

WEEKEND WOODWORKING PROJECTS™

NEAT THINGS YOU CAN BUILD IN A HURRY



PIANO MUSIC BOX

Scandinavian
candle holder

Toy ferris wheel

Seashore door harp

Hollow-log jewelry box

Lazy-Susan snack tray

FROM THE EDITORS OF WOOD® MAGAZINE

4 SCANDINAVIAN CANDLE HOLDER

Bring a touch of the old world to your Christmas with this dragon-head centerpiece, *left*. We adorned ours with holly and four cream-white candles.



6 SEAGULL-AT-SUNSET DOOR HARP

Our maritime door harp, *right*, attaches to an interior door and sounds sweet notes with every opening and closing.



8 TRAY-OF-PLENTY LAZY SUSAN

Router fans, you'll have as much fun making the handsome snack server, *below*, as you'll have using it. Six compartments for nuts and other treats surround a removable maple cutting board.



12 FUN-FILLED FERRIS WHEEL

Preschoolers will delight at finding this merry toy, *left*, beneath the Christmas tree. A light push on the oak spokes allows the walnut seats to rise and fall—just like a real Ferris wheel.





16 HOLLOW-LOG BANDSAWED BOX

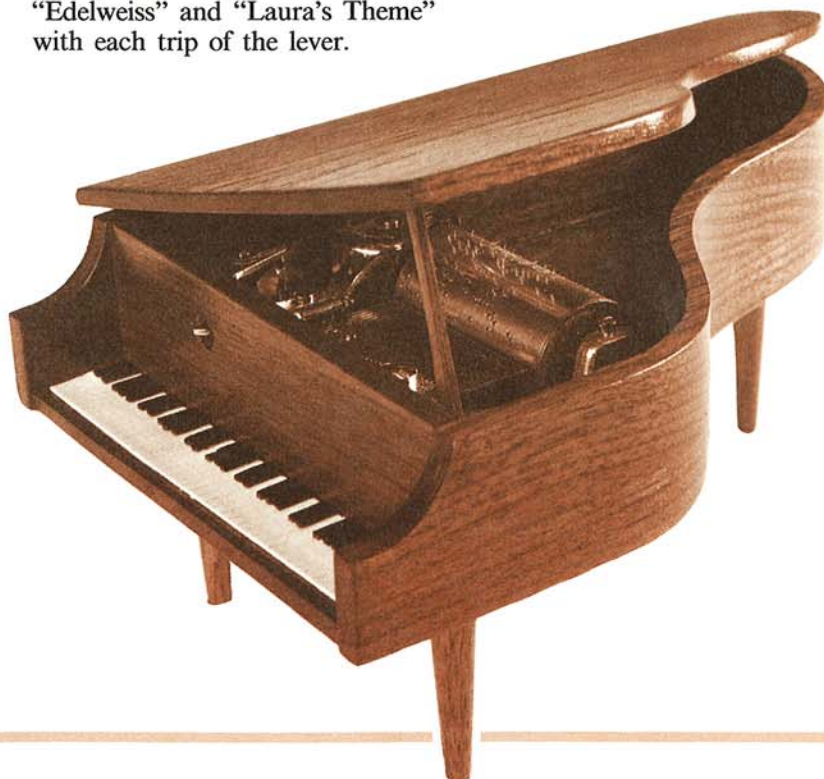
Few projects use wood more efficiently than bandsawed boxes. In our hollow-log version, we cut out the log's center, sawed it in half, and used one half for the base. The result: an intriguing keepsake box. See the sequence of construction steps inside.

GREAT GIFTS FOR CHRISTMAS



20 BABY GRAND MUSIC BOX

Here's a precious gift item that's music to your ears, as well as a woodworking challenge. Our walnut piano music box contains a quality Swiss movement that plays both "Edelweiss" and "Laura's Theme" with each trip of the lever.



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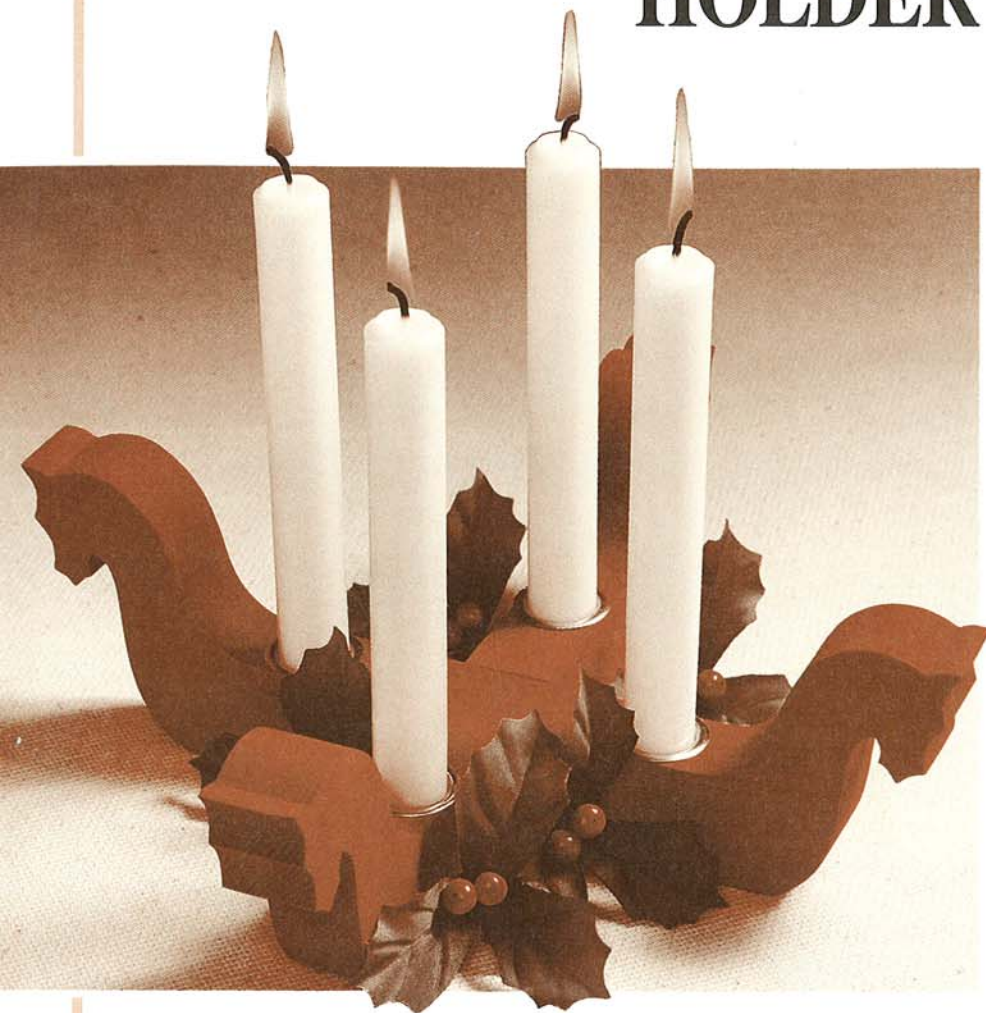
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OUR PLEDGE TO YOU

Prior to publication, we build every project presented in WEEKEND WOODWORKING PROJECTS step-by-step in our shop. Then, a team of editors reviews each element of each project—directions, illustrations, and bill of materials—to make sure the instructions we provide you are clear, concise, and complete. In short, we do everything possible to "de-bug" each project while it's being built in our shop so you'll have good results.

The Staff of Weekend Woodworking Projects

SCANDINAVIAN CANDLE HOLDER



Add a glow to your yuletide table this holiday season with our festive pine centerpiece. Four cream-white candles and holiday greens richly enhance the project's crimson wood-dye finish. *Opposite*, see our full-sized (half) pattern of the stylized, but easy to make, Scandinavian dragon heads.

FIRST, PREPARE THE STOCK AND PATTERNS

1 Select a piece of 2x6 stock 25" long, and plane or sand it to 1½" thickness. (We used pine which helps accent the bright red stain.) Then, rip and crosscut the length into two 3⅝x12½" pieces.

2 Using carbon paper, transfer the Full-Sized (Half) Pattern on page 5 to four sheets of paper. Include the half-lap and candle-hole center-points, and the depth lines. Cut the half patterns to shape. Now, tape the half patterns together to make two full patterns.

3 Spray adhesive onto the back of both patterns. Now, adhere one to a face on each wood blank. (To reduce sawing, we aligned the pattern bottoms with one edge.)

Note: If you prefer, make four photocopies of the half-pattern, and tape them together at the joint line.

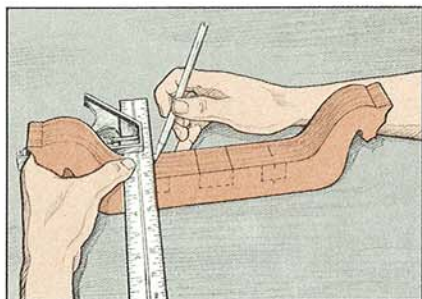
NEXT, MACHINE THE DRAGON PIECES

1 Using a scrollsaw, cut the two dragon pieces (A) to shape. (We started by cutting out the area between the ear tips and along the top. From the neck we worked along the face to the ear tips.)

Note: If you prefer to cut out the sections with a bandsaw, stick the two blanks together with double-faced tape, and cut both at the same time.

2 Next, sand the cut edges on both sections to remove any cutting imperfections and saw marks. (We used ½", 1", and 1½" drum sanders to sand the curved areas. Because one dragon piece laps over the other, we marked the upper one *top*, and the lower one *bottom*.)

3 Using a try square, transfer the candle-hole centerpoints by striking a line as shown *above right*. Find and mark the centers of these lines. Next, mark the centerlines for the



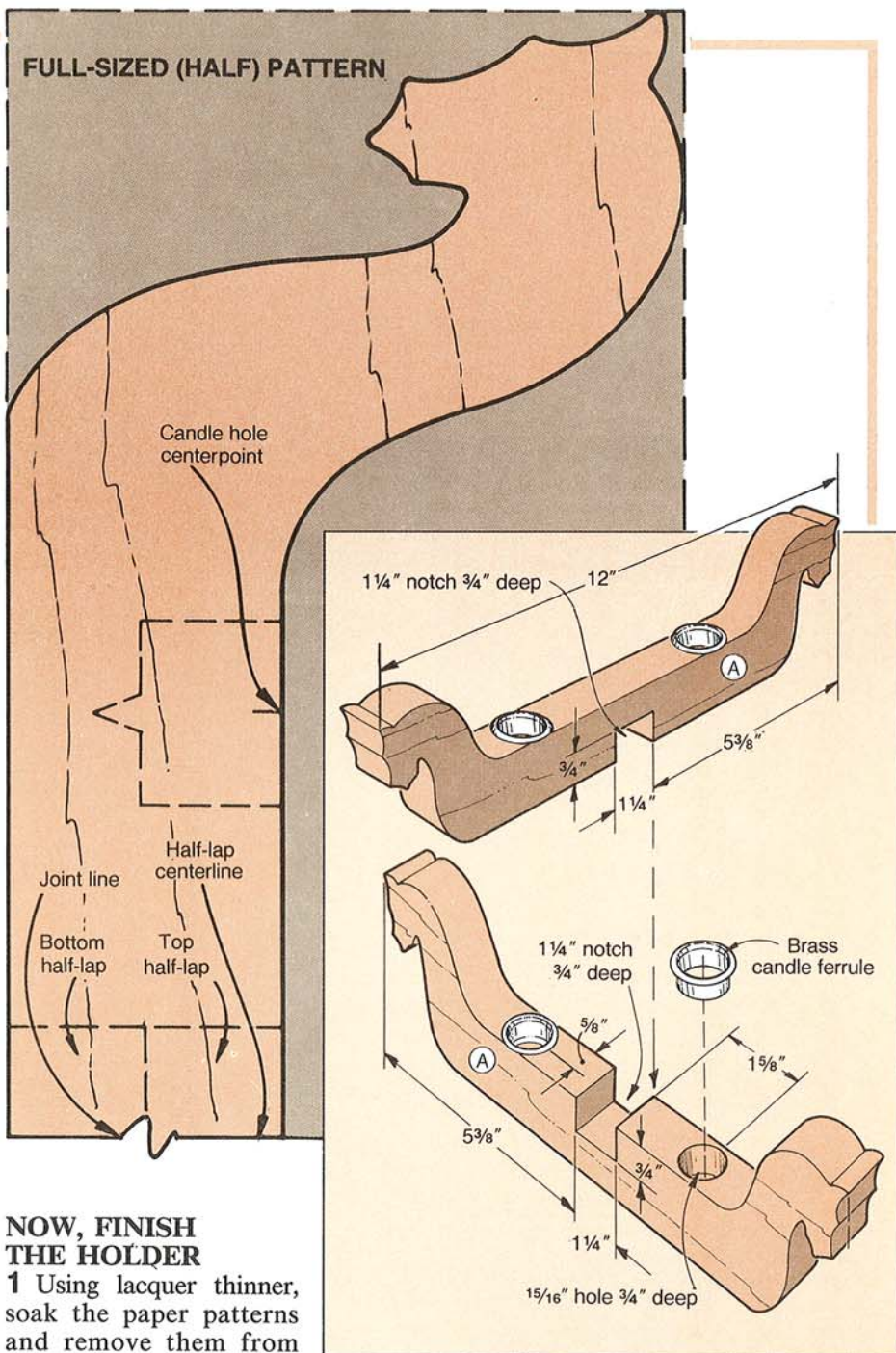
half-lap notches the same way. Look at the exploded-view drawing and note that you need to transfer one traced line to the *top* of the bottom dragon piece, and another to the *bottom* of the top dragon piece.

4 Chuck a $\frac{13}{16}$ " bit in your drill press (we used a spade bit). Place the patterned-side of a dragon piece against the drill bit. Now, adjust the drill stop so the bit drills to the candle hole depth lines. Drill the holes. (We clamped each section to the drill press table while drilling.)

5 Mark the locations of the half-lap notches on the appropriate edges of the two sections. (We verified this measurement by laying one dragon piece perpendicular to the other at the notch location.)

6 To cut the half-lap notch located in the *bottom* of the top piece, elevate the saw blade on your tablesaw $\frac{3}{4}$ " above the table surface, and cut the dado. (We attached a wood fence to the miter gauge and used it to guide the piece. We first made clean cuts along the lines on the left and right sides. Then, we removed the material between the two cuts.)

7 To cut the half-lap notch in the *top* of the bottom piece, raise the blade on your tablesaw $2\frac{3}{4}$ " above the table. Using a scrap the same height as the dragon, cut a dado and test-fit. Adjust the blade height as needed. Now, clamp the dragon piece *upside down* to the miter gauge fence and cut the dado. (As an alternative, you could cut the notches on a bandsaw.)



NOW, FINISH THE HOLDER

1 Using lacquer thinner, soak the paper patterns and remove them from the dragon sides. Let the pieces dry, and sand them if necessary. Now, apply the finish of your choice. (We brushed on a generous amount of a red Swedish wood dye. See the Buying Guide.)

2 Install the brass candle ferrules. (Again, see the Buying Guide for our source.) First, insert the ferrules partially in the holes by hand. Then, using a hammer and wood block, drive them the rest of the way.

BUYING GUIDE

● **Swedish wood dyes.** Powder, one packet covers about 40 square feet. \$3.45 per packet. From Henningson & Assoc., P.O. Box 6004, Rockford, IL 61126. Phone: 815/877-3455.

● **Candle ferrules.** Brass plated, $\frac{13}{16}$ " inside diameter, $\frac{1}{2}$ " high, catalog no. B1480, 32¢ each or \$2.90 for 10, plus tax. Minimum order \$7.50 plus \$2.50 handling and postage for cash orders. The Woodworkers' Store, 21801 Industrial Blvd., Rogers, MN 55374. Phone: 612/428-2199.



SEAGULL-AT-SUNSET

DOOR HARP



Here's a door harp that sounds every bit as good as it looks, combining a seashore scene with an assortment of pleasing musical notes. And talk about form meeting function. One of the bird's wings supports four clapper balls that strike taut harp wires when set in motion. The full-sized pattern, below, lets you cut out a bird identical to ours.

FIRST, BUILD THE HARP BOX

1 Select a piece of $\frac{3}{4}$ " poplar or pine stock and rip and crosscut it to $9\frac{1}{2}$ " square.

2 Draw diagonals to locate the centerpoint on the square. Next, using a compass, draw a $3\frac{1}{2}$ "- and a $4\frac{1}{2}$ "-radius circle.

3 With a $\frac{1}{2}$ " drill bit, drill a hole through the square inside of the $3\frac{1}{2}$ " radius line. Thread a scrollsaw blade through this hole, mount the blade on the saw, and cut out the center of the scribed circle. Next, remove the square from the scrollsaw, and form the circle, sawing around the outside $4\frac{1}{2}$ " radius. Cut just wide of the line.

4 Cut two pieces of $\frac{1}{8}$ "-thick poplar plywood to $9\frac{1}{2}$ " square. (See the Buying Guide for our source.) Lay the 9" ring on top of one plywood panel and trace around the outside edge. Now, on the face of that plywood panel, find and mark the center of the circle you just traced. Finally, using the centerpoint and dimensions on the Front View Drawing, locate and mark the centerpoints for the eight tuning pins, the 2"-diameter sound hole, and the dowel for mounting the seagull.

5 Using double-faced tape, stick the two plywood panels together, with the marked piece on top. Cut the plywood disks to shape with a scroll saw or band saw. (We cut slightly wide of the line to allow for sanding later.) Now, separate the panels and remove the tape. Chuck a 2" Forstner bit in your drill press, place a piece of scrap under the panel, and bore the 2" sound hole.

6 Now, lay the poplar ring flat and apply woodworkers' glue to the top-side. Place the *front* plywood disk (the one with the 2" hole in it) on top of the ring, align it, and clamp. Remove the clamps after the glue dries. Turn the ring over and attach the *back* plywood disk.

7 Sand the edge of the harp. (We used a stationary disk sander, and then

Buying Guide

● **Door harp kit.** Includes two pieces of $\frac{1}{8}$ " door harp plywood, eight tuning pins, four $\frac{3}{4}$ " acrylic clapper balls, and one strand of music wire. Catalog no. 7958. Enclose \$7.95 per kit plus \$3.50 for shipping and handling. From Meisel Hardware Specialties, P.O. Box 70, Mound, MN 55364. Phone 800/441-9870.

Supplies: Carbon paper, string, 1" dowel, finish, double-faced tape.

FULL-SIZED SEAGULL PATTERN

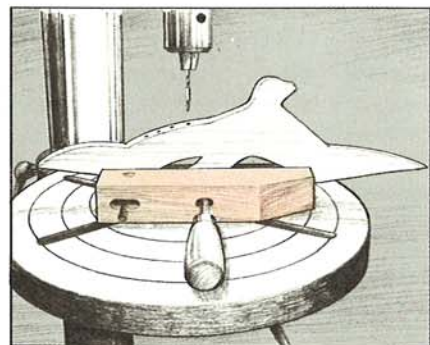
$\frac{3}{4}$ x1" dia. wood disk

sanded to the circle's line while slowly rotating the assembled harp. We then hand-sanded it to slightly round-over the edges.)

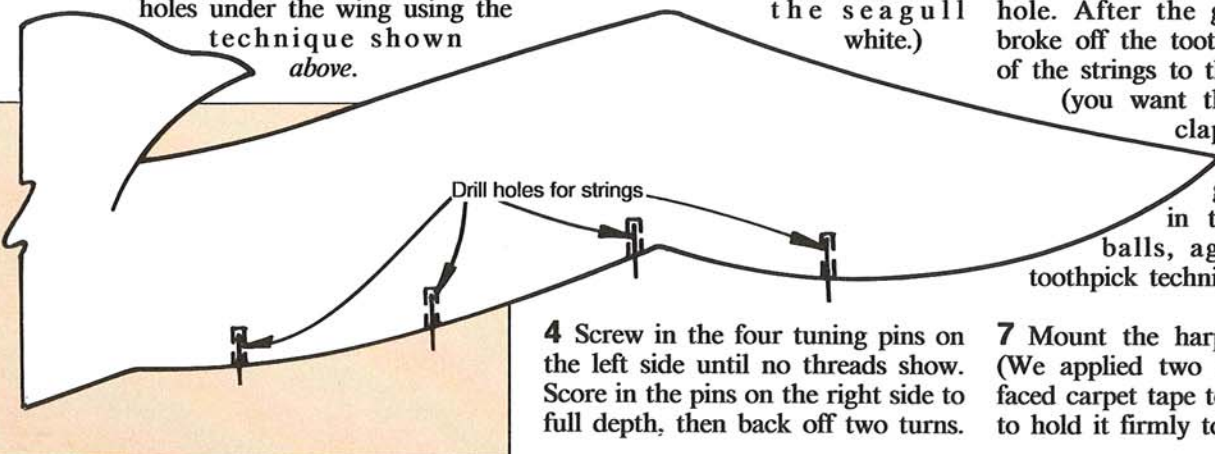
NEXT, SHAPE AND MOUNT THE SEAGULL

1 Rip and crosscut a piece of $\frac{3}{4}$ " poplar to 4x14". Plane or resaw it to $\frac{1}{4}$ " thickness. Sand the piece.

2 Using carbon paper, transfer the full-sized flying seagull pattern to a piece of paper. Include the locations of the centerpoints for the four clapper string holes in the bottom edge of the right wing. Trace the pattern onto the $\frac{1}{4}$ "-thick wood piece. Cut the seagull to shape.



3 Next, chuck a $\frac{1}{16}$ " bit in your drill. Now drill the clapper string holes under the wing using the technique shown above.



4 Cut a $\frac{3}{4}$ " length of 1" dowel and glue it to the back of the seagull. (For position, see the Front View Drawing above.) Clamp the pieces.

NOW, FINISH AND ASSEMBLE THE HARP

1 Drill the eight $\frac{3}{16}$ " holes $\frac{5}{8}$ " deep for the tuning pins that you marked on the harp's face earlier.

2 To drill the holes in the clapper balls (see the Buying Guide), chuck a $\frac{1}{16}$ " bit in the drill, and clamp a ball in a handscrew clamp. Drill the other clapper balls the same way.

3 Finish-sand all surfaces. Next, apply your choice of finish. (We painted the sun reddish-orange, and the seagull white.)

4 Screw in the four tuning pins on the left side until no threads show. Score in the pins on the right side to full depth, then back off two turns.

(We found a $\frac{3}{16}$ " nutdriver works on the 4-sided tuning pins.)

5 Thread the music wire between opposite pins, using the knot shown in the Tuning Pin Detail on the Front View Drawing. After tying the wire on a set of opposing pins, turn the right-hand pin clockwise to tighten the wire. With the wire tight, we then cut the end and proceeded to the next set of pins.)

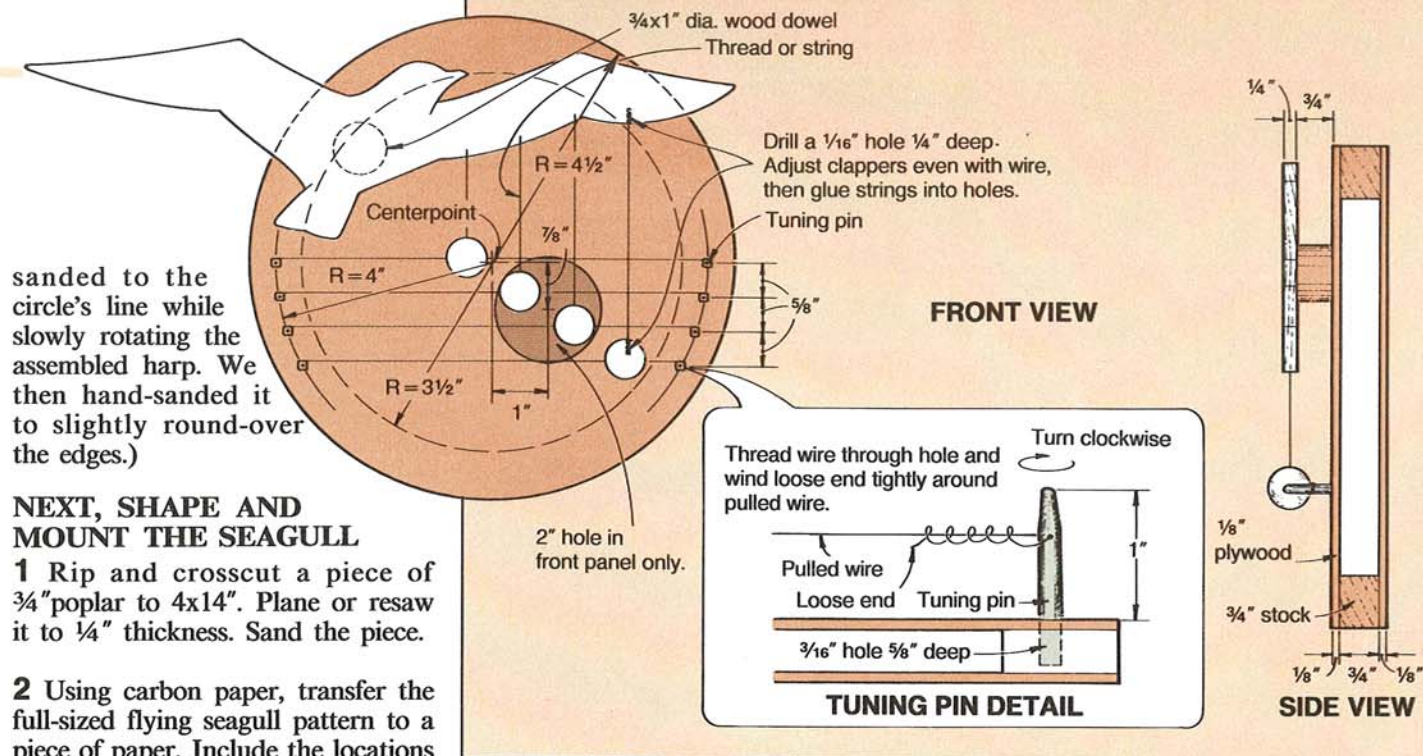
6 Cut four 6" lengths of string (we used light monofilament line). Using woodworkers' glue, glue one string in each of the holes in the underside of the gull wing. (We dipped a toothpick in glue, and then pushed it and the string's end into a drilled hole. After the glued dried, we broke off the toothpick.) Cut each of the strings to the correct length (you want the center of the clapper ball to hit the wire), and glue the strings in the holes in the balls, again, using the toothpick technique.

7 Mount the harp on your door. (We applied two strips of double-faced carpet tape to the harp's back to hold it firmly to the door.)

Project Designer: Jim Downing

Illustrations: Bill Zaun, Carson Ode

Photograph: Bill Hopkins



TRAY-OF-PLENTY LAZY SUSAN



Invite guests over for the holidays, and you can pretty much predict where they'll end up—within arm's reach of the munchies. That's when you need our full-service lazy Susan. Six deep compartments routed in mahogany hold crackers, nuts, and other popular snacks, while the eight-inch maple cutting board works great for slicing cheese or sausage. For guaranteed success, let our templates guide your router.

FIRST, MAKE THE LAMINATIONS AND THE TEMPLATES

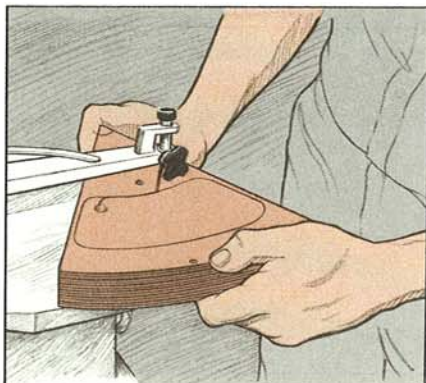
1 To make the tray (A) as shown in the exploded-view drawing, rip and crosscut 22— $\frac{3}{4}$ " mahogany pieces to $1\frac{5}{16} \times 16$ ". Apply glue to the wide face of each piece (except the outside faces of the two outer-pieces) and clamp them together, making a $16 \times 16\frac{1}{2}$ " rectangle. Remove the clamps after the glue dries, and belt-sand the top and bottom surfaces to a $\frac{1}{4}$ " thickness.

2 For the cutting board (B), cut 11— $1\frac{1}{16} \times 8\frac{1}{4}$ " strips from $\frac{3}{4}$ " maple. Apply glue to the wide faces of each piece as before, assemble, and clamp the lamination. After the glue dries, remove the clamps and belt-sand the maple to a 1" thickness. Set the lamination aside for now.

3 Make a photocopy of the Full-Sized Template Pattern on page 11. Cut out the template. (We left a $\frac{1}{4}$ " margin around the outline so the black line remained.)

4 Next, cut six 9" squares out of $\frac{1}{4}$ " plywood. (We started with a 24×48 " piece.) Using double-faced tape, stack the pieces together. Spray the back of the template pattern with adhesive, and stick it to the top square on the stack. Cut the wedge-shaped pieces to shape with your scrollsaw. (We cut slightly wide of the line, and sanded to the pattern line with a disk sander.) Now, drill the three $\frac{1}{16}$ " pilot holes in the wedge-shaped pieces where marked on the pattern. Switch to a $\frac{1}{2}$ " bit and drill a hole through the area to be cut out.

5 Thread a scrollsaw blade through the $\frac{1}{2}$ " hole, and attach it to your scrollsaw. Cut out the inside of the template as shown *top right*.

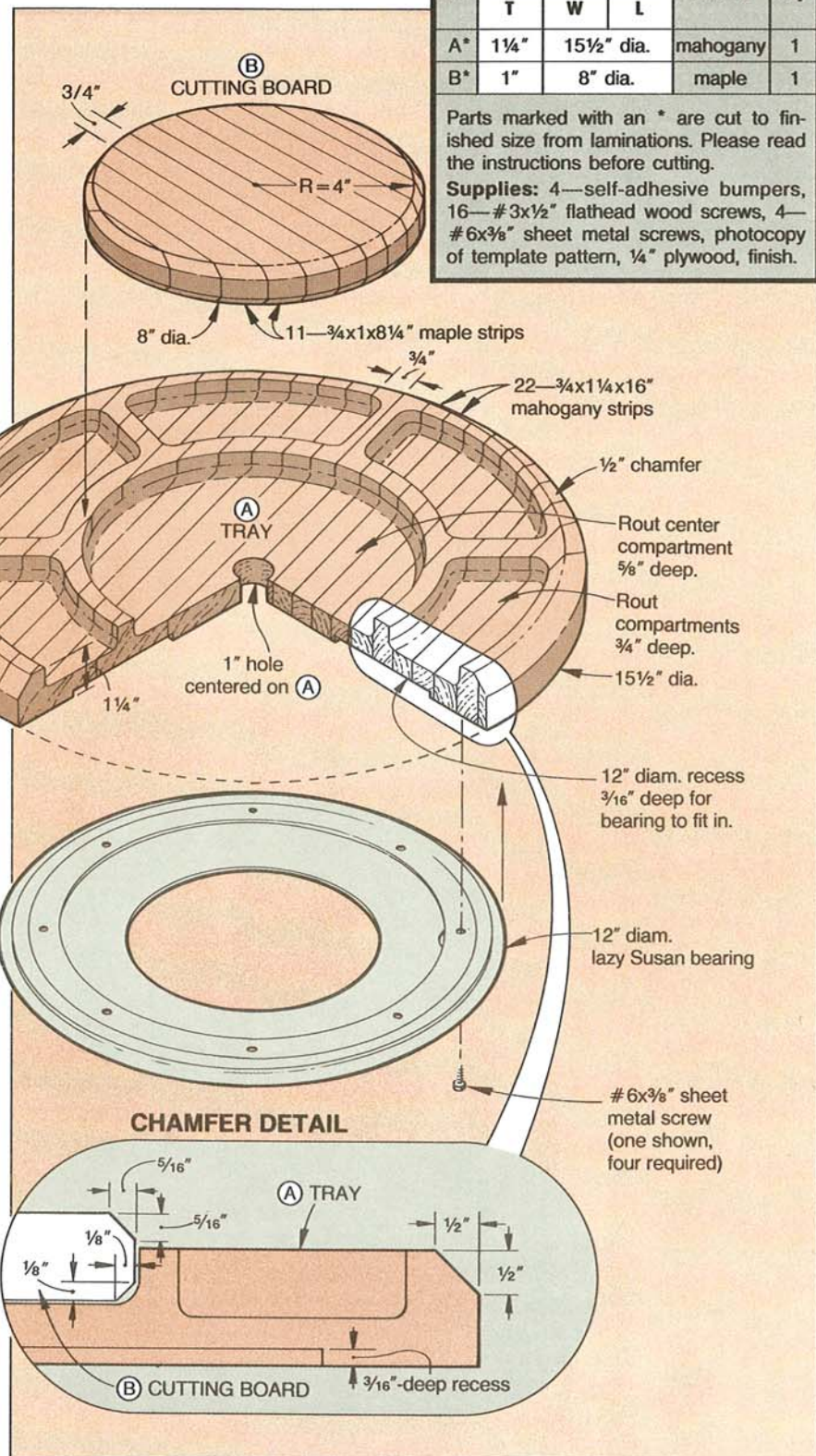


6 Attach a 2"-diameter drum sander to your drill press, and gang-sand the walls of the cutout area to the line. Separate the templates and remove the tape. Countersink the screw holes.

7 Cut a piece of $\frac{1}{4}$ " plywood to 12" square. Mark the centerpoint. Drive a finish nail into the center and cut it off so $\frac{1}{2}$ " protrudes.

8 To aid you in cutting the $8\frac{1}{4}$ "-diameter circle in the square (and to rout the other circular cuts), make the router trammel shown on page 11, and mount it on your router. Next, chuck a $\frac{1}{4}$ " straight bit in your router's collet, and adjust it to cut $\frac{1}{4}$ " deep. Place the square on a larger piece of scrap plywood, and place pivot hole W on the trammel base over the pivot nail. Now, turn on the router, lower the bit into the plywood, and rotate the router counterclockwise around the pivot to make the cut. Drill and countersink a $\frac{1}{16}$ " pilot hole $\frac{1}{2}$ " in from each corner of the plywood square. Save the square and the disk you cut out.

9 Square the ends of the mahogany lamination, and then draw diagonal lines to locate the centerpoint. Mark the point with an awl. Next, arrange the six wedge-shaped templates in a circle around the centerpoint. Now, drive the screws through the pilot



Continued

LAZY SUSAN

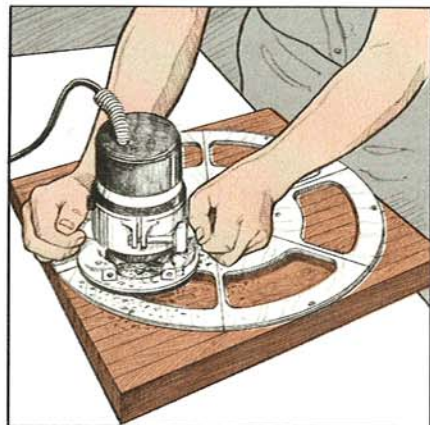
holes in the templates to fasten them to the lamination (we used #3x½" flathead wood screws).

NEXT, ROUT THE TRAY COMPARTMENTS

Note: To rout the compartments in the tray, you'll need a special bit called a 3 from 1, and a ⅝" guide bushing for your router. See the *Buying Guide* for a source for both items.

1 Remove the trammel base from your router. Replace the original base and mount a ⅝" guide bushing to it. Chuck the 3 from 1 bit in the collet and adjust the router so the bit cuts ¼" deep. Rout all six compartments to this depth as shown *below*. (When cutting, guide the router with steady, even pressure against the walls.) Stop the router, readjust the depth to ½", then rout all compartments again. Finally, set the bit to cut ¾" deep and repeat the process. Carefully smooth the bottom of each compartment with the router. When finished, remove the templates.

2 Using a compass and the center point on the mahogany lamination, draw an 8¼"-diameter circle. Next, drill a ⅛" hole through the lamination's centerpoint. You'll use this same hole as the pivot point for the bearing recess on the *underside* of the lamination.



3 Place the plywood square you cut earlier over the lamination, aligning the hole with the 8¼"-diameter circle you just drew. Now, screw the square to the lamination.

4 Using your router and the 3 from 1 bit, make a ⅝"-deep cut around the circumference of the template. Then, set the bit to cut ⅝" deep. Make the deeper pass around the circumference to form a neat outside cut, and to set the finish depth for the center compartment.

5 To help steady your router while routing out the center compartment, take the ¼"-thick plywood disk you saved earlier, and cut away 2" of it. Next, place it back in the opening as shown in drawing A *below right*. Attach it temporarily with small brads. Now, leaving your router at the ⅝" depth, slowly and carefully rout out the wood in the exposed area within the routed ring. When you've done that, remove the ¼" disk, slice off another 2", and rout the exposed mahogany within the ring. Carefully finish the bottom before moving on to the next cut because you can't go back later to clean it up. Repeat the process until you end up at the point shown in drawing B *below*. Then, remove the last of the plywood disk and finish routing the mahogany remaining in the ring. Finally, remove the tem-

plate from the lamination, and the bit and bushing from your router.

NOW, PREPARE THE BOTTOM

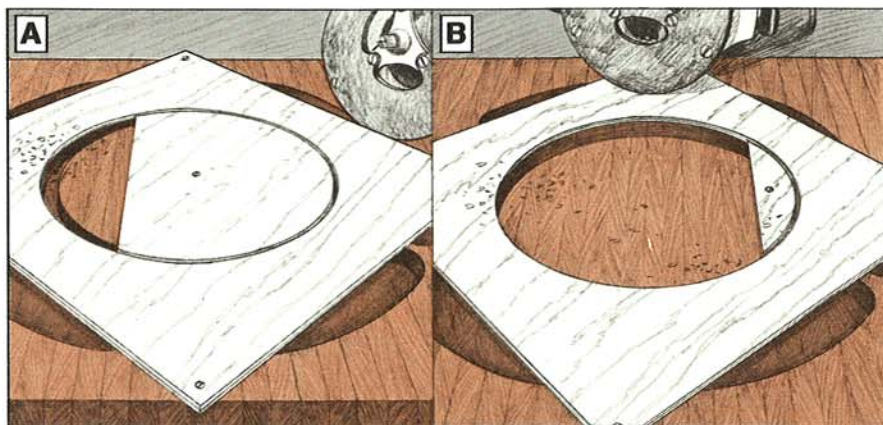
1 Place the routed lamination upside down on a piece of scrap plywood. Drive a finish nail in the drilled center hole for the pivot and shorten it to ½". To make the 15½"-diameter cut, use your router, a ¼" straight bit, and the trammel base. Place hole X on the trammel base over the pivot nail. Make several cutting passes, lowering the bit ¼" after each round, until you cut through the lamination.

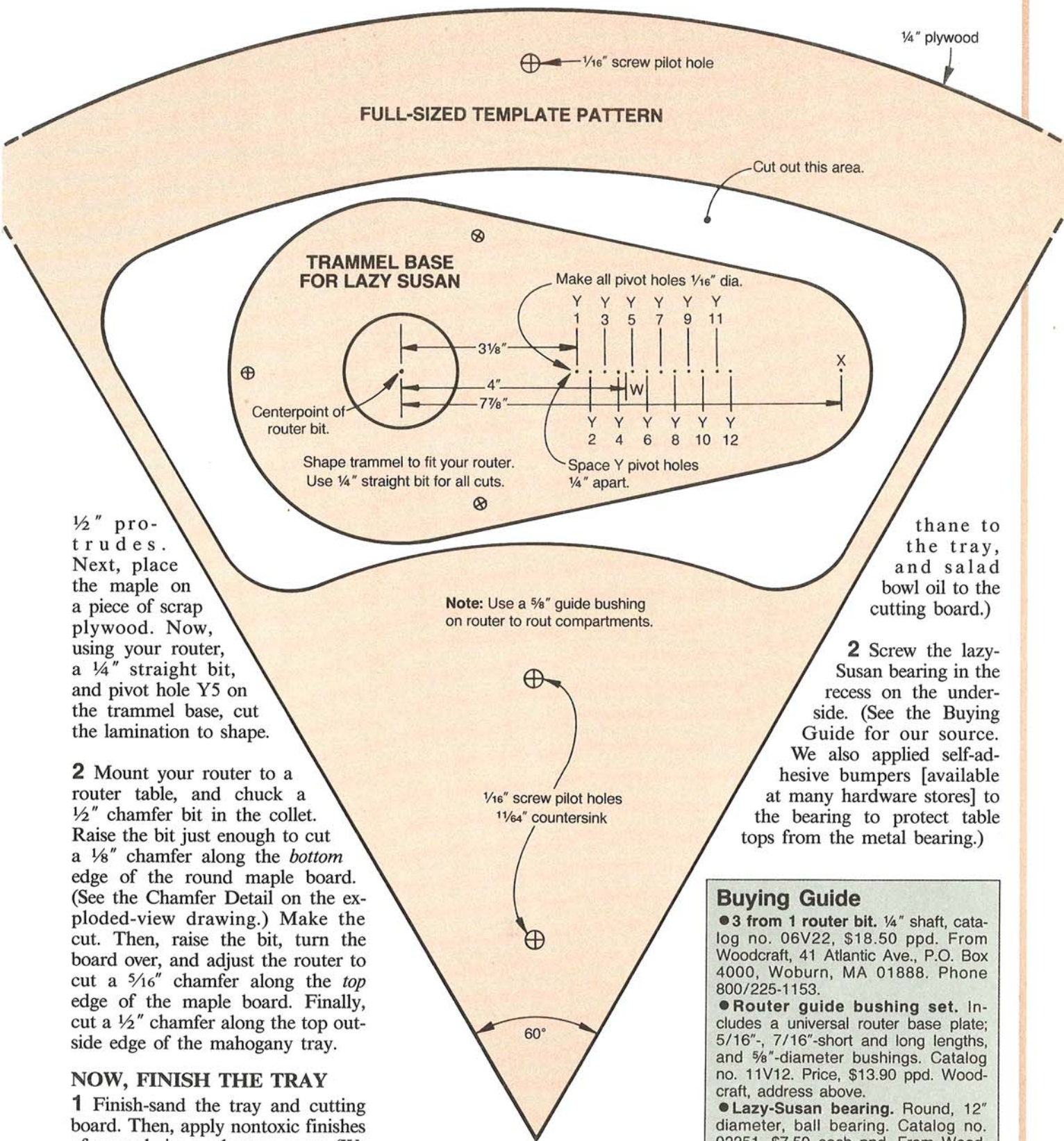
2 Next, rout the ⅜"-deep recess in the *bottom* side for the lazy-Susan bearing. (We used our router, a ¼" straight bit, and pivot holes Y1 through Y12 on the trammel base.)

3 Using a Forstner or spade bit, bore the 1" hole in the center of the tray. (Back the tray with scrap to prevent chip-out.)

SHAPE THE CUTTING BOARD AND CHAMFER THE EDGES

1 Take the maple lamination you made earlier, and square the ends. Turn it upside down, and mark the centerpoint. Drive a finish nail into the center to serve as a pivot for the trammel. Cut off the nail so only





$\frac{1}{2}$ " protrudes. Next, place the maple on a piece of scrap plywood. Now, using your router, a $\frac{1}{4}$ " straight bit, and pivot hole Y5 on the trammel base, cut the lamination to shape.

2 Mount your router to a router table, and chuck a $\frac{1}{2}$ " chamfer bit in the collet. Raise the bit just enough to cut a $\frac{1}{8}$ " chamfer along the *bottom* edge of the round maple board. (See the Chamfer Detail on the exploded-view drawing.) Make the cut. Then, raise the bit, turn the board over, and adjust the router to cut a $\frac{5}{16}$ " chamfer along the *top* edge of the maple board. Finally, cut a $\frac{1}{2}$ " chamfer along the top outside edge of the mahogany tray.

NOW, FINISH THE TRAY

1 Finish-sand the tray and cutting board. Then, apply nontoxic finishes of your choice to the two parts. (We applied three coats of satin polyure-

thane to the tray, and salad bowl oil to the cutting board.)

2 Screw the lazy-Susan bearing in the recess on the underside. (See the Buying Guide for our source. We also applied self-adhesive bumpers [available at many hardware stores] to the bearing to protect table tops from the metal bearing.)

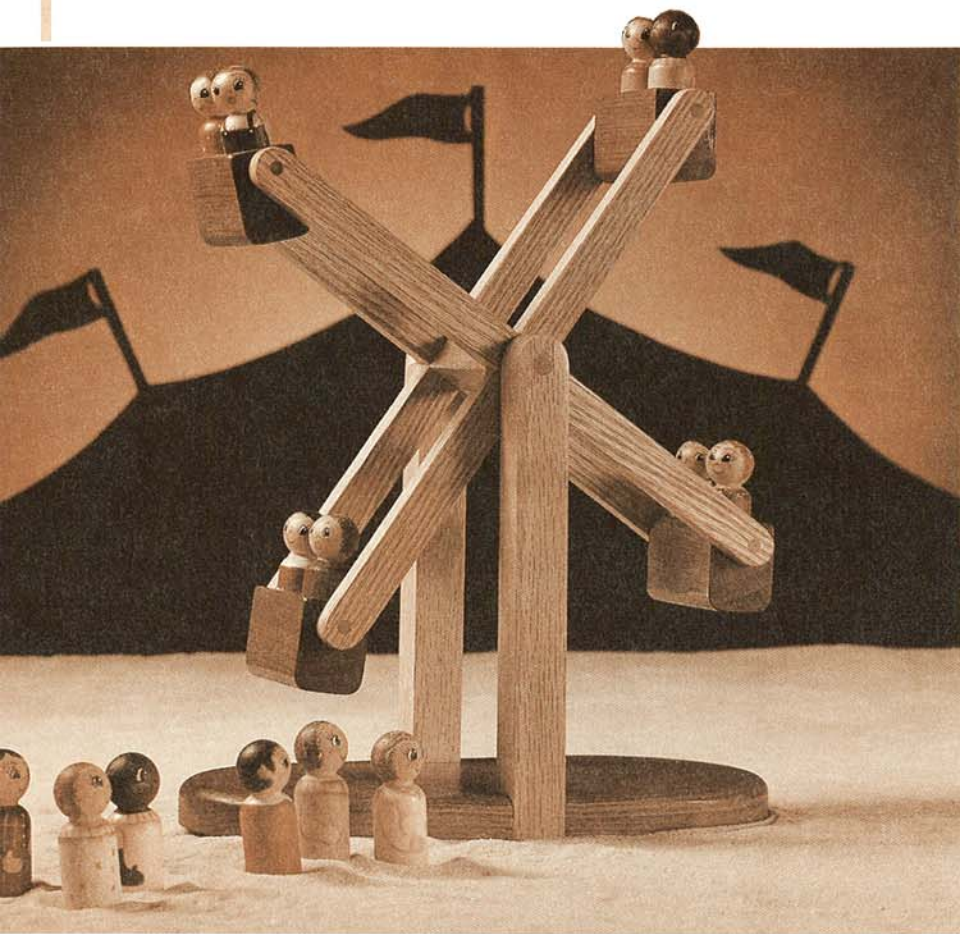
Buying Guide

● **3 from 1 router bit.** $\frac{1}{4}$ " shaft, catalog no. 06V22, \$18.50 ppd. From Woodcraft, 41 Atlantic Ave., P.O. Box 4000, Woburn, MA 01888. Phone 800/225-1153.

● **Router guide bushing set.** Includes a universal router base plate; $\frac{5}{16}$ "-, $\frac{7}{16}$ "-short and long lengths, and $\frac{5}{8}$ "-diameter bushings. Catalog no. 11V12. Price, \$13.90 ppd. Woodcraft, address above.

● **Lazy-Susan bearing.** Round, 12" diameter, ball bearing. Catalog no. 02251, \$7.50 each ppd. From Woodcraft, address above.

FUN-FILLED FERRIS WHEEL

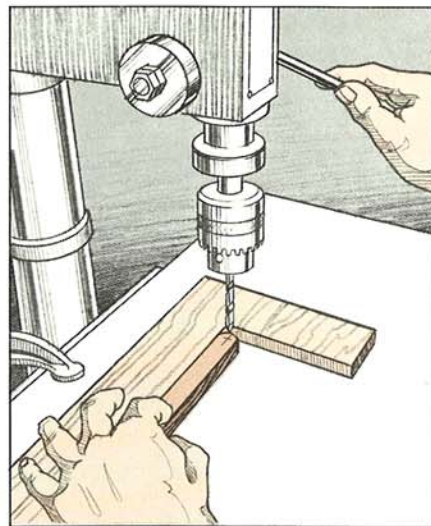


Gently turn the spokes of this midway attraction, and you may soon find a child or two at your side, watching in delight as the seats rise and fall in rotation. Made from walnut and oak, our Ferris wheel stands over 14½" tall and holds up to eight wooden people. For you would-be Santas, this gift idea is a must.

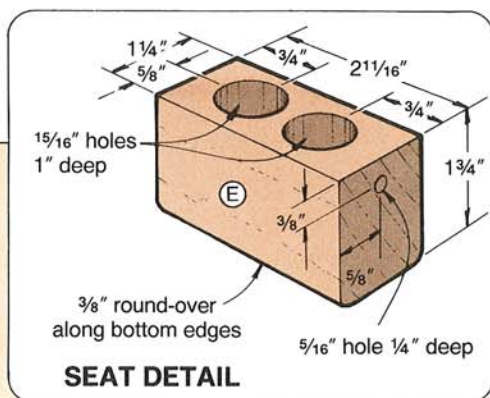
FIRST, CUT THE WHEEL SPOKES

1 From ¾" stock (we used oak), rip and crosscut the four spokes (A) to size using the dimensions listed in the Bill of Materials. (To avoid confusion, we marked the outside face on each spoke.) Next, mark the dados for the half-laps on the *inside* face of two spokes and on the *outside* face of the other two. Now, mark the centerpoints for the dowel holes at the ends of each spoke. Also, mark the ⅜" radii at the ends of the spokes.

2 Drill the eight ¼" dowel holes on the spoke ends. (It's critical these holes be drilled identically, so we tacked a small right-angle jig to a large piece of scrap, and then clamped it to the drill press table as shown *below*. This helped us position the spoke ends in exactly the same place.) Sand the radii on the spoke ends. (We used a stationary disk/belt sander.) Now, set the spokes aside; we'll cut the dados for the half-lap joints later.

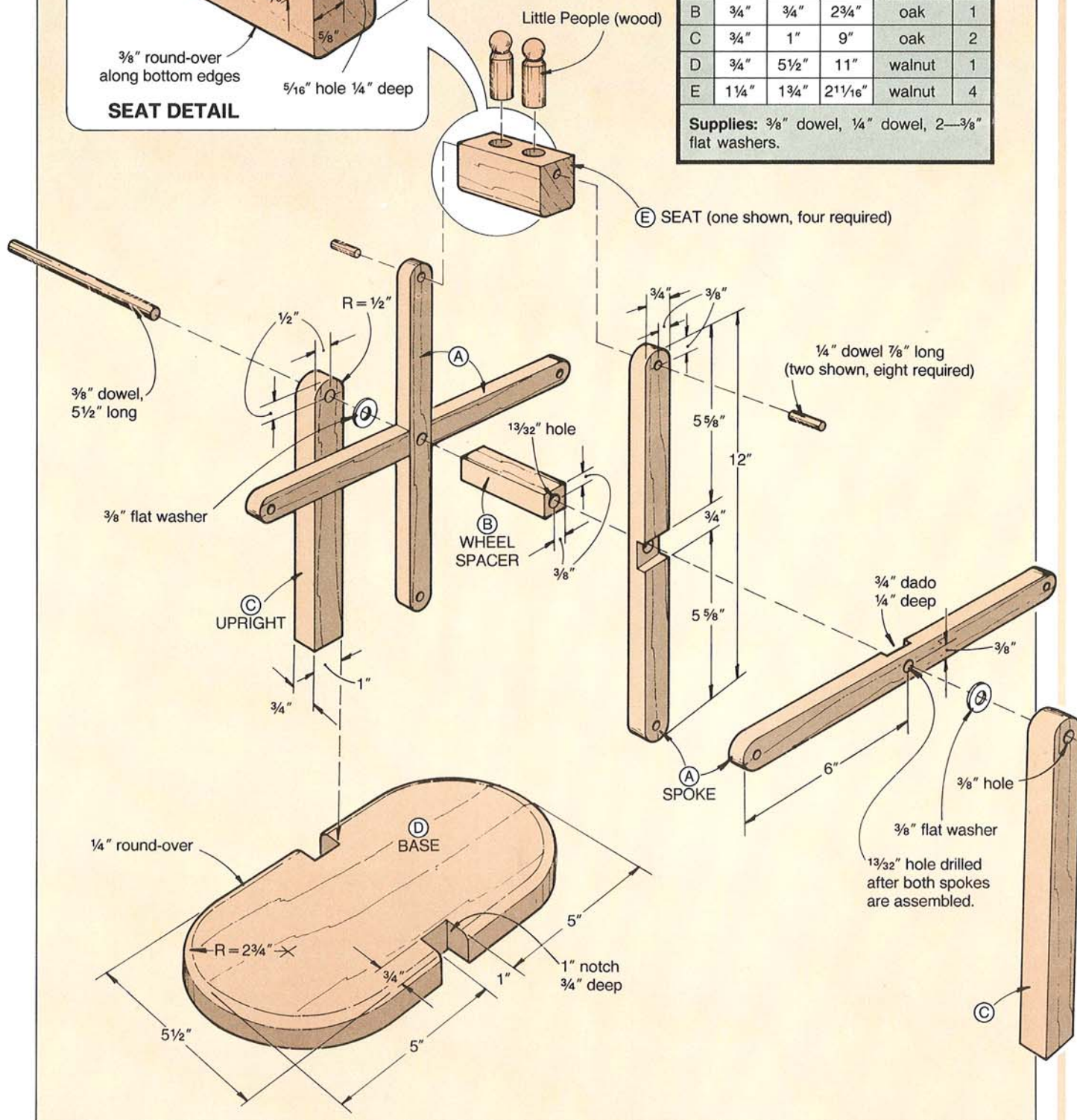


3 Next, rip and crosscut the oak wheel spacer (B) to ¾x¾x2¾". Mark the centerpoint on one end of the spacer, and chuck a 1⅜" bit in your drill. Clamp the spacer in a



Part	Finished Size			Materials	Qty.
	T	W	L		
A	1/2"	3/4"	12"	oak	4
B	3/4"	3/4"	2 3/4"	oak	1
C	3/4"	1"	9"	oak	2
D	3/4"	5 1/2"	11"	walnut	1
E	1 1/4"	1 3/4"	2 11/16"	walnut	4

Supplies: 3/8" dowel, 1/4" dowel, 2—3/8" flat washers.



Continued

FERRIS WHEEL

handscrew clamp as shown at *right*, and then clamp the assembly to the table. Check the piece for square (we used a try square), and drill a hole half-way through the block. Turn the block end-for-end, reclamp it, and complete the drilling.

NEXT, MAKE THE UPRIGHTS

1 Rip and crosscut the two 1x9" uprights (C) from $\frac{3}{4}$ " oak stock. Mark a $\frac{1}{2}$ " radius on one end of both pieces. Next, mark the center-points for the $\frac{3}{8}$ " dowel holes on the inside face at the same ends.

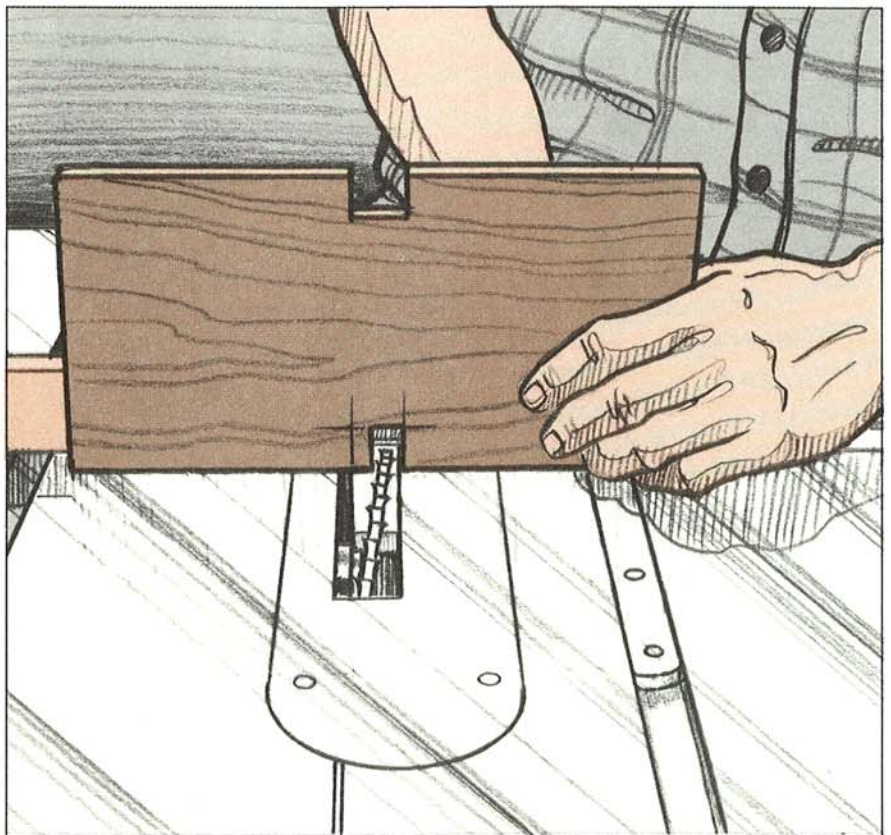
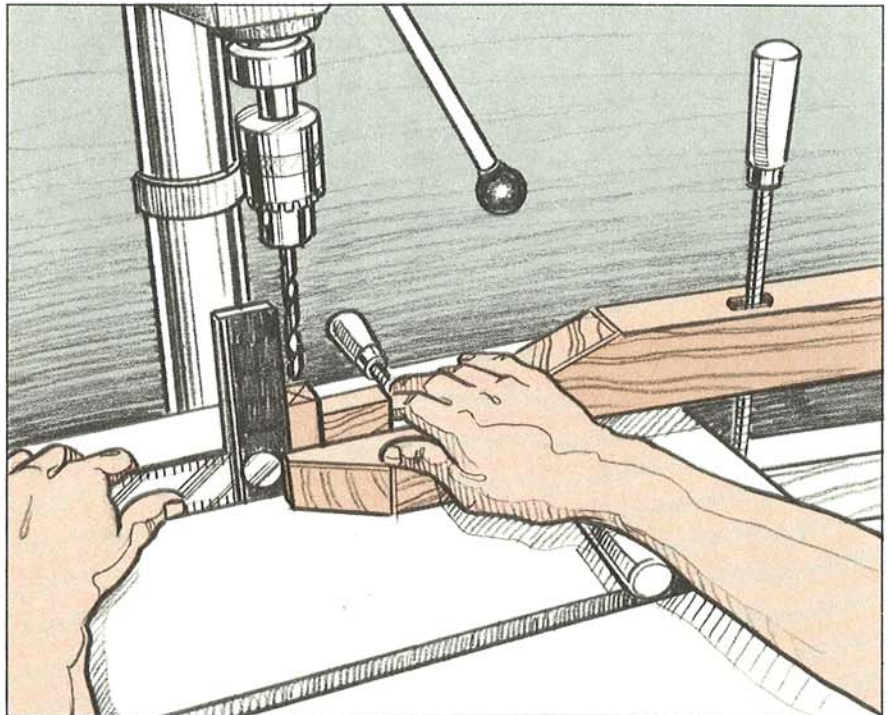
2 Back the upright pieces with scrap, and drill the $\frac{3}{8}$ " holes. Now, sand the radii on the ends.

NOW, SHAPE THE BASE

1 From $\frac{3}{4}$ " walnut stock, cut the base (D) to $5\frac{1}{2} \times 11$ ". With a compass, mark a $2\frac{3}{4}$ " radius on both ends. Next, make a light pencil mark along both outside edges 5" in from each end.

2 Mount a dado onto your table-saw that's set to cut a $\frac{1}{2}$ "-wide dado, $\frac{3}{4}$ " deep. Next, set your saw's miter gauge at a right angle to the blade, and screw a wood fence to it. Now, carefully align and cut the 1"-wide notches for the uprights in the base between the marks you penciled on the sides. (As shown at *right*, we made two cuts for each, first cutting to the pencil mark on the right, and then on the left.) Leave the dado on your table-saw for now. You'll use it again.

3 Using a bandsaw or portable jig-saw, cut the rounded ends, and sand the edges. Next, chuck a $\frac{1}{4}$ " round-over bit into your table-mounted router, and round-over the top edge of the base. Finish-sand the base. (We temporarily filled the notches with $\frac{3}{4} \times 1$ " scrap pieces while routing and sanding the base.)



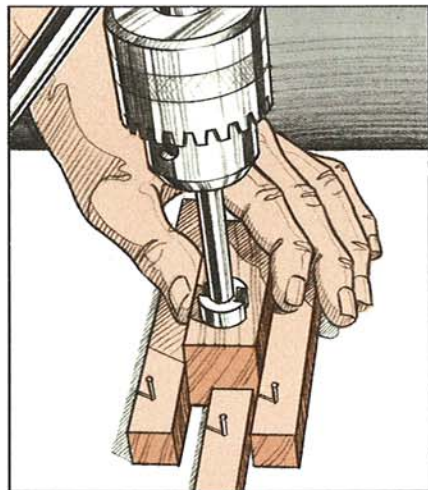
4 Lower the dado blade in your tablesaw to $\frac{1}{4}$ " above the table. Make a test cut in scrap to ensure it measures exactly $\frac{1}{4}$ " deep. Now, retrieve the spoke parts you put aside earlier and dado the half-laps.

NOW, LET'S MAKE THE SEATS

1 Rip and crosscut a piece of walnut to $1\frac{1}{4} \times 1\frac{3}{4} \times 14$ ". (If you don't have stock this thick, laminate two $\frac{3}{4}$ " pieces together, and plane or resaw it to $1\frac{1}{4}$ " thickness.)

2 Next, using a piloted $\frac{3}{8}$ " round-over bit in a table-mounted router, round-over the bottom edges of the piece. Finish-sand the piece.

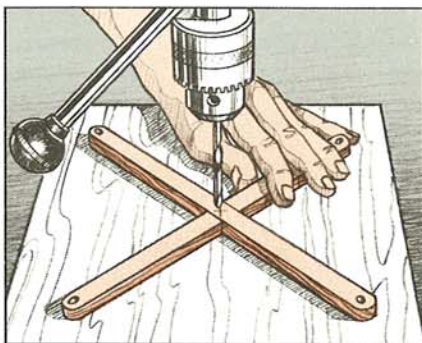
3 Using dimensions in the Seat Detail on the exploded-view drawing, crosscut the four seats (E) to length. Next, mark the location of the two $\frac{15}{16}$ " holes on the top edge, and the $\frac{5}{16}$ " holes on the ends of each seat. Drill the holes. (We used the jig shown *below* to position the piece and hold it square while drilling.) Finish sand all parts.



TIME TO ASSEMBLE THE WHEEL

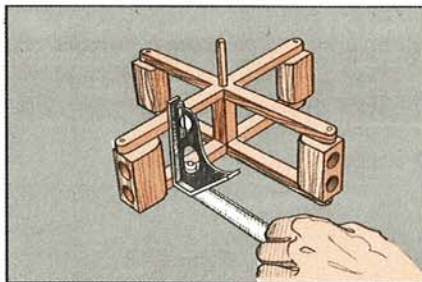
1 Glue, assemble, and clamp both pairs of spokes at the half-lap joints. Square each pair at the corners.

Wipe off any excess glue. After the glue dries, remove the clamps. Mark the centerpoint on each spoke set by striking crisscrossing lines from the spoke corners. Finally, drill a centered $\frac{13}{32}$ " hole through both lap-joints as shown *below*.



2 Cut one $5\frac{1}{2}$ " length of $\frac{3}{8}$ " dowel for the wheel axle. Next, cut eight $\frac{3}{4}$ " lengths of $\frac{1}{4}$ " dowel for the seats. Glue one $\frac{1}{4}$ " dowel in each of the eight holes at the ends of the wheel spokes.

3 Lay one spoke set (outside face down) on a flat surface. Place the $\frac{3}{8}$ " axle dowel in the center hole. Apply glue to one end of the wheel spacer and slip it over the dowel. (Do not glue the dowel.) Let the assembly set until the glue dries.



4 Next, apply glue to the top end of the wheel spacer, then place the second spoke set over the axle dowel (outside face up) and onto the spacer. As you lower the top spoke set in place, position the seats on the $\frac{1}{4}$ " dowels. Now, using a square as shown *above*, align opposing wheel

spokes parallel to one another. When aligned, let the wheel set until the glue dries.

5 Remove the axle dowel from the wheel assembly and glue one end of it in the hole in one upright. Then, glue and clamp that upright in one of the two base notches. Let the glue dry, and remove the clamp. Now, from scrap, cut a spacer as long as the distance between the base notches.

6 Slip a $\frac{3}{8}$ " flat washer over the axle dowel, add the wheel assembly, and now add another washer. (We laid the assembly on its side for this.) Apply glue in the $\frac{3}{8}$ " hole of the second upright and in the remaining base notch. Place the upright's hole over the axle dowel and its bottom in the notch. Clamp the upright at the base. Place the spacer between the uprights (near the ends) and clamp. After the glue dries, remove the clamps and spacer.

7 Apply the finish of your choice. (We left the wood unstained and applied two coats of polyurethane.)

8 Finally, fill the Ferris wheel with Little People (see the Buying Guide for a source) and watch the eyes of those little ones light up. The wooden people come unfinished, but you can give them a lot of character with a few creative strokes of an artist's brush. (A Tole painter provided the finishing touches to ours, painting on faces, hair, arms, hands, and colorful clothing.)

Buying Guide

● **Little People.** Birch, $\frac{7}{8}$ " diameter, $2\frac{1}{4}$ " tall, unfinished. Cat. no. LP1, \$2.90 for 10. Postage and handling \$2. Meisel Hardware Specialties, P.O. Box 70, Mound, MN 55364. Telephone 800/441-9870, in Minnesota, 612/471-8550.



HOLLOW-LOG BANDSAWED BOX



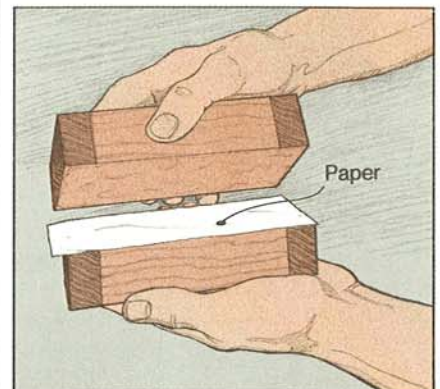
Store your rings, watch, or cuff links in this handsome container, but not before showing it off to your woodworking friends. Measuring six inches long, our oak and walnut bandsawed box features a handy flip-top lid, and a base that's cut from the cylinder's core. Follow along as we unveil the mysteries of its construction.

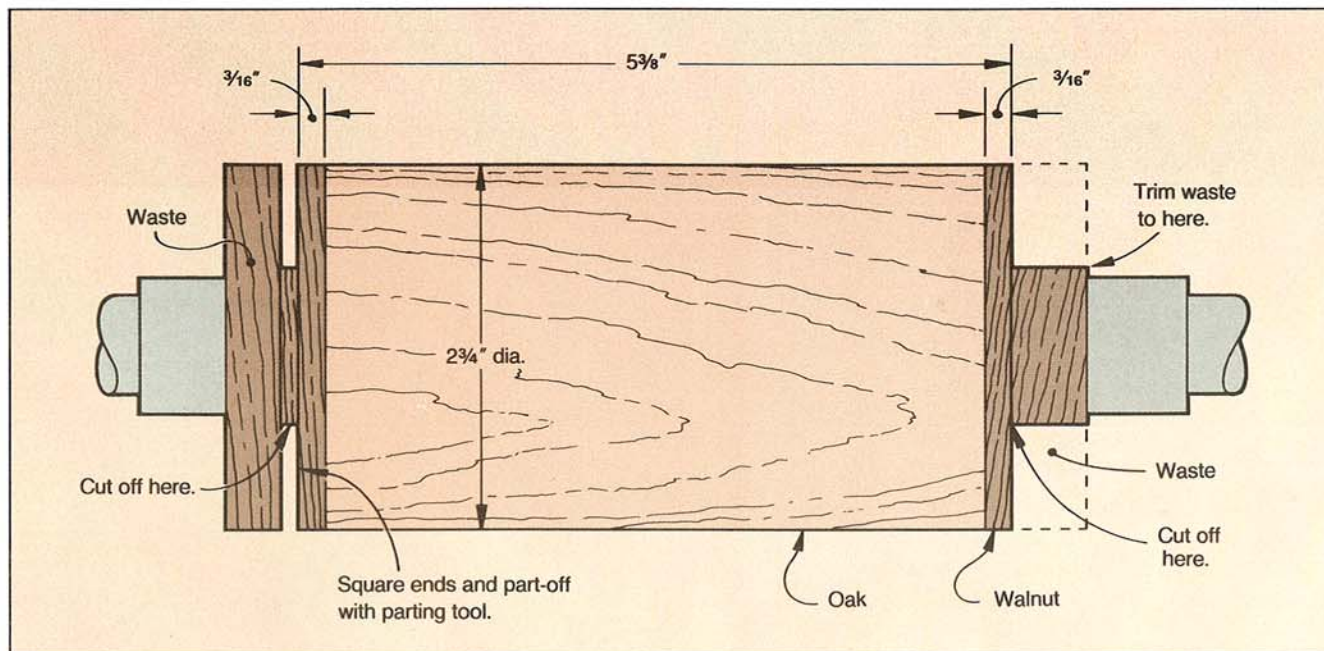
FIRST, PREPARE THE BLANK

1 Select an oak turning blank. (We used a rough-sawn 3x3x12" turning blank. See the Buying Guide for a source.) Plane two adjoining sides of the blank square; then, finish squaring the piece on a table-saw. Next, crosscut the blank to square one end, and crosscut two $\frac{3}{16}$ "-thick square pieces from it for use later. Finally, crosscut your working blank to 5".

2 Rip and crosscut two pieces of $\frac{3}{4}$ " walnut to 3" square. Glue and clamp one to each end of your 5" oak blank. After the glue dries, remove the clamps. Now, rip the 3x6 $\frac{1}{2}$ " working blank into two equal pieces.

3 Glue the blocks back together, sandwiching a piece of writing paper between them as shown *below*. Now, press the two blocks together, applying hand pressure only. (You'll separate the blocks later.) Let the glue dry.

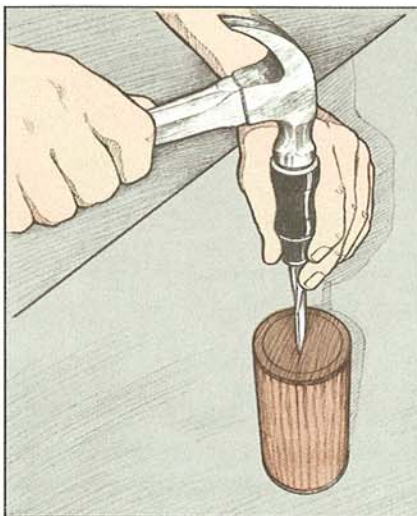




4 Using your tablesaw, square the glued working blank to $2\frac{13}{16}$ ". Next, bevel-cut the corners of the blank on your tablesaw to remove excess wood and help speed up turning of the cylinder.

NEXT, TURN THE BLANK AND TRIM THE CYLINDER

1 Mount the blank between centers on your lathe and turn it to $2\frac{3}{4}$ " diameter. (We used a $\frac{3}{4}$ " gouge, ran the lathe at 600 rpm, and checked the diameter as we worked with our calipers preset at $2\frac{3}{4}$ ".) Using a $\frac{1}{4}$ " parting tool, score the ends and remove the end waste where shown on the Cylinder Drawing above. Make sure you leave $\frac{3}{16}$ " of the walnut on both ends of the oak cylinder. Next, sand the cylinder while it turns. Stop the lathe, place a dark pencil mark in $\frac{1}{4}$ " from the outer edge on the right-hand end. Now, start the lathe, apply a pencil point to that mark, and scribe the cylinder's inside cutoff line. Finally, stop the lathe, remove the cylinder, cut off the end waste on your tablesaw, and sand the cylinder's ends flat.



2 Using a hammer and wide chisel, split the cylinder into two halves at the paper joint as shown above.

3 Adjust the bandsaw table to make certain it's square with the saw blade. Then, stand one of the half-cylinders on end and carefully cut out the core portion as shown above right. (We used a $\frac{1}{8}$ " saw blade.) Repeat the process to saw the other half-cylinder.



4 Next, sand the inside of the cylinders with progressively finer-grit sandpapers. (We stapled sandpaper to a 12" length of pine closet pole, clamped one end of it in a vise, and moved the cutout shell back and forth over the curved sandpaper.) Now, select one of the half-cylinders for the lid (A) and sand a round-over along the hinge edge as shown in the Hinge Detail on the exploded-view drawing on page 18.

Continued

BANDSAWED BOX

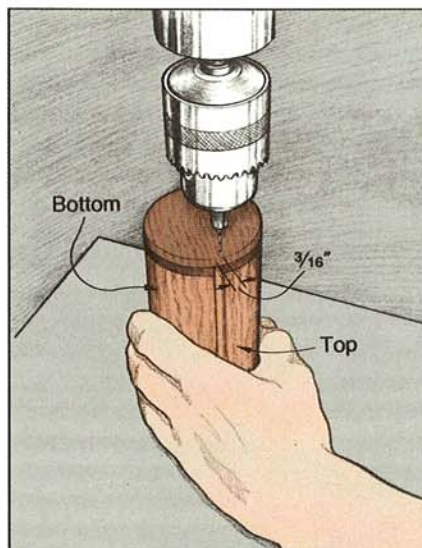
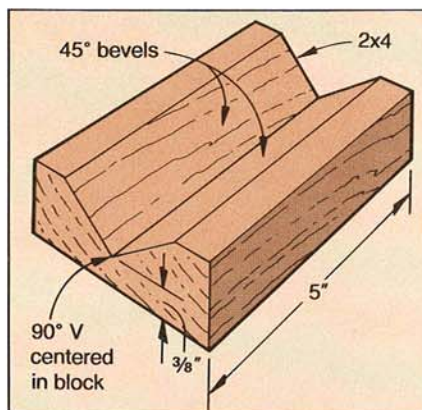
ASSEMBLING AND FINISHING THE BOX

1 Fold a piece of paper to approximately $\frac{1}{32}$ " thickness to use as a spacer along the hinge edge. Now, holding the lid and bottom (B) together, place it on end on one of the previously cut $\frac{3}{16}$ "-thick oak squares as shown at *right*, and draw around the cylinder. Using double-faced tape, stick the marked oak square to the second square, and band-saw the end caps (C) to shape. Sand the surfaces smooth. (We used a portable sander for this.)

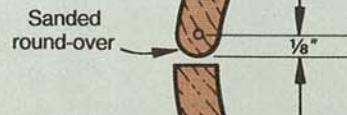
2 Separate the lid and bottom; then, glue and clamp an oak end cap to each end of the bottom half-cylinder. After the glue dries, sand the edges flush with the cylinder wall. Finally, mark the center of the cylinder ends. (We used the 2x4 centering jig shown *center right*.)

3 Select one of the core cutouts to use as the base (D) (see the exploded-view drawing) and sand it. Next, locate the centerpoint on the base piece. Use a combination square to mark a perpendicular centerline on both ends. Then, sand a $\frac{3}{8}$ "-wide flat area the entire length, centering on the centerline. (We used a belt sander.) Using the same technique, sand a similar flat area along the bottom of the box.

4 Chuck a $\frac{1}{16}$ " bit in your drill press. Place the lid on top of the bottom to form a cylinder and insert the paper shim between the joining edges on the hinge side. Sand both ends of the lid for clearance. Drill a 1"-deep hole on each end $\frac{3}{16}$ " from the edge for the hinge as shown at *right*. Now, cut two $1\frac{1}{4}$ "-long pieces of brass wire (available at most hobby shops) for the hinges and file a point on one end of each. Insert the pointed wires into the drilled holes (don't drive them all the way). Then remove the



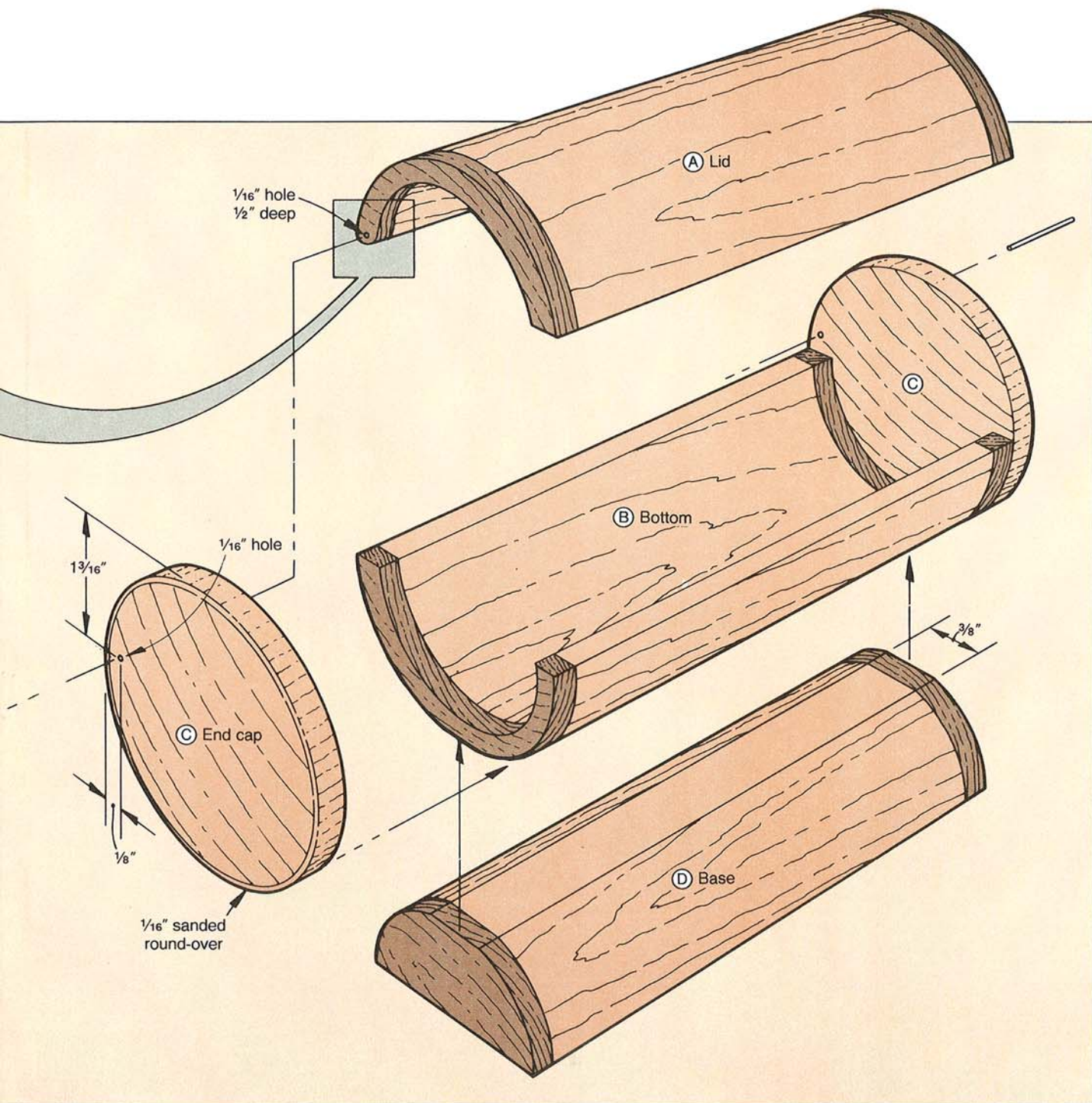
HINGE DETAIL



$\frac{1}{16}$ " brass pin
1 $\frac{1}{4}$ " long

paper shim and sand the end caps flush with the box's outline. Next, sand a slight round-over along the outside edges of the end caps. Finally, finish-sand all parts.

5 Now, remove the two hinge pins and lid. Glue the base to the bottom of the cylinder. (We first sat the box



upside down across a scrap block of wood, applied glue to the base piece, then placed it on top of the box bottom, aligning the centerlines marked on the ends.) Remove any glue squeeze-out. Let the glue dry. (We used masking tape to help hold the base and box together and in place while the glue dried.)

6 Apply the finish. (We applied three coats of satin lacquer; then, we added a coat of semigloss lacquer. We sanded lightly between coats and steelwooled the last coat.)

7 Drive the brass pins in the hinge holes. File the pins flush with the surface of the box ends if needed.

BUYING GUIDE

● **Hardwood turning square.** Red oak, 3x3x12", \$10.95 ppd. Constantine's, 2050 Eastchester Rd., Bronx, NY 10461. Telephone 800-223-8087.
Supplies: Brass wire, finish.

Project Design: Bill Hopkins
Illustrations: Carson Ode
Photograph: Bill Hopkins



BABY GRAND MUSIC BOX

MAKE THE PIANO CASE FIRST

1 Make two photocopies of page 22 with the full-sized piano, keyboard, lid-prop, and cove patterns.

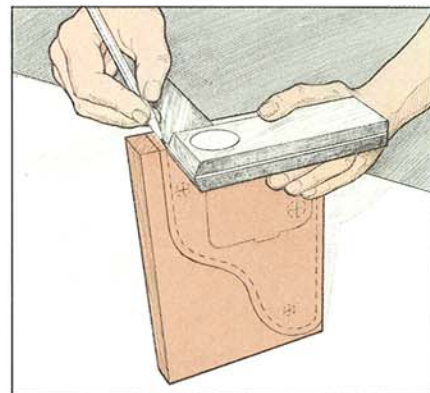
2 Rip and crosscut two pieces of $\frac{3}{4}$ " walnut to $4\frac{3}{4} \times 7$ ". Glue the pieces together face-to-face, align the edges and ends, and then clamp until the glue dries.

3 Plane one edge of the lamination. Then, crosscut one end (to be the keyboard end) square to that edge.

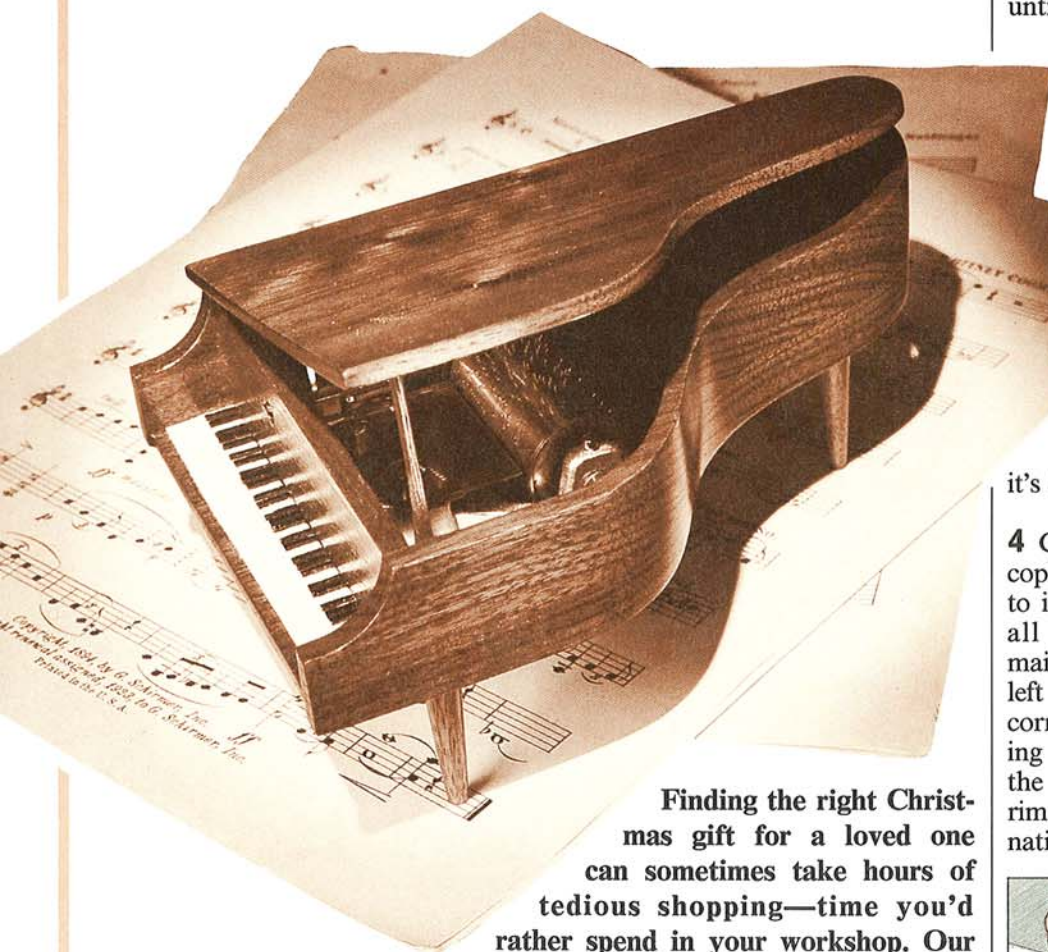
Next, clamp an auxiliary fence to your bandsaw table, and square the table with the saw blade.

Resaw a slice from the lamination to reduce its thickness to $1\frac{5}{16}$ ". Now, sand the cut surface and reduce its final thickness to $1\frac{1}{4}$ ".

4 Cut one of the piano patterns you copied to shape, and spray adhesive to its back. (We cut the pattern so all of the heavy black line remained.) Position the pattern so its left corner aligns with the squared corner on the lamination. Now, using a pencil and try square, extend the lines of the walls of the piano's rim (A) down the front of the lamination as shown *below*.



Finding the right Christmas gift for a loved one can sometimes take hours of tedious shopping—time you'd rather spend in your workshop. Our piano music box just might solve both of these needs for you in one fell swoop. Made from walnut, the easy-to-build piano accepts a 36-note Swiss music movement (See our Buying Guide on page 24) and features a moveable lid and a realistic-looking keyboard. To get started, read through the story and mail-order your materials today.

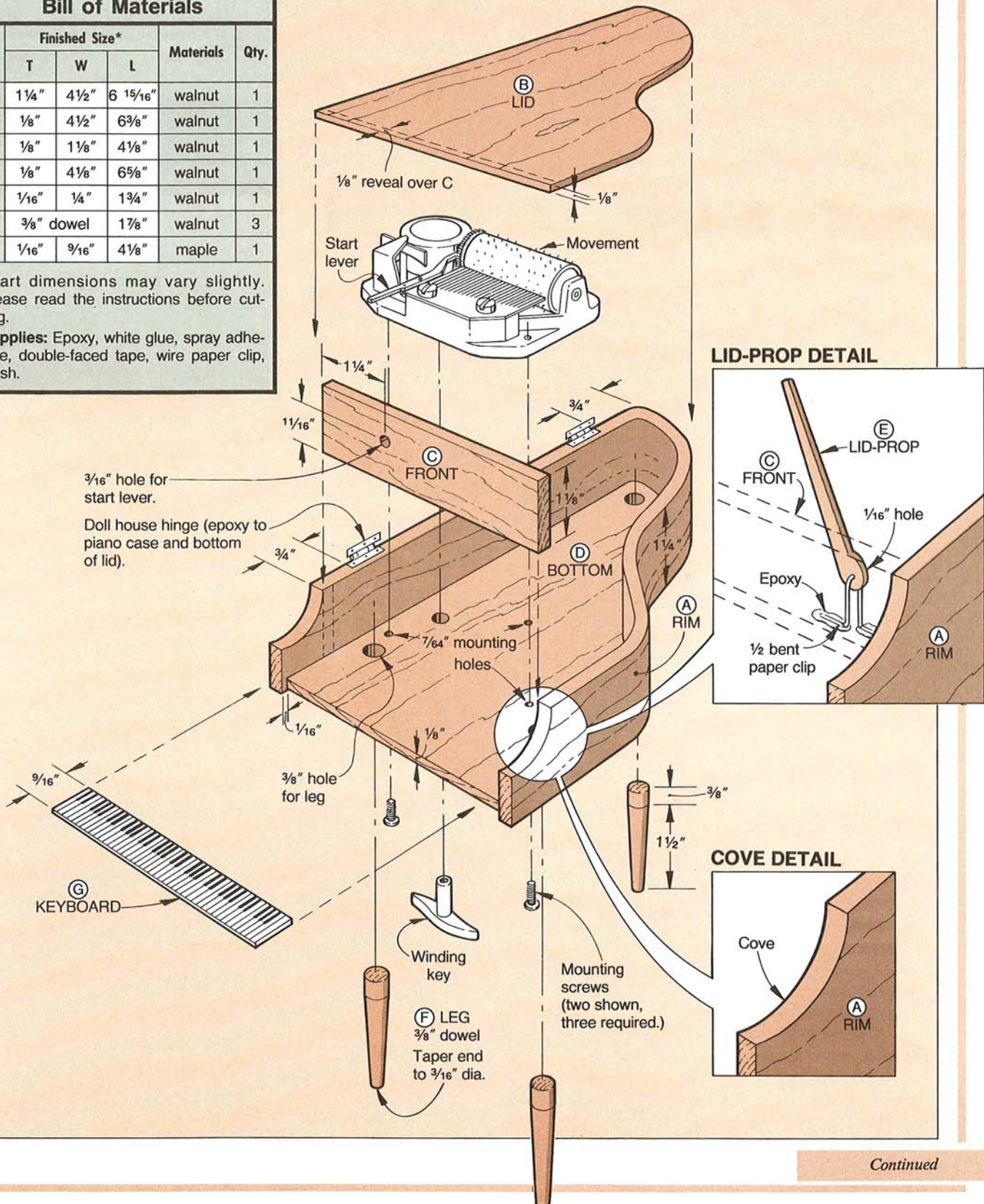


Bill of Materials

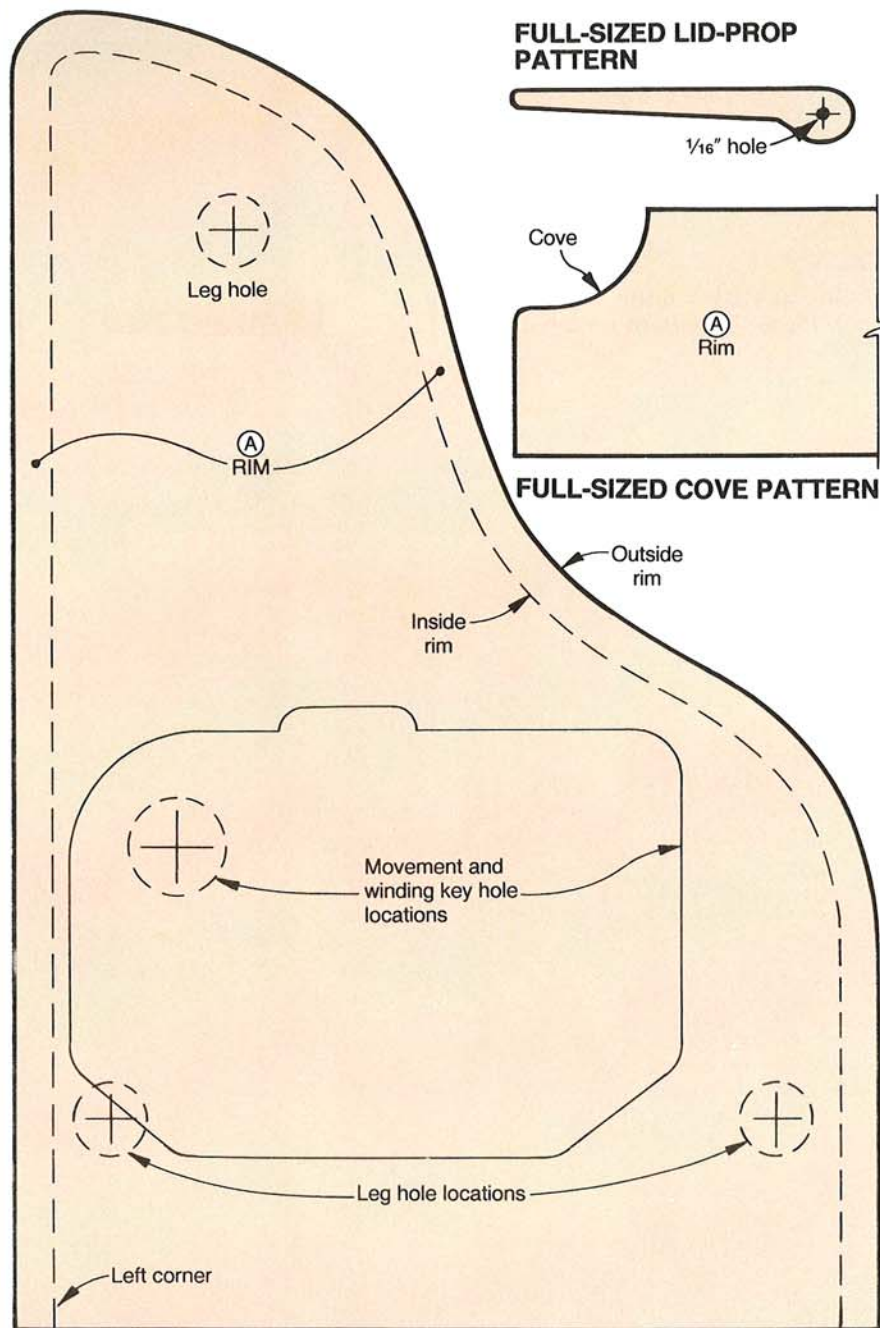
Part	Finished Size*			Materials	Qty.
	T	W	L		
A	1 1/4"	4 1/2"	6 15/16"	walnut	1
B*	1/8"	4 1/2"	6 3/8"	walnut	1
C*	1/8"	1 1/8"	4 1/8"	walnut	1
D*	1/8"	4 1/8"	6 5/8"	walnut	1
E	1/16"	1/4"	1 3/4"	walnut	1
F	3/8" dowel	1 7/8"		walnut	3
G*	1/16"	9 1/16"	4 1/8"	maple	1

*Part dimensions may vary slightly. Please read the instructions before cutting.

Supplies: Epoxy, white glue, spray adhesive, double-faced tape, wire paper clip, finish.



Continued

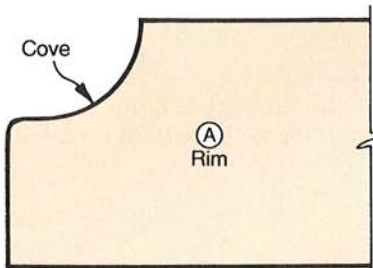
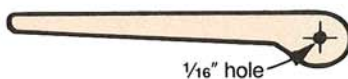


FULL-SIZED PIANO PATTERN

FULL-SIZED KEYBOARD PATTERN



FULL-SIZED LID-PROP PATTERN



FULL-SIZED COVE PATTERN

5 Lay the lamination on its left edge. Cut out the cove pattern, and adhere it to the laminate's edge where shown in the Cove Detail on the exploded-view drawing. Next, cut the radius to shape on a band-saw as shown at *right*. Finally, wrap sandpaper around a 1" dowel and sand the radius cut.

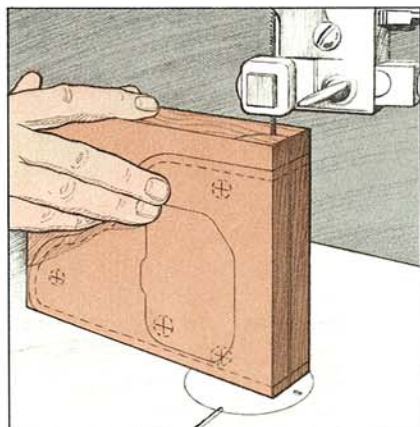
6 For the piano lid (B), crosscut and rip a piece of $\frac{1}{8}$ " walnut to $4\frac{3}{4} \times 7$ ". (See the Buying Guide for our source. We were able to cut the lid, front [C], and bottom [D] pieces from one $\frac{1}{8} \times 6 \times 14$ " piece.) Using double-faced tape, stick the $\frac{1}{8}$ "-thick piece you just cut to the *bottom* of the lamination, aligning it carefully with the lamination's left and front edges.

7 Using a bandsaw equipped with a $\frac{1}{8}$ " blade, cut the piano to shape, following the pattern's continuous *outside* line. (We cut slightly outside the line; then sanded to the line using a 2" sanding drum on our drill press.) Separate the lid from the lamination. Remove the tape.

8 Next, saw along the pattern's *dotted* line through the lamination to cut out the piano rim. Sand the cut surface to remove saw marks.

9 Lay the lid on a flat surface (top-side up) and place the piano rim on top of it. Next, align the outside edge of the left rim with the left edge of the lid and mark along the inside of the rim as shown at *right*. Repeat the procedure to mark the inside of the right rim. Now, measure the distance between these two marks to determine the length of the piano front (C).

10 From $\frac{1}{8}$ "-thick walnut, cut the $1\frac{1}{8}$ "-wide piano front to the length you determined in step 9. Next, using dimensions on the exploded-view drawing, locate and drill the



$\frac{3}{16}$ " hole for the movement's start lever. Now, apply epoxy (we used the 5-minute type) to the ends of the piece, and position it between the two rims where shown on the exploded-view drawing. Wipe off any epoxy squeeze-out, and clamp the assembly until the epoxy cures.

11 Place the piano rim on top of the lid. Align the two parts, and mark the lid where it extends $\frac{1}{8}$ " beyond the piano front (C). Now, crosscut the lid at that point.

12 For the piano bottom (D), rip and crosscut a piece of $\frac{1}{8}$ "-thick walnut to $4\frac{3}{4} \times 7$ ". Place the piece on a flat surface, and position the piano rim on top of it. With a sharp pencil, carefully outline the area inside the piano's rim on the bottom piece.

(See part D on the exploded-view drawing.) Cut the bottom to shape, and dry-fit it inside the piano. Now, mark and crosscut the front edge of the bottom piece so it will be $\frac{1}{16}$ " shorter than the rim.

13 Cut your second copy of the Full-Sized Piano Pattern to shape, cutting along the inside rim (dotted line). Place the pattern on top of the bottom piece, and align. Next, using an awl, mark the centerpoints for the three $\frac{3}{8}$ " leg holes and the $\frac{1}{2}$ " winding key hole. Drill the holes. (We backed the piece with scrap to prevent chip-out when drilling.)

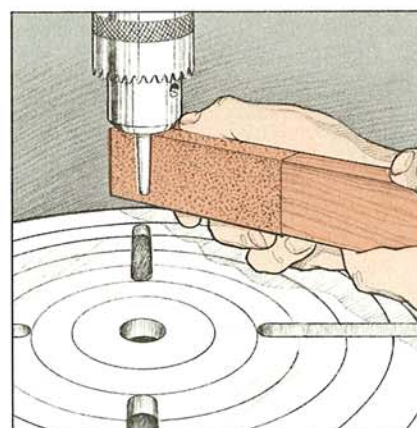
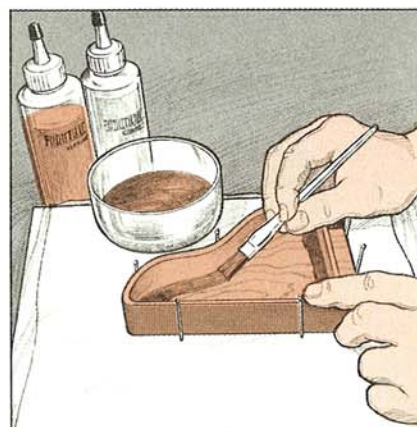
NEXT, ASSEMBLE THE PIANO

1 Cover a piece of plywood or particle board that's larger than the piano with waxed paper. Lay the piano bottom on the paper. Next, lower the rim over the bottom and into place. Now, drive several small finishing nails around the piano to hold the rim and bottom together.

2 Apply epoxy along the inside joint (behind the front board) where the bottom meets the rim as shown *top right*. Let the epoxy cure.

3 Rip a $\frac{1}{16}$ "-thick strip from a 12" length of $\frac{3}{4}$ "-walnut scrap. Next, cut out the copy of the Full-Sized Lid Prop Pattern and adhere it to the strip. Saw the prop (E) to shape. Drill the $\frac{1}{16}$ " hole at the base. Remove the pattern and finish-sand.

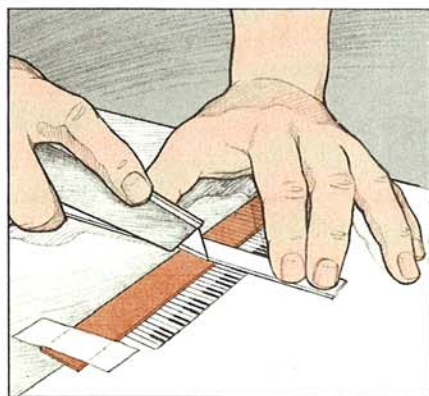
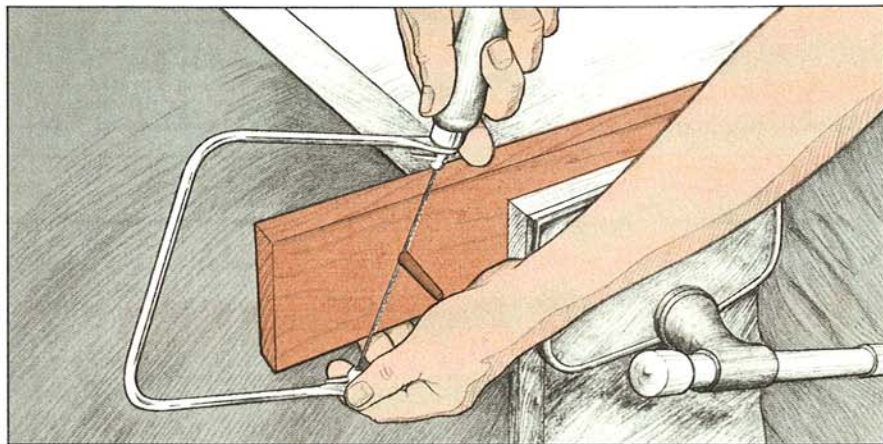
4 Insert a dowel all the way into the chuck of your drill press, and mark the dowel where it extends from the chuck. Next, remove the dowel from the chuck, measure the length held by the chuck, and add $1\frac{1}{2}$ " to that dimension. Now, cut three $\frac{3}{8}$ " dowels to that calculated length. Finally, drill a $\frac{3}{16}$ " hole in a piece of scrap. (You'll use this hole to size the leg taper.)



5 To shape the piano legs (F), chuck one of the leg dowels you just cut in the drill press. Turn on the drill press, and using sandpaper on a wooden block, sand a gradual taper on the dowel over the entire exposed length toward the tip as shown *above*. (We used 80-, 120-, and 220-grit sandpaper.) Stop sanding when the tip just fits into the $\frac{3}{16}$ " hole in the scrap piece. Shape the other two legs the same way.

6 To cut the legs to final length, first drill a $\frac{3}{8}$ " hole in scrap. Then, one by one, insert the legs through the hole $1\frac{7}{8}$ ", and cut them off flush with a saw as shown on the top of page 24. Apply glue to the ends of the legs and insert them into the holes in the piano bottom. Now, let the piano set until the glue dries.

Continued



7 Finish-sand all parts.

8 To attach the lid, position the two hinges where shown on the exploded-view drawing, and epoxy them to the piano case. (See the Buying Guide for our hinge source.) Wipe off excess epoxy. After the epoxy cures, place waxed paper or cellophane tape over the glued leaf-half, and lower the hinge's adjoining leaf-half. Coat both hinges with epoxy, and carefully lay the lid on top of them, aligning it with the rim.

NOW, MAKE THE KEYBOARD AND FINISH THE PIANO

1 To make the keyboard (G), tape the photocopy of the keyboard pattern to a piece of plywood or particleboard. Next, from a 12" length of $\frac{3}{4}$ " maple, rip a $\frac{1}{16}$ "-thick strip.

Sand the strip, and crosscut a 6" length from it. Butt the strip against the keyboard pattern as shown at left, and tape it in place. Now, lay a small straightedge across the first line on the pattern and across the thin strip. Using a sharp utility knife, lightly score the thin maple. Score the remaining keys.

2 From black veneer (see the Buying Guide for our source), cut 30— $\frac{1}{16} \times \frac{5}{16}$ " black keys. (Again, we used a utility knife to cut the veneer.) Apply glue to the back of each key (we used white woodworkers' glue), and position them on the keyboard following the pattern. Let the glue dry.

3 Trim the keyboard to $\frac{9}{16}$ " width. Trim the ends to fit the keyboard along the piano's front. Finally, glue it in position.

4 Clip off one half of a small wire paper clip and bend it to the shape shown in the Lid-Prop Detail on the exploded-view drawing. Thread the wire through the hole in the lid prop. Epoxy the bent clip to the piano bottom where shown on the exploded-view drawing.

5 Apply the finish of your choice. (We sprayed two coats of sealer, sanding between coats to level the

surface. Next, we applied the final coat, let it dry, and rubbed it out with steel wool and wax.)

6 Position the music movement in the piano case so the winding stem fits through the bottom hole and the start lever moves freely in the hole in the piano's front. Test the movement's operation. Next, using a nail, mark the three mounting screw locations. Remove the movement, and drill the three $\frac{7}{64}$ " screw holes through the case bottom, backing it with scrap to prevent chip-out. Finally, mount the movement again, and attach the winding key.

Note: If your $\frac{1}{8}$ "-thick piano lid shows any tendency to warp, cut a $\frac{1}{4} \times \frac{1}{4} \times 3\frac{1}{2}$ " walnut crossbar. Sand a 45° bevel on each end. Then, epoxy it crosswise on the underside of the lid, starting $1\frac{1}{4}$ " back from the front edge. Clamp until the glue cures.

Buying Guide

• **$\frac{1}{8}$ " walnut and $\frac{1}{40}$ " veneer.** One $\frac{1}{8} \times 8 \times 14$ " black walnut for piano lid, bottom, and front, and one $\frac{1}{40} \times \frac{3}{16} \times 20$ " black pear wood for black piano keys. Price: \$7.50 plus \$3.50 shipping and handling. From: A Woodworker's Dream, 510 Sycamore St., P.O. Box 329, Nazareth, PA 18064. Phone: 800/247-6931, in Pennsylvania, call 215/759-2837.

• **Swiss music box movement.** 3670X series (we used 3673X which plays Lara's Theme and Edelweiss). Price: \$55 plus \$2.50 postage and handling. From: Mason & Sullivan, Dept. 2366, 586 Higgins Crowell Rd., W. Yarmouth, MA 02673. Phone: 617/778-1056.

• **Hinges.** Doll house H hinge, brass, $\frac{9}{16}$ " long, catalog no. 6511. Price: \$2.10 for 10. From: Meisel Hardware Specialties, P.O. Box 70, Mound, MN 55364. Phone: 800/441-9870, in Minnesota 612/471-8550.

Project Design: James R. Downing
Illustrations: Carson Ode
Photograph: Jim Kascoutas



From Our Shop to Yours

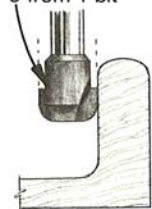
Dear Reader,

Every time I work through a router project, I learn something new about this marvelous tool. I discover jigs and specialty bits I never knew existed, and watch my router switch jobs like a utility player on a baseball team.

Perhaps one of the best routing experiences of my life occurred while working on the lazy Susan in this, our holiday issue of *WEEKEND WOODWORKING PROJECTS*. (See pages 8 – 11.) After settling on a project design, Project Builder Terri Fenimore, Projects Editor Chuck Sommers, and I met to hash over our construction approach.

We knew our router would play the hero in the story, but one routing operation really stumped us.

3 from 1 bit



It called for curved inside corners between the straight walls and flat bottoms of the snack compartments.

During the project's use, these curved corners let your fingers easily scoop nuts and other snacks out of the compartments. We asked,

"Should we rout the compartment perimeters with a core box bit to round inside corners, and form the bottoms with a straight bit?"

This two-bit process (pardon the pun) troubled us because of the cost of buying two bits, and the extra time needed to change bits. We realized, too, the difficulty of setting the second bit at exactly the same depth as the first. Any difference would have to be sanded away.

At this point, we sat in the shop in gloomy silence, paging through all our tool supply catalogs. I remember wondering if we should nix the project and turn our attention to a replacement. Then, Chuck broke the silence. "Here we go," he said,

laying his catalog on the table and pointing to a small photograph. We found ourselves staring at an item called a 3 from 1 router bit, *left*, that, according to the catalog description, cut straight walls, rounded corners, and flat bottoms in one pass. It was a miracle!

We thanked the patron saint of woodworking and ordered the bit over the phone within the hour. When the bit arrived a few days later, we gave it a trial run. It lived up to its billing and we were in woodworkers' heaven. It was perfect for routing the snack compartments, and the project turned out exactly as planned.

We think you'll find the lazy Susan and our other five projects perfect for yuletide celebrating and gift-giving. Enjoy your holiday season.

Jim Harrold
Managing Editor

Check Out These Great Tips

- Dadoing with a wobble blade—page 14.
- How to laminate wood pieces together for temporary needs—page 16.
- Sanding tapers on thin stock—page 23.

Note: To find the tips quickly, turn to the above pages and look for the tinted step numbers.

CORNER

READER'S



Because this is your magazine, it's important that you have an opportunity to sound off. Here, you can register your suggestions, criticisms, and, if you wish, a kind word or two. We may not be able to publish every letter, but we'll get in what we can. Send your letters to:

Reader's Corner

WEEKEND WOODWORKING PROJECTS

Locust at 17th

Des Moines, IA 50336.

FLYING DUCK FINDS A NEW HOME

The sportsman's coat rack in the May 1988 issue of **WEEKEND WOODWORKING PROJECTS** was a joy. The technique for making the duck by stacking and cutting three different woods is a great idea. Can you help with further projects utilizing this same idea?



Incidentally, instead of using the duck as a coat rack, we made several and used them as push plates on two-way swinging doors. They're a great addition. Many thanks

--Saunders M. Bridges,
Florence, SC

Saunders, your letter was a delight to read. The aim of our magazine is to give readers quality designs and to teach woodworking. You've confirmed these goals, and then took one of our designs a step farther! Regarding your question, we intend to do another project similar to the coat rack, but we've plenty of other good techniques and projects waiting in the wings, too.

A PRIMER ON PATTERNS

Your magazine suits me just fine. But I have a suggestion for the architects of future projects. I ask that you don't use carbon paper for transferring designs to wood from patterns. True, any marks can be removed with solvents, but they discolor fine woods such as maple.

I recommend using templates and a medium hard pencil that leaves lines you can erase.

--John B. Thresher, West Nyack, NY

John, thanks for your suggestion. You prompted me to go into the shop and try several approaches to removing carbon paper lines on wood. Here's what I found. While solvents proved ineffective, I was able to remove a carbon line on maple by sanding it lightly with fine-grade sandpaper.

Though I think your technique works well, making a tracing template adds another step to the construction process.

Another technique you may want to explore involves photocopying a pattern from a magazine and applying the copy to the wood with spray adhesive. More and more businesses have coin-operated copiers one can use, or offer the service at a reasonable cost to their customers.

Or, consider tracing the pattern using a pantograph. (See right.) With this instrument you can draw the pattern onto the stock at the same size, enlarge it, or reduce it if you desire, and it uses lead.

