

Home-Built "Cat" Tractor

Leon Abbot spends a lot of time ice fishing in the winter near his home in Siren, Wis. Two years ago, he decided to build a machine that would make it easier to get to remote lakes, traveling over deep snow through heavily wooded areas.

The result was an innovative tracked "Cat" tractor that worked out so well he now uses it for many other chores around the repair shop which he has operated for more than 30 years.

He built the frame out of heavy channel iron and mounted a Wisconsin V-4, air-cooled engine on front. Abbot converted the hand-cranked engine to electric start by mounting a triple pulley on the flywheel to accommodate a starter and alternator (the third pulley drives a hydraulic pump).

Figuring out how to mount the 12-volt automotive starter motor was a problem. He had to come up with a way to release tension on the belt once the engine started so it wouldn't burn out the starter. He ended up mounting the starter on a hinged bracket, and running a control rod back to the driver's seat. The instant the motor starts, Abbot uses the control rod to release the starter, slackening the belt.

The add-on automotive alternator charges a 12-volt battery that mounts behind the engine.

Abbot used two Chevy Vega rear ends with identical gear ratios to power the rig. The rear ends face each other and are connected by a drive shaft fitted with a 4-in. drive sprocket that's chain-driven by a 12-in. sprocket on the output shaft of a 1941 Ford 4-speed truck transmission mounted behind the engine. Abbot clutches with a built-in engine clutch.

The center wheels on each side are

mounted on a non-powered axle that moves up and down, which Abbot says is key to success of the machine.

"When I first built it, I only had two wheels per side. It dragged too much and was hard to turn. I position the center wheels a few inches below the drive wheels so the rig sort of pivots on those wheels," he says.

To make the tracks, Abbot simply cut the sidewalls out of standard 38-in. tractor tires and then bolted metal U-shaped guide brackets to the inside of the lugged belt. The guide brackets hug the outside of the drive wheels, holding the track in place. The front drive axle mounts on sliding brackets and can be moved forward as needed (via turnbuckles) to tension the tracks. "I haven't had any trouble with the tracks. They stay on great, have tremendous traction and don't seem to wear at all," says Abbot.

He steers the tracked tractor by braking either side with two levers. All four drive wheels are braked, controlled by a master cylinder on each side of the machine.

Two high-backed car seats mount at the back of the machine. There's a hitch on both front and back. In addition to using the rig for wintertime recreation, Abbot also mounts a blade in front to move snow and dirt. Originally he rigged up a hand-cranked winch to raise and lower the blade from the driver's seat (see photo). Recently, after mounting a hydraulic pump on the engine, he put hydraulic lift on front of the tractor. He also uses the tractor to skid logs out of the woods. "It has a lot of power," he notes.

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"High Lift" Equipment Loader

"It'll pick up an 80 hp tractor weighing 8,000 lbs. and safely load it onto a truck or trailer," says Lynn Youngberg, Verona, Mo., about his "high lift" front-end equipment loader built out of an IH 806 tractor.

Youngberg removed the front axle from his 806 tractor and replaced it with the rear steering axle off a International 915 rice combine which is much heavier built. The larger axle increases the length of the tractor by 2 ft. The "high lift" boom extends from the back of the tractor to about 5 ft. in front. A 3-stage, 6-ft. stroke telescoping hoist cylinder, salvaged from a dump truck, mounts at the front of the tractor to provide lifting power.

"It can lift small combines and tractors up to 15 ft. in the air and lets us stack equipment on our trailer," says Youngberg, who buys salvage combines and tractors and sells them at auctions. "The end of the boom is equipped with a chain and there's also one directly over the front axle. We can use both chains at the same time. We use the chain closest to the tractor when the implement puts too much weight on the front end of the boom. To lift small combines such as a Massey 300 we wrap a chain around each

side of the frame behind the engine. We lift the rear end of bigger combines and drag the front end on the ground. We also use it to lift combine headers, plows, and even dump trucks."

Youngberg bolted siderails salvaged from a Deere 4020 tractor to the front end of the 806 tractor to support the lifting cylinder, tying the add-on siderails to the front axle. "Most of the weight carried is on the front axle, not the frame of the tractor," notes Youngberg. To help counter balance the front of the tractor he added weights at the rear. He removed the tractor's pto shaft and mounted a steel plate over it, then used angle iron and plywood to build a box and poured concrete in it. He also replaced the tractor's original 18.4 by 38 tires with 20.8 by 34 tires because all the extra lifting was causing the originals to blow out.

Youngberg custom builds the boom tractor for about \$2,900.

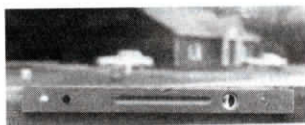
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"Make Do" Grade Level

"It's great for digging drainage ditches, terracing to drain water into a pond, building foundations, setting concrete forms, and many other jobs around the farm," says Thomas Chunn, Columbia, Tenn., about his "Make Do" grade level.

"It eliminates the need to have a surveyor standing by at \$100 per hour and you can read it fast and get out of the way of heavy equipment, saving the operator's time. And because you read it at eye level, it's much easier and more accurate than if you tried to do the same thing with a level and a 2 by 6," says Chunn.

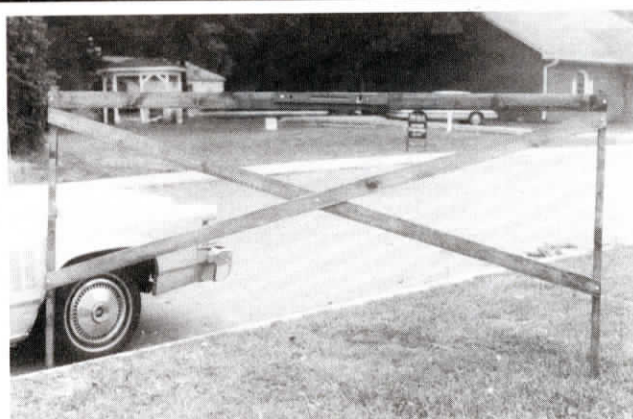
He simply mounts a standard 2 to 3-ft. long carpenter's level at the center of the top rail of a 10-ft. long wooden frame that looks like a farm gate. One end of the level pivots on a single bolt. The other end of the level moves up and down, held in place at different graduated levels depending on how much "fall" you're trying to measure on the job. It can be set at



anywhere from 1 in. to 4 in. of fall every 10 ft., for example.

Here's how you use it: Say you're digging a drainage ditch 100 ft. long. The first thing to do is to determine how steep a grade you want from one end to the other. For sake of example, say you want the ditch to slope a total of 10 in. from one end to the other. That means you want it to drop 1 in. for every 10 ft. of ditch.

The first thing to do is adjust the Make Do level to grade. You do that by driving two stakes into the ground 10 ft. apart and level the tops of the stakes using a straight



2 by 6 and a level. Then place the Make Do level on top of the two stakes, placing a 1-in. thick wood block under one end. Then adjust the level at the top of the Make Do frame so that it reads level. This setting will give you your 1-in. grade.

Put in a stake at the starting point and begin digging the ditch. After you've gone about 12 ft. or so, set one end of the Make Do frame on the first stake and drive a second stake under the other end until the Make Do reads "level". Con-

tinue the procedure 10 times until you reach the end of the ditch and then backfill to the top of the stakes.

"It's fast and easy. We recently dug a 300 ft. line in just four hours, including laying a 6-in. PVC drain pipe and backfilling," says Chunn, who sells plans and instructions for do-it-yourselfers.

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