

Kit K124 - Chicago and North Western Riveted 40' PS-1 Auto Cars



Collection of J. Michael Gruber

History

In 1949, The Chicago and North Western received 250 automobile cars from Pullman-Standard's Michigan City, Indiana plant, car nos. 57400-57898, even numbers only. The cars had an inside height of 10'8" and a large door opening of 15'0". They were equipped with Evans Type F auto loaders that could be stowed to handle general freight.

The cars had many traits typical of the PS-1s of the era. The ladders followed the design's standards with the side ladders integrating the sills steps with all attached to the bottom of the side sills and the end ladders featuring the short-lived single wider rung/tread at the bottom (early PS-1s had rungs all the same width while later ones used two wide rungs at the bottom; the single wide rung was only used for a small number of orders of cars built in 1949.) Other details included the PS-1-style bracket for the uncoupling lever, three-point bracket grab iron at the right side of the end, non-offset end sill grab (again a transition style of mounting using two trapezoid-shaped brackets), and roof without stiffening crimps in the endmost panels adjacent to the ends of the car. The major departure for this group of cars was the use of four sets of large crossbearers and straight 4" zee-bar crossties (early PS-1s used a welded AAR underframe while most PS-1s used an underframe with a pair of welded crossbearers (smaller than those on these CNW cars) and zee-bar crossties with a distinct kink where they met the side sills. These CNW cars also included tubes and other accouterments to store the chains and equipment when the car loading racks were stowed.

As delivered, the cars were decorated in one of the attractive schemes used by the CNW. The sides were painted a freight car red that was slightly darker than oxide and with hints of red. The ends, roof, underframe, and other specialties including the brake gear and trucks were black. The right side of the car carried the "Streamliners" slogan while the left was adorned with "The Overland Route." While I have not comes across photographic

evidence, some cars were no doubt repainted into diesel era schemes as well as maintenance livery. The color image included herein shows a car with an approximately 30 year old delivery scheme.

Instructions

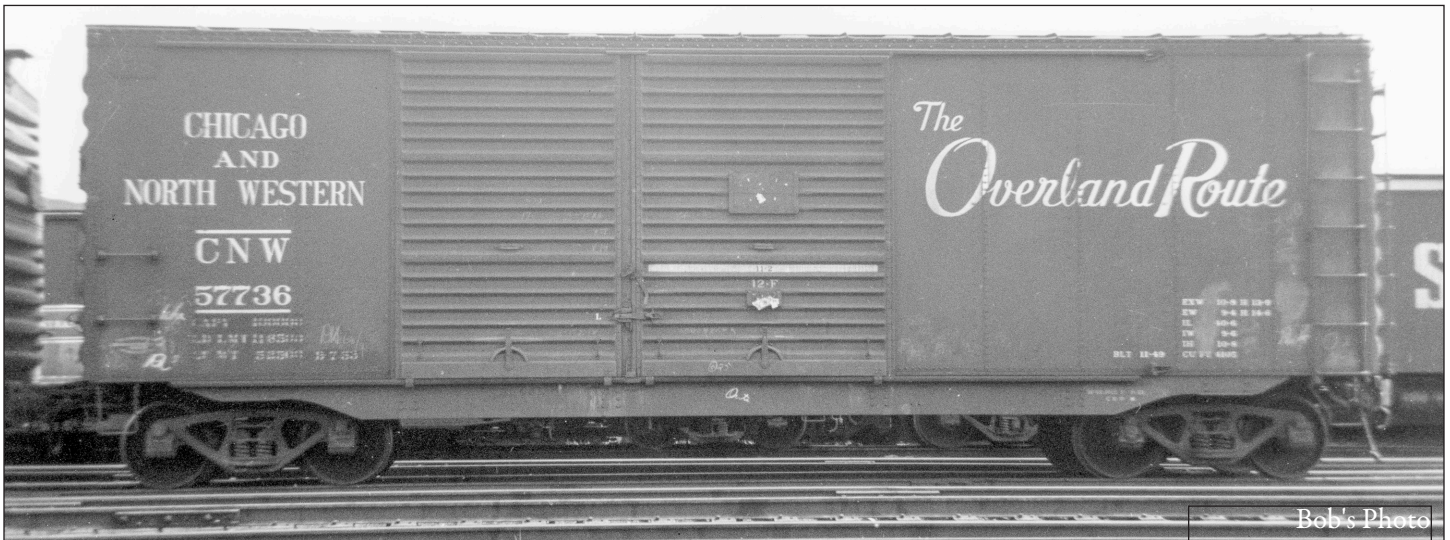
General - please, please, please read first, even if you are an experienced resin freight car modeler

This kit includes some extremely detailed etched parts. They can be fussy and may be fragile if not handled as directed or assembled in a different order than laid out herein. It is recommended in the strongest possible terms that you pay attention to the order of operations and also follow the suggestions for tools (as noted at the end of this section.) Not to sugarcoat it, this was a difficult model for me to build and I designed it! I am already streamlining future kits to improve the experience, but maintain the fidelity to detail. Rest assured that the challenge is worth it. Exercise care and patience and you will be rewarded with one of the finest models in your fleet. One other note: when I created the patterns for this model, some of the things that are used in it now, particularly the etchings, were not even in my dreams. That means that in some instances, the castings must be modified to suit these parts. I will mention those things as the build progresses.

The general order of the assembly is in many ways up to the preferences of the modeler. There are also few things that are optional and require items not included in the kit. These are noted throughout the instructions.

Important note about working with the etched metal parts... many of the etched metal parts have half-etched "score" lines. These are to be used to aid in folding the parts. Always fold *into* the score lines, meaning the angle formed by the subsequent bend will "contain" the score line, which will "disappear" into the fold in most instances, such as 90° bends. Also, the etched parts in this kit are quite thin and easy to cut or trim. I recommend the following method: lay the parts fret on a cutting mat and

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Haskell & Barker Collection neg. no. 6565, National Museum of American History, Smithsonian Institution
previous page, bottom – scan of slide; no additional data



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overlay that with a steel ruler. Trim straight down using a chisel blade like an X Acto no. 17. When overlaying with the steel ruler, leave the excess "gate" that joins the parts together exposed and the actual part under the ruler. Yes, this leaves you a little "bind" in terms of what you are cutting, but there are extra parts and you will get the hang of it! If a part bends, you can flatten it by "crushing" it between the mat and steel ruler. Also, while I did not encounter any un- or underfilled holes, it does happen and they can be cleaned out with a drill bit (as referenced in the tools section below).

Suggested tools:

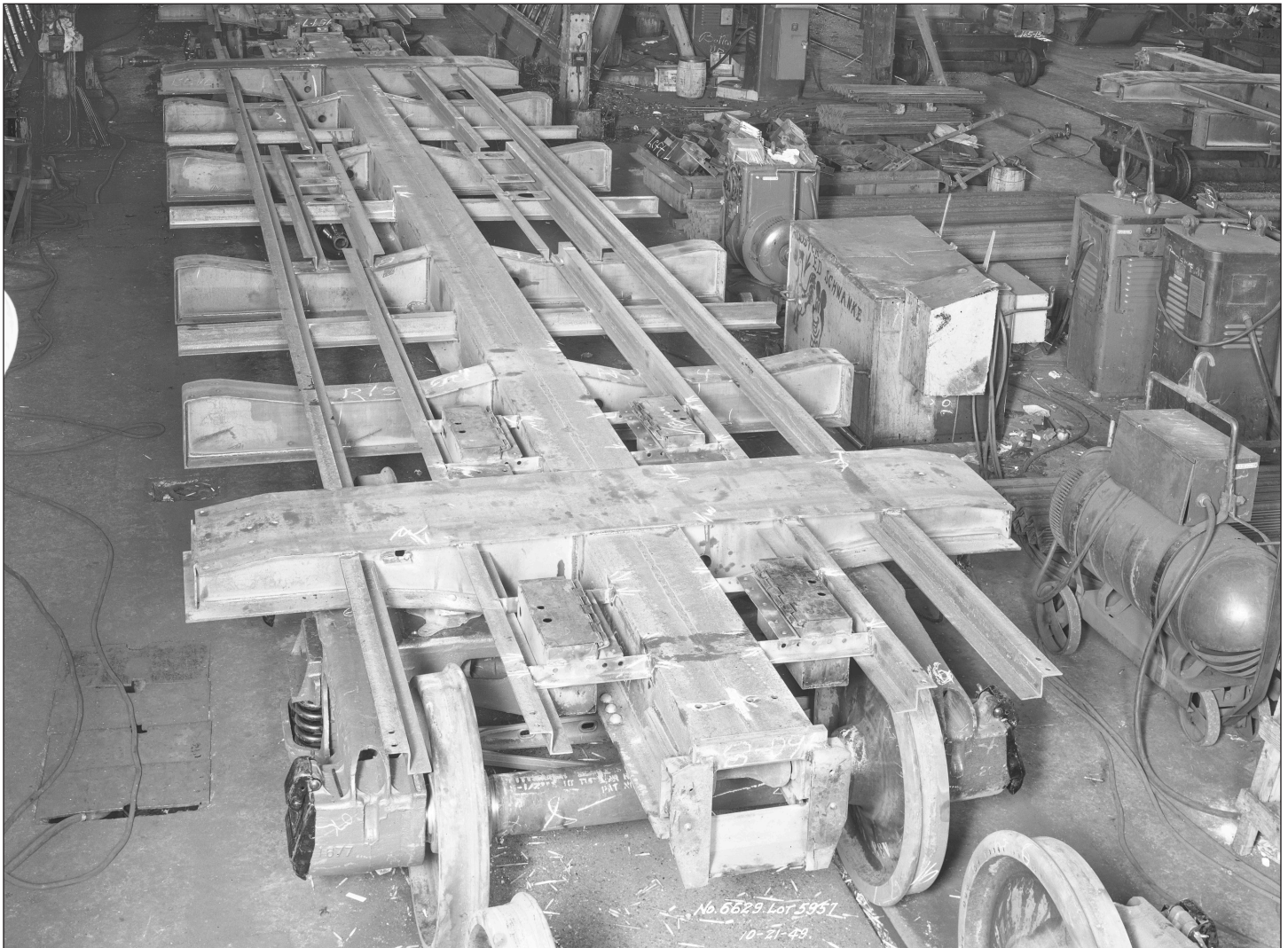
- Tweezers such as [these with serrated jaws](#) or [these with diamond tips](#) - etchings can be difficult to handle and plain tip tweezers, no matter how high quality, are not the best tool for the job... avoid flying pieces of metal followed by colorful language!
- Etched part bending tool - these devices make bending etched metal parts, especially long narrow ones like ladder stiles, much easier - I use [the 195mm Piranha](#), but [UMM-USA](#) carries many types.
- Drill bits - all drill bits are not created equal. I purchase mine from [McMaster-Carr](#) for quality and durability. I also recommend [this specific one](#) to have on hand to "ream" holes in

etchings in case you find one that is not etched completely. Yes, it is an expensive bit, but I use it only for this purpose.

- Square - I recommend having a [tool grade combination square](#) in your arsenal, but for this model, I use it to "finish" the bends in the ladder stiles, as illustrated in the accompanying photo herein. Yes, it's expensive, but I use it all the time!
- Yarmouth Model Works [ladder assembly jig](#) - I have four of these to build multiple ladders at once and I have also made my own jigs by gluing styrene, as seen in the photos in the instructions

Parts List:

- Resin castings (body, floor/underframe, detail castings)
- Decals
- Tichy AB brake set
- Kadee Miner hand wheel
- Kadee couplers, pair
- Kadee bracket grab irons
- Moloco ASF A-3 50-ton trucks, pair
- Moloco angle cock/air hose, pair
- Tangent Miner hand brake housing
- Etchings (details and Yarmouth Apex Tri-Lok running board)
- 0.008" wire - 1



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- 0.010" wire – 3
- 0.012" wire – 2
- 0.020" wire – 1
- Retainer valve
- Styrene rod
- 0.005" styrene, 21 scale inches wide
- Screws (2-56 and 1-72, one pair each)
- Washers

Extra Parts and other optional items (not included):

- Chain
- Nut-bolt-washer (NBW)
- Branch pipe tee
- Wire uncoupling levers
- [Scale Hardware 0.4mm brass rivets](#)
- Turnbuckle
- [Plastruct 0.010" styrene rod](#)
- Paint
- Weathering media
- Chalk mark decals

Assembly Sequence

◇ Begin by examining the castings. The car body has "blocks" around the "ledge" on the inside of the car body that need to be removed. There are many ways, but I recommend using a [hobby saw](#) to remove most of the material and then clean things up with a hobby chisel blade (like an X Acto no. 17) followed by files. The underbody/floor casting will likely require some filing to fit into the car body, as well. On our model, we needed to file material from the *top* edges of the casting to fit it into the car body (apologies for all of this clean up work... the casting service provider modified the body interior without prior consent, modifying the fit of the floor into the body.) The floor should be flush with the bottom of the car body at the ends. Once satisfied with the fit, continue, but do not glue the floor into the car body just yet. *Note that there are distinct A and B ends on the car body* - locate the defect card holder on the side sill, under the door track, just to the left edge of the left hand door. Once located, when looking at the defect card holder, the end to the left of that is the 'B' end and the one to the right is the 'A' end. *The floor also has specific 'A' and 'B' ends.* Look at the three pairs of square brackets with round holes in them (for the floor tubes); the two pairs that are closest together are nearer the 'B' end. I find it useful to write a 'B' on the floor adjacent to the B end to avoid any future confusion as I add details. Next, drill the holes for the train pipe through the center sills (if adding that detail) at a slight diagonal, using a no. 65 drill bit (the size isn't exact, although it is better if it is slightly larger than smaller. What is important is that the height of the holes are such that the train pipe can pass through the center sills and crossbearers without a large degree of mismatch in height variation; the train pipe should be relatively straight along its length and when the car is oriented on its trucks, the train pipe passes *through* the crossbearers, but *below* the 4" zee bar crossties.)

◇ One of the things that was updated from the time the body parts were cast and the release of the kit is the way the brackets for the uncoupling levers are replicated. There are etchings in the kits to create a more prototypical bracket. That means that the ones cast on at the ends must be removed. This can be accomplished by snipping them off, flush with the bottom of the end and then using a chisel blade to remove the remaining detail on the end sill. Another option is to accept the cast-on bracket detail and simply add the uncoupling levers to the cast-on brackets. The choice is yours

◇ Drill the underbody for the truck screws and floor tubes. The truck screw holes should be drilled with a no. 50 bit and the tubes are approximately .0465" wide, making a no. 56 drill bit almost perfect (I used a slightly larger bit.) The screws provided should be self-tapping if gently screwed into the holes. Do not do anything at this time to adjust the bolsters vis-à-vis truck and coupler height. That will be addressed later in the build. Add the round styrene to simulate the floor tubes securing in place with ACC. The "visible" section should be approximately 0.230" clear of the floor and they tubes should be straight. Add desired amount of weight to the floor. Glue the floor into the car body.

◇ Add the cast resin draft gear. These extend slightly from the end sill of the car, approximately 0.020". They are secured using the 1-72 screws included with the kit plus the small washers. The following technique works well to place them to aid in drilling. Using a combination of MEK and Goo (or Barge cement,) tack them in place in the appropriate location. Add ACC to firm up the joint between the draft gear and the floor. Then drill the holes for the screws. Like the truck screws, these are self-tapping in the soft resin. You do want to make sure that the hole in the draft gear is just wider than the threads of the screw or else the draft gear might become unglued as the screw is tightened. This can be accomplished by drilling the hole in the draft gear before attaching it to the car floor and widening it with a round file or else use a slightly larger drill bit for the draft gear than needed for the 1-72 screw.

◇ Assemble the crossbearers. They are created by gluing cast resin pieces back-to-back. You will need a total of eight of these assemblies. Clean the joint that is closest to the rails to eliminate any signs of a seam or gap (I did not do a good job of this since I noticed this after I had almost completed all underframe detailing!) ACC followed by filing once the ACC has hardened should do the trick. If adding the train pipe, drill holes through four of the eight to accommodate the pipe. A modestly oversized hole is best. Add the crossbearer assemblies, making sure to place those with train pipe holes in the correct locations. You may need to file some material from the ends of the crossbearers to effect a good fit. Use the double rows of four rivets on the side sills to guide placement. *The center two crossbearers are farther apart than the adjacent pairs of crossbearers.*

◇ Add the etched 4" zee bar crossties. The recommended method is as follows: Trim a crosstie from the etched parts fret and *before bending* test to see if it fits well or if it is too long. The etchings were made slightly too long rather than too short.

If necessary remove material with a file (or even nippers if the etched piece is significantly too large.) Once satisfied with the length, bend the piece to create a zee, remembering to bend *into* the half-etched score line, meaning that once the 90° bend is complete, the half-etched line "disappears" inside the 90° angle formed by the metal. Bending in the opposite direction from what is described can result in the failure of the metal and the part will break and will not look as good either. Glue the crosstie in place, centered between the crossbearers. You can tack these parts in place using a combination of MEK and Goo (or Barge cement) or something like [Ultra Glue](#), applied to the surface of the stringer on which the crosstie rests. I applied sparing amounts of ACC at the center sill and side sill to secure the joints. Repeat for the remaining five crossties.

◇ Add the train pipe using 0.020" wire. Use the photos as a guide for the bends. Also note that the bolsters should be notched as shown to receive the wire. Secure with ACC

◇ Add the brake parts. Begin by trimming the cylinder bracket from the etched parts fret, bending, and gluing in place, with one leg against the face of the center sill and the other against the stringer, as shown. For this and most other etched metal to resin assemblies, it is recommended that the parts be tacked using a combination of MEK and Goo (or Barge cement) or something like [Ultra Glue](#), and then secured in place with ACC. Also, remember to bend *into* the score lines on the etchings. Next add the AB valve bracket, again bending and gluing with one face against the side sill and the other against the stringer, as shown. Assemble the reservoirs from parts AB-1, AB-2, and AB-10, as shown, using liquid solvent cement. Once the parts have dried, drill the nipples with a no. 78 or 79 drill bit and also drill the three lugs with a no. 78 or 79 drill bit (this is likely something you have never done, but the reservoir brackets include holes to secure them to the reservoirs with wire.) Assemble the cylinder from parts AB-3, AB-8, and AB-9 using liquid solvent cement. Once dry, drill the nipple in the rear of the cylinder with a no. 78 or 79 drill bit. Lastly, in the AB valve (part AB-5) drill the three holes for the pipes between the valve and the reservoirs and cylinder. The pre-drilled hole is for the dirt collector and requires no drilling. For all of these holes, it is easier to drill if you first create a dimple for drilling, using something like a bulletin board push pin or a needle in a pin vise, by pushing the point where the hole should be located. When using the Tichy AB brake set, I use the "loose clevis" (AB-29) but to offset how loose it really is, I glue a piece of styrene rod in the front of the cylinder and, once dry, drill the hole that results in a tighter fit of the clevis. I have found the tight clevis (AB-25) can split the front of the cylinder. Assemble the reservoirs and etched reservoir brackets, as shown in the photos. Use 0.010" and ACC to secure the brackets and the lugs on the reservoirs. Once dry, trim the wire.

◇ Add the brake components to the underframe. The cylinder and AB valve sit on top of the brackets that were already added to the underframe. Again, it is recommended to tack them in place using the adhesives previously referenced followed by ACC to secure them. Use the photos as a guide. The reservoirs require a

little more work. Unfortunately, the reservoirs/brackets assembly is slightly too narrow to span from the center sills to the side sills. I added a little scrap styrene to both faces of the brackets and then glued the reservoirs in place. Consult photos for guidance.

◇ Add the 3" zee bar stringers at the end of the floor, two on each side of the draft gear (coupler box.) These are etchings that must be bent into a zee bar shape. Orient them as shown in the photos and attach by tacking in place using the glues mentioned previously, followed by ACC to secure them in place.

◇ The bolster cover plates are created from the 21 scale inches wide 0.005" styrene strip. Tack in place in the center of the bolster (where the truck screw is located) with strip overhanging both side sills using something like Goo or Barge cement that will allow repositioning. The objective is to ensure that it is centered and aligned relative to the rivets on the side sills with some overhang on both sides that will be trimmed after the strip is attached. Once satisfied, add some ACC in the center to secure the styrene. Then carefully apply ACC under the strip and press down with your fingers so that the strip attaches to and follows the contours of the bolster. Lastly, add some ACC where the strip meets the side sill, *from the back of the side sill joint, not from the front face of the side sill*. Repeat for the other side of the bolster and then the second bolster. Once the ACC has fully set, carefully trim the strip even with the faces of the side sills.

◇ Add brake piping. Using 0.012" wire, create the piping between the reservoirs and the AB valve. Beading pliers with round jaws are particularly good for this task. Mimic the piping as shown in the photos. Next, add the pipe between the cylinder and AB valve, again using 0.012" wire. Trim the dirt collector (part AB-6) from the Tichy parts sprue. You have a few options at this point. Use the "pipe" that is integral to the and bend it so it mimics the photos and glue into the AB valve using liquid styrene cement and secure the end of the styrene "pipe" to the train pipe by joining both with a blob of ACC. The other option is to snip off the styrene "pipe," drill a hole (no. 77 or 78) in the front of the dirt collector, glue the dirt collector into the AB valve and then add 0.015" wire between the dirt collector and train pipe, bending as shown, and secure the end of the wire "pipe" to the train pipe by joining both with a blob of ACC. If you have a tee, you can add that as shown in the photos.

◇ Add the brake levers and rods. You have a couple choices. You can use the Tichy brake levers, part nos. AB-26 and AB-28. You can also create your own from styrene, as shown on the model and use the etched clevises or you might try the etched clevises on the Tichy brake levers. The choice is yours. Use 0.010" for the rods, as shown. Note that the chain at the clevis on the cylinder is an optional item and not included in the kit. Note in the photos how the rods from the levers to the trucks are bent twice to appear, from the side view, that they attach to the levers on the trucks, even though they do not. The dead lever bracket is created from styrene (included,) but the holes seen in the bracket must be drilled. The handle to adjust the mechanism is a piece of 0.010" wire. Add three brake lever hangers by bending 0.010" wire as shown. Drill holes in the center sills as shown and secure

these with ACC. They should be touching the brake levers. A brake rod guide can be created and added with a small piece of 0.010" wire and secured into the crossbearer just in front of the cylinder, as shown.

◇ Bend the etched ladder stiles. The side stiles are straightforward. While these can be bent using a steel ruler and a single edge razor blade, it is far, far easier using a tool like the one highlighted in the Tools section of these instructions. The right stile on the ends has a "kink" at the bottom to accommodate the wider bottom rung. First, using a chisel blade, cut through the two small half-etch lines that are perpendicular to the stiles. This will allow those smaller sections to be bent independently from the longer section. Bend them first and then bend the longer section last. See photos for reference.

◇ Create the ladders using the etched ladder stiles and rungs. This is one of the most tedious and time consuming parts of the kit, but will result in close to scale-sized ladders that are more durable than styrene (and if a rung does get slightly bent, that is entirely prototypical!) If you feel that the assembly of these ladders is not feasible for you, you can use Kadee PS-1 box car ladders, but know that the sill steps will not be integral with the bottom of the ladders on the sides and the single, wider rung at the bottom of the end ladder is not available from Kadee so you will have to accept the two wider rungs at the bottom on the Kadee ladders. While I am certain that there will be many techniques shared as people become familiar with this type of ladder construction, here is what I came up with. If using the Yarmouth ladder assembly jig, ensure that the stiles are not secured rigidly in the jig; a little play will make things easier. Using 0.010" wire or 0.010" styrene rod (from Plastruct, but not included in the kit as I have obtained it to be spotty) add the first rung to the ladder (the stiles should be in the jig at this point.) To do this, using tweezers, transfer a rung to your thumb and index finger, holding the rung with an end (and hole) visible. Place a small piece of the 0.010" wire or rod through the hole situated such that your index finger prevents it from falling through, but so that there is enough showing to get your tweezers back in there and still have some rod/wire below the tweezers. With the rod/wire grasped with the tweezers, the tweezer's tips act as a stop to prevent the rung from sliding down the wire/rod. Carefully stick the end of wire/rod *below* the tweezers into the stile and let go. The rung should slide down and rest on the face of the stile (it is important that the hole where you are adding a rung is backed up by the jig, if using the Yarmouth jig or else the wire/rod will simply slide through.) Carefully secure the second hole of the rung into the other stile with another piece of wire/rod. Secure the rung in place either with ACC if using wire or tacked in place with liquid styrene cement if using styrene rod (the benefit of the styrene rod is that it allows some "play" as you build the ladder and ACC will be added to firm things up after the ladder is assembled.) It is highly recommended that the top and bottom rungs are left until after all of the others have been installed as assembly has proven easier by doing this and should you choose to "pin" a ladder by running wire straight through into the car

body when attaching the ladder, the top and bottom rungs are the logical places, even if only one hole in the rung is pinned. Add ACC sparingly to the front of the rung/stile joint and add more to the back where the wire/rod passes through. Once dry, trim the wire/rod close to flush with the face of the rung and trim the back, as well, although it need not be flush as this part is mostly hidden by the angle of the ladder stiles. I promise to post a video of this entire process to youtube for reference as the text may be confusing. Once that is done, a revised version of these instructions with a link will be uploaded here.

◇ The side ladders require the addition of the bracket at the bottom that serves as the mount for the stiles to the end sill and also includes an integral sill step. I highly recommend using the [Scale Hardware brass rivets](#) to assemble the ladder brackets to the stiles. Because they have a head that won't pass through the holes in the stiles and brackets, they allow things to be loosely tied together until glued, which mitigates what could be an extremely frustrating experience if attempted with just wire or styrene rod. My approach was to assemble the mounting brackets to the ladders, secure all with ACC and then mount the ladders to the sides and ends. A lot of text here is likely far more confusing than pointing you to the prototype photos included herein (of an extant Maine Central PS-1, but the details are similar.)

◇ Mount the ladder assemblies. First remember that once the ladders are attached, all handling of the car should be by the middle area; avoid the ends so that you do not damage the sill steps. It is recommended that the ladders be mounted using a mix of Scale Hardware rivets and wire. Start with the side sills where the ladder is mounted. Drill two quite oversized holes in the bottom of the side sill where the ladder will be secured. Because the holes are oversized, there should be a little wiggle room. Add 0.010" into the holes and slide the ladder mounting holes over the wire. Gently hold the ladder in place and mark the locations of the holes for the middle and upper ladder brackets on the side. The push pin or needle solution works well. Remove the ladder and drill the holes in the side, again using an oversized drill (no. 77 or 78 is good). Once all the holes are drilled, replace the two pieces of wire in the bottom of the side sill and relocate the bottom brackets using their holes. Using ACC, secure the bottom in place. Due to the size of the holes, you will have a few moments to gently push or prod the ladder into a permanent straight position. Add wire and/or Scale Hardware rivets and secure the remaining brackets with ACC. Note that if the post of the brass rivets is longer than the hole, then they will not be able to go in all the way; adjust your hole depth or shorten the post/leg of the rivet. Exhale!

◇ Add the end ladder. Repeat the process of adding brackets to the stiles, marking the location of the holes, drilling the holes and securing the ladders with wire/rivets. Take care to ensure that the rungs on the end ladders are as closely aligned with those on the sides as closely as possible.

◇ Add the uncoupler lever brackets (if you are doing that.) Begin by removing them from the etched parts fret. The part requires three bends. They can be handled with tweezers and

pliers. To get a sense of how the final part should appear, please refer to the Maine Central PS-1 detail photos. Once ready to attach, follow this protocol: holding the part roughly in place with tweezers, get a sense of where the middle of the three holes should be located and mark and then drill it, using an oversize bit, such as no. 77 or 78. Using a piece of wire, place the bracket and mark the other two holes. Remove the bracket and drill the other two holes. Put the bracket in place with a piece of wire or rivet in the center hole and add a sparing amount of ACC. Add the other two pieces of wire or rivets and secure with ACC. Before the ACC fully sets, move the part around so it is straight. Repeat on the other car end.

◇ Add the lower right grab irons to the end sills. Use the photos of the prototype and completed model as a guide. A good technique is to add the right bracket, add the grab iron and secure into the right bracket, then locate the second bracket using the left hand hole in the grab iron. The round mounting portions of the grab must be bent either before or after it is attached, as shown in the photos. The brass rivets or wire may be used here. Again, it is recommended to drill oversized holes in the end sills to allow for some wiggle room to align things. Repeat for the other end.

◇ Add the grab irons at the right end of the second corrugation from the bottom. The following approach is recommended. Drill holes (again slightly oversize) in the troughs between the first and second and second and third ribs to attach the legs of the right bracket of the grab iron. Attach the grab rung through the whole of the bracket with a brass rivet or wire and secure with ACC. When dry, trim most of the "leg" that is in the rear portion of the bracket. Attach the bracket using either brass rivets or wire and secure with ACC. Determine where the left bracket should be located using the grab that is attached and the bracket that remains to be attached by temporarily placing the bracket and grab together using wire or a brass rivet. Carefully mark the locations of the holes for the bracket. Remove the bracket and drill (slightly oversized) holes. Carefully arrange the bracket and grab in place using wire or brass rivets and secure with ACC. The oversized holes should provide a little "play" to straighten things, if not straight already. Repeat for the other end.

◇ Add the hand brake brackets to the end. Add the hand brake housing brackets using the etched parts and following the prototype and model photos for location. You may be tired of hearing it, but once the location is established drill slightly oversize holes and secure the brackets using wire or brass rivets and ACC.

◇ Determine the level of detail you wish to add for the hand brake housing, chain, and brake rod. The Tangent part includes simulated chain, rod, and clevis. The model illustrated in the instructions used chain, wire, and a Tichy turnbuckle (although one of the etched clevises or the one on the Tangent parts could be harvested and used.) Regardless of whether you are using the Tangent parts "as is" or replicating the detail of the model, first "open" the hole for the wheel as the Kadee Miner wheel has a wider post than the hole on the Tangent part will accommodate.

Next, add the bell crank. The bell crank is a combination of an etched bracket with the Tichy bell crank, part AB-22. Remove the "ears" from the Tichy bell crank and fit it into the etched bracket. Consult the photos. Mark the Tichy part through the holes in the etching with a push pin or needle. Remove the Tichy part and drill through. Use wire to secure the bracket and bell crank together with ACC. The bracket and bell crank is mounted between the draft gear and the first stringer and secured with wire as many of the other etched parts have been. Drill slightly oversized holes in the bottom of the end sill and floor to match the two holes in the etching. The bell crank extends below and out from the end sill as shown in the photos. Secure the etched bell crank bracket using wire and ACC. Once dry, trim the excess wire. If using the Tangent parts "as is" you can mount the hand brake and secure the clevis over the bell crank, as shown in the photos. This requires carefully placing the Tangent parts to ensure that the hand brake housing is on the brackets *and* the clevis slips over the bell crank. If creating from wire and a turnbuckle (not included) or etched clevis, and possibly chain, add those per the photos. The chain and wire were added to the hand brake housing by gluing a loop of wire, connected to the chain, into a hole drilled into the hand brake housing. All of this was left dangling as the hand brake housing was glued to the brackets. The wire was then trimmed to length to ensure that the clevis would slip over the bell crank.

◇ Add the pressure retainer valve to the left of the hand brake housing. Pre-drill the dimple in the part with a no. 80 drill to accept 0.008" wire to simulate the pipe. Drill a hole in the car end to accept the "post" on the retainer valve part. Using ACC, glue the retainer valve in place and oriented with the hole pointing down. Add 0.008" wire, creating the gentle bends as shown, with the top of the wire inserted into the retainer valve. Secure with ACC.

◇ Add the Miner hand wheel. Due to differences in the materials, it is suggested that the part be tacked in place with an adhesive such as Goo, Barge cement or canopy glue followed by ACC to firm things up.

◇ Add the running boards. The edges of the etchings must be carefully filed to clean up any burrs. The "mounts" or "straps" on the latitudinal portion of the running boards (the corners) are too long. You can trim them to length using cutters, such as those from Xuron or [ones like these](#). On the model shown here, holes were drilled in these "straps" and they were secured to the roof eaves with brass rivets. You have a choice in how the end supports are represented. The ends can be bent to simulate the angle under the end of the running boards along with the diagonal supports. This is the "simple" method. However, this results in diagonals that mount too low on the car ends compared to the prototype. To remedy this, you can cut the diagonals and mount them separately, as shown on the model in the photos. The ends of the diagonal supports were secured to the car using brass rivets through the holes in the supports. To attach the running boards, it is recommended that you choose an adhesive designed for dissimilar materials. Suggested ones include canopy glue, Ultra

Glue from Ammo, Goo, Barge cement, etc. These adhesives can be enhanced by adding some ACC at the edges, as well. Once the running boards, including supports, are attached, add the corner grab irons. These are bent (by you!) from 0.010" wire with corner eye bolts fashioned from 0.008" wire. The holes in the latitudinals are pre-etched. Secure these grabs and the eye bolts with ACC.

◇ Add the Kadee bracket grab irons to the sides. There are dimples to aid in drilling these. We recommend a no. 75 drill bit. The brackets grab irons are a press fit in the holes.

◇ Add the sill steps at the lower left corners. The step portion is attached to the brackets (using the holes in both the step and brackets) either with wire or brass rivets, similar to the assembly technique on the ladders and their brackets. The assembly is attached via holes in the bottom of the sides at the corner. It is again recommended that the holes be slightly oversize to allow for minor adjustments. Secure with ACC.

◇ Add the placard boards to the ends and the placard and route card boards to the doors. *Note that the placard boards on the ends and doors are different.* Those on the ends have visible bolt detail on the brackets.

◇ Glue the washers from the Tichy AB brake parts set to the styrene bolster cover plates, with the hole centered over the hole for the truck screws. You may also substitute your own metal washers if you choose.

◇ Add the etched brackets for the angle cock/air hose. These are mounted adjacent to the draft gear (coupler box). They are attached to the underside of the end by drilling holes and attached with wire secured with ACC. To these brackets, add the rubberized angle cock/air hose parts. These are secured to the brackets by using fine wire to simulate the U-bolts used on the prototype. The 0.008" wire included in the kit will work, although we have used even finer 0.006". The entire assembly can be secured with ACC. Consult photos for reference.

◇ Construction is complete! Before painting the model, we recommend lightly [sandblasting](#) all metal and engineering plastic surfaces with [aluminum oxide](#) to ensure that the paint will not chip or flake. This should be followed by a washing using liquid dishwashing detergent and a soft toothbrush, taking great care to avoid delicate parts and assemblies. Rinse thoroughly and allow to dry completely.

◇ We highly recommend painting using an airbrush. Prime the model with your choice of primer. The pilot model shown was primed with grey primer from Sty... While the general rule is to apply lighter colors followed by darker ones, for this model that was flipped. The roof, ends, and underframe (as well as trucks) were painted Tamiya black. After the paint dried for a day, these areas were carefully masked and the sides were given a light coat of primer where there was black paint overspray followed by a coat of [MiG Ammo 041 Dark Rust](#), a good approximation of the CNW's freight car red. Add [a gloss coat](#) to aid in decal adhesion.

◇ For decaling, our recommended approach is to apply the decals with only water. After sliding them in place (with a dull object) let them dry *mostly*. Apply decal setting solution by touching the edge of

the decal with a brush that has the solution on it and letting capillary action pull the solution under the decal. Again, let the decals dry thoroughly. After they have dried again, add setting solution over the entire decal and let that dry (and don't panic if the decals wrinkle or pucker a little when wet). After they have dried yet again, using a sharp knife, slit any areas where there are bubbles or silvering. Add setting solution. Keep repeating until all traces of air are gone. Add a gloss coat to seal the decals and hide the edges of the film. Add a flat coat. Weather to your preference, add reweigh and repack stencils, and [chalk marks](#), and your model is ready. Congratulations!

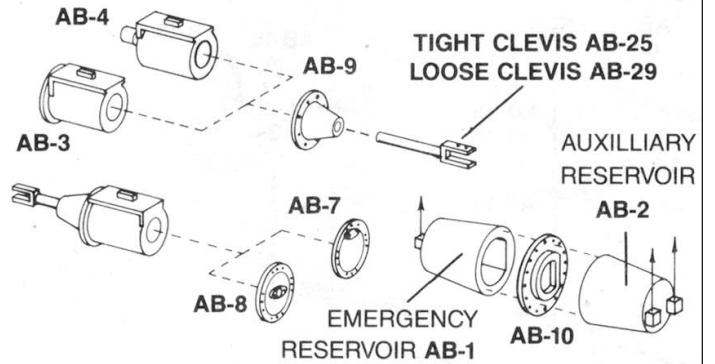
Thank you to:

- ▶ [Cartograf](#)
- ▶ Andrew Dahm
- ▶ [Kadec](#)
- ▶ [Moloco Trains](#)
- ▶ [National Scale Car](#)/Ryan Mendell
- ▶ [PPD](#)
- ▶ [Tichy Train Group](#)
- ▶ [Yarmouth Model Works](#)/Pierre Oliver

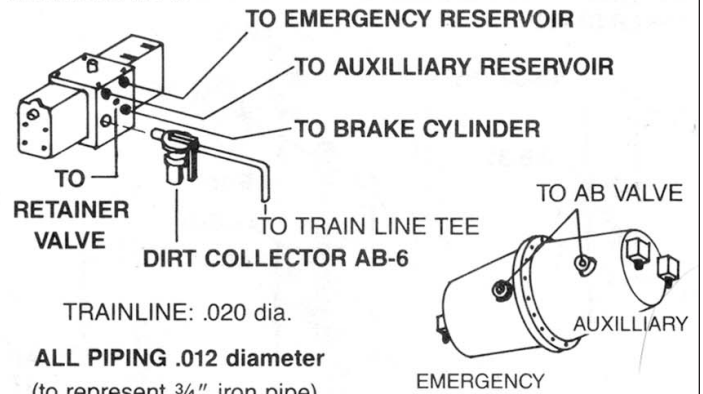
TYPE "AB" BRAKE SYSTEM PART #3013

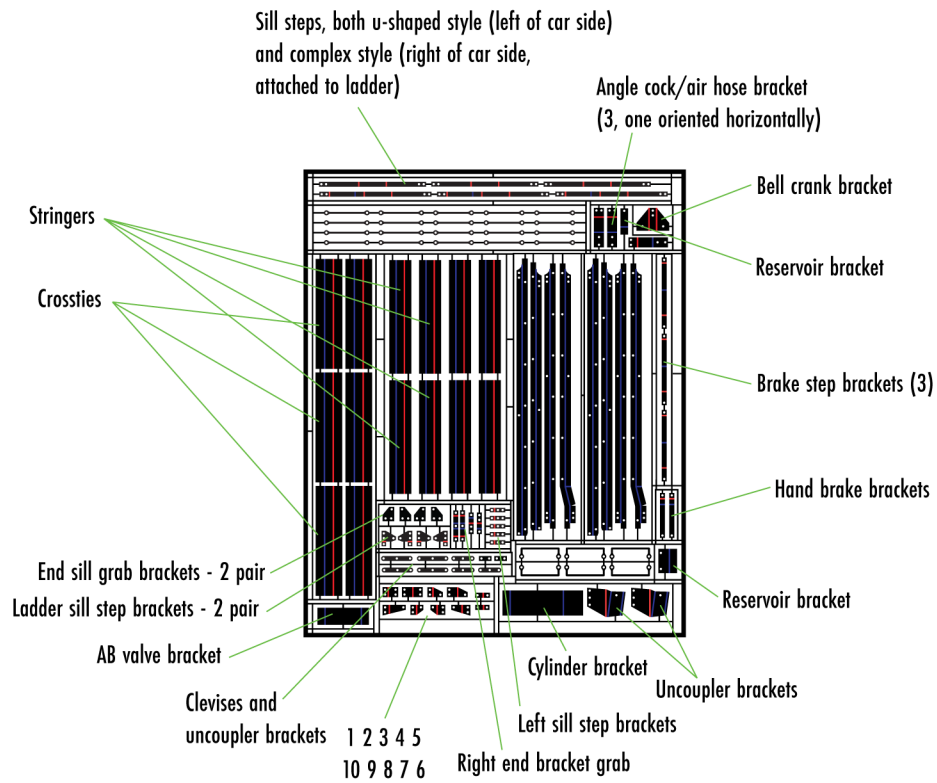
The major components are provided as multi-part assemblies to best represent the detail of the prototype, as well as allow you options to suit your specific application. The illustrations are a guideline only — refer to drawings and photos for your prototype. Several parts are included that are unique to specific TICHY TRAIN GROUP kits, and are referenced in the kit instructions.

Choose either **FLANGED AB-3** or **CAST AB-4 (modern) BRAKE CYLINDER**

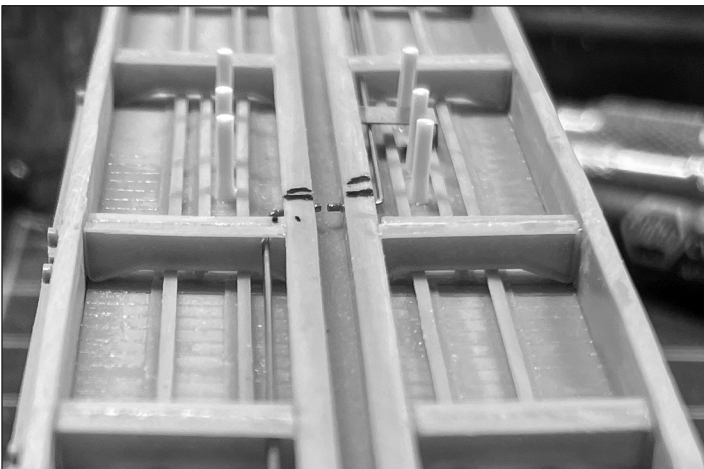
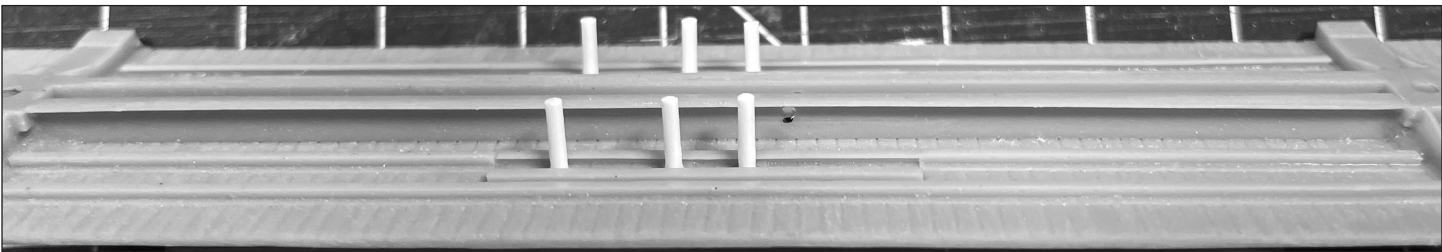
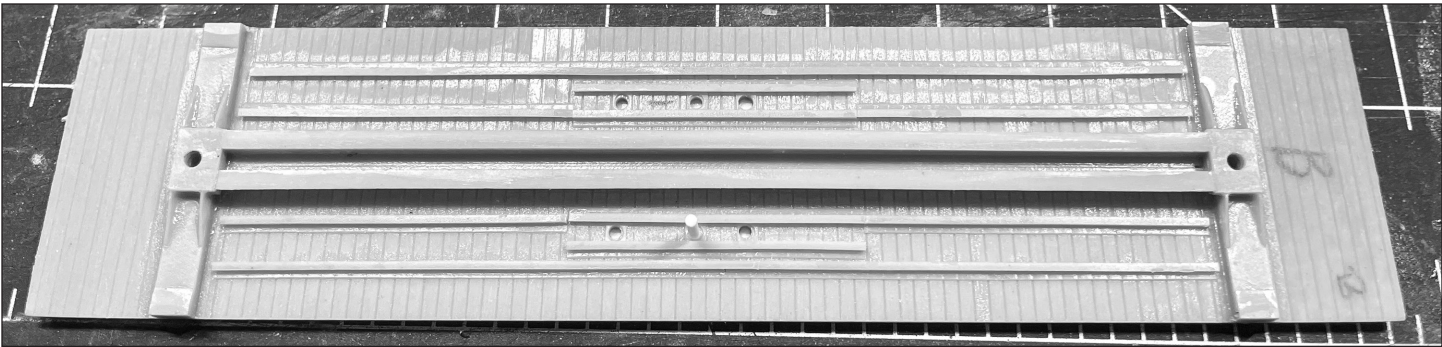


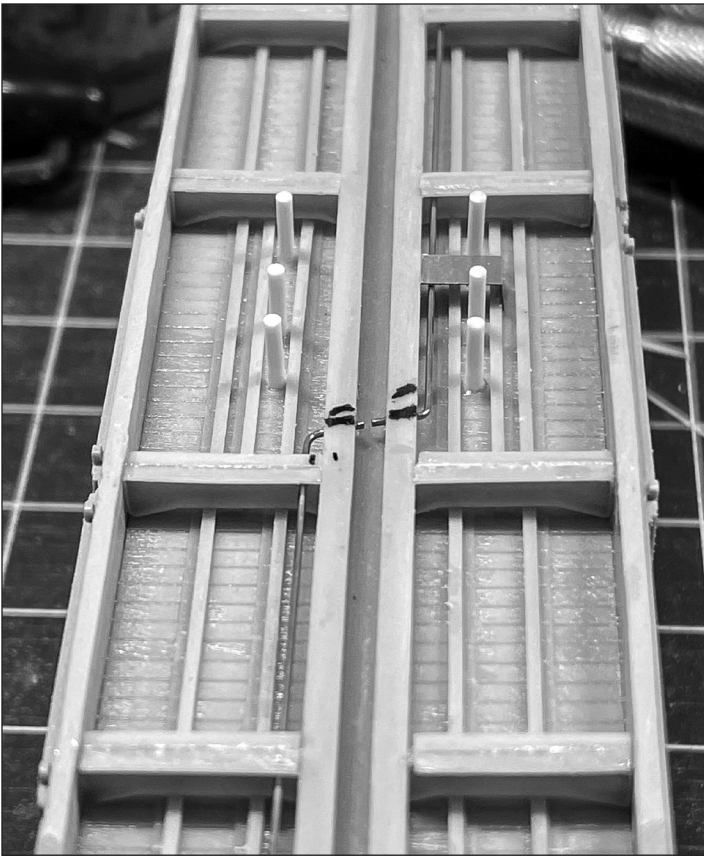
AB VALVE AB-5



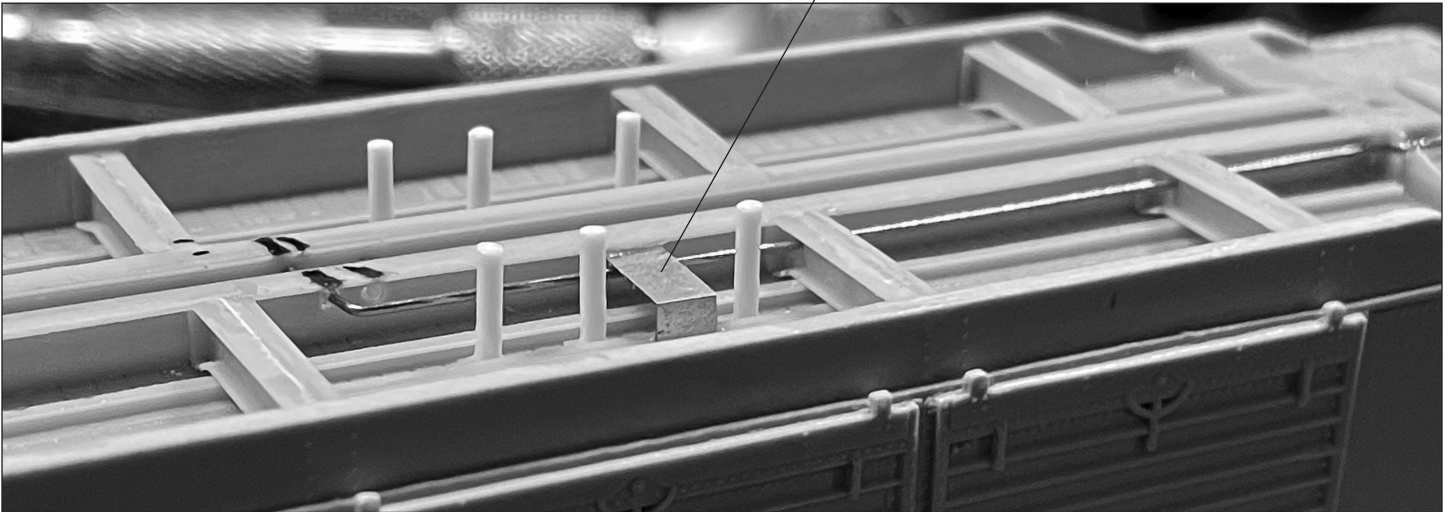


- 1-side ladder, top left
- 2-side ladder, top right
- 3-side ladder, middle left
- 4-side ladder, middle right
- 5-end ladder, middle
- 6-end ladder, middle
- 7-end ladder, bottom left
- 8-end ladder, bottom right
- 9-end ladder, top right
- 10-end ladder, top left

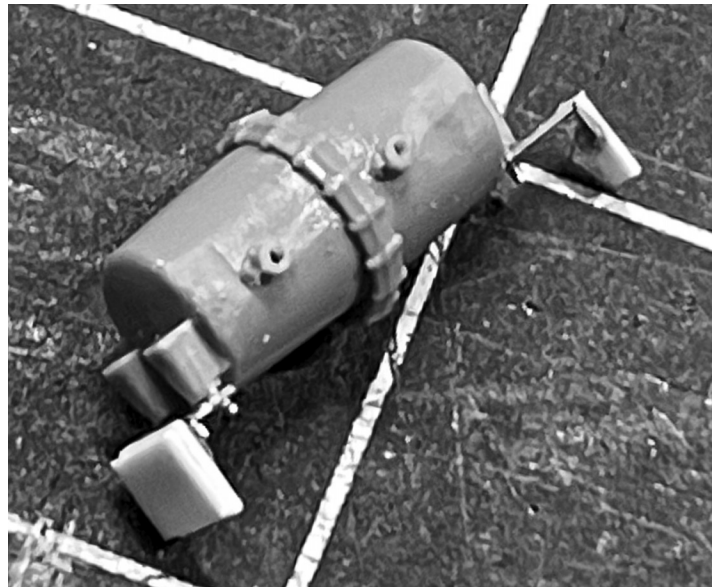
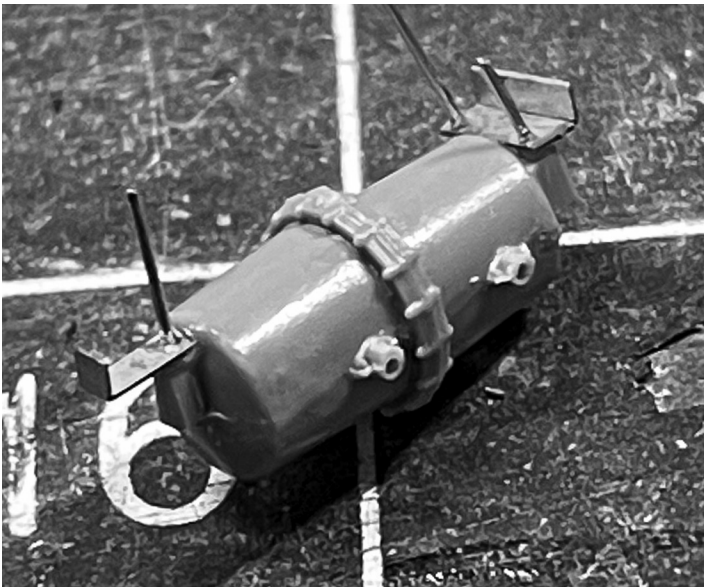




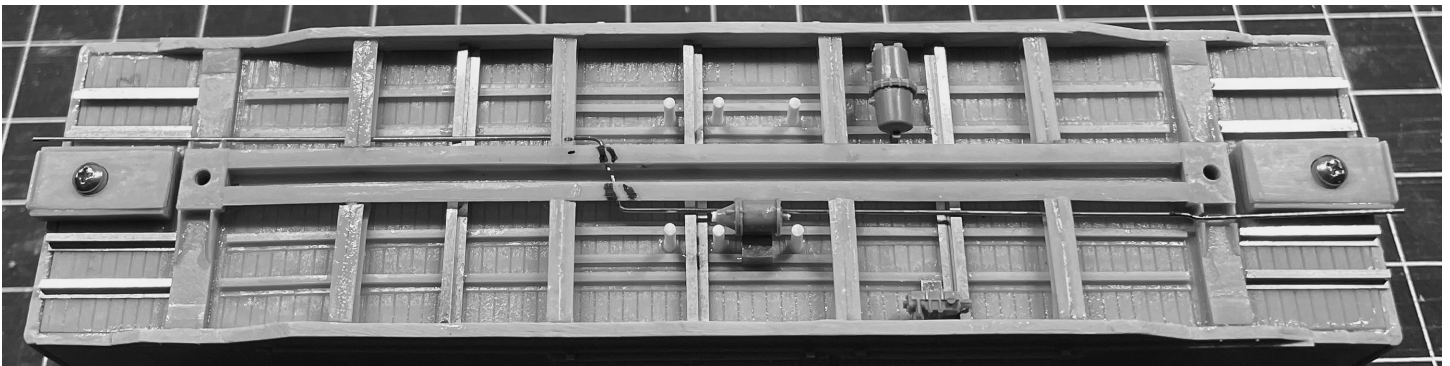
Cylinder bracket

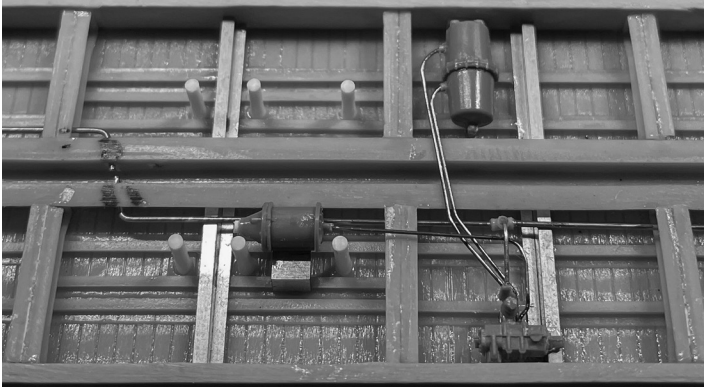
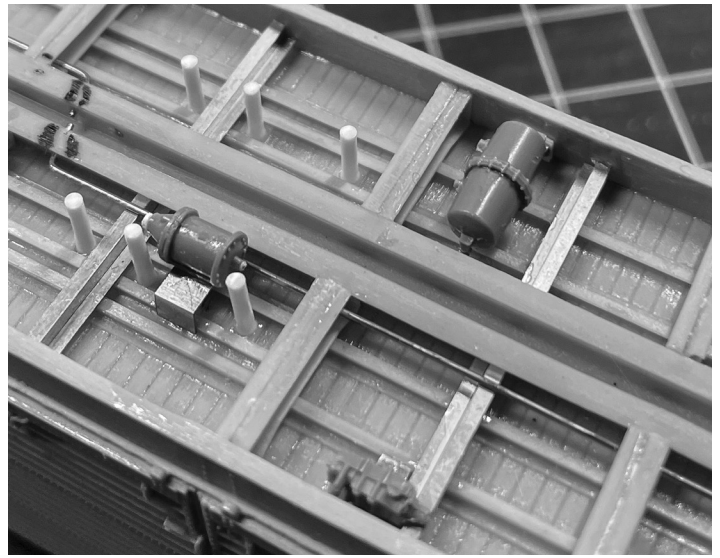


Crossties



Above and above, left - reservoirs



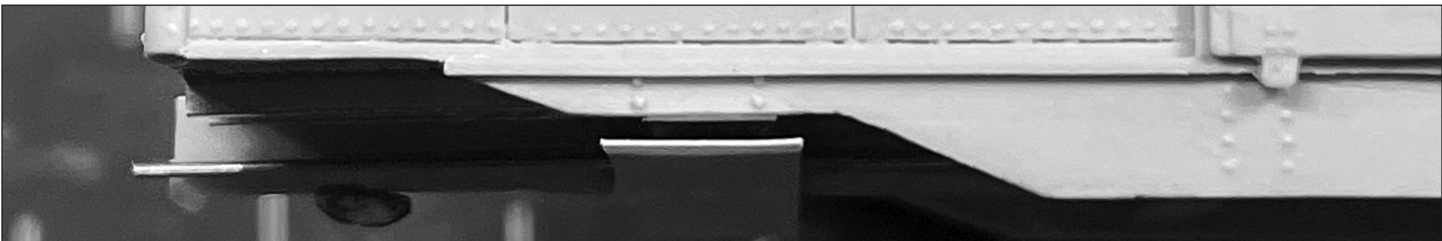
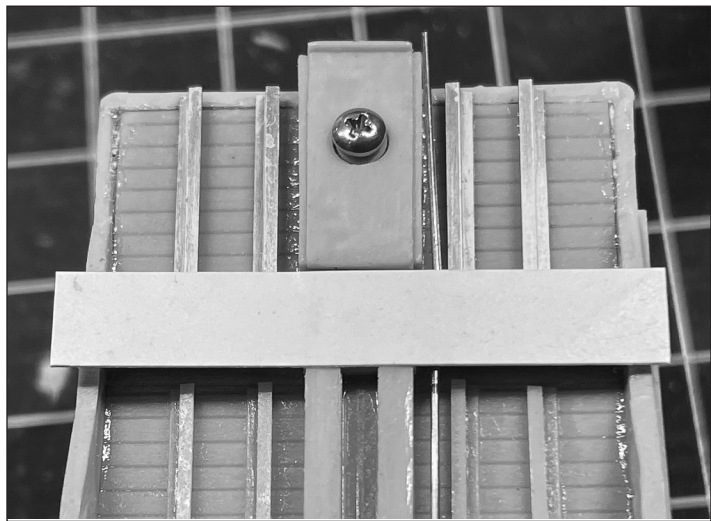
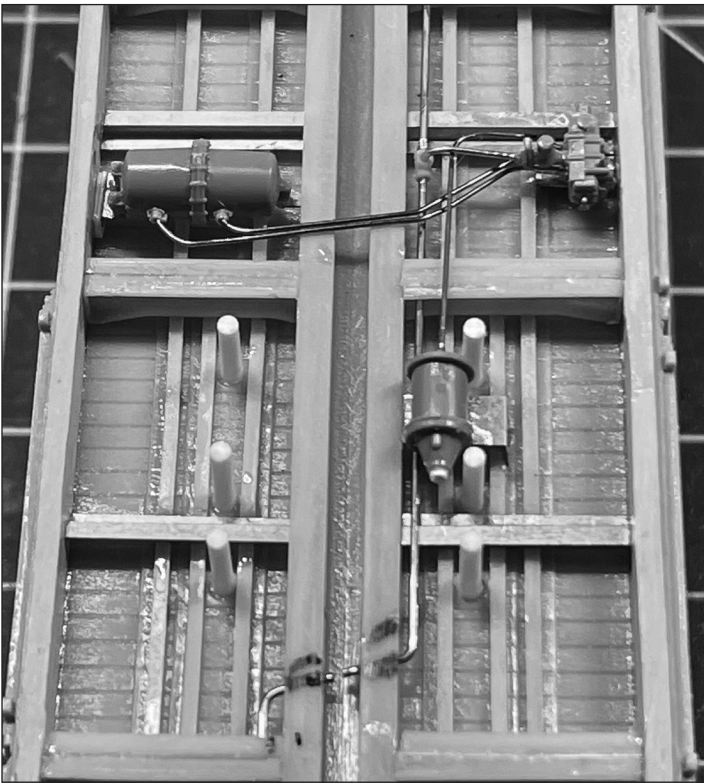
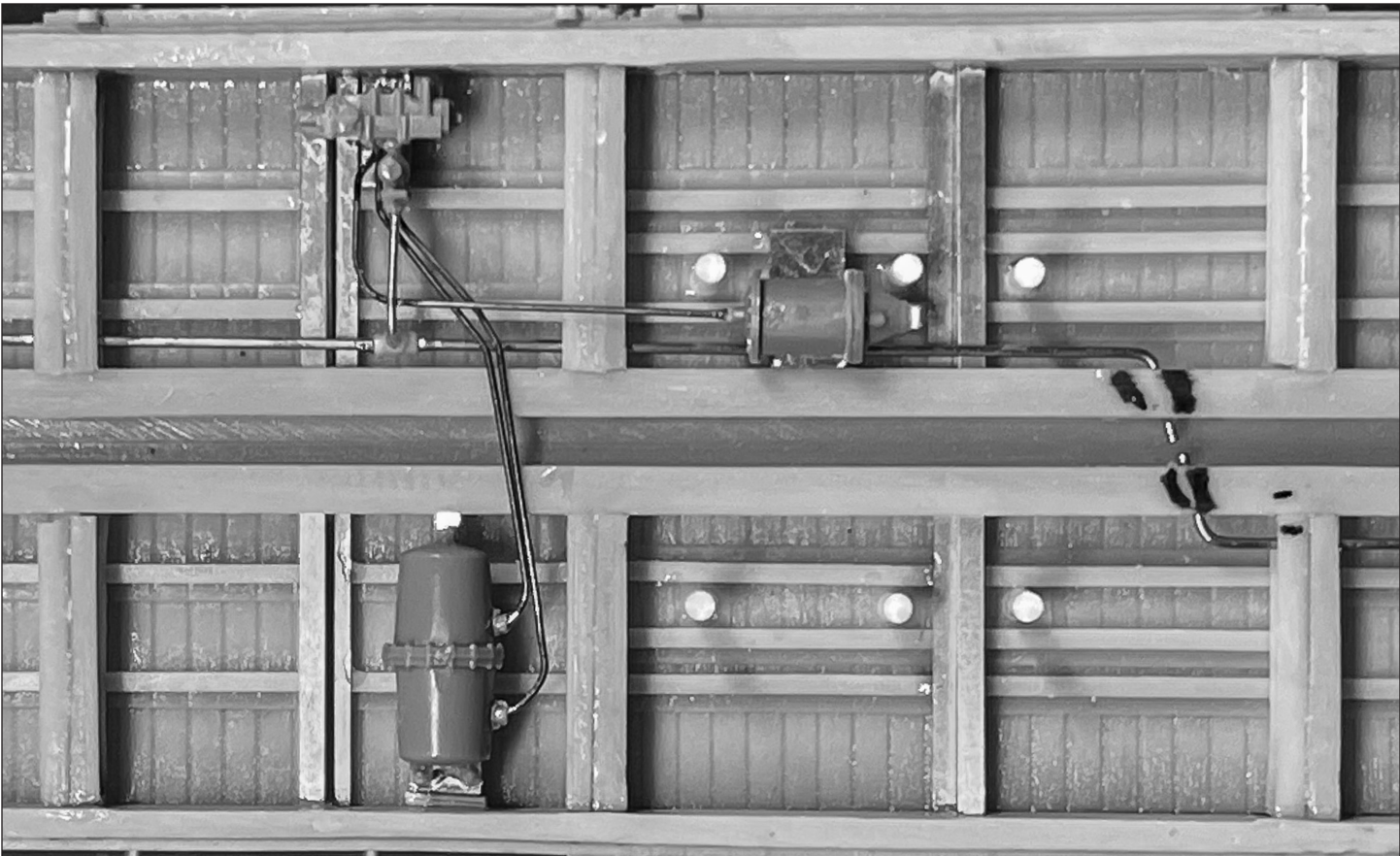


AB valve

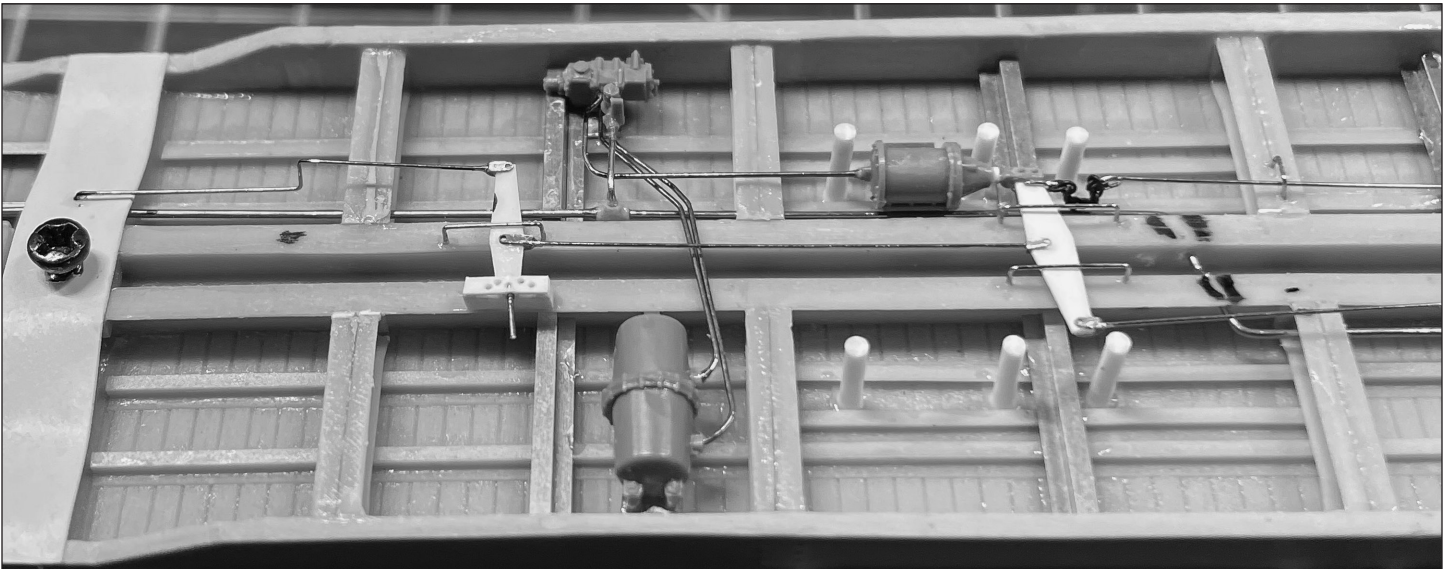
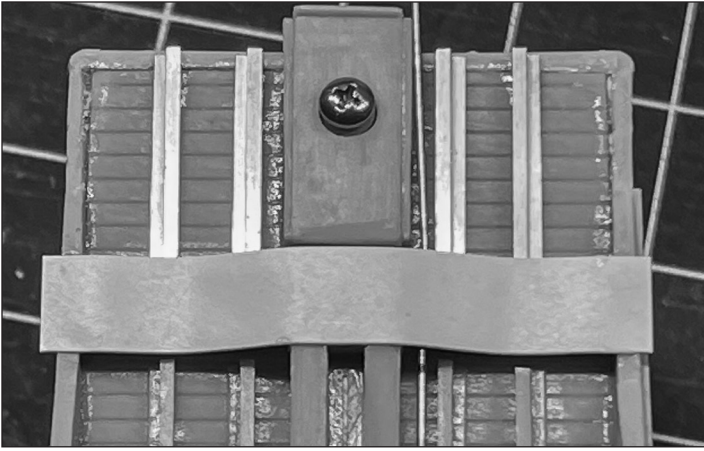


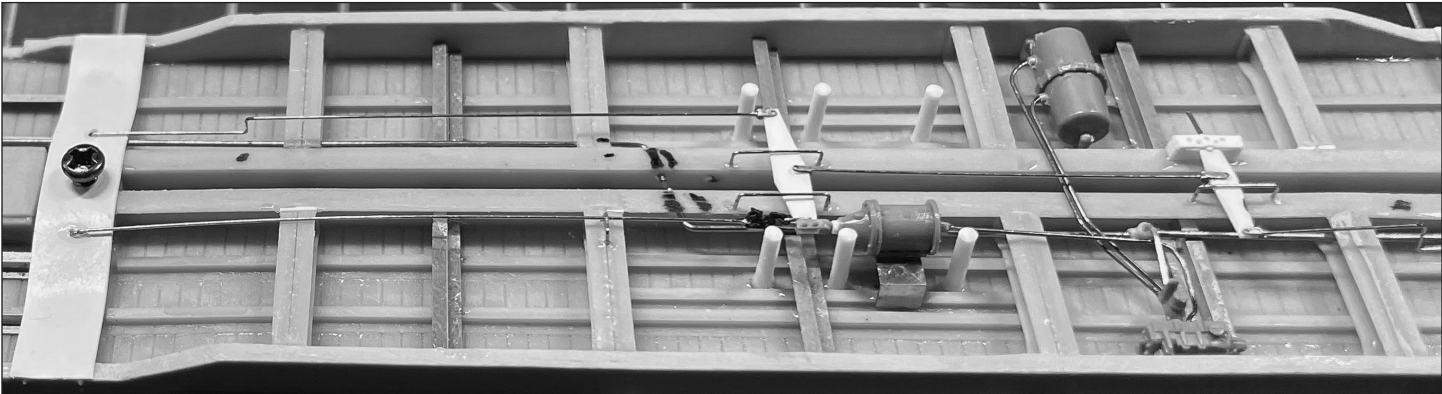
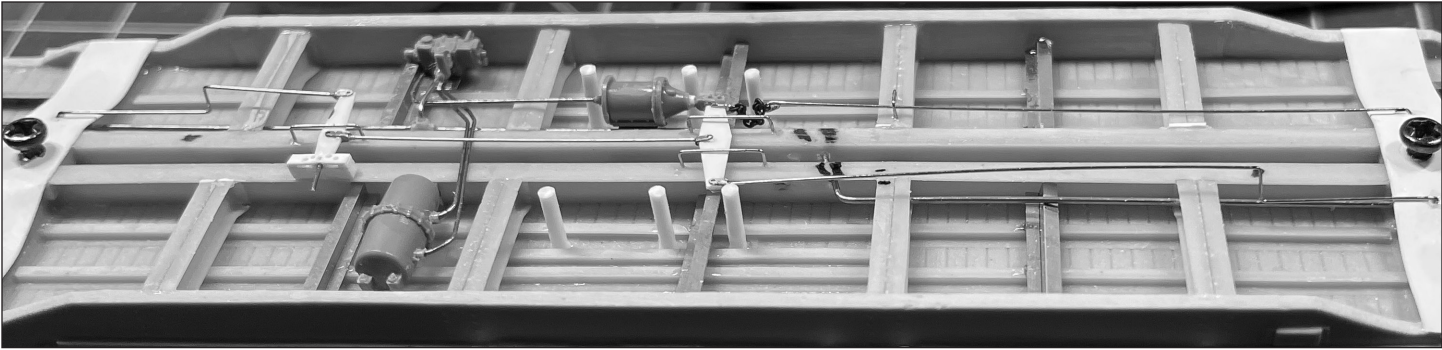
Cylinder

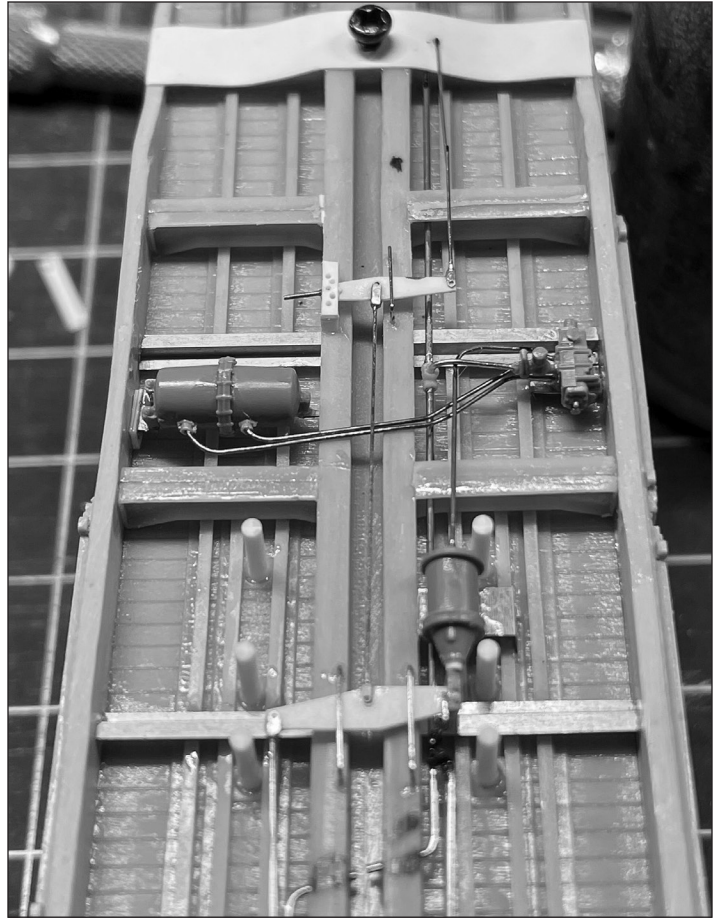
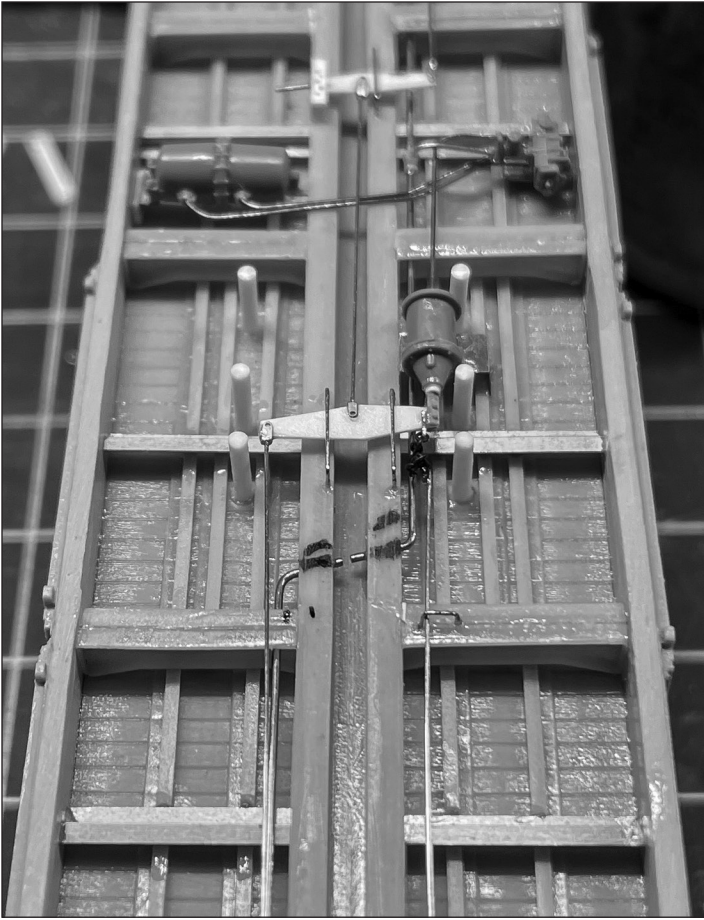
Reservoirs

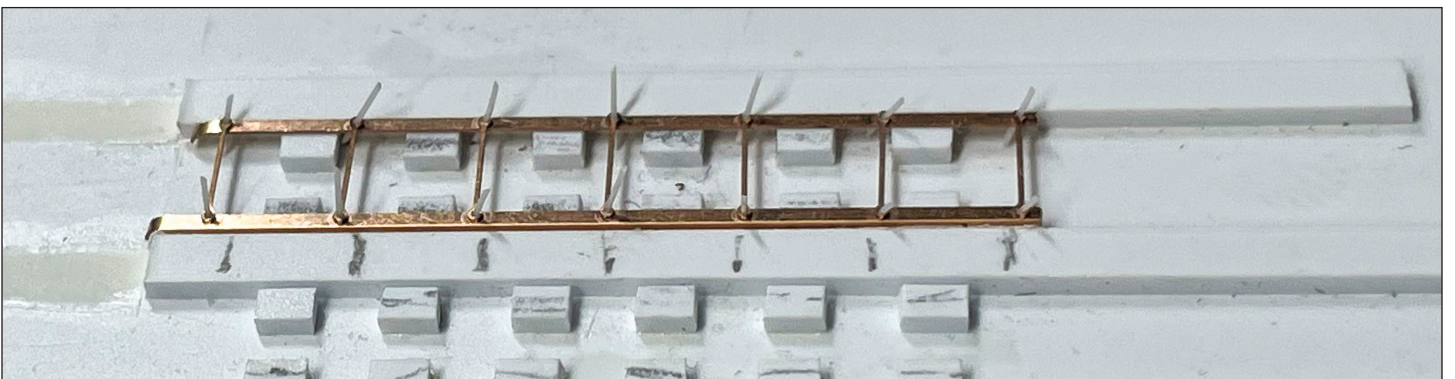


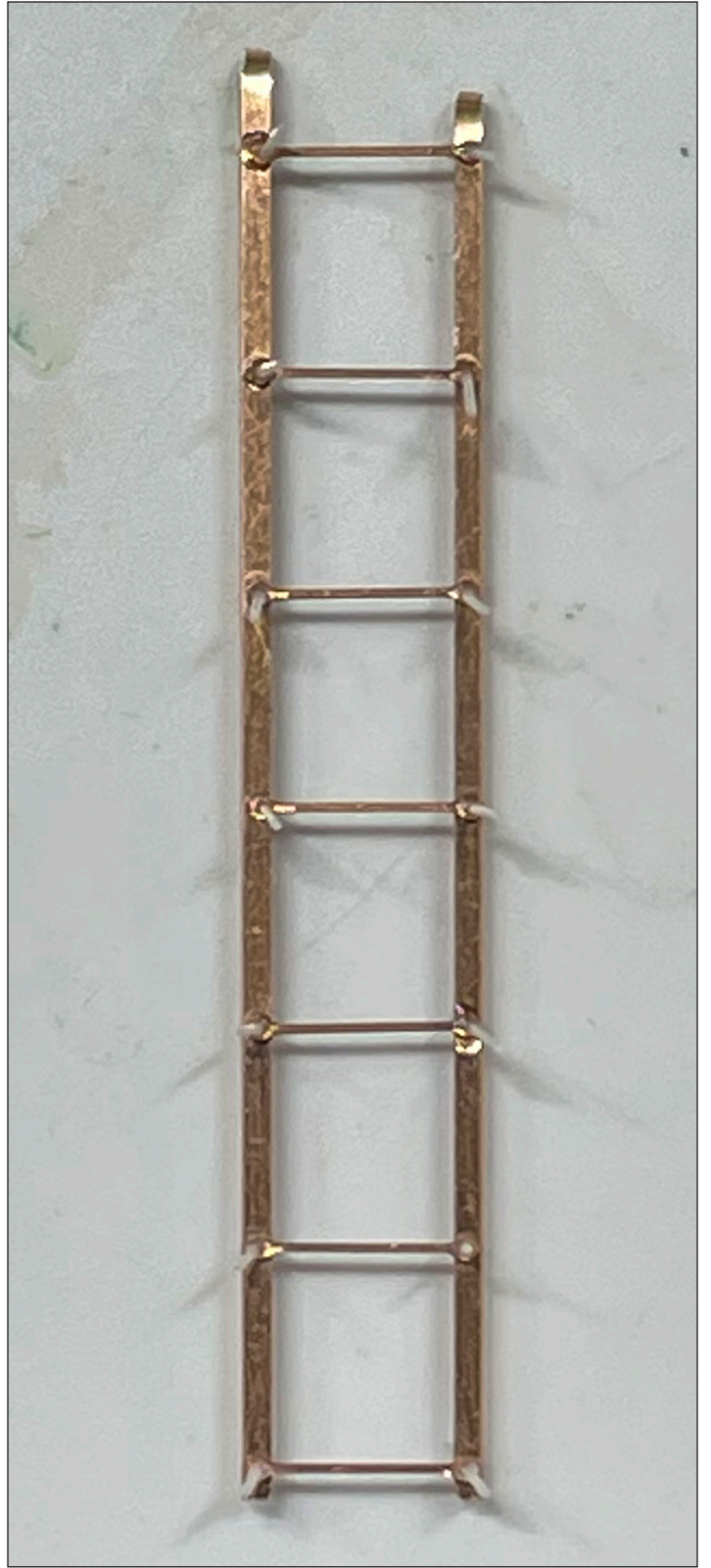
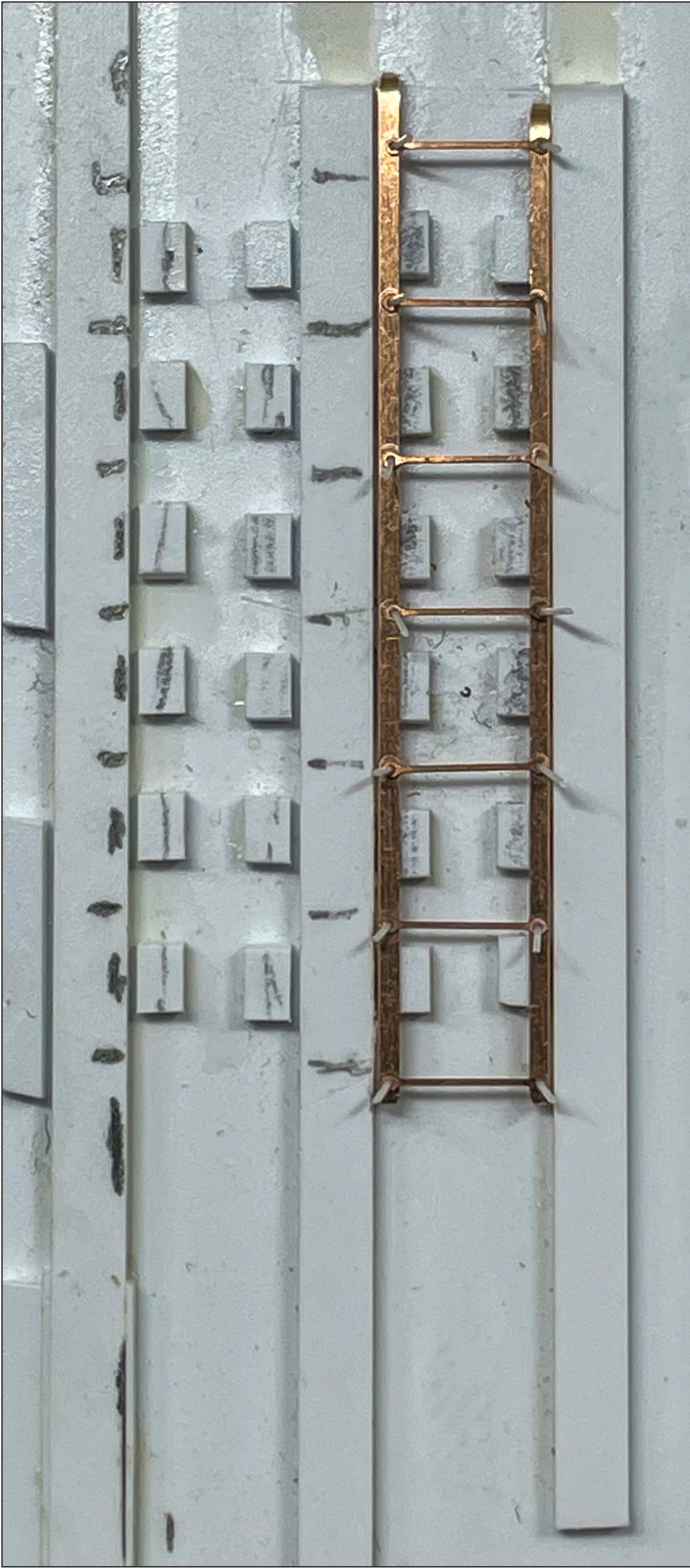
Above and above, left - reservoirs

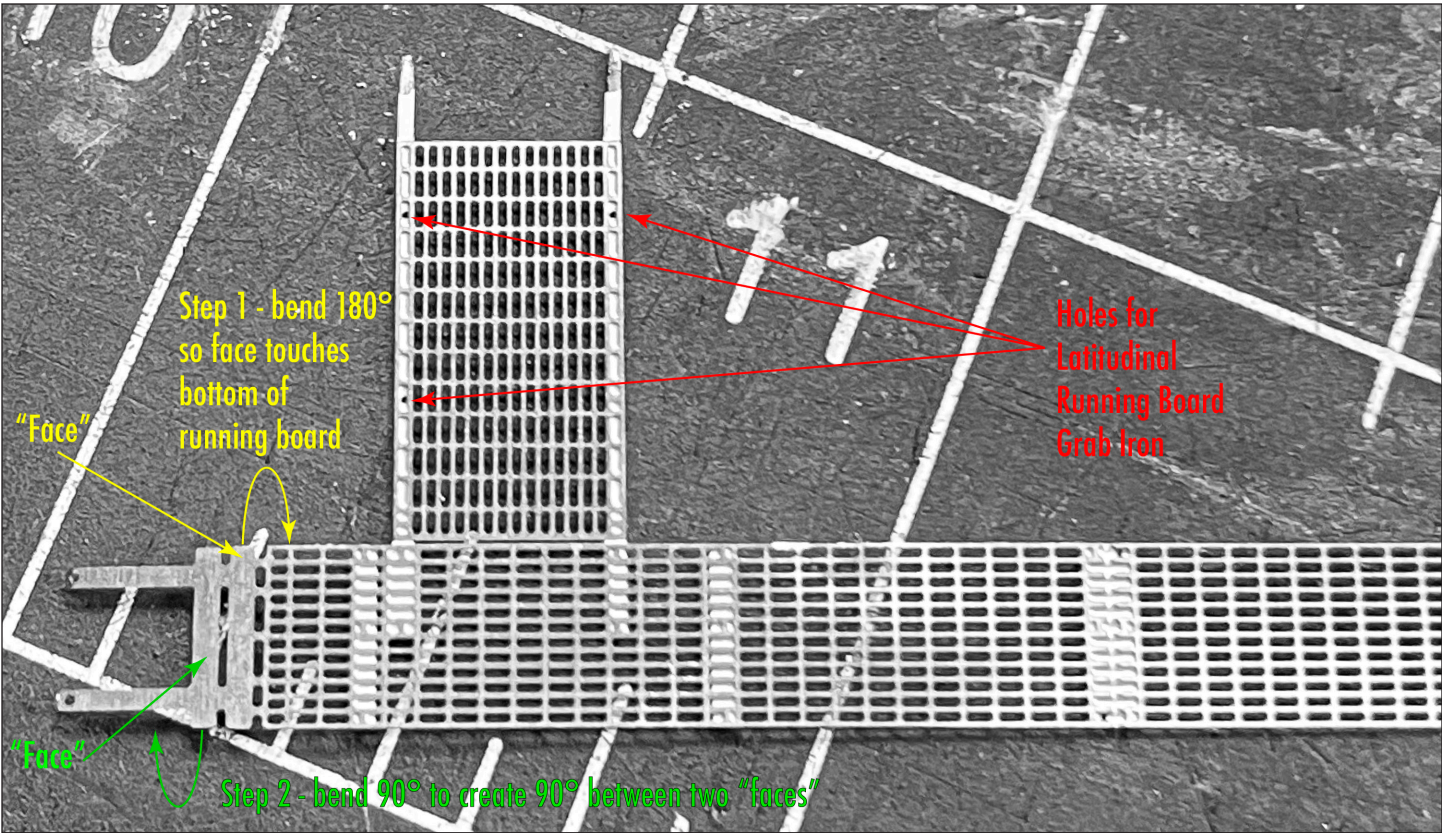




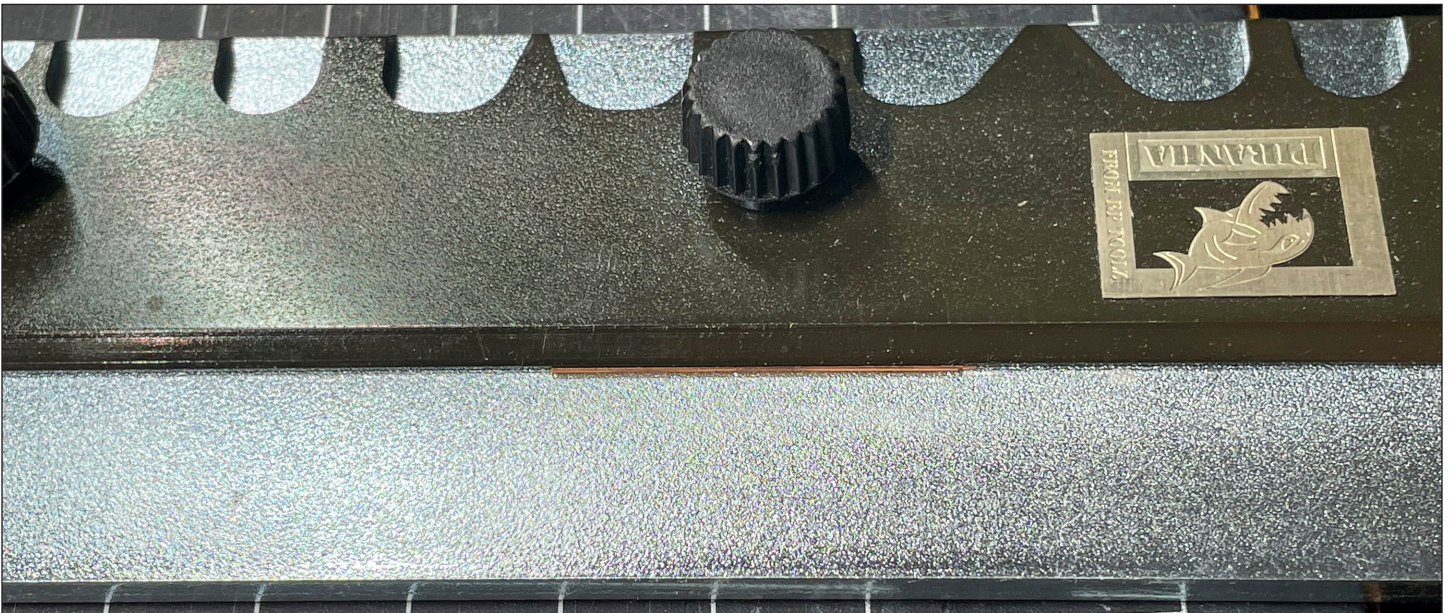
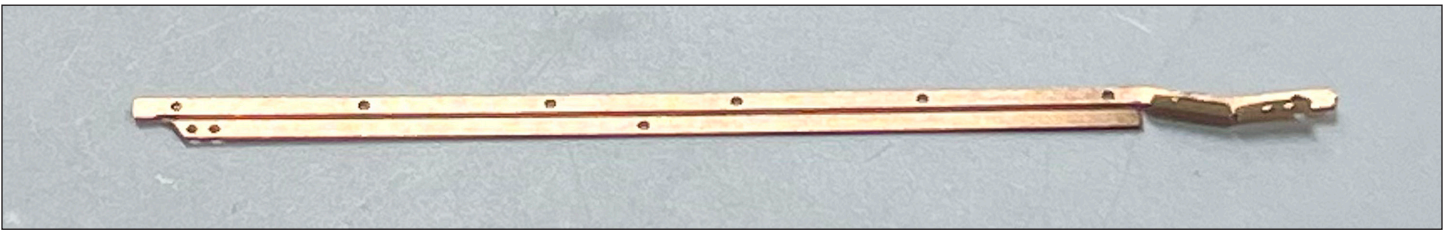




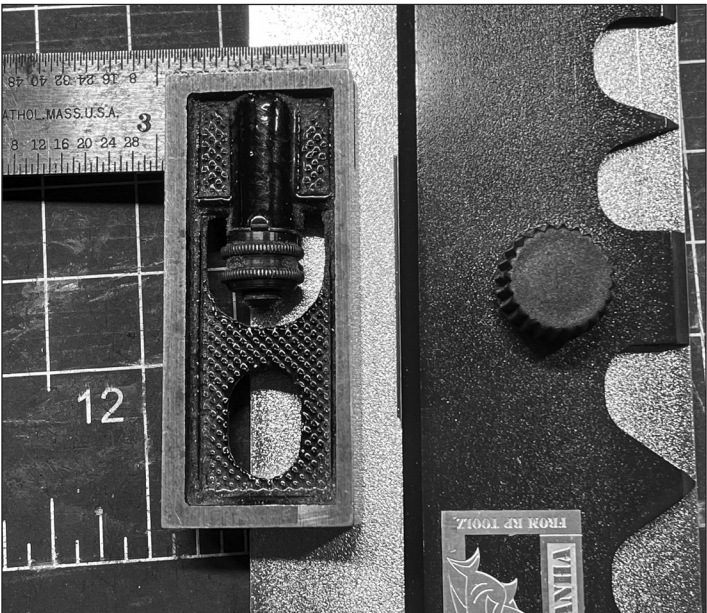








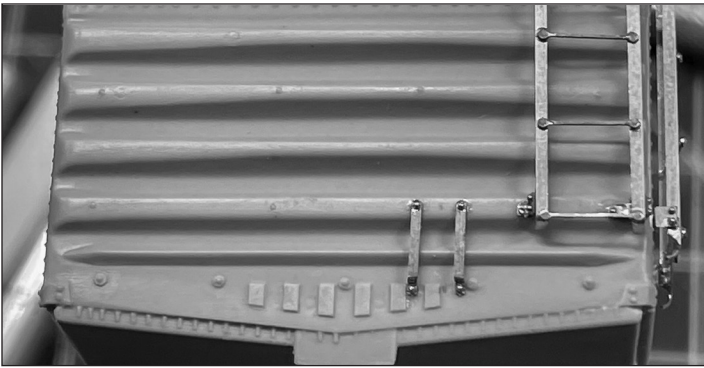
The three photos above illustrate how the right stiles of the end ladders are created. The small sections are bent first, followed by the main portion of the ladder stiles.



Above - the edge of a square pressed to sandwich the etched part between the square and the bending tool makes a good solution to "finish" 90° bends

Below - the stringers and the lower right grab iron are visible in this image

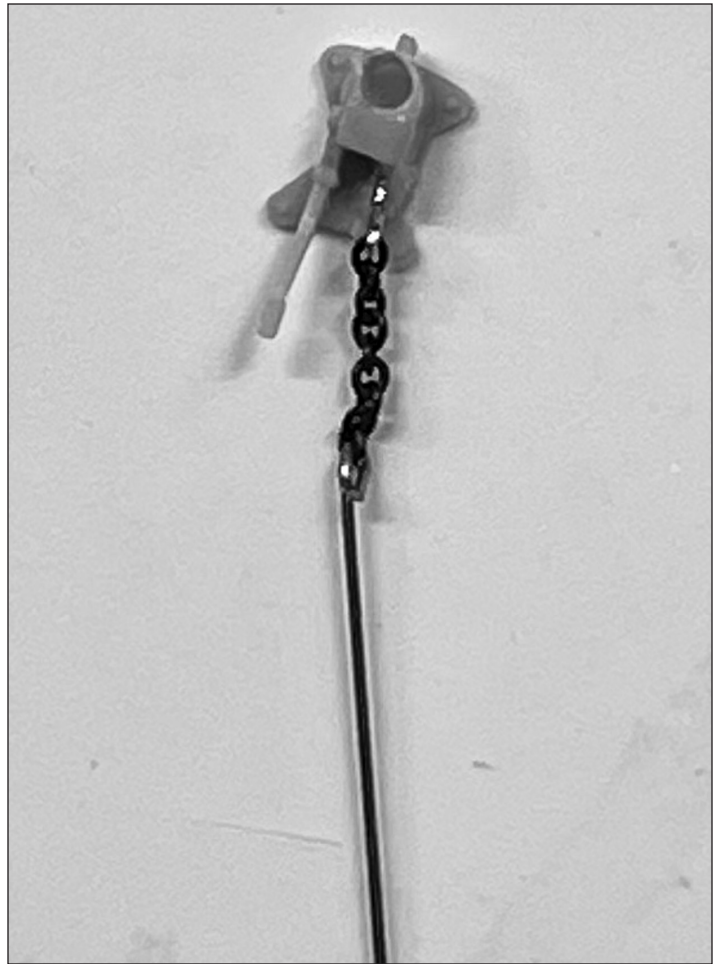




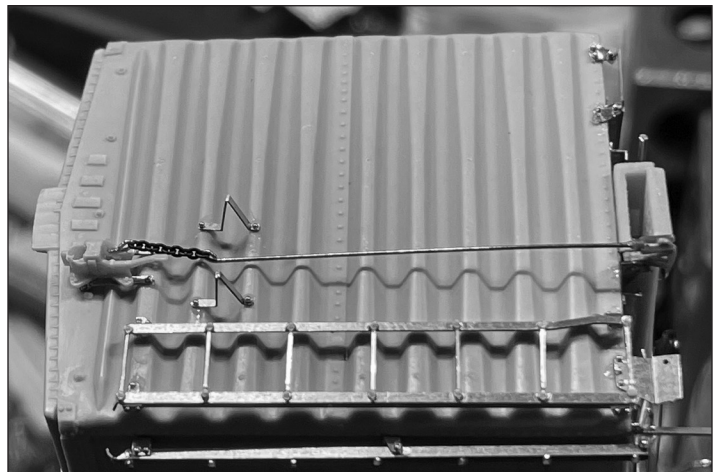
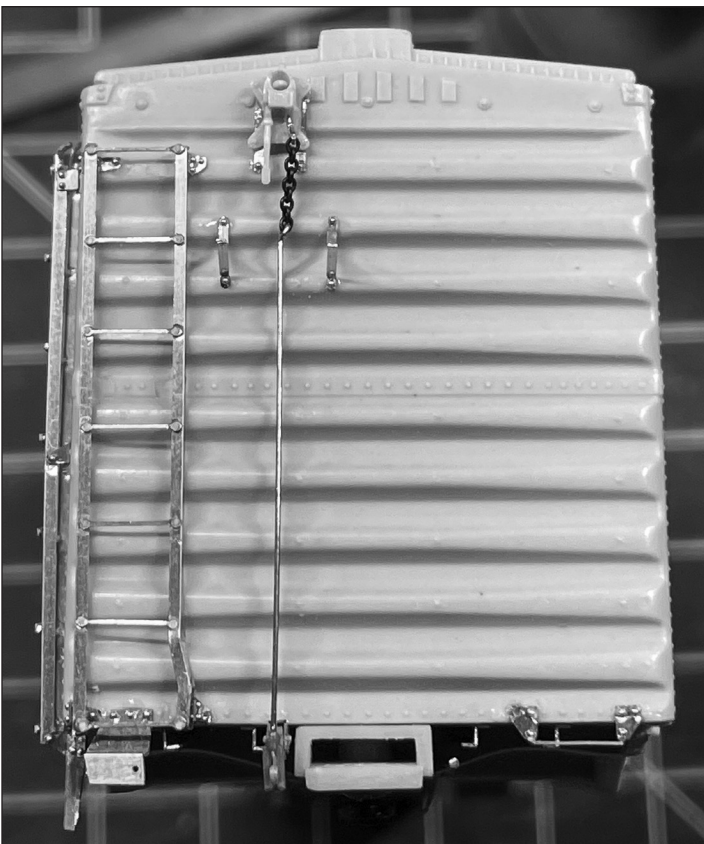
Above - the hand brake housing brackets added to the B end



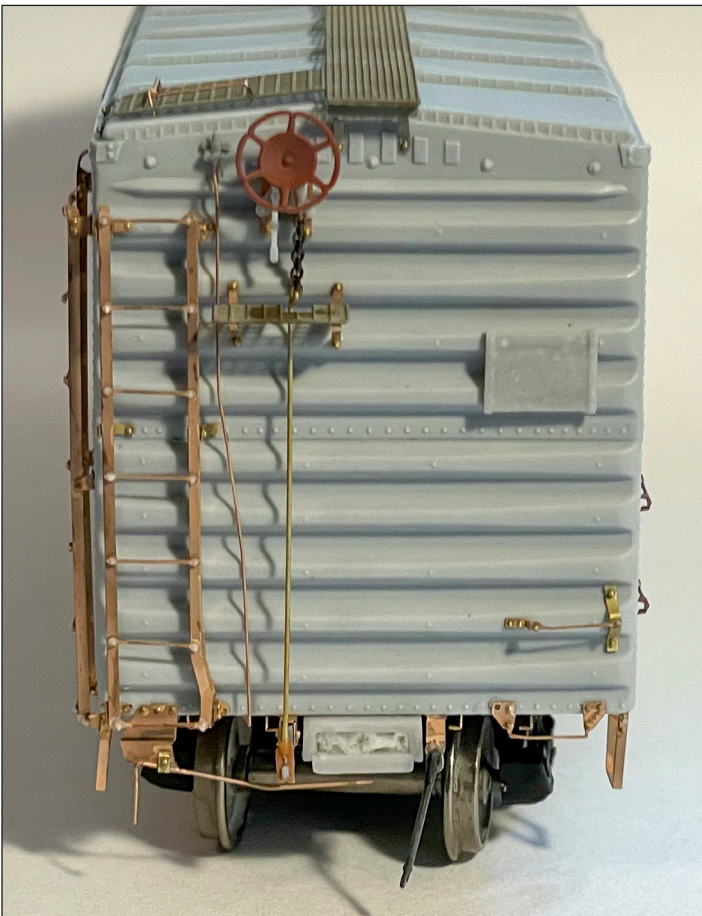
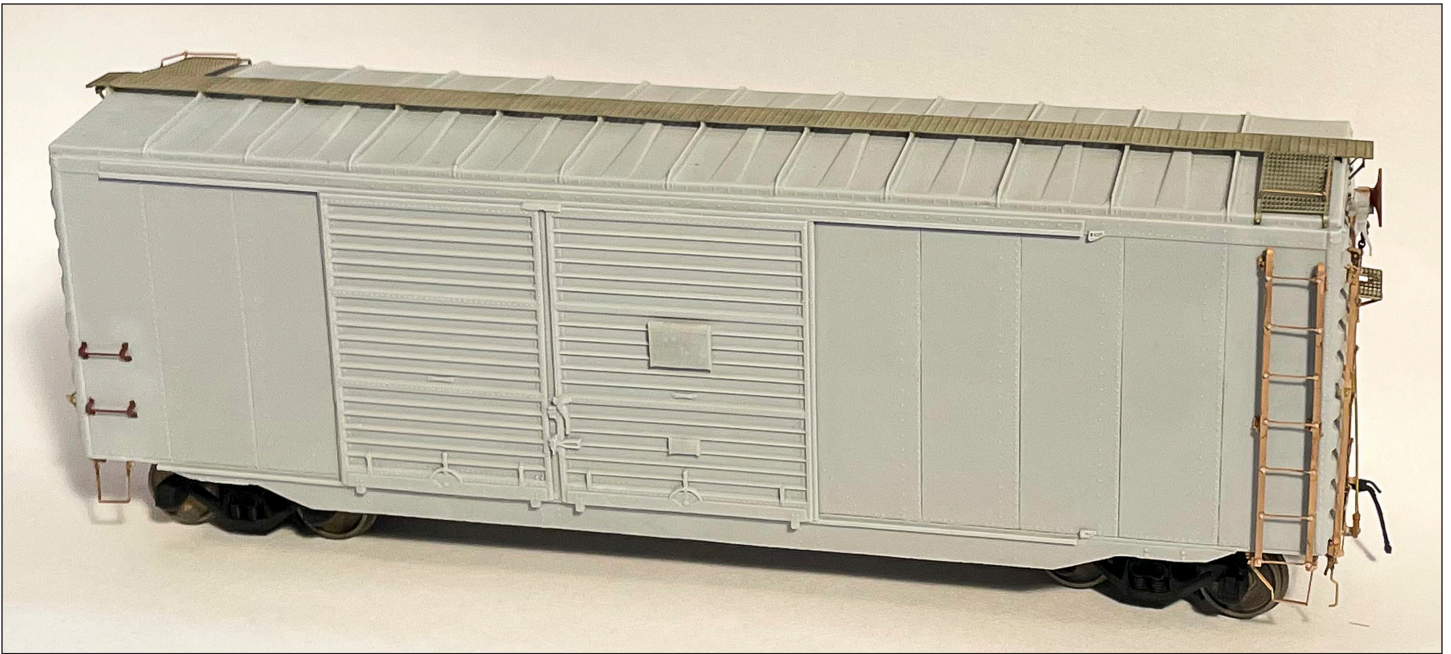
Above - bell crank and bracket



Above - Miner hand brake



Above and left - end detail including brake step brackets (brake step not yet added)



Below - note that the end placard boards have bolt detail whereas those on the side doors do not.

