

# MECCANO

## Sports Motor Car

(MODEL No. 10.2)

### SPECIAL FEATURES

The car has a modern streamlined body and is fitted with a 3-speed and reverse gear-box, single plate clutch, independent front suspension and working differential.

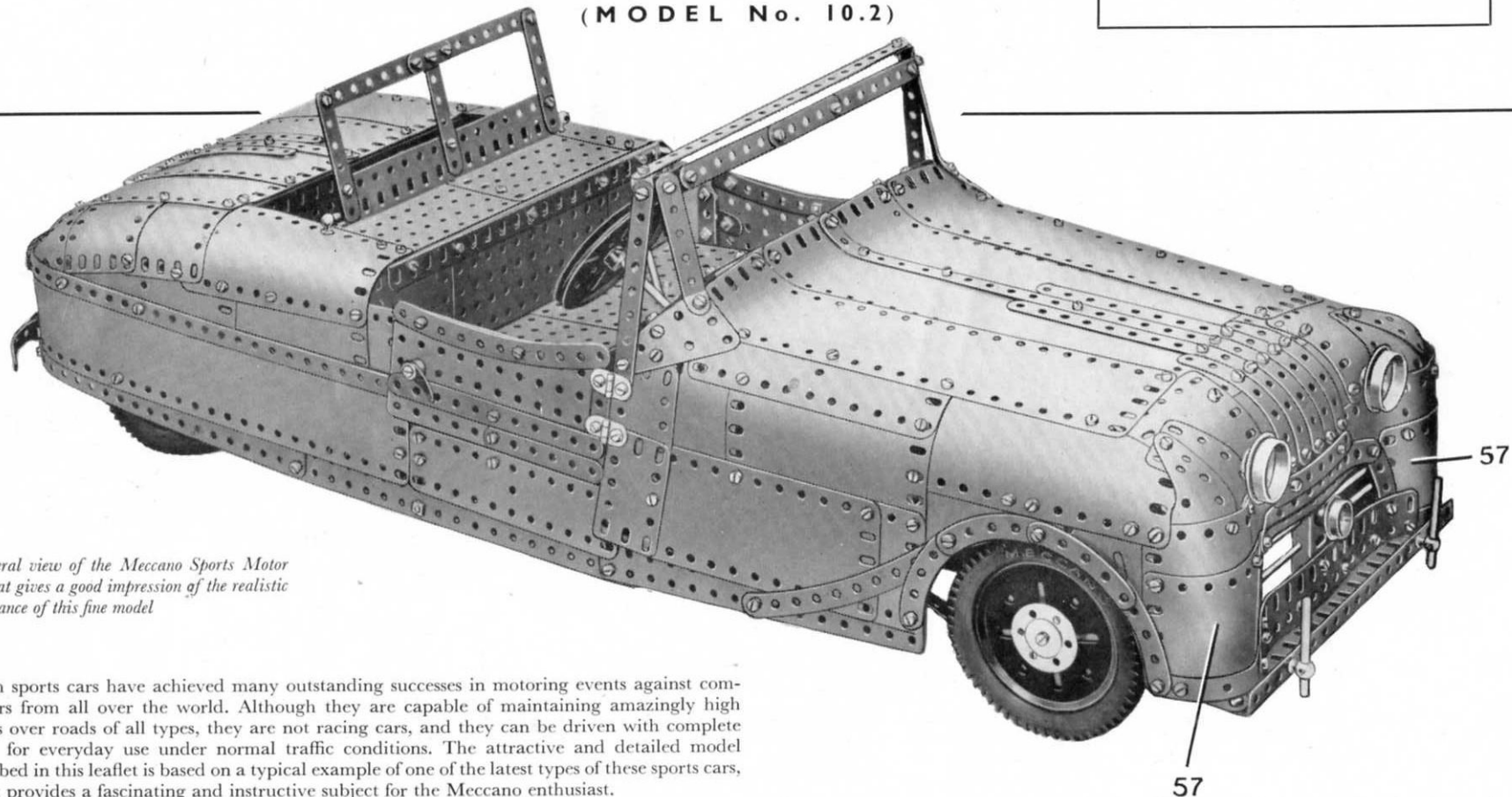


FIG. 1

A general view of the Meccano Sports Motor Car that gives a good impression of the realistic appearance of this fine model

British sports cars have achieved many outstanding successes in motoring events against competitors from all over the world. Although they are capable of maintaining amazingly high speeds over roads of all types, they are not racing cars, and they can be driven with complete safety for everyday use under normal traffic conditions. The attractive and detailed model described in this leaflet is based on a typical example of one of the latest types of these sports cars, and it provides a fascinating and instructive subject for the Meccano enthusiast.

### Construction of the Model: Details of the Chassis (Figs. 2 and 4)

Each of the chassis main girder members consists of two  $24\frac{1}{2}$ " Angle Girders joined together by bolts through their round holes to form a U-section girder. At the rear end of this girder a  $4\frac{1}{2}$ "

Flat Girder is bolted, and to this is fixed a  $9\frac{1}{2}$ " Angle Girder (1). The chassis members are connected by a  $3\frac{1}{2} \times \frac{1}{2}$ " Double Angle Strip (2) (Fig. 4), and a  $3\frac{1}{2}$ " Angle Girder (3) fixed to Angle Brackets. They are joined also by a  $7\frac{1}{2}$ " Angle Girder (4) braced by  $1\frac{1}{2}$ " Corner Brackets. The Girder (3) is braced to the channel girders by two 3" Angle Girders.

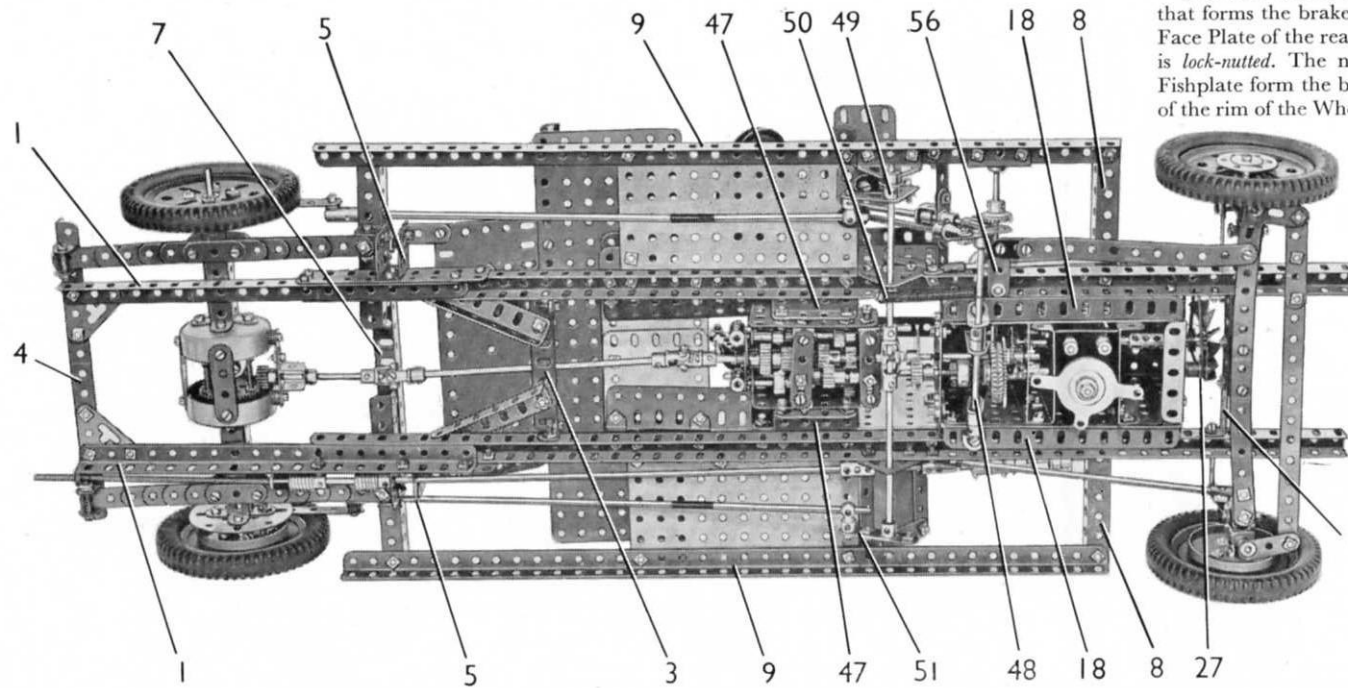


FIG. 2

*This underneath view of the chassis shows the general arrangement of the drive transmission and the brake linkage*

A Channel Bearing (5) is bolted to each side of the chassis, and to it is fixed a  $4\frac{1}{2}$ " Angle Girder (6) fitted with a  $1\frac{1}{2}$ " Corner Bracket. The Corner Brackets are connected by a  $5\frac{1}{2}$ " Angle Girder (7) (Fig. 6). A  $3\frac{1}{2}$ " Angle Girder (8) is fixed to each side of the chassis, and  $18\frac{1}{2}$ " Angle Girders (9) are bolted to the ends of the Girders (6) and (8). A  $5\frac{1}{2}$ "  $\times$   $3\frac{1}{2}$ " Flat Plate is bolted between the chassis member and the Girder (9) on each side (see Fig. 2).

### Differential and Rear Axle (Fig. 3)

Each half of the rear axle casing is formed by four  $2\frac{1}{2}$ "  $\times$   $\frac{1}{2}$ " Double Angle Strips bolted between a Boiler End and a Face Plate. When the differential is in place the Boiler Ends are connected by four 2" Strips, one of which is spaced from them by two Washers on each Bolt and has attached to it a Double Bent Strip.

One of the differential half-shafts is a 5" Rod passed through half of the casing. A  $1\frac{1}{2}$ " Contrate (10) is free to turn on the Rod, and a  $\frac{3}{4}$ " Contrate (11) is fixed on it. The Rod is then placed half way into a Coupling (12). Two 1" Screwed Rods are now fixed in the Contrate (10), with two nuts on each, and on each Rod a Collar is screwed. A  $1\frac{1}{2}$ " Rod is fixed in these Collars and also in the Coupling (12). Two  $\frac{7}{8}$ " Bevel Gears (13) are freely mounted on  $\frac{3}{4}$ " Bolts screwed into the Coupling (12). They are spaced from the Coupling by Washers, and they mesh with the Contrate (11) and with another  $\frac{7}{8}$ " Bevel fixed on a  $4\frac{1}{2}$ " Rod that forms the other half-shaft.

The differential is driven by a  $\frac{1}{2}$ " Pinion on a  $2\frac{1}{2}$ " Rod mounted in the Double Bent Strip and the 2" Strip as shown. This Pinion engages the Contrate (10).

The rear wheels are 3" Pulleys, to each of which a Wheel Flange that forms the brake drum is bolted. A Fishplate is *lock-nutted* to each Face Plate of the rear axle, and to the Fishplate a  $2\frac{1}{2}$ " Strip (14) (Fig. 6) is *lock-nutted*. The nuts on the bolt that connects the Strip and the Fishplate form the brake shoe, and can be pulled against the inner side of the rim of the Wheel Flange by means of the Strip (14).

Each of the rear springs is formed by a  $7\frac{1}{2}$ ", a  $5\frac{1}{2}$ ", a  $4\frac{1}{2}$ ", a  $3\frac{1}{2}$ ", a  $2\frac{1}{2}$ " and a  $1\frac{1}{2}$ " Strip connected by two  $1\frac{1}{8}$ " Bolts. The Bolts pass on each side of the axle casing, through three  $1\frac{1}{2}$ " Strips placed face to face. Nuts on the Bolts clamp the  $1\frac{1}{2}$ " Strips and the axle casing securely to the spring (see Fig. 6).

A Double Bracket is bolted to the front end of each spring and is pivoted on a  $\frac{3}{4}$ " Bolt passed through another Double Bracket bolted to the Channel Bearing (5). The  $\frac{3}{4}$ " Bolt is fitted with *lock-nuts*. The rear end of the spring passes between the lugs of a large Fork Piece, and is kept in position by a  $\frac{3}{4}$ " Bolt passed through the lugs. The large Fork Piece is fixed by a  $\frac{1}{2}$ " Bolt to the Girder (4).

### Construction of the Front Axle (Fig. 4)

Each of the front wheels is free to turn on a  $\frac{3}{4}$ " Bolt fixed by a nut in a Coupling (15) on a 2" Rod. The Rods are fitted with Collars at their upper ends and are supported in the lugs of  $1\frac{1}{2}$ "  $\times$   $\frac{1}{2}$ " Double Angle Strips, bolted to 2" Strips. One of the Rods carries at its lower end a Bell Crank (16), and to the other Rod is fixed a Crank (17). The Crank and the Bell

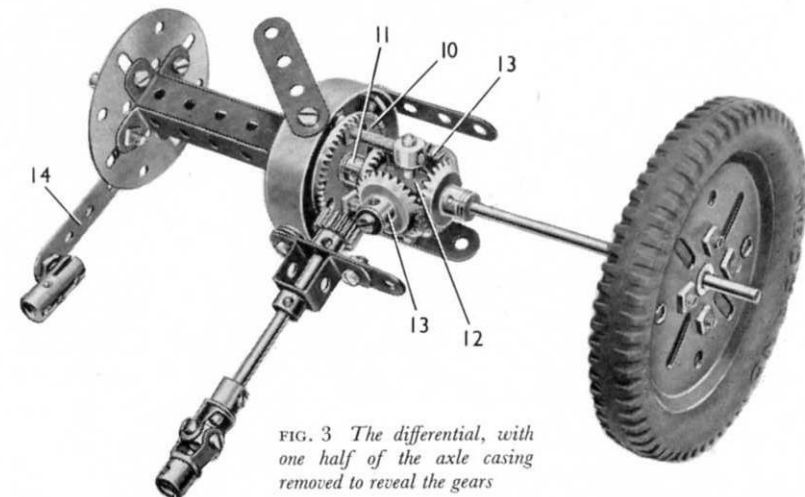


FIG. 3 The differential, with one half of the axle casing removed to reveal the gears

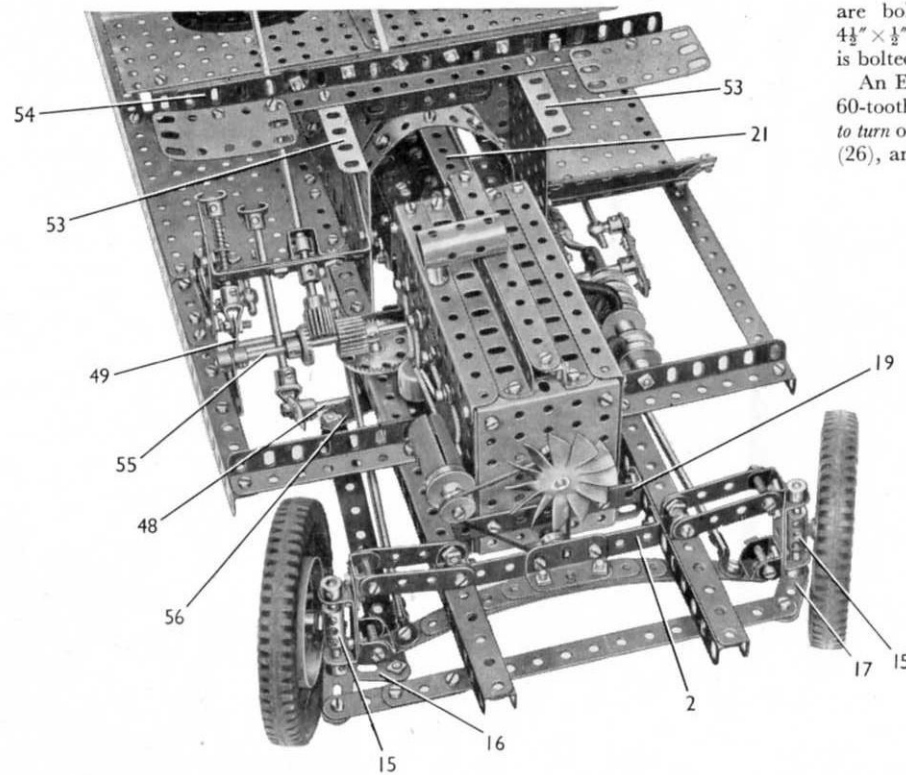


FIG. 4 A front view of the chassis showing the steering mechanism in detail

Crank are connected by *lock-nutted* bolts to a built-up strip made from a  $7\frac{1}{2}$ " Strip and a  $2\frac{1}{2}$ " Strip overlapped three holes.

A Double Bracket is bolted to each end of the 2" Strip on each side. The upper Double Brackets are connected pivotally to 2" Strips by *lock-nutted*  $\frac{3}{4}$ " Bolts, and these Strips are *lock-nutted* to further Double Brackets bolted to the chassis. The lower Double Brackets are connected pivotally to Double Brackets bolted to the ends of the main leaf of the front spring. The connections are made by  $\frac{3}{4}$ " Bolts passed through the lugs of the pairs of Double Brackets and fitted with *lock-nuts*. The main leaf of the spring is a  $7\frac{1}{2}$ " Strip, and the other leaves are formed by a  $5\frac{1}{2}$ ", a  $4\frac{1}{2}$ ", a  $3\frac{1}{2}$ " and a  $2\frac{1}{2}$ " Strip. The complete spring is attached by  $\frac{3}{8}$ " Bolts to a  $1\frac{1}{2}$ " Angle Girder bolted to the Double Angle Strip (2). The spring is braced to the chassis on each side by a  $6\frac{1}{2}$ " Rod held in Rod and Strip Connectors.

#### The Engine Unit (Figs. 4, 5 and 6)

Each side of the engine unit (Figs. 4 and 6) is a  $5\frac{1}{2}$ "  $\times$   $3\frac{1}{2}$ " Flat Plate fitted at each end with a  $3\frac{1}{2}$ " Angle Girder, at the top with a  $5\frac{1}{2}$ " Angle Girder, and at its lower edge with a  $5\frac{1}{2}$ " Angle Girder (18) (Fig. 5). The sides are connected at the front by a  $3\frac{1}{2}$ "  $\times$   $2\frac{1}{2}$ " Flanged Plate, to which a  $3\frac{1}{2}$ "  $\times$   $\frac{1}{2}$ " Double Angle Strip (19) is bolted, and at the rear are joined by a  $2\frac{1}{2}$ "  $\times$   $2\frac{1}{2}$ " Flat Plate, a  $3\frac{1}{2}$ "  $\times$   $\frac{1}{2}$ " Double Angle Strip and a  $2\frac{1}{2}$ " Strip (20). At the top of the unit two  $5\frac{1}{2}$ " Angle Girders

are bolted flanges upward, and to one of them a  $5\frac{1}{2}$ " Strip is attached by Angle Brackets. A  $4\frac{1}{2}$ "  $\times$   $\frac{1}{2}$ " Double Angle Strip (21) (Fig. 6) is fixed to the rear of the unit, and a  $2\frac{1}{2}$ "  $\times$   $1\frac{1}{2}$ " Flanged Plate (22) is bolted between the sides.

An E20R Electric Motor is fixed to one side of the engine unit, and a  $\frac{7}{16}$ " Pinion on its shaft drives a 60-tooth Gear (23) on a  $2\frac{1}{2}$ " Rod. A  $\frac{1}{2}$ " Pinion on the same Rod engages a 57-tooth Gear (24) that is *free to turn* on a  $3\frac{1}{2}$ " Rod (25). A 1" Pulley fitted with a Motor Tyre, is gripped in the boss of a Socket Coupling (26), and this assembly also is free on Rod (25). The Socket Coupling and the Pulley turn with the Rod however, through a Collar fitted with a bolt that engages a slot in the Socket Coupling.

A Compression Spring is placed on Rod (25) between the Collar and the Socket Coupling, to force the Tyre on the 1" Pulley against the face of the Gear (24) and so form a friction clutch.

The front end of the Motor shaft is joined to a  $1\frac{1}{2}$ " Rod by a Coupling. The Rod passes through the front of the housing and carries a  $\frac{1}{2}$ " fixed Pulley and a Fan.

The dynamo is a Sleeve Piece fitted at one end with a Chimney Adapter and at the other with a  $\frac{3}{4}$ " Flanged Wheel. A  $\frac{1}{2}$ " loose Pulley is free to turn on a  $\frac{1}{2}$ " Bolt gripped in the Flanged Wheel, and the Sleeve Piece is spaced from the engine unit by a nut on the bolt that holds it in place. A  $\frac{1}{2}$ " loose Pulley (27) (Fig. 5), is free to turn on a Pivot Bolt. The three  $\frac{1}{2}$ " Pulleys are connected by a Driving Band.

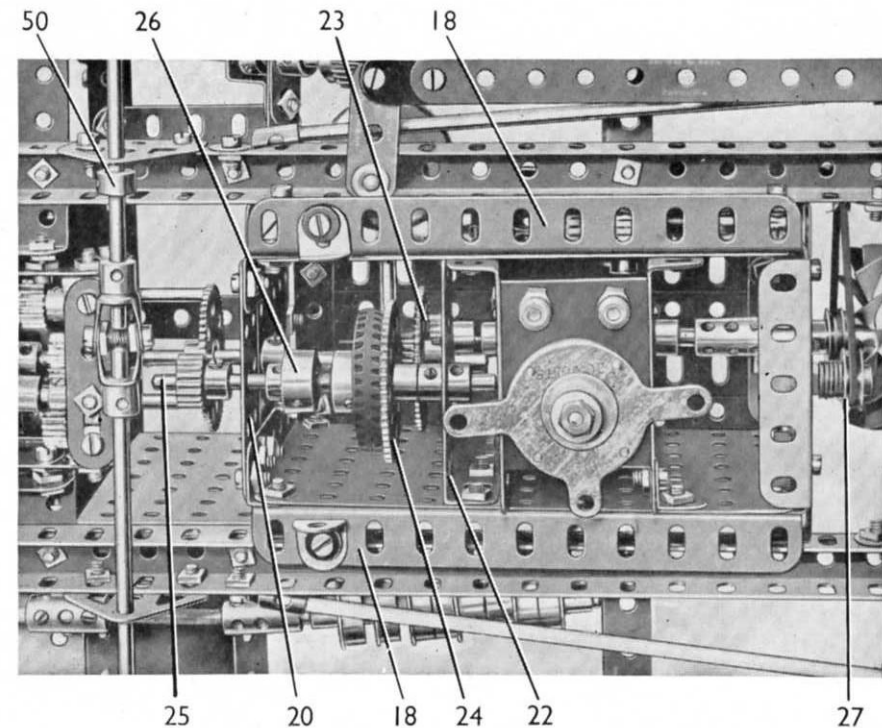


FIG. 5 The engine unit seen from below

The sparking plugs are  $\frac{3}{8}$ " Bolts, that are connected to a Chimney Adaptor by four lengths of Spring Cord. The exhaust pipe consists of two Springs bolted to the housing and clamped at their lower ends between  $\frac{3}{4}$ " Flanged Wheels on a  $3\frac{1}{2}$ " Screwed Rod. One end of the Screwed Rod is fixed in one of the Girders (8) (Fig. 2), and to the other a Flexible Coupling Unit is attached by a Threaded Coupling. The Flexible Coupling Unit is joined by a Coupling to an  $11\frac{1}{2}$ " Rod that passes through one of the Channel Bearings (5). This Rod carries two Worms, in one of which is held an Adaptor for Screwed Rods that supports a 6" Screwed Rod. The rear end of the Screwed Rod is fixed in an Angle Bracket bolted to the Girder 4.

### Assembling the Gear-Box (Fig. 7)

The gears are located in a frame, the top of which consists of two 3" Flat Girders bolted together through their round holes, with a 3" Angle Girder fixed through its slotted holes to the outer edge of each Flat Girder.

A  $3" \times 1\frac{1}{2}"$  Flat Plate is attached to each Angle Girder. The bolts that connect the Flat Girders secure also a  $1" \times 1"$  Angle Bracket (28) (Fig. 7), and a similar part at the opposite end of the frame. A  $1" \times \frac{1}{2}"$  Angle Bracket is also fixed to the centre of the Flat Girders, with a Fishplate bolted to it, so that the round hole in the Fishplate covers the slotted hole in the Angle Bracket.

The  $1" \times \frac{1}{2}"$  Angle Bracket is located below the 2" Slotted Strip seen at the centre of the gear-box.

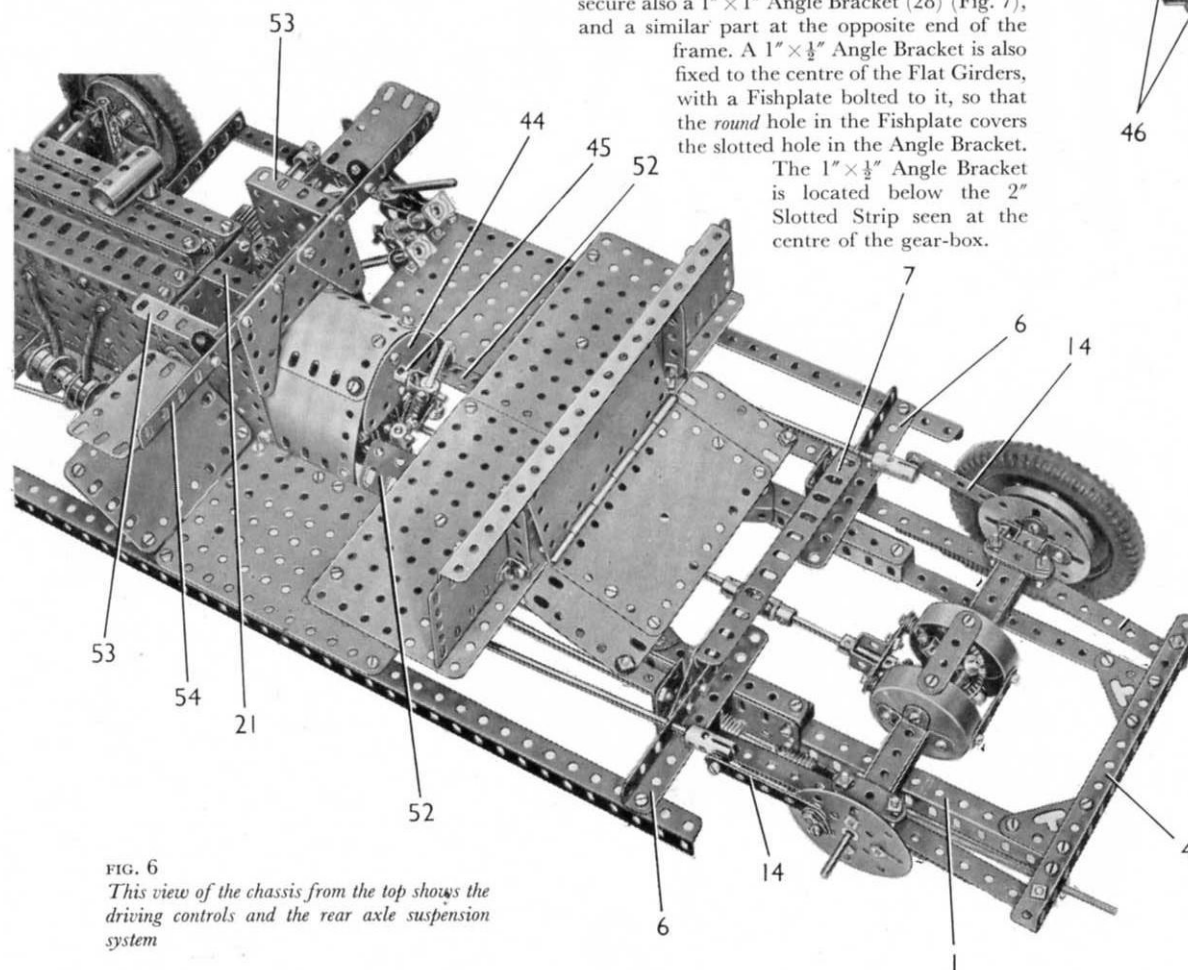


FIG. 6

This view of the chassis from the top shows the driving controls and the rear axle suspension system

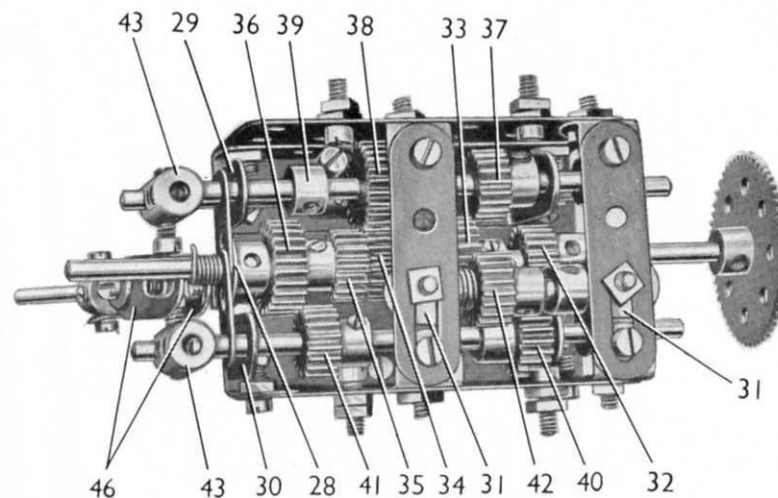


FIG. 7 A close-up of the 3-speed and reverse gear-box

The bolts that connect the Flat Girders and the Angle Girders fix also a  $2\frac{1}{2}" \times 1"$  Double Angle Strip (29) on one side and a similar Double Angle Strip (30) on the other side. Use is made of the slotted holes in the Flat Girders and Angle Girders, so that  $\frac{1}{2}"$  Pinions on Rods mounted in the Double Angle Strips (29) and (30), will mesh accurately with  $\frac{3}{4}"$  Pinions on a Rod in the central Angle Brackets. Two 2" Slotted Strips are attached to Angle Brackets fixed to the sides of the frame, and to each Slotted Strip an Angle Bracket (31) is bolted.

The input shaft is a  $3\frac{1}{2}"$  Rod mounted in one of the central  $1" \times 1"$  Angle Brackets and in the  $1" \times \frac{1}{2}"$  Angle Bracket. The Rod is fitted with a  $\frac{1}{2}"$  Pinion (32), a  $\frac{3}{4}"$  Pinion (33) and a  $\frac{1}{2}"$  Pinion (34). The Rod projects about  $\frac{1}{4}"$  beyond the Pinion (34) into a  $\frac{1}{2}"$  Pinion (35) on the output shaft. This shaft is a 2" Rod, and it carries also a  $\frac{3}{4}"$  Pinion (36). A Cord Anchoring Spring placed outside the Angle Bracket (28) keeps the Rod in position.

The 2nd and 3rd gears layshaft is a  $3\frac{1}{2}"$  Rod mounted in the Double Angle Strip (29). The Rod carries a  $\frac{1}{2}"$  Pinion (37), a  $\frac{3}{4}"$  Pinion (38) and a Collar (39). Another Collar is positioned outside one of the lugs of the Double Angle Strip to limit the sliding movement of the Rod.

The layshaft for 1st and reverse gears is a  $3\frac{1}{2}"$  Rod supported in the Double Angle Strip (30). This Rod carries a  $\frac{3}{4}"$  Pinion (40), a  $\frac{1}{2}"$  Pinion (41) and a Collar. The movement of the Rod is limited by a Collar in the same way as that of the other layshaft. The  $\frac{1}{2}"$  reverse Pinion (42) is fixed on a  $1\frac{1}{2}"$  Rod mounted in the Angle Brackets (31). The Pinion is spaced from one Angle Bracket by four Washers, and the Rod is held in place by a Collar.



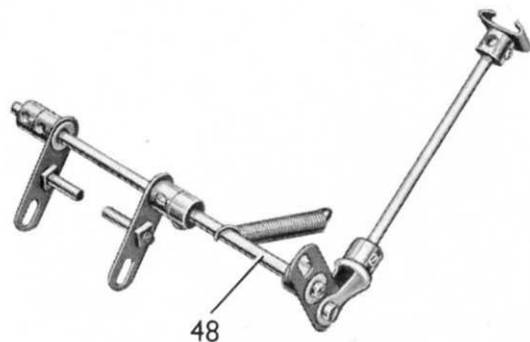


FIG. 8 The clutch pedal and release lever unit removed from the chassis

and is passed freely over the end of the corresponding layshaft. These Couplings prevent the selector shafts from turning, and so serve to keep the  $\frac{3}{8}$ " Bolts against the layshafts.

A  $1" \times 1"$  Angle Bracket is bolted to the top at the rear end of the gear-box frame, and a Threaded Pin is passed through this Angle Bracket and through a Semi-Circular Plate (44) (Fig. 6). A Swivel Bearing (45) is fixed on the Threaded Pin, and in it is held a  $2\frac{1}{2}"$  Rod that forms the gear lever. A Coupling, to which two Fishplates (46) are attached by bolts, is fixed to the lower end of the  $2\frac{1}{2}"$  Rod. The Fishplates are arranged one on each side of bolts screwed into the Couplings (43). The movement of each selector shaft is restrained by a  $\frac{3}{8}"$  Bolt held in the top of the gear-box frame by two nuts. The shank of this Bolt presses lightly against the selector shaft.

The gear-box is connected by  $\frac{3}{8}"$  Bolts to Girder Brackets (47) bolted to the chassis (Fig. 2). The sides of the gear-box are spaced from the Girder Brackets by a nut on each bolt. A 57-tooth Gear on the input shaft is driven by a  $\frac{1}{2}"$  Pinion on the Rod (25), and the drive to the rear axle is carried by a  $6\frac{1}{2}"$  Rod and two Universal Couplings.

#### Clutch and Brake Mechanisms (Figs. 2, 5 and 8)

The clutch pedal is a Slide Piece on a  $4"$  Rod that passes through an Obtuse Angle Bracket bolted to one of the  $5\frac{1}{2}" \times 3\frac{1}{2}"$  Flat Plates of the chassis. The lower end of the Rod carries an End Bearing, and this pivots on a  $\frac{3}{8}"$  Bolt passed through a Double Arm Crank on a  $5"$  Rod (48) (Fig. 8). This Rod is held by Collars in Angle Brackets bolted to the Girders (18) of the engine unit, and it carries two Cranks fitted with Threaded Pins that engage the groove in the Socket Coupling (26).

The brake pedal is a Slide Piece on a  $2"$  Rod, which is mounted in an Obtuse Angle Bracket bolted to a  $1"$  Triangular Plate fixed to the  $5\frac{1}{2}" \times 3\frac{1}{2}"$  Flat Plate. Two Compression Springs are placed on the Rod between the Slide Piece and the Obtuse Angle Bracket. An End Bearing on the lower end of the  $2"$  Rod is lock-nutted to a Bell Crank (49) (Fig. 2) on a built-up axle. This axle consists of two  $4\frac{1}{2}"$  Rods, each of which carries a small Fork Piece, and the Fork Pieces are bolted together by their lugs. The axle is supported in Flat Trunnions bolted to the chassis, and in a  $1\frac{1}{2}"$  Strip fixed to a Trunnion attached to one of the Girders (9). The axle is held

The gear selector shafts are  $4\frac{1}{2}"$  Rods mounted above the layshafts, and each of them carries a Collar fitted with a  $\frac{3}{8}"$  Bolt. The Bolt on the selector shaft for 2nd and 3rd gears engages between the Pinion (38) and the Collar (39). The Bolt on the 1st and reverse gear shaft is located between the Pinion (41) and the Collar. Fishplates are passed over the output shaft and the ends of the layshafts as seen in Fig. 7. A Coupling (43) is fixed to each selector shaft

in place by a Collar, and in addition to the Bell Crank (49) it carries half of a Dog Clutch (50) and a  $2"$  Strip (51) bolted to a Double Arm Crank. Handrail Couplings are pivoted on bolts passed through the Bell Crank and the Strip (51), and each Handrail Coupling is connected by a built-up rod to a Strip Coupling that pivots on a bolt in one of the Strips (14) (Fig. 6). The built-up rods are each made from a  $4"$  and an  $8"$  Rod joined by a Rod Connector. A Spring is attached by a bolt to the half of the Dog Clutch (50) and is looped over the clutch shaft (48).

#### Gear-Box Cover, Dashboard and Front Seat (Fig. 6)

The Semi-Circular Plate (44) is bolted to the rear lug of the Double Angle Strip (21), and a  $1\frac{1}{8}"$  radius Curved Plate also is attached to this Double Angle Strip, and is connected by further  $1\frac{1}{8}"$  radius Curved Plates to Angle Brackets bolted to the chassis. Two  $3\frac{1}{2}"$  Flat Girders (52) are attached to the chassis by Obtuse Angle Brackets, and are connected together by two  $2\frac{1}{2}" \times 2\frac{1}{2}"$  Flexible Plates placed behind the gear lever.

Two  $3\frac{1}{2}" \times 2\frac{1}{2}"$  Flanged Plates (53) are bolted to the chassis and are connected by a  $9\frac{1}{2}"$  Angle Girder (54). A  $2\frac{1}{2}" \times 1\frac{1}{2}"$  Flexible Plate and two  $2\frac{1}{2}" \times 1\frac{1}{2}"$  Triangular Flexible Plates are bolted to this Girder above the gear-box cover. The compartments in the dashboard are formed by  $2\frac{1}{2}" \times 1\frac{1}{2}"$  Flexible Plates curved slightly and bolted to the ends of the Girder (54). On the passenger side of the car a  $3\frac{1}{2}" \times 2\frac{1}{2}"$  Flexible Plate, edged by two  $3\frac{1}{2}"$  and two  $2\frac{1}{2}"$  Strips, is connected by Obtuse Angle Brackets to the  $5\frac{1}{2}" \times 3\frac{1}{2}"$  Flat Plate, and by an Angle Bracket to one of the Flanged Plates (53).

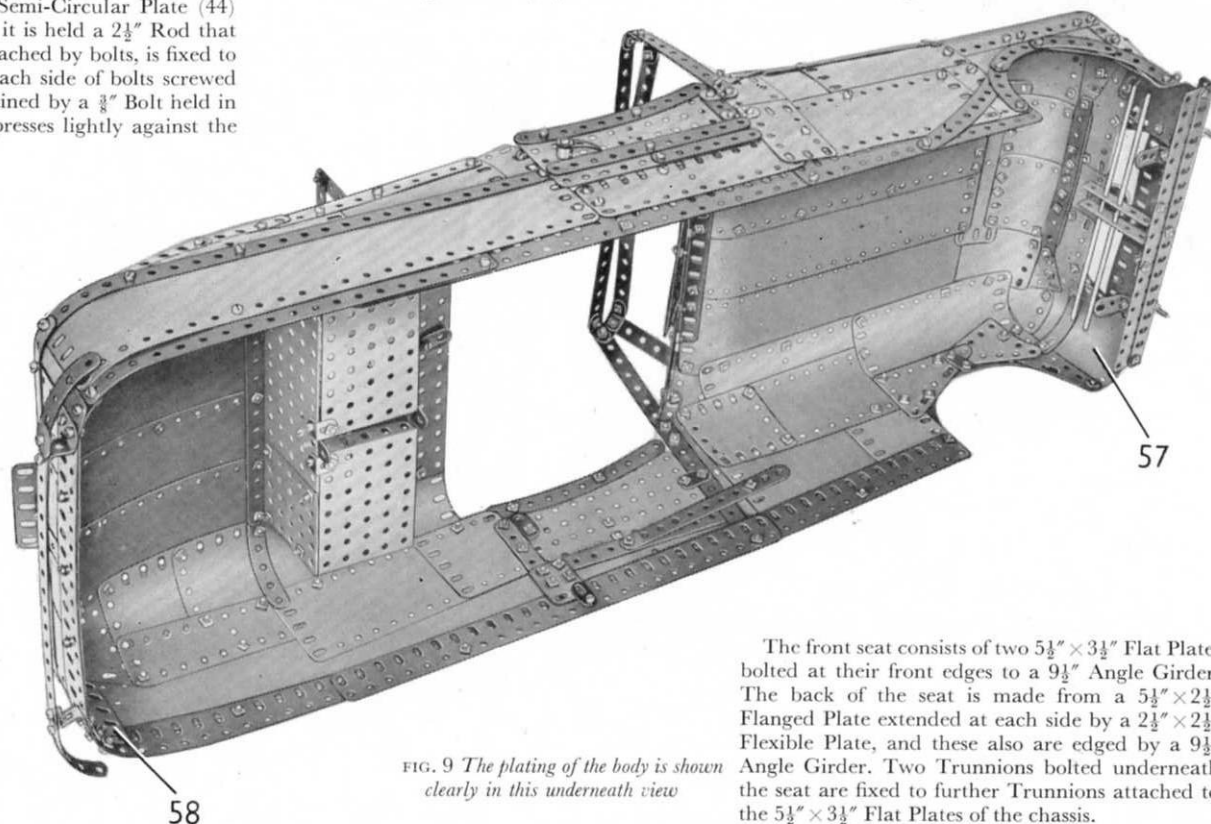


FIG. 9 The plating of the body is shown clearly in this underneath view

The front seat consists of two  $5\frac{1}{2}" \times 3\frac{1}{2}"$  Flat Plates bolted at their front edges to a  $9\frac{1}{2}"$  Angle Girder. The back of the seat is made from a  $5\frac{1}{2}" \times 2\frac{1}{2}"$  Flanged Plate extended at each side by a  $2\frac{1}{2}" \times 2\frac{1}{2}"$  Flexible Plate, and these also are edged by a  $9\frac{1}{2}"$  Angle Girder. Two Trunnions bolted underneath the seat are fixed to further Trunnions attached to the  $5\frac{1}{2}" \times 3\frac{1}{2}"$  Flat Plates of the chassis.

A Hinged Flat Plate is bolted behind the front seat, and its horizontal half is extended on each side by a  $2\frac{1}{2}'' \times 1\frac{1}{2}''$  Flexible Plate. These plates are connected to the Channel Bearings (5) (Fig. 2) by  $1'' \times 1''$  Angle Brackets.

### The Steering Mechanism

The steering column is a  $6\frac{1}{2}''$  Rod that is supported in an Angle Bracket bolted to Girder (54) (Fig. 6) and in a Double Bent Strip and a Double Arm Crank fixed to a  $3'' \times 1\frac{1}{2}''$  Double Angle Strip. The Double Angle Strip is bolted to one of the Flanged Plates (53) and to a Corner Gusset supported by a  $2''$  Angle Girder fixed to one of the Girders (9).

A  $\frac{1}{2}''$  diameter  $\frac{1}{2}''$  face Pinion on the lower end of the steering column engages a  $\frac{3}{4}''$  Contrate on a  $5''$  Rod (55) (Fig. 4). This Rod is supported in one side of the engine unit and in a Trunnion fixed to one of the Girders (9). A  $\frac{3}{4}''$  diameter  $\frac{1}{2}''$  face Pinion on Rod (55) meshes with a  $1\frac{1}{2}''$  Contrate on a vertical  $1\frac{1}{2}''$  Rod. The  $1\frac{1}{2}''$  Rod is passed through one of the chassis members and is held in place by a Collar. A Crank (56) is fixed on the lower end of the  $1\frac{1}{2}''$  Rod, and to it is lock-nutted a Fishplate. The Fishplate is bolted to a  $5\frac{1}{2}''$  Strip lock-nutted to the Bell Crank (16).

### Details of the Body

The general arrangement of the Plates that form the sides and the top of the body is shown clearly in Figs 1, 9, and 10. The curved front is formed by a  $3\frac{1}{2}'' \times 2\frac{1}{2}''$  Flexible Plate (57) on each side, and the lower corners of these are connected by a  $7\frac{1}{2}''$  Flat Girder. A  $9\frac{1}{2}''$  Flat Girder is

attached to the front by Angle Brackets, and this supports a  $9\frac{1}{2}''$  Angle Girder that forms the front bumper. The Plates (57) are extended upward by  $5\frac{1}{2}'' \times 1\frac{1}{2}''$  Flexible Plates, which are joined at their inner ends to a  $2\frac{1}{2}'' \times 1\frac{1}{2}''$  Flexible Plate. The inner edges of the Plates (57) and the  $5\frac{1}{2}'' \times 1\frac{1}{2}''$  Flexible Plates are strengthened by two  $2\frac{1}{2}''$  Curved Strips and a  $5\frac{1}{2}''$  Curved Strip. Two  $8''$  Rods are held by Spring Clips in  $2\frac{1}{2}''$  Angle Girders bolted vertically to the front (see Fig. 9).

The lower edges of the  $4\frac{1}{2}'' \times 2\frac{1}{2}''$  Flexible Plates that form the tail are bolted to a  $9\frac{1}{2}''$  Flat Girder. The curved ends of the Strip Plates that form the sides are connected to the tail Plates by a  $1\frac{1}{8}''$  radius Curved Plate (58) on each side.

Each door is a  $5\frac{1}{2}'' \times 2\frac{1}{2}''$  Flat Plate edged at the top by a  $5\frac{1}{2}''$  Curved Strip. The door on the driver's side hangs on Hinges, but the other does not open and is attached by Fishplates. The door catches are Pawls fixed on  $\frac{1}{2}''$  Bolts passed through the doors and then fitted with Fishplates, each of which is fixed on its Bolt by two nuts.

The rear seat is formed by two  $3\frac{1}{2}'' \times 2\frac{1}{2}''$  Flanged Plates connected by Angle Brackets to a  $5\frac{1}{2}'' \times 2\frac{1}{2}''$  Flat Plate extended by a  $2\frac{1}{2}'' \times 2\frac{1}{2}''$  Flat Plate. The Flat Plates are bolted to a  $7\frac{1}{2}''$  Angle Girder fixed to the front edges of the tail plates. The arm rests at the sides are  $2\frac{1}{2}''$  Angle Girders and  $2\frac{1}{2}''$  Flat Girders,

and the centre arm rest is a  $2\frac{1}{2}'' \times 1\frac{1}{2}''$  Double Angle Strip.

The hinged windscreen for the rear seat is formed by a  $7\frac{1}{2}''$  Flat Girder that is connected to a built-up strip by three  $3''$  Strips. The built-up strip consists of a  $1\frac{1}{2}''$  Strip and two  $3\frac{1}{2}''$  Strips bolted together. Two Right-Angle Rod and Strip Connectors fixed to the Flat Girder are pivoted on  $1''$  Rods, each of which is held in a Handrail Support.

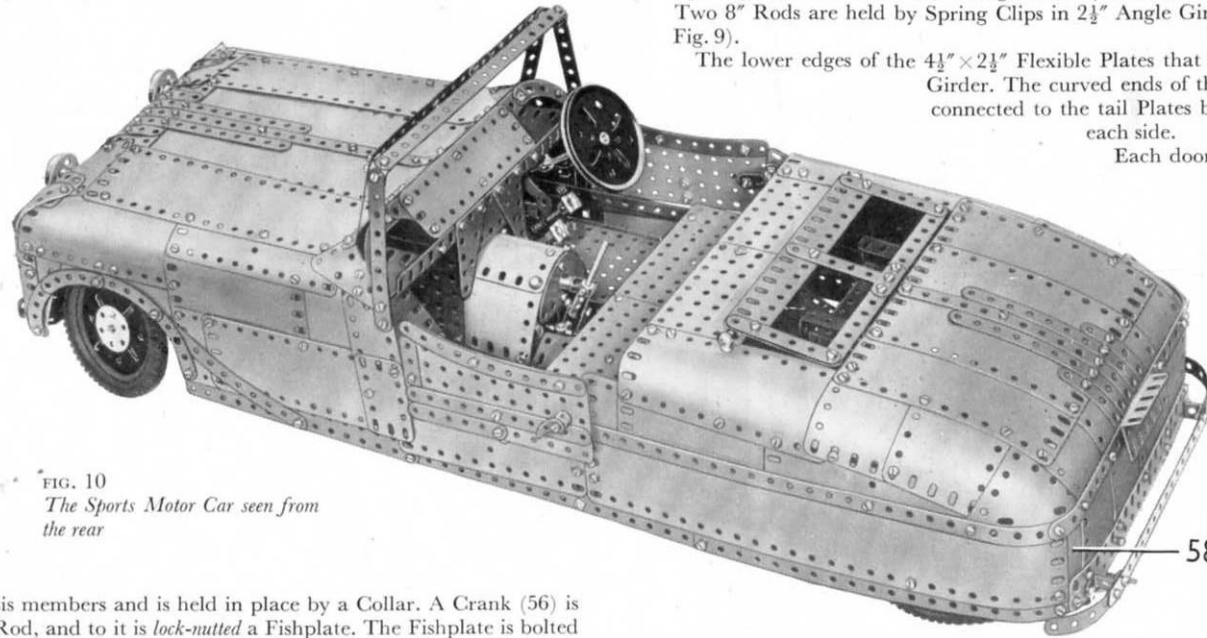


FIG. 10  
The Sports Motor Car seen from  
the rear

### Parts Required to Build the Meccano Sports Motor Car

5 of No. 1	4 of No. 9c	3 of No. 16a	1 of No. 26c	2 of No. 48	1 of No. 64	2 of No. 103h	4 of No. 133	2 of No. 164	11 of No. 200
2 " " 1a	5 " " 9d	3 " " 16b	2 " " 27a	8 " " 48a	3 " " 70	4 " " 103k	2 " " 133a	2 " " 165	4 " " 212
6 " " 1b	1 " " 9e	1 " " 17	1 " " 27d	3 " " 48b	2 " " 72	1 " " 108	4 " " 136	2 " " 166	2 " " 212a
18 " " 2	1 " " 9f	5 " " 18a	2 " " 28	1 " " 48c	2 " " 73	2 " " 109	2 " " 136a	1 " " 171	2 " " 213
7 " " 2a	21 " " 10	2 " " 18b	2 " " 29	2 " " 50	1 " " 77	15 " " 111	4 " " 137	1 " " 173a	1 " " 214
16 " " 3	12 " " 11	2 " " 20	3 " " 30	1 " " 51	1 " " 79a	12 " " 111a	2 " " 140	1 " " 175	4 " " 215
7 " " 4	30 " " 12	5 " " 19b	2 " " 32	1 " " 52	1 " " 80a	24 " " 111c	4 " " 142b	1 " " 176	6 " " 221
17 " " 5	5 " " 12a	8 " " 20b	4 " " 35	5 " " 52a	1 " " 82	6 " " 111d	1 " " 142c	1 " " 186a	2 " " 222
11 " " 6	4 " " 12b	1 " " 22	644 " " 37a	5 " " 53	6 " " 89	2 " " 114	1 " " 144	12 " " 188	2 " " 223
10 " " 6a	12 " " 12c	2 " " 23	544 " " 37b	2 " " 53a	10 " " 90	3 " " 115	1 " " 147a	10 " " 189	2 " " 224
4 " " 7	1 " " 13	1 " " 23a	75 " " 38	2 " " 55a	2 " " 90a	2 " " 116	1 " " 147b	12 " " 190	2 " " 225
2 " " 7a	4 " " 13a	2 " " 24b	4 " " 38d	24 " " 59	4 " " 103a	1 " " 116a	1 " " 147c	3 " " 190a	
6 " " 8a	4 " " 14	2 " " 24c	3 " " 43	4 " " 62	2 " " 103b	3 " " 120b	1 " " 157	6 " " 191	
3 " " 8b	3 " " 15	4 " " 25	2 " " 45	3 " " 62b	2 " " 103c	2 " " 125	2 " " 160	12 " " 192	1 E20R
7 " " 9	5 " " 15a	1 " " 25a	2 " " 46	8 " " 63	2 " " 103d	6 " " 126	2 " " 161	4 " " 196	Electric Motor
2 " " 9a	2 " " 15b	8 " " 26	1 " " 47	2 " " 63b	2 " " 103e	2 " " 126a	2 " " 162a	2 " " 197	(not included
7 " " 9b	4 " " 16	1 " " 26a	1 " " 47a	1 " " 63c	3 " " 103f	2 " " 128	2 " " 163	1 " " 198	in Outfit)