

P. L. WEIMER.
Roof-Trusses.

No. 146,114.

Patented Dec. 30, 1873.

Fig. 2.

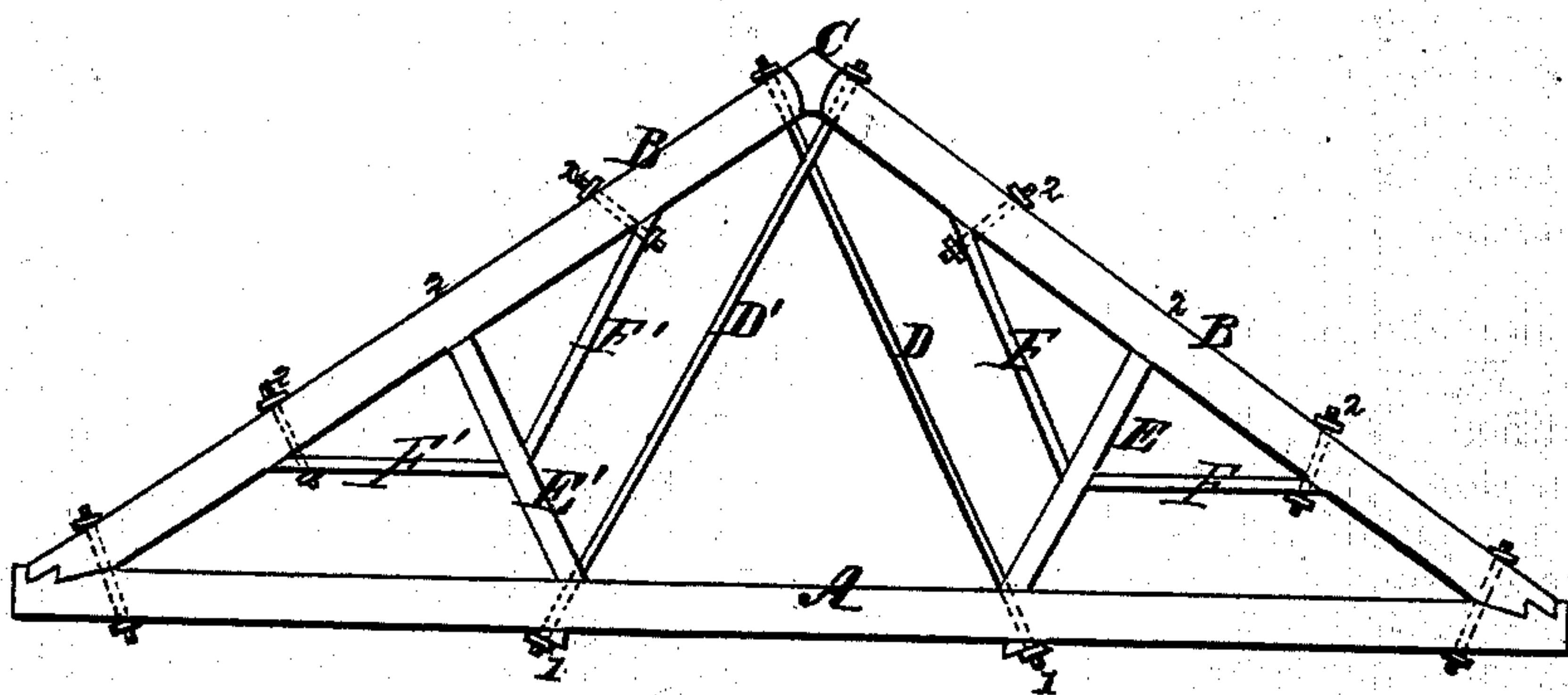
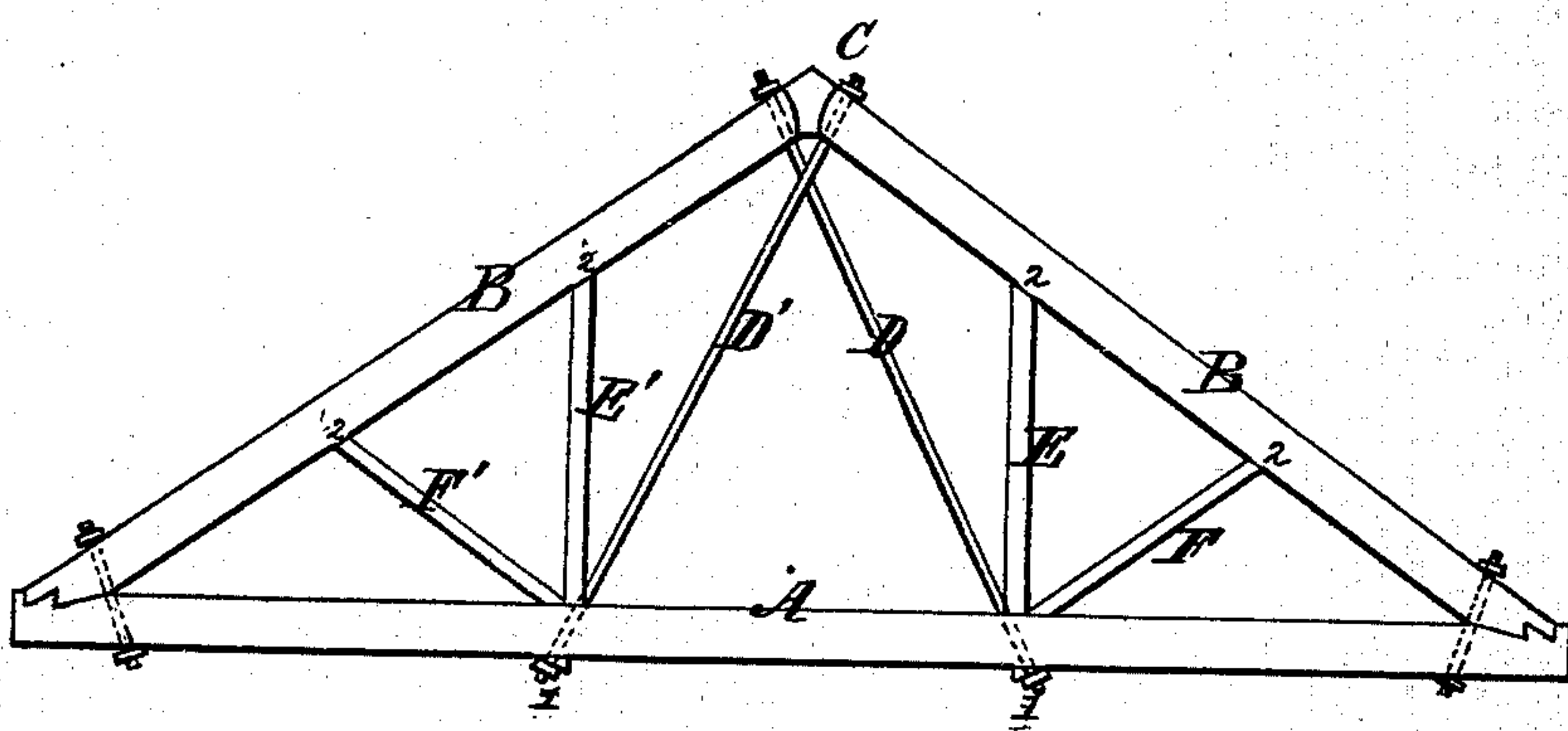


Fig. 1.



Witnesses.
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PETER L. WEIMER, OF LEBANON, PENNSYLVANIA.

IMPROVEMENT IN ROOF-TRUSSES.

Specification forming part of Letters Patent No. **146,114**, dated December 30, 1873; application filed November 29, 1873.

To all whom it may concern:

Be it known that I, PETER L. WEIMER, of Lebanon, in the county of Lebanon and State of Pennsylvania, have invented a new and useful Improvement in Truss-Frames for Roofs; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings forming part of this specification, in which—

Figure 1 is a side elevation of my improved truss-frame, and Fig. 2 a similar view of the truss-frame modified.

In the construction of trussed roofs it is essential that the principal rafters receive support, at intervals, from compression-pieces, which rest upon the tie-beam and have their thrust conveyed, by means of bolts, to the junction of the principal rafters. The nature of my invention consists in a truss-frame for a roof which has only two points in the tie-beam, which receive the thrust of the compression pieces, while each of the principal rafters of the truss have, between those ends which rest upon the tie-beam and those which adjoin, two, three, or more points of support from the compression-pieces, and the thrust of these compression-pieces is conveyed to the junction of the principal rafters by only two bolts.

In Fig. 1, A represents the tie-beam; B B, the principal rafters; C, the wedge block or key at the junction of the rafters; D D', the two bolts which extend up from the tie-beam and cross one another just at the base of the wedge-block or key piece C. E E' are upright supporting and compression pieces between the principal rafters and the tie-beam; and F F' are oblique auxiliary supporting and compression pieces, also between the rafters and the tie-beam. The foot of the piece E rests upon the tie-beam just at the point where the bolt D passes up through this beam, and the foot of the piece F rests upon said beam and against the foot of the piece E. The pieces E' F' are arranged in the same manner upon the beam, and in the same relation to the principal rafters and the bolt D', as just described, except that the oblique piece F' is inclined in a converse direction to the oblique piece F.

From the drawing, Fig. 1, it will be seen

there are four compression-pieces, E E' F F', resting on the tie-beam at the two points 1 1, and against the principal rafters at the four points 2 2 2 2. In Fig. 2 the tie-beam, rafters, and bolts are the same as in Fig. 1, but the compression-pieces E E' are set oblique instead of upright, the inclination of E being the converse of E', and, instead of using only two auxiliary supporting and compression pieces, four auxiliary supporting and compression pieces, F F' F' F', are employed, and these pieces extend down from the principal rafters and bear against the oblique main supporting and compression pieces E E' at a point about midway between the rafters and the tie-beam. In this construction each of the rafters of the truss has three points of support, 2 2 2, while the thrust is transmitted to the two points 1 1.

I am aware that roof-trusses have been devised so as to support the main rafters at different points; but the compression-pieces have been so applied that the whole weight was carried at the center of the length of the beam at one point, by means of a central upright bolt, and between every pair of auxiliary compression-pieces auxiliary bolts extending from the head of one piece to the foot of another piece, had to be employed. This plan necessitates the use of very heavy bolts, and the roof is not as strong as my roof.

I am also aware that a truss with central bolt, and with inclined compression-pieces extending down from the rafters to the foot of this bolt, and then two auxiliary vertical side bolts and similar auxiliary compression-pieces extending down from the head of said auxiliary bolts to the foot of the main central bolt, has been devised. But in that plan of construction the whole weight is transmitted to one central point on the tie-beam, and, consequently, while great strength and weight in the central bolt are required, the roof is not as strong as mine, for the reason that the larger bolt and auxiliary bolts necessitate the weakening of the beam at the points where they pass through it.

I am also aware that, in trusses where the tensile parts are made of metal, compression-pieces and tension-rods have been combined with the main rafters and tie-beam in such a manner that some of the thrust pieces are con-

nected directly to the rafters and to the tie-beam, and the others to the main rods directly, so as to be sustained thereby. This roof subjects the builder, in a given length of span, to the expense of nine separate rods and four knuckles, while mine only requires five rods and two knuckles. To secure the benefit of three thrust-supports, in a similar roof, on each rafter, as in my modified plan, it would be necessary, under the known construction of the most approved truss, to use thirteen tension-rods and six knuckle-joints, while in my construction, Fig. 2, only two main bolts, or five rods and two knuckles, are necessary.

I also am aware that a truss with a single support for each rafter, combined with two diagonally-crossed bolts, has been proposed; but this plan is not useful for any length of span, and when the span is increased, and it is desired to get the requisite support for the

rafters, it is usual to adopt one or the other of the plans herein referred to, wherein knuckle-joints and tension-rods (nine rods and four knuckles, or thirteen rods and six knuckles) are used, in connection with main and auxiliary compression-pieces.

What I claim as my invention, and desire to secure by Letters Patent, is—

The truss consisting of main rafters B B, tie-beam A, diagonal rods D D', and supporting compression-pieces E E' F F', the whole so constructed that each rafter has two or more supports, while the whole thrust or weight upon the truss is conveyed and supported at two points on the tie-beam, substantially as described.

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Witnesses:

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