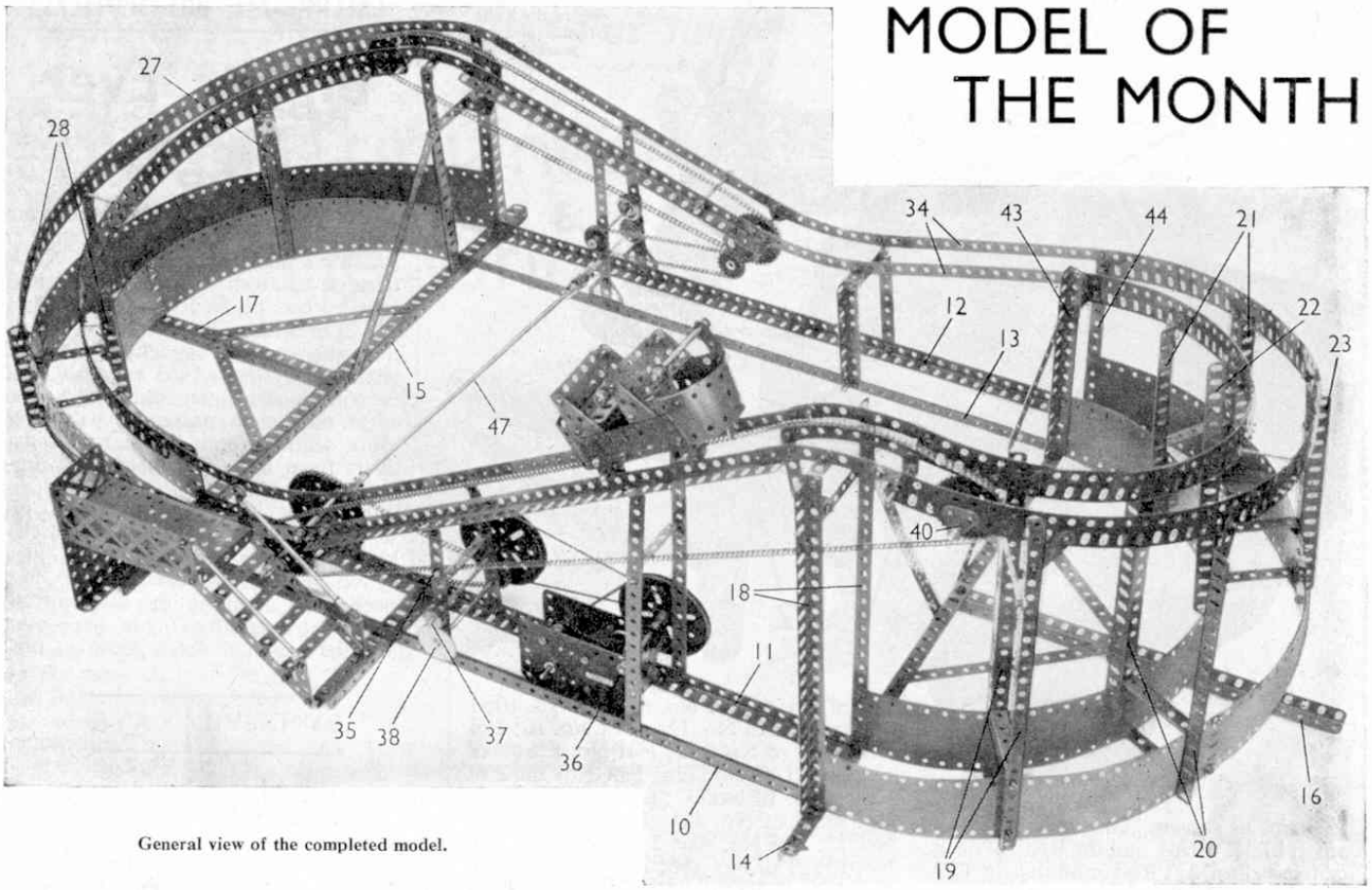
MODEL OF THE MONTH



General view of the completed model.

MECCANO SCENIC RAILWAY

SOME of the most productive sources of ideas for Meccano models are the fairground and amusement arcades that form popular features of many seaside resorts. There must be few of us who do not have happy memories of jolly and exciting trips on huge roundabouts, scenic railways, oscillating boats, octopus and "Trip to the Moon" machines, to mention only some of the numerous amazing and often ingenious devices provided for our

BY SPANNER

enjoyment when on holiday, and what fun it is to spend a few hours in riding first on one and then on another of these jolly machines. Now, alas, holidays are over for most of my readers, but during the long, dark evenings of autumn and winter those of us who are Meccano enthusiasts can live again those happy summer hours by building for ourselves a model of one of these machines in miniature, and what is more, when it is completed we can set it working just like the real thing!

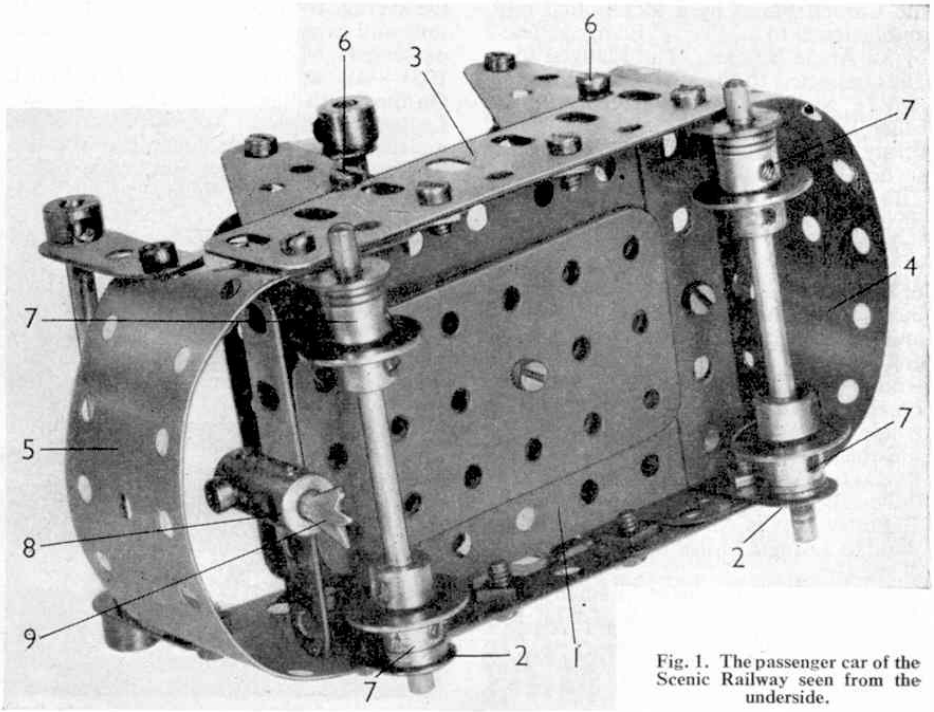
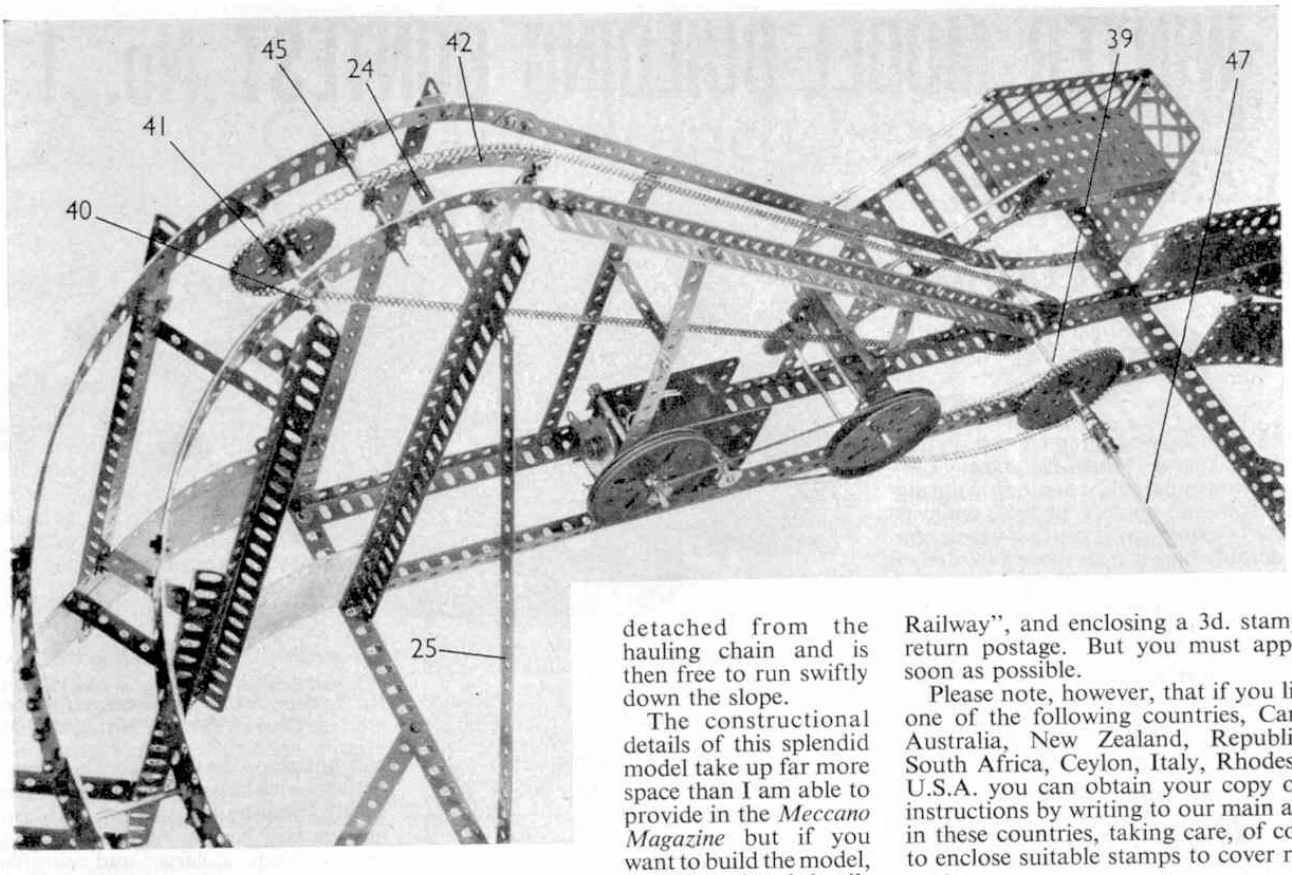


Fig. 1. The passenger car of the Scenic Railway seen from the underside.

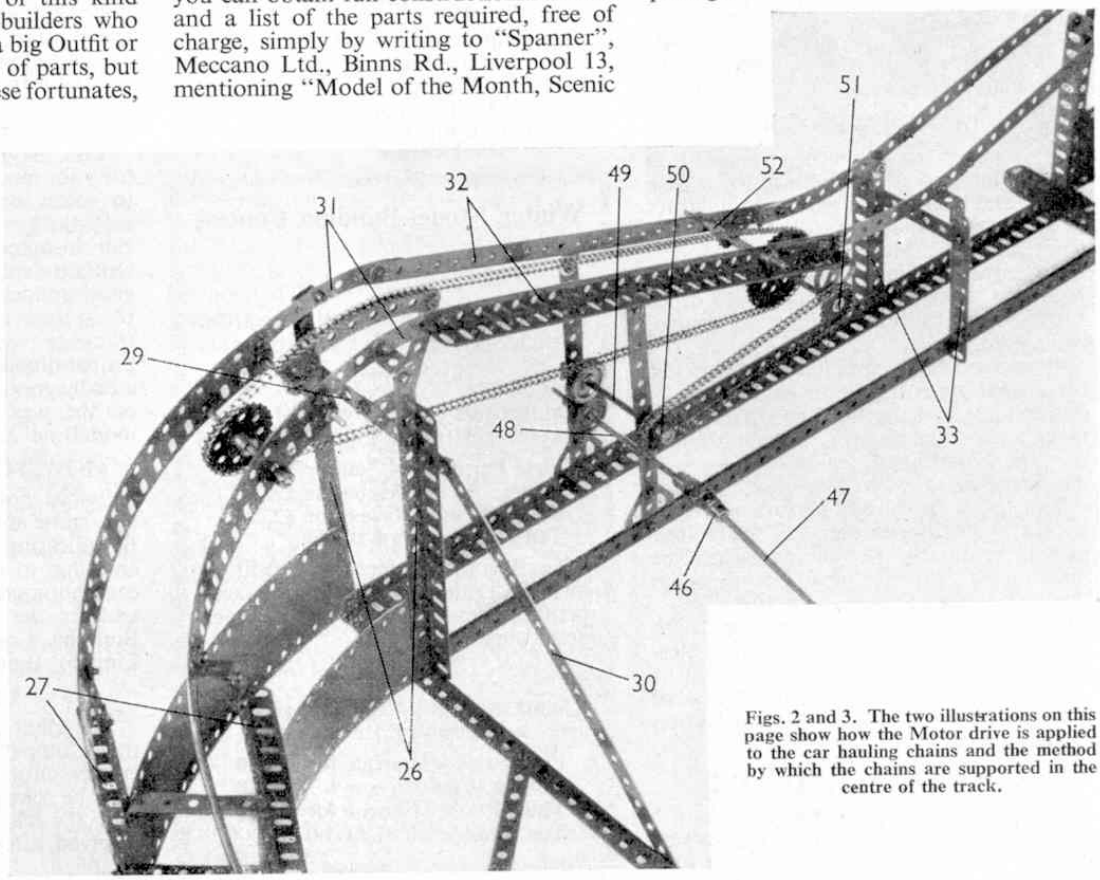


Admittedly most models of this kind are possible only to model-builders who are lucky enough to possess a big Outfit or a large and varied collection of parts, but if you happen to be one of these fortunates, I am sure you will find plenty to interest you in building and operating the attractive Scenic Railway I have designed for you and which is shown complete at the top of the opposite page. The model is not difficult to put together and it is one that can be operated by either a Clockwork or an Electric Motor, although the latter type is the more suitable and the one actually used in the model illustrated.

If you study the complete illustration, you will notice that the track of the Railway includes two steep climbing sections. When the car reaches the top of these it runs swiftly around the downward inclined track at the ends of the model, until it comes in contact with an ingenious chain hauling device that hauls it up the ascending incline. At the top of the climb the car automatically becomes detached from the hauling chain and is then free to run swiftly down the slope.

The constructional details of this splendid model take up far more space than I am able to provide in the *Meccano Magazine* but if you want to build the model, you can obtain full constructional details and a list of the parts required, free of charge, simply by writing to "Spanner", Meccano Ltd., Binns Rd., Liverpool 13, mentioning "Model of the Month, Scenic Railway", and enclosing a 3d. stamp for return postage. But you must apply as soon as possible.

Please note, however, that if you live in one of the following countries, Canada, Australia, New Zealand, Republic of South Africa, Ceylon, Italy, Rhodesia or U.S.A. you can obtain your copy of the instructions by writing to our main agents in these countries, taking care, of course, to enclose suitable stamps to cover return postage.



Figs. 2 and 3. The two illustrations on this page show how the Motor drive is applied to the car hauling chains and the method by which the chains are supported in the centre of the track.

MODEL OF THE MONTH.

SCENIC RAILWAY.

Illustrated in the October issue of the Meccano Magazine. (1961).

Building the Car

The base of the car is a $3\frac{1}{2}$" x $2\frac{1}{2}$" Flanged Plate 1 to each end of which is bolted a $2\frac{1}{2}$" x 1" Double Angle Strip 2. The sides of the car are $3\frac{1}{2}$" Flat Girders 3 which are fixed to the flanges of the Plate 1, at the same time bolting in two $5\frac{1}{2}$" x $1\frac{1}{2}$" Flexible Plates 4 and 5. These form the back and front of the car. Two 3" x $1\frac{1}{2}$" Flat Plates are then bolted underneath the Flanged Plate by means of a $\frac{3}{8}$" Bolt. These are to give extra weight and stability. Two $2\frac{1}{2}$" x $1\frac{1}{2}$" Triangular Flexible Plates are bolted along with the Flat Girders 3, and between each pair of these a $2\frac{1}{2}$" x $1\frac{1}{2}$" Flanged Plate is bolted. This has a $2\frac{1}{2}$" x $\frac{1}{2}$" Double Angle Strip fixed across its centre. The Flanged Plate is fixed in place by the Bolts 6. A $2\frac{1}{2}$" Flat Girder is then bolted to each of the Double Angle Strips. These form the seats. Next, two $1\frac{1}{2}$" Strips are bolted to the $5\frac{1}{2}$" x $1\frac{1}{2}$" Flexible Plate 5 at the front of the car. A 3" Rod is journalled in these and held in place by Collars to form the front handrail. The handrail for the rear seat is made by fixing two Fishplates to the top of the Flanged Plate which is the back of the front seat. A 3" Rod retained by Collars is held in the Fish-plates. The wheels on which the car runs are built up by placing a $\frac{3}{4}$" Washer (Part No. 38D) between two Collars on a 3" Rod. The outer Collars 7 should be fixed with 7/64" Grub Screws and not the standard 5/64" Grub Screws as this part actually comes in contact with the rails and the larger Grub Screws would cause the car to run inefficiently. The Rods are journalled in the lugs of the Double Angle Brackets 2, spacing the Collars 7 from the Double Angle Bracket by two Washers. A Coupling 8 is bolted to the Flanged Plate 1 and in it is held a Centre Fork 9 with its centre prong bent a little towards the rear of the car.

Framework of the Railway.

Four $24\frac{1}{2}$" Angle Girders 10, 11, 12 and 13, are bolted to two $24\frac{1}{2}$" Angle Girders 14 and 15; they are fixed in pairs, bolted in the fifth and ninth holes of the Angle Girders. Two $12\frac{1}{2}$" Angle Girders 16 and 17 are bolted to the centres of the Angle Girders 14 and 15 and they are braced by two $7\frac{1}{2}$" Strips as shown. This should provide a good sturdy base to which the rails and their supports can

be fixed as follows. Two 12½" Angle Girders 18 are bolted to the Angle Girders 10 and 11, and to the Angle Girder 13 is bolted a 7½" Angle Girder 43. To the Angle Girder 12, is bolted a 5½" Angle Girder 44. Three 12½" x 2½" Strip Plates are bolted end-to-end and fixed in a semi-circle to the outside Girder 18 and the Angle Girder 44. Two 12½" x 2½" Strip Plates are then bolted end-to-end and fixed in a semi-circle to the inside Angle Girder 18 and the Angle Girder 43. Next bolt to the Strip Plates two 12½" Angle Girders 19. These should be spaced from Angle Girders 18 by ten holes on the outside Strip Plate and seven on the inside. The Girders are braced by two 2½" x ½" Double Angle Strips. Two 9½" Angle Girders 20 are then bolted to the Strip Plates. These also are spaced ten holes on the outside and seven on the inside from the Angle Girders 19. They are also braced by two 2½" x ½" Double Angle Strips. Two 7½" Angle Girders 21 are bolted to the Strip Plates at points seven holes on the inside and ten holes on the outside from the Angle Girders 43 and 44. They are braced by two 2½" x ½" Double Angle Strips as are the 9½" Angle Girder 22 and the 7½" Angle Girder 23. The Strip Plates are fixed to the Angle Girder 16 by Angle Brackets.

The Angle Girders 18 are braced near the top by a 4½" Strip 24, which is fixed to the two Angle Girders and should have one hole protruding on the inside of the structure; a 12½" Strip 25 is then bolted between the protruding hole of Strip 24 and the centre of the Angle Girder 14.

Fixed to the top of the Angle Girders 18 by ½" Reversed Angle Brackets are two 4" Curved Strips. The Curved Strips are fixed to the main rails by Fishplates. The inside rail is formed by two 12½" Flat Girders, which are joined together by a 2" Flat Girder and fixed to the Angle Girder 43 by a ½" Reversed Angle Bracket that is bolted four holes from the top. This rail is fixed by ½" Reversed Angle Brackets. The outside rail is formed in exactly the same way but having an extra 7½" Flat Girder bolted on the end. This rail is fixed to its supports by 2" Slotted Strips. A 12½" Strip is fixed between the Angle Girders 43 and 14. The two rails are tied together in the middle by a Screwed Rod. The outer rail, when fixed into position, should be slightly higher than the inside rail so that the car will lean inwards. It is advisable to test the car on the rails as you are constructing them to ensure that it runs smoothly.

Next, two 7½" Angle Girders 26 are bolted to the Angle Girders 12 and 13, and between these and the ends of the Angle Girders 10 and 11 are bolted two built-up Strip Plates,

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which are constructed in exactly the same way as those at the opposite end of the structure. Two $5\frac{1}{2}$" Angle Girders 27 are fixed to the Strip Plates spaced twelve holes from the Girders 26 on the inside and sixteen holes on the outside. They are braced by two $2\frac{1}{2}$" x $\frac{1}{2}$" Double Angle Strips. Next two $4\frac{1}{2}$" Angle Girders 28 are fixed to the Strip Plates. These also are braced by Double Angle Strips. The Angle Girders 26 are braced three holes from the top by a $4\frac{1}{2}$" Strip 29. This should overlap one hole on the inside so that a $9\frac{1}{2}$" Strip 30 can be bolted between it and the Angle Girder 15 to brace the structure.

The Angle Girders 26 are extended at the top by 2" Strips and fixed to these Strips by $\frac{1}{2}$" Reversed Angle Brackets, are two 4" Curved Strips 31. Next bolt to the Curved Strips 31 two $12\frac{1}{2}$" Angle Girders 32. The Angle Brackets are supported on $5\frac{1}{2}$" Strips, which are bolted to Flat Trunnions that in turn are bolted to the Angle Girders 12 and 13. The Strips are attached to the Angle Girders 32 by Angle Brackets. Next, two $4\frac{1}{2}$" Angle Girders 33 are bolted to the Angle Girders 12 and 13. They are spaced fourteen holes from the Angle Girders 43 and 44. They are braced at the top by a $3\frac{1}{2}$" Strip. To the top of the inside Angle Girder 33 is bolted a $\frac{1}{2}$" Reversed Angle Bracket, and to the outside Angle Girder is bolted a Fishplate. To the $\frac{1}{2}$" Reversed Angle Bracket and the Fishplate are bolted two $5\frac{1}{2}$" Curved Strips that in turn are bolted to the Angle Girders 32. To the other end of the Curved Strips are bolted $7\frac{1}{2}$" Strips 34 which likewise are bolted to the Flat Girders fixed to the Angle Girders 43 and 44. The rails, supported by the Angle Girders 27 and 28, are then fitted. They are built in the same way as the rails at the opposite end of the structure and are bolted to the Curved Strips 31 and then to the Angle Girders, being bolted to the inside Girders by $\frac{1}{2}$" Reversed Angle Brackets and to the outside by 2" Strips. They are then fixed to the ends of the Strip Plates. The inside rail is bolted to the Strip Plate by means of a $\frac{1}{2}$" Reversed Angle Bracket. The outside rail is bolted straight on to the Strip Plate, at the same time bolting in on each rail, $5\frac{1}{2}$" Curved Strips. To these Curved Strips are bolted two further $5\frac{1}{2}$" Curved Strips and they would overlap four holes. Bolted between these Curved Strips and the Curved Strips at the top of the Angle Girders 18, are two $18\frac{1}{2}$" Angle Girders. These are supported on two $5\frac{1}{2}$" Strips 35 and two $9\frac{1}{2}$" Strips as shown. They are braced by $2\frac{1}{2}$" x $\frac{1}{2}$" Double Angle Strips. This completes the framework of the railway.

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The platform for gaining access to the car is constructed as follows. A $3\frac{1}{2}$" x $2\frac{1}{2}$" Flanged Plate is bolted to the Angle Girder 15. They should overlap two holes. A $5\frac{1}{2}$" x $2\frac{1}{2}$" Flanged Plates is bolted to the top, at the same time bolting on a $2\frac{1}{2}$" Braced Girder that forms the back rail. The side rail is a $5\frac{1}{2}$" Braced Girder. A $5\frac{1}{2}$" Angle Girder is bolted underneath the Girders 10 and 11, and to this is bolted a $2\frac{1}{2}$" x $\frac{1}{2}$" Double Angle Strip which should overlap the end of the Angle Girder by one hole. $5\frac{1}{2}$" Strips are then bolted between the lugs of the $2\frac{1}{2}$" x $\frac{1}{2}$" Double Angle Strip and the end holes in the $5\frac{1}{2}$" x $2\frac{1}{2}$" Flanged Plate, at the same time bolting 2" Strips to the lugs of the Double Angle Strip, and also a 2" Strip is bolted to the end hole of the Flanged Plate. The steps are formed by bolting $2\frac{1}{2}$" Double Angle Strips to the $5\frac{1}{2}$" Strips as shown. The handrails are Rods held in Rod and Strip Connectors and bolted between the 2" Strips at the bottom and the 2" Strip and the Braced Girder at the top.

The Drive.

An E15R Electric Motor is bolted to the Angle Girders 10 and 11. A $\frac{1}{2}$" Pulley Wheel fixed on its spindle is arranged to drive a 3" Pulley on a 4" Rod 36. Another $\frac{1}{2}$" Pulley Wheel on Rod 36 drives a second 3" Pulley on a $4\frac{1}{2}$" Rod 37. A $\frac{3}{4}$" Pinion on the end of Rod 37 drives a 50-tooth Gear Wheel on the Rod 38. A $\frac{3}{4}$" Sprocket Wheel on Rod 38 Drives by Chain, a 3" Sprocket Wheel on Rod 39, which also carries a 2" Sprocket Wheel positioned in the centre of the rails. A Universal Coupling is fixed to the inner end of the Rod 39.

The part now to be constructed is the chain arrangement that hauls the car to the top of the incline. Two 1" Triangular Plates 40 are bolted to the Flat Girders that form the rails, to provide the bearings for a $3\frac{1}{2}$" Rod carrying a 2" Sprocket Wheel 41. Two 4" Curved Strips 42 are bolted together with Fish-plates between them. One of the Fishplates is held by nuts on a 3" Screwed Rod 45, which is fixed with nuts in the Flat Girders. The other Fishplate is extended by a 2" Slotted Strip bolted to a $1\frac{1}{2}$" x $\frac{1}{2}$" Angle Bracket which is fixed to the $4\frac{1}{2}$" Strip 24. A length of Sprocket Chain is placed around the 2" Sprocket Wheel between the rails on Rod 39, with the Chain lugs facing inwards. The

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Chain is then taken over the $4\frac{1}{2}$" Curved Strips/and around the Sprocket Wheel 41. The ends of theChain can then be linked together. The 4" Curved Strips should be adjusted to keep the Chain in contact with the Centre Fork 9 fixed to the car. A similar Chain drive is arranged on the opposite side of the track to pull the car up the slope. A Universal Coupling 46 is secured to the Rod 48 and connected to the Rod 47. The other end of the Rod 47 is fixed in the Universal Coupling on Rod 39.

On Rod 48 is a 1" Gear that meshes with another 1" Gear on the Rod 49. Rod 49 carries also a 1" Sprocket Wheel 50 that drives another 1" Sprocket Wheel 51 on a $3\frac{1}{2}$" Rod mounted in Trunnions bolted underneath the $12\frac{1}{2}$" Angle Girders 32. Fixed on this $3\frac{1}{2}$" Rod is a 2" Sprocket Wheel that drives the car hauling chain. A $3\frac{1}{2}$" Rod 52 is arranged in each of the two car hauling drives to raise the Chains so that the Centre Fork 9 on the car engages them and the car is hauled up the slopes.

Parts required to build the Scenic Railway:- 1 of No. 1; 4 of No. 1a; 6 of No. 1b; 6 of No. 2; 2 of No. 2a; 3 of No. 3; 2 of No. 5; 6 of No. 6; 3 of No. 6a; 6 of No. 7; 2 of No. 7a; 8 of No. 8; 3 of No. 8a; 6 of No. 8b; 4 of No. 9; 5 of No. 9a; 11 of No. 10; 15 of No. 12; 2 of No. 12b; 1 of No. 13; 5 of No. 15a; 1 of No. 15b; 4 of No. 16; 1 of No. 16a; 6 of No. 16b; 2 of No. 19b; 2 of No. 23a; 1 of No. 25; 1 of No. 27; 2 of No. 31; 305 of No. 37a; 285 of No. 37b; 61 of No. 38; 4 of No. 38d; 2 of No. 46; 19 of No. 48a; 2 of No. 51; 1 of No. 52; 2 of No. 53; 6 of No. 55a; 28 of No. 59; 1 of No. 63; 1 of No. 65; 2 of No. 73; 2 of No. 77; 3 of No. 80c; 1 of No. 81; 6 of No. 89; 8 of No. 89b; 1 of No. 94; 3 of No. 95; 1 of No. 95a; 1 of No. 95b; 2 of No. 96; 1 of No. 96a; 1 of No. 98; 1 of No. 100; 8 of No. 103b; 2 of No. 103d; 2 of No. 103f; 4 of No. 103h; 2 of No. 103k; 2 of No. 108; 2 of No. 111a; 1 of No. 111c; 13 of No. 125; 2 of No. 126; 2 of No. 126a; 2 of No. 140; 1 of No. 186c; 1 of No. 186d; 2 of No. 189; 2 of No. 196; 8 of No. 197; 4 of No. 212; 4 of No. 221. 1 E15R Electric Motor.