to and equal to $v\,t$ by construction; therefore the triangle $n\,s\,L$ is equal to the triangle $v\,t\,A$, and $L\,s$ is equal to $A\,t$ in amount and direction.

But $$\frac{A\,t}{A\,L} = \frac{O\,G}{O\,L}, \quad \text{or,} \quad A\,t = A\,L \times \frac{OG}{O\,L}.$$

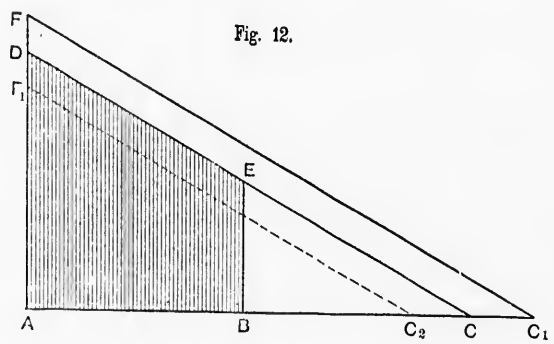
In other words, when the centrifugal force acting at G is represented by the radius $A\,G$, that acting at L may be represented by the radius $A\,L$, multiplied by a fraction which is the ratio of the weight G, which would be supported at L, provided the link were to rest in a horizontal position on two supports at L and O; which was to be proved.

If the centre of gravity of the link were at its centre, as is common, then it would be exactly right to consider one-half the link concentrated at L.

7. *Frictional effect of valve.*

In Fig. 12 let $A\,C$ represent the maximum tension of spring and $B\,C$ the tension to inner position of weight-arm. Let $A\,D$

Fig. 12.



and $B\,E$ represent the spring force corresponding to positions A and B of weight-arm. Assuming perfect isochronism between weight and spring, then $A\,D$ and $B\,E$ also represent the balanced centrifugal force, and this force for any intermediate position of weight-arm is the corresponding height from the line $A\,B$ to the line $D\,E$. Up to this time we have neglected the effect of valve-gear friction.

Supposing this effect to be a constant force acting in the same direction as the centrifugal force of the weight, then it may be