

ATTRACTIVE NEW MODEL

# A MOTOR-DRIVEN FRET-CUTTING MACHINE

AS a change from the ordinary run of model-building I have chosen a rather unusual subject for my new model this month, and it is one that should appeal to those with a fair assortment of Parts and an E15R or E20R Electric Motor at their disposal.

It is the fret-cutting machine illustrated complete in Fig. 1 and while it is quite easy to construct, it is sturdy and will be found quite useful for working in thin veneer or balsa wood.

In constructing the machine it is advisable to start with the framework, which is built up from four  $7\frac{1}{2}$ "", four  $5\frac{1}{2}$ " and four  $4\frac{1}{2}$ " Angle Girders and is braced at each end by crossed  $5\frac{1}{2}$ " Strips placed as shown in the illustrations. Two  $4\frac{1}{2}$ " Angle Girders 1 and 2

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are bolted to the ends of the frame and these are connected by a  $7\frac{1}{2}$ " Strip 3. A  $5\frac{1}{2}$ "  $\times$   $3\frac{1}{2}$ " Flat Plate 4 is bolted across the base of the frame and to this is bolted an E15R Electric Motor.

## THE SAW FRAME

The lower arm of the saw frame consists of four  $9\frac{1}{2}$ " Angle Girders. These are joined together by bolting them to the lower ends of two  $5\frac{1}{2}$ " Angle Girders 5 between which are placed two  $5\frac{1}{2}$ " Flat Girders 6. On each outer side of the Flat Girders is a Corner Gusset. At the front end the  $9\frac{1}{2}$ " Angle Girders are joined together by two Fishplates, placed between the Girders and held by the bolts 7 and 8. Two Washers are also placed on the holding bolts for spacing purposes.

The upper arm 9 of the saw frame is constructed from two  $9\frac{1}{2}$ " Angle Girders and is connected to the back of the frame in a similar manner to the lower arm. Two Washers are placed on the bolt 10 between the Corner Gussets, for spacing purposes, and the front ends of the  $9\frac{1}{2}$ " Girders are connected together by means of a  $1\frac{1}{2}$ " Angle Girder 11. A Double Arm Crank 12 is also bolted across the top of the arm in the position indicated in the illustrations.

## THE WORK-TABLE

The work-table is formed by two  $3\frac{1}{2}$ "  $\times$   $2\frac{1}{2}$ "

Flanged Plates. Two  $3\frac{1}{2}$ " Double Angle Strips 13 and 14 are bolted to the lower arm of the saw frame and to the lugs of these,  $1\frac{1}{2}$ " Corner Brackets are bolted as indicated.

To the top edges of the Corner Brackets on each side of the machine a  $4\frac{1}{2}$ " Angle Girder 15 is bolted and the work-table is then fixed in position.

## SAW MECHANISM AND MOTOR DRIVE

A  $\frac{7}{16}$ " diameter 15-tooth Pinion fixed on the Motor shaft engages a 60-tooth Gear

fixed on a short Rod mounted in the Motor side-plates. Also on this Rod is a  $\frac{1}{2}$ " diameter 19-tooth Pinion that engages a 57-tooth Gear fixed on a  $4\frac{1}{2}$ " Rod 16, also mounted in the motor side-plates. A 1" Sprocket Wheel on this Rod is connected by Chain to a 2" Sprocket Wheel fixed on a 3" Rod 17 that is mounted in the  $7\frac{1}{2}$ " Strip 3 and in a similar Strip 18 fixed across the outside of the base-frame.

On the inner end of Rod 17 is a Bush Wheel 19 fitted with a Threaded Pin 20. A  $2\frac{1}{2}$ " Strip, forming a connecting rod, is placed over the Pin and held in place by a Collar, as shown, and the upper end of the Strip is attached by a bolt to a Collar 21. The Collar 21 is gripped by the bolt on the end of a 4" Rod with Keyway 22, which is passed through the boss of a Double Arm Crank 23 and the centre hole of a  $1\frac{1}{2}$ " Strip 24 bolted across the lower and upper sides of the lower saw-frame arm respectively. A Key Bolt is inserted in the boss of the Crank 23 so as to prevent the Rod with Keyway from turning in the Crank, but at the same time allow the Rod to move freely up and down in the boss.

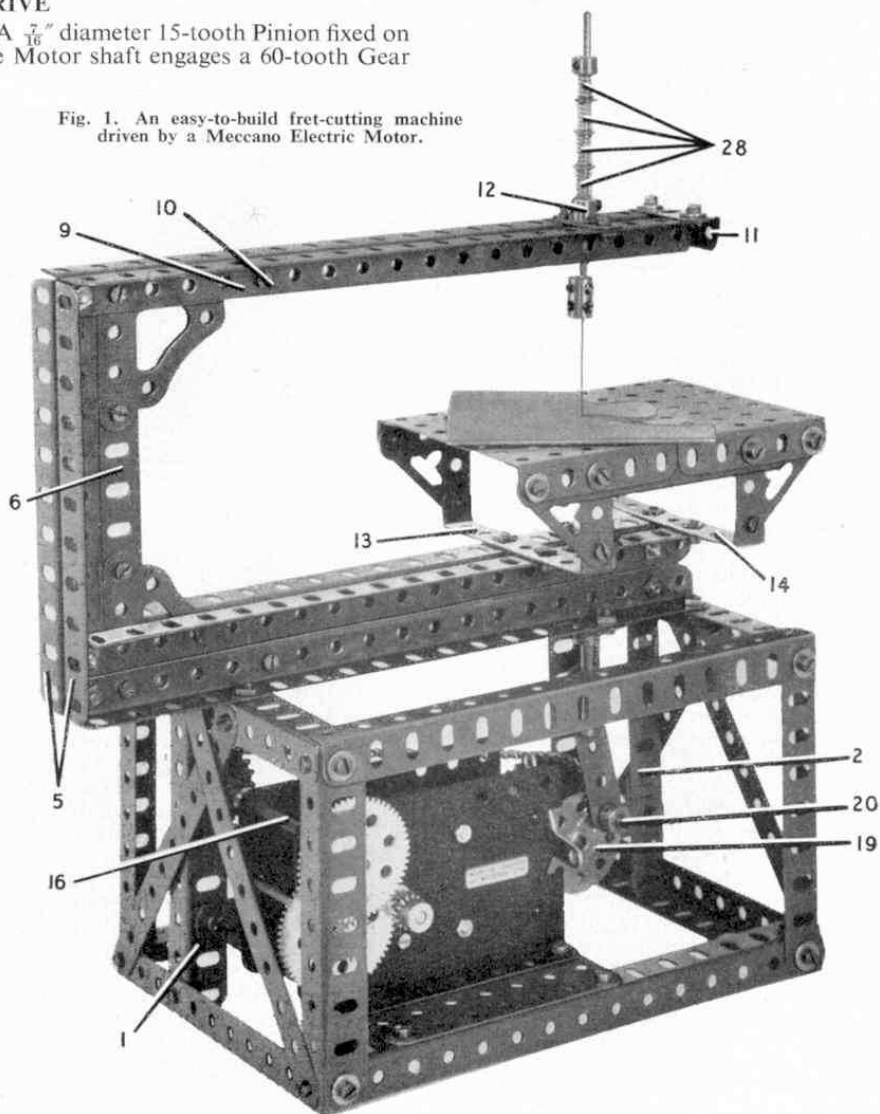


Fig. 1. An easy-to-build fret-cutting machine driven by a Meccano Electric Motor.

4 of No. 108; 9 of No. 111c; 1 of No. 115; 4 of No. 120b; 4 of No. 133; 2 of No. 230; 2 of No. 231; 1 E15R Electric Motor; 1 Fret-saw Blade.

### "AUTUMN MODEL-BUILDING COMPETITION" PRIZE WINNERS

#### Section A

1st Prize, Cheque for £4.4.0: R. v. Rooij, Eindhoven, Holland. 2nd Prize, Cheque for £2.2.0: P. F. Stanbury, Llanelly. 3rd Prize, Cheque for £1.1.0: A. P. King, Portchester, Hants.

Five Prizes each of 10/6: M. C. Thew, Paignton; J. Stephens, Darlington; M. F. Fishwick, Marple; K. Alexander, Auckland, E.2, New Zealand; R. Cole, Enfield.

Five Prizes each of 5/-: D. Clarke, Fife, Scotland; K. Corlett, Barrow-in-Furness; N. C. Baines, Southampton; R. J. Battersby, Oxford; I. D. Singer, Los Angeles 19, U.S.A.

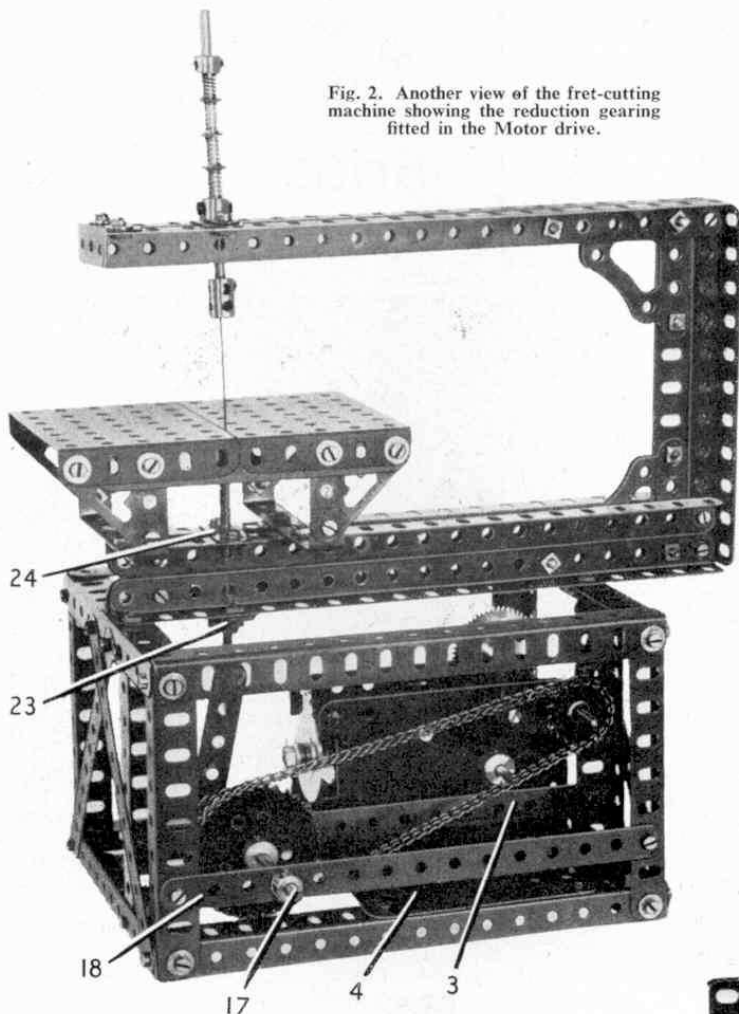
#### Section B

1st Prize, Cheque for £4.4.0: M. Brookfield, Blythe Bridge. 2nd Prize, Cheque for £2.2.0: F. Pickles, London, S.E.18. 3rd Prize, Cheque for £1.1.0: Dr. Gustave Gingras, Quebec, Canada.

Five Prizes each of 10/6: K. Hoorn, Amsterdam, W.2, Nederland; E. P. Steffens, Haarlem, Nederland; K. J. Shrewsbury, Burton-on-Trent; G. Servetti, Piacenza, Italy; J. Attard, Marsa, Malta, G.C.

Five Prizes each of 5/-: D. Read, Didsbury, Manchester, 20; L. Villa, Gibraltar; H. Manning, London, N.12; J. C. Palmer, Droitwich Spa; R. D. Couchman, Pershore.

Fig. 2. Another view of the fret-cutting machine showing the reduction gearing fitted in the Motor drive.



Fixed on the upper end of the Rod with Keyway is a Short Coupling 25, in which the lower end of a fret-saw blade is fixed.

The upper end of the saw blade is gripped in a Short Coupling 26 fixed on the lower end of a second 4" Rod with Keyway 27. The Rod with Keyway is mounted in the boss of the Double Arm Crank 12 and on it are placed four Compression Springs 28, each separated from the others by a Washer, as shown. The Springs are held in place by a Collar 29. A Key Bolt is inserted in the boss of the Double Arm Crank 12 to locate in the groove of the Rod with Keyway and prevent it from turning, while leaving it free to move up and down in a similar manner to the Rod 22. This completes the construction of the model.

When the Motor is switched on, the action of the crank formed by the Bush Wheel and Threaded Pin 20 causes the saw blade to move up and down, the purpose of the Compression Springs 28 being to assist in the upward stroke and to apply tension to the saw blade.

Suitable blades for use in this machine can be obtained quite cheaply from any dealer in fretwork tools and supplies.

*Parts required to build the Fretwork Machine:* 2 of No. 1b; 4 of No. 2; 1 of No. 5; 1 of No. 6a; 6 of No. 8a; 4 of No. 8b; 6 of No. 9; 8 of No. 9a; 1 of No. 9f; 3 of No. 10; 1 of No. 15a; 1 of No. 16a; 1 of No. 16b; 1 of No. 24; 1 of No. 26; 1 of No. 26c; 1 of No. 27c; 1 of No. 27d; 74 of No. 37a; 66 of No. 37b; 42 of No. 38; 2 of No. 48b; 1 of No. 52a; 2 of No. 53; 8 of No. 59; 2 of No. 62b; 2 of No. 63d; 1 of No. 94; 1 of No. 95; 1 of No. 96; 2 of No. 103;

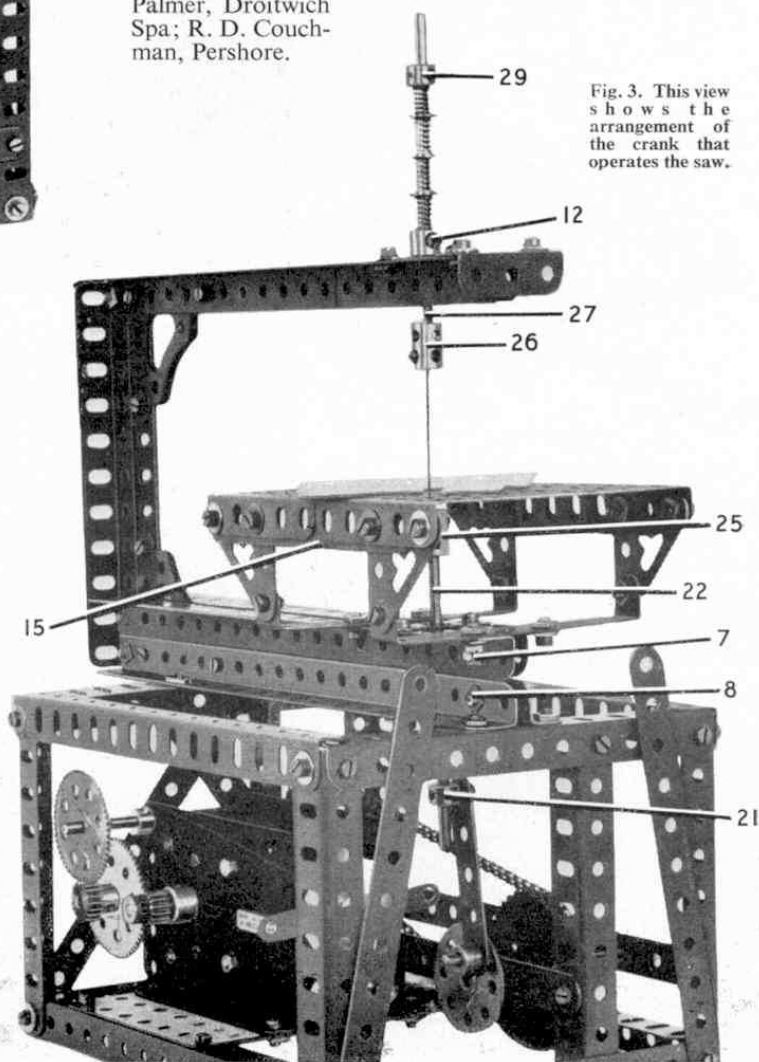


Fig. 3. This view shows the arrangement of the crank that operates the saw.