The L.B.& S.C.R. Modellers Digest

Issue 4

Christmas 2016

A journal of the Brighton Circle, for those modelling the “Brighton” in all scales and gauges.

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The Terrier is the large loco....

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Editorial

The annual model railway “wishlist” has come and gone - with little to show for it in Brighton terms. One particular question, that I cannot get my head around, is that we have had Ready to Run Terriers in 2mm, 4mm and now 7mm scales for years (decades in the case of the 4mm version), but nothing for them to haul. I would have thought that a Stroudley 4 wheeled carriage would be an obvious accompaniment - and equally good for those looking for a generic light railway vehicle. However, the criteria for the wishlist appear to require subjects to have survived into BR days - so Brighton modellers will just have to keep on .....well, wishing.

Which gets me round to the issue of how do modellers take the first steps into modelling the Brighton? It is fine if soldering and singed fingers hold no fears for you, as there is an excellent supply of etched brass kits for Brighton subjects. But getting over that initial hurdle and gaining confidence to tackle the first etched kit is a major step. Most of us have gone through some kind of progression, where we have adapted plastic kits that are “good enough” and slowly graduated to learn the skills that allow us to build more or less what we want. If anyone reading this recognises themselves in that transitional phase, please drop me a line. What “good enough” compromises are available out there and how can other Brighton modellers help you to take those further steps?

Eric Gates

Modelling Steward, The Brighton Circle

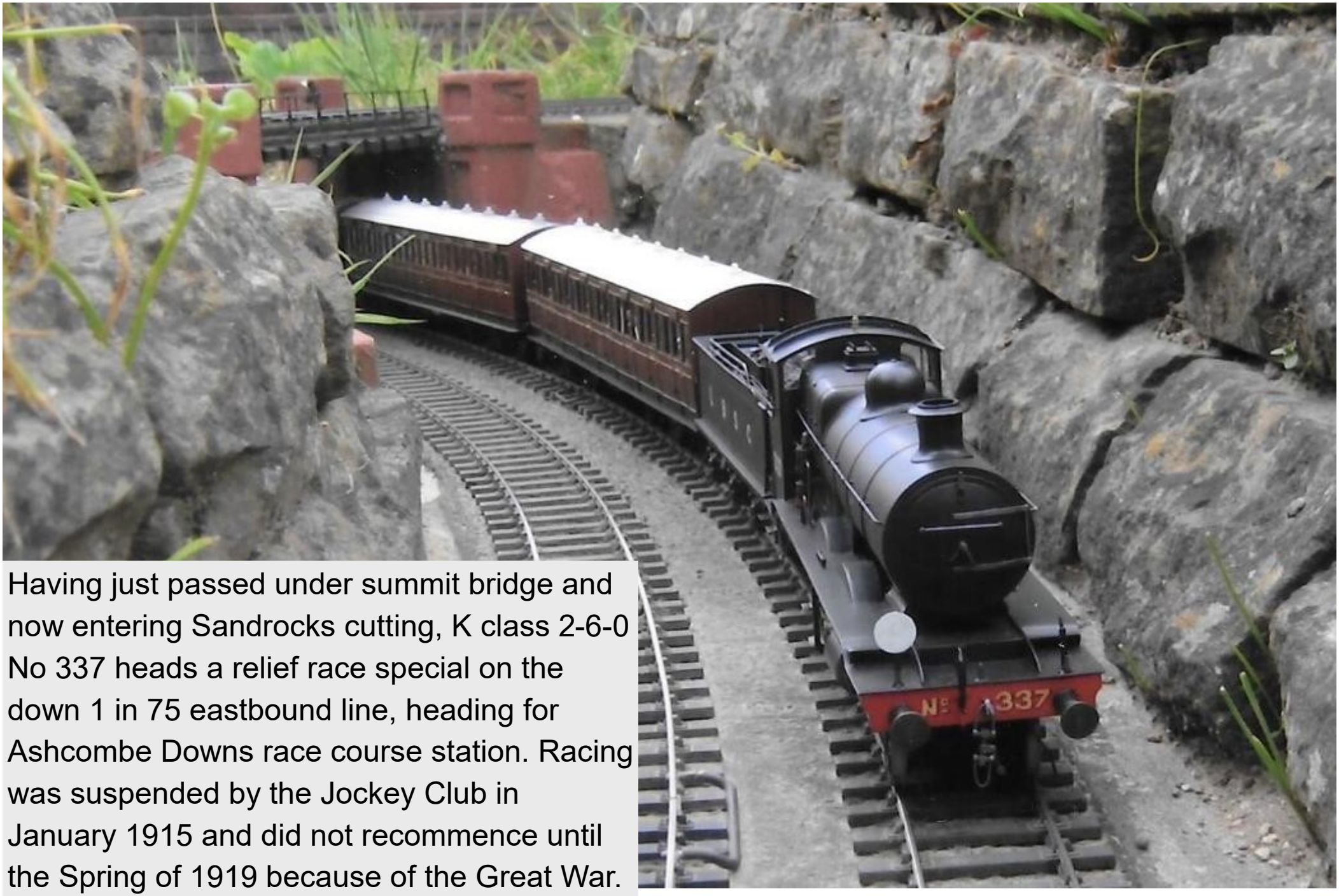
Racing at Ashcombe Down or

More 7mm scale outdoors

By Mike Cruttenden

B1 class No 197, formerly Jonas Levy, climbs the 1 in 40 bank passing Ashcombe Downs station. Shunting is being carried out on the upper level, with LBSC, LSW and SER rolling stock.

E4 class 0-6-2T No 473, formerly Birch Grove, in final Brighton livery, lettered LBSC, climbs the 1 in 75 gradient up to Summit Bridge, the highest point on the line, with a 3 car stopping train to Ramber Park. After crossing the bridge, the train will descend the 1 in 40 Ashcombe bank, by-passing the race course station. Loco and train by Arch Overbury.



Having just passed under summit bridge and now entering Sandrocks cutting, K class 2-6-0 No 337 heads a relief race special on the down 1 in 75 eastbound line, heading for Ashcombe Downs race course station. Racing was suspended by the Jockey Club in January 1915 and did not recommence until the Spring of 1919 because of the Great War.

A pause, shunting. C2x class 0-6-0 No 543 waits at the approach to Ashcombe Downs station for the signal to be pulled off, to allow it to continue with its shunting duties.

Loco by Arch Overbury

The first major structure on the line after leaving Ramber Park station is the Edward VII memorial bridge. K class No 337, now fully lined out at the head of a race train for Ashcombe Downs. The train is westbound and will shortly be climbing the 1 in 40 Ashcombe bank. Although fixed in position for running sessions, the bridge swings to allow access between house and workshop.

Owned by MSC, this loco was rebuilt and painted by Colin Hayward.

Heading for home, with racing over, E6 class radial tank heads a horse box train away from Ashcombe Downs station at the end of the day.

Loco and stock by Arch Overbury

Illuminated by the rays of the setting sun, G class single No 350 Southbourne awaits her turn at the headshunt at Ashcombe Downs station, before hauling a special race train back to London.

Loco built and painted by Colin Hayward

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Whitechapel - 7mm scale

By Peter Wisdom

Whitechapel was a station on the East London Railway which from 1869 to1876 was run by the LB&SCR. I was looking to build a smaller layout which would fit in the back of a car, rather than hire a van, and an ELR layout meant that I could use my existing stock. In the event I built a five car set of Craven stock using plans published in the Brighton Circular.
The two 48”x 22”baseboards have sides of 3.5mm ply sandwiched with softwood blocks also providing a socket to plug the legs into. Top layer is of 6mm ply rebated into the sides. The fiddle

yard is a two road traverser mounted on drawer runners with a detachable extension to keep within the 48” footprint.

The track and the three points were hand built, laid on cork and powered by Tortoise point motors and operated from an Ambis lever frame which also operates the signals. Ballasting is all over which is prototypical but does require a lot of scraping to ensure good running.

Whitechapel was like a number of stations in London built in a cutting and thus has brick retaining walls . I made walls for both the front and back of the layout but after the first outing I removed the front wall as the general opinion was that it did not enhance the view of the layout (offers invited for 48” of walling).They are made of Slaters brick plasticard , arches cut out with an Olfa cutter and backed with 5mm foam board and coloured with water colour pencils blended with damp cotton buds.

I decided that as I had no plans of prototype buildings and the only photo I had seen of Whitechapel station showed an impressive edifice which was far too large for my small layout I would have to use modellers licence.

Thus the buildings consist of a walkway at street level, stairs down to platform level, a platform shelter and a small signal box. All of these made extensive use of Evergreen strip, brick plasticard and foam board backing. The platform also has S&D lamps and MSC platform seats, the people have been, much to their surprise, transported from the Sussex countryside and are now waiting for a train in London.

The goods facility is a loading platform with a door in the end wall which conceals one of those new fangled hydraulic lifts to raise goods to street level .
Small layouts have their limitations regarding operation and in my view have a limited appeal, so I am currently considering reusing the baseboards for a 4mm layout which would enable me to make use of locos and stock bought to run on a club layout which is taking a very long time to build.
However, if anyone is looking for a ready made, 7mm scale, bijou layout, I am open to offers.....

Stock that may be found at Whitechapel.

All are scratchbuilt, except for the all First, which comes from an Ian MacCormac kit.


THIRD
THIRD


SECOND
SECOND
SECOND


FIRST
FIRST
FIRST

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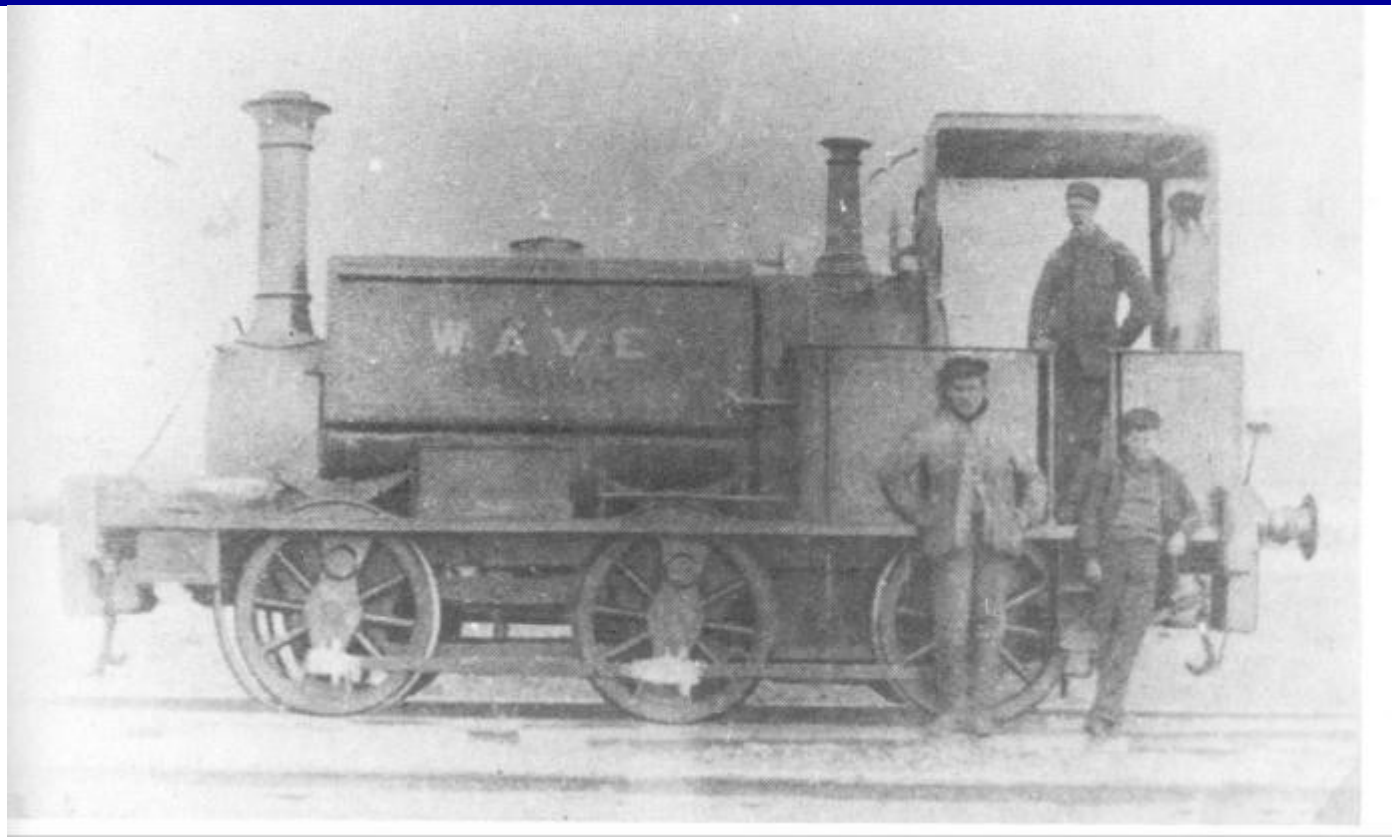
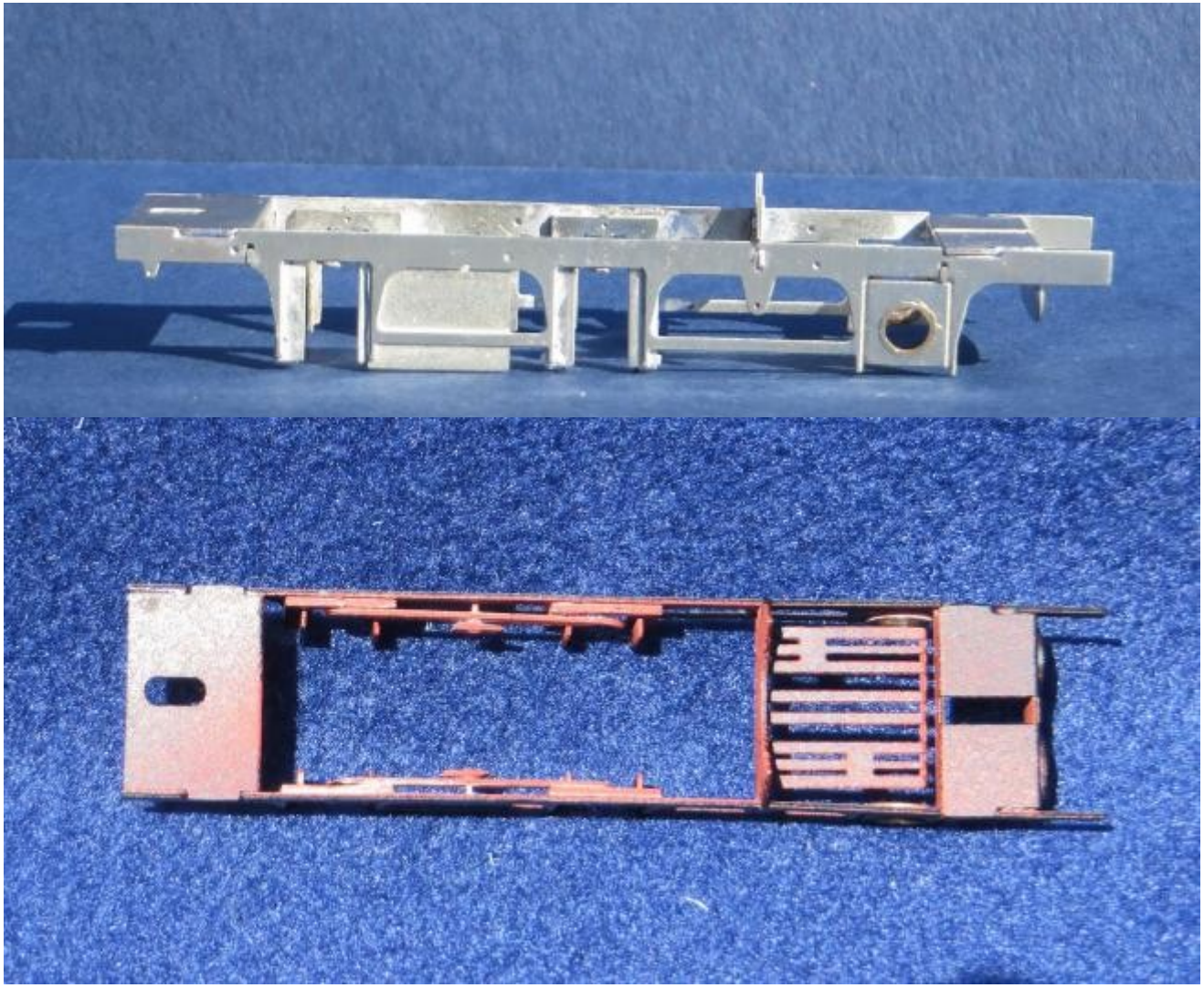
Wave, the Newhaven Harbour Company shunter

By Eric Gates



Wave was a Manning Wardle Old Class I, owned by the Newhaven Harbour Company and used for shunting the quays. She was bought in 1881 from the Hunslett Engine Company (another Manning Wardle named Bradford was purchased the following year) around the time that the harbour was being developed extensively to allow the running of scheduled, rather than tidal cross Channel services. Wave lasted until 1892 and Bradford until 1898, when she was sold and replaced by Fenchurch – one of the LB&SCR's own Terrier tanks. Since the Harbour Company was a subsidiary of the LB&SCR, the pair of Manning Wardles were repaired, when necessary, at Brighton Works and, slightly more surprisingly, both are recorded as being painted in Stroudley's improved engine green livery.

The starting point for this model was the etched/cast kit in 4mm scale by RT Models; in fact, much of the etching is in nickel silver and some of the castings are lost wax. For a standard product, no two Manning Wardles seem to have looked quite the same and the kit provides for a wide range of variations including two other Sussex locos: Morous and Siddlesham from the Selsey Tramway. A photo is therefore critical and, since there is only one, fairly poor, known photo of Wave, quite a lot is left to educated(?) guesswork.

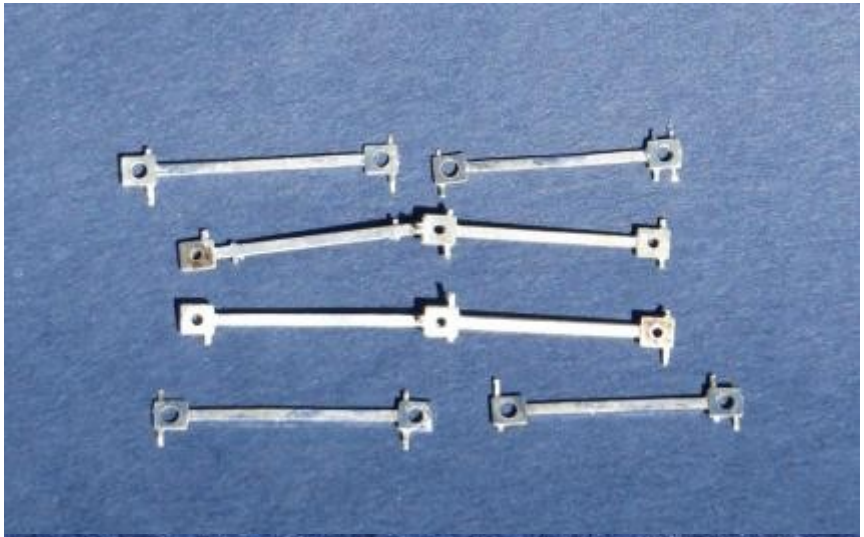


Starting with the chassis, I took fright at the frames by the leading axle; there seemed to be about 0.5mm thickness of metal left, if you removed the marked area to fit hornblocks. As a cop out, I left that as a fixed axle and decided to leave only the centre and rear axles to be compensated.

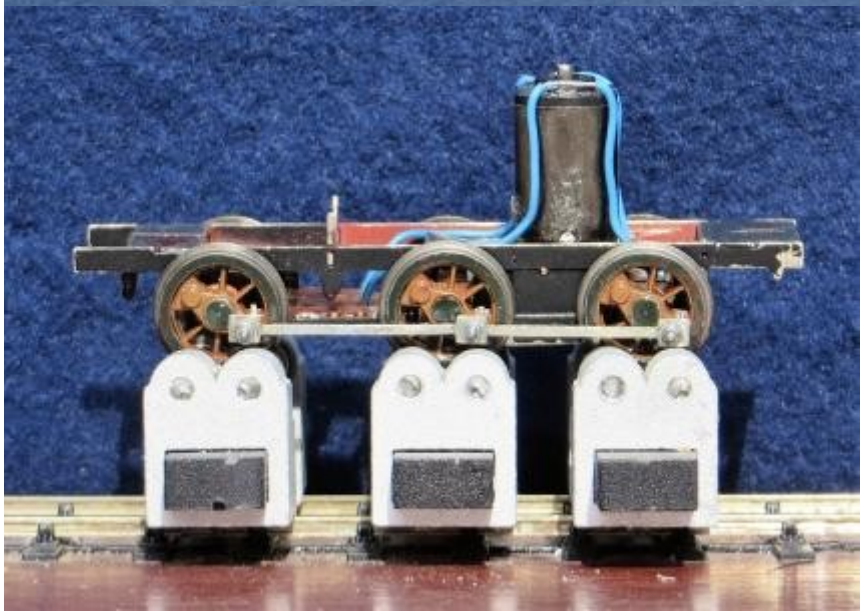
Having dug myself into this hole, it promptly started to get deeper as, of course, the driven axle then has to be one of the flexible ones. And, to leave space for a motor and gears, the compensating beams

have to be mounted on stub axles or otherwise the arrangement would clutter up the area where you would want to put the motor and gearbox. The chassis was the first time that I have used the Avonside chassis jig and, whilst it all seemed to go well, it took a lot longer than the version on the video instructions!

There are two alternatives for coupling rods; one has an overlap on the centre crank pin, while the other has a proper working knuckle just in front of the centre crank pin. I assembled both, but did not use the one with the working knuckle as the bearing surface of the joint on this arrangement did not seem sufficient to sustain any wear.



The drive train for this loco consists of a Mashima 1015 motor and a High Level Roadrunner compact + gearbox: with 12mm driving wheels, I am not expecting Wave to have any great turn of speed! The kit provides for the motor to fit vertically into the firebox, which resulted in an interesting game of origami, trying to align it all so that it fitted. In fact, I built most of the body sub-assemblies, so that I could convince myself that the motor did actually line up with the firebox, as it is an extremely snug fit. Work therefore progressed in parallel on both body and chassis, trying one against the other, to understand how



it would all come together. This arrangement leaves the whole boiler/saddle tank area empty and available for ballast. The boiler is white metal and so has some mass to it, but the tank is made up from 6 etched pieces, leaving quite a lot of space to fill. I had some left over, rubber, sound-proofing mat (from sound proofing a car), which has an adhesive surface on one side, and this should add some substance.

One idiosyncrasy of mine is that I like to put the wheels on once – and, ideally, keep them on. I notice that others seem happy to take wheels on and off, although there seems to be a preference with Gibson wheels to do so as little as possible. As the photos show, the frames are given a coat of Halfords primer and then satin black once the basic elements are in place. I know that the addition of breakgear, etc., will mean that paint has to be polished off to allow soldering, and that there will be lots of touching up, but it does mean that the areas behind the wheels will need no further attention once the wheels are on.

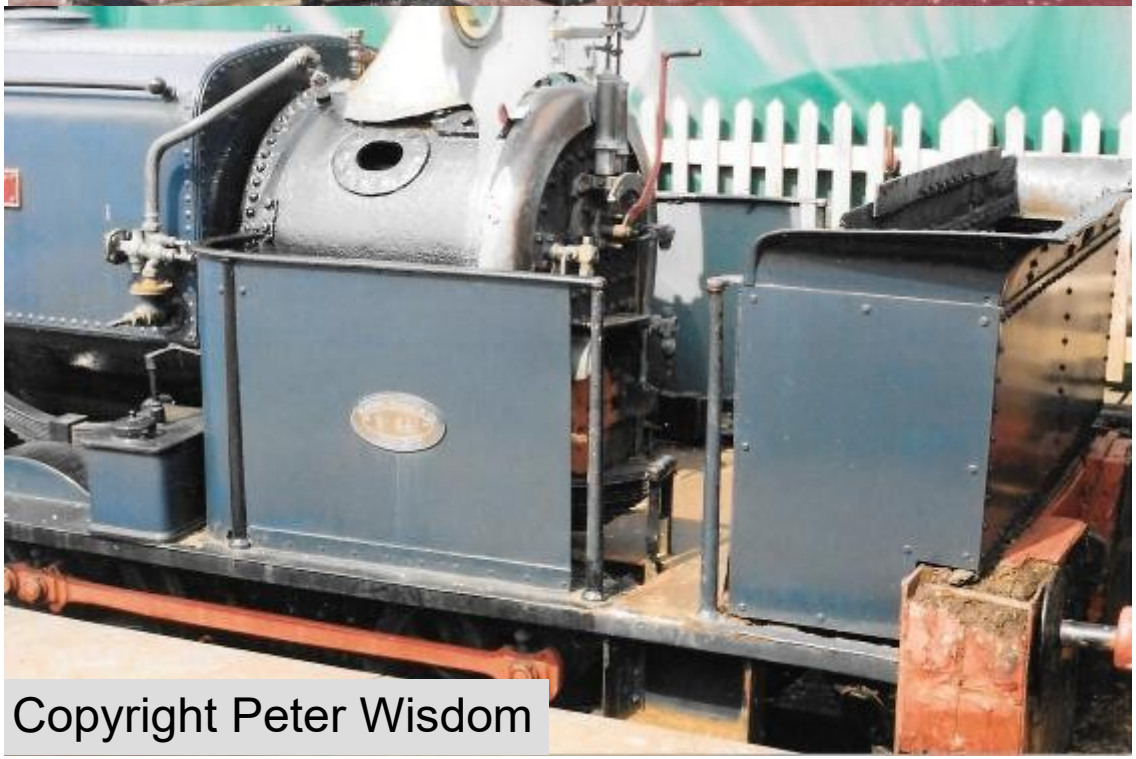
Cab

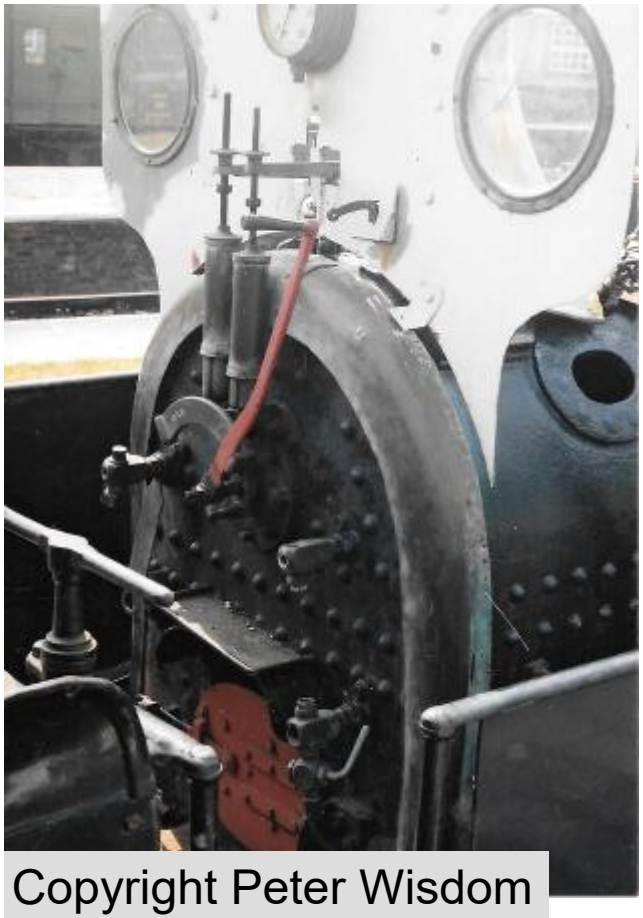
I particularly liked the use of nickel silver for many of the frets and it made assembly of the cab rather easier. I had two goes at the cab, as I could not convince myself that the “standard” cab looked anything like the side view of Wave. One variance appears to be that there is a piece of strip (angle iron?) around the inside of the cab, presumably to provide some rigidity and shape to the structure. The other, which I concluded after I had made up

the standard cab, complete with angle iron, was that Wave's cab was rather shorter. The bunker had no flare (unlike many Manning Wardles); the cab seems to rise straight from it and the cab front seems to sit right at the rear of the firebox (but before the backhead). Fortunately, the kit includes cab etches for both Morous and Siddlesham of the Selsey Tramway, which offer a couple of alternatives. One seemed to provide the correct side profile, but I have no idea whether the front or rear view is appropriate, given the absence of any photo or drawing.

Plumbing

The kit contains some lovely lost wax castings for the boiler feeds, but I struggled to work out where they should go. Peter Wisdom kindly provided me with some photos of Sharpthorn, at Sheffield Park, which seems to have a pipe coming out of the lower corner of the saddle tank and





Copyright Peter Wisdom

disappearing up to the top of the firebox. The photo of Wave seems to show a pipe from the same position on the tank, but simply disappearing behind the fenders: presumably it led to a valve or injector on the footplate to control the boiler feed? There is another length of rod appearing from the fender, which appears to end in a crank just short of the toolbox and disappearing below the footplate: I wonder whether this continues to the sandbox at the front of, and below the footplate, as there is no other obvious means of actuation? Peter's photos of Sharpthorn show the right hand side of the loco, which has the brake and reverser. Did the fireman operate the reverser, was a loco like this designed for one man operation or was it driven from the right? The reverser obviously has a linkage that runs down the side of the loco but there is also another small lever with a long rod; another arrangement for sanding or some other control?

Copyright Peter Wisdom

In the absence of any evidence, I have had to make up my own mind and try to represent an arrangement that looks practical, but I cannot say with confidence that this is how these features were arranged on Wave.

Toolbox, sandboxes

On the basis of the left hand side view, I have added a toolbox above the footplate on the left and sandboxes below the footplate on both sides.

Breakgear

Despite the frequency of “run ins”, I have assumed that brakes were fitted, although on the right hand side only. A brake to the rear face of the front and rear drivers seems to have been a standard Manning Wardle arrangement and I have opted for this. I am not sure that I completely understand the arrangement of rodding, but since the longitudinal rod seems to run high up below the footplate, it is effectively invisible.

Footsteps

I have opted for the standard MW footsteps – although reinforced with some wire to provide a little more substance. The photo suggests that Wave had something different - but without enough detail to indicate what these might have been.

Handrails

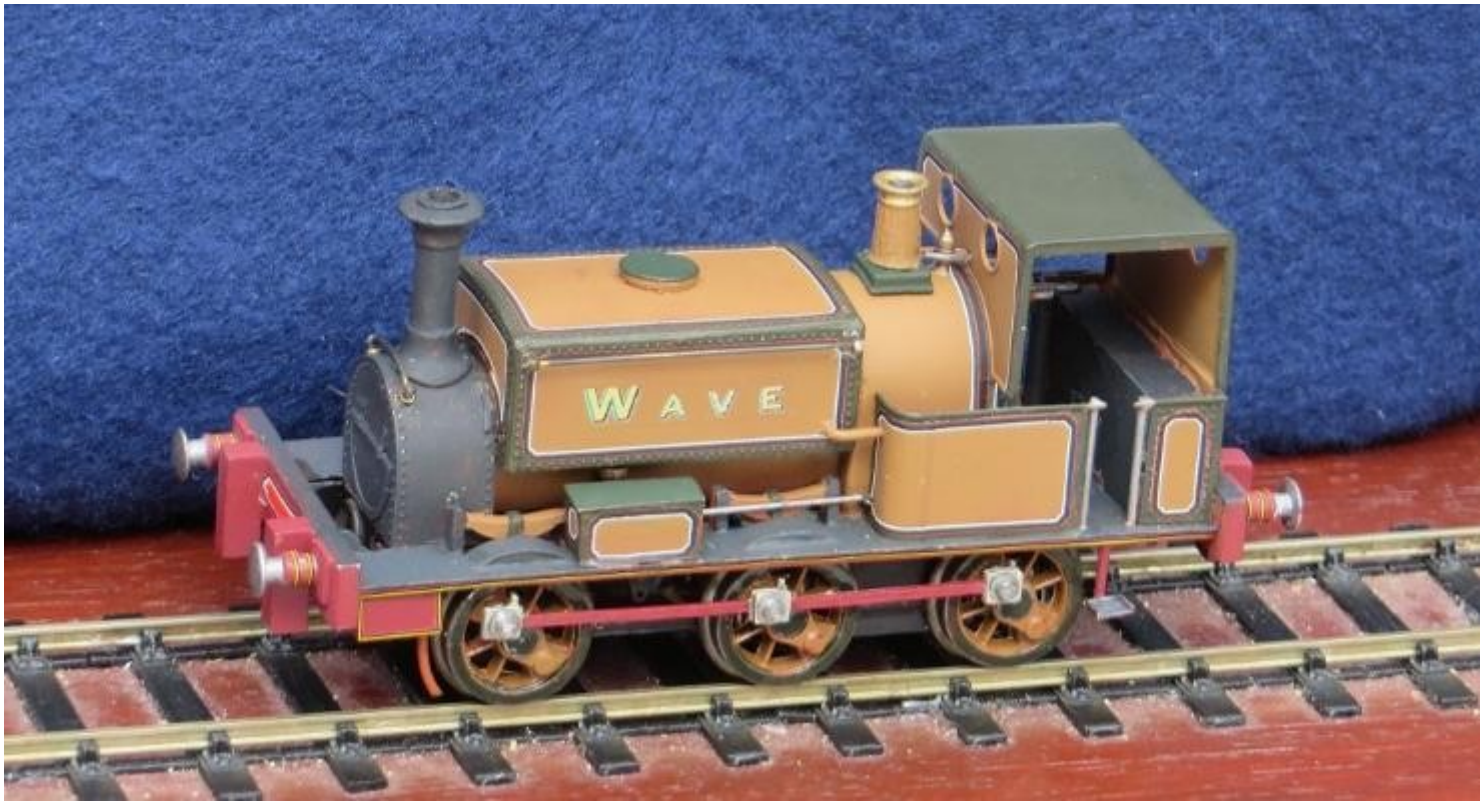
The smokebox handrail seems to have been a replacement for the standard MW horizontal semicircle around the smokebox. By the time of the photo, Wave seems to have had a more conventional handrail, in a vertical arc over the front of the smokebox.

Lampirons

Most photos of Manning Wardles do not feature lampirons – not surprising given their normal employment by contractors. Since Wave only seems to have ventured out of the immediate Newhaven area for major work at Brighton – possibly once every couple of years – I have concluded that I can leave her without lampirons.

Livery

However unlikely, the Newhaven Harbour Company was sufficiently proud of its shunter to have it painted in the Stroudley passenger livery. However, the normal livery must have been adapted to suit the design of this particular loco.



For example, in the absence of a clearly demarcated cab roof, would it have been painted white, or might it have been border green, as seems to have been the case with some other small tank engines? Wave seems to have retained dumb buffers for working chauldron wagons, which makes it difficult to give the buffer beam the full lining out. With such tiny splashers, they could not have been lined and how might the sandbox, below the footplate have been treated? Again, I have made some assumptions, going for a degree of simplification rather than the full livery.

One useful discovery related to the valence lining. After lining Dieppe, with its outside frames both on loco and tender, I was somewhat short of valence lining. The valences on Wave are very shallow and I seem to have a lot of buffer lining, of which the lining sheets seem to have excessive amounts (it must have seemed like a good idea when the sheets were designed). Taking a sharp blade, I was able to slice off one side of the buffer lining, to get red/black/yellow, which seems to fit Wave rather well.

Finally, taking my courage in both hands, I have given Wave a very light weathering to make her look “in service”. This consists of a very light dusting from above with the airbrush, using a nearly black mix, to simulate the effect of smoke and smuts, and a relatively light mix from underneath to represent dust and dirt being thrown up. This has given most of the loco a mainly matt finish, but the sides of the tanks retain a slight gloss. I quit while I was still ahead and stopped at that point!

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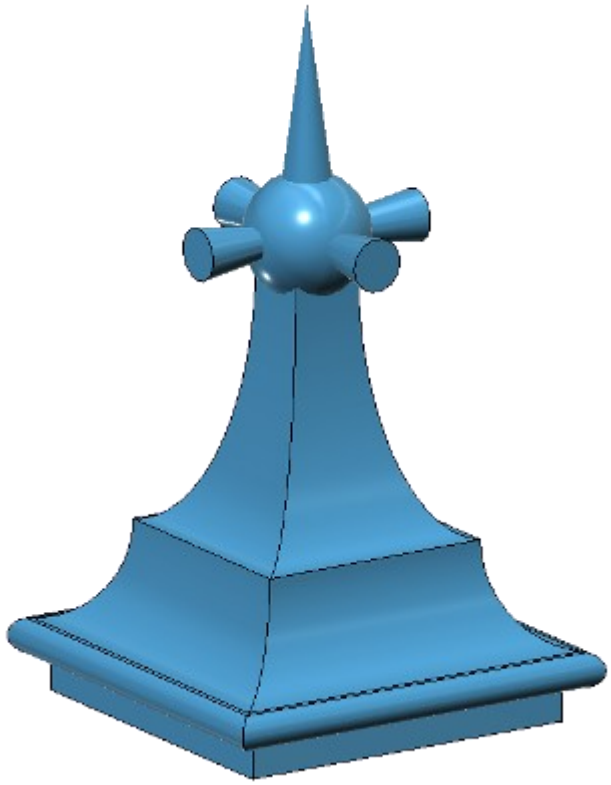
A Signal Box Finial by 3D Printing

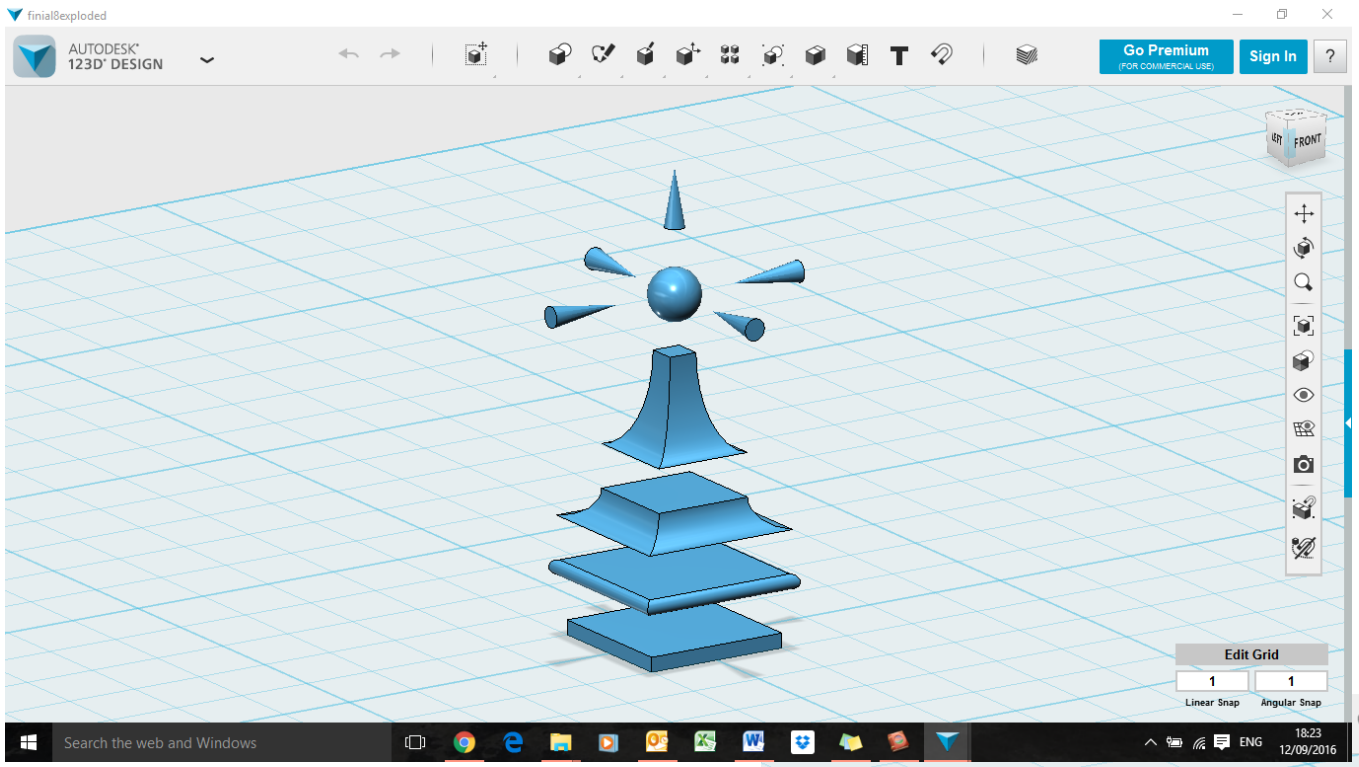
By Barry Luck

I started work on the signal box for Plumpton Green almost four years ago, and it's been almost finished for two years – lacking just the brackets under the eaves, and the finial/ventilator on the roof. The brackets were my first attempt at 3D printing, and arrived from the printer (ModelU) in early September – but not without a few difficulties on my part in producing the original drawing.

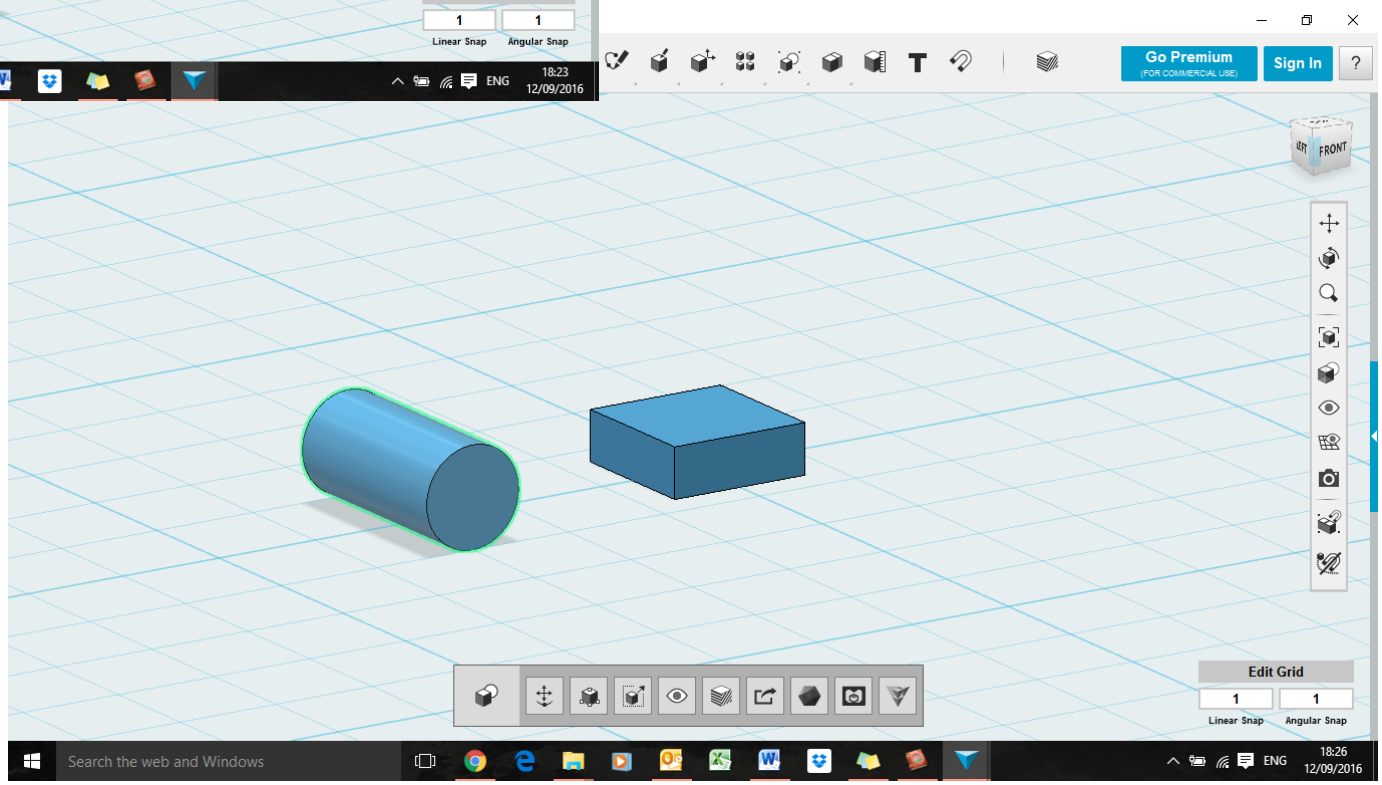
However, this minor success spurred me on to get the finial sorted out. In my search for better software capable of drawing 3D solids (as opposed to 3D mesh objects) I stumbled across AutoDesk123D. This is a free program, and is simple enough to get to grips with, within a few hours. However, its simplicity doesn't mean you can't make complex shapes given a little forethought and ingenuity.

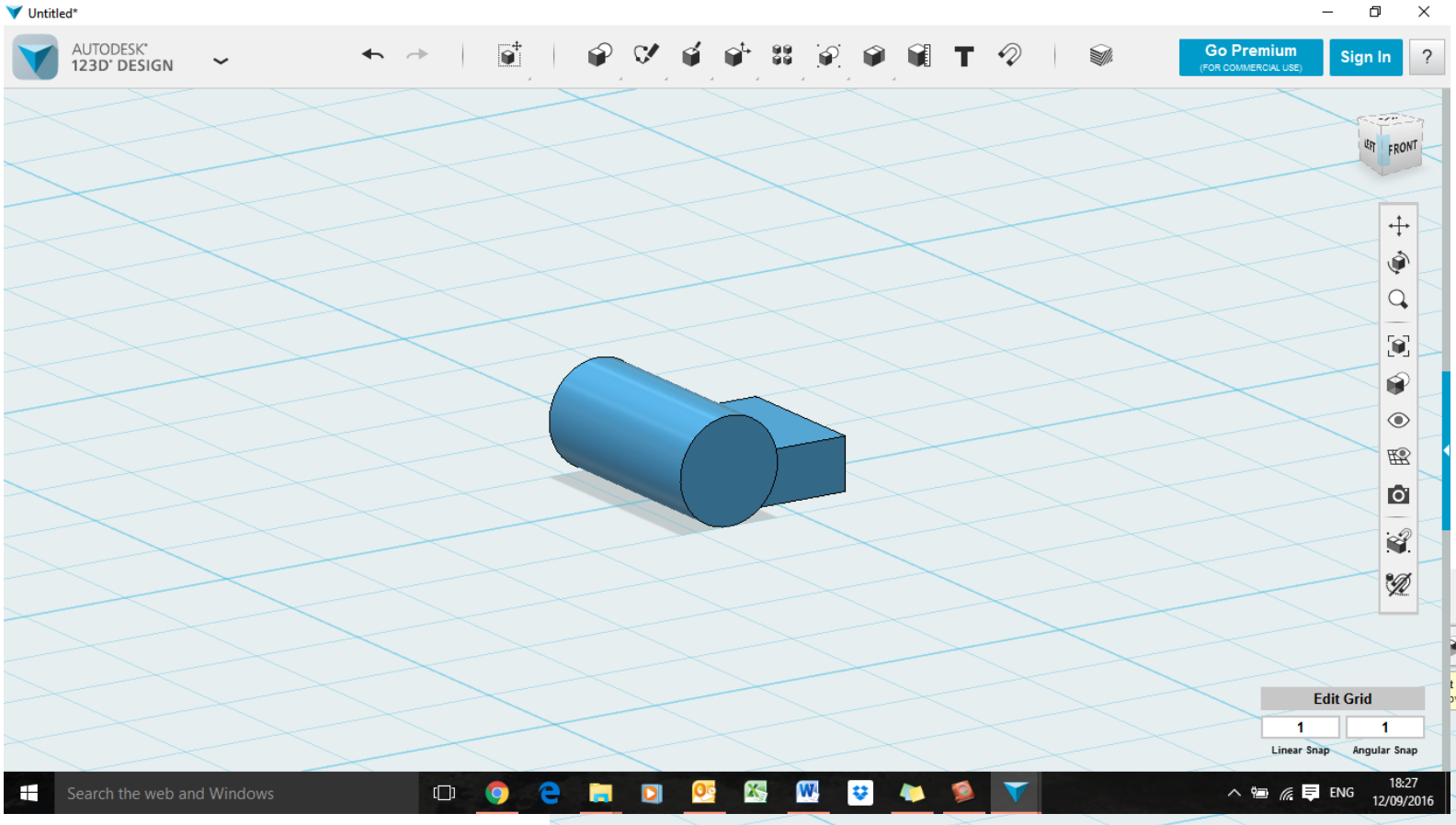


The photographs illustrate firstly, the finished finial, with the second photo showing an exploded view of the ten component parts. The program allows you to create 'primitives' (simple cuboid, cylinder, cone, sphere, toroid) defined only by their dimensions. These primitives can then be combined in various ways (merge, subtract, intersect, separate) to create more complex shapes.

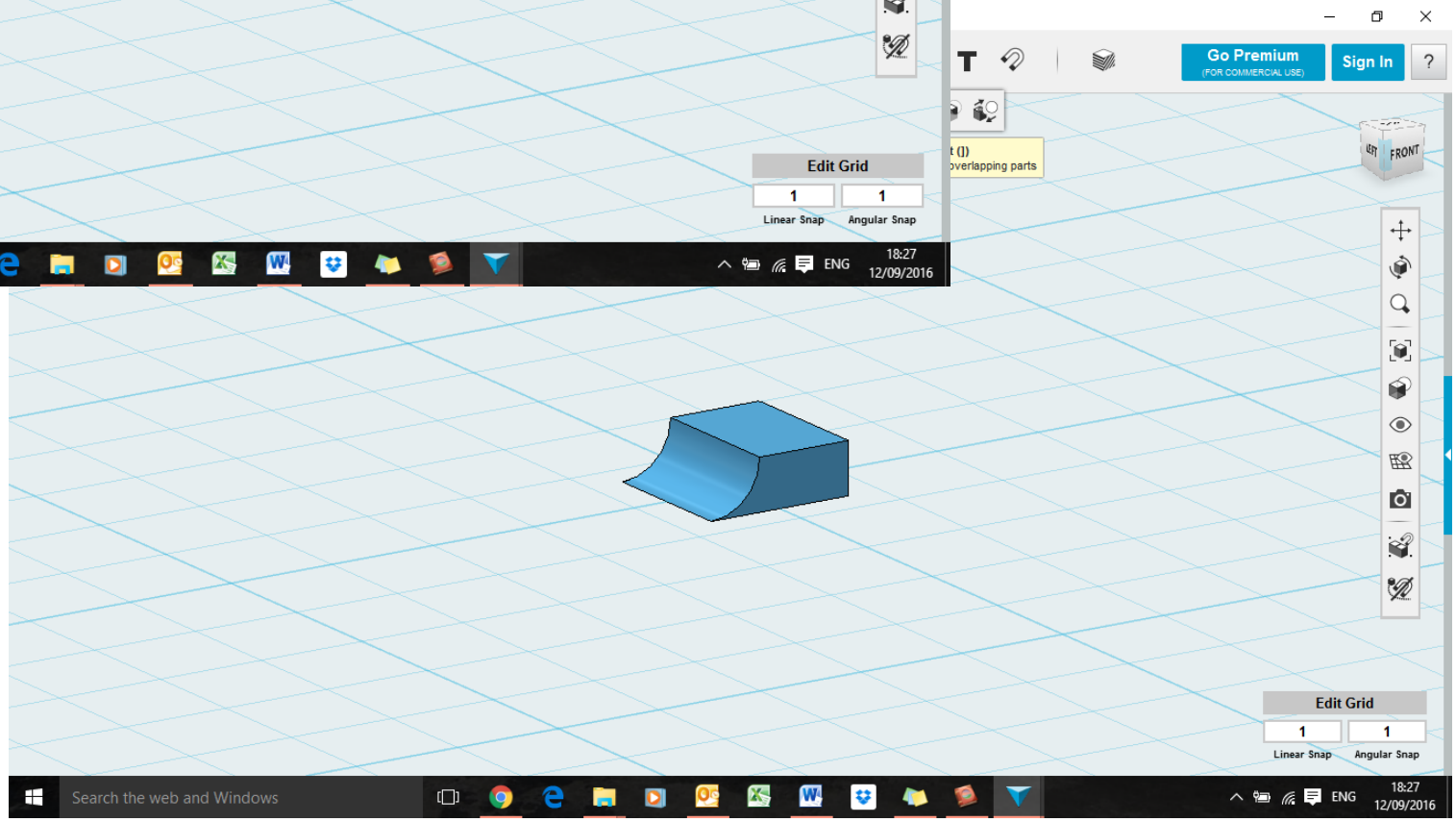


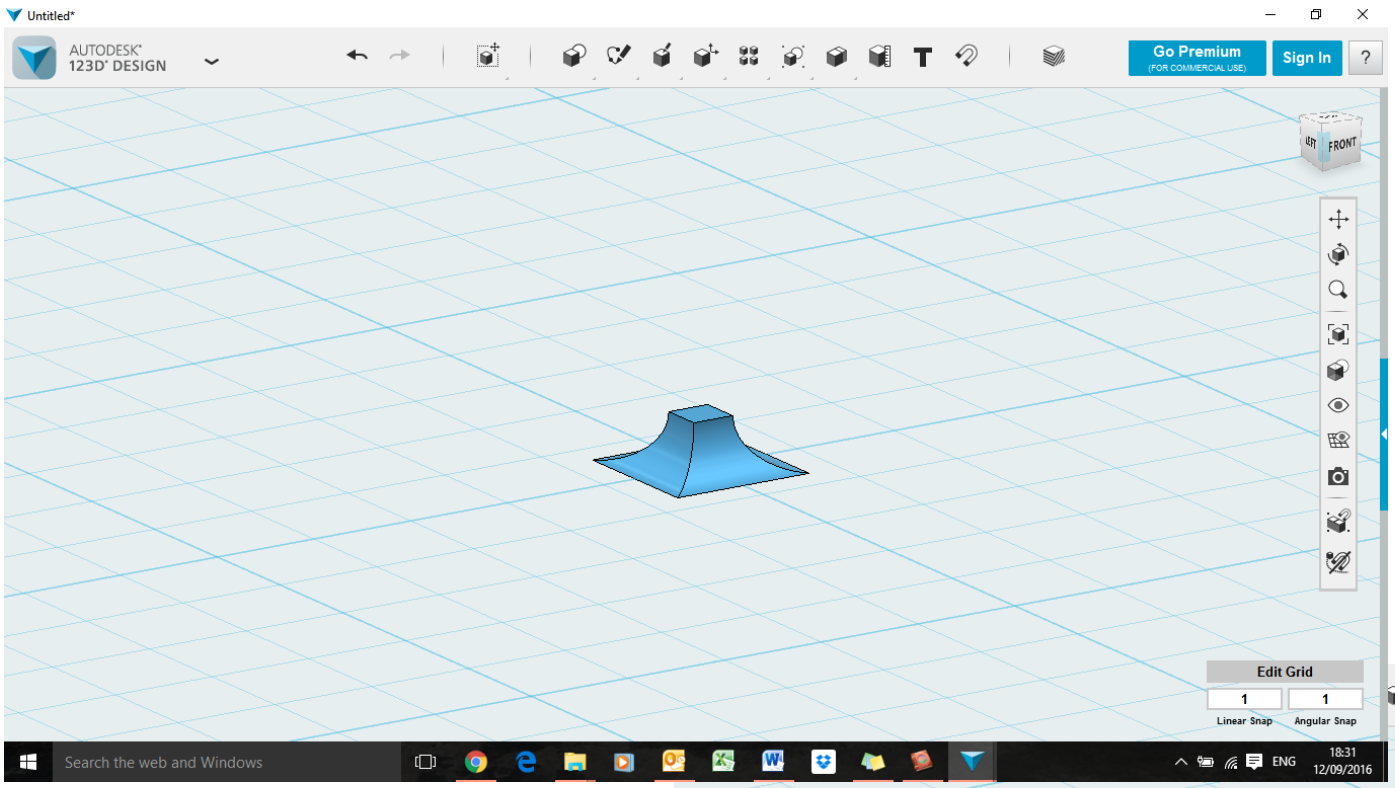
In the exploded view, the bottom layer is a simple cuboid, whilst the second is also a cuboid, but with externally radiused edges (‘fillets’ in the language of the program). The third and fourth layers are a little more complex, and the construction of the fourth layer is shown in the next five photos. The starting point is a cuboid and a cylinder.



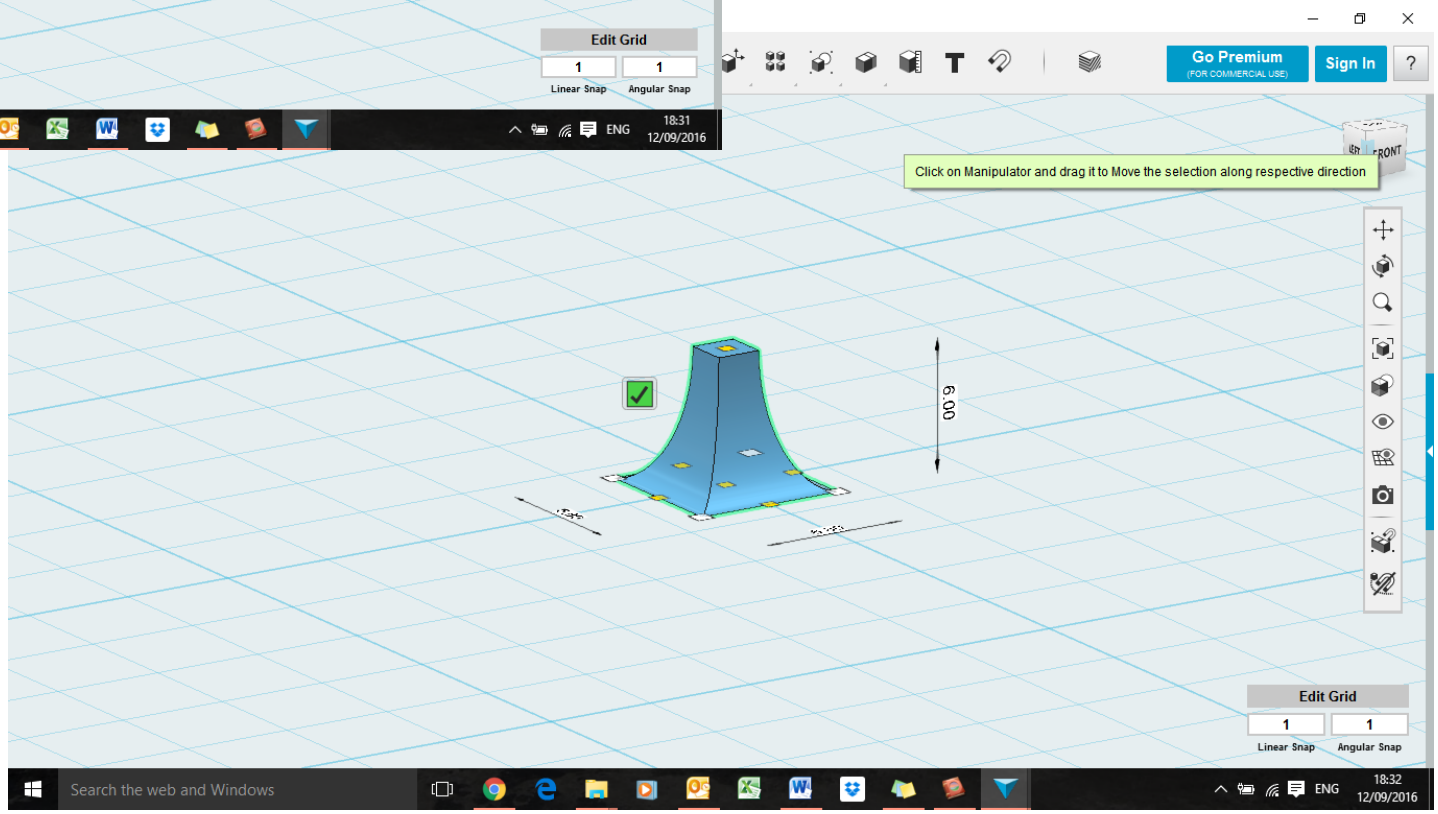


By aligning the cylinder with the edge of the cuboid, and subtracting the cylinder, a concave face is created, which can be repeated on the other three side faces.





The final stage is to stretch the object upwards to its finished height.



The only complication is working out the starting dimensions of the cuboid and the cylinder. To remove a perfect quadrant from the edge of the cuboid, the cylinder radius must be the same height as the cuboid. The dimensions of the top face are also dependent on the radius of the cylinder – the length and breadth of the top face will be the length and breadth of the bottom face less twice the radius of the cylinder.

For my finial the bottom face of the fourth component needs to be 6.8 X 6.8mm, and the top face 2 X 2mm. The radius of the cylinder must be half the difference between these two measurements = (6.8-2)/2 = 2.4mm. The height of the cuboid must be the same as the radius of the cylinder to start with (2.4mm). Once the concave sides have been formed it can be stretched upwards to the finished height (6.5mm).

The top six pieces are all ‘primitives’ – a sphere and five cones.

The final stage is to move the components around to build the finished object. AutoDesk123D is a bit clunky in this respect because it doesn’t use an absolute co-ordinate system. The most useful commands in this respect are ‘D’ which centralises any selected component on the grid and ‘shift-D’ which places the component on the grid (as opposed to somewhere above it). Each component can therefore be centralised on the grid and then moved up by the required amount to mate with component below.

There are a few short training videos which are worth watching to get you started.

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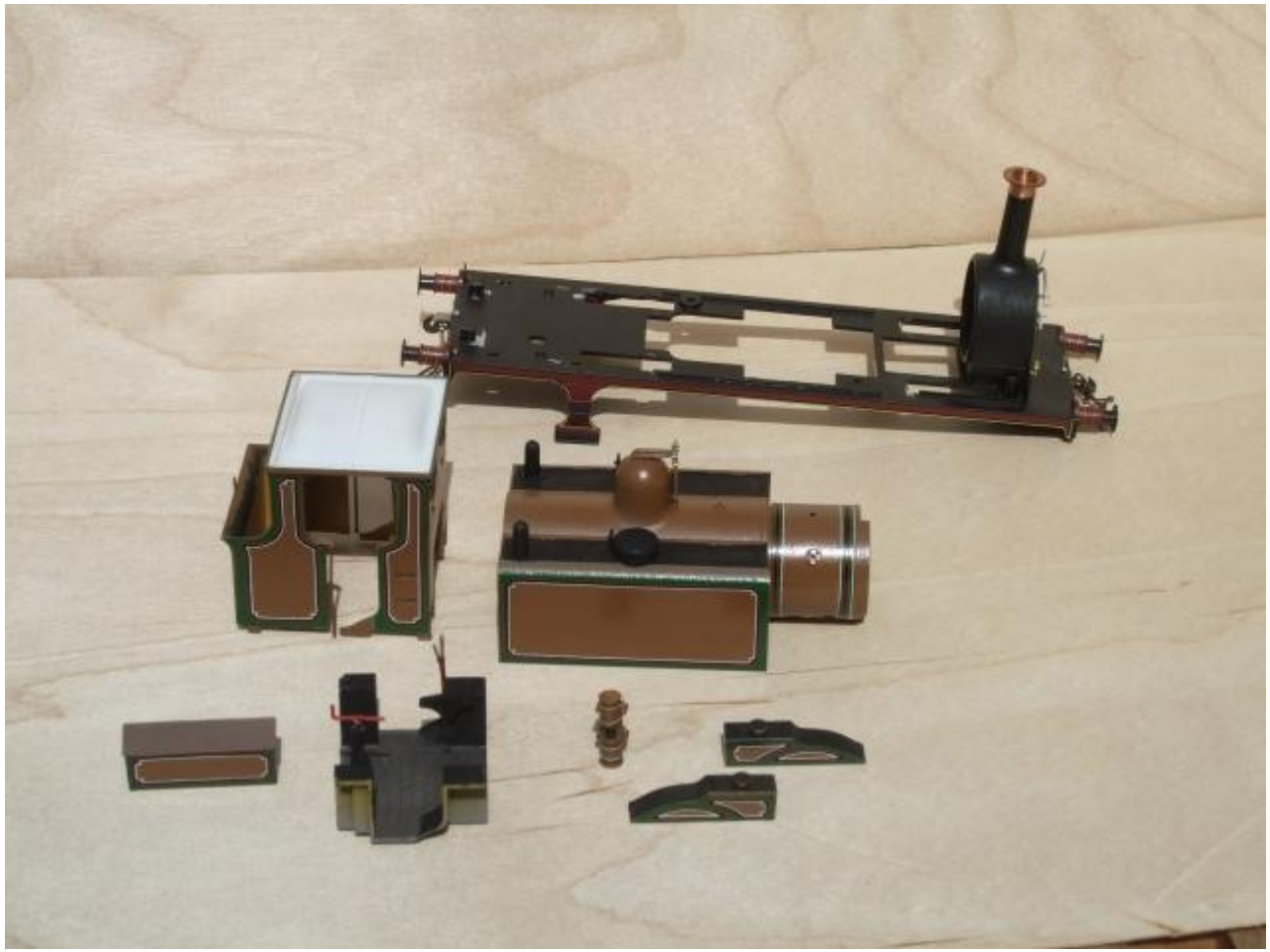
Repainting a Dapol Terrier

By Richard Barton

There are many good features of the 0 Gauge Dapol Terrier, not least the price! Although my model of “Thames” runs beautifully, I could not live with Dapol’s interpretation of Improved Engine Green and it looked awful compared to my existing Stroudley locos. In any case I wished to rename it “Gipsyhill”, which ran on the Hayling Island branch in my period, so I took the drastic step of repainting it!

I asked on our LB&SCR Yahoo Group if anyone had repainted the Terrier. Peter Smith was the only person to reply but he had used acrylics which he had mixed himself. I have never used acrylics so decided to use Craftmaster's IEG from that nice Mr Waldron.

The body was removed by unscrewing the four outermost screws under the chassis. First the “glowing light” in the firebox was removed - the PCB is held with double sided tape. The side tanks and cab are retained by tags, which are lightly glued into slots in the chassis and the tool box is a push fit onto a moulding on the footplate. I slid a knife carefully between the footplate and the body components. Next the Westinghouse pump and its piping was removed, as well as the incorrect lubricators on the tank fronts and the condensing pipes, not needed for my period. Once the cab was removed the rear of the cab can be freed by sliding downwards. The cab floor is a separate component and a push fit onto the footplate.The boiler was removed from the smokebox, which was left on the footplate and the lamps irons were pulled out of the splashers, allowing the splashers to be removed. Finally the spectacle glasses were easily pushed out and the whistle removed, though I left the salter valves in position to avoid damage. I filed off the rivets on the tank sides, as they make it difficult to position new transfers (in any case there were too many!) but I decided to live with the the incorrect gauges in the cab - with the roof a fixture, they were inaccessible.



My intention had been to overpaint the IEG by brush, to avoid spoiling the lining, which has been nicely reproduced by Dapol. I experimented with a part of the cab rear, which would not be visible but the enamel paint would not adhere to Dapol's varnish. Someone on RM Web had the same problem with repainting the cab interior and had used Halford's grey primer to give a key for the enamel paint. I masked the smokebox and salter valves and sprayed the whole body with primer and then IEG, with the cab interior brush painted with Precision LBSCR Tan.

Lining transfers are available from Guilplates for £12 including postage, the sheet giving sufficient for a Terrier and a D3. The main difficulty in applying these transfers is avoiding any creasing or, if you take too long in positioning them, they can stretch and the adhesive weaken. The latter can be overcome by rubbing a wet brush onto the blue surface of the sheet not covered by the transfers (the blue is film of adhesive) and adding this under transfers that have lifted. It is best to cut the transfers for the side tanks into four parts and apply separately (I found out the hard way!). Similarly it is easiest to cut most of the other transfers into more than one part, taking care to join up the lining as accurately as possible. The only major fault with these transfers is the bright green, rather than dark green, borders, which I overpainted with LB&SCR Goods Green, using a Windsor and Newton Series 7 size 00 brush, as recommended by Ian Rathbone for fine work. It is helpful to have a clean cocktail stick to hand, in case any paint obscures the lining. I forgot to overpaint the green in the boiler bands with a bow pen, which should be done before they are fitted and are still flat. The buffer heads and shanks plus the Salter valve levers were lightly painted steel, the Westinghouse piping copper and the brake blocks as weathered wood. The “Gipsy Hill” transfers came from Mike Waldron, the etched number plates from Guilplates, the crew from Andy Staddon and the coal in the bunker from the NCB. The footplate required little attention. The top of the cab steps were reprofiled with a half round file to avoid the unsightly join in the lining and the missing lamp irons added behind each of the rear buffers. The wheels were repainted in IEG with dark green balance weights and the coupling rods in steel. As yet I haven't removed the raised coupling pockets but they make the lining unsightly when viewed from the side - they will have to go! I will fit a stronger spring for the couplings at the same time.

I am pleased with the overall result, though it was time consuming. There are some imperfections in the lining transfers when viewed in close up: the Dapol Terrier has some small differences in dimensions from the Vulcan Terrier kit, for which the Guilplates transfers were probably designed. This I accept, as my modelling budget will only fund those models to be professionally painted that I cannot complete myself. At least I have the named Terrier I needed and it is very different from all other Dapol Terriers!

I have one more Terrier to repaint. I will certainly rub down the loco name before repainting, as this is just visible through subsequent paint layers in certain light. I will probably not go to the trouble of completely stripping the Dapol paint. In any case, if the Dapol lining is faintly visible after repainting it is a useful guide to the positioning of the new lining transfers.

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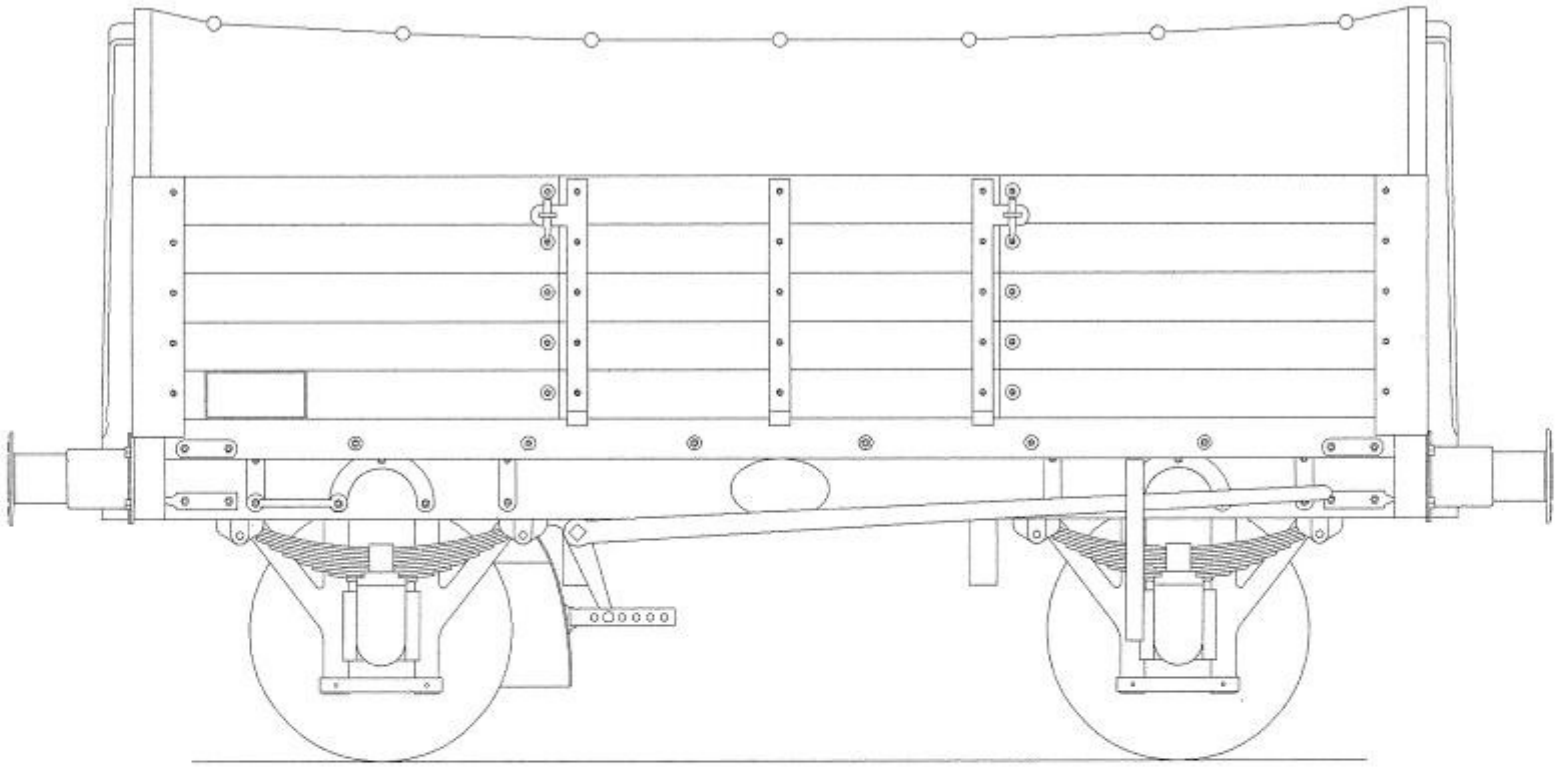
An Open A of 1880

By Simon Turner

Another early Open A, this time with the full three plank high semi-circular ends and a rope or wire to support the inevitable wagon sheet. As with other early vehicles, there are no external strapping or washer plates on the body - just individual washers behind each bolt. Note also the single block, single side brake.

Open As were the typical merchandise wagon on the L.B.& S.C.R. and would have been the most frequent Brighton vehicles to be found off the system in neighbouring companies' trains.

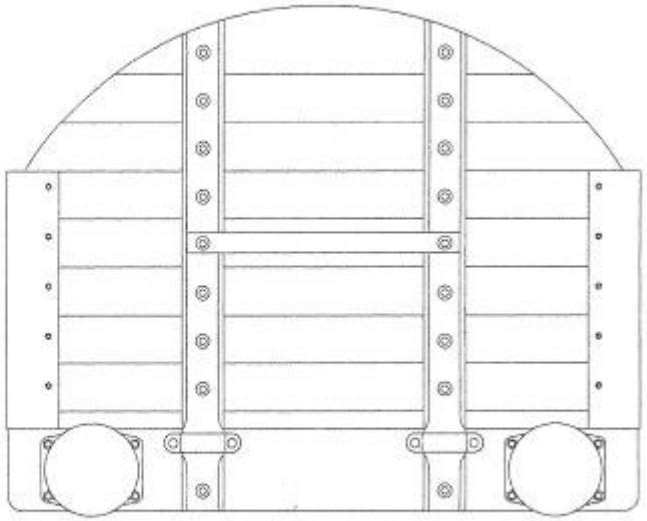
Typical livery would have been a pale lavender grey, with black ironwork. Lettering would have included the totem (often referred to as the illiterates mark), with an "A" followed by the number. The only other indication of ownership would have been on the numberplate on the solebar.

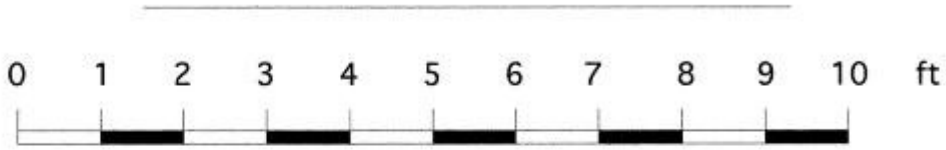


LB&SCR A class Open Wagon
As per No.A6627 built 1880

Drawn by S.T.Turner *May 1998*

A6627





End View
Wagon A6627

A6627E

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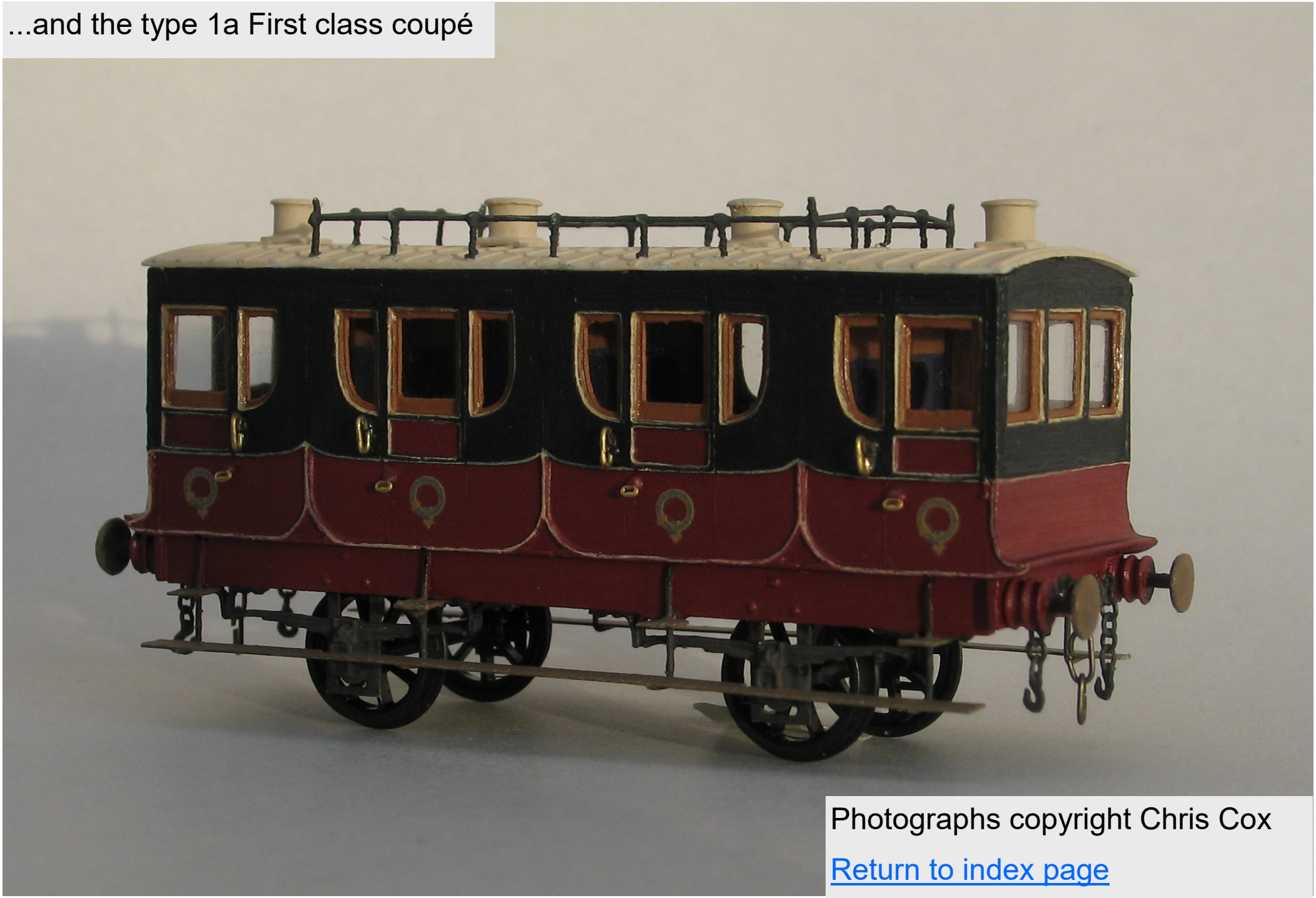
L & C R First Class Carriage

By Chris Cox

A London and Croydon First class carriage built by Chris Cox and using Cameo cut components and transfers by Ian White.

The sequel may well be a kit for a first class coupé of type 1a (see LB&SCR Carriages)

...and the type 1a First class coupé



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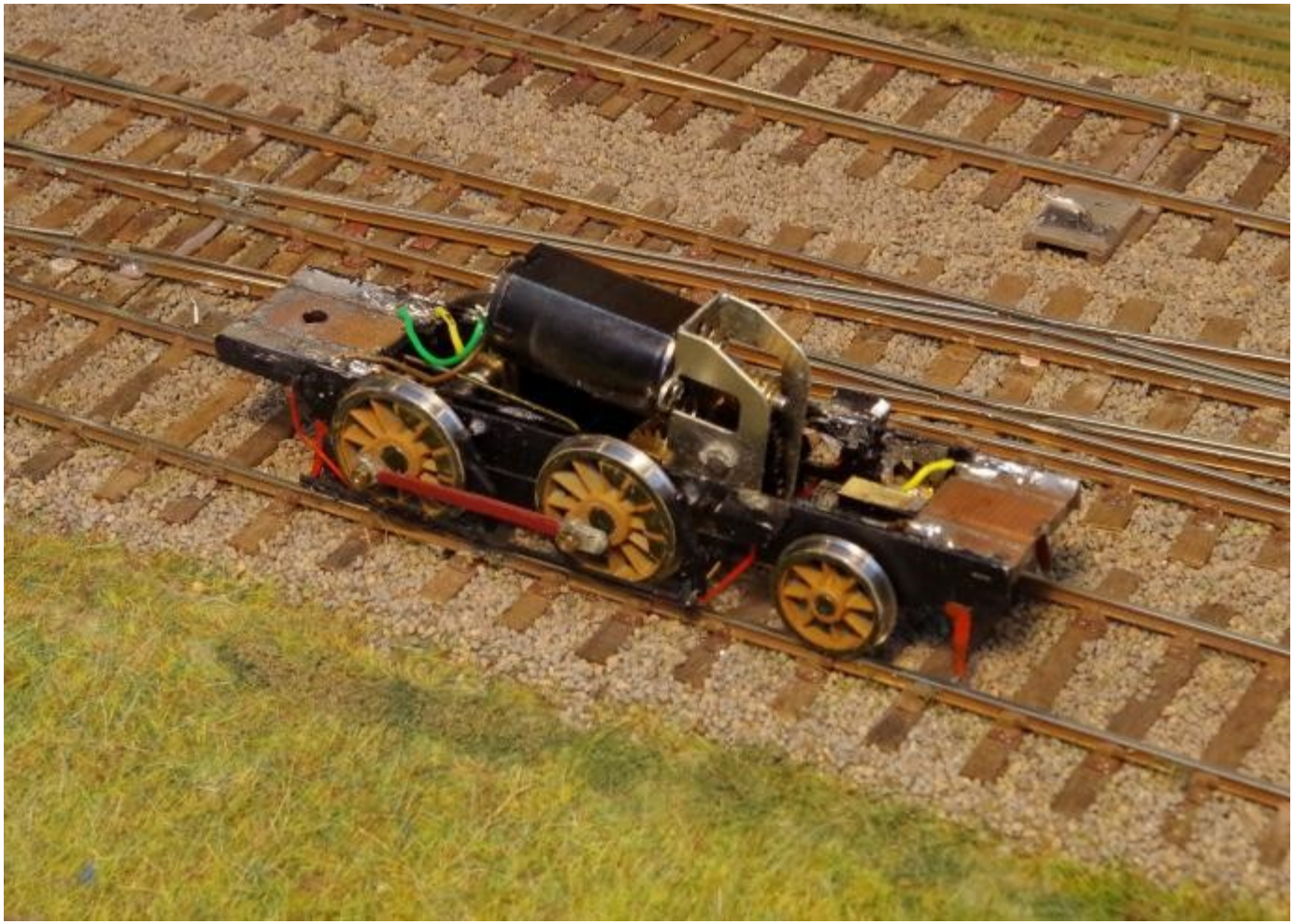
Boxhill - a 2-4-0T

By Barry Luck



A few years ago, I bought a part-built and unpainted white-metal model of a Terrier from a friend, with the express instruction that I complete it as Boxhill in the experimental 1905 green livery.

I removed the sprung hornblocks and rebuilt the chassis with full compensation and a Mashima motor with High Level gearbox. I finished the body, and gave it a coat of Halfords grey acrylic primer – and then put it on a shelf while I researched the elusive experimental green livery.

Bradley states that Boxhill was painted green – once citing Stroudley's green, and once being more specific about 'goods green'. However, there are many photos of Boxhill in this livery, and they show that the loco is quite clearly in a two-tone livery, and not therefore 'goods green'.

I've been unable to find any other references to this paint scheme, and a question posed to the e-Circle failed to elicit any further information. Having abandoned the loco for the best part of five years, I decided to bite the bullet, and complete the engine in IEG – albeit with concave corners to the lining (as shown in the photographs) rather than Stroudley's 'bee-sting' corners.

Having decided on the livery, I was very pleased to see that Peter Wisdom agrees with me in ‘Southern Style Part 2’!

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Short Trains on the L.B.& S.C.R.

The Victorian Age

By Nick Holliday

Although the main thrust of railway building in the early part of Victoria's rule was to create main lines serving major centres of population, many short branches were also built, often at the behest and expense of the local businessmen, desperate to become part of the widening network. During this period, the Sussex saw a number of such lines appearing, often the creation of separate companies that eventually became part of the LBSCR empire. Thus places like Bognor, Seaford, Hailsham and Midhurst became railway termini, some towns subsequently booming, and others merely continuing in their rural quietude. Some of these lines didn't have direct connection to the main lines to begin with, and so a three or four coach train plied backwards and forwards to provide the necessary service.

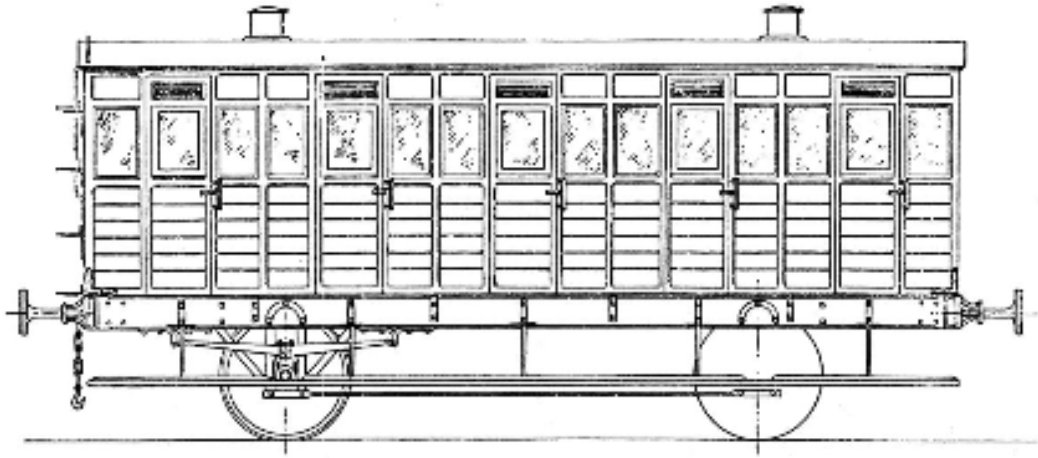
On the following page is a photo of the Bognor train, waiting to leave Barnham Junction. The loco is a Sharp single, with a full brake immediately behind the tender, followed by a three compartment first, four compartment second or third and, tucked away under the canopy, an antique third class, or perhaps fourth class, vehicle, dating back to the era of open sided carriages.

Modelling such as train in any scale is difficult. 5&9 Models, and Woodham Wagon Works before that, have produced white metal kits for similar carriages in 4mm, which occasionally turn up on certain auction websites, and the former's range can be seen on their website. The proprietor is currently taking a sabbatical from kit production to build his own layout, although he can be contacted by email. 5&9 also have produced white metal kits for early LBSC locomotives, but they have been out of production for some time. Ian MacCormac of the Brighton Circle has prepared etches for some Craven coaches, for both 4mm and 7mm scales, and these can be seen on his blogspot.

Exclusively Brighton Models (EBM) have also produced etched brass kits in both 4mm and 7mm for a variety of early Stroudley locos, which would be appropriate to haul such stock, such as the early 0-4-2 tank and various alterations to Craven designs, such as the Dieppe and Sussex singles and the Belgravia 2-4-0's.

The fact that early coaches tended to follow the carriage builders' design, rather than the railway companies', means that some coaches for other lines can be conscripted for service. In 4mm, there may be suitable items in the current Worsley Works, and Bill Bedford brass etch ranges that can be used with little or no modification, such as the Bill Bedford Furness Railway coach, illustrated left, or perhaps his NSR items.

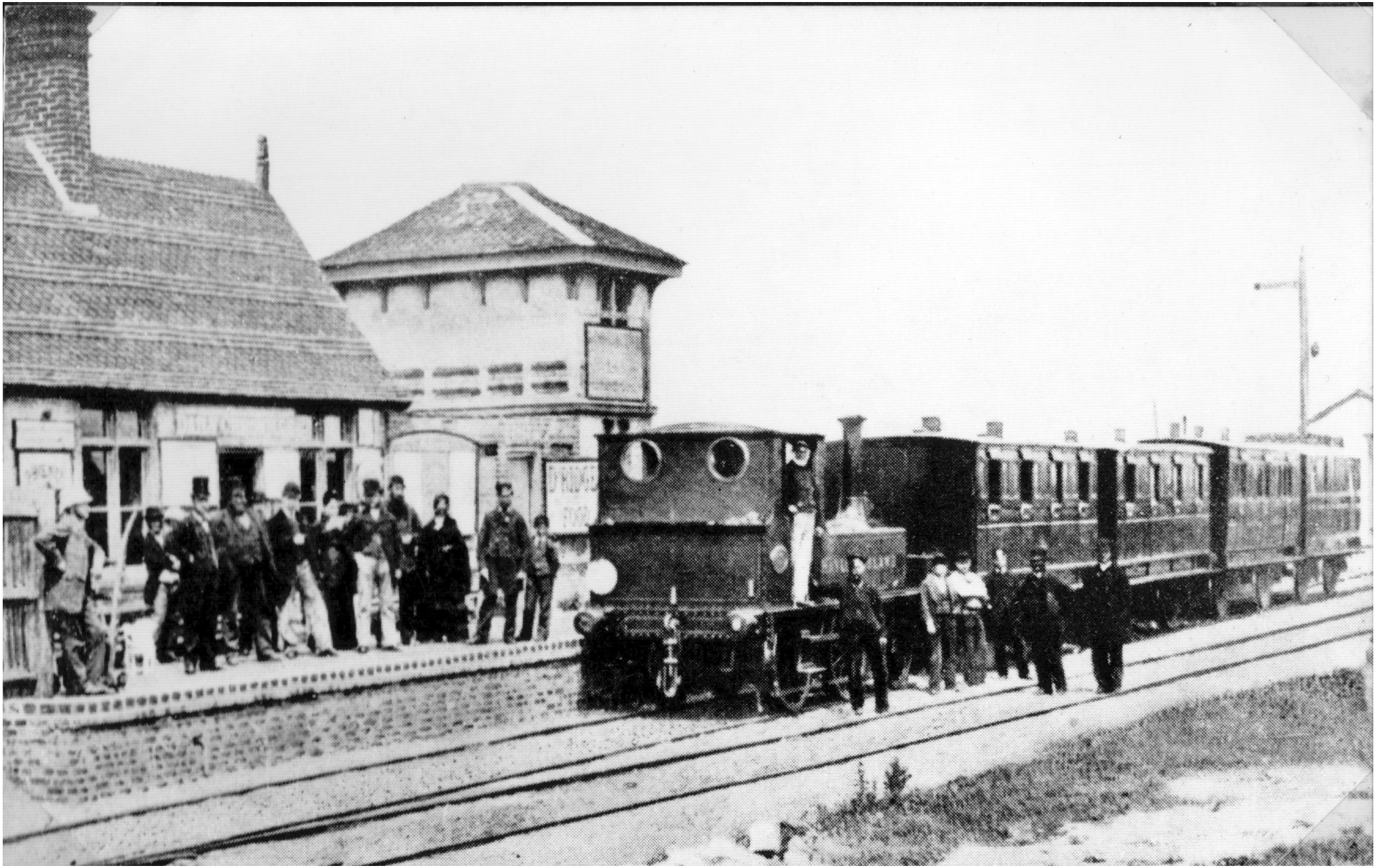
WC&ER 24ft Coach



BCK1850 WC&ER 24ft Coach

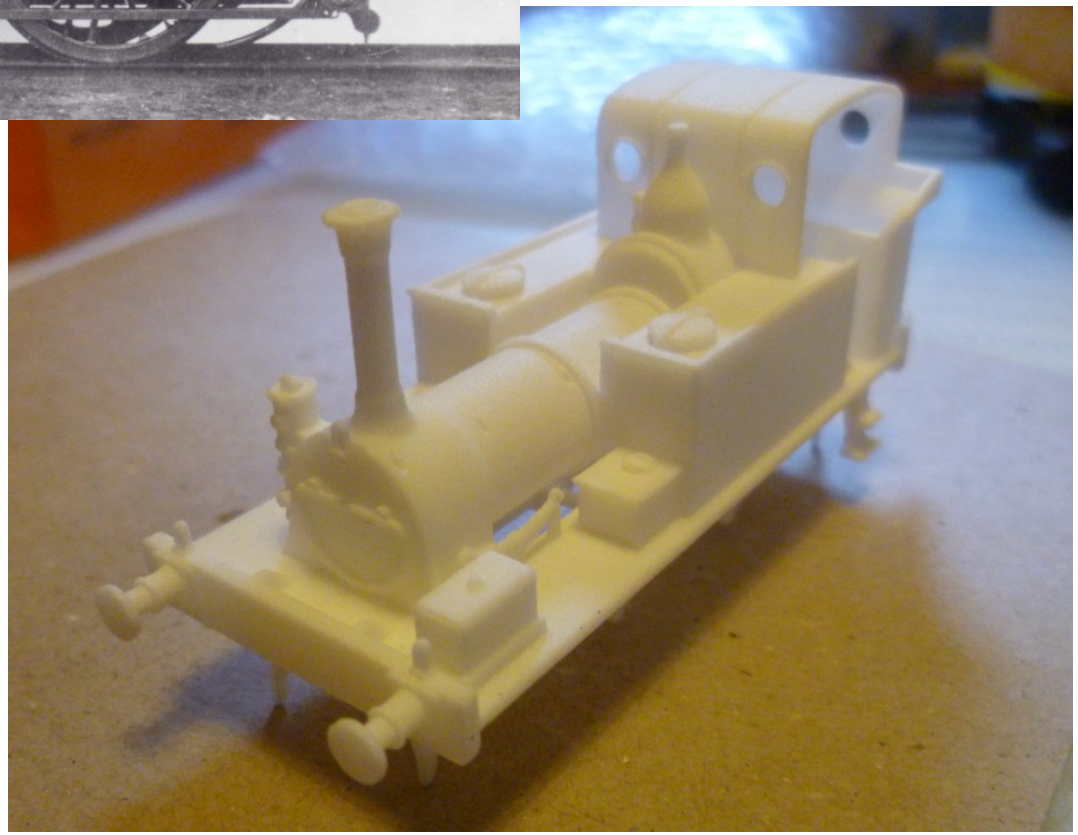
Construction: Etched Brass

Sets of etched kits for London and South Western Railway 4 wheelers often appear second-hand, with three of the four vehicles being very appropriate for LBSC use. In 7mm, Parliamentary Trains and Diagram3D have some early LNWR stock that could form the basis of a Brighton train, the former promising a Bury loco, some of which ran on the Brighton system in its very early days.



The train arriving at Hayling station is hauled by a Sharp Stewart 2-4-0 tank, for which 5&9 did produce a 4mm kit, the train has two 4 compartment thirds, a larger first carriage and what may be a third brake. Eric Gates has recreated this train using 5&9 kits and a couple of the LSWR vehicles mentioned above.

A similar, slightly larger, locomotive can be created by substantially modifying a 4mm Gem kit for the Cambrian / GWR 2-4-0, based on LBSC Bishopstone.

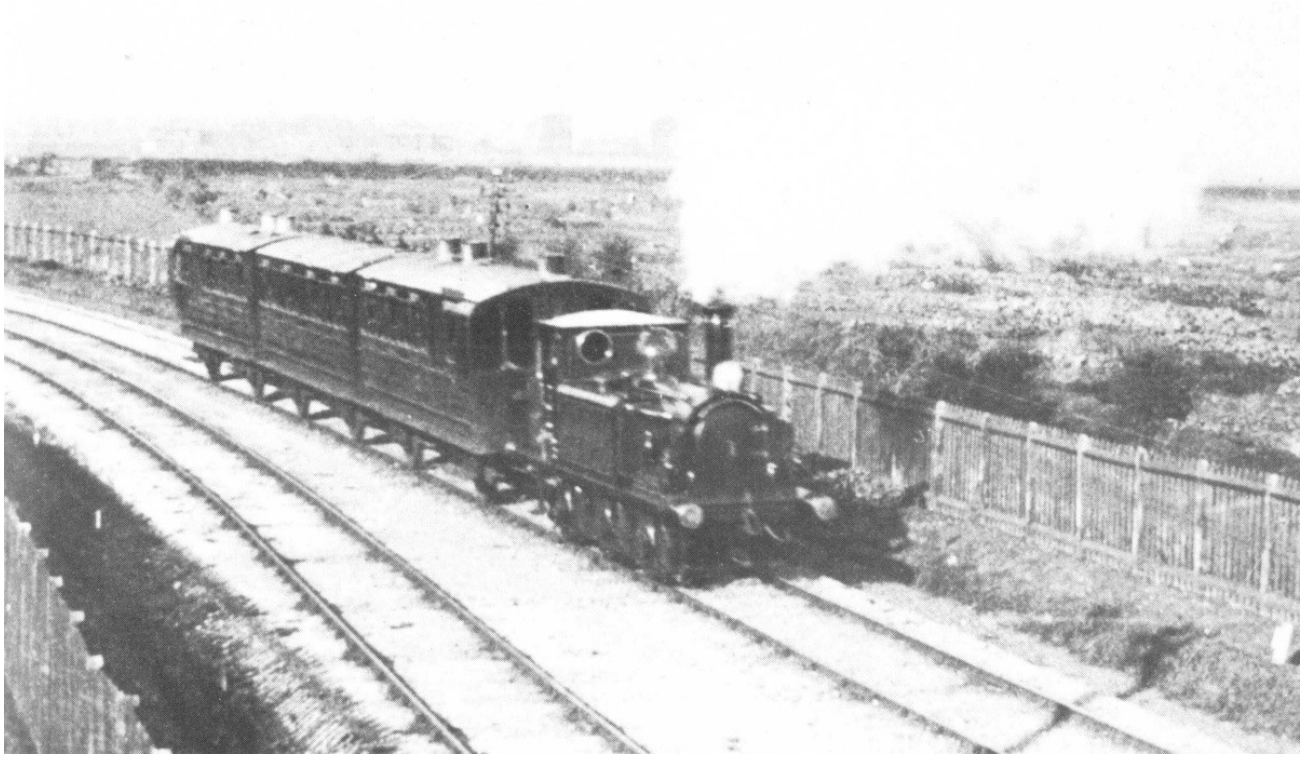


A smaller, more freelance, version can be built using a Shapeways 3D printed moulding for the Millwall Dock Extension Railway Manning Wardle. (At least it did run in a yellow livery, very similar to Stroudley's!)

The Stroudley Era

Following the arrival of Stroudley at Brighton, things began to change, although many of the Craven locos ran on, often heavily modified, until the end of the century, as did some of the old coaches, with some of the latter being used as service stock or as grounded bodies. Stroudley introduced his new range of locos, starting with the Terrier, as well as coaching stock to his own design, although maintaining some of Craven's better features. The Stroudley style of coach and wagon building can be traced all the way through to grouping, only slightly larger and perhaps more refined.

Terrier Preston on a Hayling Island train.



Another Terrier on the East Southsea branch.

The modeller of such trains now has an embarrassment of riches. Dapol have produced RTR Terriers in 2mm, 4mm (now in the Hornby range) and 7mm. Although they have certain faults, in the smaller scales as a result of trying to cover too many variations in one moulding, they have proved a popular entry loco for pre-grouping modelling. For this era, the Stroudley Improved Engine Green livery, with names, is correct, and, to be strictly correct, in their original form they should have sandboxes above the footplate, copper condensing pipes and not an extended smokebox.

There have also been a number of kits for these locos in 4mm, starting with the original white metal kit from K's, no longer available, via a number of etched kits, many of which appearing under the Jidenco / Falcon Brass logo, also out of production, to a current etched kit from Albion Models, available from Roxey Mouldings at exhibitions. There has also been a multiplicity of kits in various materials in 7mm, with Roxey Mouldings and Ace Products currently offering them.

Sometimes the Terriers' big brother, the D1 0-4-2 tank, would be used, and kits for these are available in 4mm from Albion and SEFinecast, and in 7mm from Albion. In addition the EB 0-4-2 tank could have been seen on such duties.

Modellers have been equally well served regarding the four wheeled coaches, partly thanks to their survival into the thirties on the Isle of Wight. K's, in a rare display of rationality, produced three key types to run with their Terrier, a full third, a first and a third brake. These were made in white metal, and were heavy and difficult to build so that they ran well, but, as Eric showed in the previous Digest, with a bit of work they scrub up very well, and they appear regularly on eBay at usually not too silly prices. Roxey Mouldings have produced etched kits for them in both 4mm and 7mm, and include the distinctive short full brake that can be seen in the Hayling Island photo.

In addition, Smallbrook Studios have replicated the K's kits in cast resin, to represent the coaches as they ran on the island, and so they need a little bit of reverse-engineering to achieve their original Victorian splendour.

Just to make things even easier, Bachmann USA have produced some four wheeled coaches for the Thomas series which appear to be based upon the Stroudleys. They have been successfully reworked by Gary Kemp (BlueLightning on RMweb) as shown to the left.

There is the suspicion that they are closer to HO than 4mm, but when run with a Terrier (Dapol in this instance) the lack of height is not so noticeable.

Other modellers have taken advantage of the similarity of the Triang GWR clerestory coach mouldings to cut and shunt suitable stock, such as the two leading coaches on the Katharine Street (Central Croydon) layout of Peter Wood and the late Michael Knight, seen at the recent Croydon exhibition. Ratio GWR and MR coach parts have been similarly adapted as well.

This fine O Gauge train is courtesy of Graham Boseley, with his stock running on the Stevenage Model Railway Club layout. Provenance of the loco is unknown, but the coaches are from Roxey, finished and painted by Jason Kristunas.

In 2mm, Etched Pixels have a wide range of etched coach bodies to run on adapted Peco chassis. to go with the Dapol Terrier.

To add to the 4 and 7 mm mix, there are other kits around that could add variety. Ian MacCormac is promising some Stroudley saloons, EBM's range included a couple of Stroudley four wheelers, although more main line than branchline in character, and London Road Models have a passenger luggage van and a straight sided full brake. You could also include a NPCS item, such as a horse box or carriage truck in the train, without making it too long. The Roxey kit of the short Stroudley horse box in particular comes to mind.

For those of you who want to study the coaching stock in more detail, the two volumes on four and six wheel coaches from Brighton Circle members Ian White, Simon Turner and Sheina Foulkes, are absolutely essential.

http://www.kestrelrailwaybooks.co.uk/LBSCR1.htm

Early locomotives are discussed in detail in the unfortunately out of print RCTS series on LBSC Locomotives authored by Bradley, but a recent reprint of a 1903 book by Frank Burtt is widely available, often at reduced prices in book warehouse locations.

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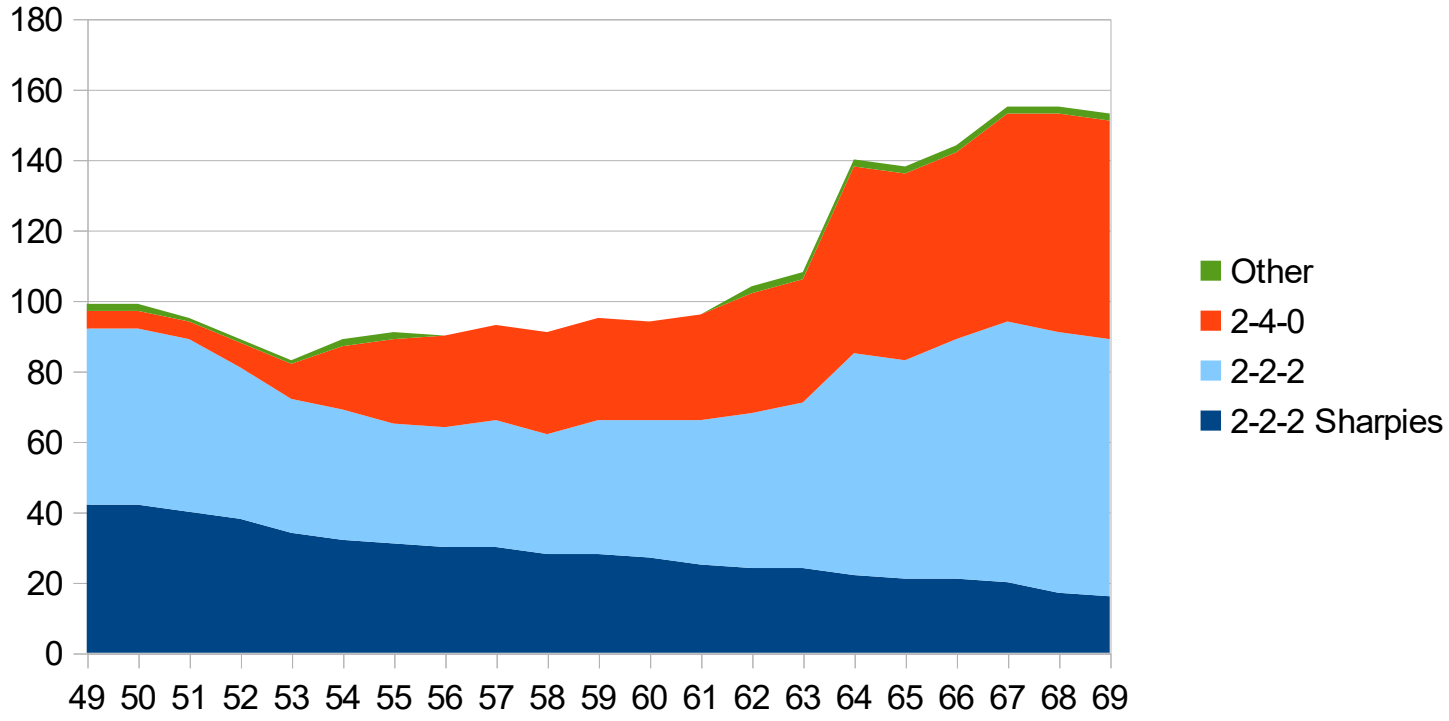
Single Drivers

By Eric Gates

One of the “interesting challenges” of modelling the Brighton is the number of single driver locos that were in service well into the 20th century. Stroudley's G class 2-2-2s are well known, but, for those delving a little further back, there are many singles among the range of locos that flowed from the creative mind of J C Craven.



Graph illustrating the number of passenger locos owned by the LB&SCR during the Craven period and showing how, even in 1869, well over half were singles.

For those modelling in 4mm and 7mm scales, EBM has produced the Stephenson single and the rebuilt version, Sussex, while 5 & 9 Models has produced a Jenny Lind and has a Nasmyth Wilson single in development, both in 4mm scale. How many other pre-grouping companies are as well served?

The only problem with single drivers is how to give them sufficient adhesion to pull anything useful. Not only does there have to be as much weight as will fit, but it also has to bear on the driving axle to the maximum extent possible. The area immediately above the driving axle is already likely to be full of motor and gearbox, so the weight needs to be balanced around the driving axle and to take account of any springing or compensation. A traditional rigid frame is likely mean that any irregularity in the track will leave the driving wheels spinning in the breeze. To date, I have had three attempts – each using a different system – but I am not sure that any is as good as it might be. This article therefore offers a selection of sub-optimal solutions, with the invitation to others to offer more successful alternatives.

Jenny Lind was my first single and was built from a 5 & 9 white metal kit, modified slightly to reflect one of the locos, late in its career. In this case, the loco has tender drive, provided by a HighLevel LongRider diesel power bogie, which had the right spacing for the outer axles. There was just space to add a centre axle – although this did not improve the compensation and the tender see-saws slightly between forward and reverse. It does, of course, have the disadvantage that the tender has a life of its own, which can look slightly odd, as the tender sets off slightly before the loco. However, with plenty of lead packed in, it has reasonable haulage and would take 5 coaches on my roundy-roundy layout.

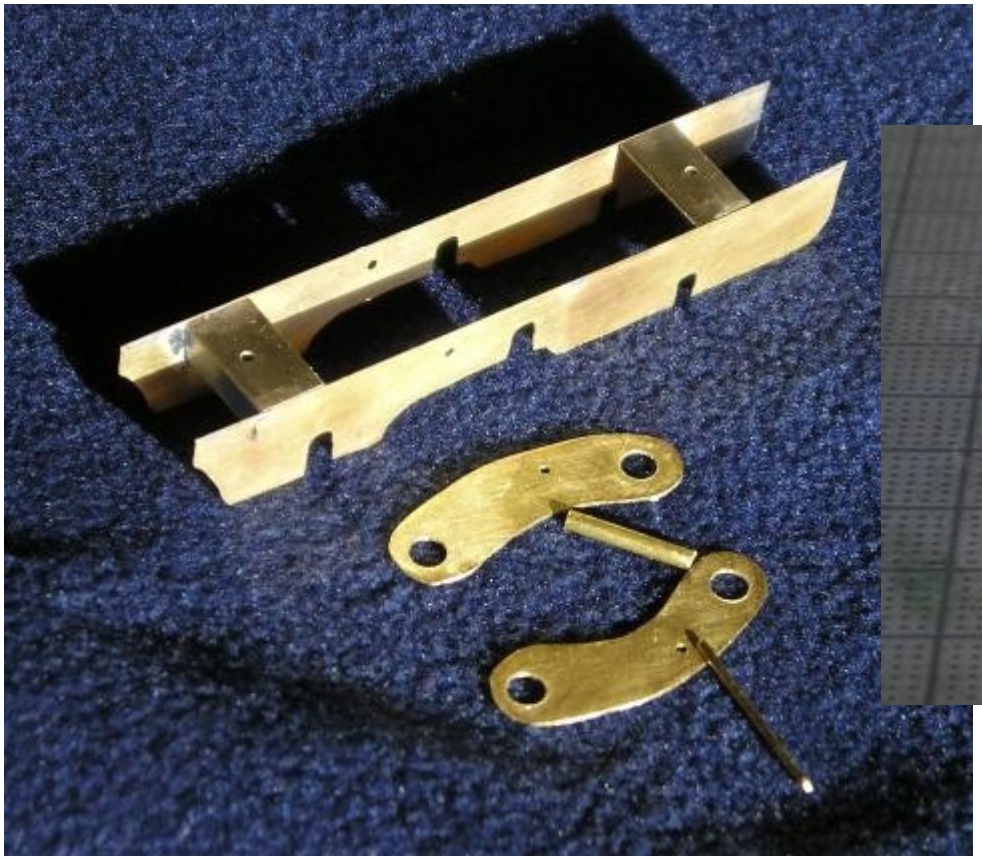
LongRider power bogie, with the extra axle fitted, sitting next to the tender body.

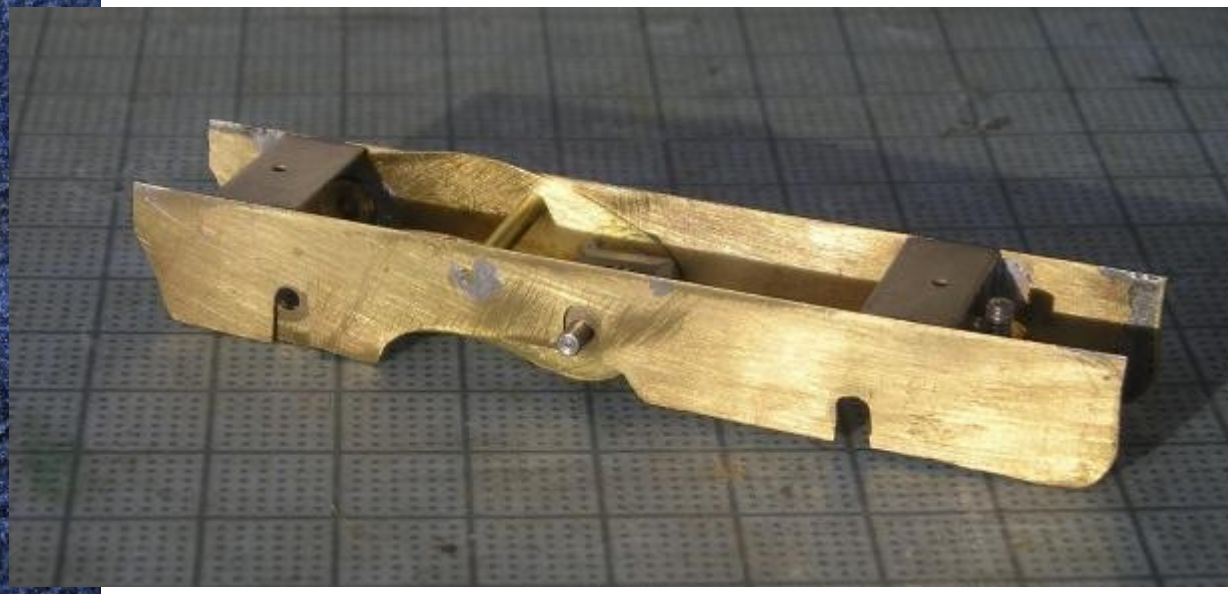
Photo was taken before the fitting of handrails, but otherwise largely complete.

The Sharpie tank engine

This little tank engine was built from some castings that Chris Cox showed at a Brighton Circle Annual General Meeting some years ago. The castings covered the body of a Sharp tender loco and I made the mistake of suggesting that one of the Craven conversions to a tank engine would make an interesting challenge. This required a chassis to be built from scratch. It has three point compensation, with a rocking front axle and the driving and trailing wheels mounted on a pair of

compensating beams. The point of balance on the beams is about three quarters of the way towards the driving axle so that the maximum weight is transferred to the drivers. Despite being made largely from white metal, this loco was never going to be very powerful (but then I don't suppose the prototype was either), as there is only just enough room to get a Nigel Lawson motor into the firebox, with a rubber band drive.





Above - frames with the compensating beams that carry the driving and trailing axles.

Top right - assembled chassis with the compensating beams - shown enlarged below right.

Dieppe

Dieppe is a Stephenson single, built in 1864, and constructed from an EBM etched brass kit. In this case, the loco has fixed axleboxes for the driving wheels, a rocking front axle (to give the three points of suspension) and a trailing axle that is lightly sprung to stay on the track, but otherwise just goes along for the ride. When originally built, I did not add enough weight and I have recently had another go, to cram lead into any spaces that I could find. Weight needed to be added to the smokebox, since that is the end with the fixed suspension point, and adding weight only at the cab end would lift the loco nose up. As it is, it needed careful adjustment to minimise any see-sawing around the driving axle. Logically, this arrangement should be a good way to maximise the amount of weight that can be brought to bear on the driving axle, since a compensating beam to the trailing axle must divert some of the available adhesive weight. However, making the tender into a semi-trailer, Sharman style, would allow more weight to bear on the drivers - but with the need to counterbalance the front end still further.

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Above - chassis showing fixed driving axle, swinging front axle to the right and sprung rear axle to the left.

Right - chassis with motor and gearbox in place.

After three attempts, I still don’t think I have come up with the ideal solution, so I should be interested to hear from others how they have tackled their single driver locos.

Travelling Hand Crane Part 3

By Colin Paul

LB&SCR Goods Department 10Ton, 6 Wheel Travelling Hand Crane No.19 in 7mm

Part 3: Underframe continued

Correction: In Digest No.3, Page 53 reads: …additional added section 6` 8” deep fitted to the original headstock… should read **6”- 8” deep!**

Sadly, the construction of the underframe has taken me a lot more time than first envisaged and this article now records the completion.

Firstly, the brakes; were they fitted or not? Looking at the clearest photo of No.19 (Digest No.1, Page 29), the image was slightly lightened on screen. A very faint triangular brake block can just be seen, acting on the left-hand side of the centre wheel. The image is still not clear enough to make out if there was a brake block acting on the inside face of the left-hand wheel, as the supporting beam gets in the way. It is my guess that there were two brake blocks either side and these have been modelled. The end of the central brake pull rod is also just about visible. So with this information, it would appear that the spoked wheel on the threaded bolt, with the drop-down side clamps (one either side of the external supports on the face of the solebar) were indeed to operate the brakes. It still puzzles me how the clamps work the brake pull rods, as there no visible linkages to be seen. The shape and size of the brake block appears to be a slightly smaller version of a coach brake.

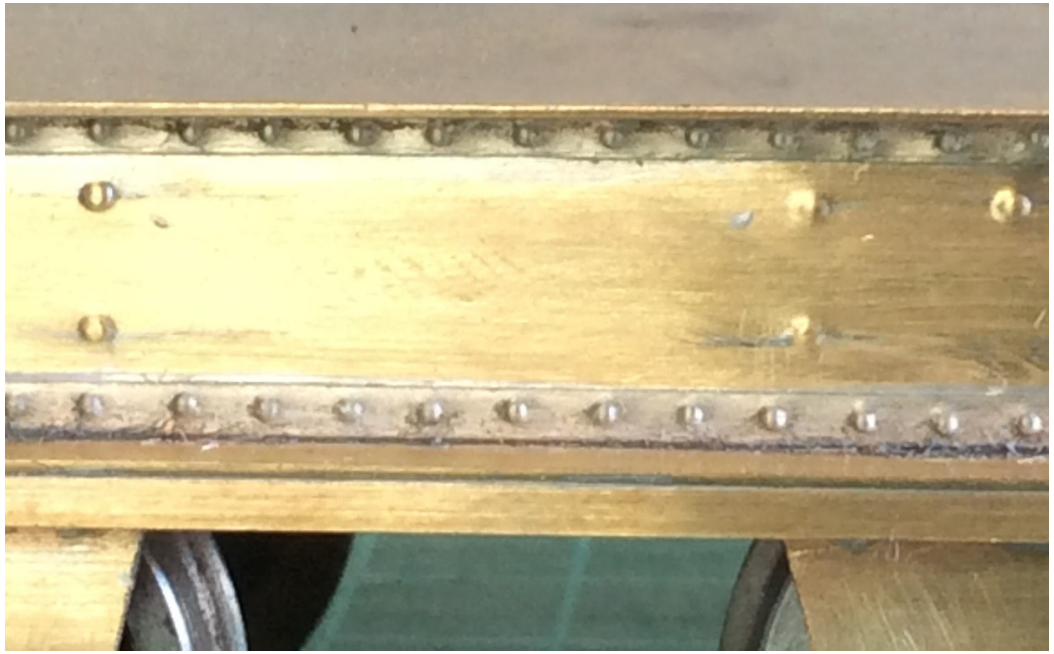
At the end of the last article before publication, Mike Waldron had sent me the lovely etched rivet

strips for the crane. The rivet spacings throughout the whole crane worked out to around 2.5mm x 1mm wide though this may not be 100% correct. If a GA drawing were available, clearly showing the measurements etc, they would have been spaced accordingly, but I was more than happy with this spacing as a compromise. A long strip was carefully removed from the etch, which revealed the first of a number of problems. As I did not want to punch out the rivets from behind, the brass was half etched from the front; ie leaving the rivets fully formed ready. I noticed from the start the thickness of the etch was way too thin for 7mm at around 10thou, but decided to carry on. Starting with the camera side first, the top and bottom strips were cut to length (117.5mm) and soldered into position. First impressions of strips appeared fine and acceptable, but I did notice the top row, especially in the shadow of the overhang lip of the decking, simply vanished from normal viewing angles. Looking at the photo of No.19, the rivets were clearly visible, but, more importantly, a shadow could be seen running the whole length of the strip (along the bottom edge), which was missing on the model. Further study revealed the strip was slightly too narrow. My estimate of 1mm should have been 1.50-1.75mm wide at least. Having left everything as it was for a few days, I still was not happy with the results. So, reluctantly, the strips were removed and the side cleaned of solder. Back to square one. The only way to resolve the issue was to make my own rivet strips, which is where I had started. As Eileen’s do not sell any 1.75mm wide n/s or brass strips (their 2mm strip is way too wide), I settled on 1.5mm x 30thou n/s (Eileen`s Emporium ref:NF01503D) which I had in stock. As it happened, 1.5mm looked correct. Setting up my trusty old Cherry scale rivet press, work progressed on punching in the rivets. After straightening out the curve (from the punching process), to my surprise, the edges stayed

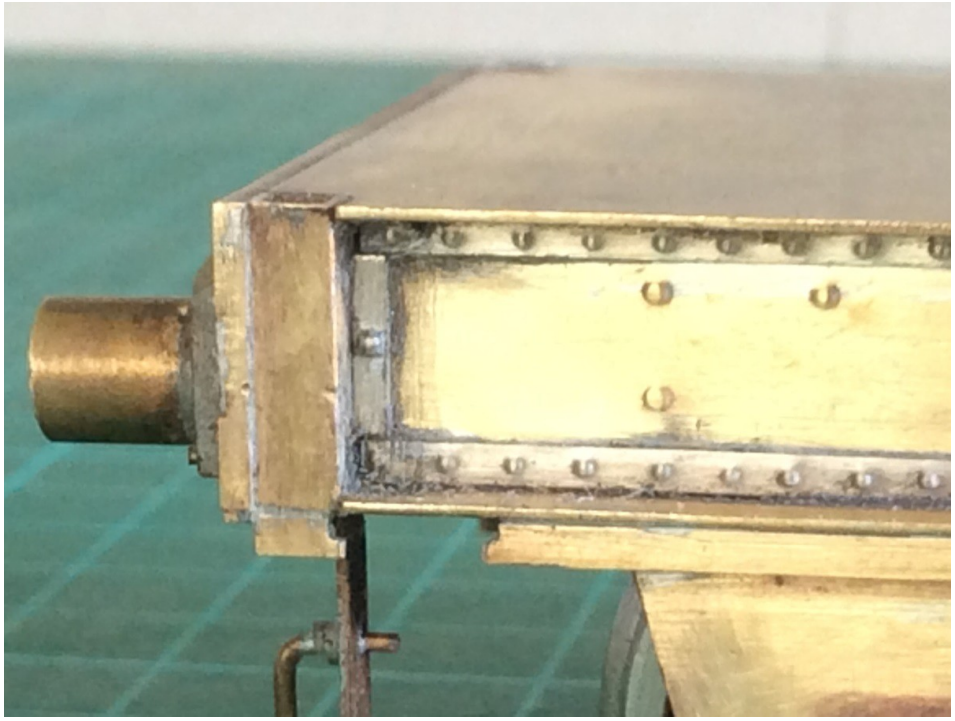
relatively flat. Only one or two edges required flattening with pliers.

Home punched rivet strip using 1.5mm x 30thou nickel silver strip. Each rivet was reproduced using a Cherry Scale rivet punch set to 2.5mm spacings. It was not the easiest photo to take showing the raised rivets due to several different lighting positions. The remaining strips on the rest of the crane, including the jib, will be made in exactly the same way.

Two prepared strips were cut to length. The top one was soldered on first, as before. Straight away, the rivets were clearly visible, but, more importantly, a clear defined shadow could now be seen running along the bottom edge, even with the shadow of the overhang. Now I was happy with the result and completed both sides. At long last it looked like the photo.

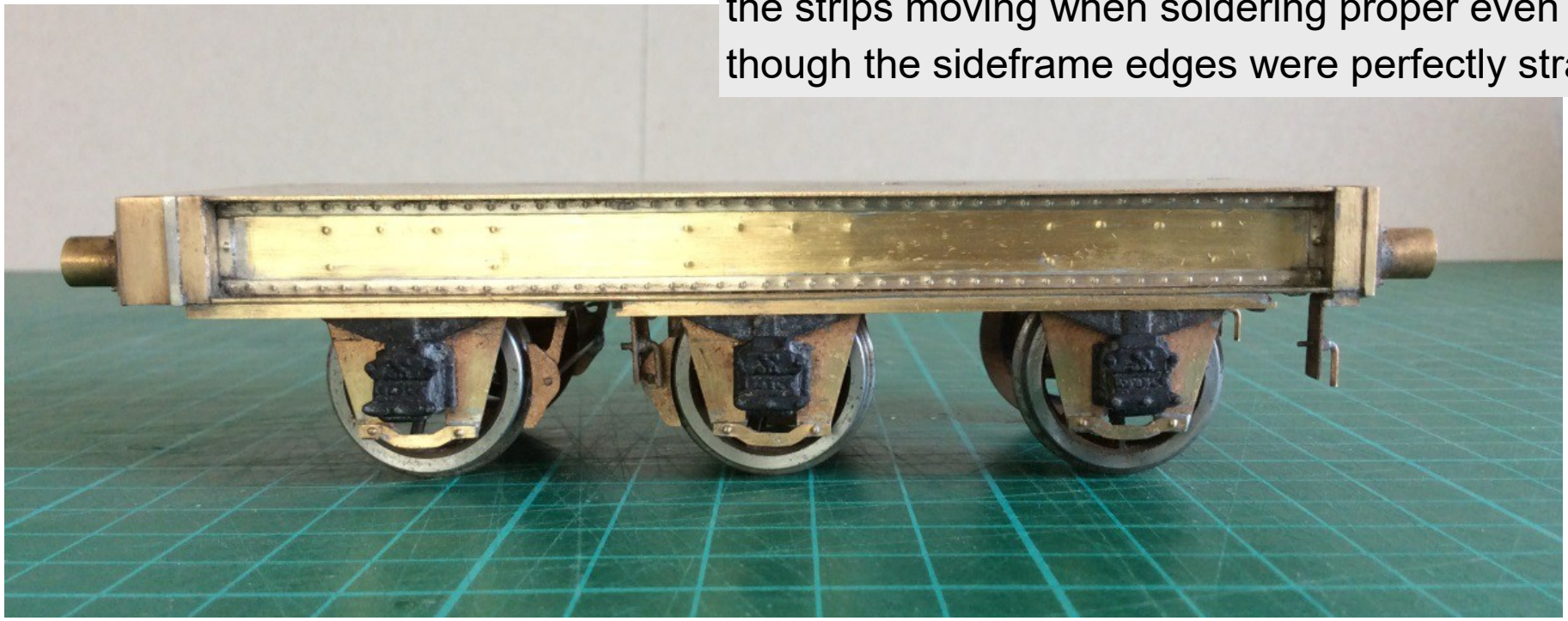


Close up of the top and bottom rivet strips soldered into position. The photo shows the rivet detailing beneath the 3mm overhang of the decking base plate with the slight shadow along the bottom edge of the top strip. Now using 1.5mm wide strips instead of the original 1.0mm wide strips, the distance between the two edges is 6.5mm which looks more or less like the photo.



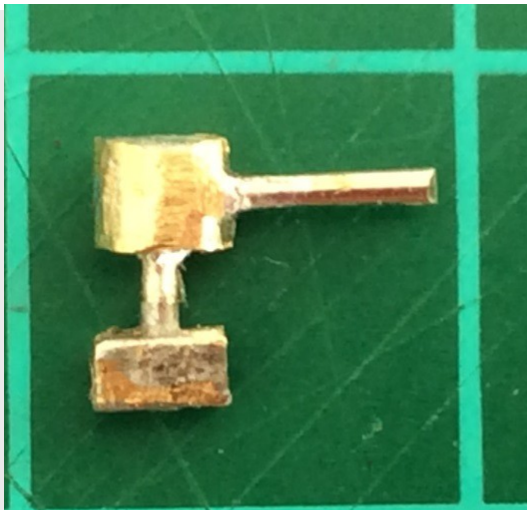
Another close up (jib end, far side) this time showing a vertical end strip which has been soldered into position. Each one was cut to 6.5mm long and has a single rivet punched in. Note the cut out slot for the supporting beam which is purely cosmetic.

The long strips were cut to length, then tack soldered into positioning using small blobs of low melt solder every 15-20mm or so. After tweaking, fillets of Carrs 145 was then used to complete the process for strength. Care was still required to stop the strips moving when soldering proper even though the sideframe edges were perfectly straight.



Positioned directly above each leafspring (three per side) on each sideframe, there are what appear to be three small square blocks, with rods protruding out from them, pointing towards the jib end. At first glance, the extreme right hand one appears to be missing, but very close examination reveals it is pointing directly towards the camera. I contacted my friend John Ritter, a fellow Circle member in Australia, who explained that they were screw-down jacks, which are screwed down into the special massive axleboxes to prevent spring movement and so help stabilise the crane (i.e. for lifting and travelling etc). The tommy bars slide through the top, so that they can be rotated clockwise or anti-clockwise. As they are purely cosmetic on the model, the tops were made from a prepared length of brass filed to 2.25mm x 2.5mm. Each top was then cut to 2.25mm high. A 0.75mm hole was carefully drilled in the side for the tommy bar, and another in the bottom for the vertical rod. After the rods were soldered in place, the corners were finally rounded off leaving a flat(ish) back. The lower rectangular block, which is positioned on top of the bottom ledge, is cut from 1/16th square brass section (KS149) 3mm long. A 0.75mm hole was drilled in the top to accept the completed top section. The overall height appeared to be about

The six screw-down jacks with tommy bars were very tricky to make and contain 4 individual items in each. As they are cosmetic (i.e. do not rotate), it was much easier to make them as a completed unit and solder into position later. Looking at the photos, it would appear the tommy bars are all pointing forwards towards the jib end. As each one has a flat back, I had to make three of each, mirror imaged. This particular jack still requires some filing of the solder and cleaning up around the edges.



6.00-6.25mm. When precisely measured, they were soldered into the bottom blocks. When I was happy with the overall height (judged by the photo), all six were completed. They were then very carefully soldered into position using low melt solder at first, then some delicate use of Carrs 145 solder for some strength (Figure 1).

A pair of five spoke brake wheels were made next. From the photo and my

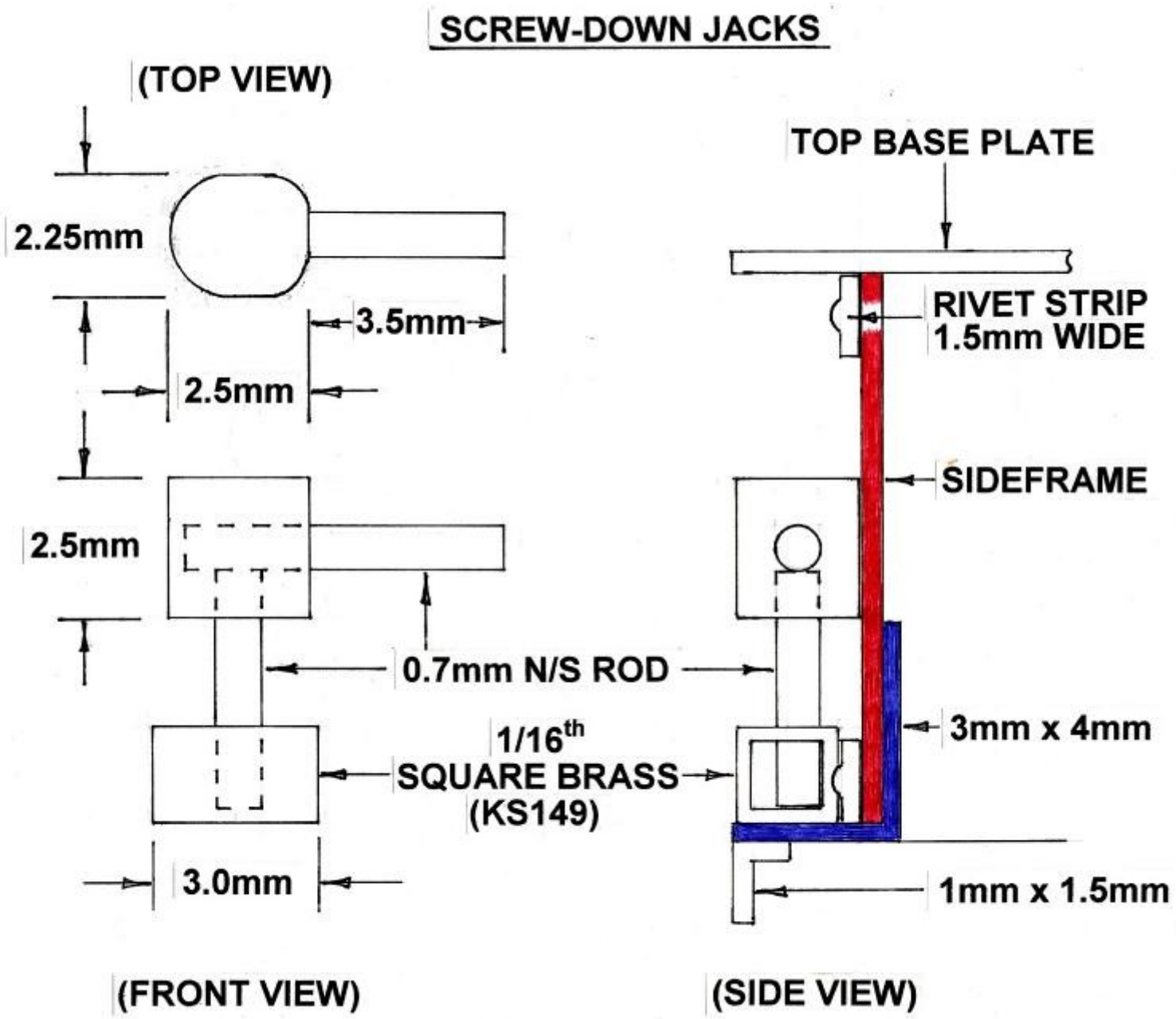
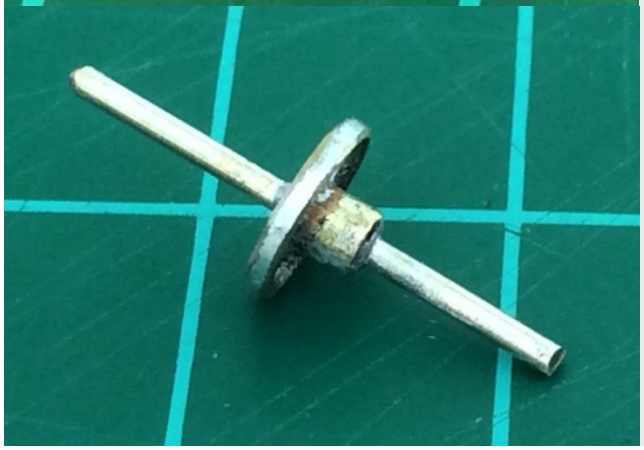


Figure 1

drawing, their diameter was estimated at around 6.0-6.25mm. Not having a suitable etch of a spoked wheel, they had to be made from scratch. Two oversized brass discs measuring 7mm in diameter were first soldered together, then a 0.8mm pilot hole drilled in the centre. Cutting out the waste either side of the 1mm wide spokes took a bit of skill. They were then unsoldered and cleaned up. To form the outer ring, two telescoping brass tubes one 1/4” in diameter (KS131), and one 7/32nd” in diameter (KS130) were cut to 1.5mm wide and were soldered together. They were then filed down to approximately 1mm wide. The spokes of the wheels were then carefully filed down to fit snuggly inside the inner ring making sure the hole was dead in the centre of the wheel. After soldering the spokes in place, the outer edges of the rings were rounded off. The centre hole was then reamed out to accept a 1mm diameter n/s rod, 17mm long, which was then soldered in position (perhaps subtle painting later



Two views of the brake wheel on its dummy threaded shaft. Each of the 5 spokes were cut out from a disc of 7mm diameter brass making sure there was enough room for a 1mm hole in the centre. Two 1mm wide rings of brass tubing were cut and soldered together. With careful measuring of the spokes they were cut shorter so the rings fitted snuggly inside. After soldering and cleaning up, they were then turned with a curved edge in my pillar drill with a file. The bottom view shows the other side with a small collar fitted. You can just make out the curved edge of the wheel.

on will give an impression of a thread). Finally a small collar (KS125) was cut to 1.5mm long, reamed out to 1mm and soldered onto one side of each wheel as is clearly visible on the photo.

Fig 2 below illustrates the design.

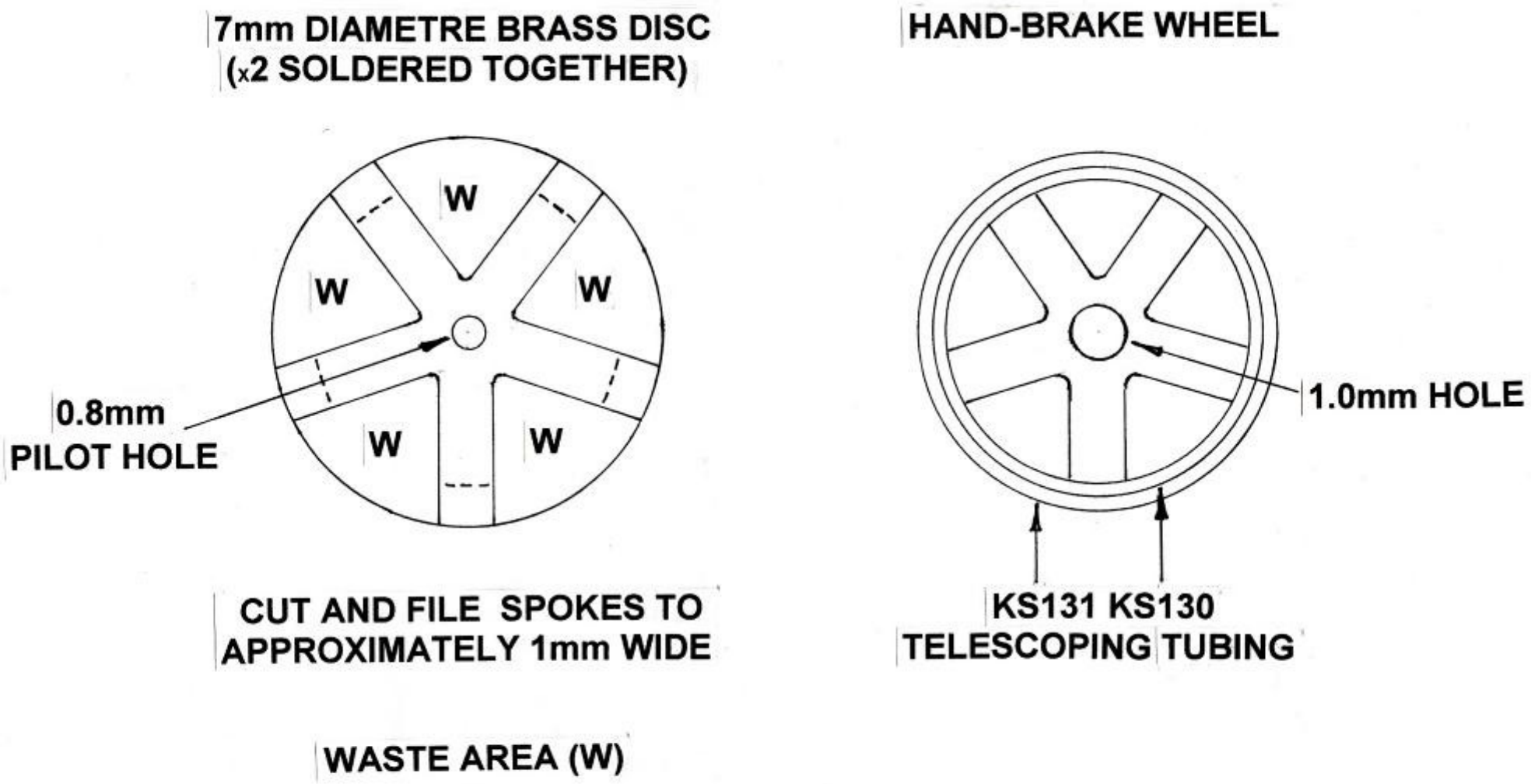


Figure 2

The brake side clamps were very hard to design and fabricate. The simplest thing to do was to solder together four pieces of scrap n/s sheet, cut out the basic shape, then drill out all holes etc. After unsoldering and cleaning up, each one would be pre-bent around a 1mm rod (representing the threaded bolt) and soldered together. The first clamp went well and looked more or less like the photo, though I was not totally happy (again), as it was a bit on the thin side. The following two clamps did not look like the first one and were different lengths. The last one simply snapped in half after flattening it out and re bending it a few times. Abandoning this approach, the only way was to file and cut them out of solid brass in a jig, which was successful. They now obviously looked all the same, but, more importantly, were a bit thicker in the centre section than the wrapped around ones - see Figure 3.

A pair of left and right handed brake side clamps which were cut and filed from a solid piece of scrap brass. The backs are slightly flatter for a better fit on the bottom angled section. Close examination reveals some unsightly file marks which were cleaned up well before final assembly but after the photo was taken.

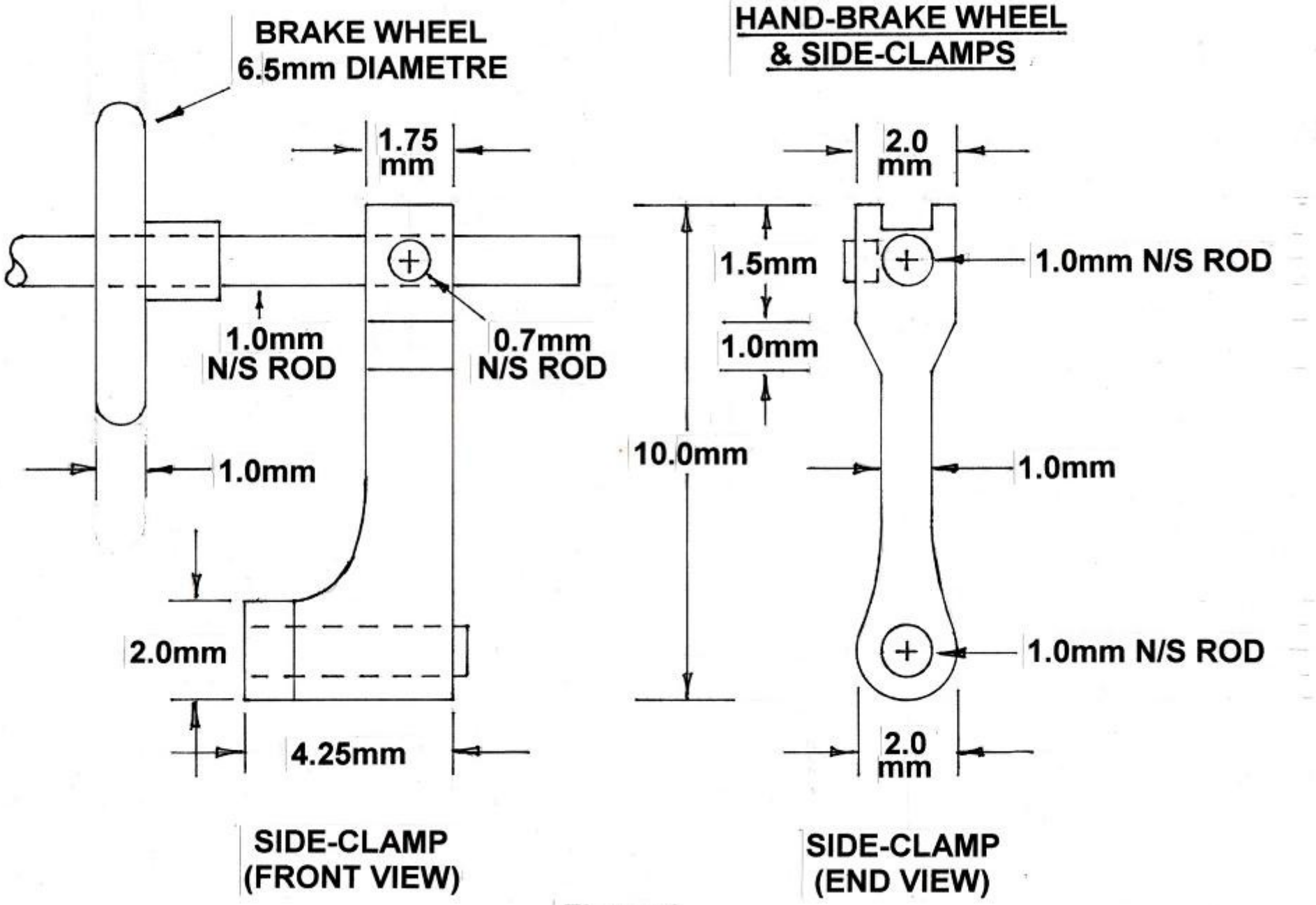
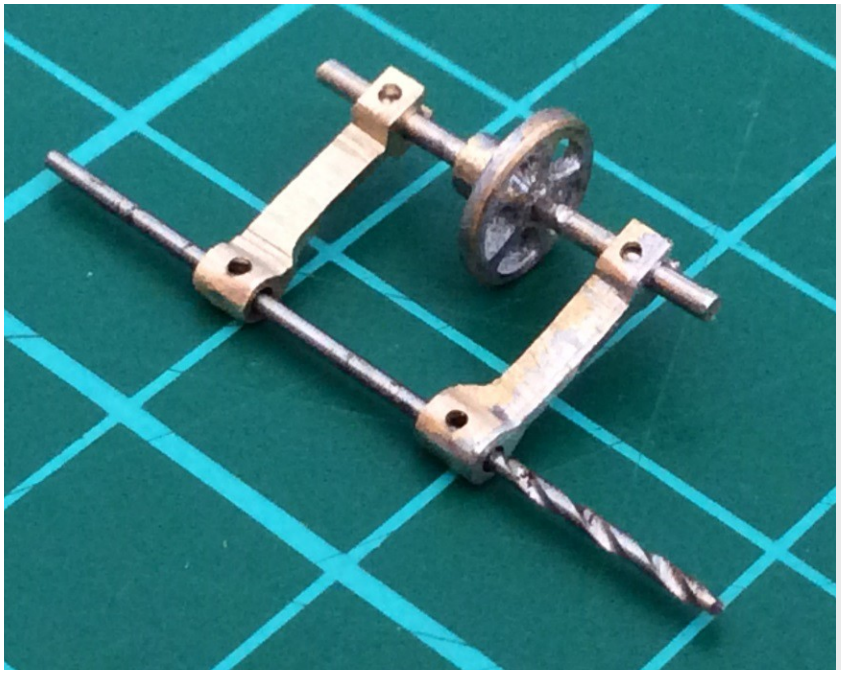

BRAKE WHEEL
6.5mm DIAMETRE
1.75
mm
1.0mm
N/S ROD
0.7mm
N/S ROD
1.0mm
2.0mm
4.25mm
SIDE-CLAMP
(FRONT VIEW)
HAND-BRAKE WHEEL
& SIDE-CLAMPS
2.0
mm
1.5mm
1.0mm
10.0mm
1.0mm N/S ROD
1.0mm
1.0mm N/S ROD
2.0
mm
SIDE-CLAMP
(END VIEW)

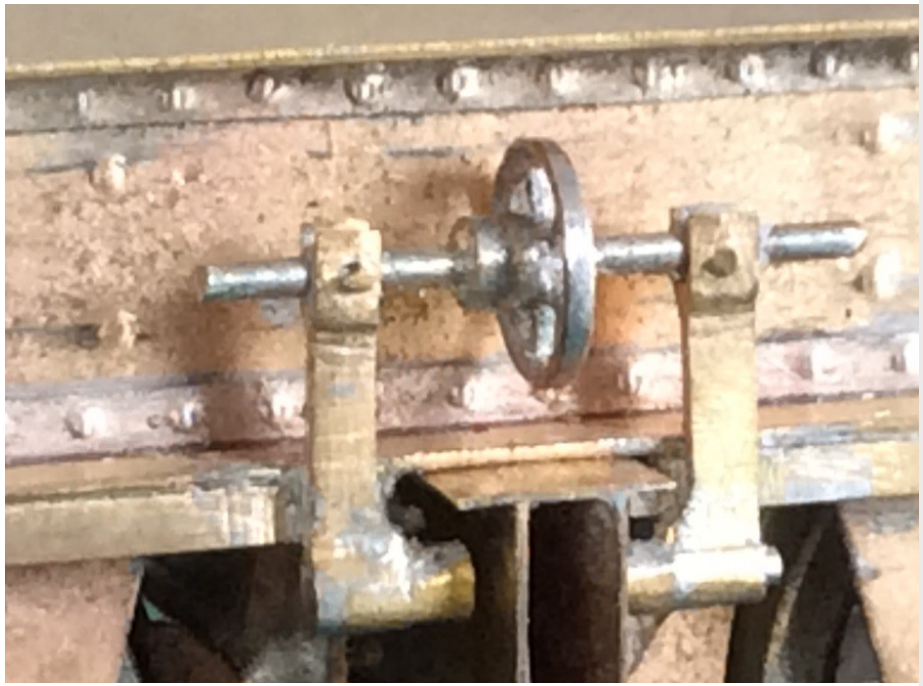
Figure 3

Two side clamps were then slid onto the completed brake wheels. With the aid of a 1mm drill bit through the bottom holes, the side clamps are perfectly aligned ready for soldering together, checking that the measurement between the bottom inside face of each clamp was 3.5mm.



An unsoldered (photo side) brake wheel and side clamps with the 1mm drill bit keeping everything in position before soldering. An oversight in the designing and cutting, I found out the bottom of the clamps were a bit narrow. So small (1/16th outside diameter) collars had to be soldered to the inner face of each the clamp (not photographed) effectively packing them out slightly. Only then could the inside measurement be set to 3.5mm and soldered together.

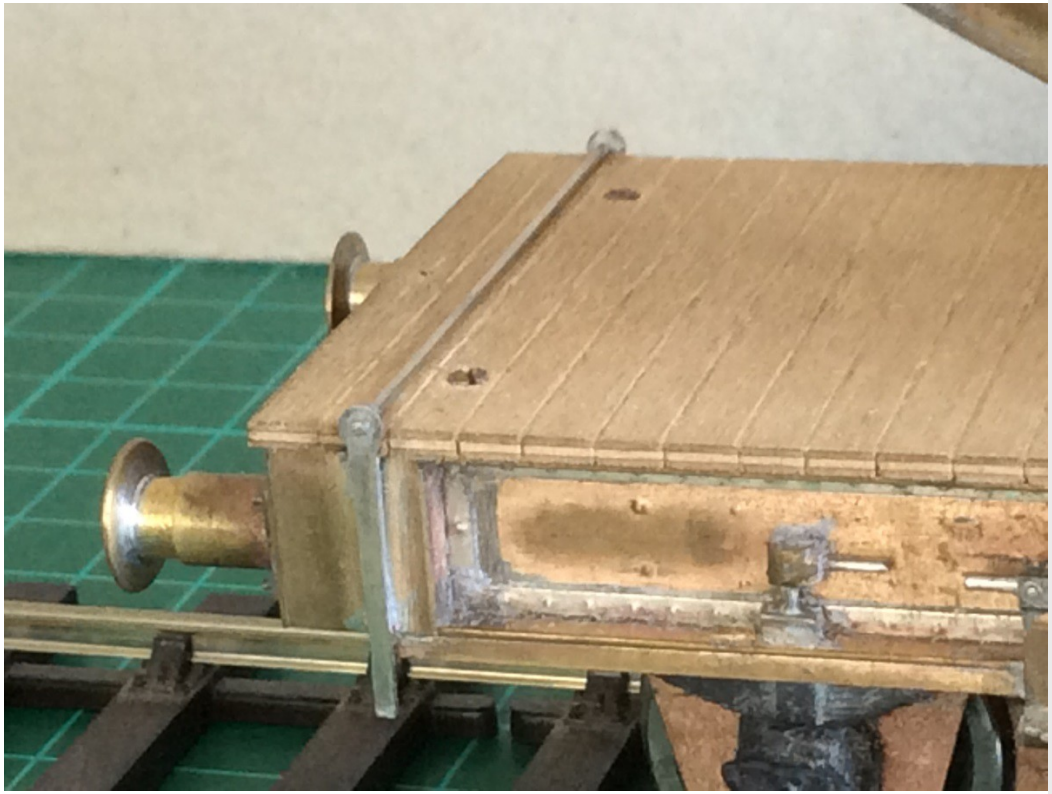
Only then can the sub-assemblies be soldered together. Due to an error in my drawing, the inside measurement of the clamps was too narrow. The only solution was to solder on two extra lengths of tubing (KS125), 2mm long, onto each of the inner ends, which would be filed back later to clear the supporting beam. Once completed, the first one was then offered up to the sideframe. Virtually no filing or packing was required before it was soldered into position.



One side clamp assembly soldered in position. Two inner collar packing pieces which can now be clearly seen, were soldered to the inner face of each clamp first (noted by a solder fillet) before fitting. There was only one position the clamp could go and that was directly in-line with the support beam slot. Before soldering, I had to file a small amount of brass behind one clamp for a perfect fit. Using Carrs 145 it was carefully soldered into position making sure the threaded bolt was parallel with the sideframe and horizontal with the sideframe. Only now can the inner faces of the collars be filed back to clear the supporting beam (0.5mm clearance on each side). On the real No.19, there doesn't seem to be any form of bracket or bolt detail visible on the bottom of the clamps as the outside face is completely smooth.

By pure luck there was a slight gap (0.5mm) between the wheel and the sideframe, but, more importantly, all clamps are perfectly vertical, which was another unplanned bonus. The supporting beam now obviously fouls the inside face of each clamp, which had to be filed back accordingly. As no rodding or linkages, which would be positioned behind the clamps to the pull rods, can be seen from normal viewing angles, they have not yet been designed or modelled. The moving crane body has to be securely locked down somehow for travelling, and unlocked for movement etc. Clearly visible is a long vertical lever

(another one is positioned on the other side) located on the outside face of the left-hand headstock. I am 99% sure these levers are for this operation. If they are, the levers would be moved at least 15 degrees inwards to unlock the whole assembly via a cam (possibly two) underneath the crane body. As the distance between the decking and the bottom of the crane body is small (3-4”), no detail can be made out other than a rod resting on top of the decking. The levers themselves on the model (19mm long) are made from thick scrap n/s etch filed with a slight taper down to 1mm wide, with a



The locking levers were made from scrap nickel silver 19mm long. A thin 0.5mm packing piece was soldered onto the headstock first, then the lever soldered over it giving the impression of a gap. From normal viewing distances a gap would not be seen. The rod connecting the two levers (0.8mm n/s) must have had a cam positioned mid-way a long it, which would locate in a slot underneath the moving crane body thus locking it in place. A representation of the cam will be done before painting as it will be clearly visible if the crane body is rotated. The decking simply slides underneath the rod and is secured in place by four Slaters crank pin bolts (two shown) filed flush. For a trial run, my home turned buffers were fitted and lightly sprung and work beautifully.

0.8mm hole for the n/s rod. As they are purely cosmetic, they are soldered onto the face of the headstock with a thin packing piece behind. It gives the impression there is a gap behind them.

The two drop down footboards were the next items to make. As they would be made actually to drop down, I had no idea as to their precise width. When folded back, the leading edge must clear the bottom of the large gearwheel (nearest the camera) on the side of the crane body. So jumping the gun slightly, a start had to be made on the moving crane body proper. With Francis`s drawings, he estimated the overall width as 37mm wide over the wrap round flanges. At the time of writing (Nov 2016), the basic frame has been completed and can rotate on the tapered column and base ring. Cardboard mock-ups of all gearwheels and pinions (to the same thickness as the 3D printed gearwheels) have also been fitted in their corresponding holes, along with the original jib mock-up. The widths of the footboards were estimated at 9mm x 70mm, so a mock-up was made. Happy with 9mm, two 1.5mm thick wood ply pieces (the same as the main decking) were cut out and scribed accordingly. Through past experiences of drilling holes in the correct position and at the correct angle i.e. the match truck toolbox lids, I made a small jig to help this time around. Using a long section of spare brass angle, in my case 2mm x 4mm, a 0.4mm hole was drilled out from the inside, again at the correct angle. After determining precisely where the holes had to be drilled (two in the footboard, and four in the decking), the over length angle section was firmly held in place (fingers and sticky tape) over the edges of the wooden pieces. The drill bit was then simply re-drilled through the pilot hole - see Figure 4 on the next page. With all holes drilled, the pre-cut No.14 fishing hooks were glued in place with Superglue. This was a difficult bit of modelling, getting everything lined up and level with the decking when folded down.

JIG FOR DRILLING HOLES INTO DECKING AND DROP-DOWN FOOTBOARDS

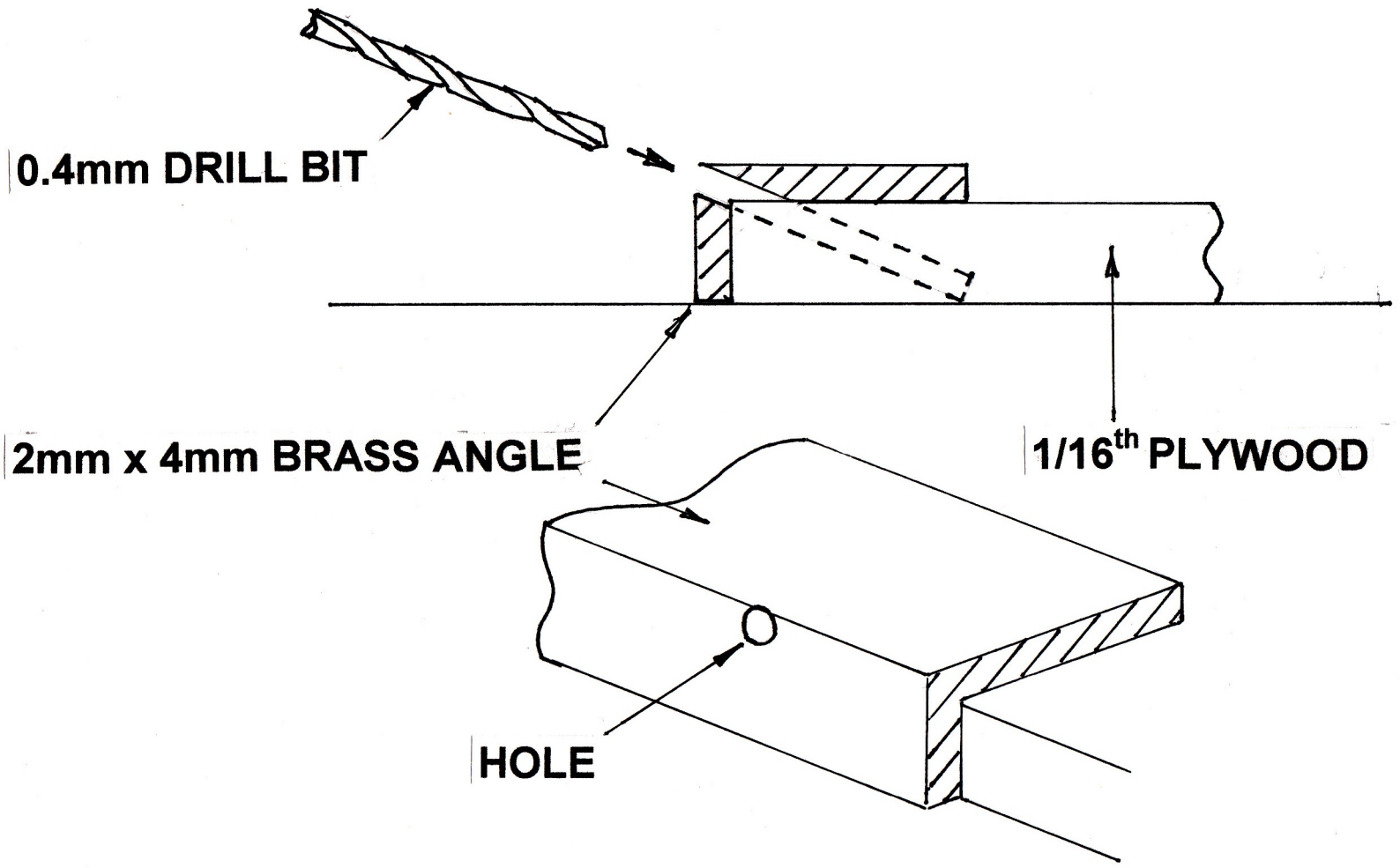


Figure 4

Far side drop down footboard folded flat revealing the hinge. Using No.14 fishing hooks, all barbs were cut off for safety reasons (i.e. my fingers) and trimmed to 3mm long. The hinges were guessimated at roughly 47mm apart which looked about right. For each separate hinge, one hook is used for the footboard, and two for the decking. All holes are drilled out to approximately 45^0 angles in both. The two footboard hooks were superglued in first. Carefully positioning the footboard in its correct position was marked on top of the decking using a pencil. Two holes were then drilled either side of each corresponding hinge into the decking, again at a 45^0 angle. Thin 0.3mm diameter n/s rod was used for the retaining pins. The hooks were then lined up using the retaining pins and finally glued in place. Some of the wood has to be cut away either side of the pins for clearances.

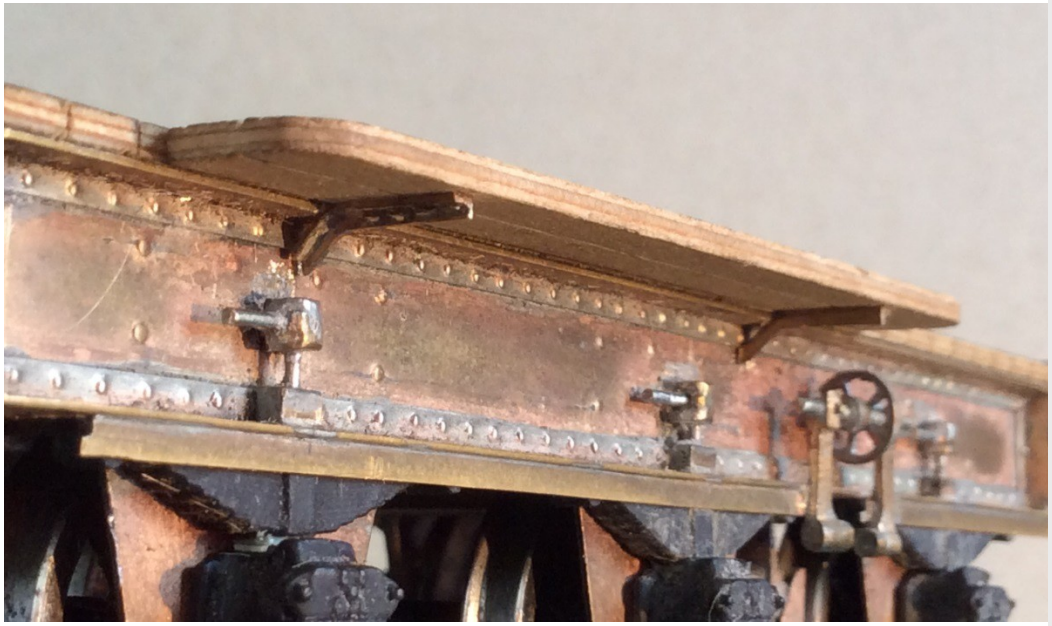
After painstakingly completing the far side footboard (away from the camera), it folded up nicely. Work then progressed on the camera side – at which point a problem emerged. When folded upwards, the leading edge fouled the bottom teeth of the largest gearwheel by a good 1mm. As the planks had already been scribed both top and bottom, I could not trim 1mm off the edge, so another, second pair of footboards were made, this time to 7mm wide. After refitting, I found these footboards were now too

narrow and did not look like the photo at all. There was now too much of a gap below the gearwheel. Finally a third pair was made, this time to 8mm wide. At long last, they looked more or less like the photo.

Drop-down footboard brackets were also were very difficult to design and fabricate. They are obviously positioned directly in line with the hinges on the bottom of each footboard (four in all) with an `S` shape inner end that rests against the sideframes when folded down flat. As they were functional and not cosmetic on

A crude close up of a bracket which was cut out from a piece of 4mm x 2mm brass angle 14mm long and shaped accordingly to the curved side profile. Two turned down Peco track pins secure the bracket in place which pass through the outside plank (the scribed line is just visible) which was then filed nearly flush. If just glued in place, no doubt the bracket would break off eventually. The two inner bolts are brass rod and purely cosmetic (0.6mm). Before the brackets were fitted though, the footboards laid perfectly flat in the `down position` and flush with the decking. Knowing the curved (inner) ends were too long (by a good 1mm), they required filing back accordingly. Just visible is part of the hinge and retaining pin. Note also the bottom rivet strip clearly showing the raised bolt detail to good effect, whereas the top strip is hidden by the overhang of the decking. The grey circle is the hole for the tapered column and bearing base ring.

the model, they took a bit of working out. After some measuring and scale drawings, the best way to make them was to use an un-equal `L` strip measuring 4mm x 2mm (Eileen`s Emporium ref:L04020D), cut out all waste bits, then carefully bend and file to the shape, matching the side profile, but leaving an extra 1mm on the end for filing off later. Two holes were then drilled out on each bracket, corresponding with the outer plank. When done, the brackets were superglued in position and then secured with two PECO track pins (PECO Ref: SL-14) with turned down heads in the two outer holes. Finishing off the other bolts, I used 0.6mm/0.7mm brass rod and Plastikard cubes - see Figures 5 and 6 on following pages.



A close up view of the (far side) footboard in the lowered position. The ends of both brackets are touching the sideframes and take the full weight (in reality) of the footboard. Obviously the weight of the models footboards are very light compared to the real thing, but if any heavy fingers did apply any downward force, the brackets would do the job they were designed for. As the camera was positioned a few centimetre’s from the model, the top rivet strip is now clearly visible and shows up very well.

DROP-DOWN FOOTBOARD
SUPPORT BRACKET

BEND TO SHAPE MATCHING CURVATURE
OF `S` SHAPED END

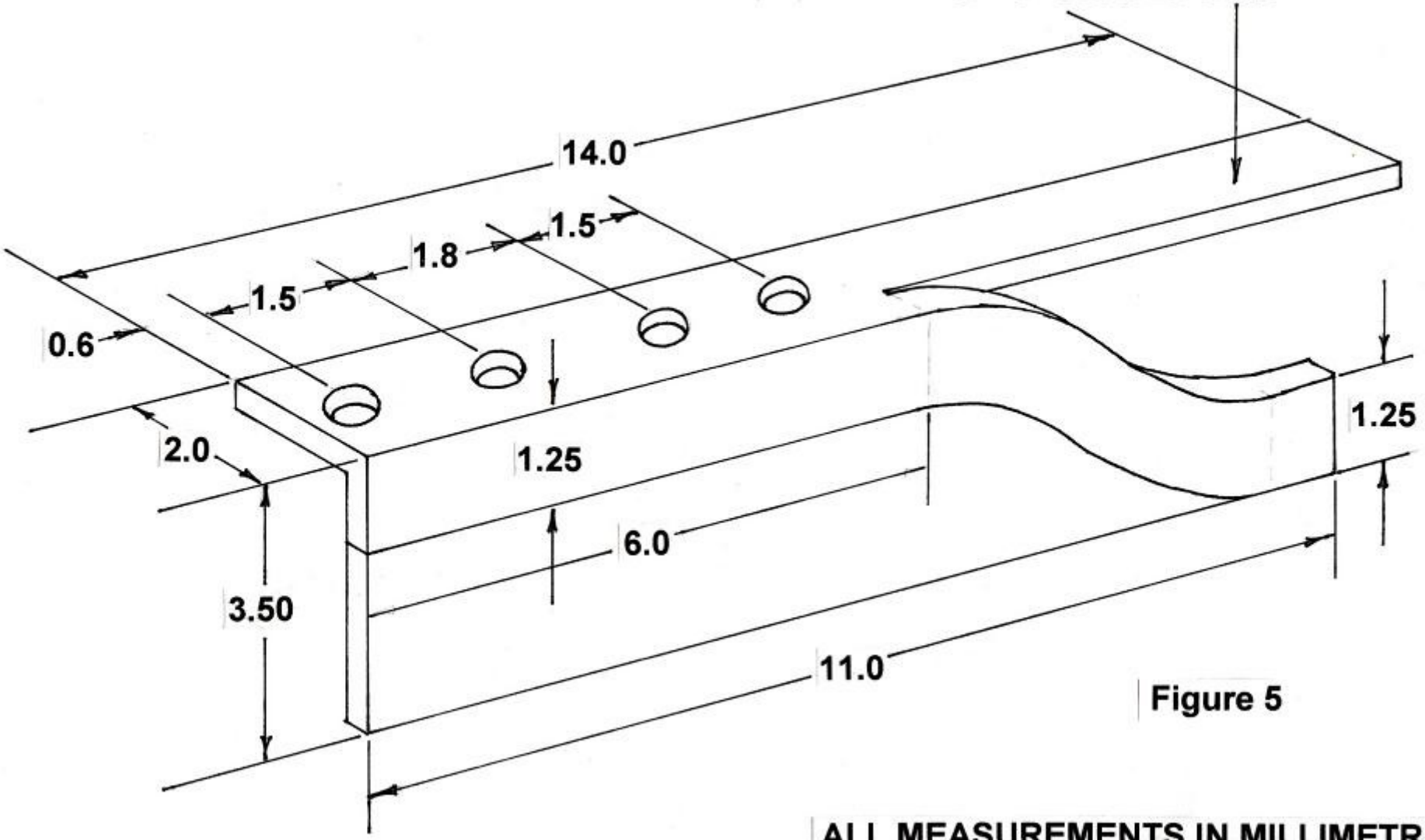


Figure 5

2.0mm x 3.50mm ANGLE SECTION

ALL MEASUREMENTS IN MILLIMETRES
NOT TO SCALE

A - 0.6mm BRASS BOLT HEADS
B - 0.6mm 10thou PLASTIKARD BOLT HEADS
C - 0.7mm BRASS BOLT HEADS
P - PECO TRACK PINS

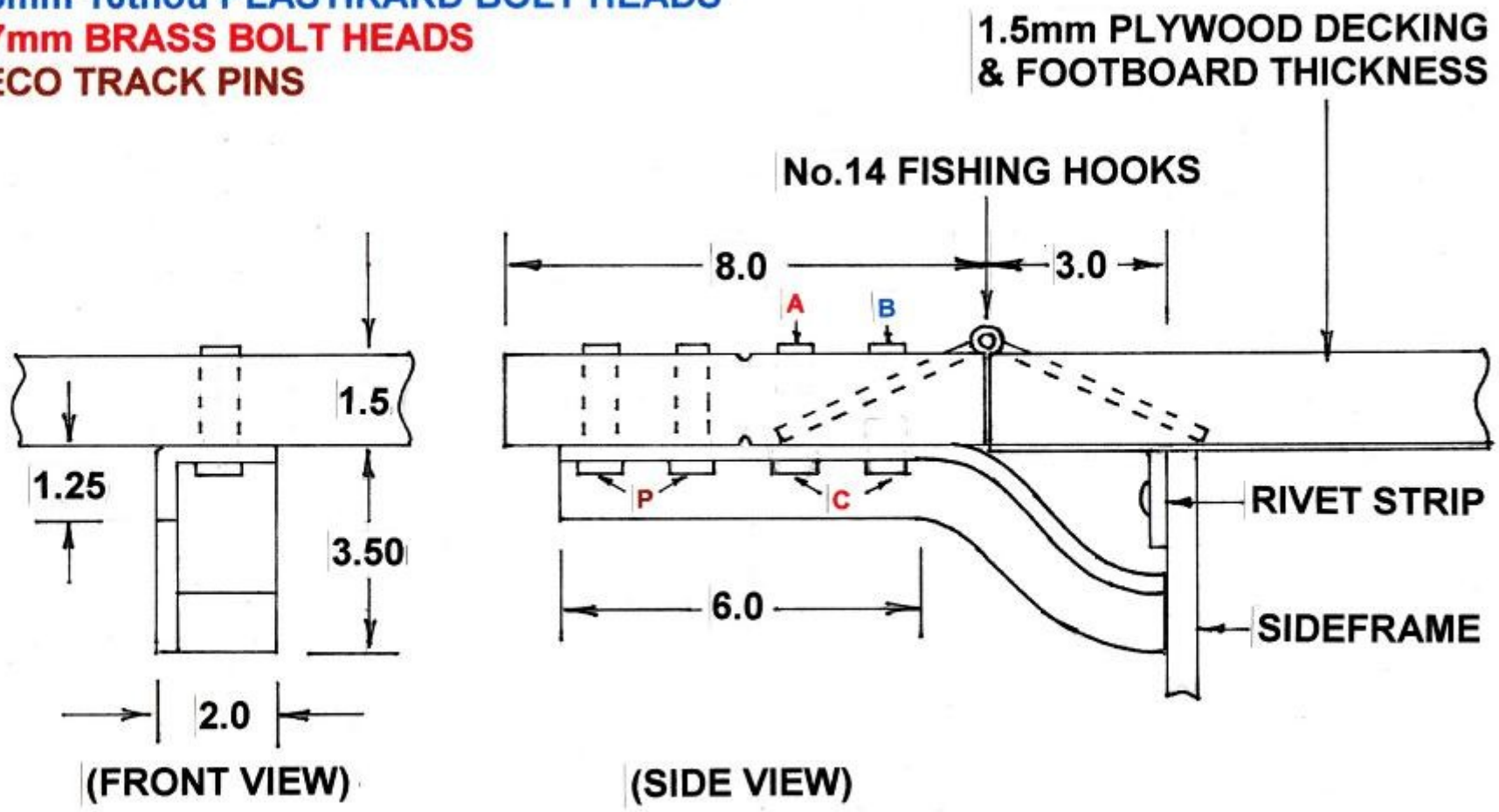
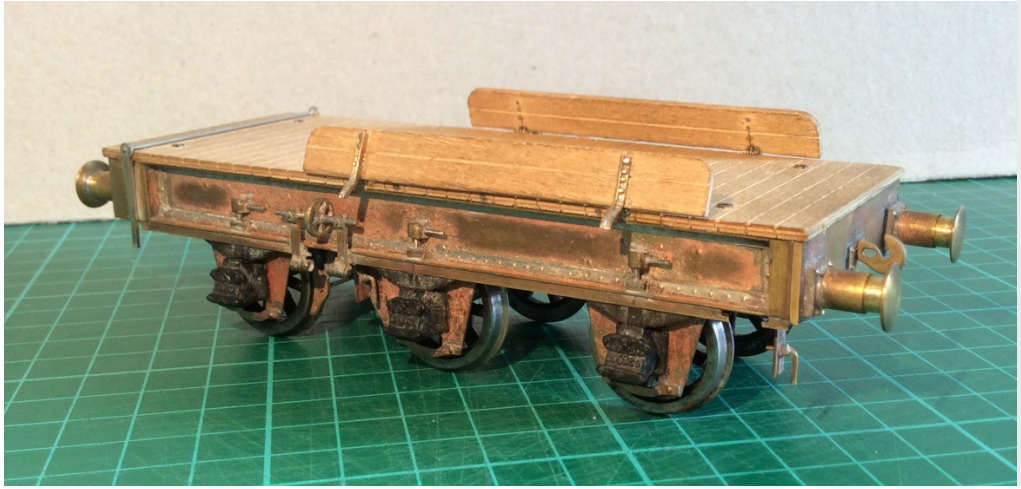


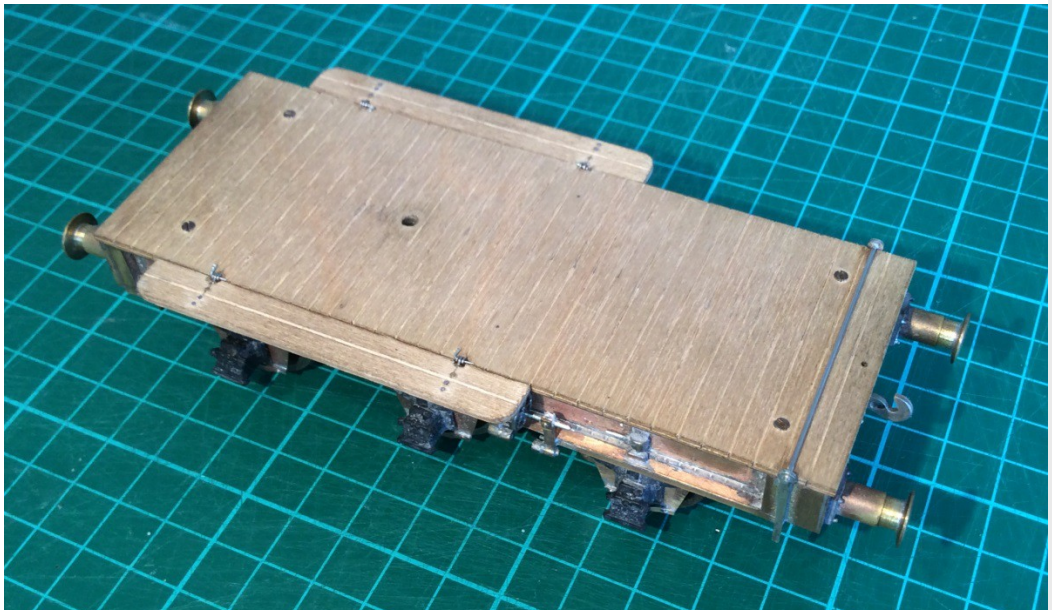
Figure 6

ALL MEASUREMENTS
IN MILLIMETRES

The photos below show the footboards in the raised and lowered positions on the nearly completed underframe. The last items to attach are the axleboxes and leafsprings which have been left until last. Any soldering in and around the W-irons would result in a major meltdown of the 3D printed parts.



Both footboards shown in the raised position. Due to my design of the hinges, the footboards cannot lay completely flat on top of the decking. In reality, they would never need to lay flat anyway due to the positioning of the moving crane body. Surprisingly the decking has stayed perfectly flat and has not yet started to bow upwards, especially on the right hand end jib end.



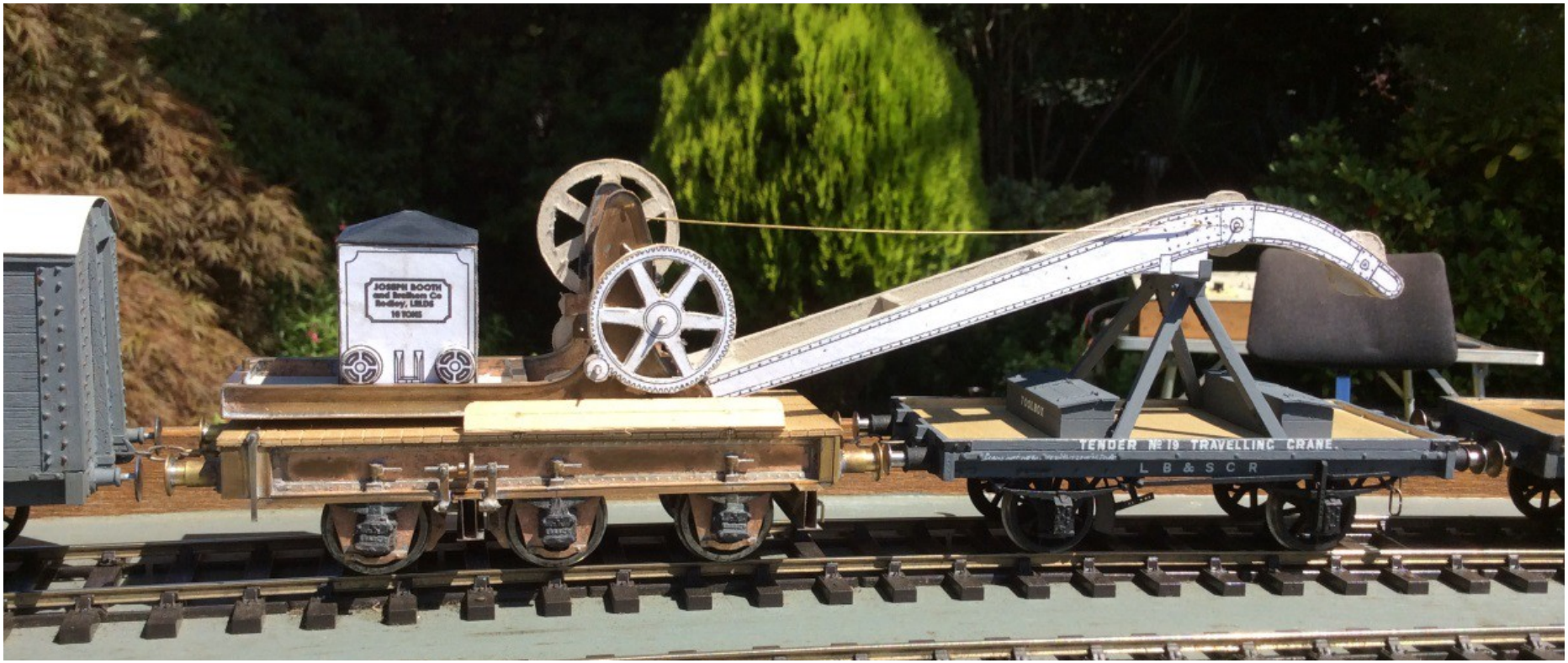
A bird's eye view showing both footboards in the lowered position. Care must be taken when fitting these boards as the tops and decking must line up perfectly smoothly. The very small hole on the extreme right end adjacent to the locking bar is for a locking pin that holds the moving crane body in place to stop it rotating. The axleboxes and leafsprings are, at present, only doublesided taped in position.

Again, as mentioned in Part 2, I was happy with my Match Truck drawing, but was more concerned about the overall height of the trestle and the overall length of the bar on which the jib slid. On paper, everything looked about right. The trestle at that time had not yet been glued in place, just in case it required a new one. I did not want to fall into the same trap as with the footboard fiasco. Having been forced into making a start on the moving crane body proper (out of brass) it was again tested with my original cardboard jib in place. Again, the overall height of the trestle appeared to be spot-on, as was the length of the bar. However, the flat bottom of the shallow triangular section underneath the jib (the item that slides on the bar) does not quite line-up looking at the photo (this will be rectified when the proper jib is made). The Match Truck is positioned a good 4mm further away than it should be when the buffers were lightly kissing. On one particular test the drawbar hook was pulled out slightly (too lightly sprung), then the jib fell off the end of the triangular section. There are three possible reasons. Either the buffers on both the cranes underframe and/or the match truck are too extended from the buffer housings or the coupling links require shortening, or the jib requires lengthening slightly. The latter looks the best option as the model looks in proportion to the photos.

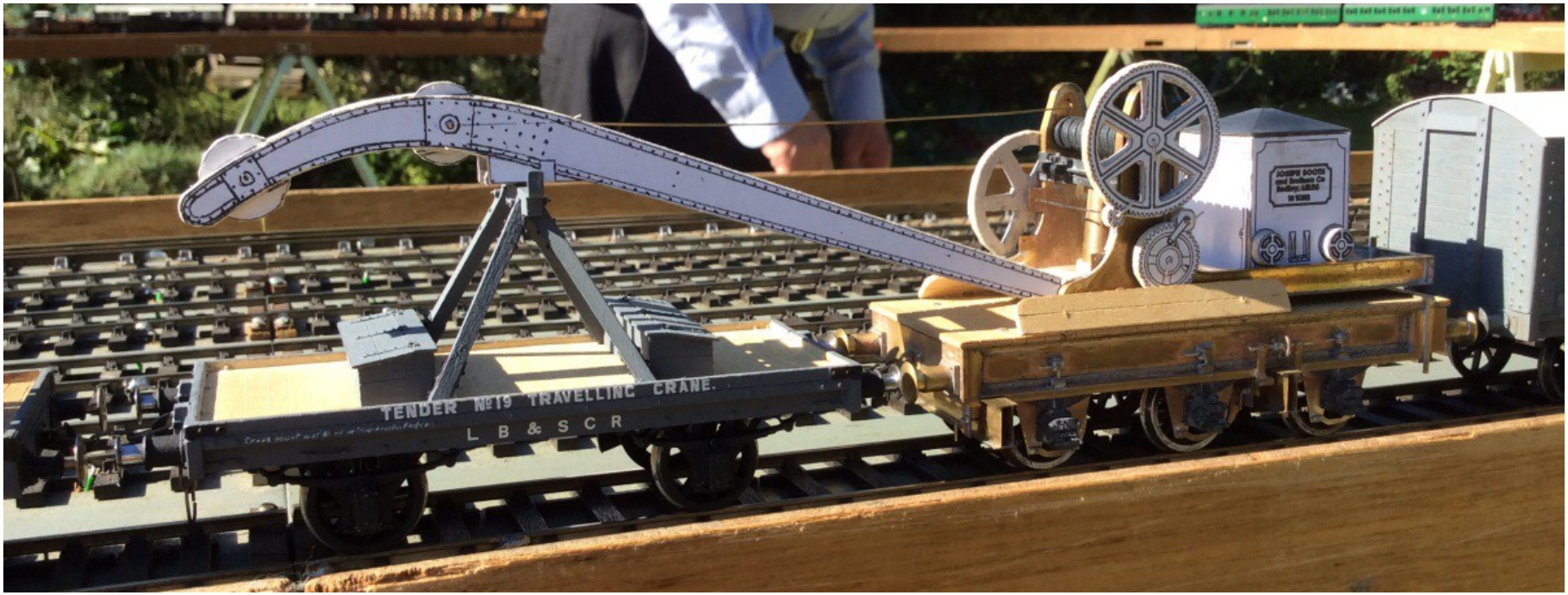
The last few photos show the crane on extensive tests during in the summer months.

This completes the construction of the crane's underframe at long last. I cannot see any more items that can be added to the model, other than painting and transferring, which will be in a later article.

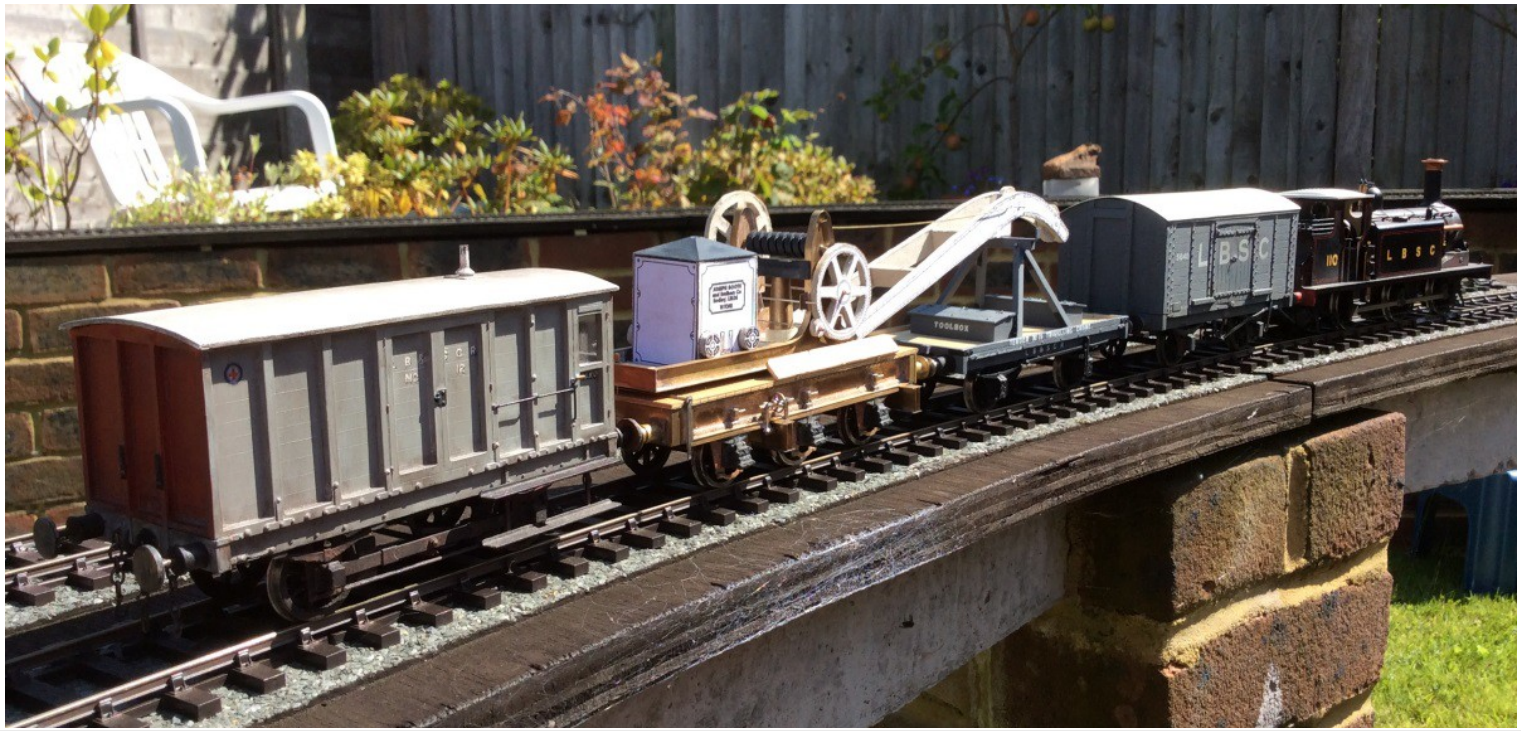
Part 4 will describe the construction of the moving crane body.



The crane on test (August 2016) complete with its match truck. The basic brass moving crane body is well under way but lacks any detailing at this stage. All gearwheels were printed off and glued to thick cardboard and cut out. 0.6mm brass rods were inserted into each wheel centre which passes through corresponding holes in the crane's sideframes. The nearside footboard clearly shows the slight gap underneath the bottom of the largest gearwheel. The two supporting beams are in the travelling position to check clearances etc. The dummy weight box is mounted on a rectangular base and easily inserted and removed. Note the black coloured 3D printed weight box roof which will eventually be used on the finished model.



A far side photo showing the original cardboard mock-up jib positioned on the `new` brass moving crane body. As mentioned in the text, the bottom flat of the triangular section which slides on the bar of the trestle is slightly out of position i.e. too far forward by at least 4mm. The small rectangular area to the right of the bar can just be made out on the side of the original drawing, which should be the correct positioning. This will be modified when a brass jib is constructed. The view also shows a crank handle which operates the smaller gearwheel via a pinion. This handle when turned, raises the chain until the ball and hook is forced into the nose of the jib. The jib then raises upwards clearing the trestles sliding bar so the moving crane body can be rotated. The footboard being the same width as the photo side lays flat on the face of the gearwheel which is prototypical (as shown in an Illustrated History of Southern Wagons Vol.2. Page 73, Plate 124).



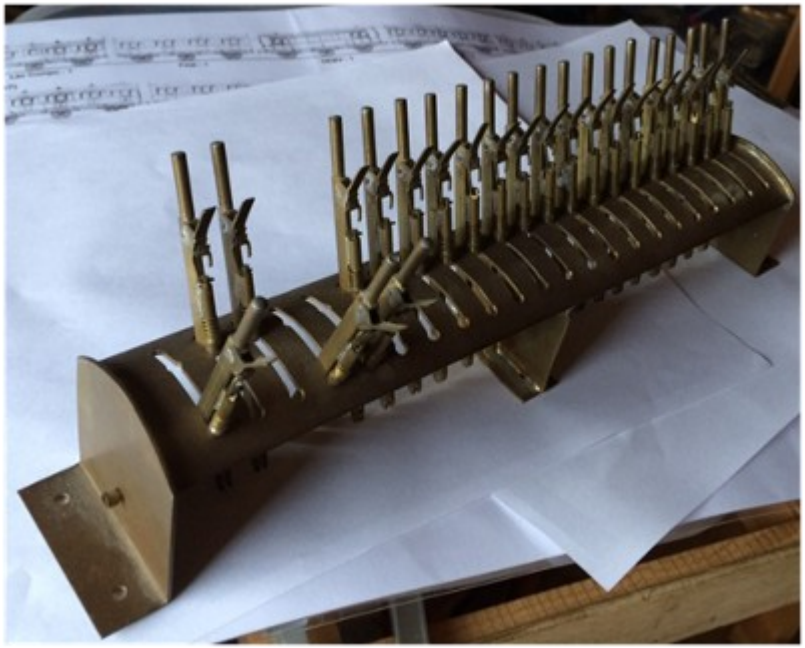
Another `on test` photo, this taken on my own garden railway on a glorious sunny day. Passing through all of the Peco point work, and one scratch built catch point, no problems showed up with the `new` brass moving crane body. The brackets to the footboards have still got to be fitted which were done soon after. By this stage, it has taken me the best part of a year's modelling to date. The formation shown would be a typical for the crane in having its own tool van (substituted in this case by a Billinton Egg Truck) and a brake van at the rear. If for example a station only had a 5 Ton yard crane, or it was `out of action`, or required a larger load to lift, the crane would be sent out. The station staff would then assist in any manoeuvres required. When the crane was constructed and delivered to the LB&SCR in 1904, no doubt the 1851 Craven Brake would have long been scrapped.

Return to Index

Signal Operation

By Mike Waldron

This brief article is by way of presenting a planned and viable system for signal *(and, for that matter, turnout)* operation, rather than one that has actually been installed as yet. As justification for submitting it, I feel it ranks as a carefully planned and usable system for those challenged in the wallet department, as well as being a logical next step after several preceding issues involving signals. Phil Taylor has already offered his thoughts in the last edition, both building and operating them via memory wire and bouncer mechanisms. *(For which latter item, incidentally, I do a compact etching, shown below).*

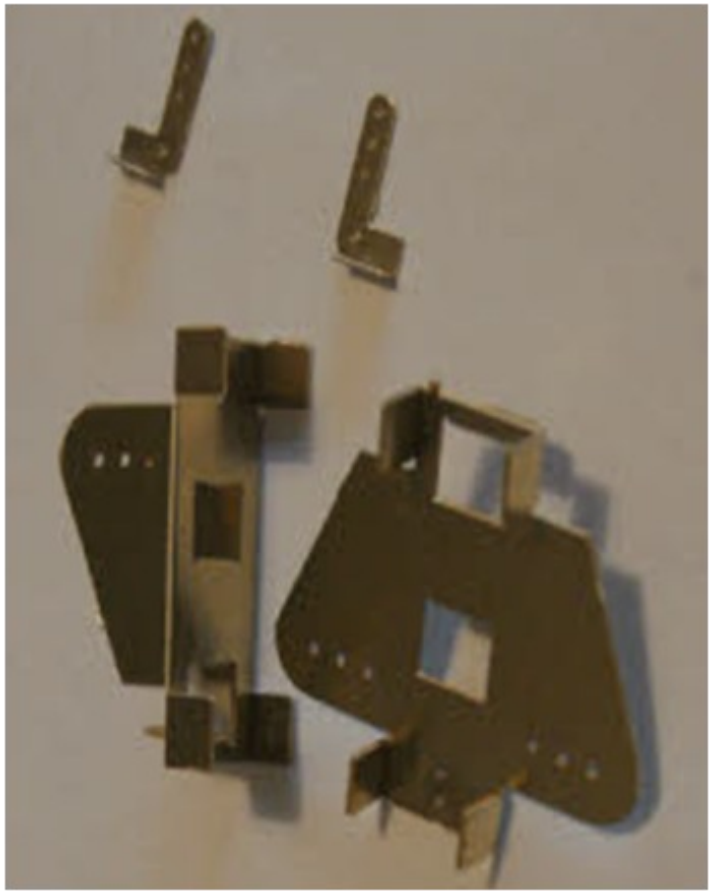


Having built a fairly complex lever frame about three or four years ago, and also providing slotted post signals, I needed to turn my attention to the way the levers would actually cause movement in the signals themselves. The lower end of each lever has a divided end with three holes each side for attaching cables.

I am a firm advocate of mechanical rather than electrical operation, as it is far more akin to the original system, purely and simply. We have to use electricity to power our

BRAIDED SEA FISHING LINE *(Not the actual one I have, but of the same ilk)* This filament is reputed to be virtually stretch-proof, and capable of landing a shark, though I don't think we need quite that level of strength, even on the most stubborn of mechanisms!

model locos, with all the accompanying insulation issues, so I accept that. However, whilst the historical use of nylon fishing line or cotton thread brought with it other stretching and breaking issues, the present day filaments and cords the fishing fraternity use are of a far more permanent and robust nature, and make mechanical operation by these means a much more feasible option than it used to be. It also avoids purchase of expensive individual operating units! I personally object to the idea of paying £12 or so merely to operate one turnout, plus the further cost of lever, push-button or whatever arrangement needed to operate it!



I have also devised these (albeit rather small) operating units that can be mounted on the underside of the baseboard, with ‘plug and play’ signals sitting on the top. In other words, they can be lifted out and serviced, or for portable layouts, removed and stored to avoid damage. Naturally I designed them with my slotted signal range in mind, as an integrated system, but, with cunning, they can be adapted to scratch-built ones also.

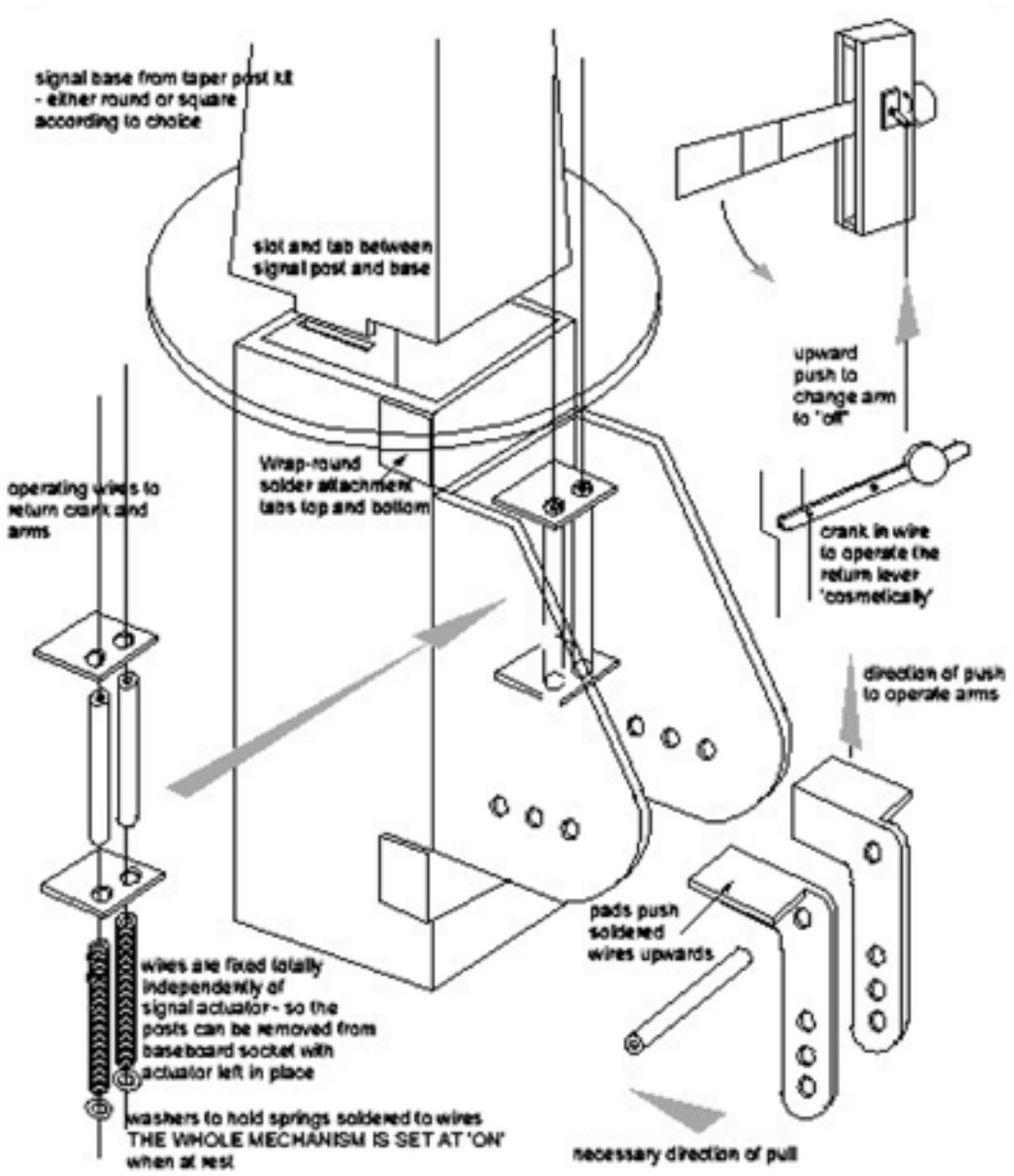
These units are designed to enable almost any number of arms, of almost any type, to be operated in this way. Gantries would have at least two support location points, and therefore as many numbers of places on which you could mount such items as there were gantry ‘legs’.
Clearly some means of adjustment in required somewhere in the system and, bearing in mind my recent e-group inquiry re the proper design of round-section Brighton turnout tie bars, the means of operating turnouts is also within the scope of this scheme.
The addition of small nuts and screws (not bolts - they only have thread part way along the shank) in the system gives a simple and controllable means of adjustment, and is much to be recommended where possible. As well as that, particularly with signals, bearing in mind the tiny movement at the arm crank itself, there must also be some means of reduction of throw from the lever frame, or motion in the line to the actual arm, as it is often in the order of 20 times greater at the lever end than at the post end. A number of holes on the lower end of the lever arm begin this process of adjustable reduction, and (bell) cranks with three holes on each arm increase this facility, wherever a change of direction is called for.
The point at which the motion ’meets’ the operating unit at the foot of the post/socket gives another possible location for adjustment. These cranks here, in my system, are very small, but still have the adjustment option built in. Here the motion arrives in the horizontal plane, moving in a small arc at the lower end of the crank, thence translated into vertical motion. At this point, there is a break in the system in the form of a ‘table’ on the top of the crank and a sprung pad at the lower end of the operating wire that proceeds up through the baseboard to the signal. This enables the post to be removable, and that part of the operating mechanism to lift out with it.

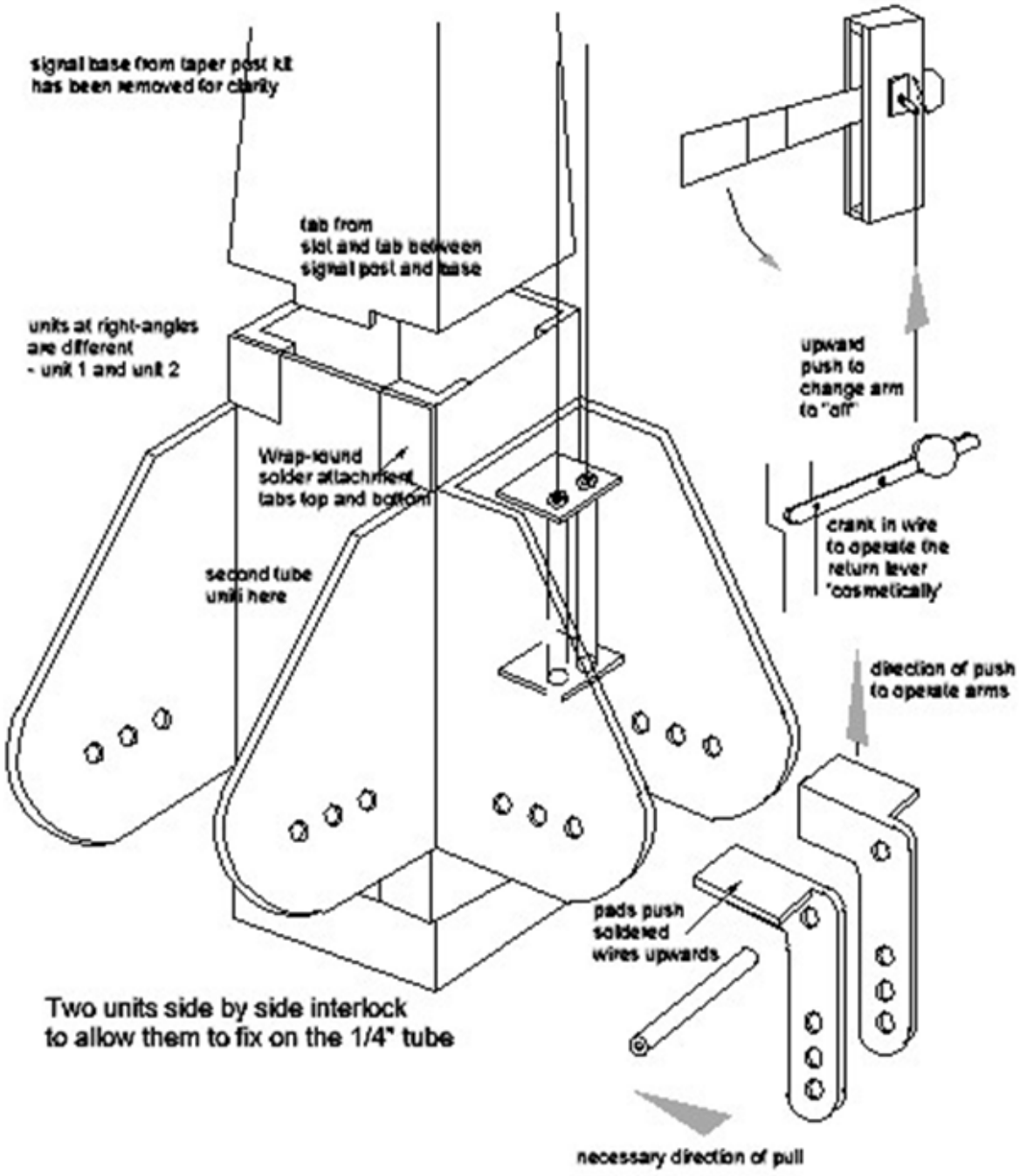
The transmission of the motion is via the fishing line illustrated above. As I mentioned, it is virtually non-stretch, so the holes in the lever and cranks are already effective here as it leaves the lever. The use of simple screw-in metal eyelets (like the ones you screw into the backs of picture frames and cost pence) enable the direction of the line to be changed through almost any angle, on its way to the base of the signal. My preference is to use a brass screw with a small running-fit pulley which adds a larger radius of curvature around which to pass, rather than a small diameter of metal on a picture eye, though smoothness of surface is by far the most important thing to avoid unnecessary wear and fraying of the line.

These diagrams are derived from those on my website, on which the EBM system is illustrated through various downloads on the signals pages. The first diagram shows the principle of how a single actuator unit works. The cable motion arrives at the lower end, in the direction of the grey arrow – but note that it requires a 'pull' rather than a 'push' action. It is therefore necessary for the cable to arrive at the rear of the crank – which is very simply arranged by positioning a directional-change pulley / eyelet behind the signal.
Note the pads on the top of the cranks, and the three adjustment holes mentioned above.
There are three further holes horizontally arranged - one of which will hold the crank pivot axle.
These are there to ensure the possibility of moving the crank either towards or away from the post socket.
Note that the baseboard is omitted here for clarity, but the plug-in signal is shown. The small unit on the left in the arrangement whereby the operating wire is spring, to keep the pad returning to the same place each time the lever is returned to normal in the 'box'. Although not to scale, you can see how relatively tiny the signal arm crank is.

The return mechanism is merely cosmetic, and the wire should be arranged to ‘pass through’ it – merely giving it movement, but not contributing to the operation. The reason for this is to avoid numerous pieces of operating wire, thereby losing motion.

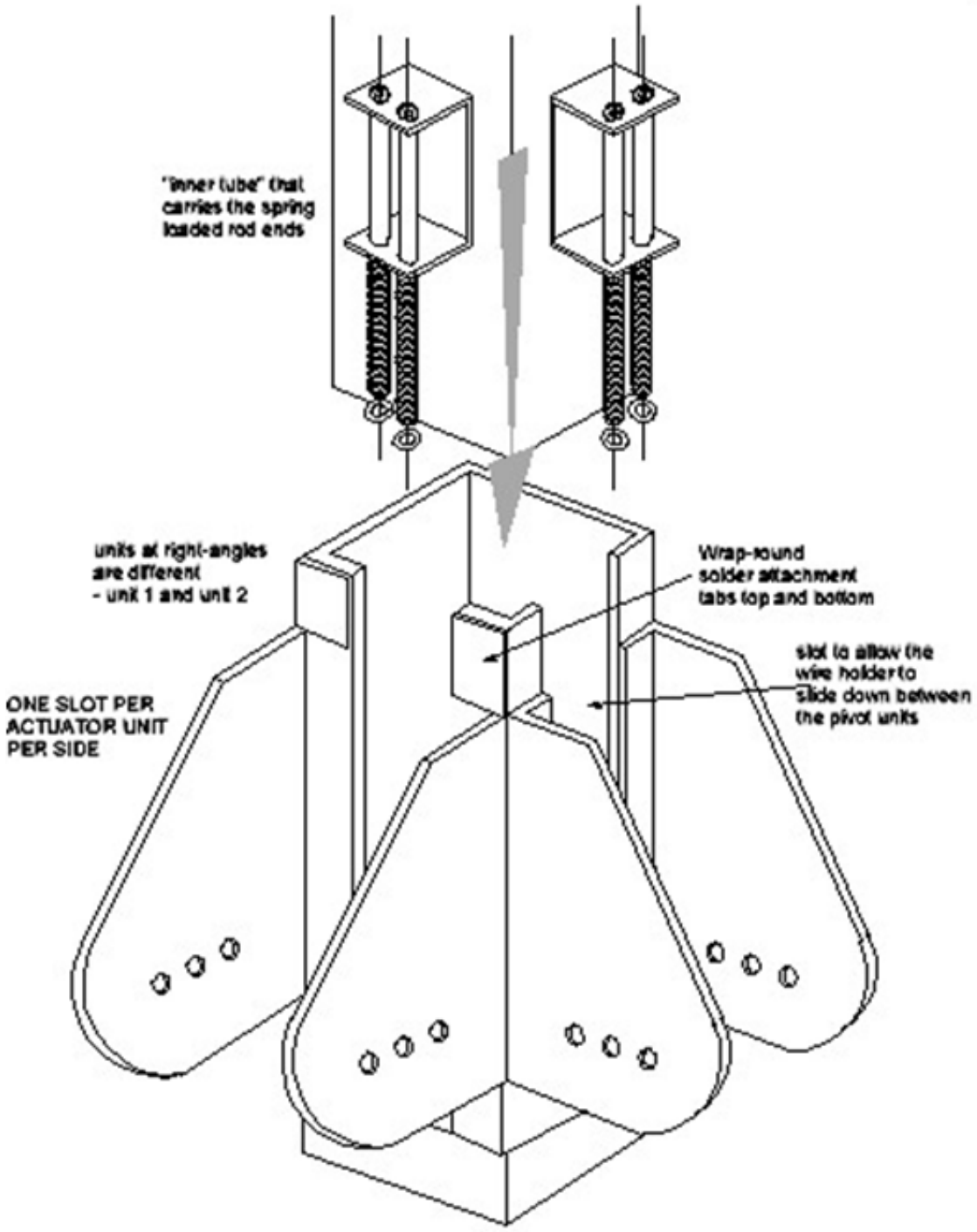
All the holes should be a close fit on the wire use – and as they are already etched in the cranks, the operating wires below the baseboard need to be matched to these holes. If the layout is going to be heavily used – such as at one that is exhibited, then bulking up the holes with extra width would be advisable where possible – to create double the bearing width. Clearly this may not be an option with the signal arm crank, unless a tiny 16BA(?) washer was used on the back – to double the thickness, without spoiling the appearance. It might just be that some photos show there to be a ‘boss’ on this, so that would mean you could add one in front as well as one behind.





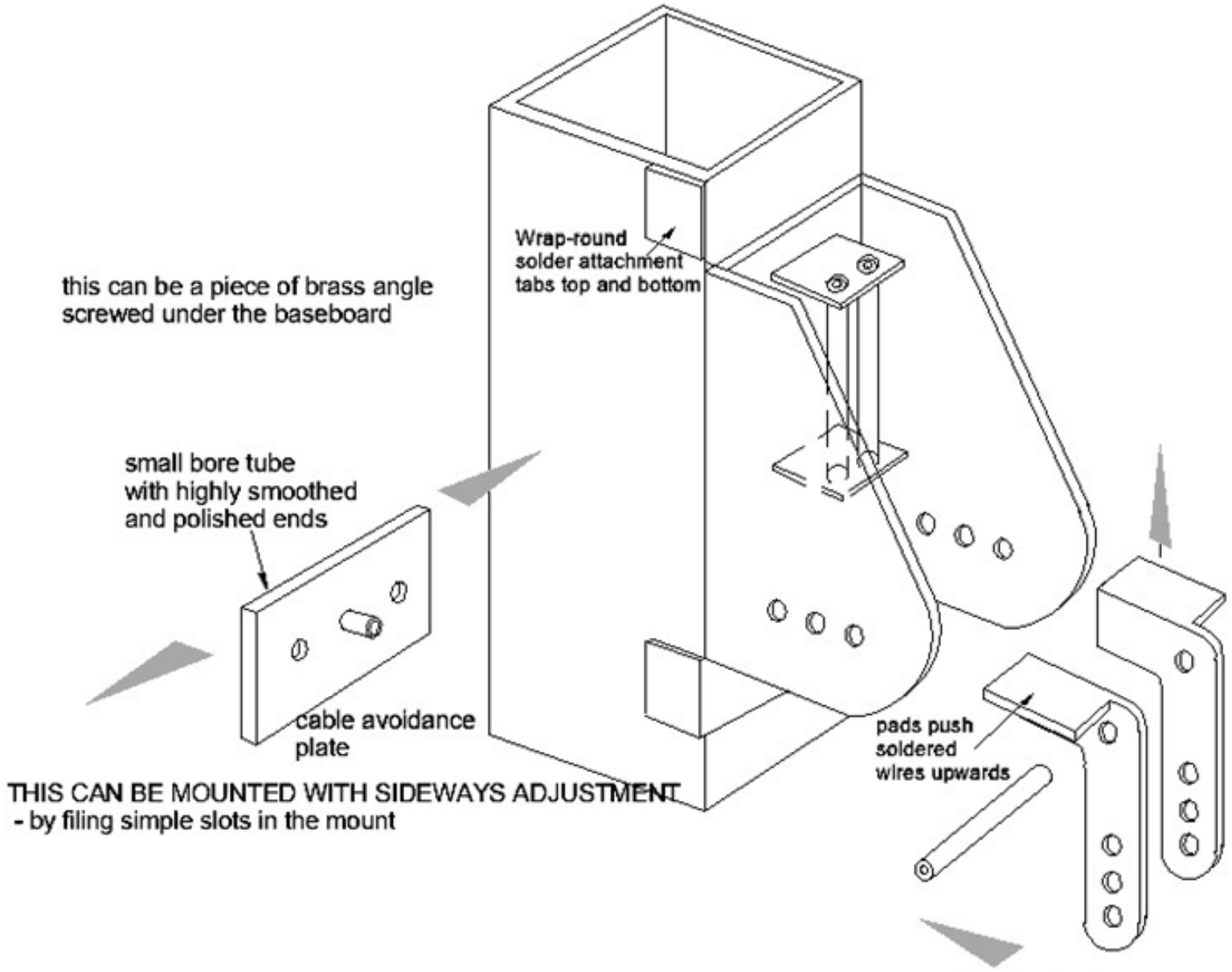
The next two diagrams illustrate the use of double and multiple operating units. Notice that there are allowances built in to enable correct overlapping – as the 'wing' pieces that fold out to enable attaching to the post would otherwise conflict and one would throw the other out of alignment.

These two further diagrams illustrate how a greater number of arms borne on the post will introduce some complications under the baseboard. Those with a divergent outlook will note that there is likely to be some potential conflict with the need to introduce the pulling motion from the back of each post-mounted unit – so a means of guiding the cable to avoid one rubbing on another will be needed. A plate with small holes bearing short lengths of tube will achieve that, so long as the entry point of each piece of tube is scrupulously smoothed.

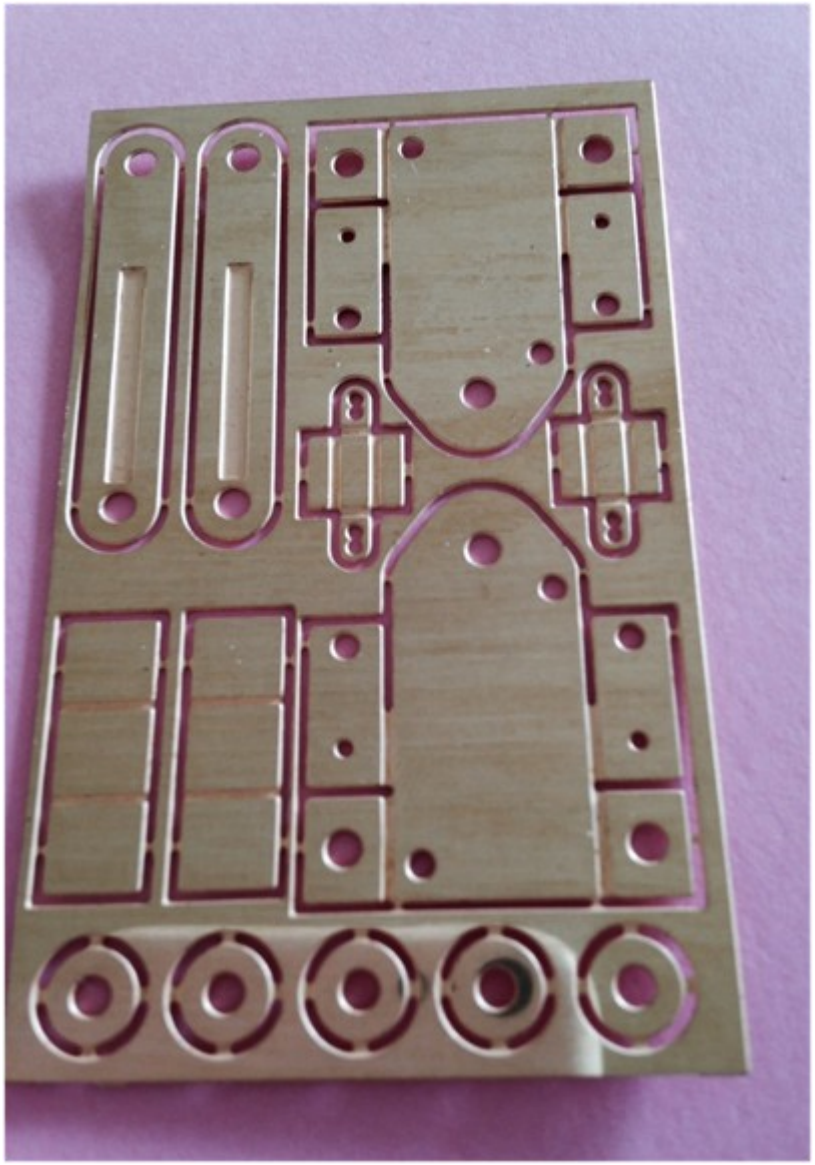

"inner tube" that carries the spring loaded rod ends
units at right-angles are different - unit 1 and unit 2
ONE SLOT PER ACTUATOR UNIT PER SIDE
Wrap-round solder attachment tabs top and bottom
slot to allow the wire holder to slide down between the pivot units

The next diagram shows how you can add a small guide when there are more than one set of operating cables that might conflict as described above. This can either be made from a small rectangle of brass/nickel silver kit fret waste, or a piece bent at right angles and drilled to form a location point to drill two holes in and screw it up into the underside of the baseboard.

Cord avoidance guides are located opposite the cranks, which are pulled slightly off line to enable the pads to move upwards by being pulled, and, thereby, push up the ‘pads’ that in turn push the operating wire end domes upwards, and the wire through the holes in the baseboard; this eventually lifts the arm crank and dips the



signal arm to 45°, indicating ‘line clear’ ahead.



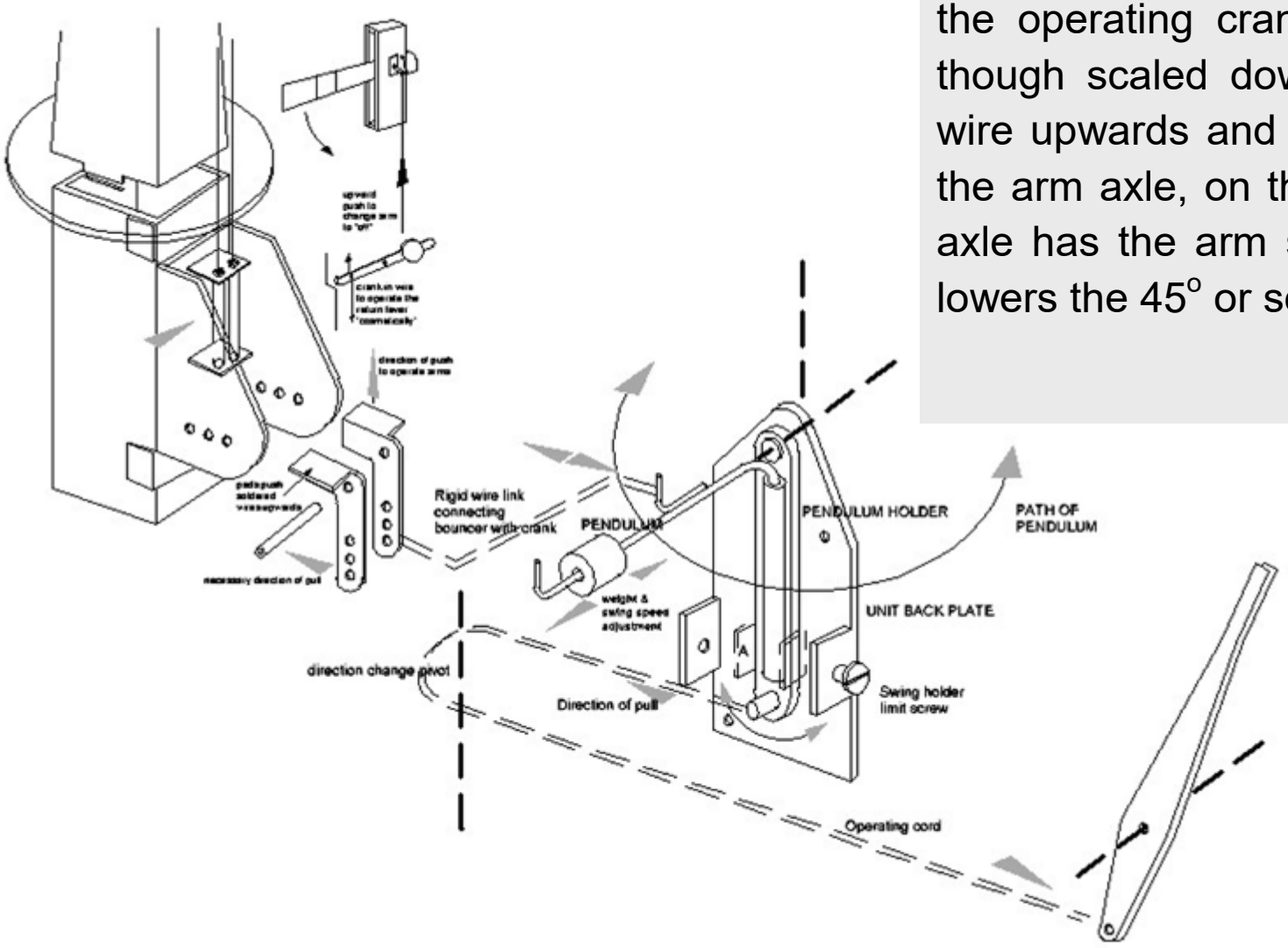
The bouncer mechanism is an etched unit that owes its existence to the article in MRJ by Vincent de Bode, and is an attempt to slightly simplify and expand the design by adding more positive adjustment points.

Phil has used both the original de Bode method, and has also tried mine, I hope with success. They were designed to attach between the operating units above and the arriving cable from the lever frame. The cable actually attaches to the hole in the base of the bouncer swing unit, which, in turn, carries a piece of tube soldered to it and the pendulum arm – to which the signal actuator cranks are lined by wire. This will enable a ‘pulse’ of movement just as the de Bode unit intends – the length of which is completely adjustable, as is the lead weight put on the end of the pendulum arm.

How these make up should be fairly clear from the etch (of 2 units) above left, and also the schematic diagram on the next page. The three square fold up pieces to the left above the washers fit in the space behind each pendulum holder and in line with the adjusting screws:

See diagram on the following page.

The lever pulls the cord, the cord pulls the pendulum holder, and the pendulum swings almost horizontally, though independently, activated by the holder's vertical arc movement. The rigid wire link, in turn, moves the operating crank in the exact same way, though scaled down. This pushes the signal wire upwards and turns the crank attached to the arm axle, on the face of the slot box. The axle has the arm soldered on it, so it rotates lowers the 45° or so - to indicate 'line clear'



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Directors' Saloon in 7mm

Worsley Works

A recent release from Worsley Works is a set of etches (as scratchbuilder aids) for the L.B & S.C.R. Directors' Saloon. Further details are available on their web page.

Photo copyright Charles Osborne

7mm scale Craven carriages

from Ian MacCormac

Ian's blog

Some lineside items to cast, etch or 3D print?

Temporary speed restriction, Croydon

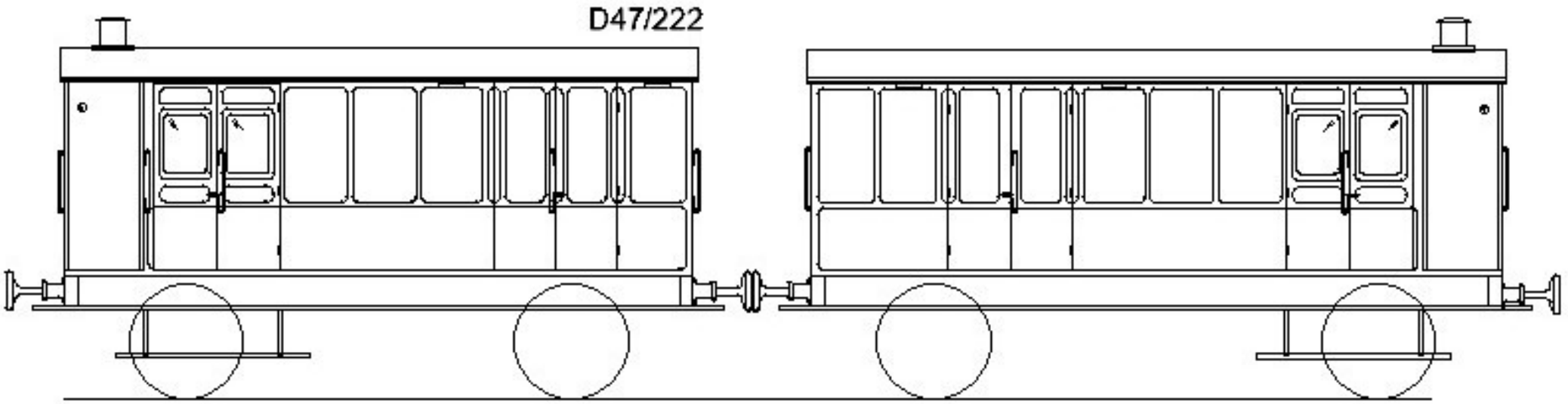
Water standpipe Redhill

Yard point lever

Photos from Nick Holliday's collection

A Stroudley brake van

from EBM



Study of the photos of the Norwood Junction accident indicated that one of the D47 4 wheeled brakes appeared to be longer than the other. The drawings above illustrate the typical vehicle on the left and a longer version on the right, with an extra panel at the luggage end. EBM plans to produce etches for the longer vehicle which will be available at £32 per set.

EBM website

Another Craven single in the pipeline.....

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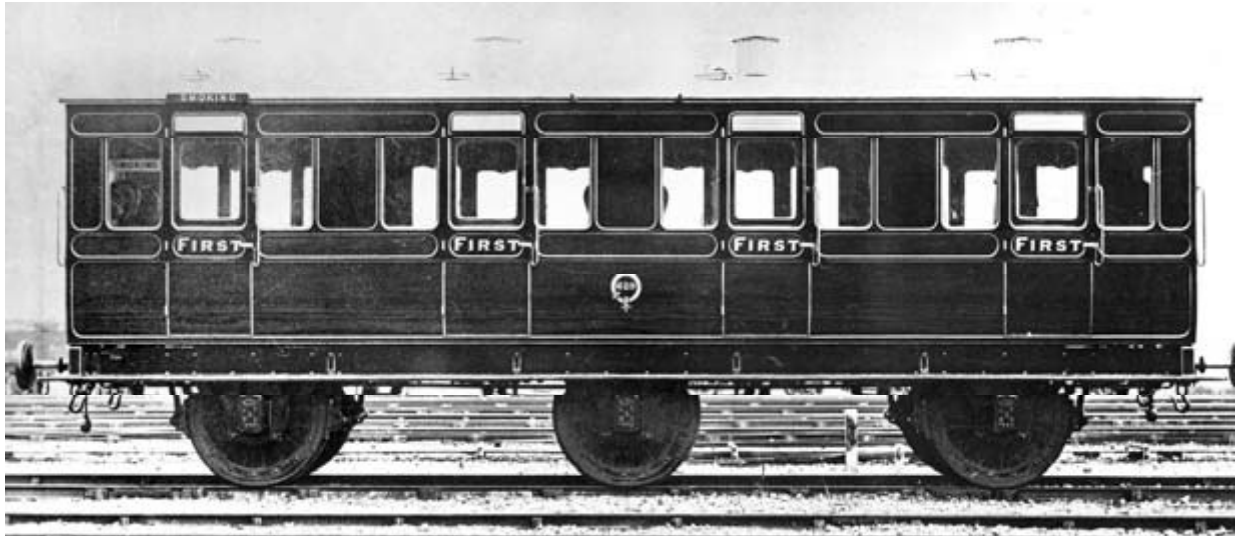

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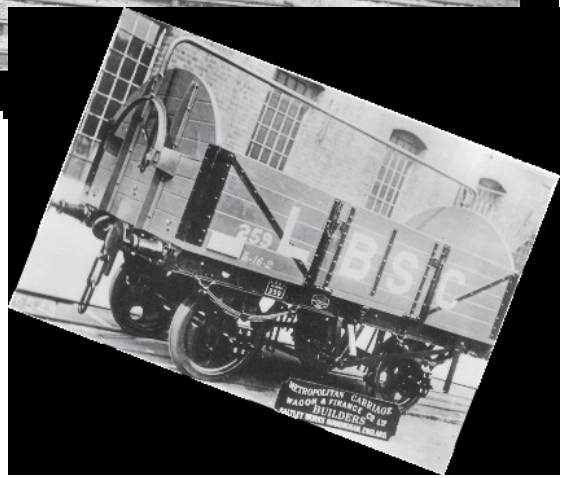

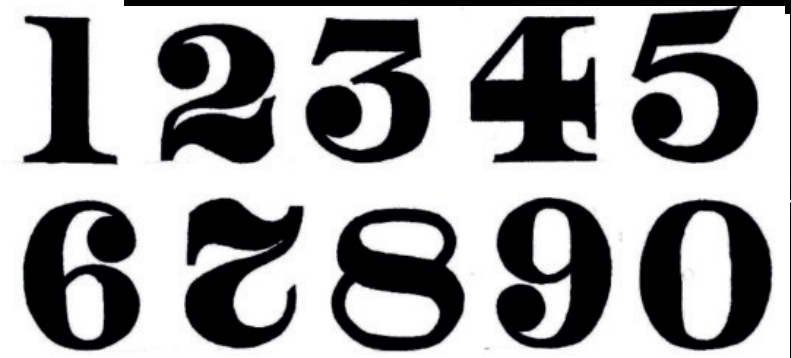

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