



# Tools for Lifting and Hauling



Use small rocks or logs for leverage when prying heavy objects.

Place the chisel tip under an object to be moved, and wedge a log or rock between the bar and the ground to act as a fulcrum for the lever. Press the handle down with your body weight positioned over your palms. Never straddle the bar when prying. When the object raises as much as the bite will allow, block it and use a larger fulcrum or shorter bite on the same fulcrum to raise it further. You will gain proficiency with practice.

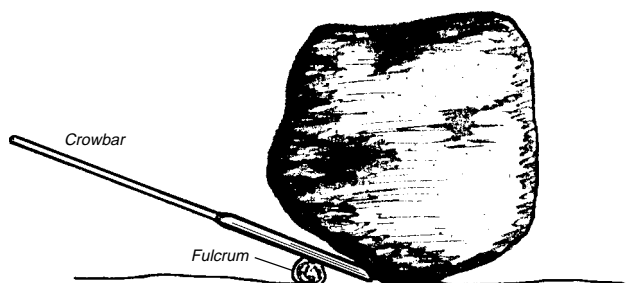
Carry crowbars by your side, tip forward, and grip it tightly near the middle to maintain balance. Maintain the factory bevel on the tip with a file or grindstone.

## Crowbars



Crowbar

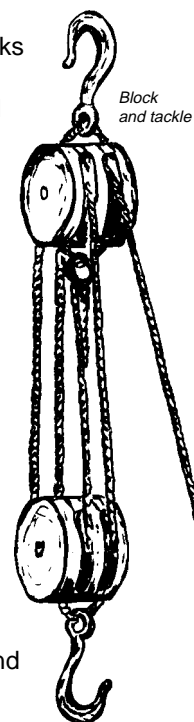
Use a crowbar for prying and levering large, heavy objects. These bars are heavy-duty steel and vary in length, weight, and diameter. In general, crowbars have a chisel tip on one end and a rounded handle on the other. They are usually 1 to 1½ inches in diameter and vary between 40 to 62 inches in length.



Crowbars are indispensable for moving very heavy objects.

## Block and Tackles

A block and tackle is a set of pulley blocks and ropes used for hoisting or hauling. These come in different styles, sizes, and capacities. In general, however, the more ropes that pass between the blocks, the greater mechanical advantage the tool affords. This advantage is called stress strength or lift capacity and is usually stamped somewhere on the tool. Attempting to move objects heavier than the block and tackle can safely support may damage the tool or cause injury. Never overstress block and tackle sets.

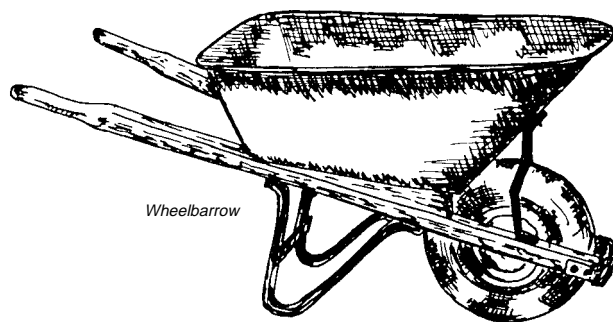


Hook the fixed or stationary block to something solid and the moveable block to the load. Pull the free rope end to lift or move the load and tie it off to hold the load in place. Always stand clear of stressed lines and out of the load's path of movement. Never stand under a suspended load.

Regularly examine running gears and hooks for signs of fatigue. Inspect cables or ropes for fraying and replace when necessary. Periodically oil unsealed bearings. Be careful not to spill oil onto areas that might cause it to slip under stress.

## Wheelbarrows

Wheelbarrows help carry rocks or dirt to or from the work-site. Most wheelbarrows have a metal box and frame, wood or aluminum handles, and solid rubber or pneumatic tires. We recommend pneumatic-tired wheelbarrows because tire inflation can be changed to roll easily on uneven terrain.



Select a wheelbarrow stout enough for the job. Typically, wheelbarrows hold 4 to 5 cubic feet and weigh 20 or more pounds. Lift a loaded wheelbarrow with your legs, not with your back. Keep your back straight, bend at the knees to get into a lifting position, and grasp the handles firmly.



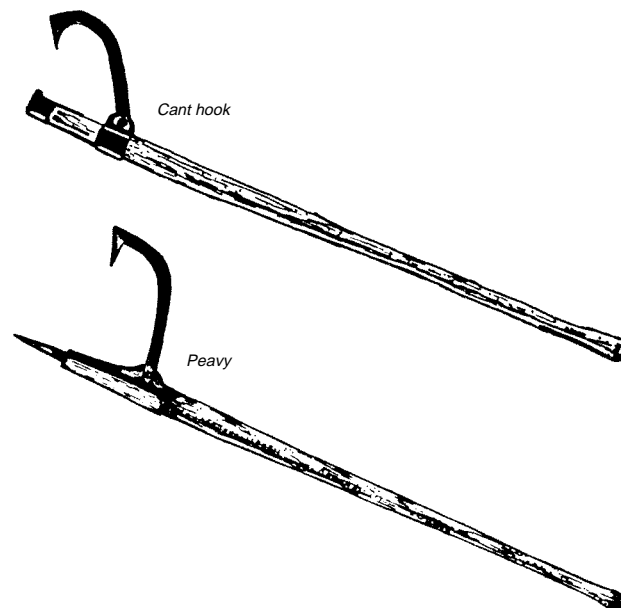
Bending your knees and lifting with your legs avoids back strain or injury.

Balancing heavy loads on uneven terrain requires strong arms and legs. To avoid tipping, keep the load's center of gravity low to the ground. Good footing is essential. Learn and work within your physical limits. Several light loads will be easier and safer to manage than one large one. Prevent muscle strains by starting light and working up to heavy loads.

Although wheelbarrows usually require little maintenance, there are some things you can do. Lightly oil the wheel and axle occasionally, unless it has sealed bearings. Check handle bolts often for tightness and carry replacements in the field. Keep the box clean—dirt, water, or debris left standing in wheelbarrows will accelerate rusting. Turn the unit over at the end of the day's work, or if possible, store it out of the weather.

## Cant Hooks and Peavies

Cant hooks and Peavies afford leverage for moving or rotating logs. The cant hook was originally used with a jam pike—a long pole with a spiked end. Loggers separated pieces with the hook after using the pike to pry them apart. Later these tools were combined by an American black-smith, John Peavy, and the new tool bore his name. They weigh from 4 to 6 pounds and have handles from 2½ to 5 feet long. The size of log to be handled will dictate the size of the tool.



To roll a heavy log, use a series of short bites with the hook and maintain your progress by quickly resetting it. Catch the log with the hook hanging down so the point of the spike becomes the fulcrum on top of the log. Rotate the log using the leverage of the handle working the tool like a ratchet. Moving large logs may require several hooks working together. Avoid taking large bites; a heavy log will roll back and pin the handle before the hook can be reset.

Carry the Peavy by your side with the point forward. For balance, grip the handle behind where the hook attaches. Before walking, secure the hook against the handle to prevent injury to the operator or damage to the point of the hook. These tools also need maintenance. Keep hinged parts lightly oiled for proper movement. Spiked ends and hooks are usually bolted to handles, so check these frequently for tightness. Remove the spike ends and hooks when replacing handles. Carry replacements in the field. Sharpen hook ends with a mill bastard file and finish with a whetstone. Maintain factory bevels as much as possible.

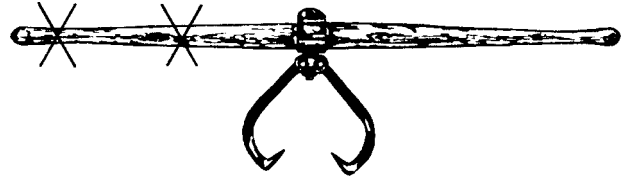
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## Timber Carriers

Timber carriers enable teams of workers to move logs. With one tool the log is dragged. Several carriers could allow four or more persons to carry a large log. Hooks are 3 to 16 inches; handles are typically 4 feet long. Carriers weigh about 7 to 8 pounds.

Maintain the tongs on a timber carrier like cant hooks and Peavies. The tongs attach to the handle with a single bolt that is removed for handle replacement and carrying.

*Room for two persons on each side.*



Timber carriers allow several persons to carry logs.



# Tools for Peeling and Shaping

## Bark Spuds (Peeling Spuds)

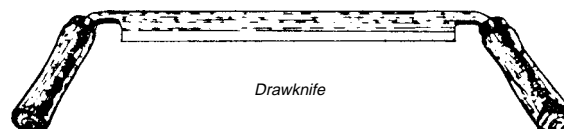
Use a bark spud to peel green logs. They have a 3 to 4-foot long handle and weigh about 4 pounds. Position the log about hip high. Hold the tool firmly with both hands and push the dished blade lengthwise along the log under the bark. Always pry away from your body. Three sharpened edges make this tool unusually hazardous to use and transport. Be mindful of the blade when working or walking near others.

Carry the spud at your side. Grip the handle near the middle and walk with the cutting edges away from your body and down. Maintain the original shape of the cutting blade when sharpening. Use a file and a whetstone on each edge on both sides.



## Drawknives

Drawknives work best to peel dry logs. A standard drawknife has an 8- to 10-inch blade with perpendicular handles at each end and is 4 to 5 inches long.



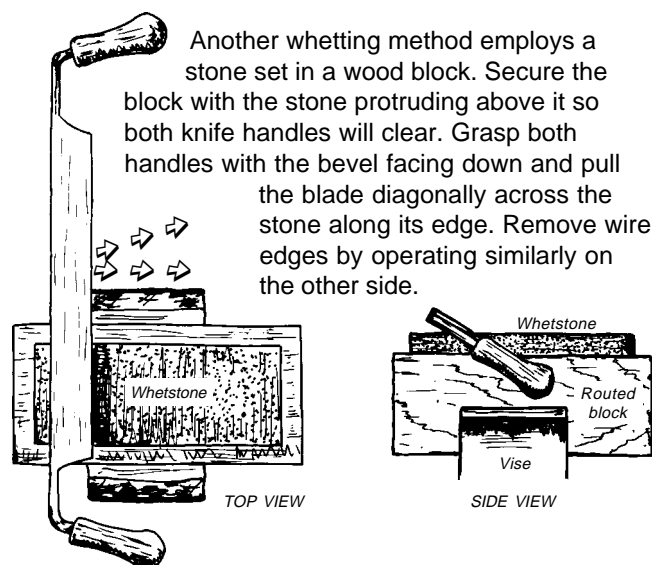
For greatest efficiency, position the log about waist high. When using the drawknife, grasp both handles so the beveled edge of the blade faces the log. Begin each stroke with arms extended and pull the tool toward you while keeping even pressure on the blade. Keep fingers clear of blade corners. Since the knife shaves to attain a flat surface, the largest strips will come from log edges.

You can change the thickness of shavings by rocking the blade back and forth on the edge bevel. Practice will yield proficiency.

Carry drawknives by one handle and at your side. Sharpen drawknives with a file or grinder. Maintain the edge bevel at 33°, and keep the blade cool to preserve the temper. Finish with a whetstone. Whet the blade by holding one handle with the blade facing up and securing the other. Hold the stone on the blade flat against the bevel and move it across the blade in a circular motion. When a wire edge forms on the full length of the blade, lightly whet the flat side to remove it.



A drawknife peels the bark off of logs.

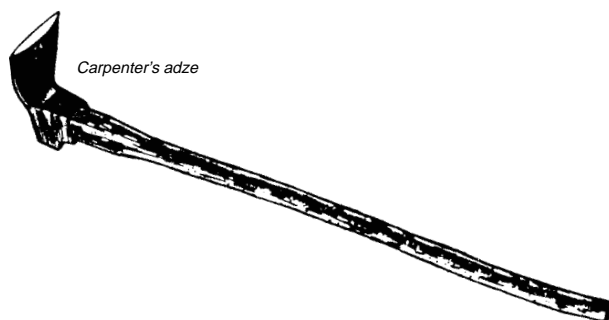


Sharpening a drawknife using a stone set in a wood block.

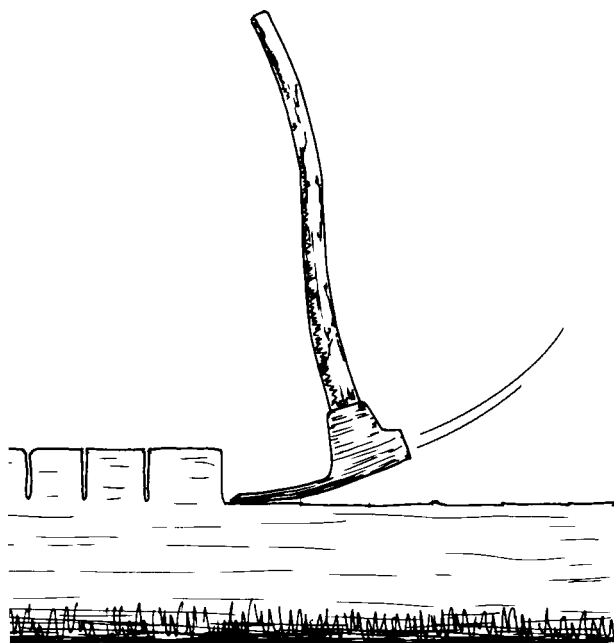


## Carpenter's Adzes (Cutting Adzes)

This tool trims and shapes wood surfaces like hewed timbers or flattened logs. The cutting edge is 4 to 7 inches wide and 8 to 10 inches long. Adze heads weigh from 3 to 5 pounds with a cutting blade set perpendicular to the handle. The blade curves from the front of the head to the cutting edge, roughly matching the arc of the curved handle.

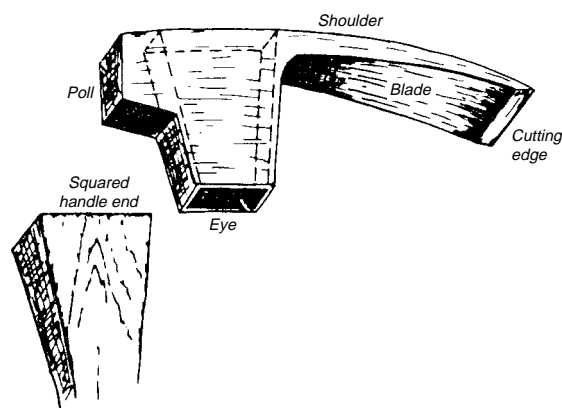


To use a cutting adze, stand astride or on top of the log to be hewed. Grip the handle with both hands and swing it with short strokes in a pendulum motion along the log. Use your thigh as a stop for your arm and to control the depth of the cut. When standing on a log and swinging, take care to position yourself to miss your feet and legs.



Hewing a log with a carpenter's adze.

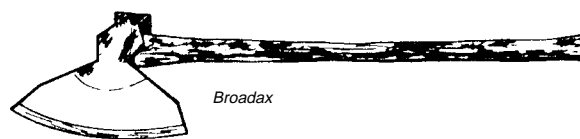
A square tapered eye and handle end allows the head to tighten when swung, but also allows its removal for carrying and sharpening. Some adzes may have a small set screw to further secure handles to heads. Keep the adze sharp. Maintain the cutting edge by regularly "touching it up" with a whetstone. If the blade needs reshaping, grind the edge bevel on the underside to 30°. Finish with a whetstone.



Detail of the carpenter's adze head.

## Broadaxes

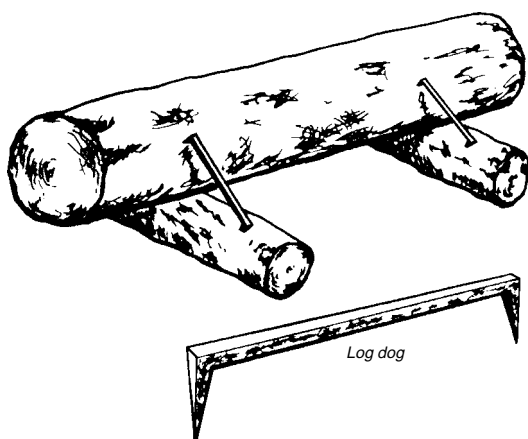
Use a broadax for hewing if no adze is available. Position the log so that scores are on one side and perpendicular to the ground. Depending on the size of the log, stand on the side opposite the scores or on top of the log. Large logs may require you to work on the same side as the scores.



Additional safety hazards exist when hewing with a regular ax. Maintain control of the ax by grasping the handle near the middle with hands several inches apart. Use short swings to sever scored sections. Work the length of the log in one direction to remove most of the wood, then reverse directions for smoothing. Be extremely careful of glancing blows; work slowly and carefully. Frequent rest periods will help ensure efficiency and safety.

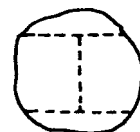
Hew logs in the following manner:

**1**—Elevate the log onto two short cross pieces and anchor it with log dogs. Log dogs are timber workers' clamps. One end is driven into the log and the other into a stable support. The log is held in place and both of the worker's hands are free for hewing.

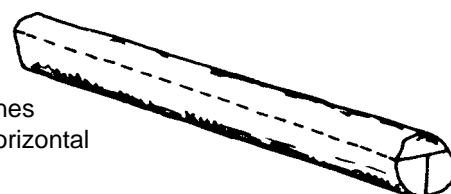


Log dogs steady the log while it is being hewn.

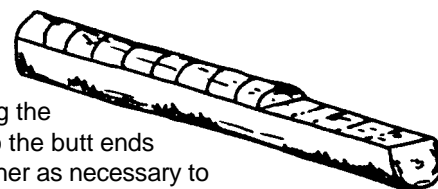
**2**—Mark a plumb line down the center of one end and a horizontal line perpendicular to it. Be sure to place the horizontal line deep enough to attain the desired width of finished flat surface.



**3**—Repeat the procedure at the opposite end and snap two chalk lines connecting the horizontal end lines.



**4**—Using an ax or saw, score the log to the depth of the chalk lines, making the grooves parallel to the butt ends and as close together as necessary to hew a flat surface.



**5**—Hew (remove) the scored sections with an adze or broadax. If you use a broadax, hew the log face perpendicular to the ground rather than parallel, as shown here. The remaining sides may be marked, scored, and hewed as necessary.