

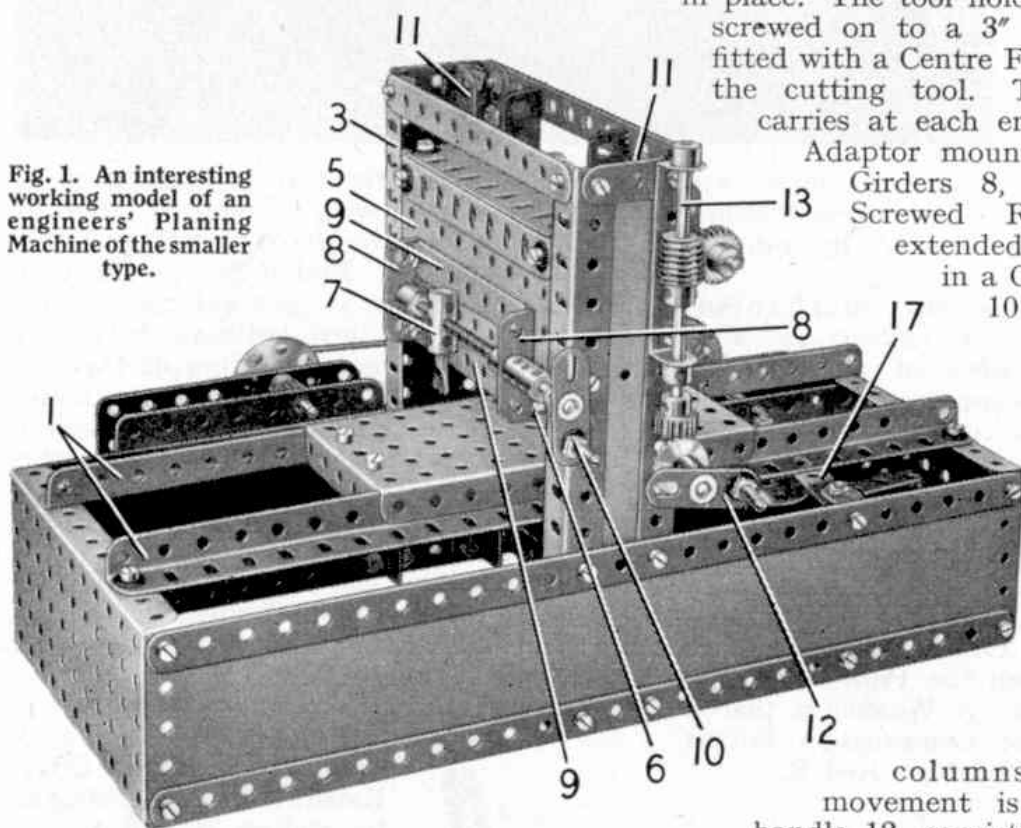
# New Meccano Model

## An Engineers' Planing Machine

THE side of the base of the Planing Machine seen in Fig. 1 consists of a  $12\frac{1}{2}'' \times 2\frac{1}{2}''$  Strip Plate edged by two  $12\frac{1}{2}''$  Strips. The other side is formed by a  $9\frac{1}{2}'' \times 2\frac{1}{2}''$  Strip Plate and a  $4\frac{1}{2}'' \times 2\frac{1}{2}''$  Flat Plate, which are also edged by  $12\frac{1}{2}''$  Strips. The ends are  $5\frac{1}{2}'' \times 2\frac{1}{2}''$  Flanged Plates bolted between the sides. Two  $12\frac{1}{2}''$  Angle Girders 1 are fixed along the top of the base

the two  $4\frac{1}{2}''$  Girders are connected by a  $4\frac{1}{2}''$  Flat Girder, and the lower edges of the Flat Plates are joined by two  $1\frac{1}{8}''$  Bolts 6, each of which is fixed in place by nuts. A cross-slide for the tool holder 7 is made by bolting two  $1\frac{1}{2}''$  Angle Girders 8 to one of the  $5\frac{1}{2}'' \times 2\frac{1}{2}''$  Flat Plates, but each bolt used for this purpose is passed through two face-to-face  $3\frac{1}{2}''$  Strips 9 before it is fixed in place. The tool holder 7 is a Coupling screwed on to a 3" Screwed Rod and fitted with a Centre Fork that represents the cutting tool. The Screwed Rod carries at each end a Screwed Rod

Fig. 1. An interesting working model of an engineers' Planing Machine of the smaller type.



and they form guides for the reciprocating worktable. At one end of the base a  $3\frac{1}{2}'' \times 2\frac{1}{2}''$  Flanged Plate 2 is attached and is connected to the  $4\frac{1}{2}'' \times 2\frac{1}{2}''$  Flat Plate of the side by two  $1\frac{1}{2}'' \times \frac{1}{2}''$  Double Angle Strips.

Each of the vertical columns that support the adjustable tool carriage consists of two  $7\frac{1}{2}''$  Angle Girders 3 with a  $5\frac{1}{2}'' \times 1\frac{1}{2}''$  Flexible Plate and a  $1\frac{1}{2}''$  Strip bolted between them. The upper ends of the columns are connected by two  $5\frac{1}{2}''$  Strips, and two further  $5\frac{1}{2}''$  Strips 4 are bolted between the lower ends of two of the Girders.

The tool carriage 5 is made by bolting  $4\frac{1}{2}''$  Angle Girders centrally along the upper edges of two  $5\frac{1}{2}'' \times 2\frac{1}{2}''$  Flat Plates. Then

Adaptor mounted in one of the Girders 8, and one of the Screwed Rod Adaptors is extended by a 1" Rod held in a Coupling. A handle 10 on the 1" Rod consists of a Double Arm Crank fitted with a Threaded Pin.

The tool carriage 5 is free to slide vertically up or down the supporting columns. It is guided by two  $4\frac{1}{2}''$  Angle Girders 11 bolted to the inner faces of the

columns. The vertical movement is controlled by a handle 12, consisting of a Threaded Pin in a Double Arm Crank that is fixed on a  $2\frac{1}{2}''$  Rod. This Rod is mounted in one of the Girders 3 and in a  $1\frac{1}{2}''$  Angle Girder bolted to it (Fig. 2), and it carries a  $\frac{3}{4}''$  Contrate that drives a  $\frac{1}{2}''$  Pinion on a vertical Rod 13. Rod 13 is supported in a  $2\frac{1}{2}'' \times \frac{1}{2}''$  Double Angle Strip bolted to the column, and is held in place by Collars. A Worm on Rod 13 engages a  $\frac{3}{4}''$  Pinion on a  $6\frac{1}{2}''$  Rod mounted in  $1\frac{1}{2}''$  Angle Girders fixed to the columns. The  $6\frac{1}{2}''$  Rod is fitted with two  $\frac{1}{2}''$  Pinions, and these mesh with  $3\frac{1}{2}''$  Rack Strips attached by Angle Brackets to the back of the tool carriage.

A No. 1 Clockwork Motor is attached to the base by  $\frac{3}{8}''$  Bolts, but is spaced from it by a nut on each Bolt. The Motor driving shaft is removed and replaced by a 2" Rod

that carries a made-up pulley consisting of a Wheel Disc and a  $\frac{3}{4}$ " Flanged Wheel. The Wheel Disc is spaced from the Motor side-plate by two Washers, and the pulley is connected by a Driving Band to another made-up pulley on a Rod 14. The second pulley consists of two  $1\frac{1}{8}$ " Flanged Wheels, and Rod 14 is mounted in the side of the base and in the Flanged Plate 2. A  $\frac{7}{16}$ " Pinion on Rod 14 drives a 60-tooth Gear on a 2" Rod, and a  $\frac{1}{2}$ " Pinion on the latter Rod engages a 57-tooth Gear on a Rod fitted with a  $\frac{3}{4}$ " Pinion 15. The last-mentioned Rod is mounted in Flanged Plate 2 and in a Double Bent Strip bolted to it.

The table that carries the work to be machined is a  $5\frac{1}{2}$ "  $\times$   $2\frac{1}{2}$ " Flanged Plate that slides freely on the Angle Girders 1. A Double Bent Strip is fixed underneath the table, and to this is lock-nutted one end of a made-up strip 16. Strip 16 consists of two  $5\frac{1}{2}$ " and two  $2\frac{1}{2}$ " Strips, overlapped as shown to make a 7" strip of double thickness, and its other end is lock-nutted to a  $3\frac{1}{2}$ " Strip 17. Strip 17 slides freely in a Slide Piece 18, and it is lock-nutted to one lug of a  $2\frac{1}{2}$ "  $\times$   $\frac{1}{2}$ " Double Angle Strip bolted to the side of the base. The Slide Piece is fixed on a  $\frac{3}{8}$ " Bolt that pivots in a hole in a Bush Wheel 19. The latter is fixed on a Rod fitted with a  $1\frac{1}{2}$ " Contrate 20 that meshes with the Pinion 15. The Rod is mounted in two  $5\frac{1}{2}$ "  $\times$   $\frac{1}{2}$ " Double Angle Strips bolted between one end of the base

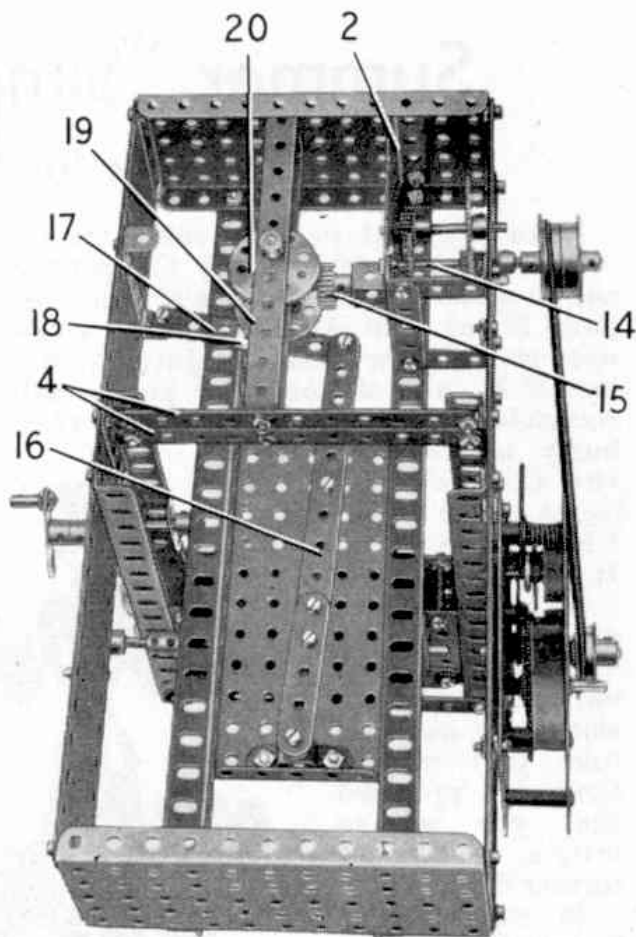


Fig. 3. A view of the quick-return mechanism located under the worktable of the Planing Machine.

and the Strips 4. This arrangement provides an automatic quick return stroke for the work table.

Parts required to build the Planing Machine: 4 of No. 1; 6 of No. 2; 5 of No. 3; 2 of No. 5; 2 of No. 6a; 2 of No. 8; 4 of No. 8b; 4 of No. 9a; 5 of No. 9f; 4 of No. 12; 1 of No. 14; 3 of No. 16; 1 of No. 16a; 3 of No. 17; 1 of No. 18b; 2 of No. 20; 1 of No. 20b; 1 of No. 24; 1 of No. 24a; 2 of No. 25; 4 of No. 26; 1 of No. 26c; 1 of No. 27; 1 of No. 27d; 1 of No. 28; 1 of No. 29; 1 of No. 32; 104 of No. 37a; 85 of No. 37b; 30 of No. 38; 2 of No. 45; 2 of No. 48; 2 of No. 48a; 2 of No. 48d; 1 of No. 50; 3 of No. 52; 1 of No. 53; 1 of No. 53a; 7 of No. 59; 2 of No. 62b; 2 of No. 63; 1 of No. 65; 2 of No. 70; 1 of No. 80a; 1 of No. 103c; 2 of No. 110; 7 of No. 111c; 2 of No. 111d; 2 of No. 115; 2 of No. 173a; 1 of No. 186d; 2 of No. 189; 1 of No. 196; 1 of No. 197; 1 No. 1 Clockwork Motor.

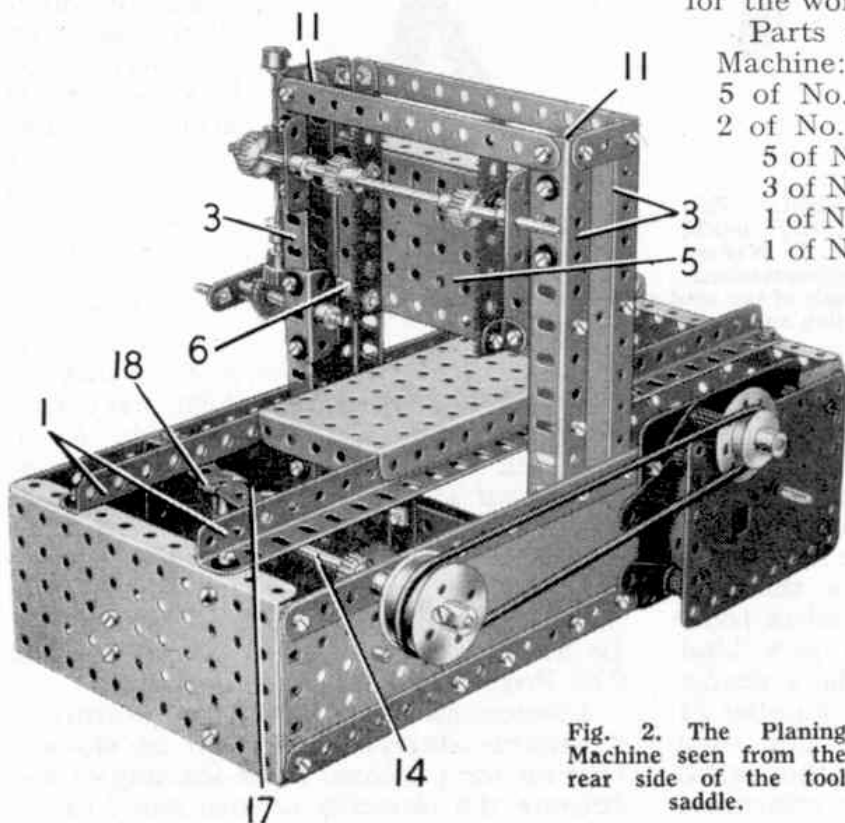


Fig. 2. The Planing Machine seen from the rear side of the tool saddle.