BARROWMORE
MODEL RAILWAY GROUP
"Modelling to a high standard amongst friends"

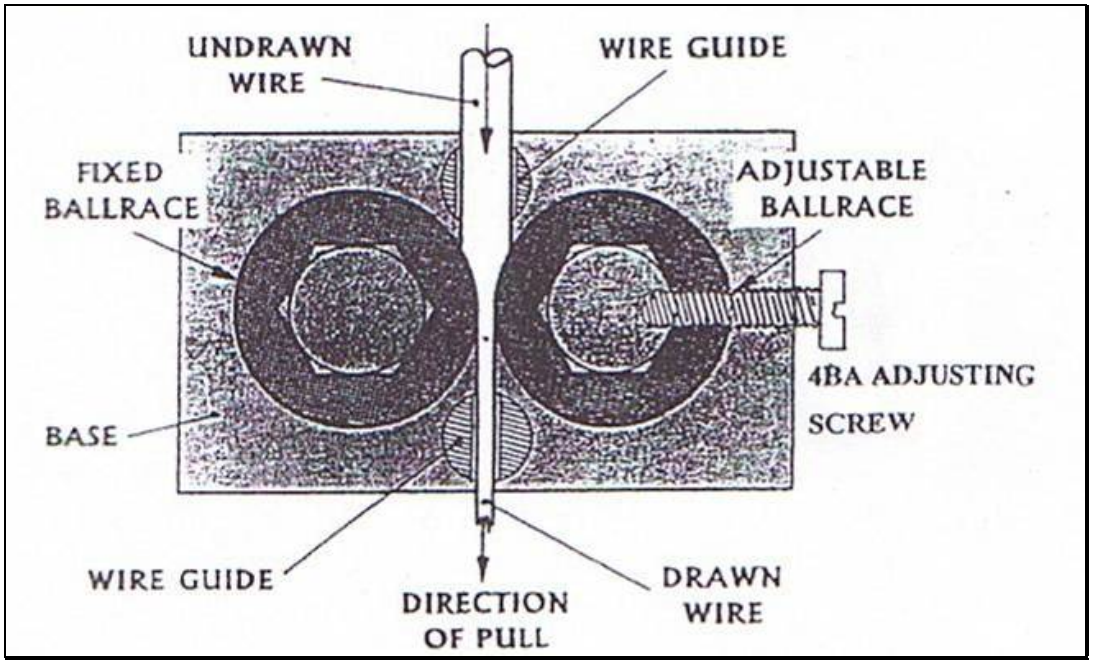
Workshop Notes: Wire Flattening Tool

Back in the 1980s when I dabbled in 7mm scale modelling, I discovered a firm called 'ScaleSeven Models' which marketed (among other items) metal strip: nickel silver 0.005in or 0.010in thick and in various widths, including some of less than 1mm. This material also turned out to be very useful in the 4mm scale work I was doing at the time. I bought what seemed a lot of the thinner widths, but of course my supply eventually ran out. Jim and Eileen Pitchforth (originators of 'Eileen's Emporium') managed on occasion to locate similar supplies from the continent. Today, narrow strip is still difficult to source: 1mm width seems to be the norm from such suppliers as Mainly Trains. So, 'make your own' seems to be the answer. I continue to be tempted by the precision guillotines that are on the market, but really most of what I want is catered for by a special tool I made on the prompting of Malcolm Genner of the group that runs the EM layout "Manafon Mills". I had initially persuaded Malcolm to describe this flattening tool he had made, for, firstly, the "Merseyside Express" [1]. A version of the article eventually appeared in "Modelling Railways Illustrated" [2]. I made one for myself, and can testify to its usefulness!

[The elegant curve on the left-hand side of the base is not a design feature,
but just happened to be present on the piece of scrap that I used!]

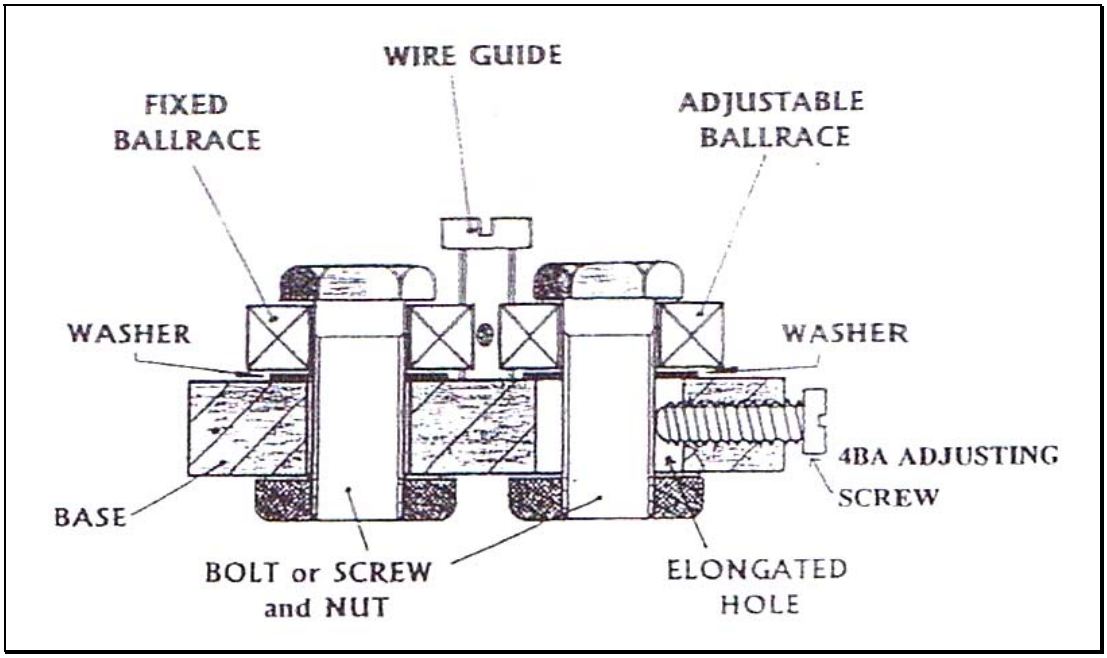
So here is a much-revised version of Malcolm's description of some unknown modeller's idea which first appeared in print over thirty years ago: the first author's name is now lost in the mists of time, but his memory is honoured! (If anyone can throw any light on its provenance, please get in touch). Just as Malcolm did, I made a tool based on the description, meaning to improve on the design in a subsequent effort. And, not surprisingly, the original is still in use!

The **construction** of this tool is quite simple, the most important items being the ball-races. Any size is suitable, but I would recommend something in the region of three quarters of an inch to an inch in diameter. Of course you could buy new bearings (look in your local Yellow Pages under 'Bearing Stockists'): you should be looking for 'Single row deep groove bearings'. But a less expensive course (and more in tune with railway modellers' parsimony!), would be to beg second-hand bearings from a model engineer acquaintance. The base plate (perhaps 2½" by 1¼" by ⅜" thick) is cut to suit the size of the bearings and here again I would suggest a chunky lump of metal at least about a quarter of an inch thick, as it will need to act as a guide for the adjustment screw and will need to be placed in a vice for some operations: the machine-ability of light alloy is attractive here, and that is what I used. Some bearings may need a spacing washer between them and the base, so as to allow the outer ring to revolve freely in use. Having arrived at your chosen bearing size and found a suitable base plate, manufacture starts by drilling two holes in the plate at the centres of the bearings such that they are just touching.



(Plan view – not to scale)

The size of holes and the size of screws depend upon the bearings selected, as the screws will act as spindles. One hole is elongated by a small amount to allow the bearing some lateral movement. Mark the base in some manner to show this - I actually drilled and tapped the base plate to accept an adjusting screw (see the diagram) for the movable bearing. A 4BA adjusting screw will have a screw pitch of 0.66mm, so that one full turn of the screw will potentially alter the position of the adjustable bearing by this amount – about 0.026in. Similarly, lesser rotation will make a smaller difference, so that half-a-turn = 0.013in, and so on.



(Section – not to scale)

Mark and drill two further holes along the centre line of the base to accept the wire guides. For these, I tapped the holes 4BA to take a long shank screw with a hole drilled through for the wire. These wire inlet holes will need to be elongated a bit to allow some lateral movement in the passage of wire through the guide posts.

To **use** the device: grip the tool horizontally in a vice, slacken the adjustable bearing spindle and adjusting screw, set the gap required by using a gauge (either a feeler gauge or a pattern) and re-tighten the screws. Take a strip of wire and beat the first inch or so with a hammer so that the wire can be fed through the guides and the rollers of the tool. Pull the wire through the tool with a pair of pliers. Result: flat strip. I usually choose 26SWG copper wire (about ½mm), and with my usual tool settings, the thickness of the wire is reduced to about ¼mm and the width increased to about 0.65mm. This size strip is suitable for both wagon lamp irons and brake safety loops in 4mm scale. Thicker gauges of wire may require passing through the tool several times at different settings: trial and error will show the limits.

What use is it? The short answer to this is: anywhere you want a thin flat strip. Wagon and coach under-gear, particularly brakes and truss rodding immediately spring to mind, together with items such as lamp irons and coal rails on locomotives; slatted station seats and fencing have also been made using the flattened wire. Your imagination will suggest answers!

Notes:
[1] “Merseyside Express” (Merseyside Model Railway Society), issue no.276, March 1996.
[2] “Modelling Railways Illustrated” (Irwell Press), vol.3 no.8 (Apr. 1996).