

Consider the member FE. The Dead Load places this member in Tension 1,750 pounds. The Live Load as it moves to joint (2) is seen to destroy 1,250 pounds of this Tension. Reaching joint (3), the Live Load not only destroys the existing Dead Load Tension, but is seen to place FE in Compression 750 pounds. **However, a Tension member due to its slender proportions cannot take up Compression without "buckling."** This being the case, provision must be made for this 750 pounds Compression, which would otherwise "buckle" FE.

The Counterbrace.

Let Fig. 148 represent the panel in which the member FE lies. In this diagram, the line joining A and B represents the member FE.

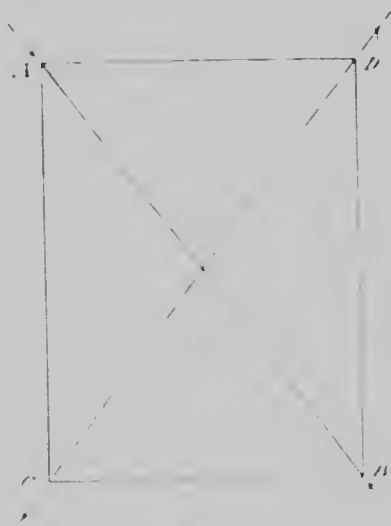


Fig. 148.

It has just been shown that when the Live Load reaches joint (3) (Fig. 141), the member FE would be subjected to 750 pounds Compression. This being the case, the condition of affairs may be represented by a pair of equal forces, one acting at each extremity of FE at A and B as indicated in Fig. 148, these two forces tending to place FE in Compression.

Now, since FE cannot withstand Compression, the joints A and B will tend to move inward under the forces indicated. But when the joints A and B move inward,