

Rusty Metal and Weathered Wood; Scratch-building a Carson and Colorado Flat Car in On3

By Chris Butler

Photographs and Illustrations by the author

Part 2 – Let's Get Down To Work!

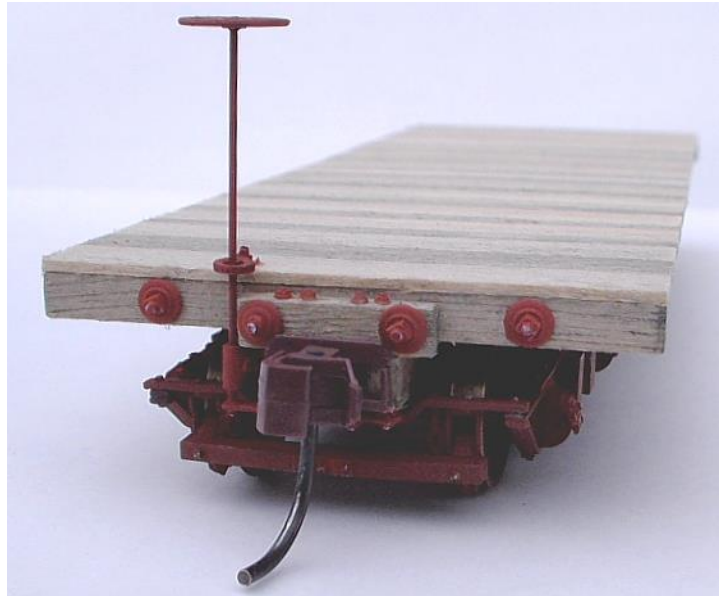


Fig. 1. "B" end view of the author's completed 22' On3 flat car.

In the previous edition of the **Mail Car**, we explored the basic design elements of a typical narrow gauge flat car. With that behind us now, let's get started and build an O-scale model of it!

Flat car jig and under frame construction

In order ensure that I built a square and repeatable under frame for the flat car frame a simple styrene jig was constructed. After all, I might want to use the jig to build another under frame for say, a caboose or a boxcar. I used a piece of scrap 0.040" thick sheet and marked out the location of the sills and end beams. When this was done, I glued some square dimensional styrene rod to it to act as guides for the sills. I also used odd pieces of scrap styrene to ensure that the sills were correctly spaced. The end result didn't look pretty however, it was very functional and filled the bill nicely.

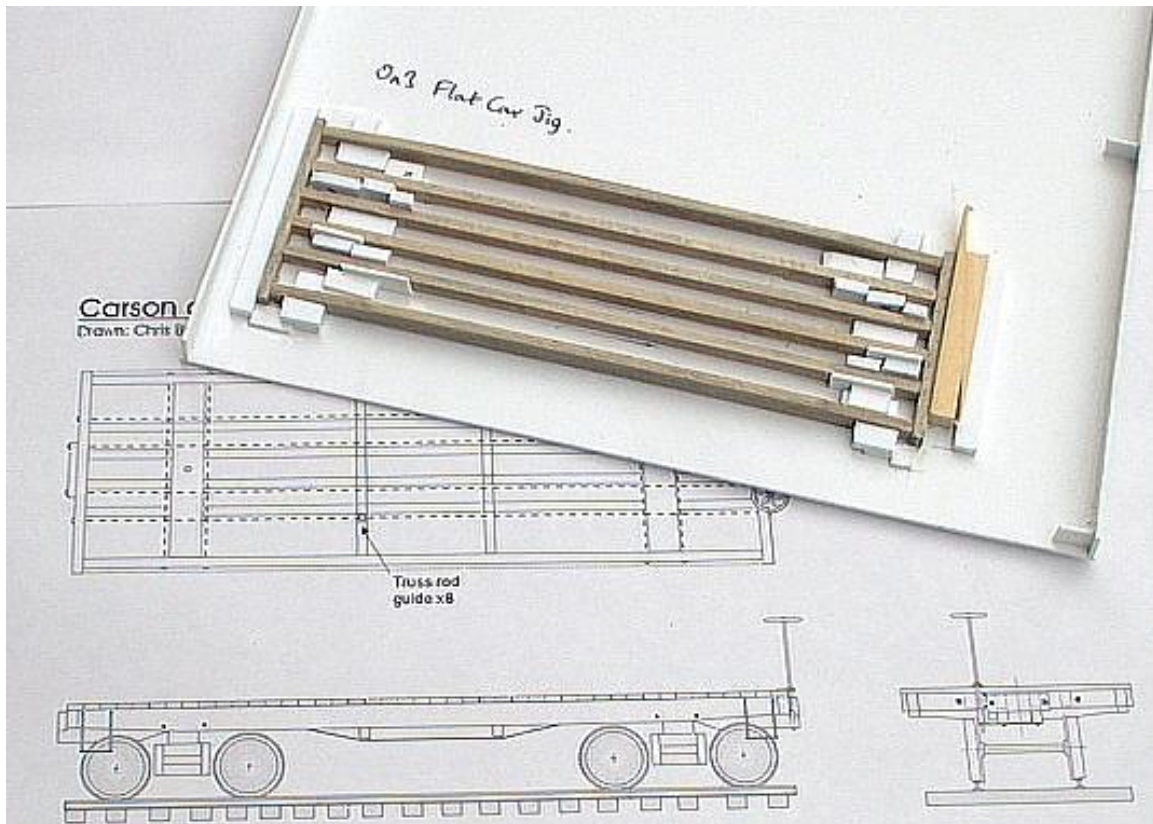


Fig. 2. The completed jig with the end beams and sills in place – note the wooden wedges at the right-hand end.

So much for the jig, the next problem was “Where can I obtain O-Scale basswood?” The answer was quite simple. In the past, I used to model in HO-Scale and as a consequence, I had lots of Northeastern dimensional stock on hand. The only thing I had to do was to ignore its equivalent HO size and think of it as regular dimensional stock. I also found that Hobby House in Vanier stocks reasonably large dimensional basswood in 2 foot lengths. I used both sources.

Sounds simple, right? Well, I built a basswood prototype and tore the jig apart and rebuilt it three times over (with freshly cut basswood and corresponding alterations to the drawings) before I was happy with it.

For the center sills, I cut 4 lengths of HO-Scale 8x12” stock (roughly 5x7” in O-Scale) and two lengths for the end beams. Next, I cut the side sills from 3/32” x 1/4” basswood stock and carefully sanded the angled tapers that go from the truck bolsters to the end beams.

All of the sills were “gang sanded” on my home made sanding jig to ensure that they all finished up square and the same length. I did the same with the end beams. Once I was happy with the final dimensions, I stained them with a light wash of black shoe dye and Isopropyl alcohol mix. When they were dry, I loaded the pieces into the jig, carefully applied some yellow glue and inserted the wedges. I remembered reading one time that yellow glue sets up stronger if it’s compressed while it’s drying. It must have something

to do with the glued getting squeezed into the fibres of the wood. Anyway, hence the wooden wedges.

To make absolutely certain that everything was flat, I applied a heavy weight to the frame while it was setting.

Once the frame was dry, I made up two bolster sections for the trucks from 1/8" x 9/32" basswood stock, stained them and glued them in place. Note that I deviated here as the prototype used what appears to be cast metal bolsters.

Needle beams and Buffer blocks

Next, I built the needle beams from the 8 x 12" HO scale basswood and glued them in place. I made up two buffer blocks for the end beams by cutting pieces of the HO basswood and sanding their thickness a little. I then followed the previously described sequences for staining and gluing.

Draft Timbers

The next step was to make up four identical draft timbers by carefully cutting and sanding some of the HO 8"x12" basswood. Note the notch for the buffer block clearance and the taper as it meets up with the bolster.

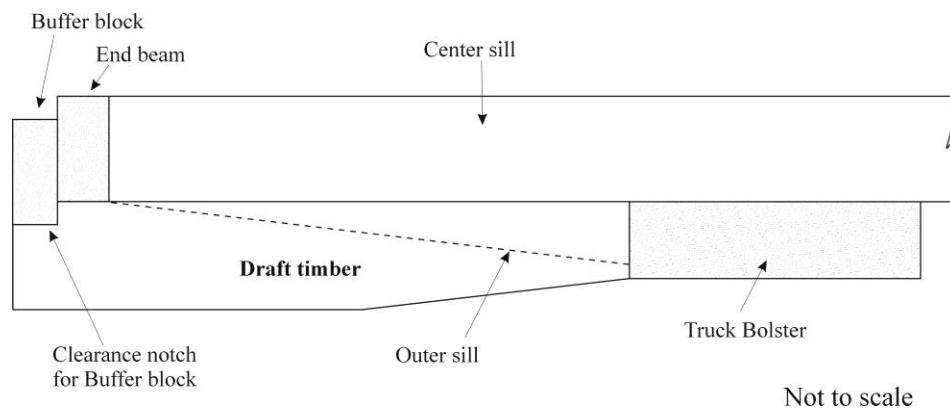


Fig. 3. Draft timber details – 4 required.

Once the timbers were ready, I stained them and when they were dry, I carefully glued them in place:

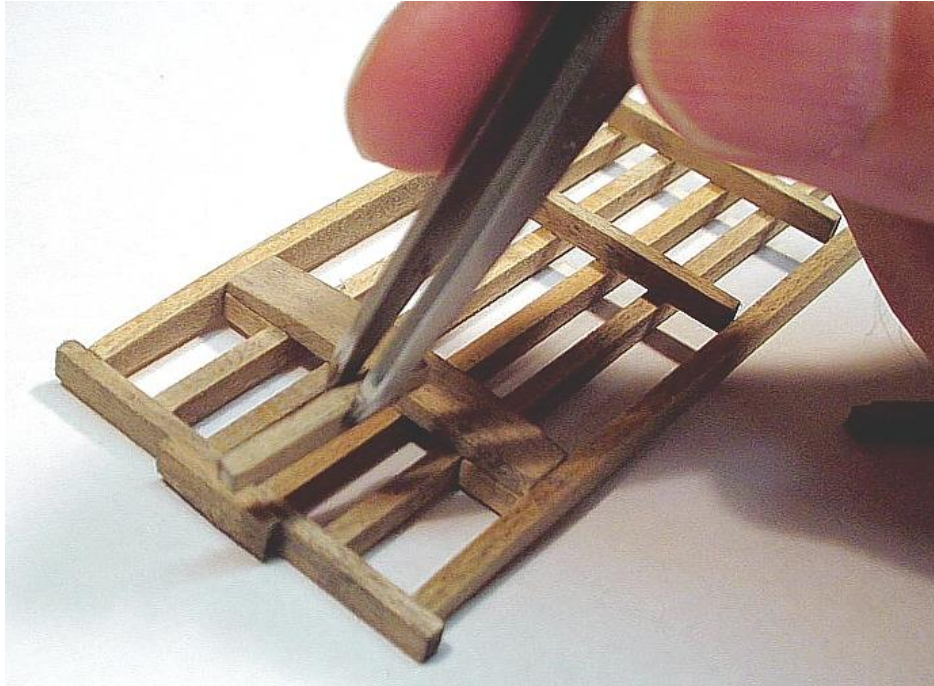


Fig. 4. Installing the completed draft timbers.

Couplers

I decided to use Kay Dee #807 On3 couplers. If you've used Kay Dee's #5 HO couplers, these work on the same principle however, the coupler knuckle is made from a slippery Delrin plastic (moulded in a brown or black colour depending on the model) with a metal uncoupling trip pin. Using Delrin is a good idea because the colour is right and the couplers couple together very easily. The other big difference between these and the #5 HO couplers is the self-centering design and of course the overall size.

The coupler pockets were narrowed to roughly 9 scale inches as per Kay Dee's instructions so they'd fit between the center sill sections and then they were assembled and installed. Even after narrowing the pockets, I found it necessary to hollow out the draft timbers a little so the couplers would "swing" from side to side properly.

Truss Rods

I built my truss rods from 0.022" brass rod. The prototype appeared to have saddles where the truss rods touched up against the underside of the needle beams. I built my saddles (eight of them) from 1/64" x 1/32" brass rod and carefully soldered them to the brass rod.

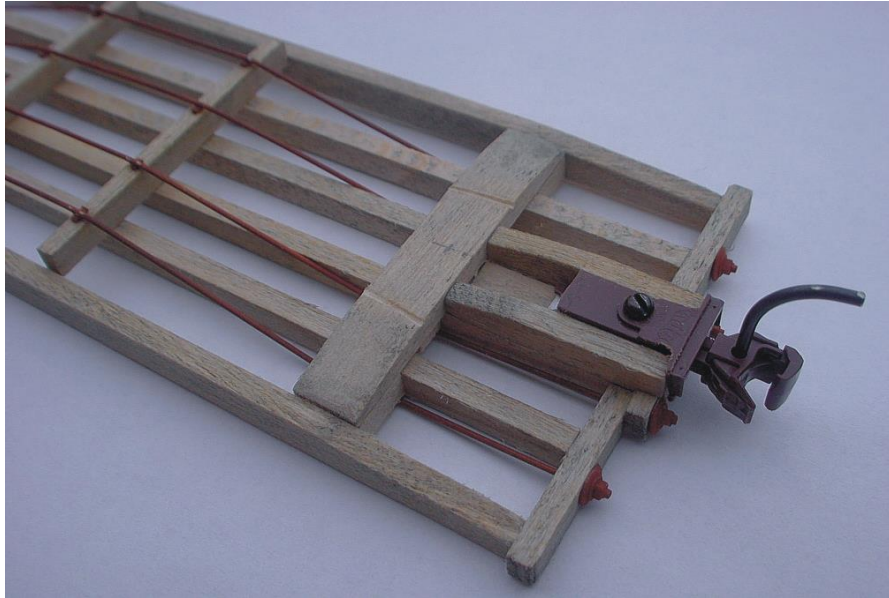


Fig. 5. The completed truss rods installed – note the saddles and NBW castings.

The truss rods were cleaned up with diluted dish washing detergent and airbrushed with my “old rust” mix – a blend of Floquil Rust and Zinc Chromate Primer. Once dry, they were carefully assembled onto the flat car. I then drilled 0.025” holes into the end beams and glued each truss rod saddle in place with ACC.

From what I could see on the photographs and drawings I had to hand, turnbuckles were not used on these cars.

Lastly, I installed eight pre-airbrushed Grandt Line #16 2½” NBW’s onto the two end-beams to represent the end-to-end tensioning truss-rod system.

If you’d like to construct this flat car (or something similar), please send me an email at cabutler@primus.ca and I’ll respond with scale drawings in CorelDraw 9 format and un-scaled drawings in hi-resolution JPEG format.

In the next edition of the Mail Car, I’ll describe the brake rigging, trucks, decking and general finishing details. Until next time...