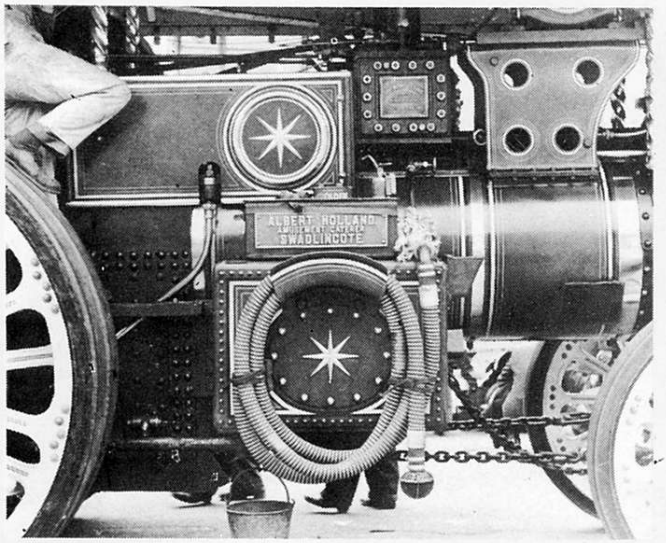


Fig. 1, side elevation of Burrell Scenic Locomotive 'Winston Churchill'. Note size of steam chest by comparison with boiler.

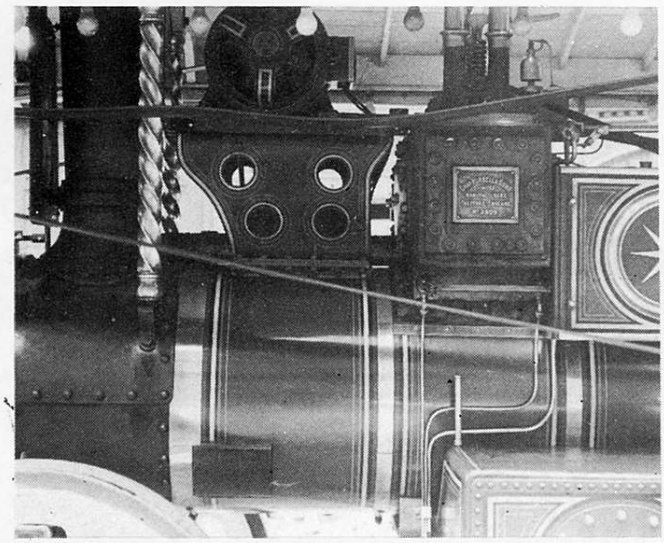


Fig. 2, a nearside view of 'Winston Churchill' showing symmetrical construction.

Part 5 of COLIN HAMILTON'S series on traction engine modelling deals with some of the features found in the central portion of a

SHOWMAN'S ENGINE

HAVING looked at the back and front ends of engines in previous chapters we now go on to examine in detail the midships portion of a typical Burrell Showman's Scenic Engine, using 'Winstone Churchill' once again.

Fig. 1 shows an excellent side elevation from which the proportions of the steam chest can be compared with those of the boiler on which it is mounted and the simplicity of the box-like structure should be noted by Meccano constructors who frequently go for a more ornate and curvacious structure at this point. Fig. 2 shows just how symmetrical is this scenic engine when viewed from the nearside (pavement side in the U.K.), but we need to study Fig. 3 to see that this Burrell design still has room to accommodate twin cylinders side by side, one being the high pressure cylinder (smaller circular end capping disc) and one low pressure cylinder (nearest camera) which makes use of the expanding steam from the high pressure exhaust part. 'Switching' of the steam from the boiler to the high pressure cylinder and then to the low pressure side of the steam chest is carried out by slide-valves outboard of each cylinder (but inside the steam chest) actuated by eccentrics on the main crankshaft. Simple twin quadrant gear allows the slide valves to reverse their phase so that the crankshaft will run in either direction.

Fig. 4 shows an attempt to reproduce a simple steam chest on a Meccano model which simulates, on the nearside, the squared-off box type of construction, but only one cylinder is attempted. End capping for this cylinder is provided by an 8-hole Wheel Disc with a ¾" Washer bolted in its centre. Both of these components are in black finish from earlier Meccano days and readers who have such parts from yesteryear should bear in mind the realism which such parts add to the 'smoky' parts of traction engines and railway locomotives. From Fig. 4 it is obvious that 3" x 1½" Flat Plates form the side shields of the connecting rod and eccentric gear and a crosshead of two Short Couplings on a 1" Rod runs in piston guides made from a 2½" Rod held by Collars to the side Plate and a 2" Rod mounted in a Rod Socket locked to the front plate of the steam chest. A slide for the eccentric connecting rod is simply a Slide Piece running on a 2½" Strip attached by a Fishplate to the steam chest side.

If we now look at Fig. 5 it is clear that our model shows a compromise in construction with a curved form to the 'offside' view of the steam chest. This is achieved quite simply by using a pair of Threaded Bosses internally to which the 8-hole Wheel Discs are attached at their '3 o'clock' and '9 o'clock' positions. A pair of 2½" x 1½" Flexible Plates are trapped under the top and bottom plates of the steam chest and curved over the offside to be fixed to the internal Bosses by an overlaid 1½" Strip and Washer-packed Handrail Supports as shown.

Top plates on traction engine steam chests are the normal place to find mountings for steam whistles, safety valves, regulators, or governors, and vertical exhaust steam pipes.

Fig. 3, the front end of a Burrell steam chest showing high and low pressure cylinder plates.

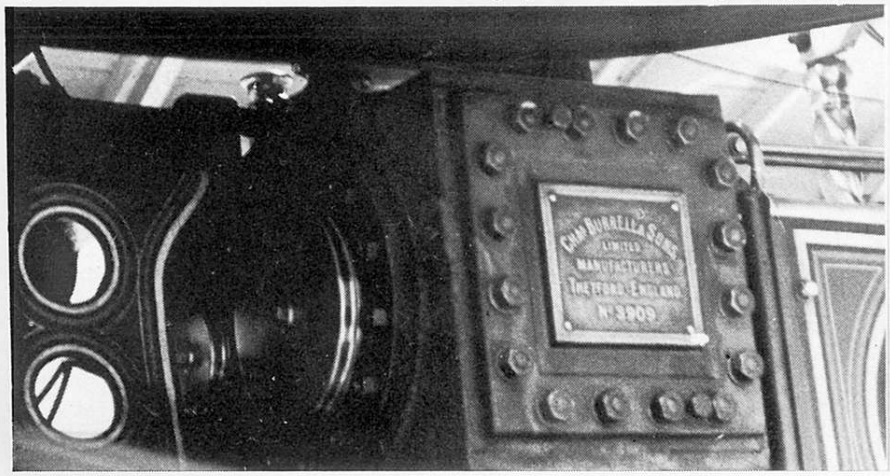
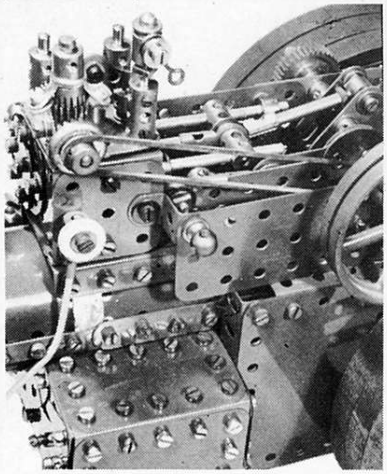


Fig. 4, the steam chest and single cylinder motion on a simple Meccano model.



Figs. 4 and 5 show how these items are modelled in standard Meccano parts. Modelling to this 'scale' (roughly speaking) requires compact construction and the centrifugal governor in this case uses a small Contrate Wheel drive to a 15t Pinion, the actual boss of the Contrate forming the drive pulley connected by a 6" Driving Band to a ½" fixed Pulley on the crankshaft. A Small Fork Piece has its lugs splayed outwards as shown and weighted with Set Screws attached by single Nuts to form bob-weights. The friction between the boss face of the 15t Pinion and that of the Fork Pieces is sufficient to give a realistic rotation on the 1⅛" Bolt set in the Coupling below.

A complete steam whistle can be seen in Fig. 4. Below the top plate of the steam chest, two Long Threaded Pins are set into the ends of a pair of 3" Girders running across the top. A standard Threaded Pin is similarly attached to support the Coupling forming the post of the steam whistle in the opposite corner of the steam chest at the top, (see Figs. 4 and 5). A 1½" Square Plate is dropped over the three Threaded Pins and two Couplings on the offside Long Threaded Pins clamp this Plate in place. Completion of the steam whistle is via a second standard Threaded Pin on to which is screwed a Threaded Boss fitted with an electrical Contact Screw, packed up by Washers, and a Wire Hook is trapped by Washers on a Set Screw in the side of the Boss. If a piece of Meccano Cord is attached and run back to the driver's position, the whistle is completed.

Location and design of these accessories gives the modeller great scope to exercise his choice of standard 'brassware', etc. to simulate the items referred to above and if the modeller has no access to the real locomotives, then library books should provide numerous illustrations of all these accessories. Illustrations in these articles can only begin to point the modeller in the right direction. Similarly, construction of the crankshaft in a Meccano traction engine can be simple or complex. That used in the excellent Fowler Ploughing Engine featured on the cover of the previous M.M. is a solid Meccano Axle Rod making use of four Meccano Eccentrics to give the twin cylinder and valve-gear motion required. Fig. 4 shows how a built-up crankshaft is made for a single cylinder engine. A start is made by setting up two Double Arm Cranks on any Meccano Rod and connecting the non-slotted ends by a ¾" Bolt and lock-nuts, spaced by appropriate Washers to permit a Collar to rotate freely. A standard Threaded Pin is fixed in a Rod Connector and screwed partially into the Collar. It is then a simple matter to extend the connecting rod from the Rod Connector as required.

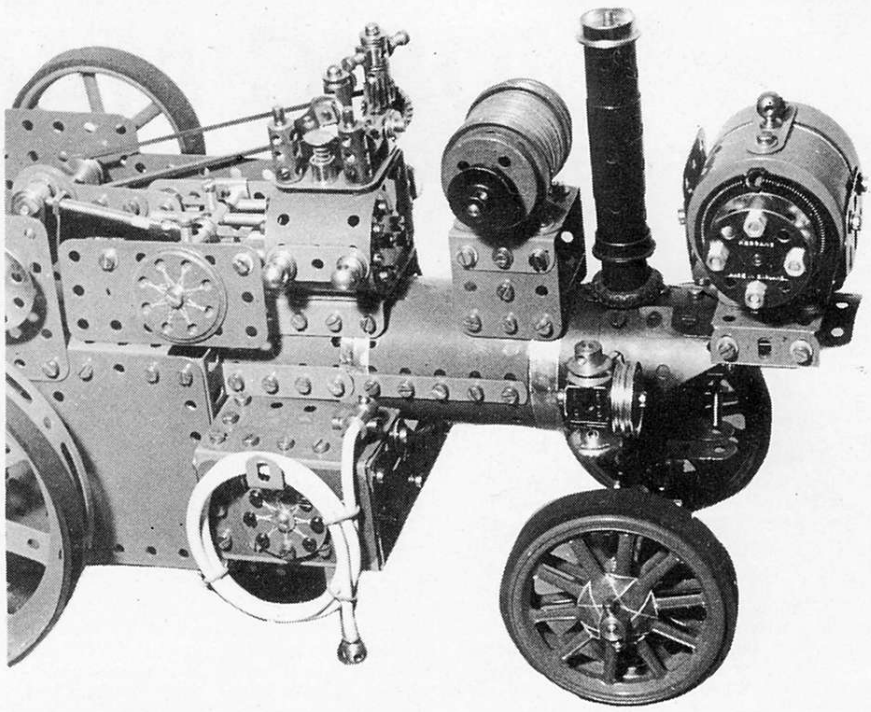


Fig. 5, an offside view of a Meccano showman's locomotive showing general features and ornamentation. Note simulated water hose and belly tanks.

Once the pair of Double Arm Cranks have been securely lock-nutted and checked they may be removed from the Axle Rod on which they were set up and then fitted with separate lengths of Meccano Rod to suit the crankshaft bearings. These bearings should be substantial and carefully set up. Double Arm Cranks make useful crankshaft bearings, or multiple layers of short strips, but they should always be set up by using a selected straight Meccano Axle Rod to ensure no binding when these reinforced bearings are bolted up at the final stages. Advanced modellers are able to extend this technique using pairs of Couplings as the webs of the crankshaft to make up twin crank jobs very effectively. Correct locking with appropriate grub screws can ensure that these built-up crankshafts run truly and for long periods at model shows.

Long-distance traction engines, including showmen's engines, had to plan 'water stops' very carefully and the fitting of belly tanks to augment the normal bunker was common practice for these road locomotives. Figs. 1 and 6 show the belly tanks on the Burrell together with the means of topping-up by suction hose from the local duck-pond, river or canal. Reproductions of these tanks in Meccano are shown in Figs. 4 and 5 where, again, Meccano Flexible Plates of yesteryear are used for choice by virtue of the absence of elongated holes. In addition, brass-finished Set Screws of the period add a bright touch to the appearance. A small diversion from standard parts incorporates about 50cm of Woolworths spring curtain cord to simulate the suction hose on the model as this particular plastic-covered spring cord takes the threaded portion of a Handrail Support internally to act as the suction filter and the other end of the curtain cord fits nicely into the bore of a Handrail Coupling mounted on a Threaded Pin to represent the hose connector on top of the belly tank.

General decoration on a scenic engine again gives great scope to the Meccano modeller's initiative and creative skill. The 'Star' pattern common to Burrell tanks and sideplates is reproduced here on the Meccano model by 8-hole Wheel Discs laced in the pattern shown by gold-coloured sewing thread, the same as that used to decorate the spokes of the front wheels.

When the 'scale' of the model goes up a size, many of the Meccano circular parts such as Conical Discs, Wheel Flanges and Curved strips may be utilised for embellishing flywheels and side panels on showmen's engines and examples of this skill are regularly seen at the Henley Meccano Show. Add to this the very wide range of colour contrasts available through changes in the Meccano colour schemes over the past three decades and the scope is enormous.

As in other road vehicles, showmen's engines need gears and differentials and these will be dealt with in the next article.

Fig. 6, a close-up of the Burrell belly tank showing typical 'star' ornamentation.