Breadbox

This counter-top breadbox will make a fine addition to your kitchen or a hand-made gift.

BY JIM SINCLAIR

One common approach when designing a breadbox is to build it with a tambour door. Tambour doors are traditionally made with the tambour slats glued to a canvas backing. For this project I decided to take a more modern approach using a router bit set designed to create tambour doors.

Designing the Piece

When designing the breadbox, the first step was to lay out and measure the loaves of bread that were lying about on the counter in my kitchen. This gave me a rough idea of how wide, deep and high I wanted to make the bread box. With this basic information I moved on to the technical details of incorporating the tambour door and laying out the joinery.

The most critical design component is the side of the breadbox. This is where the runner tracks for the tambour door will be cut and where the joinery for the base, top and back will all have to be incorporated. The tambour bit set instructions suggested a minimum outside arch radius of 5 ¾", so I started with that. The bit set specifies that the tambour slats will be ½" thick, so a 9/16" wide track seemed appropriate. A ¼" shoulder front and back looked pleasing and should be sufficient to hold the door slats in place. Next, I needed some room to attach the frame and panel back. With a ¼" thick panel and a ¼" shoulder to hold the panel I ended up with a total width for the side of 12 ½". Determining the height for the side was somewhat more subjective. I simply decided to make the center of the arc the center of the height of the side. This gave an over size for the side of 12 ½" by 12".

To size the base and top I started with an arbitrary 17" opening, added two times the 7/8" thickness of the sides and two times the 3/8" extension on each side and the front gave an overall dimension for the base of 19 ½" by 12 7/8". The 3/8" came from using a roman ogee bit on a test piece, looking at what a side piece might look like beside it and coming up with something that looked aesthetically pleasing. The top is the same width as the base, but only needs to be deep enough to slightly overhang the curved front of the side panels, which gave a size for the top of 19 ½" by 8 ¼". The dowel placements for the base run the full length of the side. The dowel placements for the top are restricted to the back to avoid conflicting with the tambour track.

The final consideration in the design is the grain orientation. By lining up the grain direction of the top, sides and base, all the significant movement in these four pieces will be from front to back.

The back can't be lined up with the rest of the box, so the design uses a simple frame and panel approach to avoid wood movement problems.

Preparing the Basic Box

Mill the boards that you will glue together to form the top, base and side panels slightly over size. Select the parts from your stock and match them up to provide panels that the grain and colour flow together nicely. Orient the panel sections so the grain is running the same way. This makes it easier to surface plane the glued up boards. Once the panels are glued up and roughly smoothed, cut them to the final size.

Routing the Tambour Slats

While the glue is drying for your various panels, move on to preparing the tambour slats.

The tambour bit set I used creates slats that fit together using a ball and groove joint that holds the slats together while allowing them to pivot smoothly as they move along the track routed into the sides.

The first step is to prepare the blanks to make the slats. For this design you will need 20 slats, but I made a few extra in case I ran into any problems and I made them about 3" longer to make finishing a bit easier. Your goal is to end up with a set of blanks that are square and the surfaces ready for finishing. Start with a set of boards of sufficient length and joint and surface plane them to ½" thick. Smooth these boards on both sides. It is much easier to plane or sand the faces of the slats before ripping them apart and routing them. Once the boards are smoothed, turn them into slat blanks by jointing an

Lead Photo by Vic Tesolin. All others by Jim Sinclair. Illustration by: James Provost

Woodpecker Tambour Set

For this project I used the Woodpecker Tambour Set from Dimar Canada. The bit set comes with a clear instruction sheet and a pair of short example slats. There is a marketing tag on the instruction sheet that claims "No Sawing! No Sanding! No Gluing!" I found this to be almost accurate. After the ball grooving I found that there was a bit too much fuzz left in the track for my liking. The fuzz got in the way of the slats pivoting smoothly. A quick run through with a bit of 120-grit sand paper cleaned this up. The no gluing is of course the key attraction to this set.

You can check them out on the web at dimar-canada.com.

edge square and then ripping off a slat just over 1" wide. A quick touch with a plane on the ripped edge should give you a blank that is ready for routing. Repeat for as many slats as you can get out of a board, and for all the slat boards.

The next four steps involve routing the blanks you have just created with the tambour bit set. In order to create smooth acting ball in groove joints in the tambour door, the blanks need to be fed consistently past the router bits. The key to accomplishing this is to use a pair of feather boards for all the operations.

The first router step is to create the tongue. Put the nicest looking slat blank aside before doing this step. This blank will become the lead slat on the tambour door. You don't want a tongue on this slat. Set the fence so that it is even, with the outside of the guide bearing on the tongue profile bit. Mount a vertical feather board on the fence to hold the blank down against the table and a horizontal feather board on the table to hold the blank against the fence. Run the blanks through the router twice, once on each side to create the tongue.

The next two steps will create the socket for the previously created tongue. First, use the slot cutting bit to remove most of the material for the groove. Then switch to the ball grooving bit to create the final

Consistent results – Using a set of feather boards will ensure that all of the parts come out looking the same.

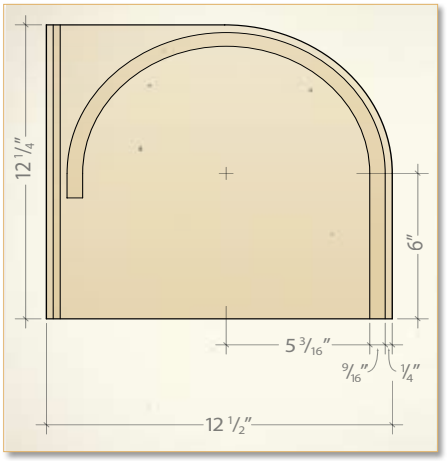
Make it simple – A router trammel will make easy work of cutting the curved dado that will house the tambour door.

Materials List

Part	Qty	T	W	L
Base	1	7/8	12 7/8	19 ½
Top	1	7/8	8 ¼	19 ½
Side	2	7/8	12 ½	12
Tambour slat	20	½	1	17 7/16
Back muntin	2	½	1 ½	12 ½
Back panel	3	¼	5 1/16	12 7/16

DEFINITION

Muntin: a vertical division that runs between the rails of a frame dividing the panel area into smaller sections. Muntins stiffen the panel area, making the overall frame more rigid.



ball shape for the groove. As with the first step, use a pair of feather boards for both of these passes to keep the slat blank tight against the table and the fence. Don't forget to include the lead slat when cutting the round groove. You could choose to select one slat as the trailing slat and skip putting a ball groove in it. However, I didn't bother.

The final routing step is to use the bull nose bit to round over the corners of the edge with the ball groove. I used the same bull nose setting to round over the front of the lead slat.

Cutting the Track for the Tambour

It is important when working on the sides to keep in mind that there is a right and left hand side piece, and that they are different. I find that an easy way to keep this in mind is to lightly draw in pencil on the pieces where the material is to be routed away. This gives a quick and simple check that parts are oriented correctly before cuts are made. This piece is complicated enough that you don't want to make mistakes that will force you to remake the part over again.

The tambour track is cut in three steps using a 9/16" straight bit. First I cut the arc using a circle jig and a plunge router. The pivot pin of the circle jig fits into a hole in a piece of ¼" hardboard that has been carpet taped to the side panel. A

Work to the lines – Pencil lines on the fence show where to start and stop the cuts.

Minimize tear-out – Using a sacrificial push stick when routing the Roman ogee will keep the end of the cut clean.

corresponding ¼" piece of hardboard goes under the circle jig where the router mounts to the jig to keep the jig level with the work piece. Remember when placing the pivot hole that the pivot point is slightly to the front of center to allow for room for the back. Break the cut up into two or three passes, with the first pass being very light in order to establish a nice clean crisp edge to the track. Plunge the bit near the top, slightly to the back. This way, if you introduce any slight inconsistencies into the track while plunging the bit they will be hidden, both when the door is fully open and when the door is almost closed. If you are not comfortable with consistently pivoting the router to the exact end of the arch with each pass, stop a little short on the first two passes and only go right to the end on the final pass.

Now move the bit to the router table to complete the track. At the front the arc is extended straight down the remaining height of the side. This allows the tambour door to close. At the back a short stopped straight cut descending 1" below the center line is added. This increases the opening at front for the tambour door without risking the back of the door pinching a loaf of bread at the back when the door is fully opened.

I cut these straight portions of the tambour track in two passes using a cleated piece of 1/8" hardboard to raise the work piece up for the first pass. The three pencil marks on the router table fence show where to start and stop the cuts for the short stopped cut at the back, one pair for the left side cut and the other pair for the right side cut. As well, the center pencil mark shows where to either start or stop the long cut at the front. When starting a cut other than at the edge of the piece, lower it down onto the cutting bit using the appropriate pencil line as a guide. When you reach the end of a stopped cut back off a small amount and then pivot the piece up clear of the bit.

Cutting the Back Panel Slots

A ¼" straight bit in the router table is used to cut the slots that the back panels will mount in. All the slot cuts can be done using the same setup. Raise the bit to ¼" high and set the fence ¼" back from the bit. For the sides, the slot cut runs all the way from the top to the bottom. For the top and base, the slot runs ¾" short of both sides. For the muntins using a horizontal feather board to keep the piece tight against the fence helps keep the slot consistent. For all the pieces I cut the slots in two passes using the same cleated hardboard as before to raise the work piece up for the first pass.

Details

The breadbox requires a bit of detailing in the form of edge treatment. The top and base have a classic Roman ogee edge on their upper front and sides. The curved front edges of the two side panels are softened with a round-over. A modest chamfer of all four bottom edges of the base, and the bottom sides and front of the top complete the edge treatments.

I used a classic Roman ogee bit and a router table to form the ogee on the base and top. Take two passes with the ogee bit raising the bit slightly for the second pass. The first pass removes most of the material and the second light pass should give you a nice clean cut with no fuzz or burning. Use a sacrificial push block, particularly when routing the end grain to prevent tear out. To do the round over on the side panels I used a ¼" round-over bit with a bearing in a trim router.

Hole spacing – Using a jig to accurately position the dowel holes will make assembly much easier.

Joinery

The base, top and sides are joined together using dowels. The design has all of these panels flush at the back. This provides a convenient registration point for accurately lining up the dowel holes. I used a simple jig on my drill press that allowed each panel to move over an inch at a time as I drilled the holes.

The frame and panel back uses a pair of vertical muntins 1 ½" by ½" and three ¼" thick panels. The top base and sides combine with the muntins to make up the frame. ¼" slots are cut into the base, top sides and muntins to accommodate the ¼" panels. Smooth the panels down to slightly under the ¼" so they fit easily into the slots. The panels are not attached with glue to allow for wood movement left and right. By cutting the panels about $^1/_8$" narrower than the openings they will nicely float between the muntins and sides and the wood movement in the panels will not cause any issues.

The Handle

Selecting a handle for your breadbox is a personal choice. In my case I selected a commercially available handle that matched the hardware in my kitchen. It is mounted to the lead slat using a pair of bolts that were provided with the handle.

Finishing

A bread box sitting on a kitchen counter top is going to be exposed to water and grease. Unless your guests are careful, there is a good chance the breadbox will also be exposed to heat, coffee and alcohol. The finish will have to stand up to this kind of abuse. As well, you will want something that doesn't have a lingering odour that can get into the bread once it dries. I went with three coats of a wipe-on polyurethane. I sanded after each intermediate coat with 400 grit sand paper to remove any dust nibs that may have accumulated. After the final coat is dry I sanded with some 2000 grit automotive sand paper to provide a smooth silky finish.

I prefer to finish most of my projects before assembling them. I find I can focus on carefully producing a clean, even finish with small components more effectively than I can with a fully assembled piece. There are no hard-to-get-at locations and drips are not a problem. The joinery needs to be protected from the finish and so I generally tape over the areas that will be glued to protect the surfaces. You also need to be careful when clamping to not damage the finish. Using some softwood cauls or leather between the clamps and finished surfaces should work. The tambour door lends itself quite well to this pre-finish approach. Slopping wet finish into the pivoting joints of the tambour slats seems to me to be just asking for trouble. Put tape over all the dowel joints. Be careful on the base and top that the tape does not cover anything that will show. The tenons on the muntins should also be taped. The locations along the slot that the muntin tenons fit into need to be protected. To do this I temporarily press fit some slightly overlong softwood stubs into the slots at these locations. To prevent any finish buildup sticking these temporary plugs in place, I pull them out after each coat.

I mentioned earlier that I left the tambour slats over long for the finishing. I held the slats at one end while I applied the finish and then placed them down on a pair of supports to dry. When the tambour slats were finished I cut them to length removing any blemishes near the ends that my handling or the supports may have introduced.

Final Cutting to Size

Now that you have your pieces finished it is time to dry fit the breadbox base, sides and back together. At this stage you should use dowels in all the holes to verify that everything goes together properly. Measure the opening between the back of the left and right tambour tracks. Allow a bit of slack, say $^1/_{16}$" shorter than the opening and cut the tambour slats down to the length needed. Once they are cut, sand the ends a bit to smooth them out so they will slide easily in the track. The tambour door can now be assembled. Slide the slats together one at a time and check that they pivot easily. A bit of sanding may be required if you run into any problems.

Glue-Up

The first step in any gluing operation is to dry clamp each glue operation in order to make sure that you have all the necessary clamps, that the clamps are set to approximately the correct opening and to generally familiarize yourself with how you are going to go about doing the glue-up. You don't want to discover that you are missing something or that your parts don't go together properly when they are already wet with glue. The breadbox glue-up can easily be done in two stages. The tricky part of the first stage is that the tambour door must be put into the tracks. Dry assemble the top and the two sides. Basically, get the dowels started into both the sides and the top but leave them loose enough that you can slip the tambour door into place. Fit the tambour door into the tracks and then tighten up the dowels. Carefully pop the base off the sides so you can glue the base to the two sides. A bit of glue in each hole and a thin coat of glue on each dowel is all that is needed. Clamp the two sides to the base and the top. If you get any glue squeeze-out it can be cleaned up now easily with a wet paper towel or rag. Once the glue has dried loosen the clamps and remove the top. Assemble the back panels and muntins in place in the now glued together base and sides. A small amount of glue on the muntin tenons is all that is required here; the panels should float. Glue the dowel joints between the top to the sides and clamp the two sides to the base and the top.

Leave the door open and wait a few days to let the finish completely dry and the fresh finish aroma to dissipate. Now you can move the breadbox to your kitchen countertop and show off your handiwork.

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