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# MECCANO MOTOR CHASSIS

Full Instructions for Building this Interesting Model

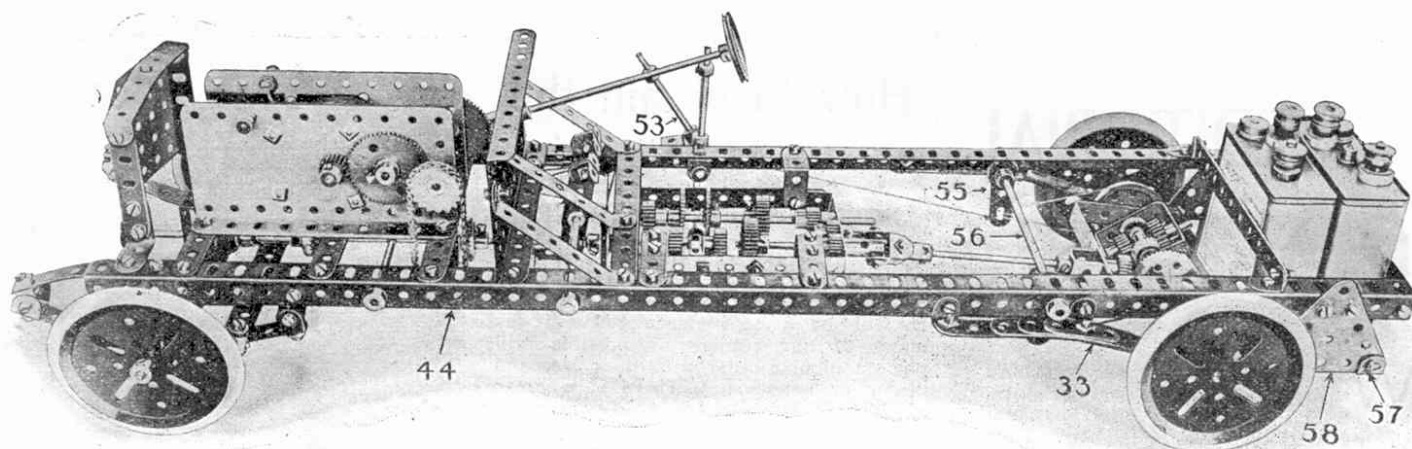


Fig. A. The Complete Chassis

IN printing these full instructions for building the Meccano Motor Chassis we hope that many of our readers will be induced to construct this splendid model, which we consider to be a triumph in model making. When exhibited at the British Industries Fair the Chassis claimed the attention of His Majesty the King, and was also the centre of marked attention from thousands of other visitors to the Fair. It is an accurate reproduction of "the real thing," as are all Meccano models, and so perfectly does it demonstrate the main mechanical features of a modern motor-car that it is in use at several schools of motoring for teaching purposes.

## A Real Gear-Box

The Chassis frame is made of 24" angle girders connected by  $5\frac{1}{2}$ " strips, the overall length being 26" and breadth  $7\frac{3}{4}$ ". It is driven by a Meccano Electric Motor, mounted in the position occupied by the engine in real automobile practice. The current is obtained from a 4-volt accumulator, mounted at the rear of the Chassis. The drive is through a two-speed, sliding-pinion gear-box and universal-jointed propeller shaft to a gear-driven back axle, on which is situated the built-up differential. Direct drive is obtained on top gear and the change-speed gear is actuated by a cross shaft connected to the gear lever, the gears sliding into position by successive backward or forward movements of the lever.

The universal joint of the propeller shaft is a combination of the cross-pin and sliding types, and operates in exactly the same manner as on a real Chassis. The steering, which is on the Ackermann principle, also follows actual car practice. Worm and pinion is used, and the shaft is connected by rods and strips to the steering swivels. The Chassis, which is under-slung—resting on built-up cantilever elliptical-springs—is fitted with a gear-box having two forward speeds and reverse.

## Begin by Building the Frame

The Meccano Chassis is not difficult to build, and a great amount of fun and practical instruction may be obtained when the model is completed. It is very realistic to see this chassis running around under its own power, or to set it to run up a steep incline and drop into low gear by flicking the change-speed lever with the finger, when the gradient causes the speed to fall off.

As in building a motor-car it is best to begin to build this model by making up the Chassis frame, the sides (1 Fig. C), of which are  $24\frac{1}{2}$ " angle girders connected by  $5\frac{1}{2}$ " strips (2). The front steering axles (3) and their springs

(4) may then be built on to the frame as shewn.

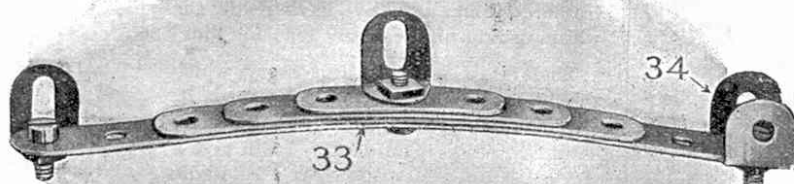


Fig. B. Rear Leaf-Spring

The stub axles (3) are fitted into the couplings (5) and swivel in 1" reversed angle brackets (6) which are bolted to two overlapped  $5\frac{1}{2}$ " strips in order to give a projecting end hole on each side to form a bearing

**Meccano Motor Chassis—(cont.)**

for the couplings (5). These  $5\frac{1}{2}$ " strips also support the springs (4). The couplings (5) are moved to steer the car by means of a 1" rod which is gripped in the lower part of the coupling 5A and fitted with a crank (7) connected by a strip (8) to another  $1\frac{1}{2}$ " strip secured to a crank (9) on the rod of a gear wheel (10) which is rotated by a worm (11) on the steering wheel (12). The strip 8 is connected to the crank 9 extension by an angle bracket lock-nutted to give free pivotal movement.

The wheels are caused to turn together by nipping the 2" threaded rods (14) into the couplings 5 and 5A by screws, the outer ends of the two threaded rods screwing into threaded bosses (13) connected to the outer ends of  $5\frac{1}{2}$ " and  $2\frac{1}{2}$ " strips overlapped three holes. The bosses are coupled to the strips by screws (15) threaded into the bosses with washers beneath.

The brake lever (53) and change speed lever (54 Fig. D) are bolted to the side frame. The brake lever (53 Fig. A) is connected by a cord to a crank (55) nipped on an axle rod (56) which carries a similar crank on the near side. From the ends of these cranks the brake cords are carried round the brake drums. The change speed lever (54 Fig. D) is fitted at the lower end with a

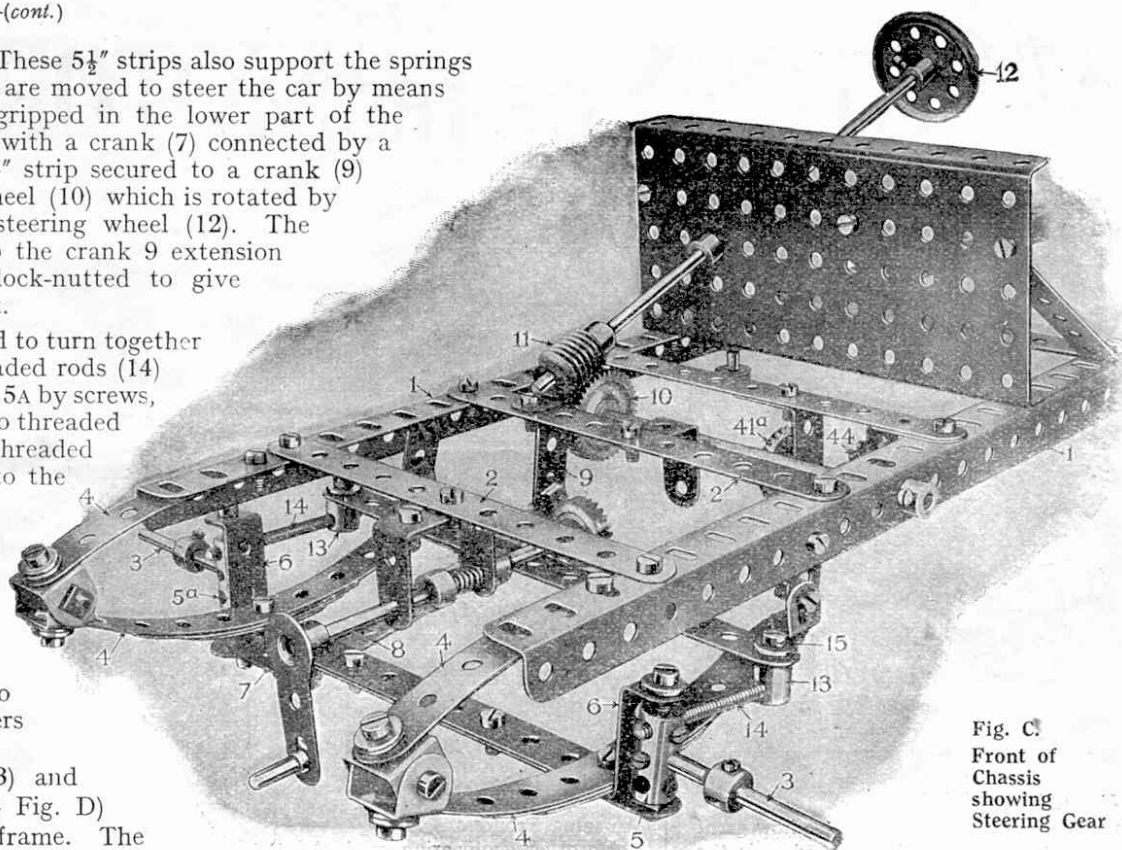


Fig. C.  
Front of  
Chassis  
showing  
Steering Gear

coupling (55) carrying a 2" rod on which is a collar (55A) which engages between the gear wheels, as will be described later.

The concluding instalment of this article will appear in next month's issue and will deal with the construction of the gear-box and differential.

**Parts required to Build the Meccano Chassis**

12 $5\frac{1}{2}$ " Perforated Strips	2 $\frac{1}{2}$ " Pulley Wheels	1 $5\frac{1}{2}$ " $\times$ $2\frac{1}{2}$ " Flanged
3 $4\frac{1}{2}$ " " "	(fast)	Plate
7 $3\frac{1}{2}$ " " "	1 Bush Wheel	1 $3\frac{1}{2}$ " $\times$ $2\frac{1}{2}$ " " "
3 $3\frac{1}{2}$ " " "	6 $\frac{3}{4}$ " Pinion Wheels	24 Collars
7 $2\frac{1}{2}$ " " "	4 $\frac{1}{2}$ " " "	5 Cranks
2 $2\frac{1}{2}$ " " "	4 50 Toothed Gear	8 Couplings
6 $1\frac{1}{2}$ " " "	Wheels	2 Threaded Bosses
2 $24\frac{1}{2}$ " Angle Girders	1 56 " " "	2 $2\frac{1}{2}$ " Triangular Plates
3 Flat Brackets	3 1" Gear Wheels	2 2" Screwed Rods
10 Double "	1 $1\frac{1}{2}$ " Contrate Wheel	2 1" " "
18 Angle "	4 $\frac{3}{4}$ " " "	2 1" Sprocket Wheels
11 1" Angle "	2 Bevel Gear Wheels	2 $\frac{3}{4}$ " Bolts
2 8" Axle Rods	1 Worm Wheel	1 Threaded Pin
4 6" " "	12 Nuts	2 Pivot Bolts
1 5" " "	90 " and Bolts	29 Washers
1 $4\frac{1}{2}$ " " "	1 2" Spring	4 $3\frac{1}{2}$ " $\times$ $\frac{1}{4}$ " Rubber Rings
2 $3\frac{1}{2}$ " " "	1 Double Bent Strip	2 1" Reversed Angle
5 $2\frac{1}{2}$ " " "	2 $1\frac{1}{2}$ " $\times$ $\frac{1}{2}$ " Double Angle	Brackets
3 2" " "	Strips	
5 1" " "	1 $3\frac{1}{2}$ " $\times$ $\frac{1}{2}$ " " "	1 Hank of Cord
1 Flanged Wheel	3 $5\frac{1}{2}$ " $\times$ $\frac{1}{2}$ " " "	9" Sprocket Chain
4 3" Pulley Wheels	3 $2\frac{1}{2}$ " $\times$ 1" " "	
4 $1\frac{1}{2}$ " " (fast)	1 3" $\times$ $1\frac{1}{2}$ " " "	

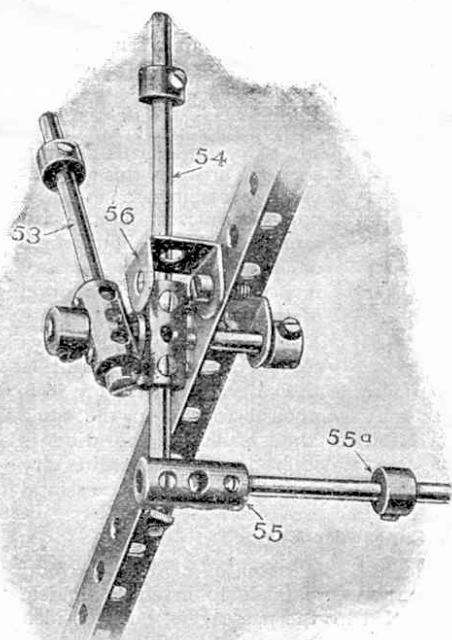


Fig. D.  
Brake and  
Change Speed  
Levers

(This article will be concluded in our next issue.)