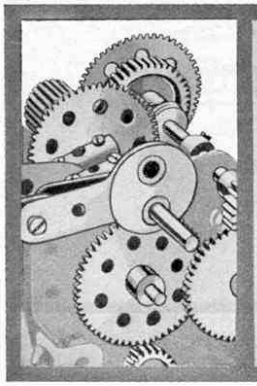
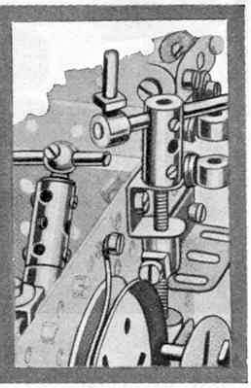


HOW TO USE Meccano Parts

IX.—GEARS, etc. (CLASS O)



For the purpose of this series of articles we have grouped all the Meccano parts into two main sections, termed the Structural and Mechanical Sections, and these sections have been further divided into a number of separate classes. The complete grouping is as follows. Structural Section: Class A, Strips; Class B, Girders; Class C, Brackets, Trunnions, etc.; Class D, Plates, Boilers, etc.; Class E, Nuts and Bolts, Tools and Literature. Mechanical Section: Class M, Rods, Cranks and Couplings; Class N, Wheels, Pulleys, Bearings, etc.; Class O, Gears and Toothed Parts; Class P, Special Accessories; Class Q, Miscellaneous Mechanical Parts; Class T, Electrical Parts; Class X, Motors, Accumulators, etc.

THE Meccano Pinions, Gear Wheels, and Sprocket Wheels, which are included under Class O, formed the subject of last month's article, and below we describe the principal functions of the remaining parts in this class. For the benefit of those readers who are unable to refer to the September issue, we are reproducing on this page the complete list of parts that are grouped under Class O.

The Rack Strips (parts Nos. 110 and 110a) are designed for converting rotary motion to rectiliniar motion, or vice versa. They are invaluable for obtaining the traversing movement of lathe saddles or other parts of machine tools. In model No. 6.17 in the 4–7 Instruction Manual two 3½″ Rack Strips are used to impart up and down motion to a Meccano jack, while in model No. 7.8 (Steam Shovel) Rack Strips are employed to thrust the shovel arm toward or away from the jib. The 6½″ Rack Strip is one of the latest additions to the Meccano system, but it has already found a very large number of uses.

A very ingenious movement produced with the aid of two 3½″ Rack Strips is illustrated in Fig. 3. This is a device designed to increase the length of a crank stroke, and is taken from the Standard Mechanisms Manual, where it appears under detail No. 278. For the benefit of those readers who are unable to refer to the S.M. Manual, we repeat the description:—

The connecting or piston rod is placed on the end of a ¾″ Bolt 1, which passes through an Eye Piece 2 and carries on its shank a ½″ Pinion 3. The latter rolls on a 3½″ Rack Strip 4 secured by Angle Brackets to the base of the model. A second Rack Strip 5 bolted to two Eye Pieces 6 sliding on a 5½″ Strip 7 also engages with the Pinion 3.

At each stroke of the connecting rod the Pinion 3 is caused to rotate, owing to its engagement with the Rack 4, and thereby thrusts the upper Rack Strip in the same direction as that in which the connecting rod moves, but through a distance twice as great. Strip 7 is bolted at each end to 1½″ Strips secured to the base by means of 1″ Angle Brackets. A second guide Strip 8, secured at either end to a 1″×½″ Angle Bracket, forms a support for the Eye Piece 2.

The Rack Segment (part No. 129) is intended principally for use where it is required to rotate a mechanism through part of a revolution only. It should be bolted to a Face Plate or other part that is capable of turning about a centre and a 1″ Gear Wheel should be engaged with its teeth. The Segment has 28 teeth and a radius of 1½″, so if four Segments are placed together to form a circle, the latter will measure 3″ in diameter and will have 112 teeth. Great care should be taken when joining the segments together, because unless the adjoining teeth are spaced correctly they will fail to mesh properly with the Gear Wheel.

Fig. 1 shows two Rack Segments secured to the bottom of one of the davit arms of a boat launching gear. This arm is required to move through less than half a circle, hence two Rack Segments joined together provide a sufficient number of teeth to receive the drive from the 1″ Gear Wheel 6, a reduction ratio of approximately 3:1 being obtained. The Rack Segments (shown at 3 in the illustration) are bolted to the Face Plate 2, which forms part of the arm 1.

Parts in Class O: Gears and Toothed Parts

Part No.		Prices s.	d.
25	Pinion Wheels, ¾″ diam., ¼″ wide ... each	0	6
25a	,, ,, ¾″ ,, ½″ ,, ... ,,	0	8
25b	,, ,, ¾″ ,, ¾″ ,, ... ,,	0	10
26	,, ,, ½″ ,, ¼″ ,, ... ,,	0	4
26a	,, ,, ½″ ,, ½″ ,, ... ,,	0	6
26b	,, ,, ½″ ,, ¾″ ,, ... ,,	0	8
27b	Gear Wheels, 133-teeth (3½″ diam.) ... ,,	1	3
27a	,, ,, 57 ,, (1½″ ,,) ... ,,	0	6
27	,, ,, 50 ,, (1 5/16″ diam.) ... ,,	0	6
31	,, ,, 38 ,, (1″ diam.) ... ,,	1	0
28	Contrate Wheels, 1½″ 50-teeth ... ... ,,	0	9
29	,, ,, ¾″ 25 ,, ... ,,	0	6
30	Bevel Gears, ¾″ 26-teeth ... ... ,,	0	9
30a	,, ,, ½″ 16 ,, ... ,,	0	6
30c	,, ,, 1½″ 48 ,, ... ,,	1	6
32	Worm, 12 threads per inch ... ... ,,	0	5
95b	Sprocket Wheels, 3″ 56-teeth ... ... ,,	0	6
95	,, ,, 2″ 36 ,, ... ,,	0	5
95a	,, ,, 1½″ 28 ,, ... ,,	0	4
96	,, ,, 1″ 18 ,, ... ,,	0	3
96a	,, ,, ¾″ 14 ,, ... ,,	0	3
110	Rack Strips, 3½″ ... ... ,,	0	2
110a	,, ,, 6½″ ... ... ,,	0	3
129	Rack Segments, 3″ diam. ... ... ,,	0	5
144	Dog Clutches ... ... ,,	0	6
147	Pawls, with Pivot Bolts and Nuts ... ,,	0	3
147a	Pawls ... ... ,,	0	2
148	Ratchet Wheels ... ... ,,	0	6
167a	Roller Races, geared, 192 teeth		
167c	Pinions for Roller Bearings, 16-teeth	see class N.	
168b	Ball Races, geared, for Sprocket drive		

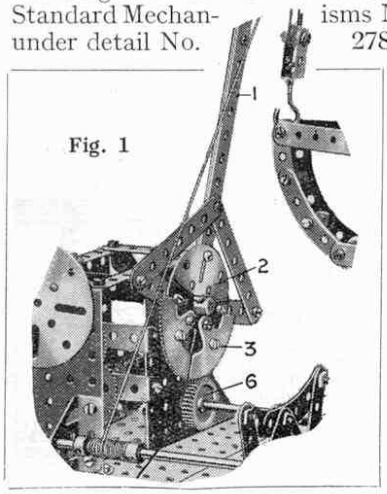


Fig. 1

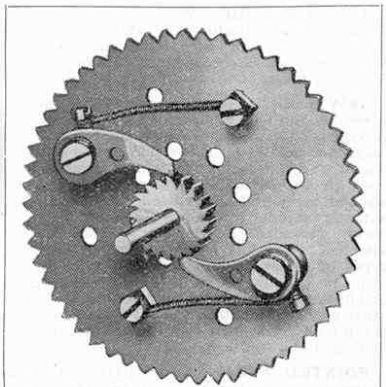


Fig. 2