

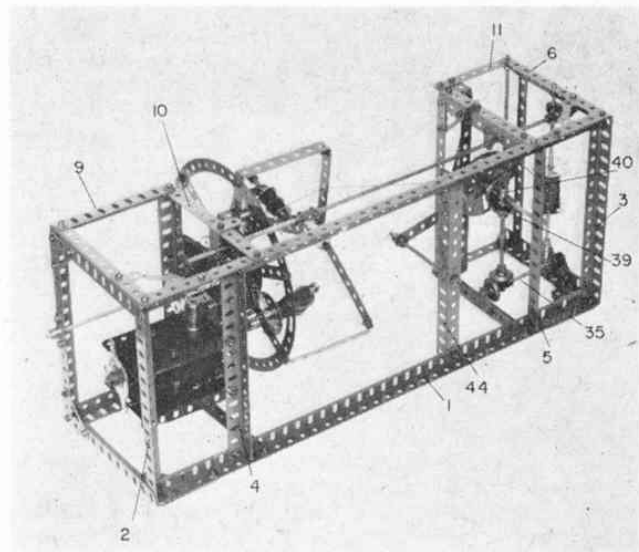
TAYLOR'S ROPE-MAKING MACHINE

A genuine working
model described
by **Spanner**

IN MECCANO model-building, the term "working model" is generally used in a way which the true English scholar would regard as incorrect. We, in the hobby, use it to describe a model which incorporates movement, or one which reproduces the *actions* of the full-size machine on which the model is based, but we do not necessarily mean that it performs the actual *work* done by the original. Described here, however, is a model which does qualify as "working" in every sense of the word—a Rope-Making Machine, designed and built by Mr. Harold H. Taylor of Huddersfield, Yorkshire. Not only does this incorporate movement, but it also produces a very good, single "rope" (miniature, of course!) from half a dozen strands of thread!

As a matter of interest, regular readers of Meccano Magazine will be extremely familiar with Mr. Taylor's work, although I doubt if many of you realise it. The fact is that most of the models we feature in these pages are supplied by Mr. Taylor, who has been building models for us for many years. He never seems to run out of ideas and I should like to take this opportunity of thanking him for his invaluable assistance.

To get down to the construction of his Rope-Making Machine, however, a framework is produced from two 18½ in. Angle Girders 1, joined at one end by a 7½ in.

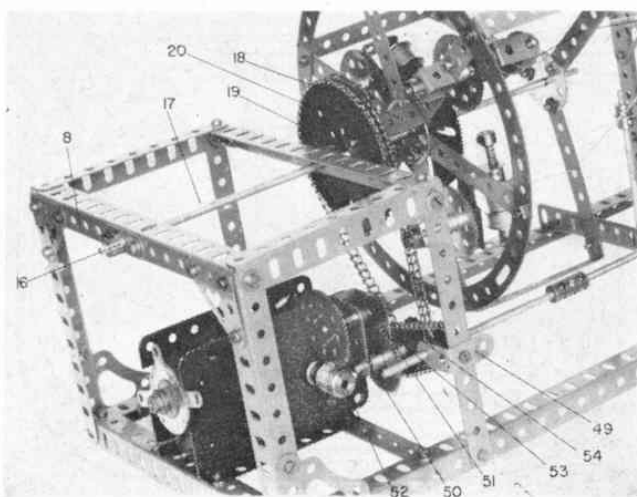


Angle Girder 2 and, at the other end, by a similar 7½ in. Angle Girder 3. Two further 7½ in. Angle Girders 4 and 5 are also fixed between Girders 1 in the positions shown, then four 5½ in. Angle Girders 6, strengthened by Corner Gussets 7, are bolted one to each corner of the resulting framework.

The two Girders 6 at the same end of the framework as Girder 2 are joined at the top by a 7½ in. Angle Girder 8, 1½ in. Corner Brackets being used to strengthen the join, while fixed horizontally to the top of each of these Girders 6 is a 4½ in. Angle Girder 9. The inward ends of Girders 9 are joined together by a 7½ in. Angle Girder and are also secured to corresponding Girder 1 by 5½ in. Strips 10.

At the opposite end of the framework, Girders 6 are connected through the second holes from the top by a 7½ in. Strip, whereas a 3½ in. Strip 11 is attached to the top of each Girder by an 8 in. Rod held in place by Collars. Strips 11 are themselves connected to Girders 1 by 5½ in. Strips 12, to each of which a 4½ in. Angle Girder 13 is bolted. The top holes of Girders 13 at each side are connected by a 7½ in. Strip 14, 1½ in. Corner Brackets again being used to strengthen the connections. Strips 11 at each side are themselves connected by a 7½ × 1 in. compound double angle strip built up from two 1 × ½ in. Angle Brackets joined by a 7½ in. Strip 15.

Fixed in the boss of a Double Arm Crank 16, bolted to Angle Girder 8 is an 11½ in. Rod 17 which projects forward through the centre hole of the Girder joining Girders 9. Mounted on this Rod is the revolving structure carrying the bobbins of thread from which the "rope" is wound, but it is better to build up this structure separately before fitting it to Rod 17. Two 1½ × ½ in. Double Angle Strips 18 are bolted through diametrically opposite holes to a 3 in. Sprocket Wheel 19, a 6-hole Bush Wheel 20 being bolted to the free lugs of the Double Angle Strips. Bolted, in turn, to this Bush Wheel are six radiating 3½ in. Strips 21, to the ends of which a 7½ in. Circular Strip 22 is secured, at the same time fixing a 3½ × ½ in. Double Angle Strip 23 to the end of every *second* Strip, as shown. Also bolted to the centres of these same Strips are three



Above: This model produces from six strands of thin thread, a single miniature rope. This view shows the basic assembly. Left: A view of the initial drive system. Note: the chain here must not be too tight.

Right: A close-up view of one of the thread bobbins.
Below: A close-up view of the revolving bobbin structure, on which the six bobbins are mounted.

Double Bent Strips 24, while three $3\frac{1}{2}$ in. Strips 25 are secured one to the free lug of each Double Angle Strip 23. The other ends of Strips 25 are bolted to a 6-hole Wheel Disc 26.

Journalled in each Double Bent Strip 24 and respective Strip 21 is a 2 in. Rod, held in place by a Collar and a 57-teeth Gear Wheel 27. A Double Arm Crank, to which two 1×1 in. Angle Brackets 28 are bolted, is fixed on the Rod immediately in front of Gear 27, the bobbins of thread later being mounted between the free lugs of Angle Brackets 28. These should not be dealt with until the rest of the model is finished, however.

At this stage the structure—without the bobbins—is mounted on Rod 17, a $2\frac{1}{2}$ in. Gear Wheel 29 being added to the Rod before the Rod is located in the centre hole of Wheel Disc 26. This Gear Wheel is fixed on the Rod and serves to hold the revolving assembly in position, but *note that, Sprocket Wheel 19 and Bush Wheel 20 must be free to turn on the Rod.* Gear Wheel 29 engages with Gear Wheels 27.

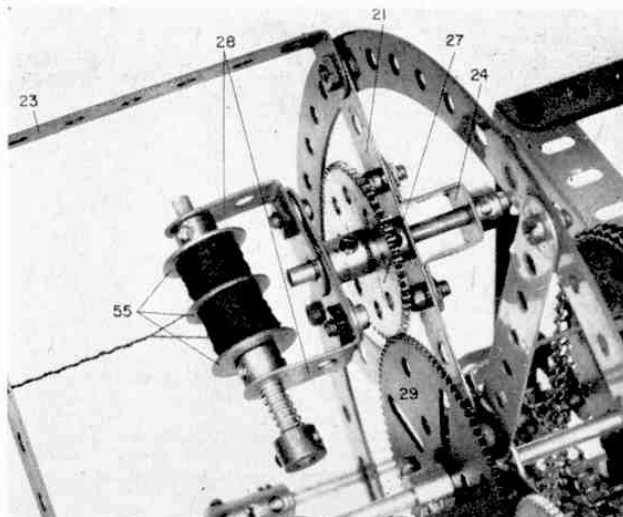
Take-up Roller and Drive System

Incorporated in the model is a powered take-up roller for the finished "rope" and a simple, but rather ingenious guide arm which distributes the "rope" evenly over the roller. The roller consists of a Sleeve Piece over a Chimney Adaptor and a Socket Coupling, in one side of which an 8-hole Bush Wheel 30 is fixed by a Grub Screw. All are mounted on an 8 in. Rod 31, together with a second 8-hole Bush Wheel 32, a Worm 33, a $\frac{1}{2}$ in. Pinion 34 and two Collars, the latter serving to hold the Rod in its bearings, these being supplied by the centre holes in appropriate Angle Girders 6. Bush Wheel 32 is clamped against the Sleeve Piece.

In mesh with Worm 33 is a $\frac{1}{2}$ in. Pinion on a 4 in. Rod 35 journalled in two 1 in. Corner Brackets 36, one bolted to nearby Angle Girder 6 and the other to nearby Angle Girder 13. Also mounted on the Rod is a fixed $\frac{7}{8}$ in. Bevel Gear, a loose Coupling 37 and a Collar. The Rod passes through one end transverse bore of the Coupling to leave the longitudinal bore free for a $3\frac{1}{2}$ in. Rod which carries two further $\frac{7}{8}$ in. Bevel Gears 38 and 39. Bevel 38 meshes with the Bevel on Rod 35. The Rod is, of course, free to turn in the bore of Coupling 37, its other end being free to turn in the longitudinal bore of another Coupling 40, mounted transversely on a 5 in. Rod held by Collars in Strip 15 and Angle Girder 5. Another Collar holds the Coupling in place.

Fixed on the Rod above the Coupling is another $\frac{7}{8}$ in. Bevel Gear, meshing with Bevel 39, and a Face Plate 41, in diametrically opposite holes of which two Threaded Pins are secured. In contact with these Pins is a $5\frac{1}{2}$ in. Strip 42, held by Collars on a $3\frac{1}{2}$ in. Rod fixed in a Rod Socket 43. This Socket is, in turn, fixed to a $7\frac{1}{2}$ in. Angle Girder 44 bolted between Girders 1. A $\frac{1}{2}$ in. Reversed Angle Bracket 45 is bolted to the end of Strip 42, the Strip itself being held against the Threaded Pins by a 6 in. Driving Band looped over a $\frac{3}{8}$ in. Bolt fixed in nearby Angle Girder 13.

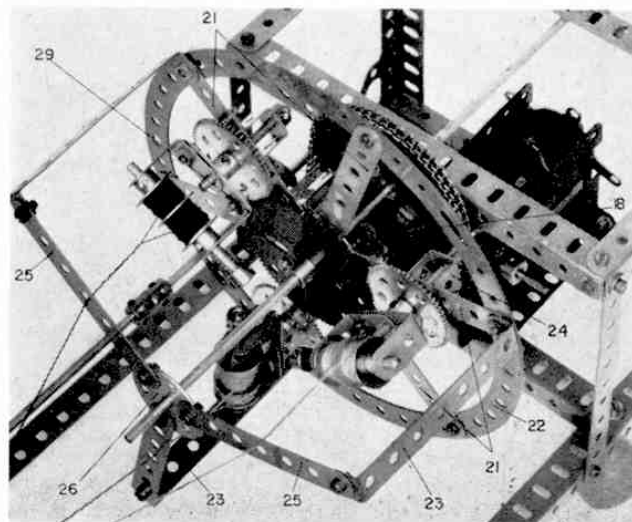
In mesh with Pinion 34 on the roller Rod is a Worm secured on an $11\frac{1}{2}$ in. Rod 46, held by a Collar in two 1 in. Corner Brackets 47, one fixed to appropriate Girder 6 and the other to nearby Girder 13. Rod 46 is extended via a Coupling, by a $4\frac{1}{2}$ in. Rod carrying a $\frac{3}{4}$ in. Sprocket Wheel 48 and is journalled in a 1×1 in. Angle Bracket 49.



Now bolted to Angle Girders 2 and 4 is an E15R Electric Motor, to one sideplate of which a Channel Bearing 50 is fixed. Held by a Collar in this Channel Bearing is a $1\frac{1}{2}$ in. Rod carrying a $\frac{3}{4}$ in. Pinion 51 and a 57-teeth Gear Wheel 52, the latter meshing with a Worm fixed on the output shaft of the Motor. Pinion 51, on the other hand, meshes with a 50-teeth Gear Wheel on another $1\frac{1}{2}$ in. Rod journalled in Channel Bearing 50, this Rod also carrying two 1 in. Sprocket Wheels 53 and 54. Sprocket Wheel 53 is connected by Chain to Sprocket Wheel 48, while Sprocket Wheel 54 is connected to Sprocket Wheel 19.

This brings us to the actual thread bobbins, two of which are incorporated in each of the three previously-described holders. Each twin-bobbin unit consists of a $2\frac{1}{2}$ in. Rod carrying three $\frac{3}{4}$ in. Washers 55 and held by Collars in the free lugs of Angle Brackets 28. A Tension Spring is slipped over the projecting end of the Rod and held in place by a Collar to serve as a light friction brake, thus preventing the Rod from turning too readily. The thread should be wound in identical lengths between the first and second, and second and third Washers, each bobbin being wound separately, with a Spring Clip being used as a "stop" for the

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Meccano Rope Making Machine

PARTS REQUIRED

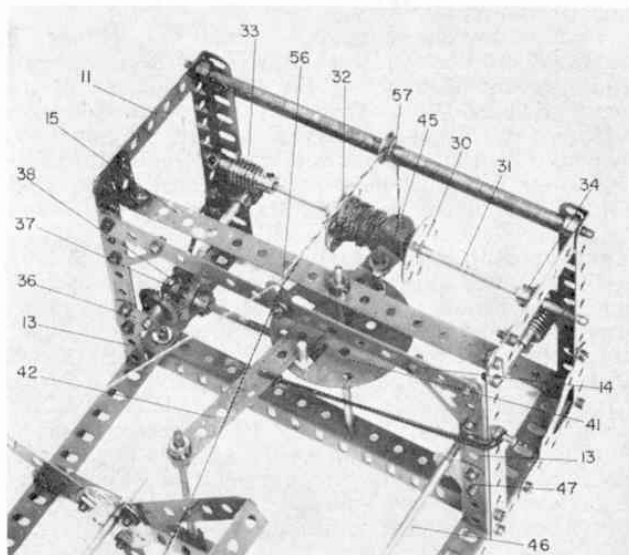
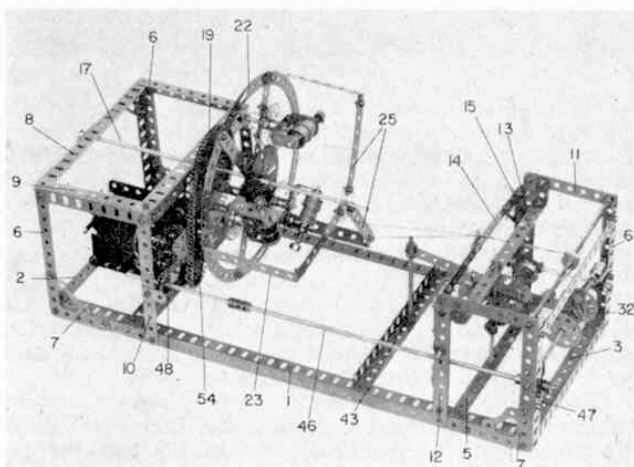
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|-------|---------|---------|--------|
| 3-1b | 3-16a | 114-37b | 1-109 |
| 5-2 | 3-17 | 30-38 | 1-111c |
| 11-3 | 2-18a | 9-38d | 2-115 |
| 2-7a | 1-23 | 3-45 | 3-120b |
| 6-8b | 2-24 | 2-48 | 1-125 |
| 4-9 | 1-24b | 3-48b | 4-133 |
| 7-10 | 1-24c | 25-59 | 4-133a |
| 7-12a | 1-25 | 4-62b | 1-145 |
| 2-12b | 3-26 | 2-63 | 1-160 |
| 2-13 | 1-27 | 1-63d | 1-163 |
| 2-13a | 4-27a | 1-94 | 1-164 |
| 1-15 | 1-27c | 1-95b | 1-171 |
| 1-15a | 4-30 | 2-96 | 1-179 |
| 1-15b | 3-32 | 1-96a | 1-180a |
| 2-16 | 115-37a | 4-108 | 1 E15R |
| | | | Motor |

centre Washer while the first bobbin is being wound.

When all six bobbins have been wound, the threads from the two bobbins in each twin-unit are twisted together and passed through the centre hole of appropriate Strip 25. From there, the threads from all the units are threaded through the circular hole in a Fishplate 56 (bolted to the centre of Strip 14), passed over a $\frac{1}{2}$ in. loose Pulley 57 on the upper Rod journalled in Angle Girders 6, threaded through the hole in the free lug of Reversed Angle Bracket 45 and are finally attached to the take-up roller to complete the model.

Below left: A general view of this amazing model.

Below: A view of the take-up roller and its drive system.



Look High... Look Low

*Dinah
Lawrence*

ONE OF the chief reasons for dull, ordinary pictures is due to the fact that they have been taken from a dull and ordinary viewpoint. It's only too clear that the photographer has stood a few feet or yards away from the subject, held the camera either at waist or eye level—and just fired away.

If you want your pictures to be out of the usual rut you must be adventuresome with viewpoints. Learn to look at your subject from all angles, don't be afraid to experiment, look HIGH and LOW for your pictures!

For instance, UNTIL TOMORROW was taken when I was lying flat on my stomach in a field and pointing the camera slightly upwards. I took the picture from this position because I wanted to get the dramatic effect of the wheel "towering" against a sunset sky.



This brings me to another point worth remembering, a photograph taken against the light will often give you very dramatic pictures, especially if taken with the sea or a stretch of water in the foreground.

In the case of THE LITTLE WHITE CLOUD, the camera was held above my head, with the lens pointing straight up to the sky: in the case of SUMMERTIME, the camera was again pointed upwards, but not so high, and it was held at ground level.