Trusses without Uprights.

It will be seen, upon a general view of the action of the different parts of a truss with parallel chords, that the diagonals, (and verticals when used,) form media through which weight acting upon the truss, is reflected back and forth between the upper and lower chords, until it comes finally to bear upon the abutment. A weight applied at one of the nodes of the lower chord, of course, can not be sustained by the tension of that chord, which acts only in a horizontal direction, but is suspended by a tension piece, whether oblique or vertical, from a node in the upper chord. But the upper chord, acting also horizontally, can not sustain the weight. Consequently, a thrust piece, either oblique or vertical, must meet the force at that point, to prevent the weight from pulling down the upper chord, and destroying the structure.

Hence we see, that in all the cases we have considered, of trusses with parallel chords, the weight, whether applied at the upper or lower chord, acts alternately upon thrust and tension pieces extending directly or obliquely from chord to chord.

With reference to Fig. 39, we have regarded the weight as transferred from tension diagonals to thrust uprights, and the contrary. But if we conceive the verticals to be removed, except the endmost, we have only to insert a thrust brace from the abutment to the second node, (or the first from