

Pretty Lidded Boxes on

I've always enjoyed making lidded containers on the lathe, but I wished I could make them from green wood, which is such a pleasure to turn: quieter, less dusty, more malleable. When I discovered traditional carved Scandinavian shrink pots, which are hollowed-out green branches (with a dry-wood bottom that the container shrinks around as it dries), I realized there was no reason I couldn't turn a shrink box from green wood. Typically, the fact that green wood shrinks and warps as it dries presents a challenge to the turner. But a shrink box takes advantage of the shrinking to lock the bottom of the box in place; and with the lid fitted to the body during drying, the

whole box changes shape together, making for a lid that, when dry, still fits snugly on the body of the box. And to me the slight diamond-shape the square boxes assume as they dry is very appealing.

Preparing the blank

Begin with a log of green wood, the fresher and more recently cut the better. Because you want the box to shrink a fair amount to lock the bottom in place, you don't want a species that's extremely stable. Birch is a good choice, and I've also had success with holly, cherry, and dogwood. I'm using cherry here.

With a chainsaw, cut a few inches off the end of a

Made from green wood, they're bandsawn outside and turned inside

BY MARK GARDNER



the Lathe

log to remove any cracks. Then cut a disc a little more than 8 in. thick from the log and saw it in half right through the pith. At this point, I head into the shop to finish cutting the blank to shape on the bandsaw, making a blank roughly 4 in. or 5 in. square and 8 in. long. The dimensions don't need to be exact since you'll trim the exterior to final shape once the interior has been turned.

To the lathe

The box gets hollowed out from the bottom, so you need a temporary tenon on the top end. With the blank between centers, use a $\frac{1}{2}$ -in. bowl gouge to turn a tenon on its top end (left) to fit a four-jaw chuck (below).

Remount the blank using the tenon, and turn the bottom end of the blank flat. Then dish out the bottom, making a shallow concavity just wide enough to leave small triangles of wood in the corners—these will be the feet of the box.

Now it's time to begin hollowing the interior. First, draw pencil lines showing where the box's lid will be divided from the base. Then, with a Jacobs chuck in the tailstock, insert a drill bit and bore to a depth just shy of the lid line. I used a 2-in. Forstner bit here, because that was what I had on hand. You could use a larger bit if you like; just be sure it's sharp.



START WITH THE BLANK

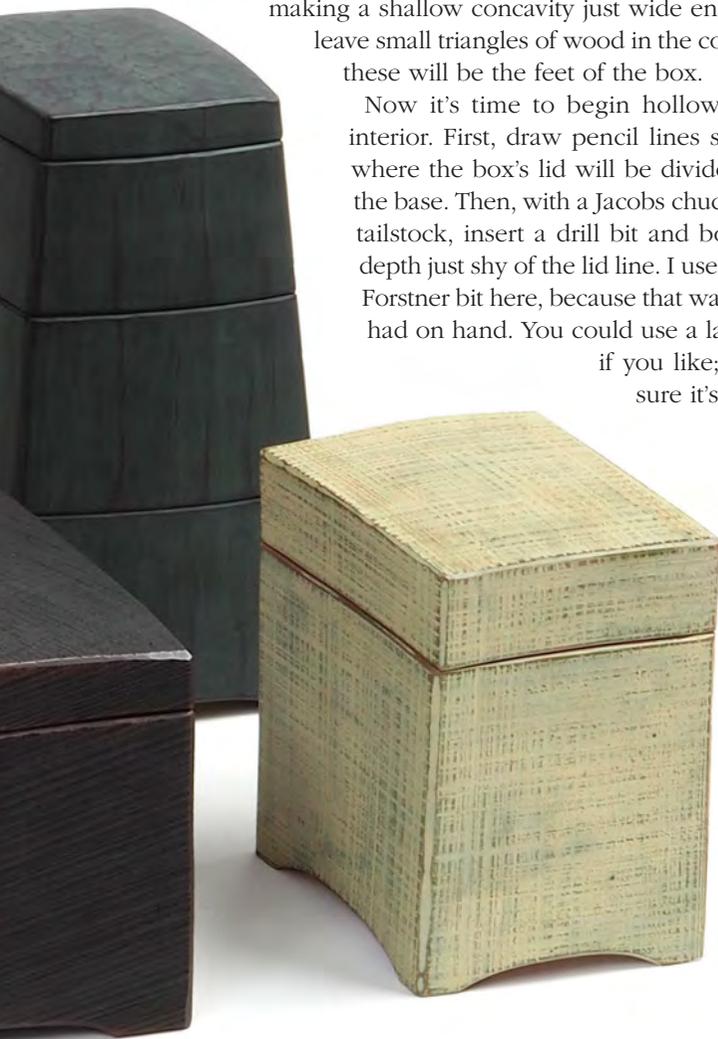
Bandsaw the blank. After chainsawing a slice from a green cherry log, Gardner bandsaws a blank to rough size for turning.

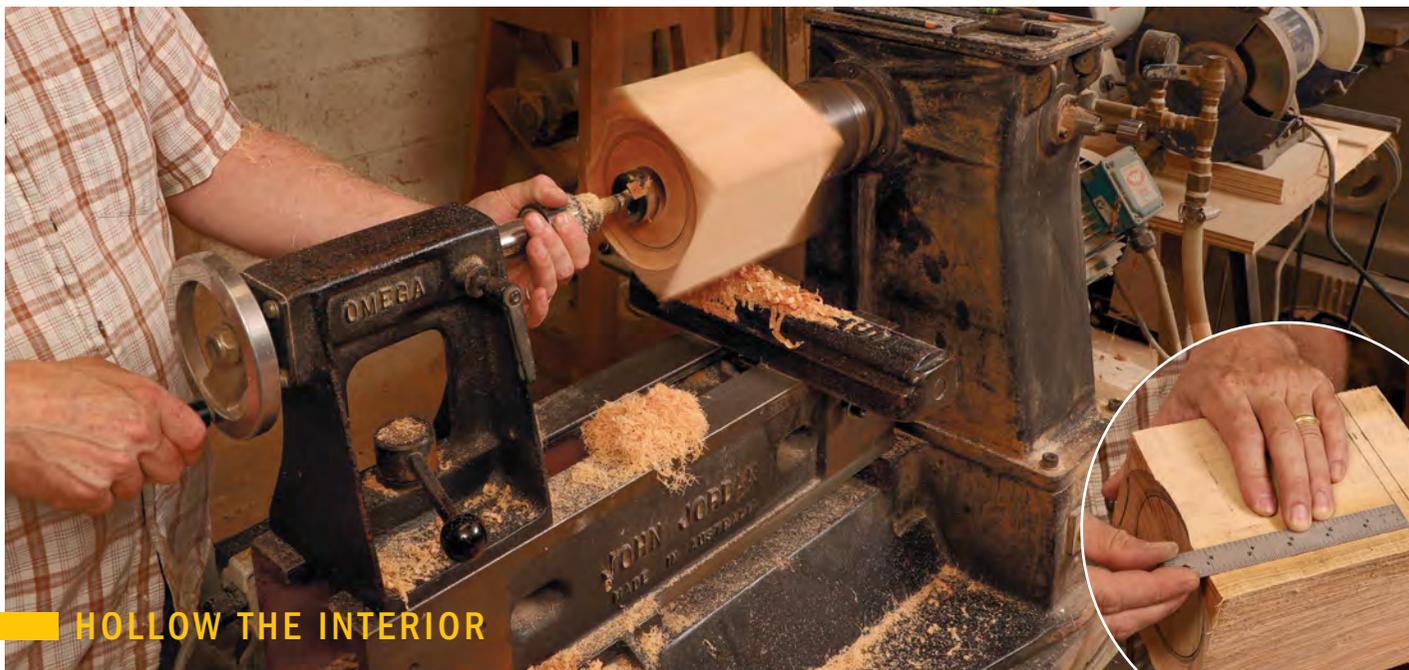


Start with a spigot. With the blank between centers, turn a tenon on its top end (left) to fit a four-jaw chuck (below).



Dish out the underside. Using a $\frac{1}{2}$ -in. bowl gouge, cut a concave recess on the bottom of the blank. Leave wood at the corners, as they will be the feet of the box.





HOLLOW THE INTERIOR

How deep do you drill? Draw two layout lines: one where you'll separate the lid from the body, the other to account for the tenon on the bottom of the lid. A Forstner bit starts the hollowing and provides a depth gauge for the turning.



Open up the inside. Gardner does most of the excavation with a hollowing tool fitted with a $\frac{3}{16}$ -in. round-nosed scraper-style cutter. The work goes quickly as he widens the drilled hole. He stops when he has nearly reached final wall thickness.



The sides get scraped smooth. With the hollowing virtually finished, Gardner switches to a straight scraper to smooth the sides of the cavity.



Custom-made grooving tool. To cut the groove for the box bottom, Gardner made a special tool from an old planer knife. He roughed out its shape with an angle grinder and refined it on the grinding wheel. To see how he made it, go to FineWoodworking.com/304.





OFF WITH THE LID

The separation starts. When it's time to divide the lid from the body, start by using a parting tool to cut a groove, guaranteeing a crisp, straight seam. But don't cut all the way through.

With the hole drilled, I use a hollow-turning tool to widen the cavity, taking the walls to about $\frac{1}{2}$ in. thick at their thinnest. The hollowing tool I use has a $\frac{3}{16}$ -in. round-nose scraper-style cutter, which cuts quickly but tends to leave slight tool marks. I remove them by following up with a large straight scraper that has been ground on the left side. Do your best to make the inside of the box an even cylinder. You can check it by placing a straightedge against the inside wall of the box; let part of the straightedge extend from the box so you can sight past it to the lathe bed. If it lines up with the ways, the interior is cylindrical.

To cut the groove for the box bottom, I use a small custom-made hooked scraper. (To see how I made one of these scrapers from an old planer blade, go to FineWoodworking.com/304.) The depth of the groove should be between $\frac{1}{16}$ in. and $\frac{1}{8}$ in., depending on how much you expect the wood to shrink. Dogwood, for example, shrinks more than birch or cherry, so I would make the grooves in a dogwood box a bit deeper. Experience will be a big help here. If you want to predict shrinkage in a particular species, you can turn a test cylinder, slice off a section (imagine an onion ring), and let it dry for a couple of weeks to see how much it shrinks. Make a tracing of the ring right after it is sliced off so you can compare the dry ring to the tracing.

Sand the interior to remove any remaining tool marks, and then use a parting tool to separate the base from the lid. You don't want the base to go flying off, so don't cut all the way through with the parting tool; cut in far enough to create a groove around the entire box, then finish the separation with a handsaw.



Saw through from there. Finish the separation safely with a hand saw and the lathe turned off to avoid having the body of the box fly off the lathe.



Remounting the body. With the lid separated and removed from the lathe, turn a jam chuck to fit the bottom opening of the box body.



Clean shoulders. After mounting the body in the jam chuck, flatten the top face and smooth the top section of the interior wall.



ADD THE LID

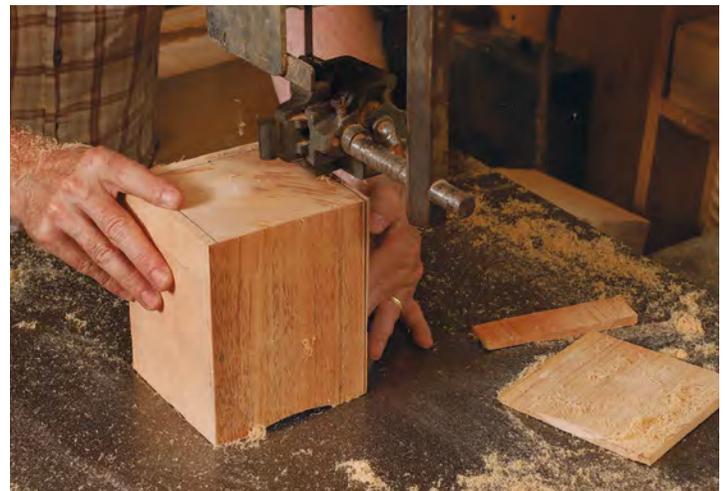
Turn the underside. With the lid mounted in the four-jaw chuck again, turn a tenon on its underside sized to the interior of the box body; then dish away most of the tenon, leaving a ring.



Fit the lid. Mount the body on the jam chuck and put the lid in place.



Tenon removal. With the lid fitted onto the body, turn away the tenon and give the top a very slightly domed surface. For most of this step, use the tailstock with a live center to support the lid; back it off at the end to remove the small plug of wood at the center.



Saw it down to size. After drawing layout lines on the box with the lid in place, saw the sides to final size. Locate the layout lines to ensure that the interior cavity is centered and the walls are all the same thickness.

Because neither the parting tool nor the saw leaves a smooth surface, you'll want to remount the box to clean up the top of the box body. To do so, turn a jam chuck that fits the bottom opening of the box body. Then, using a light touch, clean up and flatten the top of the body. I sand the top at this point using sandpaper glued to an MDF block to ensure a nice flat surface. I also finish turning and sanding the top inch or so of the interior, which I wasn't able to reach while turning through the bottom.

Capping off the box

Now it's on to the lid. Remount the lid tenon in the four-jaw chuck and flatten the lid's bottom face. Using a pair of dividers, transfer the diameter of the top opening of the box body to the bottom of the lid. Then, with a bowl gouge and a parting tool, turn a tenon that fits snugly into the body of the box. I look for



Bandsawn texture. With the box held at an oblique angle to the bandsaw blade, Gardner draws the box toward the teeth, creating a scratchy texture. He then stands the box upright and repeats the process to produce a crosshatched effect.

a very tight fit here because the lid tends to shrink a bit more than the body of the box. If, when the box is dry, the lid is too tight, you can finesse the fit with sandpaper. Be sure the shoulder of the tenon is flat, so you get a nice tight fit between lid and base. Once you're happy with the fit, use a small bowl gouge to hollow out the tenon, leaving just a ring. Sand it and take it out of the chuck.



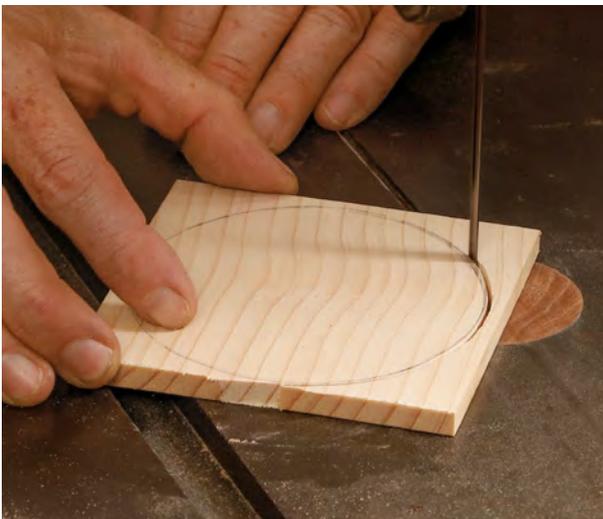
As in a standard shrink box, the bottom of this box is cut from a piece of kiln-dried wood. After it is popped into place, the box body, made from green wood, gradually shrinks as it dries, locking the bottom in place.

To finish the top of the lid, fit the lid onto the box body and remount the body on the jam chuck. Snug the tailstock up to the lid for added support, and take light cuts as you turn away the tenon and slightly dome the top surface of the lid. Back the tailstock off and use light cuts to turn away the little bit of wood that engaged the live center.



IN GOES THE BOTTOM

Tracing the interior. To size the box's pine bottom, Gardner squeezes the body just a bit with a hand-screw clamp to simulate the way it will deform as it dries. The clamp grips the corners with tangential grain, which sees more movement.



Saw and slice. Gardner cuts carefully to his perimeter pencil line at the bandsaw, then draws two more layout lines: one on the bottom face $\frac{1}{2}$ in. from the outside edge, the other around the edge, $\frac{3}{8}$ in. down from the top face. Using a sloyd knife, he connects the layout lines to create an underbevel.

Back to the bandsaw

You'll now saw the box to final shape, making bandsaw cuts with the lid in place. Draw layout lines to ensure the sides all end up close to the same thickness, about $\frac{1}{4}$ in. at their thinnest. After sawing to the lines, I stay at the bandsaw to texture the exterior. With the box lying on the bandsaw table, angle it about 45° to the blade, and pull the box back toward you so it scrapes across the teeth, producing a striated surface. To achieve a crosshatched texture, do this with the box on its feet as well as on its side. Texture the top using the same technique.

Create and capture the bottom

You can use any wood for the bottom of the box as long as it's dry. I've been making bottoms out of



Pop it in place. With the box body back in the hand-screw clamp, Gardner tips the bottom into its groove and gently pushes until it pops into place. Then he removes the clamp and sets the box aside to dry for several weeks.



FINISHING UP

More knife work. Once the box is dry, Gardner uses a sharp knife to cut clean chamfers on all the exposed outside corners of the lid and body.

Two-tone paint job. Gardner first applies an undercoat of dark-toned milk paint. When it dries, he adds a lighter topcoat.



southern white pine, which carves easily and has a nice clean look. Plane the stock to $\frac{1}{4}$ in. thick or a bit more. To find the shape of the bottom, you'll trace the inside of the body onto the bottom blank. But first, to simulate the warping that will occur as the box dries, squeeze the body on opposite corners with a hand-screw clamp. Pick the corners that represent tangential movement in the tree, and use just enough pressure so the inside goes slightly out of round. Then make the tracing, and bandsaw along the line.

The bottom gets an underbevel, which fits into its groove like a traditional raised panel in a frame-and-panel door. To lay out the bevel, draw a line around the bottom's perimeter $\frac{1}{8}$ in. below the top face. Draw a second line around the underside $\frac{3}{8}$ in. from the edge. Use a sharp carving knife to connect these two lines and create the bevel.

Start working the bottom into its groove, making any necessary adjustments for fit with the knife. Keep working until you can pop the bottom into place. The bottom should be captured in the groove, but with a bit of a gap showing on each side of the oval. Remove the hand-screw clamp, put the lid back on, and allow the whole thing to dry for a few weeks. As it dries, the body will shrink around the bottom, locking it in place, and the lid will shrink in concert with the body.

Once the box is dry, carve the feet to their final shape, chamfer the edges, and apply milk paint. Or leave it natural. □

Mark Gardner turns boxes and bowls in Saluda, N.C.



Sandpaper exposes the undercoat. When the topcoat is dry, Gardner sands the textured surface, revealing the darker undercoat on the high spots where the topcoat is rubbed away.

Making a multi-layered box

I sometimes make shrink boxes that stack together, creating a tower of boxes from a single blank. I lay out the box sections on the blank before turning.

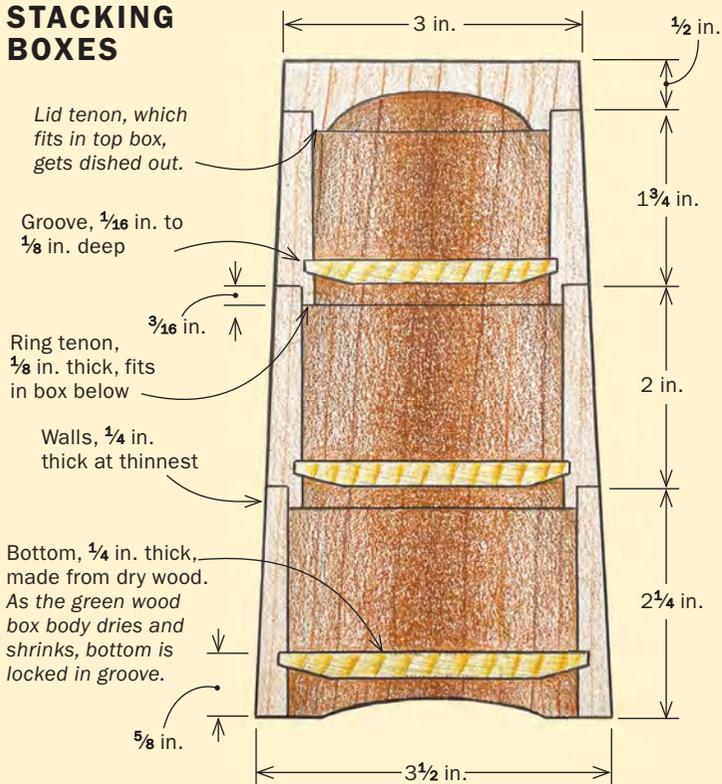
The steps for making the stacking boxes are quite similar to those for making a single box, except when it comes to detailing the bottoms of connecting boxes. The box at the bottom of the stack is made just like the body of a single box. But the boxes above it are different. Before hollowing each one out, I turn a tenon on the bottom to fit the cavity in the box below.

(This is just like the tenon on the underside of the lid in a single box.)

Once the tenon is fitted, I hollow out the interior, leaving just a ring tenon. Making the boxes nest this way means the interior diameter of each one will be smaller than the one below it.

When the turning is complete, I move to the bandsaw and cut the outside of the stack to a taper. To lay out the taper, I make

STACKING BOXES



Hollow one layer at a time. After turning a tenon on the top of the box blank, mount it in a four-jaw chuck and drill deep enough for the bottom box.



Parting off the bottom box. After hollowing the bottom box to the depth of the drilled hole, use a parting tool and then a hand saw to separate it from the rest of the blank.



The second story. Once the bottom box is parted off, Gardner turns a tenon on the next box up that will register it on the bottom one. Next he'll drill and turn the cavity in the second box.



Tapering the tower. Gardner bandsaws the whole stack to a taper. After sawing two sides, he tapes an offcut from the lid back in place; that holds the stack in position while he cuts the last two sides.

tick marks to transfer the wall locations of the top and bottom boxes to their outside faces. Then, with the whole stack and the lid assembled, I use the tick marks to draw the taper lines. I clamp the whole stack together, and cut two sides; then I tape the offcuts back on to cut the other two sides.

To clean up the bandsaw marks, I clamp the box in a bench vise and hand plane the surfaces. On this box I gave the sides a bit of a swell and left the tool marks from the plane; the milk paint finish helped to emphasize those subtle facets.

—M.G.

Online Extra

Building a box with multiple layers involves most of the steps for a one-story box and adds a few extra ones. For a fuller explanation of the process, see FineWoodworking.com/304.