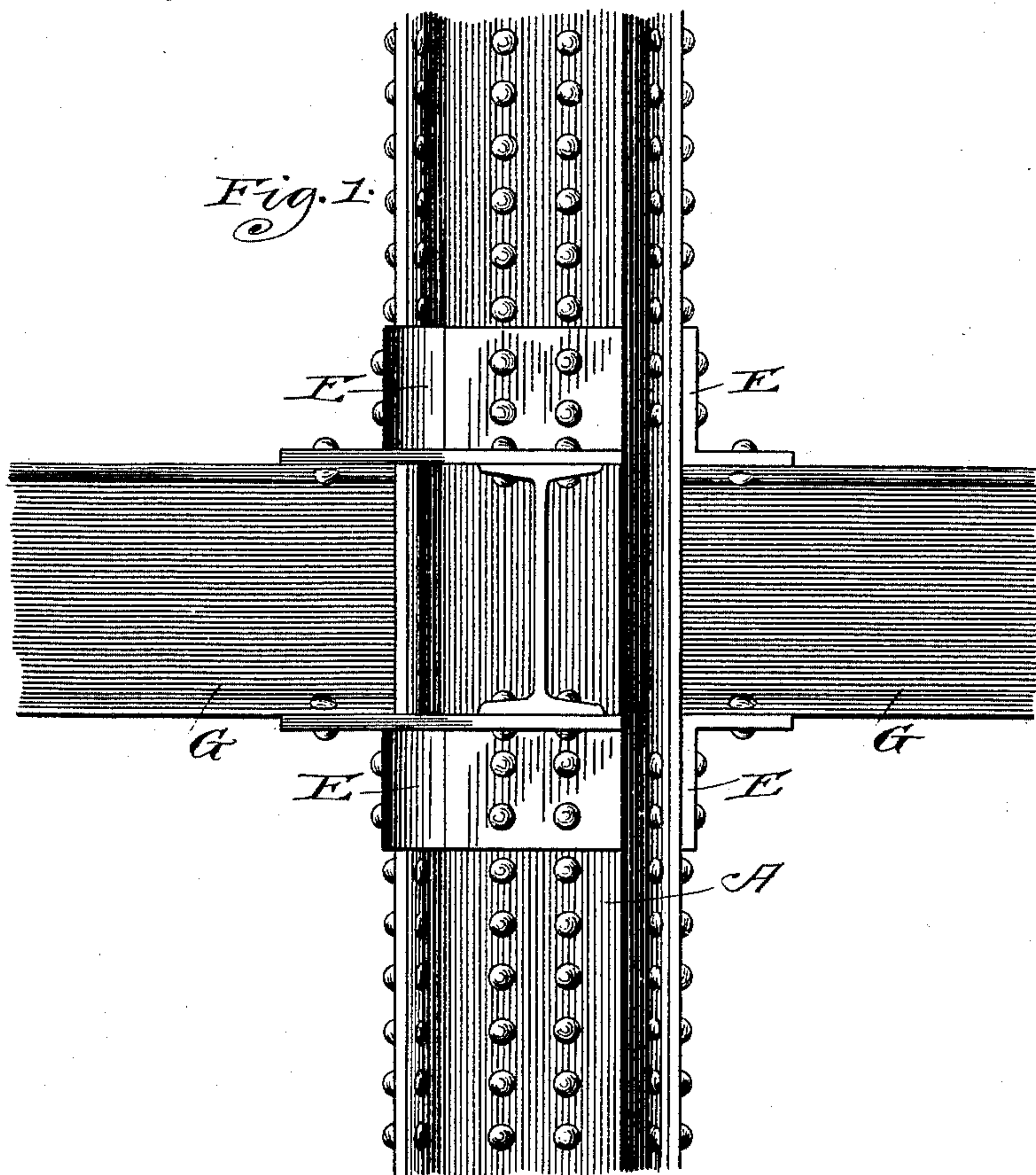
J. M. LARIMER.

2 Sheets—Sheet 1.

STRUCTURAL WORK FOR BUILDINGS.

No. 485,871.

Patented Nov. 8, 1892.



Witnesses,
J. J. Mann,
D. B. Goodwin

Inventor,
Joseph M. Larimer
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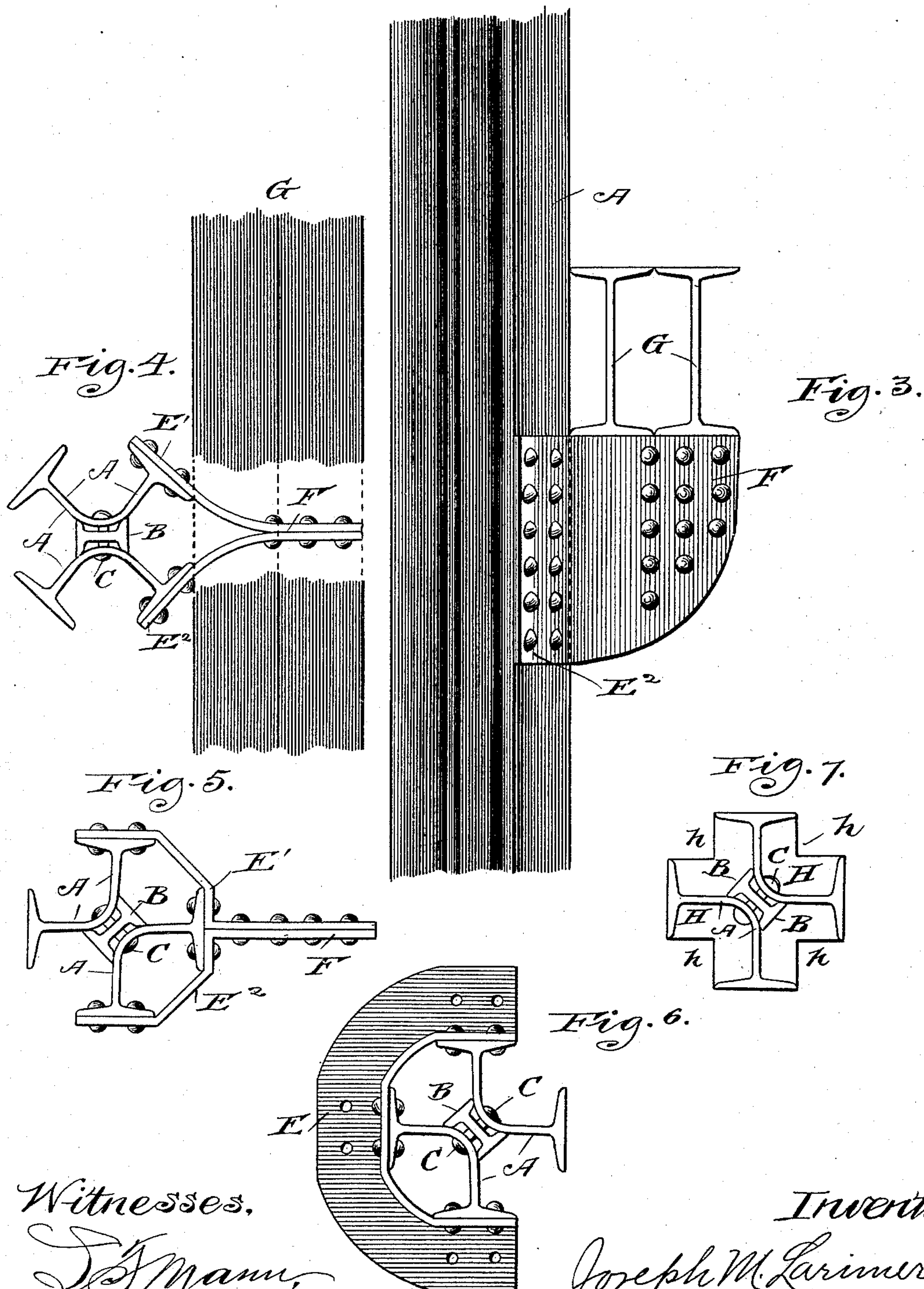
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UNITED STATES PATENT OFFICE.

JOSEPH M. LARIMER, OF CHICAGO, ILLINOIS.

STRUCTURAL WORK FOR BUILDINGS.

SPECIFICATION forming part of Letters Patent No. 485,871, dated November 8, 1892.

Application filed July 19, 1892. Serial No. 440,470. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH M. LARIMER, of Chicago, Illinois, have invented certain new and useful Improvements in Structural Work for Buildings, of which the following is a specification.

My invention has relation to certain improvements in the structural work of buildings, and more particularly to the structural work of buildings whose frames are composed of metal columns and girders.

One feature of my improvement relates to a novel means of reinforcing metal columns, and particularly to a means for reinforcing or strengthening the columns composed of metal bars having outwardly-presenting flanged heads and centrally-connected webs, such as have been heretofore patented to me and are now known on the market as "Larimer columns." In many cases it is desired, in order to render the column available in peculiar relations, to so construct it that it may be loaded eccentrically—that is to say, columns are frequently placed in such position that the load is carried upon one side only—and in these cases it is desirable to increase the thickness of the metal at the periphery of the column, and this I do by combining with the outwardly-presenting flanged heads of the metal beams of which the column is composed reinforcing-plates, which are preferably flat steel or iron plates and are bolted or riveted flatwise upon the heads of such columns. By so doing the column may be strengthened at the point where strength is needed without adding to the weight or cost by making it unduly heavy, as would result from putting the same amount of metal into the several heads or sides.

Another feature of my invention relates to a novel method of connecting together two or more of the heads of the beams composing these columns by means of a sectional ring, which is adapted to form a base-ring, a cap-ring, or a bracket; but which, as hereinafter described, is applied as a bracket.

A feature of this part of my invention relates to providing the sectional ring with lateral extensions or wings, which are bolted or riveted together and are adapted to support beams or girders carrying a weight in a plane

parallel to the side of the column to which said ring is attached.

Another feature of my invention relates to a novel form of connecting-plate which is placed between the ends of the columns where a plurality of them are superposed—as, for example, in the construction of high buildings. The particular form of plate which I employ is of such shape as to connect the several heads of the beams of which the column is composed and at the same time to afford spaces interior of the external diameter of the column for pipes, wires, or other of the accessories of modern metal-frame buildings.

In the accompanying drawings, Figure 1 is a side elevation of a column of my construction and intended particularly to show in side view the reinforcing-plates and showing, also, sectional supporting-rings with girders supported thereby. Fig. 2 is a plan view of a column composed of two bars or beams having their webs bent and connected centrally, the heads of the respective bars being connected together in pairs by sectional connecting-rings or ring-sections. Fig. 3 is a side elevation of a section of a column, showing one of its connecting ring-sections forming a bracket to support two beams, the latter shown in end elevation. Fig. 4 is a plan view of the same, the supported beams being broken away to show the bracket beneath, the outlines of said beams showing in dotted lines. Fig. 5 is a plan view of the beam and with a ring-section connecting three of the heads thereof and having a lateral extension to form a bracket. Fig. 6 is a plan view showing a modified construction of the ring-section, and Fig. 7 shows the improved form of plate.

In the drawings the column is shown as composed of two I-beams A A, having their webs bent upon curved lines and their heads presenting outwardly, the beams being connected at their middles through an interposed fillet or I-beam B by means of the rivets C.

As shown in Figs. 1 and 2, the heads of these I-beams are reinforced by the plates D, which are flat metal plates riveted to the flanges of the heads of the I-beams, and, as shown, each head is so reinforced. This is sometimes desirable in making a column; but in many cases where an eccentric load is to

be carried less than the whole number of heads may be thus reinforced.

E represents a ring-section adapted to form a bracket to give lateral support to the girder 5 E. This ring-section, as shown in Fig. 2, connects two of the heads of the respective columns, so that the two columns forming the beam are connected not only centrally, but are also connected externally or at their 10 peripheries. These ring-sections are secured over the reinforcing-plates.

In the construction shown in Figs. 3, 4, and 5 the connecting medium is formed of two metal bars $E' E^2$, disposed flatwise with reference to each other and connected together 15 at one end, but separated at the other, and made to embrace the heads of the beams A A, two of said heads being connected as shown in Figs. 3 and 4, while three of said heads are 20 thus connected as shown in Fig. 5. The parts of the bars which are thus bolted flatwise together form a lateral extension or bracket F, serving to support a load intermediate the ends of a column—as, for example, the girders 25 G. (Shown in Figs. 3 and 4.) Thus the double purpose is served of connecting together the heads of the columns and increasing the strength of the latter, while at the same time a very strong supporting-bracket is provided.

30 In Fig. 6 the same idea is exemplified, except that the connecting of the heads of the column is emphasized, while the lateral flange may be adapted to rest upon the top of a girder or to support one, as the case may be.

35 Referring now to Fig. 7, H represents a plate which is placed upon the end of a column to adapt it to receive a superposed column.

Said plate has its corners cut away, so that in outline it presents substantially the form of a Greek cross, although of course its form 40 may be varied, the essential feature being that it shall have sufficient width to furnish proper bearing-support for the end of a superposed column, while at the same time providing the spaces h , in which pipes, electric 45 wires, &c., may be run. The chief utility of this form over those now on the market is the fact that by its use considerable economy of material is gained without impairing the utility or strength of the plate. 50

Without limiting myself to precise details of construction, I claim—

1. In structural work for buildings, the combination, with a column composed of metal beams having centrally-connected webs and 55 outwardly-presenting heads, of a metal segment or ring-section connecting the heads of the respective beams of the column, substantially as and for the purpose described.

2. In structural work for buildings, the combination, with columns composed of metal 60 beams having centrally-connected webs and outwardly-presenting heads or flanges, of metal connecting segments or ring-sections composed of bars having two of their ends 65 separated and adapted for connection to the heads of the column-beams and their outer ends connected together and extended laterally to form a supporting-bracket, substantially as described.

JOSEPH M. LARIMER.

Witnesses:

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