

the diagonals to pass through. For this purpose, and to give them the stiffness their great length renders necessary, without too great an expenditure of materials, they may be formed, when of considerable length, as shewn in Fig. 24, Pl. 4.

The middle or cast iron portion is in two, or may be in 4 pieces, and connected and stiffened by the 4 small bent wrought iron bolts *b.b.* &c., (two only appearing in each view,) passing through flanges formed for that purpose, and strained out in the middle by a plate as seen at *a*, interposed between the two cast iron parts forming the main body of the vertical. The castings may be tubular, or of a \times formed section; if very long, the tubular form will be preferable.

The Cancelled Truss without vertical Struts.

(See Fig. A, p. 14.)

LXI. This truss may be constructed of iron, with cast iron cylinders and horizontal chains, the same as when the vertical strut is used, and the description relating to those parts need not be here repeated.

The verticals *ob* and *ig*, and the two diagonals *oc* and *if*, (the track being along *ah*,) should be wrought iron, and so connected as to act by tension only. Of the other diagonals, those which act mainly by thrust, may be formed of cast and wrought iron as shewn in Fig. 25, Pl. 5. *ab* is a view as it would appear when looking lengthwise of the truss, and *cd*, when taking a side view. It has a cast iron portion with a H formed section, a hole in the centre for the other diagonal, *ef*, to pass through, and 4 wrought iron rods, each running from the centre (where they receive the diagonal *ef* through an eye or loop made for that purpose,) to the end; i. e., two to each end. Those terminating at the upper end *b* or *d*, have an eye to receive the transverse pin connecting the diagonals with the cylinders. Those terminating at the lower end, pass through the chain pin, and are secured by screw nuts.