The Romance

Automobile Engineering

The development of the motor car during the

beginning of the century it

was still looked upon

as a curiosity. The

authorities

insisted that a man

carrying a red flag

should walk in

ront of every

cars were

nothing

actually regarded

past 40 years is one of the greatest triumphs engineering. To-day the motor vehicle is so

widely used that it is difficult to realise that at the

more than modified horse-carriages fitted with single-cylinder petrol

engines. They had chain drive, tiller steering, and rim brakes, and they ran on wooden carriage wheels shod with solid tyres. The bodywork was

placed high above the roadway, and provided little or no protection for

either driver or passenger. The pioneer motorists, therefore, were compelled to clothe themselves in heavy fur-lined storm-proof gar-

ments and sou'-westers as a protection against wind, rain and dust. In addition the engines fitted to the early vehicles were unreliable, and

had an unpleasant habit of breaking down at the most inconvenient

times and places. In short, a motor ride in those days was always

liable to develop into a serious adventure. As time went on, how-

ever, the motor car gradually became more efficient and reliable,

and its development has continued steadily until to-day it has reached an extremely high state of mechanical perfection.

A factor that has played an important part in the improvement

of the motor-car is the experience obtained from high-speed motor racing. Motor racing has taken place almost from the inception of motoring, and many exciting duels were fought

cars have been evolved

out on road and track in the early days. The famous Brooklands track, which was opened in 1907, provided a great stimulus to the testing of high-speed engines, while the

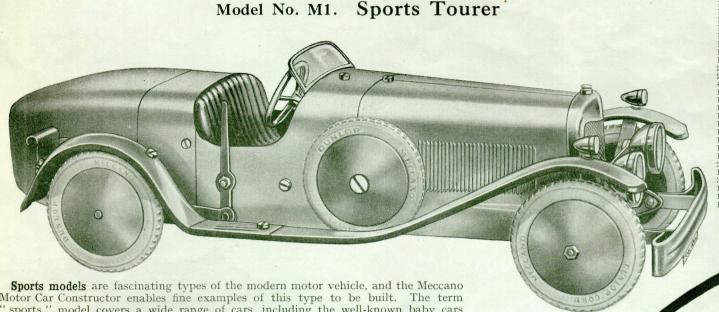
gruelling test provided by the Grand Prix Road Races run over the Sarthe circuit in Northern France have

had considerable influence on the design of the modern

that the modern highly efficient sports

An outstanding achieveme of modern motor ca

the world's



sports" model covers a wide range of cars, including the well-known baby cars fitted with specially-designed four-cylinder engines, light cars with engines of six cylinders, and larger vehicles having eight or 12 cylinders and fitted with two or more carburetters. Cars of this type are produced by many motor manufacturers, outstanding British examples being the Bentley, Lagonda, Sunbeam, Alvis and M.G. Midget. French cars of the type include the Delage, Chenard-Walcker and Hotchkiss, while Germany and Italy are represented by the Mercédès-Benz and the Fiat respectively, and the United States by the Auburn and Stutz.

Model No. M1 has the long bonnet and low racing lines that are typical features of these sports cars. The actual assembly of the model is dealt with in detail overleaf, and if the instructions are followed carefully no difficulty will be experienced in building the car. The Front and Rear Number Plates are supplied blank, and an individual touch may be given to the models by adding registration numbers.

To operate the complete model, first place the brake in the "on" position by drawing the Brake Lever toward the rear of the car. Then wind up the Motor with the key provided and place the car on the ground. Next rotate the Steering Wheel so that the front wheels are set for the car to run in the required direction, and finally release the brake by moving the lever forward. The car will then travel for about 50 yards at high speed.

Model No. M3. Light Sports Two-Seater

The light sports two-seater is a type that has been produced to meet the demands of motorists who require a car having a distinctive appearance and a high performance, coupled with the utility and comfort of the standard model. It is less expensive than a car designed to take part in actual racing, but its possession enables its owner to experience many of the thrills of that sport.

Many famous British and foreign manufacturers include light sports models in their range of productions. The chassis and engines of these models are similar in design to those of the standard touring cars of the firms producing them, but their engines are modified to enable them to give higher power and more rapid acceleration.

Among British cars of this type may be mentioned the Wolseley, Standard, Singer, Morris, Austin, Rover, Riley and Lea-Francis. French light sports cars include the Renault, Salmson, Citroën, Peugeot, Amilcar and Rally; while in Italy the Fiat and O.M. Companies also produce such cars.

Many of the features of the light sports car are reproduced in Model No. M3. This model has a shorter wheelbase than the standard car described overleaf, and several modifications must therefore be made when assembling the bodywork and propelling mechanism. In assembling the central portion of the body (see Fig. 3) the Seat 21 is bolted to the Dash 19, but the Centre Section 20 is omitted, the Tapered Tail Section 24 being bolted in position directly behind the Seat. The Mechanism is bolted to the Frame Members by bolts passed through the second set of holes in the

The Front and Rear Mudguards (complete with Running Boards) Nos. A1021 and A1023 are fitted to this car. The Front Mudguards are held in place by means of the Right and Left-hand Upper Mudguard Brackets, the screwed shanks projecting from the Side Lamps being used to lock the Mudguards in position. The Front and Rear Mudguards are held together by means of Bolts passed through the running board sections.

No. A1063 "A1064 "A1065 "A1066 "A1070 "A1071 "A1072 "A1073 "A1074 "A1075 "A1076 "A1077

Parts required

A1031

A1031 A1032 A1033 A1034 A1035 A1036 A1037 A1038 A1039 A1040

A1006 A1008 A1010 A1012 A1016 A1021 A1023 A1024 A1026 A1027

A1043 A1046 A1050 A1051 A1052 A1055 A1056 A1057 A1058 A1060 A1061

speed record has been raised through the skill and enterprise of such famous British motorists as Sir Malcolm Campbell, the late Sir Henry Segrave, and

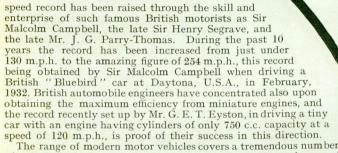
of types, including small two-seater "baby" cars, saloon and touring machines in a variety of sizes, racing cars, saloon coaches, buses, and a wide range of vehicles for industrial and commercial purposes. One of the most attractive types of cars is the sports model, which incorporates an engine having much of the high speed and rapid acceleration of a racing car, but is fitted with body-

and touring. The examples that can be built with the Meccano Motor Car Constructor are modelled on this type of car.

A1036 A1037 A1038 A1039

be driven either by an internal combustion turbine or by means power transmitted by electric waves from a central source

A Daimler dog-cart of 1896 working of the various mechanisms of an actual car is understood. The Motor Chassis assembled from standard Meccano parts is just the thing for providing this information, as it forms a complete demonstration of the various mechanisms in a real motor chassis. This model is fully described in Instruction



work suitable for normal road travel The high-speed car of the future probably will

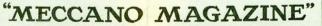
supply.

Model motor-car

building with the Mec cano Motor Car Constructor is even more interesting if the

Leaflet No. 1, which may be purchased from any Meccano dealer, or direct from Meccano. Ltd., Binns Road, Old

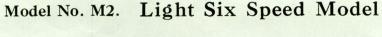
car. The early racing machines were clumsy and wasteful, very large engines being used to obtain quite low speeds; but it is from these cars

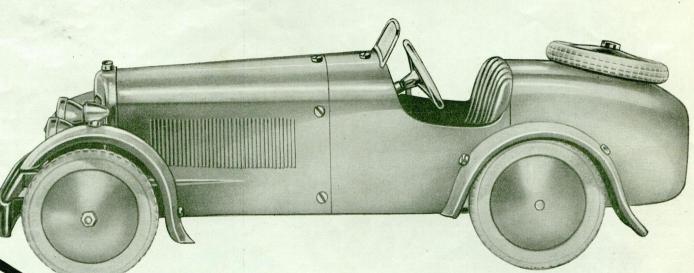


The Boy's Engineering Monthly

The Meccano Magazin; is the Meccano boy's newspaper. It tells him of the progress of the Meccano hobby in all parts of the world. It contains fascinating and up-to-date articles on Famous Engineers and Inventors, Railways, Aeroplanes, Motor-cars, Ships, Bridges, Cranes, and wonderful machinery of all kinds, and on popular hobbies such as Stamp Collecting, Photography, etc.

If you are not already a reader, write to the Editor, Meccano Magazine, Old Swan, Liverpool, for full particulars, or order a copy from your Meccano dealer or from any newsagent.





Modern racing cars are classified in accordance with the total cubical contents of the cylinders of the engine. The "baby" type of racing car, such as the M.G. Midget, thus comes in the 750 cc. class, its engine having a capacity of approximately 750 cubic centimetres; while at the other end of the scale we find the 4,398 cc. Bentley, the 5,355 c.c. Stutz, and the 7,050 c.c. Mercédès-Benz.

The light racing car having an engine of between 1,000 and 1,500 c.c. capacity is extremely popular, and many British and foreign manufacturers specialise in this type of car. Well-known British cars in this class are the Riley, Aston-Martin, Fraser-Nash, and M.G. Among the French cars of this type the Salmson, Amilcar and Bugatti makes are outstanding, while numerous light racing cars are produced in Italy, Germany and other Continental countries.

Model No. M2 incorporates many of the features of a light racing machine. The model has a shorter wheelbase than the standard car described overleaf, and this entails several modifications in the assembly of the bodywork and driving mechanism. In assembling the central portion of the body (see Fig. 3) the Seat 21 is bolted to the Dash 19 as shown, but the Centre Section 20 is not included, the Rounded Tail Section 24 being secured in position directly behind the Seat. After the Tail Section has been bolted into position, the Spare Wheel is mounted in place as shown in the illustration.

The Mechanism is now placed in the Frame and bolted in position, the second set of holes in the Frame Members being used. The end set of holes are only employed when long wheelbase cars such as models Nos. M1 and M4 are being built.

The Front and Rear Mudguards Nos. A1020 and A1022 are fitted to this model. The Front Mudguards are held in place by the Upper and Lower Mudguard Brackets, the Lower Mudguard Brackets being held to the Frame by the bolts that are used to hold the Steering Column Bracket to the Frame of the car.

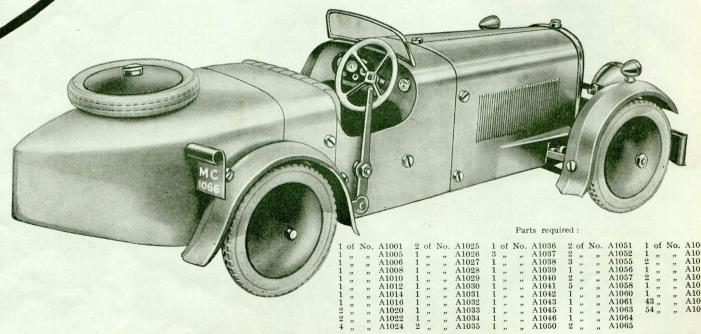
Model No. M4. Grand Prix Special

Road racing is a dangerous but highly exciting sport, and although this type of racing does not take place in England, many British cars are entered in foreign road racing events, while in certain cases English drivers pilot foreign racing machines.

One of the most famous events of this type is the Le Mans 24-hour race run over the Sarthe Circuit in France. This circuit is made up of ordinary roads, and the event provides a gruelling test of skill and endurance. In recent years the race has been distinguished by a remarkable sequence of successes by the British Bentley teams, but the honours in the last two races have gone to the Italian Alfa-Romeo firm.

In addition to the Bentley, other British cars that are prominent in road racing are the Lea-Francis, Talbot, Sunbeam and Alvis. The French Bugatti and Delage cars have both been remarkably successful in road racing events, as have also the German Mercédès-Benz and Italian Alfa-Romeo.

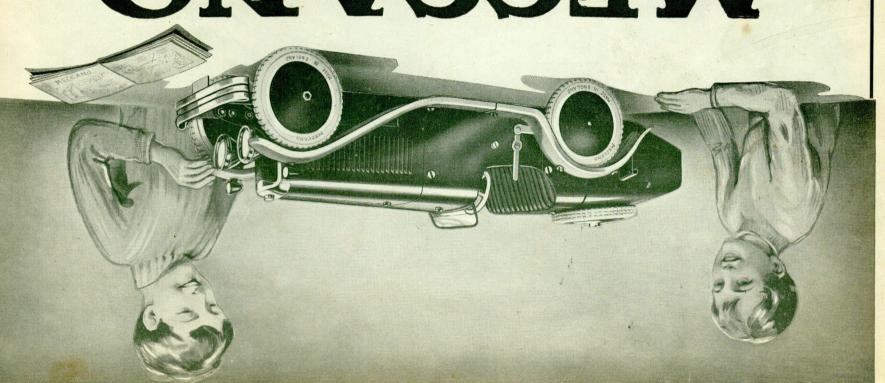
This model is similar in the main to the standard car described overleaf. The Curved Radiator and Tapered Rear Section are used in this model, however, and the Radiator No. A1001 and Clamping Plate A1005 are, therefore, employed in the radiator and bonnet assembly shown in Fig. 5. The Tapered Rear Section No. A1016 is used in assembling the bodywork. It will be seen that the Front and Rear Mudguards, Nos. A1020 and A1022 respectively, are used. The Front Mudguards are held in place by the Upper and Lower Mudguard Brackets, the Lower Mudguard Brackets being held to the frame by the Bolts that are used to hold the Steering Column Bracket to the Frame of the car. (See Fig. 1.) The Spare Wheel is secured to the top of the Tapered Rear



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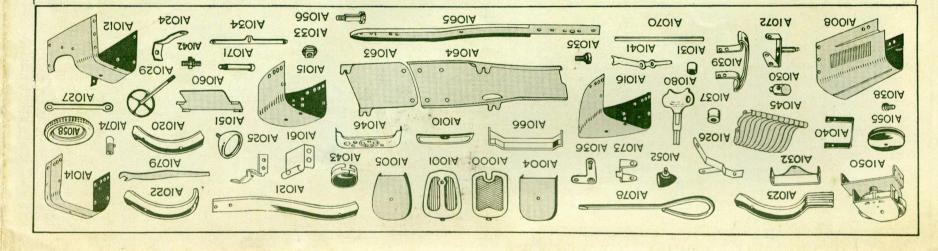
INSTRUCTIONS MOTOR CAR CONSTRUCTOR OUTFIT

MECCAIO





Meccano Motor Car Constructor Parts List



-INSTRUCTIONS-

How to build Model Motor Cars with Meccano Motor Car Constructor Parts

the centre hole in the Bell Crank 12 and secure it to the Steering Column 22 23

These instructions deal with the assembly of the Sports Tourer (Model No. M1) illustrated over-In order to build any of the three remaining models it is merely necessary to follow these instructions in conjunction with the variations to the standard design mentioned in the case of each of the four models. By making use of different com-binations of the parts such as radiators, bodywork sections, nudguards, etc., it is possible to build many different cars to the constructor's individual ideas.

Fig. 1

ENCLISH EDITION.

Frame Side Members 1 (see Fig. 2) and joining these together by means of the Front Cross Frame 2. The bolts holding the Front Cross Frame also carry the Upper Front Mudguard Brackets 3 (right- and left-hand) and the Axle Brackets 4. The Front Mudguard Tie Rod 5 is secured in position by means of the polts projecting from the Head Lamps 6.

Next secure the Radiator (No. A1000) to the Bonnet section, this

assembly being shown in Fig. 5. The Radiator 7 he fingers, thus clamping the Radiator securely in position.

Fig. 3

23

22

Commence the assembly of the model by taking the two

is laid flat on the table, and 4 the front end of the Bonnet 8 is then pushed inside the flanges of the (A1004) is next pressed into position against the back of the diator, the bolt projecting om the inside surface of the adiator passing through the ole in the Clamping Plate 9. The Clamping Plate Nut 10 is screwed on to the projecting bolt and tightened by means of

The steering gear is assembled next. One section of this is shown in Fig. 7. First of all secure the Nut Block 11 to the Bell Crank 12 by means of the special Nut 13. Next push the Bell Crank Stud 14 through Bracket 15 by means of a Nut. The Stud 14 has a smooth shoulder so that the Bell Crank 12 may rotate freely. Be sure that the nuts on the steering gear are screwed very tight in order to ensure perfect control. Now fit the Steering Column Bracket 15 16 complete with Bell Crank and Nut Block in position. The Bracket is first placed between

left by a standard bolt.

the Frame Side Members at the wide portion, and then pushed along the frame until the pairs of holes in the lugs of the Bracket 15 coincide with the pairs of holes close to the front of the frame sides. The Bonnet 8 complete with Radiator is now placed over the Frame Members, so that the pairs of holes at each side of the front portion of the Bonnet coincide with the holes in the Frame Side Members 1 immediately behind the Front Mudguard Brackets 3 (see Fig. 1). Four bolts are now passed through the Bonnet, Frame and Steering Bracket members to lock them rigidly in position.

> The Bumper Bar unit is assembled and attached to the Frame Side members as shown in Fig. 1. First of all lay the Bumper Bar 16 (see Fig. 4) flat on the table and place the Front Number Plate 17 in position. Next push the Bumper Bracket 18 between the arms of the Bar 16 so that the Number Plate 17 is clamped in position.

The complete Bumper unit is now secured to the ends of the Frame Members by means of four bolts (see Fig. 1).

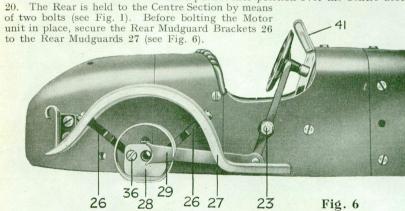
The centre portion of the bodywork of the

model may and Frame. It is made up of three separate parts, the Dash, the Centre Section and the Seat unit. These are secured together by placing the Centre Section 20 (see Fig. 3) over the rear of the Dash 19, pushing the Seat 21 into place and afterwards bolting the Centre Section to the Dash by means of the Bolts 22. The Seat 21 is held in place at the right-hand side by the Brake Lever Stud 23 and at the When the centre portion of the bodywork

is completed it is mounted in position on the Frame of the car and coupled to the Bonnet, which is already in position. The front end of the Dash 19 (see Fig. 1) is placed under the rear end of the Bonnet 8

and bolts are passed through both sections and through the holes in the Frame 1 to hold the centre portion in position. The rear end of the Centre Section should not be bolted to the Frame at this stage.

Next take the Rounded Rear Section (No. A1015) and secure the Rear Number Plate 25 to it by means of two bolts fitted with nuts. Place the Rear Section over the ends of the Frame Members 1 and push it into position over the Centre Section



In order to fit the Motor unit, turn the car over and place the Motor casing in position so that the axle holes in the side lugs coincide with the holes in the Rear

One pair of Mudguard Brackets 26 with Mudguard 27 attached are arranged in position at the left-hand side of the car looking from below, and on top of these the Brake Drum 28 is placed. Two bolts 36 are then passed through the Brake Drum, Mudguard Brackets, body, and Motor lugs, and are screwed up tightly so that everything is rigid. Two similar bolts are used to hold the Mudguard Brackets in position at the right-hand side of the car, but in this case the Brake Drum is omitted. n, slip the Brake Rod 29 into the slot in the Brake Drum 28. The Brake Lever is mounted pivotally on the Stud 23, a nut being screwed on to the threaded end of the Stud in order to keep the Brake Lever in position. When the hand lever is in the forward position, as shown in Fig. 6, the brake is "off." When the lever is drawn back the cam portion of the

Fig. 7

Brake Rod 29 forces the split rim of the Brake Drum 28 outward against the flange in the road wheel and a powerful braking action results.

The Rear Wheel 30 (fitted with grub-screw) is secured on one end of the Rear Axle 31 (see Fig. 9). In order to do this the Screwdriver is passed through the plain hole in the rim of the Wheel and the grub-screw in the boss rotated. Push the Axle 31 through the left-hand side of the Frame and place the Driving Pinion (part No. A1074) and the Collar 32 on the Axle. Then pass the free end of the Axle through the right-hand side of the Frame of the

car, and place another Collar 33 on the Axle 31. Next push the Wheel 30 inward so that the Brake Drum 28 fits closely to the Wheel, and lock the Collars 32 and 33 in position against the sides of the Frame, a small amount of "play" ing allowed to ensure free runn Next move the Driving Pinion into position so that it meshes with the teeth of the Contrate Wheel 34 of the Motor and secure it rigidly by means of its grub-screw. To complete the rear axle rigidly in place on the projecting end of the Axle 31.

The steering mechanism and front wheel assembly are next completed. First slip the Sleeve 37 (Fig. 8) on to the Steering Column 38 and pass the Steering Column through the hole in Instrument Board 39. Next place the Collar 40 on the Steering Column and lock it in place against the inside surface of the Instrument Board 39. Next place the Instrument Board complete with Steering Column 38 in the bonnet space (see Fig. 9), and screw the threaded end of the Column 38 into the threaded hole in the Nut Block 11. The perforated lug of the Windscreen 41 (see Fig. 6) is held in between the Instrument Board and the Dash, by a Bolt 42.

Fig. 8

Now mount the right- and left-hand Stub Axles 43 in position on the Stub Axle Pivots 44. Finally place the slotted portion of the Track Rod 45 over the pin of the Bell Crank 12 and secure the ends of the Track Rod to the Stub Axles 43 by means of the Track Rod Studs 46.

The Front and Rear Mudguards are coupled together by means of the Bolts 47 (see Fig. 9). Next secure the Spare Wheel by means of the special Bolt, after which the Front and Rear sections of the Undershield (parts Nos. A1063 and A1064) are overlapped and bolted together; the complete Undershield is then pushed into position. The slotted lugs of the Undershield sections fit in between the Frame Members and the inner sides of the bodywork, the Spanner being inserted through the D-shaped openings in order to lock the nuts. Road Wheels are held in position on the Stub Axles 43 (see Fig. 9) by means of nuts.

