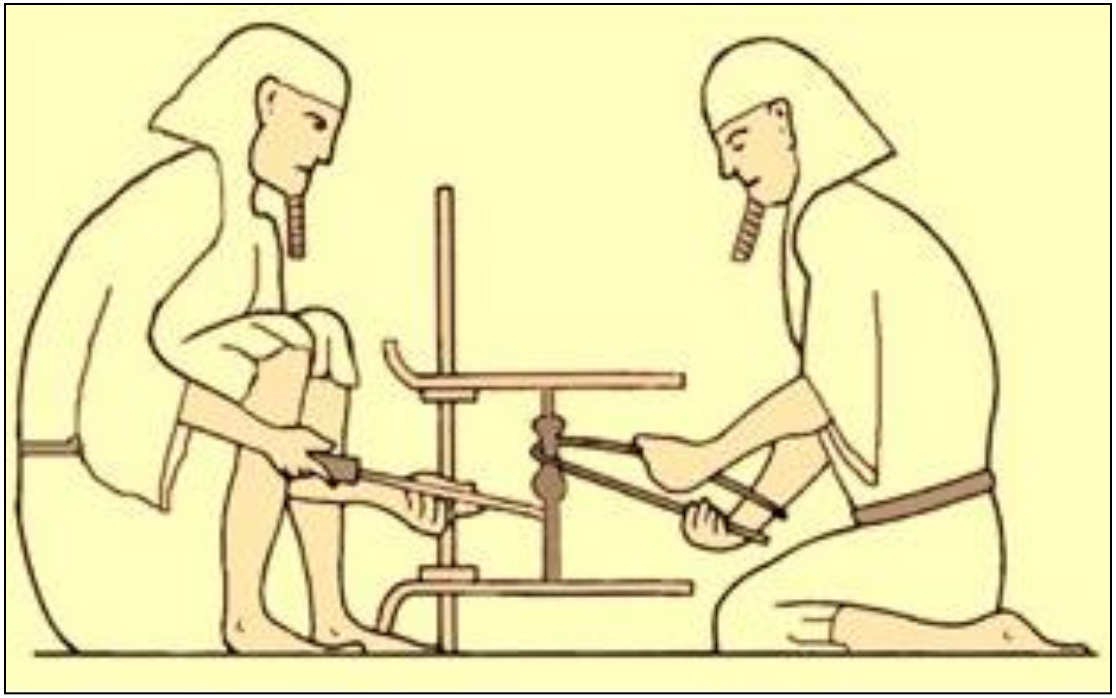
Woodturning

The wood lathe produces round project parts.

Duncan Phyfe style table

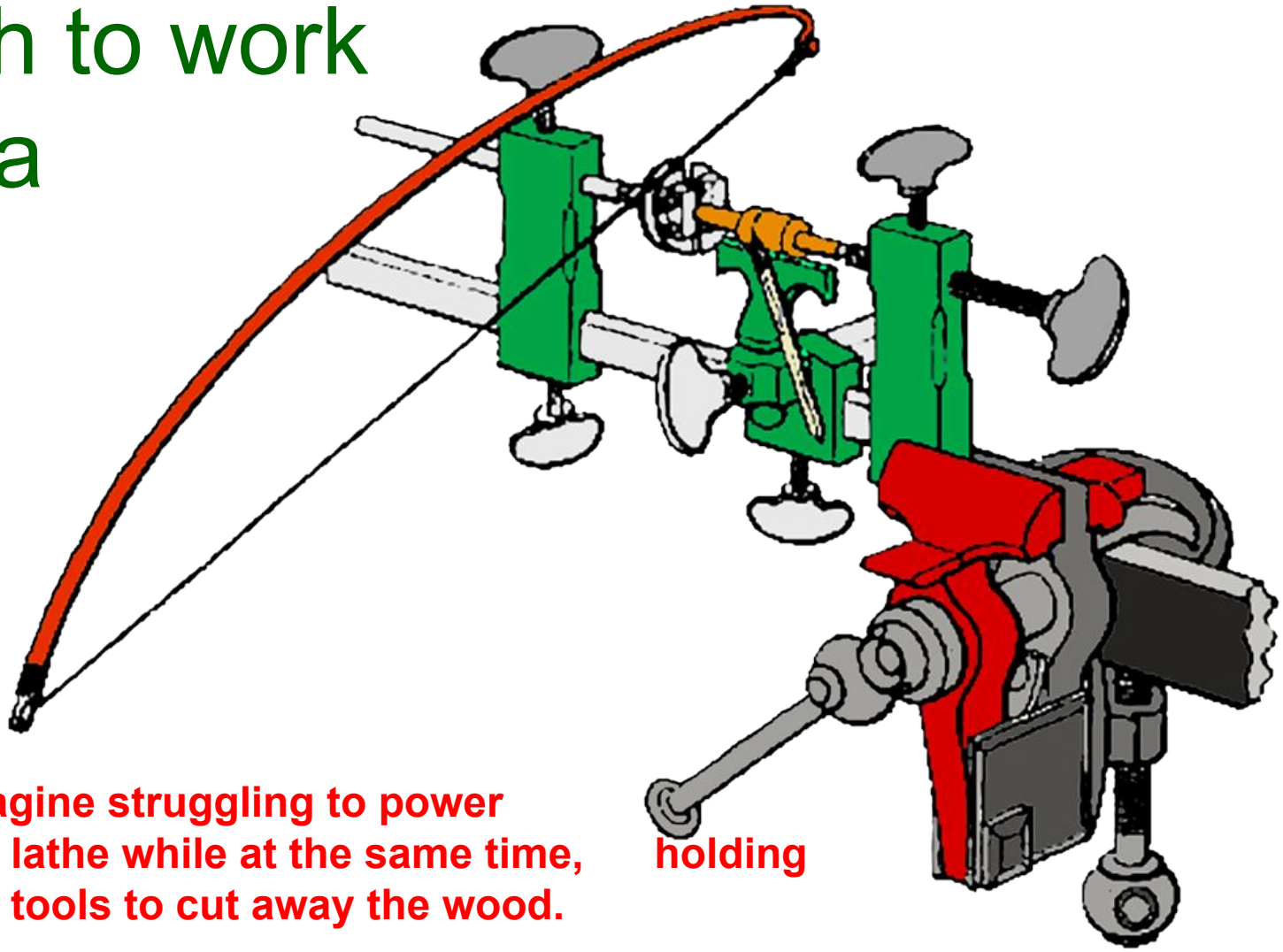
There is evidence in Egypt of wood lathes from about 300 BC.

Hieroglyphics from ancient tombs clearly show one man cutting as another is keeping the wood turning.



Asia contains similar evidence of this same method for turning wood.

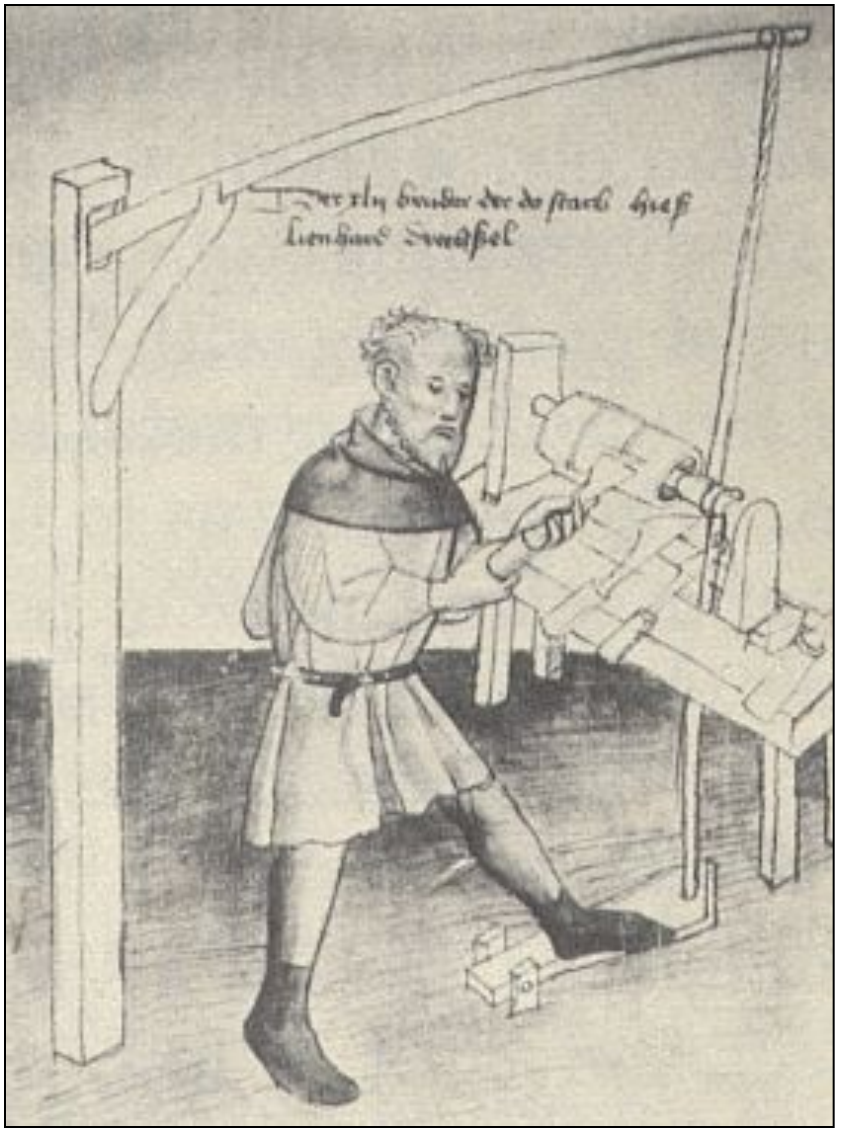
Other early lathes were powered by a bow that the operator moved back and forth to work without a helper.



Imagine struggling to power the lathe while at the same time, holding the tools to cut away the wood.

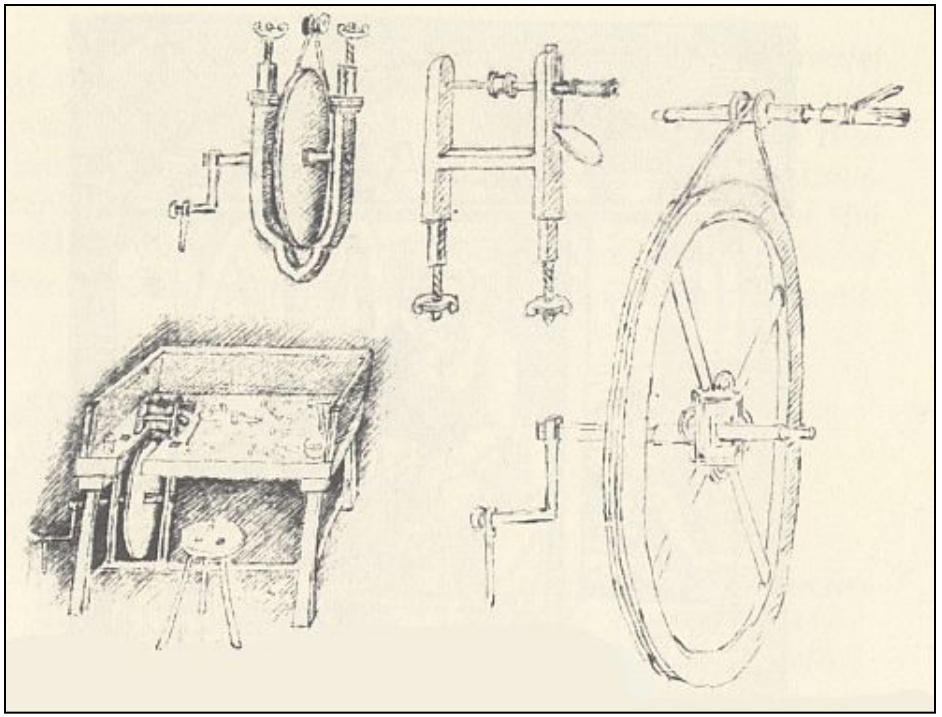
In medieval times, wood lathes were run by foot.

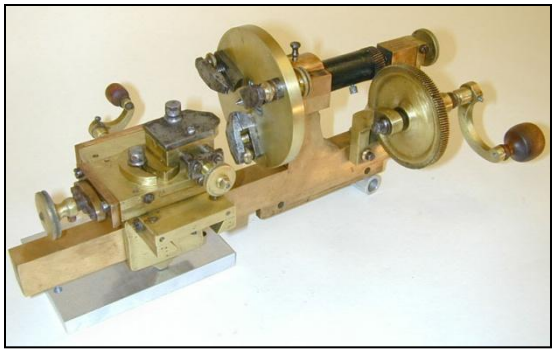
Even though both hands are free to hold onto the tools, each primitive method still only produces a cut half of the time. The wood would have to then turn back the opposite way until another forward stroke. Not a very efficient method.



Hand cranks allow an operator to work alone.

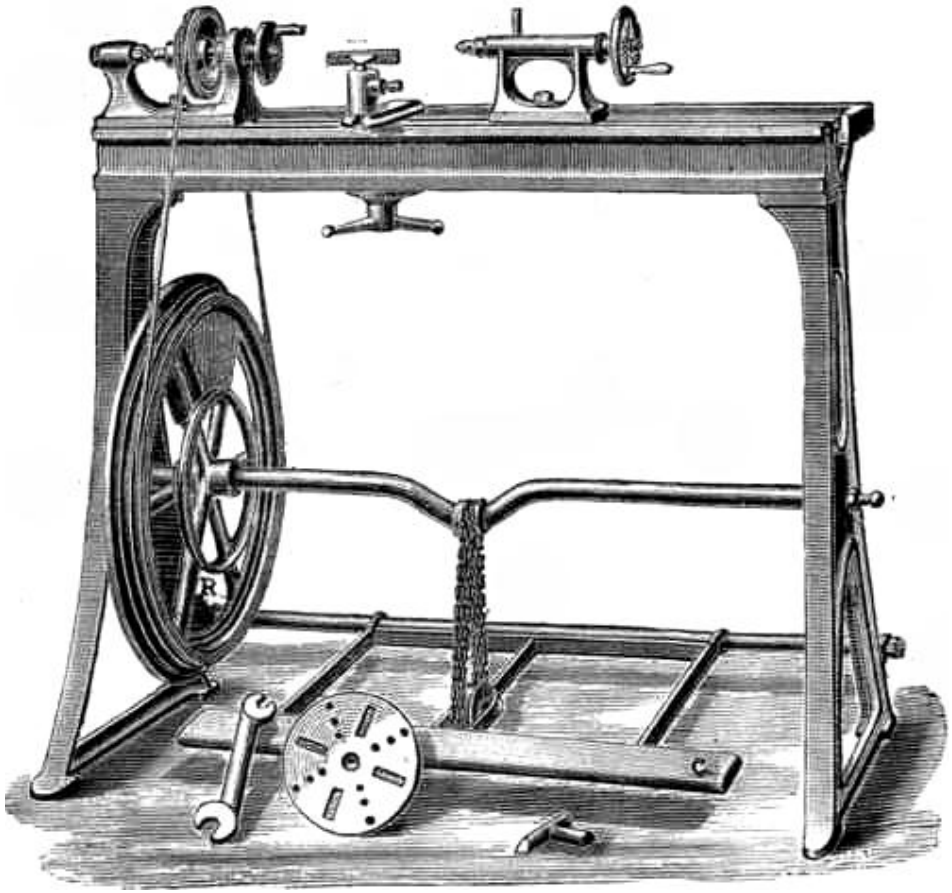
15th Century drawings show plans for this new idea.



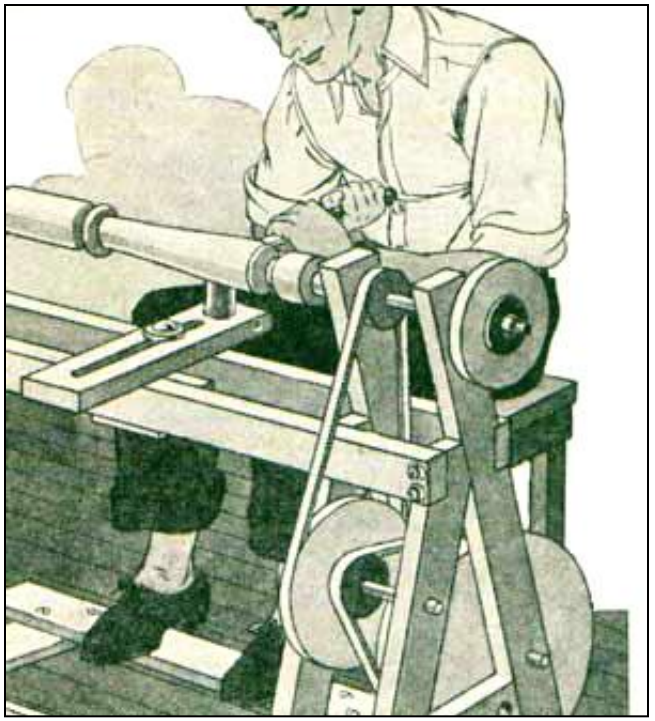


The wood turns in only one direction, but you give up working with two hands.

Treadle machines could spin the wood more efficiently.



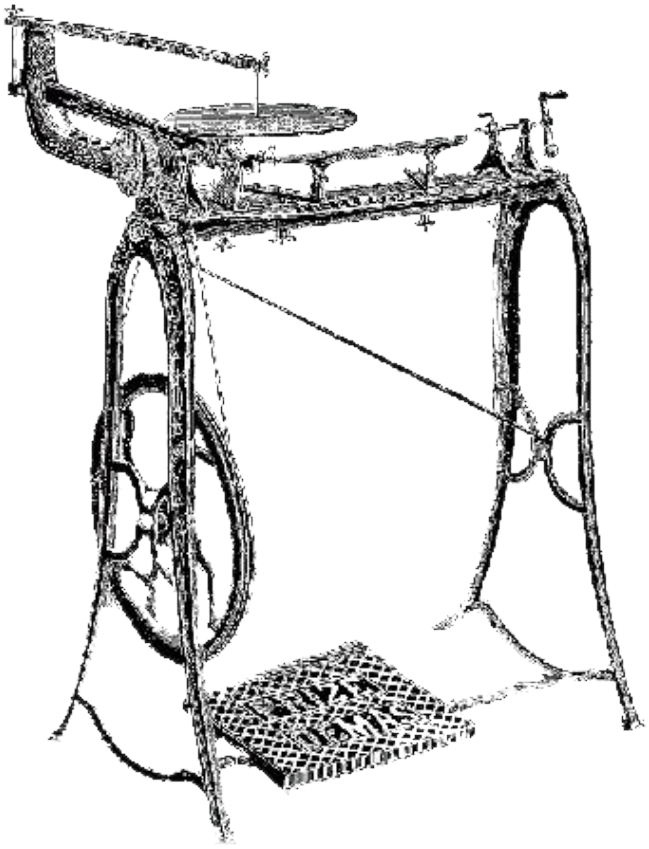
Talk about state of the art.



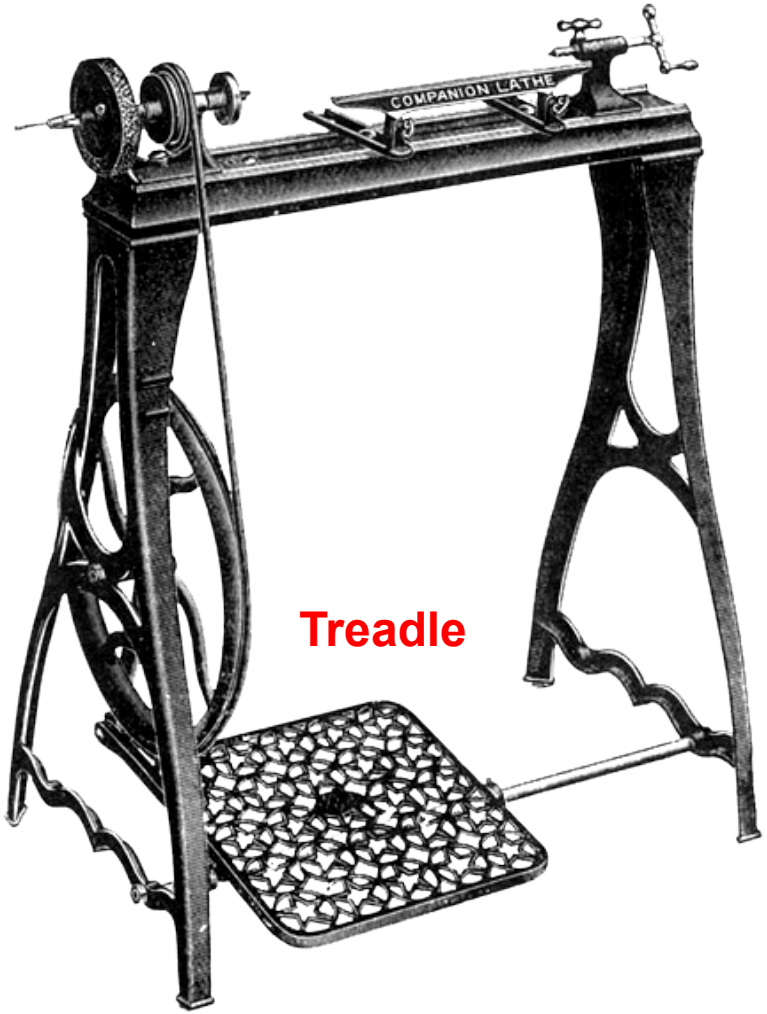
Both hands are free!

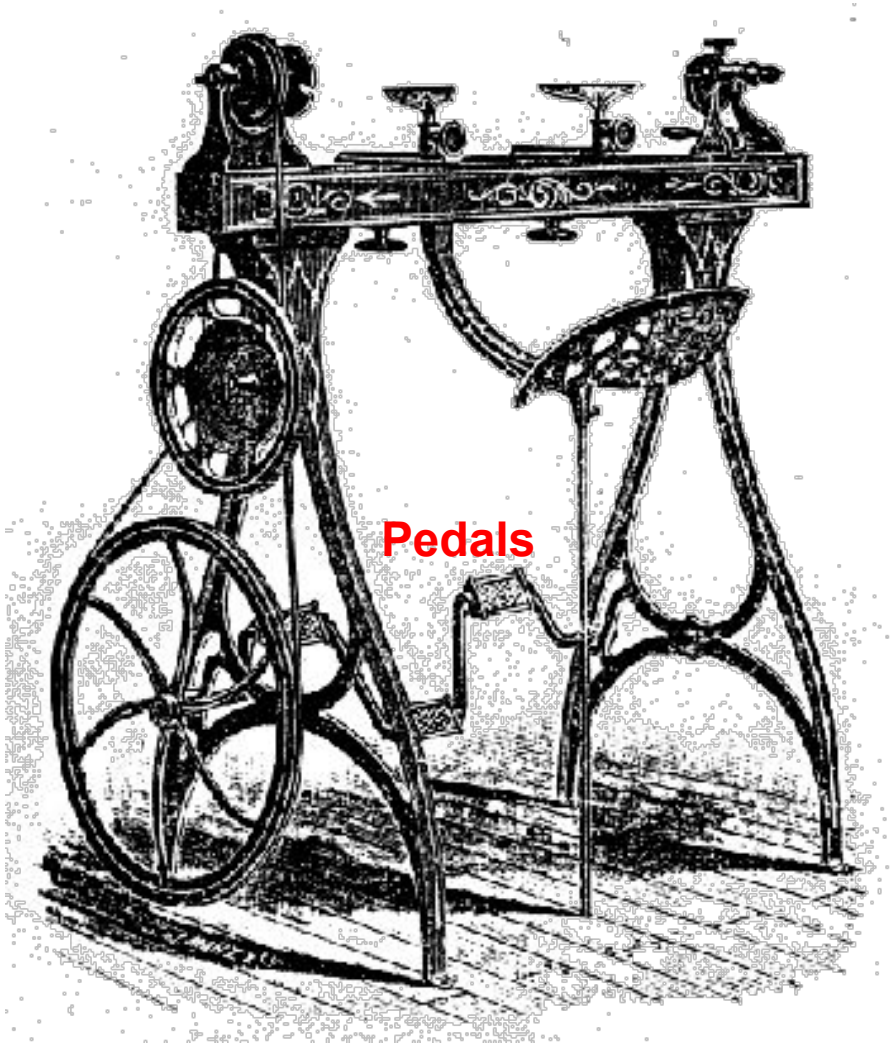
This enterprising manufacturer even made a scroll saw attachment for their treadle lathe.

1881 with Scroll Saw Attachment



Eventually treadles turn into pedals and increased torque (turning power).

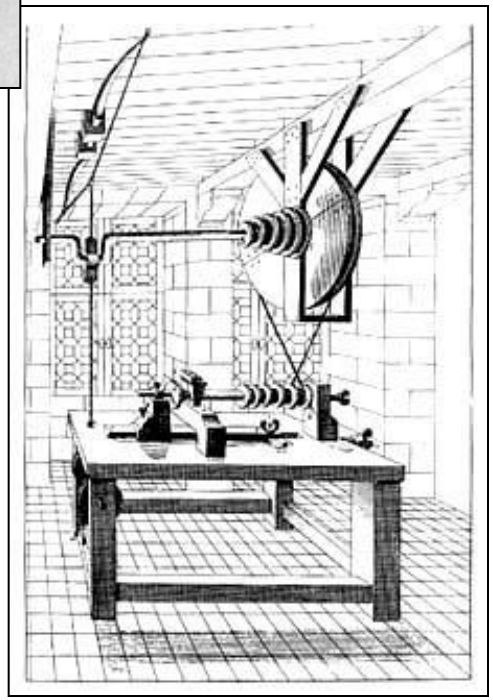




To further increase torque, other power sources developed.

Pulleys and belts would allow a series of factory machines to run from the same power source.

This included water wheels and steam engines



1941 lathe for the
home workshop.

Electricity made other sources obsolete. Now the operator could take the physical energy and concentration off pedaling and focus it on turning and machine safety.

Think Safety

Use eye protection.
Wear a face shield when faceplate turning.
Keep the tools sharp.
Use mostly lower speeds.
Make sure everything is properly tightened.
Keep the tool rest 1/8” from the project.
Turn the project by hand before applying power.
Remove the tool rest before sanding.

Small Spur Center

Large Spur Center

Live Center

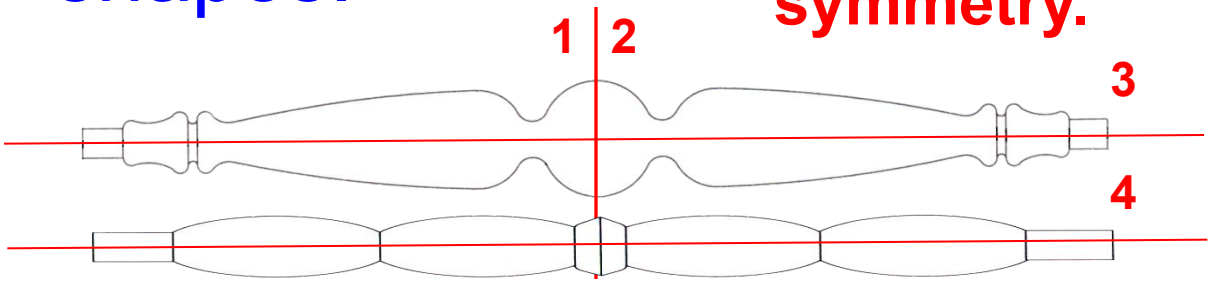
Dead Center

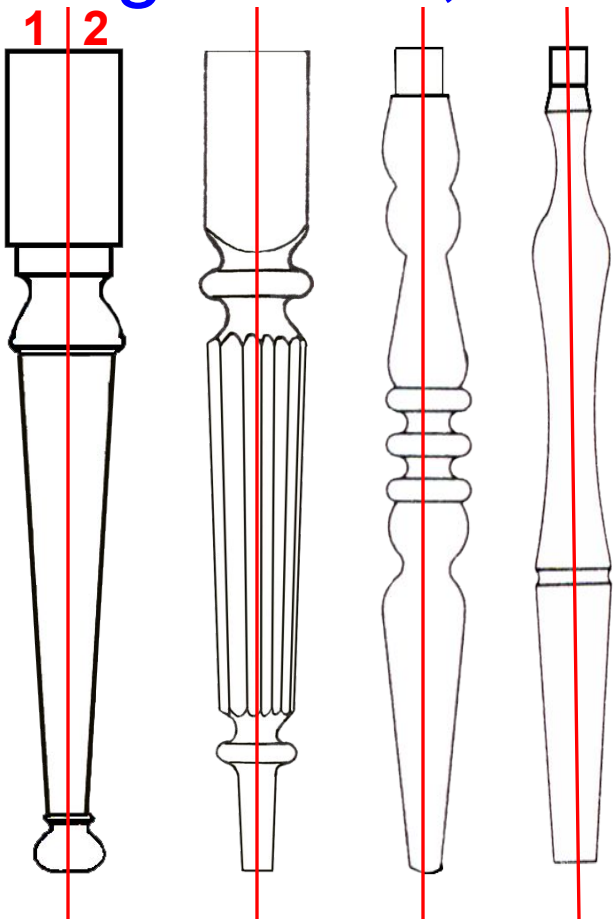
Spindles are held between a spur center and live or dead center.

Spindle turning creates cylindrical, tapered, and contoured parts like pens, table and chair legs, and bedposts.

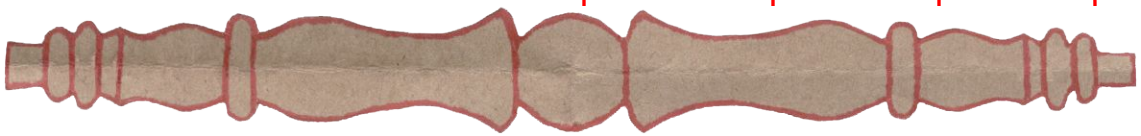
Spindles generally look better when they are well proportioned, have free flowing curves, gentle slopes and symmetrical shapes.

Vertical members have 2-way symmetry.





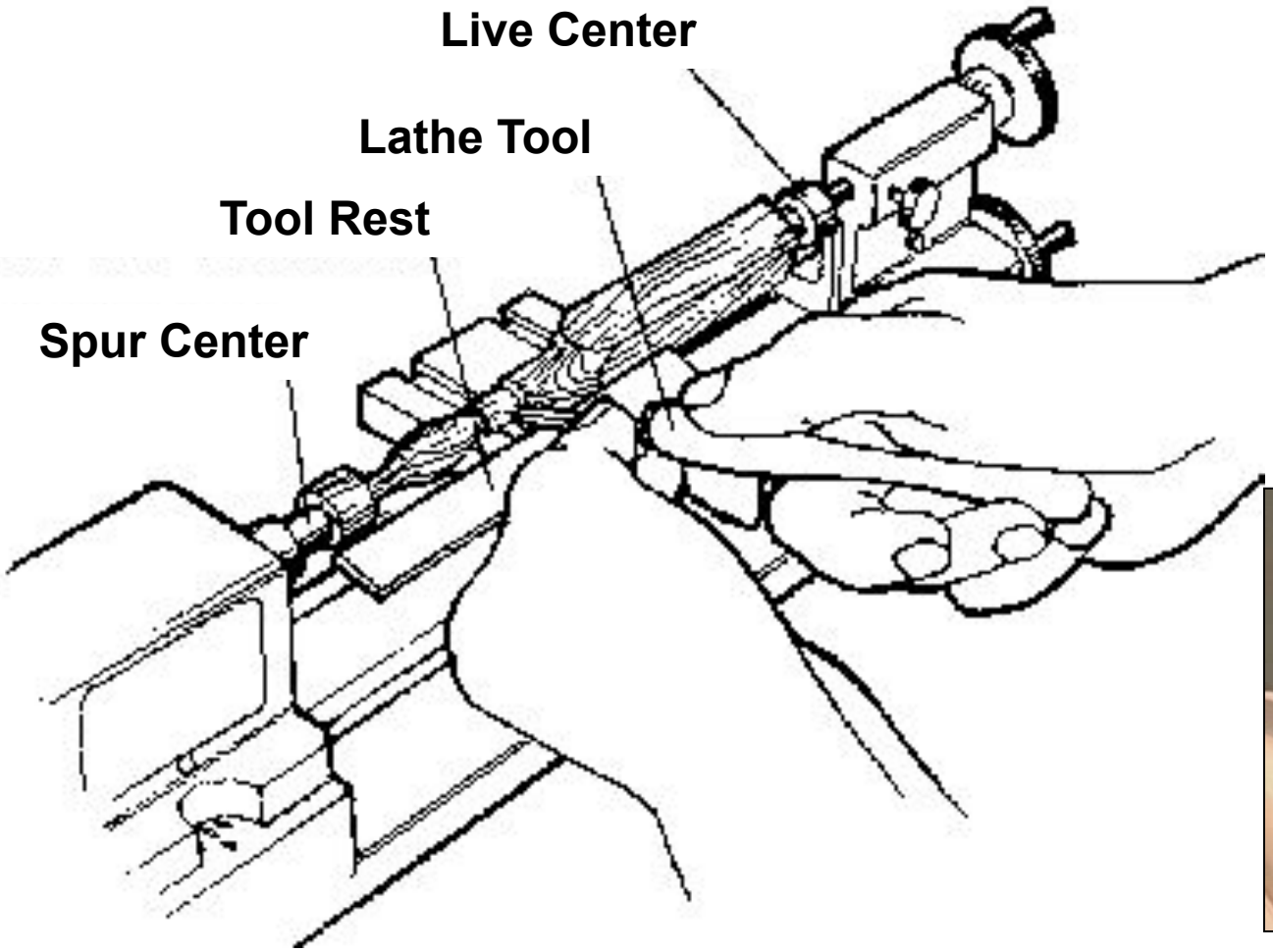
Horizontal members hav 4-way symmetry.

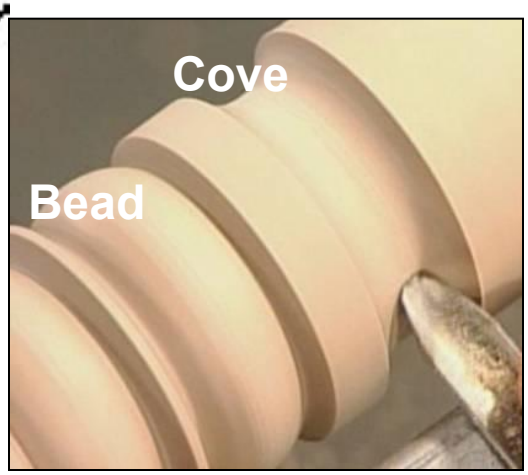


Adding in the details gives it a 3-dimentional look.

Hint: When planning spindles, folded paper can be cut to quarter or half of the shape, then be opened to reveal a symmetrical profile.

See Components of Design





A tool rest is positioned within 1/8" of the work piece. A lathe tool is held against and moved along the rotating work to remove material shaping the project. The wood may be wet or dry.

An assortment of turning tools are used to shape the wood.

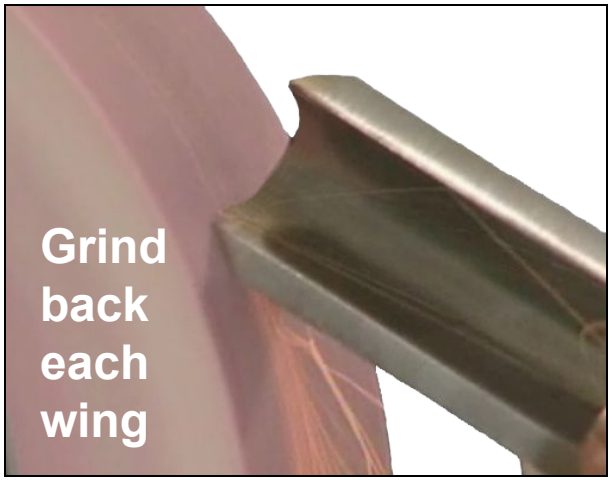
Lathe tools include the skew, gouge, parting tool, and round-nose tool.

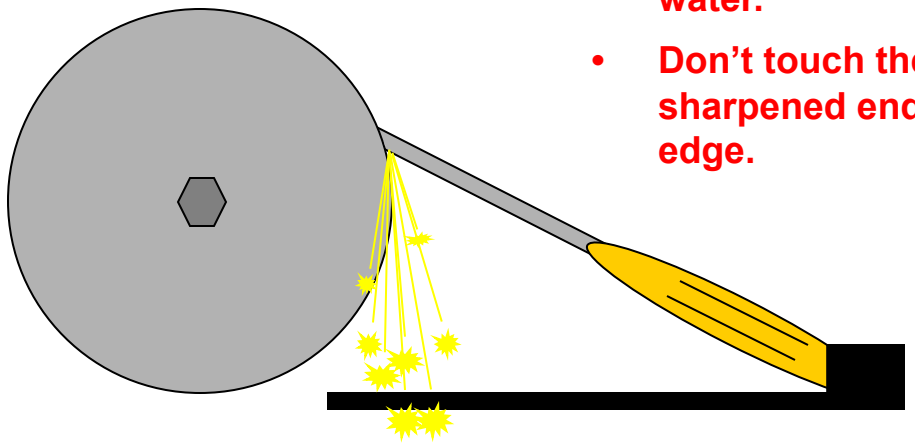
The tool must be sharp.

A sharp crisp edge works better and is safer because it requires less force when using it to cut.

Safety rules

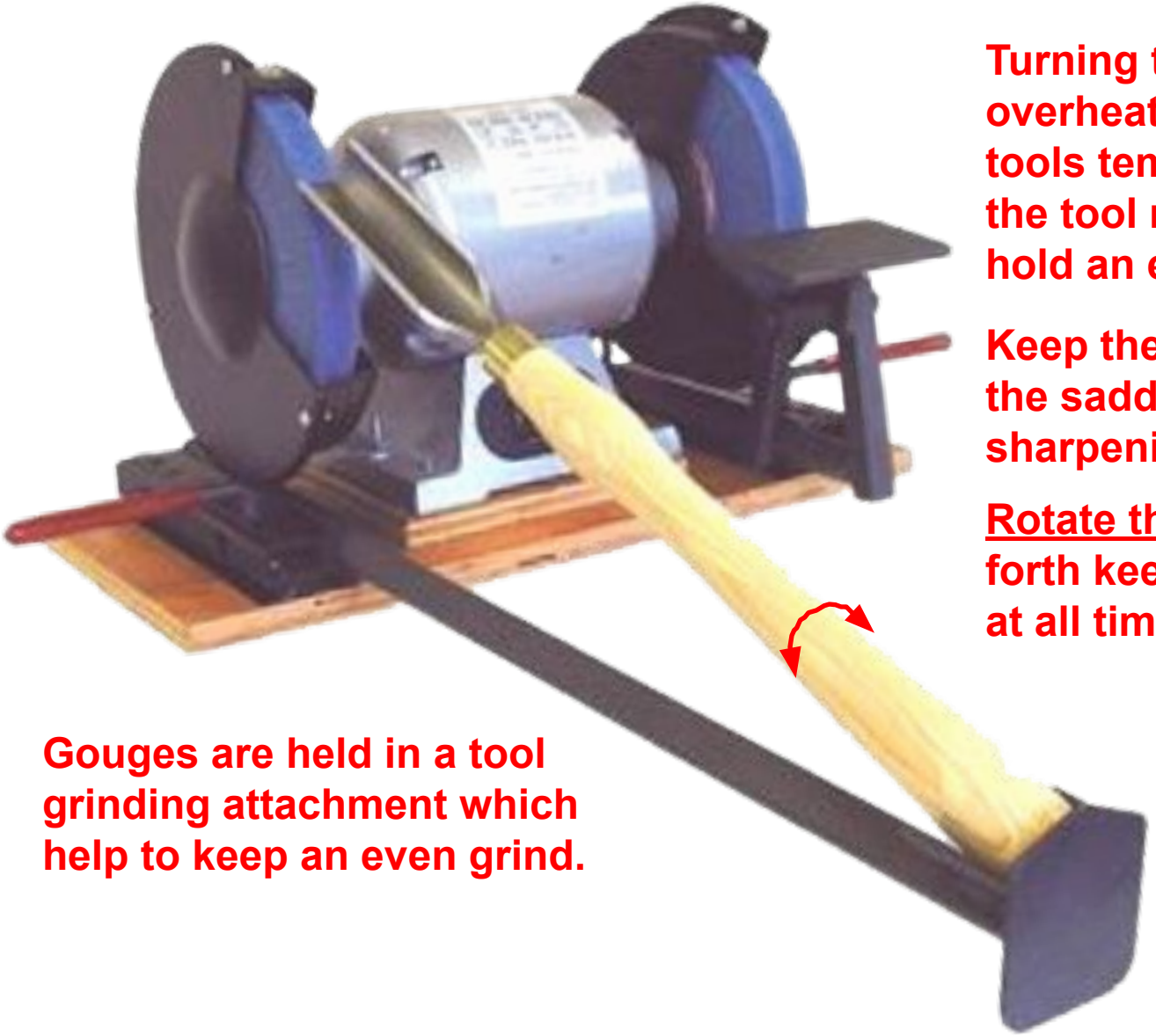
- **Use safety glasses.**
- **Keep the tool in motion.**
- **Keep the tool cool by dipping it in water.**
- **Don't touch the hot sharpened end or edge.**





It may be necessary to sharpen the lathe tool many times during it's use.

This specialized sharpening attachment makes grinding long rounded lathe tools easier.



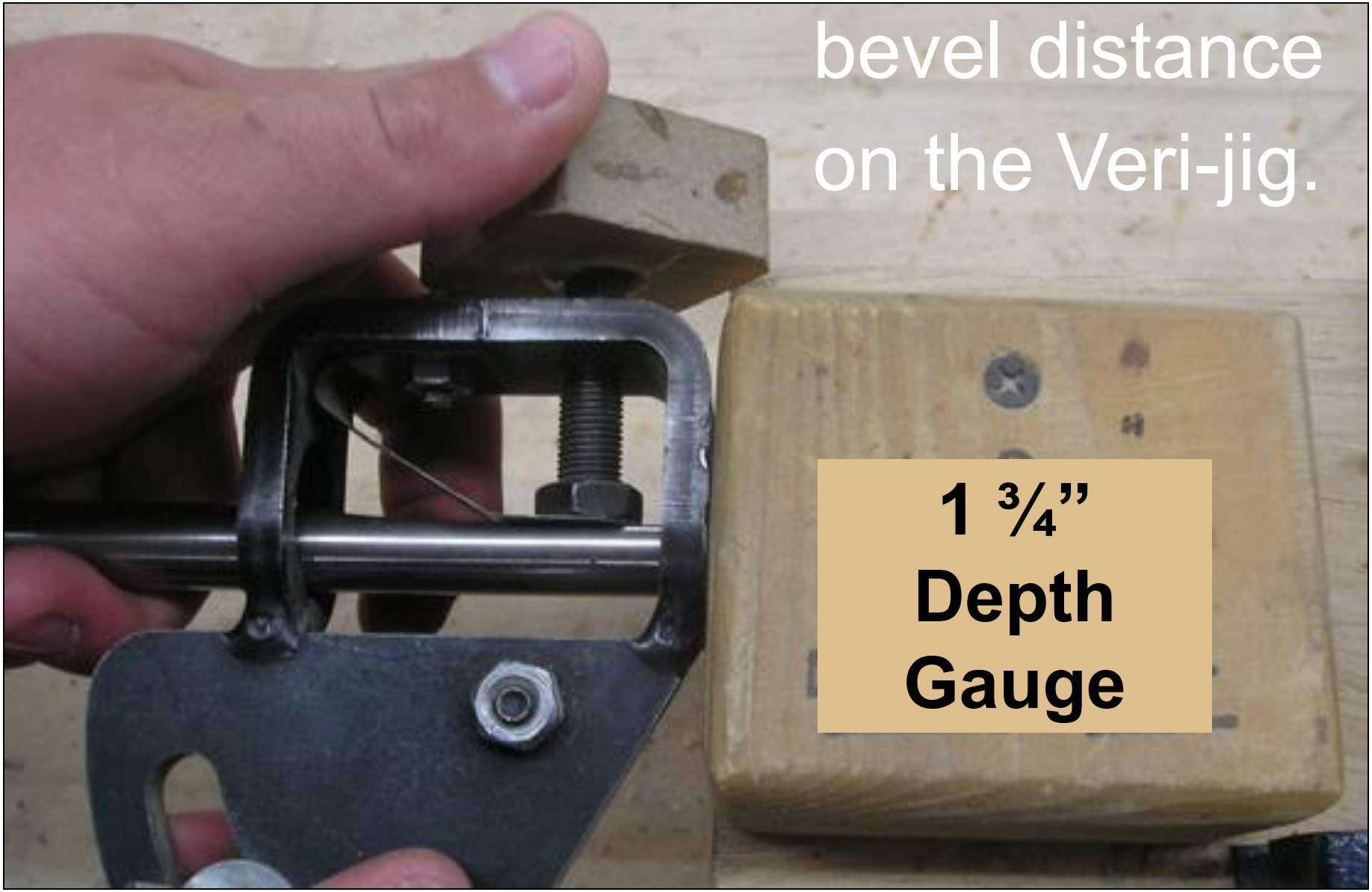
Turning the edge blue indicates overheating which removes a tools temper (hardness) making the tool metal softer (not able to hold an edge).

Keep the tool handle back in the saddle of the tool sharpening attachment.

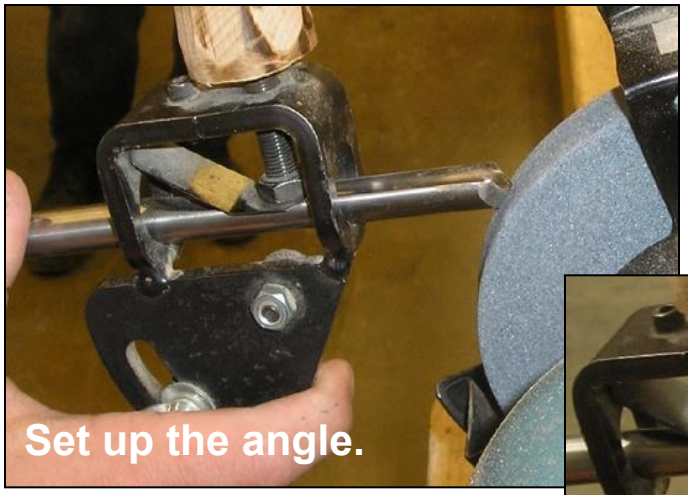
<u>Rotate the tool handle</u> back and forth keeping the tool in motion at all times during the grind.

Gouges are held in a tool grinding attachment which help to keep an even grind.

A fingernail grind requires setting the



Set the bevel and keep the point of the veri-grind jig in the saddle.



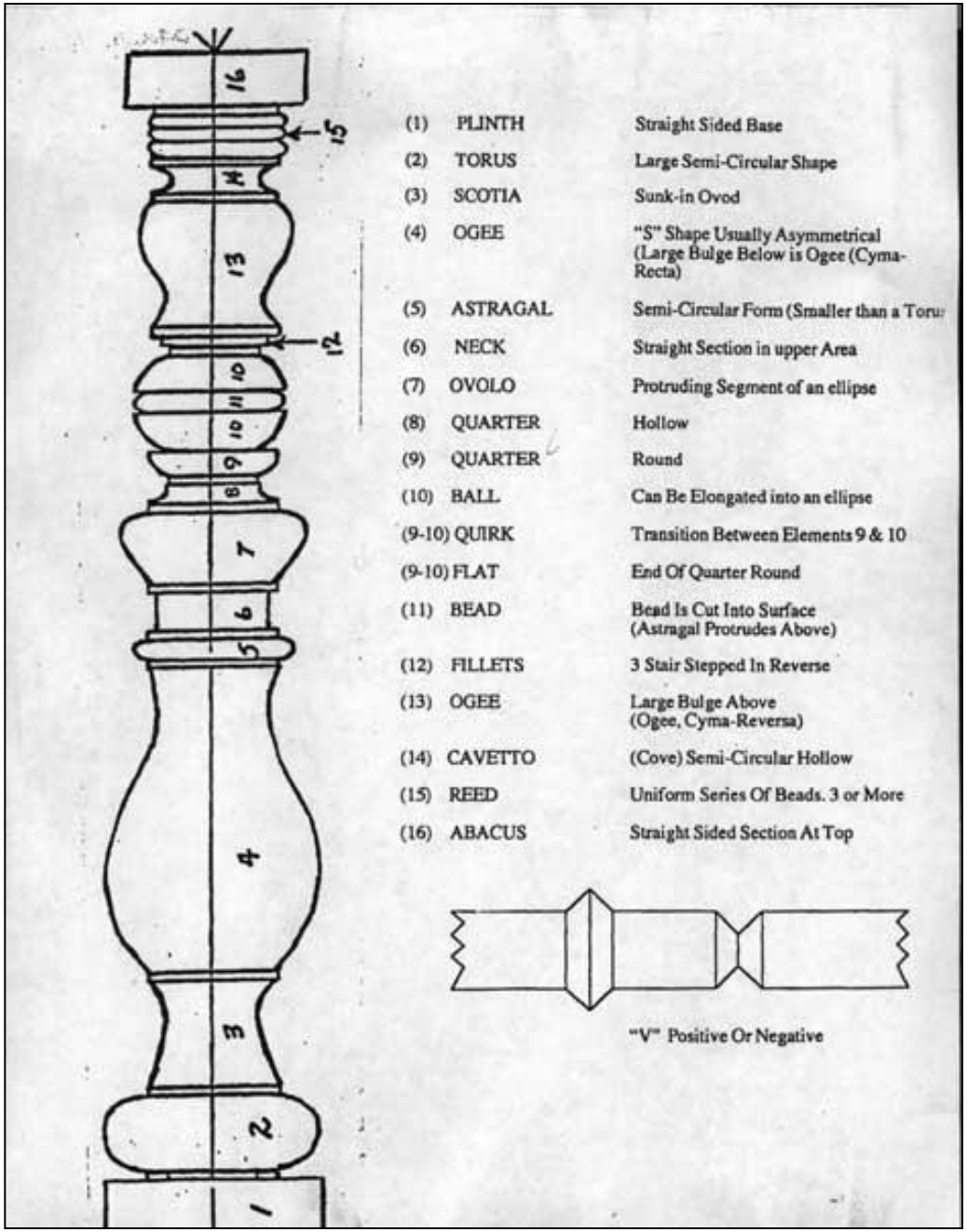
The fingernail grind is a popular edge for cutting on the lathe.

Sharpening gouges

Each tool is appropriate for creating unique shapes.

Make a bead with the gouge

Make a cove with the gouge

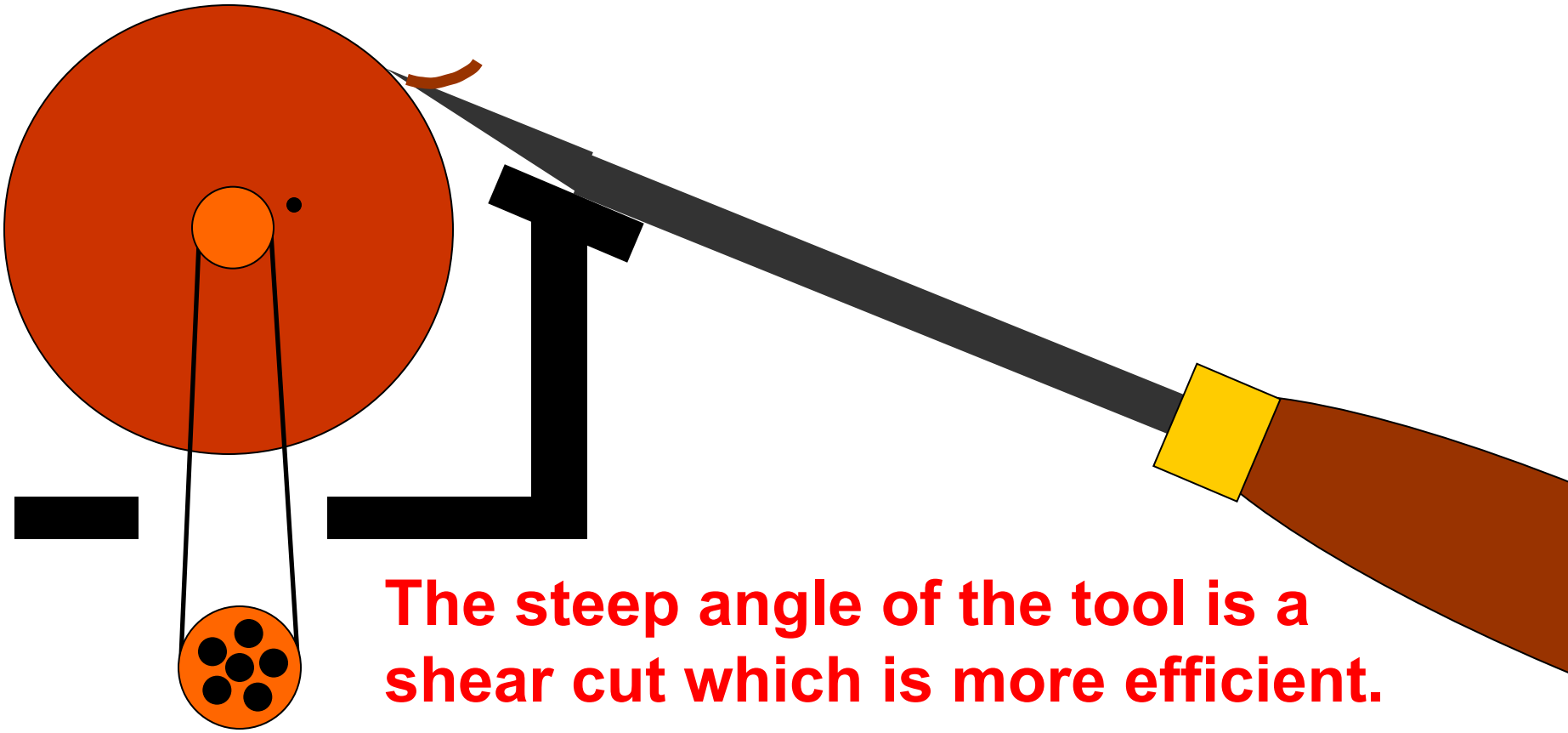


Make duplicate parts using a shop made scratch tool.

Mark duplicate locations repeatedly by carefully measure out spindle details onto a scrap stick. Next, pre-drill holes and install (hardened) sheet rock screws. As the rounded spindles are turning, press the scratch tool against the spindle to mark the details on each spindle.

To get the proper leverage, keep the tool rest close to the work.

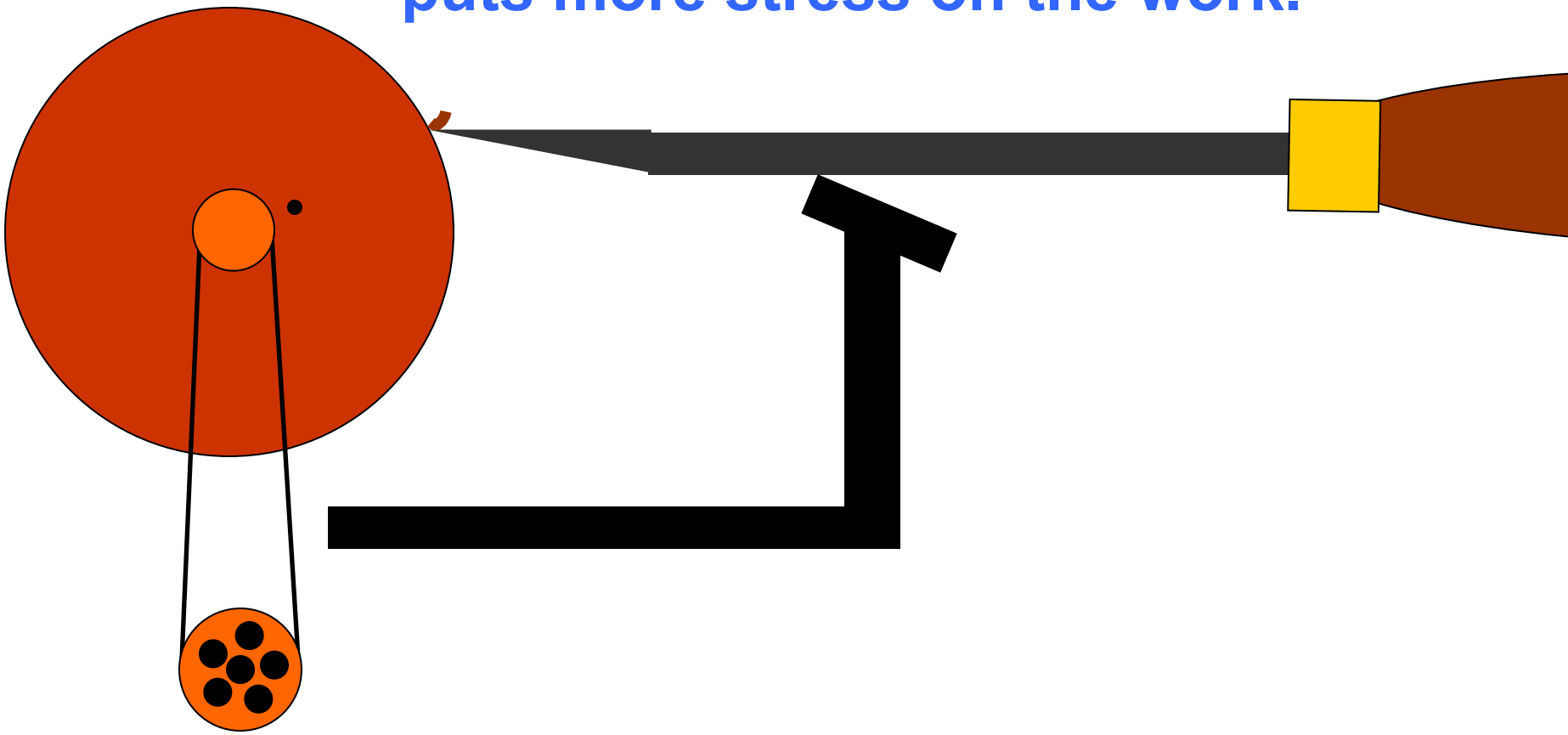
With the tool rest close, the tool is easier to control.



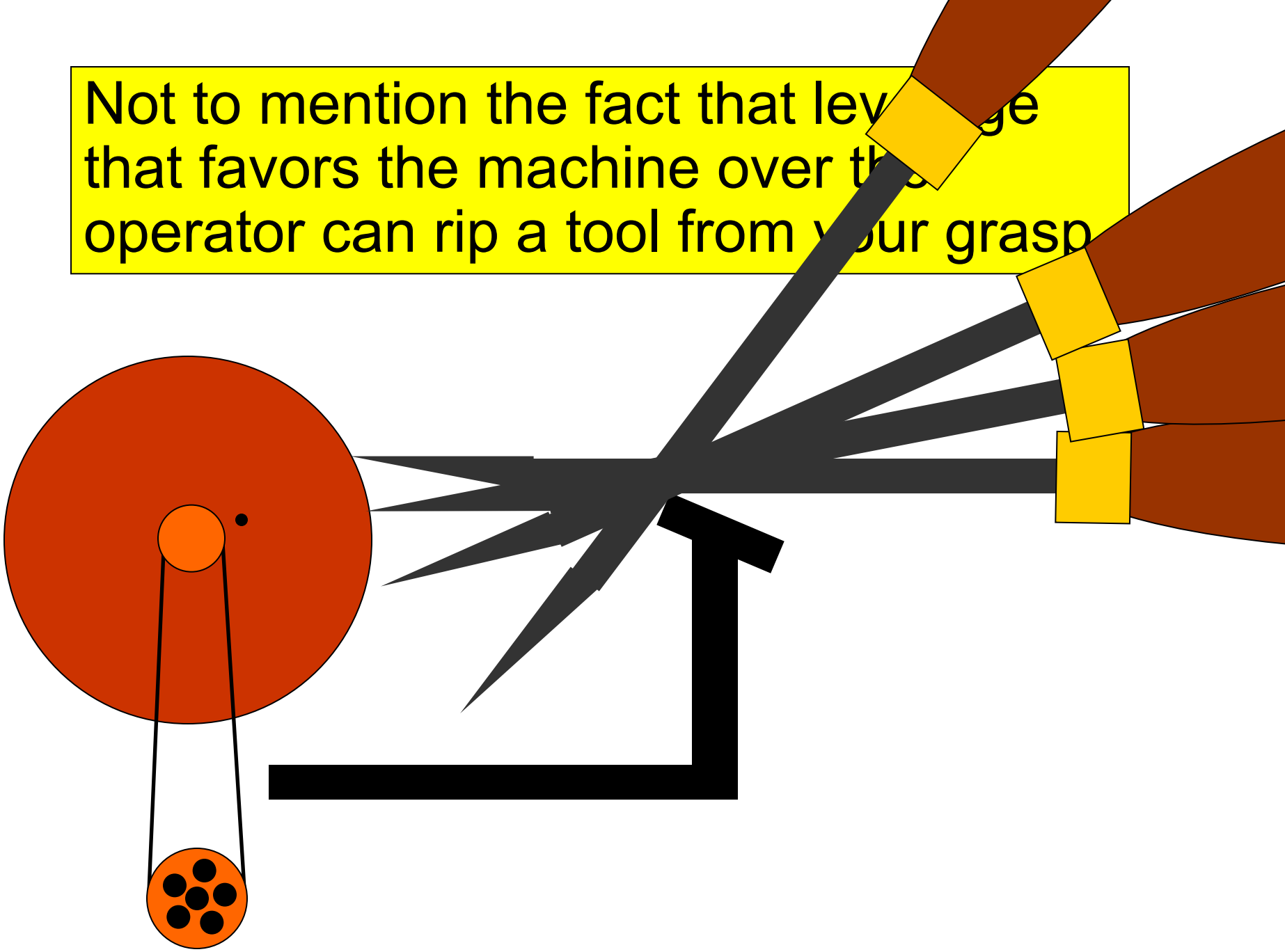
The steep angle of the tool is a shear cut which is more efficient.

If the tool rest is too far from the work, the tool is hard to control.

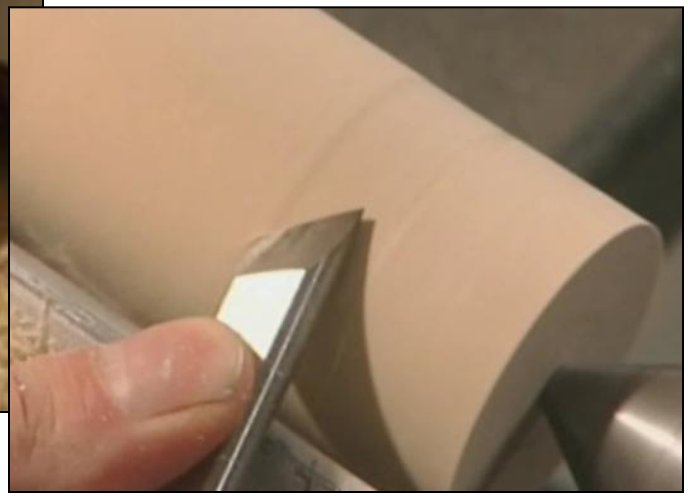
A scraping cut is less efficient and puts more stress on the work.



Not to mention the fact that lev ge
that favors the machine over th
operator can rip a tool from your grasp

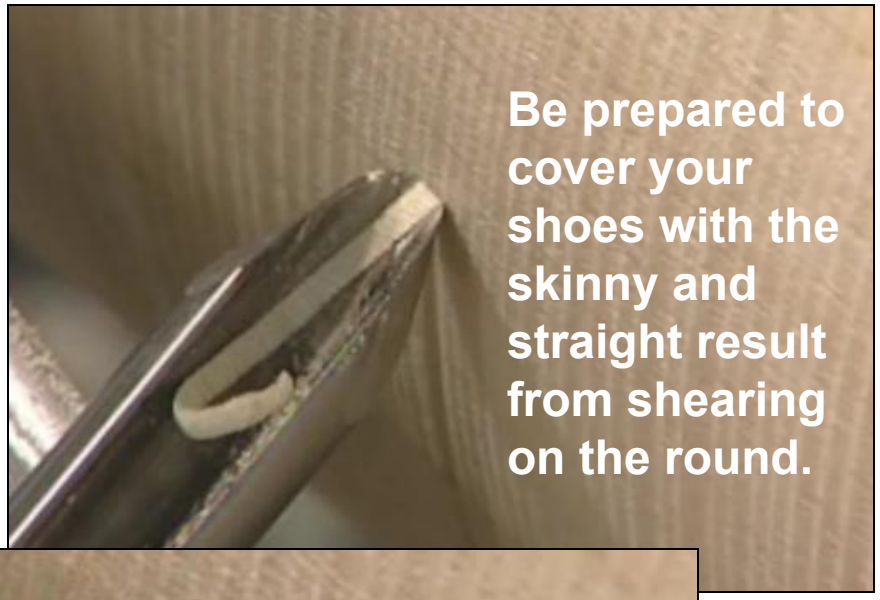


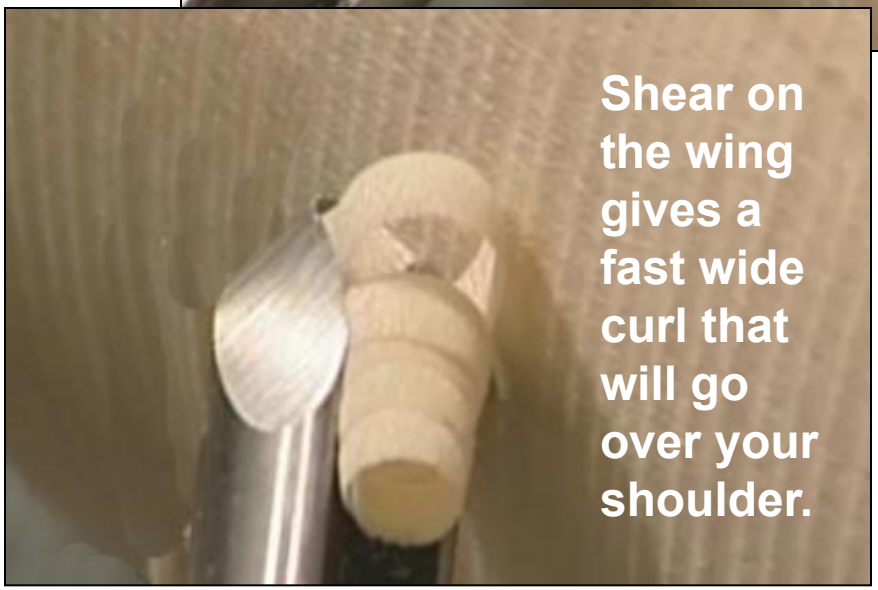
Shear cutting with the skew reduces sanding time.



ShearingShearing (riding the bevel) is far more efficient than scraping the grain. It cuts smoother with less tear out requiring less sanding.

Shear cutting lets you control the shavings.





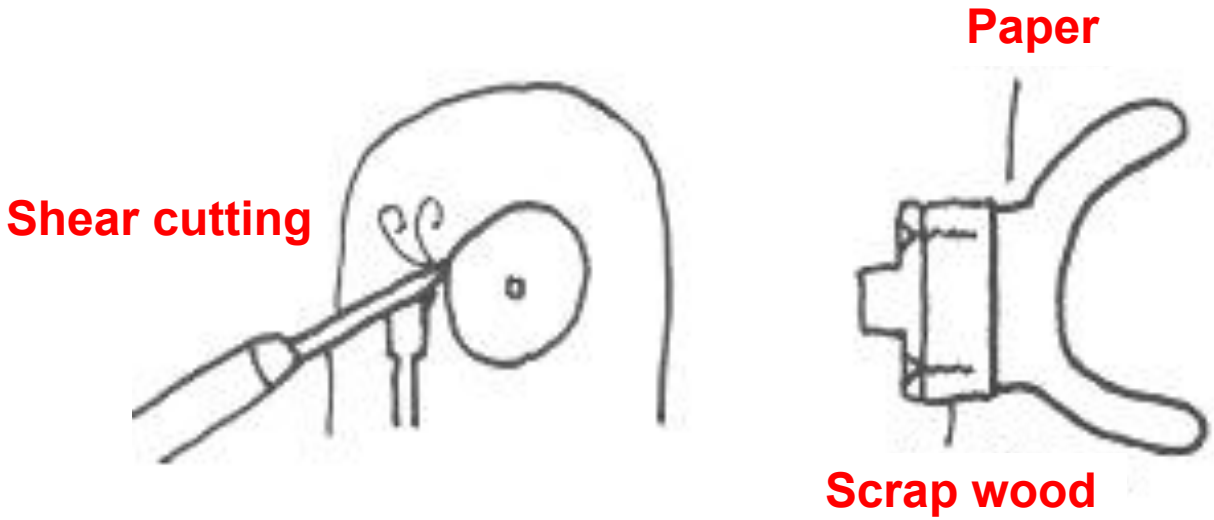

The parting tool
is being used as
a scraper on ball
shaped feet.

When the work piece is mounted on a faceplate, the edges and face can be turned simultaneously.

For better grip, choose course deep thread screws.

Deep thread screw

To prevent the screws from entering the back of the completed work piece, a backup board is glued to it before the faceplate is attached and threaded onto the lathe. Paper in between allows it to easily split off the scrap wood when the piece is finished.



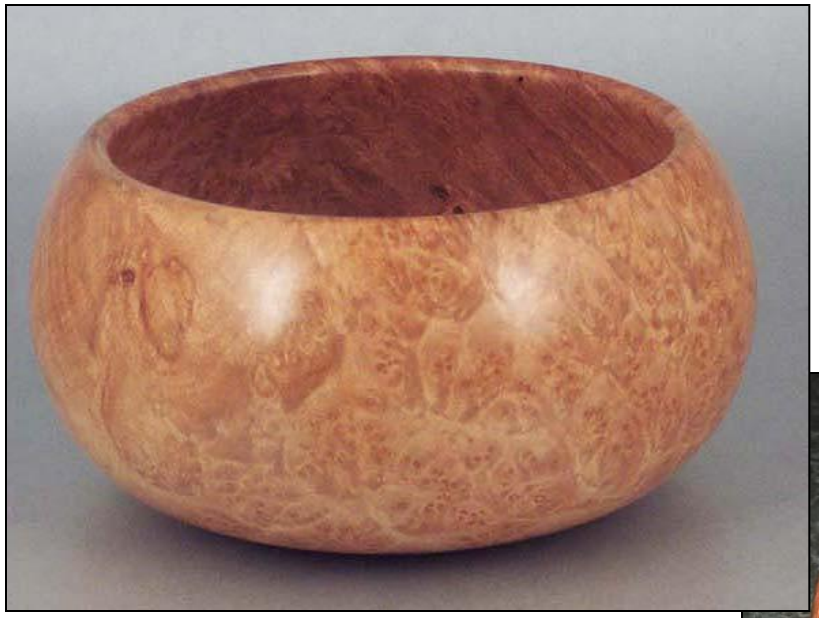
The round nose tool digs away the wood to shape a bowl.

A lathe chuck doesn't require screws to hold the work piece in place.

The lathe chuck self-centers as it clamps the work. To be safe, always remove the chuck key after use.

This burl wood bowl is held firmly by an adjustable lathe chuck.

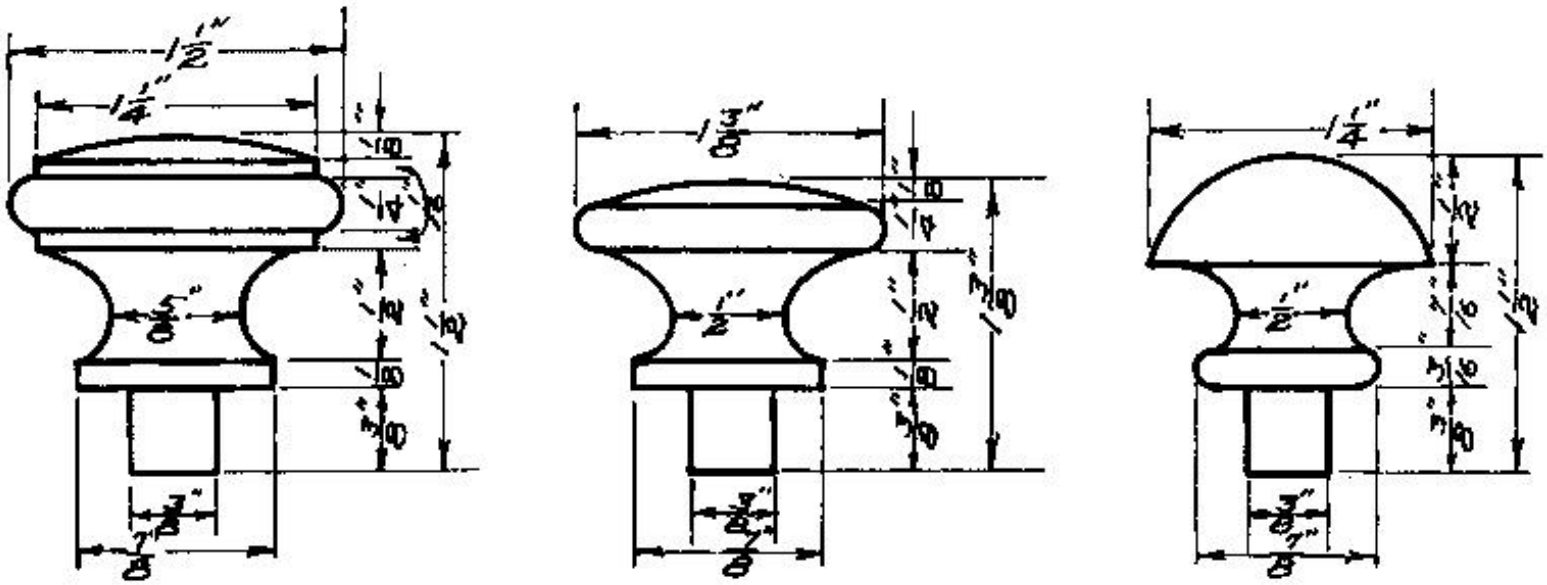
Examples of bowls done on the lathe.



Burls are popular for turning.

Curly wood give a depth and glow.

The chuck is also used for producing pieces like goblets and knobs.

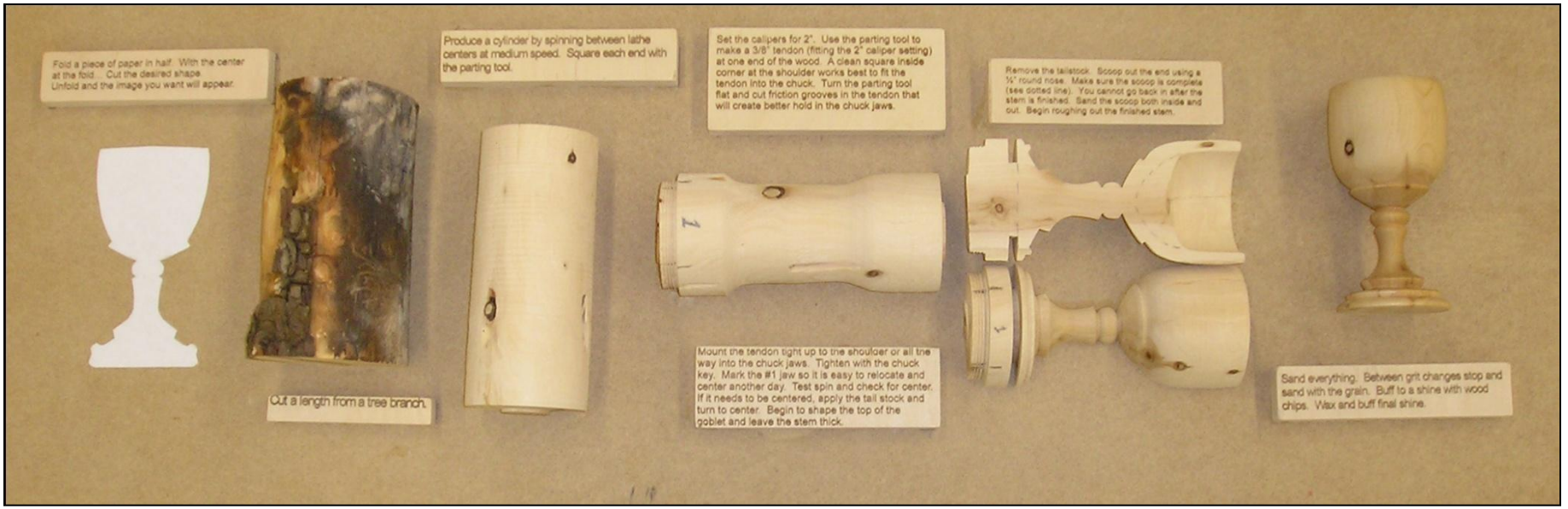


Use salvage tree trimmings and firewood for small turned projects.

Most wet wood gets sealed to slow down drying eliminating most cracking defects.

Juniper doesn't need to be sealed to dry without cracking and turns especially well.

Turning a Goblet.



From an idea, to wood blank…

…begin the shape but not a stem…

…hollow out the inside first…

… sand, wax and buff to a shine.

Remove the tool rest before sanding and finishing. Use care, the sandpaper can quickly overheat.

Buff the wax to a glossy shine.

Don’t throw out the small scrap blocks. They make great practice pieces.

Practice lathe skills and make small knobs with scrap.

Copy down any new vocabulary words or phrases from this slideshow…

Faceplate- devise for holding bowl material on the spindle of a lathe.

Spindle turning- wood is pressed between centers for spinning.

Live center- device with roller bearings for keeping the opposite end centered and running true.

Dead center- like the live center, but without roller bearing. It requires lubricant to keep from over heating while spinning

Spur center- device that grabs into and turns the stock.

Tool rest- fulcrum where the tool gets held steady.

gouge- U-shaped long channel profile cutting tool useful mostly on shear cutting spindle turning.

Fingernail grind- a more efficient grind for gouge spindle turning.

Skew- angled straight edge double bevel tool useful on spindle turning.

Round nose- flat but round end profile for all around tooling operations.

Parting tool- double beveled pointed edge tool useful in cutting channels.

Guard- a factory made covering over the turning area.

Chuck- a way to clamp in wood without using screws mostly on bowl turning.

Shear cut- cutting at a steep angle so as to shear rather then scrape.

The End