

nuts, from 1 to  $1\frac{1}{4}$  inch thick, the one to form a shoulder to hold the upper end of the diagonals, and the other, on the end to secure it above the cast iron arch.

Fig. 15, Pl. 1, is a vertical longitudinal section, shewing the arrangement at the upper end of the vertical and diagonal pieces. Each diagonal has an eye at the upper end, is bent so as to allow the vertical to pass directly through, and prevented from slipping down by the nut below. For this lower nut, a key, or a solid shoulder may be substituted with advantage. The diagonals should be of round iron about 1 inch diameter, for 72 feet span, and enlarged at the lower end as much as the screw thread cuts away.

LIV. It will be seen that these trusses, having a width of base equal  $\frac{1}{4}$  or more of the height, will support themselves, laterally, without any assistance; wherefore the flooring, including the cross beams, may be entirely of wood, and renewed at pleasure without any disturbance of the iron work.

It is therefore recommended to use wooden cross beams, which may be formed of two pieces, as by slitting the beam vertically, and bolting or pinning the parts together, with the vertical bolt passing through the ends.— In this manner they may be put on after the trusses are put together. Between each two cross bearers, and between the endmost ones and the abutments, should be a pair of diagonal braces, (2 to 3 inches thick by 6 to 10 inches wide,) to prevent lateral swinging of the road way.

Upon the cross beams, longitudinal joists are placed to support the floor plank, a thing so simple, and so generally understood, that further description is unnecessary in this place.

More or less casings and finishings of wood work outside of the road way may be added, according to circumstances, or the taste of the builder.

In my 72 feet canal bridge, the height of truss is 9 feet. But the cord chains and road way have a cambre of 1 foot