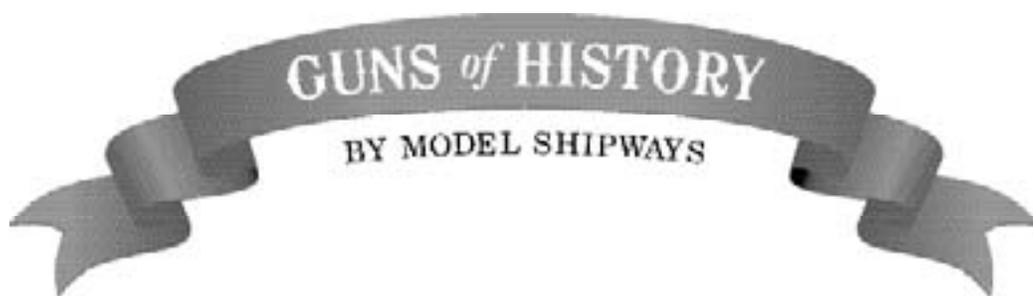
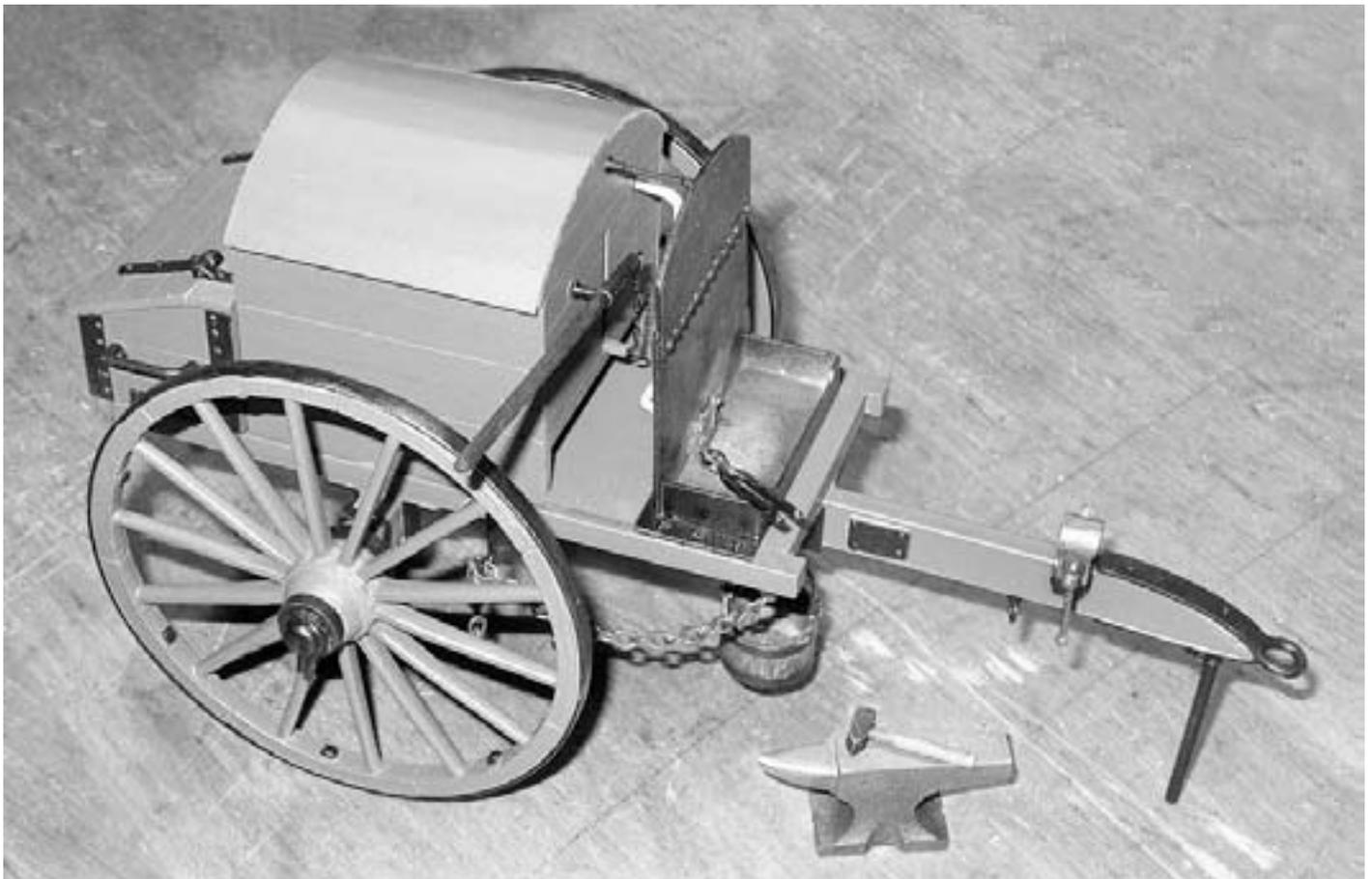


Instruction Manual

MODELING THE
Battery Forge
AMERICAN CIVIL WAR



Model Shipways Kit No. MS4012

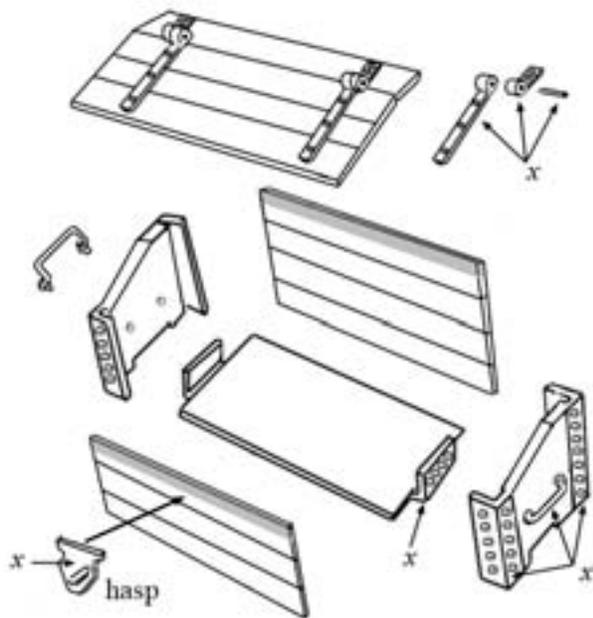
Technical Characteristics

Scale: 1/4" = 1 ft. (1:48)
Overall length: 34.5" (876 mm) (Hull)
Beam: 7.5" (191 mm)

This new kit has been designed by Ken Goldman for Model Shipways Inc. utilizing some parts from the original Marine Models Company model of the American Civil War artillery limber.
Model Shipways ©2009

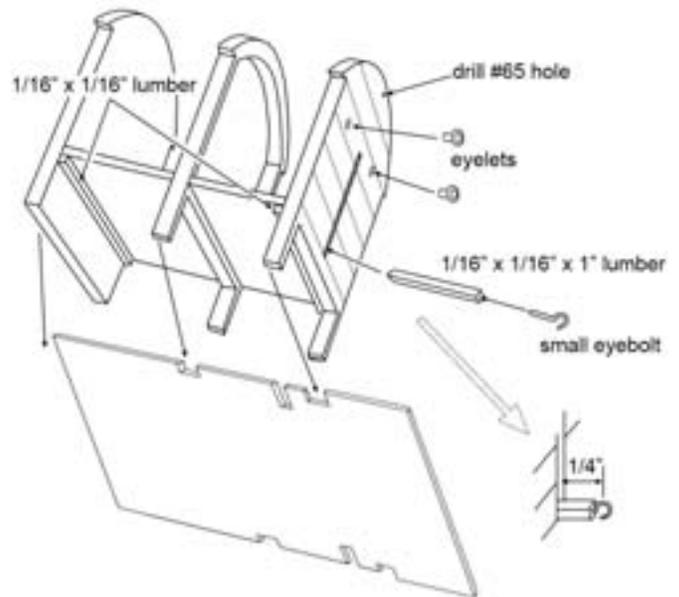
General Notes

Use 5-minute Epoxy or cyanoacrylate (Super Glue) for assembly of metal parts, white glue or carpenter's glue for assembly of wood parts. Dry fit all parts before gluing and painting. Use a #11 hobby knife, needle files and sandpaper to clean mold marks from castings and to adjust the fit where necessary. Holes may need to be drilled out. In cleaning the castings, be careful not to destroy or damage any wood grain effect. If you inadvertently do so, you can re-establish the effect by drawing the edge of a file or coarse sandpaper across the casting in the same direction as the wood grain. The battery forge was light gray (CSA) or olive drab (USA) with metal fittings (marked with an x on the drawings) painted black. If you decide to display the forge with one of our other kits - especially the limber, which is how it would have been pulled - use the same color scheme for both. If you paint the subassemblies as you go (recommended), scrape off the paint at the contact points during final assembly to ensure a good glue bond between subassemblies. Best painting results will be obtained if you use a primer before the color coat. The prop and bellows arm can be painted brown or black. Paint the bucket brown with black hoops. Rubbing graphite or similar powder over black paint will give a cast iron look.



Coal Box

Glue up the cast sides and bottom according to the drawing. Note the wide notches on the bottom edges of the sides. The end brackets on the bottom should fit inside these. It is important that these parts are squared up. Cut seven approximately 2" lengths of 1/32" x 1/4" lumber to plank the front and rear. These slats should slip into the grooves on the cast sides. Secure them with wood glue on the inside. The top slat, front and rear, gray area in drawing, will have to be trimmed flush to the box sides. Glue the laser-cut top and lid onto the sides. The top sits flush with the outside of the rear brackets. Cut two 1/4" lengths of brass rod to make the hinge pins and assemble the hinges with the shorter strap on the outside, left and right. Use ten pin nails to nail the hinges to the lid and top with the short strap about 3/16" in from the outside edge of the top. (The nails need not be cut short since the box does not open.) Glue the handles to the sides. Center the hasp on the box front, tight under the lid, and glue in place.

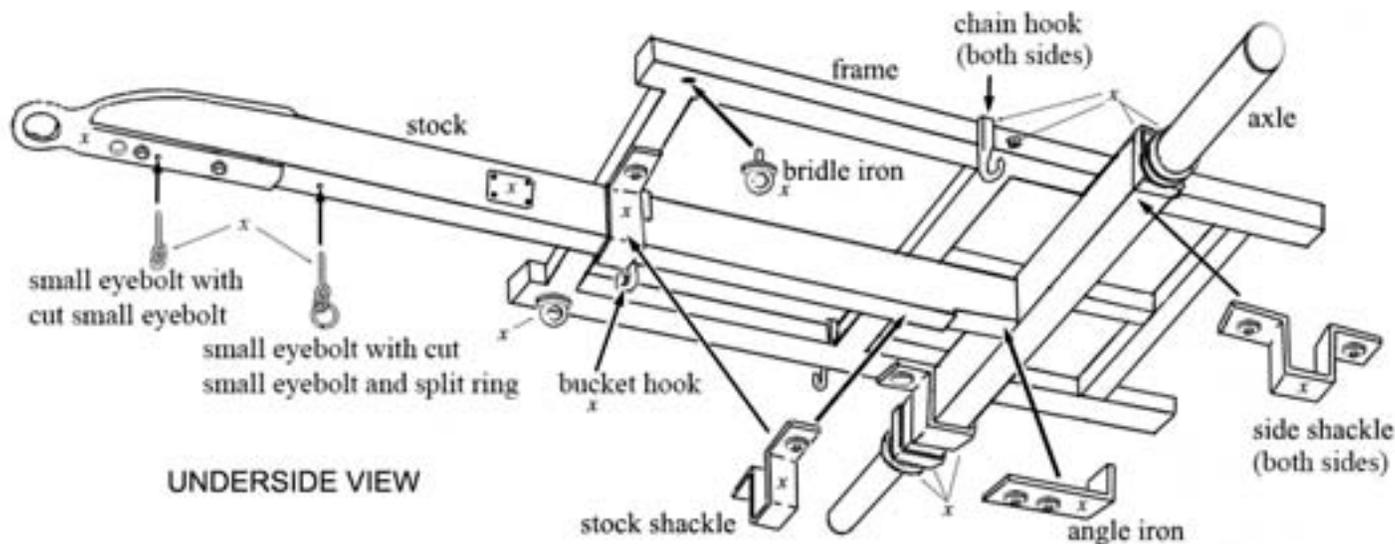


Bellows House

Glue 1/16" x 1/16" x 1 15/16" lumber to the inside of the bellows house front, flush with the opening. Glue a similar piece to the inside of the rear so its bottom edge is up 3/8" from the bottom of the laser-cut part. Use the bellows house floor to align the front rear and center of the house, but do not glue. The rear piece butt joints against the rear edge of the floor. Glue the shelf in place and remove the floor when the shelf is dry. Cut twelve 2" lengths of 1/4" x 1/32" lumber (six to a side). Dry fit and sand the edges as needed so these planks align with the etched planking on the front and rear, then glue them in place. The bottom edge of the bottom planks must be flush with the under surface of the floor. Mark the bottom planks where they overlap the long, narrow notch notches in the floor, then remove the floor and file a notch on each side up approximately 1/32".



Paint the underside of the house and the topside of the floor and then glue the floor in place. Drill a #65 hole through the house front centered and down 3/16" from the top (see drawing). Glue an eyelet into each of the two laser-cut holes on the front. Open a small eyelet to make a hook (open end down) and glue this into one end of a 1" length of 1/16" square stock. Insert the other end through the slot in the house front so the top of the hook lies 1/4" from the surface (see drawing), and glue it into place. Mark dead center on the top edge of the house front and rear, then plank down from here on both sides using 1/32" x 1/4" lumber cut so the ends are flush with the front and rear surfaces. This requires five pieces per side and is best done by chamfering the edges for a tighter fit, otherwise fill the gaps between the roof planks. In either case finish by sanding the roof smooth.



Chassis

Build the chassis per the illustration. Cut the ring end from two small eyebolts to make the extra links that attach to the small eyebolts at left. Attach a split ring to the extra link on the rearmost small eyebolt. The split ring should hang crosswise to the stock. The two chain

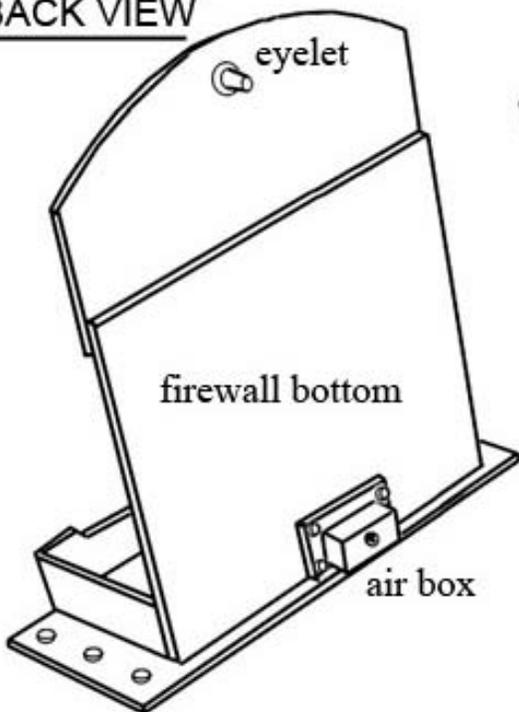
hooks must be snug to the frame cross member as these also serve as locator tabs for the bellows house floor. The holes in the bridle irons face out to the sides. The stock shackles are narrower than the side shackles.

Fireplace

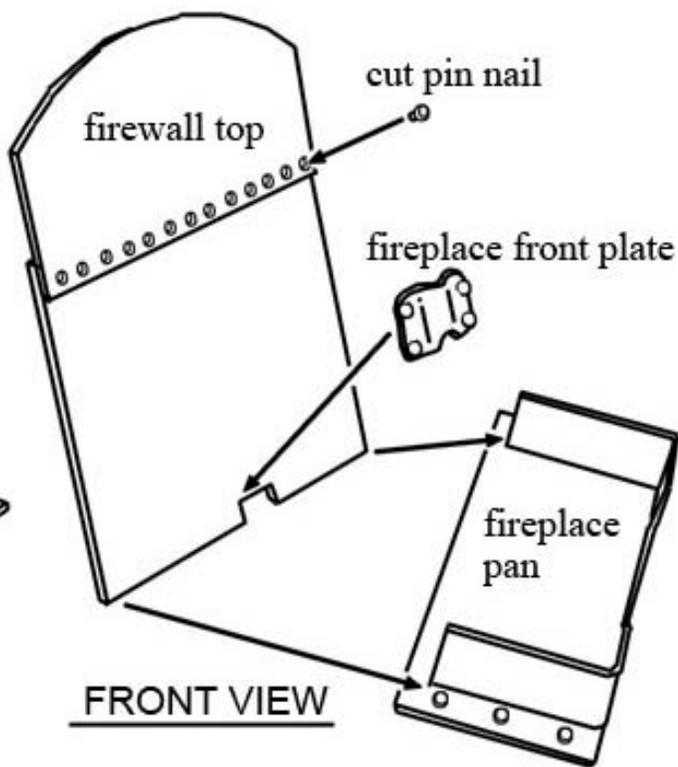
Glue the top section of the laser-cut firewall to its bottom, overlapping the latter by 1/8". To simulate the actual rivet heads, cut 13 pin nails very short and push these into the laser-cut holes in the top section. (Sticking the cut nails to a rolled bit of masking tape is the easiest way to hold them as you put them in the holes.) These "rivets" should not penetrate through the bottom section. They need not be glued as the paint will hold them. Glue the fireplace front plate (notch down) centered over the rectangular cutout in the firewall and flush with its bottom edge. Similarly, glue to the cast air box to the rear side of the fireplace. Note that the wider part of the flange is the topside. Since

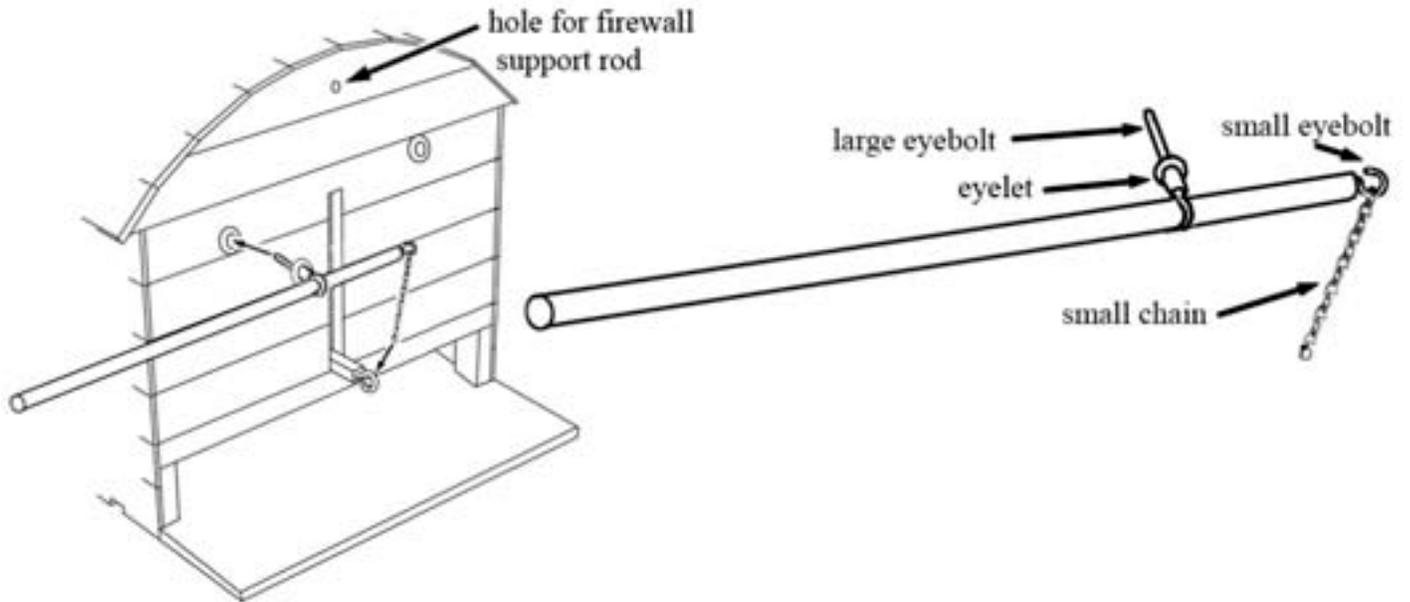
the firewall was iron in the real forge it must be primed to hide the wood grain of the kit parts. Glue the completed firewall onto the fireplace pan, centered against the sides. Mark the firewall back side for a brass eyelet centered and down about 5/32" from the top. Before gluing the eyelet in place, check the alignment by sliding the brass rod through the hole you drilled in the bellows house front and dry fitting the bellows house and the fireplace to the chassis. Pull the brass rod up to the firewall. When everything is centered and squared away, the end of the rod should meet your mark. If it does not, mark where the rod makes contact and use that mark.

BACK VIEW



FRONT VIEW



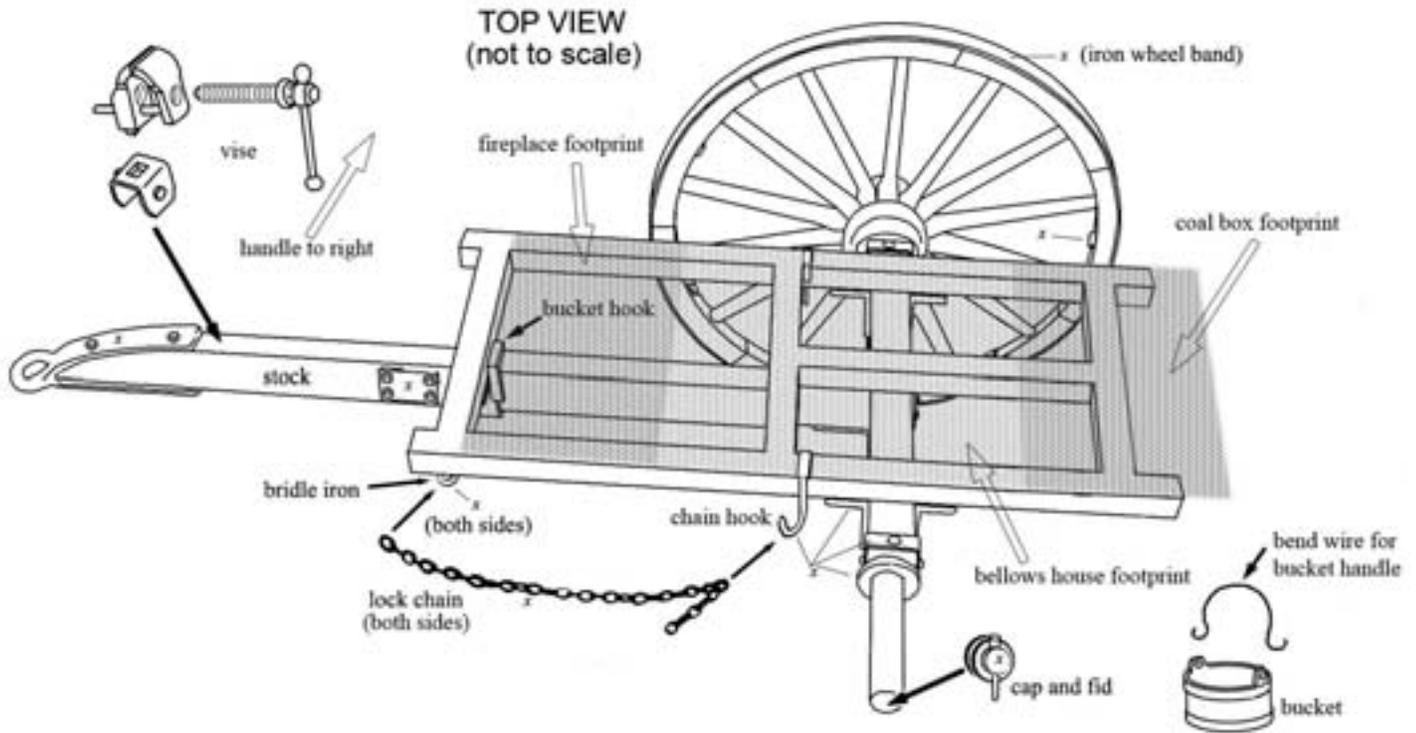


Bellows Pole

Cut off 2 1/2" of the 3/32" diameter dowel. File a notch completely around it 1/2" from one end. Spread the loop in the large eyebolt, insert the dowel so the eye is on the notch and crimp the eyebolt tight. Glue an eyelet onto the eyebolt shaft so the flange points away from the dowel. Drill a hole in the short end of the dowel and glue in a small eyebolt so its ring is perpendicular to the large eyebolt's

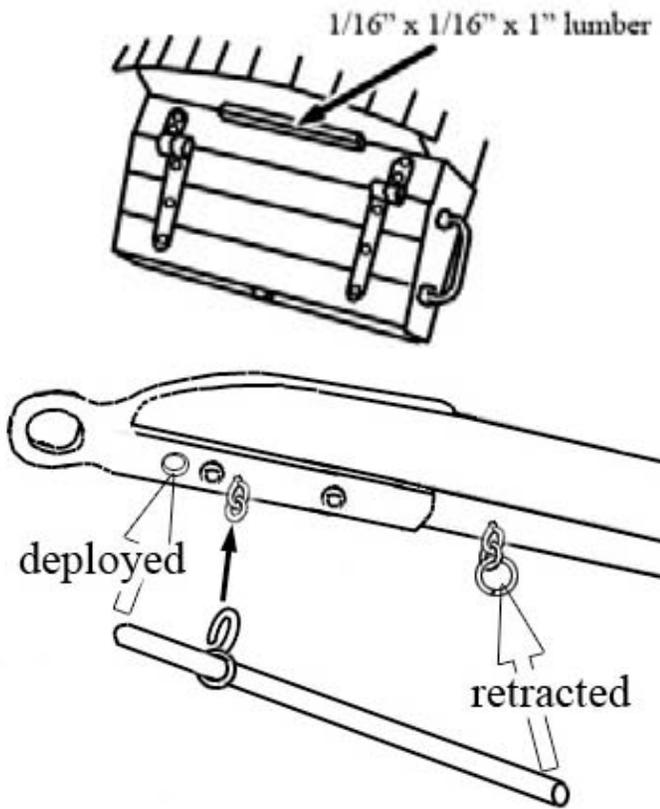
shaft. Cut a 13-links length of the small chain and circularize the end links using a scratch awl or similar. Attach one end to the small eyebolt. Attach the other chain end to the small eyebolt on the bellows arm that protrudes from the bellows house and glue the large eyebolt into the right hand eyelet on the bellows house front.

Final Assembly



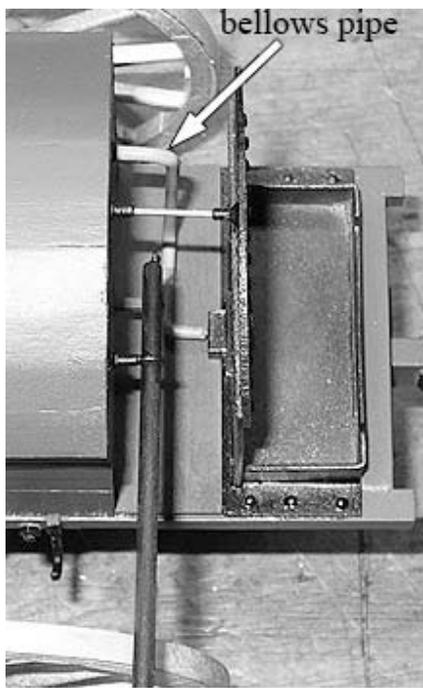
Glue the bellows house to the chassis, centered side-to-side with the tabs created by the chain hooks in the slots on the floor. Insert a 1" length of brass rod in the hole you drilled in the house front and slip an eyelet over the rod (DO NOT GLUE) so its flange will be against the house front. Center the fireplace assembly on the chassis in front of the bellows house tight up against the floor extension of

the bellows house, with the open fireplace pan to the front. Slide the brass support rod forward into the eyelet on the fireplace back, and glue it into place. Slide the free eyelet back against the bellows house front, and glue it into place. Make sure the firewall is perpendicular to the chassis. Glue the coal box snug up behind the bellows house, slope toward the rear. Reinforce this by gluing a 1" length of



the dowel into the prop socket. If you plan to attach the forge to a limber, instead slide the long end of the prop into the split ring that hangs from the other small eyebolt. To make the bellows pipe use 2 1/2" of the insulated, solid-core copper wire. Strip the insulation back 1/8" from one end. Measure 1/4" back from that point and make a 90° bend. Measure down 1 1/4" from that and make a 90° bend, perpendicular to the first bend. (With the first bend pointing away from you, the second bend points to your left.) Measure down 1/2" and make a 90° bend opposite to the first bend. Measure out 3/16" from that and strip the rest of the insulation. Trim so there is 1/16" of bare wire left showing. Dry fit this between the left hand eyelet in the bellows house and the air box. Adjust if needed, paint dark tan, then glue into place. Hang the bucket from its hook and display the tools as desired

1/16" lumber centered atop the coal box and against the back wall of the bellows house. Assemble the vise. Glue the vise to the stock so it and the screw handle extend to the right of the forge. Snug the bracket against the strap from the lunette on the stock. Use 1 1/2" of the bare copper wire to make the bucket handle. Cut the large chain into two 3" lengths. Open one end link on each and attach it to the bridle irons. Slide the road wheels onto the axles. Shorten the axles if necessary so the caps and fids fit against the wheel hub ends. The smaller wheel hub ends face out. It is recommended that you glue on the wheels. Hook the lock chains over their hooks at the sixth link from the free end.



Make the prop from a 1 1/2" length of 3/32" dowel. Check that the end will fit into the socket hole on the stock's underside. File a shallow groove completely around the dowel, 5/32" from one end. In the groove, wrap the shaft of a small eyebolt so the ring is tight to the dowel but sticks out from it. Spread the ring slightly and hook it onto the small eyebolt with added eyebolt ring you previously attached to the underside of the stock. If you plan to display the forge by itself, glue the short end of

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