suspension. (The curve A C B represents the centre span, and B C either of the land spans).

G denotes the centre of gravity of the part B C.

The tangents B I and C I will intersect at I on a vertical line drawn through the point G.

Denote by T the tension at B; by K the tension at C; and by p the weight of the portion B C.

Because the three forces p, T and K are in equilibrium about the point I, we have

$$p : K :: B H : H I$$
$$p : T :: B H : B I$$

Whence

$$K = p. \frac{H I}{B H},$$

$$T = p. \frac{B I}{B H},$$

Denote the versed sine by f, and where this does not exceed 0.07 of the span A B, the space H I may be without sensible error regarded as half the semi-span B D, which denote by l, and we have:

$$B I = \sqrt{B H^2 + I H^2} = \sqrt{f^2 + \frac{l^2}{4}}$$

Substituting these quantities in the above equations, we have

$$K = \frac{p\, l}{2\, f}$$ or the horizontal tension or thrust.

$$T = \frac{p.}{f}\sqrt{f^2 + \frac{l^2}{4}} = p\sqrt{1 + \frac{l^2}{4\, f^2}}$$ or the tension at the points of suspension, which being determined, proportion the cables accordingly.