Among the Model-Builders

By "Spanner"

A skilful model-builder and competition prize-winner — H. Smith, Port Elizabeth, South Africa.

G. B. Wallis, Rugby, one of the many successful competitors in a world-wide Meccano Competition.

A CONSTANT DIRECTION DRIVE MECHANISM

From Piddletrenthide in Dorset comes an interesting mechanism designed to give a final drive in a constant direction, irrespective of the direction of the input drive. It was suggested by Mr. G. Welch, and as its uses may not be readily apparent it should be mentioned that Mr. Welch used it in the drive to the distance recorder of a speedometer that he built some time ago. The mechanism is shown in Fig. 1.

The device has an input shaft 1, on the inner end of which is a ¾" Contrate. The Contrate is arranged to be in constant mesh with two ½" Pinions 2, each of which is mounted on the output shaft but is not fixed in place. Collars 3 are used to prevent the two Pinions from sliding on the shaft. It will be seen that when the input shaft is turned its Contrate drives the two ½" Pinions 2 in opposite directions. On the output shaft two ¾" Contrates 4 are fixed as shown.

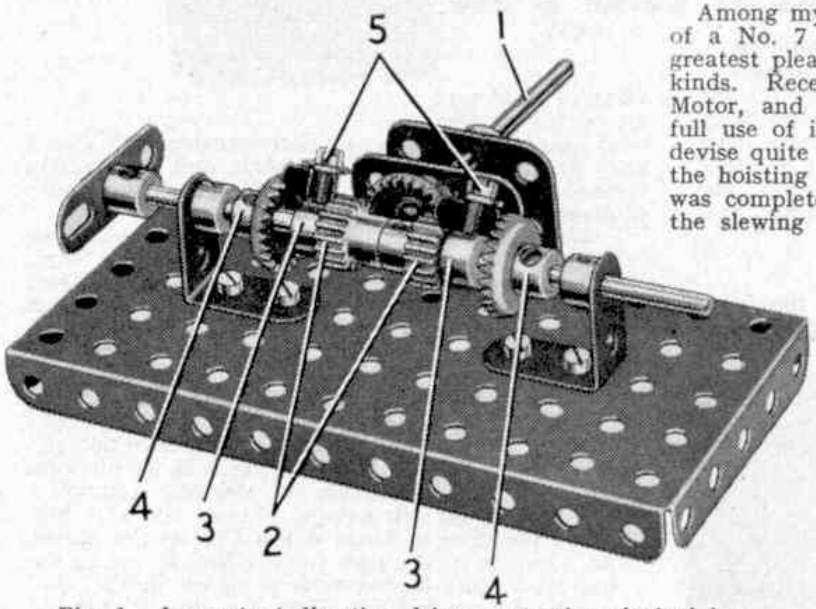

Fig. 1. A constant direction drive mechanism devised by Mr. G. Welch, Piddletrenthide, Dorset.

Screwed tightly into each of the Collars 3 is a ⅜" Bolt 5, on the shank of which a Spring Clip is slipped. Each Clip is arranged so that one of its lugs engages the teeth of one of the Pinions 2, while the other engages the teeth of the corresponding Contrate 4. The Spring Clips act as the pawls in a simple ratchet arrangement, and it is on their free-wheeling action that the working of the mechanism depends.

When the drive is engaged the Pinions 2 turn in opposite directions in relation to each other, but one of them is connected to the output shaft through its ratchet mechanism, while the other ratchet arrangement free-wheels and its Pinion turns idly on the shaft. If the direction of the drive is reversed, however, the ratchet formerly engaged becomes the free-wheeler, while the second ratchet takes over the role of driver. From this it will be seen that the output shaft continues to turn in the same direction, irrespective of reversals in the rotation of the driving shaft.

A THREE-MOVEMENT GEAR-BOX

Among my many correspondents is a proud owner of a No. 7 Outfit, who tells me that he finds his greatest pleasure in building model cranes of various kinds. Recently he obtained a No. 1 Clockwork Motor, and quite naturally he is anxious to make full use of it in his models. While he was able to devise quite easily all kinds of schemes for operating the hoisting and luffing movements of his cranes, he was completely stumped when it came to operating the slewing motion, as he found that his stock of gears was insufficient to provide three separate movements, each of which could be independently controlled. Thinking I might be able to help him he wrote to me, and after looking into his problem I was able to suggest the gear-box shown in Figs. 2 and 3. I am glad to say that I have since heard from my correspondent that he finds the mechanism very useful and that he has been able to adapt it for use in several models.

Other model-builders may find the following details useful. The housing for the mechanism is made by bolting two 3½" × ½" Double Angle Strips across a No. 1 Clockwork Motor, with a Washer on each bolt between the Motor and the Double Angle Strip. The lugs of the Double Angle Strips support two 3½" × 2½" Flanged Plates, and these are connected by two 3½" Strips 1. A 3" Pulley 2 is then attached underneath the Motor by a ½" Reversed Angle Bracket and a Double Bracket, and a 1½" Rod fixed in the boss of this Pulley is passed through a 3" Pulley 3 and is held in place by a Collar. In a model the Pulley 3 is attached to the base of the crane by two Double Brackets.

On the Motor driving shaft is a Worm 4, and two ½" Pinions 5 on the hoisting and luffing shafts respectively are arranged so that by sliding the shafts they can be moved into mesh with the Worm. Each of these shafts is a 5" Rod, and its movement is controlled by a lever that engages between two Collars fixed at one end of it. The lever is a 3½" Rod gripped in a Rod and Strip Connector lock-nutted to an Angle Bracket bolted to one of the Flanged Plates.

The drive to the slewing motion of the crane is brought into operation by sliding a 6½" Rod 6 so