

31—Machine Tools

pletely enclosed with a sliding fixture attached to the slide, except for the point at which the cut is made.

The length of blade exposed should be not more than the thickness of the stock being cut plus $\frac{1}{8}$ in. Flying particles of metal can be confined by a metal or transparent plastic guard installed in front of the saw. On a hand-fed operation, care should be taken at the end of a cut. Use a push block, not hands.

Spinning lathes

A spinning lathe is a forming tool rather than a machine tool and usually requires a specially skilled and qualified operator.

Unsafe practices which should be prohibited in operation of a spinning lathe include.

- 1 Inserting blanks and removing the processed part without first stopping the machine
- 2 Failing to tighten the handle of the tailstock sufficiently, so that the blank may work loose or ruin the stock or tool
- 3 In trimming copper and certain grades of steel, allowing the swarf to build up into a long coil

This last practice has caused hands to be severed and arms severely cut. One fatality has been reported from a coil which became snarled around the operator's neck. Operators should remove the tool, when necessary to allow the swarf to break off.

The chuck of a spinning lathe is usually a form built up of hardwood, shaped exactly like the finished part. If the piece being worked must be "necked-down," so that after the piece is formed the chuck cannot be taken out, the chuck is made in sections held together by locking rings or locking grooves.

There is a great hazard from the chuck's flying apart if the grooves should become worn or the rings should break. In view of the speed of spinning lathes (500 to 2000 rpm), the danger of flying sections of the chuck is obvious. Prevention of injuries from this cause lies in periodic inspection and maintenance of chucks.

Similarly, lathe tools should be inspected frequently for cracks in the handles or in the tools themselves.



FIG 31-11 —A gear hobbing machine with chip and splash guards

Courtesy International Harvester Company

On some older equipment, vibration or worn parts may cause the tailstock to loosen during operation and the piece to work loose or fly off, exposing the operator to almost certain injury. Again, the solution is frequent inspection and maintenance.

Gear cutters

In the operation of gear cutters and hobbors (Fig 31-11), both the tool and the work move during the operation. As a result, the point of operation guard should be simple and easily adjusted.

On operations where the work (gear blank or rough-cut gear) is moved to the tool, a simple barrier guard, formed to cover the point of operation and sized to fit the work, is satisfactory. The guard can be mounted on a spindle that carries the work so that the guard will fit over the point of operation, when the work is brought into position.

When the tool is brought to the work and when the tool and work are adjustable, an encircling type of guard may be attached to the tool head. Such a guard can be an automatic dropgate device, which can be equipped