

## SUNDRY SNIPPETS 1

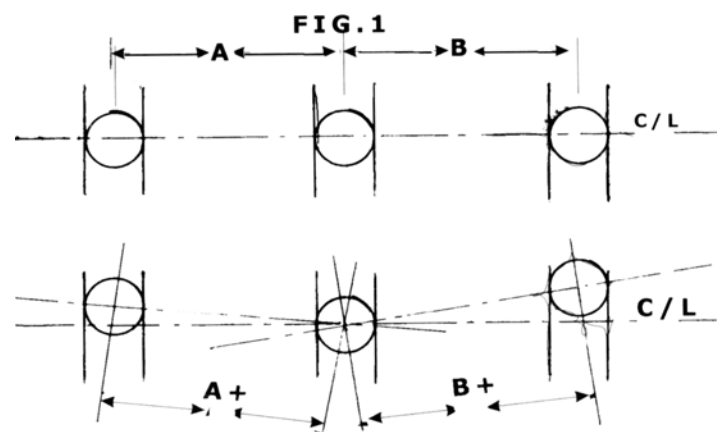
By Mike Sharman 1965

This is the first of a series of Sundry Snippets that we hope will provide some usable information, based on some of the problems that have turned up at Exhibition clinic sessions around the country.

### Coupling Rods

With most of the modern horn-block systems - spring or beam, the rods are made first and used to locate the horn guides in the chassis. This is fine until the rods are fitted - and found to bind on rotation! There are several reasons for this from the axles being slightly out of parallel, out-of-true crank pins, binding in the horn-block guides, but most common of all, is that the crank-pin holes have simply not been opened out enough! Now why should what amount to a poor engineering fit be a cure for our problems?

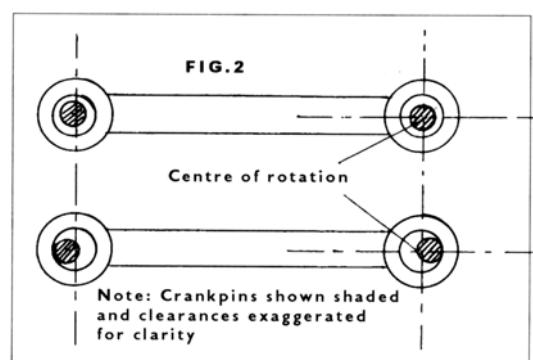
If we examine the prototype we find a pair of roughly one-inch plate frames with various 'cut outs', joined at the cylinders, motion brackets and sundry frame



spacers - not unlike our model. But there is a difference, in that the prototype can 'give' slightly as it goes along and our model is absolutely rigid. Secondly, the coupling rods are usually made of a high grade steel, which with only a around 0.002" to 0.003" clearance

on the crank pins, has to stretch and compress a few thou', all carried through by the mass of the entire locomotive and its momentum. If we tried to scale down a 0.002" clearance in 1/76 scale you can see we would have a total seizure, so we must open out the holes to a value which is much more than the prototype equivalent. If you study Figure 1 you can see why. With the coupling rod axles centre lines parallel with the track there is no problem, but move one of the centres up or down from the centre line and the rod must lengthen or shorten, and of course, model rods will not. So the holes must be opened out until they run sweetly.

Now opening out holes needs to be done carefully with a reamer or broach,



because the opening out needs to be even, and in the centre of rotation, Figure 2. This is allied with the fact that it is better with jointed rods to join them at the knuckle, rather than overlap on the centre crank pin, Figure 3. I am not saying this overlap system cannot work, it can, but it does lead to wear problems much earlier in the chassis life.

