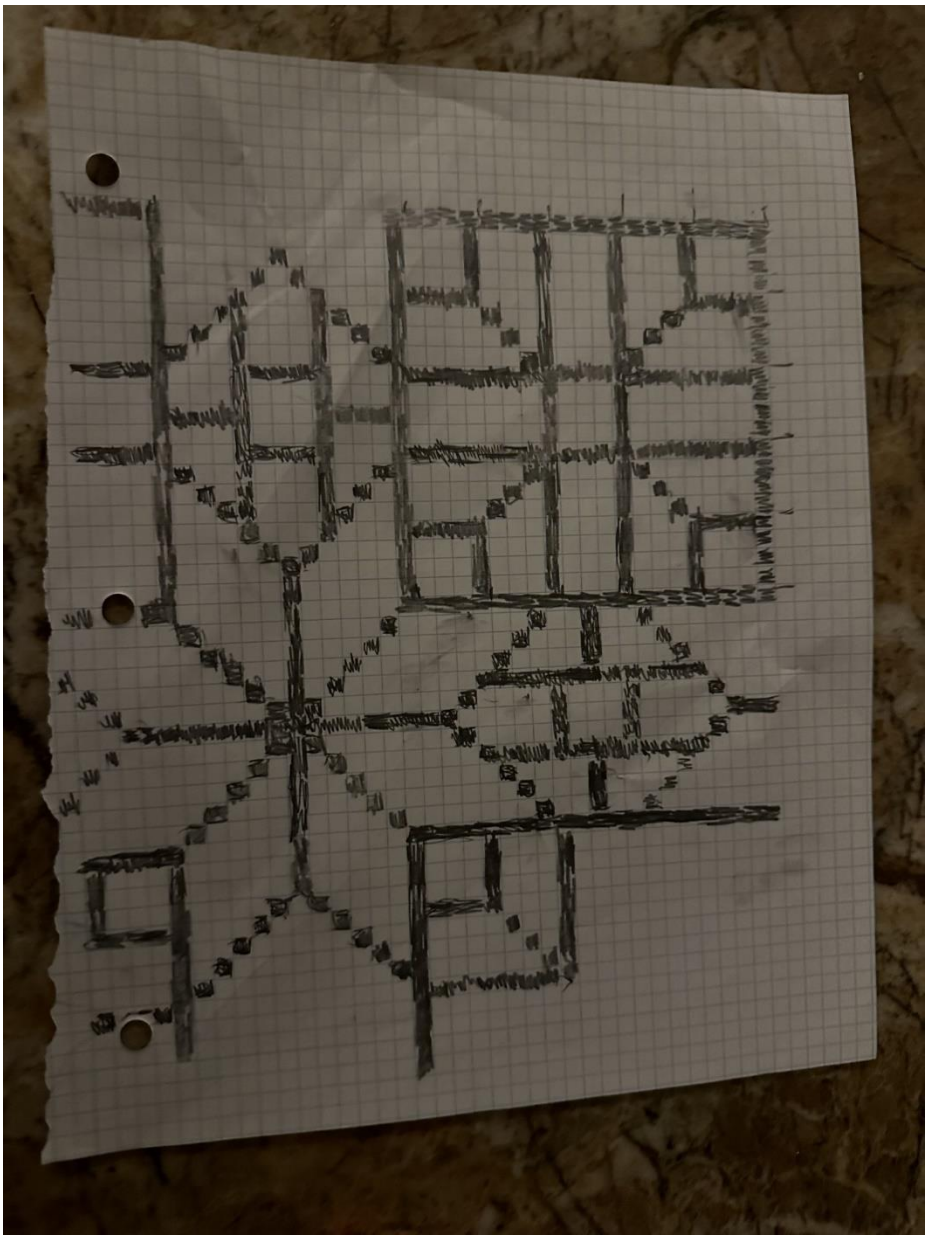
Cut logs into roughly 12-inch lengths

I use various native Texas hardwoods including pecan, mesquite, hackberry, black walnut and ash. The log that was used to make the piece shown in this document was slightly spalted pecan.

Seal wood pieces

The ends of the logs are sealed using Anchor Seal. Anchor Seal is a liquid wax emulsion that dries to a layer of wax. The wax layer slows drying and minimizes cracking.

Layout single repeating pattern on graph paper

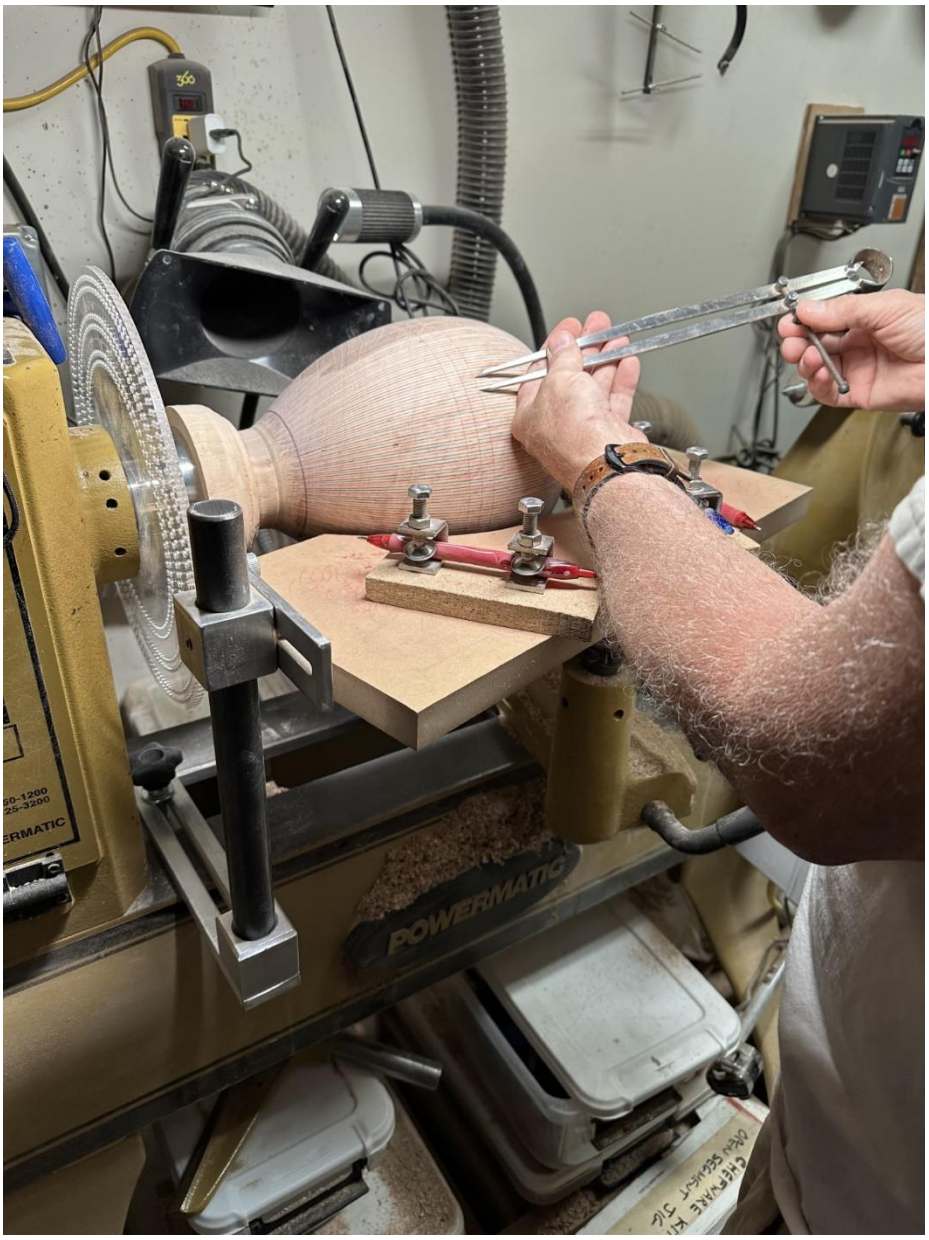


The repeating pattern is 32 x 32 units. For 8 repeating patterns around the piece a total of 256 units around the circumference are required.

Shape outside and hollow inside of the piece on lathe

I use a camera-based hollowing system that facilitates hollowing to a uniformly thin wall thickness. I typically make the wall thickness about 4.5 mm (0.18 inch) on pieces I'm going to pierce. This thickness is thin enough to allow the drill to pierce the wood and thick enough to provide strength and contrast.

Mark latitude (circumference) and longitude (top to bottom) grid lines to facilitate pattern layout



The design requires 256 longitude (top to bottom) lines. An indexing wheel with 256 indexes (clear plastic disk mounted to left of piece) and a flat platform are used to draw the 256 longitude lines. Once the longitude lines have been drawn, the flat platform is used to draw the latitude (circumference) lines around the piece. The latitude lines are positioned to create approximate grid squares. The squares are approximate because the curves of the piece distort the squares.

Use grid lines to layout pattern

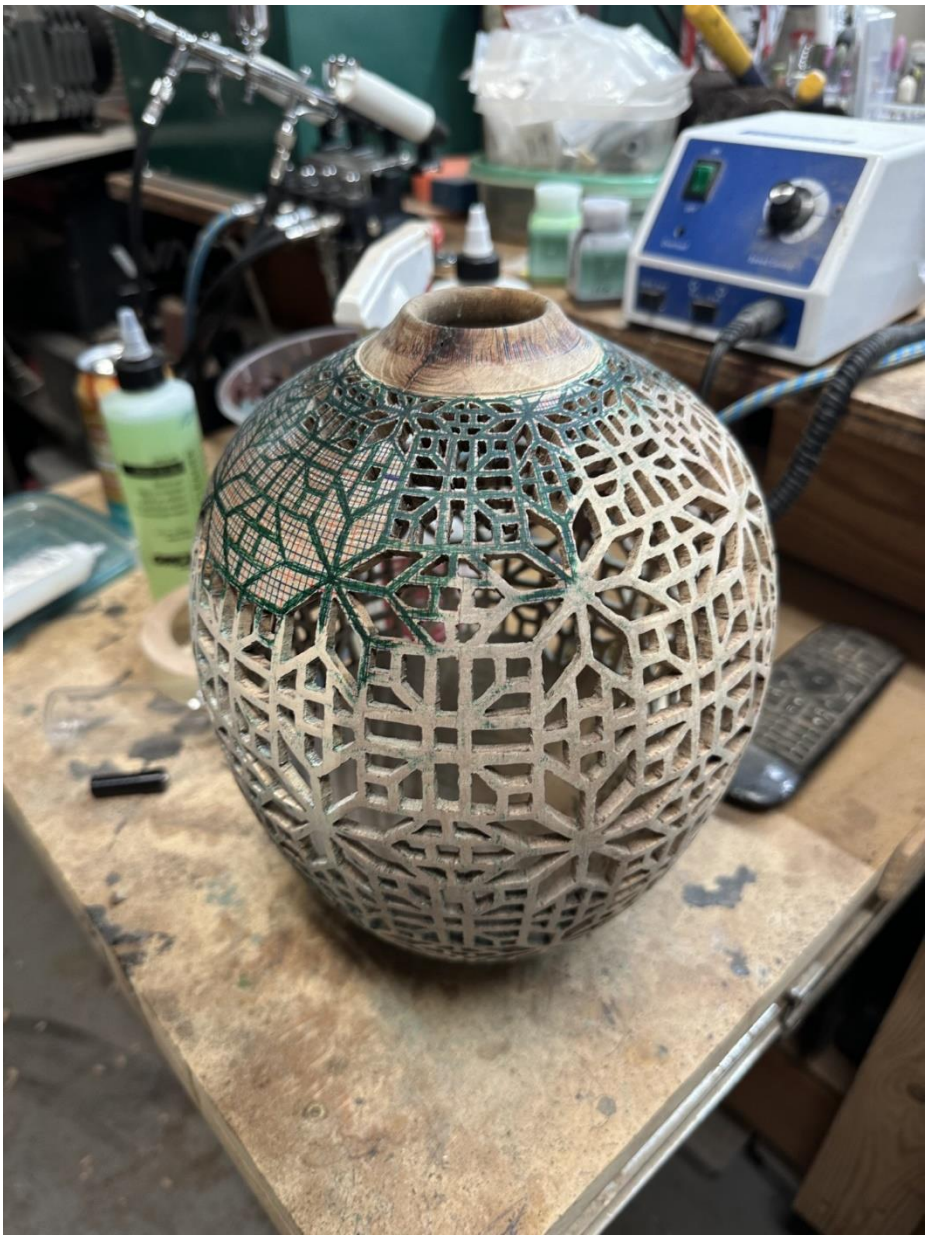
The repeating pattern is drawn on the piece using the grid lines.

Finish pattern layout

Use high speed dental drill to cut out pieces

A high-speed air turbine dental drill is used to pierce the pattern on the piece. These drills are used in dental labs to shape and smooth dentures and crowns. I use an NSK Presto II drill that runs at 320,000 RPM. As a comparison, most Dremel devices max out at about 30,000 rpm. The process uses the same small carbide burs (bits) that are used in a dental lab.

Partially pierced



Piercing completed

Dye piece in black India ink

The India ink is used to blacken the inside of the piece and on the inside edges where wood has been removed. The black provides better contrast to the outside of the piece that will be sanded to reveal the undyed wood. The piece is submerged and rotated in a shallow bath of ink to insure uniform coverage.

Sand India ink off outside of piece

Apply finishes

The finished piece is 10 inches tall and 7 ¾ inches in diameter. The top and bottom rings are painted with acrylic paint. Satin wipe-on polyurethane is applied on the inside of piece. Semi-gloss wipe-on polyurethane is applied to the outside of piece.