



## Tractor PTO Powers "Mud Proof" Trailer

In the mountains surrounding his farm, Melvin Whitaker, Kanosh, Utah, uses a tractor-pulled trailer to haul 2 to 3 tons of wood. Even on steep, muddy slopes he seldom gets stuck because both wheels on his trailer — the cut off bed of an old pickup — are powered by the tractor's pto.

"Together, the tractor and trailer work like a four-wheel drive rig," says Whitaker. "When we get in muddy conditions, we can engage the tractor's pto. It works through the transmission of the trailer to turn the wheels and self-propel the trailer."

To build the trailer, Whitaker started with an early '70's 3/4 ton Ford Camper Special pickup, equipped with a long "fleetside" bed and heavy leaf springs. Using a cutting torch, he cut off the pickup behind the cab, leaving the transmission intact.

Next step was to reverse the pickup's rear end, rotating it 180° so that the tractor pto shaft turns in the same direction as the trailer's pickup driveline. "Originally, the tractor's pto shaft and the driveline

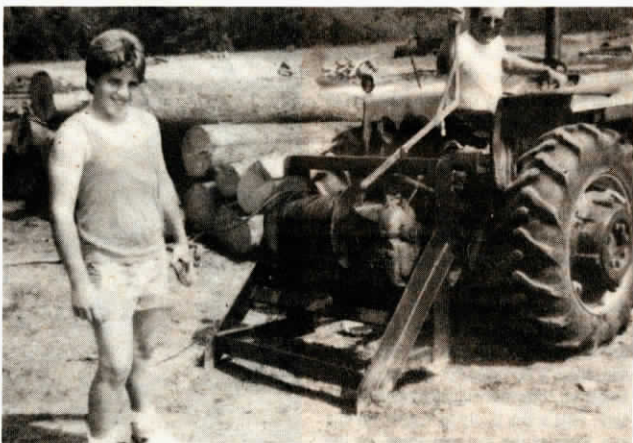
turned in opposite directions," explains Whitaker. "Without rotating the rear end, the trailer would have had 4 reverse gears and 1 forward. Now, it has 4 forward and 1 reverse gear."

Next, Whitaker hooked up a 5 ft. long pto shaft, borrowed from an old grain roller, to the input shaft of the pickup's rear end. He also cut off the pto shaft's spline, sliding it onto the input shaft, drilling a hole through it and securing it with a key.

"A pto-powered trailer works best with tractors whose ptos can be engaged or disengaged without depressing the clutch," notes Whitaker. "On such tractors, you can let the tractor go as far as it can, then engage the pto by flipping a lever."

Whitaker runs his trailer's transmission in low gear only, engaging it only when the trailer needs extra power to avoid getting stuck.

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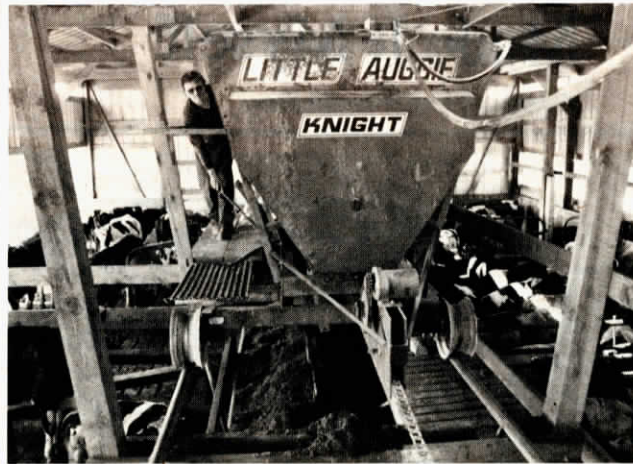
## 3-Pt. Mounted 20-Ton Winch

A 3-pt. mounted 20-ton "wrecker" winch lets Richard Newton, Marengo, Ind., pull even the heaviest farm machinery out of mud in minutes.

Newton mounts the 40-year-old winch on his 55 hp Massey 165 diesel tractor. He bought the rig for \$200 at an auction several years ago. It was equipped with a steel frame and a spool holding 200 ft. of 5/8 in. cable. Newton cut away part of the frame, then welded several pieces of heavy

angle iron together to form a triangle shaped frame. A cross member, 6 in. above the bottom of the frame, prevents the winch from completely sinking in soft ground.

To operate the winch, Newton sets it on the ground and flips a lever which disengages the cable, allowing him to reel it out. After setting the cable's hook on the vehicle, he activates the tractor's pto to start the winch. "The more the winch



## "Railroad" Feeder Made From Old Stationary Mixer

An electric-powered moveable "railroad" feeder, made by converting a stationary Knight mixer wagon to ride on rails and pull itself along a chain, lets Dave and Melvin Danzinger, Alma, Wisc., quickly and inexpensively feed 150 heifers in their slatted confinement barn.

"Pulling this homemade mixer with a 3/4 hp electric motor is much easier than pulling it with a tractor. It's also a lot cheaper and less expensive to maintain than a commercial belt feeder," says Dave. "Our belt feeder gave us a lot of trouble over the years, so we said 'why not use our mixer?' We figured out a cheap way to move it, and made it simple to operate. Best of all, it cost less than \$1,500 to build, compared to about \$6,000 for a belt feeder that would do the same job."

The Danzingers, who built the moveable feeder last November, put the 180 cu. ft. mixer wagon on an old wagon chassis, welding 2 rear ends under each end of the mixer.

The mixer runs back and forth on a homemade "track", located just above the bunk and 6 ft. above the floor. The "track" consists of two parallel 90-ft. long "rails", made of 2 in. dia. high pressure steam boiler pipe. A wooden framework supports the track.

Between the rails they installed a single apron chain, borrowed from a junked self-unloading wagon. Each end of the chain connects to a 31/2 ft. coil spring, removed from an old silage blower. The springs, in turn, are fastened to tall wood posts. The operator rides along on a side-mounted platform to control feed output. A 10 hp electric motor powers the mixer's unload auger.

Key to the moveable feeder's success is the self-pulling drive mechanism, an idea

the Danzingers borrowed from their commercial crowding gate. Three sprockets - 2 idler sprockets with a larger gear-driven sprocket between them - are lined up with the chain and enclosed for safety by two 18 x 24 in. metal plates. As the middle sprocket turns, the chain goes up and over it. "The gear-driven sprocket pulls the mixer along the chain, just like you would pull yourself along a rope," says Dave. "When you reverse the motor, the sprocket pulls the mixer in the opposite direction."

The 100 by 40 ft. building is divided into 6 pens, 4 on 1 side and 2 on the other, with each pen holding a different group of cattle. A 5-ft. wide bunk, with a divider board, runs through the center of the building. By flipping a lever, Danzinger can divert feed out the bottom to either side of the bunk. "It takes 1 1/2 min. to travel the length of the building, or 3 min. round trip. Counting filling time, it takes 30 min. to feed all of the cattle," notes Dave.

When loaded, the mixer weighs 5 tons. To support the track, the Danzingers built a wooden platform over a series of posts and vertical pipes spaced every 5 ft. A series of 2 by 8 in. boards, bolted to the posts, run crosswise. The outside posts slant outward to provide room for the mixer, which is wider on top, and an observation walkway.

A conveyor fills the mixer, delivering oatlage and haylage from a silo beside the barn. An auger from a bin delivers grain to the mixer. The Danzingers then scoop in protein, vitamins and minerals.

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pulls, the more it digs itself into the ground," says Newton. "The strain of the pull is mostly on the winch, not the tractor. The transmission's low gear ratio makes the winch extremely powerful. We've used the winch to pull out tractors, neighbors' grain trucks, felled trees, and even a fully loaded lime truck weighing 11 tons."

To protect the tractor driver from a snapped cable, Newton says he plans to

install a shield behind the driver. Altogether, he figures he spent about \$400 on the winch and frame modifications.

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