

Fig. 1. A workable Gantry Crane that can be built from parts in Outfit No. 2.

### Gantry Crane

Our first model this month is a workable Crane known as a Gantry Crane, which can be built from parts in Outfit No. 2. It is shown in Fig. 1.

The Gantry is supported by four  $5\frac{1}{2}$ " Perforated Strips 1 bolted to the corners of a  $5\frac{1}{2}$ " x  $2\frac{1}{2}$ " Flanged Plate 2. These are connected together by two  $2\frac{1}{2}$ " x  $\frac{1}{2}$ " Double Angle Strips 3 and two  $5\frac{1}{2}$ " x  $\frac{1}{2}$ " Flexible Plates 4, the edges of which provide the running rails for the trolley. The hoist trolley is constructed from two Trunnions 5 and a Flat Trunnion bolted together, two  $2\frac{1}{2}$ " Strips 6 being secured to their lugs. The same bolts also hold  $2\frac{1}{2}$ " Strips 7, through the upper ends of which a Crank Handle is passed and is held in place by Spring Clips. The Crank Handle is fitted with a Cord Anchoring Spring to which is attached cord that passes through the centre holes of the Trunnions and is tied to a small loaded Hook. The trolley runs on four 1" Pulleys fixed on  $3\frac{1}{2}$ " Rods passed through the ends of the Strips 6.

*Parts required to build the Gantry Crane:* 4 of No. 2; 6 of No. 5; 2 of No. 16; 1 of No. 19g; 4 of No. 22; 4 of No. 35; 18 of No. 37a; 18 of No. 37b; 8 of No. 38; 2 of

## Spanner's Special Section for Juniors

# Easy Model-Building

No. 48a; 1 of No. 52; 1 of No. 57c; 2 of No. 126; 1 of No. 126a; 2 of No. 189.

### Three-Wheel Sports Car

The neat three-wheel sports car shown in Figs. 2 and 3 is quite simple in construction. The chassis consists of two  $5\frac{1}{2}$ " Strips 1, connected by a  $1\frac{1}{2}$ " x  $\frac{1}{2}$ " Double Angle Strip 2 and attached by Angle Brackets to a  $2\frac{1}{2}$ " x  $\frac{1}{2}$ " Double Angle Strip 3. A *Magic Clockwork Motor* is bolted to the chassis as shown in Fig. 3, and the Motor pulley is connected by a Driving Band to a 1" Pulley on the rear axle. The axle is a 2" Rod held in place by a Spring Clip. The Motor brake lever is extended by a 1" Rod held in a Rod and Strip Connector fixed to the lever.

Each side of the body is assembled on a  $5\frac{1}{2}$ " Strip 4 bolted to the lugs of Double Angle Strip 3 and joined to the chassis by  $\frac{1}{2}$ " Reversed Angle Brackets 5. The side is plated by a  $2\frac{1}{2}$ " x  $1\frac{1}{2}$ " Flexible Plate and by a  $5\frac{1}{2}$ " x  $1\frac{1}{2}$ " Flexible Plate. Two Obtuse Angle Brackets are fixed to the rear end of each  $5\frac{1}{2}$ " x  $1\frac{1}{2}$ " Flexible Plate, and the Brackets on each side are bolted together.

A  $2\frac{1}{2}$ " x  $1\frac{1}{2}$ " Flanged Plate is bolted between the front ends of Strips 4, and it projects one hole in front of the Strips. Two  $2\frac{1}{2}$ " Strips 6 placed face to face, are fixed to the Flanged Plate, and these support a  $3\frac{1}{2}$ " Strip 7 that forms the front axle beam.

The front Wheels are each fixed on a  $1\frac{1}{2}$ " Rod mounted in a Double Bracket and held in place by a Spring Clip. A  $\frac{3}{8}$ " Bolt is passed through a Fishplate and the Double Bracket, and these parts are clamped tightly together by a nut. The Bolt is then passed through one of the end holes of the Strip 7 and is fitted with lock-nuts, so that the Bolt, Double Bracket and Fishplate pivot freely in the Strip. The Fishplates

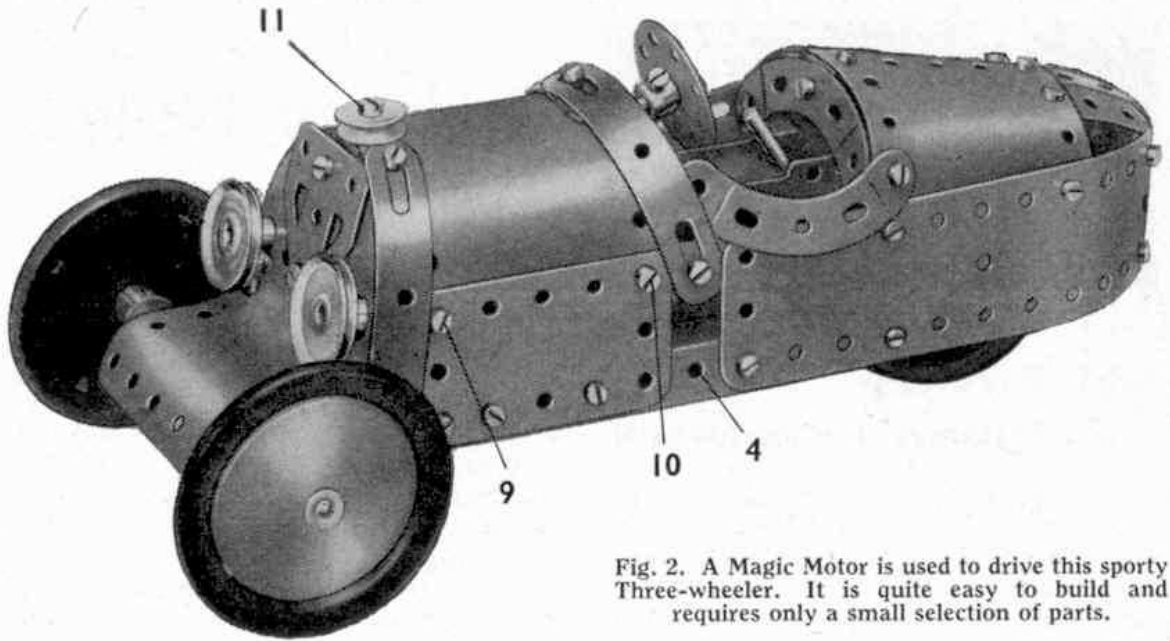


Fig. 2. A Magic Motor is used to drive this sporty Three-wheeler. It is quite easy to build and requires only a small selection of parts.

are linked by a second  $3\frac{1}{2}$ " Strip attached by lock-nutted bolts, and two Angle Brackets are fixed to this Strip by a Bolt 8 to form a U-shaped piece.

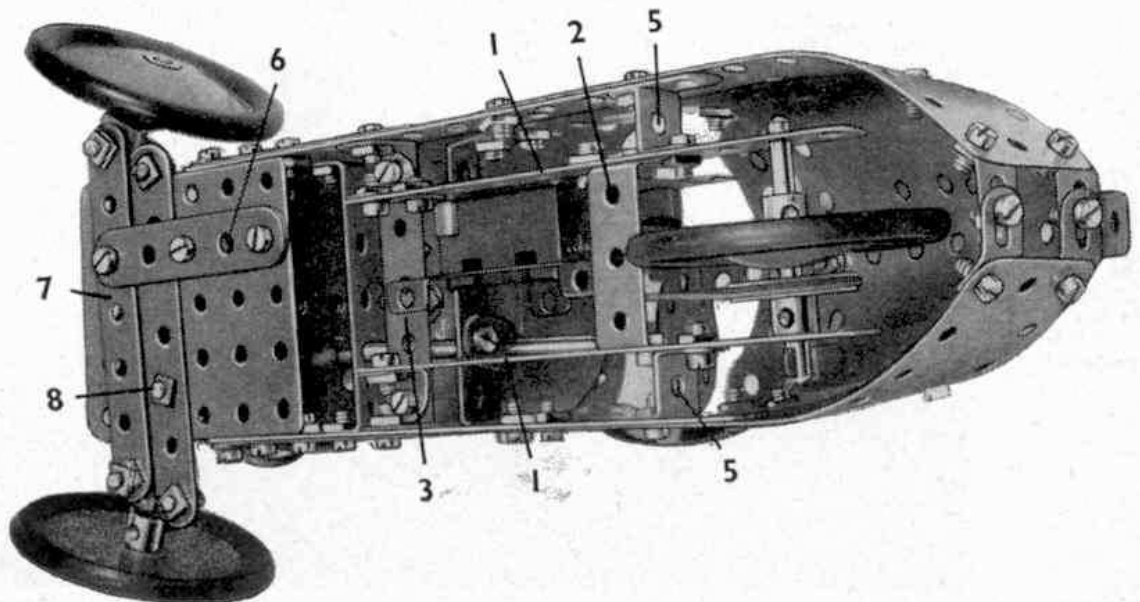
The upper edges of the Flexible Plates that form the sides of the body are braced by  $5\frac{1}{2}$ " Strips. The top of the bonnet is a  $4\frac{1}{2}$ "  $\times$   $2\frac{1}{2}$ " Flexible Plate curved as shown in Fig. 2, and the Bolts 9 and 10 that fix the Flexible Plate in position attach also two  $2\frac{1}{2}$ "  $\times$   $\frac{1}{2}$ " Double Angle Strips placed between the sides of the body. The bonnet is completed by four Formed Slotted Strips.

The radiator cap is a  $\frac{1}{2}$ " loose Pulley held by a  $\frac{3}{8}$ " Bolt 11 that fixes also an Angle Bracket placed inside the bonnet. This Angle Bracket is used later to fix the radiator in position.

The steering column is a Crank Handle, which is passed through the Double Angle Strip held by Bolts 9 and through a Fishplate bolted to the Double Angle Strip held by Bolts 10. The grip of the Crank Handle engages between the Angle Brackets fixed by Bolt 8 to the  $3\frac{1}{2}$ " Strip of the steering mechanism.

The radiator and front cowl are formed from a Semi-Circular Plate bolted to a  $2\frac{1}{2}$ "  $\times$   $2\frac{1}{2}$ " Flexible Plate shaped as shown in Fig. 2. Two 1" Pulleys on  $\frac{3}{8}$ " Bolts represent headlamps, and the assembly is fixed to the Angle Bracket attached to the bonnet by  $\frac{1}{2}$ " Bolt 11. The rear cowl of the car consists of two  $1\frac{1}{16}$ " radius Curved Plates bolted at an angle to the  $5\frac{1}{2}$ "  $\times$   $1\frac{1}{2}$ " Flexible Plates and joined together at the centre. The tail is completed by three  $2\frac{1}{2}$ " Strips bolted to the  $1\frac{1}{16}$ " radius (Cont. on page 527)

Fig. 3. An underneath view of the Sports Car showing how the driving Motor is fitted.



## Autumn Meccano Competition

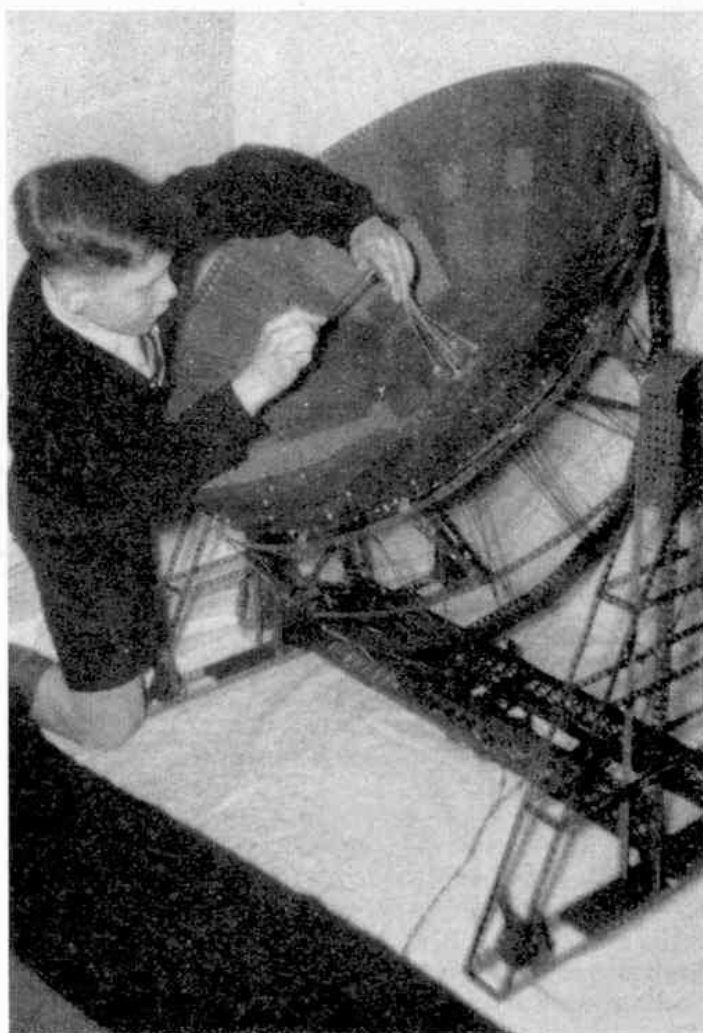
Prizes for Models of all Kinds

THE first of the season's general model-building Competitions is now in full swing and it presents all Meccano model-builders with a fine opportunity to indulge in a pleasant and worthwhile pastime, while at the same time providing them with the chance to win a cash prize for their efforts. Full details of these prizes appear in the panel at the foot of this page.

The Competition is open to model-builders of all ages living in any part of the world, and every competitor has an equal chance no matter what his or her age may be or the size of the Outfit possessed. This is assured by the fact that in awarding the prizes the judges will take into consideration, when assessing the merits of a model, the age of the competitor and the size of the Outfit or quantity of parts from which his or her model is built.

In entering the Competition all the model-builder has to do is first to think of a new model of any kind whatever and then set to work to build it as neatly and realistically as possible from standard Meccano parts. When the model is completed the next thing is to obtain either a photograph of it or, if this is not possible, make a good sketch showing the details as clearly as can be managed. The photograph or sketch need not be the competitor's own work, but the model itself must be the result of his own unaided efforts. This model must not be sent under any circumstances.

The competitor should write his age, name and full address in *block* letters on the back of each photograph or drawing, and then send them in an envelope addressed to "Autumn Meccano Model-Building Com-



A fine model of the Jodrell Bank Radio Telescope, which won a First Prize for Clive Wright, West Bridgford, Notts, in a recent Meccano Competition.

petition, Meccano Ltd., Binns Rd., Liverpool 13."

Entries will be divided into two Sections as follows:—A, for competitors under 14 years of age; B for those age 14 or over.

The contest will close on 31st December, 1960, and all entries must be received on or before that date.

### Easy Model-Building—(Continued from page 515)

Curved Plates.

Three  $2\frac{1}{2}$ " stepped Curved Strips form the sides and rear of the driver's cockpit as shown in Fig. 2.

The Magic Clockwork Motor will drive the model for a considerable distance at a good speed. The Motor can be wound by inserting the key in the gap left between the  $5\frac{1}{2}$ "  $\times$   $1\frac{1}{2}$ " and  $2\frac{1}{2}$ "  $\times$   $1\frac{1}{2}$ " Flexible Plates that form the sides of the body.

Parts required to build the Three-Wheel Sports Car: 6 of No. 2; 2 of No. 3; 5 of No. 5; 3 of No. 10; 2 of No. 11; 6 of No. 12; 4 of No. 12c; 1 of No. 17; 2 of No. 18a; 1 of No. 18b; 1 of No. 19g; 3 of No. 22; 1 of No. 23; 1 of No. 24; 5 of No. 35; 57 of No. 37; 10 of No. 37a; 7 of No. 38; 1 of No. 48; 3 of No. 48a; 1 of No. 51; 3 of No. 90a; 6 of No. 111c; 2 of No. 125; 2 of No. 126a; 3 of No. 187; 2 of No. 188; 2 of No. 189; 1 of No. 190; 1 of No. 191; 2 of No. 200; 1 of No. 212; 1 of No. 214; 4 of No. 215; 1 Magic Clockwork Motor.

#### THE PRIZES

The following prizes will be awarded in each of the Sections A and B.

First Prize — Cheque for £4 4s. 0d.

Second Prize — Cheque for £2 2s. 0d.

Third Prize — Cheque for £1 1s. 0d.

Five Prizes each of 5/-d.

Certificates of Merit also will be awarded.

# Among the Model- Builders

By "Spanner"

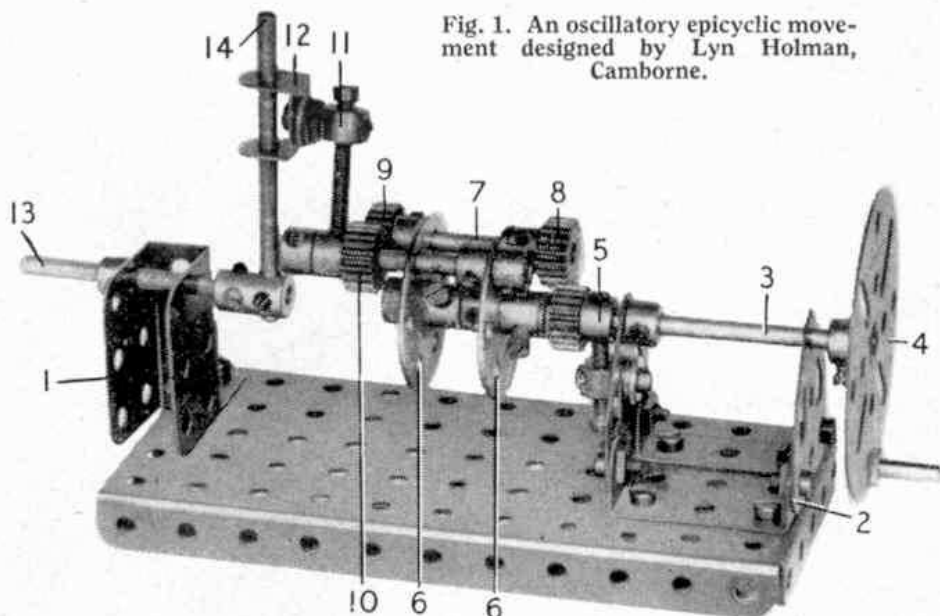


Fig. 1. An oscillatory epicyclic movement designed by Lyn Holman, Camborne.

## An Oscillatory Epicyclic Movement

A CHANNEL Bearing 1 is attached to a  $5\frac{1}{2}'' \times 2\frac{1}{2}''$  Flanged Plate with a  $1'' \times 1''$  Angle Bracket. Two Flat Trunnions 2 are bolted to two  $1\frac{1}{2}'' \times \frac{1}{2}''$  Double Angle Strips secured to the Flanged Plate. Through the Flat Trunnions a  $4\frac{1}{2}''$  Rod 3 with Hand Wheel 4 is journalled. A  $\frac{1}{2}''$  Pinion 5 is loosely placed on the Rod with a  $\frac{3}{4}''$  Bolt in its boss. The Bolt is anchored in a Collar bolted to the inner Flat Trunnion. Two six-hole Bush Wheels 6 fastened to the Rod 3 are spaced apart with a Collar and Washer as shown. Secured to the  $1\frac{1}{2}''$  Rod 7 are two  $\frac{1}{2}''$  Pinions 8 and 9. Pinion 9 engages with a  $\frac{1}{2}''$  Pinion 10 on a  $2''$  Rod that is held in position in the Bush Wheels by three Collars, and is free to rotate. A  $1\frac{1}{8}''$  Bolt is inserted in the boss of the Pinion 10 and it carries a Collar 11, which is lock-nutted to a Double Bracket 12. A  $2''$  Rod 13 mounted in a Channel Bearing, supports a Short Coupling holding a  $2\frac{1}{2}''$  Rod 14, upon which the Double Bracket slides. Before finally securing the  $\frac{1}{2}''$  Pinions on the Rod 7, they should be rotated so that the  $1\frac{1}{8}''$  Bolt is located in an upright position, so imparting an oscillatory movement to the Rod 14.

The mechanism, which was designed by Lyn Holman, Camborne, is intended for converting continuous rotary motion into oscillating motion about the same centre line, but without using any fixed point other than that on the centre line. It makes use of a condition in epicyclic gearing in which two gears move bodily around a third gear, which is fixed from rotation, all the gears meshing. If the outer gear has the same number of teeth as the fixed gear it will not rotate about its axis. Any point on this outer gear therefore remains in the same

relative position regardless of its rotation around the "sun" wheel. This "point" is represented in the model seen in Fig. 1 by the  $1\frac{1}{8}''$  Bolt in the boss of the  $\frac{1}{2}''$  Pinion.

## Inconstant Speed Gear Box

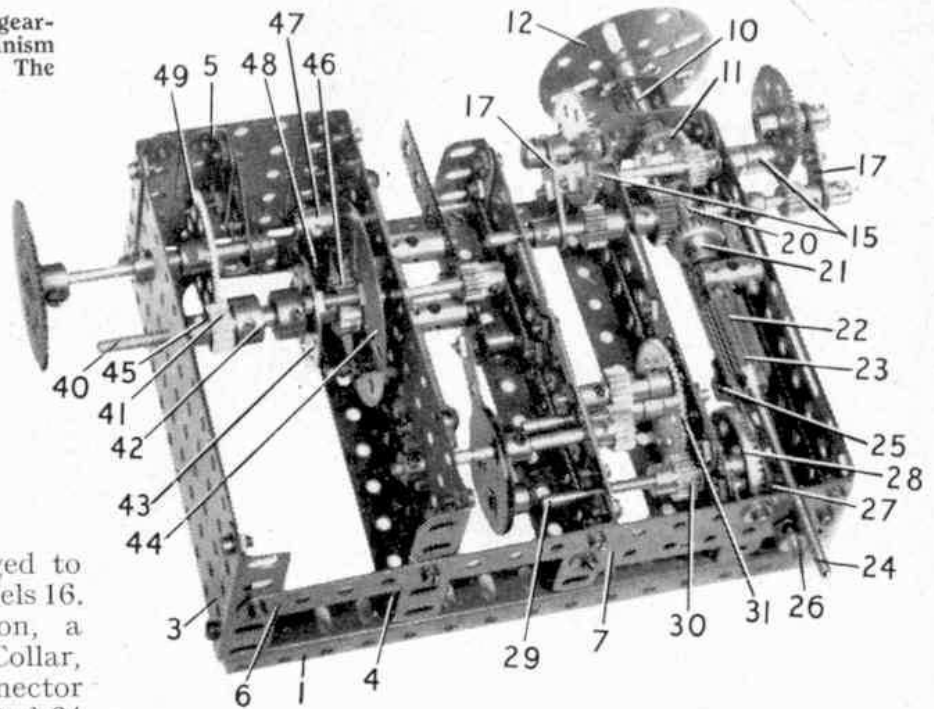
This gear-box, designed by H. C. Geesink, The Hague, Holland, transforms a constant speed into an inconstant speed, which can be interrupted or given a back and forward movement by fixing or loosening the set-screws of the  $2\frac{1}{2}''$  Face Plate 44. This gear-box might be used for many interesting models such as a meccanograph designing machine and mechanical tools.

Details of the mechanism are as follows. Two  $7\frac{1}{2}''$  Angle Girders 1 are joined together by five  $5\frac{1}{2}''$  Angle Girders and braced at each corner with  $1''$  Corner Brackets. Now bolt the  $5\frac{1}{2}'' \times 2\frac{1}{2}''$  Flat Plates 2 and 3, with  $2\frac{1}{2}''$  Angle Girders, to the  $5\frac{1}{2}''$  Angle Girders 4. A  $2\frac{1}{2}'' \times 2\frac{1}{2}''$  Flat Plate is then bolted to the  $2\frac{1}{2}''$  Angle Girders to support the  $5\frac{1}{2}'' \times 2\frac{1}{2}''$  Flat Plates. The  $1\frac{1}{2}''$  Angle Girder 5 holds a Flat Trunnion. To the remaining  $5\frac{1}{2}''$  Angle Girders secure  $1\frac{1}{2}''$  Angle Girders at each end, and connect each pair with a  $5\frac{1}{2}''$  Slotted Strip and a  $5\frac{1}{2}''$  Flat Girder, the middle two having a  $2\frac{1}{2}''$  Flat Girder bolted to them. The  $2\frac{1}{2}''$  Angle Girder and the  $1\frac{1}{2}''$  Angle Girders are joined together by a  $7\frac{1}{2}''$  Strip 6 and a  $3\frac{1}{2}''$  Strip 7. Two  $1\frac{1}{2}''$  Strips 8 and 9 are attached to the  $1\frac{1}{2}''$  Angle Girders with a Double Bent Strip to support the  $1\frac{1}{2}''$  driving Rod 10.

To the Rod 10 a Face Plate 12 is secured and also a  $\frac{3}{4}''$  Contrate Wheel 11 that engages with a  $\frac{1}{2}''$  Pinion 14 fixed to the  $2\frac{1}{2}''$  Rod 13. On each end of the Rod 13 is fixed a Rod Socket 15, each of which is tightly

Fig. 2. An inconstant speed gear-box that is based on a mechanism designed by H. C. Geesink, The Hague.

bolted in a hole in a 57-tooth Gear Wheel 16. Into the bosses of the Gear Wheels are secured 1" Rods that carry a Crank 17 with a 1½" Strip bolted to it and held between two Collars. Through the bosses of the Cranks 17 a 5" Rod 18 is passed and it can slide in the slots of the Slotted Strips. Two ½" Pinions 19 are arranged to engage with the Gear Wheels 16. Now secure a ¾" Pinion, a Washer, a Coupling 20, a Collar, and a Rod and Strip Connector to the Rod 18. To a 5" Rod 24 fix a ¾" Contrate Wheel 21 to engage with the ¾" Pinion, the Rod being free to rotate in the Coupling 20. A ½" × ¾" Pinion 22, and a ½" Pinion 23, with their teeth in line, are fixed to Rod 24. The Rod 24 is held in the Coupling 20 by a 1" Rod placed in a Rod and Strip Connector that is secured in the Coupling between the Contrate Wheel 21 and the Pinion 22. To the 6½" Rod 26 fix a ¾" Pinion 27 and a ½" Pinion 25. Pinion 25 is arranged so that it engages the Pinions 22 and 23. Pinion 27



drives a 1½" Contrate Wheel 28 on a 2½" Rod 29. The ½" Pinion 30 drives a 57-tooth Gear Wheel 31 on a 2½" Rod that carries a ½" Pinion 32 which engages with another loose ½" Pinion 33 mounted on an Adaptor for Screwed Rod and held by a Collar 34. The Eccentric 35 is mounted on a 3" Rod that is driven by a ½" Pinion 36 engaging the ½" Pinion 33. On the arm of the Eccentric is fastened a Threaded Pin to which a 3½" Rack Strip 37 is secured by a Collar. A 1½" Strip is bolted to the Rack Strip and also two Threaded Couplings 38, which slide on a 4½" Rod 39 attached to the Flat Plate by two Handrail Supports. The Rack Strip engages with a 7/16" Pinion on a 5" Rod 40.

A ½" Pinion 41 is fastened in a Socket Coupling 42 fixed to the Bush Wheel 43. The Bush Wheel is attached to the Face Plate 44 by two ¾" Bolts and six Nuts. This unit is free on the Rod 40 and is held in position by a Collar 45. The Ratchet Wheel 46 is fixed to the Rod. A Pawl 47 is bolted to the Face Plate 44 by a Pivot Bolt, and a Spring 48 keeps the Pawl in engagement with the Ratchet Wheel. A Gear Wheel 49 mounted on a 3" Rod is driven by the ½" Pinion 41. If a to-and-fro motion is required the set-screw in the Face Plate 44 should be tightened.

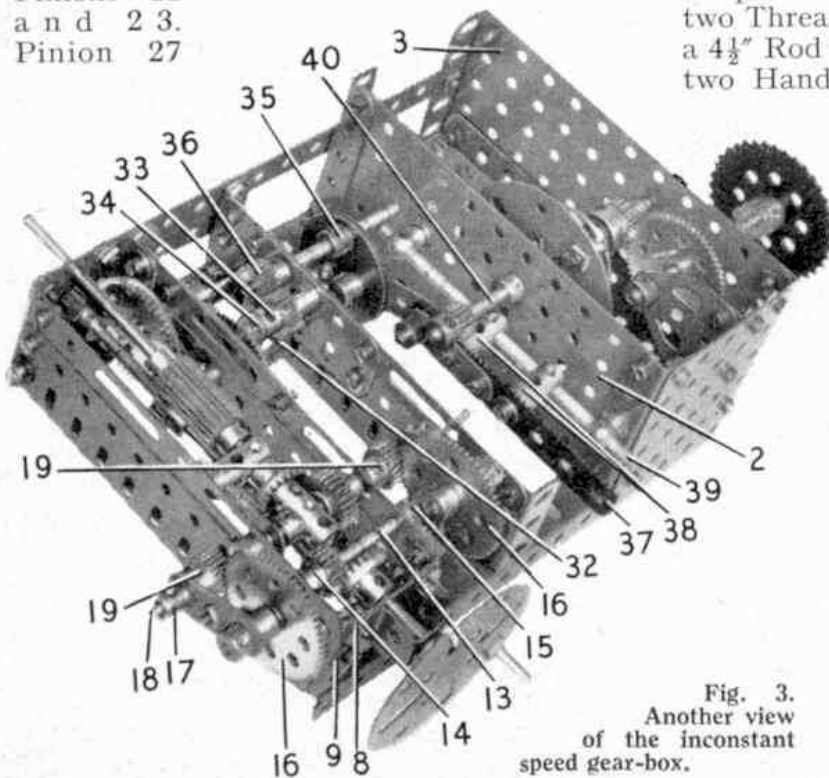


Fig. 3. Another view of the inconstant speed gear-box.