# A Meccano Fretwork Machine

THE Meccano fret-cutting machine shown in the accompanying illustrations is built entirely from standard parts, and can be used for actual fretcutting.

Each side of the platform 3 consists of two 9½″ Angle Girders bolted together to form a T-section girder. The ends of the platform are also T-section girders, each of them consisting of two 5½″ Angle Girders bolted together. A 5½″ × 2½″ Flat Plate is bolted across each end of the platform, and another similar plate is bolted across the centre, leaving a space of 1″ between each Plate. Three 5½″ × 2½″ Flanged Plates 13 are bolted to the Flat Plates and a 7½″ Girder is bolted to their top flanges.

The work table consists of two 4½″ × 2½″ Flat Plates 15 spaced ½″ apart and strengthened by four 5½″ Angle Girders, the projecting ends of which are joined by a 5½″ Flat Girder that is attached to the flange of the front 5½″ × 2½″ Flanged Plate. The table is supported at the rear by 5½″ Angle Girders, attached by Architraves 14 to the platform 3 and by 1″ Corner Brackets to the sides of the table. At the front the table is supported by two 7½″ Angle Girders.

To build the saw frame support 19, four 18½″ Angle Girders are bolted together to form two 18½″ U-section girders. These are then bolted one above the other to the Flanged Plates 13, and at their rear ends is attached a 7½″ U-section girder 20 consisting of two 7½″ Angle Girders bolted together. The built-up girder 21 consists of two 9½″ Girders and two 3½″ Girders overlapped four holes and bolted together to form an 11″ U-section girder.

Each of the arms 16 and 17 is constructed by bolting two 24½″ Angle Girders together to form a U-section girder. 1½″ Strips are bolted inside the slotted flanges of these girders, and through them are passed 1½″ Rods on which the saw frame pivots.

The saw frame is tensioned by means of two Compression Springs 23, and the tension applied to the saw can be adjusted by means of a butterfly nut on the Screwed Rod 24. This Screwed Rod is pivotally attached to the lower arm by means of a Swivel Bearing, and the butterfly nut consists of a Threaded Boss fitted with two Threaded Pins. A Collar on the Screwed Rod prevents too much tension being applied to the saw.

The weight of the lower arm is compensated by two Springs 34.

The upper end of the saw blade is held in a Strip Coupling 32 bolted to the arm of a ½″ throw Eccentric 31, which is mounted on a 2″ Rod. The Rod carries a 2″ Pulley and is journalled in two Cranks fixed to the sides of the arm. The saw is held in the Strip Coupling by a 1″ Screwed Rod fitted with a butterfly nut consisting of a Collar and two Threaded Pins. The lower end of the saw is held in a Strip Coupling 33 also fitted with a 1″ Screwed Rod and butterfly nut. In this case the Strip Coupling is bolted to a Trunnion that is attached by its flange to the lower arm.

Reciprocating motion is applied to the saw frame by a crank consisting of a Face Plate 28 mounted on a 4½″ Rod 25. Each of the bearings for the 4½″ Rod consists of a Double Arm Crank bolted to two Architraves 26. In addition to the Face Plate the Rod 25 carries a Flywheel and a 1″ Sprocket Wheel 27. The Face Plate is fitted with a crank pin consisting of a 1″ Rod carrying a Coupling, the Rod being held in place by two Collars. A 2½″ Rod 29 is fixed in the longitudinal bore of the Coupling, and its upper end is held in the spider of a Swivel Bearing fixed to the lower arm of the saw frame. A 2½″ Rod 30 journalled in the Architraves 26, carries a flanged roller guide for the driving chain consisting of two ¾″ Discs and 10 Washers.

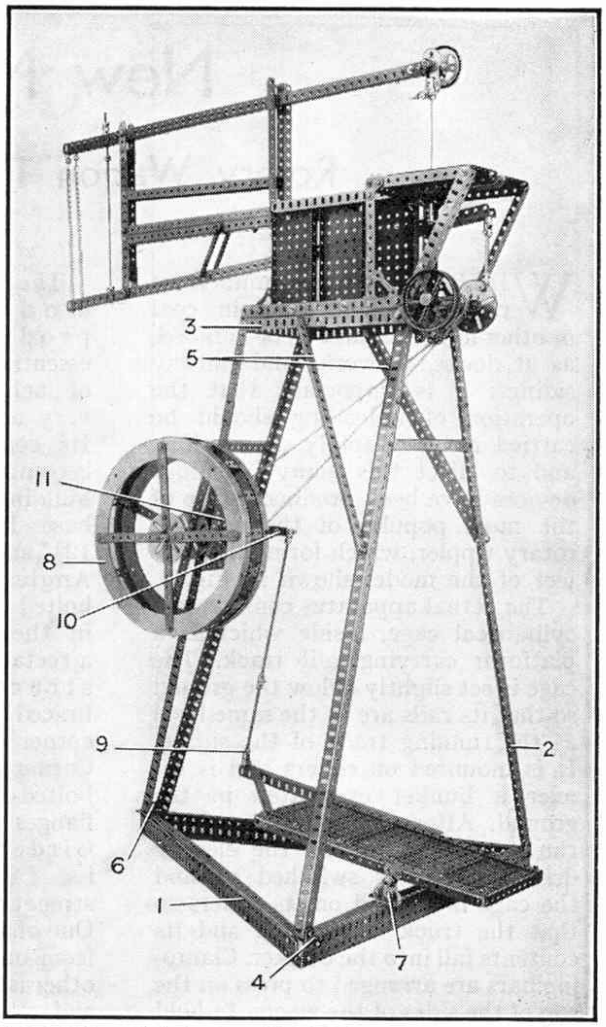


Fig. 1. This model fretwork machine is built entirely from Meccano parts and can be used for actual fretcutting.

The main driving shaft carries the built up flywheel 8, a 3″ Sprocket Wheel and a Crank 10, which consists of two Cranks bolted back to back overlapping 1″. The flywheel comprises two Ring Frames, part No. 167b, joined together by 2″ Strips, and it is weighted with four Weights, part No. 66, bolted inside the rim. The hub of the flywheel consists of Face Plates, and the spokes are 4½″ Strips.

The treadle consists of three 5½″ × 2½″ Flanged Plates and two 5½″ × 2½″ Flat Plates bolted to two 12½″ Angle Girders. It pivots on a 6½″ Rod passed through two 1″ Triangular Plates bolted to its sides and also through two Trunnions 7 attached to the base. A 12½″ Girder is bolted to the right-hand side of the treadle so that it overhangs 11 holes, and its rear end is connected by a Swivel Bearing 9, and an 8″ and a 4″ Rod, to the Crank 10. Connection to the crank is effected by means of a Coupling.

Parts required to build the fretwork machine: 16 of No. 2a; 4 of No. 5; 16 of No. 6; 2 of No. 6a; 8 of No. 7; 4 of No. 7a; 10 of No. 8; 11 of No. 8a; 11 of No. 8b; 14 of No. 9; 3 of No. 9a; 3 of No. 9b; 3 of No. 9c; 1 of No. 9d; 2 of No. 9e; 1 of No. 9f; 2 of No. 13a; 1 of No. 14; 1 of No. 15a; 1 of No. 15b; 2 of No. 16a; 3 of No. 18a; 1 of No. 20a; 342 of No. 37a; 335 of No. 37b; 215 of No. 38; 4 of No. 43; 6 of No. 52; 4 of No. 53a; 2 of No. 57c; 22 of No. 59; 4 of No. 62; 4 of No. 62b; 4 of No. 63; 2 of No. 63b; 1 of No. 64; 4 of No. 66; 5 of No. 70; 2 of No. 77; 1 of No. 78; 3 of No. 82; 1 of No. 94; 1 of No. 95b; 1 of No. 96; 3 of No. 103b; 2 of No. 103a; 1 of No. 103; 8 of No. 108; 3 of No. 109; 1 of No. 111; 3 of No. 111a; 4 of No. 111d; 6 of No. 115; 3 of No. 126; 1 of No. 132; 4 of No. 133; 8 of No. 133a; 3 of No. 165; 2 of No. 167b; 1 of No. 170 2 of No. 217b.

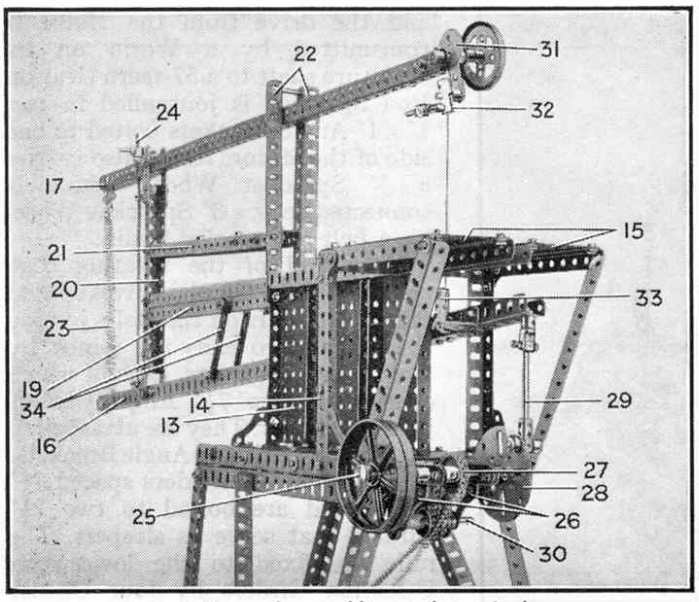


Fig. 2. The saw frame and its operating mechanism.