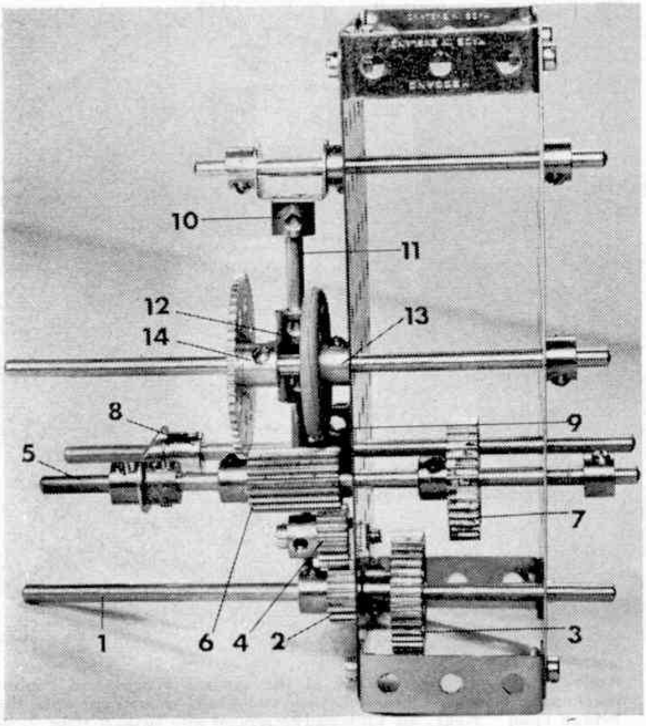

Above, Fig. 1. An automatic brake which comes into operation between forward and reverse movements of a central mechanism. The designer is L. R. Atkinson of Putney Heath, London.

AMONG THE MODEL BUILDERS

with Spanner

LAST MONTH, in a special article dedicated to simplicity in Meccano model-building, I featured a couple of extremely useful ideas supplied by Mr. L. R. Atkinson of Putney Heath, London. I would now like to begin this article with another, more complicated, but equally useful suggestion from Mr. Atkinson—an Automatic Brake between forward and reverse movements.

Perhaps the most advantageous use for this mechanism is in a model such as a motorised crane where it is necessary to constantly reverse the direction of drive of at least one of the operating movements. In a crane, for example, the load winding drum is forever required to turn first one way, then the other, and you will know from experience that, in certain circumstances, control of the load can be lost when the operating lever is in the neutral position between forward and reverse. Mr. Atkinson's mechanism completely overcomes the problem by automatically braking the important shaft.

Assuming that the model to which the brake is to be fitted already has a gearbox, then the only thing to ensure is that one sideplate of the gearbox incorporates a Flat Plate to act as one bearing for an input Rod 1 (fig. 1), to which the drive from the motor is taken. Fixed on this Rod, one each side of the Plate, are a $\frac{1}{2}$ in. Pinion 2 and a 1 in. Gear 3. In mesh with Pinion 2 is an "idler" $\frac{1}{2}$ in. Pinion 4 loose on a Bolt fixed in the Plate. Another Rod 5, free to slide in its bearings, carries a $\frac{1}{2} \times \frac{3}{4}$ in. Pinion 6 on one side of the Plate and a second 1 in. Gear 7 on its other side. Movement of the Rod should bring either Gears 3 and 7 or Pinions 4 and 6 into mesh. The neutral space should be as small as possible. Held between Collars on Rod 5 is a Crank 8, the boss of which is fixed on a sliding control Rod also journalled in the gearbox sideplate and carrying a Coupling 9, as shown.

Yet another Rod, on which a Large Fork Piece 10 is firmly held by Collars, is mounted in the sideplates. Fixed in the boss of this Fork Piece is a further Rod 11 on which a Short Coupling 12 is secured, a suitable Dinky Toy tyre being wedged onto this Coupling. The output shaft which, in the case of a crane, would be connected to a winding drum, consists of a final Rod carrying a 1 in. Pulley with Rubber Ring 13 and a 57-teeth Gear 14, the latter in constant mesh with Pinion 6.

When the control Rod is moved laterally, Rod 11 is forced to slide up and over Coupling 9. As this happens, the tyre on Short Coupling 12, if it is correctly positioned, should bind on Rubber Ring 13. The parts, incidentally, should be so adjusted that Rod 11 is at its maximum height at the mid-point of disengagement of the Pinions and 1 in. Gears.

The final word on this mechanism comes from Mr. Atkinson who writes, "For maximum braking effect, the pull (of load or jib) on the output shaft should be so arranged that it tends to turn Pulley with Rubber Ring 13 in a clockwise direction when looking at the Pulley face.

Epicyclic winding drum

As already explained, the above mechanism is ideal for controlling a crane's winding gear and, strangely enough, the next offering is also concerned with winding gear although not specifically for a crane. It is a Heavy Duty Epicyclic Winding Drum designed by B. N. Love of Hall Green, Birmingham as an improvement on the original winding drum fitted to a famous Grandfather Clock produced before the last war and is suitable for inclusion in any weight-driven mechanism requiring a rugged winding drum.

Two 3 in. Sprocket Wheels 1 (figs 2 and 3), bosses inward, form the end "checks". Each Sprocket carries six Threaded Bosses secured to its inside face by $\frac{7}{32}$ in. Bolts passed through the outside ring of holes in the Sprockets. Four of these Bosses are spaced at 90° round the Sprocket and act as securing points for the drum surface. The other two Threaded Bosses on each Sprocket are also set in the outside ring of holes, diametrically opposite each other, and act as bearers to assist in keeping the drum surface cylindrical in form. This leaves the remaining two holes free to carry the epicyclic gear Rods.

Before the gear Rods are fitted, however, the drum surface is produced from four $2\frac{1}{2} \times 2\frac{1}{2}$ in. Flexible Plates 2, curved to shape, overlayed at their slotted ends by four $2\frac{1}{2}$ in. Strips 3. The Bolts securing these Strips and thus the curved Plates, are screwed into the transverse bores of the four Threaded Bosses set at 90° in each end cheek, but note that the remaining "bearer" Threaded Bosses do not receive securing Bolts. It is important to remember, also, that Threaded Bosses do not have their transverse holes drilled centrally, but closer to one end. When bolting them to the end cheeks, they must be arranged with the transverse holes *furthest away* from the Sprocket face. When assembled, the drum must rotate freely on the