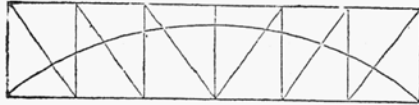


ually stiffen it, and prevent that injurious vibration to which reference has been made.

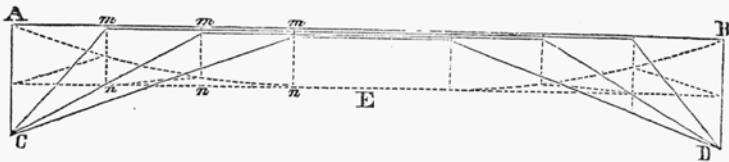
FIG. 94.



A still lighter truss could be formed by using diagonal ties instead of counter-braces. The vertical pieces would then be in a state of compression, and could be simply notched on the chords without passing through, as is necessary when the strain upon them is one of extension. This arrangement would suit for a bridge when the roadway is on the top chord.

Where the roadway is on the bottom chord, the ties should be iron rods and the counter-braces of wood.

FIG. 95.



A system of construction applicable to spans of considerable extent, consists of arch-braces counter-braced by a single inverted arch, $A E B$. The arch is attached by iron rods passing through the straining-beams with nuts on the top. The nuts being at the top of the truss would be at all times accessible, the strain could be regulated at pleasure. The long braces at the ends would require intermediate supports.

Instead of the inverted arch, an ordinary counter-braced truss consisting of chords, ties, and counter-braces, without braces, could be used.

Trussed girder bridges which consist of two or more longitudinal timbers, strengthened by iron rods passing beneath them and adjustable by screws, are strong, cheap, and when properly constructed and proportioned, are very efficient. As