are attached by bolts that pass through the two connecting-plates and the web of the I-beam. The connection at the upper ends of the vibration rod may be similar, if the width of the T connecting-plate be great enough to permit of the passage of a bolt.

At the intermediate strut connection, there should be enough rivets used in respect to bending and bearing to transfer the calculated stress upon the strut to the connecting-plates.

If there be but one portal strut at each end of the span, it may be connected to the batter brace by two large bolts passing through a jaw plate, as shown in Fig. 11, Plate II. These bolts may have square heads placed so near the sides of the jaw that they cannot turn, the nut having to be screwed up on the inside of the batter brace. But, if there be two portal struts at each end of the span, the channels are to be turned around ninety degrees, and brought nearer together; so that it will be better to use exterior bent plates attached to the flanges of the channels, as shown on Plates IV. and VI., in addition to a single large bolt through the jaw.

Concerning the best method of connecting the lower lateral rods, there is much diversity of opinion; although, in ninety-nine cases out of a hundred, they are attached to the floor beams, which are thus made to act as struts for the wind pressure. Some bridge designers put bent eyes on the lateral rods, and run bolts through the web, usually near the middle, which is very objectionable, for two reasons: First, the laterals take hold of the weakest part of the beam; and second, being attached at such a distance from the pins, they permit of too much vibration. Another detail is to rivet two 4 by 6 inch angles to the web, and drop a pin through the six-inch legs: this is a little better detail, but the same objections apply here. Another is to let the rods pass through the webs, and through rods and plates bent so that one face is perpendicular to the direction of the lateral rod, another face parallel to it, and the other two end faces parallel to the web of the beam, to which they are riveted. The same objections apply to this, together with two which are still more important; viz., that, as at each connection there are two such plates and two lateral rods from adjacent panels crossing each