

only so far as the stiffness requires, but a counter brace is placed in every panel to take a bearing in screwing up the main ties.

The most novel detail of this truss is the top angle block ; this is of cast-iron and formed of three forms of castings.* The respective parts are: *First*, the angle-block proper or brace-bearing, which is placed below the chord, and receives the ends of the braces in the central panels of the four largest spans; this is cast with extended ends, to form a connection with the sub-chord. *Second*, the keys, which pass through the chord in much the same manner as ordinary packing blocks ; they are cast hollow, in as many parts as there are spaces between the chord timbers, and with side plates to receive the ends of the timbers whenever a joint is broken. *Third*, the washer plates, which rest on the top of the chord and carry the nuts of the ties ; the plates for the main and counter ties are cast separate. The brace-bearings are cast with flanges extending their whole length, which fit into grooves cut in the chords, and bear against the cast-iron keys; the ties pass through the hollow keys, nowhere coming in contact with the wood of the chords. As the ties take hold of the washer-plates above, and the braces rest against the bearing below, both of which bear upon the keys, the strain is distributed, from the first, through the whole section of chord, instead of being thrown entirely upon one edge, as is usual in wooden bridges. The keys also serve to throw the vertical component of the strain in the ties, directly upon the braces, without the intervention of the soft wooden chord.

The lower angle-block, or brace-bearing, is cast in a single piece, having a series of webs on the under side through which the pin passes.

The top laterals are of the pattern commonly used with the Howe truss, except that the bearing of the half struts is taken by small castings placed around the centre of the long strut, instead of being thrown directly upon the wood. The bottom laterals have cross struts and diagonal ties, each strut extending from the foot of a post to the opposite point on the chord-link of the other truss ; the ties connect at one side with an eye-plate which fits over the chord-pin, and at the other with bent rods attached by nuts and a casting to

* These details are shown on Plate X., which contains also the general plans of the 248 foot span. Plate IX. contains a general elevation of the bridge, and some plans of the 176 foot span.