Next Month: "LUDWIG KOCH'S SOUND RECORDINGS. By T. Holloway

MECCANO MAGAZINE

Editorial Office:
Binns Road
Liverpool 13
England

Vol. XXXV
No. 4
April 1950

With the Editor

B.E.A.'s New Air Liners

News that British European Airways will soon be operating a brand-new fleet of sixty all-British air liners has brought fresh hope to our aircraft industry.. For five years this industry has been in the unenviable position of having to watch British Overseas Airways buy new fleets of American and Canadian aircraft, while our own factories have been crying out for work—the inevitable consequence of wartime policy under which Britain built only warplanes, leaving America to fulfil our transport needs.

B.E.A.'s new fleet will consist of 20 Airspeed "Ambassadors," 20–30 Vickers "Viscounts" and 14 Handley Page "Marathons." They will cost about £8 million, but should earn something like £12 million a year when they get into their stride.

Nor will their earning capacity result from a lessening of passenger comfort and conveniences. The "Ambassador," for example, will offer all the advantages of a pressurised cabin and facilities for hot meals, combined with a cruising speed of over 250 m.p.h. It should enable B.E.A. to reduce their fares substantially on short-haul routes like London to Paris.

On the Corporation's longer routes, the 40-seat propjet-powered "Viscount" will introduce completely new standards of speed and vibrationless comfort, and, cruising at 300 m.p.h., will bring Rome within four hours of Britain.

For very short routes such as their Scottish and inter-Channel Island services, B.E.A will use the 20-passenger "Marathon," the prototype of which is at present on a 35,000 mile tour to New Zealand and Australia. It is rather large for the job, but Britain has spent about £1,500,000 on its development, and B.E.A. have decided to put the national interest before their own specialised requirements, confident that the "Marathon's" four engines and high-wing arrangement will pay handsome dividends in popularity.

B.E.A. are to be congratulated on this demonstration of their faith in Britain's ability to produce fine air liners as well as the world's finest fighter aircraft. Remembering the achievements of the famous old British "Hannibals," "Empire" flying boats and "Rapides," they need have little fear that their new equipment will let them down.

This Month's Contents

Model-Building Competition Results

By "Spanner"

October General Contest (Home Section)

The principal prize-winners in the Home Section of the October "General" Model-Building Competition were as follows:

First Prize, Cheque for £3/3/-: H. H. Taylor, Huddersfield; Second Prize, Cheque for £2/2/-: J. A. Heywood, Macclesfield; Third Prize, Cheque for £1/1/-: G. R. C. Taylor, Halewood, Nr. Liverpool. Five Prizes each of 10/6: K. Saunders, Lyndhurst, Hants.; H. Tothill, Hove, Sussex; S. Reid, Aberdeen; L. Finner, Cork, Eire; R. Reynolds, Higher Tranmere, Birkenhead. Six Prizes each of 5/-: G. Tyrrell, Sevenoaks, Kent; W. S. Roberts, Bradford, Yorks.; G. P. Clark, Tavistock, Devon; B. Gowing, Yoxford, Suffolk: B. Hoyle, Deepcar, nr. Sheffield; D. Smith, Ilford, Essex.

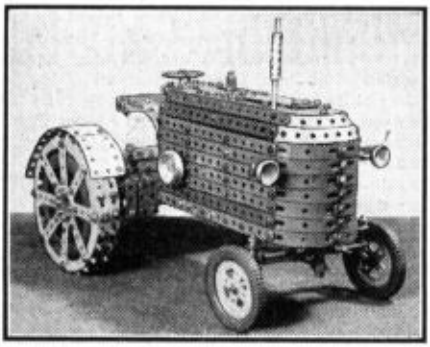


Fig. 1. A neat diesel tractor by G. R. C. Taylor, winner of Third Prize.

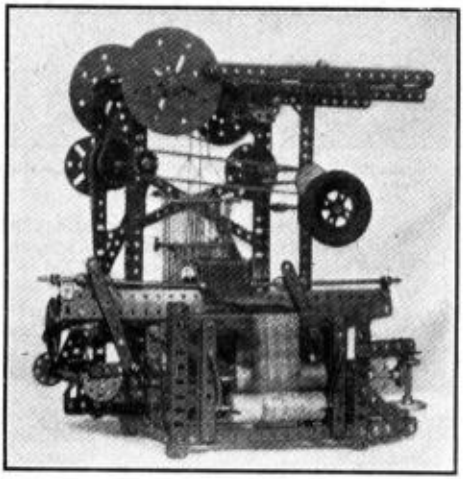


Fig. 2. A practical model loom built by H. H. Taylor, Newsome, Huddersfield, for which he was awarded First Prize.

First Prize was awarded to Harold H. Taylor, for the fine loom shown in Fig. 2. This model is capable of all kinds of weaving by varying the drafting of the healds, and adjustment of the "lag cylinder," and the illustrations submitted were accompanied by several fine examples of cloth produced with it and a highly technical description of its operation. I hope it will be possible to obtain a more simple description of its construction and if this is forthcoming I will give further details of this interesting model in a future *"M.M."*

Second Prize went to J. A. Heywood, for an excellent model of the Diesel Electric locomotive 'No. 10000.' The model was built from a photograph reproduced in the February 1948 issue of the *"M.M."* and its overall length is 37 in. with a width of 4 in., the gauge of the track is 2½ in. Heywood submitted a very neat and careful drawing of the model, and I am reproducing it as Fig. 3 on this page. I think Heywood deserves congratulating not only for the fine work done in the model itself, but for his drawing.

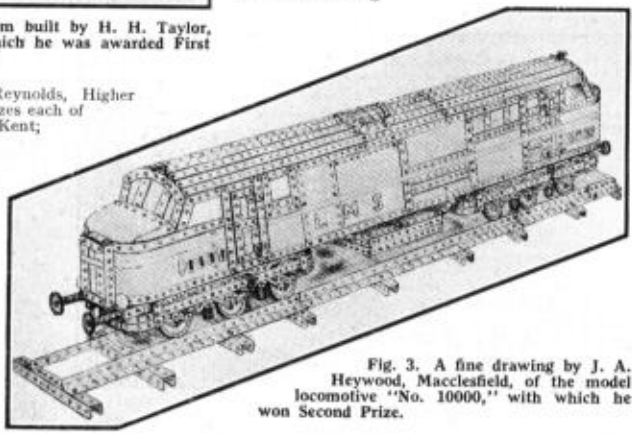


Fig. 3. A fine drawing by J. A. Heywood, Macclesfield, of the model locomotive "No. 10000," with which he won Second Prize.

Using the Meccano Gears Outfit "A"

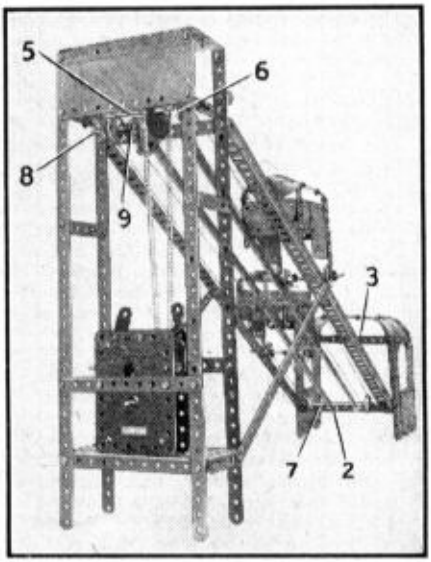
A Funicular Railway for Outfit No. 5

A FUNICULAR is a type of inclined railway used in some parts of the world, principally Switzerland and Japan, for ascending the slopes of mountains. In Fig. 1 we illustrate a model railway of this kind that forms a good subject for the owner of Outfit No. 5 and a Meccano Gears Outfit "A."

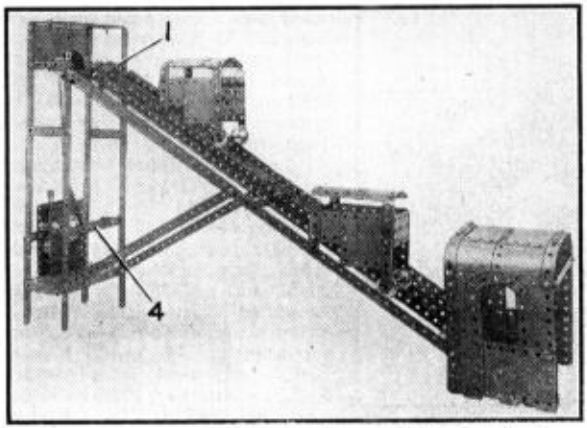
Construction of the model is begun by building the tower. The four supports of the tower are compound strips made by overlapping 12½" and 5½" Strips three holes. They are braced by Strips and Plates. The outer running rails are 12½" Angle Girders overlapped two holes, and 12½" Strips connected in the same way are used for the centre pair. They are supported by 5½" Strips, and at the tower end are bolted near its top. The inner rails are attached to the 5½" Strips by a 1½" × ½" Double Angle Strip 1 at the upper end and two Reversed Angle Brackets 2 at the lower.

The sides of the lower station are constructed from two 5½" × 1½" Flexible Plates and half a Hinged Flat Plate. Two 5½" × 2½" and two 2½" × 2½" Plates are used for its roof, which is edged with Formed Slotted Strips and Strips. It is strengthened by a 5½" Strip bolted across at 3. The sides of the cars are identical in construction, each being made with a 2½" × 2½" and a 2½" × 1½" Flexible Plate. A Semi-Circular Plate bolted to a Double Angle Strip fills the backs of the cars while the front of one of them is a 2½" × 1½" Flanged Plate. Two Flat Trunnions bolted to a Double Angle Strip form the front of the other car. Two 1⅜" radius Curved Plates and two 2½" × 2½" Flexible Plates form the roof and are attached to the Strips on the sides of the car by Obtuse Angle Brackets. The 1" Pulleys forming the wheels are held on the Rods by Spring Clips.

A ½" Pinion on the Motor engages with a 1½" Contrate Wheel on a 4" Rod, bearings for which are provided by two 1" × 1" Angle Brackets bolted to Strip 4. A ½" Sprocket Wheel on the Rod is connected by chain to a 2" Sprocket on a 5" Rod 5. This Rod carries a 1" Pulley 6, and a length of Cord is passed round this Pulley and a second 1" Pulley held loosely on a 4" Rod 7. The Cord is then tied to each end of the car. The reversing movement, which allows one car to be lowered and the other raised, is produced by a ½" Pinion on Rod 5 meshing with a similar part on 2" Rod 8. Bearings for Rod 8 are two Fishplates, one of which is seen at 9. The other is attached to a Trunnion bolted to the 5½" Strip. A 1" Pulley on Rod 8 drives the second car and the Cord is passed round a ½" loose Pulley on Rod 7 and tied in the same way as the first. The model is reversed manually and care should be taken when adjusting the Cords to see that both cars reach the end of their run simultaneously.



A rear view of the funicular showing how the Clockwork Motor is fitted in the tower.



A funicular railway that can be built from Outfit No. 5 and a Gears Outfit "A."

Parts required to build model Funicular Railway: 10 of No. 1; 14 of No. 2; 2 of No. 3; 10 of No. 5; 2 of No. 6a; 4 of No. 8; 3 of No. 10; 2 of No. 11; 12 of No. 12; 2 of No. 12a; 4 of No. 12c; 1 of No. 15; 1 of No. 15a; 1 of No. 15b; 2 of No.16; 1 of No. 17; 5 of No. 22; 2 of No. 22a; 1 of No. 23; 11 of No. 35; 100 of No. 37; 7 of No. 37a; 11 of No. 38; 1 of No. 40; 1 of No. 48; 8 of No. 48a; 1 of No. 51; 1 of No. 52; 2 of No. 90a; 2 of No. 111a; 6 of No. 111c; 1 of No. 126; 2 of No. 126a; 4 of No. 188; 4 of No. 189; 4 of No. 190; 2 of No. 191; 4 of No. 192; 1 of No. 198; 2 of No. 199; 2 of No. 200; 2 of No. 214; 4 of No. 215; 1 No. 1 Clockwork Motor; 1 Gears Outfit "A."

Among the Model-Builders

By "Spanner"

Simple Friction Differential Gear

The device shown in Fig. 1 is a gearless differential that is designed for the use of young car builders who do not possess Gears. It is entirely friction driven and of course is only suitable for use in light vehicles.

The frame is constructed with two $2\frac{1}{2}'' \times \frac{1}{2}''$ Double Angle Strips and two $2\frac{1}{2}''$ Strips. A $1\frac{1}{2}''$ Contrate Wheel 1 is attached to an end of the frame by $\frac{3}{8}''$ Bolts as shown. A $3\frac{1}{2}''$ Rod 2 carries a Coupling 3 and two 1" Pulleys fitted with Rubber Rings, which are spaced from the frame by six Washers. Two $3\frac{1}{2}''$ Rods 5 and 6 forming the wheel axles are each journalled in the ends of the frame and in Coupling 3, and carry 1" Pulley Wheels and Rubber Rings that take the place of Bevel Gears generally used in an actual mechanism of this kind. The Contrate Wheel 1 is driven by a $\frac{1}{2}''$ Pinion on the transmission shaft 4, and the end of this Rod is journalled in a Coupling that is held loosely on Rod 6 and spaced from the Contrate by four Washers.

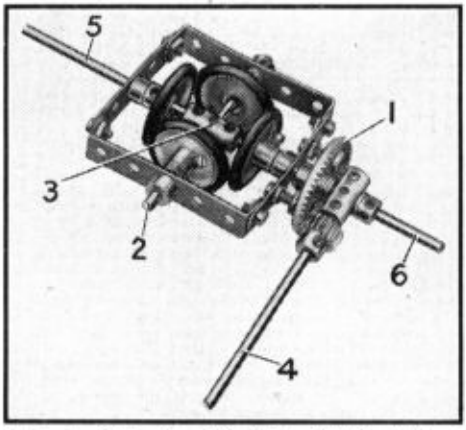


Fig. 1. A friction type differential suitable for light and simple model cars.

Roller Bearing for Large Cranes

A necessity in constructing large model cranes and excavators is that of providing a suitable roller bearing for carrying the swivelling superstructure. The standard Flanged Rings, part No. 167b, are ideal for the purpose, and a bearing built up with them is capable of carrying heavy loads and is very steady in operation.

The lower part of the bearing is made from two Flanged Rings connected together by eight $\frac{3}{4}''$ Bolts. Each Bolt is fastened by a nut in one of the Flanged Rings, and the second Ring is clamped in place between two nuts. A Face Plate 1 is bolted centrally to $9\frac{1}{2}''$ Strips fixed across the Flanged Rings, and a Rod 2 is passed through its boss. In a travelling crane model this Rod should be left free so that it can be used to transmit the drive to the travelling wheels.

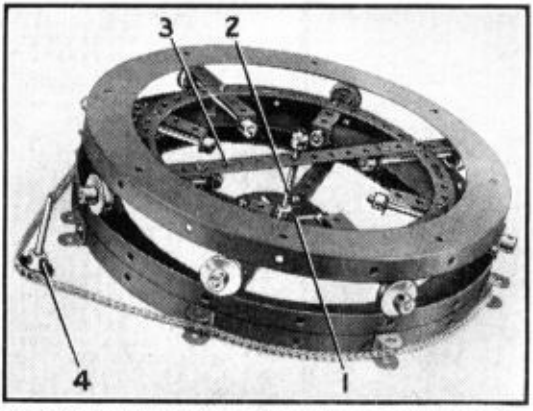


Fig. 2. An arrangement for a large built up roller type bearing. A device of this kind is suitable for use in large hammerhead and blocksetting cranes.

The rollers of the bearing are represented by $\frac{3}{4}''$ Flanged Wheels carried on a "spider" pivoting on Rod 2. The spider consists of eight $2\frac{1}{2}'' \times \frac{1}{2}''$ Double Angle Strips bolted to a Circular Strip, and a $7\frac{1}{2}''$ Strip 3 is also bolted in position. The Flanged Wheels are fixed on $3\frac{1}{2}''$ Rods mounted in the Double Angle Strips and held in place by Collars. Another Flanged Ring that is fixed to the model's superstructure rests on the Flanged Wheels, and the

Fig. 3. Ian T. Watts, Hove, photographed with his specially designed Meccano storage and building cabinet, a description of which appears on this page.

superstructure is held in position by a Collar fixed on Rod 2.

In actual practice the lower fixed part of the roller bearing is usually toothed, so that a Pinion fixed on a shaft in the superstructure meshes with the fixed unit and can be used for slewing. In the model this mechanism can be represented by an endless length of Sprocket Chain passed between the lugs of Double Brackets bolted to the lower Flanged Ring. A Sprocket Wheel 4 mounted in the superstructure engages the Sprocket Chain.

A Novel Meccano Cabinet

An ingenious solution to the problem of storing conveniently a large collection of Meccano parts has been found by Mr. Watts, Hove, who designed for his son Ian, the cabinet shown in one of the accompanying illustrations. The cabinet is made from an old bagatelle table, and is 3 ft. 9 in. high, 2 ft. 8 in. wide and 1 ft. 3 in. deep from back to front. It is provided with a drop flap supported when open by sliding brackets, and this also forms a work bench on which Ian is able to build his models.

Underneath the cabinet are two bookshelves. The Meccano parts are stored on racks fitted to a false interior of the cabinet. The back racks are made from $\frac{1}{2}$" × $\frac{1}{2}$" strip steel into which short rods are screwed one inch apart, while the side racks consists of ordinary cup hooks. Small parts such as nuts, bolts and spring clips are kept in small trays fitted with compartments, and Rods are stored vertically in a circular aluminium block drilled $\frac{5}{8}$" deep with $\frac{11}{64}$" holes.

Heavy Duty Quick Return Movement

This mechanism is particularly suited for incorporating in large model planing machines and for use in similar cases where a robust and positive quick idle stroke movement is required.

The table of the machine is represented in the illustration by a $2\frac{1}{2}$" × $\frac{1}{2}$" Double Angle Strip in order to show the mechanism as clearly as possible. A vertical driving shaft 1 carries a Bush Wheel 2, and a $\frac{3}{8}$" Bolt passing through one of the holes in the Bush Wheel is secured in the boss of a Slide Piece 3. A $3\frac{1}{2}$" Strip 4 passed through the Slide Piece pivots about an upright fixed Rod 5 and is pivoted on a lock-nutted bolt at its outer end to a connecting lever 6. The latter, in turn, is pivotally connected to the underside of the table, which slides on the Girders 7.

The Bush Wheel 2 rotates in an anti-clockwise direction, rocking the lever 4 to and fro, and the Slide Piece 3 slides on the lever as it follows the movement of the Bush Wheel. Consequently, the guide 3 is at a greater distance from the fulcrum of the lever during the forward stroke than it is on the return.

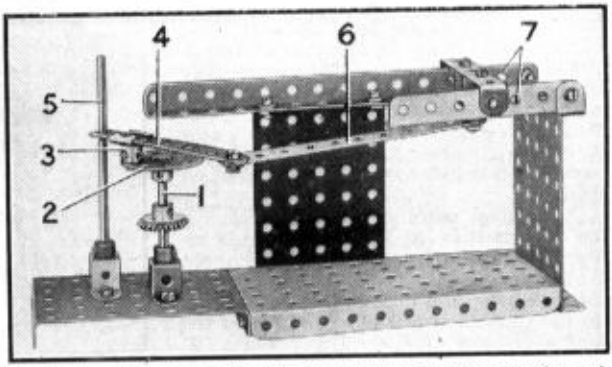


Fig. 4. A quick-return mechanism that has uses in model machine tools.

New Meccano Models

Electric Truck and Swing Bridge

THE attractive electric truck shown in Figs. 1 and 2 is based on the small vehicles used for transporting goods and parcels in factories, warehouses, railway stations, etc. The model is fitted with a simple steering mechanism, and with a pedal-operated brake acting on a drum fitted to the rear axle.

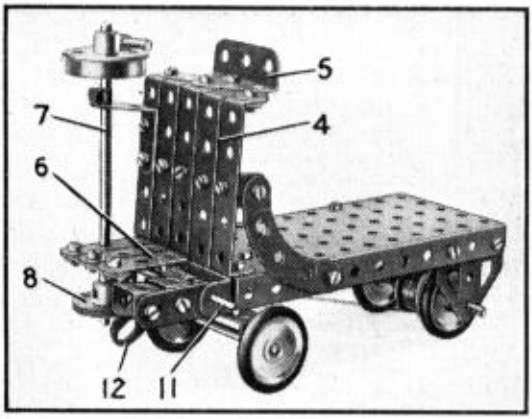


Fig. 1. A neat electric truck that makes a good subject for a small Outfit.

A 5½" × 2½" Flanged Plate is used for the chassis and load platform of the model, and the rear wheels are fixed on a 3½" Rod mounted in Flat Trunnions bolted to the Flanged Plate. The Rod carries between the Flat Trunnions a drum 1 formed by two ¾" Flanged Wheels. The front wheels are fixed on a 2½" Rod carried in a 1½" × ½" Double Angle Strip 2. A ½" Bolt is passed through the centre hole of the Double Angle Strip, and is fixed by two nuts in a Double Bent Strip 3. A ½" loose Pulley is used to space the axle unit from the Double Bent Strip, and the assembly is bolted to the 5½" × 2½" Flanged Plate.

A dividing panel 4 is made from five 2½" × ½" Double Angle Strips bolted to the Flanged Plate. A small radius Curved Strip is used to connect the outer Double Angle Strips, and a Trunnion 5 is bolted to the Curved Strip and to the lug of the centre Double Angle Strip. Three 2" Strips 6 form a platform for the driver.

Steering is controlled by a 4½" Rod 7, mounted in one of the Strips 6 and in a 1" × 1" Angle Bracket fixed to the panel 4. The Rod is held in position by a Spring Clip and a Collar, and it carries at its lower end a 1" Pulley 8. A length of Cord is tied to the Double Angle Strip 2 at 9, passed round the Pulley 8, and through a Stepped Bent Strip 10. The Cord is then tied again to the Double Angle Strip 2 at point 9.

The brake pedal is made from a Crank fitted with two Double Brackets. The Crank is fixed on a 3½" Rod 11, which is carried in a 2½" × ½" Double Angle Strip bolted to the front of the Flanged Plate. Rod 11 is fitted with a second Crank 12, and one end of a length of Cord 13 is tied to the Crank. The Cord is passed through an Angle Bracket 14, led twice round the drum 1 and finally is tied to the Double Bent Strip 3.

Parts required to build model Electric Truck:

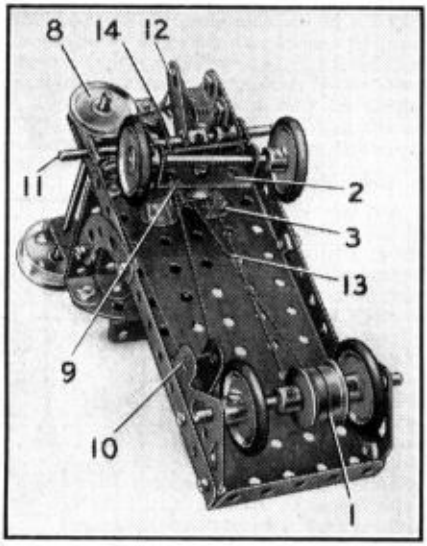


Fig. 2. An underneath view of the truck showing the arrangement of the steering and brake cords.

4 of No. 6; 3 of No. 6a; 2 of No. 11; 1 of No. 12; 1 of No. 12a; 1 of No. 15b; 1 of No. 16; 1 of No. 16a; 1 of No. 20; 2 of No. 20b; 5 of No. 22; 1 of No. 23; 1 of No. 35; 34 of No. 37; 1 of No. 40; 1 of No. 44; 1 of No. 45; 1 of No. 48; 7 of No. 48a; 1 of No. 52; 3 of No. 59; 3 of No. 90a; 1 of No. 115; 1 of No. 126; 2 of No. 126a; 4 of No. 155.

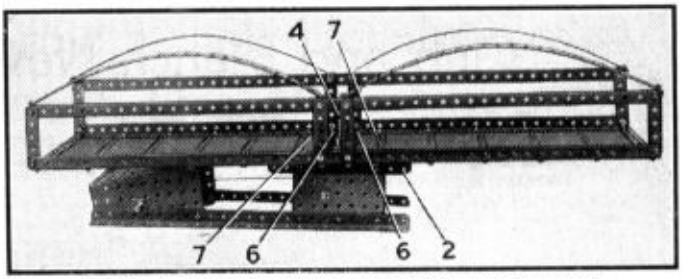


Fig. 3. A simple swing bridge operated from a Crank Handle.

Swing Bridge

The swing bridge shown in Figs. 3 and 4 is very easy to build. It is best to commence by constructing the pier support on which the moving span pivots. This is built by bolting 3½" × 2½" Flanged Plates and Flanged Sector Plates to two 12½" Angle Girders 1. These are connected by a 3½" × 2½" and a 5½" × 2½" Flanged Plate 2, and also by a 2½" × ½" Double Angle Strip 3. A 1" Pulley Wheel on the Crank Handle drives a second 1" Pulley on a 3" Rod journalled in the sides of the 3½" × 2½" Flanged Plates. A Worm on this Rod engages with a ½" Pinion on a 5½" Rod 4, which is mounted in the 5½" × 2½" Flanged Plate and in a 2½" × ½" Double Angle Strip 5.

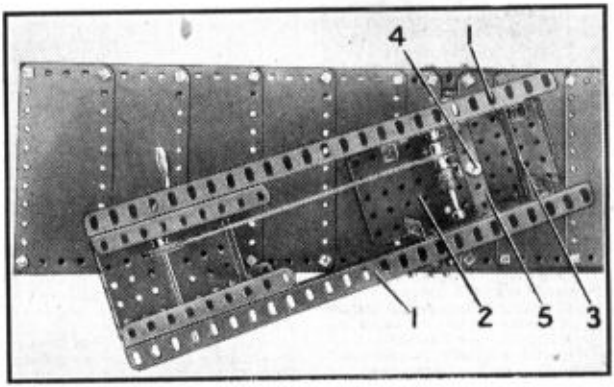


Fig. 4. An underneath view of the bridge pier showing the swivelling mechanism.

The bridge span is built from two compound girders each consisting of two 12½" Angle Girders overlapped three holes. They are joined at the ends by 5½" Strips, and a Bush Wheel is bolted to two other 5½" Strips 6. The roadway is then filled with 5½" × 2½" Flexible Plates and two 5½" × 1½" Plates 7. The sides are extended upwards by 2½" Strips and braced across by 12½" Strips. Four 12½" Strips curved to represent arches are attached to the sides by angle Brackets.

Parts required to build model Swing Bridge: 8 of No. 1; 4 of No. 2; 8 of No. 5; 6 of No. 8; 8 of No. 12; 1 of No. 15a; 1 of No. 16; 1 of No. 19g; 2 of No. 22; 1 of No. 24; 1 of No. 26; 1 of No. 32; 1 of No. 35; 72 of No. 37; 5 of No. 38; 1 of No. 40; 2 of No. 48a; 1 of No. 52; 3 of No. 53; 2 of No. 54; 10 of No. 59; 2 of No. 189; 10 of No. 192.

A FINE COMPETITION FOR ALL MECCANO BOYS

Every Meccano boy should enter the model-building competition announced here, for there is a good chance that he may win one of the fine prizes offered. All that is necessary to take part in the contest is to build a Meccano model. This may be of any type, and the only condition is that it must be the competitor's own unaided work. Every "*M.M.*" reader is eligible to compete in this contest, no matter what his age may be.

Any size of Outfit may be used in building the model, but good workmanship and constructional details that show ingenious uses for Meccano parts will attract the attention of the judges far more that the mere size of a model.

After the model is built the next job is to obtain a suitable illustration of it. This should be a photograph, but a sketch will do quite well if a good photograph is impossible. The competitor must write his age, name and address on the back of the illustration, and enclose it, together with a brief description of the model, in an envelope addressed "*April General Model-Building Contest, Meccano Ltd., Binns Road, Liverpool 13.*"

Entries will be grouped into two Sections, one for competitors living in the British Isles and the other for Overseas competitors. Those from competitors in the British Isles may be sent in at any time up to 31st May 1950. Entries from readers living Overseas will be accepted until 30th September 1950.

The following prizes will be awarded in each Section for the best built and most interesting models received. First, Cheque for £2/2/–; 2nd, Cheque for £1/1/–; 3rd, P.O. for 10/6. There will be also five consolation prizes of 5/– each and Certificates of Merit.

It should be noted that successful entries become the property of Meccano Ltd., but illustrations of unsuccessful models will be returned to senders provided that a suitable stamped addressed envelope is enclosed.