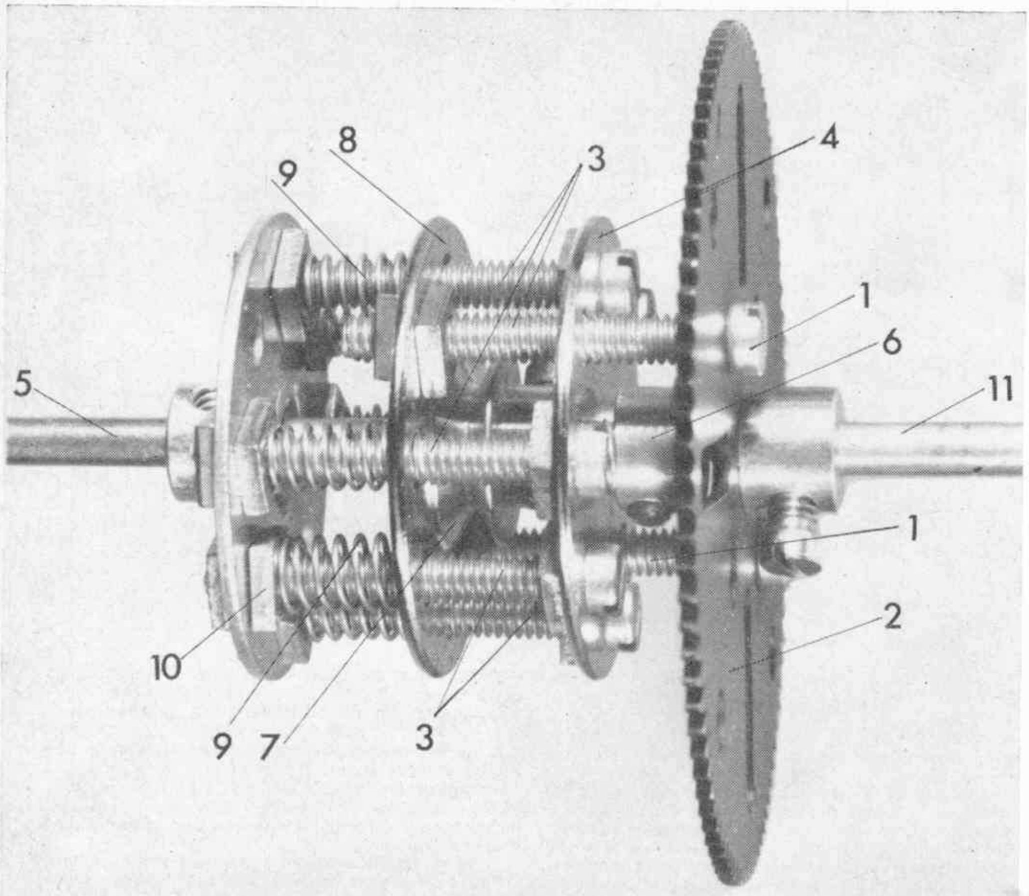
AMONG THE MODEL BUILDERS



Mr. S. K. Maw of Epworth, Nr. Doncaster, Yorkshire, designed this simple clutch, suitable for light-duty work

MECHANICS is a subject studied by every schoolboy sometime during his educational career and I am, therefore, sure that all readers will know something about that most elementary feature of mechanics—the Lever. You will be familiar with such terms as 'Load', 'Effort' and 'Fulcrum', and will know that, by using a lever, it is possible to shift a greater load with a specific amount of effort than it would be possible to shift with the same amount of effort if a lever were not employed. The further the fulcrum is from the effort, the greater is the load that can be shifted.

Of the many different types of lever in existence, perhaps the most commonly used is the ordinary crank handle, although a lot of people do not realise that this qualifies as a lever. As you know, the crank handle is made up of three basic parts: the actual handle which is turned, the shaft, running parallel to the handle, and the transverse section joining the handle to the shaft. The load is carried by the shaft. The effort is applied to the handle, and the centre-line of the shaft acts as the fulcrum. In theory the longer the transverse section, the greater is the load that can be moved. In practice, however, it is usually undesirable to have a long transverse section. Not only does it make the crank handle unwieldy but, particularly in Meccano models, it tends to get in the way.

As far as Meccano is concerned, the problem of obtaining increased leverage while keeping the transverse section comparatively short has been overcome by Mr. H. H. Taylor of Huddersfield, who designed the crank handle featured here. By incorporating a Single Throw Eccentric he has produced what, in effect, is a 'lever within a lever', and this, of course, gives the same results as an increase in the length of the transverse section.

In the accompanying illustration Mr. Taylor's crank handle is shown journalled in a couple of Flat Plates. These Plates were used to provide a mounting for the assembly so that it could be photographed. When included in a model, only the handle on a suitable shaft would be used, the actual mounting depending entirely on the particular model being built.

Handle

Construction of the unit is quite simple. The Rod forming the shaft of the crank handle is passed through the boss of a Single Throw Eccentric 1, that is fixed by a ¾ in. Bolt 2 in its throw hole to the side of the model. The Rod must be free to turn in the boss, and must protrude half an inch through the Eccentric. Three Washers are slipped on the protruding end of the Rod, followed by a Crank 3, which is then fixed in place. The arm of the Eccentric is extended by a 1½ in. Strip 4, at the same time lock-nutting another 1½ in. Strip 5 in place. Finally, the other end of this Strip is lock-nutted to the Crank, as shown, while a Threaded Pin 6 is fixed in the end hole of Strip 4 to act as a handle.

Parts required

2 of No. 6a
7 of No. 37a
3 of No. 37b
3 of No. 38
1 of No. 62
1 of No. 111
1 of No. 115
1 of No. 130a

Light-Duty Friction Clutch

Mr. S. K. Maw, of Epworth, Nr. Doncaster, Yorkshire, recently wanted a friction clutch for a small model he was making but, unfortunately, he could not find details of a unit small enough to meet his requirements. He then took the only course left open to him and designed his own mechanism, sending us details of the unit when he had finished it. The unit is featured here and, although I have not actually tried it out in a model, it should be quite adequate for smaller constructions.

To build the clutch, two 1⅛ in. Bolts 1 are fixed by Nuts to a 2½ in. Gear Wheel 2, the Bolts passing through inside diametrically opposite holes in the Gear Wheel. Another six 1⅛ in. Bolts 3 are now fixed by Nuts in an 8-hole Wheel Disc 4, leaving two diametrically opposite holes free. The Wheel Disc is now slipped onto a Rod with Keyway 5, to the end of which a Collar 6 is fixed.

Wheel Disc 4, still on the Rod, is now slipped onto the shanks of Bolts 1, then a ½ in. Pulley with boss 7, carrying a Keybolt in its boss, is mounted on the Rod with Keyway, to be followed by a second 8-hole Wheel Disc 8 which is fixed by Nuts on Bolts 1. At the same time Bolts 3 protrude through the holes in this Wheel Disc.

Wheel Disc 4 is moved up the shanks of Bolts 1 until it traps Pulley 7 against Wheel Disc 8. A Tension Spring 9 is now slipped onto the shank of each Bolt 3 and is held in place by a Nut. An 8-hole Bush Wheel 10 is fixed on the end of the Bolts by Nuts and, finally, a suitable Rod 11 is fixed in the boss of Gear Wheel 2. To provide greater friction between Pulley 7 and Wheel Disc 8, incidentally, it is advisable to cover the side face of the Pulley with a rough material. 'I used Elastoplast discs', says Mr. Maw .