Strain in counter-braces, one post unloaded. In this case, as the dead load is unchangeable, we are concerned with the live load alone, or 2000 lbs. per ft. = 30,000 lbs. per panel. The reaction of the left abutment from this (supposing the post to the right is unloaded) is 20,000 lbs., and of the right abutment 10,000 lbs.

$$\left.\begin{array}{l}\text{Horizontal strain from left diagonal, } \frac{20{,}000 \times 15}{5} = 60\,000 \\ \text{Horizontal strain from right diagonal, } \frac{10{,}000 \times 15}{5} = 30{,}000\end{array}\right\} \text{diff. } 30\,000.$$

This difference being horizontal difference, for conversion into longitudinal strain on the counters, it is to be multiplied as before by $\frac{15.81}{15}$, which gives 31,620 lbs. as tension on the counters; or by applying the formula, the strain is at once given—

$$\frac{l^2\, w}{27 \times h} \times \sqrt{\frac{\frac{1}{8}\, l^2 + h^2}{\frac{1}{8} l}} = \frac{45^2 \times 2000}{27 \times 5} \times \frac{15\,81}{15} = 30{,}000 \times 1.054 =$$

31,620, as before.

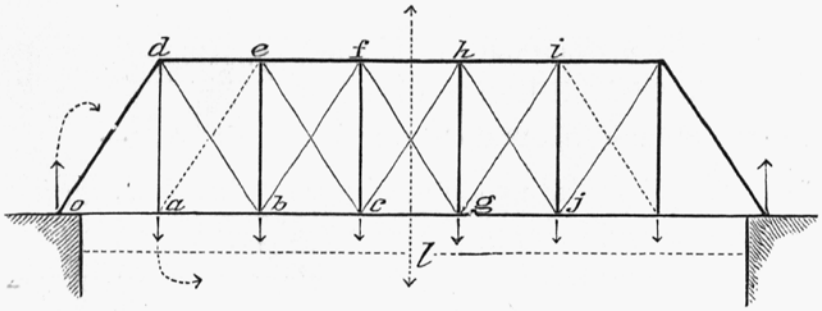

FIG. 46.

THE WHIPPLE TRUSS (Fig. 46).—By extending the Queen Post so as to embrace additional panels, the