Suggestions Section

By "Spanner"

(485) Automatic Motor Brake

In Fig. 485 is shown a novel type of automatic brake designed to apply a retarding force to the armature of an Electric Motor immediately the current supply is cut off. A brake of this kind is useful in model cranes and lifts and other types of hoisting machinery.

The rotating member of the brake is a 1″ fast Pulley shod with a 1″ Rubber Tyre and secured to the armature spindle of the Motor. The fixed portion of the brake consists of a Bush Wheel on a Rod 1 that is free to slide in a Collar, which is fixed rigidly between the ends of a pair of Simple Bell Cranks. The latter are bolted to 2″ Strips 2, which are secured to the arms of a Single Bent Strip on the motor sideplate.

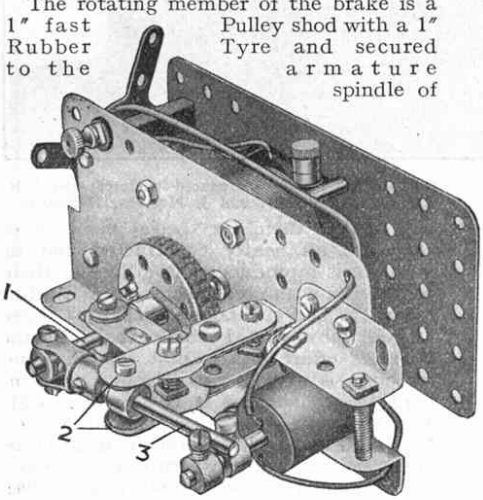

Fig. 485.

One end of a Rod 3 is attached pivotally by a Swivel Bearing to the Rod 1, while its other end rests between Collars spaced about $\frac{3}{16}$″ apart on the end of the solenoid plunger. A small piece of Spring Cord bolted to the Strip 2 presses on the upper part of the boss of a Bush Wheel on the Rod 1, and a second piece of Spring Cord is attached to the lower side of the Strip 2 to press similarly on the lower half of the Bush Wheel.

The solenoid is composed of a Bobbin wound with four layers of No. 23 S.C.C. wire. One end of the winding is attached to a Terminal that is insulated from the Motor side plate by an Insulating Bush and an Insulating Washer, and the other end is secured so that it is in metallic contact with the plate. One of the Motor terminals is treated in a similar manner, and connection is made to a $3\frac{1}{2}$-volt current supply from the terminal on the Motor side plate and the remaining Motor terminal.

When the Motor is running current flows through the turns of the solenoid, which pulls its plunger in. When the current is cut off the solenoid becomes inoperative and the plunger is freed. The Springs then pull the face of the Bush Wheel into contact with the Tyre on the 1″ fast Pulley.

(486) Independently Sprung Wheels for Motor Vehicles

(P. Swan, Rangoon)

The mechanism shown in Fig. 486 is based on a special system of front wheel suspension used in some motor vehicles. The two wheels are sprung independently, so that each can give on passing over an obstacle in the road without affecting the other. The result is smoother riding than with a suspension system of the more usual kind.

The frame of the Meccano mechanism is made up from two $3\frac{1}{2}$″ Angle Girders 1 joined together to form an inverted U-shaped girder. On each side of this girder are bolted two Flat Trunnions 5, which form the upper components of the road wheel coupler. On each side of the Girder, between the Trunnions 5, there are also Two Trunnions 2. Each Road Wheel is mounted by bolting it to a Face Plate that carries a $1\frac{1}{2}$″×$\frac{1}{2}$″ Double Angle Strip as shown. A 2″ Axle Rod is passed through the ends of this Double Angle Strip and a second one bolted in the position shown in Fig. 486. The Rod is held in place by Collars. The lower end of the second Double Angle Strip is coupled to the Trunnions 2 by a pair of $2\frac{1}{2}$″ Strips, while its upper end is held by a Double Bracket on the top of the $1\frac{1}{2}$″ Double Angle Strip. This Double Bracket is linked by $1\frac{1}{2}$″ Strips to the Trunnions 5.

The unit is completed by putting Springs in such a position that the mechanism gives the highest degree of riding ease and better distribution of the weight of the motor vehicle. This is attained by bolting the Springs 4 between the Angle Girders and the $2\frac{1}{2}$″ Strips. This method gives the wheels a knee-action.

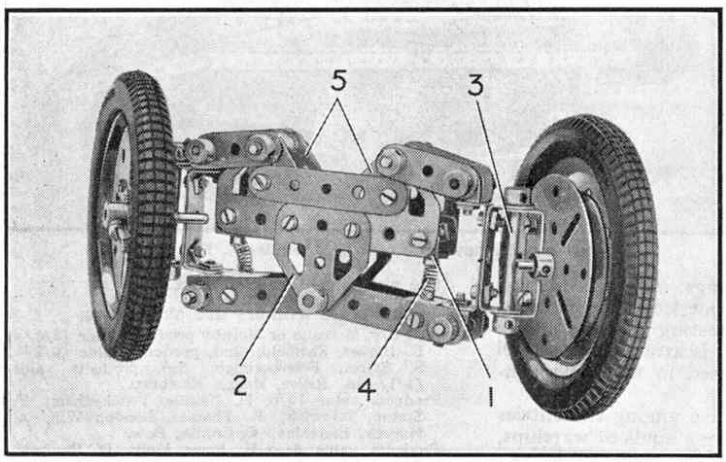

Fig. 486.

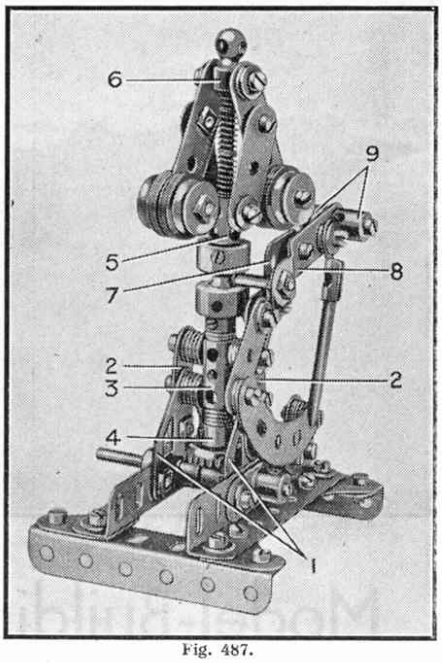

Fig. 487.

(487) Centrifugal Speed Indicator

(G. Woolfenden, Liverpool 11)

A sturdily built indicator, by means of which it is possible to determine the speed of revolving shafts and wheels, is shown in Fig. 487. It was designed by G. Woolfenden, Liverpool 11. To construct it two 3″ Angle Girders are bolted at right angles to two $3\frac{1}{2}$″ Girders to form a base. Trunnions 1 carrying $1\frac{1}{2}$″ Strips 2 are bolted in the centre of each $3\frac{1}{2}$″ Girder. Each $1\frac{1}{2}$″ Strip 2 carries two $\frac{3}{8}$″ Bolts fitted with five Washers, the Bolts being screwed into a Coupling 3 that forms a bearing for a vertical 5″ Rod on the lower end of which is a $\frac{3}{4}$″ Contrate Wheel. This Contrate engages a $\frac{1}{2}$″ Pinion on a $2\frac{1}{2}$″ Rod, which is journalled in reinforced bearings consisting of Double Arm Cranks bolted to the $3\frac{1}{2}$″ Angle Girder. The $2\frac{1}{2}$″ Rod forms the driving shaft. The upper end of the vertical Rod carries a Socket Coupling in which a Coupling 5 is gripped, a Compression Spring and a Handrail Coupling 6. To each side of the Handrail Coupling a 2″ Strip is bolted as shown, and these carry at their lower ends weights consisting of two $\frac{1}{2}$″ loose Pulleys and about six $\frac{3}{4}$″ Discs. The Coupling 5 is connected by two $1\frac{1}{2}$″ Strips to the 2″ Strips, the connections being made by means of lock-nutted bolts.

A 1″ Corner Bracket 7 has a second similar part secured to it, and lock-nutted to this is a $2\frac{1}{2}$″ Strip 8 that is curved slightly and is fitted with two Threaded Bosses 9 carried on a $\frac{3}{4}$″ Bolt. A Threaded Pin in the other end hole of this Strip engages the groove of the Socket Coupling on the 5″ Rod. To the other 1″ Corner Bracket a $1\frac{1}{2}$″ Strip is bolted, and this in turn is extended by a $2\frac{1}{2}$″ Cranked Curved Strip arranged as shown. The indicator pointer is a 2″ Rod attached by means of a Rod and Strip Connector to the $2\frac{1}{2}$″ Strip 8.

Before the device can be used for speed indication it must be fitted with a scale, which is calibrated by connecting the governor to shafts that revolve at known speeds. The positions of the pointer are then marked. The scale should be glued to the $2\frac{1}{2}$″ Cranked Curved Strip.