A new chassis for a Slater's Flatiron

The rebuild returned from Warren's paint shop and what a wonderful job he has made of it too.

My client sent me a second hand Flatiron he had bought to be 'improved'. Whoever had built it had not used the chassis kit that Slater's provide but instead used a set of milled frames and rods to make a rigid chassis with a crude representation of the brake gear.

The basic body had been built reasonably competently (however, with far too much solder) but many and various parts were missing and the holes for bolt heads in the cab front, side and back are devoid of said bolt heads along with a rear step and handrails on the smokebox.
More of the missing parts were the vacuum and steam pipes, the clack valves on the tank fronts, lamp irons, the ejector, and pipe run plus the handrail on the smokebox door. All parts that are provided for in the Slater's kit. In addition, all the cast parts that had been added had not been fettled and in all cases were damaged. Result, all the parts were removed; they had been fitted with Araldite and most were destroyed in removing them but the dome survived. The steps were also removed so that they could be cleaned up properly and strengthened. There clearly was going to be much work to produce an acceptable body to fit the rather nice chassis that Slater's do for this kit. Here is the body after all this treatment and paring away a great deal of excess solder prior to fitting new parts.
Now it is beginning to look more the part. All the holes in the cab front, back and sides have been filled with Scale Hardware bolt heads, new boiler fittings have been obtained from Slater’s and other parts from various sources. The buffer bodies are Hobby Horse but the heads were replaced with the original Slater’s, as they are steel and not brass. The coupling is also from Hobby Horse and is very fiddly to put together but looks good once complete. The tank vents are there because this will be 2015, the only one to have a water scoop fitted. The first chimney from Laurie Griffin was too tall so I am awaiting a shorter version to fit, which duly arrived and, on checking ten GA drawing in the instructions, was found to be more correct in not having a capuchon.

One of the steps on the rear of the bunker was missing, probably because it had been fitted with Araldite and subsequently lost. Not a good idea, superglue would have been far better but, of course, soldering is by far the best. I fabricated one from scrap brass of the same thickness and used some Scale Hardware bolt heads rather than try to punch them out with the rivet press. I think it worked quite well. The body is just about finished now, the roof is removable and has been filed down to as flush a joint as it is possible to achieve with being removable. Only the backhead to do now.
The Chassis.
We decided that the crude chassis that came with the engine would be discarded, sold on and a new Slater's chassis kit obtained including wheels and an ABC gearbox with a Cannon motor.
I then started sourcing the missing parts (mostly from Slater's) but including some Midland pattern couplings from Hobbyhorse Developments, new buffers, handbrake and sand lever standards. A chimney and water scoop from Laurie Griffin since this is to be the one and only example with water pick-up gear. Given the cost of the original kit, one wonders why the builder chose to leave off so much of what was provided, perhaps it was a second-hand kit for him or her and the parts were not there. I also think that more than one person has been involved in the build. In an ideal world one would take a blowlamp to the remains and start again but a line has to be drawn somewhere.

I began with the new chassis, which looks to be an excellent piece of design for a fully sprung chassis with a sprung bogie that has built in side control (however, this is beginning to look more than a little suspect). I do not like the fold up frames preferring to build chassis using jigs however, with care it goes together well and produces a square set of frames. However, were I to build another I think I would probably separate them and use the chassis jig but that is just personal preference. So what's in the box, or rather bag in this case?

Three sheets of well-etched, thick, brass dated 1984, though the slots are rather large for the tabs; a set of steel connecting rod etches; bearings; plunger pick-ups; bolts etc., and a bag of castings, most of which are lost wax plus plastic brake shoes. There is too a book of instructions for the kit, including the body, with drawings (including a GA) and some historical notes and information on numbering of engines. Though the parts are numbered on the etches there are relatively few references to them in the instructions.
The instructions (which are somewhat out of date, see later) suggest fitting the hornguides while in the flat. A good idea since a major proportion of them are an integral part of the etch as can be seen in the previous picture. It does however make the bending up of the frames a tad difficult. There is no mention of how the lost wax spring castings should be fitted but it made sense that they be removable. The volute springs for the front drivers were simply soldered to the keeper plate after drilling suitable holes in the spring base for the bolts.

The other springs have cutouts instead of holes, presumably so they can be wedged in by the bolts holding the keeper plate. I considered that they would not be very robust like that (and so they proved) so modified them by soldering some scrap etch across the gaps to hold the bolts and cut half circular grooves in the back so that a small screwdriver can be brought to bear to run the bolts home and discarded the keeper plates for these axles. The tabs to which the spring parts are fitted rely on a small, half etch fold-up that needs to be tapped 10BA and is inherently weak despite exhortations to strengthen with a fillet of solder, so I soldered some scrap etch in the gap to add more strength. I found, not unnaturally, that each bearing needed to be fettled individually therefore, they are all marked so they can be fitted back in the same place after disassembly.
Here are the frames assembled with the brake hangers and the bogie pivot added but no springs yet in the hornguides. The instructions are vague on the bogie pivot so I assumed that it is fixed to the body, we shall see in due course if I got it right. The rear springs needed a little material grinding away on the inside faces to allow the ash pan to sit properly.

The bogie is similar to the frames but all of the hornguide parts aside from the brass bearings are an integral part of the etch. The instructions on the other hand are out of date. The parts provided are clearly intended for sprung bearings but the instructions refer to compensating beams that are no longer provided. A careful reading and examination of parts makes this clear but more guidance on how the torsion beams fit would have been useful.

The first picture shews one-half of the bogie hornguides completed, the second shews the modifications made for the torsion beams. The method suggested is that the two torsion beams and spring are held in place by a 12BA bolt, bearings and washers plus a 12BA nut. Fiddly in my view so I modified the set so that the torsion beams and spring are soldered together to make a single unit by temporarily bolting them together with a chemically blackened bolt, the bearing holes opened out and a larger bearing tapped 10BA soldered into an enlarged hole in the frame and torsion unit. Now it is a simple matter to bolt each torsion beam/spring assembly directly into the frames and no fiddly nuts to get lost in the process. To be fair the instructions do suggest soldering a nut in place on the frames.
This also obviated the use of steel nuts and or bolts with brass parts, something to be avoided if possible. The other modification I made was to tap one of the holes for the horn guide keeper 14BA and use bolts to secure them. Much easier to disassemble.

The bogie largely completed with the side spring control in place. However, I think that to make it more free moving I shall have to add some tube between the arms of the central beam to prevent them moving under pressure and impeding the sprung movement, we shall see. Never-the-less, it appears to be a well thought out piece of machinery. However, appearances are deceptive, the parts bind badly and do not, at present, do the job for which they were intended. They continued not to do the job for which they were intended and ultimately, I removed the springs, soldered the remaining parts solid and then filled the underside with liquid to add more weight. The bogie will be sprung on its pivot.

The wheels arrived from Slater’s and went through my usual procedure. Clean any rust off and then rub the backs on some 240-grit paper on a flat surface until the rim and boss are evenly shiny. Add a drop of oil into each axle end to ensure the bolts do not rust in place over time. Polish all the axles in the lathe with 600 grit paper and then tap the crankpin holes in the driving wheels 10BA, countersink the hole on the back of the wheel, screw in a 10BA steel countersunk bolt from the rear and thread a brass bush tapped 10BA onto that and tighten carefully. Stow the 12BA nuts, bolts, bushes and washers provided with the horde already generated by past such exercises. We now have a good base on which to assemble the connecting rods later.
The driving wheels each have a brass washer to hold it clear of the spring faces while the bogie wheels needed a 5mm length of brass tube to space them out from the bogie frames.

The wheels were temporarily tried out in the frames along with the motor to ensure it all fit well. The intention was to fit the ABC gear and Cannon motor on the rear axle rather than the centre as suggested in the instructions however, you can see that it is fitted to the front axle in error. It will fit on the rear axle with the motor body horizontal and facing forward.

Slater's provide a set of etched steel rods for this kit but once soldered together I was not happy with the way they cleaned up, to wit, not making the joints in the laminations disappear. No criticism of the parts, I think my lack of experience in working in steel may be the reason. A set of milled, jointed rods were sent for from JPL, which arrived a couple of days later, there is an argument that nothing looks more like steel than steel; probably true but nickel silver looks like oiled steel and does not rust. I was surprised at how obvious the milling marks were, particularly on the top and bottom edges and spent a couple of hours cleaning up and polishing the rod parts. The rivets to make the join were too short so I used those from the Slater's rods, the original rods were scrapped.

Then a set of CPL crankpin nuts were drilled and tapped 10BA. Yes, I know they are GW pattern but they will be immeasurably better than provided 10BA nuts and I know of no manufacturer of Midland pattern crankpin nuts (but if you do please let me know).
However, examination of pictures suggests that the Midland crankpin nuts were very similar the Great Western crankpin nuts, but larger so I have used the larger size from several sets that were left over from other builds.

The rods were then fitted, the chassis put on the rolling road and power applied, it ran first time, which was most gratifying. It is now, after the addition of a little oil on the bearing surfaces, running-in on the rolling road before I strip the whole thing down to fit the plunger pick-ups, springs in the hornguides and brake gear.

I am always amazed that when one reassembles the parts again after adding brakes and sundry items, it always then runs like a box of spanners! Much time was then spent fettling to get it run as it did first time.

The sand boxes were much modified; firstly, by cutting off the pipefitting, drilling the centre 0.8mm and then fitting a modified brass sand pipe from a diesel. Much stronger that wire in the rather delicate fitting on the cast white metal sand box.

However, when I fitted the body to the chassis it refused to turn a wheel but a couple of pads of plasticard between the chassis and body solved that. A problem arose when I discovered that the rear-fixing nut in the body had come away. This was fitted by the original builder of course and was now very difficult of access. I clamped a piece of 2mm brass in place, soldered it in place, tested for strength by trying to knock it out, then drilled, and tapped the hole.

The water scoop (this is to be a model of the only of the class to be so fitted) is slightly out of correct position because otherwise it would have covered the hole for the rear-fixing bolt between body and chassis. I soldered it in place and then soldered the scoop in the up position.

The backhead took a while but the small parts that make it up take time to prepare.
Now complete and about to go to Warren's paint shop.
Back from Warren’s paint shop.

Bexhill on Sea, January 2015