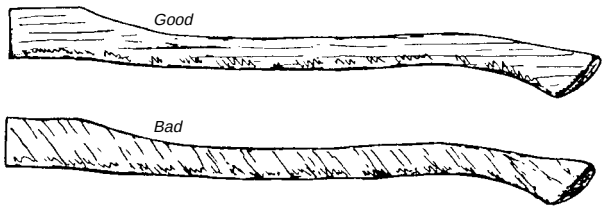
Tools for Rehandling

About Rehandling

Wood handles are common to most trail tools and are the most common type of replacement handle. Hickory makes the best handles for impact tools because it combines hardness and stiffness with excellent resiliency. For bent handles or simple handholds, ash is usually used.

When choosing tool handles, remember that straight grains offer maximum flexibility and strength. If possible, the grain should also be tight and knot-free, and it should run parallel to the wedge slot. Avoid coated handles. Painting or staining can hide flaws in materials or construction.



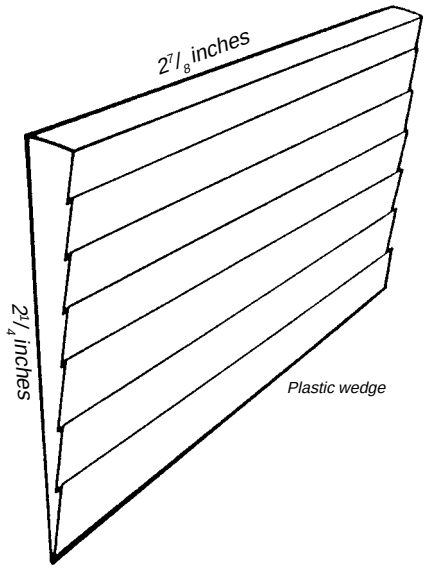
The grain of ax handles should run parallel to the wedge slot.

Diagram of the wedge slot and end grain of ax handles.

Fastening Wedges

The best wedges for securing tool heads are hardwood or plastic. Plastic wedges are superior and maintain strong joints because they resist changes in moisture. Avoid metal wedges for fastening heads to handles; these crush and weaken handle wood and make broken handles difficult to remove by drilling.

Sometimes a handle may need only a new wedge because the handle was not broken but loosened. In this case, carefully drill out the old wedge; remove the handle; clean the slot; and replace the handle on the head.



Plastic wedges work best for securing tool heads.

Rehandling Procedures

Regularly inspect all tool handles and replace any cracked, rough, or badly weathered handles as soon as possible. When a tool needs a new handle, follow this step-by-step procedure. We have selected ax handles as the example for this discussion, but the technique is adaptable to other trail tools:

❏ Clear the eye of the tool. To remove worn or broken handles from the eye of a tool, place it upright in a vise and drill several holes into the wood from the top. These holes relieve pressure on the wood inside the eye so it can be driven out with a hammer and punch. If heads are epoxy-bonded to handles, soak the head in boiling water to soften the bond.

❏ Size up the tool and match an appropriate handle to the head. All handles will need some reshaping by hand to fit the head. Be sure that the top of the handle will fill the eye of the tool in both length and width.

❏ Saw the handle to an approximately correct length. If the handle was not factory sawed to accept a wedge, remove the head, secure the handle, and carefully saw down about two-thirds the depth of the head.

❏ Inscribe two perpendicular centering lines across the length and width of the handle end inside the eye. You will use them as a guide/check for centering the handle in the eye later. Make an additional mark below the head and just above where the handle broadens to denote the final seat for the head.

❏ Slowly remove excess material from the handle using a spoke shave, wood rasp, or grinder.

❏ Fit the eye of the tool to the handle. Light tapping on the tool head will allow repeated removal of the handle without damaging the wedge slot. Continue shaving and fitting until the head rests squarely $^{1}/_{4}$ to $^{3}/_{8}$ inch above the final seating mark. Make sure that the head is straight on the handle.

❏ With tool head aligned perpendicular with the handle, draw a line across both sides of the handle at the final seating mark. Saw a shallow cut along these lines to create a square shoulder. Fit the tool head to rest lightly on this shoulder.

❏ With rasp and sandpaper, uniformly backslope the handle from the perimeter of the handle to where the head finally seats. Carefully smoothing the handle just below the head prevents splintering.

❏ Use a long tapered wedge that extends the full width of the slot to attach the head to the handle. Drive the wedge into the slot, and tap alternately on the wedge and the end of the handle until the striking tool bounces off each with equal force. Use epoxy to fill remaining voids between the handle and the eye and seal out moisture.

❏ After the epoxy sets, trim excess wood flush with the top of the head. A hacksaw works best here because the blade will not be dulled by the metal, and because the saw blade can be turned 90° on the frame.

❏ Remove any varnish or paint from the handle. A light coating of raw linseed oil regularly applied will protect against drying and cracking. Some woods workers recommend drilling short holes in the base of the handle and periodically filling them with linseed oil. The oil penetrates the entire handle through natural pores in the wood.

❏ A loose handle can be temporarily tightened in the field by soaking the head in water or linseed oil. The wood in the head swells to accommodate the fluid and fits tighter in the eye. Make permanent repairs as soon as possible.

❏ Handles may also be shaved to fit individual grips more comfortably to reduce impact shock and hand and arm cramps. When shaving handles, proceed slowly and carefully; it is better to remove too little wood and have to trim again than to remove too much and have a weak or unusable handle.

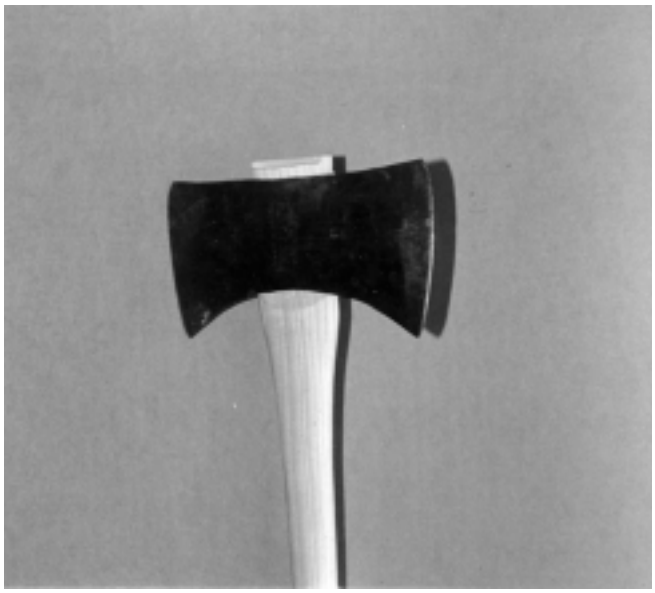
A—Size up the tool head and match it to the handle. Note that the handle protrudes excessively long through the head. Scribe it to be cut off.

C—A line has been scribed below the roughly-fitted handle. The line denotes the final shoulder upon which the head sets.

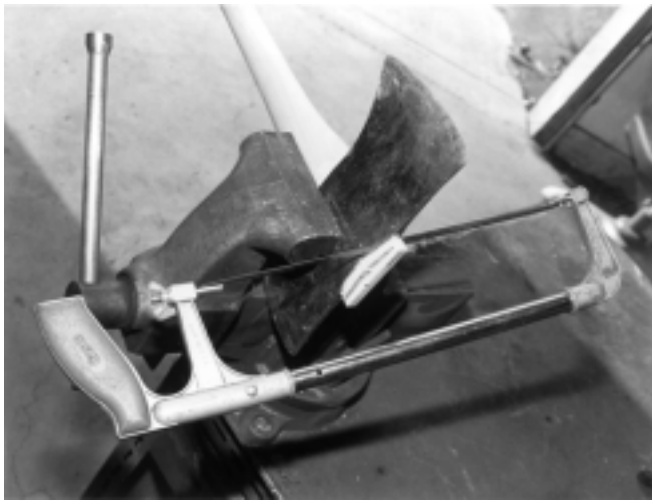
B—Saw the handle to about the correct length. The handle has been roughly fitted so the head slides to within about $^{1}/_{2}$ inch of the final seating position.

D—The tool head has been snug-fitted to the square seating shoulder. Note that there is about $^{1}/_{2}$ inch excess handle above the head.

E—All surfaces just below the handle should be sanded smooth before the head is placed to insert the wedge. The wedge has been started in kerf.



F—The wedge has been driven home with the alternate driving of the wedge and the end of the tool handle.



G—Use a hacksaw to trim off the excess handle and wedge flush with the tool head. Turn the saw blade 90° on the frame to facilitate the flush cut.

H—The finished mounted tool. The handle can be finish-sanded and oiled with raw linseed oil to protect against moisture.

Bibliography

Graves, W.D. *Sharpening Edge Tools,* Scientific American 108:143, Feb. 8, 1913.

Jackson, Alberts and David Day. *Tools and How to Use Them,* Knopf, NY, 1978.

Juranitch, John. *Sharpening Secrets of a Pro,* Popular Science, Feb., 1977.

Kephart, Horace. *Camping and Woodcraft,* Macmillan Co., NY, 1978.

Langsner, Drew. *Country Woodcraft,* Rodale Press, Emmaus, PA, 1978.

Miller, Warren. *Crosscut Saw Manual,* Tech. Rep. 7771-2508-MTDC, USDA Forest Service, Missoula Technology and Development Center, Missoula, MT, 1978.

New York Hand Tools Institute. *Proper Uses and Common Abuses of Striking and Struck Tools,* Hand Tools Institute, NY, 1973.

Proudman, Robert D. *AMC Field Guide to Trail Building and Maintenance,* Appalachian Mountain Club, 1977.

Sloane, Eric. *A Museum of Early American Tools,* Ballantine Books, NY, 1964.

U.S. Department of Agriculture. *Handle on a Round Point,* 16-mm film, Washington, DC, 1959.

U.S. Department of Agriculture. *Safety Depends on YOU,* 16-mm film, Washington, DC,1959.

U.S. Department of Agriculture. *Only a Bunch of Tools,* 16-mm film, Washington, DC, 1949.

U.S. Department of Agriculture. *Sharp as a Razor,* 16-mm film, Washington, DC, 1967.

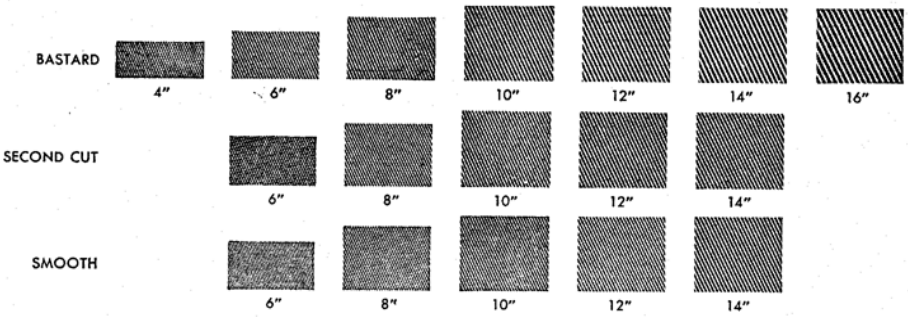
USDA Forest Service. *Fireman's Handbook,* Pacific Southwest Region, 1937; and Fireman's Handbook, Northern Region, 1968.

USDA Forest Service. *Health and Safety Code Handbook,* Washington, DC, June, 1979.

Appendix—American Pattern Files

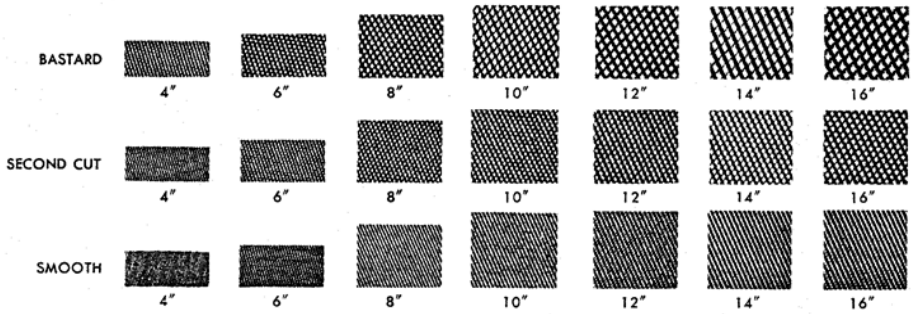
MILL FILES

The following illustrations show the actual coarseness of Mill files.



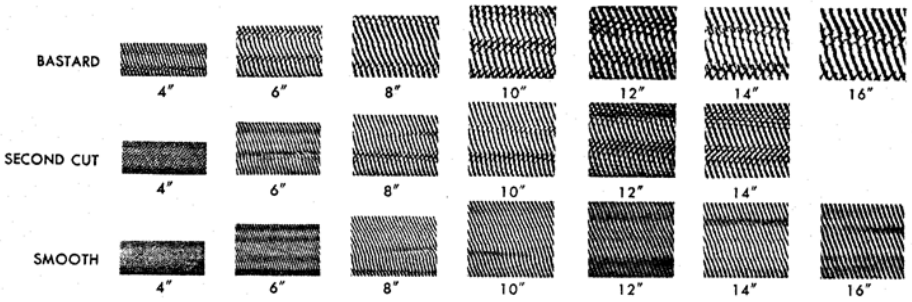
FLAT FILES

The following illustrations show the actual coarseness of Flat files.



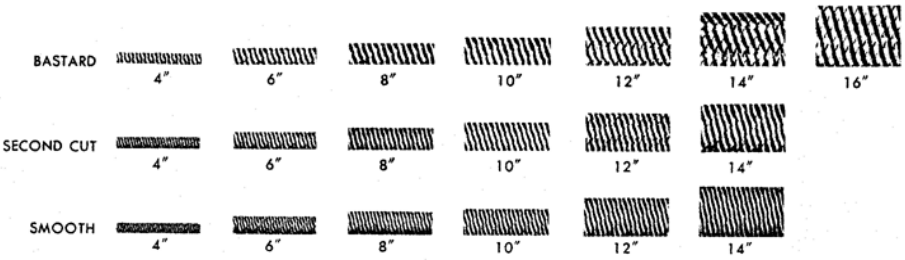
HALF ROUND FILES

The following illustrations show the actual coarseness of Half Round files.



ROUND FILES

The following illustrations show the actual coarseness of Round files.



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Library Card

Hallman, Richard G. 1988. Handtools for trail work. Tech. Rep. 8823-2601-MTDC. Missoula, MT: U.S. Department of Agriculture, Forest Service, Missoula Technology and Development Center. 49 electronic p.

Describes the handtools commonly used by Forest Service trail crews for sawing, chopping, grubbing, digging and tamping, brushing, pounding and hammering, lifting and hauling, peeling and shaping, sharpening, and rehandling. Includes many illustrations of the tools.

Keywords: axes, hammers, hand tools, saws, sharpening, tools.

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