WEEKEND WOODWORKING

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Windy-day whirligig
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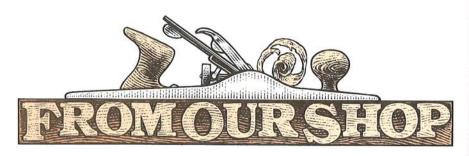
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CHECK OUT THESE TIPS AND JIGS

 Using sandpaper strips to sand hard-to-get-at places—page 8.

How to make a back-cut to create relief on a carving—page 14.
How to drill perpendicular holes in

the edge of a disc—page 25.

Simple jig for slicing dowels on a

bandsaw—page 26.

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

Dear Reader,

In past issues I've crowed about some of the great traits woodworkers possess. I've bragged about our high regard for craftsmanship, and how many of us lovingly share the wooden things we make with those around us. Though F.B.I. agents might find us dreadfully dull, we can be proud of this profile, and of our woodworking accomplishments.

Beyond these more obvious traits, however, there lies one that too frequently goes unnoticed. Can you guess what it might be? If not, take a moment to glance at the projects on pages 16 and 26 (our rocking cow

and garden whirligig).

If you guessed "humor" as the mystery trait, you're right! How many times have you strolled through a carving or craft show and found yourself chuckling because some hilarious woodworking project tickled your funny bone? I'll never forget the first time I stumbled onto a wood "tax shelter," a project which consists of a miniature lean-to housing a handful of thumbtacks.

As it turns out, wood is a terrific medium in which to do comedy; unlike cartoons, it allows you to work in three dimensions. And even if amusing people remains the primary purpose of a woodworking project, I say bravo! The world can never have too much joy and laughter.

Projects with a punch line

If you, too, would like to stir a little laughter, I strongly suggest building either the rocking cow or garden whirligig. Not only are they easy and inexpensive to make, (provided you have a scrollsaw or bandsaw), but you'll find both to be genuine crowd pleasers, too.

Like many humourous woodworking projects, the punch lines for our two lie in their actions. At rest, for instance, the old spotted cow serves as a decorative country accent. But give it a rock, and you have a comic beast whose tail, udder, and head swing wildly about from side to side. And with a light breeze, you can share in our gardener's frustration as he tries futilely to scare off a pair of pesky rabbits with his hoe. (Here, we rely on a propeller and cam to initiate the action.)

Calling all comedians

Should these two projects tickle your funny bone, let us know, and we'll work to find a few more for future issues. Or, if you're a woodworking comedian who has made a project like the ones featured here, send us a picture of it. Who knows, if we like it enough to use in the magazine, we'll pay you for the idea so you can laugh all the way to the bank.

Jim Harrold Managing Editor

MARCH • 1990 VOL 3, NO. 2, ISSUE 14





MUSICAL TONE BOX

Made from cherry and maple, this beautiful hollow-box percussion instrument sends haunting musical tones into the air when struck. We made ours with dovetail joints, but half-lap and butt joints also work.

BIG-HIT BASEBALL BAT If there's a little slugger in the

family, do him or her a good turn by shaping this 29"-long home run king before the start of spring training.



WEEKENDS OF WOODWORKING ENTERTAINMENT

ELEGANT **CARVED SPOON**

Looking for a fun-filled day of carving? Check out our exclusive stacked-hearts spoon design from artist and woodcarver Fern Weber.



appreciate the humor of this good-natured holstein. Just tip the rocker and watch her tail, udder, and head swing. Find full-sized patterns

on pages 18-19.





24 WINDY-DAY WHIRLIGIG

Here's an outdoor project that offers joy long after you make it. Our colorful whirligig design spins into action with each gust of wind, and features the comical scene of a gardener chasing rabbits with his hoe.

Full-Sized Patterns
Speed the Work!

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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 wood project-directions, illustrations, and bill of materials—to make sure the instructions we provide you are clear, concise, and complete.

The Staff of Weekend Woodworking Projects"

MUSICAL TONE BOX

IT SOUNDS AS GOOD AS IT LOOKS!



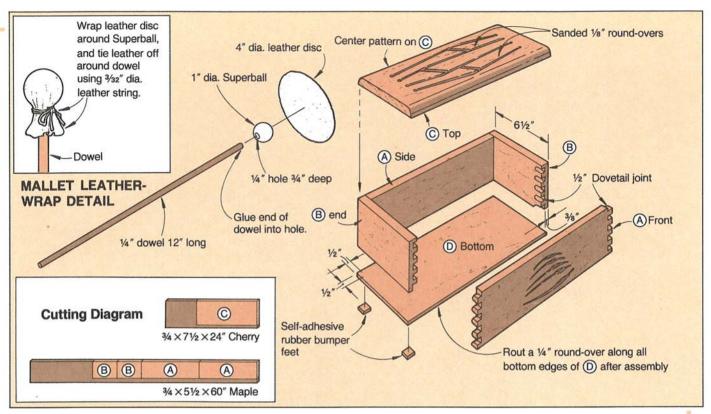
Early wooden drums, found on almost every continent, were typically hollowed-out logs. Our ancestors used them for ceremony and communication. Though the modern version, shown above, offers the same rich sounds, it's much better looking, and a lot more fun to make. Expert tone-box designer Gary Damaskos created the design for WEEKEND WOODWORKING PROJECTS. He recommends using 3/4"-thick native hardwoods for the box sides and top. In this project we'll introduce you to dovetail joinery. If you'd rather avoid the dovetail joints, Gary assured us that butt and half-lap joints on the box work equally well.

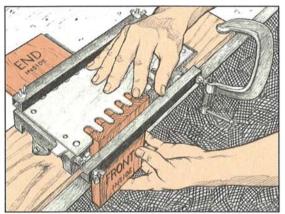
WE'LL START BY CUTTING THE BOX PARTS

- 1 Select the wood for the tone box, picking the straightest, flattest boards you can. (We chose cherry for the top, maple for the sides and ends, and birch plywood for the bottom.) See the Cutting Diagram and Bill of Materials on page 7.
- 2 Square the maple stock, and then rip it to $4\frac{1}{2}$ " wide. Crosscut two $15\frac{1}{4}$ "-long pieces from the board for the sides (A), and two $6\frac{1}{2}$ "-long pieces for the ends (B). Crosscut two 6"-long pieces to use for testing the dovetail setup later.
- 3 For the top (C), square the $\frac{3}{4}$ " cherry stock, and then rip and crosscut one $6\frac{1}{2} \times 16$ " piece from it.
- **4** Cut the $\frac{1}{4}$ " plywood bottom (D) to $6\frac{1}{2} \times 16$ ". (We purchased a 12×24 " piece at a hobby shop.)

NEXT, CUT THE DOVETAILS

- 1 Assemble your dovetail jig. (For this box, we used a Vermont-American jig with its ½" flush-joint template, and a ½" dovetail bit.) If you are not real familiar with dovetailing, we recommend you read the manual that comes with your jig before attempting to rout the joints. Follow the manual and set up your jig to cut ½" dovetail joints.
- **2** To orient the tone box for dovetailing, think of the box sides (A) as drawer sides, and the box ends (B) as drawer fronts. Label the pieces, mark the inside faces, and number the mating corners as shown on the exploded-view drawing *opposite*.
- 3 Use the two 6"-long maple pieces you cut earlier and make a test joint of corner 1. First, clamp the left or front side test piece vertically in the jig, with the inside surface facing out. Butt it against the left side stop (as you face it). Extend the piece





½" above the top of the base. Next, place the *end* piece *horizontally* under the template, with the *inside* surface facing *up*. Butt it against the side piece and the left top stop, and clamp. Now, move the side piece up flush with the top surface of the end piece as shown *above*, and clamp.

- 4 Install a 7/16" guide bushing and a 1/2" dovetail bit on your router. Set the bit to the depth specified in the manual. Rout the joint, cutting from left to right.
- **5** Remove both pieces from the jig, and assemble the joint to test the fit. If the joint fits too loosely, increase

the bit's depth slightly (about ½64"). If it fits too tightly, decrease the bit depth. If the pins (triangular-shaped fingers left on the ends after routing) recess into the sockets (triangular-shaped openings cut into ends), adjust the template forward (toward you) on the base. If the pins protrude from the sockets, move the template farther back on the base so

the bit can cut farther into the end piece. Make the adjustments, and retest the joints until correct.

6 Dovetail the parts. Rout corner 1, and then corner 3 on the left side of the jig. Next, switch to the right side of the jig and make a test joint to check it. Rout corner 2, and then corner 4 on the right side.

CUT THE SLOTS NEXT

- 1 Using carbon paper or a photocopier, make copies of the speaker and top patterns on page 9.
- 2 Lightly mark centerlines for both length and width on the front side

piece. Apply spray adhesive to the back of the speaker pattern. Adhere the pattern to the front piece, aligning the pattern centerlines with those on the front. (You may trace the pattern directly onto the piece.)

- **3** Using the same technique, transfer the top pattern to the top surface of the cherry piece.
- 4 With a 1/8" bit in your drill press, carefully drill through the five start holes marked on the speaker pattern. (We drilled several overlapping holes to accommodate the saw's blade. We also backed the piece with scrap when drilling to prevent

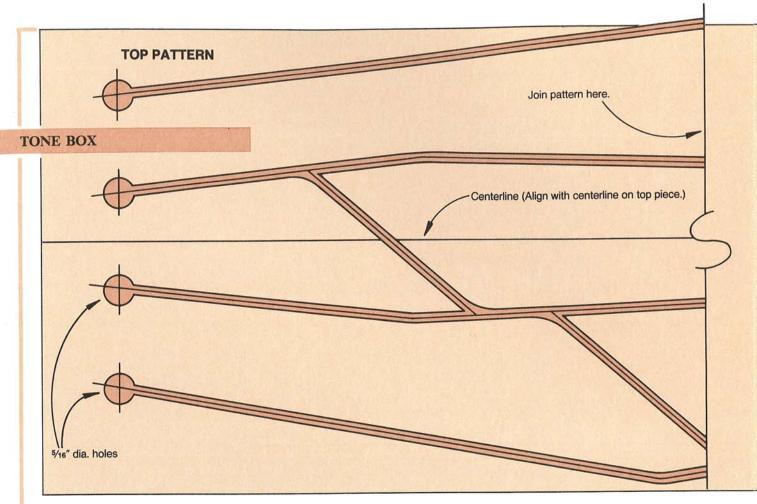
Bill of Materials						
Part	Finished Size			±		
run	T	W	L	Matt	Qty.	
A side	3/4"	41/2"	15¼"	М	2	
B end	3/4"	41/2"	61/2"	М	2	
C top	3/4"	61/2"	16"	С	1	
D bottom	1/4"	61/2"	16"	BP	1	

Material key: M-maple, C-cherry, BP-birch plywood.

Supplies: 2-1"-diameter Superballs, ¼" dowel, kidskin leather, ¾2" leather string, 4-self-adhesive rubber bumpers.

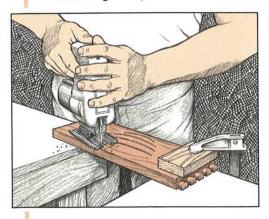
Project Design: Gary Damaskos; Portland, Oreg.

Illustrations: Kim Downing; Carson Ode Photograph: Jim Kascoutas



chip-out.) Next, clamp the board, and using a portable jigsaw, saw the five lines as shown *below*. Always let the saw's blade come to a stop before lifting it from the slot. Make the slots one blade wide except where pattern shows them wider.

5 Saw the slots in the top. (We used a 5/16" bit to drill the eight end holes. Then, we made the long, straight cuts between the end holes, and finished by making the diagonal connecting cuts.)

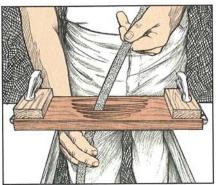


6 Sand the edges of the slots in both pieces as shown at *right* to round them over. (Shaping the edges of these cuts requires a lot of sanding. We used ¾"-wide strips cut from a belt-sander belt. You can use strips of cloth- or paper-backed sandpaper, and then apply strips of masking tape to the sandpaper to make them more durable.) Start with 100- or 120-grit sandpaper and finish with 220-grit sandpaper.

ONE BOX, NOW READY FOR ASSEMBLY

1 Apply glue (we used yellow woodworker's glue) to the dovetail joints, and assemble the sides and ends. Tap the joints tight with a mallet and block. Wipe off any glue squeeze-out with a damp cloth. Clamp until the glue cures. (We placed small wood pads between the clamps and the wood parts.)

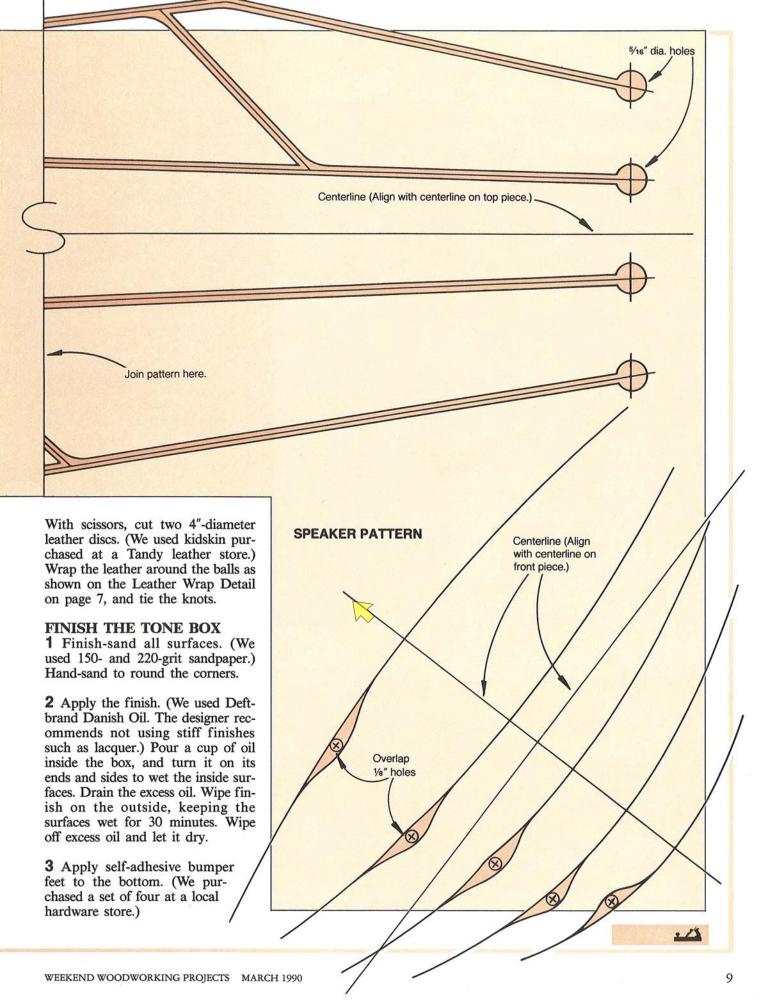
2 Glue the top and bottom pieces to the side assembly, and clamp.



Wipe off glue squeeze-out. Remove the clamps after the glue dries. Now, belt-sand all edges flush.

3 With a router and a ½" round-over bit, round the edges along the top. Switch to a ¼" round-over bit and round over the edges along the bottom. Do not round over the edges of the sides or ends.

4 Make two mallets, using the Mallet Drawing on page 7. (We bought the balls at a toy store.)



BASEBALL BAT

FOR YOUNG SLUGGERS



When we decided to feature a baseball bat in WEEKEND WOODWORKING PROJECTS, we went straight to the experts, Hillerich and Bradsby Co., the makers of the renowned Louisville Slugger®. The folks at H&B turn wood bats for a living (among other things), making over a million of them a year from ash. Why Ash? It's because this wood offers the proper amount of tensile strength, weight, and resiliency desired in a finished bat. In short, ash puts 'em on base and drives 'em home. If you can't buy ash locally, use our Buying Guide to mail order a turning square or two.

TURN THE SQUARE ROUND

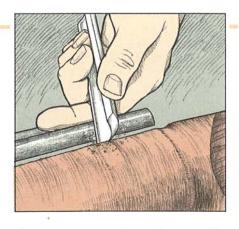
- 1 Start with a $3\times3''$ ash turning square at least 31" long. (See the Buying Guide for our source.)
- **2** Mark diagonals on each end of the square to locate centers. Next, mount the square between centers on your lathe.
- 3 Using a gouge or a skew, and a speed of about 800—1,000 rpm, round down the turning stock to a 2¾"-diameter cylinder. See the drawing *upper right* for tool position if you round down the stock with a gouge. After rounding the stock, stop the lathe and move the tool rest closer to the cylinder. (For long smooth cuts and less readjusting, we used the longest [12"] tool rest that we had available.)

NEXT, TURN THE BAT TO ROUGH SHAPE

- **1** Refer to the dimensions on Step 1 of the Two-Step Drawing *opposite*, and mark the depth-reference points on the cylinder where shown.
- **2** Using a parting tool and an outside caliper, make all of the depthreference cuts into the cylinder on the marks you just scribed. While making these cuts, stop the lathe frequently and check the diameter of the cylinder within each cut with the caliper. *Do not* cut too deeply. Allow extra stock for the finish cuts, and

sanding.

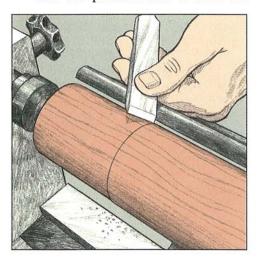
- 3 Remove the wood between the reference cuts. Again, do not cut deeper than the reference cuts at this time. (As shown at *right*, we used a 1" skew chisel for this. A spindle gouge would also work.)
- **4** Using the skew or a spindle gouge, form the knob on the handle end. Next, move the tool rest to



the opposite end, and carefully round-over the fat end of the bat. Leave the tenons on each end of the bat (ours measured about 1¼" in diameter). You'll remove them later.

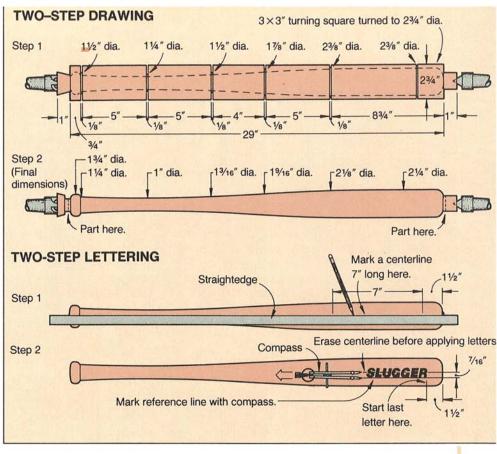
MAKE THE FINAL CUTS, AND SAND THE BAT

- 1 Increase lathe speed to 1,200-1,500 rpm, and make long, smooth finish cuts with the skew. Stop frequently to check the bat diameters with an outside caliper against the final dimensions shown on the Step 2 drawing, upper right.
- **2** Machine-sand the bat. (We chucked a 2" flexible rubber disc into our portable drill to sand the



bat as shown at *right*. Hold your drill so the disc rotates *into* the turning as the latter spins.) Or, hand-sand the bat.

3 Make the parting cuts at each end of the bat. (We worked back and forth until each tenon measured less than ½" diameter. Next, we

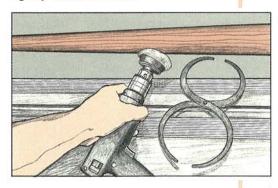


sanded as much of the ends as we could, then stopped the lathe and finished cutting the tenons with a fine-toothed saw.) Finally, finishsand the tenons flush with the ends.

4 To apply the SLUGGER® name (see the Buying Guide for our source, or buy a sheet of similar dry-transfer letters at an art supply store), lightly mark a 7"-long reference centerline on the face grain at the fat end of the bat. Step 1 on the Two-Step Lettering Drawing above shows how we did this. Next, mark a line 7/16" below the centerline where shown on the Step 2 drawing. Now, scribe a perpendicular start line 1½" from the end of the bat. Erase the centerline.

5 Place the sheet with the name SLUGGER® over the bat and align the bottoms of the letters along the reference line, and the letter R with the start line. Tape the sheet in place with masking tape. Next, carefully rub the face of the letter R with the burnishing tool provided to transfer it onto the bat. Transfer the remaining letters onto the bat using the same technique. Erase the lines.

6 Apply the finish. (We sprayed on three coats of exterior polyurethane. Apply light coats so you do not disturb the lettering.) Sand the finish lightly between coats.



BUYING GUIDE

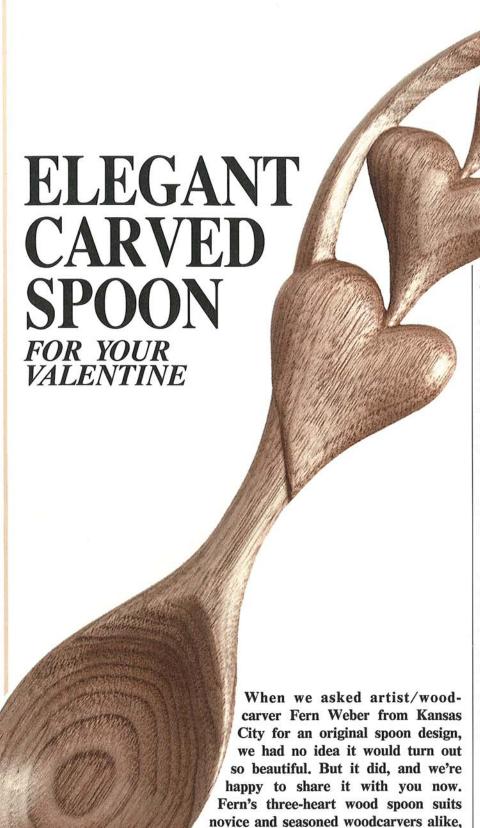
● Ash turning square. 3×3×36" ash turning square. Order no. WA3336, \$23.50 ppd. Constantines, 2050 East-chester Road, Bronx, NY 10461.

● Letters and tool. Two SLUGGER® emblems (dry-transfer letters of 84 point, Helvetica Bold Italic), burnishing tool, and application instructions. \$4.95 ppd. The Art Store, 600 Harding Rd., Des Moines, IA 50312. SLUGGER® is a registered trademark of the Hillerich and Bradsby Company, Louisville, KY.

Supplies: Polyurethane finish.

2/3

Project Design: Marlen Kemmet, Des Moines, Ia. Illustrations: Kim Downing; Carson Ode Photograph: Jim Kascoutas



taking about a day to complete with only

a minimum number of carving tools. Find

everything you need in the next four pages.

Note: If you do
not own a
bandsaw or
scrollsaw, spoon
designer Fern
Weber will sell you a
precut blank at a reasonable
price. (See the Buying
Guide.) If you buy a precut
blank, you can skip the first
five steps.

FIRST, WE'LL MAKE THE BLANK

- 1 Using carbon paper or a photocopier, make a copy of the two Spoon Blank patterns shown on page 15. (The face pattern has been flopped because you'll apply it to the backside of the spoon blank.) With an X-acto knife, trim along the straight line of the Side View. (We used a ruler to guide the knife.) Now, rough-cut around the Back View, trimming closely along the tip of the bowl. Set the patterns aside.
- **2** Rip and crosscut a piece of 3/4" walnut or butternut (we used the latter) to 3" wide by 12" long.
- 3 Adhere the Side-View pattern onto one edge of the blank, aligning as indicated on the pattern. Next, clamp a fence to your bandsaw's table 3/8" from the blade. Using a 1/4" bandsaw blade, saw the blank to shape, starting on the handle end, and carefully cutting on the outside of the line. Just before you reach the curve in the pattern, turn the saw off and remove the fence. Insert a small nail in the saw kerf to prevent binding, turn on the bandsaw, and make the curved cut.
- **4** Spray adhesive to the back of the Back-View pattern, and adhere it to the bandsawed surface of the blank. Align the pattern at the thickest end, as shown at *right*. Be sure to center the spoon between the edges of the workpiece.

5 Drill ¼" holes through the blank where indicated on the pattern. Turn the patterned face of the blank up, insert a scrollsaw blade through one of the holes, and cut out the opening. Cut out the other opening the same way. Remove the patterns. (We used lacquer thinner.)

TIME TO START CARVING

1 Pencil a line around the spoon's perimeter to mark the center on the edge of the spoon's handle and hearts. (We held the pencil at a fixed angle, and rested the bottom edge of the spoon on the index finger as shown at *right*.) Pencil in the heart outlines, and the dotted line for the spoon bowl on the top face of the blank (see pattern), staying approximately ½" in from the edge.

Note: To carve the spoon, we used a ½"-wide #7 palm gouge, a wood carving knife, and a round riffler file.



Buying Guide

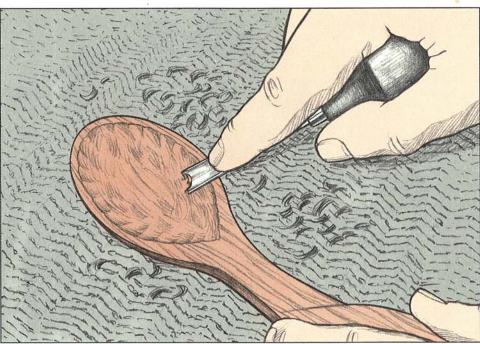
• Spoon Blanks. Specify walnut or butternut. \$8.00 per blank. Include \$2.00 for shipping and handling. Send check to: Fern Weber, 402 N.E. 67th Terr., Kansas City, MO 64118. Or phone 1-816-436-0441.

● Carving tools. A #7 ½" gouge, \$11.95. Wood carving knife #58, \$8.75. Round riffler file #R-1, \$10.50. Include \$2.00 for shipping. Order from: Freeborn's Woodcarving, 7909 W. 80th Terr., Overland Park, KS 66204. Or call 1-913-642-4976. See the Buying Guide below left, for the address of a supplier if you wish to order any of these tools.

2 Holding the spoon handle firmly, scoop out the bowl area with the

gouge. Start at the rim of the bowl defined by the dotted line on the pattern, and taper the bowl's interior wall to a depth of ½" at the center as you work. (See *below*.) To avoid lifting long splinters of wood,

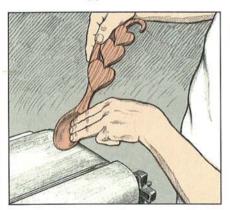


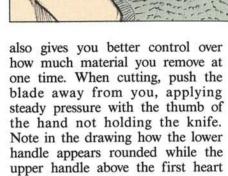


CARVED SPOON

make fine cuts and use the gouge's cutting edge across the grain as much as possible.

- **3** Shape the rounded bottom of the spoon's bowl either with your carving knife or with a stationary belt sander as shown *below*. (We found the belt sander to be a real time-saver for this operation. When sanding, we continually rotated the bowl bottom to prevent faceting.)
- 4 Carve the spoon handle with your carving knife. (See the shaded areas on the small spoon drawing on page 15 for carving details.) For smooth cuts, work the knife blade first one way along the grain, and then in the opposite direction. This

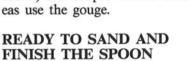




looks bevel-cut.

- 5 To give shape to the hearts where they intersect with the handle, cut about ½" deep along the lines where the hearts overlap the handle. Carvers call this a stop-cut. To make them, use the tip of the carving knife as shown below. Now, use it to make shallow back-cuts toward these heart lines.
- **6** Still using your carving knife, slice thin chips out of the shaded ar-

eas around the hearts, tapering as you carve for depth and shape. (See *above*.) For deeper cuts in these areas use the gouge.

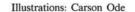


- 1 Using a round riffler file, clean up the heart edges where they intersect with the handle and where the hearts touch the other areas. Work the file back and forth as shown below, to smooth-sand these areas.
- 2 Next, hand-sand away any roughness. (We started with 150-grit sandpaper, and then changed to 220- and 400-grit.)
- **3** Apply a finish. (We brushed on a coat of McCloskey's wood sealer and let dry 24 hours. Then, we brushed on four coats of Deft semigloss polyurethane, rubbing between coats with #0000 steel wool. Finally, we buffed the spoon with very fine steel wool and rubbed in a finish coat of Butcher's paste wax.)

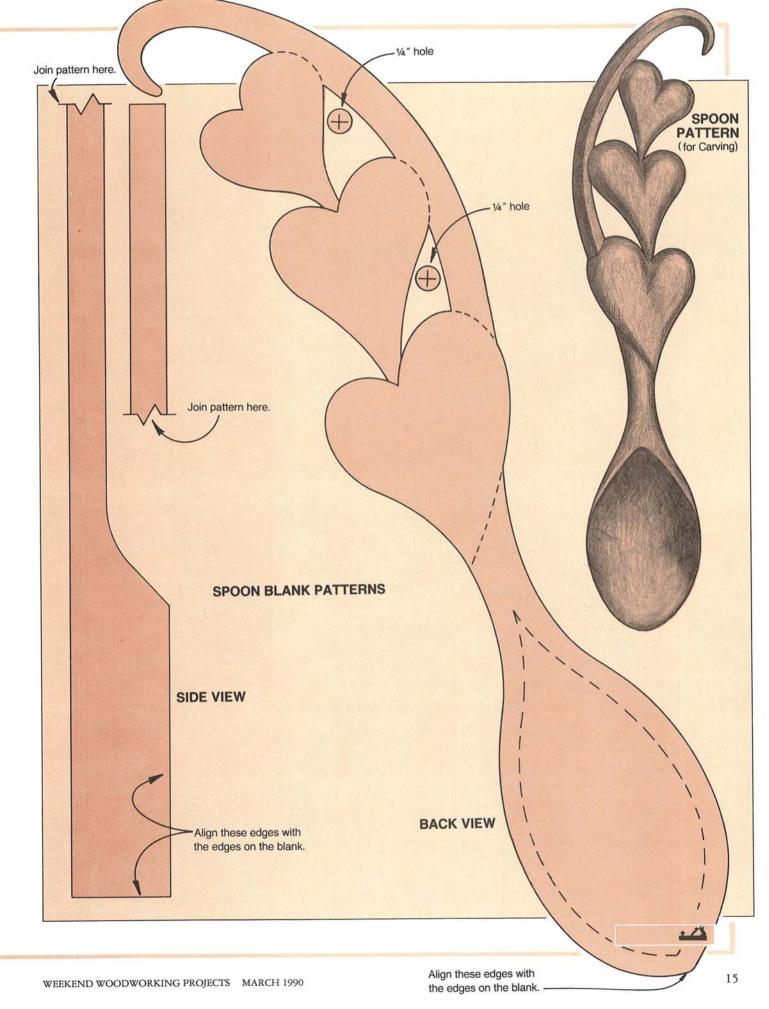




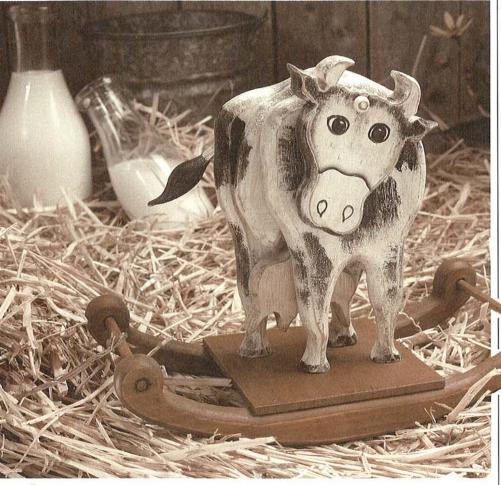
Project Design: Fern Weber, Kansas City, Mo.



Photograph: Bill Hopkins



ROCKING COW



The instant you set this bovine beauty rocking, you'll find yourself laughing till the cows come home. Once in motion, our holstein's tail, udder, and head wag pendulum-like from side to side, but not together. Use our patterns and scrollsaw or bandsaw the parts, and the painting instructions on page 30 to give your cow the popular country finish.

WE'LL CUT OUT THE PARTS FIRST

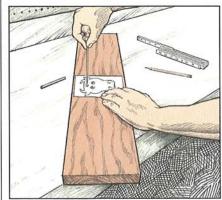
1 Using carbon paper or a photocopier, make copies of the full-sized patterns on pages 18 and 19. Include the centerpoints for all holes. Now, cut the patterns to rough shape with scissors, leaving about a ½" margin around the edges.

2 Select your wood stock. (We chose 3/4"-thick clear pine [except for the base] to avoid having to work around knots.)

3 Again using carbon paper, transfer the cow patterns you made in step 1 onto the face of the stock as shown below. Mark the centerpoints for all drill holes on each piece with an awl. (See the Cutting Diagram on page 19 for suggestions on how we laid out the patterns for grain direction.) If you made photocopies of the patterns, cut them out with scissors, spray the backs with spray ad-

hesive, and adhere them to the face of the piece.

4 Drill the %16" holes through the cow's head (E) and tail (F) where marked. (We backed all pieces with scrap when drilling holes to prevent chip-out.) Switch bits and drill the 3/32" hole through the udder (D) piece. Next, drill the 7/32" holes through the back legs (A) and the front legs (C) pieces where

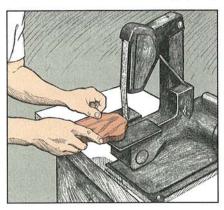


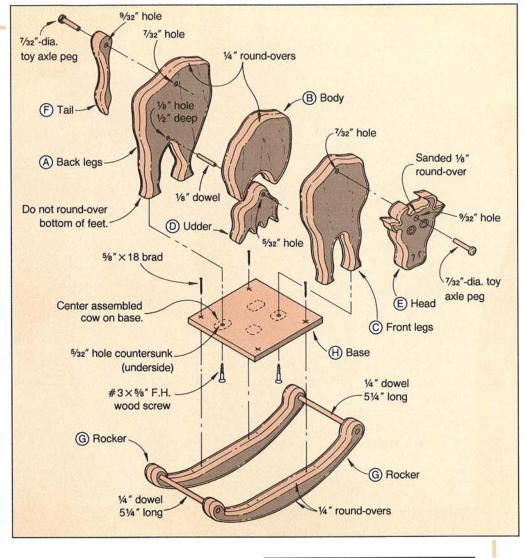
marked. Change bits again and drill the ½" hole ½" deep on the inside face of the back legs.

- **5** Cut the individual cow parts (A,B,C,D,E,F) to shape. (To simplify the task, we first roughcut each part from the others, and then sawed them to shape.)
- 6 Crosscut the stock for the rockers into two 12" lengths. Using double-faced tape, stick the pieces together face to face. Trace the rocker pattern (G) onto the face of one piece. With your drill press, drill the two ¼" holes through both pieces.
- 7 Saw the rockers to shape. (We used a bandsaw equipped with a ½8" blade to cut out the parts but a scrollsaw will work. We cut outside of the line.)
- 8 Rip and crosscut the 5×5" base (H) piece. (We cut ours from ¼"-thick mahogany but any thin plywood will work.)
- **9** Crosscut two ¼"-diameter dowels to 5¼" long. Cut one 1¹¹/16" length of ½" dowel. Set them aside.

NEXT, SAND AND ROUT THE PARTS

1 Sand the cut edges on all parts. (We used a 1" belt sander as shown below to sand the cow's body parts,





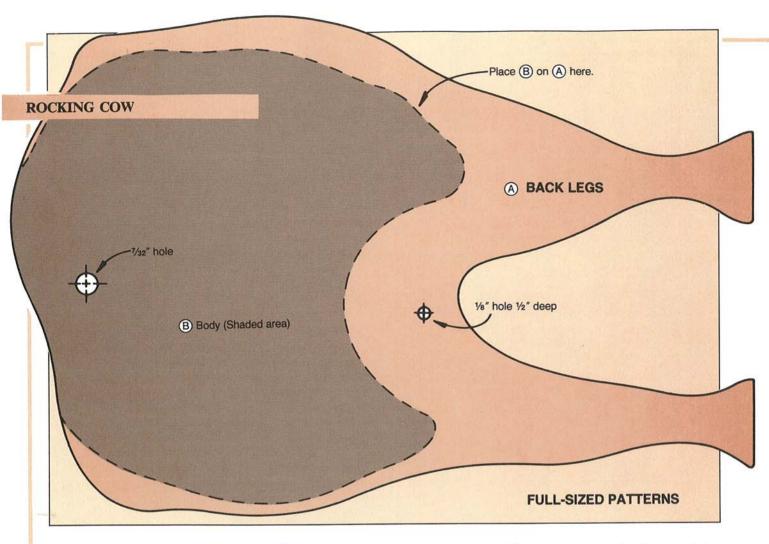
and a drum sander to sand the rockers.) Sand one face of the udder to remove about 1/16" of thickness. (We thinned ours on a belt sander.) Now, separate the rocker pieces and remove the tape.

- 2 Chuck a ¼" round-over bit in your table-mounted router. Round over the edges on the cow parts. (For safety, we suggest you round over the tail, and around the horns and ears on the head by hand. We used a ½" rasp and a ¾16" half-round mill bastard file to smooth and round over the cuts in these areas, and a drum sander to help shape the tail.) Always use a protective guard, and hold the pieces so your fingers remain a safe distance from the rotating bit.
- 3 Round over the edges on the rockers with the same bit. Using a

Port	1	Initial Size*			
run	T	W	L	Mati	Oty.
A back legs	3/4"	51/2"	73/4"	P	1
B body	3/4"	5"	5″	Р	1
C front legs	3/4"	41/2"	73/4"	Р	1
D udder	3/4"	3"	3″	P	1
E head	3/4"	41/2"	41/2"	P	1
F tail	3/4"	1"	51/4"	Р	1
G rocker	3/4"	3″	12"	P	2
H base	1/4"	5″	5″	MP	1

* You saw the parts to finished size during construction. Please read all of the instructions before cutting the material.

Material key: P-pine, MP-mahogany plywood. Supplies: ½" dowel, ½" dowel, 2-1½6" long × ½2" diameter birch toy axle pegs, acrylic or enamel paints, 2-#3×5%" flathead wood screws, 5%"×18 wire brads.



countersink bit, slightly enlarge the ¼" holes on the faces of both rocker pieces. Next, sand all parts with 150-grit sandpaper.

PAINT AND ASSEMBLE YOUR ROCKING COW

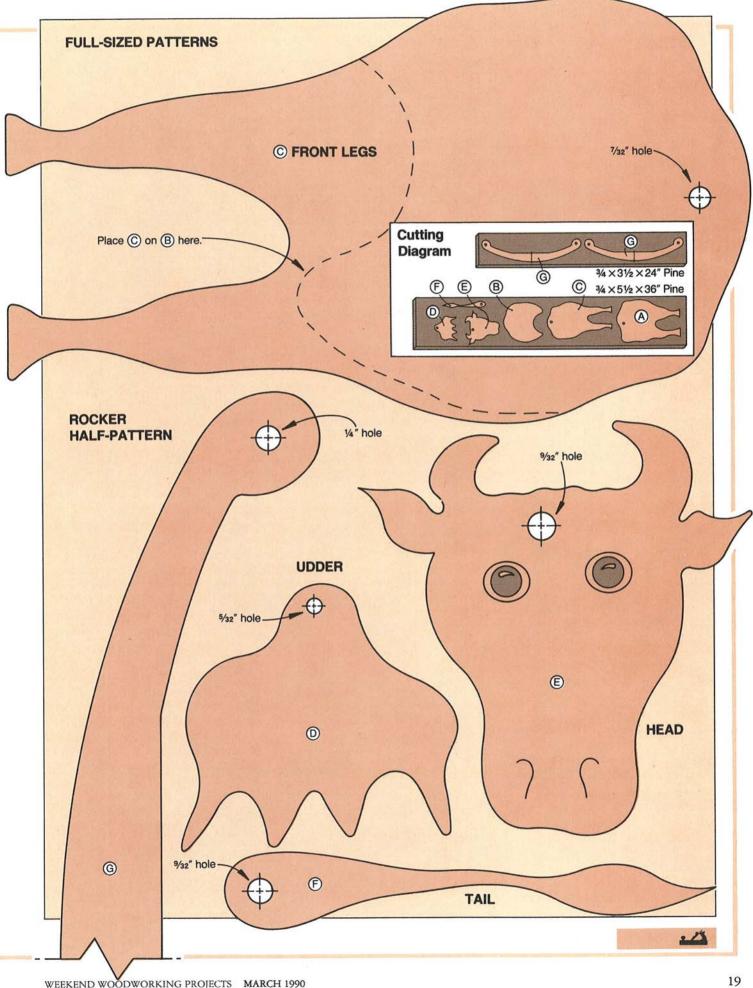
- 1 Paint the cow parts (including two toy axle pegs), the rocker, and the base. Because no two cows ever have identical black and white patterns, feel free to develop your own painting pattern. (We used acrylic paint, making the base and rocker an antique red color, and the cow black and white. For details on how we produced our antique-looking paint finish, see *PAINTING POINTERS* on page 30.) After painting, let the parts dry well before assembling the cow.
- **2** Glue and assemble the rockers. (We used yellow woodworker's glue.) Place the base on the rockers, and nail with four 5/8" × 18 brads.

- 3 To assemble the cow, first lay the back legs (A) on a flat surface with the outside face down. (See the exploded-view drawing on page 17 for reference.) Apply glue to the back side of the body (B) piece. Place it on the top face of the back legs, aligning it along the top and locating it slightly off center as indicated by the broken line on the pattern of A. Next, glue the ½" dowel in the hole on the inside face of the back. Place the udder over the ½" dowel but do not glue it—you want the udder to swing freely.
- 4 Apply glue to the front face of the body part. Place the front legs (C) on top of part B, and align it, referring to the location suggested on the pattern. Stand the assembly up, and adjust the alignment of the two leg parts so all four feet stand level on a flat surface. Clamp the assembly until the glue sets. (We used spring-type clamps.)
- **5** Set the cow on the base, position it where you desire, and then lightly trace around one front foot and the opposite back foot with a pencil. Remove the cow, mark centerpoints for the two foot prints you just traced, and then drill and countersink the two 5/32" holes on the underside. Place the cow back on the base, align the feet with the outlines, turn the two parts over together, and then mark the screw holes on the feet. With a portable hand drill, drill a 1/16" pilot hole in each foot where marked. Screw the cow to the rocker base.
- 6 Insert a toy axle peg through the hole in the head, and glue the tip of the peg in the hole in the front legs piece. Allow enough clearance between the head and the front legs piece so the head can swing freely. Attach the tail to the back legs piece the same way. Now, rock the cow and enjoy the action.

Project Design: Arthur Anderson, Walpole, N.H.

Illustrations: Kim Downing; Carson Ode

Photograph: Jim Kascoustas



TWO-PART PATIO CHAIR

IT STORES EASILY AND QUICKLY

This stylish patio chair looks as great indoors as it does out. In fact, you may want to make more than one. The identically shaped pieces simplify construction, and also allow you to store the chair in a small closet space. Simply separate the parts, and slide the legs of the seat section between the back supports. We made our chair using the gridded patterns on page 23. If you would rather work with full-sized patterns, drop us a line at the address listed on the same page.

PREPARE THE PATTERNS, AND THEN CUT THE PARTS

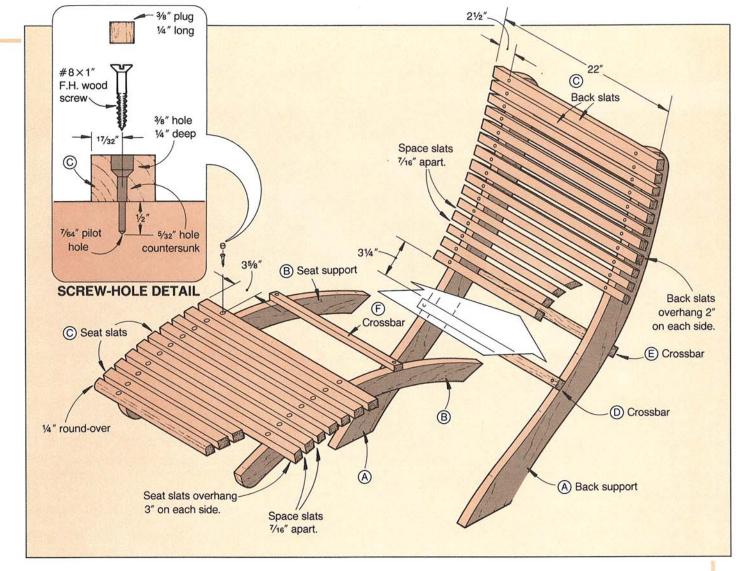
1 To make the patterns for the seat and back supports, tape sheets of paper end to end to form two lengths measuring 8½" wide by 44" long. Now, starting at one corner, draw 1" squares over the entire surface of one of the lengths.

2 Using the gridded Support Pattern on the top of page 23 as your guide, draw the outline of the back support (A) on the grid form. Include the ends for the seat support (B) as represented by the shaded area on the drawing. (When working with grid patterns, we first plot the points where the pattern lines cross the grid lines, and then draw the lines to connect the points.)

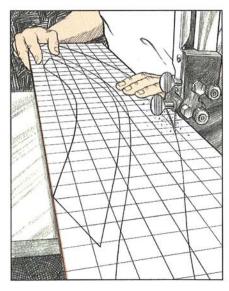
3 Next, using the pattern you just created, and carbon paper, transfer the outline of the seat support pieces (B) to the second long sheet you made in step 1. For these pieces (B), trace the shaded portion of the Support Pattern for the outline. Now, cut both patterns to shape with scissors, leaving a ½"-wide margin around the edges.

4 Arrange the patterns on the face of one of the 1½16×9½ ×48" boards (we used white oak). See the Cutting Diagram on page 23 for how we laid out the patterns. Next, apply spray adhesive to the undersides of both patterns and adhere them to the board. Now, apply double-faced tape to the underside of that board, and then stack it on top of the second board, aligning them along the edges.

Note: If you use our full-sized support patterns, cut them apart and adhere them to the stock. Next, bandsaw the support pieces to shape.



5 Bandsaw the supports to shape as shown *below*. (We sawed wide of the line, and then sanded to the line.) Separate the pieces, and remove the tape and patterns.



- **6** From ¾"-thick oak, rip and crosscut 25 seat and back slats (C), and the three crossbars (D,E,F) as dimensioned in the Bill of Materials. Rout or sand a ¼" round-over along one edge of one seat slat. Finish-sand all parts.
- **7** Rip a $\frac{7}{16} \times \frac{7}{16} \times 60''$ strip from scrap pine. From it, crosscut 28 spacers to 2" long for use later.
- 8 Chuck a combination 3/8" countersink/counterbore bit in your drill press. Next, clamp a fence to your drill press table, positioning it 1/2" from the centerpoint of the bit. Clamp a stop block 21/2" from the bit's centerpoint. Drill the holes in the back slats. (See the Screw-Hole Detail above for hole and screw specifications.) Move the stop block 35/8" from the bit's centerpoint, and drill the seat slat holes.

Bill of Materials							
Part		Finished Size*					
		T	W	L	Mati	Qty.	
A*	back support	11/16"	8"	42"	0	2	
B*	seat support	11/16"	6″	34"	0	2	
С	slats	3/4"	1"	22"	0	25	
D	crossbar	3/4"	1"	183/16"	0	1	
E	crossbar	3/4"	1"	183/16"	0	1	
F	crossbar	3/4"	1"	16"	0	1	

* Parts marked with an * shown initial size. You cut them to final size during construction. Material key: O-oak.

Supplies: 56-#8×1" flathead wood screws, scrap pine, 34" plywood, resorcinol glue, finish of your choice.

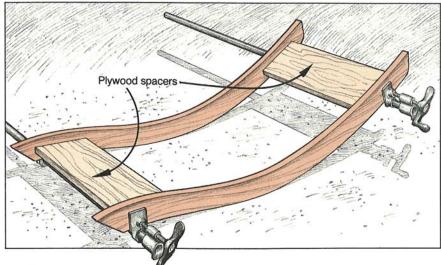
9 With a 3/8"-diameter plug cutter, cut 56 plugs from oak scrap that measure 1/4" long. Put them aside for use later.

Project Design: James R. Downing

Illustrations: Kim Downing; Carson Ode

Photograph: Bill Hopkins

PATIO CHAIR



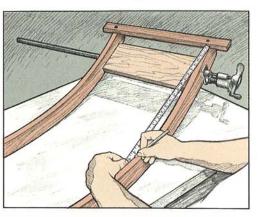
NEXT, ASSEMBLE THE CHAIR

1 Cut two pieces of $\frac{3}{4}$ "-thick plywood to 6×16 ". Fit these spacers between the back supports as shown above, and then clamp.

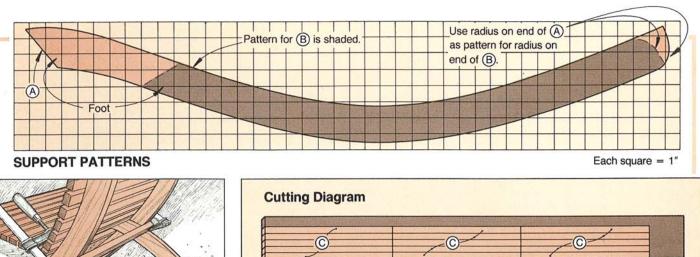
- 2 Glue and screw one back slat at the top of the back supports (see the Side-View Drawing on page 23), aligning the edge flush with the ends of the supports. Using a framing square, square the assembly as you work. Also, center the slat from side to side so it overhangs 1½" on both sides. (Once the slats were positioned, we drilled ½" pilot holes ½" deep into the supports, and waxed the screws before driving them. For glue, we used waterproof Weldwood brand [DAP] two-part resorcinol glue.)
- **3** Butt the end of your tape measure against the inside edge of the top slat as shown at *right*, and make a mark 201/8" from that point on the edge of both back supports.
- 4 Lay 14 back slats on the back supports, spacing them with the 7/16" spacer blocks. The last slat should end on marks you made in step 3. If

it does not, resize the spacers so the last slat ends on those points. When you have spaced the slats correctly, glue and screw each slat to the back supports. Remove the spacers.

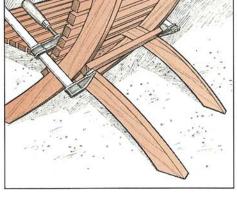
- **5** Measure 3¼" forward from the edge of the last slat along both back supports and mark. (See the Side-View Drawing.) Mark and then drill and counterbore the screw holes in the front crossbar (D). Attach this crossbar to the supports at this point.
- **6** To assemble the seat section, take the two plywood spacers you used for assembling the back supports and shorten both to 13¾" long. Clamp them between the two seat supports (B) the same way you did when assembling the back section.

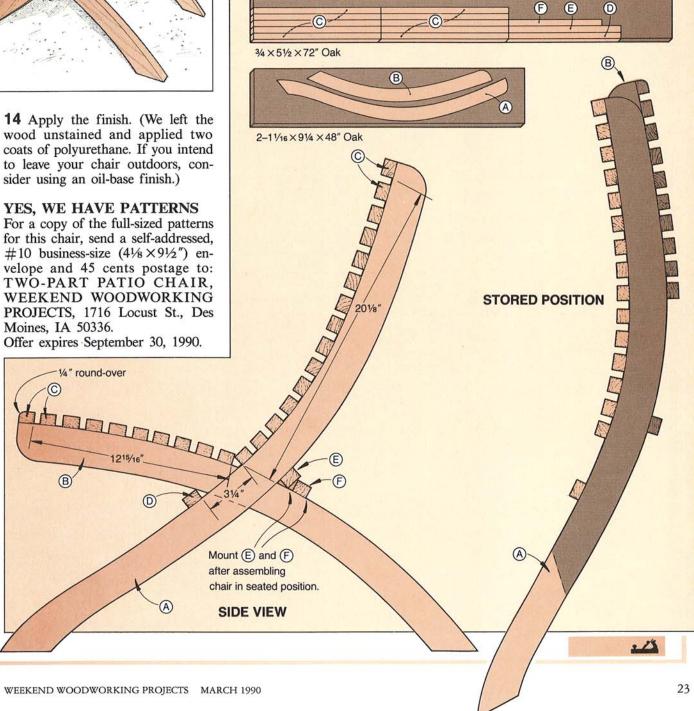


- **7** Glue and screw the front slat with the rounded-over edge to the front of the seat supports. (See our Side-View Drawing *opposite*.) When attaching the front slat, center it so 3" overhangs on each side of the supports. Wipe off any glue squeeze-out. Square the assembly.
- **8** Measure 12¹⁵/16" from the back edge of the first slat, and mark both seat supports at that point. The edge of the last seat slat should butt against these marks.
- **9** Lay the rest of the seat slats across the seat supports, and space them with the ½16" spacer blocks. Adjust the spacing if necessary so the last slat ends on the marks. Now, glue and screw the slats to the seat supports. Remove all spacers.
- 10 Put the chair together in a sitting position as shown on the exploded-view drawing. Place the rear crossbar (E) against the back supports where shown on the Side-View Drawing, and then clamp it as shown *opposite*, top right. Next, drill, glue, and then screw this crossbar in position permanently.
- 11 Attach the remaining crossbar (F) against the rear crossbar (E) where shown on the Side-View Drawing.
- **12** Glue the oak plugs in the holes in the slats. After the glue dries, sand the plugs flush with the surface of the slats. (We used a palm sander to speed the sanding.)
- 13 Test the fit of the seat section in the stored position inside the back section before finishing. (See the Stored-Position Drawing *opposite*.) If the legs of the seat section do not slide easily in between the legs of the back section, sand the outside curved surfaces of the back supports until the seat slats clear.



3/4 × 51/2 × 72" Oak





WINDY-DAY WHRLIGIG IT'S A BREEZE TO MAKE



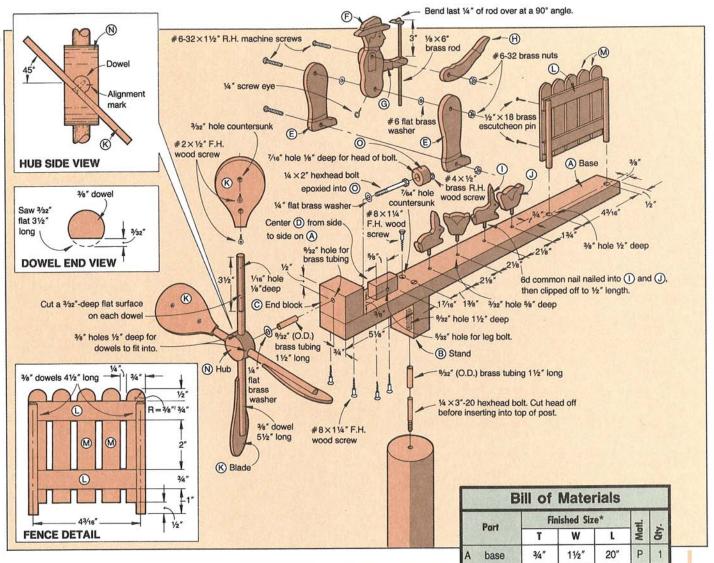
This spring, add a splash of color to your yard or garden with this humorous outdoor project. A gentle breeze spins our whirligig's propeller, causing the gardener to shake his hoe at the pesky, cabbage-munching rabbits. To ensure your success, we provide all of the needed part patterns on page 28.

FIRST, MAKE THE BASE

- 1 Rip and crosscut a $\frac{3}{4}$ "-thick piece of pine to $\frac{1}{2} \times 22$ ". (See the Cutting Diagram on page 27.) From it, cut a 20" length for the base (A), and a $\frac{1}{4}$ " piece for the stand (B).
- **2** Drill the holes in the base. (See the exploded-view drawing on page 25, and the Section-View Drawing on page 26. We backed all parts with scrap when drilling.) Drill the centered ⁹/₃₂" hole in the stand.
- **3** To form the end block (C), rip and crosscut a piece of scrap pine 2x4 to $1\frac{1}{2} \times 1\frac{1}{2} \times 1\frac{5}{16}$ ". Referring to the exploded-view drawing, mark and drill the $\frac{9}{32}$ " hole.
 - 4 Epoxy and screw the end block to the base. Now, attach the stand to the base.
- 5 For the leg spacer (D), rip and crosscut a piece of pine to $\frac{3}{8} \times \frac{3}{4} \times \frac{15}{8}$. Mark, and then drill the $\frac{5}{32}$ hole through it.

NOW, MAKE THE FENCE

- 1 Using carbon paper or a photocopier, make copies of the patterns (E,F,G,H,I,J,K) on page 28. Include all of the figure details and painting outlines on each.
- **2** Plane or resaw a $34 \times 51/2 \times 24''$ piece of pine to 1/4'' thickness. Transfer patterns, paint details, and hole centerpoints, onto the piece. Saw the parts to shape. (We used a scrollsaw.) Sand the edges.
- 3 Drill a 3/32" hole 1/2" deep into the bottom of each rabbit and cabbage. (We held the parts in a wood screw clamp while drilling.) Epoxy a 6d nail in each hole. Clip the nails off so 1/2" extends beyond the wood. Drill the holes in the body parts.
- **4** From scrap 3/4"-thick pine, rip and crosscut seven pieces to 1/6"



thick and $4\frac{1}{2}$ " long for the fence parts (L,M). Draw a $\frac{3}{6}$ " radius on the end of one piece. Next, stack five of the pieces with the marked one on the top. Saw the end radius.

5 Assemble the fence as shown in the Fence Detail on the exploded-view drawing. (We used epoxy, and $\frac{1}{2}$ " × 18 brass escutcheon pins.)

6 From a 3/8" dowel, crosscut two 41/2" lengths. Sand a slight round-over on the ends. Place these dowels in the post holes you drilled in the base. Now, epoxy and nail the fence to the posts.

7 Next, paint the gardener, rabbits, cabbages, and the fence. (We used enamel paints. See the key on page 28 for our color selections.) Keep the left-over paints to touch up the bolts after assembling the gardener.

Supplies: $1-\frac{3}{8}$ " birch dowel, 1-1" birch dowel, epoxy, $1-\frac{1}{4}\times2$ "-20 hexhead bolt, $1-\frac{1}{4}\times3$ "-20 hexhead bolt, $3-\#6-32\times1$ " roundhead machine screws, 3-#6-32 nuts, $2-\frac{1}{4}$ " flat brass washers, 2-#6 flat brass washers, $1-\frac{9}{32}$ " (O.D.) brass tube, $1-\frac{1}{8}\times6$ " brass rod, $8-\#2\times\frac{1}{2}$ " flathead wood screws, $1-\#4\times\frac{1}{2}$ " flathead wood screws, 4-#6 common nails, sheet brass, $\frac{1}{2}$ "×18 brass escutcheon pins, $1-\frac{1}{4}$ " screw eye, paint.

THE PROPELLER COMES NEXT

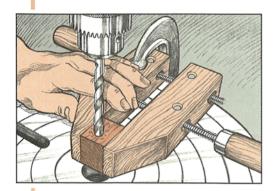
1 For the propeller hub (N), rip and crosscut a ¾"-thick piece of pine to 1¾" square. Draw diagonal lines on one face to find the center. (See the Hub Detail Drawing on page 27.) Now, using a try-square, draw perpendicular lines through the center of the square to divide it into four equal parts. Extend these

Finished Size*						
Part		T W		L	Matt.	Oth.
A	base	3/4"	11/2"	20"	Р	1
В	stand	3/4"	11/2"	13/4"	Р	1
С	block	11/2"	11/2"	15/16"	Р	1
D	spacer	3/8"	3/4"	15/8"	Р	1
E	leg	1/4"	2"	41/2"	P	2
F	body	1/4"	21/2"	51/4"	Р	1
G	left arm	1/4"	1¾"	31/2"	P	1
Н	right arm	1/4"	11/4"	3¾"	P	1
1	rabbit	1/4"	21/4"	21/2"	P	2
J	cabbage	1/4"	11/2"	2"	P	2
K	blade	1/4"	3¾"	41/4"	P	4
L	rail	1/8"	3/4"	43/4"	Р	2
М	upright	1/8"	3/4"	43/4"	P	5
N	hub	3/4"	13/4	dia.	P	1
0	rotor	1"	dia.	3/4"	BD	1

*You cut most parts to final size during construction. Please read the text before cutting any parts.

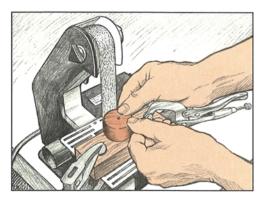
Material key: P-pine; BD-Birch dowel

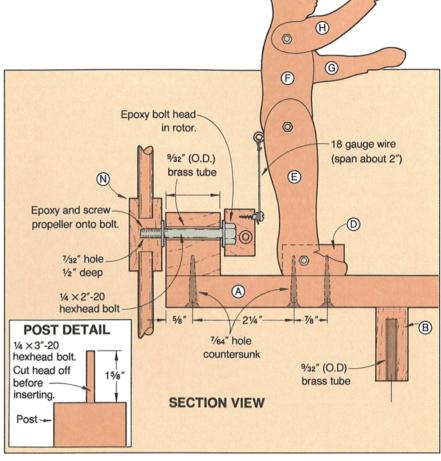
WHIRLIGIG



lines onto the four edges, and mark the centerpoints on each. Now, scribe a %" radius (1¾"-diameter) circle on the square.

- **2** Clamp the square in a handscrew clamp as shown *above*, and drill a $\frac{3}{8}$ "-diameter hole $\frac{1}{2}$ " deep into the edge's centerpoint. Turn the square, and drill the identical holes in the other three edges. Drill the $\frac{7}{32}$ " hole $\frac{1}{2}$ " deep in the center of the top face of the square.
- **3** With a bandsaw or scrollsaw, cut out the 1¾"-diameter disc. (We sawed just outside the line, and then sanded to the line using our sander as shown *below*.)
- 4 Crosscut four 5½"-long lengths of 3/8" dowel. Pencil a mark 3½" from the end on each. Now, using the miter jig and piece of plywood as shown at *right* to support the dowels, bandsaw a 3/32" flat surface on one side of each dowel to that





mark. (See the Dowel End-View Drawing on page 25 for details.)

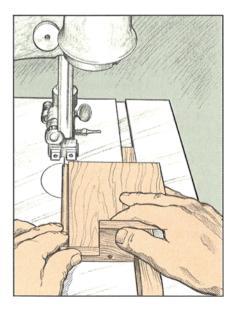
- **5** Drill and countersink the two 7/64" holes on each propeller blade where marked. Epoxy a blade to the flat area on each dowel, center and align the blade, and then drive the $\#2 \times 1/2$ " wood screws.
- 6 To make the rotor (O), crosscut a 3/4" length of 1"-diameter birch dowel. Next, using the dimensions

on the Rotor Detail Drawing found on page 27, locate and drill the holes. Fill the large hole in the face with epoxy, and tap the head of a 2"-long machine bolt into it. Square the bolt in the rotor, and remove the excess epoxy.

NOW, COMPLETE THE ASSEMBLY

1 Crosscut one 15/16" length, and one 11/2" length of 9/32"

(O.D.) brass tubing. (We purchased a 12" length of the tubing at a hobby shop.) Insert the short piece of tubing into the hole in the end block. Place the 1½" length in the hole in the stand bottom.



- 2 Apply grease to the barrel of the rotor bolt, slip a ½" flat brass washer over the end, and then insert it through the hole in the end block. Epoxy and screw the leg spacer to the base. Paint the base.
- 3 Insert the propeller blade dowels into the holes in the hub. Angle the blades to 45° as shown on the Hub Side-View Drawing on page 25. When you've aligned the blades, make an alignment mark on each dowel and on the hub. Now, screw the hub onto the rotor bolt, and spin the propeller to test its balance. To adjust, move the dowels in or out of the hub. When the propeller spins smoothly, pencil a depth mark around the base of each dowel. Number each dowel and hole. Epoxy, and reassemble the propeller. Paint the propeller.
- 4 Place a ¼" flat brass washer over the rotor bolt, apply epoxy on the threads, and then screw the propeller assembly onto the bolt far enough to take up any slack.
- **5** Drill the pilot hole in the gardener's back where indicated on the pattern. Turn a ½" screw eye into the hole. Next, assemble the gardener, placing #6 flat brass washers between the body and legs. Leave the hip joint loose so the body can move freely.
- 6 Cut a 4" length of wire (we used 18-gauge wire). Using one end of the wire, wrap several tight turns around the shank of a #4×½" roundhead screw. Drive the screw with the wire turns into the pilot hole in the rotor's face.
- **7** Bolt the gardener's legs to the spacer (D). Trim the ends of all bolts, and then place a dab of epoxy on each nut to hold them permanently. Next, with the gardener standing almost upright, loop the

Project Design: Warren Fulton, Altoona, Ia.

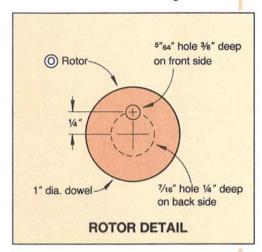
free end of the wire through the screw eye, and then wrap it around itself as shown on the Section-View Drawing. Turn the propeller to test the gardener's movement. Adjust wire length so the gardener moves freely. Cut off the excess wire. Paint over the bolt heads and nuts with the left-over paints.

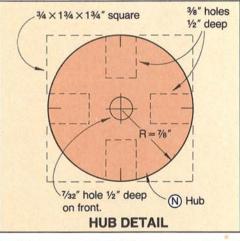
- **8** Epoxy the nails of the rabbits and cabbages in the holes in the base.
- 9 Using the pattern on page 28, trace the outline of the hoe's head onto a piece of .005 sheet brass. Cut the blade to shape. Next, cut a 6" length of ½" brass rod, and then bend the tip of it to a 90° angle. (We purchased both items at a hobby shop.) Solder the blade to the rod. Paint the hoe. Insert the rod through the hole in the gardener's left hand.

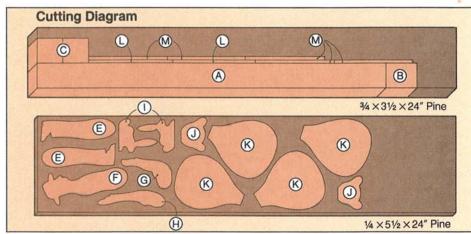
YOU'RE READY TO MOUNT THE WHIRLIGIG

- 1 Cut the head off of a 3"-long \(\frac{1}{4}" \times 20 \) bolt. Drill a \(\frac{1}{4}" \) hole \(\frac{1}{2}" \) deep in the top of the mounting post. Apply epoxy to the threads on the bolt. Drive the bolt into the hole, leaving at least \(\frac{15}{8}" \) of it extend above the top of the post.
- 2 Place the base of the whirligig over the bolt you epoxied in the

post, and insert it in the hole in the stand. Now, stand back and laugh while the wind blows, and the gardener battles his uninvited guests.

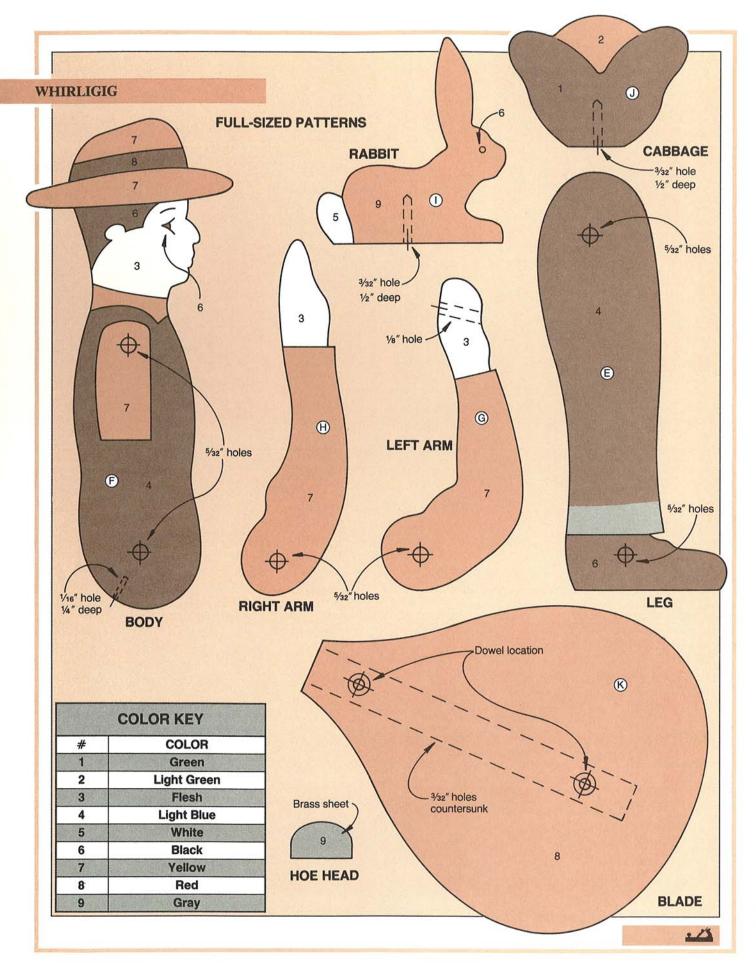




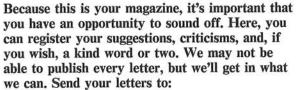


Illustratons: Kim Downing, Carson Ode

Photograph: Jim Kascoutas



Readers Corner



Reader's Corner
WEEKEND WOODWORKING PROJECTS™
1716 Locust St.
Des Moines, IA 50336

MR. PROLIFIC

hannassanass

First, a note to say that I really enjoy your very neat magazine and can't wait for the next issue to arrive to see what's new. Issue 9 is a lulu! I down-sized your "Tea-For-Two Dining Set" to only 4" high for super miniatures. Your scrollsaw plans here are really great.

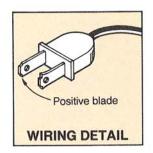
I'm making the carousel from issue 9 (6 of them) out of ½" red oak. And I've made ten pianos from your piano music box plans in issue 6. Here, I changed the legs on the piano. I used galley spindles and just cut off one end of them for a classic look. I bought plastic piano keys from Meisel Hardware Specialities.

Keep up the good work! Ed Weidman, Sterling Heights, Michigan

Ed, it sounds like we're keeping you pretty busy with our project plans. I'd like to thank you for telling readers how our project designs can be readily adapted to personal tastes. Your piano story serves as a good example. Just as you did, we encourage all of our readers to have fun and modify and change any of the project designs or materials if they so desire.

LANTERN ALERT!

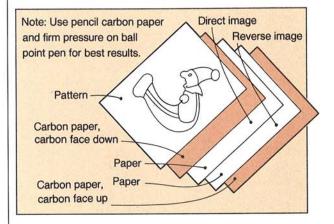
In our Colonial Lantern, Issue 13, we have a correction on the Wiring Diagram, page 17. Note that the smaller plug blade, left, is positive. Please make this change.



TWO SIDES TO EVERY CLOWN

There is a simpler method for providing plans for the backside of a project such as in the acrobatic clown on pages 12 and 13 of issue 12. Place a carbon sheet–carbon side up–on your table. Place a sheet of paper on top of the carbon, and then another sheet of carbon–carbon side down–on top. Next, place the item to be copied on top of the stack and trace the outlines. This paper can then be used as a pattern to be copied on both sides of the project's wood piece.

Carlton M. Herman, Hendersonville, N. Carolina



Oh, the miracle of carbon paper! Thanks, Carlton, for sending your idea in. It's one that is quick, easy, and inexpensive. Readers, store this one in the drawer containing your woodworking tips.

Mr. John Huntington of Long Beach, California, wrote to us with a similar idea that reproduces the pattern for each side on two sheets of white paper. (See the sketch above.) A hearty thanks to you, too, John for writing in.

Still a third subscriber, Mr. Harry Parfitt of Philadelphia, Pennsylvania, wrote to tell us that he converted a 4×14" drawer into a light box, taping a piece of plexiglass over the top and placing a light source inside. Like the window idea we used in the clown story, here you would tape the design pattern side down and make your copy on a sheet of tracing paper laid on top.

Isn't it amazing, once we begin to deal with a woodworking problem, how many possible and practical solutions can be found? — JH

PAINTING POINTERS

HOW TO CREATE COUNTRY FROM A CAN

It's odd how old, deteriorating paint can enhance an item a lot more than freshly applied paint. Take our rocking cow on pages 16–19, for instance. We wanted a country accent that showed wear, much like an antique. To arrive at this look, we consulted with our project painter, Susan Henry of Des Moines, Iowa. Here's the process she recommends.

PREPARE THE SURFACE, AND THEN PAINT

Most country finishes require some sanding, usually with sandpapers 320-grit or finer. However, on the cow, we felt that the wood's natural texture and the machining marks would add to its primitive and antique character. For these reasons we left the saw and router marks.

Brush on a coat of water-based varnish to seal the wood. (The finishing products suggested can be purchased in small quantities at crafts supply stores.) After it dries, apply a topcoat. For the white cow, Susan suggests using Delta brand Ceramcoat antique white (bottle) acrylic paint. Apply it with a sponge brush, in straight, even strokes, following the wood's grain. (For best results, use a brush sized to fit the project—in this case a 1"-wide sponge brush works well.)

Apply just enough paint to uniformly wet the surface without it running. Apply the paint quickly and carefully, but avoid overlapping. If you do overlap, remove the paint in that area. You can take it back to the raw wood by wetting a Q-tip or small cloth with rubbing alcohol, and then wiping the overlapped paint off. Then reapply.

Touch the paint. If the surface feels cool, it hasn't dried enough. If you want to speed up drying, blow warm air over the painted surface with a hair dryer. After the paint has dried, sand very lightly, using the surface of smooth brown kraft paper (from a grocery sack).

Next, paint the spots, udder, and the rocker assembly. Use acrylic paints:

black for the spots, nose, and eyes; light beige for the udder; and barn red for the rocker base.

To paint the spots, Susan suggests loading a small amount of the black paint on a small piece of wadded cloth or paper towel. Dab it on an area of the cow's body, and then work the paint outward. Use an artist's liner brush to paint on the eyes and nose. Let the paints dry thoroughly before proceeding.

DISTRESSING CREATES THE ANTIQUE LOOK

To make the cow look old and worn, lightly sand away some of the paint in the areas where most wear would occur. These areas include the edges of the body parts, the head, tail, ears, horns, and rockers. At this stage Susan prefers to sand with a medium-grit emery cloth, but a medium sandpaper can also be used. Sand as much as you want, even down to the bare wood for a heavily worn look. However, sand a little at a time, checking the overall effect as you work.

Next, apply the "antiquing" coat. This time Susan suggests Delta Ceramcoat Aqua Stain in antique oak color. Apply it uniformly with a 1½"- or 2"-wide varnish brush. Wipe it with a clean cloth or soft paper towel, following the wood grain. This antiquing coat darkens the topcoat, so wiping some of it away allows you to control the effect. Wipe until you create the shade you like. If you prefer a deeper shade, let the Aqua Stain dry, and then apply a second coat.

After the antiquing coat has dried, brush on a protective coat of a water-based satin varnish. If you desire a soft, matte shine and smooth feel, lightly sand with the kraft paper again, and then apply a second coat of the varnish.

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