

Making wagon undercarriages in HO scale probably can end up being the most difficult phase of wagon building. The technique explained here represents one Ringling style undercarriage for trucks on wagon #65.

Construction of the undercarriage becomes a separate project. It is built after the wagon body is completed and it is done this way for several reasons. The first is that all wagons are spray-painted including the undercarriage. The second reason is that if at some later date you wish to change the style of wheels and undercarriage, it is easier to remove the assembly without damaging the body.

Most of the wood used will be scale lumber. (Available from Kappler, Northeastern St Albert's. Check your local hobby shop for the brand they carry.) This helps take the guess work out of determining sizes. The rest of the materials are offered only as suggestions.

As a final note, certain deviations to this approach will have to be made with drop frame wagons and wheels that have different diameters between the front and rear sets.

## Making Wagon Undercarriages In HO Scale

DATE: None

SCALE: HO

SCANNED & REVISED:  
04/23/02

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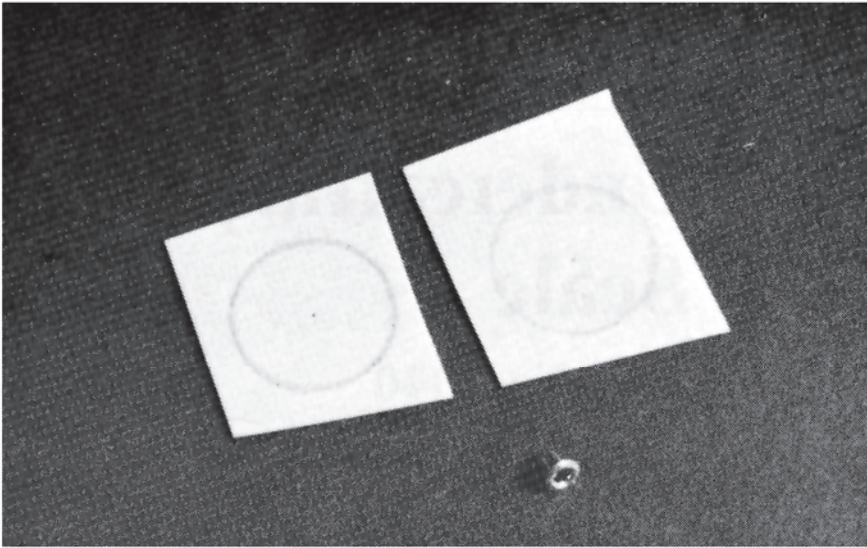
## Circus Model Builders

Drawn By  
Joe Kaspar, CMB 1940

DRAWING NUMBER

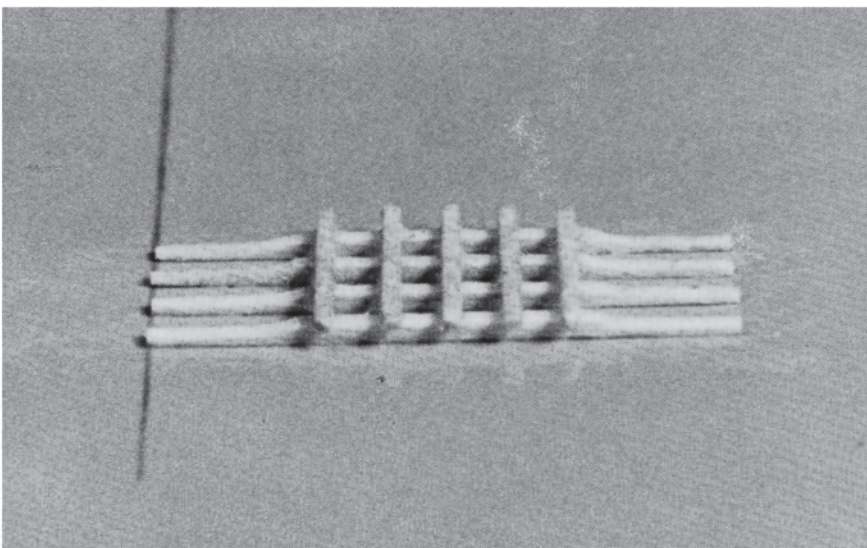
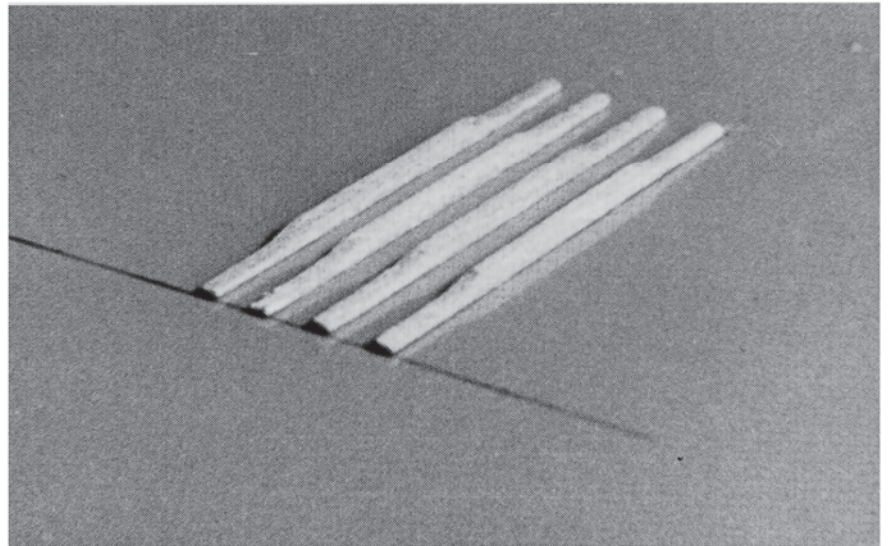
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The fifth wheel is constructed first. Using .015 styrene, draw two circles with a compass, three scale feet in diameter and cut out with a scissor. If the fifth wheel is not required to turn, the circles are glued together. If the wheel is required to turn, some sort of rivet must be used. Pictured is a small rivet used in electronic circuit boards, usually available in electronics stores.

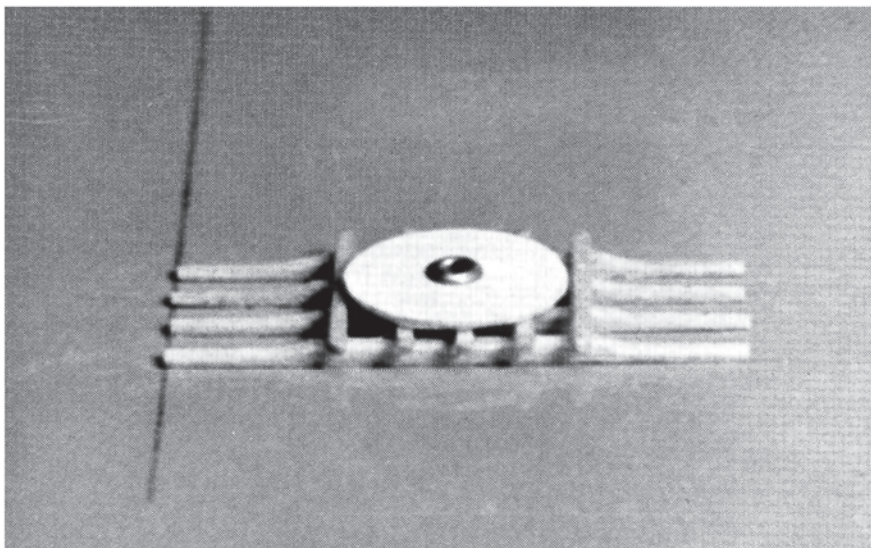
The working surface should be a sheet of styrene at least .025 inches thick. Draw a line on the surface to represent the wagon body side. Measure the width of the wagon and cut four bolsters using 3" X 3" scale lumber. Measure the width of the wheel to be used and mark the dimension on both sides of the bolsters. Taper the bolsters as shown in the photo and used Elmer's white glue, secure to the styrene.



Cut five long braces 2" X 3" X 3' 6" [scale wood] and set them over bolsters. There should be a 3" overhang on the front and rear bolster. The two outside long braces should be slightly rounded on the outside edges. Now glue the long braces on the bolsters. [The spread should not exceed three scale feet.]

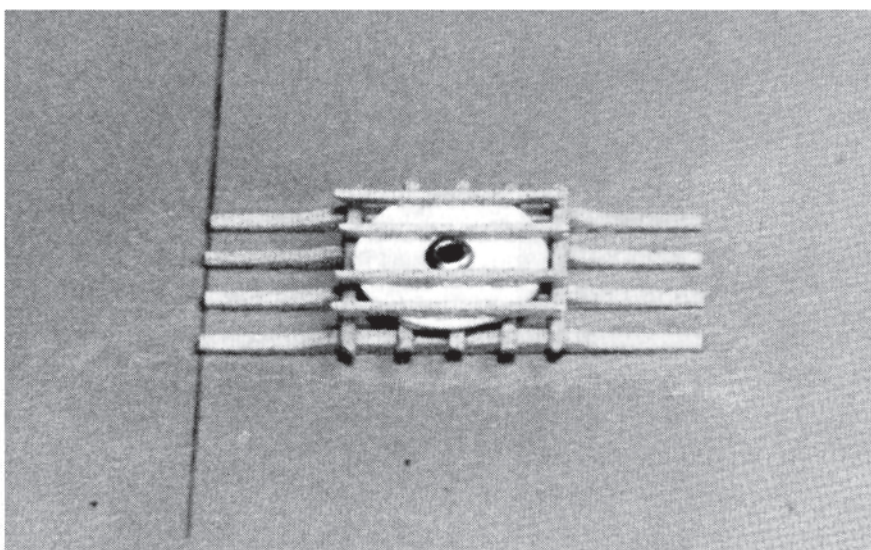
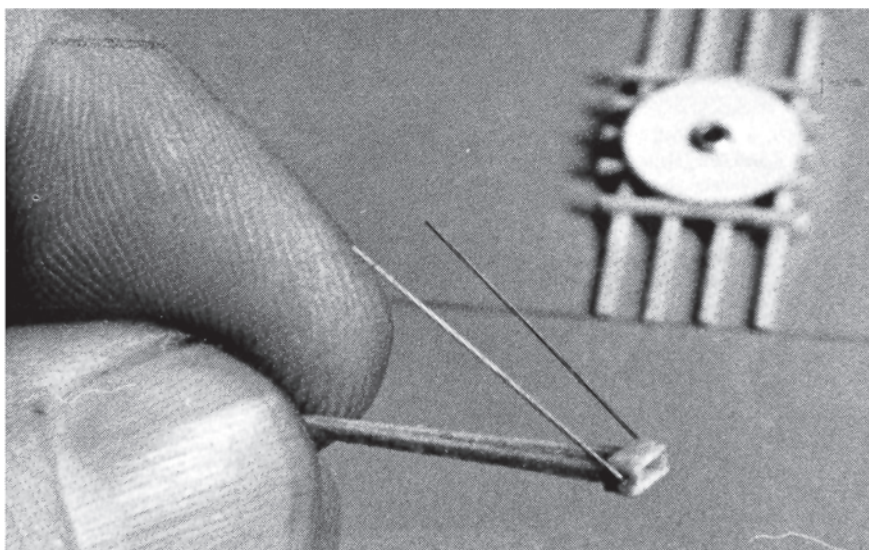
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Cement the fifth wheel in place using an adhesive type glue such as Walther's Goo.

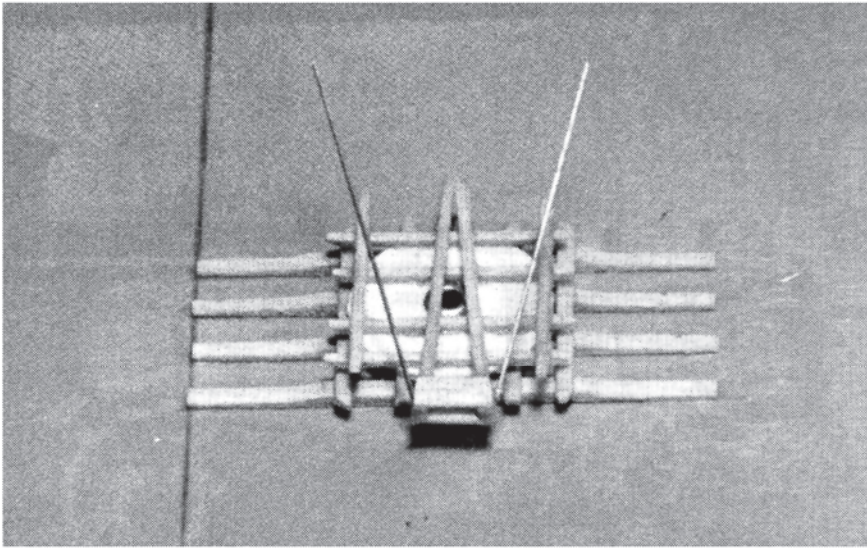
Cut two lengths of 2" X 2" X 6' long scale wood. Glue these two pieces into a "V" shape with the opening one foot wide. Cut two 1" X 6" X 1' pieces of scale wood and glue at the opening of the "V" assembly to form the pole pocket. Drill a #75 hole on each side of the home pocket and insert a length of .015 brass wire with the adhesive glue to keep the wire from falling out at this time.



Cut four corner braces 2" X 2" X 3 1/2' and round off one edge on each end. With the adhesive glue, mount on the fifth wheel, rounded edge toward the bolster.

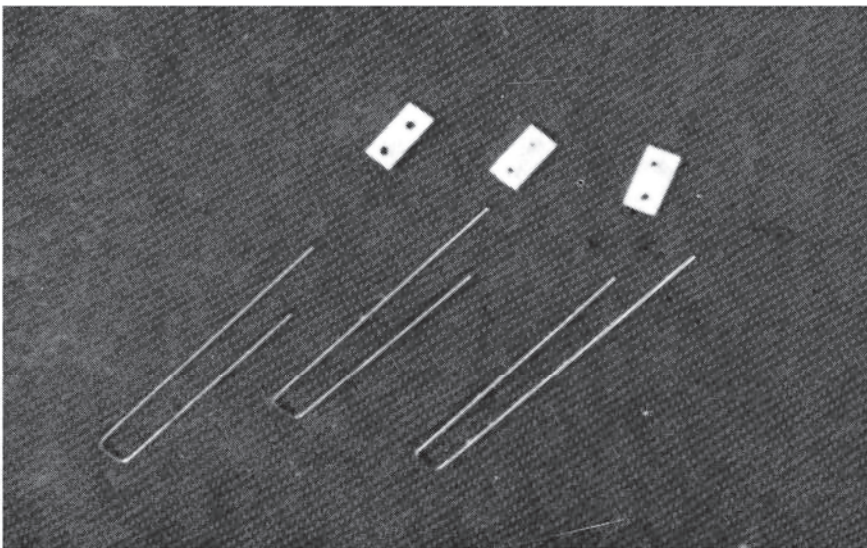
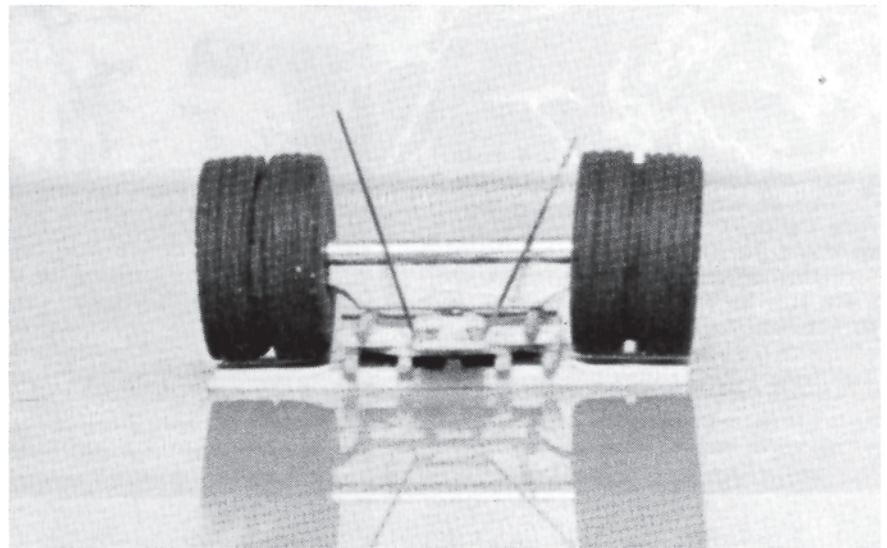
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Cut the rear of the pole pocket assembly off to a total length of five scale feet and glue in place. Cut two lengths of 2" X 2" X 3 1/2". Round one corner on each end. Glue on both sides of the pole pocket with the round edges toward the bolster.

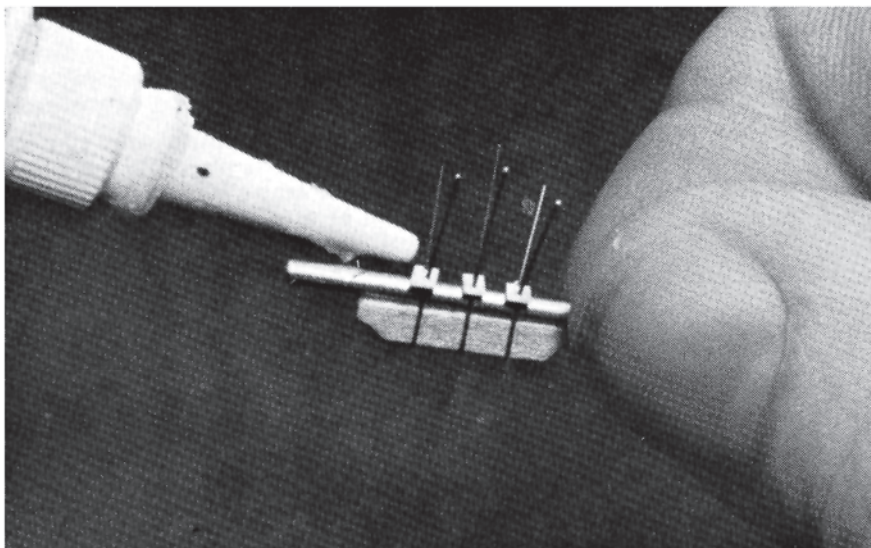
Cut two axles out of 1/16" brass tubing. A Good length would be four feet distance between the two wheels and the axle should just clear the wheel hub. In this case 6 1/2' was used. Cut the front axle assembly out of 1/16" X 1/4" basswood, four scale feet long. Taper the axle assembly as shown in the photo. Using adhesive glue, attach the axle to the axle assembly. Place the wheels of your choice on the axle and balance on the fifth wheel assembly.



Proper height of the axle should have the wheels just clearing the bolsters. The axle assembly must be adjusted to meet this requirement. The U-bolts are constructed from .010 styrene and .010 brass wire as shown in the photo. The holes should be the exact diameter of the axle assembly and should be drilled in the styrene before cutting to size.

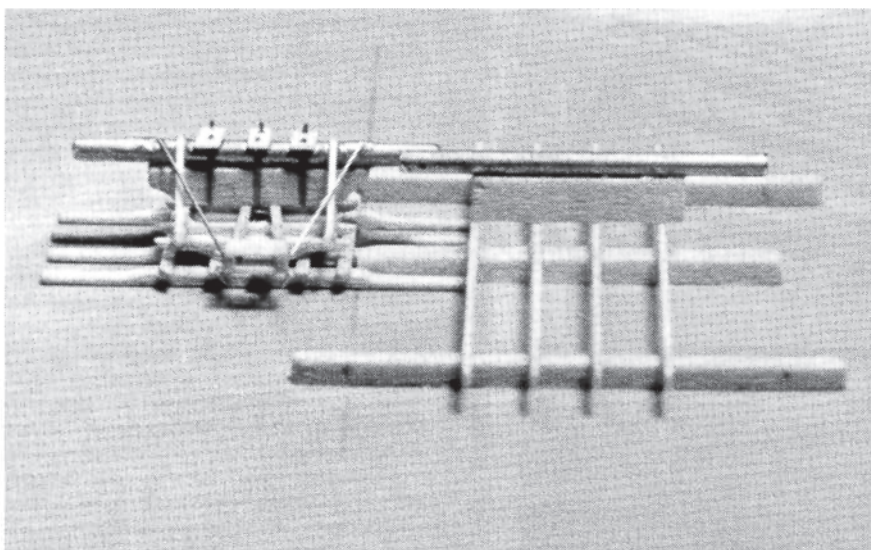
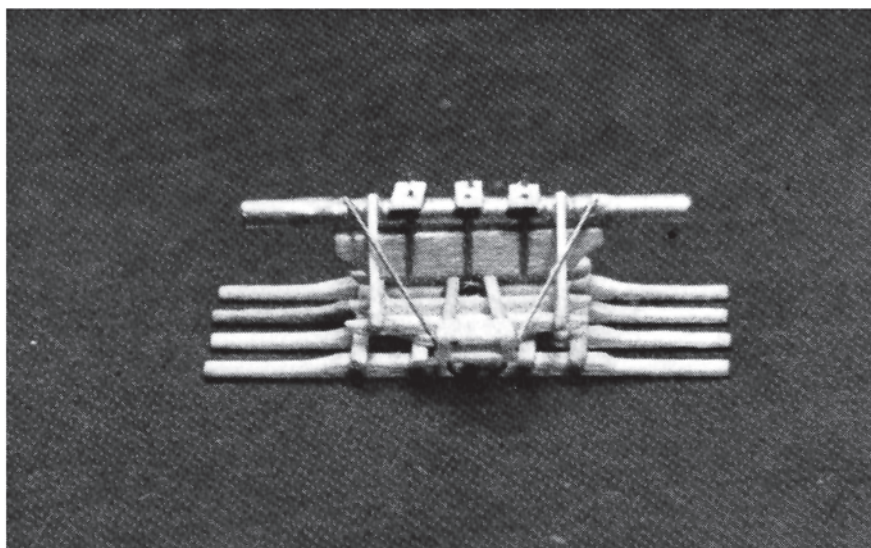
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The U-bolts are held in place by spreading, slightly the brass wire and gluing them in place with a Cyanocrylate (instant) glue. All caution must be observed when using this type of glue. Since this glue runs freely, a tissue can be used to blot the surface. When the surface has dried, snip the long ends close to the axle as possible with a scissors. Now glue the axle assembly to the under-carriage. (Note: Acetone will remove Cyanocrylate glue from fingers, etc.)

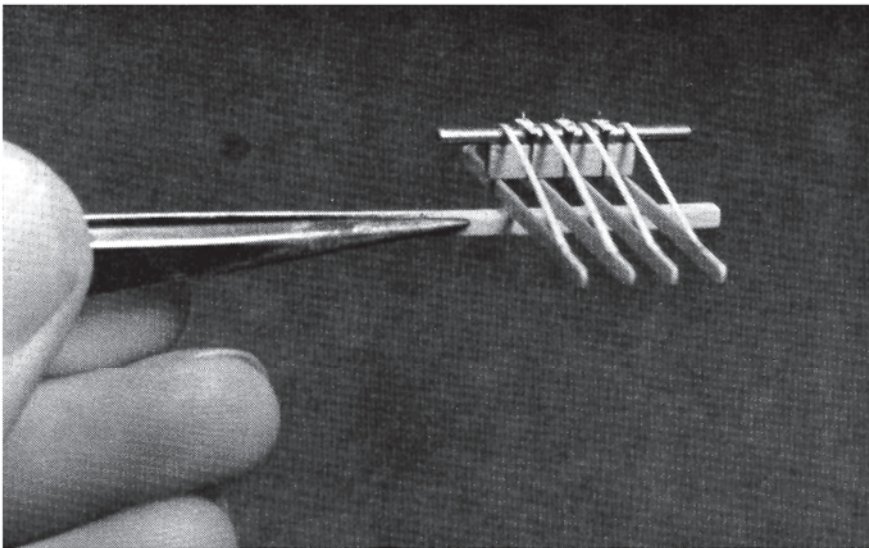
Bring the brass wire from the pole pocket back to the axle and glue in place with Cyanocrylate. Two axle braces are cut from 3X5 card stock and glued in place. The front axle assembly is now complete. Slide a razor blade under the bolsters and the assembly will come right off the styrene. A little water on the finger will dissolve any excess glue from the bottom.



The rear assembly is started by gluing the bolsters to the styrene just as with the front assembly. This model required two bolsters to have metal braces attached to the body. The axle assembly will not be attached to the rear and front bolster because they will be painted a different color. We are using these bolsters to determine the proper axle height at this time.

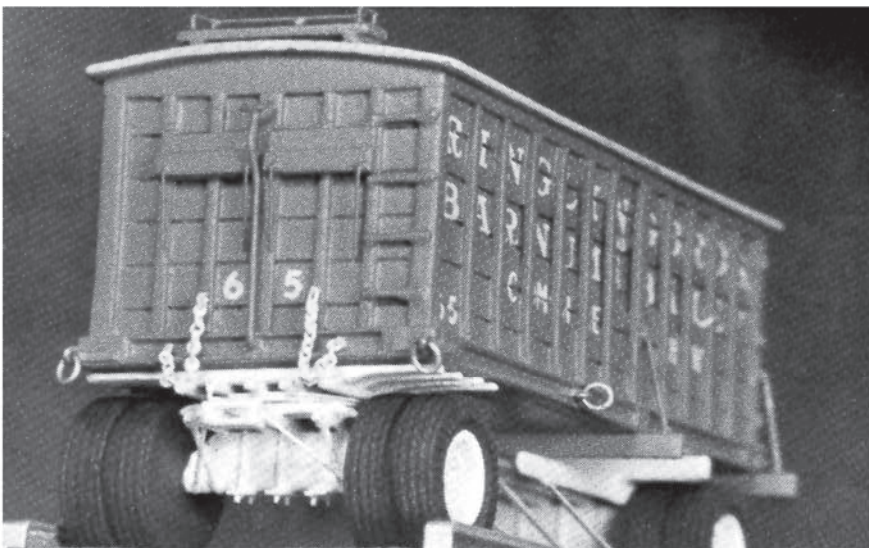
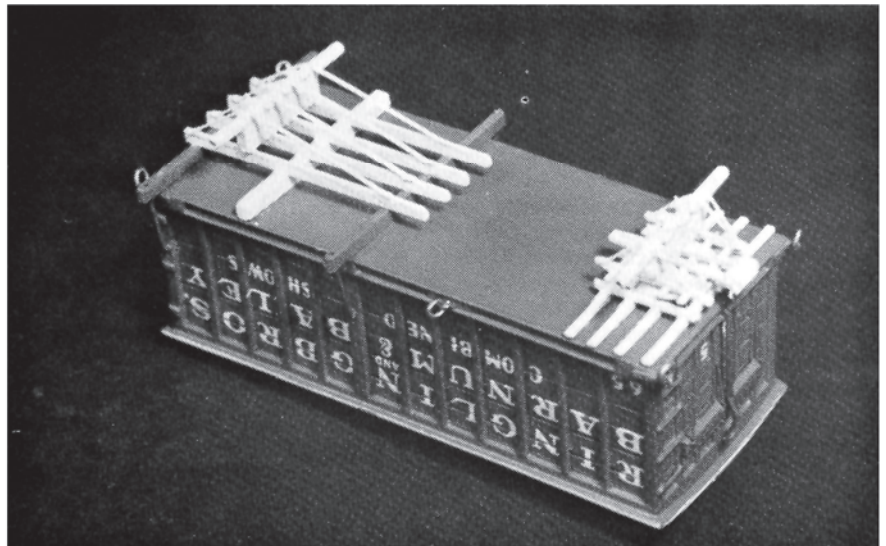
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Cut four axle supports out of 1" X 6" wood and glue in place. [In this case only the center bolster.] The length should be a one foot overhang on the front bolster. Cut the rear axle assembly from the same material as the front and glue the axle on top with adhesive glue. Balance the rear axle assembly on top and slide the front axle next to it. If the rear axle is not the same height, adjust the rear axle assembly accordingly.

Attach the U-bolts to the rear axle assembly in the same matter as the front and glue the axle to the supports. Cut four axle braces from the same 3X5 card and glue across the axle assembly to each support. Both front and rear assemblies can now be painted. If they are to be sprayed, it is best to give a brush coat first so that paint gets to the "hard-to-get-at" places.



I hope much of this will be of some benefit to the modeler. It has been helpful to me; now I don't have to remember what I did last time.

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