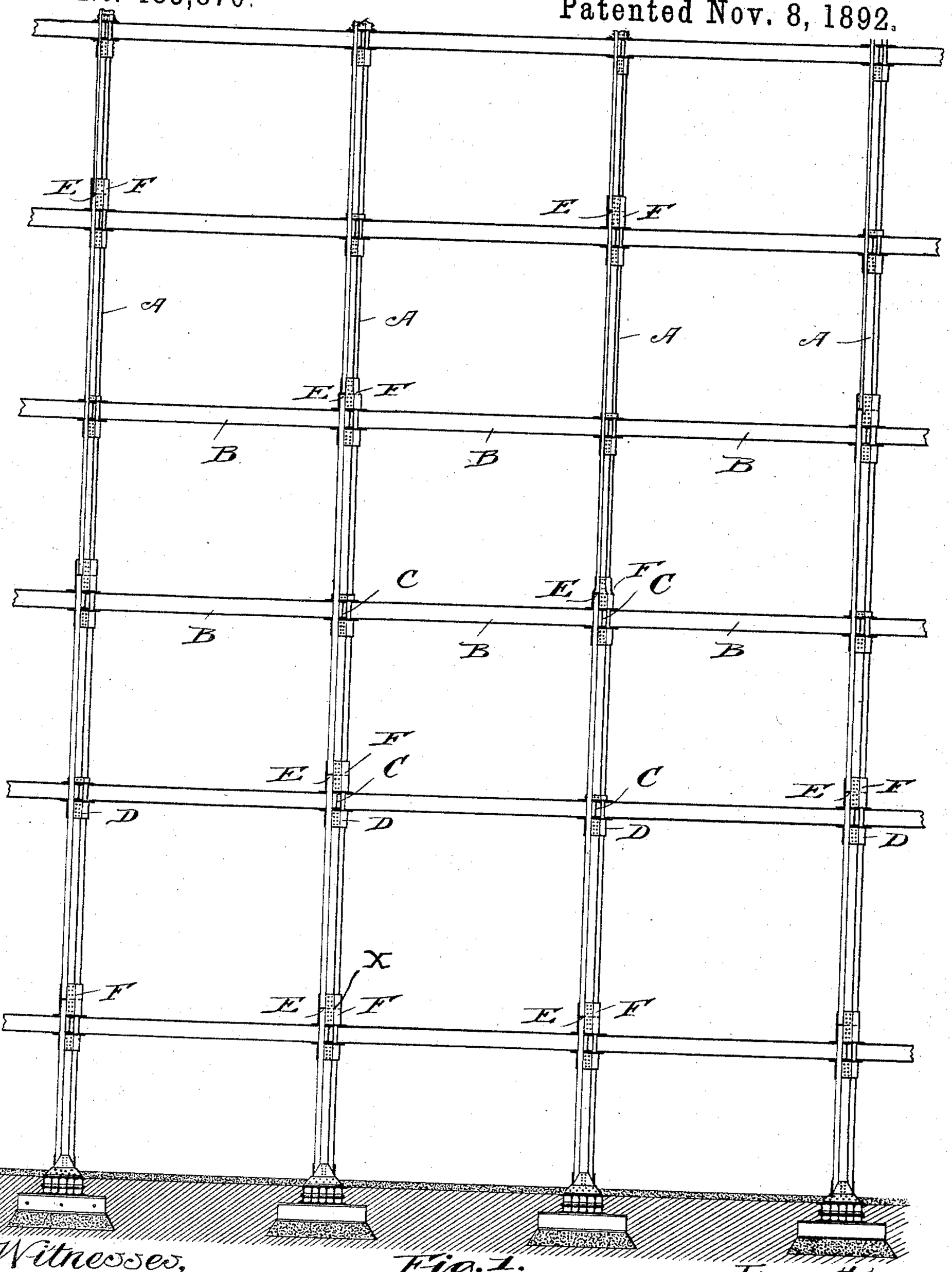
(No Model.)

J. M. LARIMER.

3 Sheets—Sheet 1.

METAL FRAMEWORK FOR BUILDINGS.

No. 485,870. Patented Nov. 8, 1892.



Witnesses,
D. E. Mann
Frederick F. Goodwin

Fig. 1.

Inventor,
Joseph M. Larimer
By Offield, Fowler & Linthicum,
Attys.

(No Model.) 3 Sheets—Sheet 2.

J. M. LARIMER.

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Fig. 2.

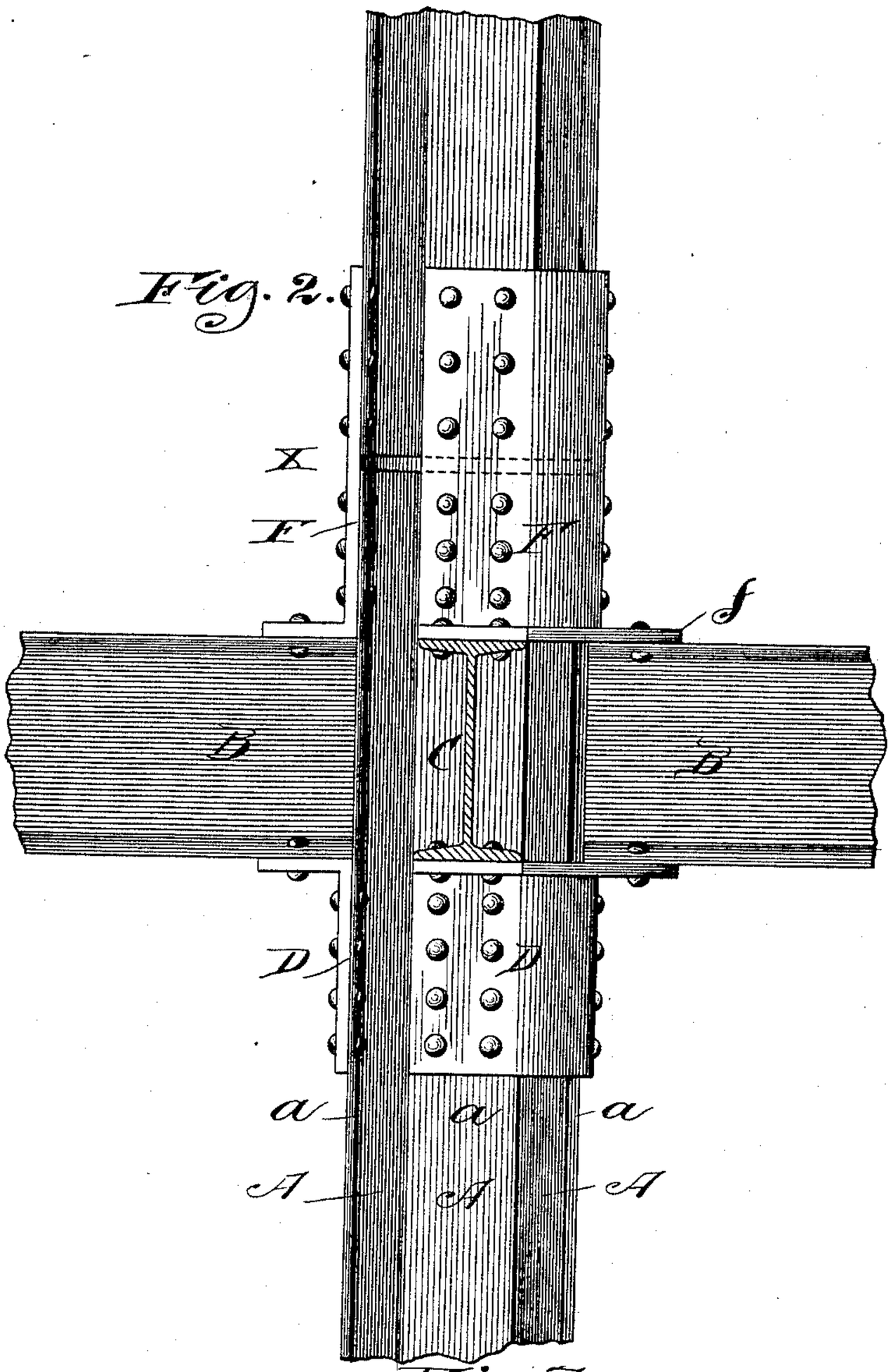
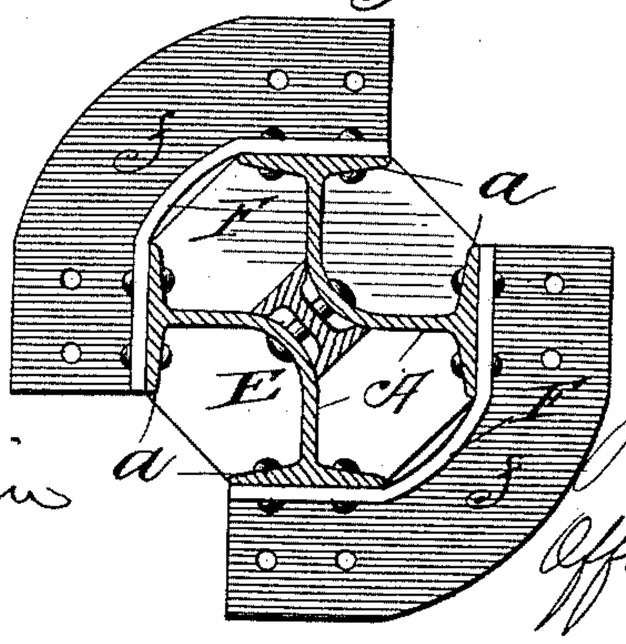


Fig. 3.



Witnesses,
F. G. Mann,
Frederick f Goodwin

Inventor,
Joseph M. Larimer
Offield Towle & Linthicum
Attys.

(No Model.)

3 Sheets—Sheet 3.

J. M. LARIMER.

METAL FRAMEWORK FOR BUILDINGS.

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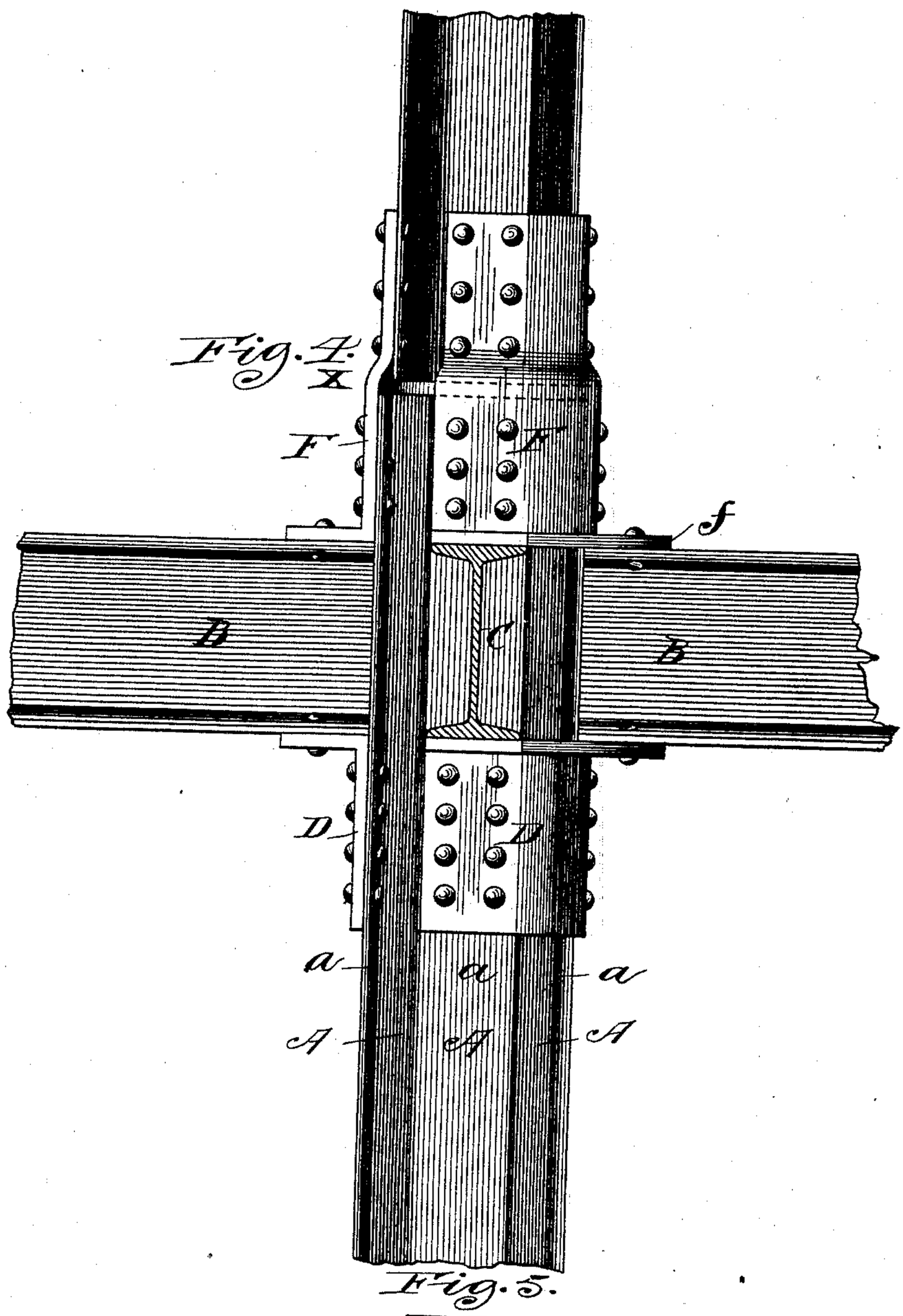
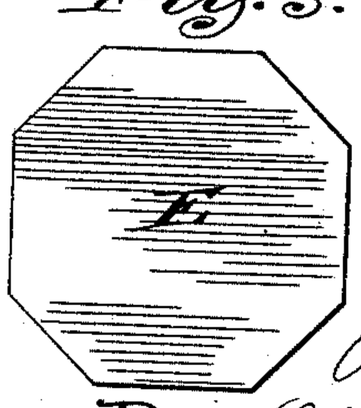


Fig. 5.



Witnesses,
D. C. Mann,
Frederick L. Goodwin

Inventor;
Joseph M. Larimer
By Offield Towler Linthicum
& Mann,

UNITED STATES PATENT OFFICE.

JOSEPH M. LARIMER, OF CHICAGO, ILLINOIS.

METAL FRAMEWORK FOR BUILDINGS.

SPECIFICATION forming part of Letters Patent No. 485,870, dated November 8, 1892.

Application filed November 10, 1891. Serial No. 411,500. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH M. LARIMER, a citizen of the United States, residing at Chicago, Illinois, have invented certain new and useful Improvements in Metal Framework for Buildings, of which the following is a specification.

My invention relates to that class of architectural structures wherein the framework is composed of metal columns and girders to support the wall, floors, and ceilings. Structures of this kind are carried to great heights, sixteen to twenty stories having been attained and much greater heights being now projected. In the construction the framework is usually erected independently of the exterior walls and is carried up by placing the column end to end, the girders resting either directly upon the tops of the columns or upon flanges thereof and the joint being made between the supporting and the superposed columns in the plane of the bottom of the girder. As the girder must be connected to the columns in addition to connecting the columns to each other, difficulties are encountered in riveting or bolting the parts, and the principal object of my invention is to provide a convenient way of connecting the columns end to end without impairing the strength of the structure. To do this, I make the joint or connection between the supporting and the superposed column at a point between the girders, preferably a short distance above the floor-line, and interpose between the ends of the columns to be connected an equalizing-plate whose diameter will be substantially equal to the cross-sectional diameter of the column. This plate provides for any inaccuracy in the opposing ends of the columns to be joined and enables the use of millwork, and thereby affords a considerable saving over the cost of specially grinding the ends of the columns in order to secure accurate fitting or abutment between them. The columns are provided with flanged rings or brackets to support the girders, and in order to connect the ends of the columns I employ segmental metallic connecting-brackets having bases which rest upon the girders and upright members lapping upon the two columns to be joined and which are bolted or riveted to the flanges of said columns.

In the accompanying drawings I have illustrated my invention in one view as applied to a structure wherein double-length columns are employed and so arranged above the second floor that the alternate columns break joints.

In said drawings, Figure 1 is an elevation showing the framework of a building composed of columns and girders embodying my improvements. Fig. 2 is a broken elevation of two columns joined together, two girders supported by the lower of said columns, and showing in sectional view a transverse girder. Fig. 3 is a sectional plan view of the column and showing the equalizing-plate and connecting-brackets. Fig. 4 is a broken elevation partly in section and showing parts corresponding to those illustrated in Fig. 2, except that the two columns are of unequal size; and Fig. 5 is a detail plan view of the equalizing-plate.

A represents a column which may be of any approved form of construction, the one shown being particularly described in my patent, No. 453,341, issued June 2, 1891. Said column is composed of **I**-beams having their webs bent upon curved lines and connected through an interposed fillet by a central line of rivets and having outwardly-facing heads or flanges *a*. These columns are placed end to end and are connected by girders B C, which are supported upon the brackets D, riveted to the flanges *a* of the columns.

By referring to Fig. 1 it will be seen that above the second floor these columns are what are denominated "double-length" columns—that is to say, each column is of a length corresponding to twice the height of a story—and they are so arranged that the alternate columns break joints. It is difficult to fit the columns end to end and to connect the girders at the joint between the ends of the columns, because of the lack of room to properly rivet the parts together. This construction is further objectionable in that it does not have the same effective strength as one wherein the joints in the vertical columns are noncoincident with the joints between the girders and the columns. I therefore make the joints between the supporting and superposed columns above the floor-line, as shown at X, Fig. 1, and interpose between their abutting

ends the equalizing-plate E. The brackets D are secured to the columns at some distance below their upper ends, and therefore said ends project beyond the upper faces of the girders. To connect the supporting and superposed columns together, I employ the segmental connecting-brackets F, which are preferably provided with feet *f*, riveted to the top flanges of the girders. These connecting-pieces F are curved in cross-section, as clearly shown in Fig. 3 of the drawings, and their upright portions are riveted to the flanges *a* of the columns which they join. I preferably make this joint above the girder, instead of below it, and also prefer to make it close to the girder, as a more rigid structure can thereby be secured.

The plates E, which may be perforated as described in my patent, No. 463,318, dated November 17, 1891, serve to equalize the compressing strain between the ends of the columns and compensate for any irregularity in said opposing ends, while adding but little to the expense of construction.

It will be found that a framework constructed in the manner above described can be more rapidly and economically erected and that it will be strong, owing to the non-coincidence of the joints of the girders and columns. The forms of the connection F may be varied; but that shown has a distinct utility in the fact that thereby the flanges of the two beams comprising the column are connected transversely and the feet *f* afford adequate means for connecting the several girders.

In Fig. 4 of the drawings I have shown two columns of unequal diameter connected by the brackets, which in this case have their upper ends reduced to adapt them to lie flat against the heads of the smaller columns.

In my pending application Serial No. 440,470 I have broadly claimed the ring-section herein shown connecting the heads of the respective beams of the column.

I claim—

1. In framework for buildings, the combination, with metal columns connected end to end, of metal girders supported by said columns and the latter being joined in planes parallel to the girder-joints and suitable metal connecting plates or brackets for connecting the columns, said brackets having feet bearing on the tops of the girders, substantially as described.

2. In framework for buildings, the combination, with metal columns, of transverse girders connected to said columns below their upper ends, plates interposed between the ends of the columns, and brackets overlapping the joints between the columns and secured therewith, substantially as described.

3. In framework for buildings, the combination, with metal columns joined end to end and composed of a plurality of beams having outwardly-presenting heads, of transverse girders supported upon said columns and connecting-brackets overlapping the joints between the columns, said brackets being of such width as to adapt them to connect transversely two of the parallel heads of such columns, substantially as described.

JOSEPH M. LARIMER.

Witnesses:

C. C. LINTHICUM,

FREDERICK C. GOODWIN.