

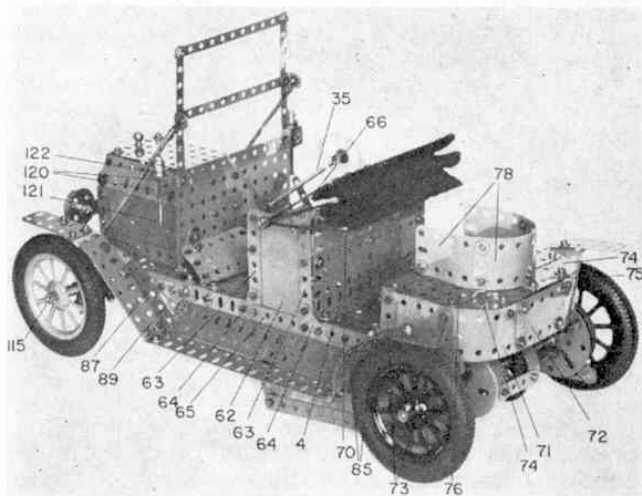
# "TIN LIZZIE"

by  
**Spanner**

**A super-detailed 1910 Model "T" for the advanced builder of veteran cars**

"OLDIES" OF all sorts—veteran cars, vintage cars, traction engines, steam engines—all have a tremendous following among Meccano modellers. You only need work on Meccano Magazine for a couple of months before readers' letters make this fact quite clear, but why should it be? Is it because enthusiasts see Meccano as an "old" system fit only for "old" subjects? Not a bit of it! It's simply because old subjects—particularly vehicles—are far more appealing, both visually and mechanically, than their modern counterparts. Because of this, Meccano modellers, in common with most types of modellers, like building them and what better reason could there be than that?

As far as Meccano is concerned, the popularity of old vehicles, especially old cars, is undeniable and so this month's "advanced model" spot goes to the magnificent "banger" described below. Old car enthusiasts will recognise it as a very good reproduction



of one of the most renowned cars in history—the famous Model T Ford, known affectionately by all as "Tin Lizzie."

The Model T was of course made for many years, during which time its appearance altered slightly, and our model is based on the 1910 version.

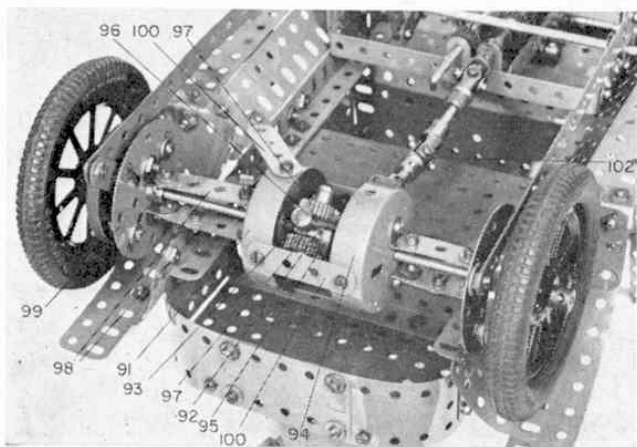
The parts required list for this model can be obtained by sending a S.A.E. to Meccano Magazine, Northern Office, Binns Road, Liverpool 13.

## Chassis

Beginning construction with the chassis, two 15 in. compound angle girders 1 are each built up from one 12½ in. and one 4½ in. Angle Girder, overlapped four holes, the inner securing Bolt also fixing the appropriate rear spring 2 in place. Each of these springs consists of one 4½ in. Strip, one 3 in. Strip and one 2 in. Strip, suitably bent and secured one on top of the other.

Girders 1 are connected towards the rear by a 5½ × 2½ in. Flat Plate 3 overlaid along its longer sides by two 5½ in. Angle Girders 4 and 5. Another 5½ in. Angle Girder 6 is bolted between the forward ends of girders 1, two 4½ in. Angle Girders 7 being bolted, in turn, to this Girder. Two 4½ in. Strips 8 are secured between Girders 7 through their fourth and rearmost holes.

At this stage, the radiator and front laterally-mounted road spring should be added. The radiator is built up from twelve 2½ in. Strips 9 separated by Washers and



Above: Realism is one of the main features of the Meccano 1910 Model T Ford, as this view clearly shows.

Left: A close-up view of the underside of the model showing the rear axle and differential.

mounted on four 2 in. Screwed Rods and one  $3\frac{1}{2}$  in. Screwed Rod 10, the latter passing through the centre holes of the Strips. The lower Strips are separated by two Washers on each Screwed Rod, while the next eight Strips are separated by three Washers. The second and third Strips are separated only by a Nut on the centre and two outside Rods, the first and second Strips being separated by a Nut on only the centre Rod 10. With the radiator finished, this centre Screwed Rod is fixed in the centre hole of Angle Girder 6, the two outside Rods also being secured to the Girder, then the front spring 11 is slipped on to the protruding end of the centre Rod and held in place by a Nut. The spring itself is simply produced from one  $5\frac{1}{2}$  in., one  $4\frac{1}{2}$  in., one  $3\frac{1}{2}$  in. and one  $2\frac{1}{2}$  in. Strip, all curved to shape and positioned one on top of the other. Two Double Brackets 12 are secured one to each end of the  $5\frac{1}{2}$  in. Strip.

Now fixed by Angle Brackets to the top of compound girders 1 is a  $5\frac{1}{2} \times 3\frac{1}{2}$  in. Flat Plate 13, to the front of which, a Power Drive Unit is fixed by Bolts screwed into four Threaded Bosses, the output shaft of the Unit pointing vertically downwards. The bonnet is then added, each side consisting of a  $4\frac{1}{2} \times 2\frac{1}{2}$  in. Flexible Plate 14, edged at the front by a 2 in. Angle Girder 15 and at the rear by a 2 in. Strip 16. All are bolted to the vertical flange of nearby Angle Girder 7. The upper edge of each Plate 14 is angled over and extended by a  $4\frac{1}{2}$  in. Flat Girder 17, to which a  $4\frac{1}{2} \times 2\frac{1}{2}$  in. Flat Plate 18 is attached by Obtuse Angle Brackets. The bolts fixing the front Brackets to the Plate also hold in position two ordinary Angle Brackets, to which is bolted a  $2\frac{1}{2}$  in. Flat Girder 19, extended at each end by a 1 in. Corner Bracket 20. Plate 18 is attached to Plate 13 by another Angle Bracket.

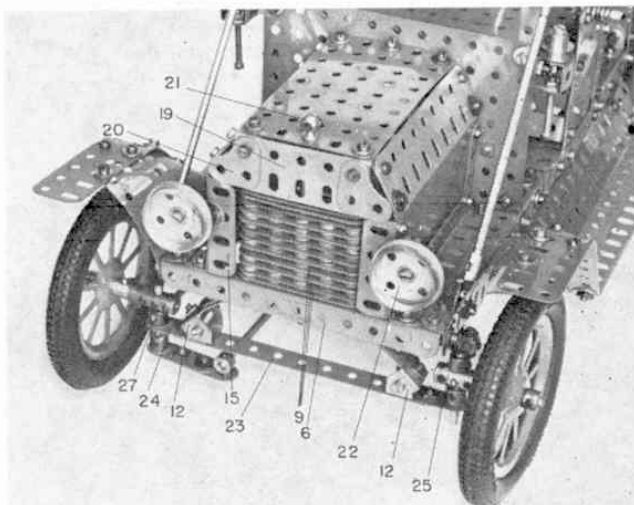
At the front of the bonnet, a radiator cap is represented by a Handrail Support 21 held in Plate 18, while two large headlamps are each supplied by a  $1\frac{1}{2}$  in. Flanged Wheel 22, fixed by a  $\frac{1}{2}$  in. Bolt to a Fishplate which is in turn bolted to Angle Girder 15. On the original Model T, these headlamps were powered by acetylene gas.

### Steering Mechanism and Gearbox

While there is still plenty of room to work, the steering mechanism and gearbox should be added. In the case of the former, a  $5\frac{1}{2}$  in. Strip 23, extended at each end by a Crank 24, is secured by Double Brackets to Double Brackets 12. Fixed in the boss of the left-hand Crank is a  $1\frac{1}{2}$  in. Rod on which a Coupling 25 is loosely held by a Collar, the Rod passing through the centre transverse bore of the Coupling. Secured in the inside end transverse bore of the Coupling is another  $1\frac{1}{2}$  in. Rod on the opposite end of which a Swivel Bearing 26 is mounted.

Now mounted free in the boss of right-hand Crank 24 is yet another  $1\frac{1}{2}$  in. Rod, this held in place by a Collar beneath the Crank and a Coupling 27 above it. As before, the Rod passes through the centre transverse bore of the Coupling whereas a further  $1\frac{1}{2}$  in. Rod, carrying a Swivel Bearing 28 is fixed in the inside transverse bore of the Coupling. Swivel Bearing 28 is connected to Swivel Bearing 26 by a  $4\frac{1}{2}$  in. Rod.

Mounted on the lower end of the Rod in right-hand Crank 24 is another Crank, extended by a  $1\frac{1}{2}$  in. Strip 29. Pivotaly attached to the end of this Strip is a Collar carrying a 3 in. Rod 30, the other end of which is held in a second Collar, pivotaly attached to the arm of a further Crank 31. This Crank is mounted, along with a  $\frac{1}{2}$  in. Pinion 32, two Washers and a Collar, on a  $2\frac{1}{2}$  in. Rod journalled in a  $1 \times 1$  in. Angle Bracket

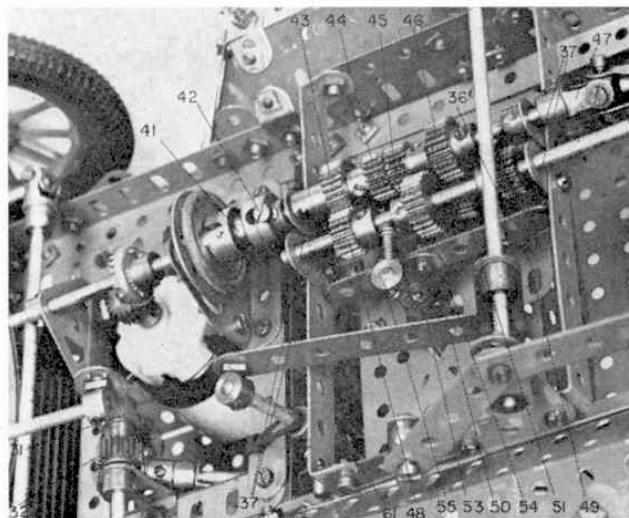


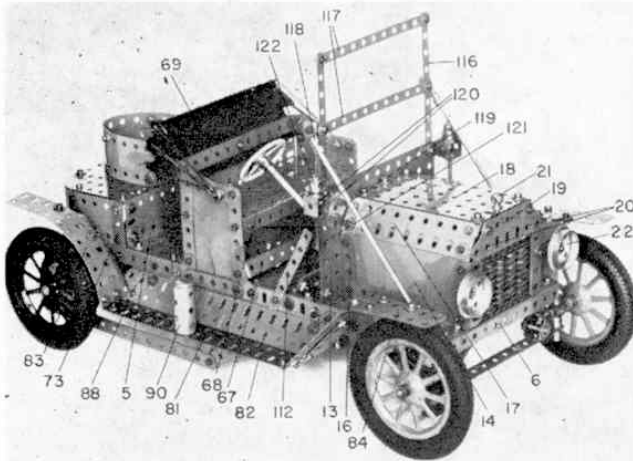
In this close-up view of the front of the Model T construction of the radiator and bonnet is clearly shown.

bolted to appropriate Angle Girder 7 and in a 1 in. Corner Bracket 33 bolted to nearby girder 1. The Washers hold the Pinion away from the Angle Bracket and allow it to mesh with a Worm 34 on a  $6\frac{1}{2}$  in. Rod 35 serving as the steering column. This Rod is journalled in Flat Plate 13 and in an Angle Bracket bolted to the inside of the bonnet through right-hand Angle Girder 7. A Collar and Washer against Plate 13 hold the Rod in position, while a  $1\frac{3}{4}$  in. Steering Wheel is mounted on the upper end of the Rod.

In real-life the Model T did not have a conventional gearbox as we know it today, but was fitted with an unusual 2-speed and reverse box which was pedal-controlled, as opposed to the more recent lever-controlled mechanisms. In our model, however, a typical 3-speed and reverse box has been included to "fill-up the gap," details of the original unit not being available. A framework is produced from two 3 in. Angle Girders 36, the horizontal flanges of which are butt-jointed together by a 3 in. Flat Girder to form a  $1 \times \frac{1}{2}$  in. "U"-section girder. The securing Bolts also fix to the underside of the Girders four  $1 \times 1$  in. Angle

An underside detail shot showing the clutch and gearbox in close-up.





Working clutch, gearbox, differential and brakes are just some of the realistic features fitted to this superb model of a 1910 Model T Ford.

Brackets 37, positioned one at each end of each Girder. Two  $5\frac{1}{2} \times \frac{1}{2}$  in. Double Angle Strips joined by two 3 in. Flat Girders 37a are bolted one to each pair of Angle Brackets, the Flat Girders being bolted to girders 1.

Now journalled in the apex holes of Two Flat Trunnions 38, fixed by  $1\frac{1}{2}$  in. Angle Girders to Strips 8, is a 3 in. Rod carrying a  $\frac{3}{8}$  in. Contrate Wheel 39 and held in place by a Collar and an 8-hole Bush Wheel 40. Contrate 39 meshes with a  $\frac{1}{2}$  in. Pinion mounted on the output shaft of the Power Drive Unit. Bush Wheel 40, on the other hand, makes contact with a Rubber Ring on a 1 in. Pulley with boss fixed in one side of a Socket Coupling 41. This Socket Coupling is free to slide on a  $2\frac{1}{2}$  in. Rod, journalled in nearby Angle Bracket 37, but is prevented from turning on the Rod by a Bolt 42 screwed into one tapped bore of a Collar fixed tight on the Rod, the Bolt engaging in the slot in the free end of the Socket Coupling. A Compression Spring between the Collar and the inside of the Socket Coupling keeps the Rubber Ring hard against Bush Wheel 40.

Mounted on the Rod, inside the Angle Bracket, is a Collar followed by a  $\frac{3}{8}$  in. Pinion 43 and a  $\frac{1}{2}$  in. Pinion 44. The other end of the Rod is then inserted, free, part way into the bore of another  $\frac{1}{2}$  in. Pinion 45, fixed on the end of a 2 in. Rod journalled in rear Angle Bracket 37. This Rod also carries a  $\frac{3}{8}$  in. Pinion 46 and a Collar inside the Angle Bracket and a Universal Coupling 47 on the end of the Rod outside the Angle Bracket.

Running parallel to the gearbox input and output shafts, just described, is a sliding layshaft, supplied by a  $4\frac{1}{2}$  in. Rod, journalled in remaining Angle Brackets 37. Mounted on this Rod, in the positions shown, are two  $\frac{1}{2}$  in. Pinions 48 and 49, separated by a  $\frac{3}{8}$  in. Pinion 50. Another  $\frac{1}{2}$  in. Pinion 51 is mounted free on a  $\frac{3}{4}$  in. Bolt screwed into the transverse bore of a Threaded Boss bolted to the vertical flange of nearby Angle Girder 36, but spaced from it by a Collar and two Washers on the shank of the securing long Bolt. Pinion 51 is in constant mesh with Pinion 46.

All the gears should be so arranged that, with the layshaft as far forward as possible, Pinion 49 engages with Pinion 46, *without* touching Pinion 51, to give first gear. When the layshaft is slid rearwards, these Pinions should all move out of mesh before Pinion 50 engages with both Pinion 44 and Pinion 45 to result in second gear. By moving the layshaft further back, third gear is obtained, at which time Pinion 43 meshes with

Pinion 48 and Pinion 50 meshes with Pinion 45. When the layshaft is moved as far backwards as possible, Pinion 50 should move out of mesh with Pinion 45 and into mesh with Pinion 51 while Pinions 43 and 48 remain in mesh, to give reverse gear.

Control of the layshaft is by a gear-change lever supplied by a 3 in. Rod 52, carrying a Handrail Support and mounted in one transverse bore of a Short Coupling 53. This Short Coupling is itself mounted, along with a Washer, on a 2 in. Rod, held by a Collar in the apex holes of two 1 in. Triangular Plates 54, bolted one each to the vertical flanges of Angle Girders 36. Fixed on the lower end of Rod 52 is a Collar 55, in one transverse bore of which a  $\frac{1}{2}$  in. Bolt is held. The head of this Bolt engages between Pinions 48 and 50 on the gearbox layshaft.

Control for the clutch comes from a  $1\frac{1}{2}$  in. Rod fixed in the centre transverse bore of a Coupling 56, the lower end of the Rod engaging in the waist of Socket Coupling 41. Inserted in the longitudinal bore of Coupling 56 are a 2 in. Rod and a 3 in. Rod 57 to form a compound rod journalled in 1 in. Triangular Plates 58, fixed by Angle Brackets to the inside edge of the horizontal flanges of compound girders 1. Secured tight on Rod 57 is a Short Coupling 59, the Rod passing through the lower transverse bore of the Coupling to leave room in the longitudinal bore for a 1 in. Rod on the upper end of which a Collar is mounted. Fixed to this Collar is an Angle Bracket 60 serving as the clutch pedal.

Also mounted on Rod 57 is a Coupling 61, free to turn, but held in place by Collars, the Rod passing through the centre transverse bore of the Coupling. A 1 in. Rod, carrying a Collar is fixed in the upper end of the longitudinal bore of the Coupling, an Angle Bracket being bolted to the Collar to act as the footbrake pedal. Working brakes are incorporated in this model, but they and their linkage will not be described until later.

### Bodywork

We come now to the bodywork, beginning this with the front seat. Each side consists of a  $3\frac{1}{2} \times 2\frac{1}{2}$  in. Flexible Plate 62 bolted, along with two  $3\frac{1}{2}$  in. Strips 63, two 1 in. Corner Brackets 64 and a  $2\frac{1}{2}$  in. Strip 65, to compound girder 1. Note that rear Strip 63 is positioned one hole higher than front Strip 63, the tops of the Strips then being connected by a  $2\frac{1}{2}$  in. Curved Strip 66. Bolted between each side of the seat is a  $5\frac{1}{2} \times \frac{1}{2}$  in. Double Angle Strip 67 and a  $5\frac{1}{2} \times 2\frac{1}{2}$  in. Flanged

An underside view of the model showing the drive from the motor through the clutch and gearbox to the rear axle.

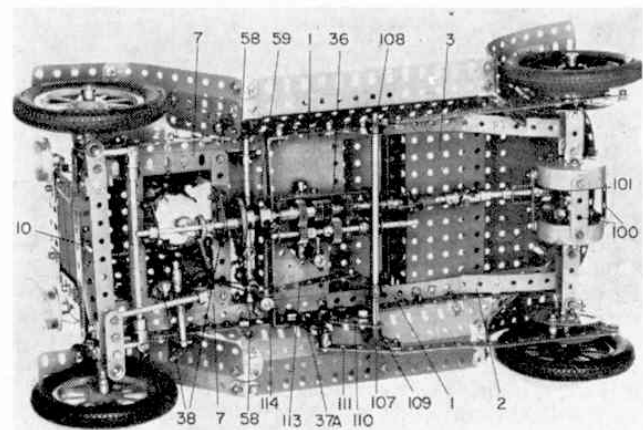
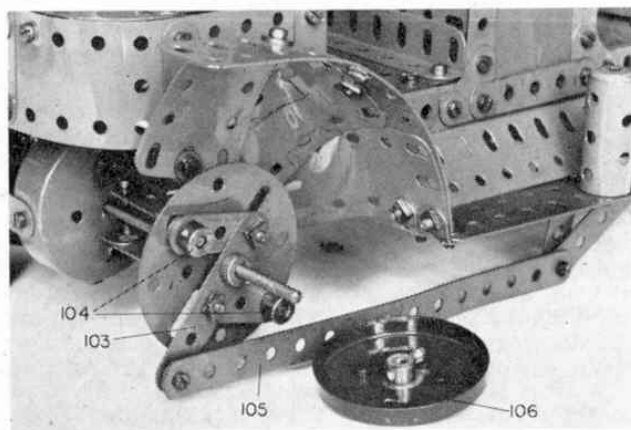


Plate 68, to the forward flange of which a  $5\frac{1}{2} \times 1\frac{1}{2}$  in. Flexible Plate is secured. Another  $5\frac{1}{2} \times \frac{1}{2}$  in. Double Angle Strip 69 is fixed between the upper ends of rear Strips 63, while the back is enclosed by a  $5\frac{1}{2} \times 1\frac{1}{2}$  in. Plastic Plate 70 bolted to the back of this Double Angle Strip, and a  $5\frac{1}{2} \times 1\frac{1}{2}$  in. Flexible Plate bolted to the rear flange of Plate 68.

On the model illustrated, a collapsible hood was added, this being produced from a rectangular piece of black cloth sewn on to three "U"-shaped pieces of wire, the ends of which were bent to a circle and mounted on two  $\frac{1}{2}$  in. Bolts, lock-nutted one to each Curved Strip 66.

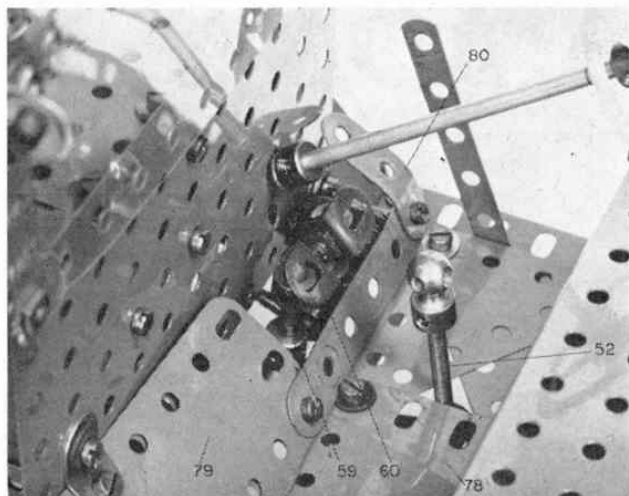
At the rear of the model, a "dickie" seat is included. This is built up from an  $11\frac{1}{2} \times 1\frac{1}{2}$  in. compound plate, consisting of two  $5\frac{1}{2} \times 1\frac{1}{2}$  in. Plastic Plates 71 joined by a  $2\frac{1}{2} \times 1\frac{1}{2}$  in. Flexible Plate 72, curved to shape and bolted to four 2 in. Strips 73, secured two to each girder 1. Attached by Angle Brackets to the top of the compound plate are two Semi-circular Plates 74, a  $3\frac{1}{2} \times 2\frac{1}{2}$  in. Flexible Plate 75 and a  $5\frac{1}{2} \times 2\frac{1}{2}$  in. Flat Plate 76, the forward securing Bolts in the last case also fixing a  $5\frac{1}{2}$  in. Angle Girder to the front edge of Plate 76. A  $5\frac{1}{2} \times 1\frac{1}{2}$  in. Flexible Plate 77 is bolted to this Girder and to Angle Girder 5, while two  $5\frac{1}{2} \times 1\frac{1}{2}$  in. Plastic Plates 78, overlapped seven holes, are fixed by Angle Brackets to the top of Plates 75 and 76.



In this view of one of the brakes, the brake drum has been removed to show the expanding "shoes".

In front of the main seat, a floor is provided by a  $3\frac{1}{2} \times 2\frac{1}{2}$  in. Flexible Plate 78, bolted to left-hand girder 1, and two  $2\frac{1}{2} \times 2$  in. Triangular Flexible Plates, bolted to right-hand girder 1. The latter Plates should be so arranged as to leave a small triangular space through which the gear-change lever projects. A footboard is built up from two  $2\frac{1}{2} \times 1\frac{1}{2}$  in. Flexible Plates 79, overlapped four holes and attached to Flat Plate 13 by an Obtuse Angle Bracket. Secured between this footboard and an Obtuse Angle Bracket bolted to right-hand girder 1 is a 3 in. Strip, the Bolt fixing this Strip to the Bracket also holding a bent  $1\frac{1}{2}$  in. Strip 80 in place.

The two combined running board/mudguards arrangements are next each produced from a  $7\frac{1}{2}$  in. Flat Girder 81 attached by Obtuse Angle Brackets to a similar Flat Girder 82, itself attached by Obtuse Angle Brackets to appropriate compound girder 1. Attached to the rear end of Girder 81 by ordinary Angle Brackets is a curved  $5\frac{1}{2}$  in. Flat Girder 83, while the front end of Girder 81 is extended, via Obtuse Angle Brackets, by a shaped  $6\frac{1}{2}$  in. compound flat girder 84, supplied by a  $4\frac{1}{2}$  in. and a  $2\frac{1}{2}$  in. Flat Girder. The rear mudguard is then completed by three



Inside the model are the operating controls—steering wheel, hand brake and gear-change levers and clutch and foot brake pedals.

$2\frac{1}{2} \times 1\frac{1}{2}$  in. Plastic Plates 85 curved to shape and bolted between Flat Girder 83 and compound angle girder 1. To complete the front mudguard two  $2\frac{1}{2} \times 1\frac{1}{2}$  in. Plastic Plates 86 are bolted between compound angle girder 1 and the upper part of compound flat girder 84, while a  $2\frac{1}{2}$  in. Flat Girder 87 is bolted to the lower part of girder 84.

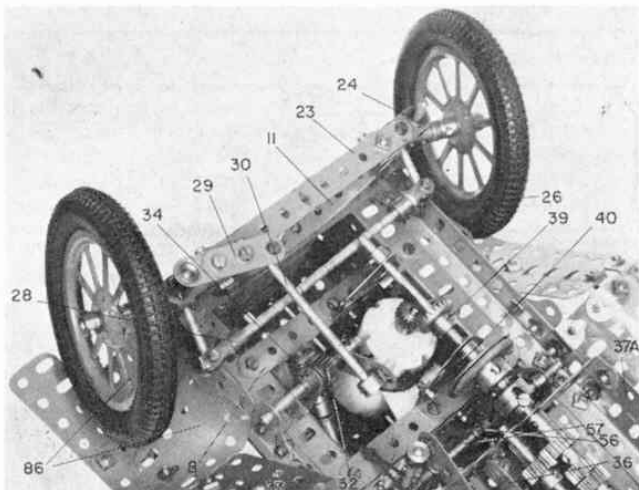
The final touches to this section are supplied by two 1 in. Corner Brackets 88 and 89, one bolted to the rear end of Flat Girder 82 and the other to compound angle girder 1, immediately forward of Flat Girder 82. An imitation acetylene gas tank 90 is produced from two Chimney Adaptors joined by a Sleeve Piece and is bolted to right-hand Flat Girder 81 in the position shown.

### Rear axle assembly

Next in line for construction is the rear axle which incorporates the usual Meccano differential. A  $4\frac{1}{2}$  in. Rod, carrying a Boiler End 91 and a fixed  $\frac{3}{8}$  in. Contrate Wheel inside the Boiler End, is inserted, free, part-way into the Longitudinal bore of a Coupling 92, through the centre transverse bore of which a  $1\frac{1}{2}$  in. Rod fitted

*Continued on page 457*

A detail shot of the front of the chassis from the underside to show construction of the steering mechanism.



### Simple Cam

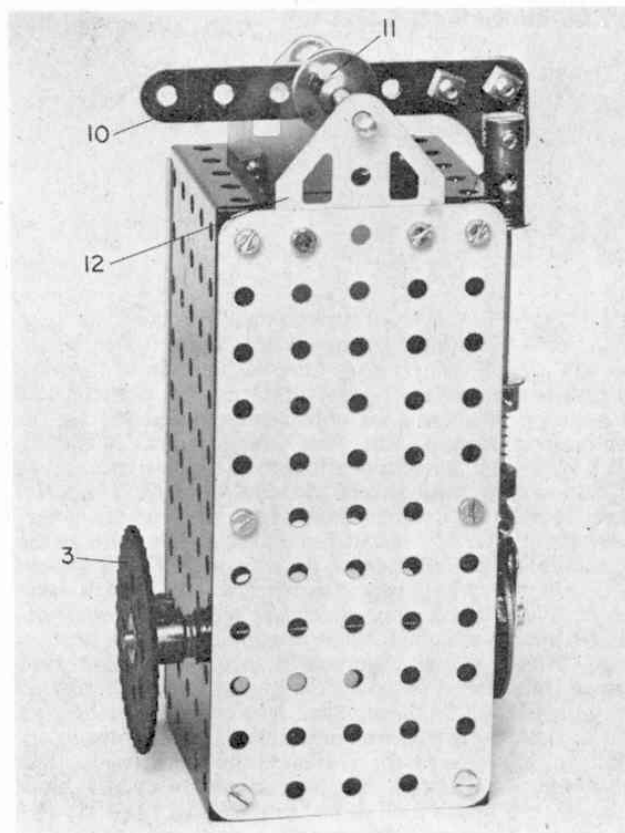
Moving on from electrical equipment to something purely mechanical, we have an idea for a simple cam mechanism supplied by a Lancashire reader. The design of the mounting would, of course, depend entirely on the model to which the mechanism was fitted, but, for our purposes, a sample mounting was built-up from two  $5\frac{1}{2} \times 2\frac{1}{2}$  in. Flanged Plates 1 connected by two  $5\frac{1}{2} \times 2\frac{1}{2}$  in. Flat Plates 2. Journalled in Plates 1 is the camshaft, supplied by a  $3\frac{1}{2}$  in. Rod on one end of which a 2 in. Sprocket Wheel 3 is fixed. Mounted on the other end of the Rod is the cam, itself, this consisting of nothing more complicated than a 1 in. Triangular Plate 4 bolted to the face of a 6-hole Bush Wheel 5.

A cam follower is next produced from a 3 in. Rod 6 mounted loose in the legs of a  $1\frac{1}{2} \times \frac{1}{2}$  in. Double Angle Strip bolted to appropriate Flanged Plate 1. Loose on this Rod, beneath the lower lug of the Double Angle Strip is a Collar and a Compression Spring 7, while a Handrail Coupling 8 is fixed on the lower end of the Rod. Fixed in the upper end of the Rod is a Strip Coupling 9, in the slot of which a 1 in. Corner Bracket is pivotally secured. The rocker arm is represented by a  $3\frac{1}{2}$  in. Strip 10, bolted to this Corner Bracket and mounted between two  $\frac{3}{4}$  in. Washers 11 and two Collars on a 3 in. Rod held by further Collars in the apex holes of two Flat Trunnions 12, bolted one to each Flat Plate 2. In a model, of course, the particular operation to be carried out would be actuated by the movement of Strip 10.

#### PARTS REQUIRED

1-3	22-37a	1-48	2-70	1-120b
1-16	22-37b	2-52	1-77	2-126a
2-16b	2-38	5-59	1-95	1-133a
1-24b	2-38d	1-63b	1-111c	1-136c

Below is another view of the simple cam described in the text on this page.



### Model 'T' Ford continued from page 455

with two Collars 93 is fixed. A Washer spaces the Boiler End from the Contrate. Inserted, free, into the remaining part of the longitudinal bore of the Coupling is another  $4\frac{1}{2}$  in. Rod, this one also carrying a Boiler End 94 as well as a  $1\frac{1}{2}$  in. Contrate Wheel and a  $\frac{3}{4}$  in. Contrate Wheel 95, the last two spaced apart by three Washers. Two 1 in. Screwed Rods 96, held by Nuts in diametrically opposite holes in the face of the  $1\frac{1}{2}$  in. Contrate, are screwed into the appropriate transverse tapped bores of Collars 93, then two  $\frac{3}{4}$  in. Pinions 97, free to turn, are mounted on Pivot Bolts screwed into the centre transverse tapped bores of Coupling 92. These Pinions engage with the  $\frac{3}{4}$  in. Contrate Wheels.

Fixed to Boiler End 91 by Angle Brackets are two 2 in. Strips 98, to the other ends of which a Face Plate 99 is fixed also by Angle Brackets. Another Face Plate is similarly fixed to two  $1\frac{1}{2}$  in. Strips, themselves attached by Angle Brackets to the other Boiler End, then the two Boiler Ends are connected by four 2 in. Strips 100, one of which is spaced from the Boiler Ends by two Washers on the shanks of the securing Bolts. Journalled in this Strip and in a Double Bent Strip bolted to it is a 2 in. Rod held in place by a Collar and a  $\frac{1}{2}$  in. Pinion 101, the latter meshing with the  $1\frac{1}{2}$  in. Contrate Wheel. A Universal Coupling 102 is mounted on the forward end of the Rod, then the axle is bolted to the ends of the rear road springs. Universal Coupling 102 is connected to Universal Coupling 47 by a  $1\frac{1}{2}$  in. Rod.

As mentioned earlier, working brakes are fitted to

the model. These act on both rear wheels and both are similarly built. A  $2\frac{1}{2}$  in. Strip 103 is slipped over the protruding end of each axle Rod, the Rod passing through the second hole in the Strip. Lock-nutted through the first and third holes of the Strip are two  $1\frac{1}{2}$  in. Strips, to the ends of which two Collars 104 are fixed by  $\frac{1}{2}$  in. Bolts passed through opposite elongated holes in the appropriate Face Plate, three Washers on the shank of each securing Bolt spacing the Strip from the Face Plate.

Lock-nutted to the free end of the  $2\frac{1}{2}$  in. Strip is a  $7\frac{1}{2}$  in. Strip 105, then a brake drum is produced from an 8-hole Bush Wheel, boss inwards, bolted to a Wheel Flange 106 and is fixed on the axle Rod in such a position that Collars 104 will make contact with the flanges of the Wheel Flange. Three Washers space the boss of the Bush Wheel from the Face Plate.

A  $6\frac{1}{2}$  in. Rod carrying a Crank 107 and held in place by Cranks 108 and 109 is now journalled in  $1\frac{1}{2}$  in. Corner Brackets 110, bolted to Flat Girders 37a. One Strip 105 is lock-nutted to Crank 108, while the other Strip 105 is lock-nutted, along with a  $2\frac{1}{2}$  in. Strip 111, to Crank 109. The free end of Strip 111 is pivotally attached to a Threaded Boss fixed tightly to a  $4\frac{1}{2}$  in. Narrow Strip 112 lock-nutted to compound girder 1. This Narrow Strip serves as the handbrake, but the earlier-mentioned footbrake pedal is also connected to the braking system by a  $3\frac{1}{2}$  in. Strip 113, lock-nutted between Crank 107 and a Collar 114, fixed on the end of a  $1\frac{1}{2}$  in. Rod secured in the lower part of the longitudinal bore of Coupling 61.