



Bob Grimm built this working replica of a steam locomotive. It rides on rubber tires instead of rails so he can drive it on the road in local parades.

## “Go-Anywhere” Rubber-Wheeled, Steam-Powered Locomotive

By Lorn Manthey, Contributing Editor

Bob Grimm is one of those guys who likes to work on projects that are unique and BIG. In 2007, he started building a working replica of a steam locomotive. The finished outfit measures 40 ft. long, 8 ft. wide, 12 ft. tall and weighs more than 10 tons. Grimm’s machine rides on rubber tires instead of rails so he can drive it on the road in local parades so people experience railroad history in an entirely new way.

“I thought about making it smaller at first, but the more I penciled stuff out the more it made sense to make it almost full size, just like a real locomotive,” Grimm says. He’s had a fascination with steam engines since he was a kid. “I grew up on a farm and the train track ran nearby. I remember locomotives chugging by with the steam pouring out, the whistle blowing and the sound of wheels on the rails. It was a real thrill to watch them.”

Grimm drew up his plans based on pictures of a Baldwin steam locomotive. His son, who’s the equipment manager at the Black Hills Central Railroad in Rapid City helped him with several details. “I wanted to make the engine look as realistic as possible,” Bob says, “so I took my time and did a lot of research before getting started.”

Grimm’s locomotive is built on the same principle as an old time steam engine. It has a boiler mounted on a large chassis with four large driven wheels and two sets of smaller wheels in the front. Wood is burned in a firing chamber to heat water and produce steam. The steam flows into a high pressure slide valve that drives two pistons. The piston control rod is hooked to the cross head, which is connected to the drive rod and coupling rods that drive the wheels. The valve can be rotated to power the machine forward or backward. Exhaust steam leaves the piston chamber in a loud “choo” sound and blows white puffs as it billows up the stack and out the top. The faster the piston moves, the quicker the exhaust billows and the faster the locomotive moves.

Grimm built the chassis for his rig from the frame of an old tandem axle semi tractor. He removed the front wheels and axle, then made a special frame that sits below and outside the main frame to mount four steerable wheels. He converted the rear tandem axles to extra large single wheels fitted with 42-in. tires. The rear wheels have large reciprocal plates connected together with a 2-in. thick metal rod. “There’s a piston on each side, so the

wheels are timed and pull in unison,” Grimm says. The front of the frame has two steerable wheels that let him turn the locomotive in a wide arc around corners.

Steam is generated by a wood-fired Ellsworth boiler. He located pistons from an old steam pile driver and built all of the components that connect the steam power system to the wheels. “I was able to machine some parts on my lathe, but the large and difficult ones I had done by a local machine shop. I fabricated most of the other metal work myself and had the shop do some of the more difficult cuts,” Bob says. Even the lubrication is similar to a real locomotive, with the crank pin and crosshead bearings holding small cup-shaped reservoirs for oil.

Included in the overall design is a fully functional engineer’s cabin that has wood sides, a metal roof and scroll-cut windows. The engineer steers the front wheels with a 2-ft. dia. steering wheel and tends the steam boiler by observing functional gauges and regulating the pressure with hand valves. A large bell and steam whistle are mounted on top of the boiler. Grimm built a replica cow catcher on the front of the locomotive and also mounted a large headlight in the middle in front of the boiler. A trailing axle supports a tender on the back of the locomotive that holds the 500-gal. water tank and wood supply to feed the boiler. “It looks and sounds like a real locomotive,” Bob says, “and that’s exactly what I was trying to achieve.”

After he finished building the steam components he tested the system with an air compressor and the power transfer worked fine. He fired the boiler and set the relief valves at 100 lbs. to guard against too much pressure. Bob says the “street speed” for his locomotive is maximum 5 mph. Frequent stops during a parade aren’t a problem because the locomotive has a special brake system and the wheel drive mechanism easily disconnects from the transmission.

Grimm says that even though building his locomotive took more than 7 years and well over 2,000 hours of labor, he never lost interest and always knew he’d get it done. “It was a huge undertaking,” Bob says with modesty, “something that I hope people will appreciate for a long time.”

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Dean Holbert raided his junk pile to build Leonard the Longhorn. Its body cavity contains a remote-controlled audio system that makes Leonard bellow like a bull.

## Scrap Iron Bull Really Draws A Crowd

What has 186 railroad spikes, about a ton of old tools, and bellows like a bull? It’s Leonard the Longhorn, says Dean Holbert, whose imagination and wire welding skill shaped the bullish sculpture.

The 81-year-old Kansas farmer was inspired by the memory of a Longhorn bull his family had 40 years ago. Though he had only tackled one other sculpture – a cactus made of truck drive lines and saw blades – he was determined to make the bull.

He started with a frame made of oil well sucker rods. Then he raided his junk pile as well as neighbors’ junk piles for wrenches, horseshoes, traps and other metal he could find to shape Leonard. Before he could weld them on, however, he had to take care of one thing.

“The wire welder can’t deal with rust,” Holbert notes.

So, he bought vinegar – 10 gallons of it with 5, 10 and 20 percent acidity. The higher the acid content the fewer days he needed to soak the parts.

“It made the parts smell good,” he says. “You can’t believe how much black junk was left at the bottom of the vinegar.”

After wire brushing, he spot welded items to the frame. His son, Gary, usually stopped in after work to hold bigger pieces while

Holbert welded them in place.

Dump rake wheels transformed into ribs over a set of numbered Deere wrenches. Railroad spikes formed the horns. Holbert polished and lacquered a spade for the bridge of the nose, and welded 1 1/2-in. ball bearings for eyes. While Leonard is mostly made up of tools, he also has a rat trap, cast iron frying pan and shears inside him, too. Holbert added a few surprises inside too.

“I welded a door off an old wood stove ahead of the hip,” he explains. “It opens up and you can look inside the stomach – an old flat air tank. For intestines, I used the downspouts off an old grain drill. I pounded a heart out of metal and painted it red.”

The cavity also contains an audio system to make Leonard bellow like a bull when Holbert activates it with a remote control.

The Longhorn sculpture was taken to a few events last year including one in Oklahoma City and another at a Kansas City barbecue. Kids loved turning and spinning parts that Holbert included just for that purpose.

“A car dealer in Oregon wants to buy him. I can’t sell him. He’s family,” Holbert says. “But I might rent him out.”

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