

Rumney Models 7mm Anchor Mount Tank Wagon Chassis Instructions

Notes

This set of instructions covers the 14T (OB.71) and 20T (OB.74) anchor mounted tank wagon underframe kits. They are designed to provide accurate underframes for use with Rumney Models 7mm anchor mount tank wagon body kits OC.71 and OC.72.



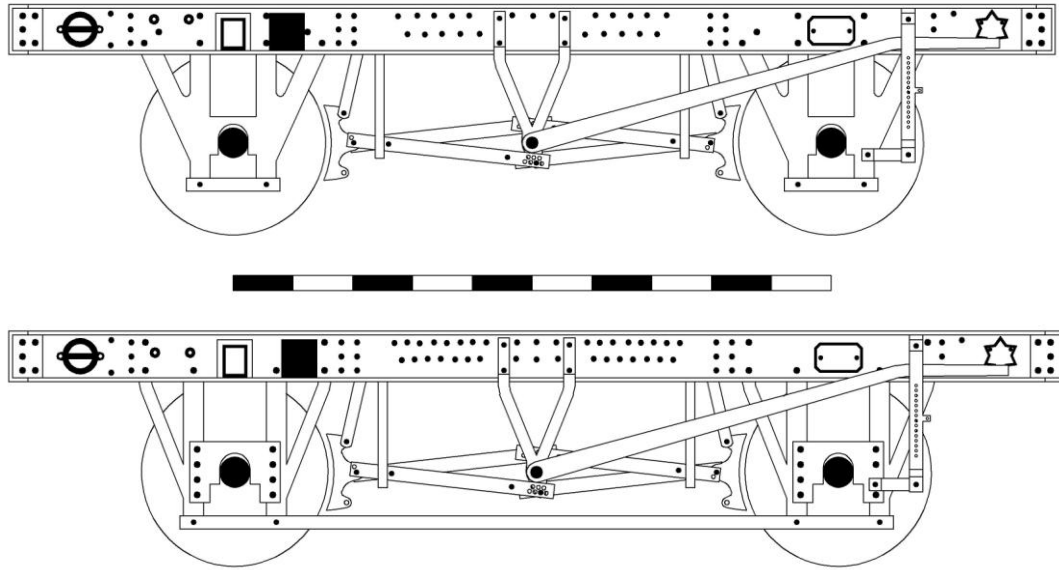
Anchor mounted tanks were introduced in the 1940s and continued to be built into the early 1960s. Indeed I believe that the last unfitted wagon built for use on the British Railways network was an anchor mounted tank wagon built for Berry Wiggins. They were built for various capacities and types of load with different tank diameters. Most common were 14T class A, 14T class B and 20T class B.

You can use these underframes in conjunction with the Rumney Models anchor mount wagon body part kits OC.71 (7'3" Ø) and OC.72 (6'7" Ø). The two underframe and two body kits can be combined to produce most of the fuel oil tanks built from around 1947 until the introduction of the 35T GLW vacuum braked tanks in the late 1950s. These are summarised as follows:

- | | | |
|------------------------|-------------------|----------------------------|
| • OB.71 + OC.71 | 14T Class A Tanks | 14T underframe + 7'3" tank |
| • OB.71 + OC.72 | 14T Class B Tanks | 14T underframe + 6'7" tank |
| • OB.74 + OC.71 | 20T Class B Tanks | 20T underframe + 7'3" tank |

Essentially the two underframe kits are the same, they simply differed in detail. The 14T underframe has standard (12-16T) BR type wagon axleguards and were fitted with 9"x4.5" journal 2 part oil axleboxes along with 6 leaf springs. The 20T underframe has heavier pattern RCH axleguards and riveted axlebox guides and were fitted with heavier springs (8 leaf) and larger 10"x5" journal 2 part oil axleboxes.

The eagle eyed will note that early 14T anchor mount tank wagons had RCH type axleguards and some of the 20T wagons had BR plate axleguards. It is a simple matter to prepare artwork for these other two types and I'm happy to release them if and when there is sufficient demand to cover the cost of doing so. Realistically I need 5 of each type to cover the cost of doing this. If you are interested in these types then please email me.



Read through the instructions first and familiarise yourself with the components. Drawings and photographs are included to attempt to make my waffle clearer. Note that all the photos are of the 4mm version so may not match the 7mm one exactly suitably illustrate the item in question.

All fold lines are through 90° with the fold line on the inside unless stated otherwise.

Check all holes before removing parts from the fret. The drawing process for etching if you use a CAD program as I do is extremely accurate but the actual etching process itself not an exact science. If the fret is slightly over etched then there is no problem but if they are under etched the holes will need enlarging. I find that this is easiest to do before removing parts from the fret. The hole sizes will be noted at the appropriate points.

Suspension

The underframe is designed to be built sprung using individual springs made from steel guitar wire soldered to the etched spring/bearing carriers. For this you will need a suitable flux. I use Carr's Black label.

The exact size of spring wire that you need will depend on the final unsprung (i.e. without wheels, axles and spring carriers) weight of the wagon. The following list will give you the spring wire diameter for a given wagon weight.

100g	0.011" (11 gauge)
145g	0.012" (12 gauge)
200g	0.013" (13 gauge)
270g	0.014" (14 gauge)
350g	0.015" (15 gauge)

I have included 0.013" wire with the underframes as this is probably the most likely size that you'll need.

If the finished vehicle is weighted to according the above figures with the weight evenly distributed then this will produce a spring deflection of 0.6mm. Also don't over weight the wagon in relation to the spring diameter as the springs will not have enough upwards movement before they hit the axleguards. Think of the weight as an ideal weight but also a maximum for that gauge of wire. Plain (i.e. unwound) guitar wire 'top strings' in various gauges are readily available from music shops. I use Ernie Ball strings on my wagons but as long as it's steel any brand will be fine.

Materials list

Several sizes of wire are needed to build the chassis. Eileen's Emporium are good source for these and they do a mixed sizes pack if you don't want to buy large quantities.

0.5mm - Lots of it - Brakegear, tie bars/keeps, brake lever guards, vees

1.0mm - Alignment pins for the brakegear frets

1.2mm - Brake cross shafts *

* This wire is a bit undersize at 1.2mm and should really be something like 1.4mm. 1.2mm is a readily available size though and hence why I suggest using it. You could try 1.5mm but this is pushing it a bit for the etched vees. 1.6mm or 1/16" is likely to prove too big.

You will also require items such as buffers, axleboxes and springs as well as coupling links to complete.

Buffers were 1'6" spindle type (generally 4 ribs) with 13" heads; Slater's do a 1923 RCH buffer which should fit the bill. Some wagons had a 2 rib fabricated type with a hexagonal shaped base; are these available in 7mm at all?

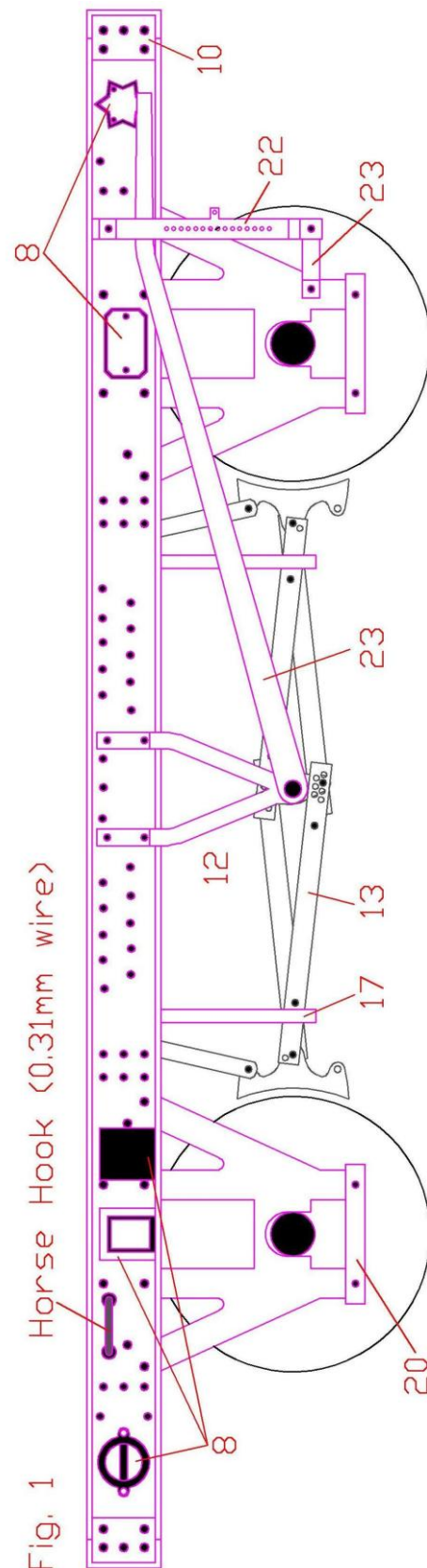
14T anchor mount wagons had 6 leaf springs and BR type 2 part oil axleboxes (9"x4.5" journals). 20T anchor mount wagons had 8 leaf springs and RCH type 2 part oil axleboxes (10"x5" journals). These are available, along with the tank fittings, as 3D prints if buying a complete kit.

Coupling hooks are included but you will need links. When new the couplings on these wagons were basic 3 links. Some later gained Instanter links. You will need the links to complete.

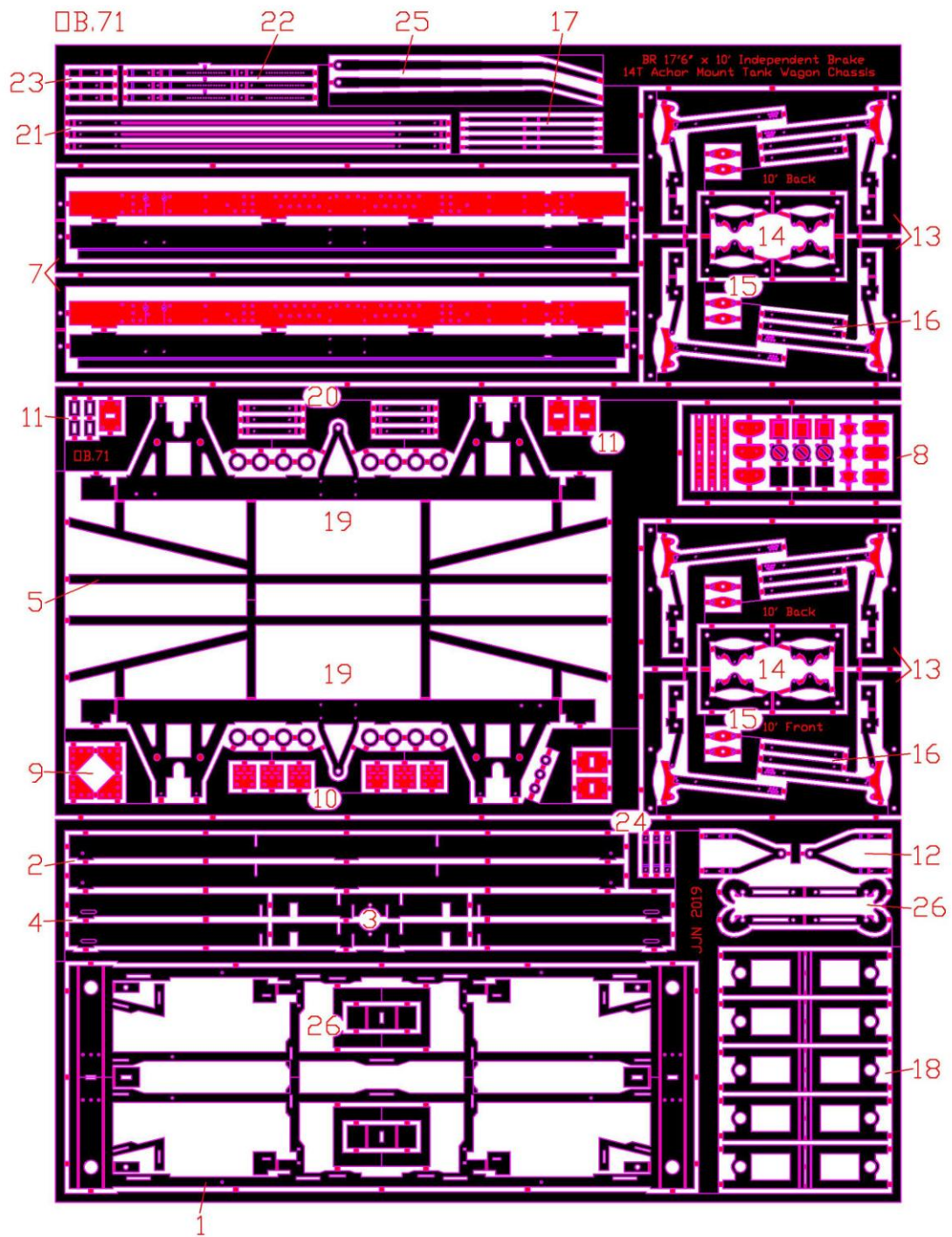
Contact details for the above suppliers can be found at the end of these instructions.

Component List

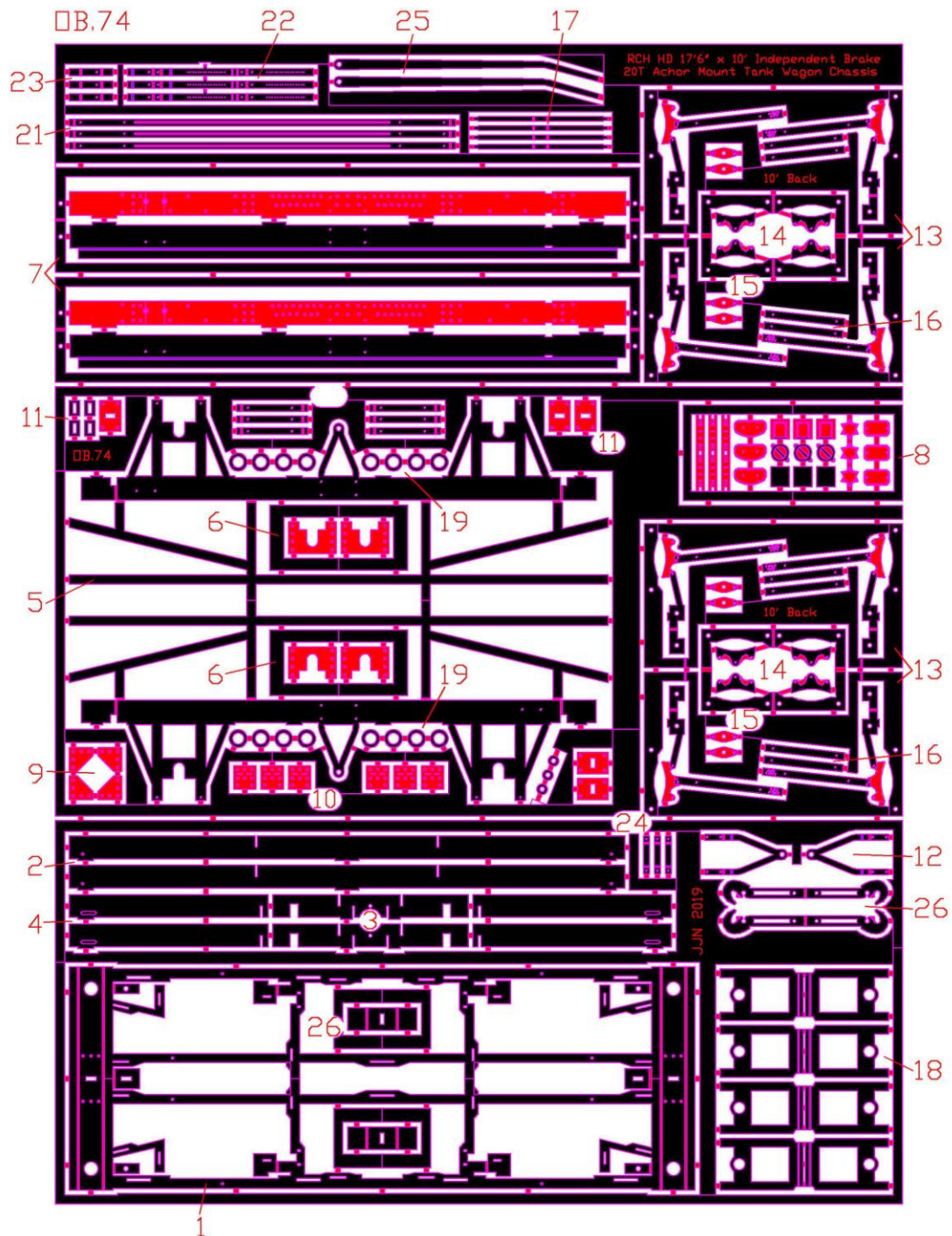
- 1 - Bottom plate
- 2 - Longitudinal spacers
- 3 - Transverse spacers
- 4 - Angled end spacers
- 5 - Top plate
- 6 - Riveted axlebox guide overlay (OB.74 only)
- 7 - Solebars
- 8 - Solebar detailing
- 9 - Solebar/headstock corner plates
- 10 - Solebar/headstock bracing
- 11 - Coupling pockets
- 12 - Additional vees
- 13 - Main brakegear
- 14 - Brake shoe infill
- 15 - Push rod cranks
- 16 - Push rod infill
- 17 - Push rod safety loops
- 18 - Spring Carriers
- 19 - Bearing washers
- 20 - Axle keeps
- 21 - Tiebars
- 22 - Brake lever guards
- 23 - Brake lever guard brackets
- 24 - Brake lever guard stays
- 25 - Brake levers
- 26 - Coupling hooks
- 27 - Coupling hook spring bracket



OB.71 Parts Diagram



OB.74 Parts Diagram



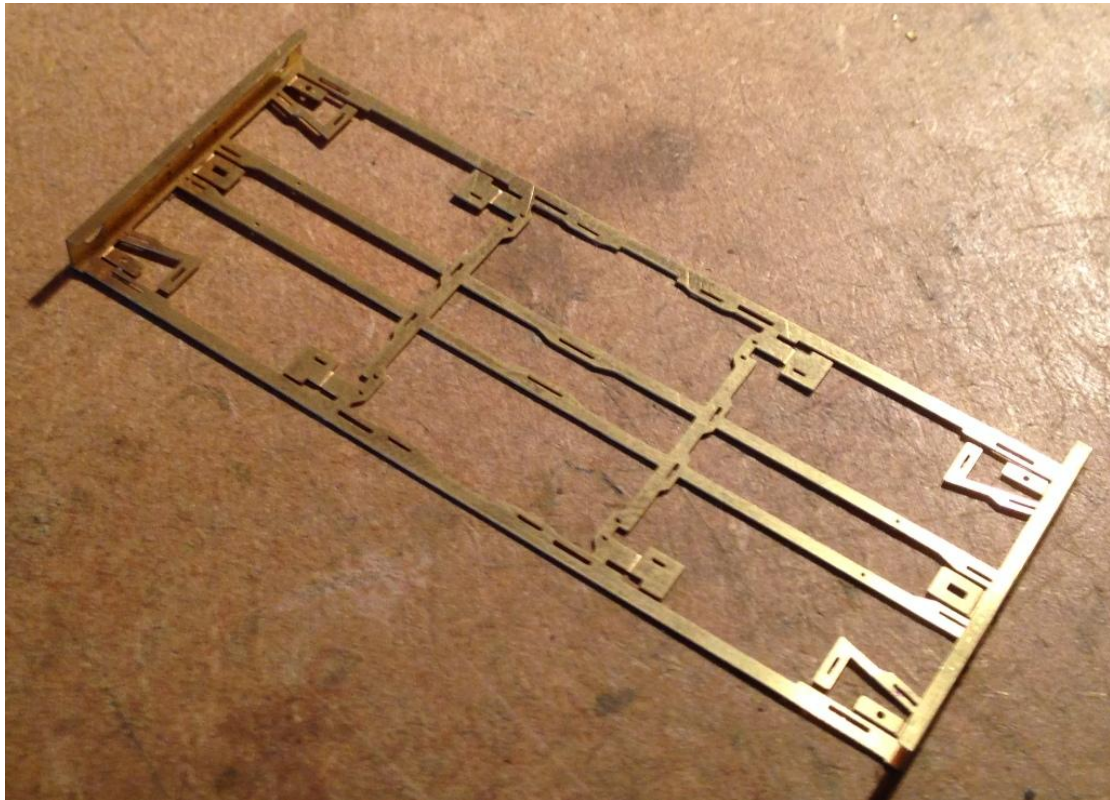
Construction

Main Chassis

Firstly check the fit of your buffers in their holes in the headstocks. It may sound a bit odd starting with something that usually goes on at the end but it will be much easier to open out the holes now rather than later.

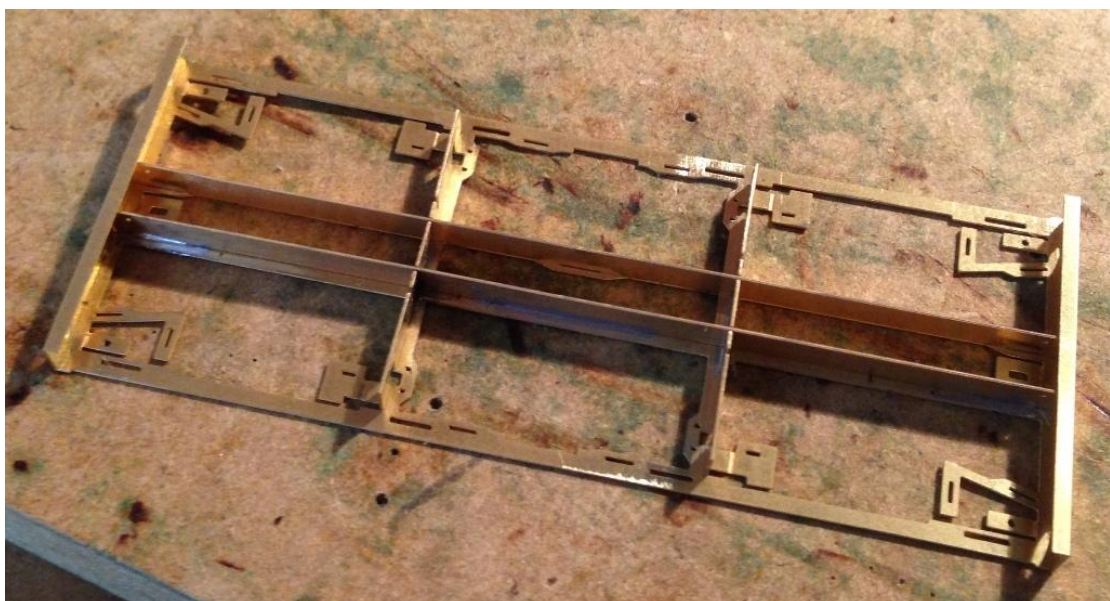
Start with the chassis bottom plate (1). Push out the half etched rivets on the headstocks. I find the easiest way to do this is to use a drop head rivet press with the fret placed over one of those ubiquitous green cutting mats. Remove from the fret. Remove the buffer retainers from the middle of the axleguard assembly and put to one side. Clean up connecting tags.

The headstocks need to be folded up. This is best done with the chassis bottom plate clamped to something or held in a vice to avoid distortion. There are two sets of fold lines as the headstocks need to be folded into a channel. Starting with the outermost parts of the chassis, fold the bottom plate through 90° . Next fold the headstocks through 90° to form a channel. Do not reinforce with solder yet.

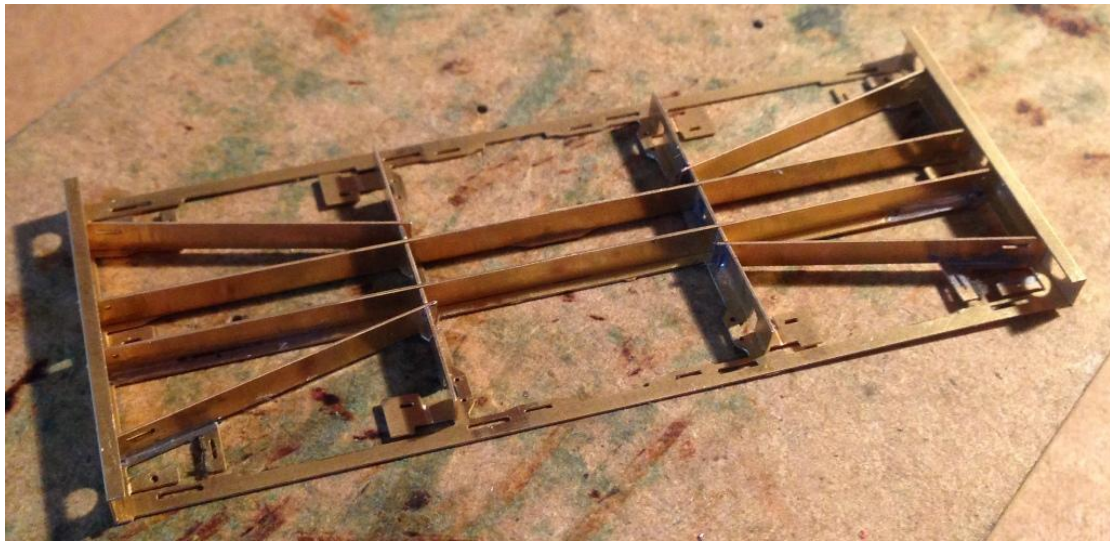


Remove the longitudinal spacers (2) and the transverse spacers (3) from the fret and clean up any tags. Fit the longitudinal spacers first using the tabs and slots to aid alignment. You may have to feed them in at an angle due to the headstocks. Solder to the bottom plate.

Add the transverse spacers. These fit into the slots in the longitudinal spacers and on the bottom plate. Solder in place.



Remove the angled end spacers (4) and clean up any tags. Fit to the underframe using the slots in the transverse spacers and the bottom plate. Solder in place.



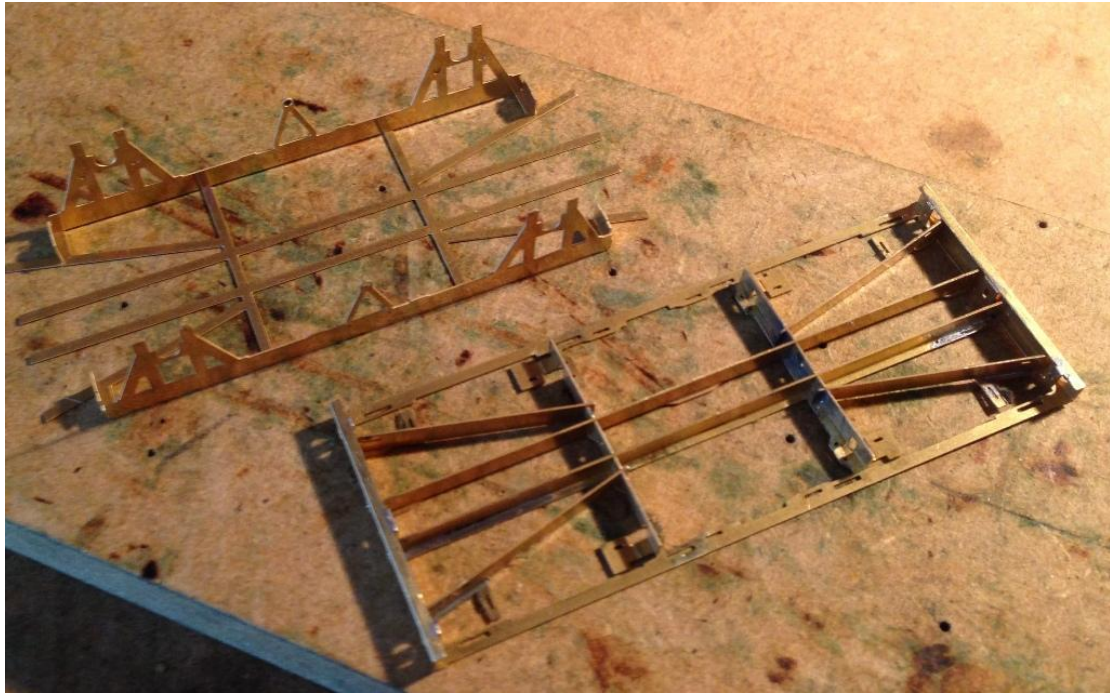
Fold up the buffer and coupling hook guides at the ends of the bottom plate and solder in place.



Check that the large holes in the vees on the top plate (5) will accept 1.2mm wire and the small holes for the secondary vee pins and horse hooks can accept 0.5mm wire. If you are constructing OB.71 drill out the holes on the backs of the axleguards as per your particular prototype (they did vary and some didn't have any holes) using a 1.5mm drill then remove from the fret.

Carefully fold up the sides and the four spring supports. Make sure that the sides are at 90° and adjust if necessary.

The chassis top and bottom plates need to be fitted together and then soldered in place and the axleguard assembly then need to be soldered together. There are tabs on the top plate and slots on the bottom plate to align everything. Make sure all of the tabs are properly home when fitting.



Solder together where the tabs are fitted to the slots and along the main framing on the top plate.



There are four tabs with small slots on into which the brakes will be fitted. Fold these down through 90°s. You should have something that is looking like an open chassis now.

If you are constructing OB.74 you will need to solder in place the riveted axlebox guide overlays (6). These should be fitted to the outside of the axleguards. Use the slots for the axles as a guide and solder in place.



There are two parts to the solebars (7), a backing piece which is folded into an L and a detail overlay. These are designed to be soldered together whilst still attached to the fret that surrounds them.

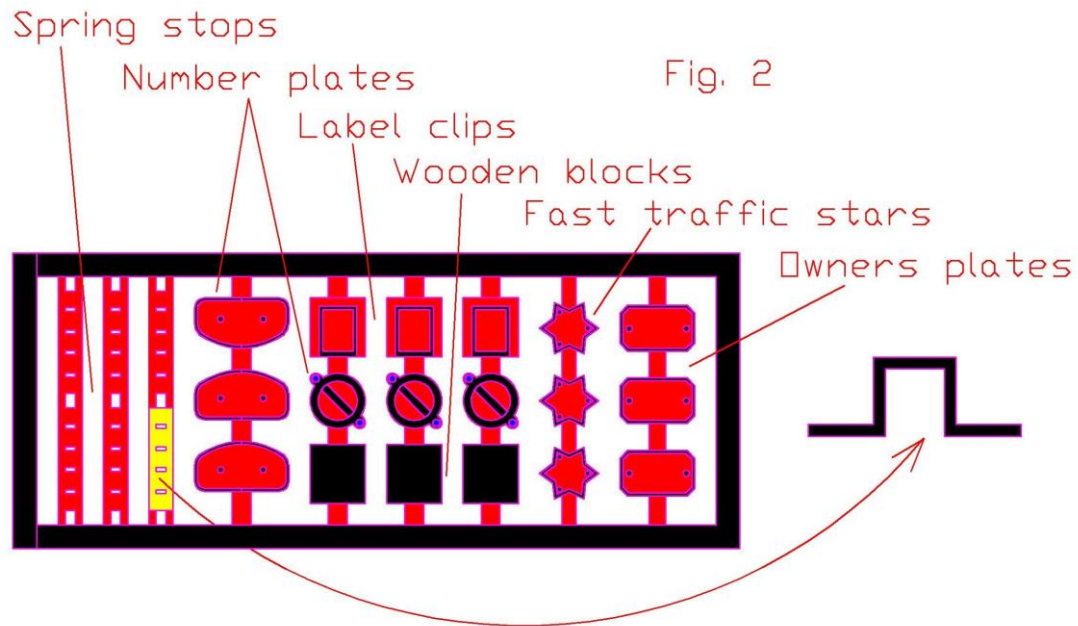
Remove the solebars from the main fret making sure that the frame that is around them is still attached. I found it useful to construct a jig to hold the two parts whilst soldering together. Use one of the solebars to drill two 1mm holes near the edge of a piece of scrap wood or mdf. Short lengths of 1mm wire can then be used to pin the solebars to the wood and leave your hands free for soldering. Tin the back of the detailing part fold the two halves of the frame over so that the fold is through 180° with the fold line on the outside. Sweat the two parts of the solebar together.



Now is probably the easiest time to attach the solebar detailing to the solebars so I shall cover this now before returning to the business of assembling the chassis.

Solebar detailing

The solebar detailing (8) comes contained in its own little fret. See Fig. 2 below. On it you will find fabricated axle spring stops, two types of number plates, label clips, a rectangle that is actually a block of wood on the real thing, fast traffic stars and owner's plates. I assume the purpose of the rectangular block of wood was for pinning labels to; they were quite common. The positions of all this stuff varied so check your prototype. The details can be soldered on in the appropriate places.



Remove the solebars from their frame and fold the small edge through 90°s so it forms an L shape.



Main Chassis Continued...

The solebars can now be fitted to the chassis. There are slots and tabs on the bottom plate to aid location and the ends go into the channel that is the headstock. Fit the solebars at an angle and then straighten, locating the slots and tabs at the same time. Once in place then the solebar can be soldered in place.



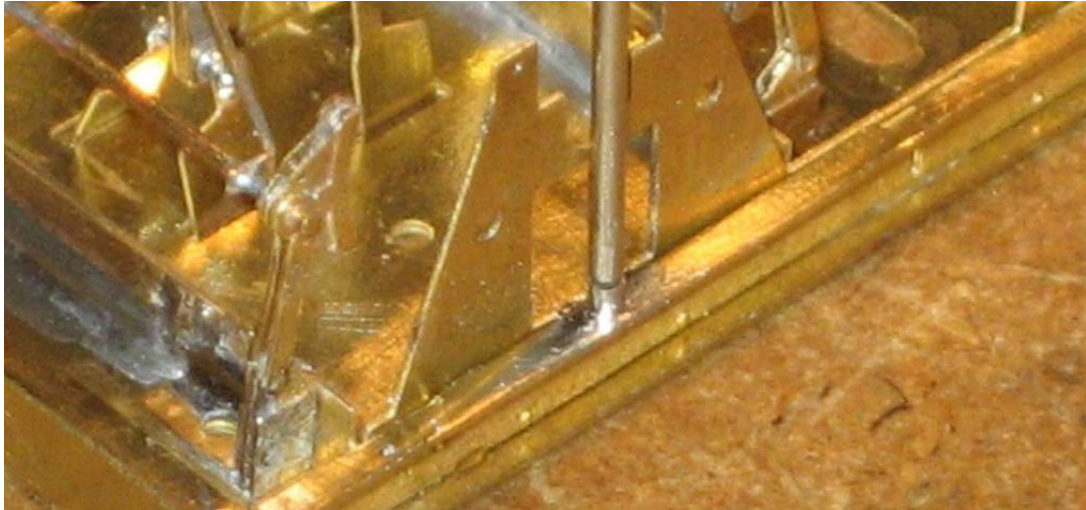
Add the Solebar/Headstock corner plates (9). These should be arranged so that the two straight sides go along the outer edge of the headstock and the inside of the Solebar. Note that they go on the underside of the chassis.

You can also now add the solebar/headstock bracing (10). These fold into an L and fit into the solebar/headstock channels. There are small half etched slots to aid you locating the bend point.

Now is as good a time as any to fit the coupling pocket detail (10). Solder in place using the hole for the coupling as a guide. I find the easiest way of doing this is to shape the end of a cocktail stick to fit in the slot. This can be used to align the detail on the headstock and hold it in place while you solder them together.



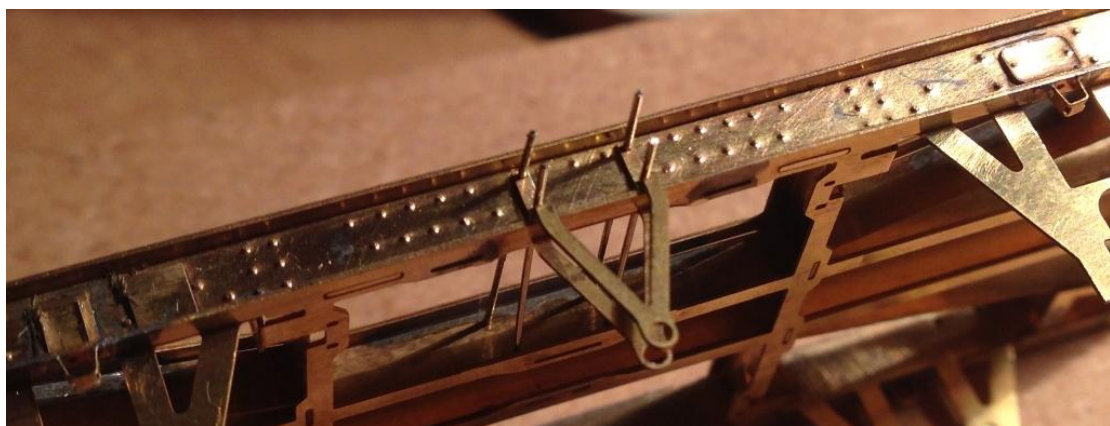
Spring Stops



There were two different pattern of spring stops fitted depending on when they were built. There are 6 fabricated spring stops for early builds on the solebar detailing (5) fret (see Fig. 2) which can be folded up and then soldered in place. I find a small pair of self closing tweezers good for this. Later wagons had round pattern spring stops. Use 1.6mm (1/16") wire for these. I cut almost all the way through the wire with a piercing saw and then solder in place. The cut can then be completed without the soldered joint breaking.

Secondary Brake Vees

Make sure that the large holes in the additional vees (12) can accept 1.2mm wire and the small ones 0.5mm wire. Remove from the fret and clean up any connecting tags. There are two sets of fold lines on the additional vees, fold both sets through 90°. Make sure that the four holes in the centre of the solebars can still accept 0.5mm wire and then use four short lengths of 0.5mm wire to pin the additional vees to the underframe. See picture below. Solder in place.



Brakegear

The brakegear is designed to be assembled with everything still attached to its surrounding frame. Once everything is soldered together it can be removed from the frets, tidied up and fitted in place.

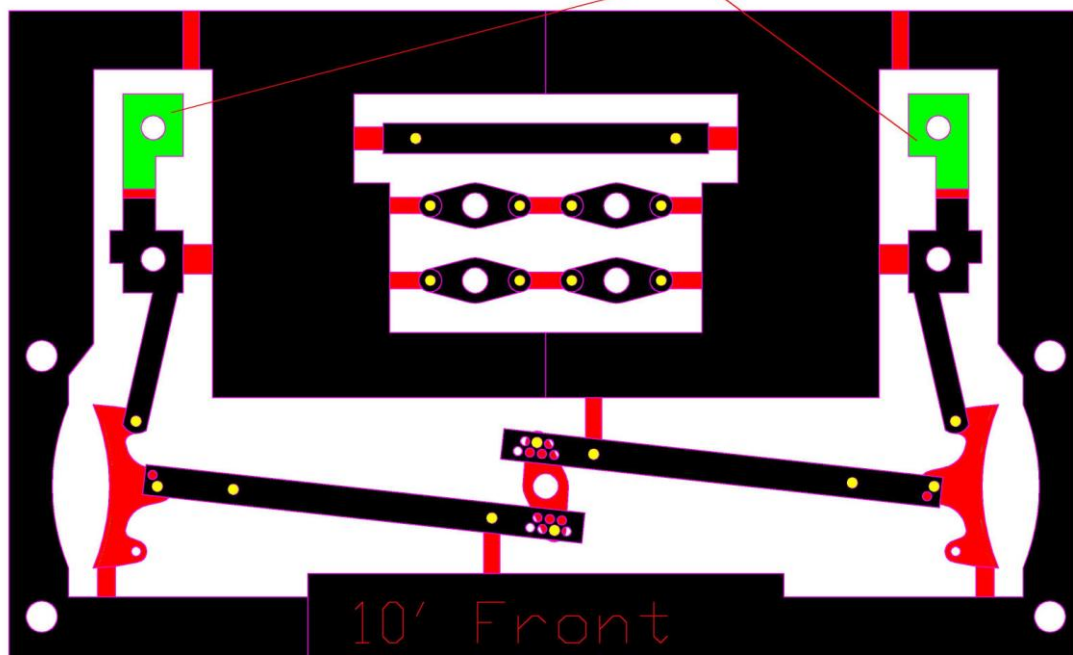
The first step is to create a jig to aid assembling everything. Use a suitable piece of wood or mdf. Use one of the frets as a guide. Drill through the main brakegear (13) parts labelled front with the writing facing towards the wood. The larger holes are 1mm diameter and the smaller ones 0.5mm. If you are unsure which holes you should be drilling through see Fig. 3 below.



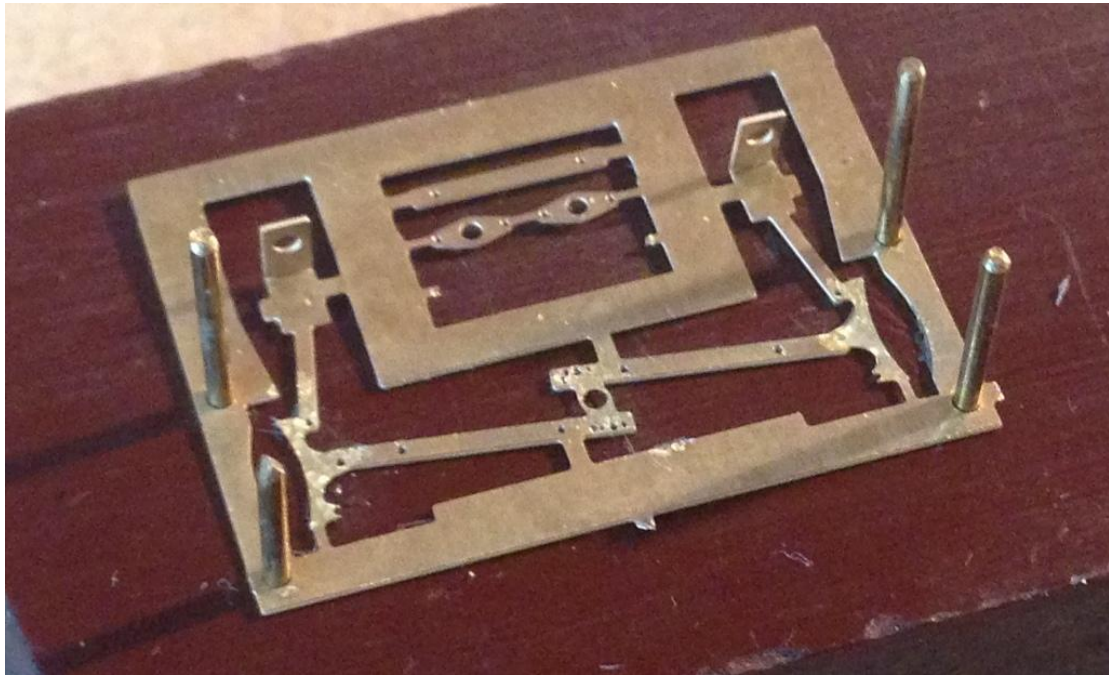
Once the jig is created you can check that the small holes in the rest of the main brakegear (13), brake shoe infill (14), push rod cranks (15) and push rod infills (16) can accept 0.5mm wire. These are marked in yellow on Fig. 3 below. I find it easier to locate the hole from the side with no writing on the main brakegear.

Fig. 3

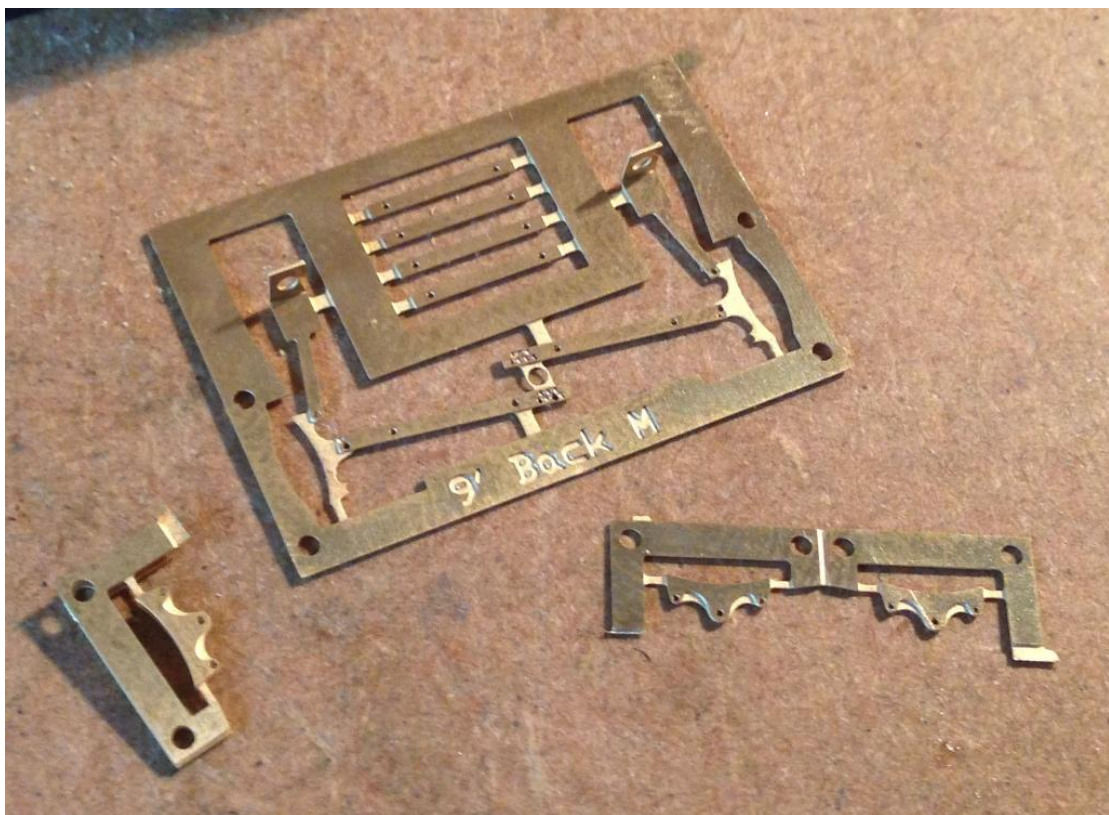
Fold through 180°



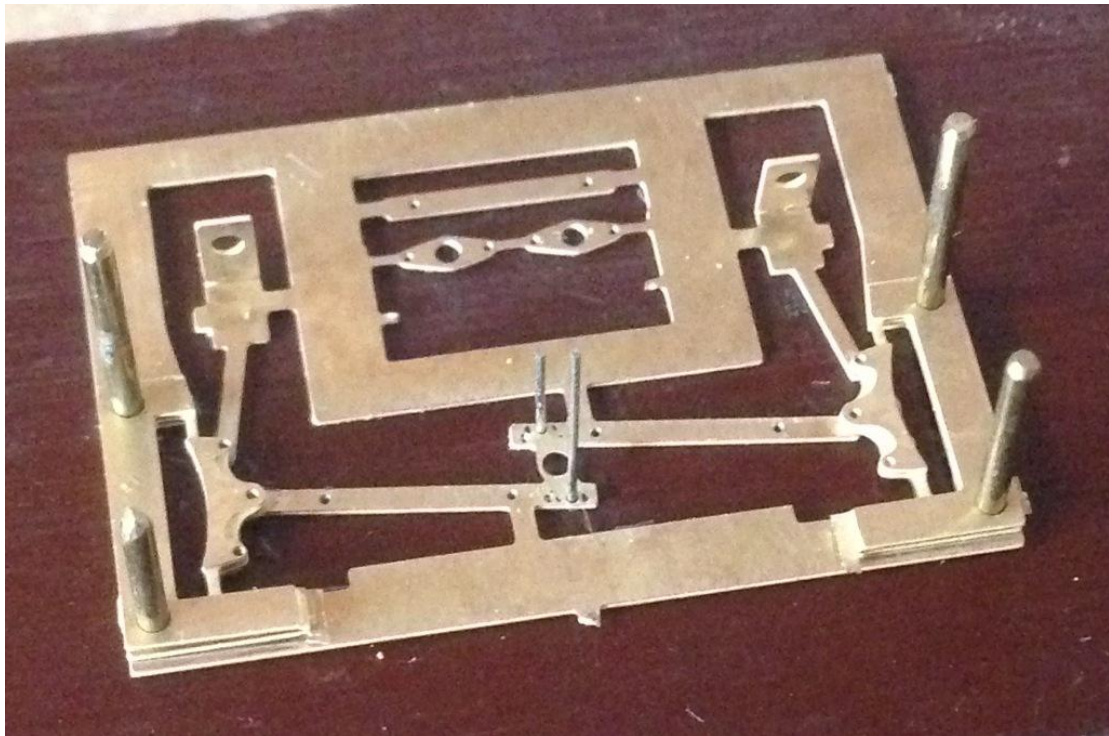
Remove the push rod cranks (15) and push rod infill (16) (if required). Carefully fold the parts marked in green on Fig. 3 through 180°s with the fold line on the outside and then pin to the jig using short lengths of 1mm wire, writing side facing down.



Take the brake shoe infills (14) and fold double with the fold line on the outside.



Place the brake shoe infill over the front using the 1mm wire rods to align everything. Insert two short lengths of 0.5mm wire onto the holes where the push rods join the brake shaft cranks.

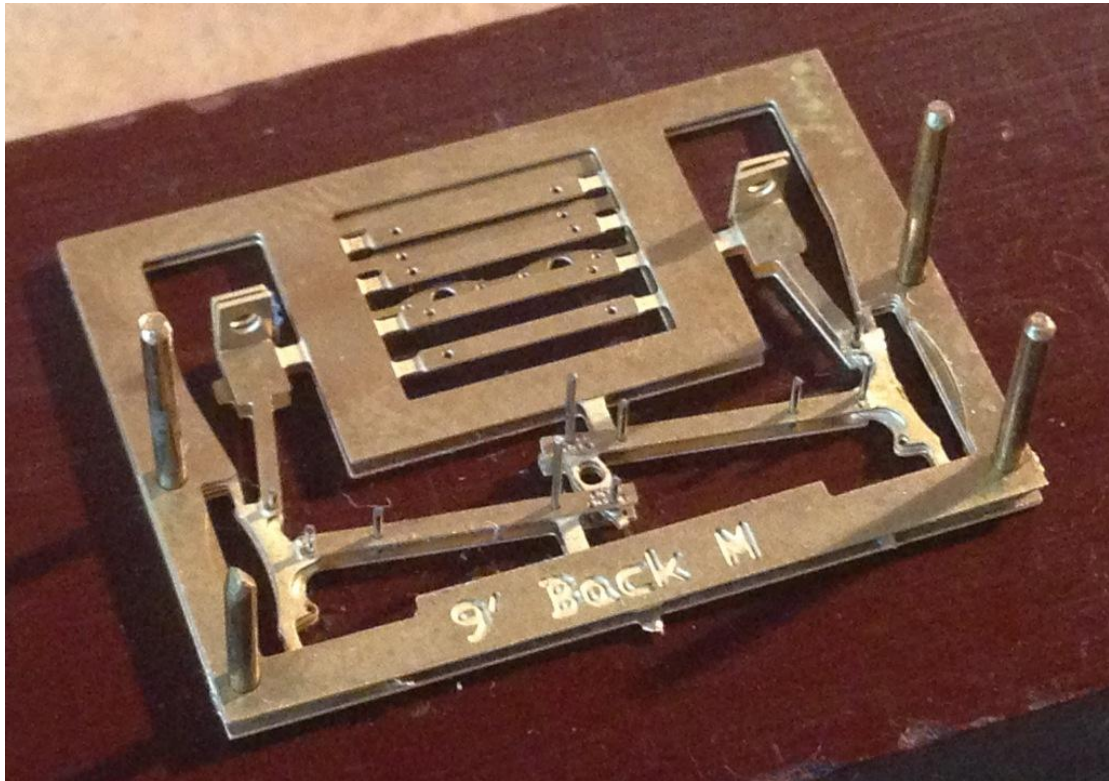


Fold up one set of push rod cranks and place onto the two lengths of 0.5mm wire.



If you wish to use the push rod infill pieces provided then repeat the process for the cranks with these parts.

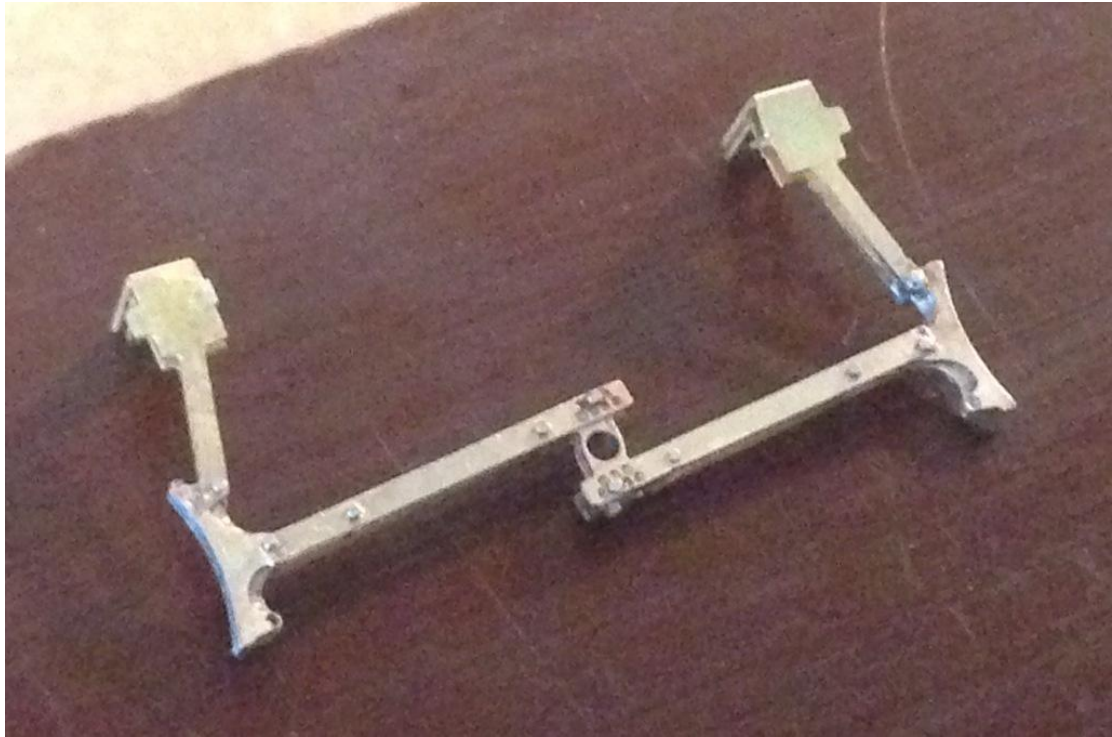
Carefully fold up the parts shaded green in Fig. 3 on the back part of the brakegear and pin onto the assembled layers with the writing visible and facing away from everything else. Make sure all the bits of wire go where they should. Fill the remaining holes with 0.5mm wire making sure it goes all the way through.



Solder the layers together paying particular attention to the brake shoes (I found it best to apply solder to the long curved edge) and the joints where the wire meet the etch.



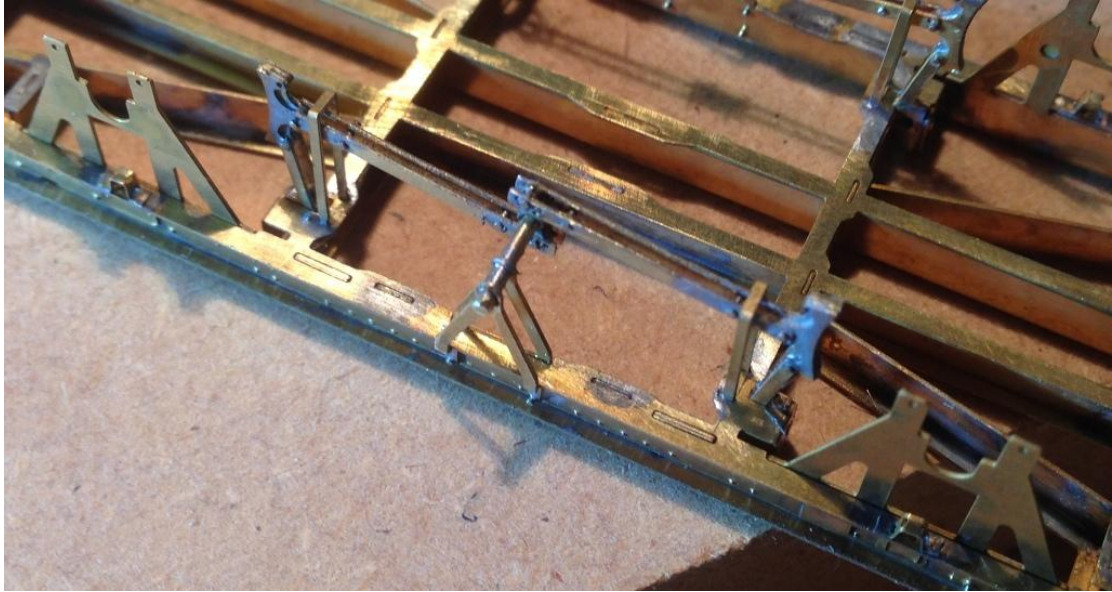
Carefully remove the brakegear from the fret; I used a piercing saw. Clean up any tags that are left and also the wire to represent bolt heads.



The brakegear can be fitted to the wagon using the tabs and slots as before. Gently bend the shoes to get the tabs into the slots. Use something suitable to pin the brakegear to the chassis through the holes in the feet while you solder them in place.

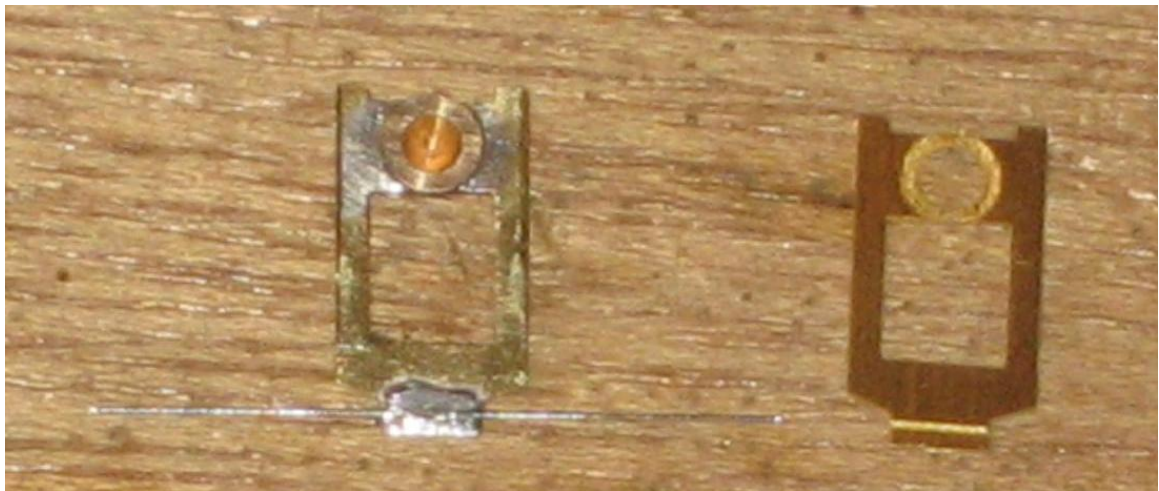


Finally the push rod safety loops (13) can be fitted. These fold up and are soldered in place using very small slots in the bottom plate to align things.



Spring Carriers

Although you may wish to leave the actual construction of the spring carriers (18) until you can determine the weight of the wagon I go over their assembly now.



They are designed so that the springing wire is soldered to the carrier using the half etched slot as a guide. The 4mm version is just a single full thickness piece of metal but for the 7mm ones they can be folded double to give extra strength given the extra weight they will be carrying. When fitting the bearings make sure there is no sideways slop in the setup; bearing washers (19) are included for this purpose. There should be a good fit between the axles and the bearings with ideally no sideways movement at all. If you need to fit the washers I'd fit them to the side that will go against the inside of the axleguard. This reduces the amount of material that is in contact and so the amount of friction in the setup.

I find the easiest way to assemble the spring carriers is to make a small jig consisting of an off cut of wood with a 2.5mm hole drilled into it. Once folded double and the two halves soldered together the spring carrier can then be placed so that the bearing locates through the hole in the carrier and into the wood. The bearing can then be soldered in place. The spring wire can be located in its half etched guide slot and soldered in place using a suitable flux. I use Carr's black label. The spring wire needs to extend at least 11mm either side of the point where it is attached to the carrier.

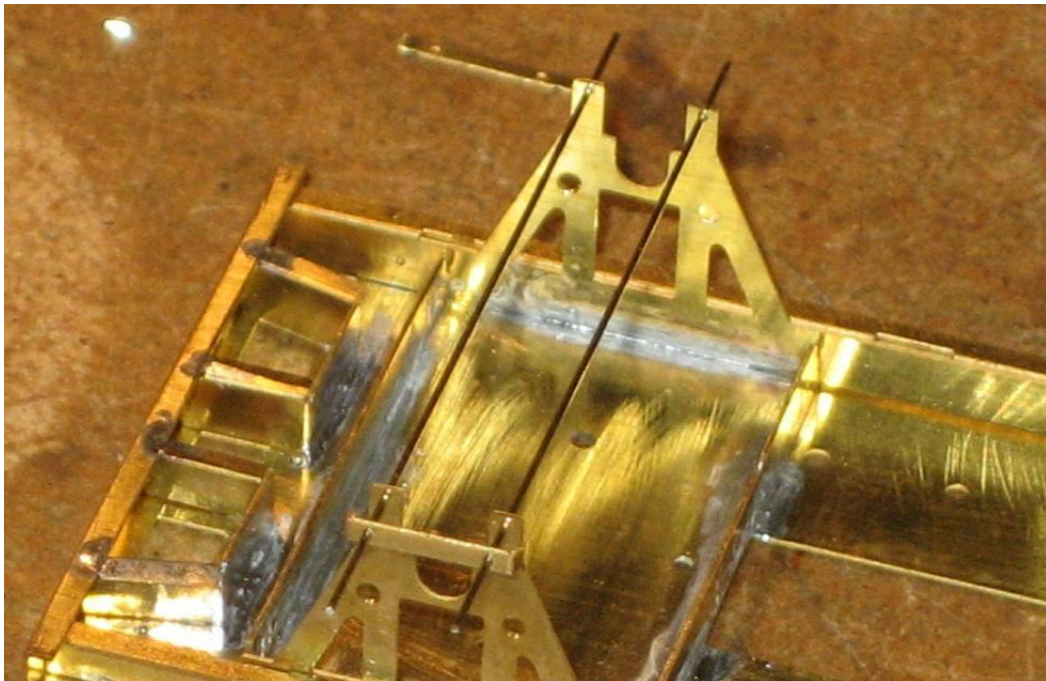
Axle keeps and tiebars

There are both individual axle keeps (20) and tie bars (21) included. 14T underframe should have individual keeps and the 20T underframes tie bars.

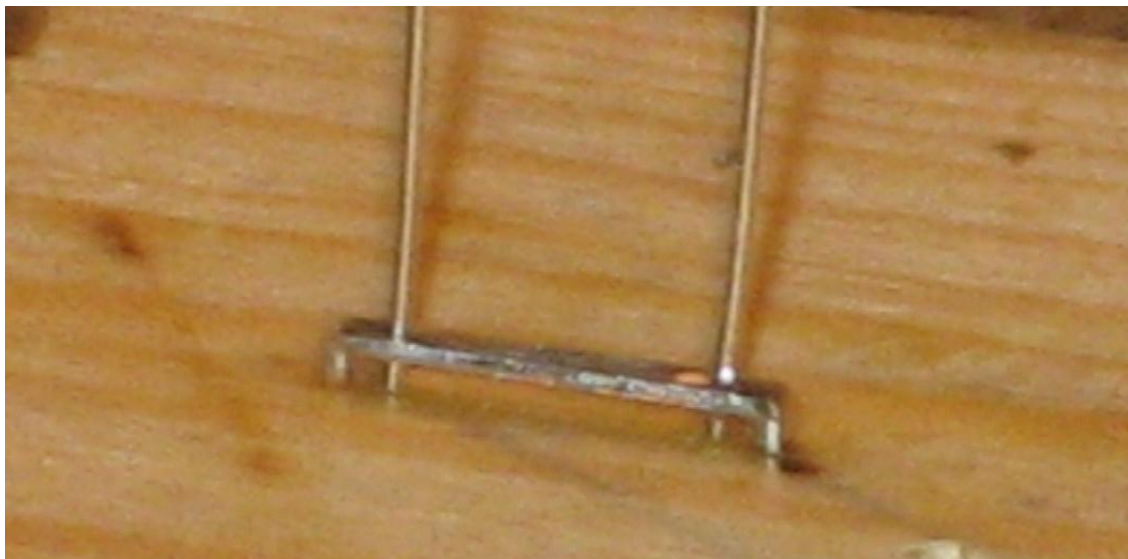
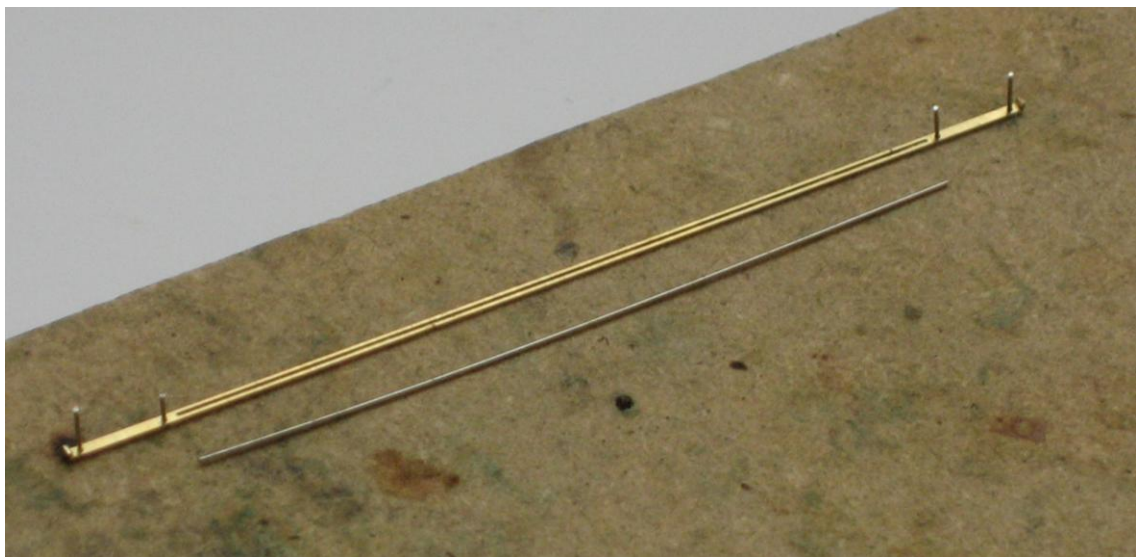
The keeps and tiebars are both assembled in the same way and are designed to be removable if you wish in order to allow the wheel sets to be easily dropped out. They can of course be soldered permanently in place but either way you will need to make sure the holes will accept 0.5mm wire before removing them from the fret.

Tie bars are fairly vulnerable so in order to strengthen them I have included a slot on the back into which you can solder a length of 0.5mm wire. This will make them a lot more robust.

If you are not planning on making them removable then they can be pinned and soldered to the axleguards. Remove from the fret and fold the ends up. Thread lengths of 0.5mm wire through an axle keep/tiebar and holes in an axleguard and then the corresponding holes on the opposite axleguard. Solder in place. Fit the other axle keep/tiebar and solder in place. Trim the wire so that it represents bolt heads on the tie bars but extends approximately 0.75mm from the back of the axleguard. These pins will prevent the springs from becoming disengaged from their slots.

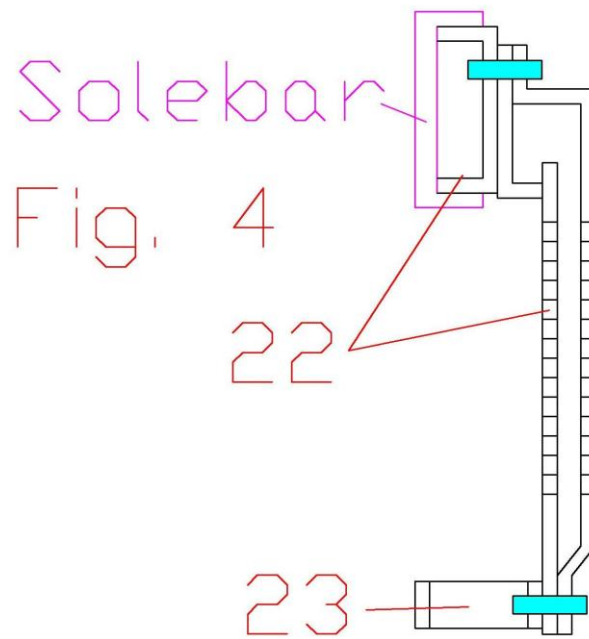


If you want to make them removable to allow the axles to be dropped out then you will need to solder 0.5mm pins through the holes in the axle keeps/tiebars. I find the easiest way of doing this is to use one pair of holes as a jig and drill a pair of 0.5mm holes into a piece of scrap wood. Short lengths of 0.5mm wire can then be threaded through the axle guards locating into the holes in the wood. These can then be soldered in place and filled back to represent bolt heads before folding up the ends. Fold the ends of the axle keeps/tiebars and locate two short lengths of 0.5mm wire through the holes and into the holes drilled into the wood. Solder the wire in place and whilst still pinned to the wood file the wire back to represent bolt heads. Remove and trim the other end of the wire. You will need to make sure there is at least 0.75mm of wire projecting from the back of the axleguards otherwise the spring carriers will be able to fall out of place when everything is assembled. It is also a good idea to leave at least one of the pins in the axle guard as long as possible to give you somewhere to hold them when painting. Once the axle keeps/tiebars and the chassis are painted they can be tack glued together on final assembly. The glued joint can be broken and the tie bars removed if you find it necessary to remove the wheels at any point.



Brake Lever Guards

Make sure that the holes in your chosen brake lever guards and brackets (22) and lever guard stays (23) can accept 0.5mm wire and remove from the fret. Separate the lever guard from the lever guard bracket. Fold the lever guard along with the lever guard bracket referring to Fig. 4. Solder the lever guard and bracket together using 0.5mm wire to align them. Trim the wire on both the front and back to represent a bolt. The whole assembly can then be located in the solebar and soldered in place. There are slots in the solebar to receive the lever guard brackets. Press out the half etched rivet on the brake lever guard stays and fold both ends through about 30°. The stay can then be pinned to the bottom of the lever guard using 0.5mm wire and then soldered to both the lever guard and the axleguard and any excess wire trimmed off.



Axleboxes and springs

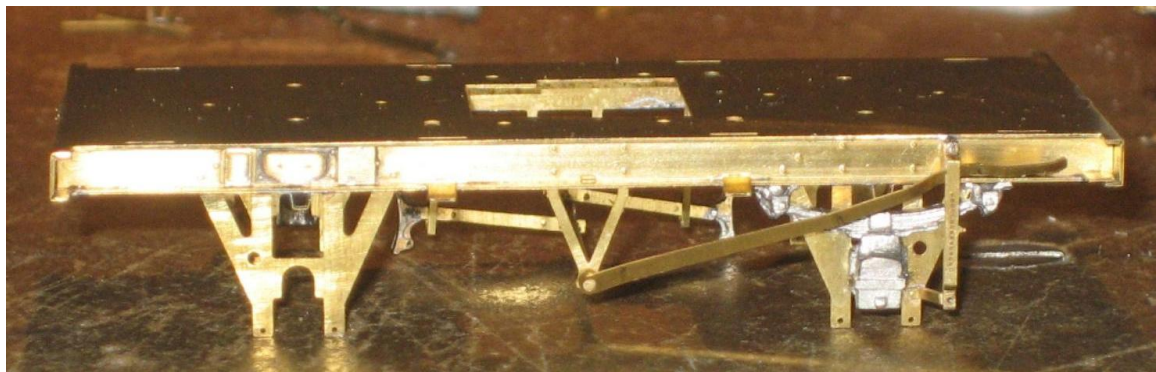
Now is a good time to fit the cast axle boxes and springs. It will make life easier when bending up the brake levers as they should be bent, like the prototype, to clear the axleboxes and springs.

Brake shaft

Cut two lengths of 1.2mm wire to form the brake shafts and fit in place. Each shaft should pass through the two vees and the set of brakegear next to the vees. The shaft should extend about 0.9mm out from the vee (making sure that the outer vee is straight) and the same on the inside of the brakegear. Solder in place and trim the ends if necessary.

Brake Levers

Make sure the holes in the brake levers (24) and the cams can accept 1.2 mm wire and remove from the fret. The brake levers then need to be bent up as per the prototype clearing the axleboxes and then cranked for the handle. Check on the model and adjust until you are happy with the shape. Once you are happy with the shape the brake levers can be soldered in place.



Coupling Hooks

Coupling hooks (26) are provided on the fret. They are designed so that the two halves are folded double and soldered together. You can then dress them with a file to better resemble castings.

Also included are coupling hook spring brackets (27). These simply fold into a C shape and then fit into the headstock in the centre of each end of the wagon. Solder in place. They were used to give a mounting plate for the rubber springs used for the couplings. See the photo below.



Painting

I now use Halfords grey primer in a tin through an airbrush with cellulose thinners to prime just about everything, including plastic bodies. The primer is synthetic and has no adverse effects on the types of plastics used on RTR railway models and kits. The cellulose thinners used evaporate so quickly that they don't have time to attack the plastic. You can then put your choice of paint over the top including cellulose. Don't use the red oxide in a tin on plastic though as it won't adhere and the paint will just come off.

Notes on weighting

The suspension on the underframe is designed to work optimally under the various weights laid out at the beginning of the instructions. As there is no space on the underframe the best place for it is in the tank body.

Finally

Last but certainly not least if you haven't come across the wonderful resource for BR wagon photos that is Paul Bartlett's website then I would thoroughly recommend a visit to:

<http://paulbartlett.zenfolio.com/>

Justin Newitt - May 2019

Suppliers List

Rumney Models (vacuum cylinders, axlebox and spring castings)
www.rumneymodels.co.uk

Eileen's Emporium (brass wire)
Unit 19.12 Highnam Business Centre
Newent Road
Gloucester
GL2 8DN
www.eileensemposium.com

Slater's Plasticard (buffers)
Old Road, Darley Dale
Matlock
Derbyshire
DE4 2ER
www.slatersplastikard.com