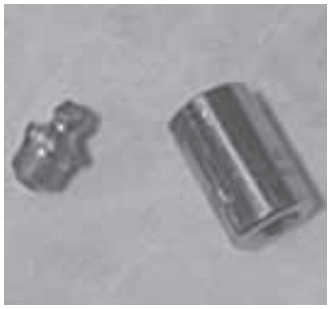

"It holds the zerk rigidly outside the socket at just the right depth," says Corbiel. "When you try putting a zerk inside a standard socket, there's no way to extend the zerk outside the socket far enough so the threads will engage and you can screw it into place. It also works great for removing zerks, too."

Sells for $10 plus S&H.

Gordon Fuller, Barrieæ, B.C. ph 250 672-0167; grfuller@uniserve.com: "The cord advance on my Weed Eater was always a hassle to operate. To solve the problem, I removed the spool and drilled two small holes about 1/2 in. apart, then threaded the cord through them as shown. I've made this modification for several friends, using different sizes and lengths of cord. Usually I use a cord that's 16 to 20 in. long."

Glen Teel, Hays, Kansas: "To get rid of rust inside a fuel tank, I put a small length of pipe in the fuel valve which sticks up in the tank about a half inch. The rust stays in the bottom of the tank. I need to remove and drain the tank once in a while in order to remove water.

"We buried an old tank next to our shop and put our high pressure washer down inside it so it won't freeze, allowing us use the pressure washer during the winter. We also store paint inside the tank."

Mike Toppen, Burnips, Mich.: "With all the interest in wind power, lots of people are taking old car alternators and rebuilding the

armature for use on a homemade windmill. I've found that by using high power permanent magnets, I can improve power production at lower wind speeds. I press apart the armature and pull out the field coil. Then I repack the field with the magnets and rewind the stator with extra wire. I find these two changes let me produce 13 volts at around 200 rpm compared to the same charge at the 250 rpm speed recommended with a traditional rebuilt alternator."

Mike Takeuchi, Columbus, Montana: "I needed to remove the valves on a small engine but didn't have a valve spring compressor. To solve the problem, I threaded a couple of cable ties on opposite sides of the spring and cinched them down in order to compress the spring. To release the spring, I simply cut the ties."

To save energy Art Hertz built this shop into the side of a hill.

Earth-Sheltered Shop

Art Hertz, Fairfax, S. Dak., built an underground shop that always stays at 40 degrees no matter how cold it is outside.

"The temperature inside the shop stays at about 75 degrees during the summer and never goes below 38 degrees during the winter, even when it's 30 degrees below zero outside," says Hertz.

The shop is built into the side of a hill and measures 48 ft. long by 32 ft. wide, with 14-ft. high sidewalls. There's a 24-ft. wide, 16-ft. high bi-fold door on one side. The walls are poured concrete.

The back side of the building, as well as the roof, are covered with 4 in. of insulation that has a plastic tarp over it, with a 2-ft. deep shell on top of that.

"I built it in 1990 and it has worked great," says Hertz. "The only time I use any heat is when I bring in a cold piece of machinery that's covered in snow and ice. In that case I bring a space heater inside the shop. There's a bathroom inside and the plumbing has never frozen. There's also a 12-ft. long by 5-ft. wide deep pit in the middle of the building for servicing trucks and tractors."

Contact: FARM SHOW Followup, Art Hertz, 36717 Quarry Road, Fairfax, S. Dak. 57335 (ph 605 654-2250).

"6-Stroke Engines" Use Waste Heat

Countless inventors all over the world are trying to use water to make hydrogen they can run in their 2 and 4-stroke engines. Bruce Crower took a different tack. He decided to make an engine that uses petroleum fuel in its first four strokes and water in strokes five and six. Essentiallly, what he does is capture and use engine heat.

Crower injects water into the cylinder after the exhaust from the gas ignition strokes is exhausted in the fourth stroke. As the water turns instantly to steam, expanding by a factor of 1600, the pressure carries the cylinder through a fifth stroke with the steam being expelled in the sixth stroke.

The effect is to both capture cylinder wall heat for use as power and also to cool the cylinder down. Crower found he could eliminate the normal engine cooling system on the prototype single cylinder diesel he has experimented with.

Crower described the benefits of this to Pete Lyons in a December 2006 article in *AutoWeek*, "Can you imagine how much fuel goes into radiator losses every day in America? A good spark-ignition engine is about 24 percent efficient, i.e. about 24 cents of your gasoline dollar ends up in power. The rest goes out in heat loss through the exhaust or radiator and driving the water pump and the fan and other friction losses."

Photo courtesy Eric R. Schweinhagen

Bruce Crower's 6-stroke engine uses petroleum fuel in its first four strokes and water in strokes five and six.

Crowder, an experienced inventor and engineer, was sidelined by health issues recently. His brother David Crower recently told FARM SHOW that Bruce's project is on hold until his return.

Contact: FARM SHOW Followup, Bruce Crower, Crower Cams & Equipment Co., Inc., 6180 Business Center Court, San Diego, Calif. 92154 (ph 619 661-6477; fax 619 661-6466; www.crower.com).

Another 6-Stroke Engine

Roger Bajulaz from Switzerland took a different tack to the challenge nearly 20 years ago and continues to refine it today. His company, Bajulaz S. A., patented a 6-stroke engine that uses heated air in a cylinder head modified with a combustion chamber inside an air chamber. Heated air from the cylinder charges a combustion chamber as fuel is injected. After ignition, the high pressure is released into the cylinder for an expansion stroke. The heat released at ignition heats the air in the surrounding air chamber, pressurizing it for release to power an additional stroke.

Bajulaz claims thermal efficiency of 50 percent versus 30 percent for traditional internal combustion engines, 40 percent reduced fuel use, direct injection and optimal fuel combustion at every engine speed. Plus, the company claims almost any type of petroleum or vegetable oil, even animal grease, can be used in the system. This could reduce emissions by 60 to 90 percent.

Aside from the head, Bajulaz claims no significant modification would be needed to a standard engine design. Like Crower's engine, the cooling system is reduced. Bajulaz S. A. projects that were a company to adopt the design, cars with it could be on the market within three to five years.

Heated air from the cylinder charges a combustion chamber as fuel is injected.

Contact: FARM SHOW Followup, Bajulaz S. A, Matutina Parc, 22 Ave. du Bouchet, 1209, Geneva, Switzerland (info@bajulazsa.com; www.bajulazsa.com).

Gas-Powered Air Compressor

When his portable generator went bad, Donald Bates, Toccoa, Ga., took the rig's 8 hp Briggs & Stratton electric start gas engine and battery and mounted them on an electric-operated, stationary air compressor, turning it into a portable, gas-powered model. The engine belt-drives the compressor just like the electric motor did.

"I use the compressor to operate air tools such as a grinder equipped with a sanding disc, a nail gun, and a spray paint gun. I can take it with me anywhere I want, and I think it's a lot cheaper to run the compressor on gas than on electricity. I spent less than $100 to convert it. A new 6 hp gas-powered compressor sells for $700 or more," says Bates.

He bought the electric-operated, stationary air compressor for $10 at a junk yard. It came with a 20-gal. tank and a belt-driven compressor. He threw away the electric motor, which no longer worked, and unbolted the compressor and moved it back to make room. He added a metal handle and stand at one end of the tank, and a pair of wheels from a riding mower at the other end. A pipe serves as the axle. He made an angle iron frame to mount the engine and battery. He also added an air pressure regulator and the air cleaner off an old garden digger. A solenoid switch makes it easy to start the engine.

Donald Bates bought a junked stationary air compressor with an electric motor that no longer worked. He replaced it with an 8 hp gas engine. It belt-drives the compressor just like the electric motor did before.

Contact: FARM SHOW Followup, Donald Bates, 6611 Simmons Rd., Toccoa, Ga. 30577 (ph 706 716-0789).