M.L.W. Services CNR Combine Kit

Introduction (PLEASE READ)

Thanks for buying this kit.

The prototypes for this kit are the Pullman/CC&F built CNR colonist cars that were converted to Combination Passenger/Baggage cars from 1949 to 1956. To get a complete history about these cars, see the Lepkey CNR Passenger Cars Companion Book.

This is the second version of this kit. The first attempt had some major design problems and was 2 scale feet too long. This version is better but there are a few things that you must decide before you build it. It seems that Murphy's Law always creeps in every one of my projects.

You can build this kit so the doors operate or you can build it with the doors static in place. If you build the kit so that the doors operate, you will have to do some modification one of the ends. Admittedly, the hinges are over scale and somewhat noticeable when the doors are open. When the hinge design was made, and transferred to the etching drawings, one of the ends did not acquire the hinge slots in the correct place. You will have to add new ones about 3.5 inches lower than where they are presently located. This is covered in the vestibule section.

The baggage doors operate as well but once again you can solder them shut.

There are not a lot of underbody castings in this kit. This is intentional to keep the costs down.

There are areas where you will have to modify and adapt what is there. Sometimes things work on paper but change in a practical situation. Please keep an open mind when you are asked to change hole placement or remove some excess material.

If we were to correct some of these shortcomings and add more underbody castings, the price of the kit would increase by at least 50 percent. To keep the price point acceptable, we decided to go with this version.

REMEMBER, you are working with thin sheet metal for the most part. DO NOT OVERHEAT USING HIGH SETTINGS. DO NOT USE A BLOW TORCH! Failure to follow this advice will most likely WARP or BURN your parts. How? If one area is overheated and another remains cool, the overheated one expands while the cool one stays and voila, a warp. These parts cannot be replaced and warped sheet metal is almost impossible to fix easily. But it can be done.

ALWAYS work from the centre of any piece to the outer edges. ALWAYS check to see if things are aligned. If you notice that something is not lined up properly, do not continue. Backtrack to where things got into trouble or remove the piece entirely and try again.

Be very patient. This is a kit. Enjoy it. It should give you 24 hours of enjoyment.

Prepare the inner side and the outer side by tinning both surfaces as shown in Figure S1.

Attach the baggage door guides to the inner side as shown in Figure S2.

Attach the outer side to the inner side by starting at the middle and working to the outer edges. Use the coffee stir to hold the outer side to the inner side as you solder from the inside.

Once again, work slowly, don't use too much heat and don't use an open flame.

Prototype Disclaimer

Different CN combines had placement of their details in different places. The battery and storage boxes don't seem to always be in the same places.

Different numbers of this class had their roof details located uniquely. Decide on which car you are doing and add the details to suit.

Check your prototype shots or freelance it.

Acknowledgements

Special thanks to Dan Kirlin who let me borrow his extremely detailed information including drawings, measurements and photos. Thanks to my former student and student Model Railway Club member Christopher Caines for helping me to measure and photograph the prototype at Tottenham, Ontario. Thanks to Chris Creighton of Schomberg Models for doing the excellent resin castings. Thanks to William Flatt for use of his photographs. Thanks to Bill Wade from BTS for making his castings available. Finally thanks to my wife, Terry for putting up with this time consuming endeavour.

All artwork and original patterns were done by M.L.W.Services. So you can blame them for any shortcomings.

Kit Contents

Etchings

Inner Sides/Outer Sides/Delicate Side Framing
Bulkheads/Bulkhead Doors
Vestibules, Vestibule Doors, Safety Gates and Trap Doors
Door Hinges
Baggage Doors/Baggage Door Guides

Resin Parts

Roof Ends
2 Smoke Stack Base

Brass Parts

4 x Steps
Brake Line/Signal Line
Steam Line
10 x Pullman Roof Vents
Brake Cylinder Assembly
Generator
2 x 0.020" – for hand grabs and rain gutter over baggage door
3 x 0.032" – for the Brake/Signal Line
2 x 3/64" – for the Steam Line
Spare 0.016" brass sheet
Spare 0.010" Brass Sheet
1 piece of 7/32" brass tube for 14" reservoir
1 piece of 1/4" brass tube for 16" reservoir
2 pieces of brass channel to mount the reservoirs
1 piece of 3/32" brass tubing to make the smoke stacks

Wood Pieces

Pre-cut Clerestory roof stock
1 piece of 5/8" x 5/8" wood for the battery box
1 piece of 5/8" x 7/16" wood for the storage box

Miscellaneous

American Models 6 Wheel Passenger Trucks
Black Cat Decals
SHS Couplers

Preparation

Read through the instructions to familiarize yourself with all the parts. Then cut out the parts and file away the tabs. The fine rivet framing has been cut out for you and mounted on cardstock. Occasionally a frame piece may be incomplete. Additional material has been taped on to alleviate this.

The Frame

1. Fold the bottom of the fishbelly frame along the fold lines. Next fold the slopes of the fishbelly. There are narrow extensions at the ends. These really are unnecessary and are hard to fold. You can cut them off at the end of the slope. If you look at Figure 001, it is the extension on the lower left.

2. Place the fishbelly tabs in the slots in the floor and solder the tabs on the top of the floor. See Figure 001.

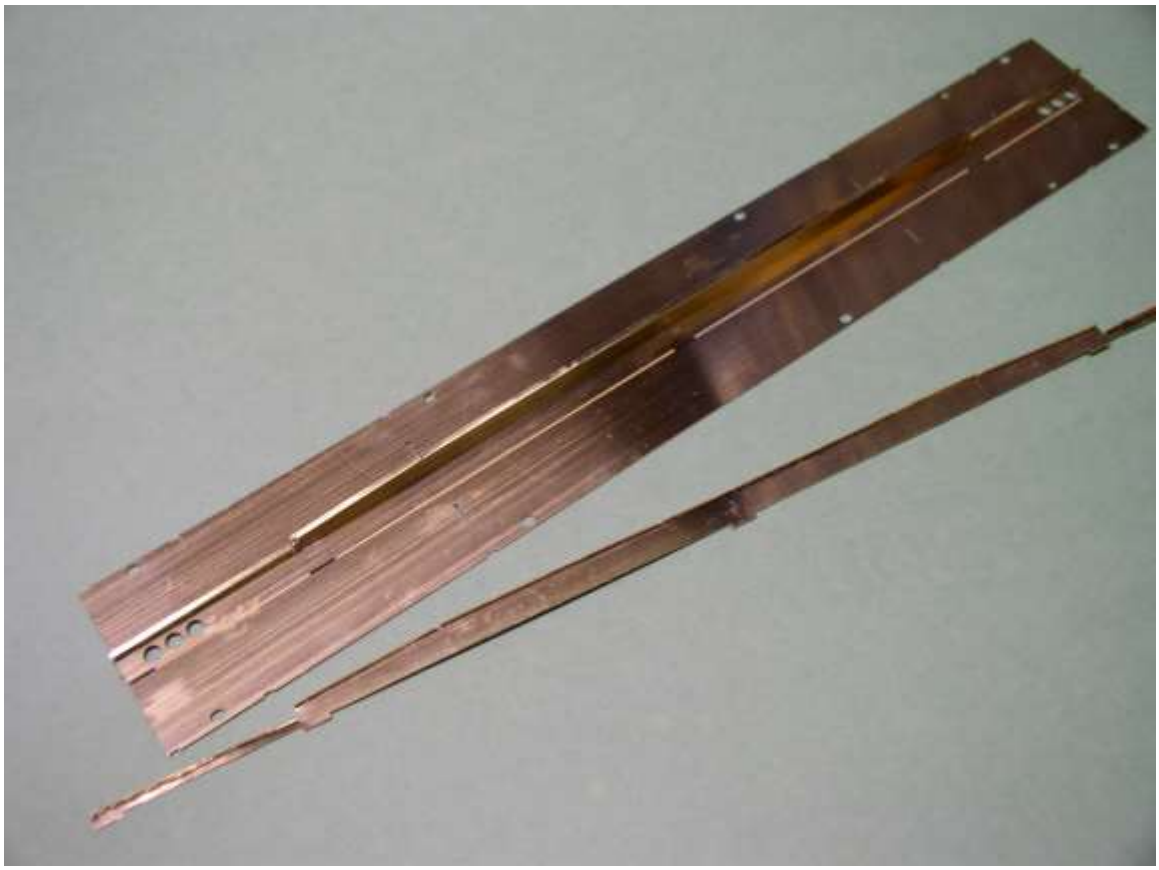

Figure 001.

3. Next add the side braces for the frame. You will have to clip a little off where the edge meets the fishbelly. See Figure 002.

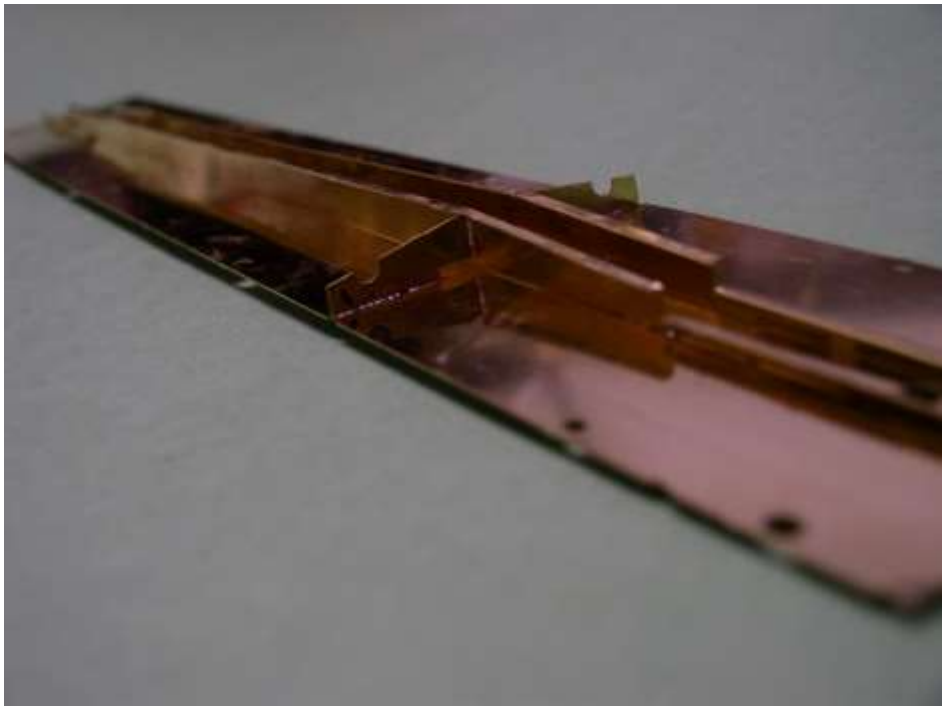

Figure 002

4. Add the top bracing to the side braces. See Figure 003.

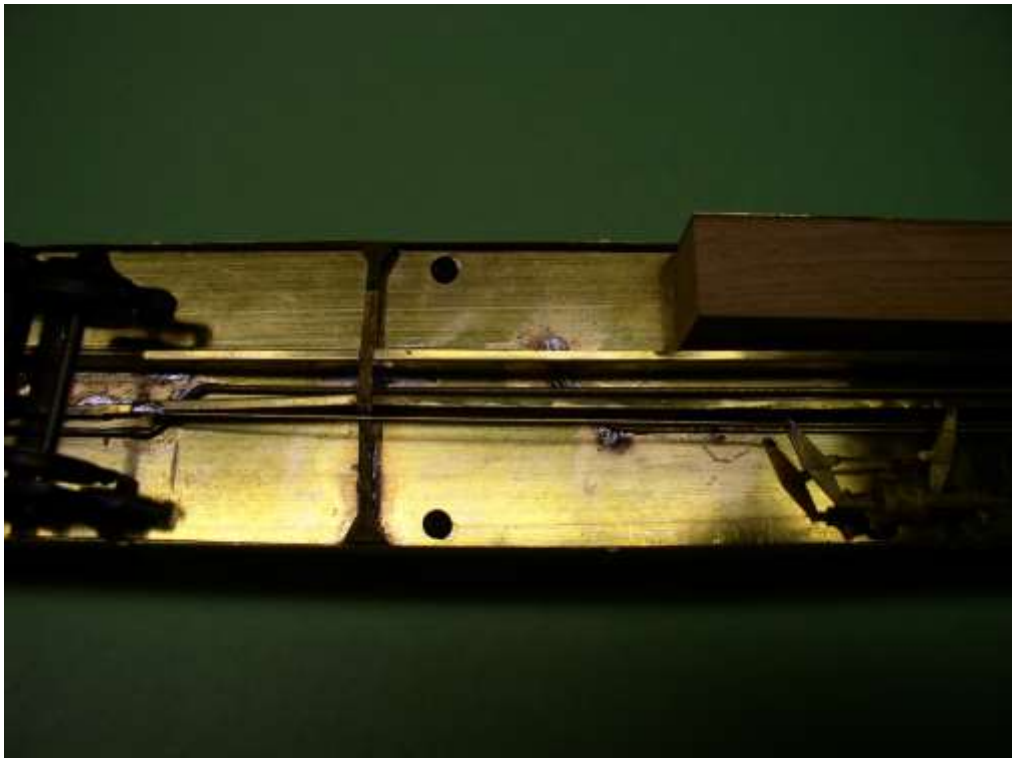

Figure 003.

5. Add the tuck bolsters by soldering to the top of the floor. The truck bolster is shown on the left. We used the centre hole for the American Models trucks. If you use other trucks, you may have to experiment. See Figure 004.

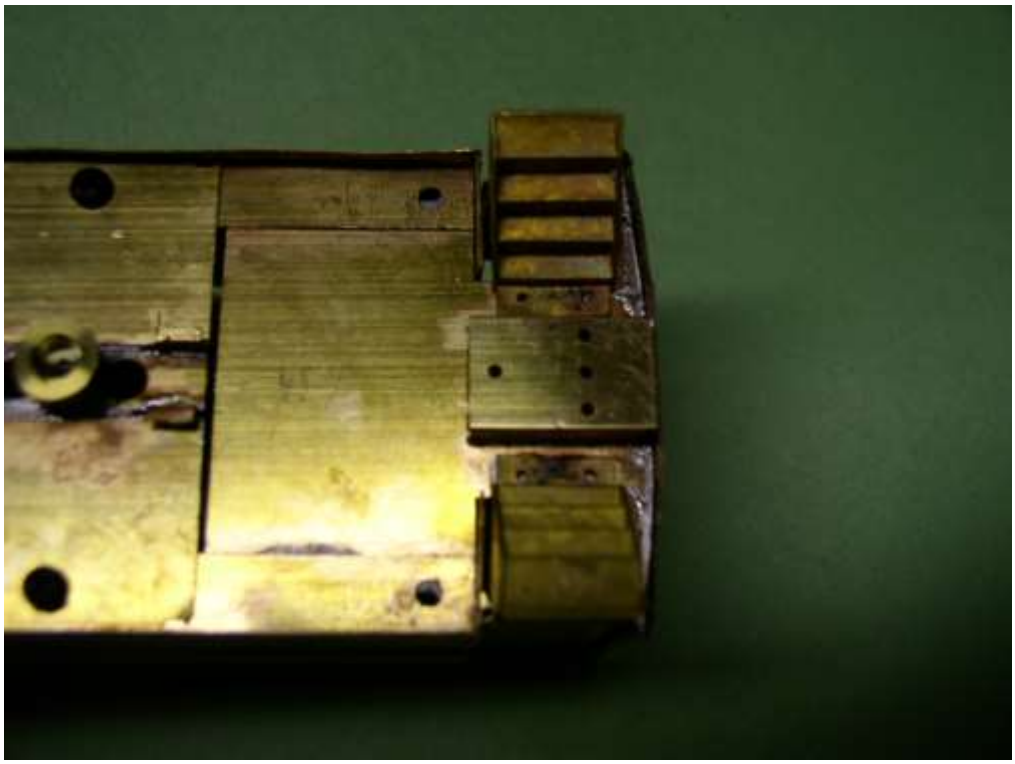

Figure 004.

6. Try mounting the trucks. Use the 1/4" 2-56 screws from the bottom and 3/16" 2-56 screw from the top to secure the truck. You can play with the tension.

7. We will complete the rest of the frame later.

The Sides

1. Clamp top edge or the inner side with a two pieces of wood. Fold the top baggage door guide inwards using a steel ruler. It should be folded in towards the car like the lower lip.

2. Tin the inside of the outer side and the outside of the inner side. Line up the inner and outer sides so that the windows match. The outer top will have about a 3 scale inch overhang at the ends. This is the way it's supposed to be. See Figure 005.

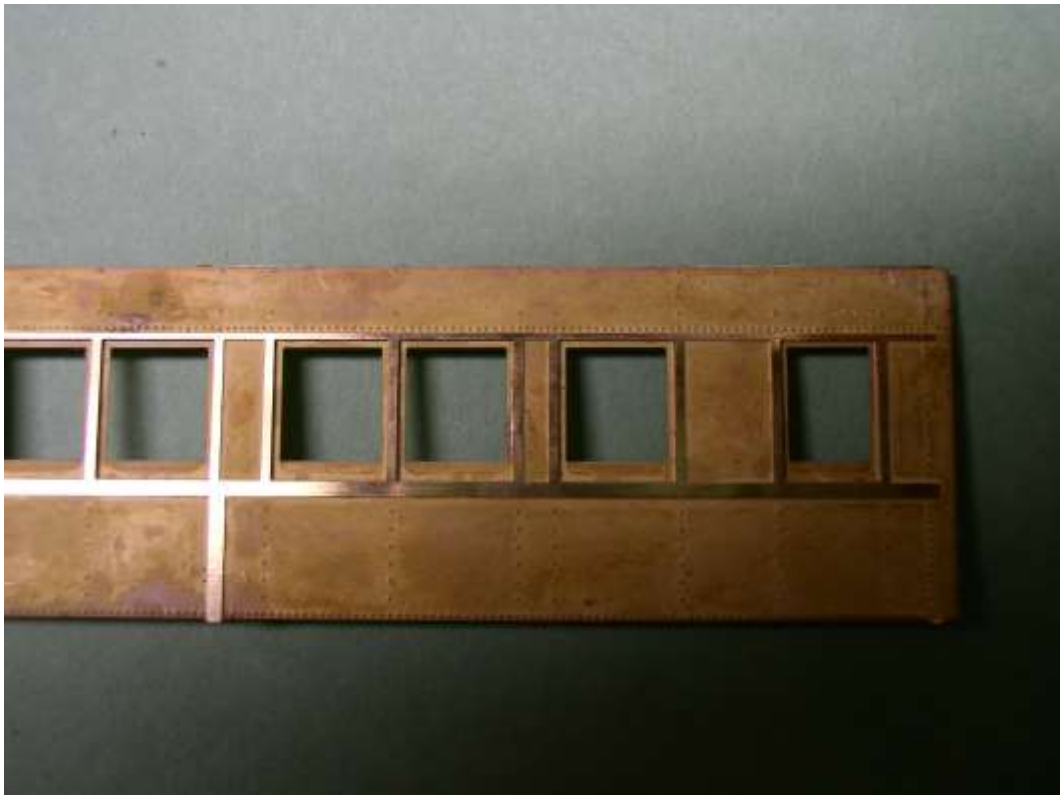

Figure 005.

3. Tack solder the top edge above the baggage door. Now slowly heat the inner wall and move from the centre of the sides outward. Use a coffee stick to help push the outer side against the inner side. Keep checking for alignment. If you are off, you can unsolder by using a razor blade to pry things apart. See Figure 006 and 007.

Figure 006

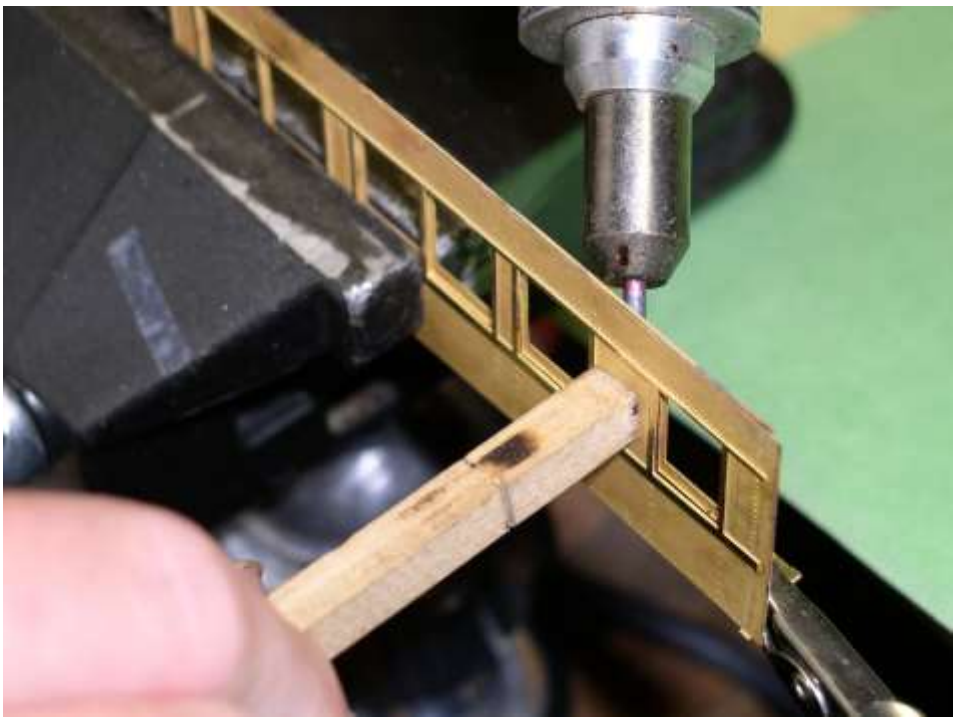

Figure 007

4. Check alignment over and over. Try fitting the baggage door in the opening. You will probably have to file the bottom a bit. See Figure 008.

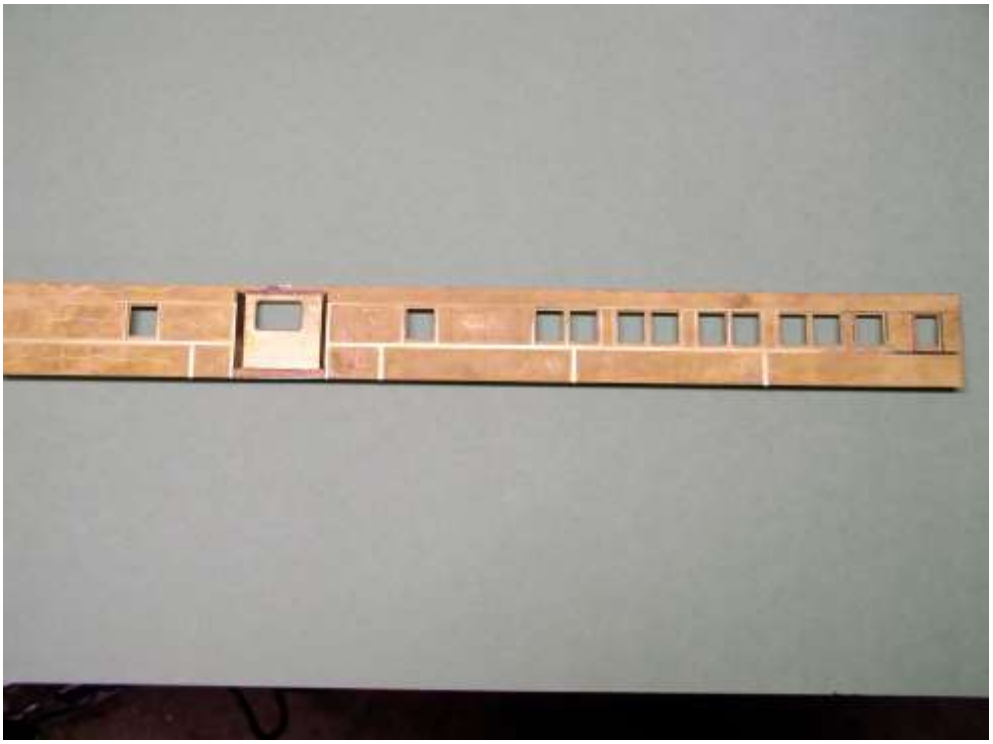

Figure 008

5. Tin the trim and using a very low heat setting solder on to the raised portions of the outer sides. If you get out of alignment, use a razor blade to help unsolder. See Figure 09.

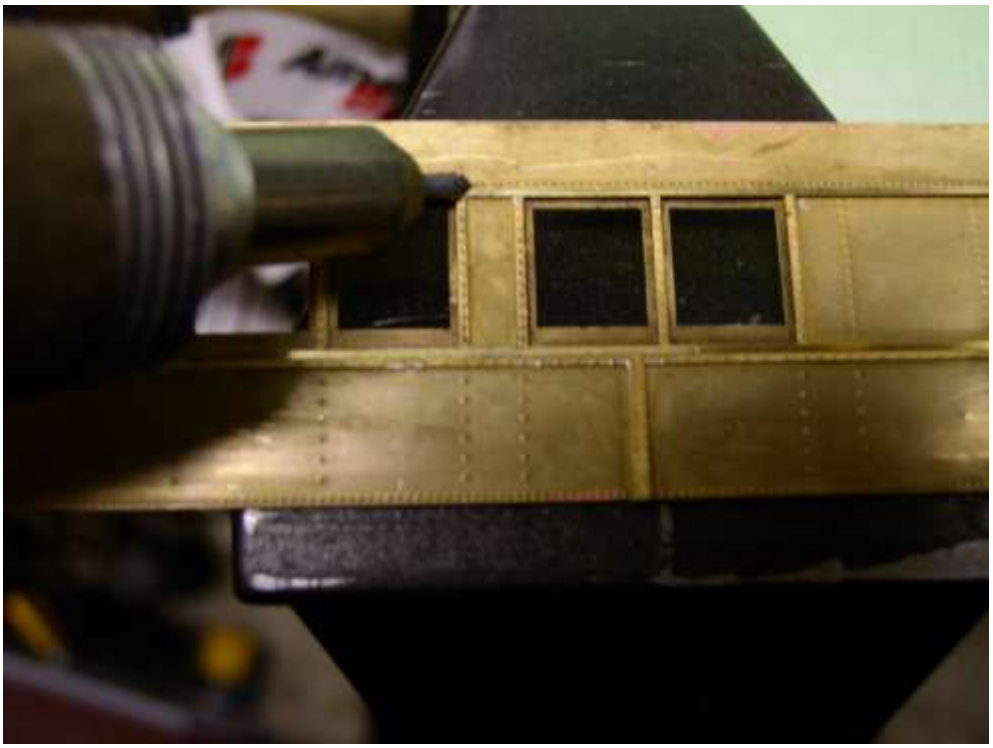

Figure 09

6. Your finished sides should look something like Figure 010.

Figure 10

7. Before you do the next step, please cut new slots in one of the ends for hinges if you are going to have operating doors. You will notice that one of the ends has

the slots ***higher*** than the other. They need to be ***lowered*** to the same place as the correct end. If not, the hinges will be too high.

8. Solder the doors into the bulkheads. Solder the kick plates at the bottom of the doors. See Figure 011.

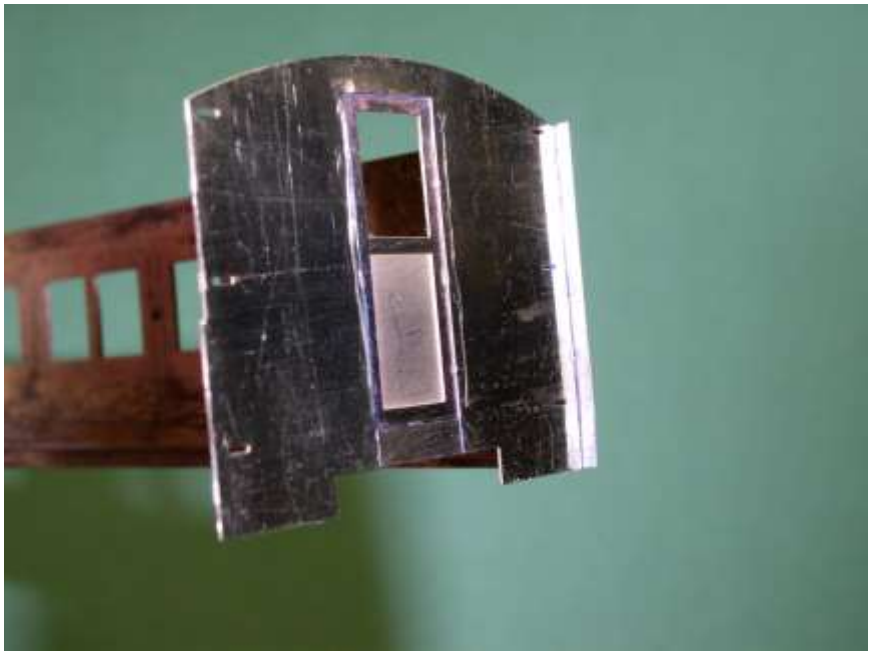

Figure 011 showing the incorrect slot placements.

9. Place the inner bulkhead in one side and solder in place. Then do the same for both end bulkheads. See Figure 012.

Figure 012

10. Next add the other side. See Figure 013

Figure 013

11. Fold the overlap over the bulkhead ends using a piece of wood. See Figure 014.

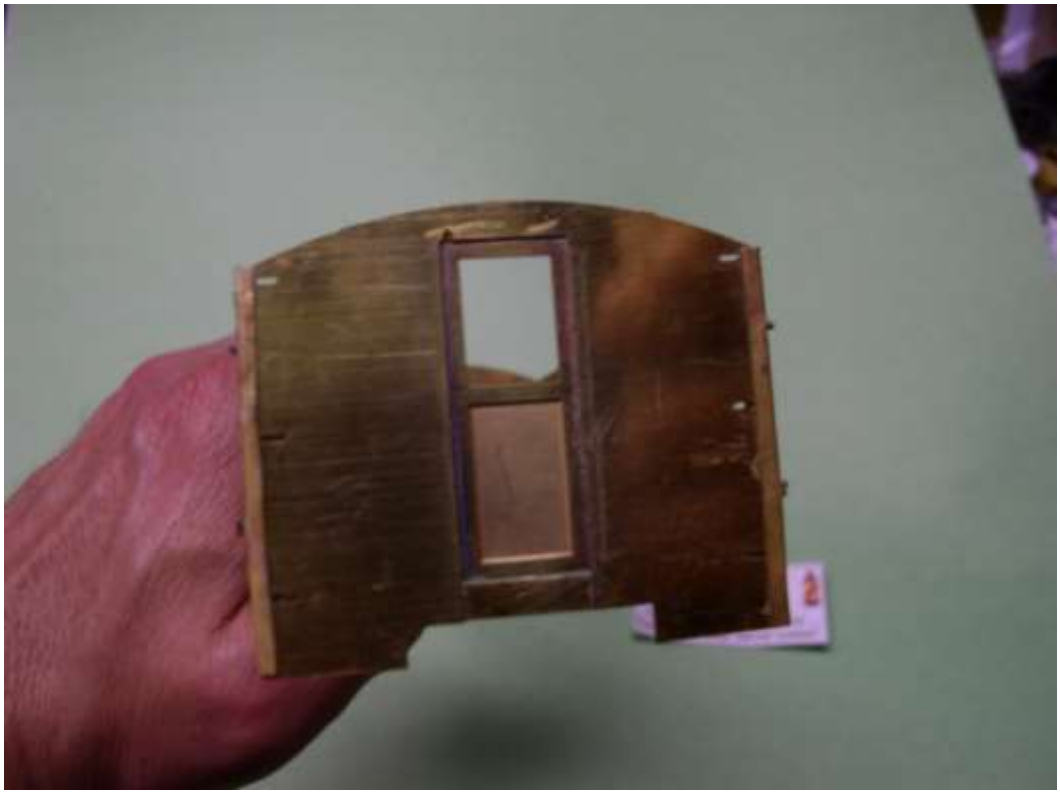

Figure 014

Decide whether you want hinged doors or not. If so, proceed to next step. If not, proceed to step 14.

12. Fold the hinges on the doors 90 degrees using the fold lines as guides. Try to have them as flush as possible. See figure 015.

Figure 015

13. Solder the hinges into the slots on the ends. The hinges can be found tabbed to the doors and the stair opening in the floor. They look like bird's heads. There are two types. One has the hole 1 inch closer to the tail. The other has the hole farther away from the tail. Use the ones that you feel will help to keep the door side closer to the bulkhead. The slots are longer than necessary so help you horizontally position the door. See Figure 016. Look closely and you will see the incorrect slots above hinges that have been attached.

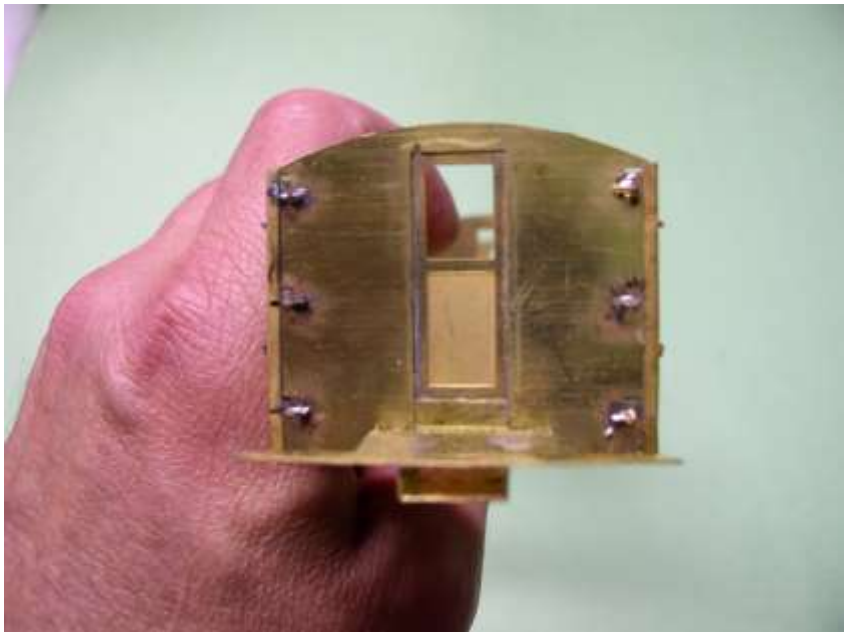

Figure 016

14. Bend the vestibule end slightly on each side of the door frame to match the vestibule floor end. See Figure 017. Vestibule floor end is visible as well.

Figure 017

15. Using a piece of 3/64” brass wire clamped vertically in a vice, start to roll the edges of the vestibule end. See Figure 018.

Figure 018

16. Now place the end on a flat surface and continue the roll around the 3/64” rod. See Figure 019.

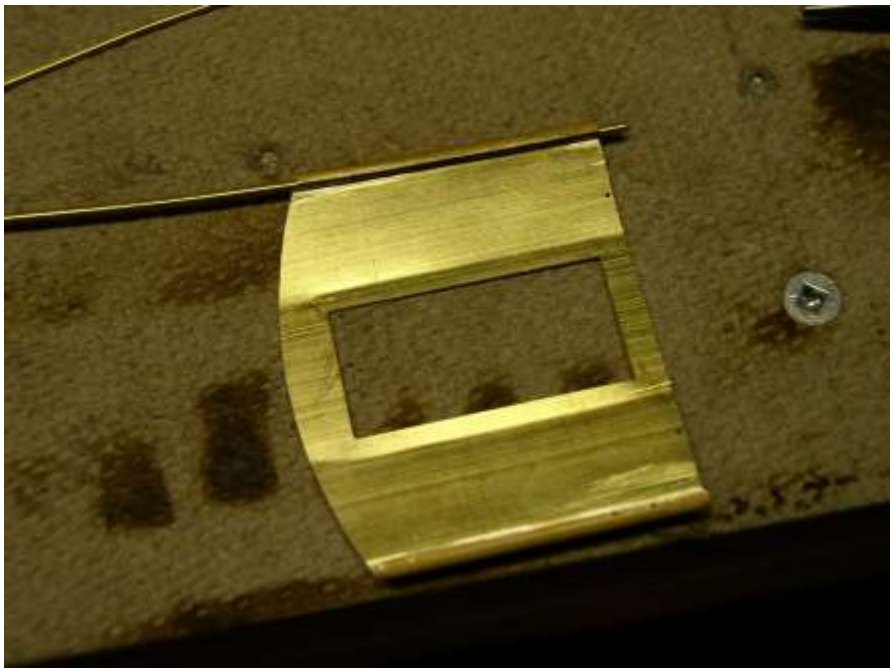

Figure 019

17. Place the vestibule platform ***inside*** the combine with the step opening flush with the rear of the bulkhead. Everything should square up nicely. Solder it in place. See Figure 020.

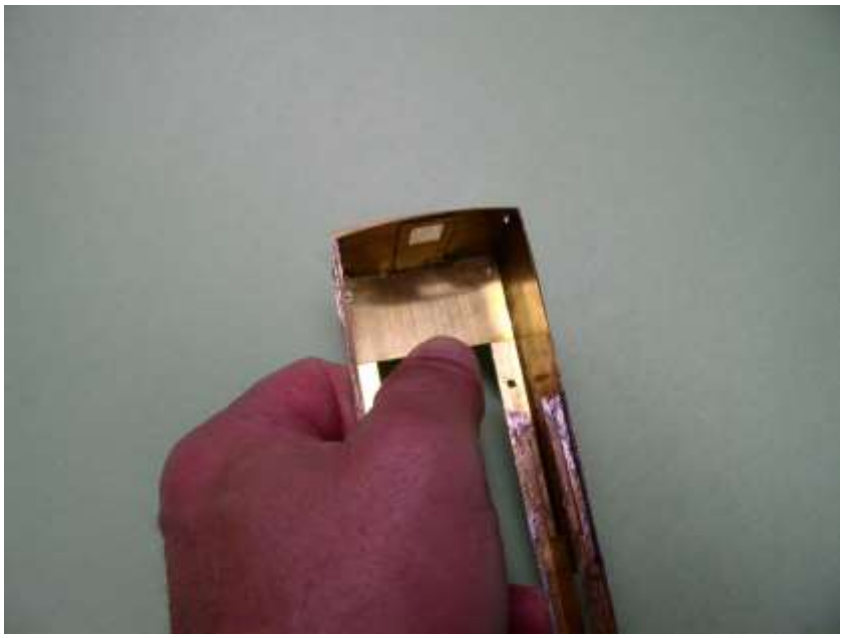

Figure 020.

18. Fold the sides on the coupler mounts and attach one to the bottom of each vestibule end. See figures 021 and 022.

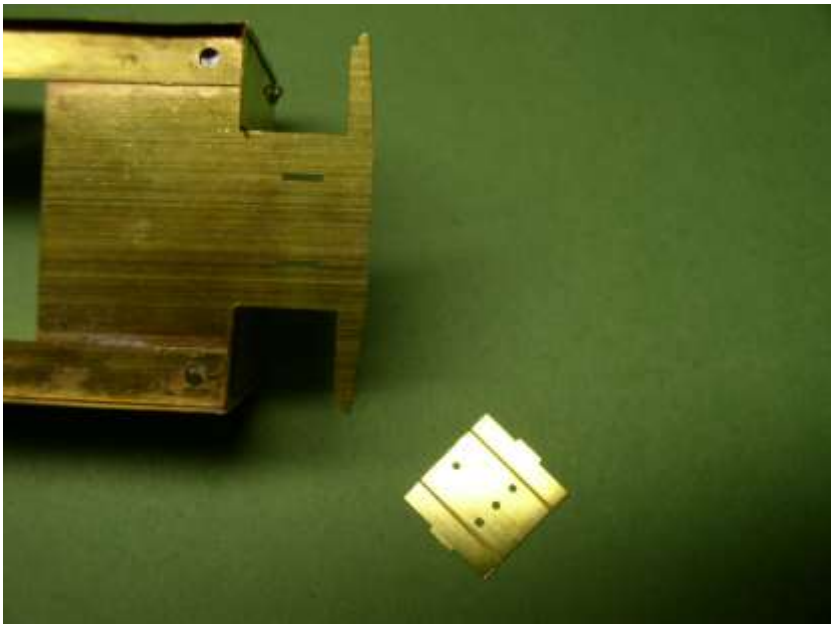

Figure 021

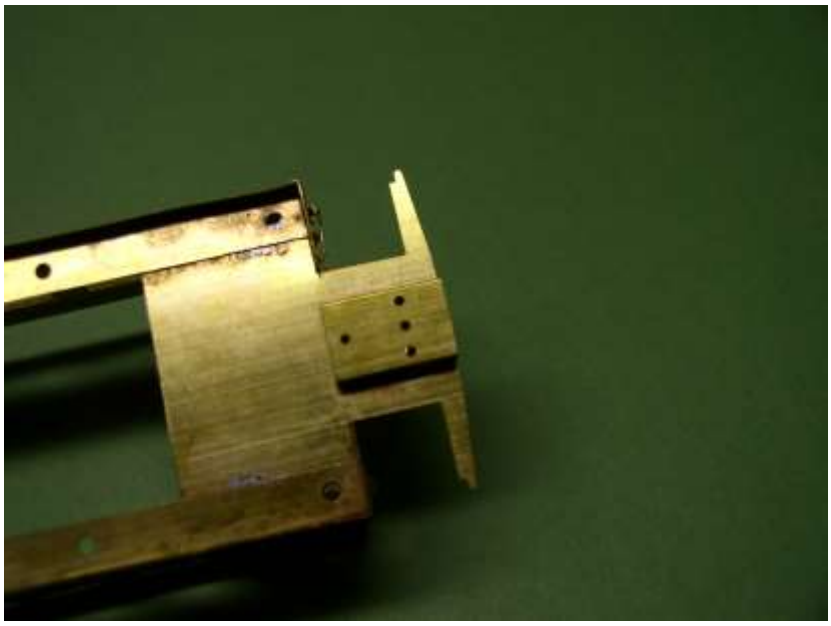

Figure 022

19. Test fit the end to the vestibule floor. The edge of the vestibule end will go around too far for the door to attach squarely. You have to unroll the edge a bit and remove 1/32" from the edge. A sharp pair of scissors will do this or you could file away. Reshape and test until you get a good fit. You can use a plastic hammer to gently shape it true with brass rod held where the radius is. See Figure 023.

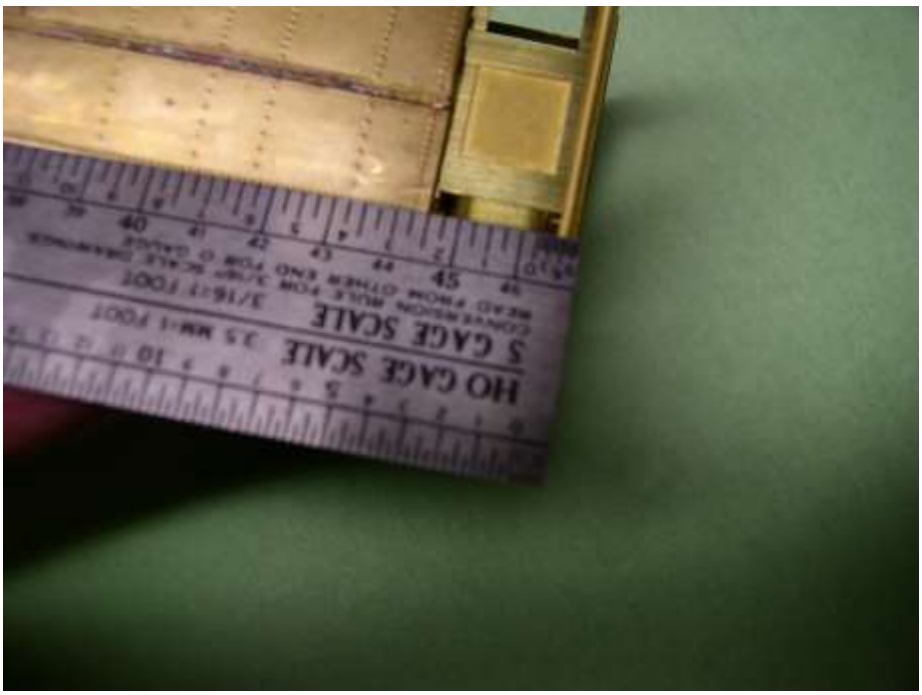

Figure 023

20. Take the end off and solder the top form in place. If you are soldering your doors in place, solder them in place to the vestibule end. See Figure 023 and 024.

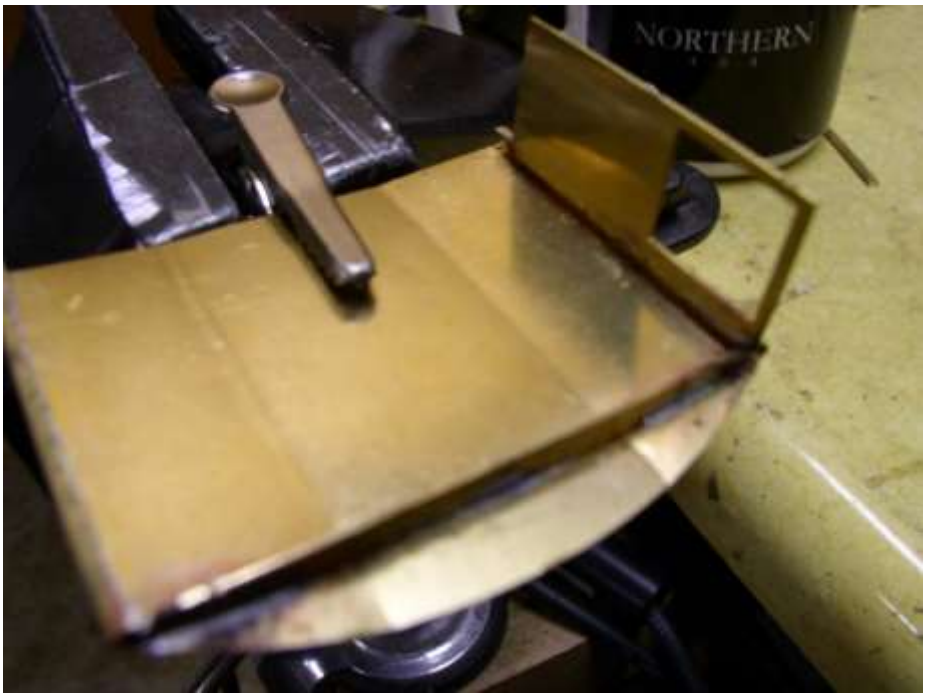

Figure 23

Figure 024 showing the doors soldered in place on solid end.

21. Trim and attach the safety gate to the inside of the vestibule end. See Figure 025.

Figure 025

22. After checking and positioning, solder the vestibule ends to the vestibule floor. See Figure 026.

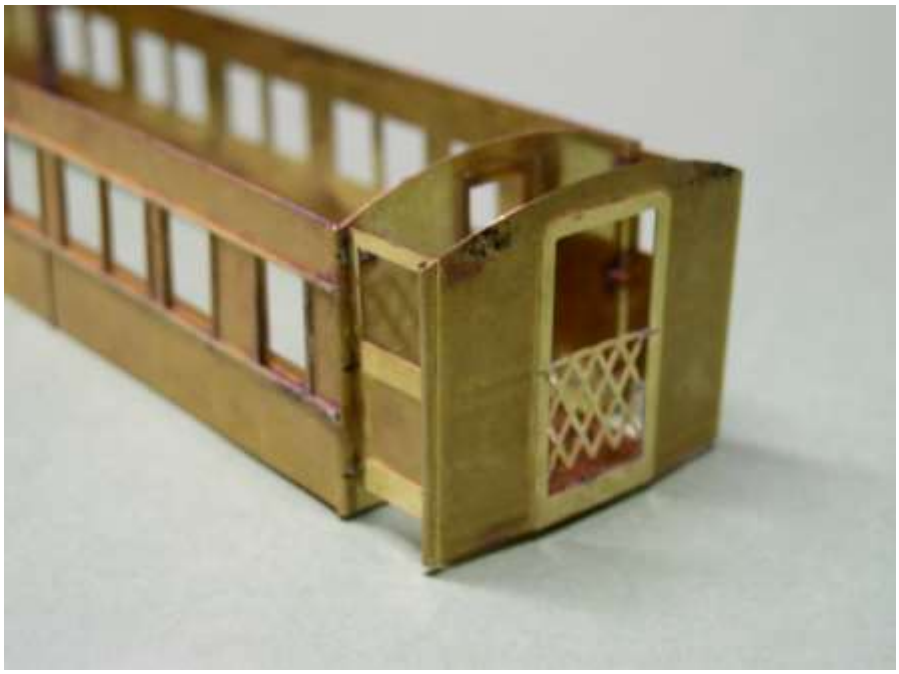

Figure 026

23. Cut a piece of strip brass, straighten it then bend it so that it fits between the top of the door of the end bulkhead and the top of the form of the vestibule end. Solder it in place to create a secure vestibule end. See Figure 027.

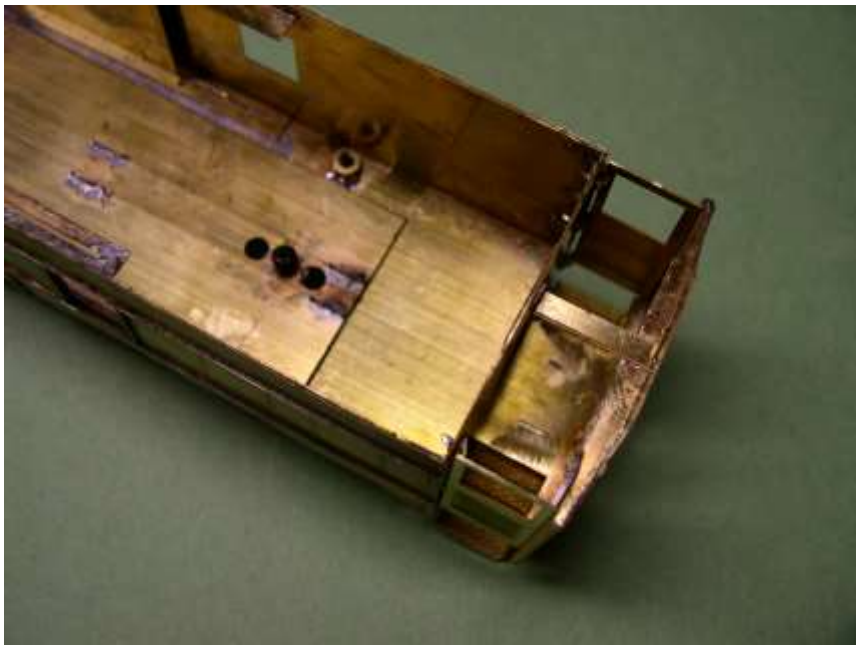

Figure 027

The Floor Part 2

1. There are small holes in the floor that denote where the baggage end is. They are not used for fastening the floor to the body. Fit the floor to the body in the fashion mentioned above. The four end holes should almost line up with those on the body. Use a fine felt tipped marker to mark on top of the floor where the holes should line up with the inner four holes in the body lip. Drill or ream the holes in the floor so that you can pass a 2-56 screw through the holes. Next thread the 3/64 inch 2-56 screws through the holes and fasten with 2-56 nuts. Solder a fillet around the nuts and the body lip. See figure 027 above.

2. Look at Figure 028. This shows the typical placement of the underbody details. Think of the car with the baggage end towards the front of the train. The small air reservoir is located in line with the rivet strip to the rear of the baggage door. The larger one is located behind. The bracket of the generator is located about 2 inches in front of the front rivet strip of the baggage door on the fireman's side. The small storage box is located about 8 scale inches in front of the front brace on the engineer's side. The larger battery box is located about 60 inches behind the rear rivet strip of the baggage door.

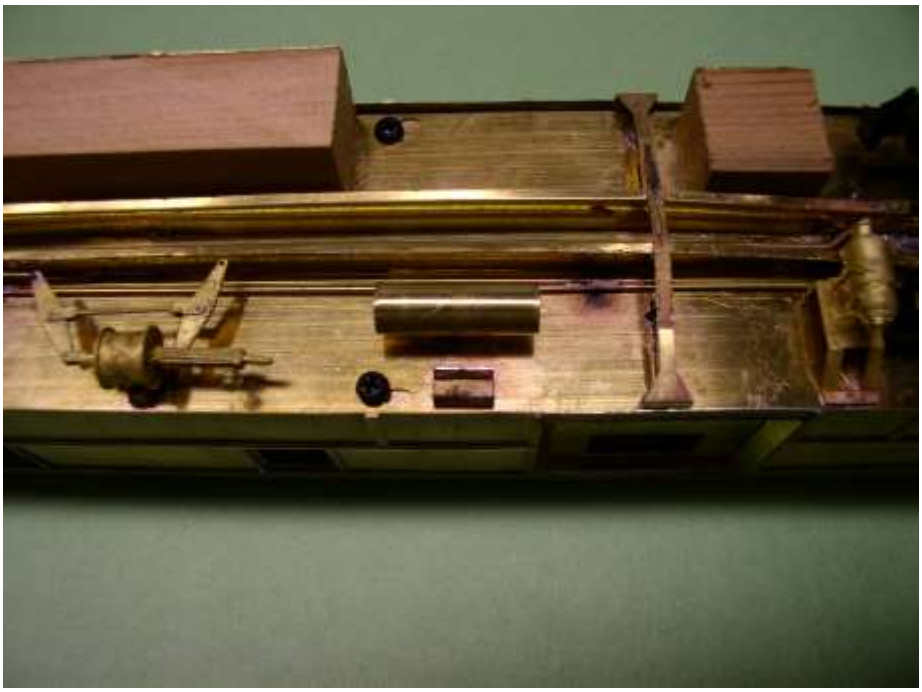

Figure 028

3. Measure about 12 inches in from the side for the brake cylinder. The front of the brake cylinder should line up with the second rivet line after the window behind the baggage door on the fireman's side if the car has the baggage end towards the front of the train. Mark this location and drill a 5/64" hole in the floor. Solder the brake cylinder to the floor as shown in Figure 028.

4. Measure about 12 inches back from the rear rivet strip of the baggage door and 4 inches from the edge. Solder the 5/64" channel at this location as shown in Figure 028. This will serve as the support for the smaller reservoir.

5. Solder the other piece of 5/56" channel 14"directly behind the first channel as shown in Figure 028. This will serve as the support for the larger reservoir.

6. Solder a piece of 0.010" brass sheet to each end of the 14" brass tubing. See Figure 029.

Figure 029

7. Shape the ends as shown in Figure 030.

Figure 030

8. Repeat steps 6 & 7 for the 16” brass tubing.

9. Solder the 16” reservoir in the U channel closest to the fishbelly as shown in Figure 028.

10. Solder the 14” reservoir in the U channel closest to the car edge as shown in Figure 028.

11. ACC the battery box covers etchings to the 5/8” square piece of wood. Attach to the on the engineer’s side or the underframe as shown in Figure 031.

Figure 031

12. Do the same with the storage box using the storage box etching and the 5/8” x 7/16” piece of wood.

13. You can add the air and signal lines using the 0.032” brass rod. They cross to the engineer’s side just behind the battery box. See Figure 032.

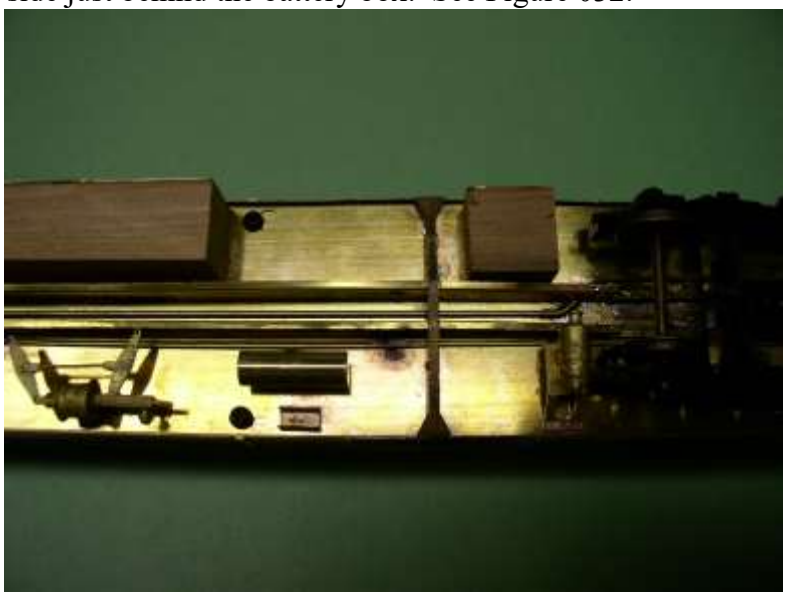

Figure 032

14. Add the steam line using the 3/64" brass rod. It crosses over to the fireman's side just as you see it crossing the engineer's side in Figure 032.

The Roof

1. Situate the wood roof section on the top of the body with the groove over the middle bulkhead. Add the resin ends. Check the resin ends for squareness. File the ends lightly to get a better fit. See Figure 033.

Figure 033

2. When you get a good enough fit, ACC the ends to the centre section. Scrape the seam with a razor blade. Fill the gap or any differences with water based wood filler. Allow to dry then sand. See Figure 034.

Figure 34

3. Drill a 3/16” hole 12 scale inches ahead of the middle bulkhead on both sides of the roof. We start with a 1/32” drill and work up. Stay clear of the clerestory. These holes will be for the smoke stack bases for the stove and heater. ACC these stacks in the holes. You may have to enlarge the holes a bit and fill the edges. See Figure 035.

Figure 035

4. Cut the 3/32” tubing to form the smoke stack. Make a small tee by grinding a curved notch in one end and soldering a cross piece in the notch. Check for the height that you need. Different combines had different heights. ACC in place. See Figure 036.

Figure 036.

5. Use 1 inch finishing nails to represent the toilet vents just behind the end windows in the passenger area. See Figure 037.

Figure 037

6. Bend two pieces of 0.020" brass wire to form the baggage door rain gutters and ACC to the roof above the baggage doors on the roof. See Figure 037.

7. Add the Garland vents to the roof where shown in Figure 037.

8. Drill 0.020" holes for the hand grabs in the ends where indicated on Figure 038.

Figure 038

9. Form a sill step for under the baggage door using a thin strip of brass and attach to the frame on both sides where shown in Figure 038.

10. If you wish to add the steam pipe connectors, the brake line connectors and signal line connectors attach to the ends as shown in Figure 039.

Figure 039

11. Form drop grabs to fit in the holes on the ends. Solder these in place as shown in Figure 039.

12. That's it. Now use the Black Cat Painting Instructions to paint your combine. Add window material (not supplied) and you're done.

Gallery

7176 Courtesy of William Flatt Collection

7192 Courtesy of William Flatt Collection

7193 Courtesy of William Flatt Collection

7193 Photo by Don Wood. M.L.W.Services Collection