the proportion of 20·3 to 17·8. The pressure at the skew-back will, therefore, be per square inch

$$4644 \times \frac{7.50}{6.32} \times \frac{17.8}{20.3} = 4832 \text{ pounds.}$$

*Strain upon the Counter-Braces.*

(See figure used in calculating Susquehanna Bridge.)

The greatest variable load on one half the bridge is 60,000 pounds.

We will have in this case $B C = 15$ feet.

$$C G = \frac{3}{4} \times 8.75 = 6.50 \text{ "}$$

$$A G = \sqrt{45^2 + 6.56^2} = 45.5 \text{ "}$$

$$G D = 11.4 \text{ "}$$

$$f G = 4.9 \text{ "}$$

$$G B = 9.8 \text{ "}$$

Resultant in the direction $G A = \frac{60000 \times 11.4}{6.56} = 104270$,

and $\frac{104270 \times 9.8}{22.5} = 50000$ nearly = maximum limit of the upward pressure upon the arch.

The strain per square inch upon the counter-brace rods of one panel resulting from the pressure will be 10,000 pounds nearly.

**Third Hypothesis.**

Calculation of the strain, on the supposition that both systems act as one. As the arch thrusts against a skew-back placed upon and between the bottom chords, it is important to inquire whether the whole strain is sustained by the lower chord, or whether any assistance is derived from the masonry itself.

Where the roadway of a bridge is placed upon the bottom chord, the chords generally rest upon the tops of the abutments, and if the arch is attached to the chord, as in the plan now under consideration, it is evident that the latter must bear the