

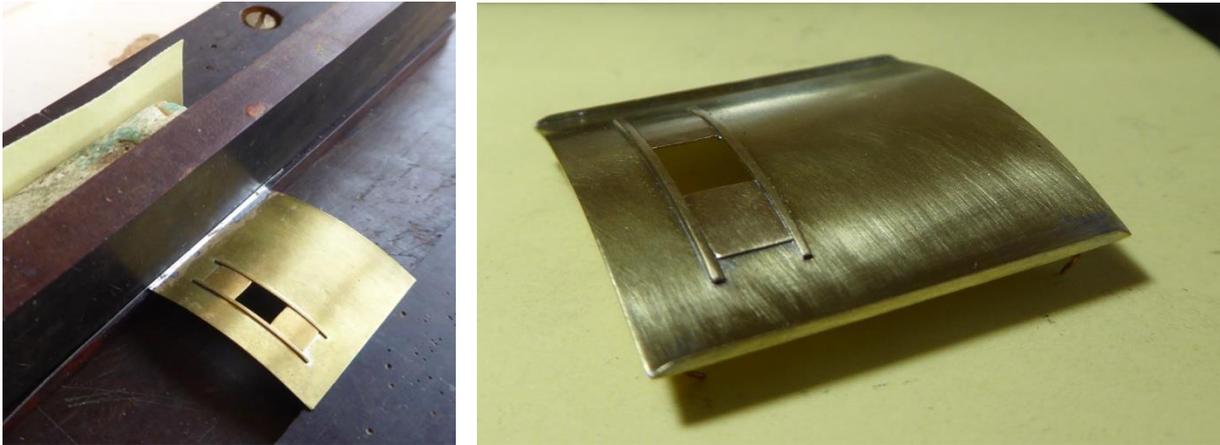
‘S&DJR Avonside 0-4-4T No.31 – Some More Finishing Details, Part 1’.

Steve Duckworth

This third contribution for ‘Virtual Missenden’ adds a further selection of detailing suggestions and ideas that I have been using whilst progressing No.31, during recent weeks leading up to the weekend. Nothing like a deadline for adding impetus to a project! I hope you find something useful....

Safety – *in addition to the usual care taken when using drills, scalpels and other blades, soldering irons and flux, I should emphasise that I often use grinding discs or dental burs in a craft drill, where there is potential for flying debris and eye damage. I always wear specs, but also work under a craft magnifier with a thick plastic lens. Take care....*

Cab roof rain-strips

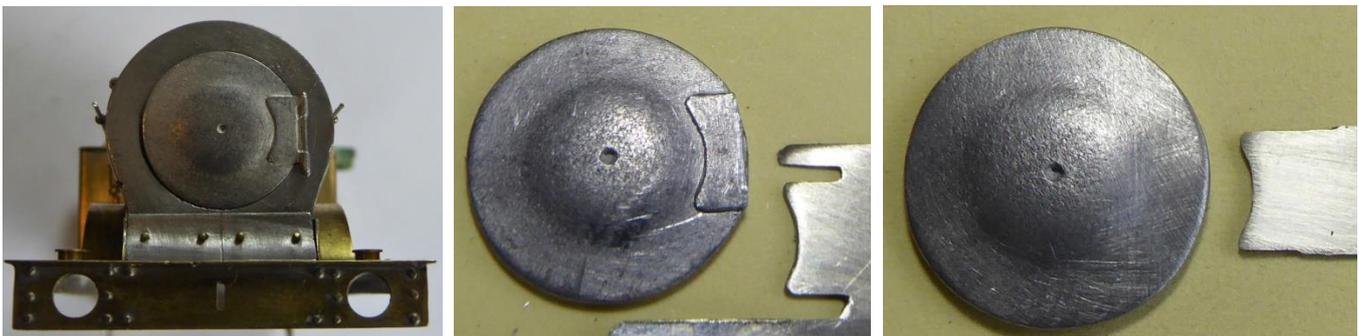


These were added using etched boiler band strip from the Alan Gibson range. The JM kit's original over-thick roof material had incorporated the rainstrips, with half-etch lines for a fold-up arrangement. I prefer sharp corners, rather than folded ones – unless the latter recreate a prototypically rounded feature.

The edges of the roof were rested on parallel strips of Tufnol, allowing the underlying ‘L’ section and retaining-spring wires to sit between the strips. A 145-tinned length of boiler band was trapped between the roof edge and another Tufnol strip, the whole set-up being pressed firmly against spacer blocks held by my work-top ‘fixed right-angle’ strips – yet more Tufnol. A fine jeweller's screwdriver pressed the boiler band strip down firmly and against the vertical Tufnol face, while flux and soldering iron were applied in a single pass along the roof edge. The resultant rainstrips were therefore vertical.

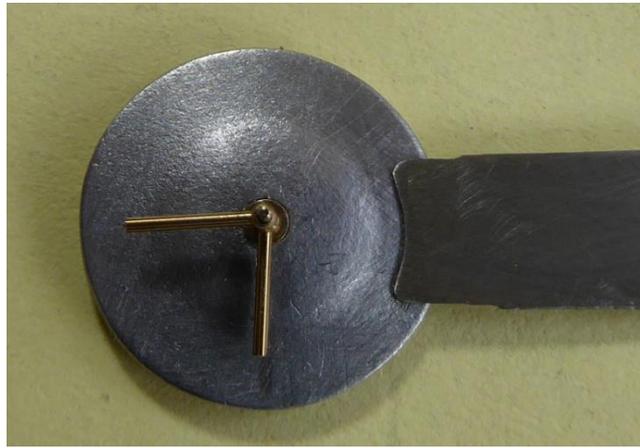
After trimming to length, the ends of the strips were chamfered down, as seen in photographs of the prototype.

Smokebox door hinge and door dart, refinement



Castings can often be rather ‘chunky’ in finish, and fine detail can get lost, so I sometimes prefer to refine commercial items, rather than accept them ‘as is’. This is actually a very good way of acquiring or extending one's skills.

The smokebox door is a particularly prominent detail ‘up front’, and the one supplied with the Avonside kit featured a plate that projected excessively into the door, with a rather ‘blurry’ hinge detail. The cast hinge was carefully cut away with a scalpel (curved No.10 blade) and the plate similarly pared/filed/sanded back to the door profile. A replacement plate was cut from NS shim, using an abrasive disc in a craft drill, shown being profiled above. I kept a generous ‘handle’ of shim to aid the process.

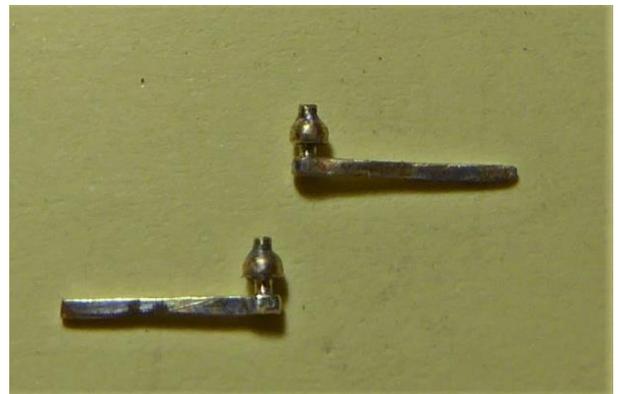
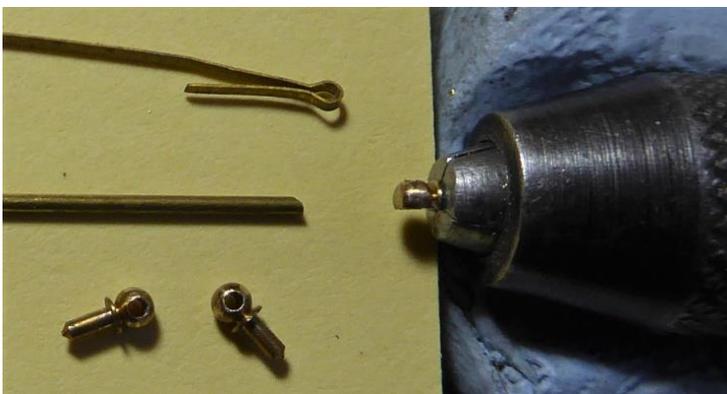


The replacement hinge plate was 'tried' against the door, to confirm it was looking correct so far, and a hole drilled and countersunk for the door dart (Gibson again). As supplied, the handle length and diameter of the boss were too great for the Avonside, so the diameter was reduced by mounting in the craft drill and filing/sanding down to match prototype photos (compare the two bosses sat in the blu-tack). The latter show that the boss should *just* protrude beyond the face of the door, hence the countersink. The right-hand photo shows the modified boss correctly seated, but with handles awaiting trimming in length – to different lengths in this case.



The removed cast 'hinge' is shown bottom-right, in the upper left photo. Here is the replacement item, utilising 0.31mm NS wire and fine brass tubing. The hinge plate has now been mostly separated from the excess 'handle', by drilling a series of holes (0.4mm at the corners, progressively enlarging towards the centre) and then enlarging with a fine dental burr, before filing the opening to shape. The tubing was cut to correct length and soldered 296deg to the plate hinge 'straps', the excess 'handle' remaining to help position the plate (tinned 100deg) correctly over the door casting before soldering in place. Once the plate was confirmed to be correctly fixed, the excess straps of the 'handle' shim were carefully ground away and the united door/ hinge unit fettled. It is loose-placed here, with trimmed door locking handles, to check fit. I was very pleased with the revised item.

Smokebox 'Furness' lubricators, fabrication



I could not find a suitable casting in my spares box, and it struck me that the domed type of Furness lubricator fitted to the Avonsides could readily be made from a suitable handrail knob. These short, rather over-scale knobs fitted the bill, and a pair were ground down to this domed shape while gripped in a pin chuck. They were then drilled to receive fine brass tube, and soldered together with generous-length brackets formed from doubled-over boiler band strip, suitably thinned in height.

Sandbox 'paddle' linkage

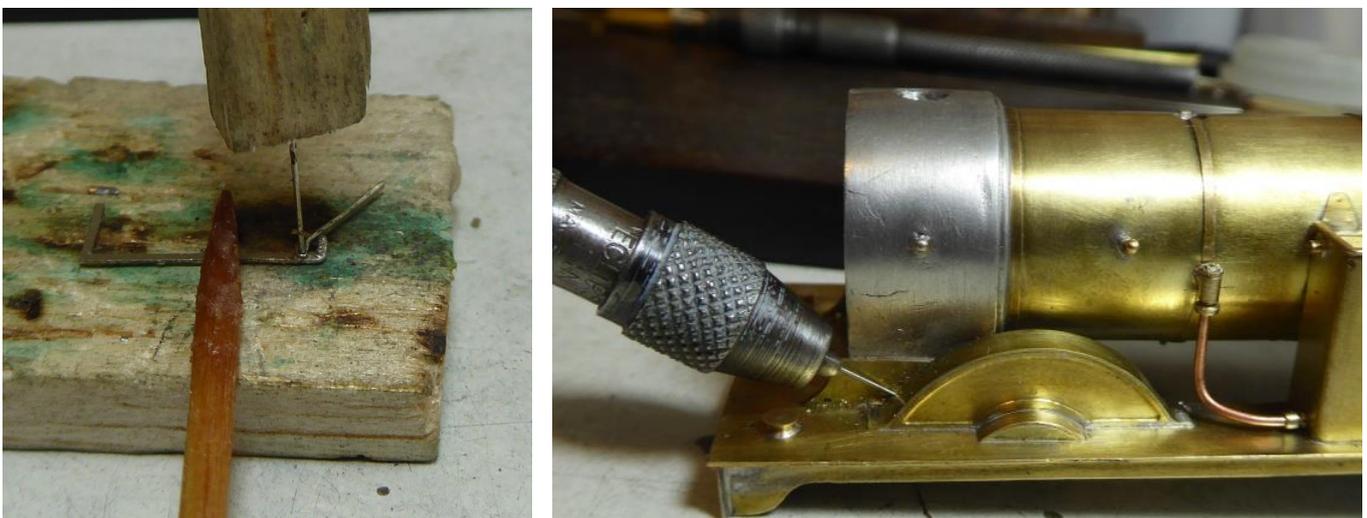


The Avonsides had manual sanding arrangements, including a rodding linkage from the cab, forward through the front left splasher, to an 'L' crank which operated a 'paddle' within the LH sandbox to help sand flow, and operated a lateral rod running below the valve-chest covers to a similar crank for the RH sandbox. These are very fine features, and easy to recreate over-scale, but I am pleased with how these look. Some finer-section NS etch waste provided the basis for the rods, a corner 'L' segment being drilled with three 0.4mm holes to create the LH crank, with lengths of 0.31mm NS wire soldered in to create the paddle spigot and a representation of the pivot pin for the lateral rod.

In the left-hand photo, the fluxed wire 'paddle' spigot is inserted through the crank into a balsa strip, being held in a balsa 'handle', awaiting soldering 296deg. Excess NS strip on the left forms another handle, and is held down by a further balsa strip. In the right-hand photo, the spigot pin has been trimmed back to match the pivot pin for the representation of the lateral rod, which only extends far enough to pass through the raised front frames section.

The rodding running back to the cab is similarly truncated, terminating immediately within the front splasher. It is depicted here offset from its correct position and awaiting a joint pin, to illustrate more clearly how it is vertical, with a twist to horizontal at the crank joint. Once these two components have been united by a third NS pin, the rearward extension of the NS strip becomes redundant and can be trimmed and profiled. I left it in place for a further photo, taken before installation of the completed and fettled assembly.

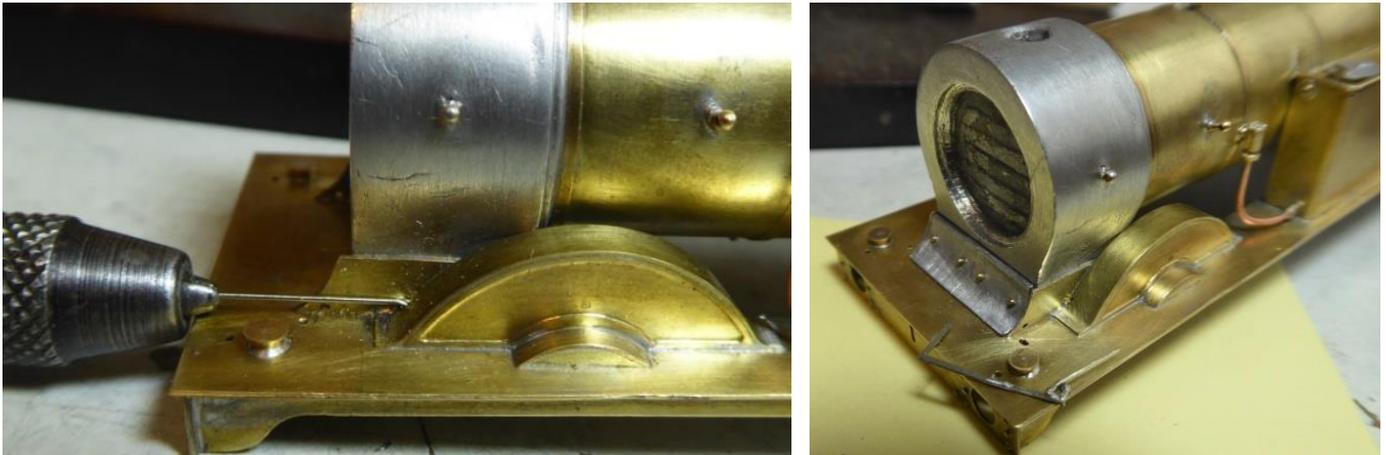
On the right hand side of the valve chest cover, a similar but single crank was located, for the RH sand box.



On the left is the third pin in place, uniting the 'L' crank and the rearward rod section, with flux applied; the soldering iron is applied roughly where the cocktail stick is positioned, the heat and flux then running towards the joint and re-melting existing solder on the crank, to complete the joint. Use of 296 solder to assemble such small sub-assemblies allows them to be soldered in place below the footplate using 145 solder, without fear of disintegration.

On the right, it is just possible to discern two pre-drilled holes below the drill-chuck: one in the footplate for the crank spigot, and one in the front framing for the lateral rodding. The latter needed to be gently 'ovalled' by 'sculpting' with a fine broach to accept the flat rod section. The splasher had to be drilled to accept the vertical rearward rod section, having test-fitted the sub assembly to the footplate and judged the correct height to intercept the splasher curve. Here the hole has been established, and the pin chuck is being angled downwards to enlarge the hole.

The 'dent' at the rear of the supplied smokebox casting, I decided, would best be remedied with filler at final fettling stage, rather than ploughing in now with low-melt solder, filing and sanding.....



Here the splasher hole has been carefully enlarged to accept the vertical rod section, while trying to avoid scarring the adjacent frame section. There is still plenty of solder to be fettled around the various joints and handrail knobs! Note the holes for the two front lamp irons, by the sandbox lids - S&D engine headcodes did not use a centre lamp; so one less item to make.

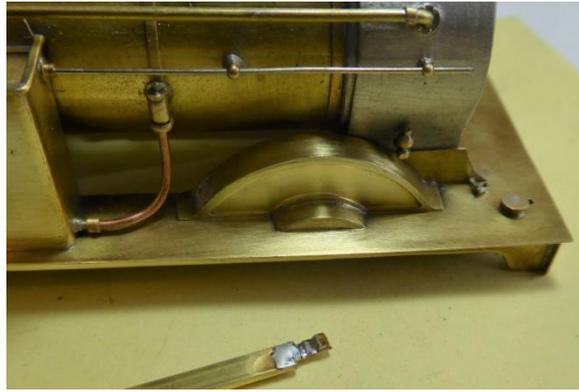
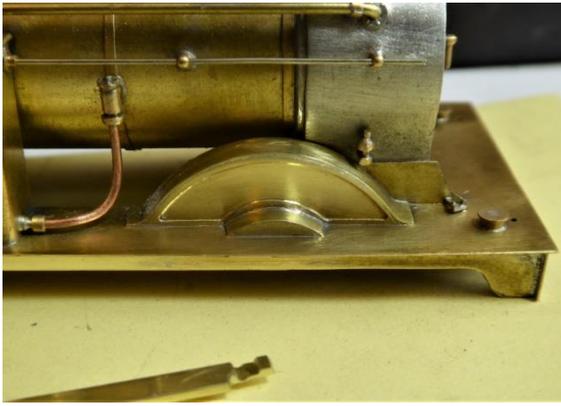
Finally, on the right, the LH crank and rodding sub assembly, ready to be trimmed and installed in its complement of holes. You will see that I had to 'shift' the crank spigot hole a shade, outwards, to get a comfortable fit. The valve chest cover casting is still loose-fitted, and awaits a reduction in height and 'depth' to sit correctly between the raised framing.

I was relieved that the rearward extension of the sandbox rodding had a joggle in it, and so emerged 'behind' the splasher, continuing just above the footplate to disappear behind the left side tank, as seen below.



Sorry for a very 'mucky' photo taken later on, rather a lot of flux spits and dust here.

Splasher-top oil-boxes, fabrication and installation



Before tackling these items, the photos also handily illustrate the above-mentioned right-hand sandbox rodding crank, as well as the Furness lubricators described earlier. The latter have square-section brackets, so were made an initial interference fit in drilled holes. Steel-epoxy will eventually secure them, to avoid yet more fiddly fettling of solder on whitmetal.

These brass oil boxes are basically rectangular brass boxes with a sloping hinged lid. In 7mm scale they could no doubt be neatly represented, but in 4mm they are really too small for castings. I reasoned that a suitable thickness of brass bar with a chamfered top, 'nicked' by judicious filing to represent two raised 'hinges', would be feasible. Actually fitting them to a half-etch splasher top seemed the bigger problem.....

On the left we have the stock brass bar, ground to width, chamfered top, with a rebate ground to fit behind the splasher top. Below this, the bar has been nearly ground right through, but leaving - again - a handle to aid the fitting process. On the right, the outward surface of the bar has been tinned with 145deg solder - we do not want to be putting too much heat into that half-etch splasher top.



On the left, looking up under the splasher, the bar 'handle' has enabled the oil box to be placed centrally on the splasher top, the rebate seated firmly against the splasher. The long handle enabled the component to be more easily oriented, perpendicular to appropriate surfaces, and made it easy to run flux along towards the awkward under-boiler location. On the right, after the solder has cooled, an exploratory gentle nudge of the excess bar established that its thinned section would bend, rather than the splasher top, and I was soon able to 'work' it to a brittle fracture as seen here. The excess joint solder seen here around the rest of the splasher resulted from me re-visiting some seams before installing the oil box, to ensure I did not peel the splasher top away from the sides during the removal of the excess bar.



Here is the same splasher underside after a full fettling, showing the oil box joint ground away virtually flush with the underside of the splasher. I had previously established that restricted front axle side-play would keep the wheel flanges well clear of the oil box joint. Finally, there is the end result, with the oil box firmly attached but still clear of the adjacent boiler cladding and band. I am very pleased with how all the various details in this 'front end' have come together.

Oh yes, those clack valves seen on right, mentioned in an earlier instalment. I forgot to add that the modification to the Mike Waldron supplied LBSCR type involved a simple, reduction of the height at the top, and the addition of an etched NS washer from a Brassmasters fret.