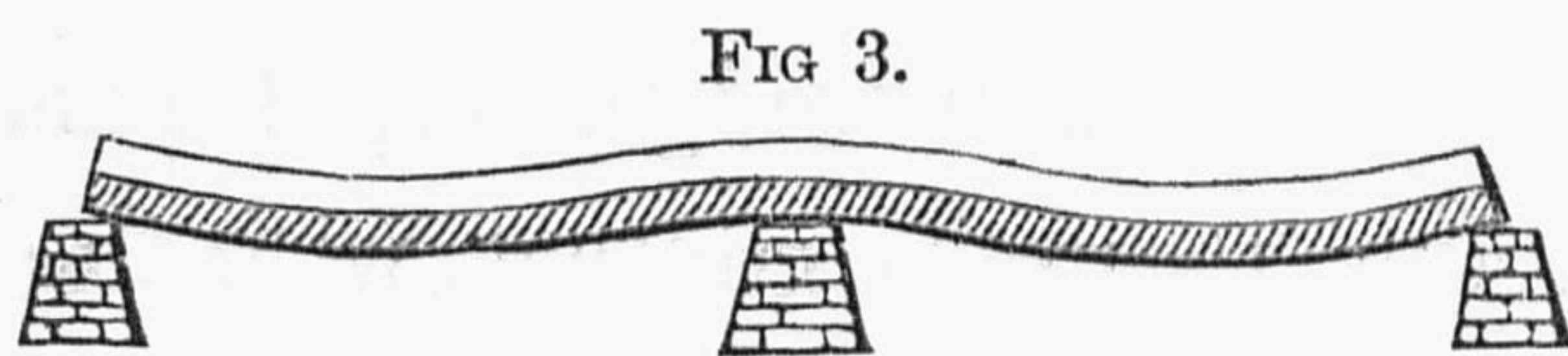


the strains due to the weight of the live load alone, the latter component strains being simply those caused by a load of the given intensity on an isolated span 182 feet long, and being tensile strains in the lower chord and compressive in the upper. The moment of flexure at the centre of the arm, due to the moving load only, is :—

$$\frac{182^2 \times 1120}{8} = 4,637,360 \text{ pounds.}$$

and the moments throughout the arm will be proportional to the internal ordinates of a parabola.* The resulting moments, the effect of the dead and live load combined, being at each point equal to the algebraic sum of the two moments already considered, are negative at the centre of the draw, decreasing in intensity, and finally becoming positive as they approach the end of the loaded arm.†

As the train advances upon the second arm, this arm will begin to deflect until it takes a bearing upon the wedges, while the strain over the pivot, which has hitherto remained unchanged, begins to increase. After an end bearing has been taken upon the wedges the second arm will continue to deflect at intermediate points until the entire draw is loaded, when the deflection of the two arms becomes symmetrical, and the distortions of the beam resemble those shown in Fig. 3. The strain



over the pivot does not attain its greatest intensity until both spans are fully loaded ; it is then equal to the sum of the effects due to the dead load, which is carried wholly by the pivot pier, plus the effects of the live load, which is distributed according to the laws which govern a continuous beam resting on three supports. The moment due to the moving load, is at the centre the negative of that at the centre of one arm when loaded alone, being equal to

$$- 4,637,360 \text{ pounds.}‡$$

this added to the moment due to the dead load gives for the maximum moment at the centre

$$- 20,536,880 \text{ pounds.}$$

* Shown on the diagram in a dotted line

† The curve of these moments is given on the diagram in a broken line — — — — —

‡ The curve of these moments is shown on the diagram in a broken line — . . . — . . . — . . . — . . .