



An improvement to Type

By Ralph Brades

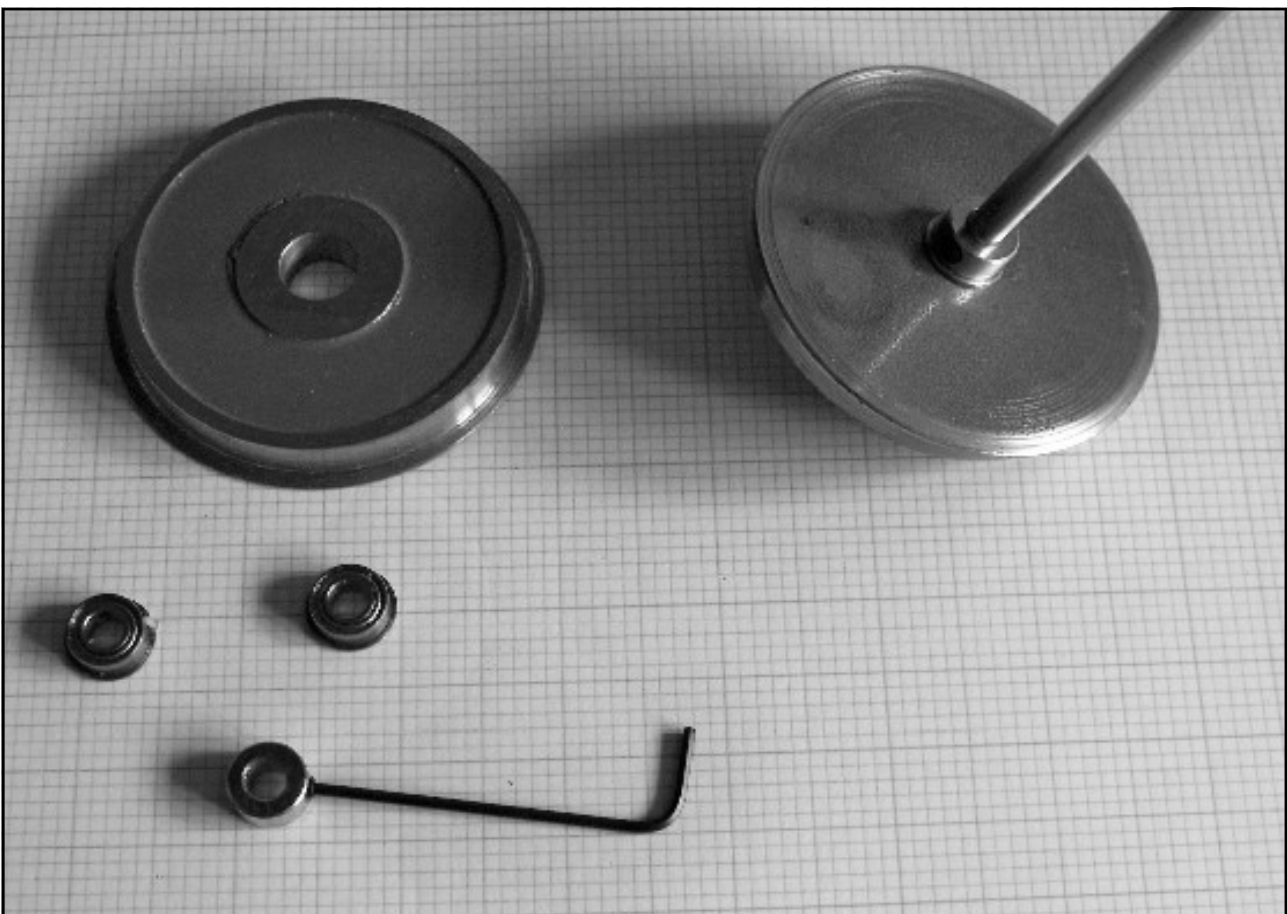
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As most people know I am a fan of the old 1920's authors especially Henry Greenly. I have often studied his book "Model Railways" and there is one passage that has often intrigued me. It relates to the wheel and axle. As we all know the wheel has a 1:20 cone angle and a 1:10 flange angle. It is this variation in diameter as the wheel corners that actually forces the wheel and axle across the track as the wheel corners.

But there is **another** method...

This is to mount the wheels so that they move freely on the axle i.e. the axle is solid and the wheels rotate (even in opposing directions). I have tight radius curves due to the local geology/geography and it seemed that this, (to me), very simple solution would benefit me -as the wheels could then turn at quite differing rates of rotation without skewing or crabbing.

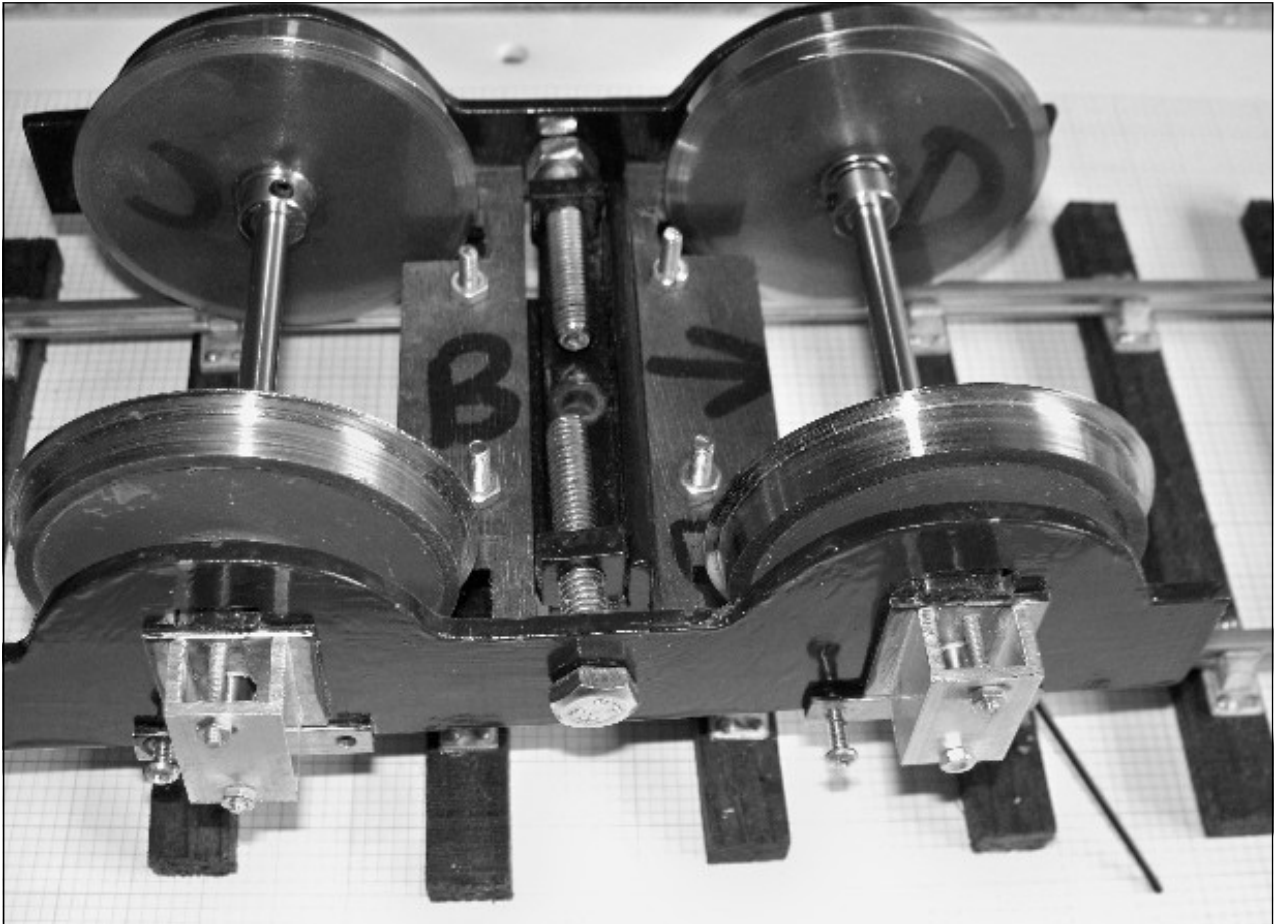
The axle is a length of 6 mm silver steel bar and the wheel is a 55 mm dia bogie wheel with the flange and tyre profile cut as per the G3 "codex". The two ball races have integral flanges and are a simple press fit into the 10 mm hole in the wheel. "Green" sleeve retaining compound was used to lock them into place. The shot below shows the wheel, the two ball races that fit either side of the hole, giving a "floating" wheel bearing system, (à la Ford Cortina!), and the grub screw collet that holds the position of the bearing assembly on the axle. Only two collets are required as the cornering forces are from the flange to towards the centre of the axle.



The advantages of this system are that there are no need for “working” axle boxes the axle does not move and thus does not need to be lubricated. The axle can be “sprung” across its length using simple springs or even heavy foam rubber...

You will have to accept some slight wheel wobble -as the position of the ball races responds to the accuracy of the axle placement of them. I have found no more than 0.5 mm wobble across a 55 mm wheel when using just finger pressure to seat the ball races -I suppose that a vice or small press would seat them better?

Here is the axle assembly in the “B” bogie of my loco, (a 2-C0-2).



The ball race wheels move very smoothly and take a 7 feet 6 inch curve without wanting to “climb” the curve or “hunt” on a straight length of track. The ball races cost about £1.10p each so the cost is not excessive, and yes I have found them to be; “an improvement to type”...