

# 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.

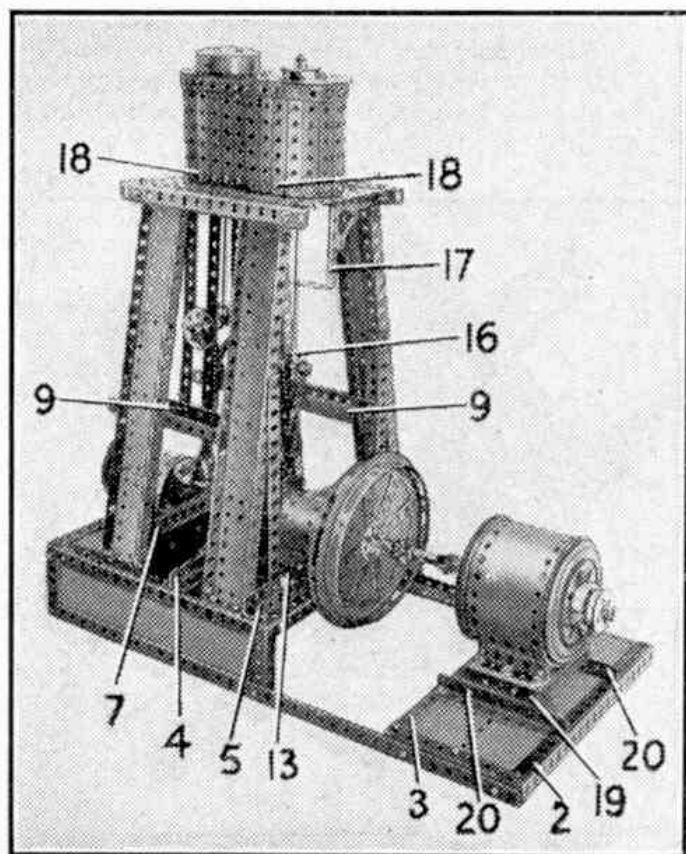


Fig. 1. A model of a vertical steam engine coupled to a dynamo that is interesting to construct and operate.

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  $6\frac{1}{2}"$