

General Project 38 — Steam Engine Miniatures/Chris Rueby

Chris Rueby sends us some photos and details of his latest projects: A Lombard steam log hauler and a Marion 91 steam shovel, along with pictures of his home-shop setup.

Lombard Steam Log Hauler



FIGURE 1—A Lombard log hauler completed last year, also done completely on his Sherline machines. Here is a shot of the model with its big brother at the Maine Forest and Logging Museum last fall, where both were running together.

The scale is 1"=1'. It was built from plans I drew in Autodesk Fusion360 (modeled in 3D, then converted to 2D plans) from photos and measurements I took of the original machine on display at the Maine Forest and Logging Museum on trips there the last two years. The original was restored to running condition a few years ago, and the museum allowed me access, and also the chance to drive the original a number of times (quite exciting).

The model is made of stainless steel, brass, bronze, with copper for the boiler. The boiler is fired with butane, and the model runs for about 1/2 hour on a filling of water and fuel. The model weighs about 35 pounds and has radio control for the throttle and steering.

The work was all done on my non-CNC Sherline lathe and mill; both have the longer beds, and the mill has the taller column. This model was completed in just about one year of work, nearly full time (retirement helps hobbies!). The model is driven by a twin cylinder engine, which transmits the power through a full



FIGURE 2—Chris in front of the restored Lombard.

working geared differential then through a pair of drive chains. All of the chains and track plates were made from scratch on the Sherlines.



FIGURE 3—Machining a track wheel for the Lombard.

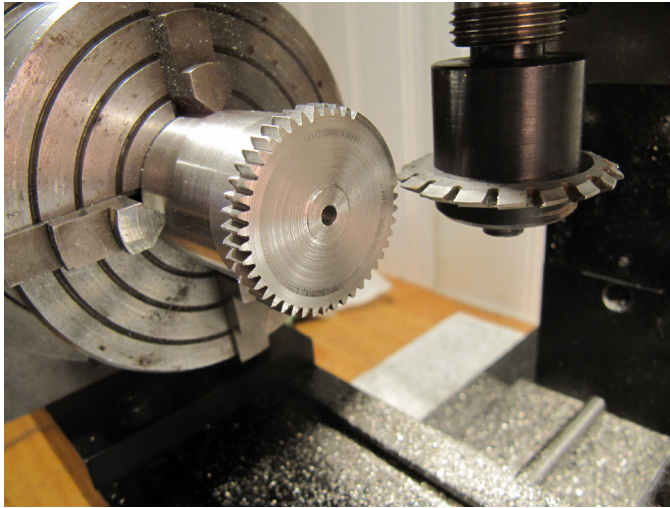


FIGURE 4—Gear cutting

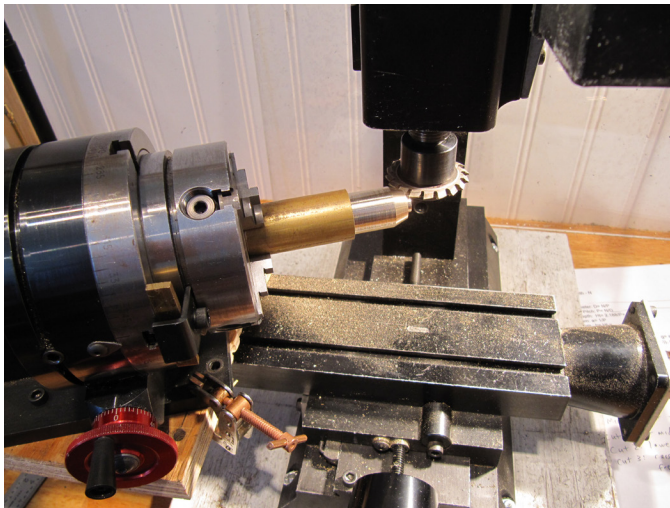


FIGURE 5—Shows an extension Chris built to hold the rotary table off the side of the mill for cutting the larger gears.

The model has skis on the front since that is how the original was used - they pulled logs on trains of sleds out of the woods on iced track roads in the winter, up to 300 tons at a time. They did have wheels on the front for moving the hauler in the summer, but they only hauled logs in the winter time when the skis were in place. The hauler had no brakes, so the normal speed of 5 mph could be higher on downhill stretches.

Invented in Maine in 1901, the Lombard was the first commercially successful application of a continuous tracked vehicle*. There were 83 built. Eventually, the company converted the power plant to a gasoline-engined version. A handful of the machines still exist, several in operation condition.

***NOTE:** The concept of continuous track propulsion was later used for military tanks during World War I and for agricultural tractors and construction equipment following the war.

Lombard Video Links

The model running in the driveway, with wheels on for summertime:

<https://youtu.be/BZ8mqxKmJJg>

And a video of the original in operation as well:

<https://youtu.be/OsapkG91sVA>

Marion Model 91 Steam Shovel



FIGURE 6—The steam shovel model, currently in progress, is larger than both his Sherline lathe and mill combined!

This model, still under construction, is 3/4"=1' scale, built of steel, wood, brass, bronze, copper. It will also be a live steam operating model with four twin cylinder engines to operate the different functions: hoist/tracks, swinging the booms, crowd (extending smaller boom), and steering. It is based on my photos and measurements of the Marion 91 shovel that is near my home; it sits outside a quarry in LeRoy, NY where it operated from 1906 to 1949, when it was driven out of the quarry and parked. I have gotten access from the LeRoy Historical Society to photograph and measure the original, and have also drawn up a full 3D model and full-size plans as well as the model plans. Work is beginning on stabilizing and restoring the original machine. It originally sat on railroad trucks, and then was converted to continuous tracks in 1923. It is the same type as was used on the Panama Canal, but this one predates the canal work.

The model will be approximately four feet long and weigh over 100 pounds when complete. It will also have a butane-fired boiler and will have the tracks that the original machine still has. Currently, the dipper bucket, booms, and front turntable are complete. I am working on the main frames now—most likely another year to two years of work to go.

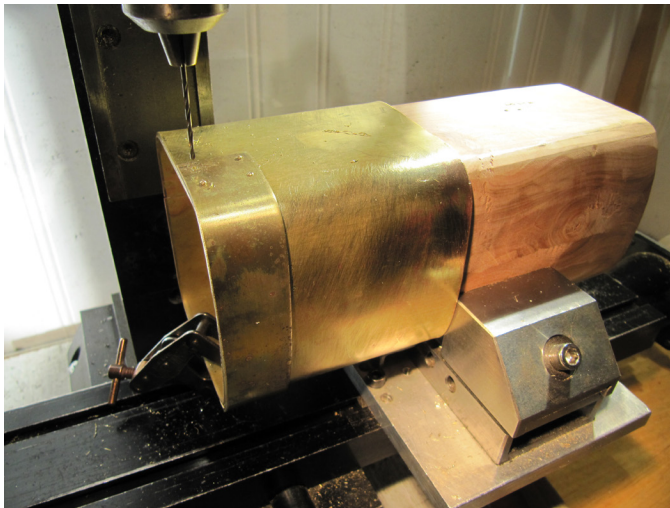


FIGURE 7—Early stages of building the dipper bucket.

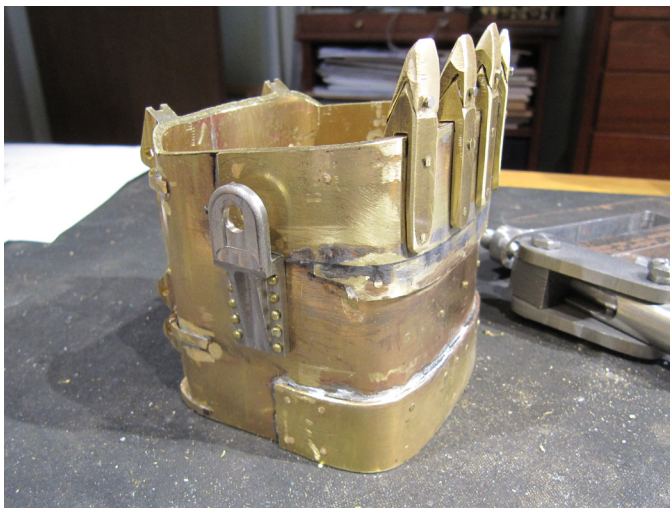


FIGURE 8—The finished dipper bucket.

On both models, the size of the parts did present the occasional challenge to make on the Sherline. The combination of the longer beds/columns, plus sometimes making extensions to hold the rotary table off the side of the mill for cutting the larger gears, and special jigs to hold the boiler tubes made it all work. Holding jigs were made for replicating the setups on parts like track plates and chain rails since many copies needed to be made that were all interchangeable. Larger diameter discs for gears were milled on the rotary table when they were too large a diameter to turn on the lathe. Adjustable stands next to the mill supported long parts like frame rails. Those challenges were never too hard to solve and were worth it to keep my shop small enough for a back bedroom.

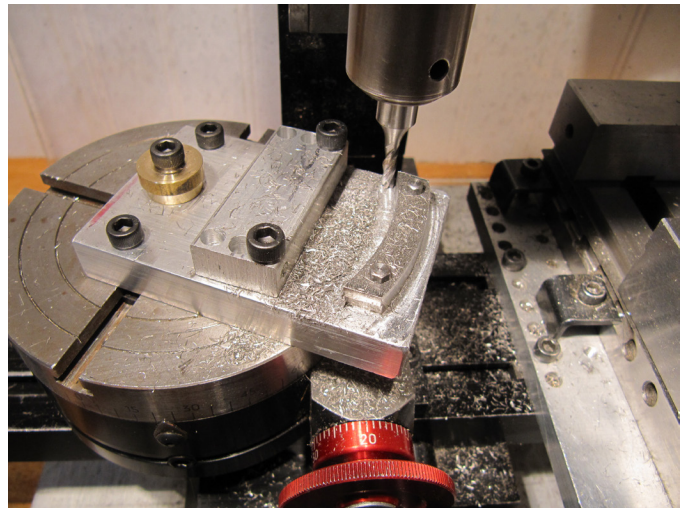


FIGURE 9—Using the rotary table to machine oversized parts.

The models are currently displayed at home, though I do take them to events at the museums and shows like Cabin Fever. The steam shovel model is being displayed along the way at fundraising events for the real machine, for its restoration.



FIGURE 10—Chris's home-shop setup. The lathe is a 4400 model with a 17" base, and the mill is a 5400 model with a 12" base and an optional extended, 15" Z-axis column bed.

Thanks,
Chris Rueby