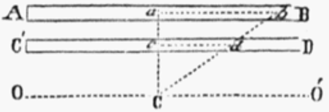
represent the strain at o and the whole resistance of the chord will be represented by the area of the trapezoid $C\,n\,n'\,o$ multiplied by the distance of the centre of gravity from s.

The centre of gravity will always fall nearly in the middle of $C\,o$. Even when $C\,o = o\,s$, the error will be only $\frac{1}{18}$ of $C\,o$, by considering it in the centre, and in ordinary cases it will not be $\frac{1}{50}$. The error is, moreover, in favor of stability.

We may therefore, in practice, consider the centre of gravity as falling in the middle of $C\,o$, and the leverage will be the distance from this point to s. The average strain upon the joint is represented by $a\,b$, and is determined from the proportion $s\,c : s\,a :: R : a\,b = R\,\frac{s\,a}{s\,c}$. R representing the maximum strain that it is considered safe to allow.

Sometimes two or more chords are used at different distances from the neutral axis.

Fig. 62.



Let $A\,B$ and $C\,D$ represent two chords, at distances $a\,C$ and $c\,C$ from the neutral axis $o\,o'$. Draw $a\,b$, to represent the maximum strain proper to allow at the centre of the upper chord, and join $b\,c$, $c\,d$ will then represent the strain upon the second chord, which accordingly opposes much less resistance than the first.

As this case often occurs, particularly in the construction of ordinary lattice bridges, it may be satisfactory to give the equation of moments. Let R = strain per square inch, at the distance $a\,c$, a = area in inches of the section of each of the four chords, $d = a\,c$, $c = c\,C$. Then $R\,\frac{c}{d} = C\,d$ = strain per square inch on second chord. $a\,R \times d$ = moment of first chord. $a\,R\,\frac{c}{d} \times c$ = moment of second chord.