

GRIST

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Quick-Connecting, Low Cost Tire "Chains"

A surprise snowfall can catch you stranded—if your chains are elsewhere, or if you didn't want to invest in their cost. In addition, all too many designs of snow chains call for complicated mounting procedures, made all the more unbearable trying to put them on in a blizzard. Now, John Hoke, regional energy and conservation technology specialist in the National Park Service's National Capital Region, suggests an excellent alternative.

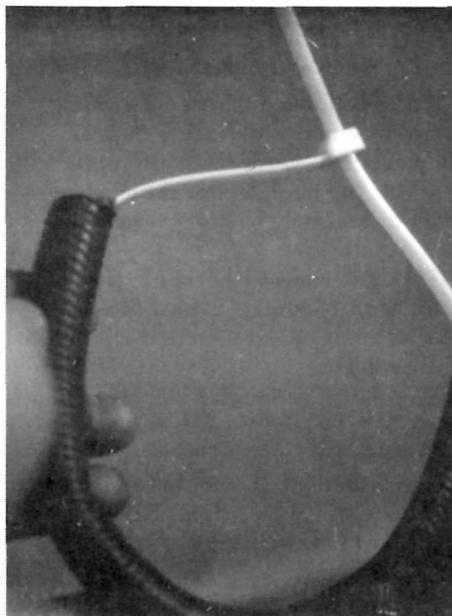
Plastic cable ties—a staple of electronics and telephone companies for bundling multi-strand groups of wire—are usually quite small. But some companies make ties that can gather 10-inch (25 cm) diameter bundles of wire, and withstand hundreds of pounds of stress. These cable ties, threaded through the wheel holes of an automobile tire, provide fair gripping power in snow. Added grip can be realized by leaving the ties a little slack, rather than pulling them up tight around the tire. Still greater traction can be obtained by threading a 12" to 15" (30-38 cm) length of old garden hose over the cable tie when it is mounted on the tire. Four ties per wheel is plenty; in a pinch, two each will work.

An added advantage of the ties appears when a car so equipped finds itself on clear pavement. The cable ties do not bang up the fenders or cause so much vibration when travelling over clear ground at higher speeds. If they do break, they won't wrap around the axle or do any damage when thrown. (And it is not a costly loss, for they are only 25¢ apiece.)

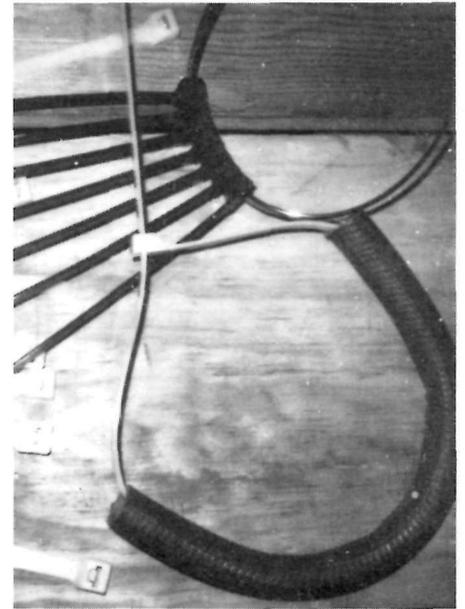
These bigger cable ties are equipped to be undone. So they can be removed for later use, and they take up little room tucked away in the trunk. Many companies making such cable ties can be found in Thomas' *Register*. The units shown in the photographs are the largest made by the Panduit Corporation of Tinley Park, Illinois.



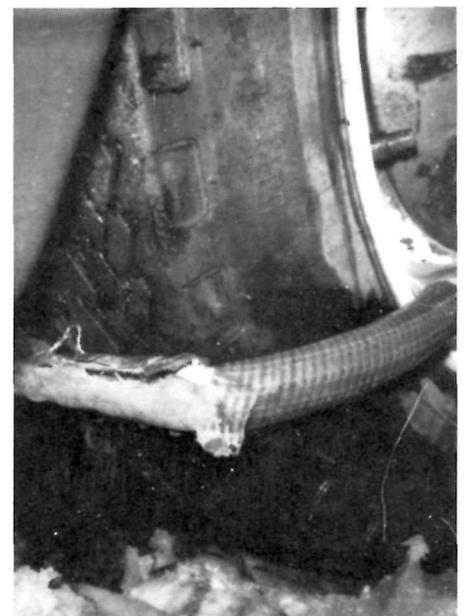
Cable tie threaded through the wheel, with section of garden hose.



Cable tie will fit most any wheel. Length of garden hose depends on tire size. "Pigtail" can be cut, but does no harm left hanging.



Cable tie and garden hose assembly, with black and white ties in background.



They will wear—on pavement—but it took ten miles (16 km) of highway to do this much damage.

Ingenuity

GRIST

A Publication of the Park Practice Program

The Park Practice Program is a cooperative effort of the National Park Service and the National Recreation and Park Association.

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The Park Practice Program includes: *Trends*, a quarterly publication on topics of general interest in park and recreation management and programming; *Grist*, a bimonthly publication on practical solutions to everyday problems in park and recreation operations including energy conservation, cost reduction, safety, maintenance, and designs for small structures; *Design*, a quarterly compendium of plans for park and recreation structures which demonstrate quality design and intelligent use of materials.

Membership in the Park Practice Program includes a subscription to all three publications and a library of back issues arranged in binders with indices and all publications for the remainder of the calendar year. The initial membership fee is \$80; annual renewal is \$20. A separate subscription to *Grist* is \$15 initially and \$7.50 on renewal. Subscription applications and fees, and membership inquiries should be sent only to: National Recreation and Park Association, 1601 North Kent Street, Arlington, VA 22209.

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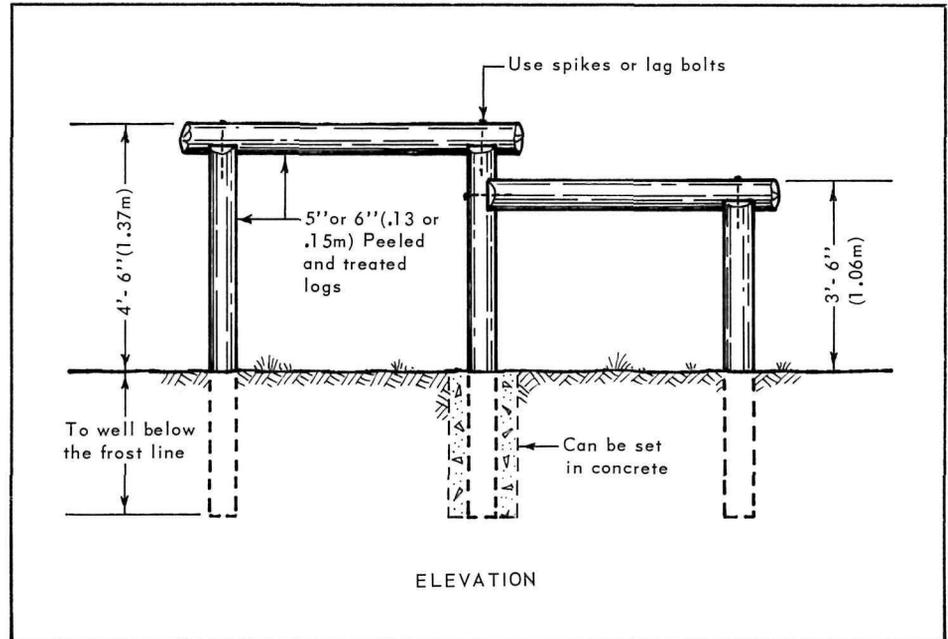
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FOR SAFETY'S SAKE

All ideas and suggestions shared in the pages of GRIST are presented as guidelines, not final working blueprints. Be sure to check any device or plan you want to adapt for compliance with national, state and local safety codes.

Camera/Binocular Rest



From Bob Standish, National Park Service editor of *Parks* magazine, comes this simple but useful design for a camera and/or binocular rest.

The stand is made of five peeled logs, 5 or 6 inches (13-15 cm) in diameter, lag bolted or spiked together. The verticle

logs should be sunk well below the frost line. Concrete footings may be used for added strength, if desired.

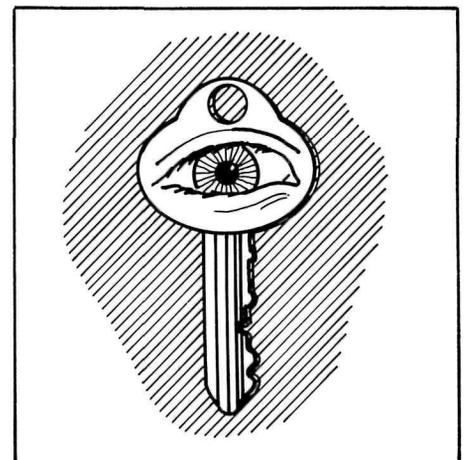
This handsome camera/binocular rest can be installed at scenic overlooks or at game and foul viewing spots.

Shut-Off Reminder for New Alarm System

There is nothing more embarrassing, time-consuming, and costly than an employee's forgetting to turn on or shut off the new electric alarm systems used increasingly to protect buildings and installations.

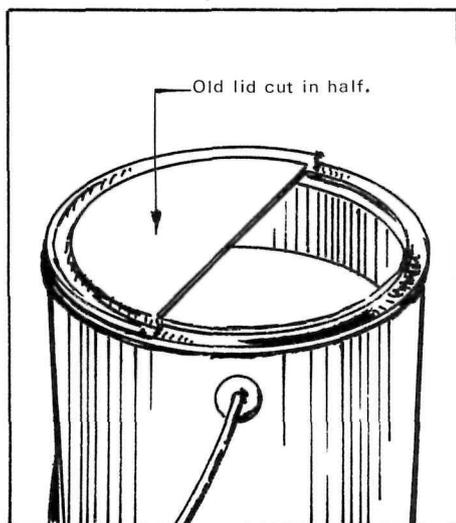
Park Aid Howard A. Smith, Jr., of John Muir National Historic Site (CA), has an amusing yet effective solution to this problem.

To prevent accidental tripping of the alarm by any staff member or volunteer, he suggested placing a "Key to the Situation" above the inside of the exit door at eye level. This large cardboard key, with an eye painted on it, is positioned by the last person leaving for the night. People entering in the morning are startled into remembering that the alarm must be turned off without delay, or the time



lapse will trip and the police will arrive—with unfortunate results.

This clever solution saves frayed nerves and prevents time-consuming embarrassments.



Dripless Paint Can

One of the most common and annoying painting problems is the way that paint accumulates in the rim of the can as you wipe the brush after dipping. Inevitably, the paint begins to drip down the side of the can, creating a sloppy mess. Norma Walsh, of San Diego (CA), shared her solution to this nuisance in a recent issue of *The Old-House Journal*.

"I created a most satisfactory solution by taking an old paint can lid and cutting it in half. I fit this half-lid to the can I'm using and wipe the brush against the straight part of the half-lid. I turned the metal down slightly with pliers so that there wouldn't be a sharp edge to damage bristles. When I'm through painting, the regular lid is put back on the can—without paint oozing down the side!"

How to Align Projectors in Spite of Sunlight

Aligning your projectors for an outside evening program can pose problems if you set up while the sun is still shining, or even fading. If you use the popular two projector and dissolve unit format, you will have a hard time projecting enough light through your slides to align the two projectors so that both slides appear in the same size and position on the screen.

Larry Frederick, assistant chief of interpretation at Wind Cave National

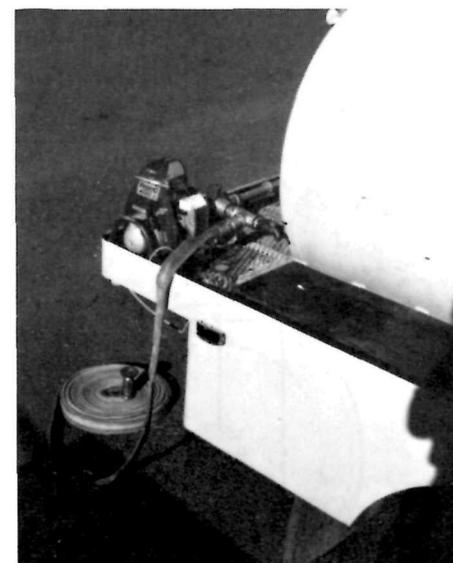
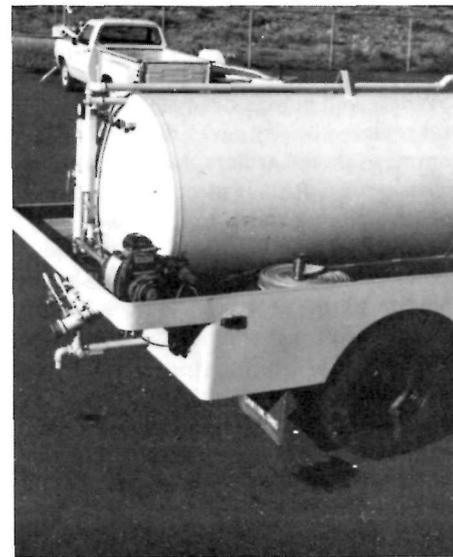
From Septic Tank Pumper to Fire Truck

If you want to boost your fire fighting capability, try this idea shared by Alan D. Mason, a maintenance worker at Curecanti National Recreation Area (CO). Convert a 1,000-gallon (3,800 l) septic tank pumper into a fire truck! With the following simple adjustment, this vehicle can serve dual purposes as both septic tank pumper and fire fighting apparatus.

The Boyd VAC-U-PRESSURE pumper unit modified by Mr. Mason has a 13-inch (32.5 cm) diameter steel plate containing one 3-inch (7.5 cm) waste water dumping valve. This plate is drilled to receive a one-inch (2.5 cm) pipe nipple. Attached to the nipple are the necessary valves, fittings, and pipe to plumb in a Pacific pumper mounted on the truck. A 1½-inch (3.75 cm) fire hose is attached to the Pacific pumper for fire fighting and filling 50- and 100-gallon (190 and 380 l) slip-on Pacific pumpers on pickup trucks. A garden hose is used for filling backpack pumpers.

This modification enables a large quantity of water—1,000 gallons (3,800 l)—to be available at the scene of a fire. The vehicle can propel water through a 1½-inch (3.75 cm) nozzle some 100 feet (30 m) onto the fire. It also can refill smaller pumpers, thus permitting them to remain near the fire scene.

Each time the tanker is used for pumping septic tanks, it is flushed and refilled with fresh chlorinated water. So there is always a supply of clean water ▶

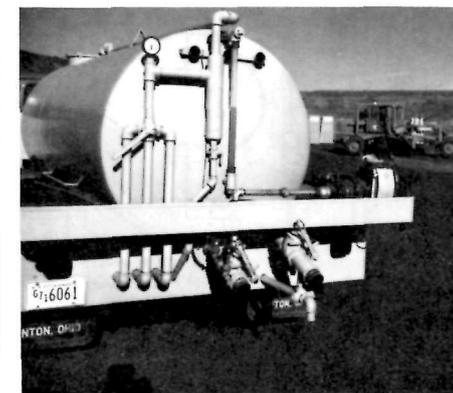


ready for fighting fires.

This dual purpose vehicle is particularly useful in areas where there is both a water shortage and a high possibility of fire.

Park (SD) offers one solution to this dilemma.

Insert blank slides, one horizontal and one vertical, at the end of your slide trays. Place the blanks in a Kodak metal slide binder to make them heavy enough to drop properly into the projector. The blank slides allow enough light to project on the screen for you to easily align the projectors. This method works while the sun is setting and long before visitors arrive to view your professional program!



Maintenance

Frame for Pulling Deep Well Pumps

When well pumps need to be pulled and replaced, many parks rely on commercial well drillers. Not only is this a costly procedure, it often is hard to get the job done on short notice. Now, Foreman John LeFevre, of Canyonlands National Park (UT), has devised a clever solution to this problem. He does the job himself, using a special frame attached to a fork lift.

The fork lift raises to a maximum height of 16 feet (4.9 m). To pull a 21-foot (6.4 m) length of pipe, LeFevre constructed a frame using 6-inch (15 cm) I beams. The frame is 12 feet (3.7 m) long and 22 inches (56 cm) wide. It has a plate welded in the top with a hole in the center through which an 8-inch (20 cm) snatch block pulley is strung.

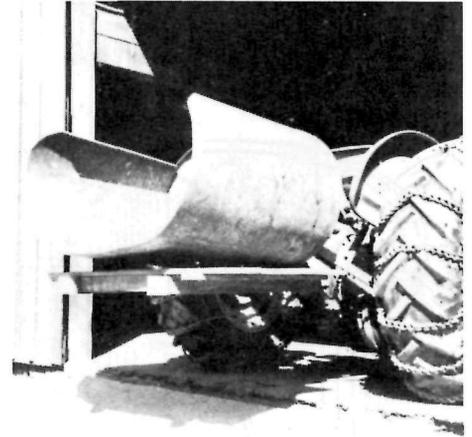
To attach the frame to the fork lift, set the frame upright, one leg on each fork

and fasten it to the load backrest with four U bolts. A $\frac{3}{8}$ -inch (.94 cm) wire rope cable, anchored to the top rear of the fork lift, is run to the top of the frame, through the pulley, then hangs straight down between the I beam frame and forks. To this end of cable is attached a 4-inch (10 cm) swivel hook.

To pull pipe from the well, just attach the swivel hook to drop pipe, then lift the forks. While the forks are raising 16 feet (4.9 m), the swivel hook with attached drop pipe will raise 21 feet (6.4 m).

LeFevre reports that this fork lift with frame is easy to transport, has worked successfully, and could well save the Canyonlands complex several thousands of dollars over the next few years.

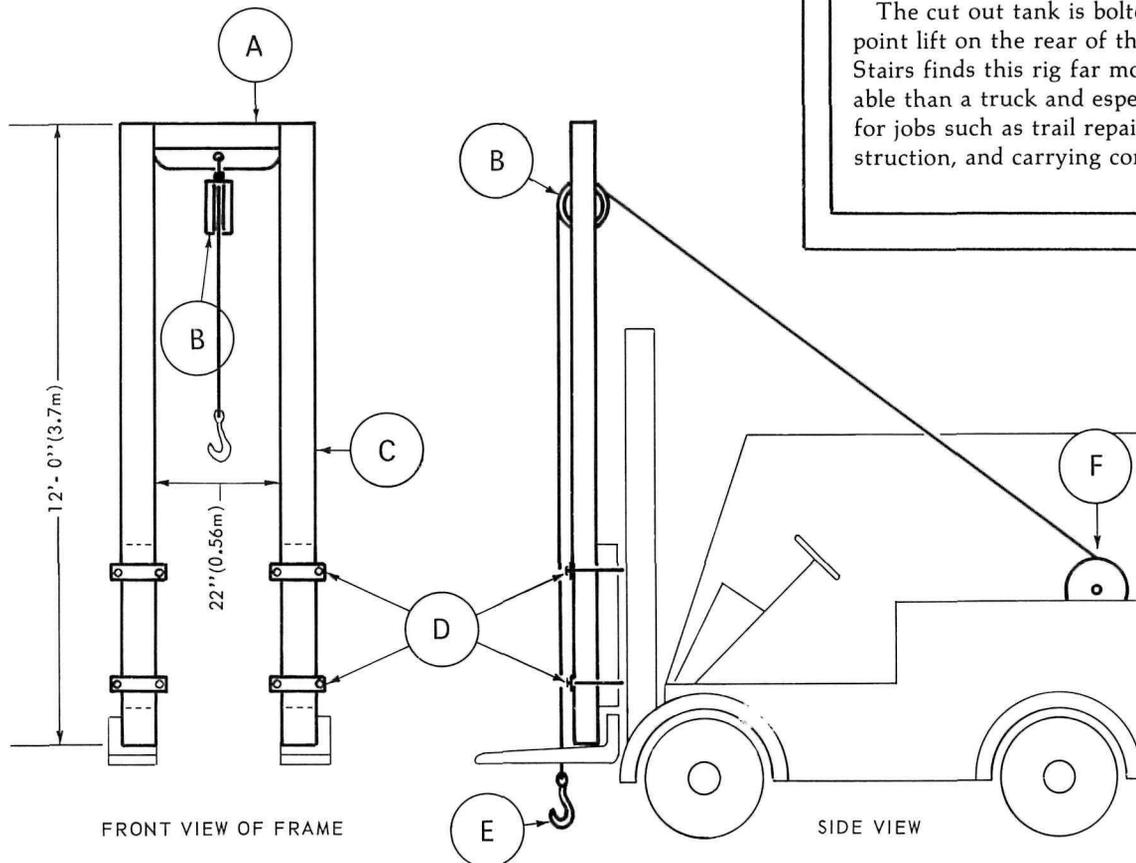
For his valuable suggestion, LeFevre was granted a \$275 National Park Service incentive award.



Tractor Bulk Carrier

Faced with the problem of transporting materials to remote locations that were inaccessible to light trucks, Bernard Stairs, of Topsmead State Forest (CT), used a surplus 275-gallon (1,045 l) fuel tank to construct this carrier.

The cut out tank is bolted to a three-point lift on the rear of the tractor. Stairs finds this rig far more maneuverable than a truck and especially helpful for jobs such as trail repair, fence construction, and carrying cordwood.



Vandal-Resistant Toilet Paper Holder for Vault Toilets

Manager George Welbon and Assistant Manager Richard Lebel, of Island Lake Recreation Area (MI), have come up with a design for a vandal-resistant toilet paper holder for use in outpost vault toilets.

So far, none of the holders have been stolen; maintenance on the unit has been minimal; and 70 percent less paper is being used than in previous years. Two rolls of paper fit on the holder, with one of them hidden; the second roll cannot be used until the first is finished.

To construct this toilet paper holder, the following materials are needed:

- one six-inch (15 cm) well casing, ten inches (25 cm) long
- two six-inch (15 cm) diameter steel plates, $\frac{1}{8}$ inch (.312 cm) thick
- one one-inch (2.5 cm) pipe, 11½ inches (29 cm) long

- one flat washer, two-inch (5 cm) diameter
- two 1½-inch (3.8 cm) Ls, $\frac{1}{8}$ inch (.312 cm) thick, seven inches (17.5 cm) long
- four carriage bolts with nuts and washers, three inches (7.5 cm) long
- one padlock
- two 2 × 4s (5 × 10 cm), 16 inches (40 cm) long—if toilet has a horizontal 2 × 4 bracing, this board will serve as the second point of support for the holder.

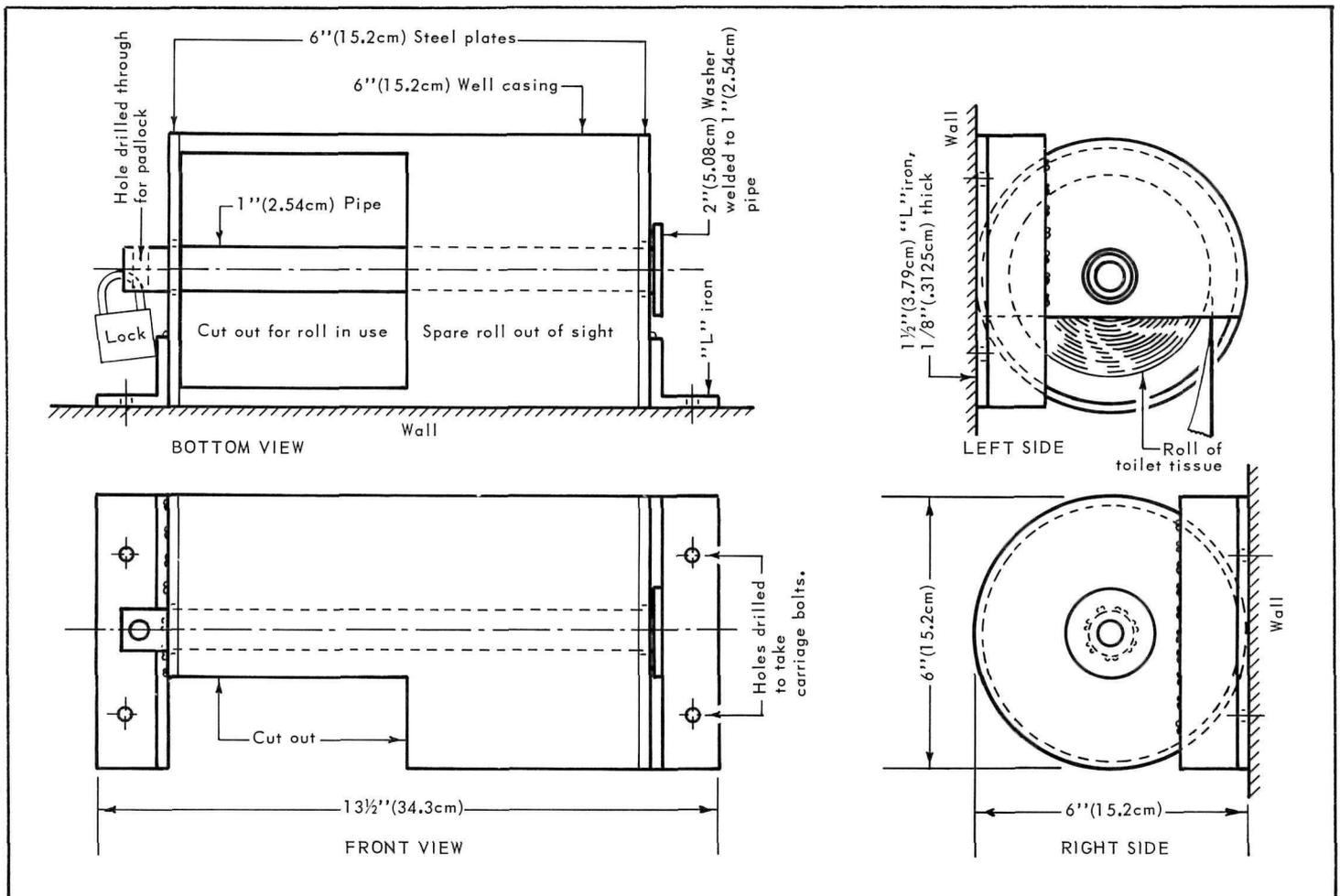
To make the holder, follow these steps:

1. Cut a hole in the center of each of the steel plates, large enough to accommodate a one-inch (2.5 cm) pipe without binding.
2. Cut one of the plates on a line drawn two inches (5 cm) below the center and extending out to the ends. Do not cut the other plate.
3. Weld one plate on each end of the well casing pipe.
4. Weld flat washer to end of one-inch (2.5 cm) pipe. Cut a slot in the opposite end so a padlock can be inserted after a hole is drilled.
5. Beginning at the end of the well casing pipe that has the plate attached, cut

off a five-inch (12.5 cm) section of pipe so that a full roll of paper will slide up into the pipe. Paper is held in place by the one-inch (2.5 cm) pipe inserted through the holes in the end plates.

6. Attach iron. Flat edge of plate mentioned in step #2 should be on the bottom and parallel to the floor after the brackets are welded into place.
7. Drill holes in top and bottom of each bracket to allow a $\frac{3}{8}$ inch (.94 cm) carriage bolt to fit.
8. Place the 2 × 4s (5 × 10 cm) in position on the inside wall of the toilet. The longer the 2 × 4s, the stronger the mount.
9. Attach carriage bolts from the outside of the toilet through the wall, 2 × 4 (5 × 10 cm), and bracket the holder. After nuts have been tightened, hammer the end of the bolts so the nuts cannot be removed.

According to the designers, a 180 lb (81 kg) man can stand on this toilet paper holder and jump on it in its mounted position and it will not break or be torn off. Also, the toilet paper is protected from water damage and the rolls are difficult for vandals to remove.

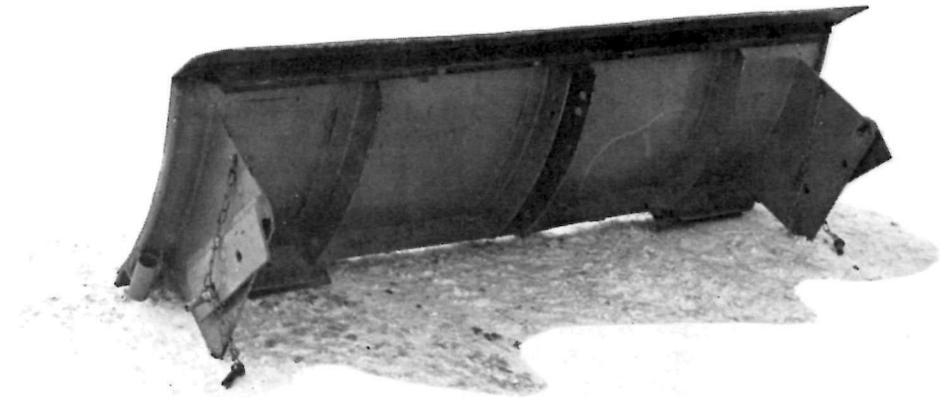


Ease Winter Maintenance Chores with this Snow Plow Attachment for a Tractor

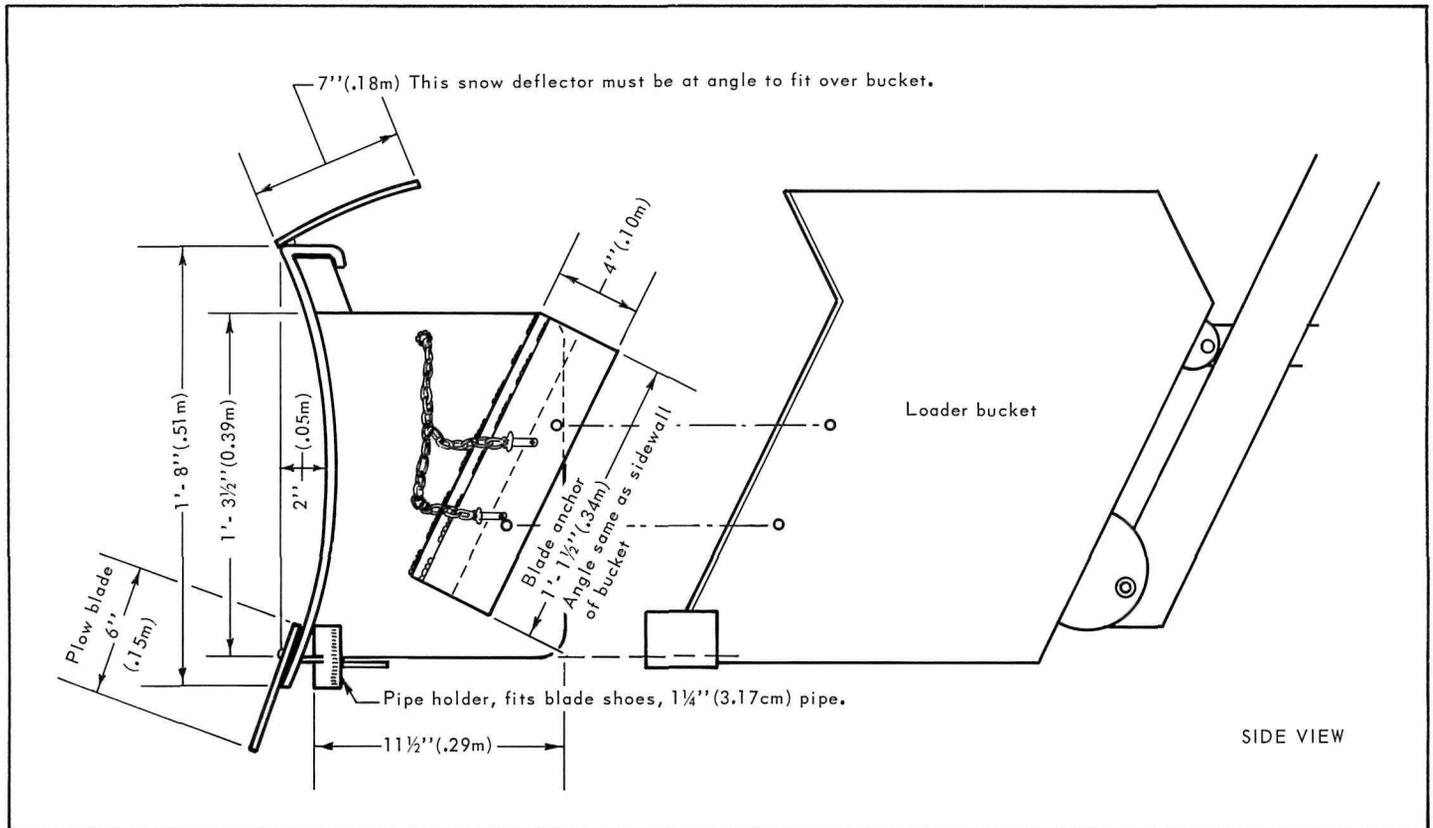
Ken Mayo's design for a snow plow that can be modified to fit an industrial wheeled tractor should prove useful to many parks needing an extra piece of snow removal equipment. Mayo, a carpenter foreman in the Taconic Region of the New York State Office of Parks and Recreation, designed and built this unit at minimal cost from scrap materials.

The snow plow blade can be attached to the bucket front end loader of the tractor by one man; he just inserts four pins. And the unit can push snow higher than many traditional snow plows. Materials and cost for building this device are:

1 surplus snow plow blade



2 pieces of plate steel 12" x 16" x 1/4" (30 x 40 x .7 cm)	\$ 6.00
1 piece of flat stock steel (for cutting edge) 1/4" x 4" x 6" (.7 x 10 x 15 cm)	\$ 10.00
8 carriage bolts 1/2" x 2" (1.25 x 5 cm)—nuts and washers	\$ 2.00
1 pair blade shoes (used)	\$ 10.00
Miscellaneous: welding rods, primer, paint, gas, oxygen, etc.	\$ 25.00
8 hours labor @ \$10. per hour to cover overhead	\$ 80.00
	<u>\$133.00</u>



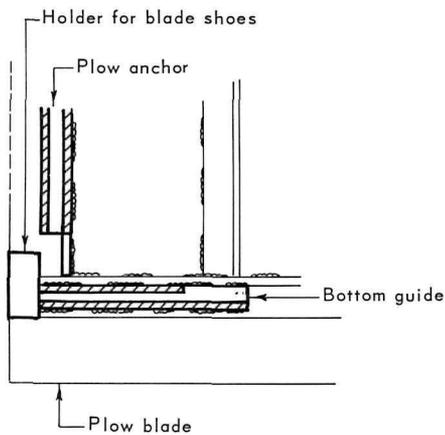


Temporary Walkway Lights for Special Night Activities

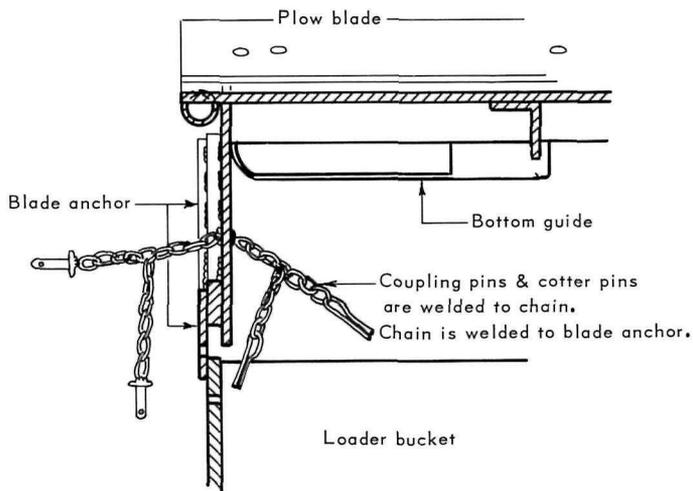
Parks needing temporary walkway lights for infrequent special occasions might try this idea sent in by Park Ranger John N. Tucker and Foreman Edward B. Caudillo of Cabrillo National Monument (CA). They mount temporary battery (6V) powered lights on a reinforced inverted wooden "L" support. These lights are positioned 30 inches (75 cm) above the walkway and 25 feet (750 cm) apart to provide optimum coverage.

Each temporary light costs \$2.69, the battery from GSA, \$1.00, and the wooden brace construction, approximately \$1.50—a mere fraction of the cost of permanent lighting. These lights require little storage space and can be used on many occasions.

Potential vandalism can be reduced by removing the globe and battery immediately after each use and by installing the battery just before dusk—installation takes only 10 seconds per fixture. When good batteries are used, these lights will operate continuously for about 6 hours.



REAR VIEW



TOP VIEW

Safety

Use a "Jumar" and Leather Brace to Climb Trees Easily and Safely

Climbing trees to remove their limbs or top sections can be tiring work when the climber must rely on a free swinging rope and use only his arms and a climbing knot to ascend. Patrick Rhoan, forestry worker at Yosemite National Park (CA), has devised a good solution to this problem—a solution that reduces arm strain and general fatigue while it allows the climber to operate tools safely and more efficiently.

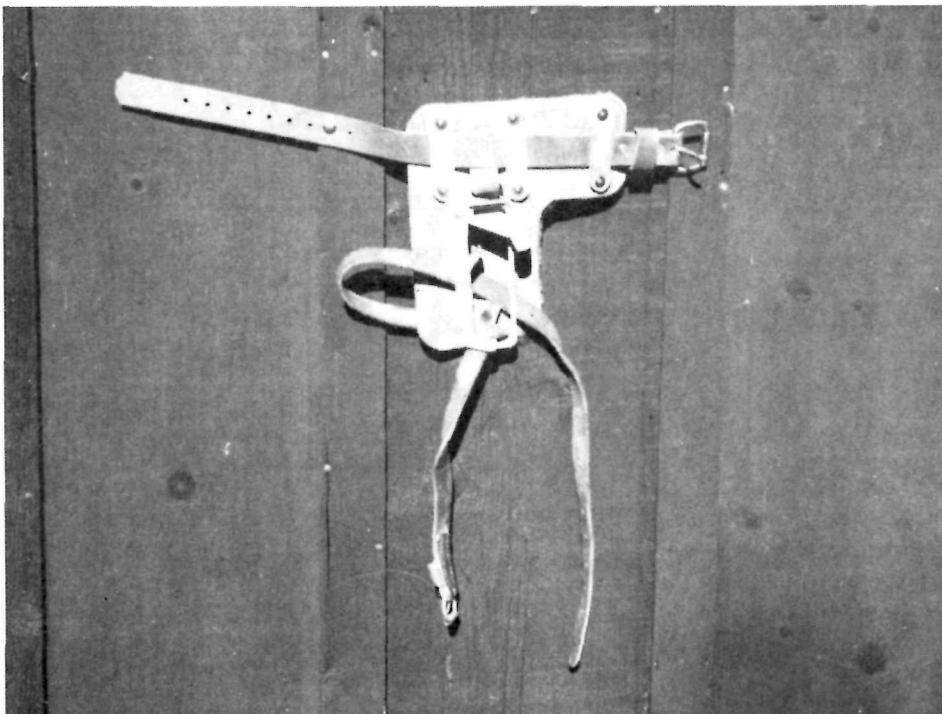
Rhoan's twofold solution calls for adapting a mechanical climbing aid and a specially designed leather brace. First, strap a "Jumar" or similar rope climbing device to your ankle so you can utilize your leg to lift your weight up the rope. This device also stretches the rope taut, making it easier to climb. Next, use a climbing saddle to hold your body weight comfortably. Secure the climbing saddle to the rope with a climbing knot which will allow you to ascend or descend.

Use of these two aids lets you shift your weight from one support system to the other and allows you free movement



while relying on either system. Also, the aids permit you to rest and to use your arms freely for working.

Rhoan claims this method's reduction in fatigue and its saving of energy for more precise work will reduce accidents, injuries, and equipment damage.



Safe Container for Carrying Blasting Caps

This idea, shared by John J. Rauk, trails leader at Glacier National Park (MT), provides added safety for blasters who must carry electric caps for blasting operations in their trails work. Rauk designed and built an explosive cap container that holds eight electric caps with eight-foot (240 cm) leads. His box is inexpensive to build, light in weight, and requires little maintenance.

The body of the box is a solid piece of Douglas fir, with $\frac{3}{4}$ " (1.9 cm) holes $2\frac{3}{4}$ " (6.9 cm) deep, rabbeted $\frac{1}{4}$ " (.6 cm). The box body measures $7\frac{1}{2}$ " (19 cm) in length, $3\frac{1}{2}$ " (9 cm) in width, and $3\frac{1}{2}$ " (9 cm) in height. Its lid is the same length and width, but $2\frac{1}{2}$ " (6 cm) in height. The lid is held in place by a leather strap fastened to the main body of the box with screws. Straps are hard tied to secure the lid, cutting down on static electricity by avoiding a metal buckle.

Painted red with "Blasting Caps" printed in white block letters on the top, this box is highly visible, even on snow blasting sites.

