

Fig. 1. A fine racing car which is driven by a rubber motor unit.

New Meccano Model

Racing Car Driven by Rubber Motor

MOST model-builders will be familiar with the rubber "motor" used to drive the propellers of model aeroplanes, but I wonder how many of them have ever tried using this form of power unit to drive a Meccano car. It is quite possible to do so, provided that the car is specially designed for this method of propulsion, and making such a model provides a pleasant change from the ordinary methods of construction. I have therefore chosen a car of this kind as the subject of a new model. This takes the form of a racing car, and is shown in Fig. 1.

I advise you to commence construction of the model by assembling the lower members of the body represented by the strips 1, each of which is made from a $12\frac{1}{2}$ " and a $5\frac{1}{2}$ " Strip bolted together. They are connected by two $2\frac{1}{2} \times \frac{1}{2}$ " Double Angle Strips 2 at the front, by two $3\frac{1}{2} \times \frac{1}{2}$ " Double Angle Strips 3 at the centre and by a Double Bracket at the tail.

You can form the body from Strips of various sizes attached to three supporting hoops fixed to the strips 1. For the front curve a $5\frac{1}{2} \times 2\frac{1}{2}$ " Flexible Plate 4 and bolt this

direct to the strips 1 by its front corners. Then attach the rear corners of the Plate to the strips 1 by means of Fishplates. To form the centre supporting hoop take two $5\frac{1}{2} \times 1\frac{1}{2}$ " Flexible Plates 5, overlap them seven holes, and attach them to the strips 1. For the third hoop two curved $4\frac{1}{2}$ " Strips 6 are used, and these also are fixed to the strips 1.

Now fill in the bonnet with ten $7\frac{1}{2}$ " Strips and a built-up strip 7 made from a $5\frac{1}{2}$ " Strip and a 2" Slotted Strip. Bolt the strip 7 to the Plates 4 and 5, and fix the $7\frac{1}{2}$ " Strips to the Plates 5. Overlap the front ends of the $7\frac{1}{2}$ " Strips slightly as shown in Fig. 2, and then clamp them between the Plate 4

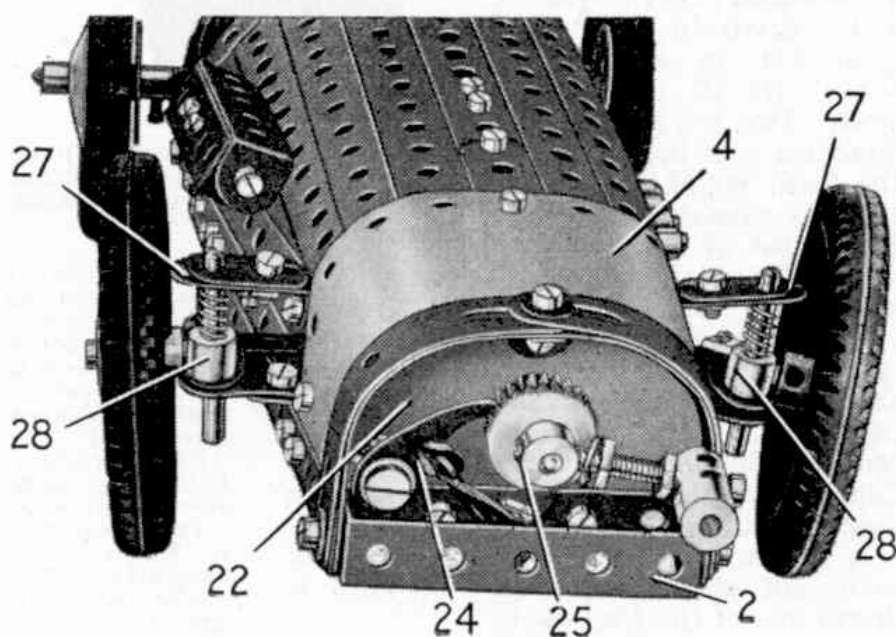


Fig. 2. The front of the car showing the ratchet motor winding device.

and two Formed Slotted Strips bolted inside the rear edge of the Plate. You should complete the bonnet with a strip 8 on each side, made from a $5\frac{1}{2}$ " Strip extended by a $2\frac{1}{2}$ " Strip. Connect the front ends of the strips 8 to the strips 1 by Fishplates.

To assemble the tail bolt a slightly curved strip 9 between the Strips 6 and the Double Bracket that connects the strips 1. To make the strip 9 overlap a $5\frac{1}{2}$ " and a $2\frac{1}{2}$ " Strip two holes. Now fill in each side of the tail with a 3" Strip 10, a $3\frac{1}{2}$ " and a $4\frac{1}{2}$ " Strip, and connect them with a $1\frac{1}{2}$ " Strip 11, a second $4\frac{1}{2}$ " Strip 12 joined to the Strip 11 by a 1" Corner Bracket, and a $5\frac{1}{2}$ " Strip 13 connected to Strip 12 by a 1" Corner Bracket. You can now complete the sides of the tail using $4\frac{1}{2}$ " Strips 14, which have to be attached by Fishplates at each end to

$2\frac{1}{2}$ " Driving Band looped round a $\frac{3}{4}$ " Bolt in the Face Plate. The rear wheels are 2" Pulleys with Motor Tyres, fitted each side with a Conical Disc held in place by a Collar.

The chassis is fitted with a simple brake easily made by fixing $\frac{3}{8}$ " Bolts in the outer holes of the Face Plate. Now mount a 4" Rod 19 in the Double Angle Strips 3 so that by operating a lever 20 you can move it to engage these Bolts. This lever is a $2\frac{1}{2}$ " Strip lock-nutted to one of the strips 8, and it carries a $\frac{1}{2}$ " Bolt that engages between two Collars on the Rod 19.

Now you can fit the rubber bands that provide the power unit. Take two 20" Driving Bands and loop them at the front round a $\frac{3}{4}$ " Bolt held by two nuts in a small Fork Piece 21. The Fork Piece is fixed on a $1\frac{1}{2}$ " Rod, which is passed through the centre hole of a Semi-Circular Plate 22. This

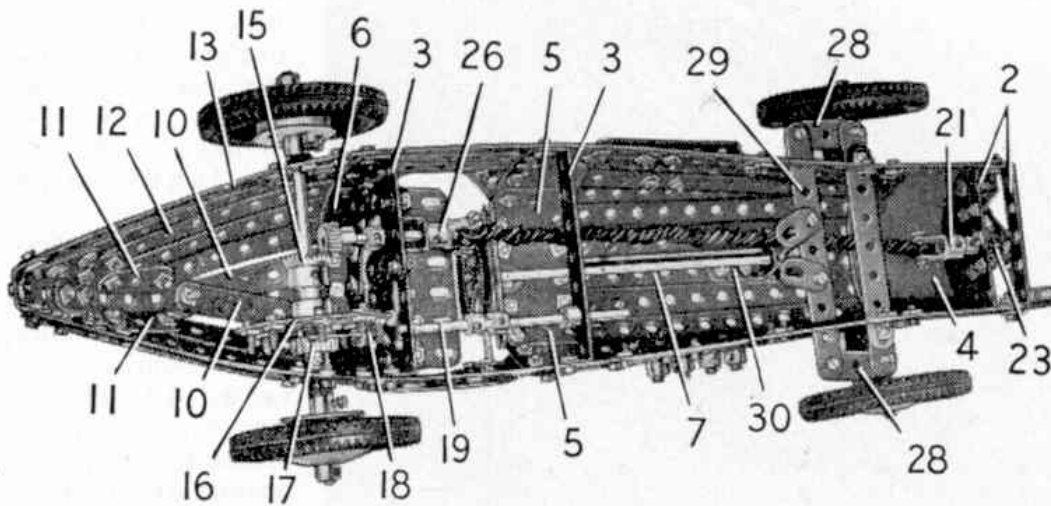


Fig. 3. An under-neath view of the racing car, showing the arrangement of the rubber Driving Bands.

the strips 1 and the Strips 13.

The sides of the driver's cockpit are formed by $1\frac{1}{2}$ " and 2" Strips and $2\frac{1}{2}$ " Stepped Curved Strips, arranged as shown. Before you bolt the Strips forming the tail in position don't forget to curve them slightly.

Now we come to the rear axle. This is a $6\frac{1}{2}$ " Rod and it is supported in the centre holes of $1\frac{1}{2}$ " Strips bolted between the strips 1 and the Strips 13. The drive to the axle is transmitted through a simple free wheel device, made by connecting a $\frac{3}{4}$ " Contrate 15 and a Face Plate 16 by means of a Socket Coupling. Make sure that this assembly is free to turn on the rear axle. Now fix a Ratchet Wheel 17 on the axle and space it from the Face Plate by three Washers. Take a Pawl without boss 18 and pivot it on a $\frac{3}{8}$ " Bolt attached to the Face Plate by two nuts. Space the Pawl on the Bolt by Washers, and arrange for it to be held against the teeth of the Ratchet Wheel by means of a

is connected to the Plate 4 by an Angle Bracket, and to one of the Double Angle Strips 2 by Fishplates. A $\frac{3}{4}$ " Pinion 23 is used to hold the $1\frac{1}{2}$ " Rod in the Semi-Circular Plate. The next job is to arrange a Pawl 24 to engage the Pinion and allow it to turn in one direction only. The Pawl should be mounted on a Pivot Bolt held by its nuts in the Semi-Circular Plate, and you should loop a $2\frac{1}{2}$ " Driving Band between a $\frac{1}{2}$ " Bolt and the Pawl to keep it against the teeth of the Pinion.

Now make a winding handle from a $1\frac{1}{8}$ " Bolt screwed through a Threaded Coupling into the boss of a $\frac{3}{4}$ " Contrate 25. Use nuts to fix the Threaded Coupling and the Contrate tightly on the Bolt.

All that remains now is to loop the other ends of the 20" Driving Bands round a $\frac{3}{4}$ " Bolt held by nuts in the small Fork Piece 26. Fix this Fork Piece on a 2" Rod and support the Rod in a $1\frac{1}{2}$ " Flat Girder bolted to one of the Double Angle Strips 3 and in a Double Bent Strip. Arrange a $\frac{1}{2}$ " Pinion on the 2" (Continued on page 260)

Millions of Them!—(Continued from page 221)

seen in the upper picture on page 221. The blanks are fed down the chute D, and arrive between a fixed block and a sliding block, each carrying one of the thread-forming dies. B is the die on the sliding block and C that on the fixed block, A representing the head of a bolt that is actually having a thread rolled on it. The faces of the dies roll the bolt along between them and squeeze the shank into the thread form required. The bolt and the dies become hot during this process, so oil is sprayed on them from the pipe E. Normally this pipe is over the line down which the bolt is rolled when the machine is working.

All that the bolts need now is cleaning and coating with brass. The brass finish is given by placing the bolts in a solution of copper and zinc salts, so that an electric current passes to them from a brass anode.

Mysterious Orchids—(Continued from page 229)

painful process it is for an orchid to reach maturity, it will be no surprise to you that many of our orchids are so exceedingly rare that it is doubtful whether they still exist or have in fact become extinct.

The extensive ploughing of pasture land has spelt disaster to many local colonies of orchids and it is possible that the monkey orchid, which until a couple of years ago survived in one place in Oxfordshire, has been destroyed in this way. The lady's slipper is found only in one area in Yorkshire, and every effort is being made to protect it from thoughtless people who cannot resist picking a rare flower when they see it.

At one time I used to gather the more common orchids myself when I found them, but when I came to understand them better, and realised how handicapped they are in the fight for survival, I made a promise never to pick one again. I leave them all to seed so that in future years people will still be able to enjoy these beautiful and interesting flowers.

Cycle Speedway—(Continued from page 239)

team addresses.

If your local team does not think that you are quite good enough for them, do not be dismayed. Instead form your own team! You will need eight riders—six team men and two reserves—and you must then decide upon a team name and team colours. Most important of all, you will have to contact your local Parks Committee to see if they can assist you to find a suitable patch of ground for a track.

The rules of the sport are outlined in the Cycle Speedway Annual and should be carefully studied. Equipment? Well, very briefly you will want an old bike, or one of the specially produced models that will set you back at least ten pounds; a good crash helmet; and leather gloves to protect the hands from cuts and dirt. You should have also a roll neck jersey or thick shirt, strong boots or shoes—an old pair—that will take quite a considerable amount of wear and tear, and riding breeches, or your oldest pair of trousers!

Study the photographs printed with this article. They will give you a guide as to how you should look when you are dressed and ready to race.

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Rod so that it engages the Contrate 15.

To make the front axle beam fix a $4\frac{1}{2}$ " Strip to the strips 1 with Angle Brackets. Fit two $1" \times \frac{1}{4}"$ Angle Brackets 27 with Fishplates, and bolt one to each side of the bonnet. Now mount a $1\frac{1}{2}"$ Rod in each end of the axle beam and also in one of the Angle Brackets 27. Fit each Rod with a Crank 28, but space the Crank from the Angle Bracket 27 by a Compression Spring. Connect the ends of the

Cranks with a $4\frac{1}{2}"$ Strip 29 attached to them by lock-nutted bolts.

For the steering column a $6\frac{1}{2}"$ Rod is used. At one end support the Rod in a Semi-Circular Plate attached to the Plates 5 by an Angle Bracket. Mount its other end in a $1\frac{1}{2}"$ Strip bolted to the $1" \times 1"$ Angle Bracket 30. Fix a Collar on the end of the Rod, and screw a Threaded Pin into the Collar so that it engages between two Fishplates bolted to the Strip 29. Now mount each front wheel freely on a $\frac{3}{4}"$ Bolt, and screw the Bolt into the boss of one of the Cranks 28.

For the driving seat two Trunnions are bolted to a 3" Flat Girder. Connect two $2\frac{1}{2}"$ Stepped Curved Strips 31 to the ends of the Flat Girder by Angle Brackets, and bolt their upper ends to an Angle Bracket fixed to the Strips 6. Finally fix two $2\frac{1}{2}" \times \frac{1}{4}"$ Double Angle Strips, bolted together, at one side of the bonnet, using $\frac{3}{4}"$ Bolts, and on the other side fix four Collars, this time using $\frac{3}{8}"$ Bolts.

To build this novel racing car you will require these parts: 2 of No. 1; 10 of No. 1b; 8 of No. 2; 10 of No. 2a; 4 of No. 3; 2 of No. 4; 4 of No. 5; 2 of No. 6; 8 of No. 6a; 16 of No. 10; 1 of No. 11; 7 of No. 12; 1 of No. 12a; 2 of No. 12b; 2 of No. 12c; 2 of No. 14; 1 of No. 15b; 1 of No. 17; 3 of No. 18a; 2 of No. 20; 5 of No. 20a; 1 of No. 23; 1 of No. 25; 1 of No. 26; 2 of No. 29; 116 of No. 37; 36 of No. 37a; 32 of No. 38; 1 of No. 45; 4 of No. 48a; 2 of No. 48b; 1 of No. 55a; 11 of No. 59; 2 of No. 62; 1 of No. 63c; 5 of No. 90a; 1 of No. 103e; 1 of No. 103h; 1 of No. 109; 7 of No. 111; 3 of No. 111a; 14 of No. 111c; 1 of No. 111d; 1 of No. 115; 2 of No. 116a; 2 of No. 120b; 2 of No. 126; 4 of No. 133a; 4 of No. 142a; 1 of No. 147a; 1 of No. 147b; 1 of No. 147c; 1 of No. 148; 1 of No. 171; 2 of No. 186; 2 of No. 186e; 4 of No. 187a; 2 of No. 189; 1 of No. 192; 2 of No. 214; 4 of No. 215.

Stamp Collectors' Corner—(Continued from page 257)

months in that dangerous Weddell Sea. 2/-, *Pourquoi Pas*; a barque-rigged vessel lost off Iceland in 1936. 2/6, *Francais*; built for the French Antarctic Expedition of 1903-5, it was lost afterwards in the River Plate.

5/-, *Scotia*; Barque-rigged whaler used by the Scottish Antarctic Expedition of 1902-4. 10/-, *Antarctic*; a wooden sealer used in several polar expeditions, and finally crushed in the pack ice of Weddell Sea. £1, *Belgica*; a barque-rigged sealer used by the Belgian Antarctic Expedition of 1897-98.

Doesn't the romance conjured up by these famous names make you want to have a set?

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