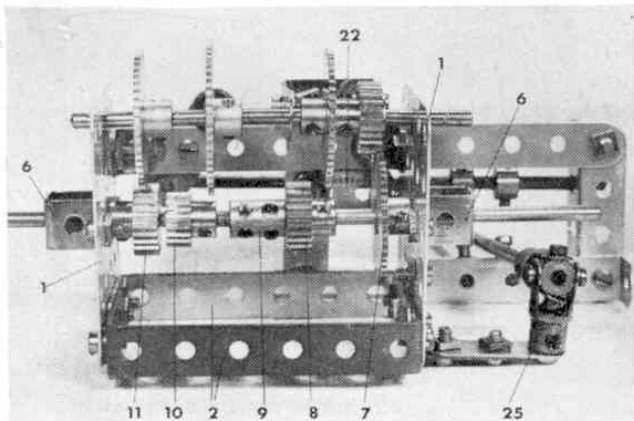


A 4-speed Gearbox with a gate change built by—we don't know who! Owing to internal reorganisation, all correspondence relating to the mechanism has been lost so, if you built it, please write to Spanner.

AMONG THE MODEL- BUILDERS

with Spanner

PICTURED HERE is an extremely useful gate-change four-speed gearbox that I am hoping somebody will recognise as his own. A rather strange statement, you may think, and one that needs a little explanation. Early last year, during an enforced absence because of illness, the gearbox arrived on my unattended desk. After my return to work, the earlier *Meccano Magazine* ceased publication (no connection, I assure you!) and in the resulting reorganisation all correspondence relating to the mechanism was lost.



Luckily the actual box remained safe and I have wanted to feature it ever since the M.M. returned at the beginning of the year. Without any details of the builder, however, I was a bit loath to do so, not being able to give the necessary credit, but it struck me that, unless I did feature it, I may never find the builder at all. Did you, therefore, build the gearbox illustrated? If you did, or you know who did, please write to me at *Meccano Magazine* Northern Office, Binns Road, Liverpool 13.

The gearbox itself presents no great problem from a constructional point of view, particularly as all the four ratios operate in one direction, no reverse gear being included. A framework is built up from two $2\frac{1}{2} \times 2\frac{1}{2}$ in. Flat Plates 1, joined together, at one side, by two $3 \times 1\frac{1}{2}$ in. Double Angle Strips 2 and, at the other, by a $5\frac{1}{2}$ in. Strip 3 attached by Angle Brackets. Strip 3 projects a distance of five holes past one Plate 1 and is connected to a $2\frac{1}{2} \times \frac{1}{2}$ in. Double Angle Strip 4, bolted to the Plate, by a 2 in. Angle Girder 5.

Bolted to the outside of each Plate 1, in the centre, is a Double Bent Strip 6. Journalled in one Flat Plate and its Double Bent Strip is a $3\frac{1}{2}$ in. Rod carrying a 50-teeth Gear Wheel 7, a $\frac{3}{8}$ in. Pinion 8 and a Short Coupling 9, the Rod being inserted only half-way into the Short Coupling, where it is fixed in place. Loose in the other half of the Coupling is another $3\frac{1}{2}$ in. Rod, journalled in the remaining Flat Plate and Double Bent Strip. Mounted on this Rod are a $\frac{1}{2}$ in. Pinion 10 and a $\frac{3}{8}$ in. Pinion 11.

A sliding layshaft is next provided by a 4 in. Keyway Rod, journalled in Plates 1 and carrying a 50-teeth Gear 12, a 57-teeth Gear 13, another 50-teeth Gear 14 and a $\frac{3}{8}$ in. Pinion 15. Gears 12 and 13 are fixed on the Rod, but Gear 14 and Pinion 15 are free to slide, being held by Key Bolts. This arrangement, in fact, results in a sort of two-in-one layshaft and for this reason requires a double control system, one operating the fixed gears and the other the sliding gears.

In the former case, a $1\frac{1}{2}$ in. Strip 16 is lock-nutted to Strip 3 through its second hole. A Collar 17 is pivotally attached to one end of this $1\frac{1}{2}$ in. Strip, but is spaced from it by two Washers on the shank of the securing Bolt. Held in the Collar is a 5 in. Rod 18, on which a further two Collars are mounted, approximately $\frac{1}{4}$ in. apart, with a Bolt screwed into one tapped bore, as shown. Pivotaly attached to the other end of Strip 16 is an End Bearing 19, the arms of which are located over Gear Wheel 13. Note that they must not grip the Gear.

Pinion 14 and Gear 15 are moved by two $1\frac{1}{2}$ in. Strips 20, placed one each side of the parts and joined at the top by an ordinary Angle Bracket and a $1 \times \frac{1}{2}$ in. Angle Bracket. To the latter, a $2\frac{1}{2}$ in. Strip 21 is pivotally connected, but is spaced from it by two Washers and a Nut on the shank of the Bolt. The same Strip is also similarly connected to a second $1 \times \frac{1}{2}$ in. Angle Bracket 22, bolted to nearby Flat Plate 1, while a Collar 23 is itself pivotally connected to the free end of the Strip. Fixed in this Collar, as shown, is a 4 in. Rod 24 carrying two Collars fitted with Bolts, situated opposite the Collars on Rod 18.

An underside view of the Gearbox showing the input and output shafts as well as the layshaft.