

NATIONAL PARK SERVICE



JANUARY 1965

NUMBER 1

YOU BOUGHT IT - - NOW PUT IT TO WORK!

ANCHORAGE AND FOOTING  
FOR GUN CARRIAGES  
(NPS SER 64-77)

If you have a fort or battlefield location in your park, your gun carriages can be securely anchored on solid footing and will appear to be in a natural position for battle rather than on display, if you follow the suggestion of Ranger Fred Vanous, Richmond National Battlefield Park.

The gun shown here for which Fred designed the concrete footings and anchorage weighs 3600 lbs. Weight should be the controlling factor in determining size of footings, and for this gun Fred used the following dimensions for the plywood molds: length, 29 inches; width, 8 inches; thickness at ends, 6 inches; thinnest part of the concavity, 4-1/4 inches.



The concavity should coincide with the curvature of the carriage wheel rim. To get the exact curvature, use the center of the axle as the pivot point, and with a cord and pencil, and holding the plywood against the wheel rim, mark the curvature.

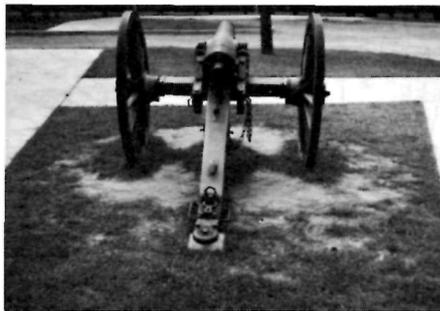
Each wheel footing weighs approximately 100 lbs. (reinforcing steel was added to the concrete, but almost any other metal scrap can be substituted).

For best results and natural appearance, the wheel footings should be installed as follows. Dig a slot slightly larger than the footing and at least 18 inches deep. If the soil is soft, place and tamp 6 inches of gravel or other aggregate to create a solid base, then add and tamp sand within 7 inches of the surface. Thus, when the footings are in place, the ends of the footings will be 1 inch and the centers 2 1/2 inches below the surface. This procedure not only results in a solid base,

but also simplifies levelling of footings prior to installation of the gun carriages. Note in photographs that the wheel footings are submerged so that only the fellys are showing, thus giving the impression that the wheels are resting on the turf.

The carriage trail anchor shown here weighs about 200 lbs. and has the following dimensions: top, 8 x 8 inches; base, 16 x 16 inches; height, 18 inches. The bolt which is 3/4 x 10 inches protrudes above the concrete anchor 2 1/2 inches. The protrusion of the bolt is important, because on most guns the carriage trail hookup mechanism has an insert which fits over the bolt, permitting use of a washer and nut, split with a hacksaw and heavily peened, to prevent removal by vandals.

The top edges of the concrete anchor are bevelled, as shown in the photograph, to accommodate the angle of the hitch



mechanism. Reinforcing steel rods or scrap metals should be used for additional strength in the anchor.

Fred says that after two years the installations at Richmond are still in very satisfactory condition. He writes that the footings and anchor may be poured in the comfort of the utility buildings during bad weather which prevents doing other outside work. Installation is simple and requires only two men.

HOMEMADE, KNOCK-DOWN  
AUDIO VISUAL CABINET  
(NPS W 64-57)

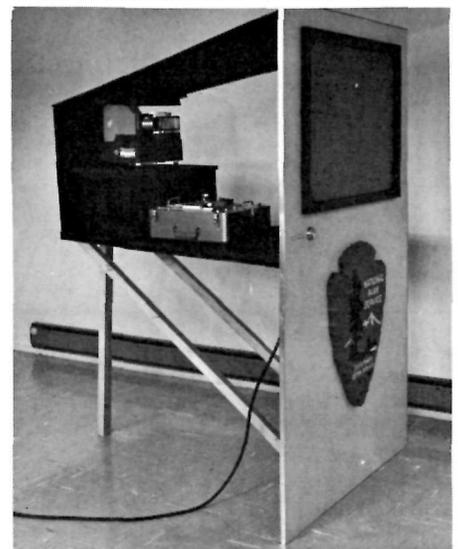
When a call came in to Coulee Dam National Recreation Area for an exhibit to be shown on short notice at a nearby boat show, Chief Park Naturalist Paul F. McCrary found a way to meet the request without using a cabinet from their per-

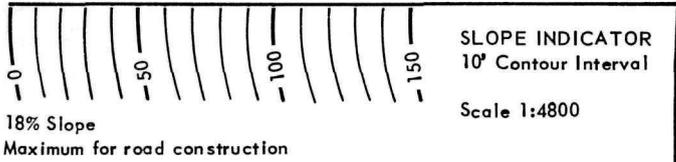
manent Audio Visual Cabinet Installation program.

A knock-down cabinet was constructed of plywood and fitted with a Polacoat Plexiglas, 25" x 37", rear projection screen, the whole assembly being fitted together with screws. A selectoslide projector with a 1 1/2" lens permitted direct projection to fill the screen from a distance of 40". The projector, which showed 31 titled slides, was controlled by a unit from a standard Audio Visual Cabinet Installation. A special tape was prepared which signaled the projector to change slides and shut down.

Special construction made assembly and tear down of the cabinet unit possible in 20 to 30 minutes.

Paul says that another advantage of the unit is the greater ease of transporting and handling.

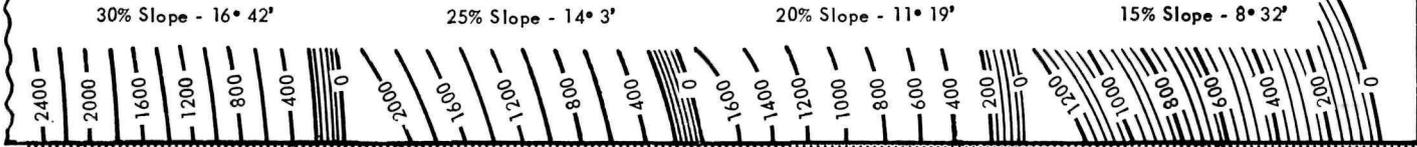
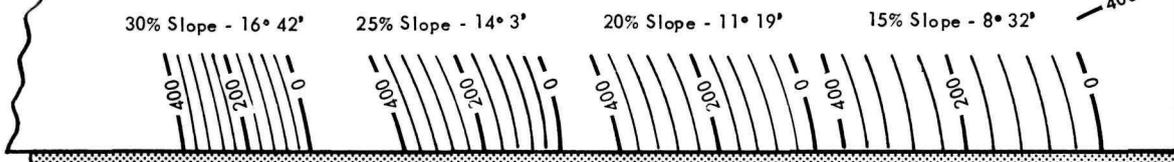
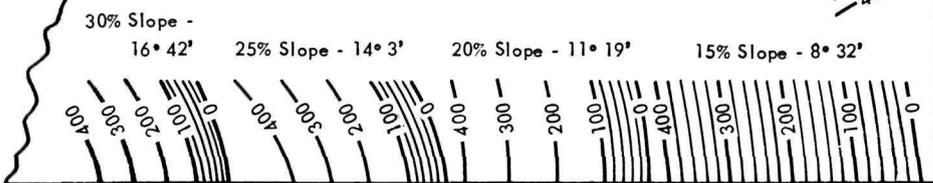
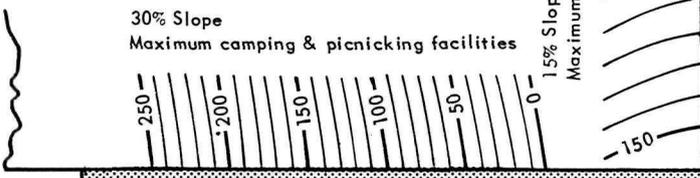




**FAST SLOPE ESTIMATING FROM MAP**  
(NPS W 64-80)

Even persons with little experience in working with topographic maps can tell the percent of slope quickly by using the guides worked out by William L. Lest, Recreation Planner, Western Regional Office, NPS.

By placing the appropriate indicator sheet over a comparable topographic map (e.g. U.S. Geological Survey quadrangle) so that the contours of the slope indicator match the contours of the map, you can tell at a glance the percent of slope. Of course, a separate slope indicator is necessary for each combination of map scale and contour interval encountered, but the time required to work up the set of guides is small compared with that required to get the measurement of the vertical rise in relation to a given horizontal distance on a map and dividing the former number by the latter to obtain the percent of slope. Bill's system eliminates errors, too.



**ADJUSTABLE DRAFTING AND ROUTING TABLE**  
(NPS SW 63-38)

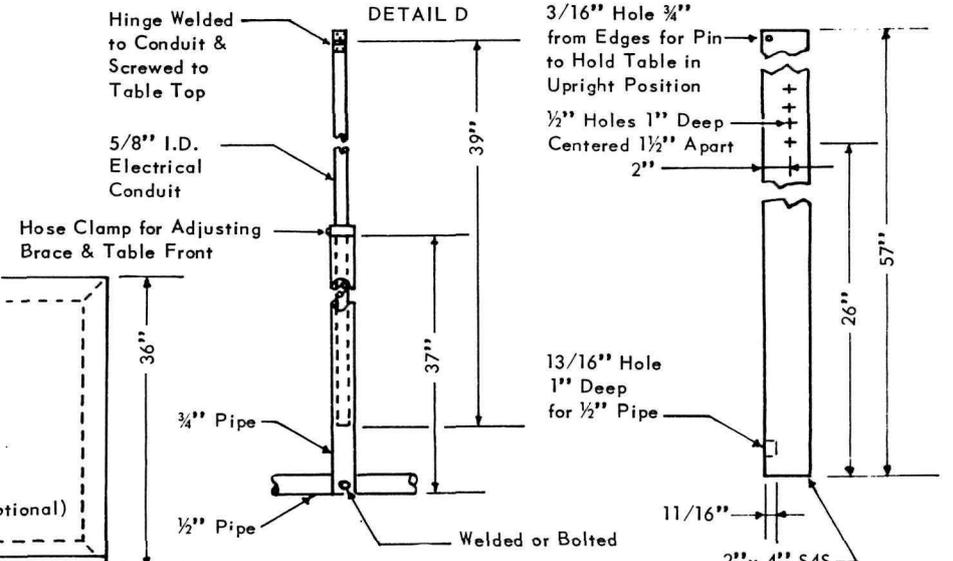
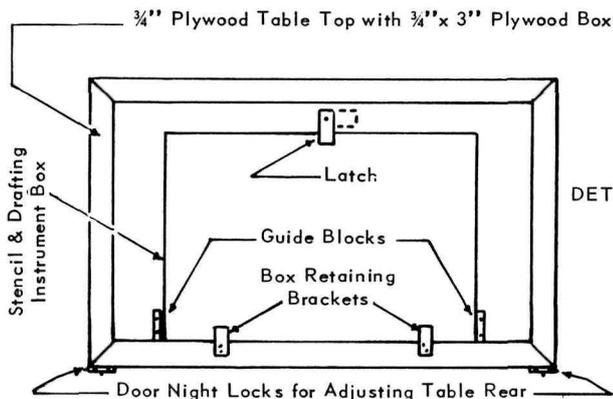
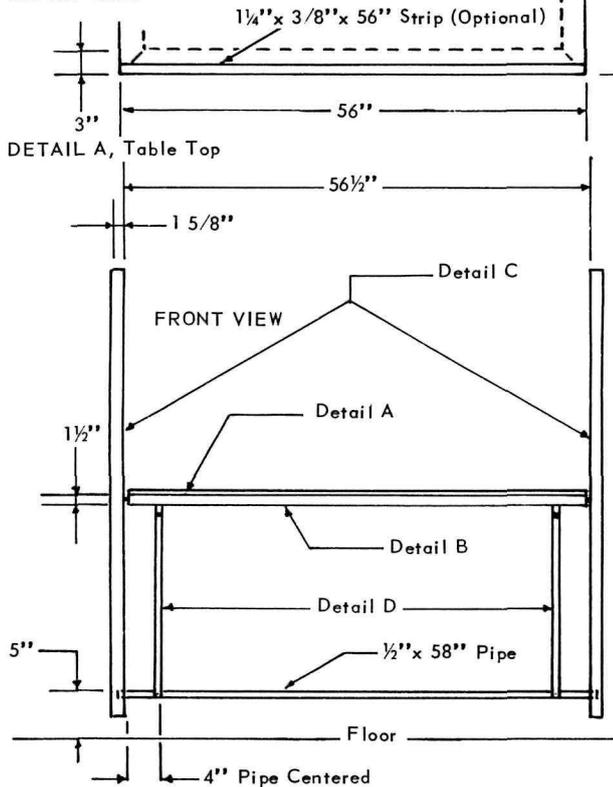
Designing and building a wall-mounted folding table that will serve well for drafting, for routing, or for shop desk purposes has won an award for Charles E. Blundell, Maintenance man at the Great Sand Dunes National Monument. Charlie's unusual table is simple in design and inexpensive to build, but it does more tricks than most of the expensive "store bought" kind.

The design shows up clearly in the photographs and sketch on the next page.

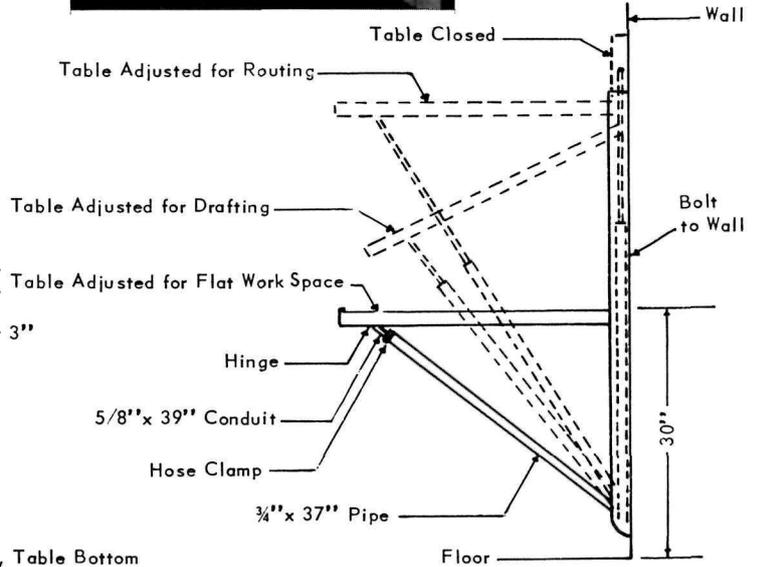
Dimensions could be varied to fit special needs. Note that the front of the table is supported by a pipe and conduit combination, one sliding inside the other—a 39-inch section of 5/8-inch conduit fitted into a 37-inch section of 3/4-inch pipe on each side. A hose clamp serves to hold the conduit in place at the desired point for each height adjustment.

The rear of the table is supported by "barrel bolts" (night locks) which serve as movable pins, slipping into half-inch holes one inch deep bored at 1 1/2-inch intervals along each of the two upright wall supports.

As an extra touch, Charlie provides a shallow stencil box of plywood fitted under his table.



DETAIL C



Charlie uses the high flat position of the table for routing and says that the workman can see his work better at that height and thus can work faster and more accurately. He uses a mid-height flat position for stenciling. Drafting is usually done at the mid-height sloping position.

**CHAIN SAW CARRYING STRAP**  
(NPS W 64-58).

Donald W. Everts, Maintenance man, and Richard T. Gale, Park Ranger, Coulee Dam National Recreation Area, together accomplished the seemingly impossible—a simple inexpensive, stable, and safe way to carry a chain saw.



By riveting a piece of nylon webbing around the handle so that the operator's arm extends through the webbing and grasps the covered saw blade, they made possible a balanced hold. The webbing should be only long enough to permit sliding the arm through. This length will not interfere with the safe and efficient operation of the saw.

**GLARELESS GLASS FOR FIRE TOWERS**  
(NPS SER 64-29)

Ranger Clifford W. Senne, Great Smoky Mountains National Park, suggests non-glare glass for fire lookout towers. Four Great Smoky tower cabs have been equipped with this glass, with the following advantages:

Glare is completely eliminated, and lookouts need no longer wear sunglasses on bright days. Eyestrain is markedly reduced.

Vision through near and distant haze is increased many times.

Looking through this type glass each ridge and other topographic feature is more sharply delineated than through clear glass.

Smokes that are difficult to spot through clear glass are brought into sharper focus and more quickly detected through non-glare glass than through clear glass, it is reported.

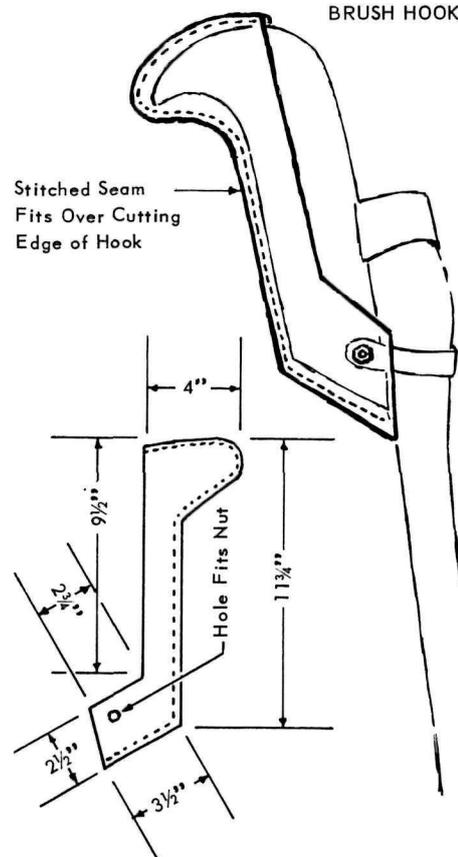
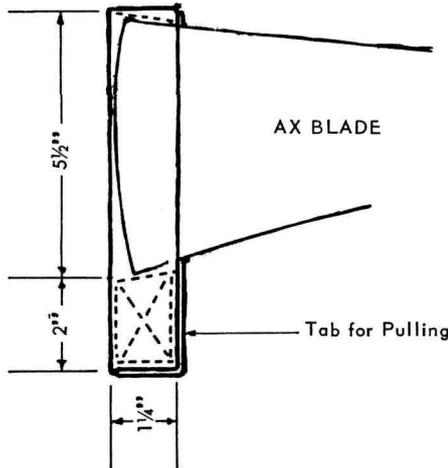
Faster detection is possible, resulting in earlier first attack and consequent minimization of burned area losses.

The glass installed at Great Smoky is Pittsburg Glass Company's Penvernon Graylite "31", 1/8" thick, double strength where small panes are used. For large windows Pittsburg Penvernon Graylite "61", 3/16" triple strength was used.

**PROTECTIVE TOOL COVERS**  
(NPS SER 64-44)

Sharpened hand tools carried without protective covers are a hazard to the carriers, particularly in woods and brush, and to riders in a vehicle, as in a truck going to a fire. When the tools are unprotected there is also the likelihood of loss of sharpness and nicking of the edges.

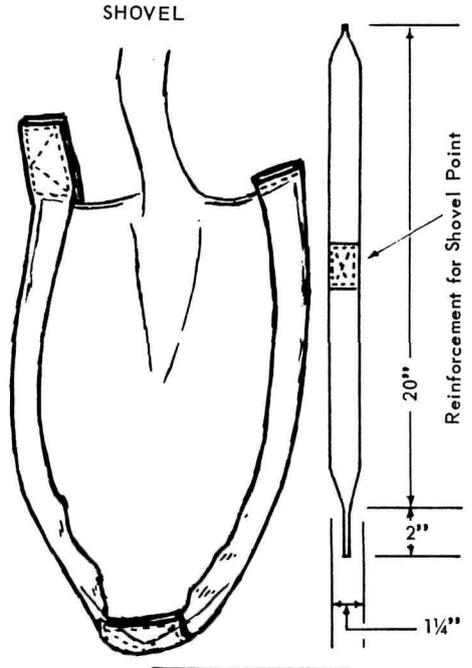
Park Ranger Alan M. Anderson, Blue Ridge Parkway, has designed tough, easy-on, easy-off covers for use in his area, the patterns for a few of which are shown in the sketches here.



The covers are made from .50" rubber with fabric in the center. Alan used 28-inch material from the Dayco Corporation, available for about \$2.75 a yard. A local trim shop stitched the covers for about

25¢ each. Costs of the covers varied, of course. Cover for a brush hook was \$1.15; for an ax, 40¢.

Readers of GRIST and PLOWBACK will recall other suggestions for making tool covers from discarded fire hose.



**SAFETY LEGS FOR CLIPPER MOWERS**  
(NPS SER 64-93).

To change blades on a clipper mower, the worker has to get under the machine. By designing safety legs to be used during the blade changing, Foreman G.C. Stevens, Natchez Trace Parkway (Dancy), has greatly reduced the hazards of the job.

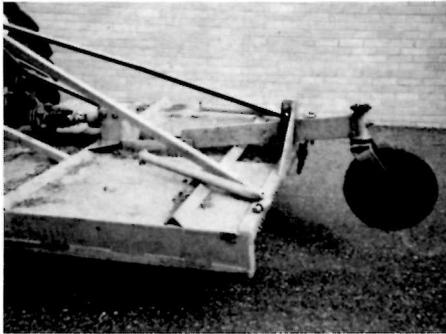


Mower with safety legs



Bolt prevents leg from kicking out or falling

Here's how the safety legs are installed: Using lengths of flat iron, prepare the means of hinging the legs to the frame. This may be done by boring a hole in the flat iron or by heating it and making a loop in the free end (see close-up photo). Make sure the free ends extend from the frame far enough so that the legs will clear it.



Safety legs in folded position

Make the legs of 1 1/2-inch galvanized pipe of the length required by your mower (they should be about 2 inches shorter than maximum lift height of rig). Weld or fasten a 1/2-inch bolt or rod in one end of the pipe and bend in L-shape, insert through the loop in the flat iron and hold in place with a cotter key. On the opposite end of the pipe-leg, weld a metal foot to prevent sinking into the ground from the weight of the rig. On each side of the legs, where they fasten to the mower frame, weld one piece of L-shaped metal with holes to accommodate a 3/8-inch or 1/2-inch bolt. This will prevent legs from kicking out or otherwise moving. The hinged legs fold on top of the mower frame when not in use, as one photo shows.

STEPS FOR "SMALL FRY"  
(NPS NCR 64-14)

Parks are for people and people come in all sizes. Those who come in the smallest sizes, namely children, seemed to Park Historian O. H. Van Zee, National Park Service, National Capital Region, to have been forgotten when new drinking fountains were constructed.



DAILY PROPERTY INVENTORY  
(NPS NCR 63-79)

The Area Chief, Potomac Park Area, National Park Service, National Capital Region, no longer has to wait for the yearly inventory to know for certain where all the accountable Government property is.

The thanks go to Oscar C. Livingston, Horticulturist, who devised a ready reference card index control system.

Previously, the only inventory record was the annual master inventory sheet issued by the Property Office and charge and credit tickets issued when the property item was issued or returned. If it was necessary to know how many of any particular item were on hand (as for instance, shovels in the case of an unusually severe snow storm), it was necessary to go through all of the accountable tickets, add this to the inventory sheet, then go through all the credit tickets and deduct this from the total. Even this did not give the location of all items.

Oscar's system makes it possible to learn from one card how many of any item there are and who has them.

The numbers across the top of the card (sketched here) represent the names of supervisory employees accountable for the item named on the card (#14 is the Area's storehouse). A key card indicates the names of employees to whom the numbers are assigned.

The system has saved many hours in taking annual inventory. A side advantage, due to the close check on the whereabouts and conditions of property, has been a reduction in misuse. Equipment is all either stencilled or branded with the Area identification and must be turned in if broken, or reported if lost, before replacement can be made. The signature of a person authorized by the chief of the section is required for all tools issued, replacements or otherwise. This close check also prevents such incidents as the turning in for replacement of a broken tool which never was issued to the employee.

SAMPLE

Date	Ref. No.	Surv'd	Rec'd	Total Chg. to Shop	Checked out to Individuals Shown as Numbers													Total Book	
					1	2	3	4	5	6	7	8	9	10	11	12	13		
1/1	Inv.			20	3		2			5	5								5
2/1		5		15	3		2			0	5								5
2/1	13296		5	20	3		2			5	5								5
2/10	13400		5	25	3		2			5	5								10

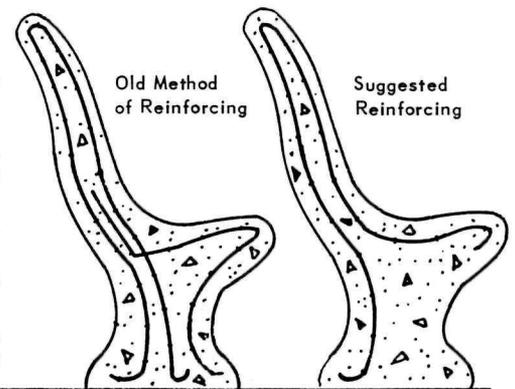
INVENTORY CARD      Item SHOVEL, long-handle, round point

These very important park patrons deserve a better deal, and Van suggested that every drinking fountain be provided with steps. Safety alone would justify the expense, but think, too, of this little lady's dignity!

MASON SAVES MONEY, WINS AWARD  
(NPS NCR 64-61)

Herbert Negus, a mason in the National Capital Region, National Park Service has worked on the casting of concrete park bench legs long enough to be an expert on the job. He noted that a lot more reinforcing rod was being used than necessary to make a strong, satisfactory job, so he sketched out the way to reinforce a leg with less steel, sent his sketch with an explanation, and won an award.

Herb's suggestion will save 500 feet of reinforcing rod for every 100 bench legs cast. It will also save man hours formerly used in making an extra bend or two in the rod.



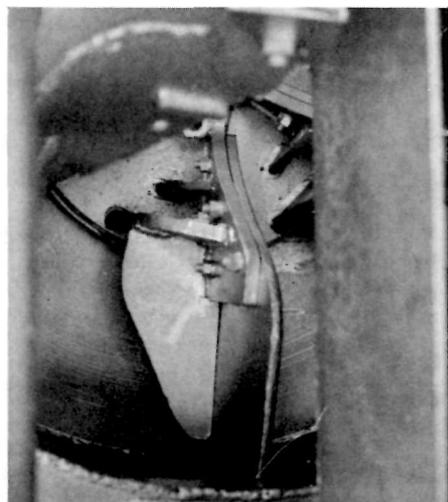
REINFORCING SNOWPLOW BLADES  
(NPS MW 64-70)

The original set of impeller fan blades (12) and two other sets for the Sicard rotary snowplow were broken and damaged beyond repair from the pressure of snow during the first winter they had the plow at Grand Teton National Park.

Darrell E. Budge, Shop Foreman, found a way to reinforce the blades, and received an award for his solution to the costly damage problem.



Broken Snowplow Blade



One of the Blade Supports Welded In Place

Fan blade supports were made by cutting two pieces (see photograph) from 1/2-inch x 6-inch flat iron and welding the two together to get a 1-inch thickness. All supports were shaped with a disc sander to eliminate the chance of changing the balance of the rotary. The supports were then welded to the impeller hub. Cutting, fitting, and installation took about eight hours and \$5 worth of materials.

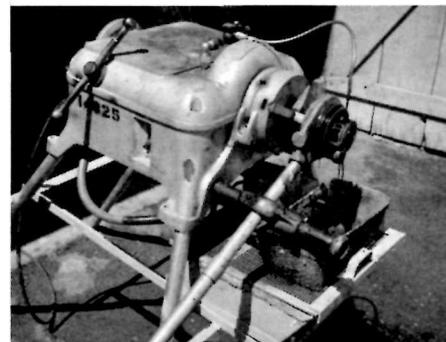
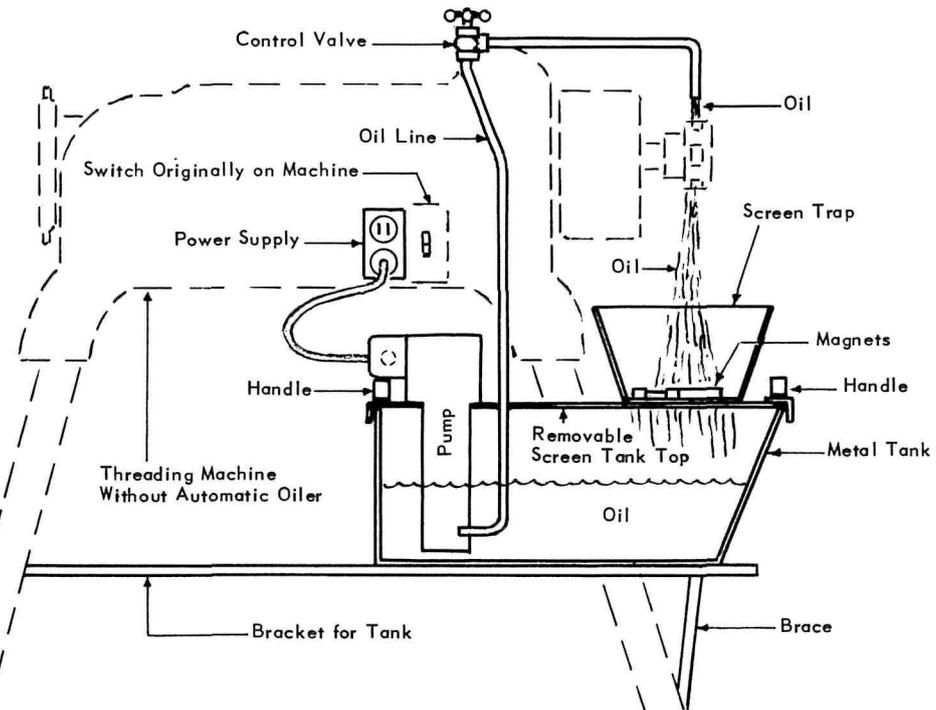
Since installation of these supports, only one blade has been replaced, in two winters and 280 hours of operation. This has meant a savings of about \$200 in parts and shop labor, not to mention time the snowplow would have been out of use.

AUTOMATIC OILER FOR  
THREADING MACHINE  
(NPS SW 64-75)

When a lot of pipe must be threaded each week on a power threading machine, applying cutting oil by hand becomes a tiresome chore and sometimes sufficient oil is not applied, reducing cutter life and sometimes giving a poor thread. Ray G. Martinez, Jr. of Organ Pipe Cactus National Monument devised a

power oiler to take care of the job and incidentally to make scrap disposal easier.

The photograph and sketch show Ray's rig, which includes an open oil pan with wire mesh cover, an oil pump, and a wire basket trap for metal particles. The trap is made more effective by having in it two or more permanent magnets to pull the metal scrap out of the oil as it returns to the pan.



SWIVEL ROAD BARRICADE  
(NPS NCR 63-73).

The usual wooden, temporary road barricade is made of two slotted stands supporting a horizontal plank. If the plank is lifted from both stands at once when the road is to be opened, the stands usually fall to the ground. If the plank is lifted from one stand and swung, to open the road, while resting on the other stand, as is often done, the stand will weaken or even break under the strain of the twisting.

Joseph F. Hebda, Foreman III, Prince William Forest Park (National Park Ser-



vice, National Capital Region) devised an improved barricade which is sturdier,

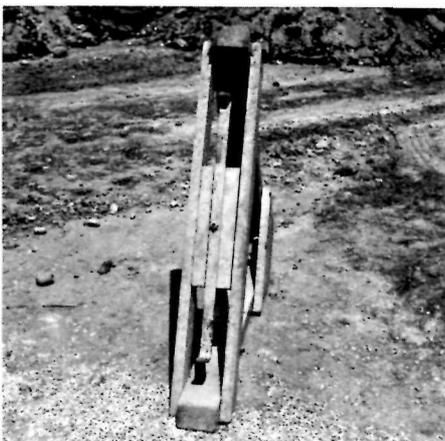
easier to handle, and requires less maintenance.

The stands have no slots for planks. Instead a 7/16-inch round bar steel pin is inserted in the top of each stand. A hole is drilled in each end of the 2 x 6 horizontal plank into which is inserted a short piece of 1/2-inch pipe. The pipe-lined holes fit over the steel pins in the stands.

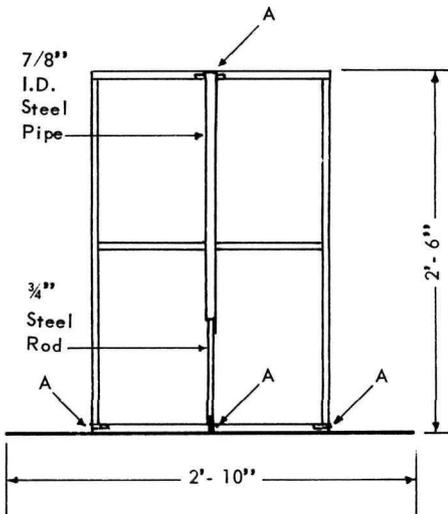


When one end of the plank is lifted to open the barricade the other end can swivel on the pin.

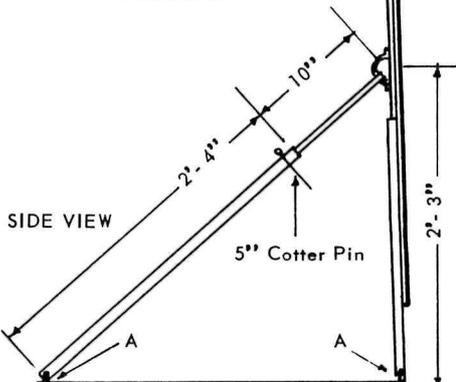
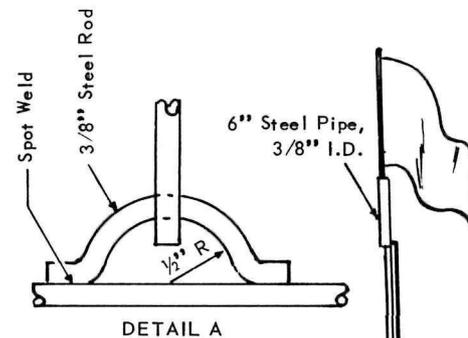
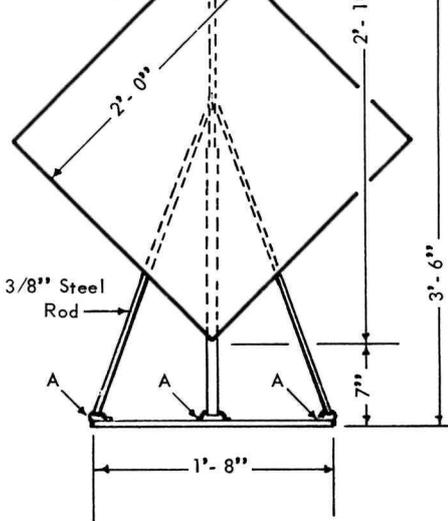
To keep the stands erect when the horizontal plank is lifted, a support made of a 24-inch piece of 1-inch steel, 3/8-inch thick is attached to the bottom of each. A center bolt loosely fastens the bar to the stand so that it will rotate, making it possible to position the bar vertically to the bottom of the stand to provide support and to bring it into a parallel position with the bottom of the stand for easier transport and storage.



PLAN

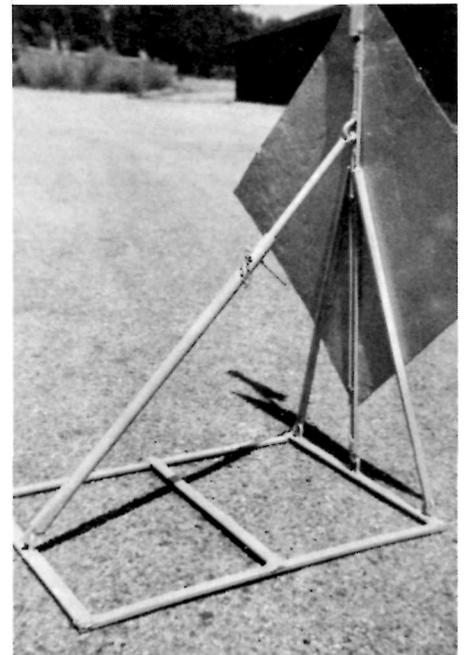


FRONT VIEW



A HUFF AND A PUFF WON'T  
BLOW THIS SIGN DOWN  
(NPS MW 64-79)

Al Gunst, Foreman II, M. G. (roads), has had many years of experience with wind conditions at Rocky Mountain National Park, so when he says the sign pictured here will stand the big blow, you can take his word for it.



This stand, which Al designed, can easily be weighted down with rock, and it folds, thus requiring little storage space. An additional advantage is the holder for a red flag to give a color as well as a verbal signal that dangerous driving conditions lie ahead.

### STORING FRAGILE ITEMS (NPS M 64-99)

The fragile baked clay pipes and other Indian artifacts found in the Pipestone National Monument area require very careful storage, so it is not surprising that one of the best ideas for handling such breakable objects has come from a member of the staff at the Monument. Richard J. McMullen, Administrative Assistant, sent in the suggestion for use of Styrofoam in storage drawers, as shown in the photograph.

To follow Dick's method, you cut a piece of Styrofoam about 1-inch thick, to the size of the drawer. You also cut another piece, about 1/2-inch thick, also drawer size. They you lay out on the 1-inch piece the items to be stored, in the best arrangement to fit the space. Draw a pencilled outline of each item on the 1-inch styrofoam sheet. Then put aside the items to be stored and cut out the outlines areas of the thick styrofoam. Place

the half-inch sheet on the bottom of the drawer and put over it the thicker sheet

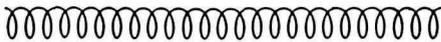


with its shaped holes. Fit the items into the holes, as shown in the photograph.

### HOW TO FIRE A FLINTLOCK (NPS SER 63-40)

At Moores Creek National Military Park a display of flintlock small arms of the Revolutionary War period attracts many visitors who discuss their firing operation. Quite often incorrect or incomplete conclusions are overheard. Sometimes the situation is such that Park personnel can correct the misunderstanding, but frequently assistance is neither requested nor indicated and would seem an intrusion.

To provide better interpretation, Park Guide George E. Raymond suggested that a chart and working model of the firing mechanism be made. Colors were used on the chart and model for easy identification of the working parts involved. The chart was placed in the exhibit case and the working model is used by Park guides when conducting a tour.



The following is a partial listing of individuals who have received National Park Service Suggestion awards to date. Following the listed award idea, you will find a page number if the idea was reported in this issue of PLOWBACK. Other listings cover awards for ideas of local application only. Awards information received after January 1, 1965 will be reported or listed in subsequent issues of PLOWBACK.

Adams, Raymond R. (NPS MW 64-62) Vise for Cross-Cut Saw. See GRIST, July/August 1964, page 31.  
Anderson, Alan M. (NPS SER 64-44) Protective Tool Covers. See p. 4.  
Bassan, Jacob (NPS 63-34) Change words on Form 10-14.  
Blundell, Charles E. (NPS SW 63-38) Adjustable Drafting Table. See p. 3.  
Bouche', Elinor M. (NPS SW 63-21) Emergency Booklet.  
Budge, Darrell E. (NPS MW 64-70) Reinforcing Snowplow Blades. See p. 6.  
Conlon, Edwin S. (NPS NCR 64-100) Funds from sale of G.W.M.P. permits be placed in safe.  
Conlon, Edwin S. (NPS NCR 65-1) Parking spaces for buses at Mount Vernon used by public when not in use.  
Coulter, Ralph (NPS NCR 64-101) Handrails for C.C. Community Building.  
Crandall, Mary (NPS W 64-45) Map Files.  
Cranford, Wm. W., Chunn, Charles F.; and Reed, Kenneth M. (NPS NCR 65-14) Elec. operated fire ring for training police dogs.  
de Kozan, Paul (NPS SER 63-85) Change

Format of Cover Letters.  
Everts, Donald W. and Gale, Richard T. (NPS W 64-58) Chain Saw Carrying Strap. See p. 4.  
Ferguson, Alive (NPS SER 64-34) For preparing revised edition of the Correspondence Procedures Handbook.  
Gleason, Vincent L. (NPS 64-43) New snap-out form replace suggestion form.  
Gray, Barbara E. (NPS WO 63-30) New System for Labeling Files.  
Gunst, Al (NPS MW 64-79) Sturdy Temporary Sign. See p. 7.  
Gurney, Elsie M. (NPS NCR 65-28) Displaying Park Service Emblem for Special Events.  
Hebda, Joseph F. (NPS NCR 63-73) Swivel Road Barricade. See p. 6.  
Hoy, Loretta M. (NPS NCR 64-102) Stand. Form for Certification of Sick Leave.  
Jennings, Mary Ellen (NPS SW 65-25) Cardex-File System.  
Kratzke, Harry A. (NPS NE 64-53) Alteration of Cyclorama Ticket Window.  
Lest, William L. (NPS W 64-80) Estimating Percent of Slope from Topographic Maps. See p. 3.  
Livingston, Oscar C. (NPS NCR 63-79) Daily Property Inventory. See p. 5.  
Martinez, Ray G., Jr. (NPS SW 64-75) Automatic Oiler for Threading Machine.  
McCarty, Rose M. (NPS W 65-37) Traffic Signs.  
McCrary, Paul F. (NPS W 64-57) Cabinet Unit for Audio Visual. See p. 1.  
McMullen, Richard J. (NPS MW 64-99) Storage Cabinets for Fragile Items. See p. 8.  
Negus, Harold (NPS NCR 64-61) Casting Concrete Park Bench Legs. See p. 5.  
Prencipe, Nick L. (NPS NCR 65-18) Purchase of Speedometer Testing Machines.

Raymond, George E. (NPS SER 63-40) Chart and Working Model of Flintlock Firing Operations.  
Rein, Mildred J. (NPS WO 64-42) Ident. Name Plates.  
Senne, Clifford W. (NPS SER 64-29) Non-glare Glass for Fire Lookout Towers. See p. 4.  
Shamburger, Oliver L. (NPS NCR 65-16) Remount Transmittal Box on Motorcycles to Prevent Breakage.  
Sondker, Adolph L. (NPS MW 65-21) Masking Tape for Safety Lines.  
Stewart, James T. (NPS MW 64-77) Relocation of Gasoline Pumps for Safety.  
Stevens, G. C. (NPS SER 64-93) Safety Legs for Clipper Mowers. See p. 4.  
Stoddard, Randolph (NPS NCR 64-117) Ident. Card for Each Park Employee.  
Studduth, R. T. (NPS MW 65-22) Install Filters in Heating Units.  
Tendler, Allen (NPS NCR 64-88) Extra Copy for Traffic Violation Ticket Book.  
Thornton, Albert C. (NPS NCR 64-70) Guardrail for Flagpole.  
Vanous, Fred (NPS SER 64-77) Anchoring Gun Carriages. See p. 1.  
Van Zee, O. H. (NPS NCR 64-14) Steps for the Small Fry. See p. 5.  
Ward, Richard M. (NPS SER 65-12) Negative Reply Form.  
White, Nathan (NPS MW 65-8) Relocate Switch for Pump Operation.  
Whiting, Carlos S. (NPS 64-41) Wirth Quotation Placed on Plaque at S.T. Mather Interp. Trng. & Res. Center.  
Whitworth, George F. (NPS W 65-5) Construction Cost Indices Simplified.  
Wilson, Rachel (NPS 64-62) Form for Recording Ticket Sales.  
Woodbury, Charles P. (NPS W 65-30) Fire Cost Forms.  
Zwierzycki, Raymond (NPS W 65-8) Compilation of Mileage Chart.