MAKE A SPLIT-TURNED FRAME

Janine Wang

Split-turning is the technique of turning a temporary glue-up comprising two or more pieces, then splitting the blank vertically back into its original elements. The split-apart pieces can be glued together again in a different orientation and then turned once more to create a beautiful object in itself (think inside-out turning), or used as a component of a larger project such as a spindle in a chair back. Canadian turner/educator Stephen Hogbin used this technique in remarkably creative ways; his work has been a real inspiration to me.

The process is most efficiently done by gluing a piece of paper in between the pieces of wood (a paper joint), turning the glued-up blank, then splitting it apart along the glue seam. The fibers of the paper rip apart, leaving the wood and glue intact.

This method creates a flat surface on the turned spindle and opens many doors when combined with woodworking techniques and machinery. Since woodworking machines and processes rely on flat reference surfaces (a working edge, for example), the flat split surfaces act like a bridge across woodturning to woodworking, letting us meld turning with all sorts of joinery and other construction techniques. In this article, I share my favorite way of crossing the two—creating a frame from four quarters of the same turning for use as a picture frame or a frame-and-panel door. So buckle up for some woodworking! But if you don't have a fully equipped woodshop, don't worry—the project is still possible to do with just a lathe, chop saw, and screws. ▸

SYMPOSIUM DEMONSTRATOR IN PORTLAND!

Craftsperson and educator Janine Wang will be a demonstrator at AAW's International Woodturning Symposium in Portland, Oregon, May 23-26, 2024, where her rotations will include split turning and basketry for woodturning. Don't miss this chance to learn from Janine, live and in person! For the latest details, visit aawsymposium.org.

The glue-up

You will need to start with four lengths of hardwood that are perfectly square. Use a reliable combination square or machinist's square to check that the relation between the faces is 90° (*Photo 1*). This step is critical, as it will ensure a secure glue joint between all four pieces with no gaps. The paper joint will not work if all the gluing surfaces do not meet flush.

When I am making a picture frame, I like to create the recess in the back, used for inserting the picture and backing, prior to glue-up and turning. To do this, you will need to remove material along the edge of your pieces to create a rabbet, or open channel, then re-glue a length of waste material into the rabbet using a paper joint. After turning, you'll be able to pop this piece off.

Each of my four blocks measures 2" × 2" (5cm × 5cm) in cross section, and I am cutting a recess that will be ⅝" (16mm) deep, which should be deep enough to accommodate an acrylic/glass panel, a picture, matboard (if desired), and a backer panel. Remove the material by making two rip cuts on the table saw (*Photos 2-4*).

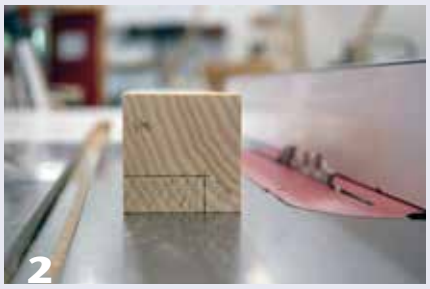
Glue the waste wood in place using a paper glue joint (*Photos 5-7*), and after the glue dries, trim the surfaces flush to end up with a square block again. Read ahead for more details on paper jointing.

To make a splittable glue joint, you will need a sheet of paper and wood glue. Paper grocery bags or heavy-weight kraft paper is best, but here I have some white drawing paper. For glue, I prefer Titebond ready-to-use hide glue (which has pros and cons that I will go into

Square up stock

Each of the four quarters of this glue-up must be identical, with sides squared to one another.

Cut back-of-frame rabbets



The rabbet at the back of the frame, which will later accept the acrylic, the picture, and the backer, is cut now, before glue-up and turning.

Glue in temporary rabbet spacer

Use a paper glue joint to temporarily glue a waste piece into the rabbets.

Paper glue join turning blank


8


9


10

The four quarters are now glued into one turning blank with a paper glue joint. Clamping pads wrapped in packing tape help to align the quarters when clamped.

later), but yellow and white wood glues will work, too.

Cut the paper with a knife or hold the workpiece down hard over the paper and rip it to size. You will need two pieces of paper the exact dimensions of one face of your quarter, one piece of paper the size of two quarters put together (double-wide), and clamps, clamping pads, glue, and a glue spreader. It is important that the paper be just the right size to avoid excess paper gumming up where your four pieces meet and causing gaps when you glue. The key to gluing here is to be neat, accurate, and tight.

Gluing all four pieces together at once is easy with the aid of the clamping pads. You will want at least eight and can make these by simply wrapping packing tape around scraps of hardwood. The packing tape keeps the pads from becoming glued to the blank.

Lay out your pieces in preparation. You will glue the first set of two quarters, then the second set, then glue the two halves together before clamping all at once. If you have incorporated rabbets into your glue up, make sure to orient your pieces correctly so that the waste blocks are wide-face-to-wide-face, with the short faces facing outward. I like to label my blocks so that face A matches with side A, B with B, and so on. When the pieces are lying flat on the table, it is very easy to mix them up.

Apply glue to both faces of your first glue joint, taking care to cover the entirety of each surface with an even layer of glue. When both surfaces have been coated, take a strip of paper and lay it across one of the wet faces. You may wish to stretch the paper with your hands to make sure the whole sheet lays flat with no wrinkles, folds, or pockets of glue or air. Align the paper with the edges of the wood and use your palms to smooth the sheet. Lay the second glued face over the top of the paper and press firmly, then move on to the next pair. When both pairs are done, use the wider sheet of paper to glue the two halves together (*Photos 8, 9*).

Position the clamping pads on either side of the blank and clamp down across the seam of both pieces at the same time. The pads will push the edges of your pieces flush. Tighten to snug but not all the way tight. Then, use a clamp and pads to clamp in the other direction. Since the pads span the glue joint, they will align the pieces perfectly. Apply two more clamps to the other end of the blank as well. If your blank is long enough to warrant it, you may wish to apply more clamps across the middle, too. When all the clamps are in place, tighten them down all the way (*Photo 10*).

After the glue has dried thoroughly, scrape the excess off the sides of your blank, then bring it to the chop saw to clean up the ends (*Photo 11*). This is a good time to cut the blank to length—in this case, 12" (30cm) final length with ½" (13mm) of waste at each end, totaling 13" (33cm).

Flush ends, trim to length


11

With the glue cured, scrape the glue and paper off the sides and use a saw to flush the ends and trim the blank to its final size.

Mount and turn

Carefully mark the centers of your blank with an awl, making sure ▸

Mark exact centers

Prior to mounting on the lathe, mark the turning centers with a scratch awl.

A cup drive center is useful, but beware the point doesn't split apart the glue-up. Either retract the point or drill a small hole to accept it.

to be as perfectly centered as possible (*Photo 12*). Label each quarter with "A" on one end of the blank, and "B" on the other end. This will ensure the best match when you miter and join the corners later to assemble the picture frame. You will match "A" ends to "A," and "B" to "B."

To ensure the lathe's drive center won't wedge the blank apart, use a cup center with an adjustable-depth tip. If you are unable to retract the tip, drill out the center indent in the end of the blank so that the drive center can sit flush without wedging (*Photos 13, 14*).

Turn the blank according to plan—in this case, a series of large beads with larger half beads at either end (*Photos 15, 16*). Leave ½" of waste at the ends to account for the marks left by the drive and live centers.

If you used hide glue, raise the grain by wetting a rag and dampening the whole surface of your spindle before the finest grit of sanding. Let it dry, and sand with the finest grit, 320 in my case (*Photos 17, 18*).

Turn to desired profile

At the lathe, lay out and turn your desired profile. The author chooses large beads, which when stained white later will represent clouds.

Sand the profile elements

The author has used hide glue, so she wets the surface to raise the grain before sanding with the final grit, 320.

Split the blank apart

To split the blank apart, you'll need a mallet and chisel. A rubber band looped around all four pieces will ensure that when the pieces split, they don't fly all over the place. Lay the tip of the chisel precisely in the paper seam and give a light tap (*Photo 19*). Do this all along the glue line on the end of the blank, making sure to chisel into the glue and paper, not wood, and then tap harder with the mallet until the seam opens up.

If the glue joint doesn't pop open all the way, try the chisel on the other end of the blank or use a few wooden wedges to hold the gap

open. If your chisel gets entirely swallowed, it's time to make a wedge. For especially long pieces you may need to do both these things (*Photos 20, 21*). With the two halves split, split them further into quarters.

Then remove the waste wood from the rabbets. Be sure to chisel in on both gluing edges, and use wedges as needed (*Photos 22-24*). Make sure not to damage your turned profile.

If you are using hide glue, clean the glue off with warm water (*Photo 25*). If using yellow or white glue, sand away the paper residue on a flat board with sandpaper adhered to it (*Photo 26*). Take your time at this step, as any remaining glue will show when the finish is applied. I choose to use hide glue for this reason. Water will remove it entirely, and I find sanding off glued paper to be tedious and time-consuming. The tradeoff is that water raises the grain and could cause the wood to warp.

The lovely thing about split-turning a frame is that you can design the turning profile responsively to the subject being framed.

Miter and glue frame corners

When all four pieces are cleaned up, it's time to miter the corners. Before cutting, make sure to lay out all the pieces in their final orientation, then clearly mark where the mitered cuts will go. It is very easy to mis-cut at this stage. I am using a crosscut sled and 45-degree-angled fence on the table saw for maximum accuracy (*Photo 27*), but this can also be done on a chop saw.

With all the miters cut, it's time to glue the frame together. Carefully arrange your pieces in the ▸

Split 1: half blank


19


20


21

After turning, split apart the paper glue joints with a chisel, mallet, and wedges if necessary—first in half...

Split 2: quarter blank


22


23

...and then into quarters.


24

Shown at right in this photo, the author decides to keep the rabbet waste wood as an interesting profiled artefact, possibly useful for another creative project.

Clean up glued surfaces, two methods

If you have used hide glue, you can clean up the remaining glue with warm water. Otherwise, sand the residual glue and paper away using a flat board with sandpaper adhered to it.

Cut miters

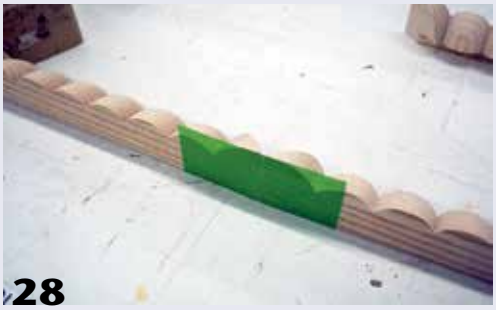
At the table saw, using a precision sled with an angled miter fence, the author cuts 45-degree miters on the frame ends.

orientation in which you will glue them (again, I will leave pencil notes to join end A to A, B, to B, C to C, and D to D). Use strong blue or green masking tape to tightly hold your mitered corners together. This will reduce slippage and cleanup when gluing (*Photos 28, 29*).

To clamp, a good framing strap clamp is usually easiest, but you can also use two bar clamps with corner cauls (*Photos 30, 31*). Before opening the glue bottle, always do a dry run to make sure things will go as planned. Note the order in which you will apply glue, tape the frame closed, then use the clamp setup of your choice. When you are ready, work swiftly to clamp while the glue is wet. With Titebond III, that's about fifteen minutes of working time.

After clamping, measure the distance from one corner to the opposite corner and then from an adjacent corner to its opposing corner. If the distances are equal, your frame is square (*Photo 32*). If not, adjust as needed.

Prepare for glue-up



Strong masking tape applied to the corners helps during glue-up.

Add splines

After the glue has cured, true the back of the frame. I sand this surface on a large sandpaper board and would not recommend using an orbital sander

Two clamping methods

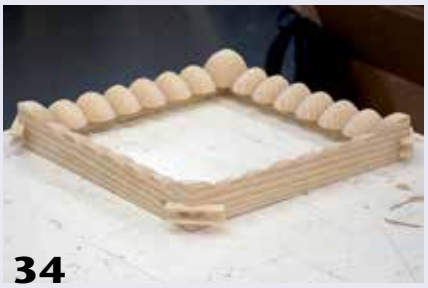
(*30*) A framing strap clamp with corner blocks works well for applying clamping pressure.

(*31*) Another method is to use bar clamps with custom corner cauls.

(*32*) With either clamping method, you can confirm squareness by measuring from corner to corner. When both diagonal spans are the same, the frame is square.

Add corner splines

33



34

The author reinforces the miter joints with wood splines, which are glued into slots cut on the table saw, then trimmed and sanded flush.

Purpose-designed for specific print

35

You can plan your turned profile based on the picture being framed.

or sanding freehand, as they would risk rounding the corners. Make sure this reference surface is dead flat before adding corner splines.

Splines will hold the frame together much more securely. A simple endgrain-to-endgrain miter joint isn't very strong; adding splines will allow facegrain-to-facegrain gluing surfaces, which will make the frame structurally sound.

Choose a spline layout that is aesthetically suited to the profile of your frame and won't break through into the rabbet on the other side. The best way to cut the spline slots is on a table saw with a flat-top saw blade and a shopmade jig to hold the frame (*Photo 33*).

I cut splines from the scrap material removed to make the rabbets at the beginning of this project (*Photo 34*). Do a dry run, then glue them into the slots, trim, and sand flush.

Frame your favorite picture

For this example, I chose to finish my ash frame with bleach and a white stain to look like clouds, and to frame a print of the sky over the Center for Furniture Craftsmanship in Maine, where I made the frame. The lovely thing about split-turning a frame is that you can design the turning profile responsively to the subject being framed, as shown in *Photo 35*.

The work is completed with a piece of acrylic and a backer that fit snugly into the back. But not too snug—leave some wiggle room to allow for wood movement. Lay the pieces into the frame and secure them with a framing pointer (*Photos 36, 37*). If you don't have access to a framing pointer, a hammer and nails will work, too. ■

Special thanks to the Center for Furniture Craftsmanship (Rockport, Maine) and all the folks there for the time and space to get the work done for this article.

Janine Wang is a craftsperson and educator based in Philadelphia, Pennsylvania. She teaches at Bucks County Community College and the nonprofit Tiny WPA. She believes embodied learning can change the world! Her studio furniture and educational practice reflect these values. Learn more at janinewang.com.

Mount acrylic, picture, and backer

36

37

Finally, the rabbet is put to use, accepting the clear acrylic, the picture, and a backer board, all held in place with framing points.

Alternate Methods

There are lots of ways to frame all sorts of things, including door panels in furniture, and many different designs, including ones that don't need to be symmetrical. The methods outlined in this article offer "fine woodworking" construction. If you are interested in how to make a split-turned frame using just a lathe and chop saw, come to the AAW International Symposium this May, where I'll be demonstrating the project. It's quick and easy to make without a table saw and a full outfit of tools. If you are interested in the opposite direction and would like to construct a freestanding cabinet with a split-turned framed panel, come to the John C. Campbell Folk School (folkschool.org) this August, where I will be teaching a course along with Rebecca Juliette-Duex.