

Using the Meccano Gears Outfit "A"

A Beam Bridge for Outfit No. 6

THE Gears Outfit "A" can be put to very good use with Outfit No. 6, and one of the models it is possible to build with this combination is the working

Rod. This Rod carries a $\frac{1}{2}$ " Pinion that engages a $1\frac{1}{4}$ " Contrate 5, which is fixed on a 6" Rod that carries also four 1" Pulleys forming the winding drums.

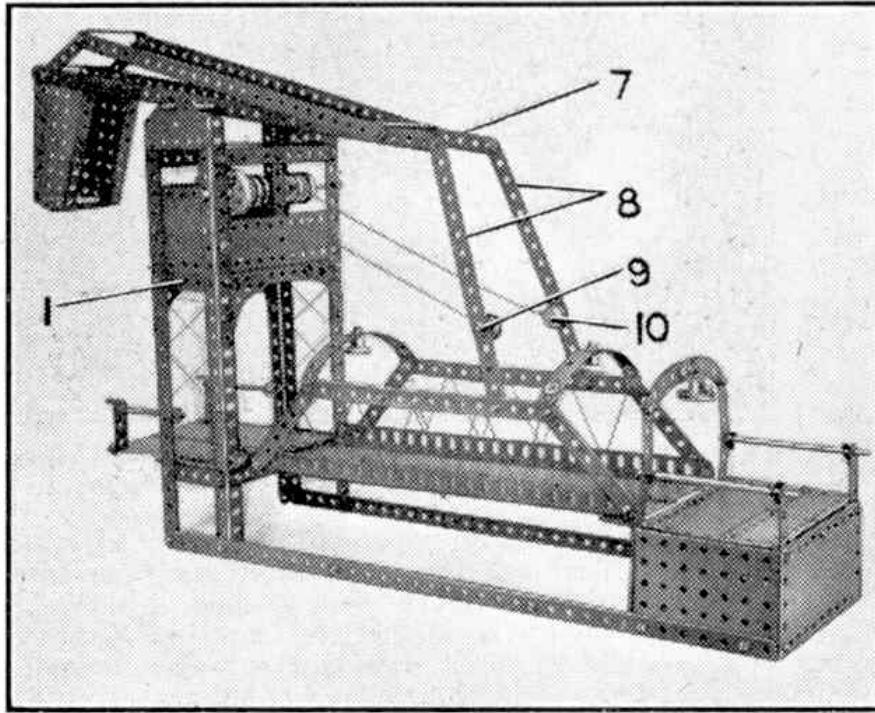


Fig. 1. A balanced beam lifting bridge built from Outfit No. 6. It is operated by a No. 1 Clockwork Motor through gears from a Gears Outfit "A."

beam bridge shown in Fig. 1. Bridges of this type are not popular in this country but many are in operation in other parts of the world, where they are particularly suited to the local conditions.

Construction of the model should be started with the tower, the main supports of which are two $12\frac{1}{2}$ " Angle Girders and four $12\frac{1}{2}$ " Strips. These are bolted to a $5\frac{1}{2}$ " \times $2\frac{1}{2}$ " Flanged Plate 1 and connected by $5\frac{1}{2}$ " and $2\frac{1}{2}$ " Strips near the lower ends. A No. 1 Clockwork Motor is bolted to the Flanged Plate in the position shown in Fig. 2. A 50-tooth Gear 2 meshes with a $\frac{3}{4}$ " Pinion on the Motor shaft, and further reduction is provided by a $\frac{1}{2}$ " Pinion 3 meshing with a 57-tooth Gear 4 on a 2"

$3\frac{1}{2}$ " \times $2\frac{1}{2}$ " Flanged Plates by a $5\frac{1}{2}$ " \times $2\frac{1}{2}$ " Flexible Plate, and a compound plate

Two Semi-Circular Plates are bolted to the tower, and the top is filled by two $5\frac{1}{2}$ " \times $1\frac{1}{2}$ " Flexible Plates. The front is partly filled with a $5\frac{1}{2}$ " \times $1\frac{1}{2}$ " Flexible Plate, and one side is completed by a $2\frac{1}{2}$ " \times $2\frac{1}{2}$ " Flexible Plate. The other side is left open to allow access to the Motor levers.

Two $5\frac{1}{2}$ " \times $2\frac{1}{2}$ " Flexible Plates forming the roadway approach are attached to the $5\frac{1}{2}$ " Strips near the bottom, and the remaining space is filled by two $2\frac{1}{2}$ " \times $1\frac{1}{2}$ " Flexible Plates. The handrails are represented by 3" Screwed Rods fixed to $1\frac{1}{2}$ " \times $\frac{1}{2}$ " Double Angle Strips and to Fishplates bolted to the $12\frac{1}{2}$ " Strips.

The other approach is

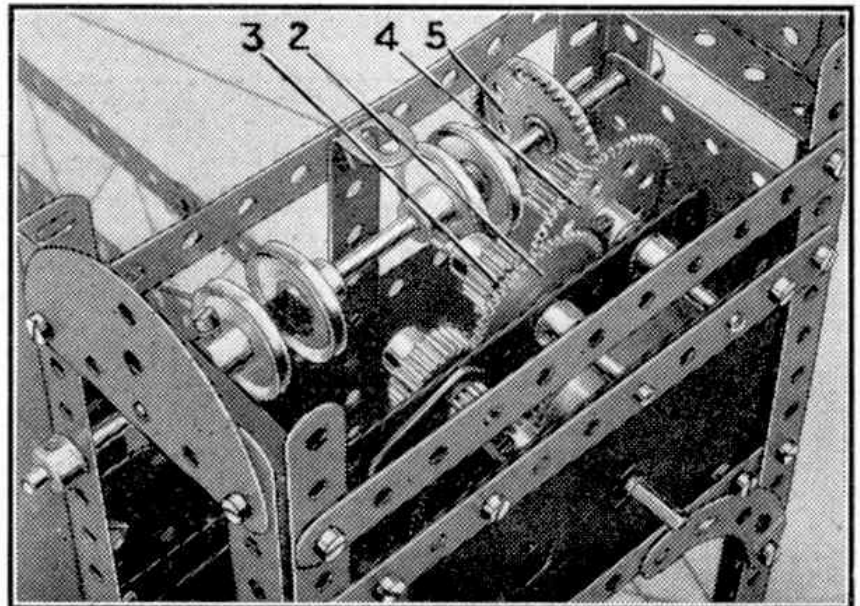


Fig. 2. This illustration shows the assembly of the gearing and position of the driving Motor in the beam bridge.

consisting of a $4\frac{1}{2}'' \times 2\frac{1}{2}''$ and a $2\frac{1}{2}'' \times 2\frac{1}{2}''$ Flexible Plate. The top is filled with a $5\frac{1}{2}'' \times 2\frac{1}{2}''$ and a $5\frac{1}{2}'' \times 1\frac{1}{2}''$ Flexible Plate, and these are attached to $3\frac{1}{2}'' \times \frac{1}{2}''$ Double Angle Strips 6, and also by Angle Brackets to the front and back plates. An arch is formed by two $5\frac{1}{2}''$ Strips and $2\frac{1}{2}''$ Curved Strips that are connected by a $1\frac{1}{2}''$ Strip. The 1" Pulley representing the lamp is attached to the $1\frac{1}{2}''$ Strip by an Angle Bracket. Two $1'' \times 1''$ Angle Brackets bolted to the front of the approach form stops upon which the bridge rests when in the lowered position.

The roadway of the span consists of two $12\frac{1}{2}''$ Strip Plates edged by $12\frac{1}{2}''$ Angle Girders. To the Angle Girders $3\frac{1}{2}''$ Strips are bolted diagonally and these are connected by two 8" compound strips made by joining $5\frac{1}{2}''$ and 3" Strips. Formed Slotted Strips are attached to the compound strips by Obtuse Angle Brackets, and the $\frac{1}{2}''$ Bolts joining them also carry

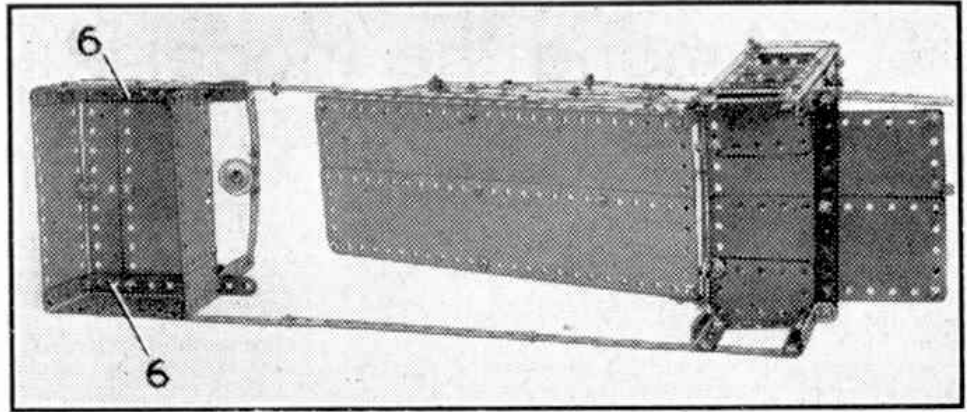


Fig. 3. An underneath view of the bridge.

$\frac{3}{4}''$ Contrate Wheels representing lamps. Cord is tied to the sides of the span to represent bracing as shown. The span is pivotally attached by lock-nutted bolts to Angle Brackets bolted to the Angle Girders of the tower.

The beam is formed by bolting two $12\frac{1}{2}''$ Strips, extended by $5\frac{1}{2}''$ Strips 7, to Flanged Sector Plates. These Sector Plates are connected by $2\frac{1}{2}'' \times \frac{1}{2}''$ Double Angle Strips and extended upwards by $2\frac{1}{2}''$ Strips. The Strips are connected by a Double Angle Strip, the bolts also holding $12\frac{1}{2}''$ Strips, which are attached five holes from the end of the compound strip. The beam pivots on a 6" compound rod formed by two 3" Rods connected by a Rod Connector. Strips 8 are compound, each consisting of a $5\frac{1}{2}''$ and a $2\frac{1}{2}''$ Strip, and they are joined by a Pivot Bolt 9 and a $\frac{3}{4}''$ Bolt 10, which also carry $\frac{1}{2}''$ Pulleys. The Cords by which the span is raised are attached loosely to the $\frac{1}{2}''$ Pulleys and then tied to the operating Rod in the tower, between the 1" Pulleys.

The handrails of the approach on which the span rests are formed by Rods passed through $2\frac{1}{2}''$ Strips bolted to the front and rear plates. The Rods are held in position by Spring Clips.

Parts required to build model Beam Bridge: 12 of No. 1; 13 of No. 2; 4 of No. 3; 2 of No. 4; 10 of No. 5; 2 of No. 6a; 4 of No. 8; 2 of No. 10; 14 of No. 12; 2 of No. 12a; 4 of No. 12c; 1 of No. 14; 2 of No. 15b; 2 of No. 16; 2 of No. 17; 5 of No. 22; 1 of No. 23; 1 of No. 23a; 9 of No. 35; 118 of No. 37; 12 of No. 37a; 15 of No. 38; 1 of No. 40; 2 of No. 48; 6 of No. 48a; 2 of No. 48b; 1 of No. 52; 2 of No. 53; 2 of No. 54; 4 of No. 59; 2 of No. 80c; 2 of No. 90; 4 of No. 90a; 2 of No. 111a; 4 of No. 111c; 1 of No. 115; 1 of No. 147b; 2 of No. 188; 4 of No. 189; 2 of No. 190; 1 of No. 191; 4 of No. 192; 2 of No. 197; 1 of No. 213; 2 of No. 214; 4 of No. 215; 1 No. 1 Clockwork Motor; Gears Outfit "A."

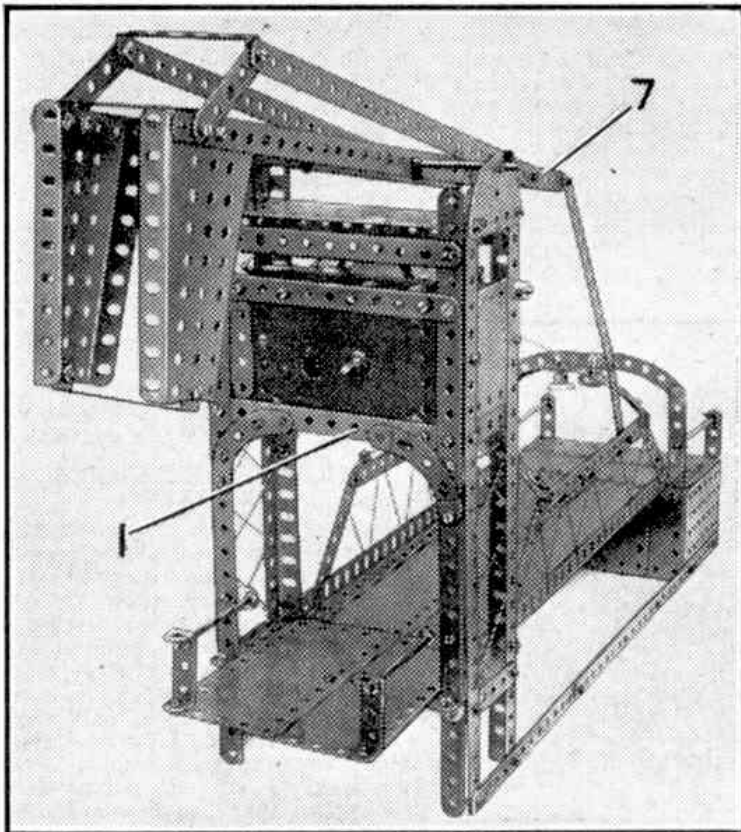


Fig. 4. A semi-end view of the beam bridge.