

New Meccano Model

Vertical Steam Engine and Dynamo

OUR new model this month is a neat reproduction of an electric generating unit, consisting of a vertical steam engine coupled to a dynamo.

The base of the unit consists of two $18\frac{1}{2}$ " Angle Girders, which are joined at one end by a $9\frac{1}{2}$ " Angle Girder 1, and at the other end by two $9\frac{1}{2}$ " Angle Girders 2 and 3. The Girders 2 and 3 are attached to $4\frac{1}{2}$ " Angle Girders bolted to the sides, and the space between these Girders is filled in by two $9\frac{1}{2}" \times 2\frac{1}{2}"$ Strip Plates. The engine bed is made by bolting a $9\frac{1}{2}" \times 2\frac{1}{2}"$ Strip Plate vertically to each of the $18\frac{1}{2}"$ Angle Girders. The Strip Plates are braced along their upper edges by $9\frac{1}{2}"$ Angle Girders, and at each end by a vertical $2\frac{1}{2}"$ Angle Girder. The sides of the engine bed are connected by a $9\frac{1}{2}"$ Angle Girder at each end.

Supports for the crankshaft bearings are provided by five $9\frac{1}{2}"$ Angle Girders. Two of these Girders are arranged to form a central T-section girder 4, and the others as shown at 5, 6 and 7.

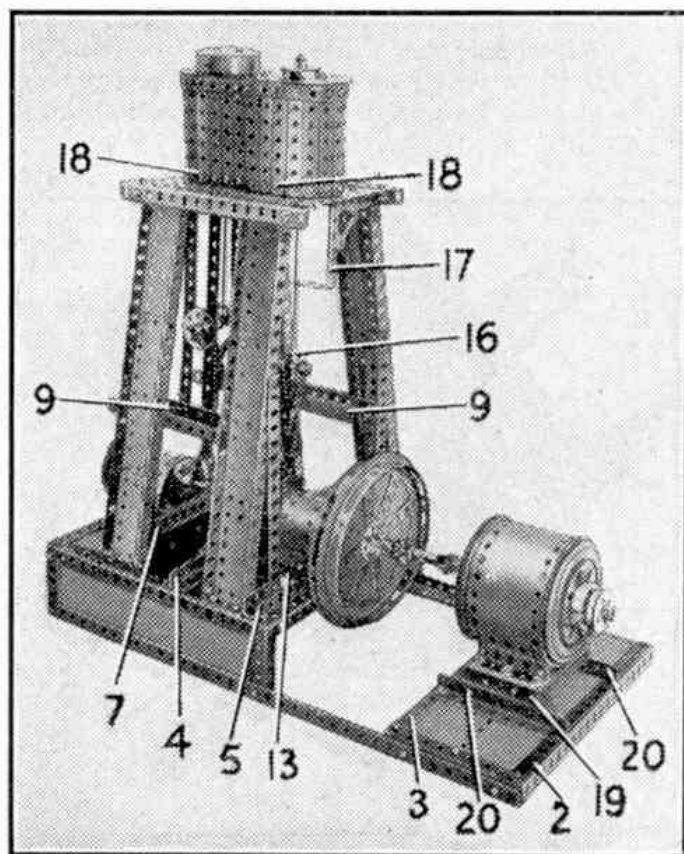


Fig. 1. A model of a vertical steam engine coupled to a dynamo that is interesting to construct and operate.

Each of the columns consists of two $12\frac{1}{2}"$ Angle Girders joined by $5\frac{1}{2}" \times 2\frac{1}{2}"$ Flexible Plates, and is attached to the platform at its upper end by a Corner Angle Bracket. The columns are braced by vertical $7\frac{1}{2}"$ Angle Girders 8. The platform consists of two $5\frac{1}{2}" \times 3\frac{1}{2}"$ Flat Plates edged by $7\frac{1}{2}"$ Angle Girders.

The slide bars for the crosshead are $7\frac{1}{2}"$ Strips extended by Fishplates, and they are attached at their upper ends to $5\frac{1}{2}"$ Angle Girders bolted underneath the platform. The Fishplates at the lower ends of the $7\frac{1}{2}"$ Strips are attached by $\frac{1}{2}"$ Bolts to $7\frac{1}{2}"$ Angle Girders 9. The slide bars are spaced from these Girders by ten $1\frac{1}{2}"$ Strips on each side, and the Girders are connected by $7\frac{1}{2}"$ Flat Girders to further $7\frac{1}{2}"$ Angle Girders that are bolted to Girders 8. The crosshead is a $3\frac{1}{2}"$ Rod fitted at each end with a Bush Wheel 10 and a Wheel Disc 11, placed one on each side of the slide bars. The $3\frac{1}{2}"$ Rod carries at its centre a large Fork Piece 12 held in position by Collars, and the piston rod is fixed in the Fork Piece. The connecting rod is formed by two $5\frac{1}{2}"$ and two $2\frac{1}{2}"$ Strips, which are shaped as shown and pivoted on $\frac{1}{2}"$ Bolts screwed into the boss of the Fork Piece. A Collar and a Washer are placed on each Bolt.

The crankshaft is carried in three bearings. The centre bearing consists of a Semi-Circular Plate attached to two $2\frac{1}{2}"$ Flat Girders that are bolted to Girders 4. Four Wheel Discs are fixed to each side of the Semi-Circular Plate to increase the bearing surface. The other two bearings are identical, and each consists of two Semi-Circular Plates fitted with four Wheel Discs. The Semi-Circular Plates are bolted to $2\frac{1}{2}"$ Angle Girders that are connected together by further $2\frac{1}{2}"$ Angle Girders bolted to the Girders 13. A cover plate consisting of a $5\frac{1}{2}" \times 1\frac{1}{2}"$ Flexible Plate is also bolted to Girders 13.

The crankshaft is in two sections, and consists of a $3\frac{1}{2}"$ Rod 14 and a $6\frac{1}{2}"$ Rod 15. The inner ends of these Rods are fitted with Cranks, and further Cranks bolted to them are connected by a 2" Rod. The connecting rod pivots about the 2" Rod. A Triple Throw Eccentric is fixed on the $6\frac{1}{2}"$