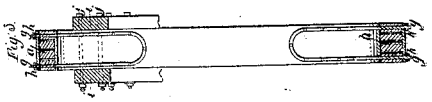
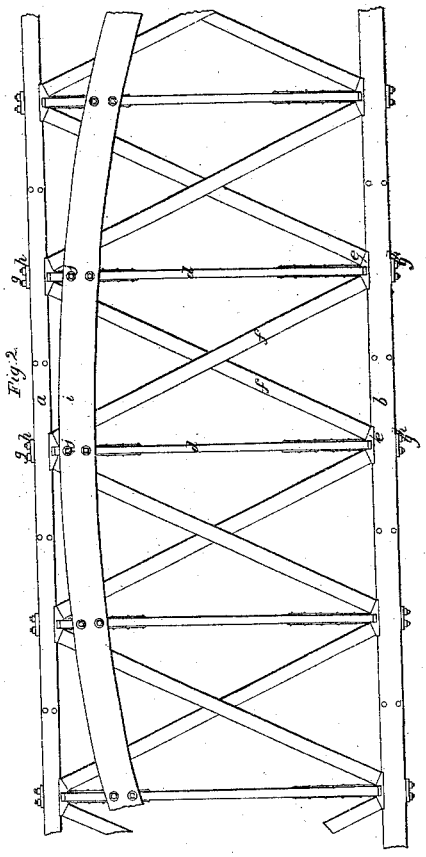
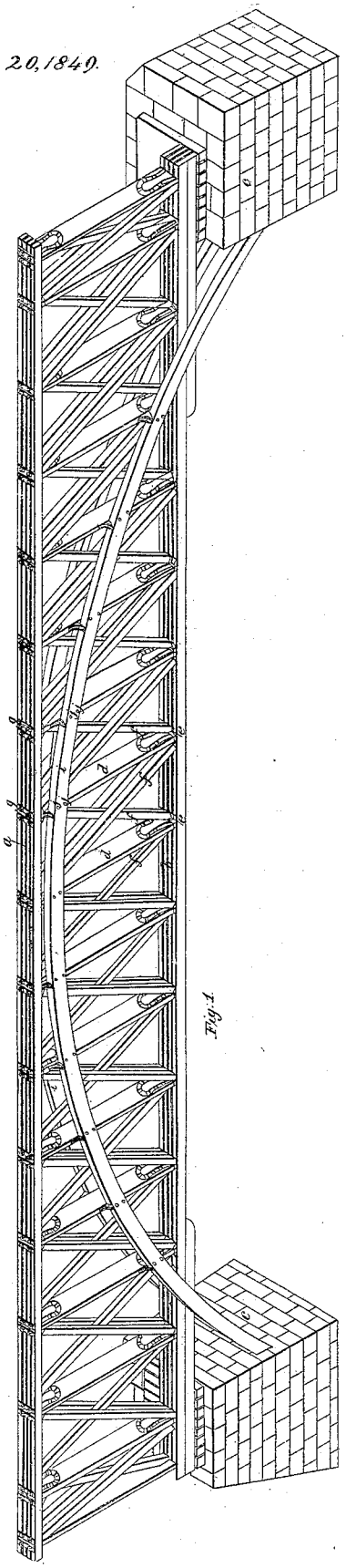
J. D. Steele.
Truss Bridge.

No. 6126.

Patented Feb. 20, 1849.







UNITED STATES PATENT OFFICE.

J. D. STEELE, OF POTTSTOWN, PENNSYLVANIA.

METHOD OF ATTACHING THE ARCH TO THE TRUSS-FRAME IN BRIDGES.

Specification of Letters Patent No. 6,126, dated February 20, 1849.

To all whom it may concern:

Be it known that I, J. DUTTON STEELE, civil engineer, of Pottstown, in the county of Montgomery and State of Pennsylvania, have invented new and useful Improvements in Bridges, and that the following is a full, clear, and exact description of the principle or character which distinguishes them from all other things before known and of the manner of making, constructing, and using the same, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is an isometrical view of one truss on my improved plan; Fig. 2, an elevation; and Fig. 3, a cross vertical section thereof.

The same letters indicate like parts in all the figures.

My invention consists not simply in combining one arch or arches with a truss frame, as this has long been known; but in effecting this combination by securing the arch or arches to the posts alone, when the posts are so connected with the chords as to admit of changing the position of the arch or arches relatively to the chords, and of drawing together the chords to camber the truss without changing the position of the arch or arches, whereby I am enabled to camber the truss and to regulate and distribute the weight and strain equally at pleasure.

In the accompanying drawings (*a*, *b*) represent the upper and lower chords, each consisting of four stringers, more or less, the lower one resting as usual on piers (*c*, *c*), and the two are connected together by means of vertical posts (*d*) at appropriate distances apart. The ends of the posts are let into recesses formed in a series of skew backs (*e*, *e*) on the upper surface of the lower, and on the under surface of the upper chords, and if desired they may be let into the surface of the chords sufficiently to hold them in place. The faces of the skew backs on each side of the posts are beveled to form rests for the ends of the braces and counter braces (*f*, *f*) which incline in opposite directions from post to post, and these bevel faces should be of such inclination as to be at right angles to the inclination of the braces. The posts do not, as usual in truss frames, extend from chord to chord, but when the braces are inserted the length of the posts is such as to admit of raising or lowering them without changing the relative position of the chords, or of drawing together the chords to camber the truss without varying the position of the posts. To form the connection of these short posts with the chords each post is provided with four (more or less) screw rods (*g*) which pass through the skew backs and chords, and are provided with screw nuts (*h*) so that by the turning of these nuts the posts can be either raised or let down, or the chords drawn together. The manner which I have adopted of securing the iron rods to the posts is fully represented in the drawings, and as this makes no part of my invention and is a well known mode of forming such connections it is deemed unnecessary to give a description of it.

The arch pieces (*i*, *i*) one on each side of the truss are then put on and secured by bolts (*j*, *j*) or other means to the outer faces of the posts alone and their extremities made to rest against the piers in any desired manner.

In erecting a bridge on this plan it will be found advisable to be guided by the following instructions, viz: The truss must first be erected provided with suitable cast iron skew backs to receive the braces, and wedging under the counter braces must be avoided by extending the distance between the top skew backs sufficiently to bring the posts on the radii of the curve of camber of the bridge. In screwing up the truss, care must be taken that the posts do not come in contact with the chords, but they must be equi-distant and about six inches from each. When the truss is so finished it must be thrown on its final bearings and it is then ready to receive the arches which should be constructed on the curve of the parabola with ordinates so calculated as to be measured along the central line of the tension posts. When the arches are erected they must be fixed firmly to the tension posts and bottom chords, and should foot on the masonry some feet below the truss, which may be done with safety as the attachment to the posts and chords will relieve the masonry of much of their horizontal thrust. When a bridge so constructed is put into use it will be found as the timber becomes seasoned the weight will be

gradually thrown upon the arches which will ultimately bear an undue portion of the load. To avoid this the camber must be restored and the posts moved up so as to again divide the strain between the truss and arches. This adjustment must take place once or twice in each year until the timber is perfectly seasoned after which in a well constructed bridge but little attention will be required.

It will be obvious from the foregoing that any modification of the truss and arches may be made which will be found to be consistent with the principle of my invention, that is to say, which will admit of connecting the arch with the posts of the truss alone, that the position of the posts may be varied relatively to the chords, and which will admit of cambering the truss without effecting the position of the arch, as neither the construction of the truss or arch make any part of my invention. It will be obvious also that one of the arch pieces may be dispensed with without changing the principle of my invention.

I do not claim as my invention the combination of an arch or arches with a truss frame as this has long since been known; but

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

Combining the arch or arches with the truss frame by attaching it or them to the posts alone (in contradistinction to the diagonal braces,) when the said posts are so connected with the chords as to admit of drawing them together without changing the position of the arch or arches, and of changing (by the same means) the position of the arch or arches relatively to the chords, substantially as described.

J. DUTTON STEELE.

Witnesses:
M. H. JOLLY,
JOHN THOMPSON.