

Machine Tools

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 definite hazard from such a 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.

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, 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 or can be equipped with a release latch to open the guard enclosure or a spring release to return the guard to a position clearing the work. Each guard should have an automatic interlock so that the machine will not operate except when the guard is in place.

On some makes of machines still in use, the lever which controls the direction of operation of the spindle is located so that the operator's hand may be caught on the back gears driving the spindle. An auxiliary lever should be installed which can be operated at a point outside the danger zone created by these gears.

On large machines where the operator may not be close to the regular control switch, a pendant switch mounted on an arm or sweep should be installed to operate a magnetic brake so that the machine can be stopped instantly.

When the operator inserts an arbor into the spindle, he should be sure that both arbor and spindle holes are clean and free from nicks. He should draw the arbor firmly into place by a sleeve nut, and securely tighten the nut. Before he removes the arbor from the spindle, he should make certain that the machine is at a standstill.

Planing Machines

Similar to a carpenter's hand plane, a planer machines a metal surface with the cutting tool held stationary while the work is moved back and forth underneath it. Shapers are generally classified as planing machines, but the process is reversed—the work is held stationary while the cutting tool is moved back and forth. Other machine tools coming within this classification are slotters, broaches, and keyseaters.

Planers and shapers

Planer accidents result frequently from unsafe practices which are basically problems of training and supervision.

- 1 Placing the hand or fingers between the tool and the work
- 2 Running the bare hand over sharp metal edges
- 3 Measuring the job while the machine is running
- 4 Failing to clamp the work or tool securely before starting the cut
- 5 Riding the job
- 6 Having insufficient clearance for work