AMONG THE MODEL BUILDERS

with 'spanner'

Drive Unit

WHILE 'Among the Model-Builders' is open to any item of interest from readers, emphasis has always been on useful mechanisms and gadgets, particularly those that can be adapted to suit individual requirements. This is because there are so many highly competent builders throughout the world designing mechanisms which might well prove invaluable to other enthusiasts, that an outlet for their ideas is essential if they are not to remain unknown.

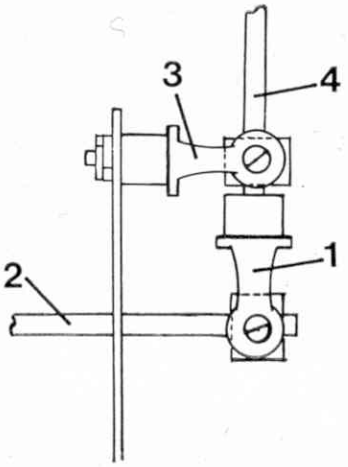
It's very satisfying to be able to solve all your own modelling problems, but this takes time as well as skill. It's far quicker—and easier—to pick up a copy of M.M. and find the problem solved for you!

Only recently I had occasion to find this out for myself. I had a hand-driven model and was thinking of ways to fit it with a motor and gearbox when I remembered I had been sent details of a very compact self-contained drive unit, consisting of an Emebo Motor and three-speed gearbox. I built it up and after a few slight modifications, found it suited my requirements admirably. You will find this modified version illustrated below, and I am sure it will prove equally as useful to readers.

Full credit for the unit goes to Mr. Andrew Cope of Heath End, Nr. Berkhamsted, Herts., who designed the original. The modified version illustrated, incidentally, is different only in that I have reversed the relative positions of two of the Gear Wheels and Pinions, to give step-down instead of step-up ratios, and have used alternative Bevel Gears to transmit the drive from the Motor to the Gearbox itself. It consists quite simply of a 5½ in. by 2½ in. Flanged Plate 1, to the flanges of which two 5½ in by 2½ in. Flat Plates 2 and two 2½ in. by 2½ in. Flat Plates 3 are bolted. An Emebo Motor, carrying a ⅞ in. Bevel Gear 4 on its output shaft, is fixed to the Flanged Plate 1 in the position shown. Bevel Gear 4 engages with another ⅞ in. Bevel Gear on a 3½ in. Rod held in Flat Plates 2 by a Collar and a ½ in. Pinion with ¾ in. face 5.

The sliding layshaft is a 4 in. Rod carrying a 57-teeth Gear 6, a ½ in. Pinion 7, a ¾ in. Pinion 8 and a 1 in. Gear 9. Gear 6 is positioned outside Flat Plate 2 and meshes with Pinion 5. A 3 in. Rod is journalled in Plates 2 and carries a 57-teeth Gear 10, a 50-teeth Gear 11 and a 1 in. Gear 12. These Gears and the gears on the layshaft must be positioned so that, when Gears 9 and 12 are in mesh, the remaining Gear Wheels are out of mesh.

Movement of the layshaft will bring Gears 9 and 12 out of mesh. A fraction after they disengage, Pinion 8 should engage with Gear Wheel 11, and as these disengage with further movement of the layshaft, Pinion 7 should mesh with Gear Wheel 10. At no time, however, must Gear Wheel 6 come out of mesh with Pinion 5. If required, the Unit can be completely enclosed by another 5½ in. by 2½ in. Flat Plate, as, indeed, was Mr. Cope's original mechanism.



Parts required:

1 of No. 15b	2 of No. 27a	1 of No. 59
2 of No. 16	2 of No. 30	2 of No. 70
1 of No. 25	2 of No. 31	2 of No. 72
1 of No. 26	18 of No. 37a	2 of No. 111c
1 of No. 26b	16 of No. 37b	1 Emebo
1 of No. 27	5 of No. 52	Electric Moter

Gear Change Lever

You will see from the illustration of the Drive Unit, described above, that I have not fitted a gear change lever to the layshaft. The reason for this is that it is possible to build many different types of lever, and the most suitable would depend largely on the particular model in which the Unit is fitted. Perhaps the simplest idea of all is to mount a 1 in. Pulley with Rubber Ring or Motor Tyre on the end of the shaft, but, if you go in for more substantial things, you may like to use the type illustrated here.

To build it, a Swivel Bearing 1 is fixed on the end of the Layshaft 2 (see diagram), while another Swivel Bearing 3 is bolted to the side of the Unit. A suitable Rod 4 is then mounted loose in the 'spider' of Bearing 3, its lower end being fixed in the boss of Bearing 2. All very simple! It should be remembered, however, that a longer layshaft than that mentioned above must be used if this method is to be adopted.

Parts required:

2 of No. 37a	1 of No. 111a	2 of No. 165
1 Rod of suitable length