

# MECHANISMS FOR A MOTOR CHASSIS

## Concluding The Special Article By "Spanner"

LAST month, I gave details of several useful mechanisms that could be incorporated in a motor chassis. These were a steering arrangement with independent suspension, a leaf spring suspension unit, a differential, and a 3-speed and reverse gear-box, in that order. A car gear-box, however, is virtually useless without a clutch, which is a mechanism designed to disconnect the drive between the engine and the gear-box so that the gears can be changed.

### HEAVY DUTY CLUTCH

The clutch illustrated in Figure 1 is particularly unique in that it can be fitted with from two to eight Compression Springs to vary the pressure between the driving plates to suit almost any model. The heavier the model, the more Compression Springs used.

The driving member is a 1" Pulley fitted with a Rubber Ring, and it is fixed on the input shaft 1. The shaft extends beyond the Pulley, and it passes through a Wheel Disc 2 and into part of the boss of a Bush Wheel 3. The Bush Wheel is fixed on the output shaft 4.

Wheel Disc 2 is connected to Bush Wheel 3 by two Pivot Bolts. Each of these is first passed through the round hole of an Obtuse Angle Bracket 5, and through a hole in the Bush Wheel. A Compression Spring is slipped over the Pivot Bolt, which is then attached to the Wheel Disc by two nuts, one on each side of the Disc.

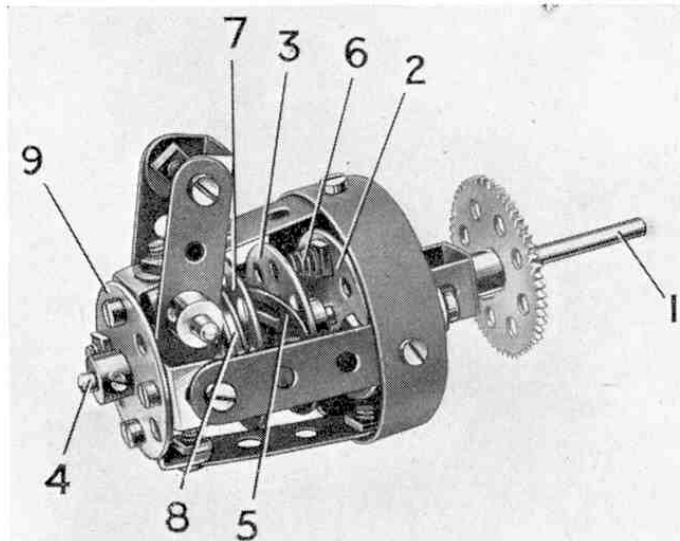


Fig. 1. A compact but very efficient clutch, which can be easily modified by fitting or removing Compression Springs, according to the weight of the model of which it is part.

The Obtuse Angle Brackets are arranged pointing in opposite directions, and they are linked by a short length of Cord that prevents them from flying outward as they rotate with the Bush Wheel. Further Compression Springs 6 can be placed between the Bush Wheel and the Wheel Disc, and they are slipped over the shanks of bolts held by nuts in the Wheel Disc.

The clutch withdrawal race consists of a Wheel Disc 7, and a 1" loose Pulley 8 separated from the Wheel Disc by a Washer.

The clutch housing is assembled from a Boiler End fitted with four 2" Strips connected by Angle Brackets to a Wheel Disc 9. The input and output shafts are prevented from sliding in the housing by a Collar on each side of the Wheel Disc 9.

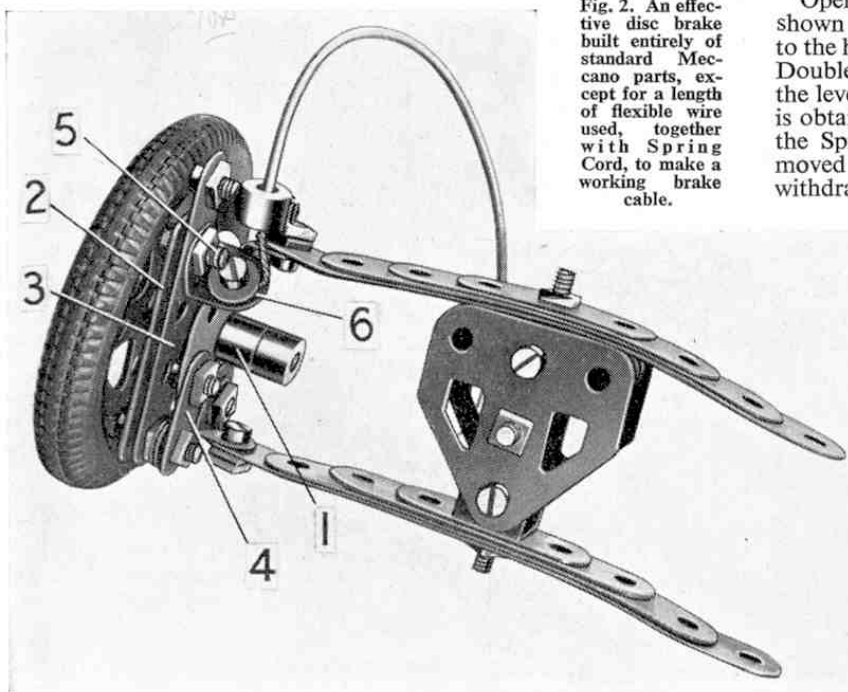
Operating levers are formed from two 2" Strips pivoted as shown on a short Rod mounted in a Double Bracket fixed to the housing. The levers are linked at their outer ends by a Double Bracket and a lock-nutted  $\frac{3}{4}$ " Bolt. The inner ends of the levers bear against the face of the Pulley 8. Adjustment is obtained by sliding the Bush Wheel 3 on its shaft until the Springs are compressed slightly. When the levers are moved to the left, their action is transmitted through the withdrawal race to the Pivot Bolts, which slide to the left through the holes in the Bush Wheel and carry with them the Wheel Disc 2.

### A MODERN BRAKE

A chassis must have some effective way of being stopped and the most efficient brake in common use today is the disc brake which far surpasses the old drum brake fitted to most existing cars. An illustration of a Meccano disc brake can be seen in Figure 2, attached, as you will see, to a different form of front suspension to that described in these pages, last month.

The mechanism is mounted on a back plate provided by a six hole Bush Wheel 1. This is fitted with two Angle Brackets lock-nutted to the ends of twin transverse leaf springs that form the front suspension members. The Bush Wheel 1 forms a bearing for a  $1\frac{1}{2}$ " Rod used as a stub axle. This Rod is free to turn in the boss of the Bush Wheel and carries a Collar at its inner end.

Fig. 2. An effective disc brake built entirely of standard Meccano parts, except for a length of flexible wire used, together with Spring Cord, to make a working brake cable.



# MECHANISMS FOR A MOTOR CHASSIS

## Concluding The Special Article By "Spanner"

LAST month, I gave details of several useful mechanisms that could be incorporated in a motor chassis. These were a steering arrangement with independent suspension, a leaf spring suspension unit, a differential, and a 3-speed and reverse gear-box, in that order. A car gear-box, however, is virtually useless without a clutch, which is a mechanism designed to disconnect the drive between the engine and the gear-box so that the gears can be changed.

### HEAVY DUTY CLUTCH

The clutch illustrated in Figure 1 is particularly unique in that it can be fitted with from two to eight Compression Springs to vary the pressure between the driving plates to suit almost any model. The heavier the model, the more Compression Springs used.

The driving member is a 1" Pulley fitted with a Rubber Ring, and it is fixed on the input shaft 1. The shaft extends beyond the Pulley, and it passes through a Wheel Disc 2 and into part of the boss of a Bush Wheel 3. The Bush Wheel is fixed on the output shaft 4.

Wheel Disc 2 is connected to Bush Wheel 3 by two Pivot Bolts. Each of these is first passed through the round hole of an Obtuse Angle Bracket 5, and through a hole in the Bush Wheel. A Compression Spring is slipped over the Pivot Bolt, which is then attached to the Wheel Disc by two nuts, one on each side of the Disc.

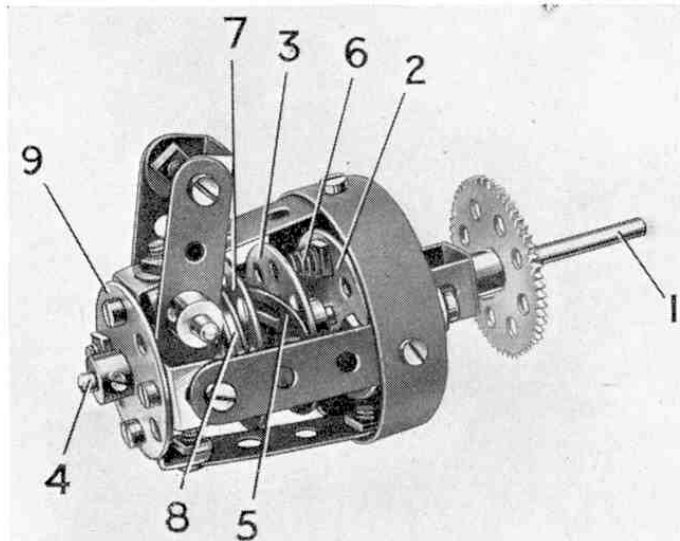


Fig. 1. A compact but very efficient clutch, which can be easily modified by fitting or removing Compression Springs, according to the weight of the model of which it is part.

The Obtuse Angle Brackets are arranged pointing in opposite directions, and they are linked by a short length of Cord that prevents them from flying outward as they rotate with the Bush Wheel. Further Compression Springs 6 can be placed between the Bush Wheel and the Wheel Disc, and they are slipped over the shanks of bolts held by nuts in the Wheel Disc.

The clutch withdrawal race consists of a Wheel Disc 7, and a 1" loose Pulley 8 separated from the Wheel Disc by a Washer.

The clutch housing is assembled from a Boiler End fitted with four 2" Strips connected by Angle Brackets to a Wheel Disc 9. The input and output shafts are prevented from sliding in the housing by a Collar on each side of the Wheel Disc 9.

Operating levers are formed from two 2" Strips pivoted as shown on a short Rod mounted in a Double Bracket fixed to the housing. The levers are linked at their outer ends by a Double Bracket and a lock-nutted  $\frac{3}{4}$ " Bolt. The inner ends of the levers bear against the face of the Pulley 8. Adjustment is obtained by sliding the Bush Wheel 3 on its shaft until the Springs are compressed slightly. When the levers are moved to the left, their action is transmitted through the withdrawal race to the Pivot Bolts, which slide to the left through the holes in the Bush Wheel and carry with them the Wheel Disc 2.

### A MODERN BRAKE

A chassis must have some effective way of being stopped and the most efficient brake in common use today is the disc brake which far surpasses the old drum brake fitted to most existing cars. An illustration of a Meccano disc brake can be seen in Figure 2, attached, as you will see, to a different form of front suspension to that described in these pages, last month.

The mechanism is mounted on a back plate provided by a six hole Bush Wheel 1. This is fitted with two Angle Brackets lock-nutted to the ends of twin transverse leaf springs that form the front suspension members. The Bush Wheel 1 forms a bearing for a  $1\frac{1}{2}$ " Rod used as a stub axle. This Rod is free to turn in the boss of the Bush Wheel and carries a Collar at its inner end.

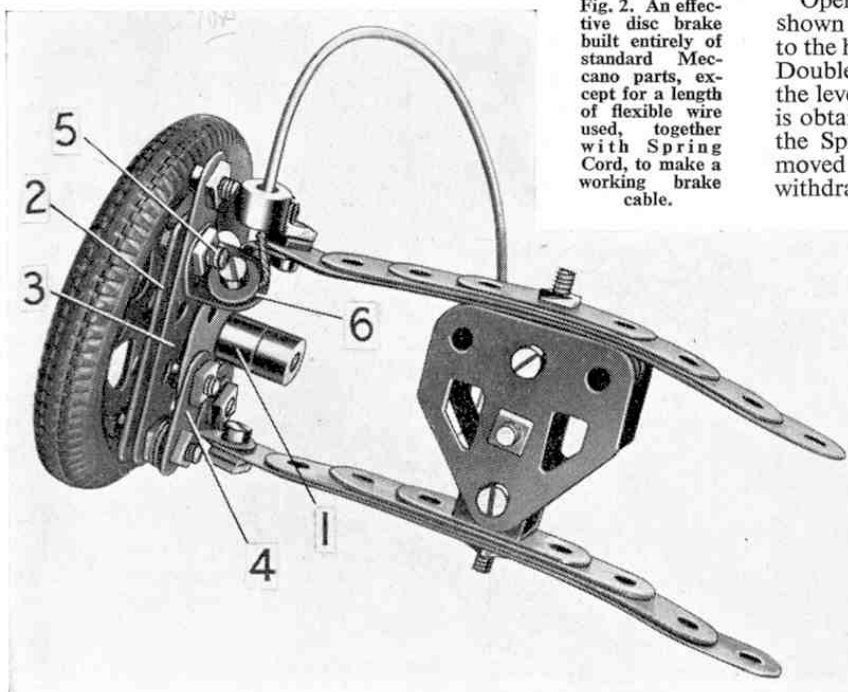


Fig. 2. An effective disc brake built entirely of standard Meccano parts, except for a length of flexible wire used, together with Spring Cord, to make a working brake cable.