

United States Patent Office.

GEORGE H. SELLERS, OF PHOENIXVILLE, PENNSYLVANIA.

Letters Patent No. 77,409, dated April 28, 1868.

IMPROVED WROUGHT-IRON ROOF-TRUSS.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, GEORGE H. SELLERS, of Phoenixville, in the county of Chester, and State of Pennsylvania, have invented certain new and useful Improvements in a Wrought-Iron-Roof Truss; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings making a part of this specification, in which—

Figure 1 represents a side elevation of a portion of a truss made after my general plan.

Figures 2, 3, 4, 5, and 6 represent, on an enlarged scale, details of the truss.

Similar letters of reference, where they occur in the drawings, refer to like parts of truss in all cases.

This invention relates to a wrought-iron roof-truss, wherein the shape and manner of making and putting together of the parts, so as to obtain the greatest strength with the smallest weight of material, and with due regard to the expansion and contraction of the metal, as well as in the cost of the structure, make up the general characteristics of the invention, and constitute its value and importance.

To enable others skilled in the art to make and use my invention, I will proceed to describe the same with reference to the drawings.

The top member of the truss is a bulb-beam, A, which has a greater area of metal in the top flange, *a*, than in the bottom or bulb *b*, thus making it theoretically correct for sustaining vertical strain. The bulb on the bottom allows better facilities for attaching the struts B and tie-rods *c*, without distorting said rods from a straight line, and avoiding transverse strains on the rods, such as occur when I-shaped beams are used for such top members. The struts may be of any of the following forms of cross-section, viz, T, L, +, O, which forms are well known in the trade, and readily rolled.

The skew-back C, the next important element of the truss, is made of two angle-brackets, *d d*, riveted or bolted, as at *e*, on each side of the web *f* of the beam A, and with or without a bottom-plate connecting these angle-pieces together. The skew-back is adapted to any angle the rafter requires, by trimming the corners *g* of the angle-pieces off, to avoid the top flange of the beam.

The tension-rods are made of bars, with enlarged ends, formed by compression in formers or dies of any desired shape that will give a sectional area of bar at the pin or bolt-hole, equal to or greater than any other part of the bar. These bars are without welds, and consequently are free from any risks of workmanship, the upsetting process having increased the density and strength of the metal where operated on.

The manner of uniting the purlines *h* (or lath, as they are commonly called,) to the principal rafters A, is clearly shown in figs. 2 and 3. A notch, *i*, is taken out of the purline *h*, and a notch, *j*, made in the rafter, where they are to be united together, which allows them to interlock one with the other, and thus afford a cheap, simple, and firm connection between them.

Tie-rods *k*, or clamps, may be used to fasten the rafters together, and prevent the purlines from dropping out, but at the same time allowing room for expansion or contraction without the purlines leaving their places.

The advantages of this notched connection between the rafters and the purlines are apparent, as it avoids the use of rivets, bolts, and other contrivances for uniting them. In fig. 5, various forms of purline-irons *h* are shown, and which may be used.

Having thus fully described my invention, what I claim as new in the construction of a wrought-iron roof-truss, is—

1. A bulb-beam, A, or a rafter, having a bulb, *b*, below, instead of a flange, for the purpose of uniting the struts and tie-rods thereto, without deflecting them from a straight line, substantially as described.
2. I also claim securing the purlines to the rafter, by means of notches in each at the points where they meet, and thus make a firm and simple union between them without the use of bolts, or rivets, or other fastenings, and allowing room for expansion or contraction without separating, substantially as described.
3. I also claim a skew-back, made of angle-brackets *d*, bolted or riveted on each side of the web of the beam, as and for the purpose herein described and represented.

GEO. H. SELLERS.

Witnesses:

JOS. MORGAN, Jr.,
HARRY C. FRANCIS.