Allison

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'Newsletter'

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Christmas Party Report.

Held early in December the Christmas Party and Club running day was an enjoyable event. The weather was kind and some of the members had their steam locos on the track. These included John Hurst's "King" and Warwick Allison's "Maisie". Santa arrived by train hauled by Jim Hyde's D 57 and was the centre of attraction for the youngerparticipants.

The combined party and afternoon tea was most enjoyable and our thanks is extended to Diane Lee and the other ladies who organised and prepared the goodies.

I am sure that all who attended thoroughly enjoyed the afternoon and evening.

CHARITY DAY. CHARITY DAY. CHARITY DAY.

Our first Charity Day for the year will be held for the Spastic Centre on Saturday 7th of March. A good roll up of members and locomotives will ensure the success of the day.

D 5706 3½ " Gauge

written by Jim Hyde.

Having decided to construct another miniature steam locomotive and having been offered the loan of a set of N.S.W.G.R. drawings of the D 57 class I commenced fabrication of the locomotive frames in September 1981.

The main frame, cut from 10 mm thick black flat bar was machined and then welded to form a rigid one piece structure similar to the cast steel frame of the prototype.

Patterns were made for the outside cylinders and main driving wheels, the castings obtained were subsequently machined. The centre cylinder was machined from a block of steel fitted with a cast iron liner and piston valve liner. Piston valve liners were also fitted to the outside cylinders. The three cylinders each have a bore of 35mm (1 3/8 ") stroke 41mm (1 5/8 ") with 19mm (3/4 ") piston valves. The valve gear and conjugating beam system for the centre cylinder follow the prototype design.

An all copper, copper alloy round top boiler 127 mm (5 ") O.D. 610 mm (24 ") overall length with a combustion chamber and wide firebox was constructed for a design pressure of 700 KPa. (101.5 psi)

Thirteen 11mm (7/16 ") firetubes, four 19mm (3/4 ") flue tubes together with six 16 mm (5/8 ") water tubes to support the D shaped combustion chamber are fitted to the boiler.

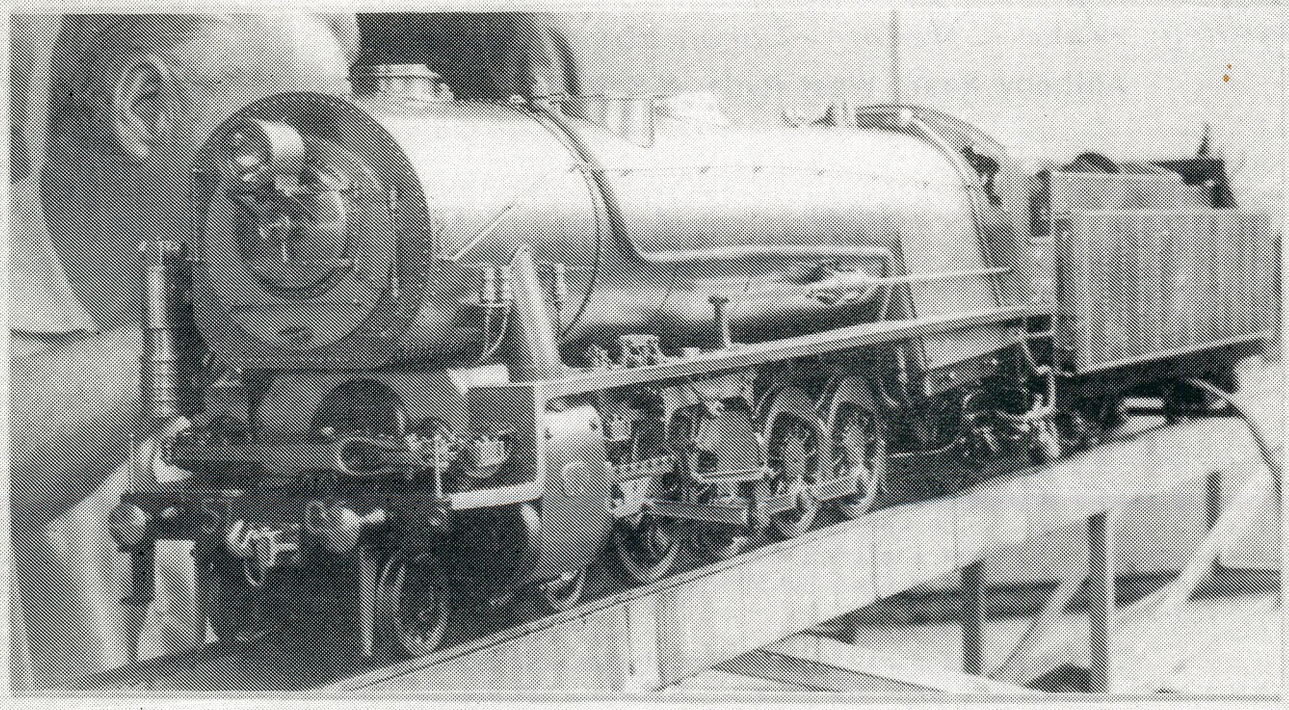
The grate area is 19,500 mm^2 (30 sq.in.) and the heating surface 352,000 mm^2 (546 sq.in.) approximately.

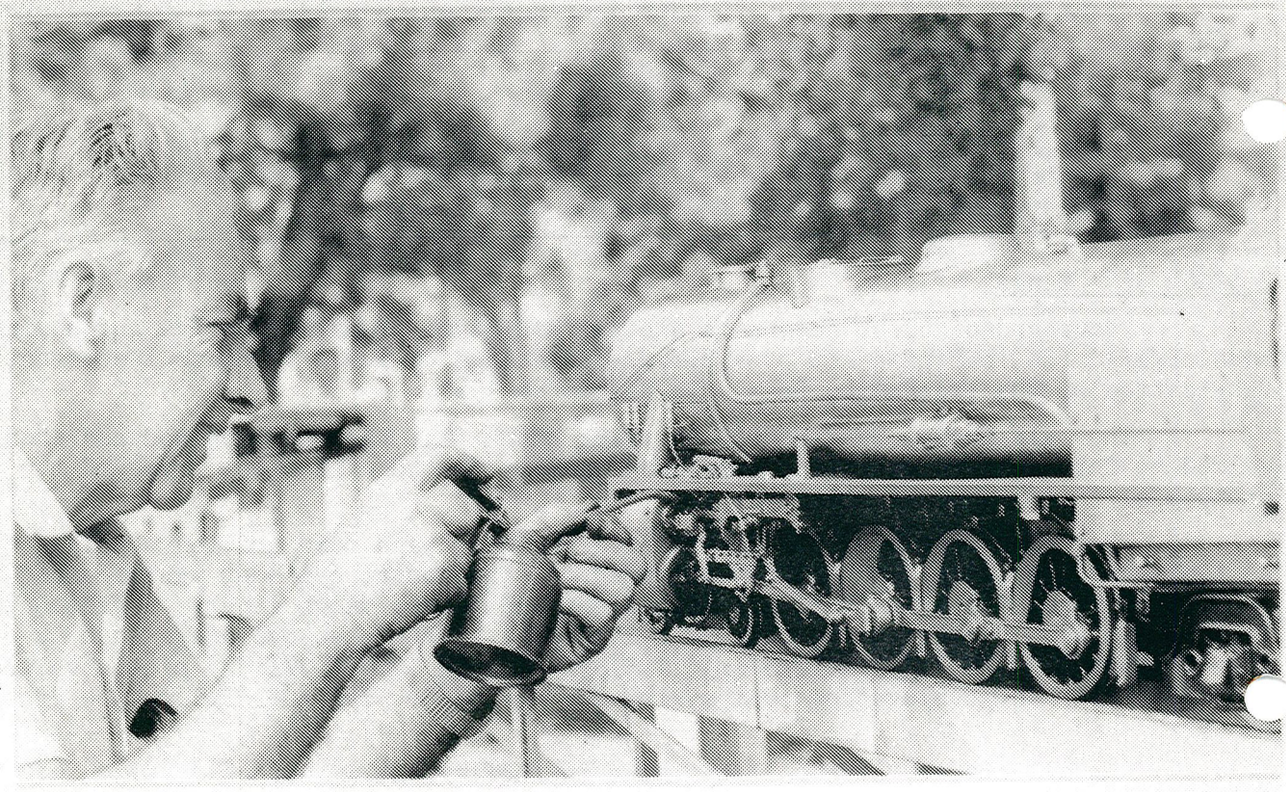
A split smokebox based on Ted Esdaile's design for his "Enterprise" locomotive was fabricated to facilitate the installation of the 6.3 mm (1/4 ") stainless steel superheater elements.

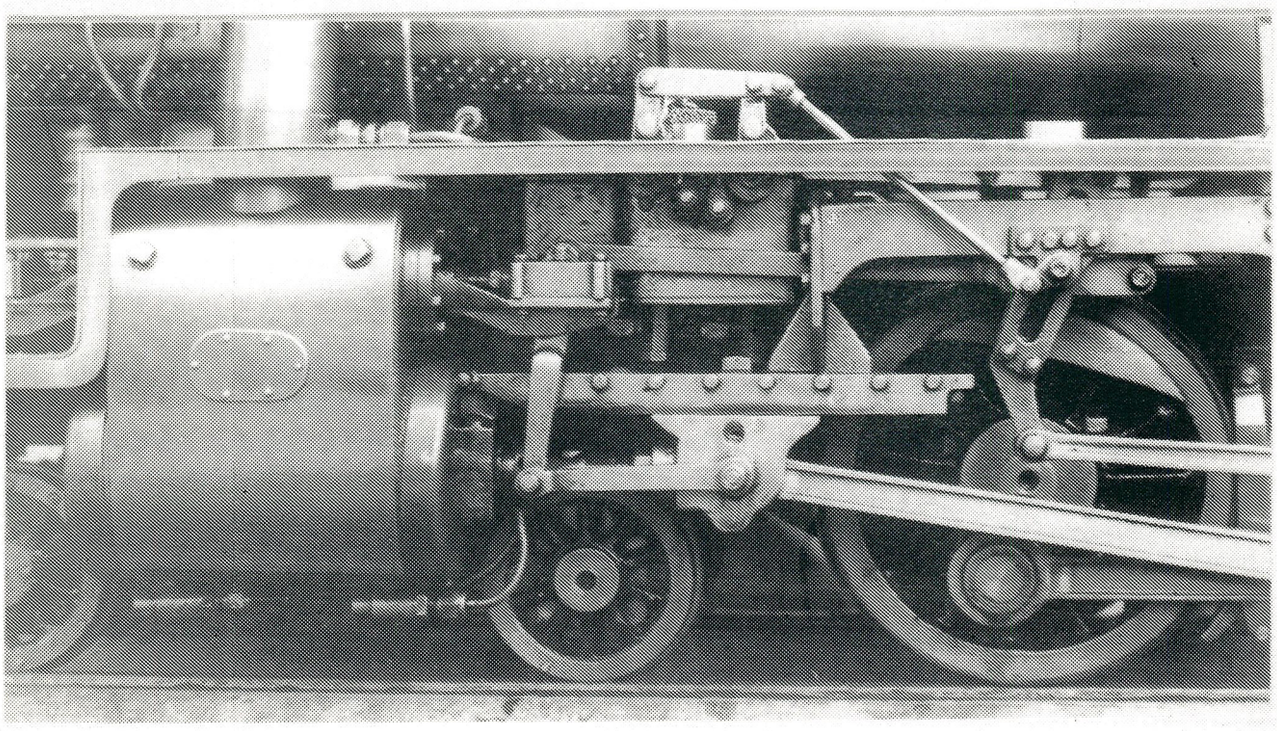
A 1/4 " B.S.P. ball valve suitably modified and bolted to the underside of the dome cover provides an effective steam tight regulator valve.

Stainless steel was used for the smokebox, boiler cleading, cab and tender and it was intended to have all these items black chrome plated, however from enquiries from the plating trade this could not be done in the necessary black colour. They also considered the combination of copper and brass items, rivets etc., with stainless steel was not a practical plating proposition so the locomotive and tender will remain unpainted.

Editors note. The locomotive runs well and looks very impressive as you can judge from the photographs reproduced on the following page.







Duty Roster.

Mar. '87. A.Mackellar, V.Scicluna, P.Ferguson, E.Holmes, J.Stevens, D.Price, K.Sewell.
Apr. '87. M.Haynes, M.McAulay, N.Sorrenson, J.Sorrenson, B.Courtenay, D.Gash, W.Hamilton.
May '87. J.L.Hurst,J.Davies, R.Lee, P.Shiels, J.Lyons, P.Brotchie, M.Yule.
Jun. '87. B.Hurst, B.Tulloch, A.Eyre, J.Hyde, B.Rawlinson, T.Esdaile, G.Esdaile.

Gate Roster.

March. W.Allison, April. B.Courtenay, May. M.Tyson, June. J.Sorrenson.

Items of interest.

In the last Newsletter it was reported that Bill Richards was recovering from heart surgery. Bill had recovered enough to be back in the signal box for the November running day. Not a bad effort Bill, to fit in all that major medical work and not miss a public running day, well done.

Easter Meet.

Our April public running day will fall on Easter Saturday. The grounds will be open on Good Friday for members and friends. The tracks will be available for running over both days, morning and afternoon tea will be available but no meals will be prepared, B.Y.O. Club house available for camping, no charges.

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Ted Esdaile is much better again and we should soon see his new 5" gauge " Lion " on the tracks.

Allan Cottrell has trialed his 2 ½ " gauge C 36. I have been told it runs very well.

Bernard Courtenay, as well as making good progress with his S.M.R. 10 class in 5" gauge, has taken charge of the weed and vegetation control and has matters well in hand.

There will soon be a fence building project at the lower end of the ground. It is expected that the usual response will be forth comming when the time comes.

At the February meeting Maurie Haynes announced that he wished to resign as Track Supervisor at the time of the A.G.M.

Bi-Centenary.

Some discussion has taken place as to what part the S.L.S.L.S. could play in these celebrations. One possibility is to hold a week end in September 1988 for running N.S.W.G.R. locomotives, this would coincide with the 133rd birthday of the railways in N.S.W.

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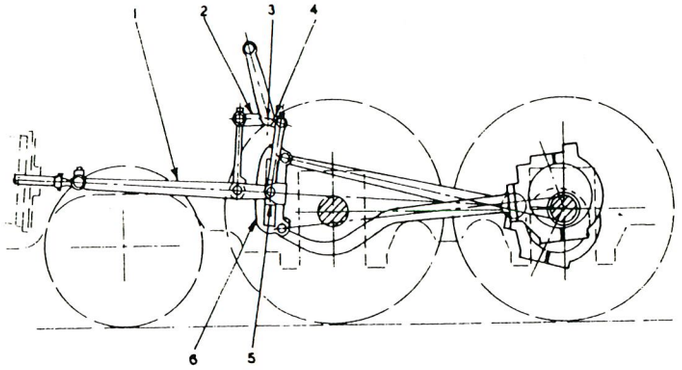

FIG. 51-9.

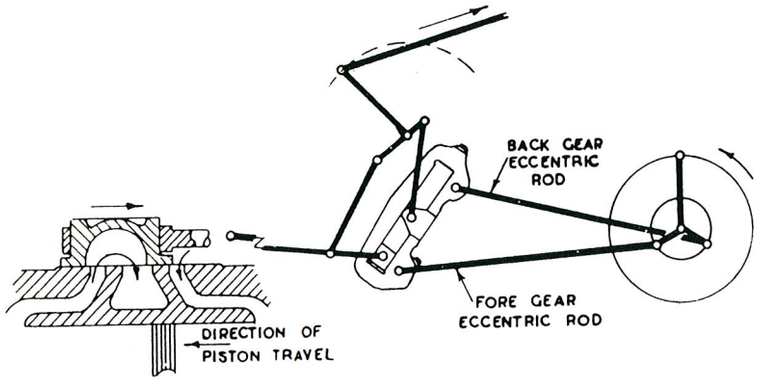

FIG. 51-10.

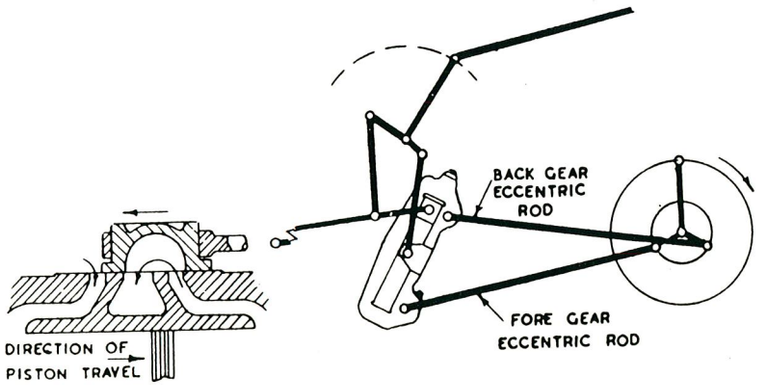

FIG. 51-11.

As both the link and block move vertically when reversing or notching-up, the actual range of vertical movement of the link is considerably reduced. For this reason, the Allen motion is said to possess a distinct advantage over the Stephenson motion on locomotives having low pitched boilers. Moreover, owing to a reduction in the amount of slip, the link slot and block are less subject to wear.

Since the link block is never far from the centre line of motion, inequalities in the steam distribution, due to the angularity of the eccentric rods, are reduced to a minimum.

51-14 EFFECT OF ANGULARITY OF CONNECTING ROD ON POINT OF CUT-OFF

The effect on the steam distribution caused by the angularity of the connecting rod is shown diagrammatically in FIG. 51-12, where AB represents the stroke of the piston, OP the crank, OC the fore gear eccentric, and AP the connecting rod. For the purpose of explanation, it will be assumed that the valve is just covering the steam port - that is, no lead is provided - and the eccentric is located 118 degrees in advance of the crank.

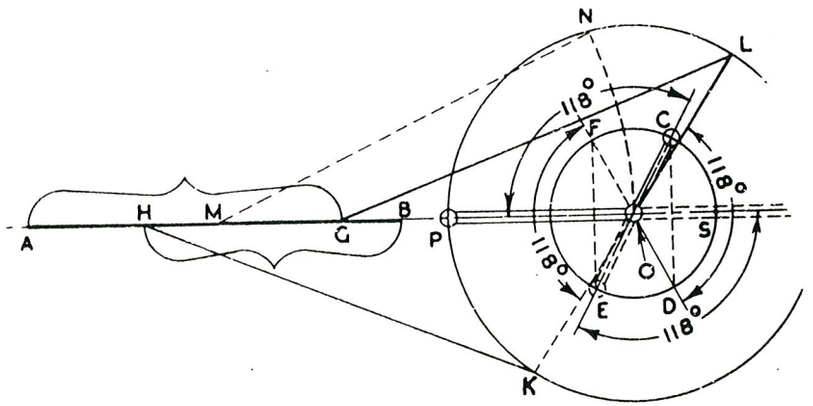

FIG. 51-12.

If the crank is rotated in the direction of the arrow the eccentric will cause the valve to uncover the front steam port, the opening increasing until the eccentric passes over the centre S, at which point the direction of valve travel will be reversed. When the eccentric reaches the point D, an equal amount past the centre S, the valve will again cover the front steam port and cut-off will occur.

At this point the crankpin will be located at L, 118 degrees behind the eccentric; consequently, if the distance LG corresponding to the length AP of the connecting rod is spaced off from L, the point G will represent the position of the crosshead at the point of cut-off on the outward stroke of the piston.

Similarly, if the crank is moved from its outer dead centre position at R, until the eccentric moves from the port opening position at E to the port closed position at F, the crankpin will reach a point K on the crank circle. By laying off the distance KH to represent the connecting rod, the position H of the crosshead at the point of cut-off on the inward stroke is determined.

By direct measurement it will be found that the distance AG, which represents the period of admission on the outward stroke, is greater than the distance BH, which represents the same period of the inward stroke. In other words, the points of cut-off, release, and compression will occur later during the outward then during the inward stroke.

From the foregoing it should be clear that the shorter the connecting rod in relation to the crank, the greater will be the degree of angularity; consequently, the greater the disturbance in the valve movements.

51-15 EFFECT OF ANGULARITY OF ECCENTRIC RODS

The student should note that the angularity of the eccentric rods will produce a similar disturbance in the movement of the valve. However, since the ratio of the length of the eccentric rod to the eccentric radius or "throw" is usually very large, the effect is much less noticeable, and for all practical purposes may be ignored.

51-16 ADJUSTING THE VALVE MECHANISM

Theoretically, the steam distribution and the points at which admission, cut-off, release, and compression occur are determined in the drawing office. It would appear, therefore, that, if the size of the eccentrics, their location on the driving axle, the lengths of the various link motion details, and the dimensions of the valve and port faces are accurately reproduced from the drawing, the locomotive should function as intended without any preliminary adjustment.

In practice, however, slight variations in the lengths of the rods, valve spindles, etc., do occur due, in some cases, to circumstances beyond the control of the designer or mechanic, or to slight modifications which may be necessary during overhaul in order to correct wear.

It is the task of the valve setter, therefore, to check the timing and accuracy of the movement imparted to the valve through the link motion, and to make such necessary corrections as will ensure the most efficient distribution of steam in each cylinder.

51-17 PREPARATORY STEPS TO VALVE SETTING

Before commencing to set the valves, certain preparatory steps must be performed. These steps, in the order in which they should be performed, are:-

(a) Marking the port opening positions. This operation is usually referred to as "taking the points";

(b) Taking the "bumping" marks.

(c) Locating the "dead centre" positions.

(d) Checking the length of the reversing rod.

(e) Checking the piston clearance.

51-18 TAKING THE POINTS OF OUTSIDE ADMISSION VALVES

The procedure adopted when marking the port opening positions of an outside admission locomotive valve, is similar to that described in Article 43-4 in relation to the D slide valve of a simple steam engine. Students are advised to review this Article before proceeding further.

51-19 TAKING THE POINTS OF AN INSIDE ADMISSION VALVE

As it is impossible to locate the port opening positions of an inside admission valve by direct observation, they must be determined by indirect measurement. This can be done by either of the following methods:-

Method 1

Step (a) Before placing the valve in the valve chamber, measure and keep a record of:-

(i) the distance A, FIG, 51-13(a), between the steam edge of the back steam port and the front face of the valve chamber.

(ii) the distance B between the steam edge of the back piston and the exhaust edge of the front piston.

(iii) the width C of the front piston; FIG. 51-13(b).

(iv) the distance D between the steam edge of the front steam port and the front face of the valve chamber.

Step (b) Place the valve in the valve chamber and slide it back until the distance E, FIG. 51-13(a), between the exhaust edge of the front piston and the front face of the valve chamber is equal to