AN INTERESTING BRAIDING MACHINE

WILL PLAIT THREE STRANDS OF COTTON

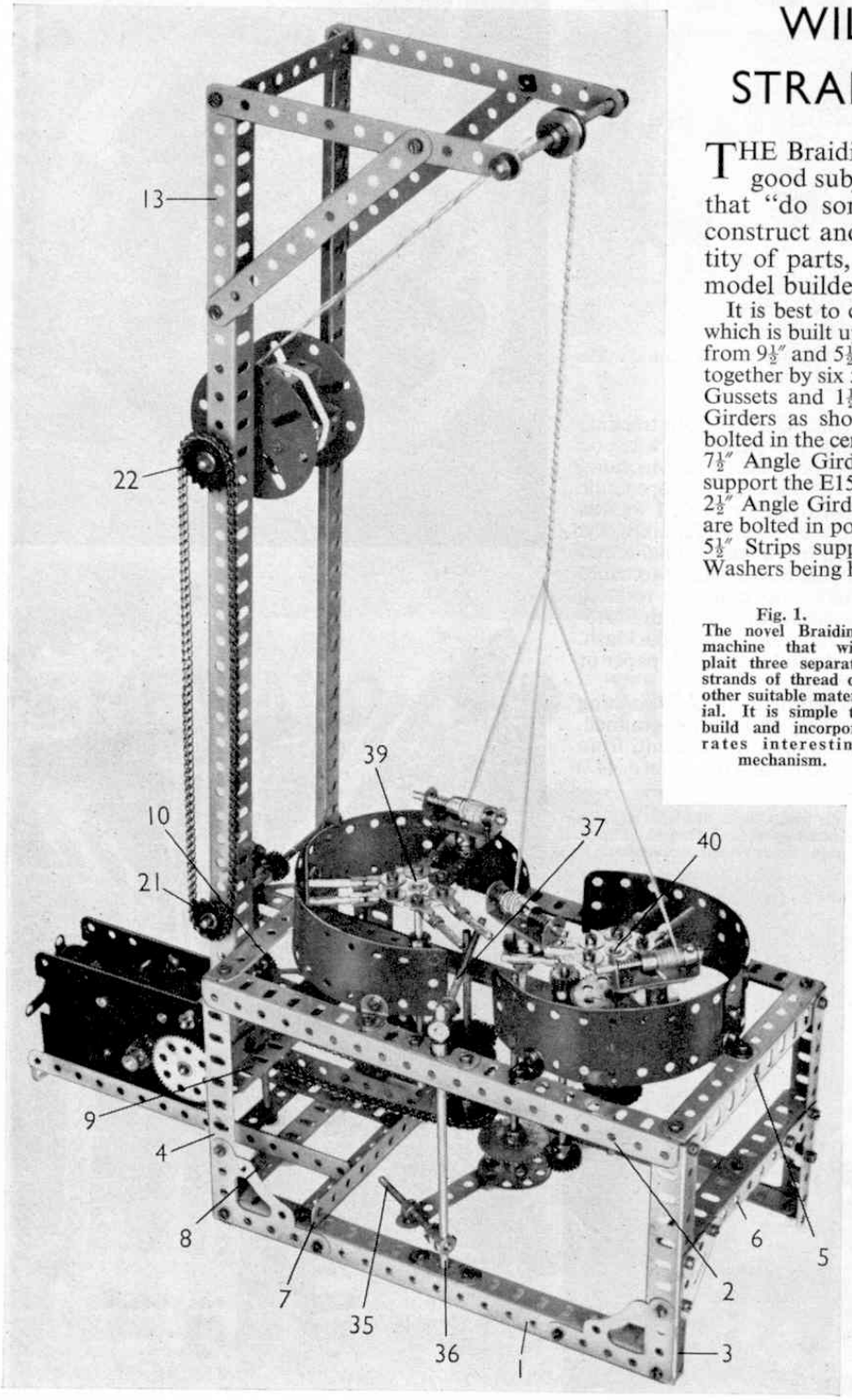

Fig. 1.
The novel Braiding machine that will plait three separate strands of thread or other suitable material. It is simple to build and incorporrates interesting mechanism.

THE Braiding Machine shown in Fig. 1 makes a good subject for those who like to build models that "do something," and as it is quite easy to construct and does not require an excessive quantity of parts, it should have a wide appeal among model builders generally.

It is best to commence construction with the framework, which is built up as follows. Two rectangular sides are made from 9½″ and 5½″ Angle Girders 1, 2, 3, and 4 and then joined together by six 5½″ Angle Girders 5, 6, 7, 8, 9 and 10. Corner Gussets and 1½″ Corner Brackets are bolted to the Angle Girders as shown. Two 9½″ Angle Girders 11 and 12 are bolted in the centre of the Angle Girders 5, 10 and 6, 9. Two 7½″ Angle Girders attached to the Angle Girders 7 and 8 support the E15R motor, and are connected at the front by a 2½″ Angle Girder. Now the 18½″ Angle Girders 13 (Fig. 1) are bolted in position. Attached to their upper ends are four 5½″ Strips supporting a 4″ Rod carrying a ½″ Pulley, ¾″ Washers being held against the sides of the Pulley by Collars.

MOTOR DRIVE

A ½″ Pinion on the armature shaft of the Motor drives a 57-tooth Gear on a 2½″ Rod carrying a ¾″ Pinion that engages with a 50-tooth Gear 14 secured to a 2½″ Rod. On this Rod is also fixed a Worm 15, which drives a 57-tooth Gear 17 on a 6½″ Rod 16 journalled in two Trunnions and a 2½″ Strip. On this Rod is fixed also a Worm 19, and a 1″ Sprocket Wheel 18.

TAKE-UP DRIVE

The Worm 19 engages a ½″ Pinion 20 on a 4½″ Rod. This Rod carries also a ¾″ Sprocket Wheel 21 that drives a 1″ Sprocket Wheel on a 4½″ Rod 22 (Fig. 1). Rod 22 carries also a built-up drum on which the cotton to be braided is wound. Two face Plates are bolted together by four 1½″ × ½″ Double Angle Strips to form the drum.

BRAIDER HEAD DRIVE

Now fix a 1″ Sprocket Wheel 23, a 1″ Gear wheel 24, and a 1″ Sprocket Wheel 25 to a 4″ Rod. Connect Sprocket Wheels 18 and 25 by Chain. A 1″ Gear Wheel 26 on a 4″ Rod 27, is now arranged to engage the 1″ Gear Wheel 24. A 1″ Sprocket Wheel 23 is used to drive a similar one on the 4½″ Rod 28, which also carries a 57-tooth Gear that drives a ½″ Pinion on the 4½″ Rod 29. At the end of this Rod is fixed a ¾″ Pinion 30, that engages a 50-tooth Gear 31 on a 4½″ Rod 32. A Bush Wheel 33 is fastened at the end of this Rod and on a Threaded Pin in the Bush

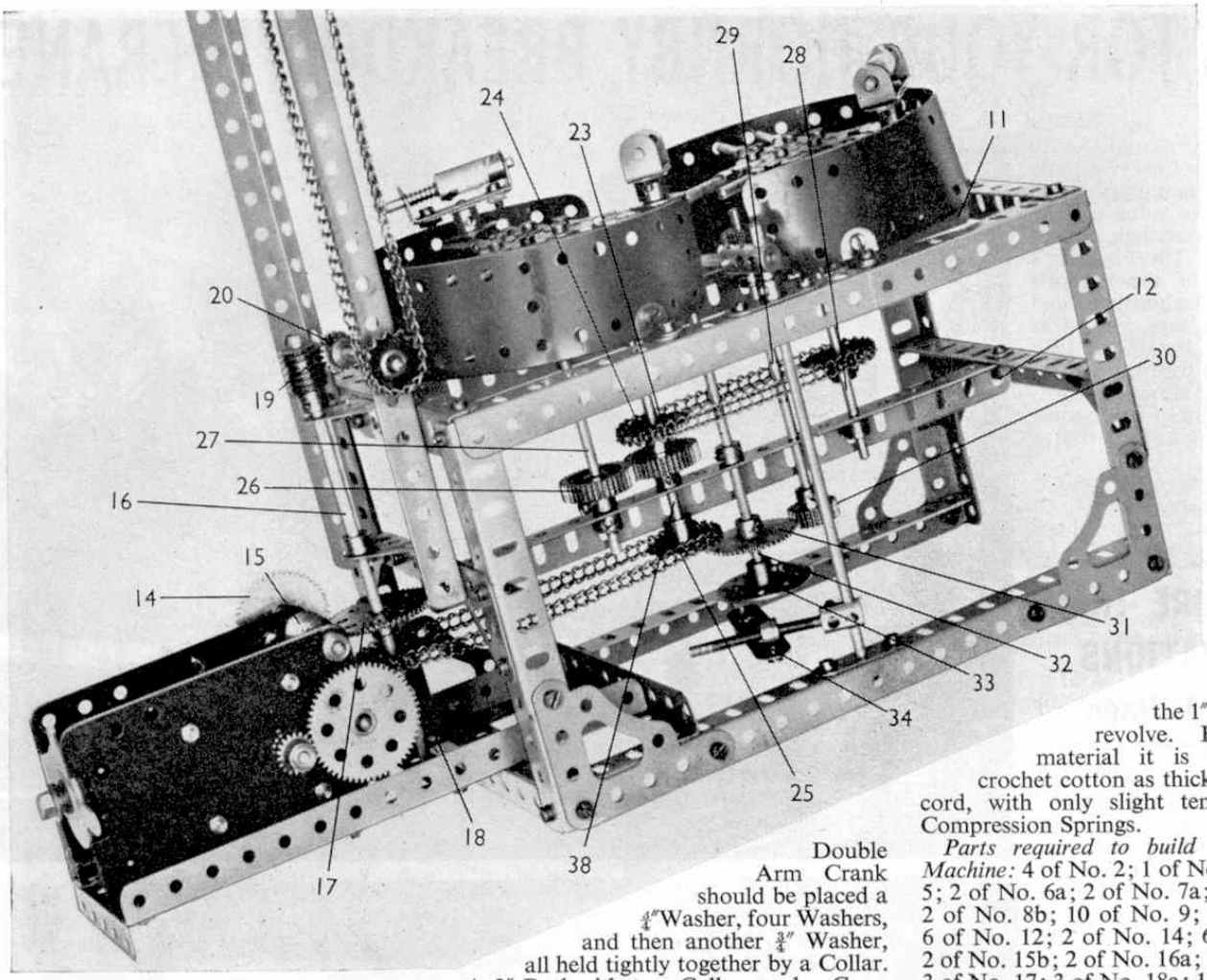

Fig. 2. A side view of the Braiding machine showing the gearing that operates the braider heads.

Wheel a $2\frac{1}{2}''$ Strip 34 is pivoted, and its other end is attached to a Flexible Coupling Unit 35 by a Bolt screwed into a Collar. A Short Coupling fixed to a $6\frac{1}{2}''$ Rod 36 holds the Flexible Coupling Unit as shown. A Coupling carrying a $3''$ Rod 37 is fixed by two Grub Screws to the $6\frac{1}{2}''$ Rod 36. The Short Coupling now has to be adjusted so that as the Bush Wheel rotates the $3''$ Rod 37 (Fig. 1) is moved evenly from side to side, pressing slightly on the Rods 29 and 38.

THE BRAIDER HEADS

Two Bush Wheels 39 and 40 each have six Rod and Strip Connectors bolted to them. These are so arranged as to form three pairs. Each Rod and Strip Connector holds a $1''$ Rod. When the Rods 27 and 28 are rotated the $1''$ Rods on one Bush Wheel should nearly touch the Rods on the other Bush Wheel, and at the same time they should be dead level and in perfect alignment. All three pairs of Rods should be carefully checked and adjusted to ensure this by bending the Rod and Strip Connectors as necessary.

BOBBIN HOLDERS

A $1\frac{1}{2}'' \times 1\frac{1}{2}''$ Double Angle Strip should now be bolted to a Double Arm Crank. On a $1\frac{1}{2}''$ Rod secured in the boss of the Double Arm Crank should be placed a $\frac{3}{4}''$ Washer, four Washers, and then another $\frac{3}{4}''$ Washer, all held tightly together by a Collar. A $2''$ Rod with two Collars and a Compression Spring are placed in the lugs of the Double Angle Strips. The Collars are fitted with 7/64″ Grub Screws.

TIMING THE MACHINE

The braider head 39 revolves in a clockwise direction. To "time" the mechanism, which is necessary to ensure correct functioning, place a bobbin holder between a pair of $1''$ Rods when they are about "five past the hour," keep turning slowly and when the $2''$ Rod of the bobbin holder has just passed the end of the Rod 37, the Bush Wheel 33 must be so adjusted as to start moving the Rod 37. At this stage the other braider head will be moving in an anti-clockwise direction so that the bobbin holder will be pushed from braider head 39 to braider head 40 by the Rod 37. Now place another bobbin holder in the braider head 40 and likewise the Rod 37 will push this over to braider head 39. Repeat again by putting the third bobbin holder in the braider head 39.

Before running the machine attach two $5\frac{1}{2}'' \times 1\frac{1}{2}''$ Flexible Plates to the Angle Girders forming the top of the bed with Angle Brackets. The Plates should clear the ends of the $1''$ Rods by about a $\frac{1}{4}''$. These Flexible Plates keep the bobbin holders on the $1''$ Rods as they revolve. For braiding material it is best to use crochet cotton as thick as Meccano cord, with only slight tension on the Compression Springs.

Parts required to build the Braiding Machine: 4 of No. 2; 1 of No. 3; 2 of No. 5; 2 of No. 6a; 2 of No. 7a; 6 of No. 8a; 2 of No. 8b; 10 of No. 9; 1 of No. 9d; 6 of No. 12; 2 of No. 14; 6 of No. 15a; 2 of No. 15b; 2 of No. 16a; 1 of No. 16b; 3 of No. 17; 3 of No. 18a; 12 of No. 18b; 1 of No. 23; 1 of No. 24; 2 of No. 24c; 2 of No. 25; 3 of No. 26; 2 of No. 27; 3 of No. 27a; 2 of No. 31; 2 of No. 32; 106 of No. 37a; 106 of No. 37b; 34 of No. 38; 8 of No. 38d; 7 of No. 48; 29 of No. 59; 3 of No. 62b; 1 of No. 63; 1 of No. 63d; 1 of No. 94; 5 of No. 96; 1 of No. 96a; 4 of No. 108; 2 of No. 109; 1 of No. 115; 3 of No. 120b; 2 of No. 126; 4 of No. 133; 1 of No. 175; 4 of No. 189; 12 of No. 212; 1 EI5R Motor.