upon the pin, at a leverage of 1 inch, the inch being our unit of length.

We found the pull of \( ab = 29.25w'' \), or \( 14.625w'' \) at each end of the pin, which multiplied by distance from centre (13.5") gives a moment = 197.4375\( w'' \), while for \( bc \), the moment is \( \frac{1}{2} \times 22.75 \times 12'' = 136.50w'' \); and the difference = 60.9375\( w'' \) = stress in centre of pin, upon a leverage of 1".

Assigning such a value to \( w'' \) as will give the assumed stress of 15,000lbs. to the inch upon \( ab \) with the truss fully loaded, with a bearing at \( a \), of 21\( w'' \) for movable, and \( 7w'' ( = 3w') \), of weight of structure, we find a stress of \( 28 \times 2\frac{1}{2} ( = 63)w'' = 8 \times 15,0000 \text{lbs.} = 120,000 \text{lbs}; \)
whence \( w'' = 1,905 \text{lbs.} \) which, being substituted in the above amount of 60.9375\( w'' \) gives the stress in pounds at the centre of the pin, on a leverage of 1", equal to 116,986lbs.

We have seen [xcvii] that the resisting power of a projecting pin equals \( 4,500 \frac{AD}{L}, \) which in this case, equals \( 4,500 \frac{AD}{L} (L \text{ being } 1), \) equal to \( 4,500 \times .7854x^{3}. \) Then, making this expression = 116,088lbs. we have \( x = 3.2'' \); being 0.26" larger than is required to withstand the action of chord alone, at its maximum stress, as already shown [cxvil].

By similar process we find very nearly the same results with respect to the shorter pins toward the centre of the truss. For, although the maximum action of diagonals takes place under greater stress upon chords, the difference is balanced by diminution in length of pins toward the centre of the truss.

Should this mode of connection be adopted, the preceding illustrations and examples, it is hoped, will enable the proper proportions of connecting pins to be determined for trusses of whatever dimensions.