

Swing it with gears

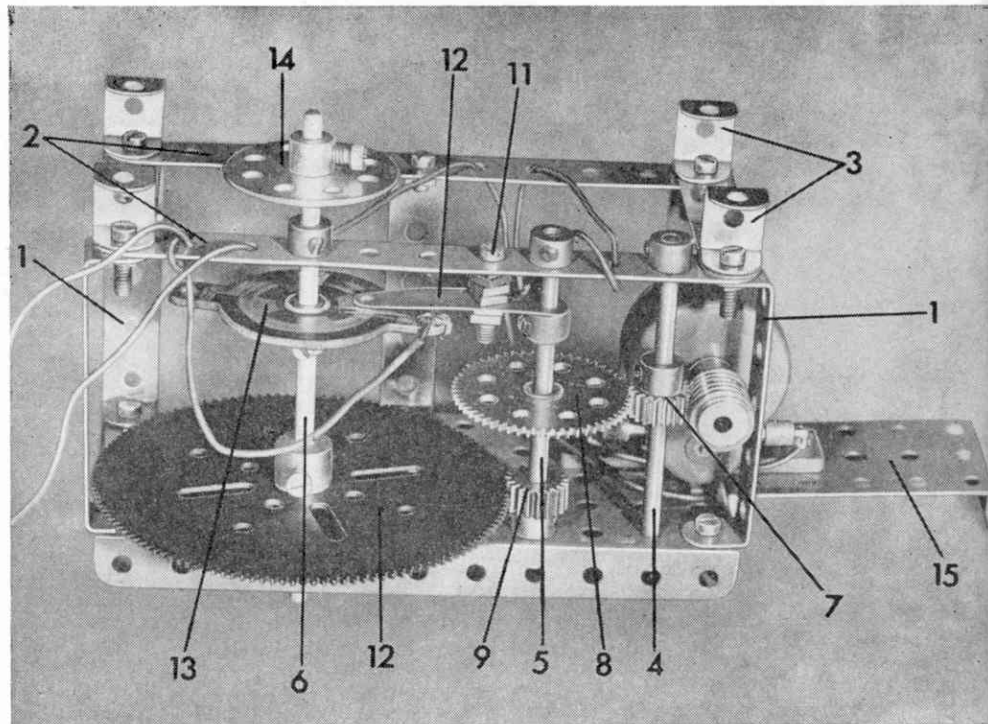
TO turn Meccano Magazine's own Swing Bridge from a highly realistic but, nonetheless static model, into a working piece of layout equipment, it must be motorised, and must also be fitted with a reduction-ratio gear box and an electrical contact which will allow it to turn through exactly 90 degrees and no more. When building the original bridge, Mike Rickett used a Meccano Emebo Electric Motor as the power plant, and Meccano standard and Elektri-kit parts for the gear box and electrical system respectively. The complete unit, illustrated on this page, is built as follows:

Five 2½ in. by 2½ in. Double Angle Strips 1 are bolted to a 5½ in. by 2½ in. Flanged Plate, one at each corner and the fifth mid-way between the Double Angle Strips which appear at the back in the first illustration. All the Double Angle Strips are then connected at the top by two 5½ in. Strips 2 and two 2½ in. Strips, at the same time bolting four Double Brackets 3 in position at the corners.

Journalled in front Strip 2 and the Flanged Plate are two 3 in. Rods 4 and 5, and a 4 in. Rod 6, Collars holding these Rods in place. Mounted on Rod 4 is a ½ in. Pinion 7 in constant mesh with a 57-teeth Gear Wheel 8 fixed on Rod 5. Also fixed on Rod 5 is another ½ in. Pinion 9 and a 1½ in. Wiper Arm 10 which rests against a Collar. In addition the Wiper Arm is held by Nuts on a ¼ in. Bolt 11, being spaced from Strip 2 by four of the Nuts.

Pinion 9 meshes with a 3½ in. Gear Wheel 12 on Rod 6, which also carries a modified Commutator 13 and an 8-hole Bush Wheel 14. The Commutator is modified by cutting and removing gaps in the copper contact area ONLY with a sharp modelling knife, in the two positions indicated on the accompanying plan. Note that Bush Wheel 14 should already be fixed to the bridge at this stage, as described by Mike Rickett in his February article. It has only been included in the above photograph to show that the pivot for the bridge is provided by Rod 6. You will have realised, therefore, that this Rod is the one which protrudes through the appropriate hole in the baseboard.

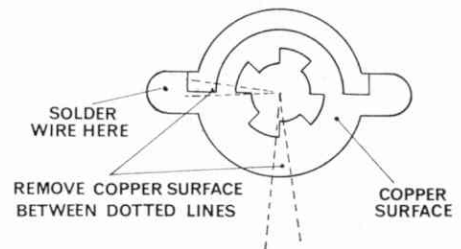
Before the Motor can be fitted, the 5½ in. by 2½ in. Flanged Plate must be extended by a 2½ in. by 1½ in. Flanged Plate 15. An Emebo Motor is then bolted in position as shown, a Worm on its output shaft engaging with Pinion 7. The anchoring points for fixing the com-



The completed mechanism showing the correct position for the Commutator and wiper arm. Note that the Bush Wheel (14) on the bridge pivot is mounted in the opposite way (inverted) on the bridge

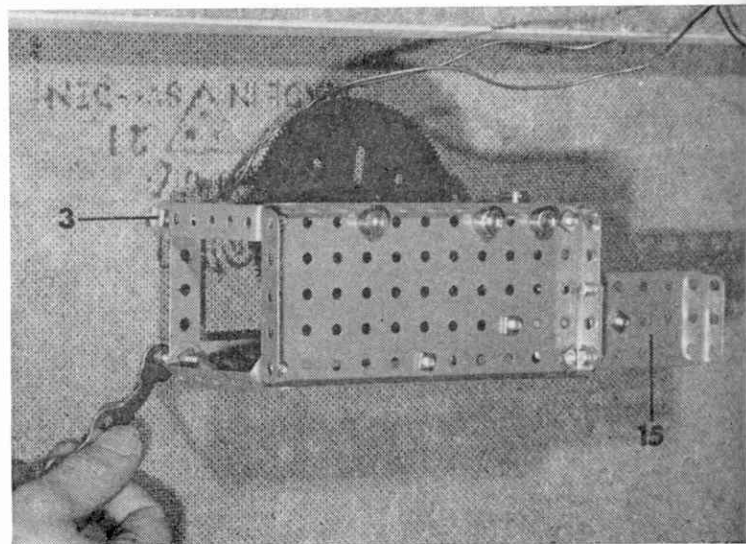
pleted unit to the underside of the baseboard, incidentally, are provided by Double Brackets 3.

The wiring that is necessary in the mechanism is quite simple, and involves only three wires. The first is connected from the control panel to one terminal of the Motor, the second is soldered to the arm of the Elektri-kit Commutator with the insulation gap running opposite it, and the third has one end soldered to the wiper arm positioned to the right of the Commutator, and the other terminal of the Motor. The two wires that emerge from the mechanism are connected up to the control panel which will be described next month.



A drawing showing the portions of the Commutator surface that should be removed

Tightening the Nuts holding the mechanism in place under the bridge base



Parts required

2 of No. 2
2 of No. 5
4 of No. 11
1 of No. 15b
2 of No. 16b
1 of No. 24
2 of No. 26
1 of No. 27a

1 of No. 27b
1 of No. 32
20 of No. 37a
8 of No. 37b
5 of No. 48a
1 of No. 51
1 of No. 52
7 of No. 59

1 of No. 111
6 of No. 111c
1 of No. 532
1 of No. 551
1 Emebo
Electric Motor