New Meccano Models

Motor Cycle and Metal Sawing Machine

ONE of our new models this month is a motor cycle, which is based on a somewhat similar model that won for Bryan Hoyle, Deepcar, near Sheffield, a prize in an "*M.M.*" model-building competition. This model is shown in Figs. 1 and 2. The petrol tank is represented by a $5\frac{1}{2}'' \times 1\frac{1}{2}''$ Flexible Plate 1 bent to a U-shape and attached to a $1\frac{1}{2}'' \times \frac{1}{2}''$ Double Angle Strip 3. A $1\frac{1}{2}''$ and a 2" Strip, together with a 1" Triangular Plate, form the sides of the petrol tank, which are attached to the Double Angle Strip 3.

The saddle consists of three Flat Trunnions attached to a Sleeve Piece, and two chimney adaptors form the tool box. Saddle springs are represented by Washers on $\frac{1}{2}''$ Bolts, which are held to a Double Angle Strip 4. Two $2\frac{1}{2}''$ Strips 5 are attached to the Double Angle Strip 4 and a second pair are bolted to them to represent the back stays. A Flat Trunnion and a $1\frac{1}{2}''$ Strip bolted to the Strips 5 form the frame of the motor cycle. A 3" Strip 7 bolted to a $2\frac{1}{2}'' \times 1\frac{1}{2}''$ Flexible Plate at one end and held under the Double Bracket 11 completes the construction of the frame.

The engine cylinder consists of Fishplates locked to two Screwed Rods by nuts, and one end of it is supported in the Flexible Plate 1 that forms the petrol tank. The other ends of the Screwed Rods are held by nuts in a $1\frac{1}{2}''$ Strip 2; two $1\frac{1}{8}''$ Bolts hold the Fishplates at their other end to a Double Angle Strip 6. Two Wheel Discs representing the engine casing are bolted to the Double Angle Strip 6. A 2" Rod mounted in the Discs carries a $\frac{3}{4}''$ Sprocket 10. A $2\frac{1}{2}'' \times 1\frac{1}{2}''$ Flexible Plate forms the base of the engine casing. This is fixed at both ends to Double Angle Strips, which are attached to the Wheel Discs and Strips 5.

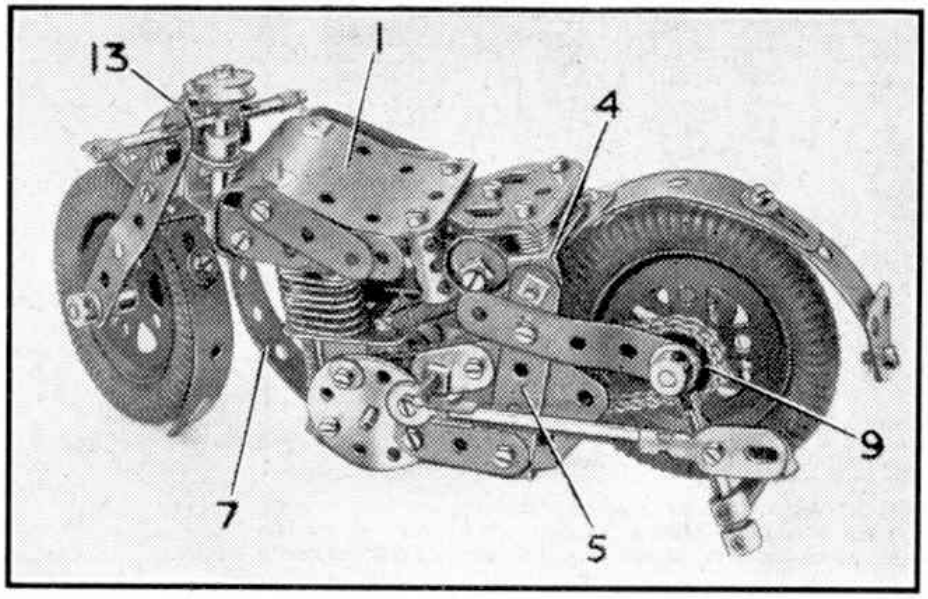

Fig. 1. A realistic motor cycle built entirely from Meccano parts.

The model is fitted with twin exhaust pipes, each of which is made by attaching a Rod and Strip Connector to the Wheel Discs as shown. The Rod and Strip Connector is then fitted with a $2\frac{1}{2}''$ Rod, which carries at its other end a second Rod and Strip Connector. Two Fishplates bolted to it form the mouth of the exhaust pipe. The kick-starter is a Threaded Pin locked on a Fishplate attached to the Flat Trunnion 8.

The carburetter, represented by Couplings, is attached to the rear of the petrol tank by $\frac{3}{8}''$ Bolts. Two $3\frac{1}{2}''$ Strips represent the front fork and they support a $1\frac{1}{2}''$ Rod that carries also a 2" Pulley fitted with a Motor Tyre. The Rod is held in place by Collars. The top of the fork is fitted with five Double Brackets as shown. The first Bracket holds in place the mudguard which is made by bolting two Formed Slotted Strips together. A $\frac{1}{2}''$ loose Pulley represents the headlight, and two further Double Brackets bolted to the fork with the Bracket 12 form the steering head. The fifth Bracket has an Obtuse Angle Bracket attached to it and a $\frac{1}{2}''$ loose Pulley represents the speedometer.

A 2" Rod forming the handlebar is journalled through the fork head and the Bracket 13 and is held in place by Spring Clips; a Cord Anchoring Spring represents the throttle. The rear mudguard is made from two Formed Slotted Strips bolted together. It is attached to the Double Angle Strip 4, forming the saddle support, by an Obtuse Angle Bracket. A 1" Triangular Plate represents the number plate and is bolted to the Formed Slotted Strips.

The rear wheel is driven by

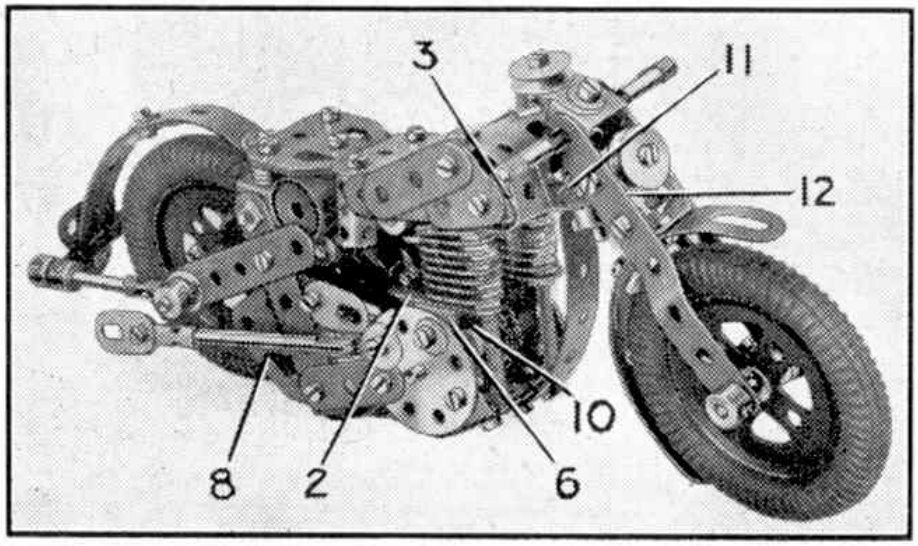

Fig. 2. The motor cycle seen from the "off" side.

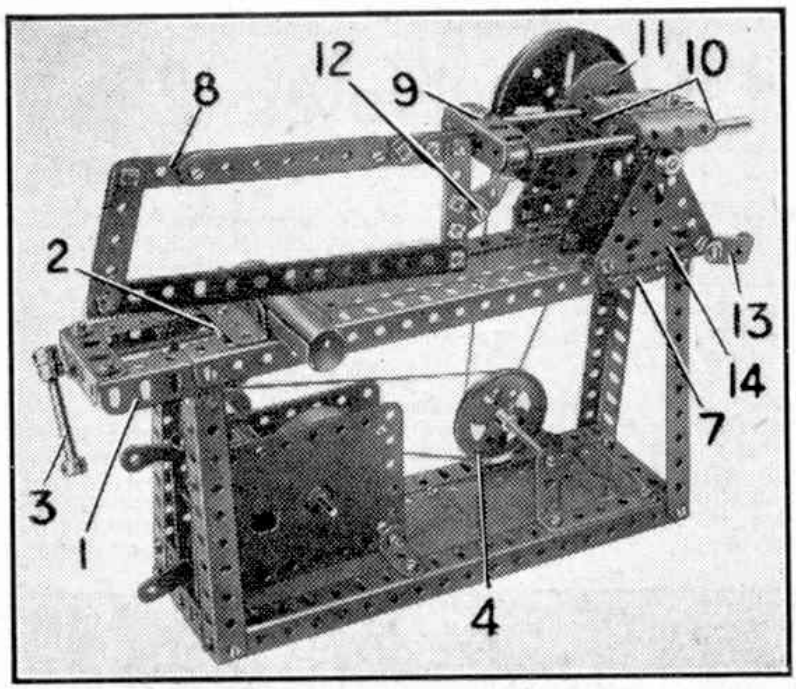

Fig. 3. A mechanical metal sawing machine driven by a No. 1 Clockwork Motor.

Sprocket Chain passed around a ¾" Sprocket 9 on the same axle and the ¾" Sprocket 10. The stand for the cycle consists of two Rod and Strip Connectors placed on each end of the axle, and each fitted with a 1" Rod that carries also two Collars. A Tension Spring is attached between one pair of Collars as shown.

Parts required to build model Motor Cycle: 2 of No. 3; 1 of No. 4; 4 of No. 5; 2 of No. 6; 6 of No. 6a; 22 of No. 10; 6 of No. 11; 2 of No. 12c; 3 of No. 16a; 2 of No. 17; 6 of No. 18a; 2 of No. 20a; 2 of No. 23; 2 of No. 24a; 2 of No. 35; 42 of No. 37; 32 of No. 37a; 18 of No. 38; 2 of No. 43; 5 of No. 48; 13 of No. 59; 4 of No. 63; 3 of No. 77; 3 of No. 80c; 1 of No. 94; 2 of No. 96a, 2 of No. 111a; 6 of No. 111c; 2 of No. 111d; 1 of No. 115; 5 of No. 126a; 2 of No. 142a; 1 of No. 163; 2 of No. 164; 2 of No. 176; 1 of No. 188; 1 of No. 189; 6 of No. 212; 4 of No. 215.

The model shown in Figs. 3 and 4 is a type of metal sawing machine used in raw material stores, tool rooms and machine shops for cutting through bar and strip metal. There are several types of these machines, and we have chosen one of the most popular as the basis for our model.

The base of the model consists of two 9½" Angle Girders, joined by two 3" Girders. The space between them is filled with two 5½" × 2½" Flexible Plates, and 5½" Angle Girders that form the table supports are bolted at each end. These are joined at the top by two 9½" Angle Girders, which are extended by 2½" Girders 1. The ends are connected by 2" Angle Girders. The table is formed by a 5½" × 1½" Flexible Plate.

The vice jaws are two 2" Angle Girders, one of which is bolted to the table. The other Angle Girder is attached to a Threaded Boss 2 carried on a 5" Screwed Rod. This Rod is mounted in an Angle Bracket bolted to the fixed 2" Angle Girder of the vice, and in the 2" Angle Girder at the end of the table. A 2" Rod 3 forms the handle, and is held loosely in a Collar locked on the end of the Screwed Rod.

A No. 1 Clockwork Motor is bolted in the position shown and fixed to the base and table supports by 1" × 1" and 1" × ½" Angle Brackets. A 1" Pulley Wheel on the Motor shaft is connected by a 10" Driving Band to a 2" Pulley 4, which is locked on a 2½" Rod mounted in two Flanged Brackets. This Rod carries also a 1" Pulley 5, from which the drive is taken to a 3" Pulley on a 3½" Rod 6. Bearings for this Rod are three 2½" Triangular Plates, two of which are attached to the table by 2½" Angle Girders. A third Triangular Plate 14 is secured by a 1½" Angle Girder 7 and a 2½" Angle Girder.

The saw blade is represented by a 6½" Rack Strip, which is bolted to a frame consisting of a 5½" Strip 8 and two 2½" Strips. Four 3½" Strips are also bolted to the 5½" Strip. A 2" Angle Girder 9 is attached to the frame by a 1" × 1" Angle Bracket, and two Cranks carrying 5" Rods are bolted to it. These Rods form slide rods and they slide in a guide made by connecting two 2" Strips 10 with 1½" × ½" Double Angle Strips. The guide block is covered by a 2½" × 1½" Flexible Plate bent to the required shape and attached by a ½" Bolt to an Angle Bracket fixed to a 1" Triangular Plate bolted to one of the 2" Strips 10. The guide is pivoted on Rod 6 by two Fishplates bolted to the 1½" × ½" Double Angle Strips.

The sawing movement is produced by the Triple Throw Eccentric 11. The arm of the Eccentric is extended by a 2½" Strip, which is lock-nutted to a 1" Triangular Plate 12 that is bolted to the frame of the saw. A 1" × ½" Angle Bracket 13 attached to the 2½" Triangular Plate 14 by a lock-nutted ½" Bolt, forms a stop for holding the saw in a raised position when not in use.

A metal bar clamped in the vice is represented by two Sleeve Pieces.

Parts required to build Metal Sawing Machine: 1 of No. 2; 4 of No. 3; 1 of No. 4; 4 of No. 5; 3 of No. 6; 2 of No. 6a; 4 of No. 8a; 4 of No. 9; 2 of No. 9c; 5 of No. 9d; 5 of No. 9e; 1 of No. 9f; 2 of No. 10; 4 of No. 12; 2 of No. 12a; 2 of No. 12b; 2 of No. 15; 1 of No. 16; 1 of No. 16a; 1 of No. 17; 1 of No. 19b; 1 of No. 20a; 2 of No. 22; 72 of No. 37; 6 of No.37a; 20 of No. 38; 2 of No. 48; 6 of No. 59; 2 of No. 62; 1 of No. 64; 3 of No. 76; 2 of No. 77; 1 of No. 80; 1 of No. 110a; 1 of No. 111; 1 of No. 111a; 2 of No. 111c; 1 of No. 130; 1 of No. 139; 1 of No. 139a, 1 of No. 186b; 2 of No. 188; 1 of No. 189; 2 of No. 192; 1 No. 1 Clockwork Motor.

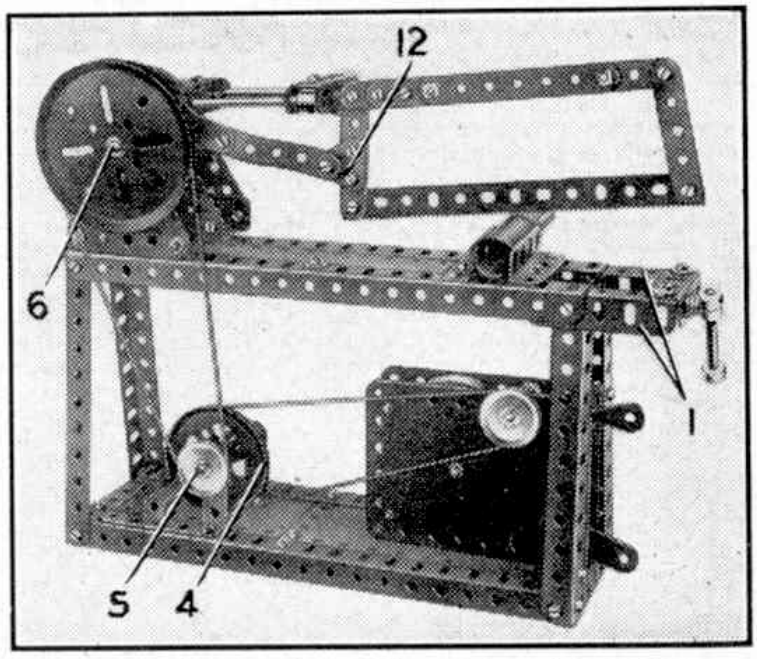

Fig. 4. Another view of the metal sawing machine.