7. Another devise for the connections of diagonals at the arch, is to replace the bent eye of the diagonal by a straight end with screw and nut, and to have oblique holes cast in the ends of arch pieces for diagonals to pass through, on each side of the upright. [See Fig. 30B]. The diagonals may be single, or in pairs. The latter plan is preferable, as giving a better balanced action; especially in case of rail road bridges, which are subject to greater action upon diagonals. This plan obviates a degree of lateral strain upon uprights, resulting from the eye connection. In this case, the upright should have a shoulder bearing on the under side of arch castings, to sustain the thrust action.

CIV. It will be seen that these trusses, having a width of base equal to about one-fourth of the height, will support themselves laterally, without any assistance from one another, or from other parts of the structure, wherefore the flooring, including cross beams, may be entirely of wood, and may be renewed at pleasure, without any disturbance of the iron work; a property peculiar to this kind of truss.

The original design, therefore, was to use wooden cross-beams, formed in two pieces, as by splitting an ordinary beam vertically, bolting the parts together, and boring at the ends for the uprights, so that they may be conveniently put in and removed whenever they require renewal. Diagonal braces of wood, or what is much better, tie rods of iron with an eye at each end,