

# *Machine Guarding*

## *Four Types of Guards*

 *Fixed*

 *Interlocked*

 *Adjustable*

 *Self-Adjusting*

 **CITATIONS**

*No guard on grinders.*

*Wrong speed or unknown speed on  
grinding wheel*

# *Machine Guarding*

## □ *Major Points*

- ☆ *Mortar mixer must have guarding over the open face. Many manufacturer sell retrofit guards.*
- ☆ *Mechanical hazards can be found at the point of operation, the power transmission apparatus or at the area of transverse motion.*

# *Machine Guarding*

## ☐ *Fatalities*

- \* *Many fatalities have resulted from employees getting caught in rotating shafts such as well boring drills & lathes.*

# *Machine Guarding*

## ■ *Fixed Guards*

- *A permanent part of the machine*
- *Not dependent on any other part to perform the function*
- *Usually made of sheet metal, screen, bars or other material which will withstand the anticipated impact*
- *Generally considered the preferred type of guard.*
- *Simple and durable*

# *Machine Guarding*

## ■ *Interlocked Guard*

- *Usually connected to a mechanism that will cut off the power automatically*
- *Could use electrical, mechanical or hydraulic systems*
- *Should rely on a manual reset system*

# *Machine Guarding*

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## ■ *Adjustable Guard*

- *Very flexible to accommodate various types of stock.*
- *Manually adjusted*

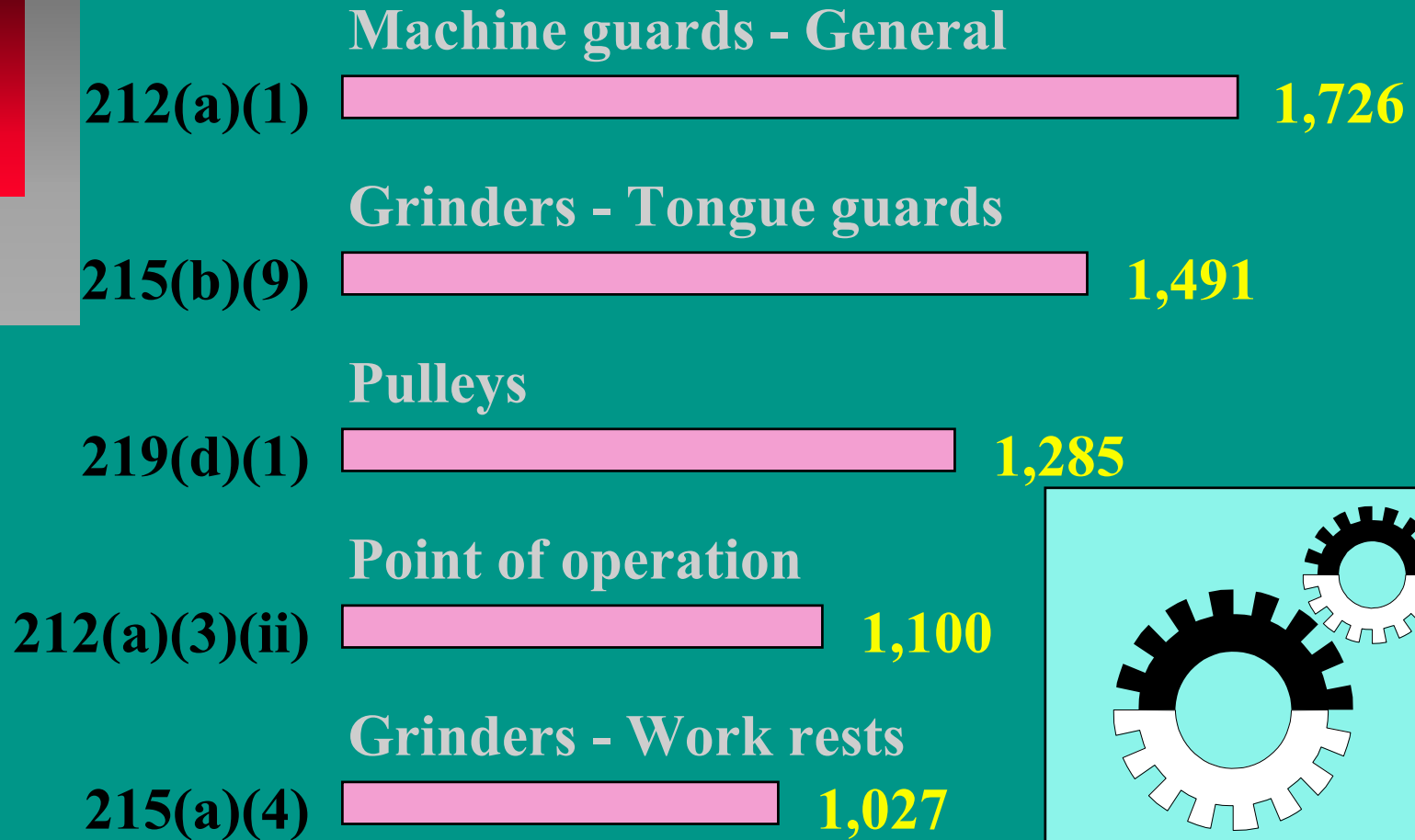
# *Machine Guarding*

## ■ *Self-Adjusting*

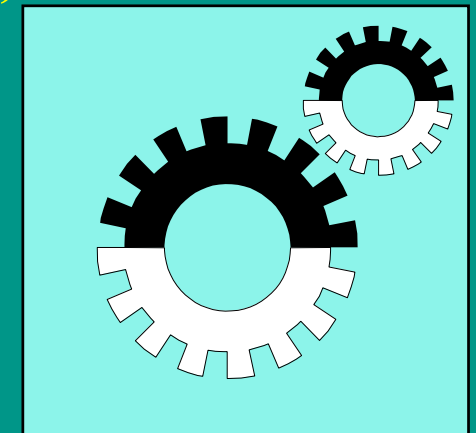
- *The opening is determined by the movement of the stock through the guard.*
- *Does not always provide maximum protection.*
- *Common complaint- reduced visibility at the point of operation.... “I can’t see what I’m doing!”*

# *Subpart O - Machinery & Machine Guarding (1910.211 - 222)*

Standard: 1910.



Number of Serious Violations - FY 94





# *Machine Guarding*



- *This picture, taken through a window, shows an unguarded saw blade.*

# *Machine Guarding*



- *Once inside the building, we find more violations. An ungrounded plug, an electrical cord with an illegal splice.*
- *Don't let these violations sneak up on you!*

# *Machine Guarding*



- *This shows a pulley system which has correct guards to keep fingers and tools away from pinch points.*

# *Machine Guarding*



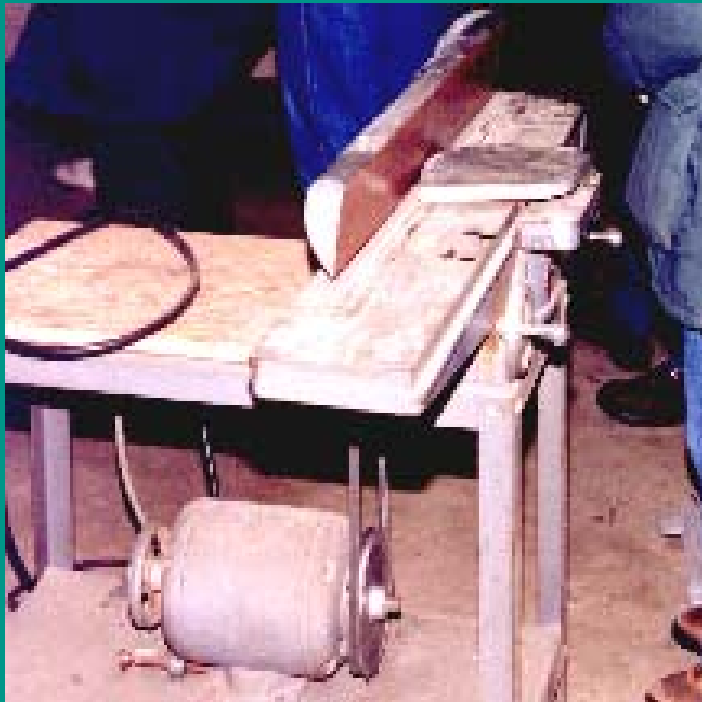
- *This man lost his finger when a machine in a foundry cut it off.*
- *There was no guard in place, as required by law, to keep his finger out of a point of contact.*

# *Machine Guarding*



- *This grinder has a fixed guard on the side to keep fingers away from the moving grind stone*

# *Machine Guarding*



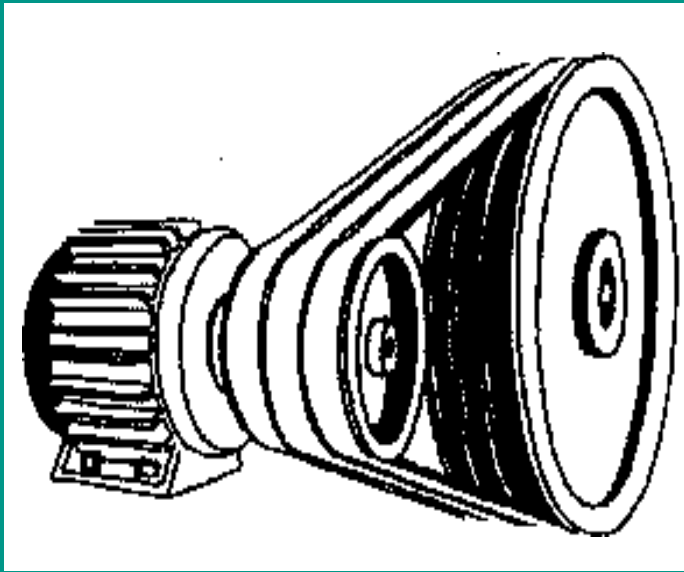
- *This is an example of a self-adjusting guard that automatically moves to accommodate different size stock.*
- *Note the unguarded pulley underneath.*

# *Machine Guarding*



- *This is an example of an adjustable guard.*
- *The operator must move the guard to accommodate different size stock on this band saw.*

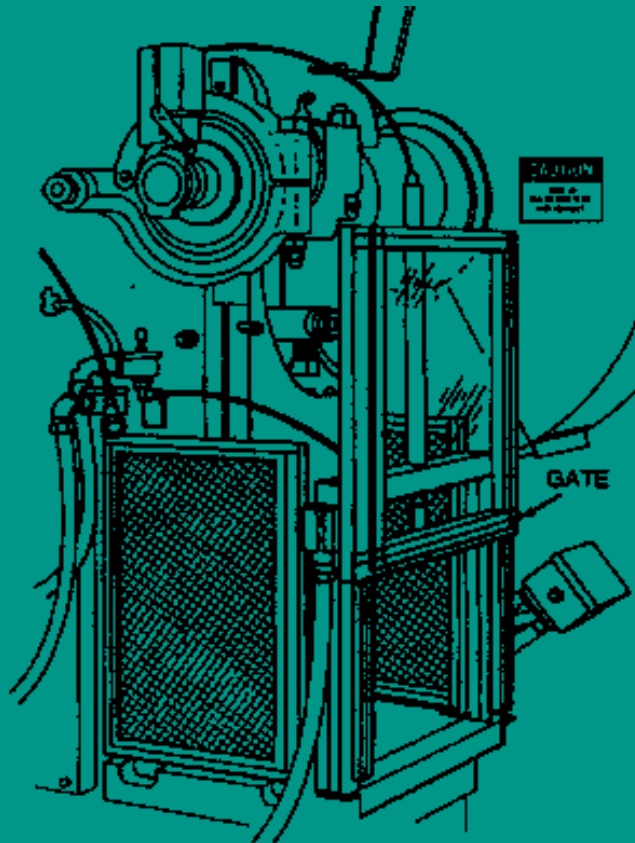
# *Machine Guarding*



- *Transmission sources such as this should be guarded to keep hands and arms out of them.*

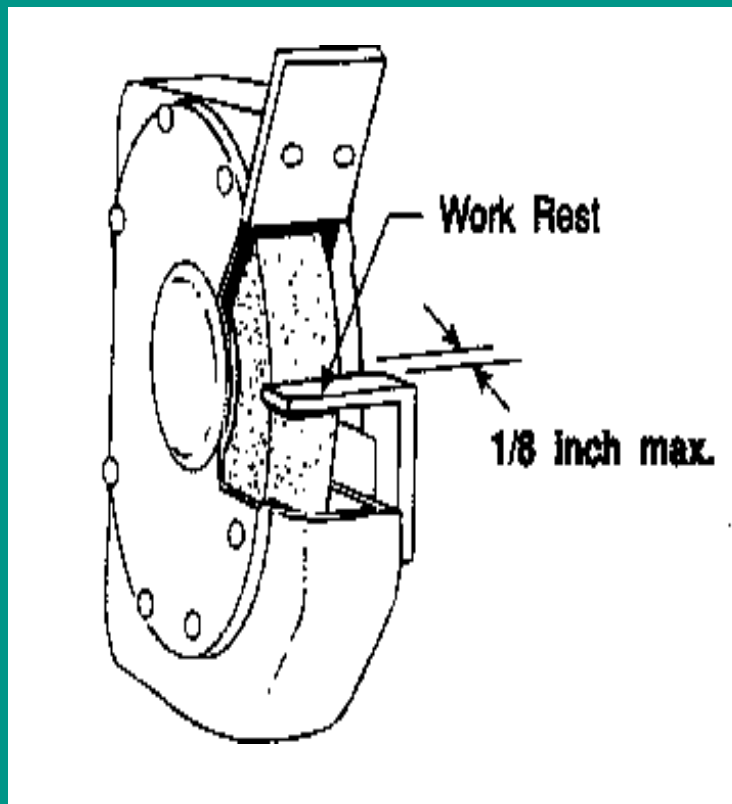


# *Machine Guarding*



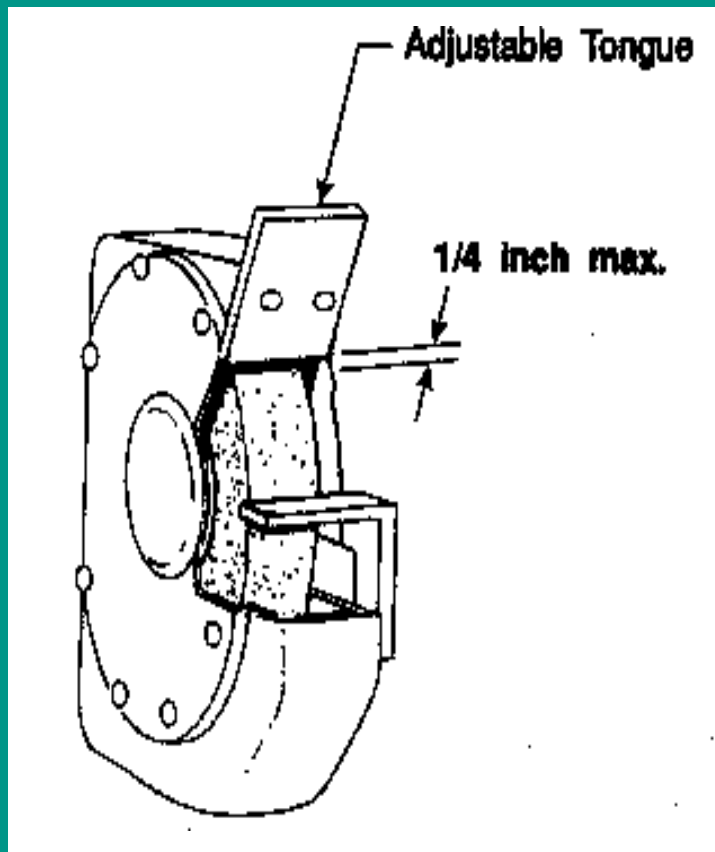
- *This machine is using a gate system to keep hands out of the point of operation area.*

# *Machine Guarding*



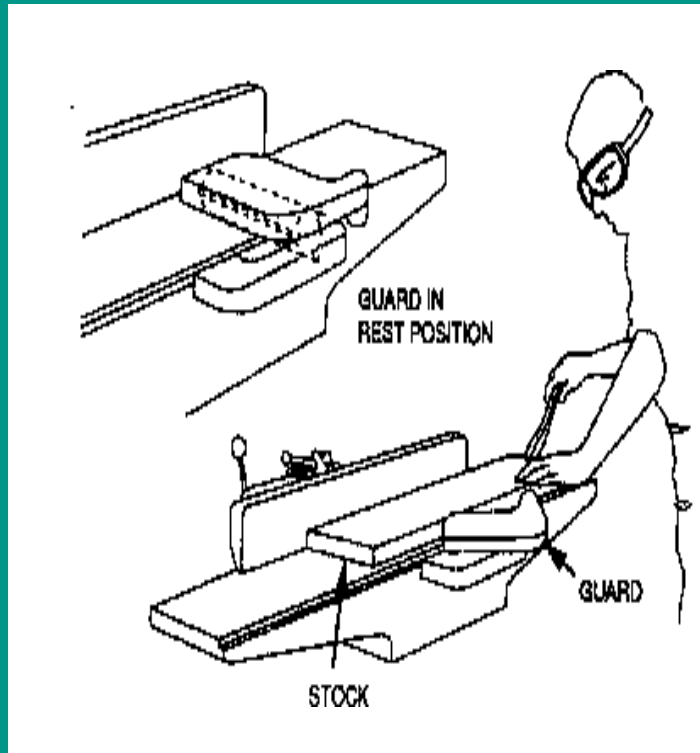
- *Bench Grinders require a work rest with a maximum clearance of 1/8 inch to insure that the work does not get drawn into the grinding wheel.*

# *Machine Guarding*



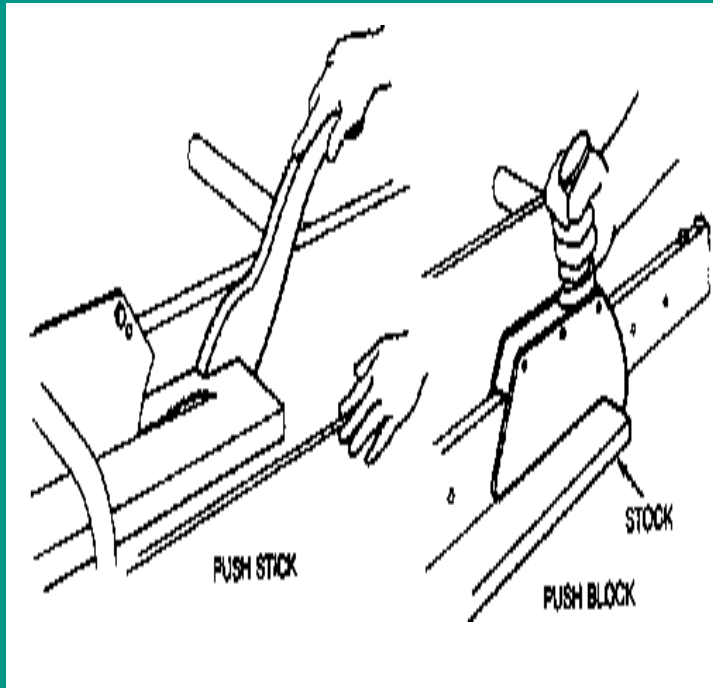
- *The top clearance on a bench grinder should not exceed 1/4 inch.*

# *Machine Guarding*



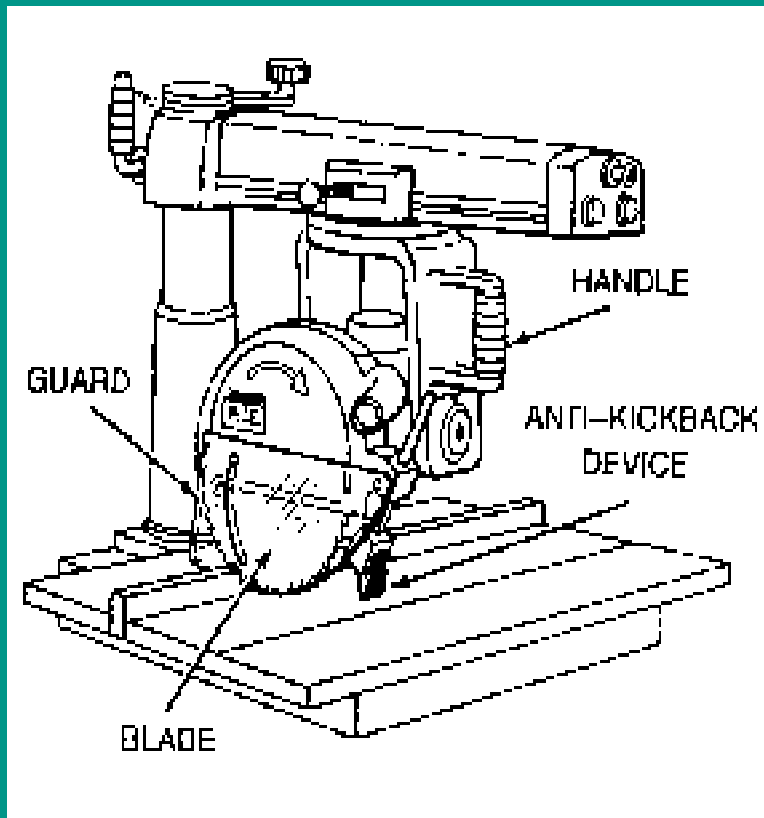
- *This wood working device has an adjustable guard that moves as the wood is fed into it.*

# *Machine Guarding*



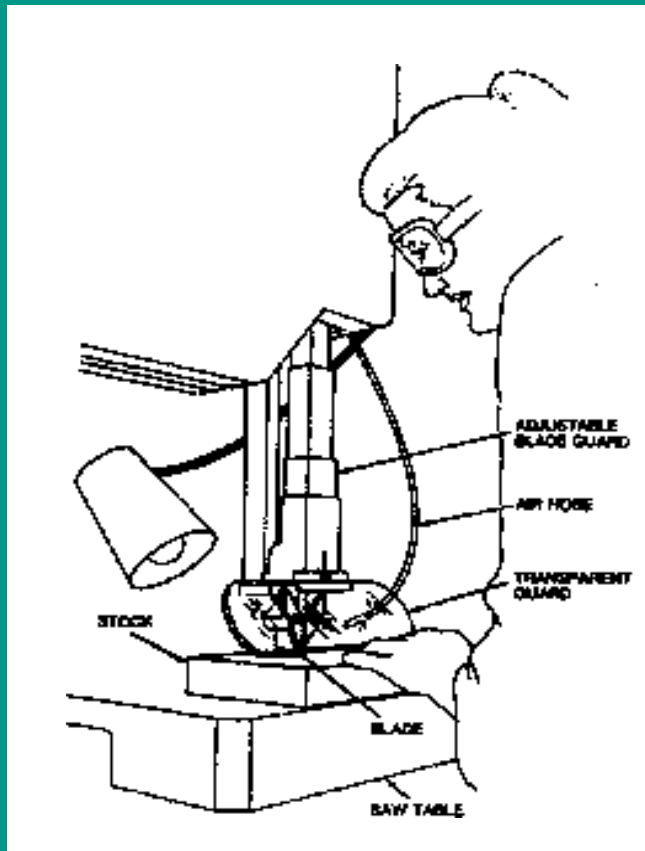
- *When working closely with wood cutting machines, a push stick can keep your fingers on the end of your hands!!*

# *Machine Guarding*



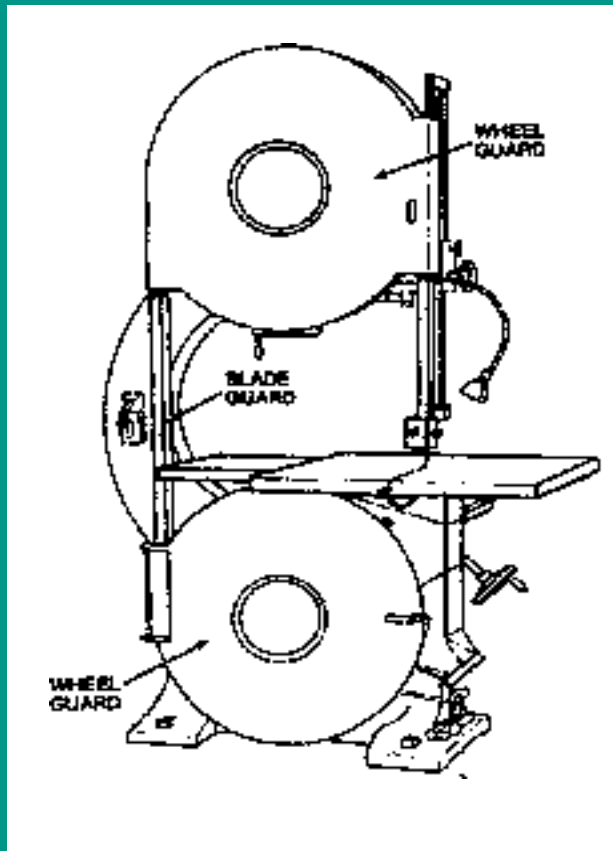
- *This saw has:*
  - *a blade guard*
  - *anti kickback device*
- *It should have a retracting device to automatically bring the saw back into position*

# Machine Guarding



- *This worker is protected from the moving blade by an adjustable guard.*

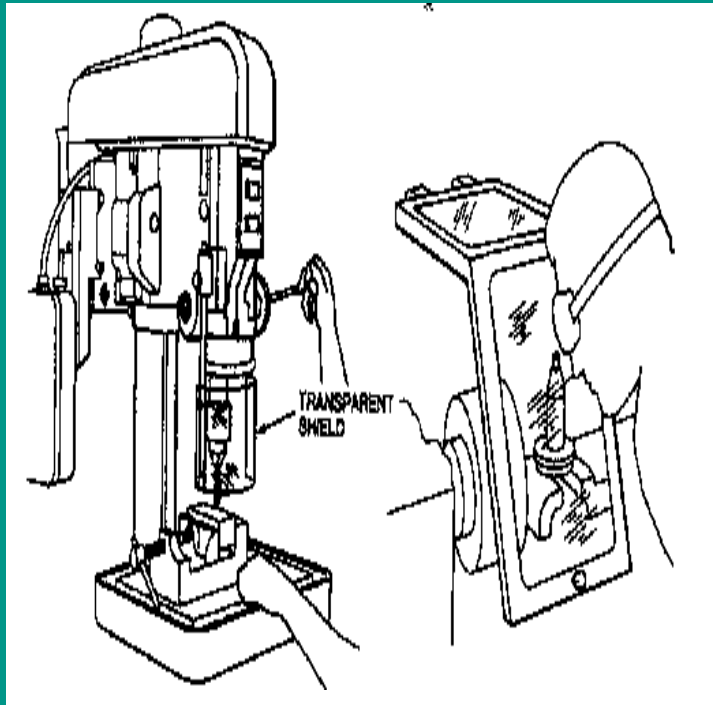
# *Machine Guarding*



- *Moving wheels are guarded with cover plates.*
- *Adjustable guard on the blade at the point of operation.*

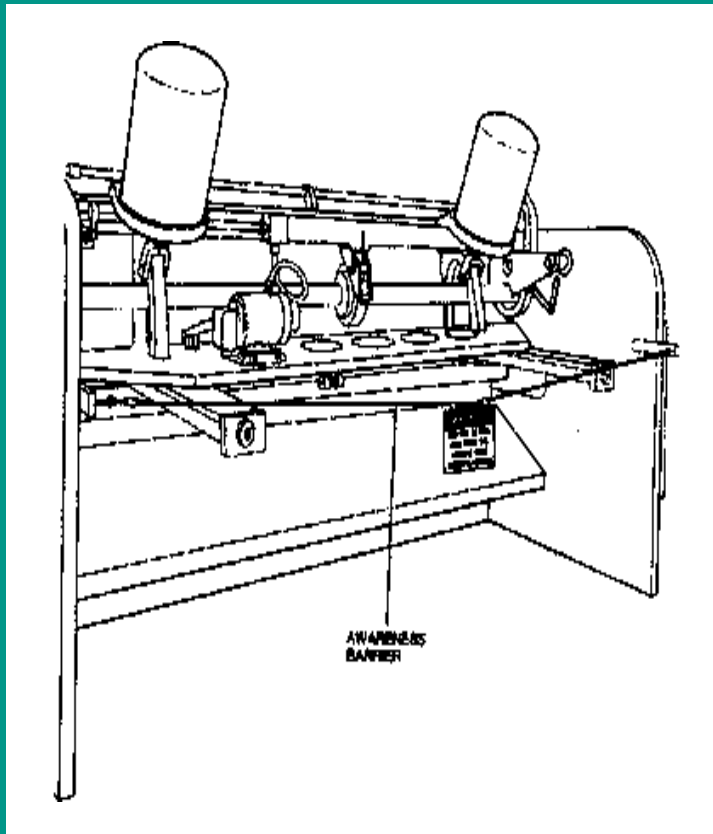


# *Machine Guarding*



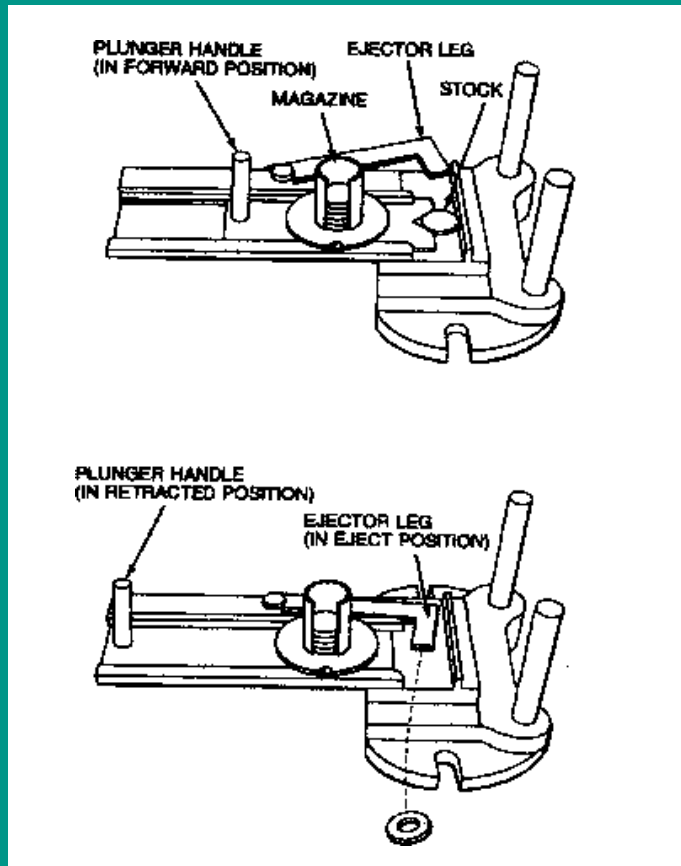
- *A shield of safety glass prevents sparks and particles from striking the worker.*
- *Rotating shafts are required to have guards on them.*

# *Machine Guarding*



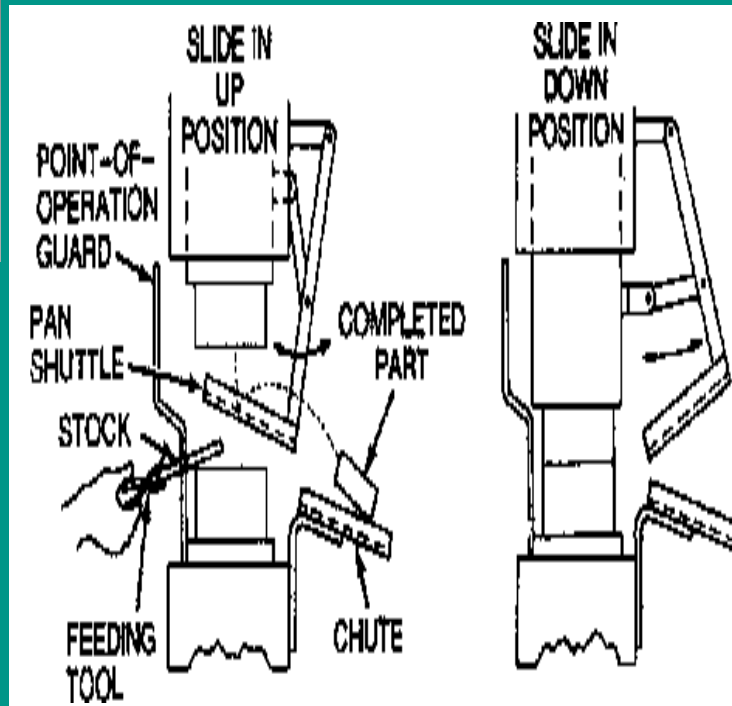
- *This machine is using a wire guard to stop the machine when a worker gets too close.*

# Machine Guarding



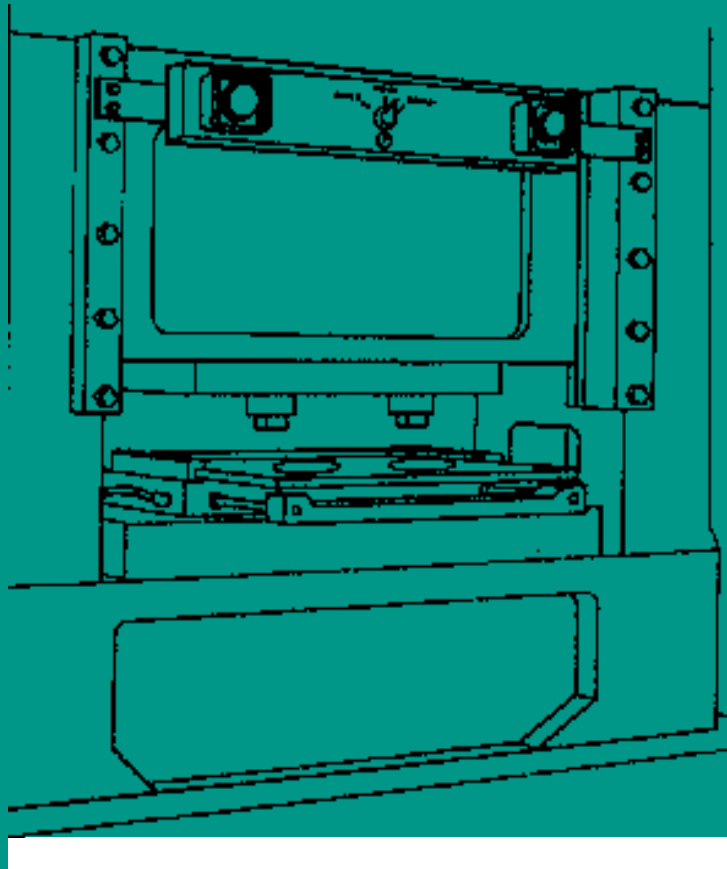
- *Instead of having the worker pick the finished product out of the die with their fingers, this system uses an automatic device to push the product out of the die.*

# *Machine Guarding*



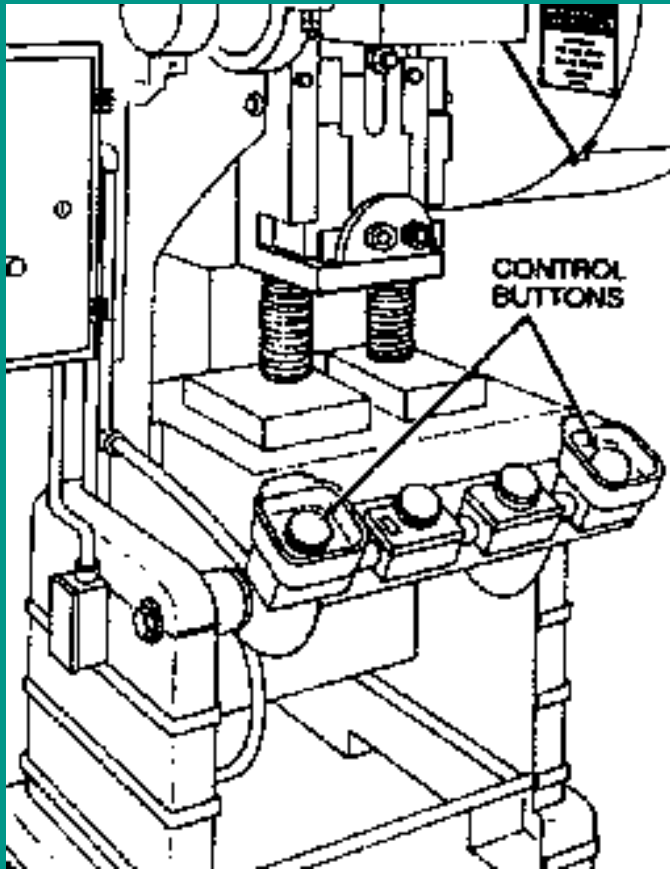
- *This machine ejects the finished product automatically.*

# *Machine Guarding*



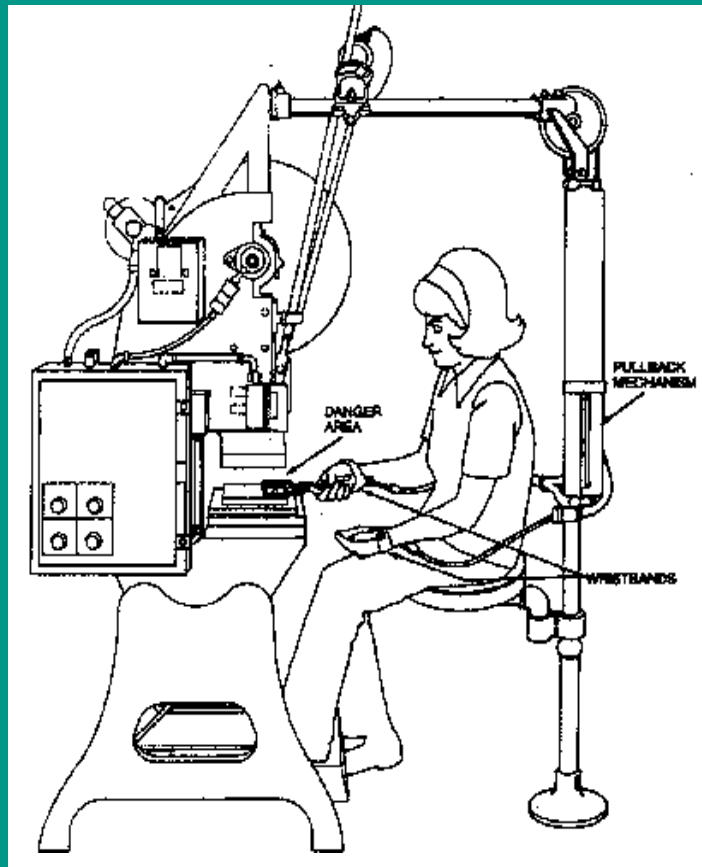
- *In order to operate this press the operator must push both buttons at the top of the machine.*
- *This insures that his hands are not in the point of operation area when the press activates.*

# *Machine Guarding*



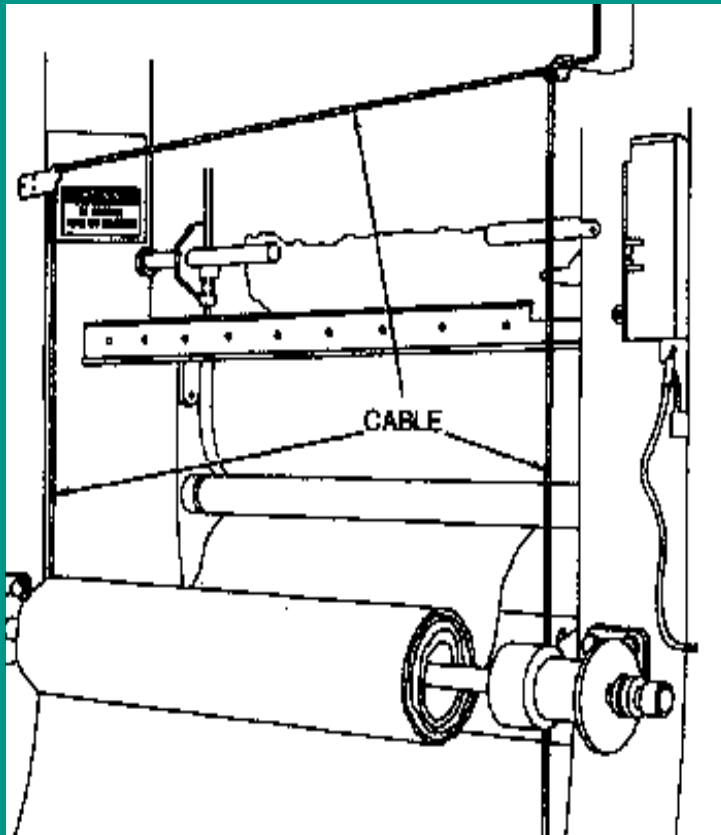
- *The operator must press both of the control buttons at the same time to operate this press.*

# *Machine Guarding*



- *This operate has wrist cuffs attached to her arms to keep her from putting them in harms way.*
- *Some versions will automatically pull the operators hands back when the press cycles.*

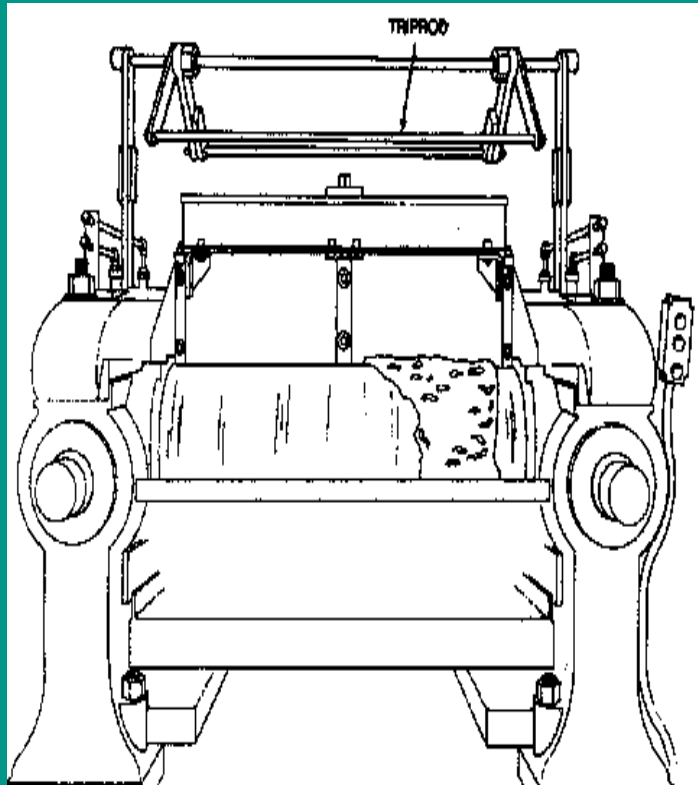
# *Machine Guarding*



- *This cable will stop the machine when it is pulled.*

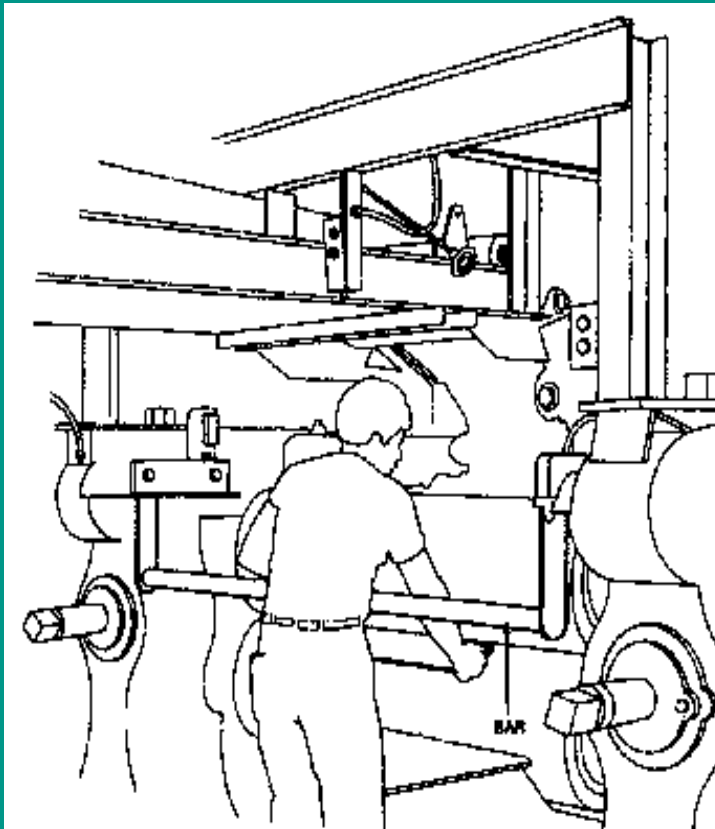


# *Machine Guarding*



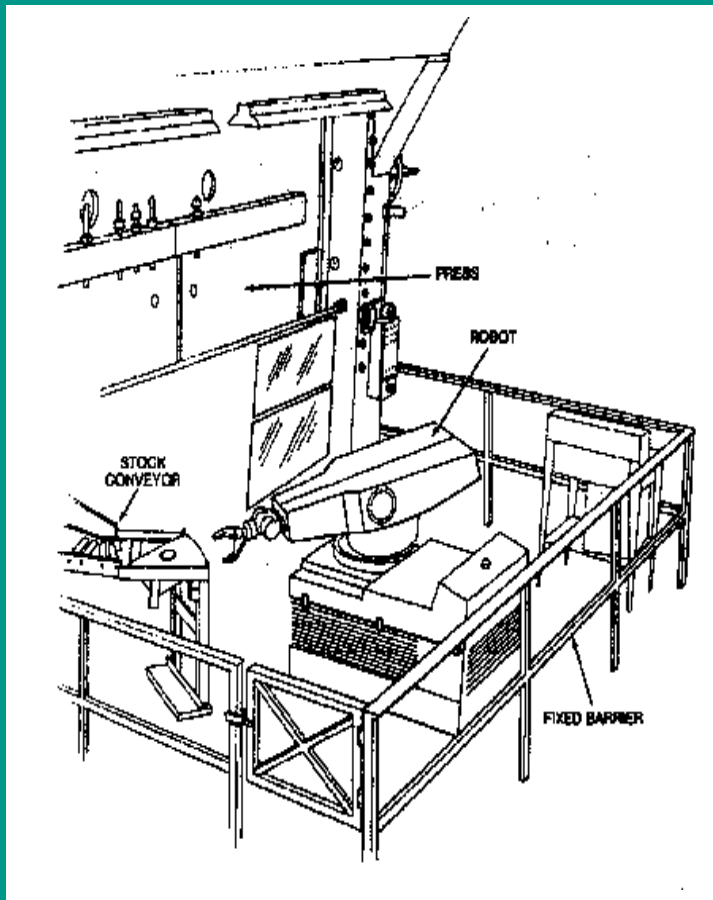
- *The tripod type bar on top of this machine can be grabbed by a worker to stop the machine.*

# *Machine Guarding*



- *This safety bar will stop the machine if the worker gets too close to the operation area.*

# *Machine Guarding*



- *Robots can be deadly.*
- *Establish a system to keep humans from getting into the robots work area.*
- *Maintenance workers must use a lockout system.*