

MAKING A BEADS OF COURAGE BOX

By Bob Gerenser & Mike Lanahan



Ground Rules

- ▣ No need for note taking
 - A Portable Document Format (pdf) copy of this presentation is available from Randy
- ▣ Ask questions.
 - It's your time.
 - There is lot to cover.
 - We'll go fast. Let us know if it is too fast.
- ▣ Sit back, and relax

What is Beads of Courage?

- ▣ Beads of Courage (BoC) provides supportive care programs for children coping with serious illness. A 501 (c) 3 organization
- ▣ Colorful beads given to mark medical treatments
- ▣ Cancer, Blood Disorders, Burn injuries, Neonatal ICU, & Chronic Illness
- ▣ <http://www.beadsofcourage.org>



Benefits

- ▣ Decreased Illness-related distress
- ▣ Positive coping strategy
- ▣ Helps find meaning in illness
- ▣ Restore a sense of self
- ▣ Tangible record of treatment



Why Boxes?

- ▣ Sadly, some children receive thousands of beads for treatments.
- ▣ Storage/Organization of beads is an issue.



How to Make One?

- ▣ Lots of ways: Hollow solid chunks of wood, Segmented Stave or Ring Construction.
 - Although elegant, NOT Quick, nor Easy.

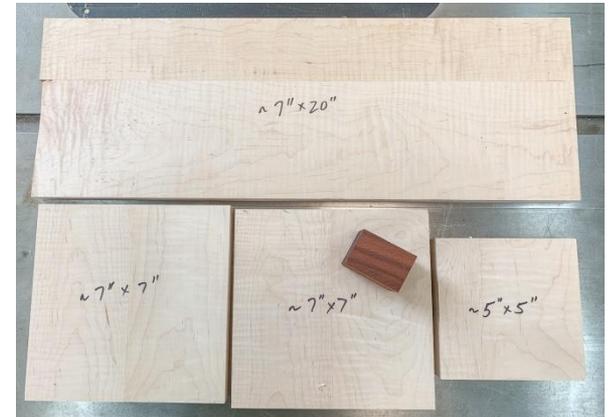


PVC Pipe as Body

- ▣ Johnny W. Tolly showed the Hill Country Woodturners how to use 6" thin walled PVC pipe as a body, and decorate outside with colorful, kid friendly fabric. (see references)
- ▣ Advantages:
 - Can be turned on any lathe with minimum 10" swing
 - No elaborate flatwork equipment or skills needed
 - MUCH easier than the previous methods
 - Quicker
 - More uniform box design, less "box envy"
 - Quicker & Easier = More boxes for the kids!

Materials

1. 6" dia PVC cylinder, 5-6" tall *
2. Fabric to cover cylinders (fat quarters) *
3. BoC logo bead for knob *
4. Scotch Guard, to protect fabric *
5. Spray adhesive for fabric to PVC cylinder: 3M, Scotch Super 77, Krylon *
6. Mod Podge or Clear Latex Enamel to protect fabric *
7. Wood for Top & Base - 7" x 7" x 1/2-3/4"
8. Wood for the Lid - ~ 5 3/4" x 5 3/4"
9. Wood for knob 1 1/2 square x 1-1 1/4" long
10. Glue for Knob to Lid - wood glue, Titebond, CA, epoxy, ...
11. Glue for Top * Bottom to Cylinder - RTV, Silicone, epoxy ...
12. Spray paint for inside cylinder (optional), Rust-Oleum Painters touch 2X Ultra Cover Paint + Primer (says: Also bonds to Plastic)



* Note, Fabric wrapped cylinders and Logo bead will be provided by the club for those that want to make & donate a box.

Steps

- ▣ Cut & True Cylinders
- ▣ Clean printing from outside (Acetone)
- ▣ Paint inside of cylinder (optional)
- ▣ Spray fabric w Scotch Guard
- ▣ Wrap cylinders with fabric
- ▣ Seal fabric (Mod Podge & sand)
- ▣ Turn Bottom and Top Ring, to fit cylinder
- ▣ Turn Lid
- ▣ Turn Knob
- ▣ Glue together

Cut the PVC Pipe

- ▣ There are lots of ways to cut a 6" diameter pipe, but without the pipe securely held, some are dangerous and most inaccurate, at best.
- ▣ The cylinders you will get were cut on a horizontal bandsaw, clamped in place with a plug in the pipe to keep it from deflecting while being clamped.

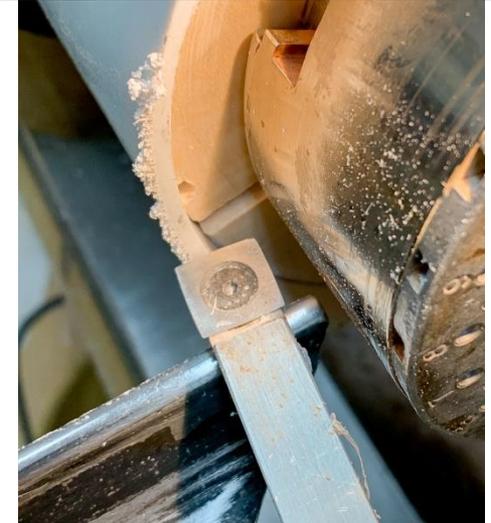
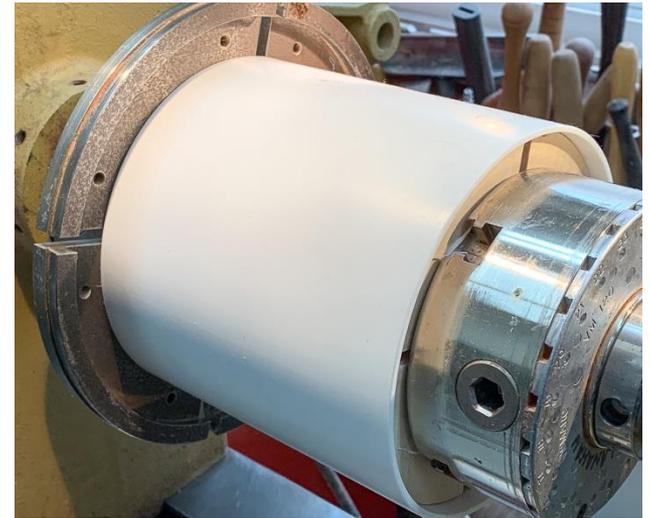


Horizontal Bandsaw



True & Clean the Ends

- ▣ Cylinder ends are rough, and not necessarily true.
- ▣ Make ~ 6" wood jaws for expansion hold to true the alignment with tailstock, with live center adapter to hold chuck.
- ▣ Use 6" expansion jaw chuck to drive cylinder
- ▣ Trued edge w carbide cutter and 80 grit to clean up.



Wear Safety Gear



Failures can be dramatic, with pointy parts

PVC is Brittle & Can Cause Serious Injury



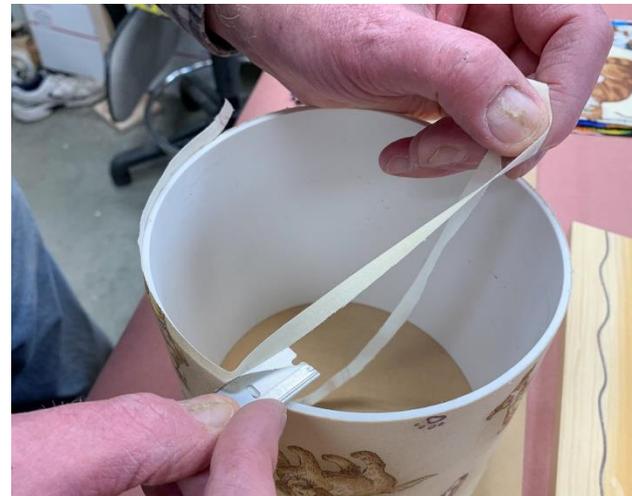
Apply Fabric to Cylinder

- ▣ Paint inside of cylinder (optional).
- ▣ Cut fabric straight and coat w Scotch Guard
- ▣ Spray adhesive on back side of fabric.
- ▣ Roll cylinder onto fabric.



Trim Fabric

- ▣ Cut seam with new razor blade
- ▣ Remove cut-off pieces and press seam together
- ▣ Trim to edge of cylinder



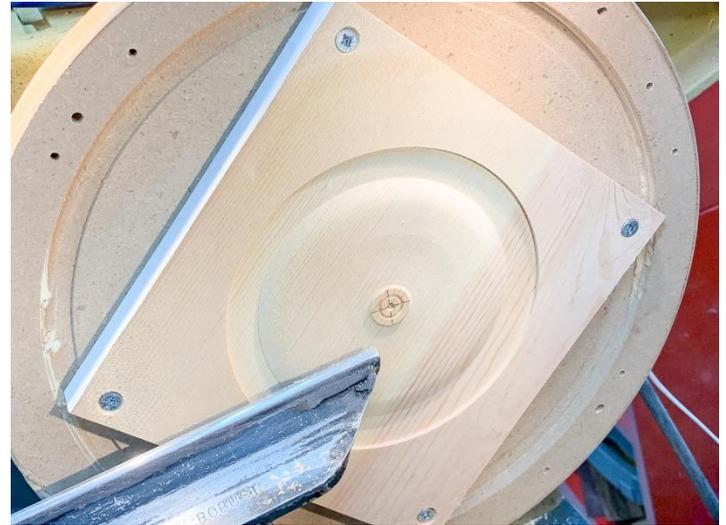
Seal Fabric

- ▣ Mod Podge
- ▣ Clear Latex Enamel
- ▣ Poly?
- ▣ ...
- ▣ Lightly sand



Make the Base

- ▣ Use friction drive, screw, hot glue or PSA to disk on faceplate, ... to dish bottom of Base, so sits on outside edge.
- ▣ Cut expansion recess for scroll chuck jaws.
- ▣ Sand & decorate bottom of base



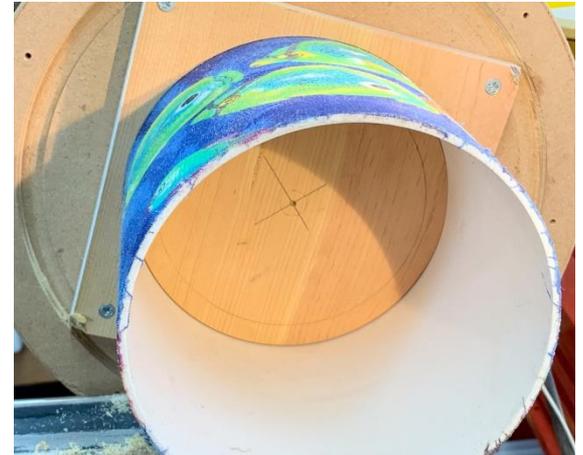
Top of Base

- ▣ Mount on scroll chuck
- ▣ Cut round
- ▣ Cut 1/8-1/4" recess for cylinder (not super tight)
- ▣ Dish out to reduce weight
- ▣ Sand



Make the Top Ring Large Jaws

- Turn a $1/8'' - 1/4''$ recess to fit the cylinder (groove or overhang).
- Cut opening for lid.
- Shape inside of top
- Cut recess for expansion chuck
- Sand



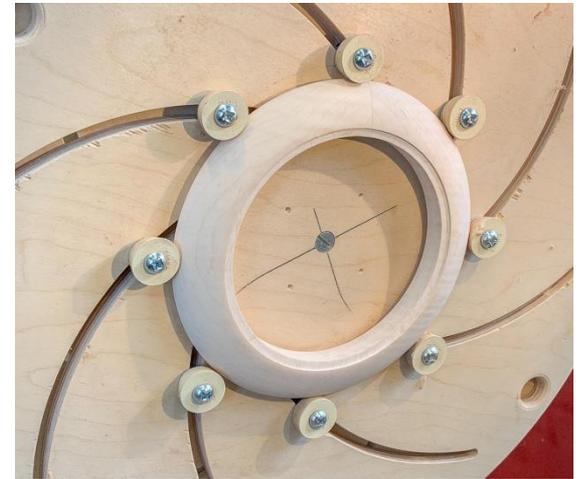
Top Ring, Large Jaws, cont.

- Reverse Chuck
- Cut round
- Finish cutting lid opening, if necessary
- Shape top
- Shape recess for lid, if desired
- Sand



No Big Jaws?

- ▣ Turn round and secure with:
 - Longworth chuck
 - Cole Jaws
 - Screw clamp to Faceplate/disk
 - Bob's Jaws



Top Ring, Faceplate/Disk

- Turn a $1/8'' - 1/4''$ recess to fit the cylinder (groove or overhang).
- Partially Cut opening for lid.
- Shape inside of top
- Cut tenon for chuck hold
- Drill hole for bolt/screw
- Sand



Top Ring, FP/Disk, cont.

- Reverse Chuck
- Cut round
- Shape top & sand
- Shape recess for lid, if desired
- Mount to disk w screw/bolt
- Finish cutting lid opening (parting off ring captured by tailstock)
- Sand Opening



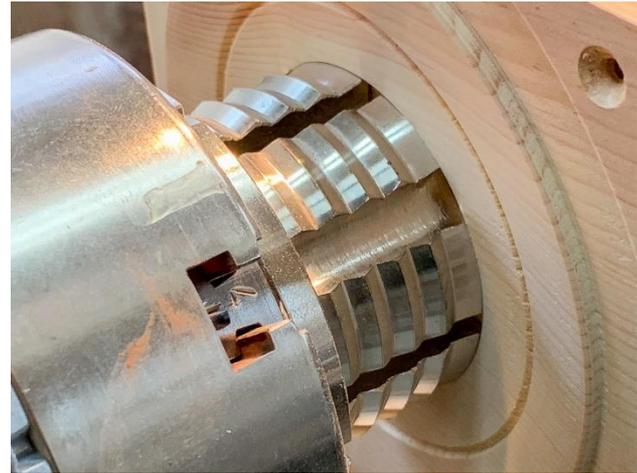
Make the Lid

- ▣ Shape underside of lid to fit top
- ▣ Dome inside of lid
- ▣ Cur recess for expansion chuck
- ▣ Decorate
- ▣ Sand



Lid, continued

- ▣ Reverse
- ▣ Turn round
- ▣ Shape top surface
- ▣ Drill $\frac{1}{2}$ " - $\frac{5}{8}$ " hole for knob
- ▣ Sand



Make the Knob

- ▣ Round blank for knob
- ▣ Drill small knock out hole
- ▣ Drill hole to fit logo bead, and adjust to fit: (my bead 0.759" x 0.300")



Knob, the sequil

- ▣ Adjust to fit Logo bead
- ▣ Shape knob
- ▣ Turn tenon to fit hole in lid
- ▣ Part off



Glue Together

- ▣ Apply finish
- ▣ Glue knob to lid with preferred wood glue of choice.
- ▣ Glue the BoC Logo bead into the knob (epoxy, ...)
- ▣ Glue cylinder into base, and top to cylinder
 - RTV / 100% Silicone
 - Epoxy
 - Other gap-filling glue of choice
- ▣ Sign bottom and donation card
- ▣ Bring to club meeting for donation
- ▣ Mark Koenig coordinating w BoC & Hospitals
- ▣ Bob's Your Uncle!

Resources

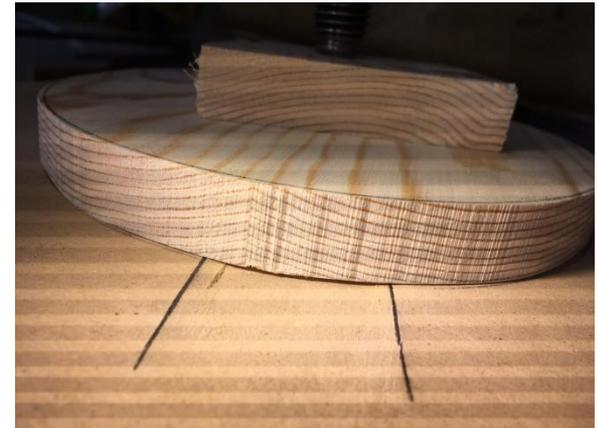
- ▣ Making Beads of Courage Boxes, by Johnny W. Tolly (see files on Yahoo Groups)
- ▣ Beads of Courage logo beads, 20 beads for \$25 from BeadsofCourage.org.
- ▣ 6" Thin walled PVC Pipe, Ewing, 1605 Old Bayshore Hwy, San Jose 95112, 408-436-8848, item no: 25002120, 6" PVC Solid Drain, 10', \$29.73.



The End

Bob's Method

- ▣ Mount 8" MDF disk to a faceplate
- ▣ At 7" diameter dish out a channel for a putty knife to pry piece off, or cut slight recess at this diameter.
- ▣ Using tailstock to center, mount a bit over 7" diameter blank to the MDF disk with double sided tape (PSA).
 - Orient the grain so long grain faces pry off slot.
- ▣ Insert another piece of wood between tailstock and blank to distribute pressure & clamp tight



Turn Groove Side

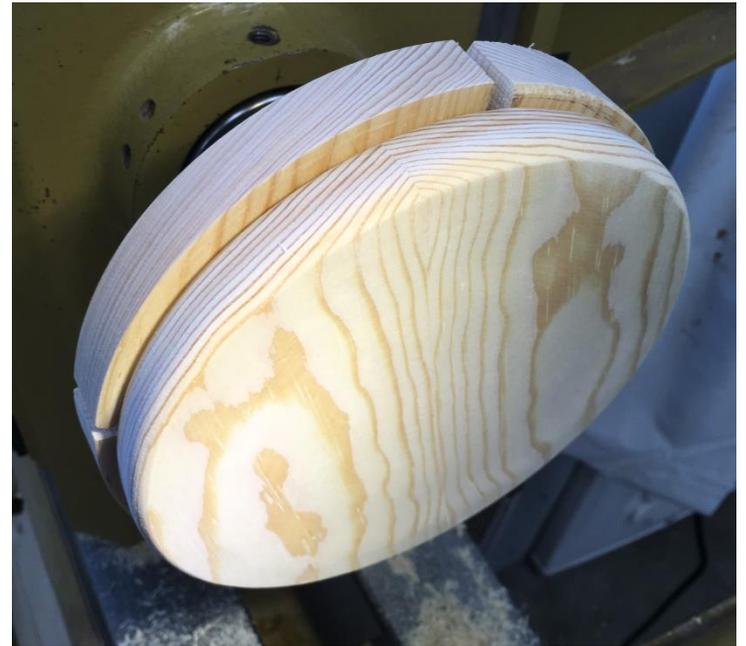
- ▣ Leave tailstock under pressure while turning outside round
- ▣ Remove tailstock and cut groove for cylinder w fabric.
- ▣ If Top ring, cut groove $\frac{1}{2}$ way through at desired opening diameter.
- ▣ Shape and sand the inside of the piece.

Unsticking

- ▣ To remove double-side-taped part from Faceplate
 - Rotate so removal recess is up
 - Insert putty knife
 - May need to tap lightly (mallet, not hand) to get started
 - SLOWLY pull back on handle to get it started to pry the work off.

Outside Base & Top

- ▣ Mount chuck with Bob's auxiliary jaws on lathe
- ▣ Insert ring and use light to moderate compression to hold (it is a perfect circle hold)
- ▣ Finish turning the top or Base, using light cuts, and sand



Lid

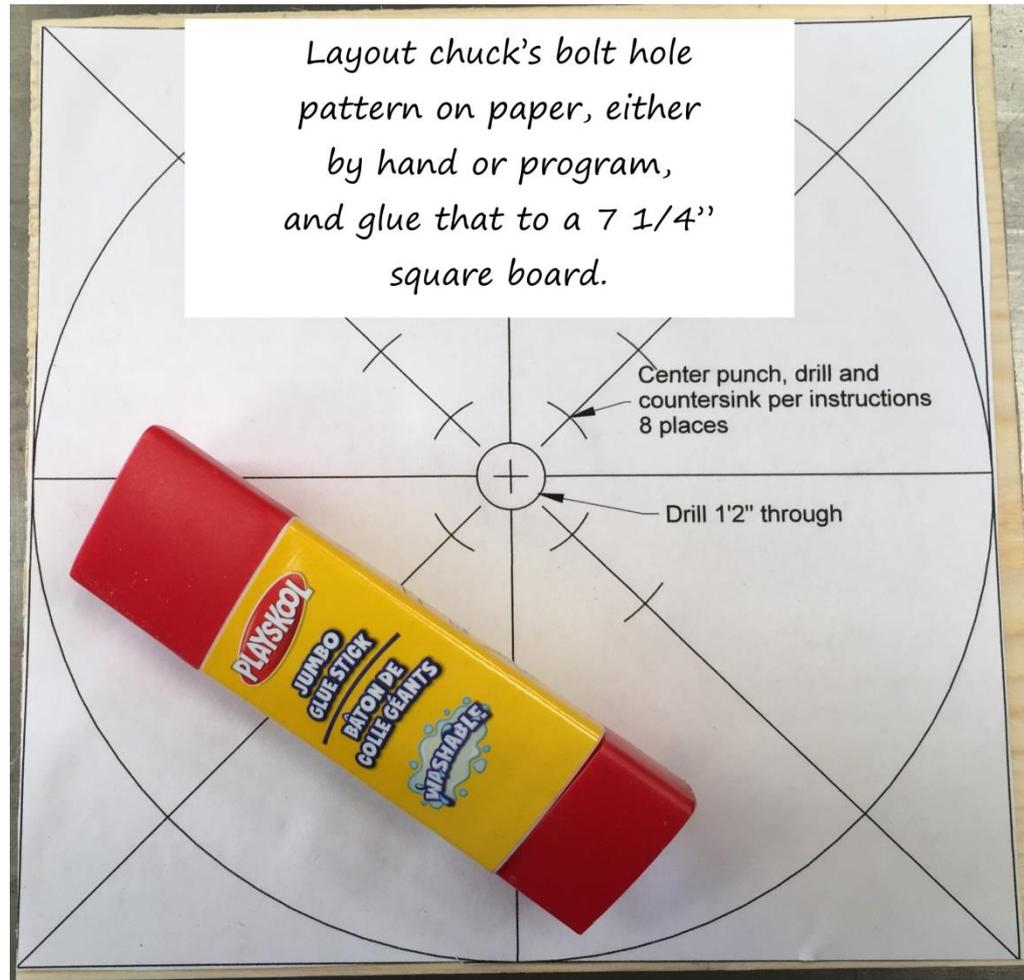
- Mount Lid blank on MDF/Faceplate as before
- Define Relief to fit inside the lid
- Tight fit is not desirable
- Relieve some of the center to remove center point mark
- Cut shallow insert for factory jaws
- Sand inside
- Remount with factory jaws expanding into reset
- Can use tailstock for support
- Finish turning top of lid



Bob's Way
of making a
"Ring Chuck"

Layout

Layout chuck's bolt hole pattern on paper, either by hand or program, and glue that to a 7 1/4" square board.

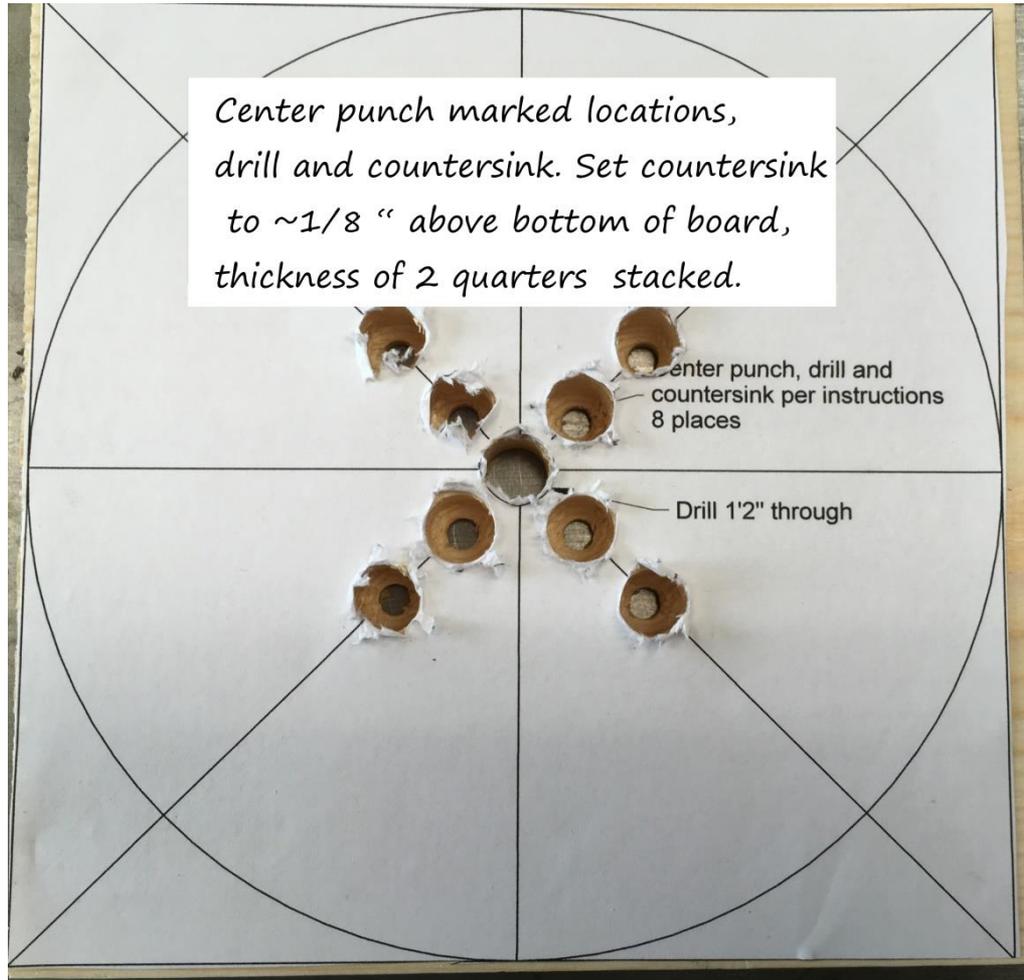


Drill

Center punch marked locations,
drill and countersink. Set countersink
to $\sim 1/8$ " above bottom of board,
thickness of 2 quarters stacked.

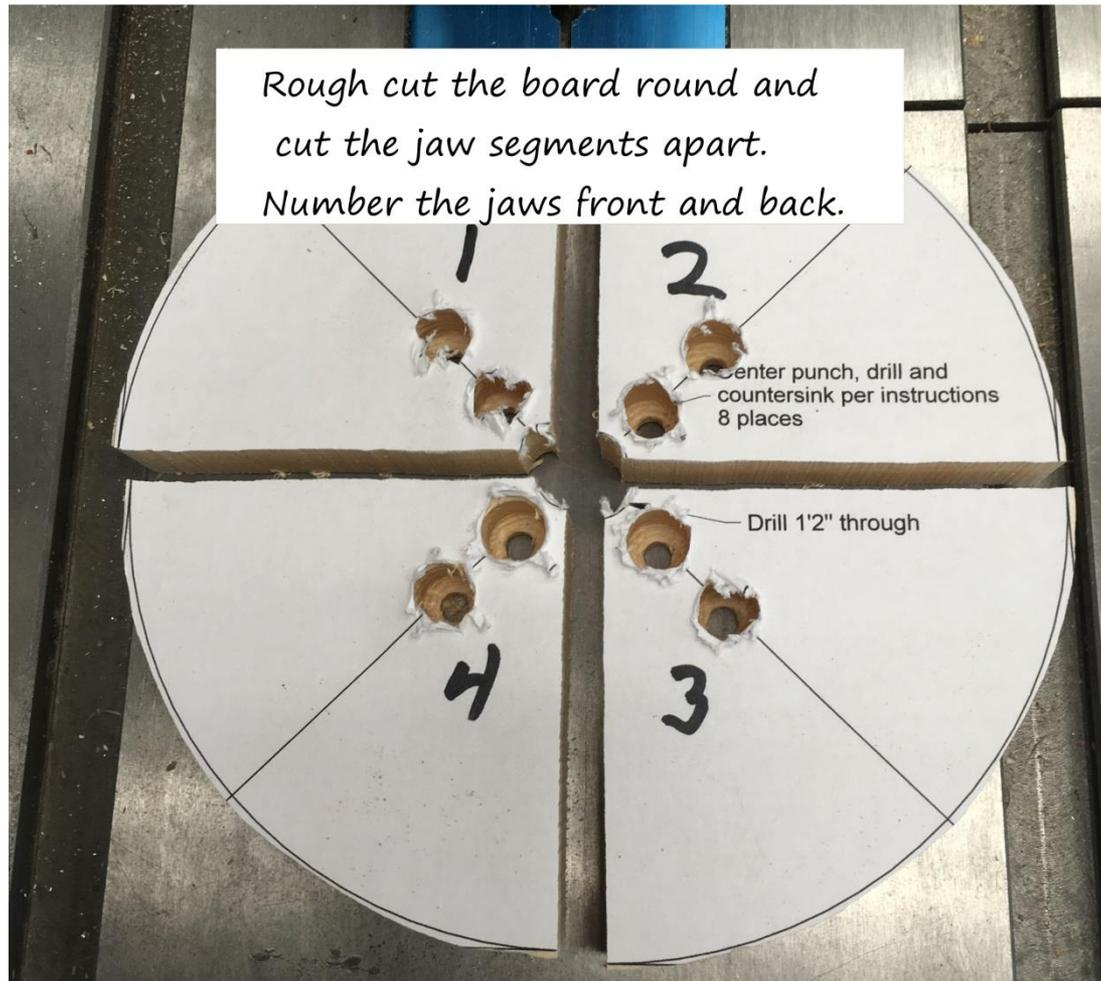
Center punch, drill and
countersink per instructions
8 places

Drill 1/2" through

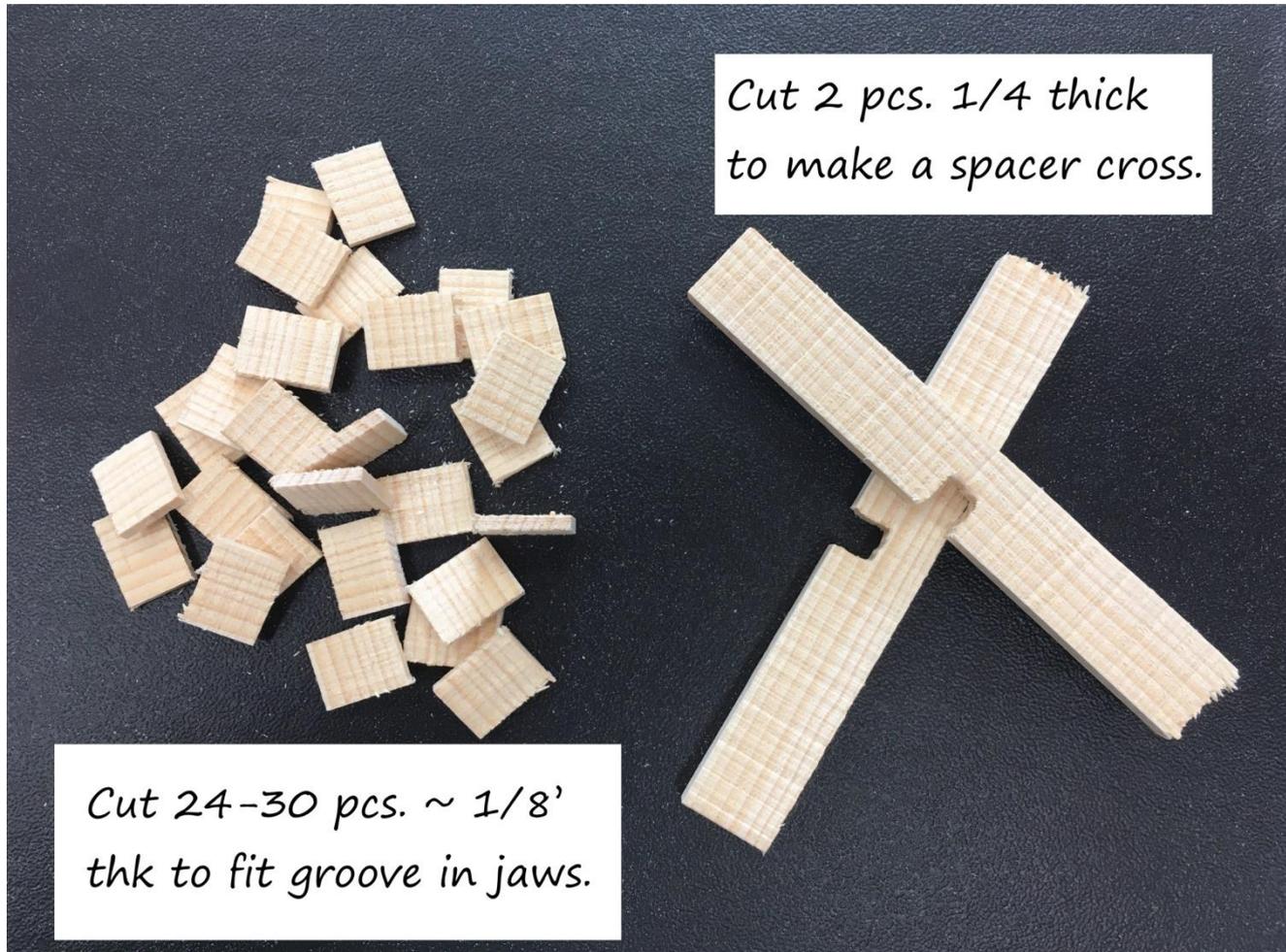


Cut

Rough cut the board round and
cut the jaw segments apart.
Number the jaws front and back.

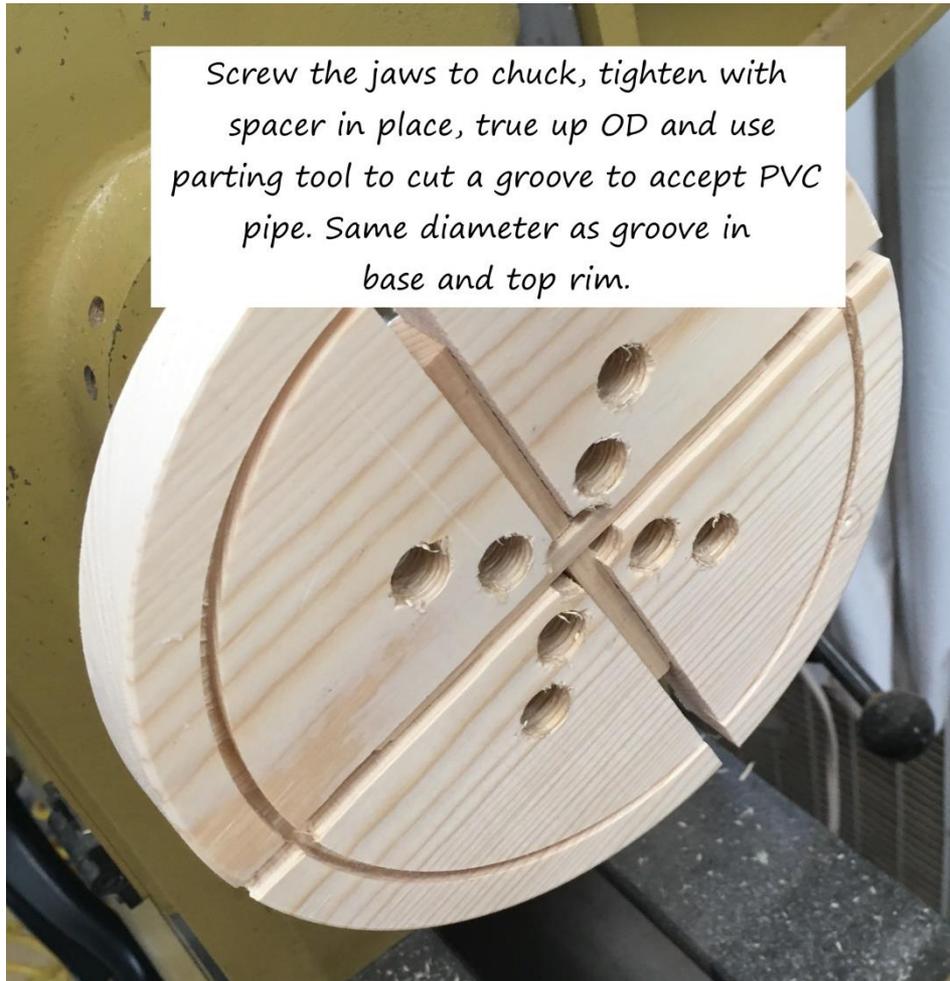


Spacers & Inserts



Cut Groove

Screw the jaws to chuck, tighten with spacer in place, true up OD and use parting tool to cut a groove to accept PVC pipe. Same diameter as groove in base and top rim.



Glue Inserts in Place

*Tap 1/8" thk. pcs .into
groove, CA in place*



Top Ring held in Jaws



Mike's Jaws

- ▣ Select drill bit that just barely fits inside the mounting hole of manufactured jaws
 - VM 100 13/64"
 - VM 120 'C' 0.242"
- ▣ On a drill press, drill a hole through a clean area of the cutout
- ▣ Lower the drill bit through one hole in the jaw, and lock bit in down position.



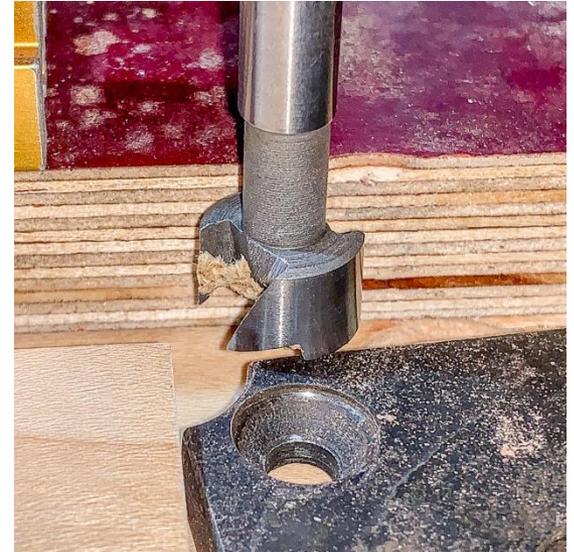
Set up Fixture

- ▣ Bring up fence and registration block flush with flat surfaces of jaw, and clamp in position.
- ▣ Place the sides of a square corner of jaw blanks flush to both stops, clamp in position, and drill through holes.
 - Keep table clear of all dust & chips each time



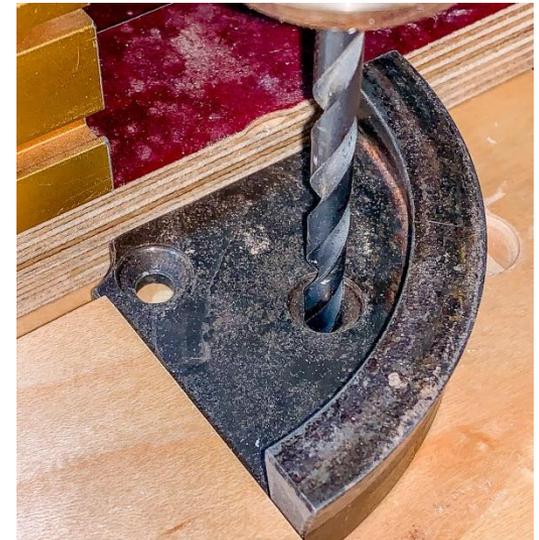
Drill

- ▣ Without moving any stops, insert 1/2" Forstner bit and set depth stop the height of top of machined jaws.
 - Stock screws should still work.
- ▣ Drill out the 4 jaws.
- ▣ Without moving any stops, set countersink depth stop to match stock jaws. Drill.



Drill 2nd Set of Holes

- ▣ Now you can unclamp fence and depth stop, and set them up for the second hole as you did for the first.
- ▣ Repeat same process for second hole



Mount & True

- ▣ Nip off corners or rough bandsaw to outside shape.
- ▣ Loosely mount on chuck (snug)
- ▣ Clamp jaws together, or with spacer, and tighten screws
- ▣ Turn outside to desired diameter
- ▣ True surface, if desired
- ▣ Number jaws to match chuck
- ▣ ByU



Degrees of “Round”

- ▣ Not all cylinders are round.
- ▣ Thin wall PVC has some spring
- ▣ Can improve Out-of-round
- ▣ PVC Heat Deflection Temp 198F
- ▣ Heat at 200F for 10-15 min
- ▣ Form to shape

