

Amazing System Feeds 400-Lb. Logs To Furnace

Jim Struble can load 400-lb. logs into his wood-fired boiler with his fingertips thanks to his log loader that lets him or his wife stoke the boiler with up to 4-ft. chunks.

"The problem with big outdoor boilers is that it's really hard to slide big chunks of wood in on top of each other," says Struble. "With my log loader, I can do it without even getting smoke in my face."

At 63, Struble wanted a way to fire his furnace easily for years to come. He and his wife run a bed and breakfast in their 2,000-sq. ft., northern Michigan home. They heat it and a 4,500-sq. ft. addition with wood. The boiler also provides hot water year round.

"I burn 20 to 25 pulp cords or more than 80,000 lbs. of wood a year," says Struble. "We couldn't afford to live here without wood."

His tower style, log loader consists of a pivoting center post or mast with a 10-ft. boom and a travelling hoist. He has 360-degree movement for the hoist within a 20-ft. circle.

Once a load of 8-ft. pulp logs is delivered, Struble uses a tractor loader to position them near his boiler. He then cuts them in two and drills a 4-in. deep, 1-in. dia. hole in one end of each log.

"I use an Irwin three-point cutting bit and a low speed, high torque drill," says Struble.

Using a hand-held remote control on a cable, he activates the hoist to drop the "log handle" to the log.

The handle is a 10-ft. length of 1 1/2-in. square tubing attached to the hoist cable in such a way that 10 in. extends past the mount. A piece of 1-in. round steel rod extends out of the end of the tube.

"I ground down the top of the rod so it's rounded off. Behind the rounded-off tip, I ground down the shaft so it's about 1/4 in. smaller in diameter than the rest of the rod," says Struble. "When I slide the rod into the hole in the log and lift the hoist cable, it picks the log up by the one end. The knob left on the end of the rod catches and holds the log."

Pushing on the long end of the handler, Struble can guide the log, pivoting the boom on the mast, and sliding the hoist down the length of the boom until he reaches the door of the furnace.

The hoist hangs from a trolley that tracks on a 10-ft. long, 4-in. I-beam boom. The boom rests on and is bolted to a steel stub welded to the mast. A chain runs from the end of the boom to a chain tightener that is anchored to the top of the mast. This allows Struble to adjust the tension on the chain, always maintaining the boom (without load) slightly above a horizontal position.

"When the boom carries a heavy piece of wood, it levels out," explains Struble. "If it isn't horizontal, the trolley will settle at the

lowest end of the boom."

The mast is a length of 3-in. dia. irrigation pipe mounted between two wheel hubs that act as pivot points. To create the pivot points, Struble cut the differential out of a car axle, stripping away all but the hubs with their bolts and the remaining axle stubs.

"To anchor the mast, I buried a 3-ft. pipe vertically in the ground," says Struble. Pieces of angle iron are welded to the pipe to keep it anchored in the soil. An 8-in. dia. plate is welded to it at soil level.

"I welded the bolts from one of the hubs to the plate and slipped the 3-in. pipe over the axle stub," he says. "With the tapered roller bearings in the hub, it rotates freely even under heavy load."

Struble then slipped the second axle stub into the top of the pipe with the hub and bolts pointing upwards. Two 2 1/2-in. pipes that connect the mast to a nearby wall attach to the hub.

"The pipes from the wall form a triangle of support to the top of the mast," explains Struble. "The pipes have 1 by 2-in. rectangular steel tubing welded in their ends."

At the hub end, the rectangular pieces each are clamped between two bolts on the hub. At the other end, they are pinned in a U-shaped bracket attached to the wall.

The chain tightener attaches to a stub welded to the top of the pipe. The setup makes it easy for Struble to disassemble the mast and boom if necessary or to adjust it to keep it vertical.

To strengthen the mast itself, Struble reinforced it with rebar. He used two lengths of 1/2-in. rebar welded at the top of the pipe and to the end of a foot long length of 3-in. C-channel that extends perpendicular from the pipe and opposite the boom. The rebar continues to the bottom of the pipe where it's again welded in place. Additional pieces of rebar create more triangulated supports for the long rebar pieces.

"Using the rebar on the pipe gives it the strength of a 24-in. deep beam," explains Struble. "Yet, it's light enough that I can pick it up and set it in place or take it down."

To protect the trolley and hoist from rain and snow, he covered the top of the I-beam with two cedar boards. They are raised on blocks so they don't interfere with trolley movement.

The cable from the hoist loops through a pulley at the log handler and back to the hoist. This effectively doubles capacity of the 650-lb. hoist.

"I've replaced the motor on the hoist twice in 8 years and replaced switches a few times," says Struble. "Otherwise, it has worked well. I can stack a couple of weeks worth of wood in half a day, and then it only takes 15 min.



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a day to load the stove."

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Build Your Own Remote-Controlled Lawn Mower

We recently spotted a YouTube video of a radio-controlled lawn mower. The video linked to a website with complete do-it-yourself plans for making your own RC lawn mower for less than \$500.

We contacted the designer, Terry Creer, who appears to be from Australia. He isn't very accessible. "Due to the lack of time at the moment I cannot answer any emails," he writes on his website along with a disclaimer that if you build a mower based on his design, you do so at your own risk.

Creer's website features many pages of pictures and descriptions to help build a mower he says you can operate from the comfort of a deck chair or hammock.

The mower is powered by the motor, circuitry and batteries from an electric wheelchair. It's supported by a frame made

from square steel tubing and a tray for the batteries. The frame is on wheels off the wheelchair. The handles and wheels are removed from the mower.

Creer offers a couple of options on how to set up the joystick and radio-controller.

"A standard, low-cost 2 channel hobby transmitter and receiver pair are bare minimum to control the beast," Creer writes. "I really have no idea why no one has attempted this before. It works well, and it uses the wheelchair's original drive circuitry. That's a mark for simplicity and another mark for cost-savings."

Here are the websites for the plans (<http://members.iinet.au/~tncpshow/RCLM/intro.htm>) and a video of the mower in action (www.youtube.com/watch?v=l8Wz_OXJfyg).



Using website plans you can build your own radio-controlled lawn mower for less than \$500. Mower is powered by the motor and batteries from an electric wheelchair.