

**MODEL OF THE MONTH**

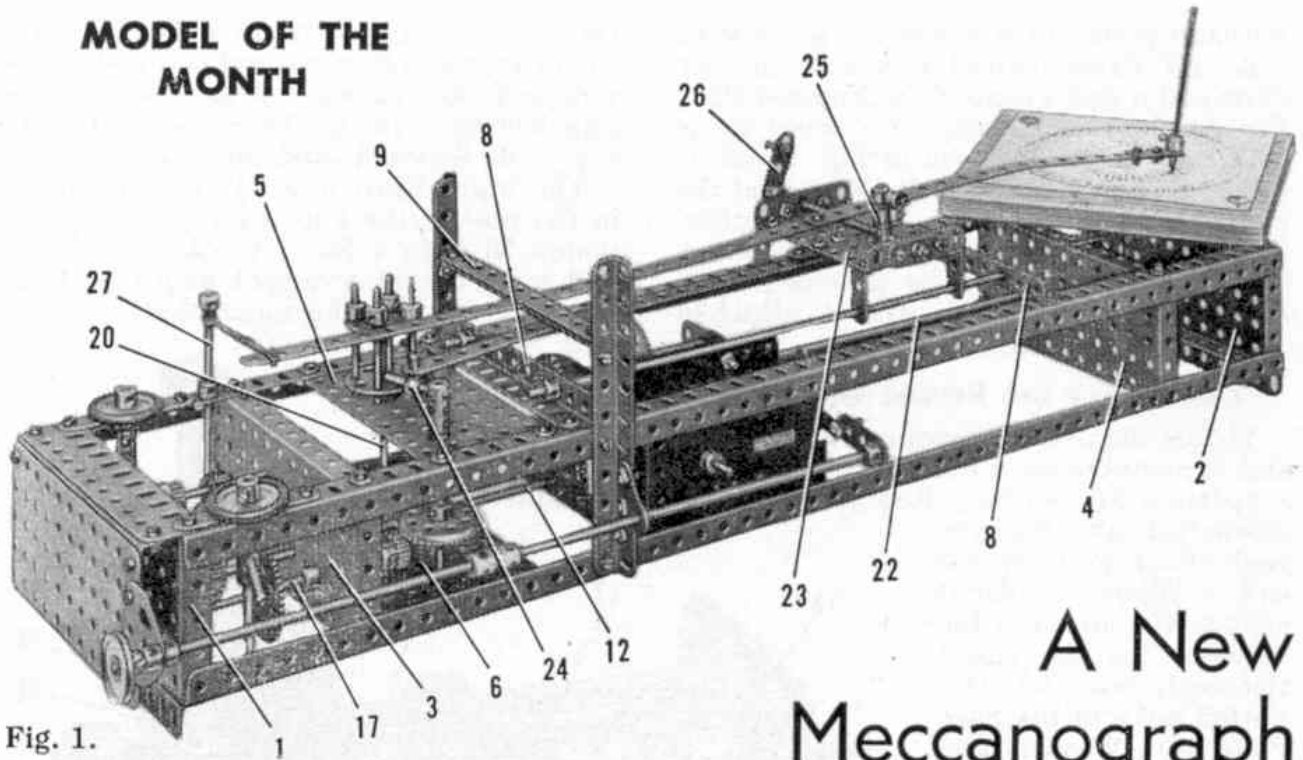


Fig. 1.

# A New Meccanograph

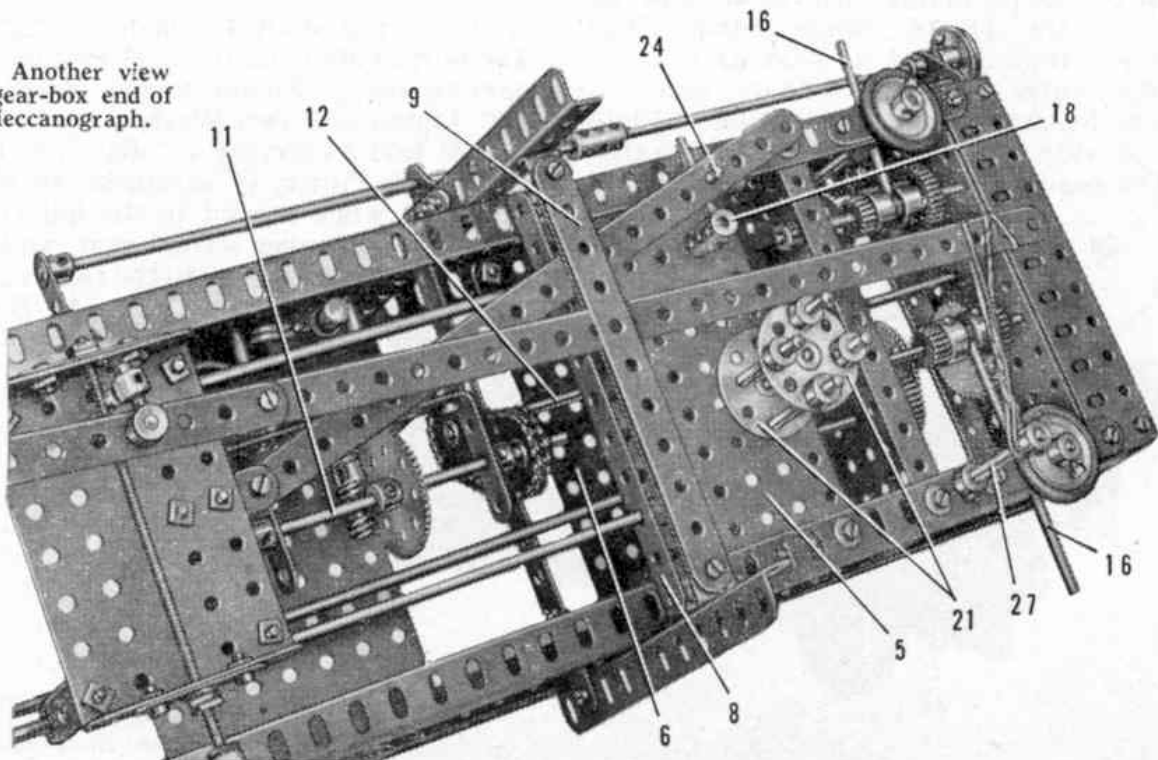
PERHAPS the most popular Meccano model of all time has been the Meccanograph. It is a model of which one never tires. Young and old alike have found the greatest pleasure in the beautiful designs it produces, and have been astonished by their wonderful variety.

Now we have a new and improved electrically operated version as the

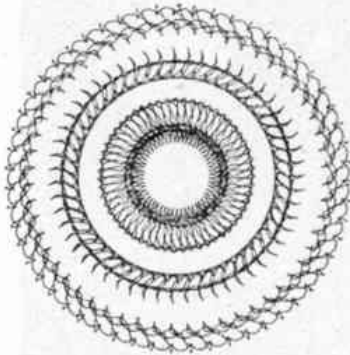
"Model of the Month" for May. It is illustrated by the pictures on these pages. When it has been constructed all that is necessary to produce a design is to pin a sheet of paper to its table, fix a ball pen refill in a holder provided on the pen arm, and set the Electric Motor running.

It is not difficult to see how this splendid model works. When the Motor is switched

Fig. 2. Another view of the gear-box end of the Meccanograph.



on, the table carrying the paper revolves and the pen moves sideways to and fro across the paper. With these two movements alone an amazing number of different designs can be made by just varying the relative speeds of the table and the pen arm, or by altering the



One of the very many beautiful patterns that can be produced on the Meccanograph.

position of the arm. Giving an additional movement to the pen arm by means of a sliding carriage moving forward and backward along guide rods gives a vast number of still more elaborate designs.

And there are other ways of varying the designs. These are explained in the instructions for building the model, which

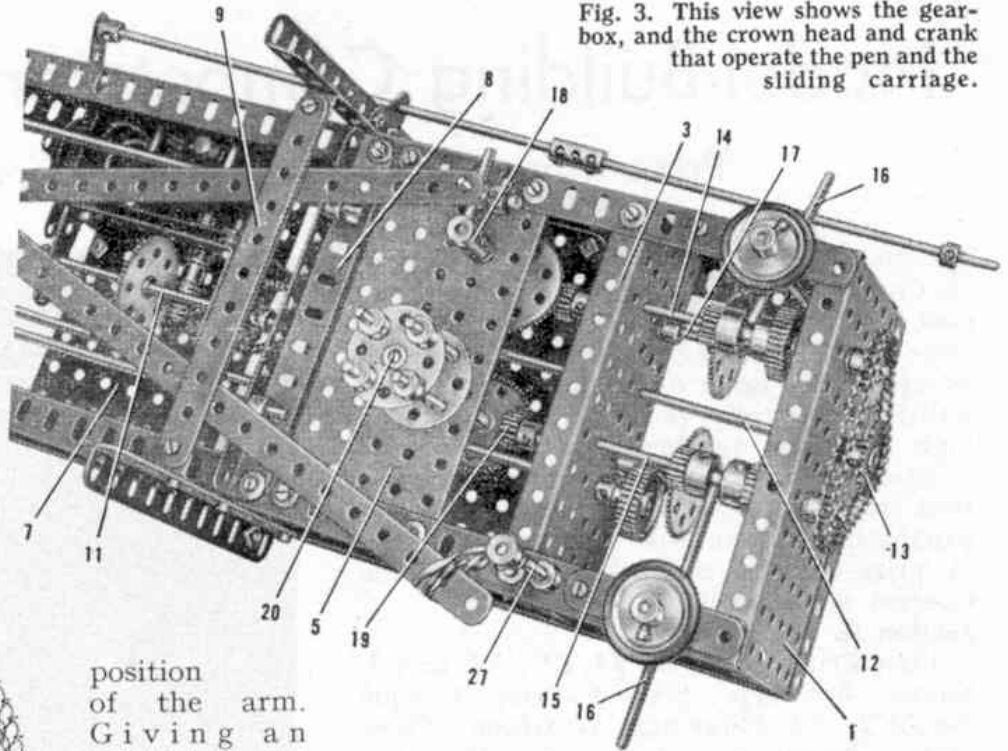


Fig. 3. This view shows the gear-box, and the crown head and crank that operate the pen and the sliding carriage.

can be obtained by writing to the Editor, enclosing a 2d. stamp for return postage. The main Meccano Agents in Canada, Australia, New Zealand, South Africa, Ceylon and the United States of America are provided with copies of the current "Model of the Month" instructions, and readers in those countries can obtain copies by writing to their Agents and enclosing stamps for return postage.

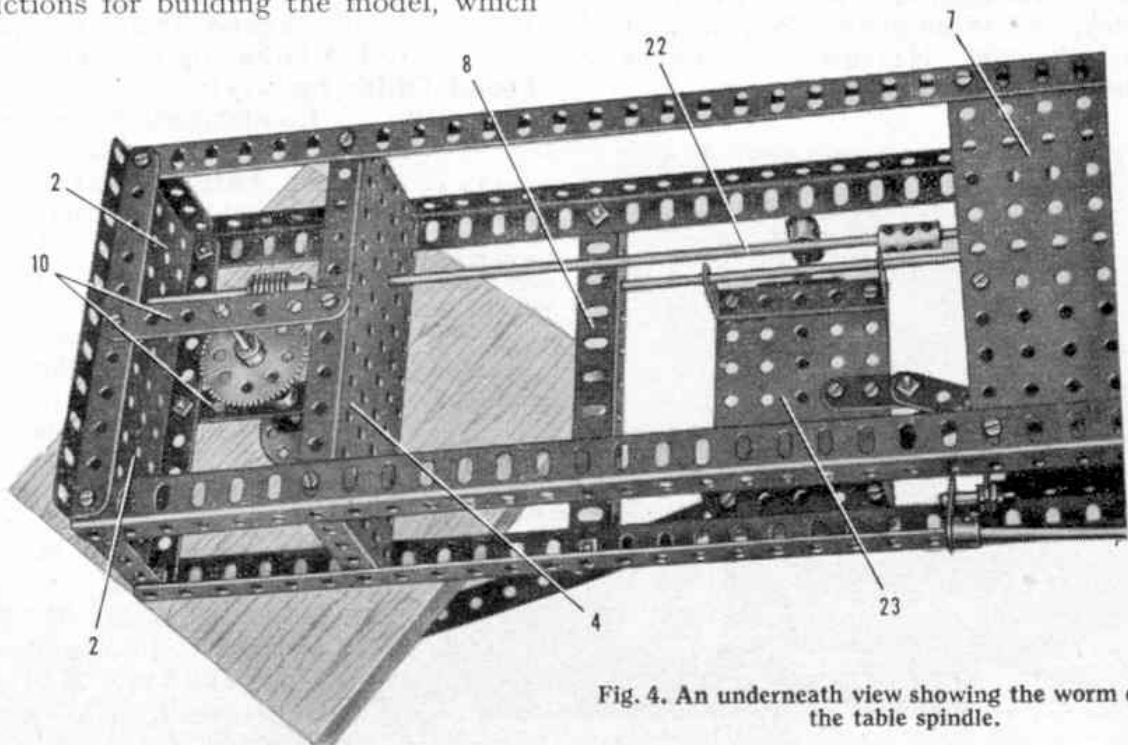


Fig. 4. An underneath view showing the worm drive to the table spindle.

MECCANOGRAPH

Illustrated in the May 1957 issue of the Meccano Magazine

Construction of the Frame

The frame consists of four  $24\frac{1}{2}$ " Angle Girders connected at each end by  $5\frac{1}{2}$ " x  $2\frac{1}{2}$ " Flanged Plates 1 and 2, and with further  $5\frac{1}{2}$ " x  $2\frac{1}{2}$ " Flanged Plates 3 and 4 bolted between the Girders. Two  $5\frac{1}{2}$ " x  $2\frac{1}{2}$ " Flat Plates 5 and 6, a  $5\frac{1}{2}$ " x  $3\frac{1}{2}$ " Flat Plate 7, and two  $5\frac{1}{2}$ " Angle Girders 8, are attached to the frame as shown. A  $5\frac{1}{2}$ " Angle Girder is fixed across the lower Girders of the frame at each end. Two vertical  $5\frac{1}{2}$ " Angle Girders are bolted to the frame, and these support Angle Brackets to which are attached two  $5\frac{1}{2}$ " Strips 9, spaced apart by a Washer on each of the bolts fixing them in place. Two  $3\frac{1}{2}$ " Strips 10 are bolted between the flanges of the Plates 2 and 4.

Arrangement of the Drive and Gearing

An E20R(S) Electric Motor is bolted to the Flat Plate 7, and a Worm is fixed at one end of its armature shaft. The Worm drives a 57-tooth Gear on a Rod 11, which is supported in the lugs of a  $3$ " x  $1\frac{1}{8}$ " Double Angle Strip spaced from the Motor side-plate by Washers on  $\frac{5}{8}$ " Bolts. A 1" Sprocket on Rod 11 is connected by Chain to a similar Sprocket on a Rod 12, mounted in the Flanged Plates 1 and 3 and held in place by Collars. Rod 12 carries a second 1" Sprocket 13, and this is connected by Chain to further 1" Sprockets on two 4" Rods with Keyway 14 and 15. Rod 14 carries a Socket Coupling fitted with a  $\frac{1}{2}$ " Pinion and a 1" Gear, and Rod 15 is similarly fitted with a  $\frac{1}{2}$ " Pinion and a  $\frac{3}{4}$ " Pinion. The Socket Coupling assemblies are made to turn with the Rods with Keyway by Key Bolts screwed into the Pinions to engage the keyways. The sliding movement of each assembly is controlled by a lever 16 formed by a Rod in a Coupling. The Coupling is fitted with a 1" and a 2" Rod, which are mounted in  $2\frac{1}{2}$ " Strips bolted to the frame. A 1" Pulley with Rubber Ring is pressed against the upper edge of the frame by a Compression Spring, placed on the 1" Rod between the Coupling and the Angle Girder. The Motor switch is controlled by a hand wheel connected as shown in Fig. 1.

The gear assemblies enable the speeds of the drives to the sliding carriage and to the pen arm to be changed. By sliding the Socket Coupling on the 4" Rod with Keyway 14, its  $\frac{1}{2}$ " Pinion can be engaged with a 57-tooth Gear on a Rod 17, or its 1" Gear can be meshed with a similar Gear also fixed on Rod 17. Rod 17 carries a  $\frac{1}{2}$ " Pinion that drives a  $1\frac{1}{2}$ " Contrate on a vertical Rod fitted with a Coupling 18.

The  $\frac{1}{2}$ " and  $\frac{3}{4}$ " Pinions in the Socket Coupling on the 4" Rod with Keyway 15 can be meshed with 57-tooth and 50-tooth Gears respectively on a Rod carrying a  $\frac{1}{2}$ " Pinion 19. The Rod is fitted also with a  $7/16$ " Pinion placed between the 57-tooth Gear and the Flanged Plate 3, and the  $\frac{1}{2}$ " Pinion 19 drives a  $1\frac{1}{2}$ " Contrate on a vertical Rod 20. Rod 20 carries at its upper end two 8-hole Bush Wheels 21, arranged so that 2" Rods fitted with Collars can be mounted in them.

The Design Table and its Drive

The  $7/16$ " Pinion on the same Rod as the Pinion 19 drives a 1" Gear on a long rod 22, which is supported in the Flanged Plates 2, 3 and 4, and is made from  $11\frac{1}{2}$ " Rods joined by a Coupling. Rod 22 carries a Worm that engages

a 57-tooth Gear on a Rod supported in the Strips 10. The latter Rod is fitted with a Bush Wheel, to which is screwed a flat piece of wood about 7" square.

The Sliding Carriage and the Pen Arm

Two  $2\frac{1}{2}$ " x 1" Double Angle Strips are bolted to a  $3\frac{1}{2}$ " x  $2\frac{1}{2}$ " Flanged Plate 23, and the assembly is arranged to slid freely on two  $1\frac{1}{2}$ " Rods held by Collars in the Girders 8. A  $1\frac{1}{2}$ " Strip is bolted to the Flanged Plate, and a  $9\frac{1}{2}$ " Strip lock-nutted to the  $1\frac{1}{2}$ " Strip is passed over the shank of a Handrail Support 24 fixed on a  $1\frac{1}{2}$ " Rod held in the Coupling 18.

A 5" Screwed Rod is supported in  $1\frac{1}{2}$ " Strips bolted to the flanges of Plate 23 and is held in place by lock-nuts. A Short Coupling 25 is threaded on to the Screwed Rod and a 1" Rod is fixed in it. A handle 26 is formed by a Threaded Crank locked on the Screwed Rod by a nut. The pen arm consists of a  $12\frac{1}{2}$ " and a  $9\frac{1}{2}$ " Strip bolted together and it pivots between Collars on the Rod in the Short Coupling 25. The pen is a ball point pen refill held in a Crank at one end of the arm, which is passed between the Strips 9 and is pulled against the Collars on the Rods in the Bush Wheels 21 by an elastic band. The elastic band is looped round the end of the arm and round a Rod 27 held in the frame by Collars.

How to Vary the Designs

The pen arm should be adjusted so that the ball pen refill bears lightly against a sheet of paper pinned to the design table. The patterns produced can be varied by altering the gear ratios by means of the levers 16, by altering the numbers and the positions of the Rods in the Bush Wheels 21, by turning the handle 26, by adjusting the position of the pen arm on its pivot, by varying the position of the  $9\frac{1}{2}$ " Strip on the Handrail Support 24, and by sliding the Handrail Support on its Rod. To enable the positions of the Handrail Support and the pen arm to be altered easily, quick release bolts can be made by fixing a Collar on a  $\frac{3}{8}$ " Bolt that forms the locking screw. A bolt screwed into the Collar makes a convenient handle.

PARTS REQUIRED

1 of No. 1	3 of No. 22	2 of No. 62
2 " " 1a	3 " " 24	1 " " 62a
3 " " 2	1 " " 25	5 " " 63
3 " " 3	4 " " 26	1 " " 63d
4 " " 5	1 " " 26c	3 " " 70
3 " " 6a	1 " " 27	1 " " 80
4 " " 7	4 " " 27a	1 " " 94
7 " " 9	2 " " 28	5 " " 96
2 " " 12	3 " " 31	1 " " 103
5 " " 13	2 " " 32	4 " " 111a
1 " " 13a	84 " " 37a	1 " " 111c
1 " " 14	79 " " 37b	2 " " 115
3 " " 15	40 " " 38	2 " " 120b
1 " " 15a	1 " " 45	1 " " 126a
2 " " 15b	2 " " 46	1 " " 133a
2 " " 16	1 " " 47a	1 " " 136
1 " " 16a	4 " " 52	2 " " 155
6 " " 17	1 " " 52a	2 " " 171
1 " " 18a	1 " " 53	2 " " 230
3 " " 18b	23 " " 59	1 E2OR(S) Electric Motor.
		2 of No. 231