Building Model Wagons in Gauge '3'

By Mike Williams – Part 1

First Published in

Newsletter 57

June 2007

When the idea of writing this article first came up I thought it would be in bad taste and construed as free publicity for my own kits. Then I thought about it a bit more and decided that if more people build their own wagons that will actually reduce my sales, so I feel justified after all. I take a lot of pleasure from the Gauge 3 Society, and writing an article is perhaps one way I can give something back. This is very much a personal account and I am aware that there are many other methods of doing the same job. Although fairly new to Gauge 3, I have been making wagons from wood or Plasticard, for over 30 years and patterns for resin moulding for over ten.

So, you want to build a wagon or wagons and don't know where to start. I suggest the first thing is to choose very carefully what to build, as you probably don't want to spend many hours making what then turns out to be a one-off, or something which only ran at the other end of the country to your other models. Then it is important to research the subject properly and it is surprising how many experienced modellers fail to do this. There are many line societies who are willing to help with drawings, photographs and information, so use them. There may also be examples preserved, or drawings in the National collection, so my advice is to ask around and don't be tempted to start the model until you have all the information that you will need. You just cannot have too much information at this stage.

"The next decision is what materials to use?"

Next I spend a long time planning out how best to make the model and whether there are any unusual features which may be difficult and thus need planning at an early stage. I make sketches of how some parts might be made, or how they will fit together. Don't put the difficult bits off to the end and then find you should have redesigned some part you have by then completed. The running gear is all-important, so consider now whether you will be using commercial axleguards and wheels, and what the distance between solebar inner faces needs to be to accommodate them. For my models I find this can be exactly scale, but some commercial components will not allow for that, so buy the parts first and design the model around them, or be prepared to make your own parts if you are not satisfied with those on offer. In my opinion Slater's wheels are hard to beat and we owe GRS a great deal for instigating the production of these. So far as I am aware GRS are the only source, but use them anyway - they deserve our business.

The next decision is what materials to use. Since I am making patterns for resin casting I use plasticard. This has many advantages, being easy to cut, easy to join, clean to handle, but some thought should go into the surface texture which does not look like wood and also bear in mind that it doesn't bend very well and certainly not into compound curves. I have made wagons from wood and these can be just as detailed as those made from plasticard, but they take longer with few obvious advantages to me, certainly

not when used as patterns, and especially of course if the real wagon was made of steel. Ah, you say, but "I only want one wagon, so I won't be using it as a pattern", to which I ask "Why not?" The amount of work in making one wagon is the same as making a pattern, so why not make a batch whilst you are about it. If you don't want to get into kit production, then speak to me or one of the other manufacturers, to see if we are interested in taking your pattern and marketing it, in exchange for some free bodies, or other components to help you. We have to work together in this hobby. With modern resin casting some undercut is acceptable and there is no shrinkage at all, which is a huge advantage.

So, you've read this far and we haven't actually made anything yet. I normally start with the floor, marking out 40thou plasticard with all the detail of planks, bottom doors etc. All these can be scribed on with a variety of tools ranging from needle files with their ends ground to a point, to small screwdrivers - anything which makes a score line the right size for that particular item. Usually floor boards are not tongued-and-grooved, and do not have a bevel on their edges, so the scribe marks will be much more shallow and narrower than those on the wagon sides, which we will come to later. Other floor detail may include hinges or strapping for bottom doors, or metal plates at the ends which on the real wagon may be removed to gain access to drawbar pins (RCH wagons have these). All this can be done now, whilst the floor is flat, because once the sides and ends are in place it is much more difficult to get at.

The real floor will scale to at least 2.8mm thick, so I then laminate various thicknesses of Plasticard until this is correct. Sticking large areas of Plasticard like this is better with a cyanoacrylate adhesive (superglue) because solvent can stay active for months and is more likely to cause warping. Solvent is however essential for small details.

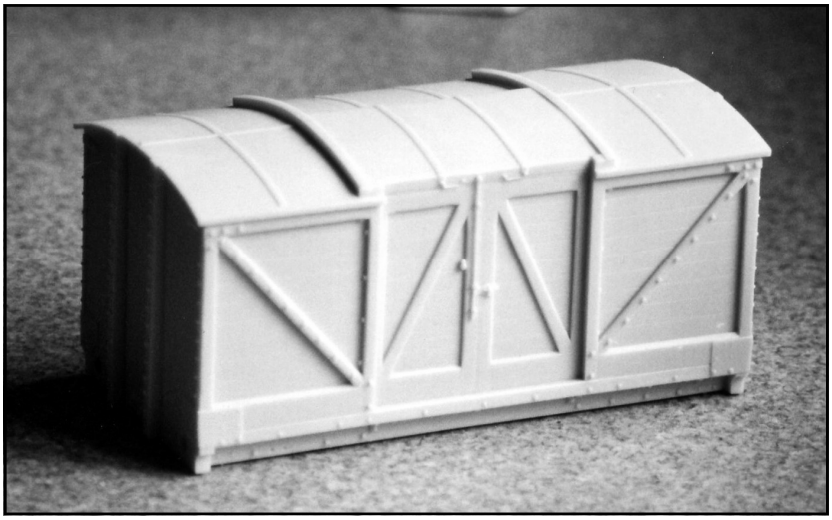
The floor is done, so now I start on the sides and ends. I scribe several long lengths of Plasticard with board marks, marking with a fine pencil at both ends of the sheet and scribing against a heavy straight-edge. Many wagons had a bevel on the edge of their boards and a needle file ground to an unequal V shape will do this, or the blade of a screwdriver held at an angle. Other wagons had a sort of beaded edge giving the appearance of a double board mark. I must admit that I haven't always done this, but it can be done with care by simply scribing the mark twice, about 0.2mm apart, but it takes care and practice and there will be a failure rate.

I knew somebody who made special slitting saws with ground blades to represent these double lines and he mounted these on a mandrel in the lathe with packings between them, so as to cut all the marks on a wagon side in one go. That is fine if you are planning the several hundred wagons that he made, but not worth it for most of us. I use 40thou for the sides and place two pieces back to back with a suitable packing between. For P.O. wagons this is usually 30thou, giving a total of

110thou (scale 2.5in) or sometimes another 40thou giving a total of 130thou (scale 3in). As you scribe Plasticard it stretches, and this method has the advantage of placing stretched faces outermost and thus straightening the strips up again.

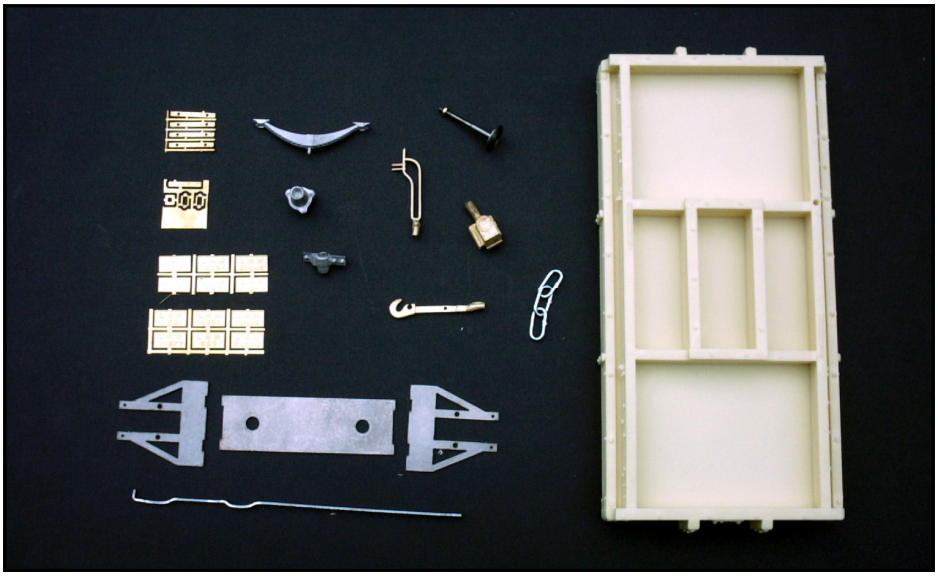
These strips are then cut to exact length. Consider whether you want to include the buffer beam as part of the end, or add it later. Usually I find the latter is easier, but care has to be taken so that the join looks exactly like the scribed board marks. Remembering that once assembled into a box it will be difficult to get inside to add detail, the next step is to fully detail the inside of the sides and ends. Before doing anything, consider the texture of the material. I go over the entire side with very course 80 grade abrasive paper to simulate wood grain. This is over-scale, but by the time parts have been added with solvent and the model has been handled, it will look about right when finished. This of course also gets rid of burrs from the scribing and cutting.

Next we can look at the drawings, mark out and apply all the detail which, inside, is mostly plain strapping. Unless you are really lucky you will probably not know what this all looks like, so photographs of similar wagons under construction, or visits to preservation sites, is invaluable. Don't forget to allow for the sides lapping over the ends at the corners when marking out. Next, we come to the bolt detail. Again, photographs will tell whether the bolts are put in from the outside or the inside and whether the nuts are square or hexagonal. Inside there will not normally be any washers because the strapping (correctly called "washer plates") does that job instead. For bolt heads various pins will do the job. Household pins are correct for about 7/8in or 1in bolt heads, but 'Lil' pins, 'Lace' pins and if you are really serious the varieties of 'entomological' pins, will give a wide variety of sizes. Each bolt needs to be carefully marked out, drilled (not right through!), de-burred, the pin cut short and placed into the hole, being held in place with solvent.



Really small round heads can be punched into Plasticard with a modellers' rivet embossing tool, cut flush with a modelling knife and stuck in place with solvent, but that is a tedious job and static electricity accounts for a high attrition rate. For square nuts I cut strips of Plasticard to the correct width and then chop into squares with a modelling knife. I know of no easy way to make hexagonal nuts which, fortunately, are relatively rare on pre-Grouping wagons, but I use 16BA nuts and screws (and washers) where they are required. It is possible to buy moulded plastic nuts, washers etc, but I cannot find a supplier of any large enough for Gauge 3. Also, these often have a length of screw protruding through the nut which looks nice, but in reality most bolts were specially made for the job and to exact length, so little or no thread protruded through the nut.

If there are washers (which fortunately there are not often) these can be made using a leather punch - the sort like a pair of pliers with a revolving head to give different sizes of hole - and applied individually before applying the nuts. I find that thick paper punches better than plastic, but if held in place and soaked with solvent it sticks so well that it cannot be removed, even when rubbed hard with a fingernail. Bolt heads rarely have washers because they are usually coachbolts with a square beneath the head to dig into the wood. Washers are also not generally used on solebars if they have flitch plates. I use solvent sparingly and at the end go over all bolts and nuts with solvent once more to check they are firmly fixed in place - we don't want one to fall off in the mould.



Resin, White Metal, Etched Brass, Laser Cut Steel.

The many materials that go into a Mike Williams LNWR Wagon kit.