

A New Meccano Loom

The Beaming Frame and Other Details

By 'Spanner'

ASSUMING that the Loom has been built up to the stage described in last month's *M.M.*, the next operation is the construction of the Heald Frames. These are the frames that hold the Healds through which the warp threads are passed from the beam. They are actuated by the cams 56 and rise and fall to provide the "shed" through which the shuttle carrying the weft thread passes.

On a 4" Rod (bottom) and a 4½" Rod (top) 30 Healds should be placed, with a Coupling on each end of each Rod. The Couplings are joined together lengthwise by 5" Rods, and these must be passed through the top 3½" Angle Girders 6 before the Rods are fixed in the Couplings. The lower Couplings carry 3½" Rods to extend the 5" Rods lengthwise, and an End Bearing 52 (Fig. 3, December *M.M.*) is secured to the bottom of one of the Rods. A 7½" Strip 53 is pivoted between the lugs of the End Bearing, and this Strip is *lock-nutted* to a Fishplate 54 pivoted on Rod 55. The Fishplate is *lock-nutted* in the 10th hole of Strip 53, counting from the End Bearing. Spring Clips are used to space the Fishplates and hold the Strips 53 in line with cams 56.

After being raised by the action of the cams, the Heald Frames are returned to their lowest positions by the tension of 2½" and 6" Driving Bands looped together and anchored on a Rod 57 (Fig. 3), and the bottom of the Heald Frames. The Heald Frames should move very freely on depressing Strips 53.

The Warp Tension Mechanism

A simple mechanism is provided to keep the warp threads at a suitable tension. This is shown clearly in Figs. 3 and 4. Two Bush Wheels are fixed to Rod 58, with a 3" Rod 59 mounted in holes in the Bush Wheels. A Bush Wheel extended with a 3" Strip is fixed to the end of Rod 58. A 6" Driving Band looped between the 3" Strip, and a 1½" Bolt fixed to the

frame imparts the required tension to the warp threads while the Heald Frames are moving up and down. A Cord, slightly tensioned with a Spring and passed over a 1½" Pulley 61, maintains tension on the warp beam.

The Shuttle

Construction of the shuttle, which is shown in Fig. 2 on the opposite page, is quite simple. It consists of two 3½" Strips, two End Bearings and a 1½" Rod. The ends of the Strips are bent slightly to fit the lugs of the End Bearings. A ⅜" Bolt, which should for preference be

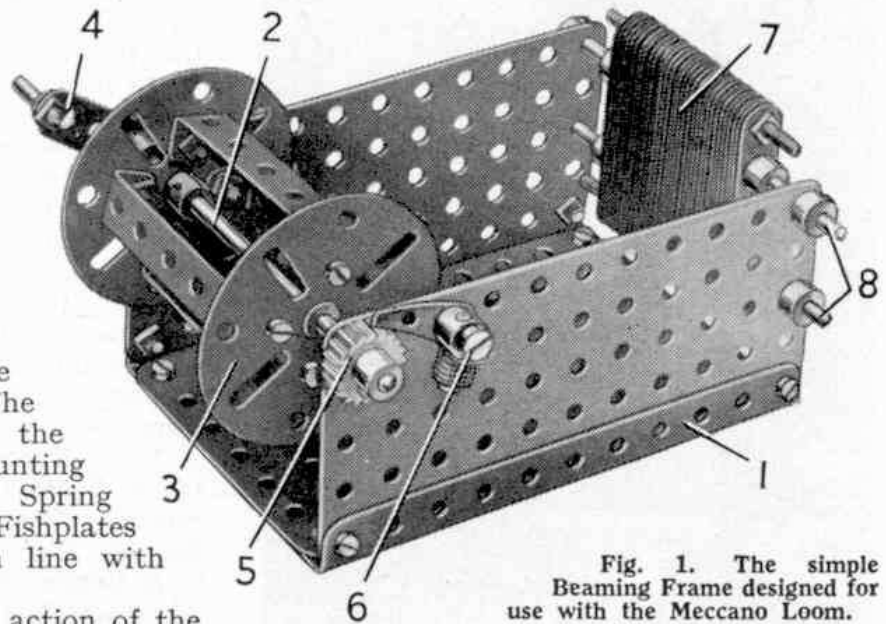


Fig. 1. The simple Beaming Frame designed for use with the Meccano Loom.

filed slightly shorter, is passed through the end hole of one of the Strips and then through the lugs of an End Bearing. A Washer is placed on the Bolt between the lugs of the Bearing, and the Bolt is then passed through the end hole of the other 3½" Strip. This process is repeated at the other ends of the Strips.

A 1½" Rod that forms the spindle on which the weft thread is wound, is held loosely in the bosses of the End Bearings, and is retained in place by stops made by screwing the grub screws right down. *The grub screws must not grip the Rod.* The sides of the shuttle must be parallel and the completed shuttle must be an easy sliding fit in the shuttle race. When

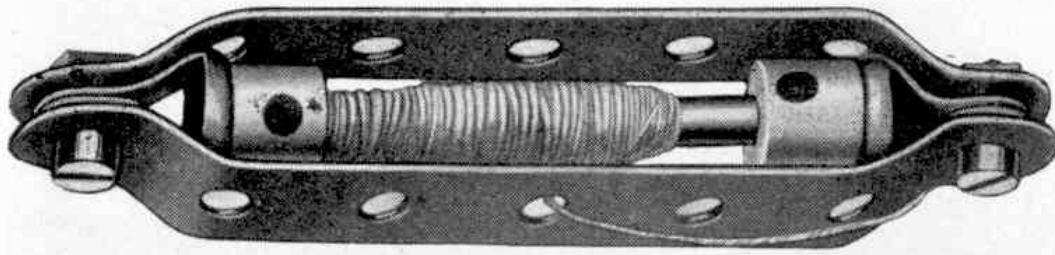


Fig. 2. The built-up Loom Shuttle.

Drawing the warp

Put the prepared beam in the

loom. Take the first thread, pull it through the *first* heald on the *front* frame, then the second thread and pull it through the *first* heald on the *back* frame. These two threads are drawn through the *first* division or dent in the reed. Continue in this way using each dent until all the threads are drawn through. Lightly brush and pass them around the upper roller and secure them to the take-up roller by means of the Rod placed in its groove.

it is in position in the race the picking sticks must strike the shuttle nose centrally. Carefully wind some "weft" thread on the shuttle spindle, keeping it in the centre portion of the Rod. Do not try to put too much on at one filling, and make sure it will run off perfectly freely, otherwise the shuttle may "stick" between the warp threads. The thread is then brought out from the shuttle as shown.

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Beaming Frame

Fig. 1 shows a simple Beaming Frame suitable for preparing the beam of warp threads ready for insertion in the Loom. The base of the frame is a $5\frac{1}{2}'' \times 3\frac{1}{2}''$ Flat Plate, fitted at each side with a $5\frac{1}{2}''$ Angle Girder 1 that supports a $5\frac{1}{2}'' \times 2\frac{1}{2}''$ Flat Plate. A Rod 2 carries the beam 3 on which the threads are wound.

Timing the Loom

The mechanism must be set so that when the slay is at back centre, one heald frame is in its highest position and will stay up until the shuttle has passed through the warp threads. The picking stick motion should then come into action just before the slay reaches back-dead centre, and should shoot the shuttle across to reach the other end just as the slay leaves back dead-centre. A little time spent in careful adjustment will soon give the desired position for smooth running.

A handle 4 is fitted to one end of the Rod 2, and the other end carries a Ratchet Wheel 5. A Pawl 6 on a Pivot Bolt engages the teeth of the Ratchet Wheel. The Pawl is weighted by Washers on a $\frac{3}{8}''$ Bolt screwed into its boss.

The reed or frame 7 consists of 31 $2\frac{1}{2}''$ Strips spaced apart by Washers on two Screwed Rods, and is supported in the $5\frac{1}{2}'' \times 2\frac{1}{2}''$ Flat Plates by Collars on two Rods 8.

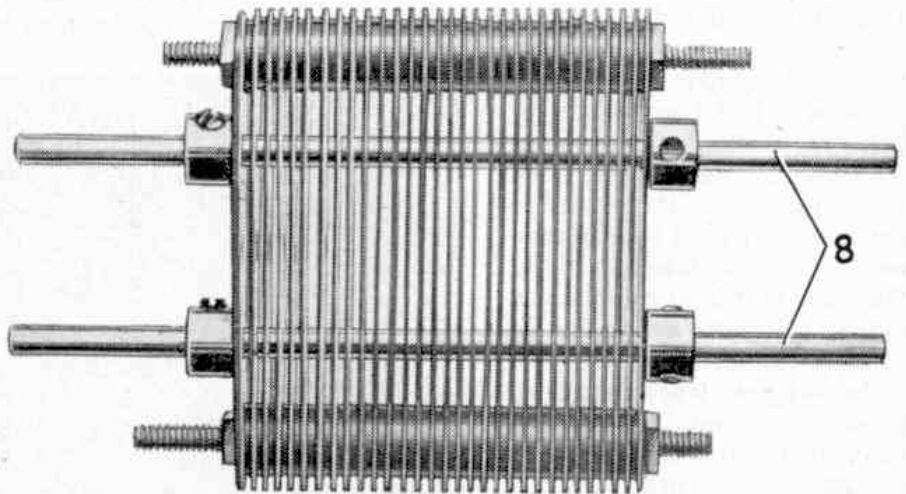


Fig. 3. The reed removed from the Beaming Frame to show its construction more clearly

Now knock two nails into a wall, a few yards apart, and then wind around them 30 turns of thread. These are now taken off the nails carefully, and cut at one end. You will then have 60 separate lengths of thread. The threads are now drawn through the reed, two threads between each pair of Strips, and with one knot are secured to the centre of the beam axle. Holding the threads tightly in the left hand, wind them on to the beam; the reed will space the threads evenly between the Face Plates. A little practice will soon produce a neat beam.

Parts required to build the Meccano Loom: 6 of No. 1a; 5 of No. 1b; 14 of No. 2; 5 of No. 2a; 9 of No. 3; 3 of No. 4; 33 of No. 5; 1 of No. 6a; 4 of No. 8; 6 of No. 8a; 4 of No. 8b; 9 of No. 9; 2 of No. 9a; 6 of No. 9b; 2 of No. 9d; 10 of No. 10; 1 of No. 12; 3 of No. 12a; 1 of No. 12b; 1 of No. 13; 3 of No. 13a; 4 of No. 14; 6 of No. 15; 5 of No. 15a; 2 of No. 15b; 6 of No. 16; (Continued on page 50)