MECCANOGRAPH EASTER SPECIAL

A No.10 Set Model by Andreas Konkoly

Described by 'Spanner'

NEVER LET it be said that the MMQ, though steeped in Meccano tradition, is not aware of the 'normal' world around it. We know what's going on out there, too, you know! *We* know, for instance, that we are in (or only just out of) the Easter season – those happy days of Easter Eggs, Bonnets and Bunnies – and now, thanks to Mr. Andreas Konkoly of Budapest, Hungary, we would like to make our own little contribution to the season with this No. 10 Set EASTER MECCANOGRAPH. Why 'Easter'? Because it draws egg-shaped patterns, of course!

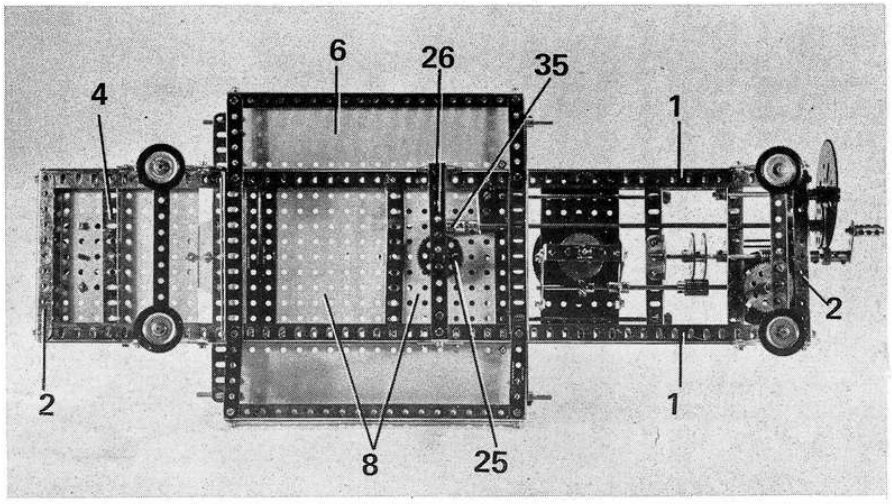
As many older modellers will know, Andreas Konkoly is one of the world's foremost experts on Meccanograph designing machines and, indeed, we have featured one or two examples of his work in the 'old' Meccano Magazine. This, his latest construction, is also his largest to date and it offers tremendous pattern variations, yet it is still a comparatively compact unit. (All Mr. Konkoly's Meccanographs, in fact, have been remarkably compact and relatively uncomplicated in design, yet they have produced some of the most precise and complex patterns imaginable.) The actual model illustrated here was built in our office from details supplied by Mr. Konkoly; we believe we have reproduced the model exactly as he instructed, but if there are any slight differences, we hope he will forgive us.

CONSTRUCTION

Beginning construction with the framework, this is built up from two 24½" "U"-section girders 1 (each supplied by two 24½" Angle Girders), connected together at the ends by two 5½" "U"-section girders 2. Two 5½" x 2½" Flat Plates 3 are bolted between girders 1 at one end, two of the securing Bolts fixing a strengthening 5½" Angle Girder 4 beneath one of these Flat Plates and between the upper flanges of the girders. Another strengthening 5½" Girder is bolted between the upper flanges of girders 1, through their twenty-third holes, then two 9½" Flat Girders 5 are also bolted between the girders, as shown, one through their thirteenth holes and the other through their thirtieth holes. Bolted between these Flat Girders at each side, and extending one hole outwards, is a 9½" x 2½" Strip Plate 6, edged by a 9½" "U"-section girder, the appropriate securing Bolts also fixing two Trunnions 7 in place. The remaining space between girders 1 and Flat Girders 5 is enclosed by two 5½" x 3½" Flat Plates 8 and two 5½" Strips.

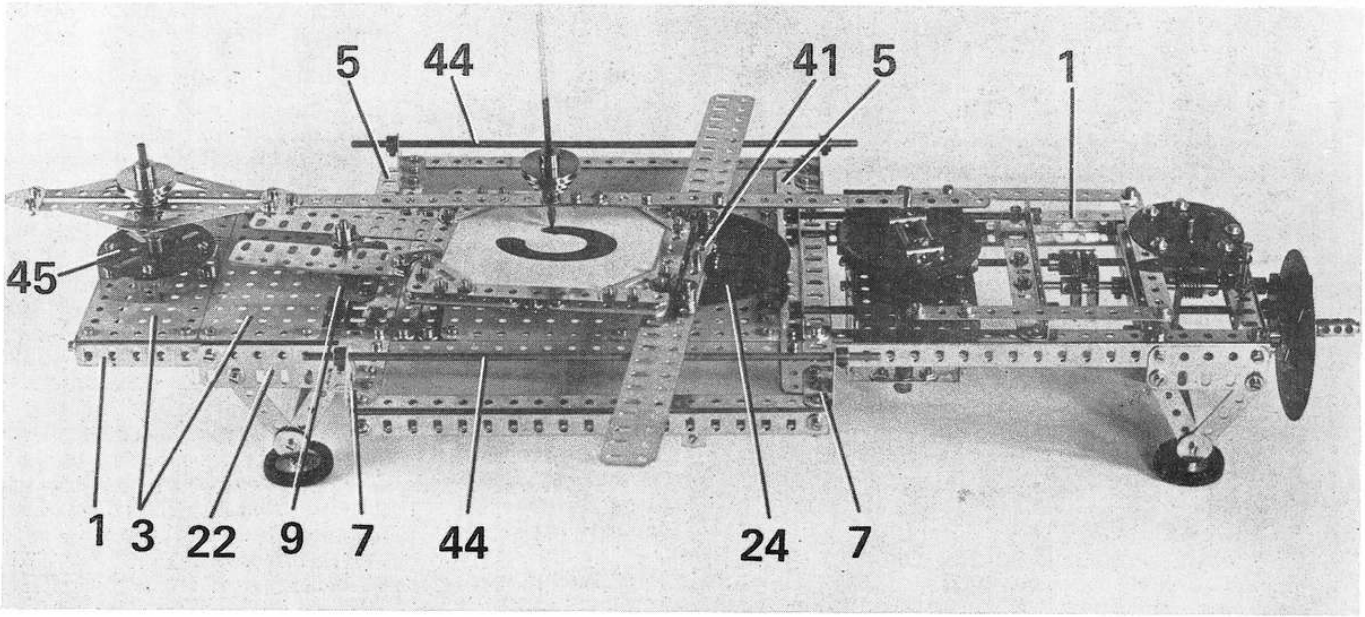
It will be seen that a short gap exists between one Flat Girder 5 and nearby Flat Plate 2. Bolted across this gap in a centralised position is a Semi-circular Plate 9 which will later serve as an anchoring point for one of the drawing table supports. Bolted in turn to the top of the other Flat Girder 5 is a 5½" Angle Girder 10, another 5½" Angle Girder 11 being secured to the top flanges of girders 1 through their tenth holes from the front end. It is important that the circular hole flanges of these Girders point upwards. A final 5½" Angle Girder 12, circular hole flange pointing downwards, is bolted to the undersides of the upper flanges of girders 1 through their fifth holes.

A general underside view of the Meccanograph showing framework details.



PEN ARM DRIVE

This particular Meccanograph is different to any other model of its type I have seen in that not only is the

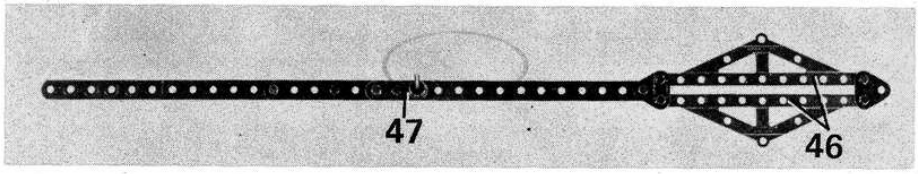


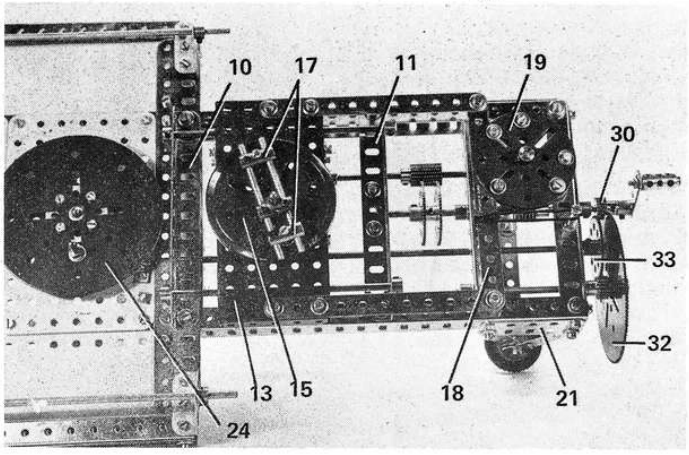
pen arm movement imparted by a variable eccentric mechanism, but this mechanism is itself mobile and activated by another eccentric mechanism! The primary unit is built up on a 5½" x 2½" Flanged Plate 13 which slides on two 5½" Rods held by Collars in Angle Girders 10 and 11. Bolted to the longer flanges of this Plate are two 2" Flat Girders, to each of which a Corner Gusset 14 is fixed with the lower ends of these Gussets in turn being connected by a 2½" x 1½" Double Angle Strip. Centrally bolted to this Double Angle Strip is a Double Arm Crank, while another Double Arm Crank is bolted vertically above it to the underside of the Flanged Plate. The bosses of these Double Arm Cranks serve as extended bearings for a 4" Rod held in place by a Washer and Collar beneath the Double Angle Strip and by a Washer and 3" Pulley 15 above the Flanged Plate. A 1½" Helical Gear 16 is fixed on this Rod.

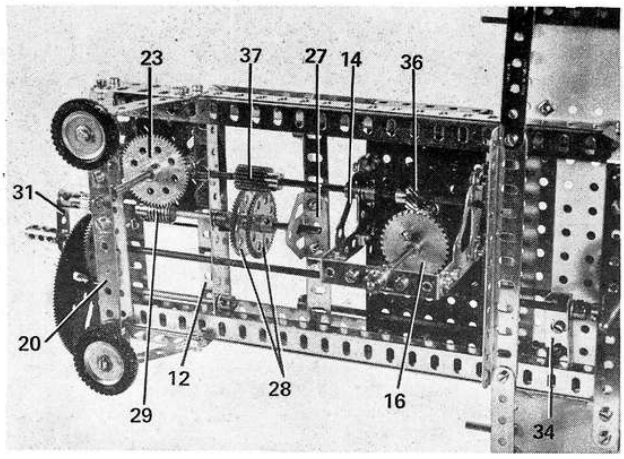
Secured by ¾" Bolts to the face of Pulley 15, through the outer diagonally opposite holes, are two couplings 17, in the transverse bores of which two 3" Rods are held. Mounted on these Rods, between the first two Couplings, is a third Coupling, in the centre bore of which a vertical 1" Rod is fixed, this Rod serving as the locating point for the pen arm. A Collar is fixed on the Rod to serve as a spacer to lift the pen arm above any surrounding obstacles. Varying the position of the central Coupling on its supporting Rods will of course vary the design of the pattern being drawn.

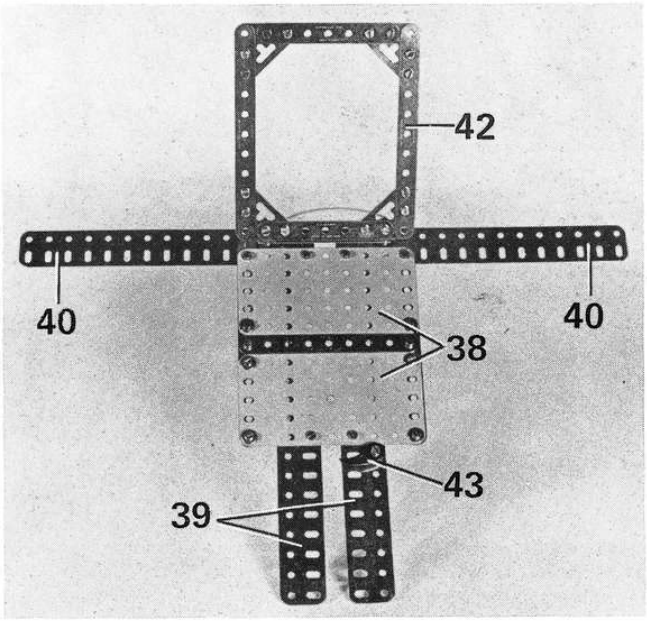
Now bolted to the top of Flanged Plate 13, at each side, are two 5½" Strips, extending forwards eight holes, the ends of which are connected by another 5½" Strip 18. This Strip makes contact with what Mr. Konkoly calls a "Bumper Wheel" 19 which is built up from two Face Plates separated by a ½" Pulley without boss and mounted on a 4" Rod. This Rod is journalled in the bosses of two Double Arm Cranks, one bolted to the underside of a 2½" Strip secured between Girders 1 and 12 and the →

Above, the completed Meccanograph, ready for operation. Right, the Pen Arm. Below left, close-up view showing the three eccentric units. Below right, close-up view of drive system.









The drawing table included in the Easter Meccanograph, designed by Mr. Andreas Konkoly of Budapest, Hungary and featured in full constructional detail in this article. Unlike a drawing table on a traditional Meccanograph, which normally spins round, this unit slowly slews without revolving, tracing an elipse shape – hence egg-patterns for Easter!

other bolted to a 5½" x ½" Double Angle Strip 20, connecting the two front legs together. Each of these legs is built up from two 5½" Strips, fixed at their lower ends (along with a ¾" Washer) to one lug of the Double Angle Strip, and secured at their upper ends to a 2½" Flat Girder 21 bolted to "U"-section girder 1. Two feet are each provided by a 1" Pulley with Motor Tyre Bolted to the Double Angle Strip, as shown. The rear legs are similarly built, except that, instead of being secured to 2½" Flat Girders, they are secured to 3½" Flat Girders 22. Mounted on the Bumper Wheel Rod is a 60-teeth Gear Wheel 23.

We come now to a third eccentric unit, this one being responsible for the egg-shaped design of the patterns. It is simply produced from a 4" Circular Plate 24, fitted with a Threaded Pin and Bolted to an 8-hole Bush Wheel. The Bush Wheel is fixed on the upper end of a 4" Rod journalled in the centre hole of front Flat Plate 8 and in the boss of a Double Arm Crank bolted to the underside of the Plate. A 57-teeth Gear Wheel 25 is fixed on the Rod, its face immediately below the boss of the Double Arm Crank, then the lower end of the Rod is journalled in a 5½" Strip 26 which is connected by 1" x 1" Angle Brackets to two 2" Strips, each of which is bolted to a Flat Trunnion 27 which is bolted in turn to appropriate "U"-section girder 1.

DRIVE SYSTEM

At this stage the drive system for the various movements should be fitted. A 6½" Rod is journalled in the centre hole of front "U"-section girder 1, in the equivalent holes of Angle Girder 12 and in a Trunnion bolted to the underside of Angle Girder 11, but packed away from it by two 1½" Strips. Fixed on this Rod are two 57-teeth Gears 28 and a Collar (between the Trunnion and Girder 12) and a Worm 29 (between Girders 12 and 1). The Collar, together with another Collar added to the Rod outside Girder 1, holds the Rod in place. Fixed on the end of the Rod is a ½" Pinion 30 and a Crank 31, the latter fitted with a free-running Coupling on a 1 1/8" Bolt to serve as the operating handle. Worm 29 meshes with Gear Wheel 23.

Pinion 30 meshes with a 3½" Gear Wheel 32 fixed on the end of a 4" Rod held by a Collar in Girders 12 and 1. Also fixed on this Rod is a ½" Pinion which meshes with a 57-teeth Gear 33 on the outer end of a long 11½" Rod journalled in Girders 1 and 12 and in a 1½" Angle Girder 34 bolted to the underside of front Flat Plate 8, but packed away from the Plate by a Washer on each securing Bolt. The Rod is held in place by a Collar against the latter Angle Girder, then a Worm 35 is fixed on the inner end of the Rod, this Worm meshing with Gear Wheel 25.

Held by Collars in the second holes of Corner Gussets 14 and the Flat Girders to which they are bolted is a 6½" Rod which is also free to slide in the corresponding hole in Angle Girder 12. Fixed on this Rod are a ½" Helical Gear 36 and a ½" x ¾" Pinion 37, the former meshing with Helical Gear 15 and the latter with Gear Wheels 28. The Pinion must of course be in mesh with at least one of the Gear Wheels at all times.

DRAWING TABLE

We come next to the drawing table and it is interesting to note that, unlike traditional Meccanographs, this does not spin on a central axis. In fact, it does not spin at all! It is built up from two 4½" x 2½" Flat Plates 38 separated by a 4½" Strip, all three parts being connected together at the edges (underside) by two 5½" Strips. Bolted to the underside of the resulting "platform" are two 9½" Flat Girders 39, these projecting eight holes forward. Note that the Girders are fixed through their slotted holes, this being necessary as the distance between them must be carefully adjusted. Projecting eleven holes outwards from the upper corners of the platform are two 7½" Flat Girders 40, between which a 3½" Narrow Strip 41 is fixed by ½" Bolts. Each of these Bolts is fitted with a Collar and a Hinge, the Collar spacing the Hinge from the Narrow Strip. The other arm of the Hinge is bolted to a frame 42, built up from two 5½" and two 3½" Strips, connected together by four 1½" Corner Brackets.

A smooth surface is of course required to support the paper on which the patterns will be drawn and Mr. Konkoly recommends a sheet of glass, 120 mm. by 95 mm. in size and 3 mm. thick. However, if you feel glass might be a little too dangerous, a similar-size piece of wood should do the job just as well. The sheet of glass or wood is placed on the platform and is held in place by the frame, a catch to secure the frame being supplied by a Pawl 43 stiffly

Continued on page 52.

PARTS REQUIRED

1- 1a	1-16	2- 48d	6-111a
1- 1b	2-16b	1- 52	6-111c
10- 2	1-18b	2- 52a	2-111d
2- 2a	1-19b	2- 53a	2-113
2- 3	4-22	24- 59	2-114
4- 4	2-23a	1- 62	1-115
9- 5	1-23b	1- 62a	1-115a
2- 6	1-24	5- 62b	2-123
4- 6a	2-26	4- 63	5-126
4- 7	1-26b	2- 70	2-126a
4- 8a	4-27a	2- 77	4-133
11- 9	1-27b	4-103a	4-142c
1- 9f	1-27d	2-103d	1-146a
4-11	2-32	2-103f	2-147c
2-12a	193-37b	2-103g	1-186a
3-13	214-37c	2-103k	2-196
2-14	85-38	2-108	1-211a
2-14a	6-38d	3-109	1-211b
1-15a	1-47	2-111	1-214
2-15b			1-235b

Piece of Glass:
95mm. x 120mm. x 3mm.