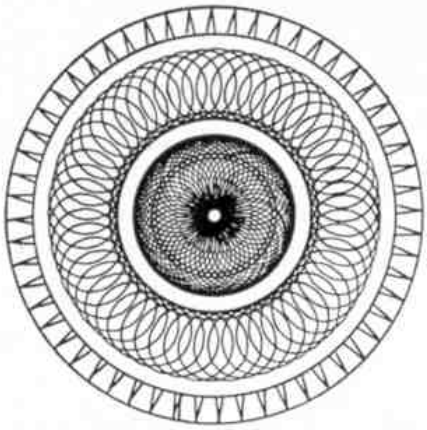
A Meccano Engraving Lathe

M.M. Reader's Attractive Model

MOST readers of the *M.M.* will be familiar with the Meccanograph, a designing machine built from Meccano parts with which beautiful symmetrical patterns can be produced. The Meccanograph has been one of the most popular of all models for over 30 years, and thousands have been built by boys all over the world.

There are, however, various other forms of designing machines, and one that has come to our notice recently is an engraving lathe planned and built by Mr. B. Minister, St. Leonards-on-Sea.



A design produced on the Engraving Machine. Notice the indexed spacing ringing the circumference of the design.

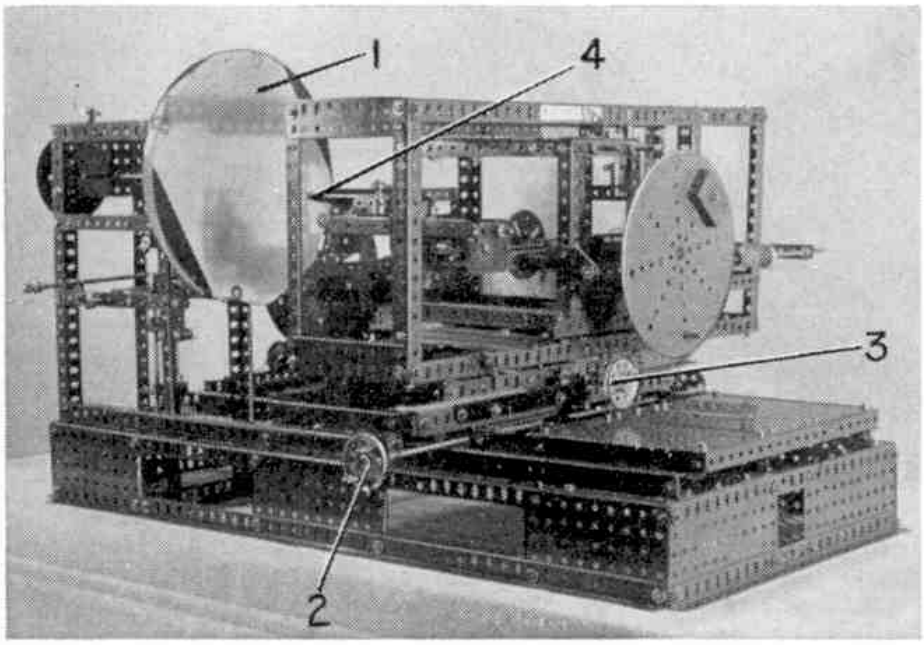
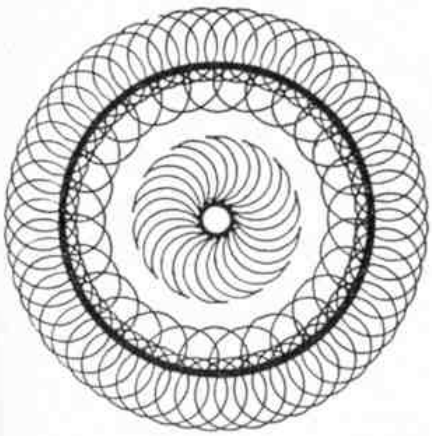


Fig. 1. When fitted with an engraving tool this machine can be used for engraving decorative designs on metal. By substituting a ball pen for the engraver, however, beautiful designs can be drawn on paper. The machine is the work of B. Minister, St. Leonards-on-Sea.



Another example of a design made on the machine.

The principle of this machine is in certain respects similar to that of the Meccanograph, but it differs considerably in its construction, its purpose, and in the type of designs it produces.

It is built on the lines of a lathe, and its designs are produced on paper, metal or wood fixed to a designing board that takes the place of a face-plate in an ordinary lathe. It produces some of its designs by drawing complete circles of varying diameters, at any point off centre or on the centre of the designing board. Any number of such circles may be used to build up a variety of patterns, one circle overlapping the other. Examples of completed designs are reproduced on this and the opposite page.

The machine consists of a stoutly-built bed, at one end of which is the head that carries the designing board 1, and mounted on the bed is a travelling carriage that supports the pen or engraving tool. The carriage is rather like the compound slide rest of an engineer's lathe, and it is arranged so that it can move both along the bed to or from the designing board, and also across the bed. Means are provided for varying the cross travel of the tool holder as required, and with these different motions, which can be operated either independently or in combination, a very wide variety of fascinating designs can be produced.

For some designs, such as one made up of small circles overlapping each other, the face-plate does not revolve continuously but is rotated intermittently through a few degrees by means of a special indexing or stepping arrangement. This consists of a

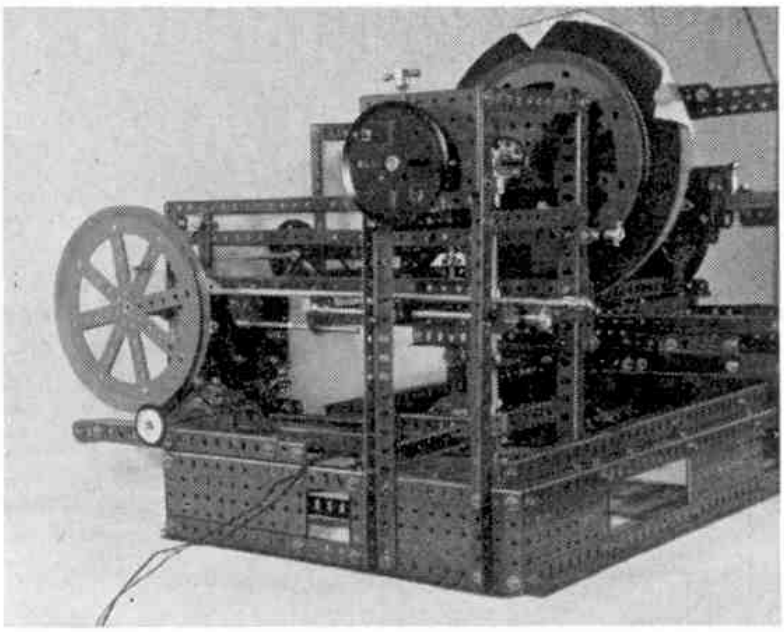
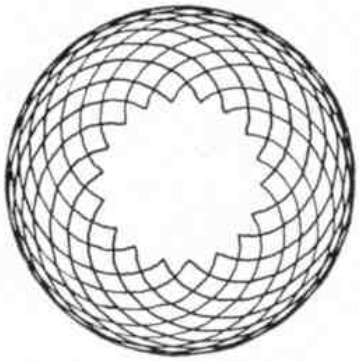


Fig. 2. Left-hand end of the machine showing the extending drive from the motor to the gears of the lathe head. The 3 in. Pulley, with handle, enables the design board to be turned by hand when required to ring round a pattern.

Gear or Sprocket and a Pawl that serves as a ratchet arrangement and enables a complete revolution to be evenly and accurately divided, the number of divisions depending on the number of teeth on the Gear or Sprocket used. For example, when using a 56-tooth Sprocket the circle circumference may be split into 56 divisions, so that small circles drawn by the pencil held in the revolving head of the carriage can be overlapped 56 times to form one complete round of the design. Further, by dividing 56 by 2, 4, 8, 7, etc. an individual circle can be worked on the faceplate 28, 14, 7 or 8 times as desired.



A design suitable for the back of a watch case.

For other work the face-plate is allowed to turn, and this motion, combined with the motions of the revolving and oscillating carriage used together or independently, builds up designs more like those produced on the standard Meccanograph.

A machine of this kind has many possibilities apart from its use for producing designs on paper. By fixing an electric engraving tool to the carriage in place of the pencil, metal can be engraved with patterns such as those seen on watch and cigarette cases. Another alternative is poker work on wood, which can be done with an electrically-heated needle in the tool holder. Of course, for these purposes it is necessary to build a sturdy machine, and in this respect Meccano proved fully satisfactory.

The base of the machine measures $24\frac{1}{2}'' \times 12\frac{1}{2}''$ and is built up from Angle Girders and is well braced. On it is mounted the compound slide rest. The slide rest can be moved to or from the face-plate 1, which is a circle of wood fixed to a 6″ Pulley, by turning the handwheel formed by a $1\frac{1}{2}''$ Pulley 3 (Fig. 1) and across the face-plate by operating the handwheel 2.

Mounted on the slide rest is an oscillating carriage, which travels from side to side on rails and is driven through an eccentric or other suitable crank arrangement from the main Motor. The holder for the pen 4, which is mounted on the oscillating carriage, is given a rotary movement by means of cranks, and the arrangement is such that the radii of the movement can be varied. In order to

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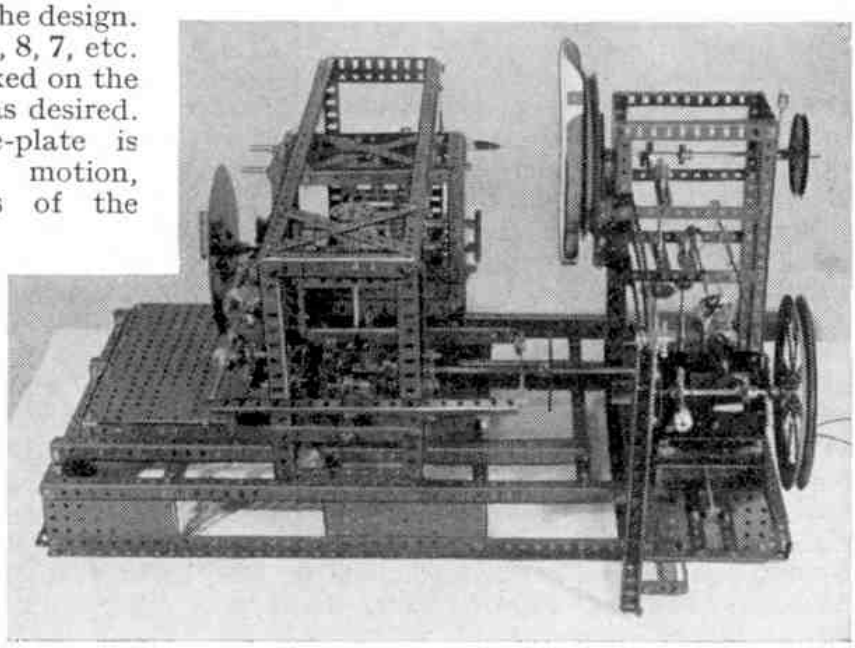

Fig. 3. A rear view of the Engraving Machine.

Their Royal Highnesses the Princess Royal and the Duchess of Gloucester leaving the Meccano Stand at the British Industries Fair, Olympia, after inspecting the Meccano models, Hornby and Hornby-Dublo layouts and Dinky Toys included in the display. On their visit they were accompanied by Their Royal Highnesses Prince William and Prince Richard, the former of whom is seen in our illustration.

The Young Farmers' Clubs—

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the printing of tickets and programmes, and acted as stewards in the hall.

Then there are proficiency tests in farm crafts. Practical instruction is given in milking, hedging, thatching, dry stone walling, sheep shearing, poultry trussing (including plucking), and ploughing. Tests in these seven crafts, some of which are taken in two sections, are held at public events such as agricultural shows and are open to young farmers between the ages of sixteen and twenty-five years. Certificates are awarded to the successful candidates, who may then wear a special badge if they wish to do so.

Through an exchange of members with other countries, young farmers also get a chance to travel. Many clubs send representatives to Denmark, France, Switzerland, and other parts of Europe; while headquarters is responsible for distant overseas visits to Australia, Canada, and the U.S.A.

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maintain the drive to the pen holder, irrespective of the position of the oscillating carriage, the drive from the Motor is transmitted to the pen holder through an extending drive coupling consisting of Rods sliding in the holes of Bush Wheels.

So that the Motor input drive to the gear-box will not be interrupted by the movement of the carriage, the Motor itself can be moved while actually working, by means of a rack and pinion arrangement.

The drive from the Motor to the face-plate designing board also is transmitted through sliding rods and Bush Wheels as in the drive to the oscillating carriage.

LONDON ON WHEELS

Readers will be interested to hear about two Exhibitions, already open, that have been organised by the British Transport Commission as part of the attractions in London for Coronation year visitors. One of these, entitled *London on Wheels*, is staged in the Shareholders' meeting room at Euston Station and will remain open until 29th August. It tells the story of the startling development of public travel in and from London during the 19th century.

Among the models included is a reproduction, believed to be the only one ever constructed, of London's first Horse Tram, named *The People*, of 1861. Other attractions include models of hansom cabs, horse buses, Thames steamers, railway locomotives, rolling stock and other equipment.

Two of the larger exhibits have been specially built for this occasion. One is a full-size reproduction of a third-class compartment in a Midland Railway coach of 1875. The other, also full size, shows a section of a Pullman dining car of about 1895. Railway tickets, handbills, posters, maps and prints, photographs and drawings also are displayed.

Entrance to this Exhibition is through the well-known Great Hall at Euston and up the wide stairway behind the statue of George Stephenson. The actual room in which the Exhibition is housed is historic. It was specially built for general meetings of shareholders of the former L.N.W.R. and was opened 104 years ago.

The other Exhibition, under the title *Royal Journey*, is being held at Battersea Wharf Goods Station and closes on 4th July. It includes a historic locomotive, Royal railway coaches and other relics connected with Royal travels in the 19th century.

Both Exhibitions are open from 10 a.m. to 7 p.m. on weekdays, and from 2 p.m. to 7 p.m. on Sundays, admission 1/- adults and 6d. children under 14.