from flying chips If a shield does not afford positive protection to all exposed employees, they should wear goggles.

Bull chisels held by one man and struck by another require the use of tongs or a chisel holder to guide the chisel so that the workmen will not be exposed to injury. Both workmen should wear goggles.

Stamping and marking tools of special alloy and design are available If possible, marking tool holders should be used so that the workman does not have to hold his fingers close to the face of the tool being struck.

Tap and die work requires certain precautions The work should be firmly mounted in the vise A wrench of the proper size should be secured The hands should be kept away from broken tap ends. If a broken tap is removed by using a punch and hammer, the worker should wear goggles When a long thread is being cut with a hand die, the hands and arms should be kept clear of the sharp threads coming through the die.

Hack saws should be adjusted in the frame to prevent buckling and breaking, but should not be tight enough to break off the pins that support the blade

Blades with 14 teeth to the inch should be used for cutting soft solid metal, 18 teeth for tool steel, iron pipe, hard metal, and general shop use, 24 teeth for drill rods, sheet metal, and tubing, and 32 teeth for thin sheet metal and tubing.

Pressure should be applied on the downward stroke only, and the saw should be lifted slightly and pulled back in the cut lightly to protect the teeth. If the blade is twisted or too much pressure is applied, the blade may break and cause injury to the hands or arms of the user.

Files Selection of the right kind of file for the job will prevent injuries, lengthen the life of the file, and increase production Inasmuch as the extremely hard and brittle steel of the file chips easily, the file should never be cleaned by being struck against a vise or other metal object—a file-cleaning card should be used.

For the same reason a file should not be hammered or used as a pry. Such abuse frequently results in the file's chipping or breaking, causing injury to the user. A file should not be made into a center punch, chisel, or any other type of tool because the hardened steel may fracture in use

The correct way to hold a file is to grasp the handle firmly in one hand and use the thumb and forefinger of the other to guide the point This technique will give good control and ensure better and safer work

A file should never be used without a smooth, crack-free handle, otherwise, if the file should slip or be struck by a revolving part of a machine, the tang may puncture the palm of the hand, the wrist, or other part of the body Under some conditions, a clamp-on, raised offset handle may be useful to give extra clearance for the hands

When work is filed in a lathe, the job should be done left-handedly, with the file and hands clear of the chuck jaws or the dog A pad of cloth or waste should not be used under the thumb on the end of the file Filings should not be blown in such a way to get in someone else's eyes

Tin snips should be heavy enough to cut the material so easily that the workman needs only one hand on the snips and can use the other to keep the edges of the cut material pulled aside The material should be well supported as the last cut is made so that the cut edges do not fall against the hands

Jaws of snips should be kept tight and well lubricated.

Workmen should wear goggles when trimming corners or slivers of sheet metal, because small particles often fly with considerable force

Cutters used on metal, such as wire, reinforcing rods, or bolts, should have ample capacity for the stock, otherwise, the jaws may be sprung or spread Also, a chip may fly from the cutting edge and injure the user.

Cutters are designed to cut at right angles only. They should not be "rocked" to facilitate the cut because they are not designed to take the resulting strain. This practice can also cause the knives to chip

Cutters require frequent lubrication. To keep cutting edges from becoming nicked or chipped, cutters should not be used as nail pullers or pry bars.

Cutter jaws should have the hardness specified by the manufacturer for the par-