

## MODEL OF THE MONTH

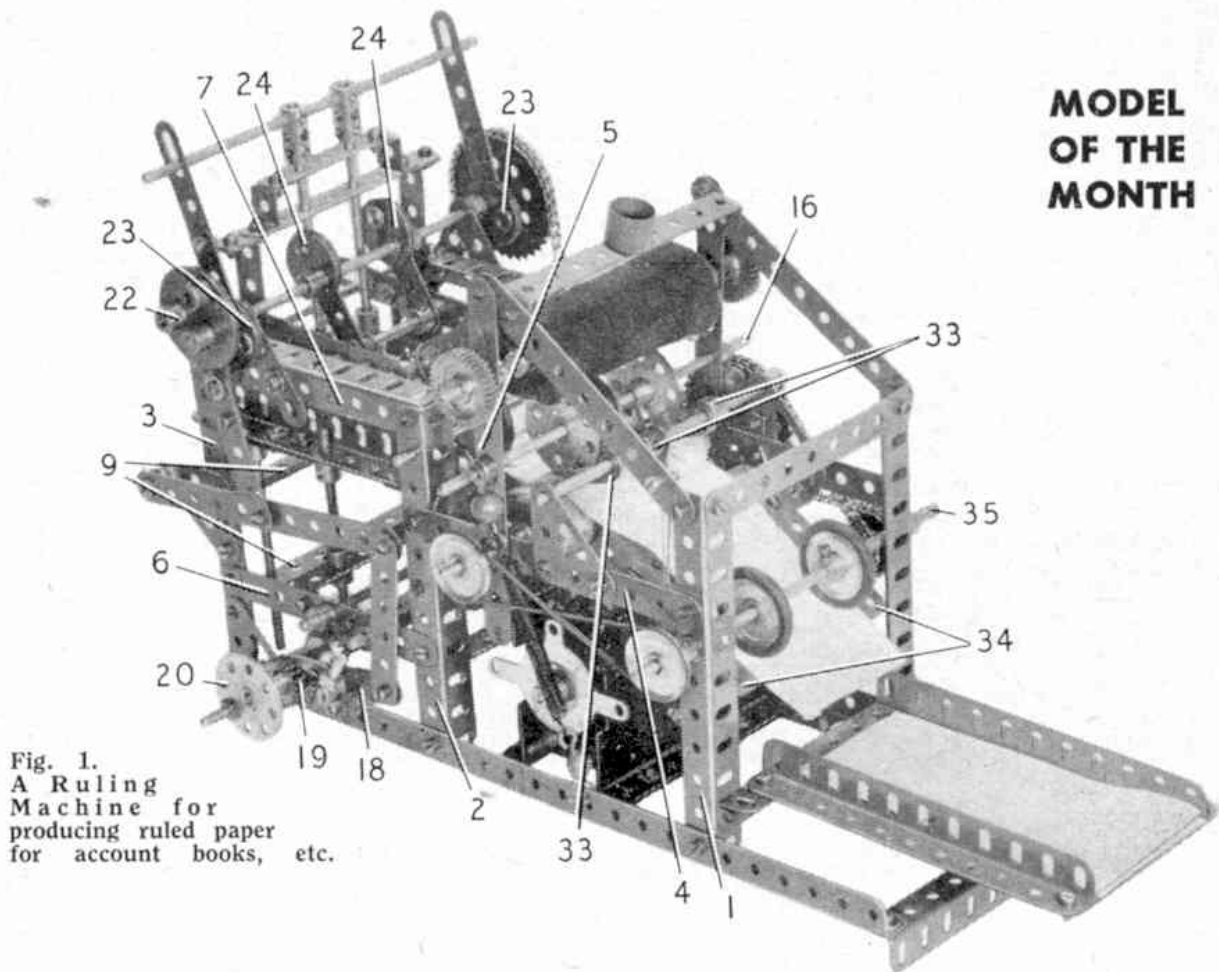


Fig. 1.  
A Ruling  
Machine for  
producing ruled paper  
for account books, etc.

# Paper Ruling Machine

WE have included in the Model of the Month subjects from time to time models of machines that will "do something", that is, carry out some kind of useful work. Among these have been a machine that folds lengths of woven cloth into bales, a machine for filling boxes automatically with pills or other articles, and a wire covering machine. We are adding this month a fine model of a printer's paper ruling machine, which is designed to print rule lines on paper, for use, for example, in the making of ledgers and other account books.

The model is shown complete in Fig. 1 on this page and while it is not at all difficult in construction, the building of it should provide plenty to interest the constructor. The model is driven by an E20R(S) Electric Motor and is most realistic when in operation.

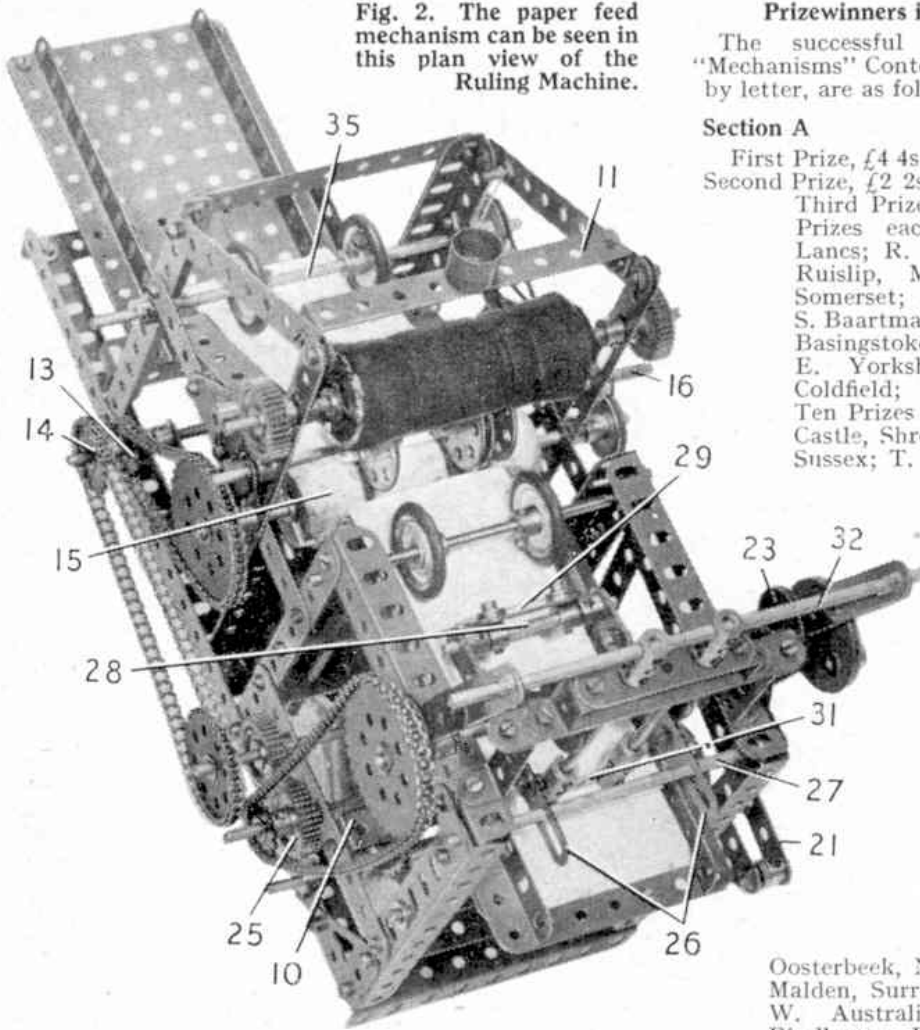
As usual readers who wish to build the

Ruling Machine can obtain full constructional details and a list of the parts required to build it simply by writing to the Editor enclosing a twopenny stamp to cover the cost of postage.

Readers living in Canada, Australia, New Zealand, South Africa, Rhodesia, Ceylon, United States of America and Italy can obtain the instructions by writing to our main agents for those countries, also of course, enclosing appropriate stamps for postage.

We advise readers who wish to build this model to apply for the instructions as soon as possible because there is sure to be a big demand and we cannot guarantee to supply Model of the Month instructions after the end of the month in which the model is illustrated in the *Meccano Magazine*. So to avoid disappointment write for your copy as soon as you receive this issue.

Fig. 2. The paper feed mechanism can be seen in this plan view of the Ruling Machine.



**Prizewinners in the "Mechanisms" Contest**

The successful competitors in the Meccano "Mechanisms" Contest, all of whom have been notified by letter, are as follows:

**Section A**

First Prize, £4 4s.—J. M. Hammond, Arnold, Notts;  
 Second Prize, £2 2s.—R. W. Gillings, Reading, Berks;  
 Third Prize, £1 1s.—N. Haines, Cardiff; Ten Prizes each of 10/—S. Ingham, Nelson, Lanes; R. Cole, Enfield, Middx; J. Reeve, Ruislip, Middx; S. Sampson, Clevedon, Somerset; M. Lobenberg, London S.W.5; S. Baartman, Pretoria, S. Africa; J. A. Olsson, Basingstoke, Hants; P. Hare, Sutton on Hull, E. Yorkshire; R. G. Matthews, Sutton Coldfield; M. Poore, Harrow, Middlesex; Ten Prizes each of 5/—T. Pickard, Bishop's Castle, Shropshire; M. Lanning, Forest Row, Sussex; T. R. E. Latter, Dinas Cross, Pembs; R. H. Khan, Karachi, W. Pakistan; P. Kellow, Torquay, Devon; T. Shiva Rao, Calcutta-26, India; A. Stewart, Moray, Scotland; R. Canovan, Norbury, London S.W.16; B. Tisdall, Kingston Hill, Surrey; S. J. Clearman, New York.

**Section B**

First Prize, £4 4s.—H. C. O. W. Geesink, The Hague, Holland;  
 Second Prize, £2 2s.—A. Konkoly, Budapest, Hungary; Third Prize, £1 1s.—R. A. Wild, Weymouth, Dorset; Ten Prizes each of 10/—Okko Bosgra, Weesp, Netherlands; C. Kensit, London S.W.15; G. Th. van Beusekom, Oosterbeek, Netherlands; T. J. Hatchett, New Malden, Surrey; B. Pickersgill, East Burburg, W. Australia; Tr. T. van Vollenhoven, Eindhoven, Holland; D. E. Hall, Hatch End, Middx; P. H. Kessler, Lucerne, Switzerland; A. W. Umpelby, Newton Abbot, Devon; J. F. Sharp, Berry Brow, Huddersfield; Ten Prizes each of 5/—J. Hutchinson, Wormhill, Nr. Buxton, Derbyshire; Prabir Kumar Sen, Calcutta 4, India; J. P. Michel, Paris Arr. 15, France; J. Shirlaw, Edinburgh 11; Alberto Morales, Mexico; L. Holman, Camborne, Cornwall; Miss J. Noad, Sutton, Surrey; R. Tuthill, E. Dereham, Norfolk; J. M. N. Aylmer Hall, Bushey, Herts; J. F. Loder, Plympton, Devon.

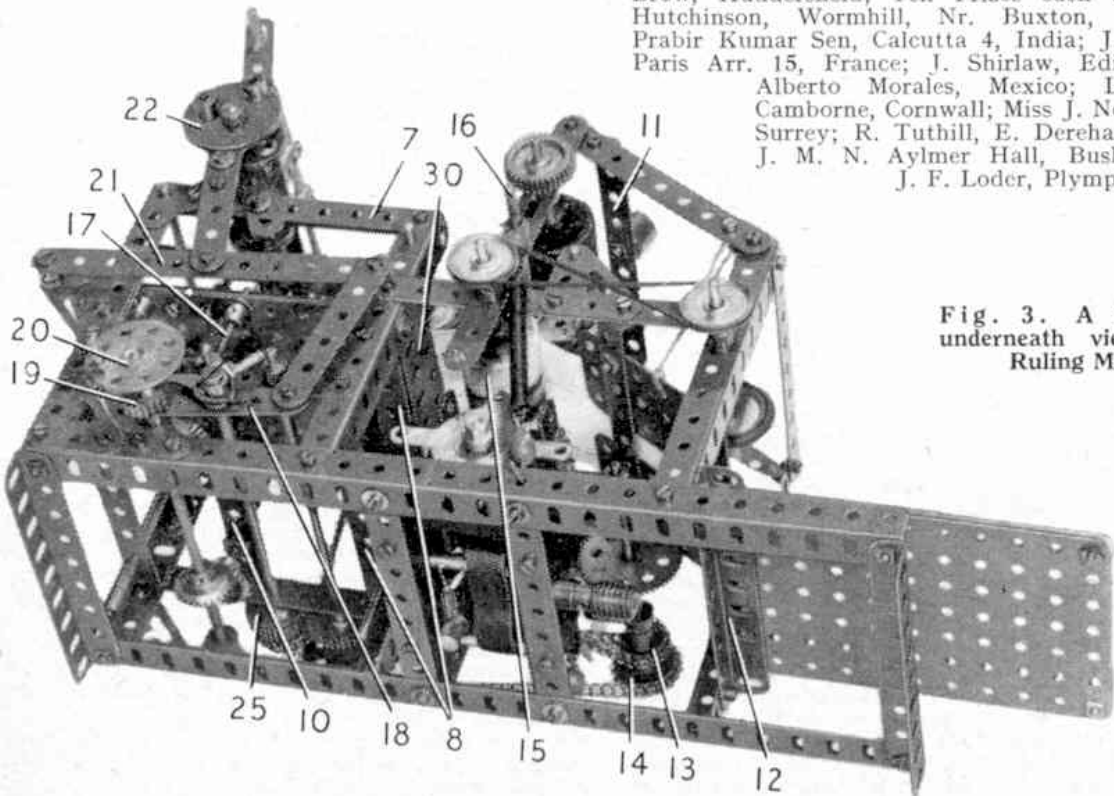


Fig. 3. A side and underneath view of the Ruling Machine.

RULING MACHINE.

Illustrated in the February, 1959 issue of the Moccano Magazine.

Construction of the Frame.

Each side of the frame consists of a  $12\frac{1}{2}$ " Angle Girder fitted with three vertical  $5\frac{1}{2}$ " Angle Girders numbered 1, 2 and 3. The Girder 3 is braced by 1" and  $1\frac{1}{2}$ " Corner Brackets. A  $5\frac{1}{2}$ " Strip 4 is bolted between the Girders 1 and 2, and a  $5\frac{1}{2}$ " Slotted Strip 5 is passed over a  $6\frac{1}{2}$ " Rod mounted in the Strip 4. The Strip 5 is connected to the Girder 1 by a  $4\frac{1}{2}$ " Strip, the bolts used for this purpose being lock-nutted. A  $4\frac{1}{2}$ " Strip 6 is fixed between the Girders 2 and 3, and the upper ends of these Girders are connected by a  $4\frac{1}{2}$ " Angle Girder  $7\frac{1}{2}$

The sides are connected by  $4\frac{1}{2}$ " Angle Girders bolted to the ends of the  $12\frac{1}{2}$ " Angle Girders, by two pairs of  $4\frac{1}{2}$ " x  $\frac{1}{2}$ " Double Angle Strips 8 and 9 fixed between the Girders 2 and 3, by further  $4\frac{1}{2}$ " x  $\frac{1}{2}$ " Double Angle Strips 10 and 11, and by a  $4\frac{1}{2}$ " Angle Girder 12 and a  $4\frac{1}{2}$ " Strip fixed to the Girders 1.

The Motor and the Drive to the Rollers.

An E20R(S) Electric Motor is fixed to  $4\frac{1}{2}$ " Strips bolted across the base, and two 1" x 1" Angle Brackets are fixed to the upper edges of one of the side-plates. These Angle Brackets are spaced from the side-plate by one Washer on each bolt. A Worm Gear on the armature shaft drives a 57-tooth Gear on a  $4\frac{1}{2}$ " Rod held in the Angle Brackets by Collars. This Rod carries a  $\frac{3}{4}$ " Sprocket 13 and a 1" Sprocket 14.

Sprocket 13 is connected by Chain to a 2" Sprocket on the Rod on which the Slotted Strips 5 are mounted. The Slotted Strips are held in place by Collars, and a Wood Roller 15 is fixed on the Rod by two Collars. A single layer of lint is glued to the Wood Roller. A  $6\frac{1}{2}$ " Rod 16 is mounted in the centre holes of the Slotted Strips 5, and this Rod is fitted with four Bush Wheels. Collars are placed on the Rod outside the Slotted Strips, then on each side a Small Loaded Hook attached to a Tension Spring is hooked in place. The lower ends of the Springs are connected by Small Loaded Hooks to the base Girders. These Springs press the Bush Wheels on Rod 16 against the Roller 15.

A  $6\frac{1}{2}$ " Rod mounted in the upper slotted holes of the Slotted Strips 5 carries a Wood Roller wound with several layers of lint. The Rod is weighted by two 1" Gears, so that the Wood Roller presses against the Bush Wheels. A Chimney Adaptor bolted to the Double Angle Strip 11 is filled with ink. A length of wool or wick is placed in the ink

and one end is arranged just above the upper Roller. The ink will be found to drip slowly on to the lint round the Roller.

### The Paper Holder and its Elevating Mechanism.

The sheets of paper ( $4\frac{1}{8}$ " x  $2\frac{5}{16}$ " ) are stacked between the upturned flanges of  $5\frac{1}{2}$ " Angle Girders bolted to a  $5\frac{1}{2}$ " x  $3\frac{1}{2}$ " Flat Plate. Underneath the Plate four Double Arm Cranks are arranged, and these support in their bosses  $3\frac{1}{2}$ " Rods that slide in the pairs of Double Angle Strips 8 and 9. A Threaded Crank is fixed centrally to each side of the Flat Plate and a 3" Screwed Rod 17 is supported in it. The Screwed Rod passes through the Double Angle Strip 10 and it carries at its lower end a  $\frac{7}{8}$ " Bevel Gear. The Screwed Rods on each side are held in the Double Angle Strip by Collars.

The Bevel Gears on the Screwed Rods engage similar Bevel Gears on a  $6\frac{1}{2}$ " Rod, which is mounted in 1" Corner Brackets bolted to the base Girders. At one end of the Rod a Collar is fixed, then a  $2\frac{1}{2}$ " Strip 18 is placed in position, then a Ratchet Wheel 19 is fixed in place and finally a hand control wheel 20 is added. A Pawl is mounted on a Pivot Bolt held in Strip 18 and is held against the teeth of Ratchet 19 by a short piece of Spring Cord. A Threaded Pin screwed into the boss of the Pawl serves as a release handle.

A 3" Strip is lock-nutted between Strip 18 and a  $5\frac{1}{2}$ " Strip 21, which is lock-nutted to a  $1\frac{1}{2}$ " Corner Bracket bolted to one of the Girders 3 and is spaced from the Corner Bracket by a Collar and two Washers. A  $2\frac{1}{2}$ " Strip lock-nutted to the centre of Strip 21 is bolted to a Triple Throw Eccentric 22, mounted in its  $\frac{1}{2}$ " stroke position on a  $6\frac{1}{2}$ " Rod. The latter Rod is supported in two built-up bearings, each consisting of a  $1\frac{1}{2}$ " Strip and a 2" Slotted Strip bolted to one of the Girders 7. The  $6\frac{1}{2}$ " Rod carries Single Throw Eccentrics 23 and 24, and a 2" Sprocket. The Sprocket is connected by Chain to a  $\frac{3}{4}$ " Sprocket on a  $6\frac{1}{2}$ " Rod fitted with a 1" Gear 25. Gear 25 engages a similar Gear on another  $6\frac{1}{2}$ " Rod, and a  $1\frac{1}{2}$ " Sprocket on the same Rod is connected by Chain to the Sprocket 14. The  $6\frac{1}{2}$ " Rods carrying the 1" Gears are held by Collars in the Strips 6.

### Arrangement of the Paper Feed

The Eccentrics 24 pivot between Collars on a  $2\frac{1}{2}$ " Rod mounted in built-up strips 26. Each of these strips consists of a  $2\frac{1}{2}$ " Strip and a 2" Slotted Strip overlapped two holes. The slotted holes are passed over a 5" Rod 27 held in the frame, and Cranks are bolted to the inner ends of the  $2\frac{1}{2}$ " Strips. The Cranks support a  $2\frac{1}{2}$ " Rod 28 fitted with two Collars. Two  $1\frac{1}{2}$ " Flat Girders 29, with a piece of thin rubber clamped between them, are fixed on bolts screwed into the Collars. Two Washers are placed next to the head of each bolt. As the Eccentrics 24 rotate, the rubber between the Flat Girders 29 presses against the upper sheet of paper and pushes it forward under rollers formed by 1" Pulleys fitted with Rubber Rings. These Pulleys are fixed on a 5" Rod mounted in the frame. The main stack of paper is prevented from moving forward by a  $4\frac{1}{2}$ " Flat Girder 30 bolted to the Girders 2.

The stack of paper is prevented from moving except under the action of the feed mechanism by a weight 31, formed by a  $1\frac{1}{2}$ " Strip held in two Strip Couplings. The Strip Couplings are fixed on  $3\frac{1}{2}$ " Rods mounted in a  $4\frac{1}{2}$ " Strip and a  $2\frac{1}{2}$ " Strip connected by  $\frac{1}{2}$ "

Reversed Angle Brackets. The  $4\frac{1}{2}$ " Strip is supported by  $1\frac{1}{2}$ " x  $\frac{1}{2}$ " Double Angle Strips bolted to the Girders 7. The upper ends of the  $3\frac{1}{2}$ " Rods carry Couplings fixed on a  $6\frac{1}{2}$ " Rod 32. Rod 32 is located in the slotted holes of 2" Slotted Strips bolted to the Eccentrics 23. These Eccentrics must be set so that they raise the weight clear of the paper when the rubber between the Flat Girders 29 is pushing the upper sheet forward.

As the printed paper leaves the rollers it is guided by three Pawls 33, arranged as shown on a 5" Rod mounted in  $1\frac{1}{2}$ " Corner Brackets bolted to the Strips 4. The paper slides down two 3" x  $1\frac{1}{2}$ " Flat Girders 34, bolted to a  $4\frac{1}{2}$ " x  $\frac{1}{2}$ " Double Angle Strip lock-nutted to the Strips 4. A rubber band looped between one of the Flat Plates and a bolt in the frame presses the assembly against Rubber Rings on 1" Pulleys, which are fixed on a  $6\frac{1}{2}$ " Rod 35. A 1" Pulley on this Rod is connected by a crossed Driving Band to a similar Pulley on the Rod carrying the Roller 15.

The handwheel 20 is used to bring the stack of paper level with the upper edge of the Flat Girder 30. The printed paper is stacked in a delivery tray formed by  $5\frac{1}{2}$ " Angle Girders and a  $5\frac{1}{2}$ " x  $3\frac{1}{2}$ " Flat Plate bolted to the Girder 12.

Parts required for building the Ruling Machine:- 3 of No. 2; 8 of No. 2a; 1 of No. 4; 5 of No. 5; 3 of No. 6a; 2 of No. 8; 10 of No. 9; 5 of No. 9a; 2 of No. 12b; 8 of No. 14; 3 of No. 15; 1 of No. 15a; 6 of No. 16; 2 of No. 16a; 6 of No. 22; 4 of No. 24; 1 of No. 24a; 1 of No. 27a; 4 of No. 30; 4 of No. 31; 1 of No. 32; 109 of No. 37a; 104 of No. 37b; 11 of No. 38; 2 of No. 43; 2 of No. 48; 5 of No. 48c; 2 of No. 52a; 2 of No. 55; 4 of No. 55a; 4 of No. 57c; 28 of No. 59; 5 of No. 62; 2 of No. 62a; 2 of No. 62b; 2 of No. 63; 2 of No. 63b; 2 of No. 73; 2 of No. 80c; 1 length of No. 94; 2 of No. 95; 1 of No. 95a; 1 of No. 96; 2 of No. 96a; 1 of No. 103c; 2 of No. 103h; 2 of No. 106; 3 of No. 111c; 2 of No. 115; 2 of No. 125; 1 of No. 130; 4 of No. 130a; 5 of No. 133; 4 of No. 133a; ~~1 of No. 133a~~; 1 of No. 147; 3 of No. 147a; 1 of No. 147b; 1 of No. 148; 4 of No. 155; 1 of No. 164; 1 of No. 186a; 1 E20R(S) Electric Motor.