

### A NEAT ELECTRO-MAGNET

A small electro-magnet that is suitable for use in numerous electrical models can be built up from two Double Brackets, which form the centre core. The Brackets are held together by two cheeks of cardboard with narrow slots  $\frac{1}{4}$ " long cut in their centres. To place the cheeks in position, the two Brackets are placed end to end and the two cheeks dropped over their inner ends. By turning the Brackets round until they are back to back, the two pieces of cardboard will slip into position and are placed one at each end of the Brackets. A strip of paper is wound round the Brackets and glued in position before winding on the wire, and it will also be found necessary to insert the securing bolts into the end holes of the Brackets before the wire is wound on. In this connection it is advisable to make quite certain of the size of bolts required, since once the coil is wound, the bolts cannot be removed.

### FIXING MECCANO BOBBINS

Meccano Bobbins (Parts No. 181), when used as electro-magnets or solenoids, can be mounted in position by clamping them in Single Bent Strips, the ends of which are bent slightly to retain the Bobbins in place. These parts can be used only when the Bobbins are not wound fully. Another method of fixing the Bobbins is by means of  $1\frac{1}{2}$ " Strips. A Strip is placed at each side of the solenoid or magnet, and the two are held together at one end by a  $1\frac{1}{2}$ " Screwed Rod, and at the other end bolts are passed through the Strips and inserted in the opposite tapped bores of a "spider" removed from a Swivel Bearing or Universal Coupling. The spider is provided with a Grub Screw for mounting the unit on an Axle Rod that may be conveniently fixed in a Rod Socket fitted in any suitable place on the model. The arrangement allows the solenoid to be mounted in almost any position.

### ROLLING LIFT BRIDGE CONSTRUCTION

The sectors at the rear of the bascules of rolling lift bridges are generally provided with teeth or studs that engage with holes in the rails on which the sectors roll. With models built from small Outfits this arrangement is not always possible, on account of the limited number of parts available. To overcome the difficulty, cords may be tied at each end of the two rolling sectors and passed round their rims before being tied at each end of the flat rails. These cords prevent the sectors from sliding on the rails, and models fitted in this way operate equally as well as those that are provided with studs to prevent slipping.

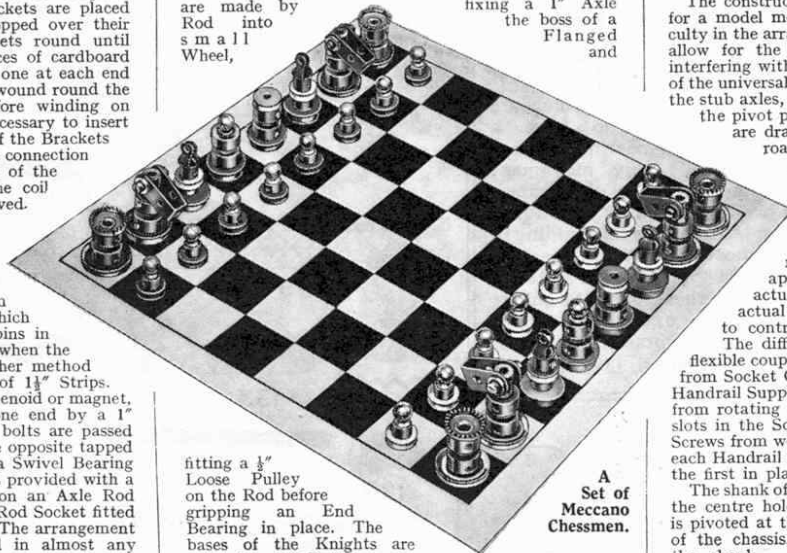
### GUIDES FOR HOISTING CORDS

Small models of hoisting gear sometimes require guides for the hoisting cords, but these must be small if the neat appearance of the model is to be preserved. Where Axle Rods are employed for constructional purposes, the cords may be passed through the loops of Anchoring Springs that are placed on the Rods at intervals as required. Anchoring Springs used in this manner are particularly suitable for models of boat-lowering gear where Axle Rods are used for the davits, but numerous similar applications will also be found for them. Where such parts cannot be used it is sometimes desirable to make a small loop from 23 gauge wire (Elektron Part No. 1587) from which the cotton covering has been stripped. The wire may be fixed in position on the model by means of a Nut and Bolt, and if a more rigid guide is required an Angle Bracket can be used, although this is not quite so neat.

### A USEFUL SET OF CHESSMEN

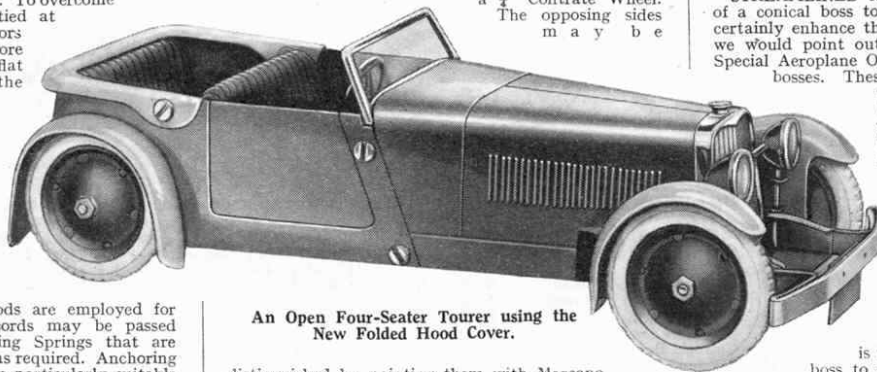
The upper illustration on this page shows a complete set of Chessmen built entirely from Meccano parts.

The Pawns consist of  $\frac{1}{2}$ " Pulleys placed with their bosses uppermost, and carrying Handrail Supports. Each Queen is made by mounting a Socket Coupling on the boss of a  $\frac{1}{2}$ " Flanged Wheel forming the base, and fitting a Handrail Coupling into its upper socket. For the Kings  $\frac{1}{2}$ " Pulley Wheels are substituted for the Handrail Couplings. The Bishops are made by fixing a  $1\frac{1}{2}$ " Axle Rod into the boss of a Flanged Wheel.



fitting a  $\frac{1}{2}$ " Loose Pulley on the Rod before gripping an End Bearing in place. The bases of the Knights are made from  $1\frac{1}{2}$ " Pulleys, and are provided with Socket Couplings in the upper sockets of which ordinary Couplings are gripped. Single Bent Strips are attached to the Couplings by bolts inserted in the opposite tapped bores, each bolt being provided with two Washers. A  $1\frac{1}{2}$ " Pulley and Socket Coupling is used for each of the Rooks, the Socket Coupling being surmounted by a  $\frac{1}{2}$ " Contrade Wheel. The opposing sides may be

A Set of Meccano Chessmen.



An Open Four-Seater Tourer using the New Folded Hood Cover.

distinguished by painting them with Meccano Enamel, which is obtainable in green, red or grey. The pieces may be coloured entirely, or only the bases enamelled if preferred. An ordinary draughts board can of course be used for play, or a board may be made from a sheet of stiff cardboard, the squares being coloured with enamel.

### NEW MOTOR CAR PART

The Manual of Instructions included in the No. 1 Motor Car Constructor Outfit illustrates four different models that can be built with this Set. The accompanying illustration shows a fifth model that is made possible by the addition of a new part to the range. This part, No. A1225, Cover for Folded Hood (price 2d.)

can be substituted for the Tonneau Cover on the Sports Tourer Model No. 4, thus giving an open car. The model illustrated here is similar to the Sports Tourer in other respects, and the Hood Cover is held in place by two bolts, as shown.

### FRONT WHEEL DRIVE TRANSMISSION

The construction of a front wheel drive mechanism for a model motor chassis presents considerable difficulty in the arrangement of a suitable universal joint to allow for the steering of the road wheels without interfering with the steering mechanism. The centres of the universals should be in line with the pivot pins for the stub axles, and on correct Ackermann steering gear the pivot pins are so placed that if imaginary lines are drawn through their centres they cut the road at points immediately under the tyres.

These requirements necessitate very compact flexible couplings, and the Universal Couplings are somewhat too long for the purpose. If they are used, the wheels must of necessity be incorrectly placed in relation to the pivots, and the result will appear clumsy and will not conform with actual practice. Such an arrangement on an actual car would make the steering difficult to control.

The difficulty can be solved by using built-up flexible couplings of the ball and socket type, formed from Socket Couplings and Handrail Supports. The Handrail Supports are free to swivel, but are prevented from rotating by  $7/32$ " Grub Screws that engage the slots in the Socket Couplings. To prevent the Grub Screws from working out, a second Screw is inserted in each Handrail Support and screwed down until it locks the first in place, but does not protrude.

The shank of each Handrail Support is passed through the centre hole of a  $1\frac{1}{2}$ "  $\times$   $\frac{1}{2}$ " Double Angle Strip that is pivoted at the top and bottom to the front springs of the chassis. The road wheel is then gripped on the shank. A suitable method of controlling the movement of the Double Angle Strips is to use a  $1\frac{1}{2}$ " Axle Rod for one of the pivots on each. This may be gripped in a Collar that is held by a bolt screwed into one of its tapped bores. The lower end of the Rod may be provided with a Crank or Coupling for connecting to the track rod.

**STREAMLINED AIRSCREW BOSS.**—The addition of a conical boss to the Aeroplane Propellers would certainly enhance the appearance of the models, and we would point out that Airscrews included in the Special Aeroplane Outfits are fitted with streamlined bosses. These parts are not interchangeable with the Airscrews on the standard Engines, however, as they do not permit lock-nuts to be fitted on the ends of the fixed shafts to retain them in place. They are intended to be mounted on Axle Rods that pass through the centres of the Special Radial Engines.

The suggested part would replace the lock-nuts retaining the Airscrew in position on the standard Engines, and the idea certainly merits careful thought. The chief difficulty that is likely to arise with your proposed part is the method of gripping the conical boss to screw it tightly in position. Its appearance would be marred if a squared section were provided for use with a spanner. (Reply to D. McGimpsey, Liverpool.)

**"T" SHAPED STRIP.**—A Strip in the form of the letter "T" would be useful for securing Strips and Girders rigidly together at right angles to each other. It would enable a neat joint to be made, but a T-shaped piece would not be so adaptable as an "L" member, and such parts are already included in the Meccano range in the form of Architraves, Parts No. 108. Corner Brackets, which are obtainable in two sizes, can also be used for this purpose. (Reply to R. Jeffs, London S.W.1.)