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CRAFTS

FALL 2013 ■ ISSUE 52

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**Great Horned
Owl Intarsia**

Page 33

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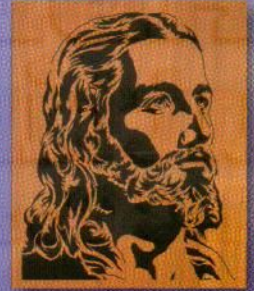
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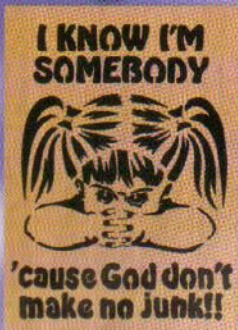
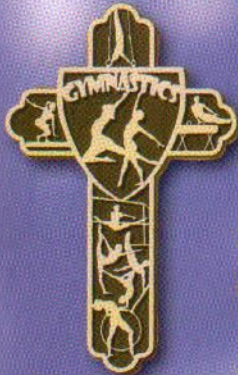
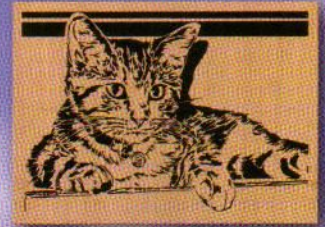
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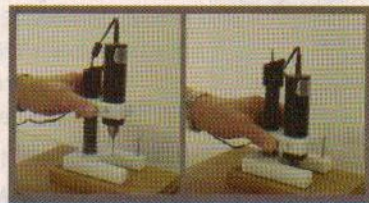
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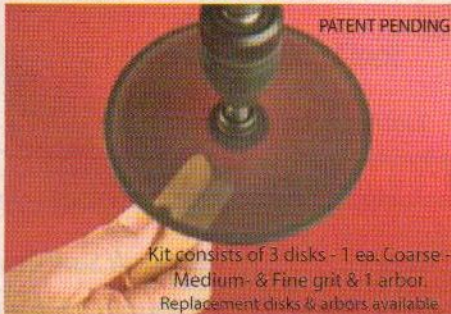
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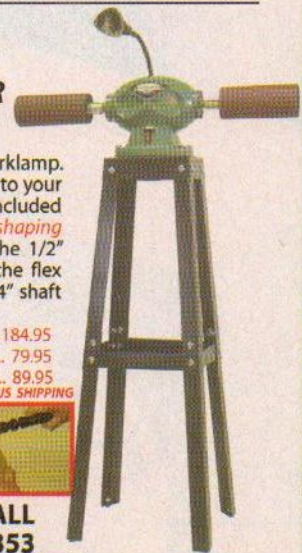
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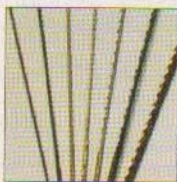
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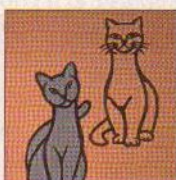
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Testing, Testing

Lately we have been trying a lot of tools and techniques. For example, Bob Duncan and I recently tested some new scroll saw blades. We don't have a workshop at the moment (we're working on that), so we set up a saw on our conference room table and apologized to our coworkers for running the very loud shop vac while we scrolled. Just another day at the office here at Fox Chapel!

There's nothing like trying it yourself to really know how something works—or, in some cases, doesn't work. A craft-store electronic cutting machine, such as a Cricut or Silhouette, is a relatively inexpensive device like a miniature CNC router or laser, but fitted with a tiny razor blade. I had visions of using one to cut veneer for marquetry or to add overlays to scrolled projects. Unfortunately, veneer proved too challenging for the machines—I succeeded with a few very simple shapes, but created a lot of kindling along the way. I did learn something valuable from the testing, though; visit our website, www.scrollsawer.com, for more info.

Speaking of CNC machines, we have been researching them (see page 72). The machines are pricey, but Bob found a good option for committed do-it-yourselfers: Zen Toolworks offers a build-your-own kit for a fraction of the price of a regular CNC router. Bob patiently followed the tutorials to connect the pieces, wire the electronics, and get the software running. The machine now has pride of place in our office, and Bob has a thorough grounding in the workings of CNC routers.

Thinking about digital cutters brought digital pattern-making to mind. Our art director, Jon Deck, wrote an article updating Gary Browning's classic method of turning photos into patterns using GIMP, a free, downloadable photo-editing program (see page 38), as well as Photoshop (visit our website for that version). I followed Jon's instructions using both programs and created a reasonable and recognizable rough draft pattern fairly easily. Not interested in drafting your own patterns? We also included Gary's timeless John Wayne pattern, originally featured in our first issue, on the pullout.

Sometimes editing tests our grammar, organization, or creativity. Other times, we're in the trenches testing machines, materials, and methods. Both types of tests help us give you the best advice and projects possible, based on personal experience.

Mindy Kinsey

kinsey@FoxChapelPublishing.com



Bob assembling the Zen Toolworks router base.

Projects and pieces leftover from this issue's tests.



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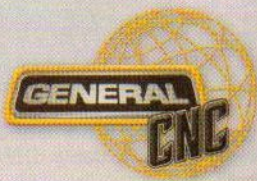
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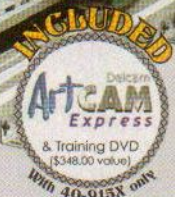


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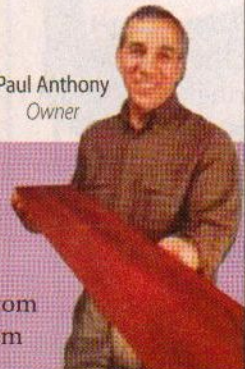
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Butterflies or Moths

Scroll Saw Woodworking & Crafts Spring 2013 (Issue 50) has some wonderful frets to cut, including the “Beautiful Butterfly Plaques.” When I was a lad, some 65 years ago, I used to collect butterflies when we lived in a village called Louis Trichardt in the then Northern Transvaal, South Africa. I kept them stuck onto sheets of cork with entomological pins, each one labeled with name, day, and location caught. Each sheet of cork was kept in a flat shirt box, and these boxes were kept in my wardrobe. I was quite a lepidopterist.

The reason I write is that of the butterflies in the project, only one is a butterfly. The rest are moths. What I learned studying butterflies as a youth was that the antenna of butterflies all have small knobs on them, whereas moths have smooth antennas. There are sure some exotic moths in the project.

Martin Brown
Via E-mail

Let's Hear From You

We'd love to hear your thoughts on our projects, ideas for new patterns, scrolling experiences, and woodworking show stories. Write to us at:

Letters to the Editor, *Scroll Saw Woodworking & Crafts*, 1970 Broad Street, East Petersburg, Pa., 17520 or e-mail Editors@ScrollSawer.com.

Intarsia Patterns

I have a large pattern for Kathy Wise's lion. Should I cut up the pattern to make the project?

Greg Smith
Via E-mail

Editor's note: We don't recommend ever cutting an original pattern. Instead, make several photocopies of the pattern. Then, cut the patterns apart and attach them to the pieces of wood. Set the master pattern aside, and keep one photocopy intact so you can dry-assemble the project on the pattern.

Wooden Bowls

In *Scroll Saw Woodworking & Crafts* Summer 2013 (Issue 51), Dale Henderson asked how to determine the table angle to cut bowl rings. The chart for finding the proper cutting angle is found in Carole Rothman's book *Wooden Bowls from the Scroll Saw*. To get the correct angle for the thickness of wood, divide the ring width by the wood thickness. A cutting angle chart is included in the book, and by matching your answer to the chart, you can find the proper angle for any bowl.

Garry Carter
Saskatchewan, Canada



Fox Hunt

Don Hysell of South Solon, Ohio, and Craig Banks of Statesboro, Ga., were randomly drawn from the participants who located the fox in our last issue (Summer 2013, Issue 51). The fox was located on page 67, in the Step 2 photo of the *Wooden Dragonfly Decorations* article.

Find the fox in this issue, and tell us the page number and location. Two readers randomly selected from all correct replies will receive a \$25 Fox Chapel Publishing gift certificate. Entries must be received by September 1, 2013, to be eligible. *NOTE: The contest fox is an outline drawing that would face left if his feet were on the "ground" (other foxes appearing in SSW&C don't count).*

Send your entry to SSW&C, Attn: Find the Fox, 1970 Broad Street, East Petersburg, Pa., 17520, or enter online at www.ScrollSawer.com.

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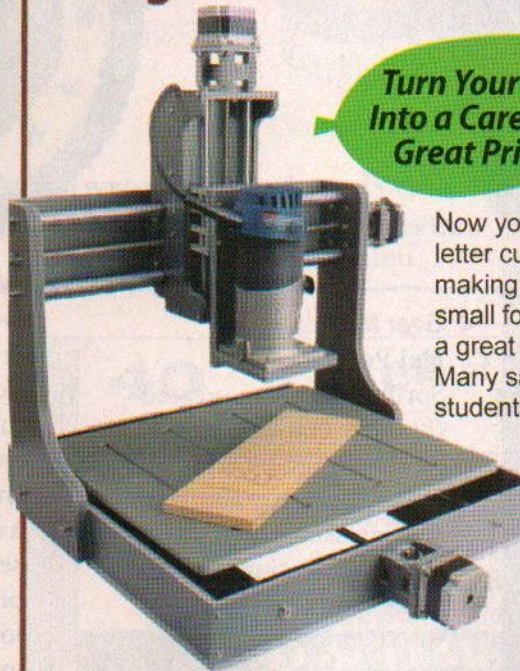
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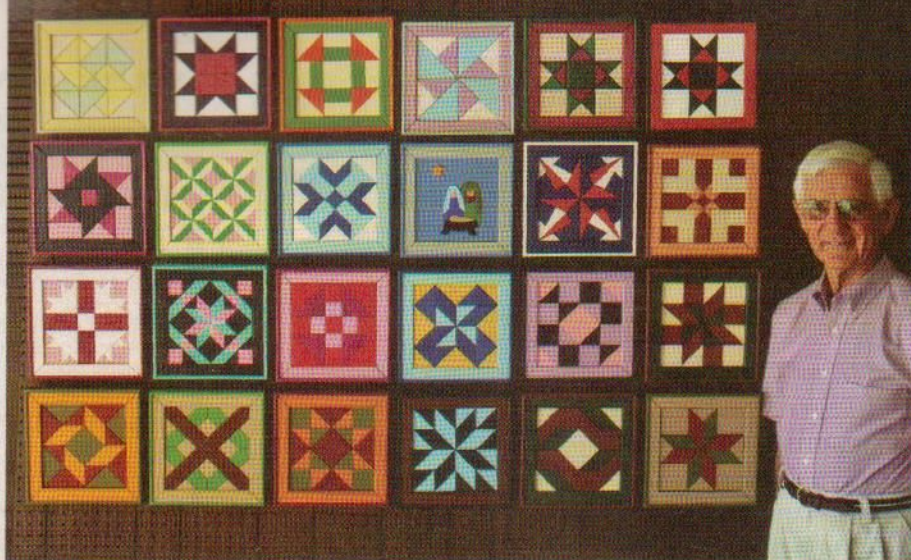
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Inspired by the Amish and Mennonite quilts found in Lancaster County, Pa., where he lives, **James Gress** of Bowmansville made wooden segmentation quilt blocks using patterns designed by The Winfield Collection.



◀ **Embellished Piano**

Gregory Cresto of Tigard, Ore., slightly modified John A. Nelson's piano music box pattern, which appeared in *Scroll Saw Woodworking & Crafts* Fall 2012 (Issue 48). Gregory used poplar for the piano and made the lid thicker so he could carve his wife's initials into it. He stained the poplar and applied a spray polyurethane finish.

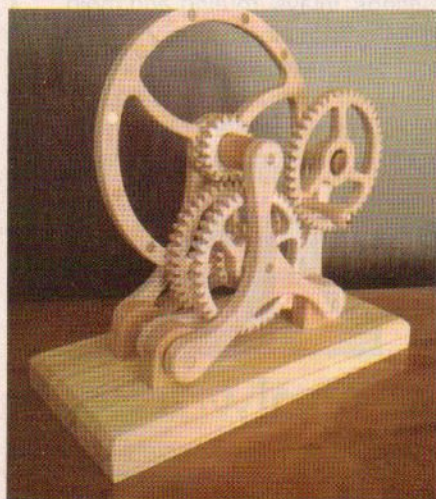


▲ **Wood & Poly Coaster**

Donald Weber of Freeburg, Ill., created this design based on a Wooden Teddy Bear pattern and shared his instructions. To get this look, stack three pieces of wood together and cut the elements. Position the pieces on a sheet of plastic and coat them with self-leveling bar-top finish to hold the pieces together. Allow the finish to dry for a day and then add more to fill the low spots. When the finish is dry, peel the plastic off the back and trim any excess finish with a utility knife.

◀ **Gear Machine**

Hal Peterson of Springfield, Ore., created this gear machine based on the design by Ed Legler in the *Gizmos & Gadgets* special issue. Hal made a few modifications to the piece to make it "more woodworker and less engineer."



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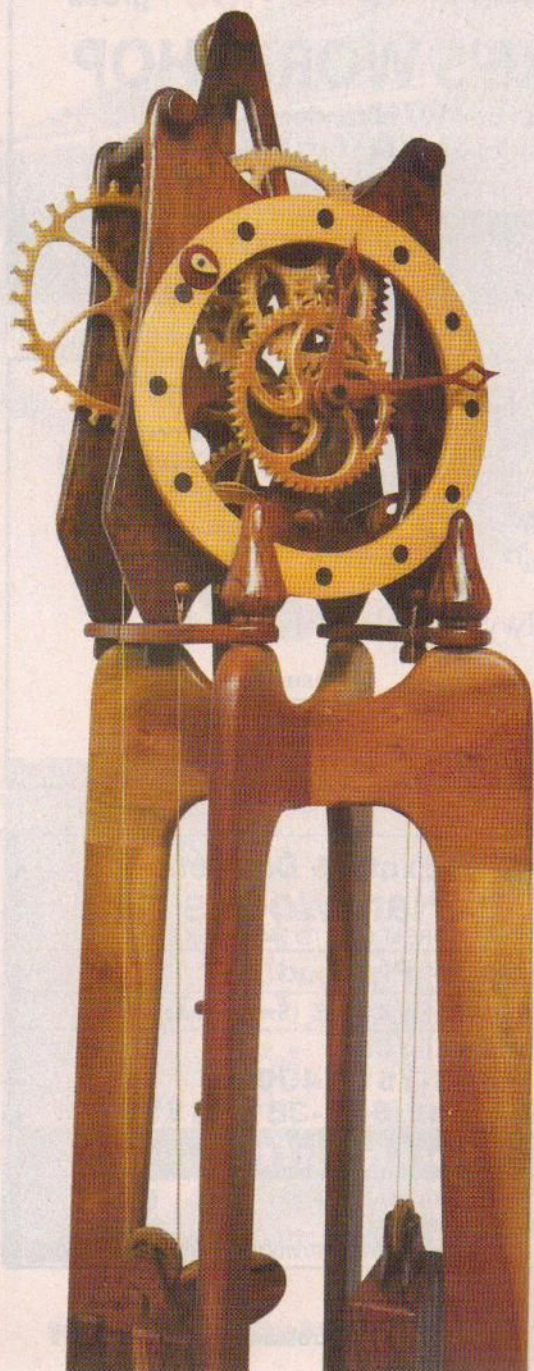
◀ **Meaningful Marker**

Richard Hare of Toledo, Ohio, modified a scroll saw plate pattern by Rick and Karen Longabaugh to create a temporary grave marker for his late wife. He cut the piece from red cedar.



▲ **Intarsia Fairy**

Jerry Blair of Duncanville, Tex., used a drawing from Lora S. Irish's *Great Book of Fairy Patterns* to create a pattern for this intarsia project. The drawing was called "Humility."



◀ **Wooden Gear Grandfather Clock**

Alan Chapman of New South Wales, Australia, created this wooden-movement grandfather clock. The movement, gearing, and escape details were designed by Wayne Sutter, but Alan designed the body, stand, weights, and pendulum. Alan used a variety of local woods.

Share Your Latest Work!

Send a slide, professional print, or digital image (300 dpi minimum) with 100 words about you and your piece. Include your hometown, the name of the pattern maker, and a list of wood and materials used. Send to Reader Gallery, Scroll Saw Woodworking & Crafts, 1970 Broad Street, East Petersburg, Pa., 17520, or e-mail editors@ScrollSawer.com.



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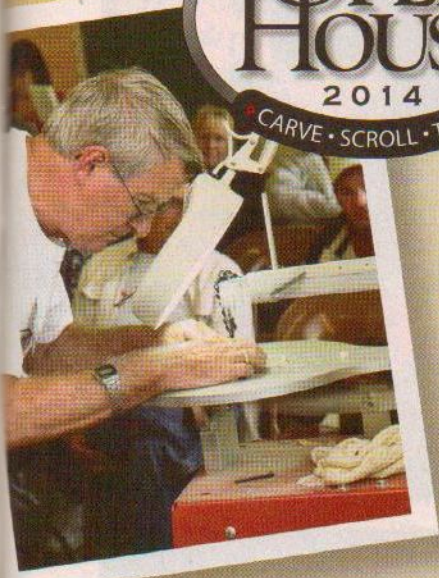
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Saturday May 10, 2014**

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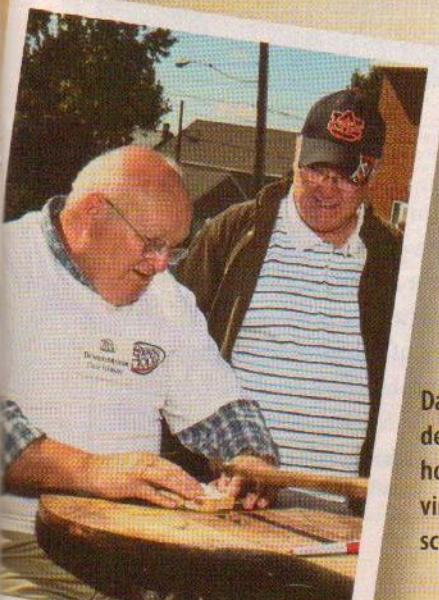
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Gary MacKay teaches a class in making a box on the scroll saw.



Between instructing intarsia classes, Kathy Wise poses with one of her popular designs.



Dale Wissler demonstrates how to use a vintage wooden scroll saw.

Dear Scroller:

Finally! We've found the perfect home to hold our Open House/Woodworking Show. Not only does the Rough and Tumble Historical Association offer us more space than ever, but it is one of the most interesting and exciting places to visit when in full swing. Along with our own classes and exhibits, you'll be able to ride a miniature live steam locomotive and see their collection of massive steam traction engines, old tractors, and gas engines. See their website for more details.

We just heard the good news a few days before this issue went to press, so you'll have to wait until the next issue to see the roster of teachers, classes, and demonstrators who will be attending. But please mark your calendar for the two-day event: all day Friday May, 9, and Saturday, May 10, 2014.

Open House was always the high point of our year. We love meeting so many subscribers, seeing our talented contributors and teachers in action, and checking out the latest demonstrations from tool manufacturers. While we organize a great woodworking show, it is also a unique "family reunion."

Looking forward to seeing you next year in May. Happy scrolling!

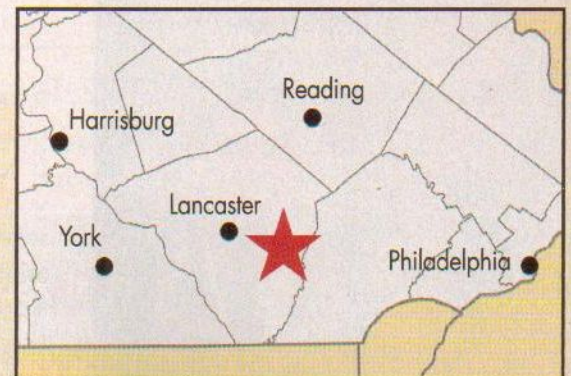
Alan

Alan Giagnocavo, Publisher

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50 miles W of Philadelphia, PA

Discover the Art in Intarsia

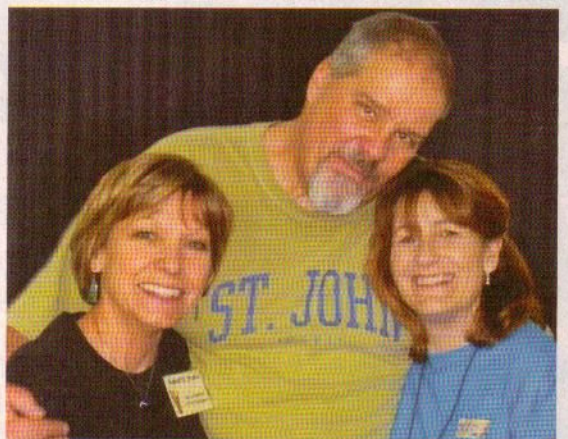
The first-ever wood art show devoted to intarsia was sponsored by the National Intarsia Carvers Association (NICA) last March in Cedar Rapids, Iowa. NICA hosted two special guests for the show: Judy Gale Roberts, a world-class intarsist, and Diane Soper, a master scroller. Additional seminars and demonstrations were presented by Jill Goldman of Flock-It, Perry Coffman of King Arthur Tools, and many others.

Intarsia artists from 16 states and Canada displayed their work in the gallery. Attendees participated in a silent auction and won more than \$3,000 worth of door prizes. Gary Reif of Jacksonville, Ill., won the grand prize, a Sand-Flee sander donated by RJR Studios.

According to NICA's president, Joannie West, "This show was primarily about making connections, so we included a social area where intarsists were encouraged to network, brainstorm, and, of course, have fun. By coming together, the attendees and the many hard-working volunteers came away with a better idea of how to continue the strong and healthy growth of NICA."

NICA is also working to build a woodworking shop for military veterans in the Cedar Rapids area. Positive and productive leisure time in a low-pressure environment can help veterans work through the issues that may result from combat experiences. Shop space has been donated, and the group is currently accepting wood and tools so they can outfit the space.

For more information about joining NICA contact Terry Tornow, vice president of membership, at 910-627-4415 or DiscoverIntarsia@aol.com, or Joannie West at 319-551-3126 or DiscoverTheArtInIntarsia@yahoo.com. Visit the organization's website at intarsiaassociation.com.



Scenes from the first-ever NICA show in Cedar Rapids, Iowa.



Rolf Beuttenmuller and Carole Rothman in Saratoga Springs, NY.

22nd Woodworker's Showcase

Classes. Competitions. Exhibits. Vendors. Demonstrations. Kids' corner. If you're looking for a show that has it all—plus a great location—then you need to visit the Northeastern Woodworkers Association's fine woodworking exposition, held each March in Saratoga Springs, N.Y. The show has seminars, tools, and materials for fans of carving, turning, scrolling, and furniture making. There's so much to see and do—both at the show and in the picturesque town of Saratoga Springs—that you will want to visit both days of the two-day show. For more information, visit www.nwawoodworkingshow.org.

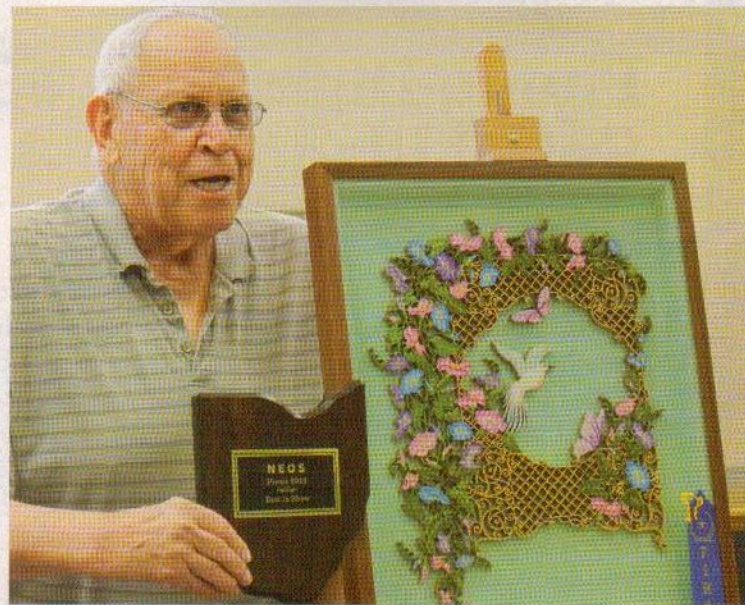
North Eastern Ohio Scroll Saw Picnic 2013

The North Eastern Ohio Scrollers hosted their second scroll saw picnic in May. The event was attended by scrollers from all over the country. According to the club president, Richard Lee Neiden, "This year we had smaller crowds, but we still consider the show a major success. It's about meeting other scrollers and making new friends for us. It's why we do picnics. The club was able to clear all costs. We want to thank all the vendors who attended, all who donated, as well as all the scrollers and woodworkers who attended."

The weekend's events included a meet and greet on Friday; a group dinner on Saturday; and seminars by Ruel Detwiler (intarsia), Hank Kauffman (the business side of scrolling), Spencer Bloom (3-D wavy ribbon), Bob Taylor (making pens), Matt Stebbins (pyrography), Tim Crawford (carving), The Buckeye Wood Turners (turning), and Lee Neiden (designing scroll saw patterns using Photoshop). Exhibitors and supporters donated generously to the raffle.

In the contest, Bob Henry of New York took the Best in Show award. Bud Hanson from Ontario, Canada, took second place, and Joe Diveley of Illinois took third place.

For more information, please visit the club website at www.northeasternohioscrollers.yolasite.com.



Bob Henry of New York won the Best in Show award at the North Eastern Ohio Scroll Saw Picnic in May.

We'd love to hear from you!

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Flying Dutchman #3/0 Spiral Blades

By Bob Duncan

Flying Dutchman's #3/0 spiral blades are the smallest spiral blades available. At 0.023" diameter, these blades fit into the tightest frets. A common complaint about spiral blades is the inability to cut sharp corners. Due to the shape of the blades, the corners will always be a little rounded. These blades are so fine that they allow you to cut close to a square corner, one that you can hardly see is rounded.

The ability to cut fine details comes at a price. These blades break easily. I started with a 1" (25mm)-thick stack of thin plywood. After breaking a few blades, I reduced the stack to ½" (13mm) thick, which helped me avoid breaking any more blades. Be sure to mark the top of the blades after you determine which end is up; the fine teeth make it difficult to make sure the blade is installed correctly.

Flying Dutchman blades are available at www.mikesworkshop.com.



The new #3/0 spiral blade (top; pictured with its #2/0 counterpart) cuts the finest details and sharpest corners of any spiral blade available.

Scroll Saw Tape

By Mindy Kinsey

In our Holiday 2012 issue, we shared a reader tip that recommended using double-sided drop cloth tape to attach patterns to blanks. Unfortunately, we later learned that the tape was unavailable—until now.

Advanced Converting Technologies Inc. in London, Ont., Canada, makes tape. According to the company's president, Jack Brown, they were researching drop cloth tape for the paint industry when they found our mention of it. Intrigued, Jack contacted us and sent a sample of his double-sided repositionable tape to see if it would work for scrolling. We tested it and shared our thoughts, and Jack asked some woodworkers in his area, including members of the St. Thomas Wood Carvers Club, to test the tape as well. Encouraged by our positive reactions, ACT has developed both Scroll Saw Tape and a related Poster Tape. Ironically, the paint people weren't interested after all.

Scroll Saw Tape comes in rolls that are 8½" wide, so it's easy to adhere to the back of an entire page or to cut smaller pieces as needed. The tape sticks firmly to blanks while you are scrolling, but is easy to peel off cleanly, without residue, once you're done. We left patterns attached to wood for several days and the tape did not dry or peel. We used the tape while cutting several varieties of wood, including cherry, and it appears to lubricate the blade to prevent scorching. Because the tape is repositionable, it is easy to use for intarsia and segmentation methods that suggest reusing the same cut pattern pieces. In short, this tape is the perfect solution for sticking scroll saw patterns to blanks. As a bonus, you can use the tape to stick reference patterns or other pages to the wall; they will stay indefinitely and remove cleanly when you're ready.

Rolls of 8½"-wide Scroll Saw Tape are available in two lengths: 5' for \$6.95 and 20' for \$19.95. It is available from The Winfield Collection, www.thewinfieldcollection.com; Workshop Supply, www.workshopsupply.com; and Scroller Scroll Saw Patterns & Supplies, www.scrolleronline.com.



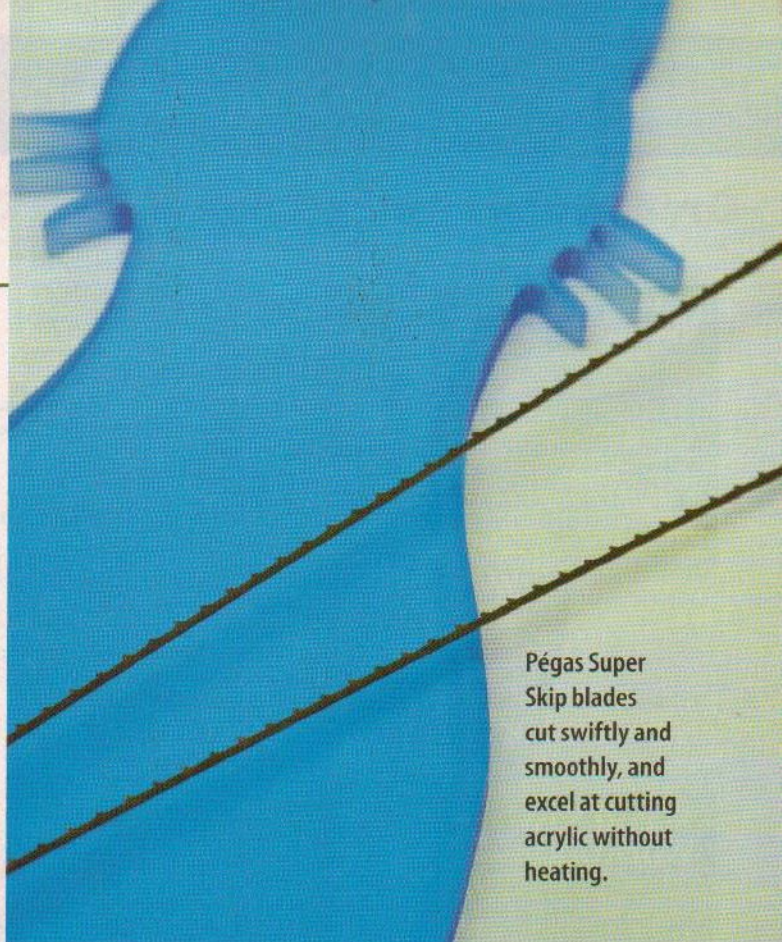
“This tape is the perfect solution for sticking scroll saw patterns to blanks.”

Pégas Super Skip Blades

By Mindy Kinsey

The new Super Skip blades from Pégas have wider gaps between the teeth than the normal skip-tooth configuration, creating a blade that cuts very quickly. In fact, these blades move so quickly that I had to turn the saw speed down while I got used to the action. The blades cut $\frac{1}{2}$ "-thick plywood and $\frac{1}{16}$ "-thick acrylic with a smooth finish and whisked the surface sawdust away. I didn't stack the acrylic, but it did not heat or break, and the edges were clean. A #5 blade slowed only slightly when challenged with inch-thick wood and cut it without scorching. If you like an aggressive blade and appreciate a smooth finish, try the new Super Skip blades from Pégas.

Pégas Super Skip blades are made in odd sizes from #0 through #9, plus #12. They are widely available online and from specialty retailers.



Pégas Super Skip blades cut swiftly and smoothly, and excel at cutting acrylic without heating.

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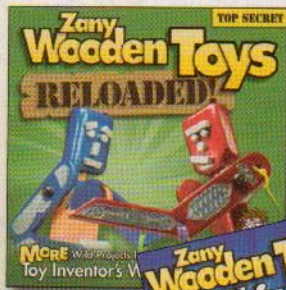
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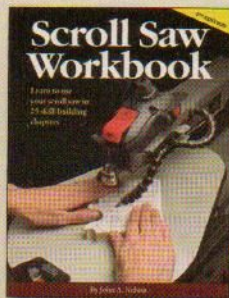
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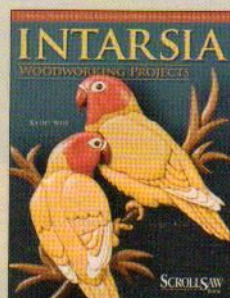
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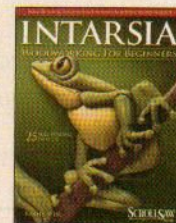
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By Kathy Wise

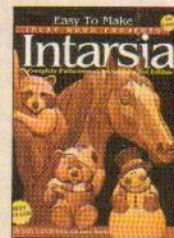
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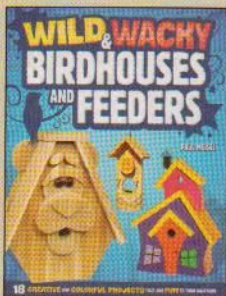
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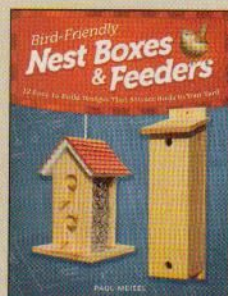
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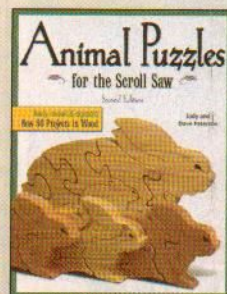
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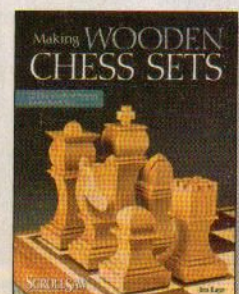
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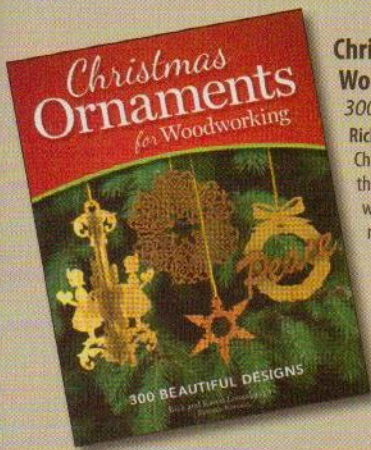
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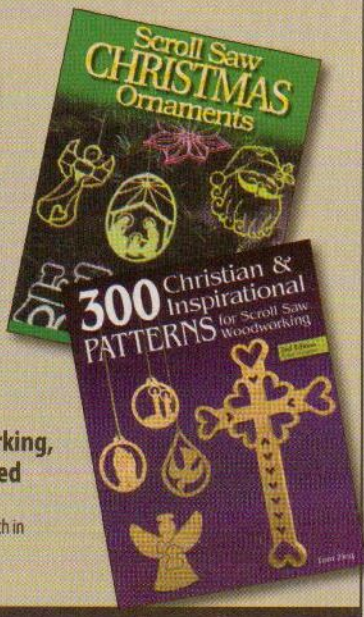
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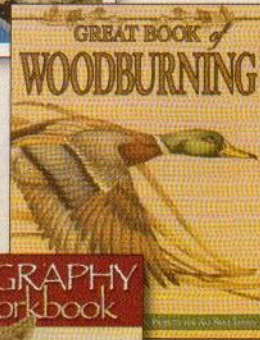
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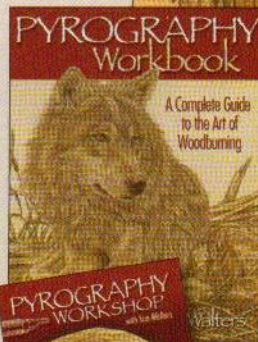
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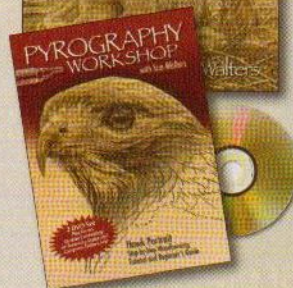
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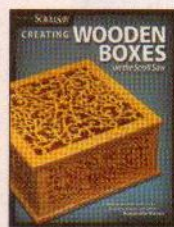


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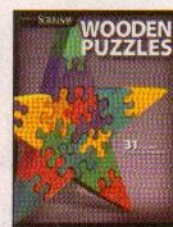


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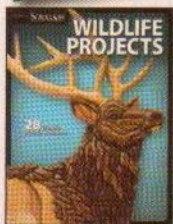


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31 Favorite Projects and Patterns

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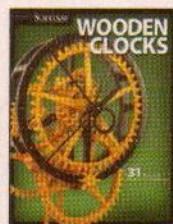


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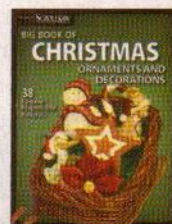


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And the Winner for Best Design Is ...

**Presenting the winners of the
2013 Best Project Design Contest**

By Mindy Kinsey

Congratulations to the scroll sawing community. You sent imaginative and interesting projects for this year's Best Project Design Contest and turned out in large numbers for the voting. This contest is a celebration of your creativity and enthusiasm.

This was a year of change for the contest. Rather than post all of the entries online for public voting—an arduous and time-consuming task—the editors carefully examined the entries and voted for our favorites in each category. Those entries became the Editors' Choice Nominees and were posted online for public voting, where you chose the winners. The entries that received the next highest numbers of public votes are recognized here as Honorable Mentions. (Note that the number of Nominees varies based on the number of entries in each category.) View all of the Editors' Choice Nominees online at www.scrollsawer.com.

We'll feature some of these projects in upcoming issues—please let us know which ones you'd like to see. And, finally, our thanks to everyone who participated, whether by entering or voting.

Participation Awards

*Artists who won a free subscription
just for entering the contest:*

Angie Gregg of Blowing Rock, N.C.

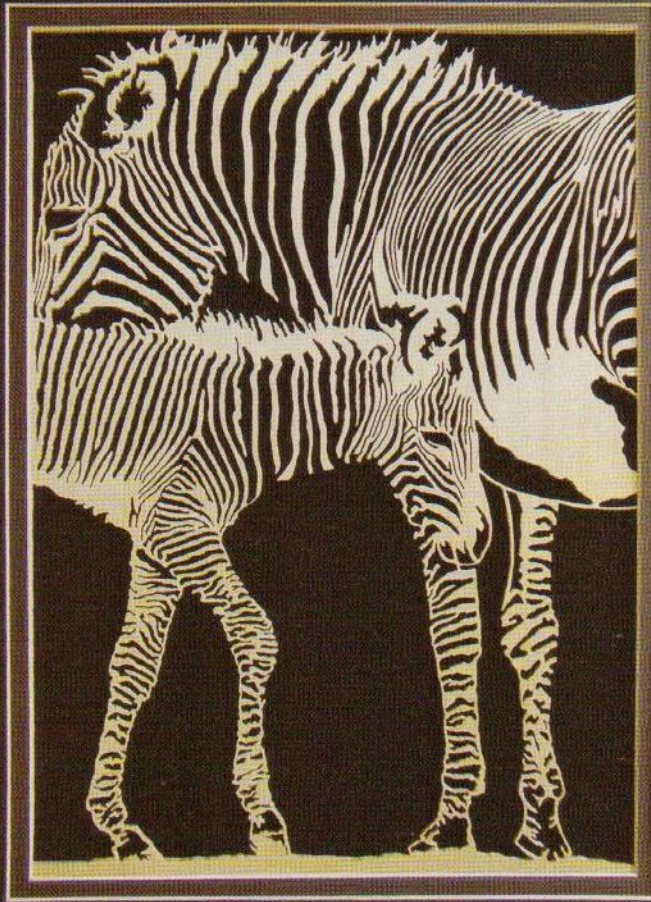
Bob Myers of DeKalb, Ill.

Robert Riggs of Keller, Tex.

Paul Yauilla of Brandon, Fla.

*Reader who won a \$25 Fox Books
gift certificate just for voting:*

Robert Cahill of Truth or
Consequences, N.M.



Best in Contest

Precious Love

by Kerry Hallam of Sumter, S.C.

Kerry Hallam based his portrait of a mother and baby zebra on a photo taken by Niki Barbati, a photographer in Italy (used with permission). The portrait is 11" by 15½" and was cut from ⅛"-thick Baltic birch plywood.

Editors' Choice Nominees

Dream Catcher

by Paula Christiansen of Omaha, Neb.

Great Blue Heron

by Theresa Eksom of Roscommon, Mich.

Soderskar Lighthouse

by Sakari Iloranta of Akaa, Finland

Egyptian Falcon

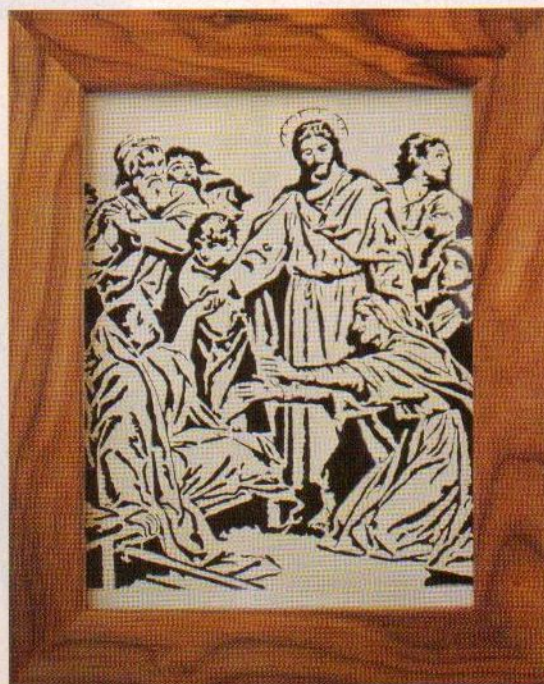
by Stacey Owen of Lemberg, Sask., Canada

Filigree Cross

by Bobby Riggs of Keller, Tex.

Lady Liberty

by Manfred Wegner of Bergenfield, N.J.



Honorable Mention

His Divine Power

by Mike Fehring of Ridgecrest, Calif.

General

Bouquet of Flowers in Oval Vase

by Simon Martin of Livron Sur Drome, France

"I like flowers," said Simon Martin of his winning arrangement. He made the flowers from the branches of different trees and the vase from a laminated blank, using entirely reclaimed wood. The flowers are 3" to 4" in diameter; the entire project is 17" tall.

Editors' Choice Nominees

HAVOC Squad Assault Cannon

by Chuck Bowman of Ocala, Fla.

Mom's Mirror

by Renee Elliott of Coeur d'Alene, Idaho

Motorcycle

by Nick Sabetti of Ottawa, Ont., Canada

Turtle Necklace

by Joseph A. Savarese of Brooklyn, N.Y.

The Haunted House

by Janice Smith of Albuquerque, N.M.

Large Mouth Bass

by Robert L. Wise, Jr., of Lima, Ohio



Honorable Mention

1985 Peterbuilt

by Rob Neves of London,
Ont., Canada



Intarsia/ Segmentation

Whooping Crane

by Linda David of Glendale, Ariz.

Linda David lived near a lake for a few years. She said, "The larger birds in particular would sometimes hold a pose long enough for you to take a great picture, but not long enough for their dinner to escape." Linda used nine types of wood in this project and accented them with natural dried florist grasses and cattails. The project is 18" wide by 29" tall.



Editors' Choice Nominees

Melaweya

by Dr. Moutaz al Shawa of Dammam City,
Saudi Arabia

Peacock

by Chuck Bowman of Ocala, Fla.

Carousel Horse

by Richard A. Hare of Toledo, Ohio

Autumn Wreath

by Connie Lovell of Evansville, Ind.

Yosemite Winter

by Duane F. Martin of Newfields, N.H.

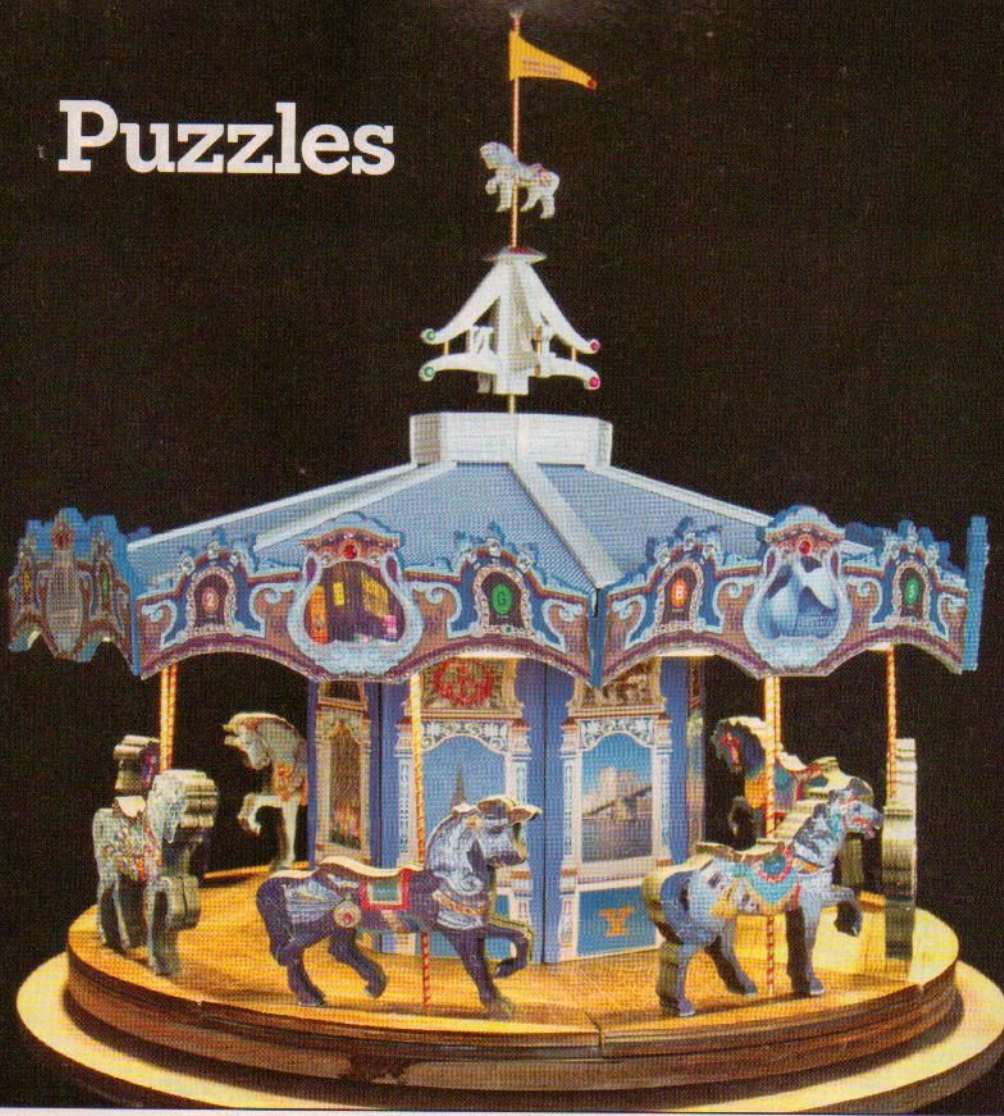
Honorable Mention

Sea Turtle

by Ricky Brown of El Cajon, Calif.



Puzzles



New York Carousel 3-D Puzzle

by Bob Crane of Wayne, N.J.

Bob Crane based his design on Jane's Carousel in Brooklyn, N.Y., which was built in 1922 and fully restored by Jane Walentas; it was opened to the public in 2011. Bob highlighted this version with jewels and lights. Magnets hold the pieces together. The entire project comprises 48 puzzles and 1,423 pieces cut from $\frac{1}{2}$ "- and $\frac{1}{4}$ "-thick plywood.

Editors' Choice Nominees

Alaskan Indian Art Puzzle

by Ruth Chopp of Gig Harbor, Wash.

Ladybug on a Leaf

by Russ Entwistle of Chepachet, R.I.

PenguinsHeart

by John Rihn of Piermont, N.H.

Snake

by Russ Rogers of Lansing, Mich.

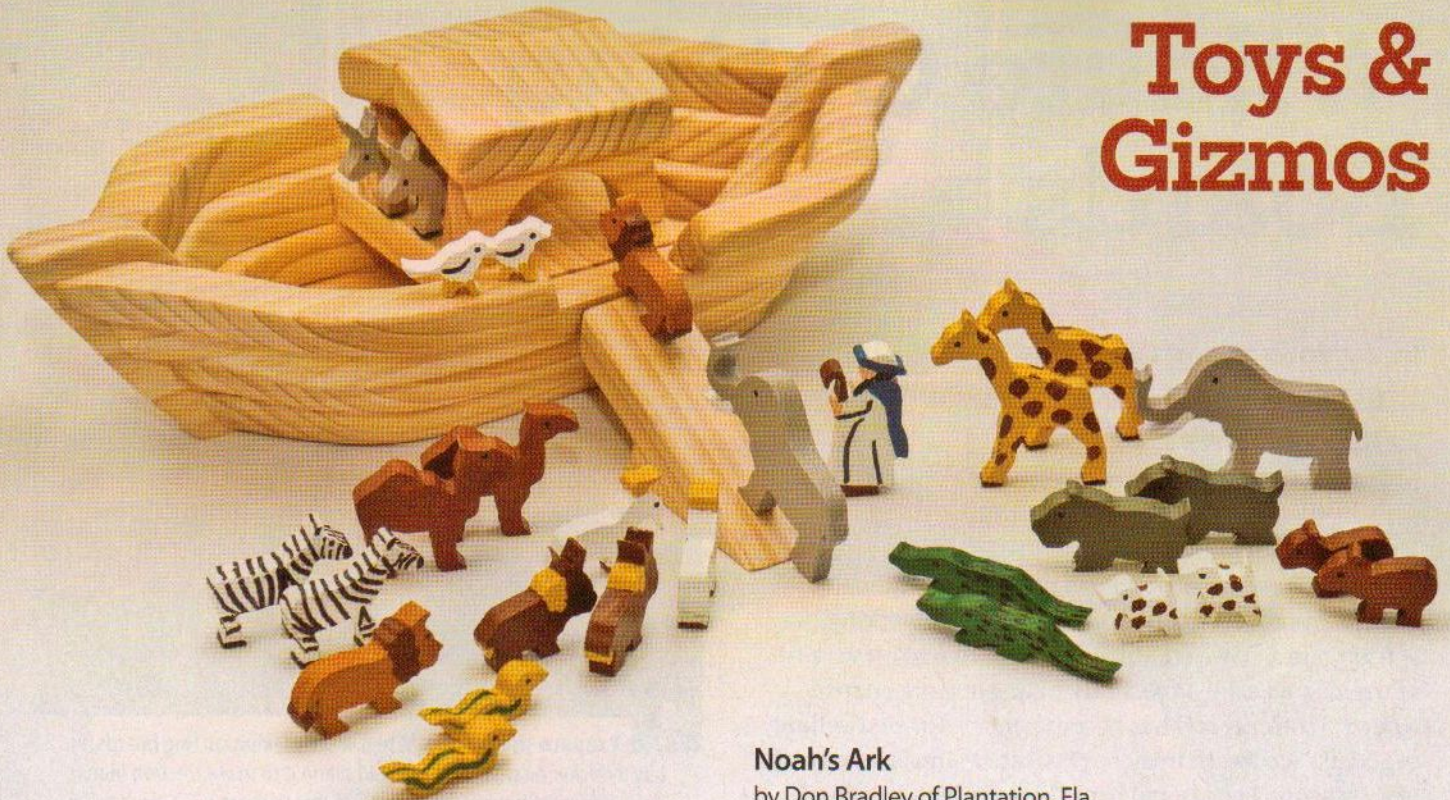


Honorable Mention

Train Puzzle

by Ronald F. Frick of Forest Hill, Md.

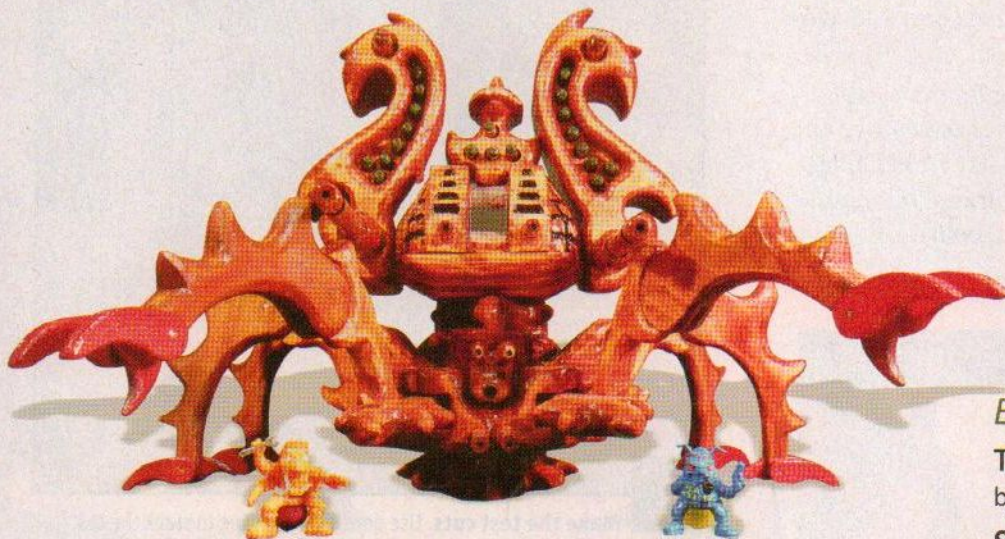
Toys & Gizmos



Noah's Ark

by Don Bradley of Plantation, Fla.

Don Bradley designed his 15"-long ark as a carpet toy. Don made the entire project, including the ark, 28 animals, Noah, and a boarding ramp, from a single 6'-long piece of pine 1x4. He painted the animals with acrylics and drew the details with markers.



Honorable Mention

BULLDOG A.N.T. Transforming Toy
by Michael Gillespie of McMinnville, Ore.

Editors' Choice Nominees

Tiki Blocks

by Brian Dahlen of Wailuku, Hi.

Stackable Turtle Toy

by Carole Merry of St. Therese, Que., Canada

Wildlife Cutting Boards

Inlay your favorite animal into these functional hardwood cutting boards

By Dayle and Jeff Taylor

We have always shared a passion for wildlife; more recently we discovered woodworking. A few years ago, we combined the two to make a variety of wooden wildlife projects, including cutting boards. The idea took off and has become one of our best-selling products. We like to inlay our favorite animals on one side of the cutting boards and back them with a side solid for cutting. We also make custom cutting boards featuring motifs ranging from classic cars to a mouse and cheese.

Experimenting with shapes, sizes, varieties of wood, handles, and inlay designs is fun. Remember, however, that these boards are decorative and functional—you will be placing food on the project. Before you buy wood or start cutting, research the toxicity of any exotic varieties that you may be considering (see www.wood-database.com) and avoid those that may cause problems.

To care for a handmade cutting board, simply hand-sand it with 220-grit sandpaper to remove any cutting marks and re-apply a food-safe finish, like natural mineral oil. Re-apply the mineral oil regularly, especially after washing the cutting board.

TIP

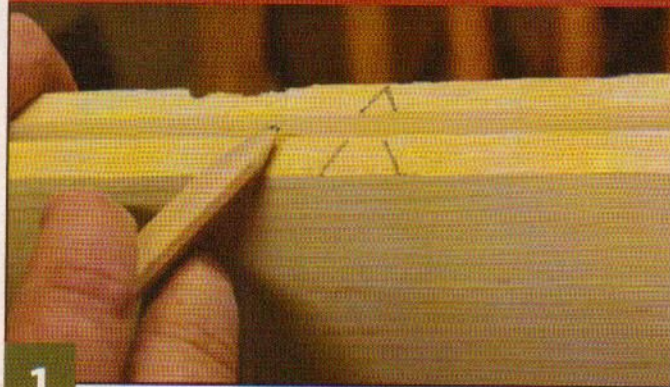
DRILLING ANGLED HOLES

To drill an angled blade-entry hole, you could tilt a regular drill press table or use a tilting drill press designed for a rotary tool. Or, cut a piece of scrap with the scroll saw table angled. Use this angled piece of scrap as a guide as you drill the blade-entry holes with a hand-held drill.



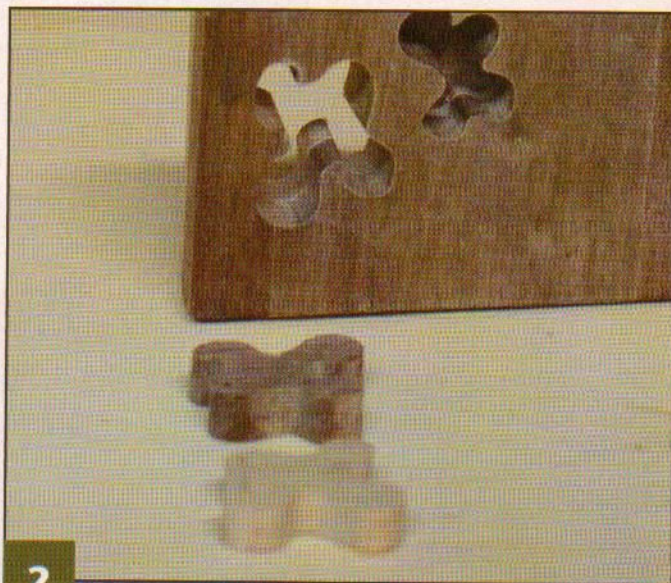
Phot courtesy of Carole Rothman

CUTTING BOARD: CUTTING THE INLAY



1

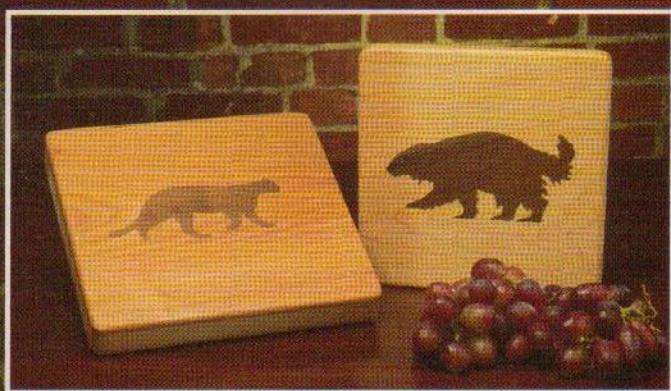
Prepare the blanks. When we're making cutting boards, we buy a thicker board and resaw and plane it to make the two blanks. However, most people simply buy boards that are $\frac{1}{4}$ " (6mm) and $\frac{1}{2}$ " (13mm) thick. The inlay piece should be slightly thicker than the top board; ours is usually $\frac{3}{32}$ " (7mm) thick. In addition to the project blanks, you will need scraps for test pieces (see Step 2). Place the main boards with their unfinished faces together and draw a triangle on one edge. Mark the top of the top piece.

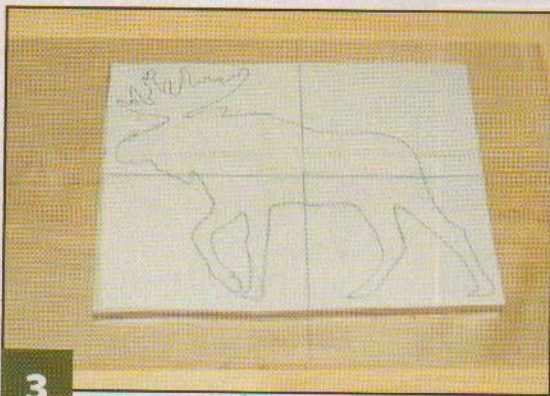


2

Make the test cuts. Use double-sided tape to stack the test blanks, or use spray adhesive to stick the plastic sides of two pieces of contact paper together. Allow the adhesive to set, and then peel off the paper backings and use the homemade double-sided paper to attach the test pieces together. Tilt the left side of a scroll saw table down $2\frac{1}{2}^{\circ}$ to 3° and drill a blade-entry hole at the same angle. Cut a test shape, working in a clockwise direction. (If your table tilts to the right, cut counterclockwise.) The walnut inlay should drop into the maple board. Adjust the table angle until the walnut sits slightly below the surface of the maple.

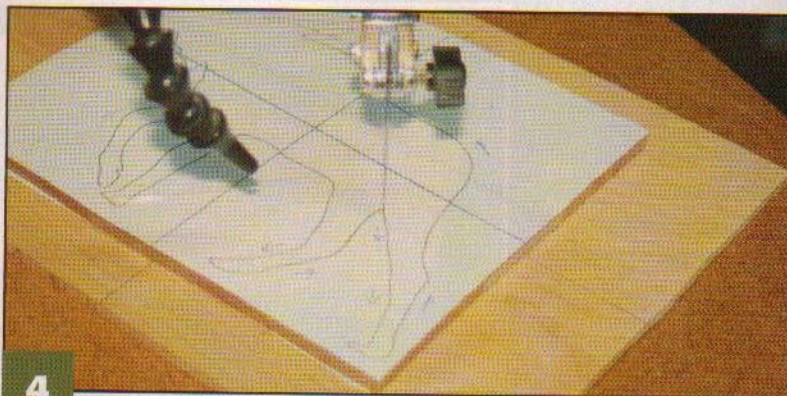
Experiment with shapes, sizes, and varieties of wood for your cutting boards.





3

Attach the pattern to the blank. Attach the inlay pattern to the walnut blank. Draw crosshairs on the pattern and on the thinner maple blank. Use double-sided tape or the double-sided contact paper method explained in Step 2 to attach the walnut to the maple using the crosshairs as a guide.



4

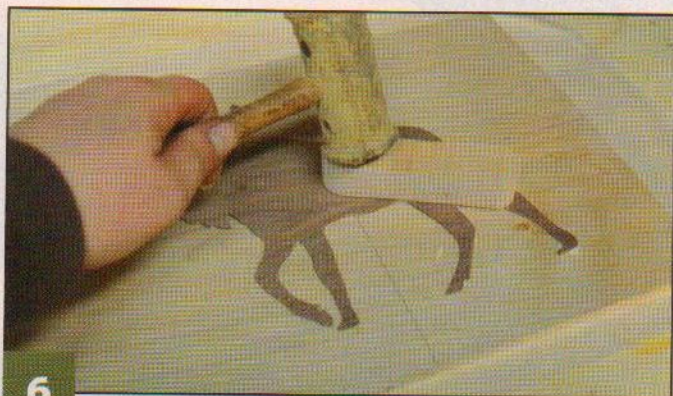
Cut the inlay. Refer to the Tip on page 24 and drill a blade-entry hole at an angle to match the setting of the saw table determined in Step 2. Place it in an inconspicuous spot, such as the intersection of the legs. With the saw table set at the determined angle, cut around the outline of the inlay. We draw arrows around the pattern to remind us which way to cut. Cut slowly to keep from bending the blade, especially in the tight corners.

CUTTING BOARD: ASSEMBLING THE INLAY



5

Apply the glue to the edges of the maple. Separate the stack and remove the patterns and contact paper. Place waxed paper on the workbench. Apply a thin layer of food-safe wood glue along the cut edges of the maple. Most wood glue is food safe when cured, but if you have concerns, check the manufacturer's website.



6

Add the inlay. Place the inlay in position. Place a piece of scrap wood on top of the inlay and carefully tap the scrap to push the inlay into position. Do not hammer hard or you may crack the inlay or maple. Don't worry if the inlay is recessed too far or sits proud; we will be sanding the piece later.



7

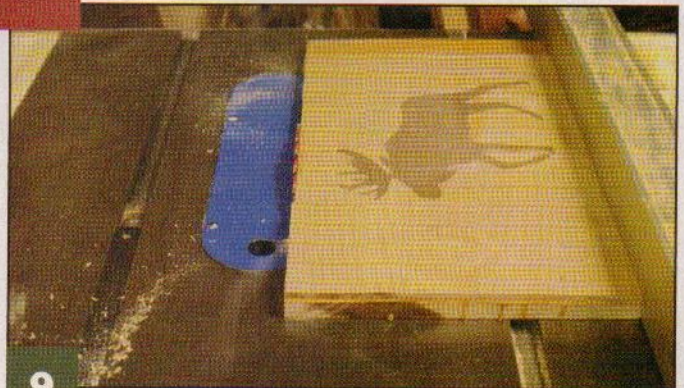
Fill any gaps. Once the inlay is in place, hold the piece up to the light to check for gaps. Because this is a cutting board, it is important to avoid gaps in the inlay where food might get stuck. While the glue is still wet, sand the top of the assembly and rub the dust into any visible gaps to fill them. Allow the glue to dry overnight. Then, sand the bottom of the assembled piece flat. We use 80-grit sandpaper in a drum sander.

CUTTING BOARD: ASSEMBLING THE BOARD



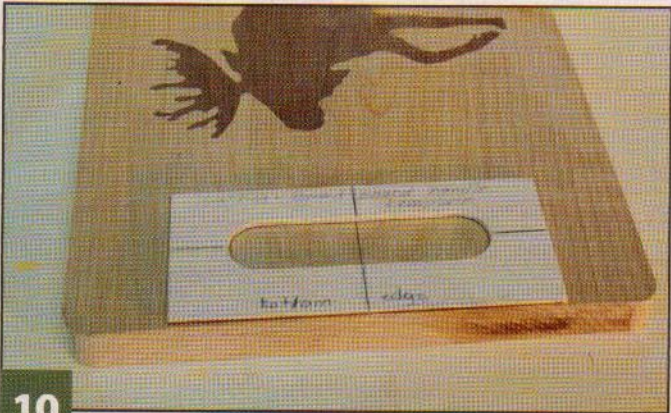
8

Assemble the board. Check the alignment of the top and base by matching the V-mark made in Step 1. Separate them and use a glue spreading tool, such as a rubber notched trowel, to spread an even coat of glue across the base piece. Place the top in position and clamp it using a book press, bowl press, or four bar clamps per side. Allow the glue to dry for 24 hours.



9

Trim the cutting board to size. Use a table saw or band saw. Mix maple sanding dust with glue and use the mixture to fill any gaps. Allow the glue to dry, and sand off the excess. Then, sand the top and bottom smooth. We use 220-grit sandpaper in a drum sander. Use a band saw, scroll saw, or disc sander to round the corners.



10

Finish the cutting board. Attach the handle pattern to a piece of thin wood and cut a handle template. Trace the template onto the cutting board, drill a blade-entry hole, and cut the handle. Use a router with a round-over bit to round the top and bottom edges and the edges of the handle. Hand-sand the board with 400-grit sandpaper. Wipe off the dust and clean the surfaces with denatured alcohol. Apply two coats of finish, such as butcher-block mineral oil, allowing the finish to dry between coats. Then, apply two coats of butcher-block conditioner (a mixture of mineral oil and wax). The conditioner can take up to a week to dry fully.

Materials & Tools

Materials for moose board:

- Hard maple, 1/4" (6mm) thick: 9 1/2" x 16" (241mm x 406mm)
- Hard maple, 1/2" (13mm) thick: 9 1/2" x 16" (241mm x 406mm)
- Black walnut, 3/32" (7mm) thick: 7 1/2" x 9" (191mm x 229mm)
- Contact paper
- Spray adhesive
- Wood glue: FDA-approved food safe, such as Titebond
- Finish: FDA-approved food safe, such as mineral oil and butcher-block wood conditioner
- Denatured alcohol
- Sandpaper: 400 grit

Tools:

- Saws: table saw, scroll saw, band saw (optional)
- Blades: #5 reverse-tooth
- Planer (optional)
- Sanders: drum sander with 80- and 220-grit sleeves; disc or belt sander
- Drill with 3/64" (1.5mm) bit
- Wood mallet
- Rubber notched trowel
- Book press, bowl press, or 16 bar clamps
- Router with 3/8" (10mm)-radius round-over bit
- Waxed paper

The author used these products for the project. Substitute your choice of brands, tools, and materials as desired.


Patterns for the **WILDLIFE CUTTING BOARDS** are in the pattern pullout section.

Suggested Finished Sizes

- **Bear bread board** - maple with black walnut inlay: 15 1/2" x 8" x 7/8"
- **Cougar cheese board** - cherry top with black walnut inlay and maple base: 9" x 9" x 1 1/4"
- **Wolverine cheese board** - maple with black walnut inlay: 7 1/2" x 7 1/2" x 7/8"
- **Wolf cheese board** - maple with black walnut inlay: 7 1/2" x 9" x 7/8"
- **Bear cheese board** - cherry with black walnut inlay: 8 1/2" diameter



Jeff and Dayle Taylor live in Tewksbury, Mass. Jeff works as master captain on off-shore projects for Boston Harbor Cruises, and Dayle is a senior keeper at Zoo New England. They enjoy camping and spotting wildlife to inspire new designs and projects. Visit their website at www.jobemacstudios.com; search for them on Etsy (Jo-Be-Mac Studios and BabyRooz); and follow them on Facebook, Twitter, and Pinterest.



Quoth the Raven

Clever puzzle perfectly
represents an avian prankster

By Judy Peterson

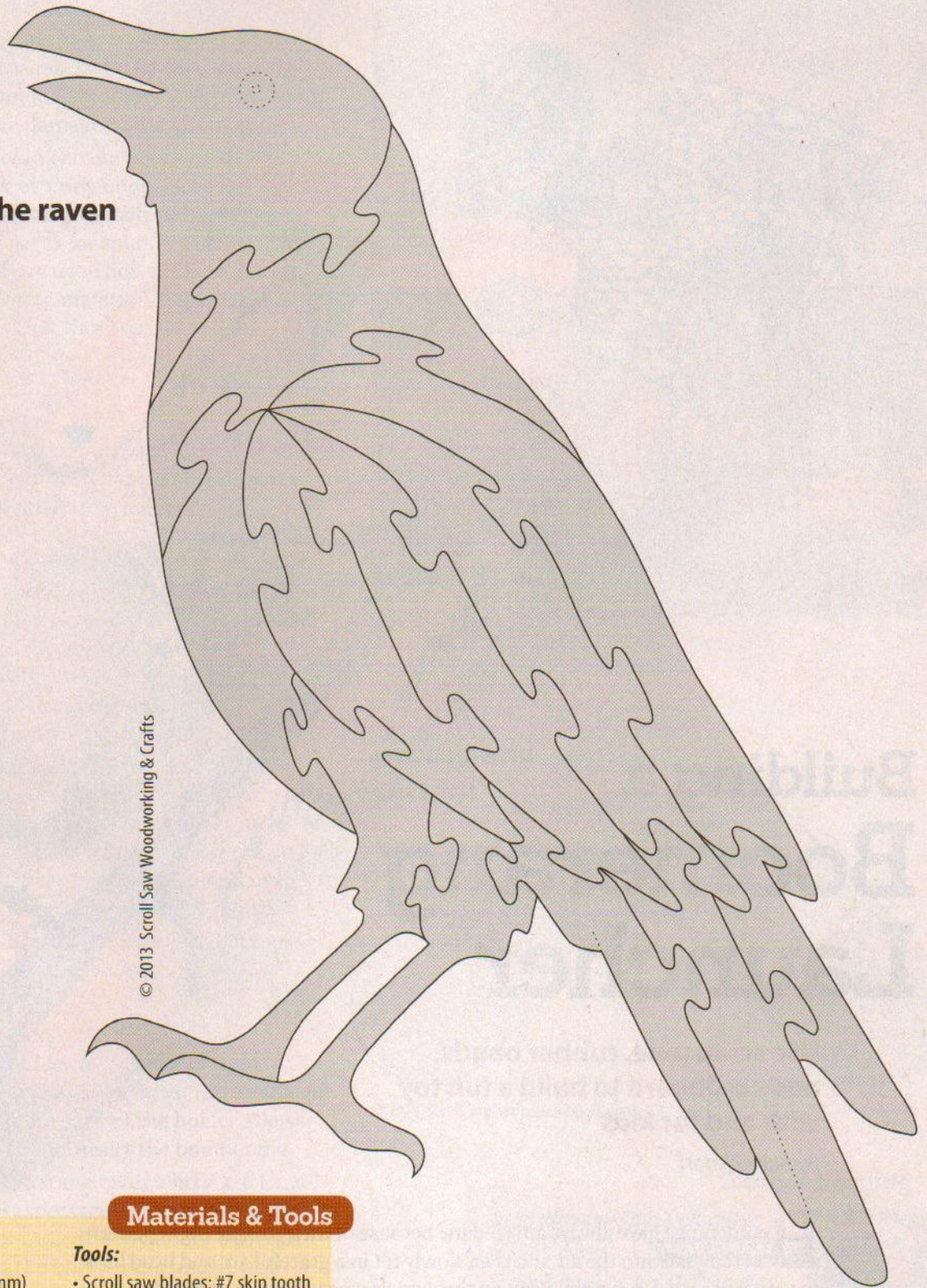
Native Americans credit the raven with giving humans light and fire. Some legends say he stole it from the creator, and others say he took it from the sun. Regardless, ravens are said to be the most intelligent of birds and were the inspiration for Edgar Allen Poe's iconic poem.

This puzzle needs to be dark, so I cut it from walnut. You could use a black wood like ebony or wenge, but those varieties can be expensive. Another option is to cut the puzzle from poplar and dye it with Behlen's jet black Solar-Lux stain. Dip the pieces in the stain, let them dry for 24 hours, and then apply clear Danish oil.

Cutting the Puzzle

After you attach the patterns to the blanks, cover them with clear packaging tape to lubricate the blade and reduce the chance of scorching the wood. Then, drill a $\frac{1}{16}$ " (2mm)-diameter hole where indicated for the eye. Insert a $\frac{1}{4}$ " (6mm)-diameter teardrop-shaped carving bit in the drill and use it to increase the size of the hole and make the eye a bit more prominent. Cut the puzzle, sand the pieces smooth, and then use a flap sander to round the edges slightly. Dye the pieces if desired and then finish them with clear Danish oil.

Quoth the raven pattern



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Materials & Tools

Materials:

- Walnut or poplar, $\frac{3}{4}$ " (19mm) to 1" (25mm) thick: 6 $\frac{3}{4}$ " x 8" (171mm x 203mm)
- Clear packaging tape
- Stain, such as Behlen's Solar-Lux: jet black (optional)
- Finish, such as clear Danish oil

Tools:

- Scroll saw blades: #7 skip tooth
- Flap sander
- Brushes
- Drill with bits: $\frac{1}{16}$ " (2mm)-diameter twist, $\frac{1}{4}$ " (6mm)-diameter teardrop-shaped carving

*The author used these products for the project.
Substitute your choice of brands, tools, and materials as desired.*



A former teacher and librarian, Judy Peterson found her niche in life as a woodworker. A winner of many design awards, she sells her puzzles at art shows around the country. Her husband, Dave, runs the record-keeping side of the business. Together they have written several books, which are available at www.foxchapelublishing.com.

A wooden boomerang launcher is shown, constructed from scrap pine. It features a purple rubber band stretched across a wooden handle. A boomerang is attached to the handle, decorated with colorful patterns including a grid of dots in red, yellow, green, and black, and a blue and white circular design. The launcher is positioned diagonally across the page.

Building a Boomerang Launcher

Use scrap pine, rubber bands, and cardboard to build a fun toy with and for kids

By Bob Gilsdorf

Boomerangs have always amazed me because of their unique flight pattern as they sail into the air and then slowly tilt in a graceful arc and head back to you. However, I'm not too keen on throwing a piece of wood and having it come flying back at me. I decided to invent a smaller, softer boomerang and a launcher that will help kids fling them with ease. Make a couple of launchers and plenty of boomerangs, and then hold target and distance competitions.

Please play responsibly: Don't launch boomerangs at people, pets, or fragile objects, and get an adult's permission before using the launcher in the house.

Getting Started

Use the patterns to cut the handle, striker, trigger, and holder. Drill the holes as marked, and then sand the pieces with 220-grit sandpaper. Round the top edges of the striker to minimize damage to the boomerang.

Cut several boomerangs from heavy card stock, such as the back of a notebook. Have fun experimenting with a variety of materials, shapes, and sizes. Cut playing cards for smaller boomerangs. I've also tried plastic margarine lids, milk cartons, and clear plastic packaging material. The clear plastic boomerangs flew great, but they were sure hard to find.

Assembling the Launcher

Refer to the assembly drawing on page 32 and align the left side of the holder with the left side of the handle. Use a drywall screw to attach the holder to the handle. I use pegs to attach the other pieces, but you could use nails, screws, or dowels. Feed pegs through the trigger and striker, and use a hammer to drive the pegs into the appropriate holes in the handle. The holes should be tight enough to hold the pegs without glue, but the trigger and striker must move freely. Glue a peg into the hole in the front of the handle, but make sure it protrudes about $\frac{1}{2}$ " (13mm).

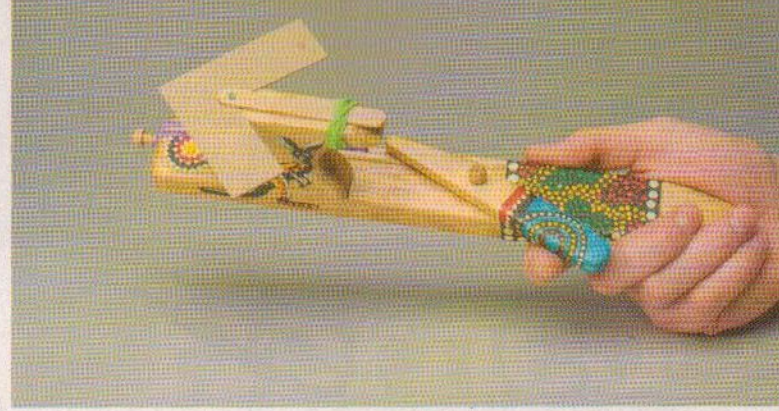
Feed the two ends of a rubber band up through the holes in the striker, using a small piece of wire if needed. Then, attach both ends of the rubber band over the peg at the front of the handle. Align the end of a craft stick with the front of the holder and use a rubber band to attach the craft stick to the holder.

I decorated my launcher with aboriginal designs, but you can paint or stain it as desired.

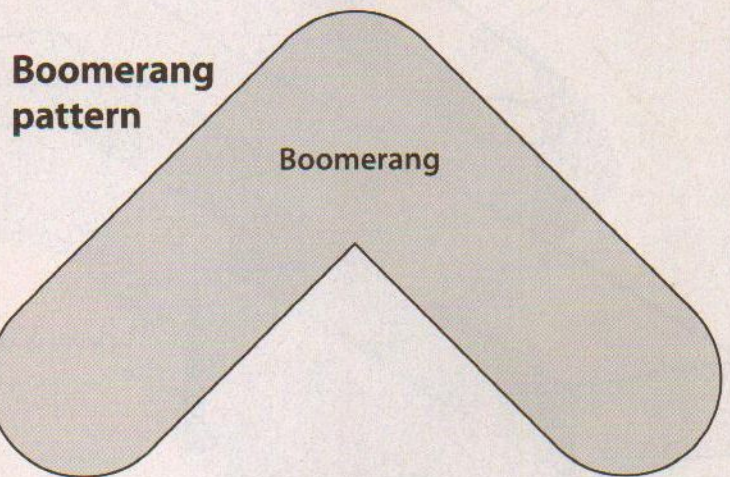
Launching the Boomerang

Pull the striker back and lock it in place with the trigger, and position the craft stick down the middle of the holder. The bevel at the back of the holder allows you to raise the craft stick to insert the boomerang.

Positioning the boomerang takes a little trial and error to create the most spectacular flights. Position the center of the boomerang directly under the craft stick. The striker spins the boomerang and gives it forward motion. If it hits too close to the center of the boomerang, there is no spin and the boomerang flutters to the ground. If it hits too far out on the wings, the boomerang doesn't get enough forward motion. Once you discover what works best, you'll be amazed by your boomerang's speed and graceful flight patterns as it sails around your yard or house.



ON THE WEB Video of the boomerang launcher in action online.
www.scrollsawer.com



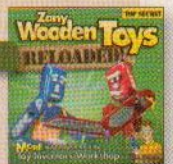
© 2013 Scroll Saw Woodworking & Crafts

Further Reading

Zany Wooden Toys Reloaded!

By Bob Gilsdorf

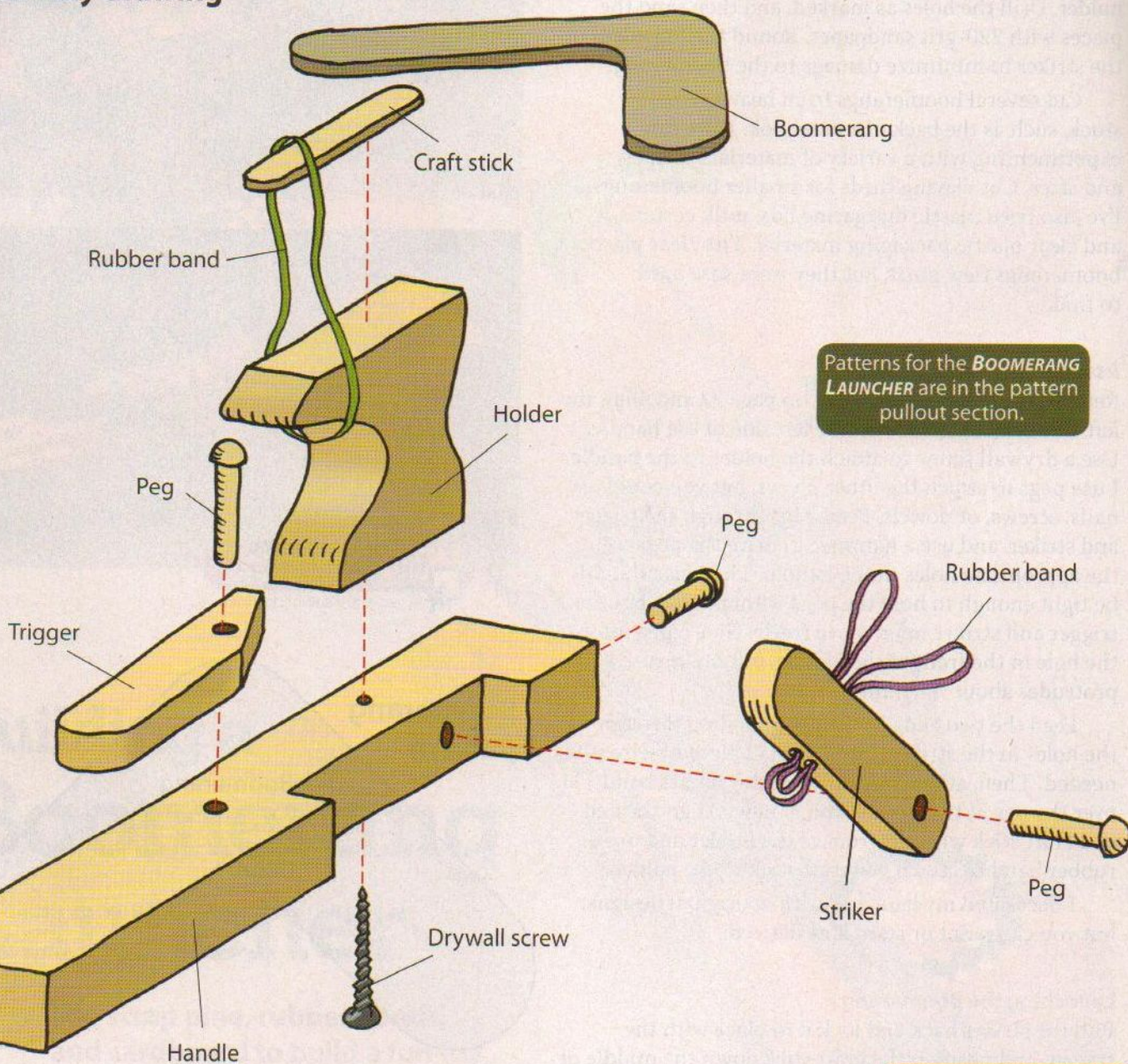
NOW AVAILABLE!



Disarm spy robots, launch flying discs, throw cards magically across the room—each of these 8 wild projects ranks high on the fun scale and will delight kids and adults alike.

Available for \$9.95 + \$3.99 S&H (parcel post) from Fox Chapel Publishing, www.FoxChapelPublishing.com, 800-457-9112, 1970 Broad St., East Petersburg, Pa., 17520, or check your local retailer.

Boomerang launcher assembly drawing



Patterns for the **BOOMERANG LAUNCHER** are in the pattern pullout section.

Materials & Tools

Materials:

- Pine, 3/4" (19mm) thick: handle, 1 1/2" x 12" (38mm x 305mm); holder, 2 1/4" x 3 1/4" (57mm x 83mm)
- Pine, 3/8" (10mm) thick: trigger and striker, 3/4" x 8 3/4" (19mm x 222mm)
- Wooden pegs, 7/32" (11mm) diameter: 3 each 1" (25mm) long
- Craft stick

- Drywall screw: 1 each 1 1/2" (38mm) long
- Wood glue
- Rubber bands: 2 each 1/8" x 3 1/2" (3mm x 89mm)
- Thick cardstock or lightweight cardboard: several 3" x 3" (76mm x 76mm)
- Sandpaper
- Acrylic paint

Tools:

- Blades: #5 reverse-tooth
- Drill with bits: 5/32" (4mm), 1/4" (6mm), 7/32" (5.5mm)
- Phillips screwdriver
- Scissors
- Hammer
- Scrap of wire (optional)

The author used these products for the project. Substitute your choice of brands, tools, and materials as desired.



Bob Gilsdorf lives in Colorado Springs, Colo., with his wife and five sons. Bob started woodworking at a young age, and he has built wooden toys for most of his life. An engineering manager at a semiconductor company, Bob continues to invent and make wooden toys. For more of his work, visit his website at www.TheToyInventorsWorkshop.com.

Great Horned Owl

Wood grain imitates
feathers in this realistic
intarsia portrait

By Kathy Wise

The great horned owl can be found from northern Canada to the tip of South America. This well-known owl can have a four-foot wingspan.

I use seven colors of wood to create the distinctive feather groups; the figure of the wood simulates the overlapping feathers.

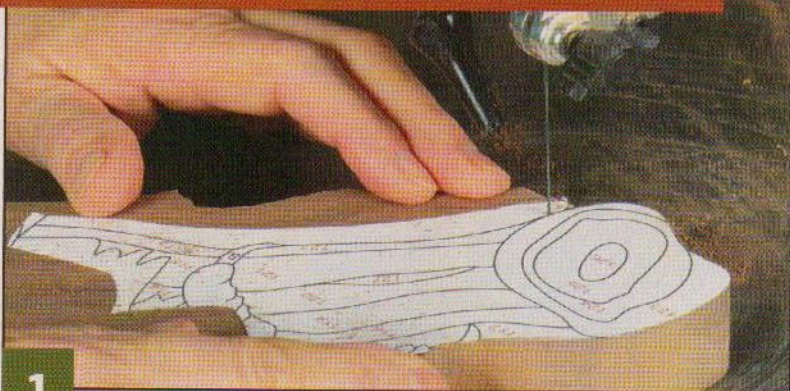


Getting Started

Make six to eight copies of the pattern. Always keep a master copy of the pattern. Cut out the pattern pieces, leaving the sections where the color and grain direction are the same together. Tape contact paper flat on a board and apply spray adhesive to the backs of the patterns. Attach the patterns to the contact paper and cut out the patterns.

Next, attach the patterns to the blanks. Make sure the wood is flat—plane as needed. Place the pattern pieces on the blanks using the grain direction as a guide to determine which areas you want to use. Remember, the grain direction arrows are a suggestion; if an interesting grain direction or figure will accent your pieces better, use that section. Peel and stick the patterns to the blanks. Cut larger pieces into manageable sizes.

OWL: CUTTING THE PIECES



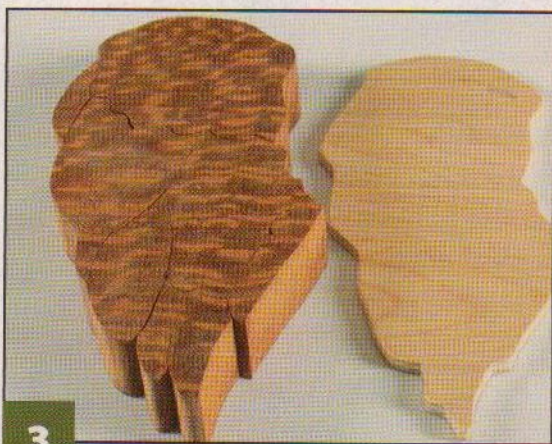
1

Cut the pieces. Use a #5 reverse-tooth blade for most of the cutting. Make sure the blade is square with the saw table. Cut carefully and stay on the lines. Use a smaller blade, like a #3, to cut the wing section apart. Cut the lines on the branch or burn them later, like I did. Number the backs of the cut pieces.



2

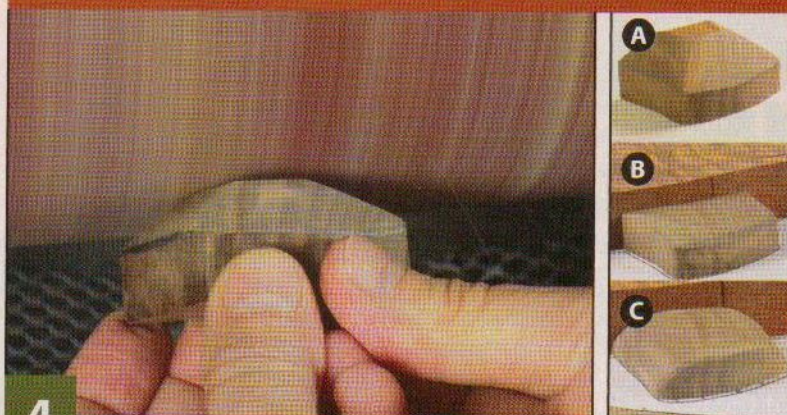
Organize the pieces. Place the cut pieces on a full-size copy of the pattern taped to the backing board. Check the fit and flow of the pieces and make any adjustments or changes needed.



3

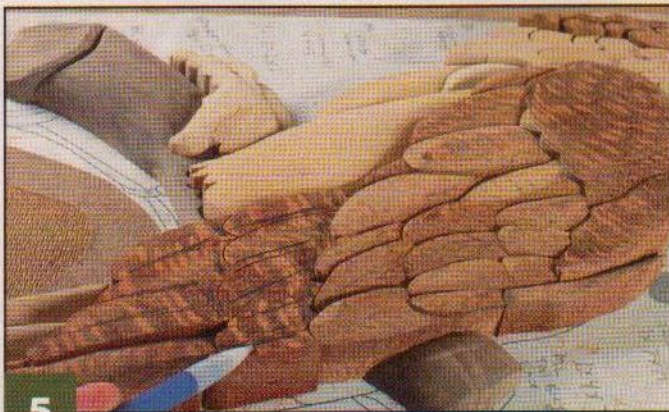
Add risers as needed. Adding risers gives the piece a more 3-D look. I use a riser under the wing section and around the beak area. Cut a piece of $\frac{1}{4}$ " (6mm)-thick plywood just smaller than the wing section and the beak section. *Note: When you are sanding surrounding pieces, do not sand below the bottoms of the pieces and expose the risers.*

OWL: SANDING & SHAPING THE PIECES

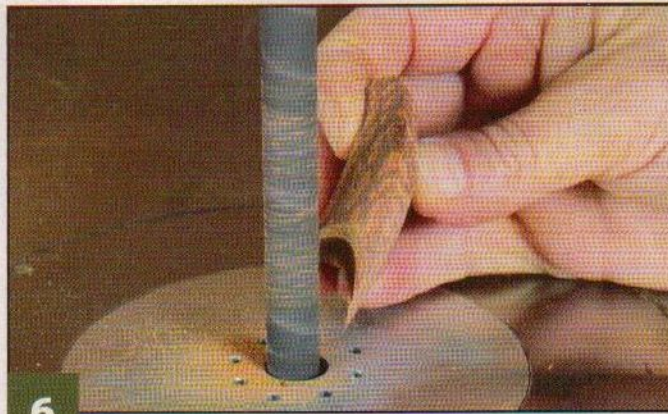


4

Sand the pieces. Use a pencil to mark the levels to sand down to. Start with the lowest pieces first, like the branch and back foot. I use a 6" (152mm)-diameter pneumatic drum sander with a 150-grit sleeve. Then, mark and gently round the highest pieces. You may have to mark and replace a piece several times. You often need to adjust nearby pieces in relation to the one you just finished. When sanding away a lot of material, such as the branch, sand three sides down to the lines (A) and sand the top flat (B). Then, round the edges (C).



5 **Adjust the levels of pieces as you go.** Moving from top to bottom, rough-sand the feathers. Place them beside the surrounding pieces often and sand a little at a time. I use a pair of forceps or needle-nose pliers to hold the small pieces on the drum sander. When you are pleased with the results, use the 220-grit sleeve in the drum sander to remove the rough scratches.



6 **Sand the tight curves.** For small areas or inside cuts where you can't use a drum sander, I use an oscillating sander with $\frac{1}{4}$ " (6mm)- or $\frac{1}{2}$ " (13mm)-diameter sanding drums. I use this to sand a small 45° angle on the small feathers. You could also use a rotary tool with the appropriate sanding drums.

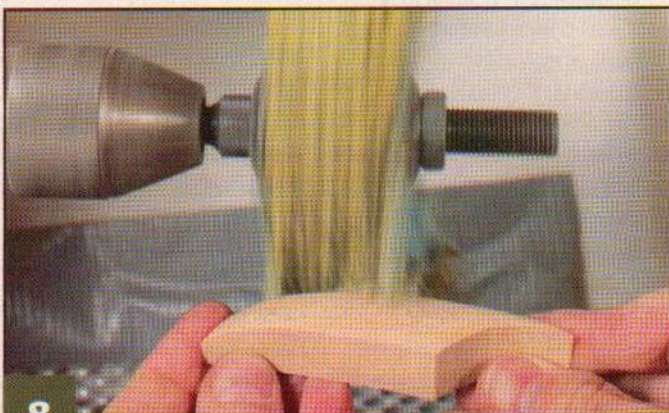


7 **Carve the details.** For small areas or inside cuts where you can't use a drum sander, I use a rotary tool or die grinder with a $\frac{1}{2}$ " (13mm)-diameter sanding drum or a carving bit. You can also use a carving knife to notch the feathery areas.

TIP

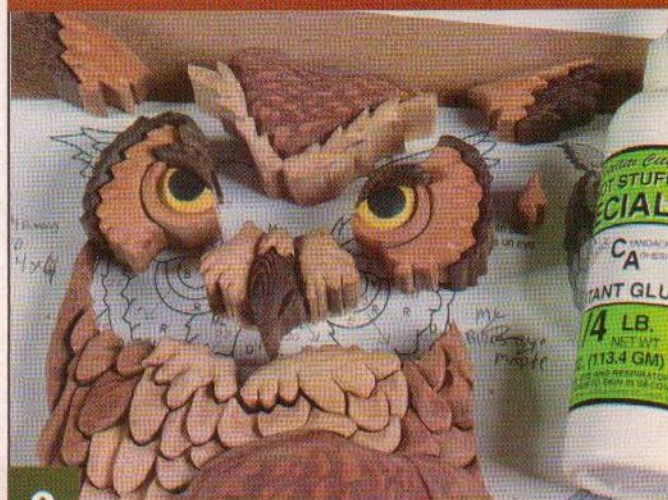
FRESH EYES

Now is a good time to step away from the project and come back a few hours later or the next day. You will see it in a new light and may decide to make more changes. Lay the board with the owl on the ground and step back, which will help you see the good (and bad) points of your work. If you like the way it looks, move on to the final buffing.



8 **Polish the pieces.** Make sure the pieces fit tightly and the entire piece is sanded to your satisfaction. I use a 220-grit sanding mop to buff the pieces, but you can use a higher-grit mop if you like. The sanding mop gives a nice polish to the pieces and helps make the finish coat of varnish go on smoothly. It also rounds any edges that you missed or are too small to sand easily.

OWL: ASSEMBLING & FINISHING THE PROJECT

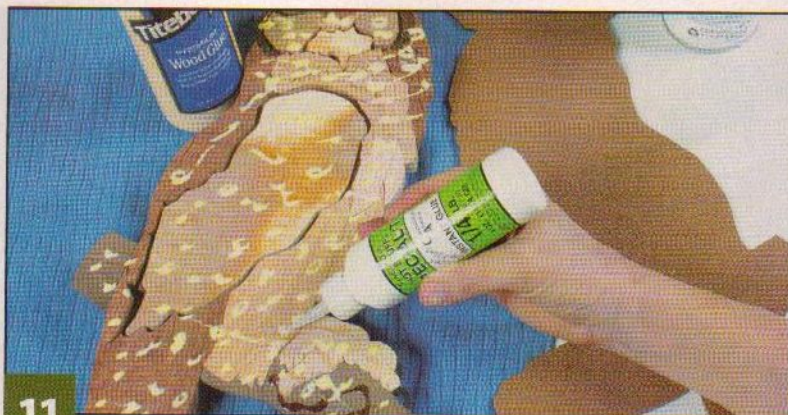


9 **Glue the pieces together.** Fit small sections of pieces together and tack them with cyanoacrylate (CA) glue. To tighten the fit of the pieces, cut along the joint and then re-glue the pieces. Then, use CA glue to tack together major sections, such as the head, wing, and body sections. Glue the sections together and sand the backs of the pieces flat. I use a flat drum sander, such as a Sand-Flee. A flat back produces a better glue joint between the pieces and the backing board.



10

Cut the backing board. Place the assembled owl on the backing board, trace around it, and cut $\frac{1}{16}$ " (2mm) inside the line. Sand and paint the back of the backing board if needed.



11

Attach the intarsia to the backing board. Apply dots of wood glue (such as Titebond) and CA glue to the back of the intarsia. Spray CA glue accelerator onto the backing board and carefully set the owl in place. Push down for 30 seconds, and then flip the assembly over and press hard to make sure all areas are glued tightly. Trim any overhanging backing board and touch up the edges if needed.



12

Apply the finish. I use spray polyurethane. Apply the finish according to the manufacturer's instructions. Allow the finish to dry overnight. Apply a clear gloss finish to the eye to give it a life-like look, and attach a hanger to the back. To give the eye an extra sparkle, add a dot of white gloss paint.



A nationally acclaimed intarsia artist, Kathy Wise has written two books and more than 30 articles. Her new book, *Intarsia Birds: Woodworking the Wise Way*, has more than 30 beautiful bird patterns, including this owl. Private and semi-private intarsia classes are available. To order the book or



request a free catalog, contact Kathy Wise Designs Inc., P.O. Box 60, Yale, Mich. 48097, www.kathywise.com, kathywise@bignet.net.

Materials & Tools

Materials:

- Black wood, such as ebony, 1" (25mm) thick: eyes and talons, 2" x 2" (51mm x 51mm)
- Very dark wood, such as wenge, 1" (25mm) thick: 4" x 5" (102mm x 127mm)
- Dark wood, such as black walnut, 1" (25mm) thick: branch, 6" x 9" (152mm x 229mm)
- Red wood, such as tiger wood, 1" (25mm) thick: 4" x 4" (102mm x 102mm)
- Yellow wood, such as yellowheart, 1" (25mm) thick: 2" x 2" (51mm x 51mm)
- Medium dark wood, such as lacewood, 1" (25mm) thick: 7" x 17" (178mm x 432mm)
- Medium light wood, such as bird's-eye maple, 1" (25mm) thick: 4" x 7" (102mm x 178mm)
- Medium light wood, such as sycamore, 1" (25mm) thick: 5" x 7" (127mm x 178mm)

- Light wood, such as sycamore, 1" (25mm) thick: 4" x 5" (102mm x 127mm)
- Plywood or tempered hardboard, $\frac{1}{4}$ " (6mm) thick: 12" x 18" (305mm x 457mm)
- Clear contact paper
- Spray adhesive
- Glue: wood, such as Titebond; cyanoacrylate (CA); CA glue accelerator
- Finish: satin spray polyurethane; clear gloss
- Hanger
- Paint (optional): white gloss

Tools:

- Blades: #5 and #3 reverse-tooth
- Pneumatic drum sander with sleeves: 150 grit, 220 grit
- Spindle sander with drums: $\frac{1}{4}$ " (6mm), $\frac{1}{2}$ " (13mm)
- Rotary tool or die grinder with bits: $\frac{1}{4}$ " (6mm) or $\frac{1}{2}$ " (13mm) sanding drum; carving bit
- Flat drum sander, such as Sand-Flee
- Sanding mop: 220 grit

The author used these products for the project. Substitute your choice of brands, tools, and materials as desired.

Pattern for the **GREAT HORNED OWL** is in the pattern pullout section.

Whitetail Deer



Intricate fretwork portrait makes a nice wall hanging

By Jody Smith

When you see a whitetail deer in the wild, it always generates a feeling of peace. If you are careful, the deer will stand and watch you for as long as you watch him. Capture that feeling at home with this challenging portrait project. As a bonus, this trophy buck will never be “the one that got away.”

Making the Project

Create a stack of several blanks if desired (see page 78 for stack-cutting methods), and then drill the blade-entry holes. Using a #2/0 spiral blade, start cutting in the center of the portrait. When you are finished cutting the design, carefully make a few passes with a propane or butane torch to burn off any fuzzies attached to the back. I attach the fragile fretwork to a backing board painted black. Then, apply a coat of spray lacquer and allow it to dry. Put the whole project in a frame behind glass to protect the fretwork.

Materials & Tools

Materials:

- Baltic birch plywood, 1/8" (3mm) thick: fretwork, backing board, 2 each 11" x 14" (279mm x 356mm)
- Spray paint: black
- Clear finish, such as ColorPlace clear spray enamel

Tools:

- Blades, such as Flying Dutchman NS: #2/0 spiral reverse
- Drill with #71 wire bit
- Propane or butane torch

The author used these products for the project. Substitute your choice of brands, tools, and materials as desired.

Pattern for the **WHITETAIL DEER** is in the pattern pullout section.



Jody Smith lives in Cloverport, Ky., with his wife and two children. He has been scrolling and designing patterns for 11 years. Contact Jody through the Scroll Saw Woodworking & Crafts Message board (www.ScrollSawer.com/forum), where his username is “sparkyky.”

Creating Patterns from Photos

It's easier than you might think to make patterns from photos using free software called GIMP

By Jon Deck

Almost everyone has a vast source of potential scroll saw patterns in family photo albums, hard drives, and even their mobile phones. Using a home computer and photo software, you can create portrait patterns of your family, pets, and favorite landscapes. You can buy pattern-making software, or do it yourself with common photo-editing programs. I have updated Gary Browning's classic instructions to show you how.

Your photos will need to be in digital format. It's easy to digitize print photos using local or mail-order scanning services. Alternatively, desktop scanners have become quite affordable if you choose to do it yourself.

You will also need a computer with photo-editing software. Many photo-editing applications are available. I chose to use GIMP, a popular, free, downloadable application with many of the same functions as Adobe Photoshop (www.gimp.org).

If you prefer to use Photoshop, please visit our website (www.scrollsawer.com) to download step-by-step instructions for that application.

Understanding What Software Will Do

To make a scroll saw pattern from a picture, you will need to simplify the image to pure black and white. All of the colors and tones in the photo will be reduced to these two values: black represents the voids cut out of the wood, and white is the wood itself.

The photo software will help you narrow and define the tonal values. You will control the appearance of the image using tools with sliders that allow you to make incremental changes and to preview the results before you apply them to the photograph.

The software will not automatically create the pattern for you. You will need to do further work to the resulting image, on the computer or with a pencil, to clean up the edges, simplify areas of noise, and build bridges to connect stray white areas to the main body of the pattern (unattached white areas will fall out after being cut).

Before You Start

The age-old computer advice, garbage in/garbage out, still holds true. To make a good pattern, you need to start with a high-quality digital image. The resolution should be at least 300 DPI and the focus should be sharp. Photos that have good contrast between the shadows and highlights will produce the best patterns.

Consider your subject carefully. If you want to create a face portrait, start with a close-up shot rather than cropping a full-figure image. A photo with more detail will give you a better likeness when cut in wood. Backgrounds can be difficult as part of the pattern. Try to pick out a simple element to establish a background and remove what you don't need—for example, use a tree branch instead of the whole tree, a window or door frame instead of room details, or one item rather than a full collection surrounding the subject.

If you want to show more than one person in the portrait, consider using separate photos and combining them in one pattern after they're defined. Rarely will you find multiple subjects represented well in the same photo.

Finally, always duplicate the original image and work on the copy. Having a pattern but no photograph when you're finished is not a good thing.

The Tool Box

The tool box is always present on the screen. You can perform all of the instructions in this article using two tools: the cropping tool (A), and the brush tool (B).

Use the magnifying tool (C) to enlarge the image when working on detailed areas.

Click the small black/white icon (D) to ensure you're working in pure black and white. Change the brush from black to white and back by clicking the double-ended arrow (arrow).

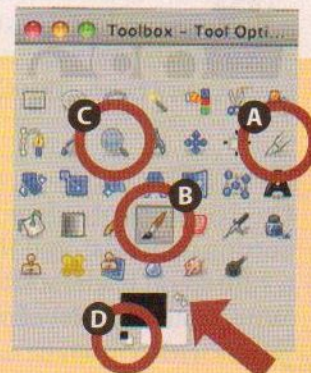
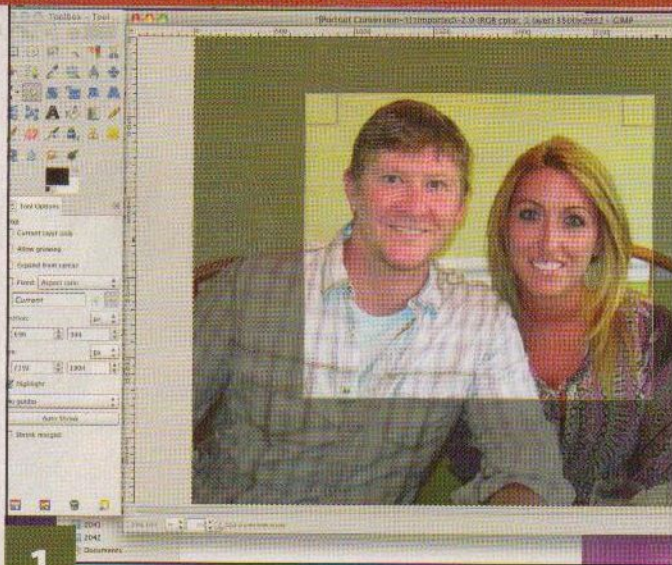
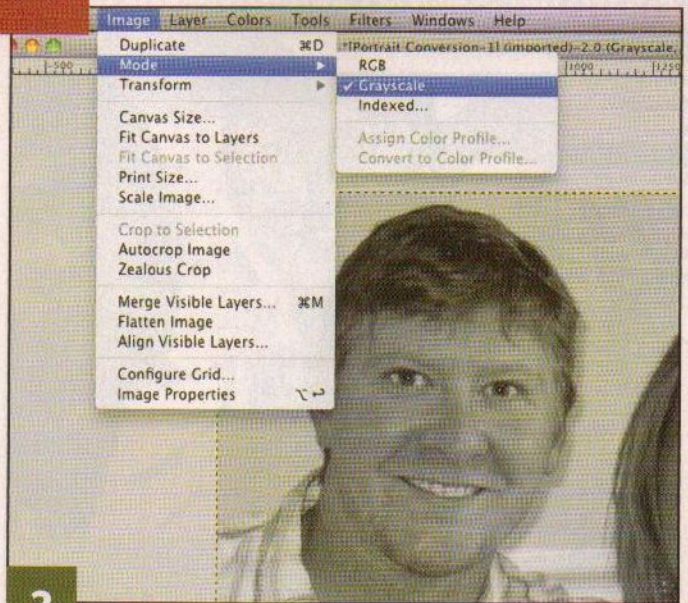


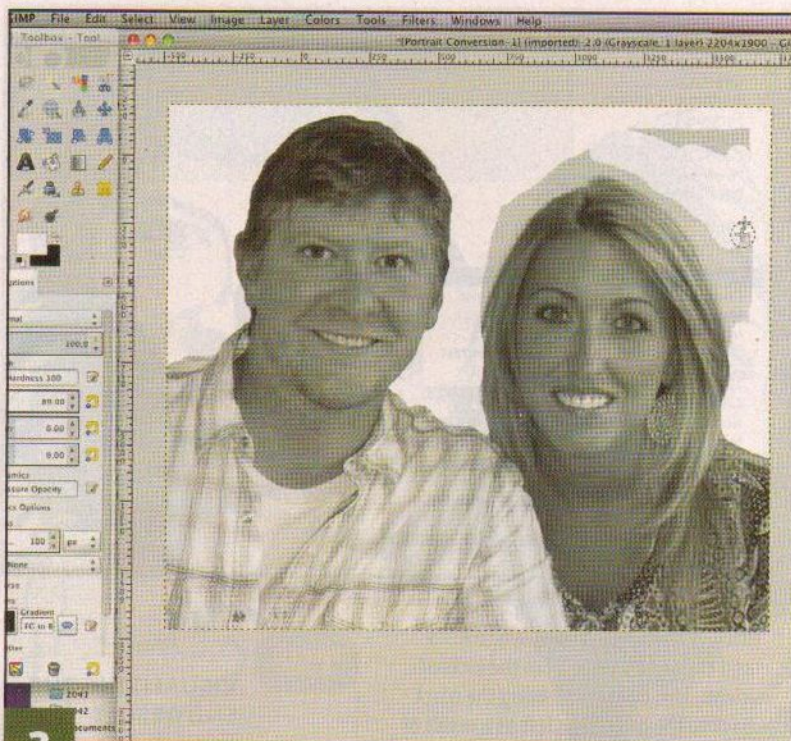
PHOTO PATTERNS: PREPPING THE IMAGE



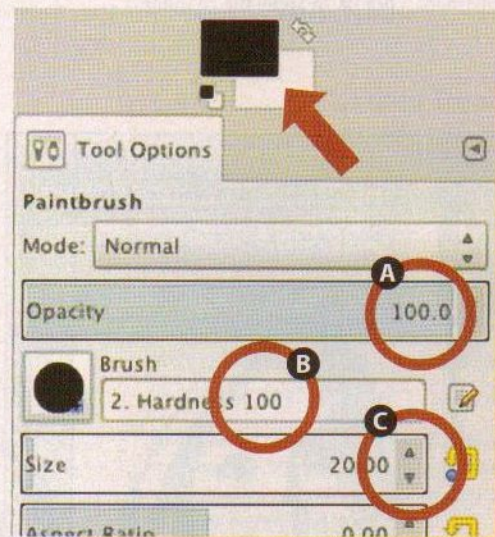
1 **Crop the image.** Use the cropping tool to maximize the subjects of the photo, reduce the background, and balance the image. Click the cropping tool on the tool box and place the cursor in the upper left corner. Click and drag the cursor across the photo to define the new image area. Release the mouse button, and drag the edges on the highlight box to fine-tune the positioning. Click the Enter key to apply the crop.



2 **Change the image to grayscale.** Pull down the Image menu to Mode. Highlight Grayscale on the kickout menu and release the mouse button. The image is now black and white.



3 **Paint out the background.** Select white to the foreground and paint out the photo background with the brush tool. Select a smaller brush to outline the subjects and a larger brush to paint the fill. The brush size is always previewed on the image. If you paint over an area that shouldn't be white, select Undo under the Edit menu to remove the previous paint stroke.

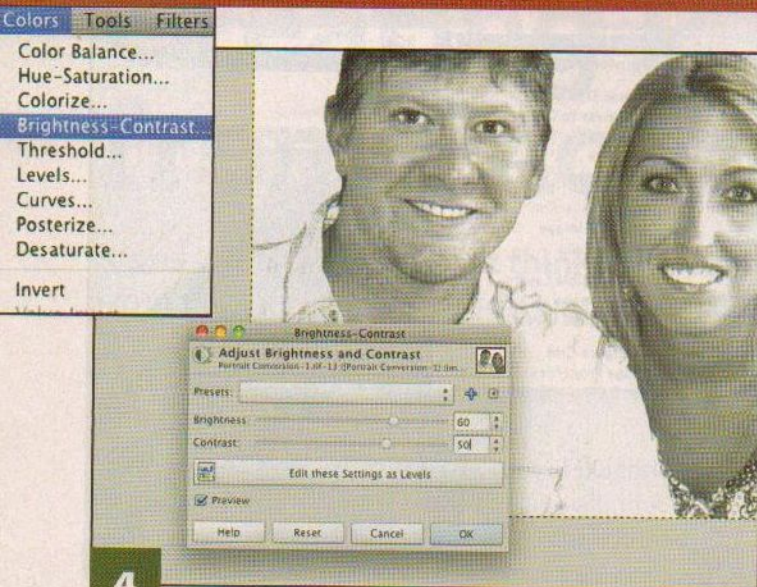


The Brush Tool

Use the brush tool for painting out backgrounds and cleaning up the converted image. **Always** keep the color palette black/white (arrow), the opacity (A) at 100%, and the hardness (B) at or near 100%. Use the size controller (C) to change the brush size for wide or detail areas as needed.

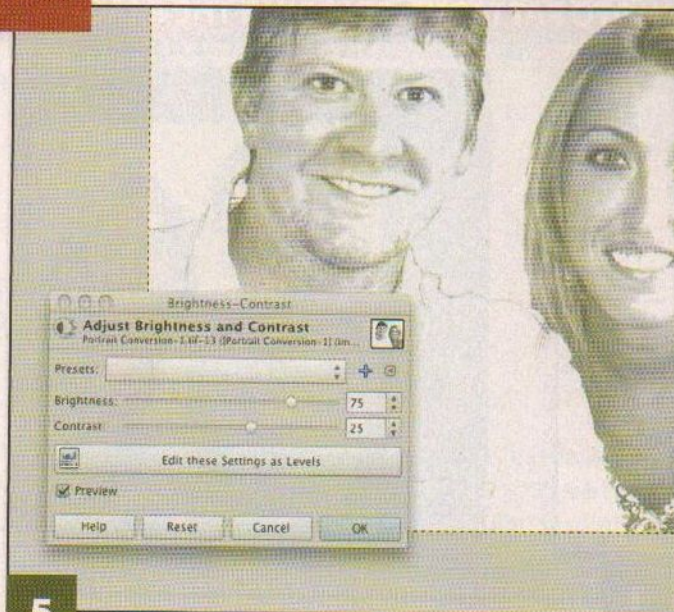
NOTE: This menu appears automatically below the tool box by selecting the brush tool.

PHOTO PATTERNS: CONVERTING THE IMAGE



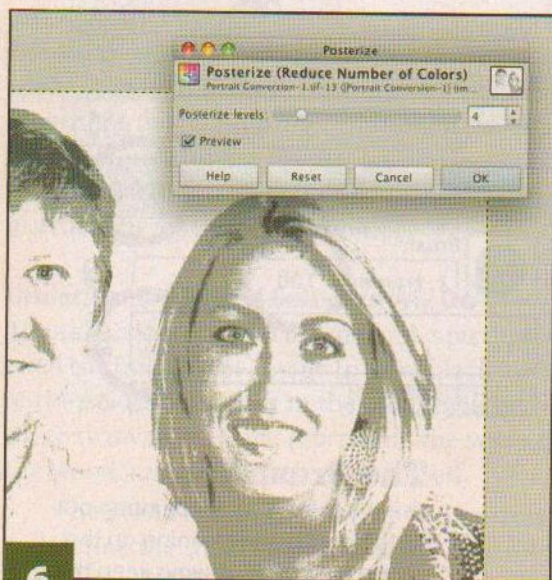
4 Begin tuning the image with Brightness/Contrast.

Under the Colors menu, choose the Brightness-Contrast command. Work the sliders on the screen to adjust the image. Don't change the image too much in a single adjustment, or you will lose too much detail. Instead, make the changes in controlled increments. I chose 60% Brightness and 50% Contrast for the initial adjustment. Click OK to apply the changes.



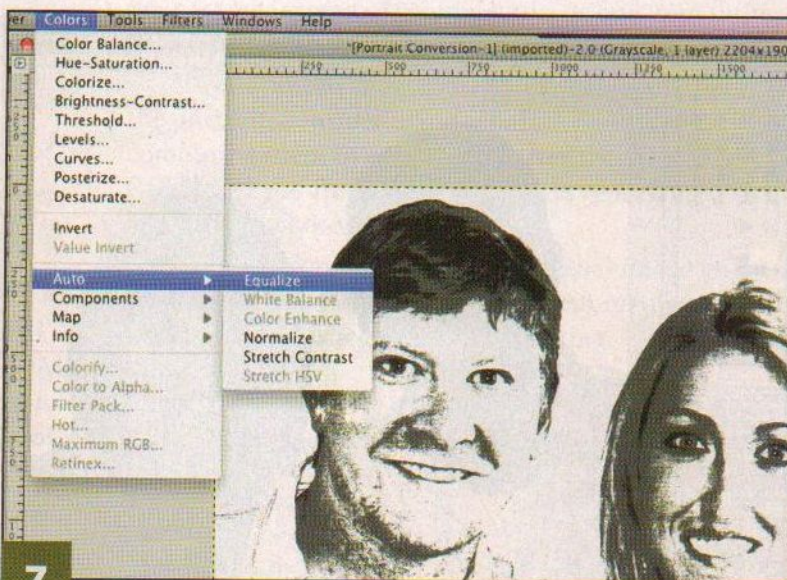
5 Increase the highlights.

Revisit the Brightness-Contrast command and maximize the white areas with the Brightness slider. Use the Contrast slider to regain enough of the details to have a solid, recognizable image. You'll notice that the black areas are being starved of value, but they will be replenished in further steps. I chose 75% Brightness and 25% Contrast. Experiment with the range of the sliders to achieve a satisfactory result, and then click OK to apply the adjustment.



6 Access the Posterize filter.

Select Colors from the top menu bar. Drop down and choose Posterize. Posterization will break gray areas into coarse dots and clearly define the white areas. Keep the posterization simple. I chose a value of 4 because a value of 3 lost more of the detail than I wanted. Click OK to apply the filter.



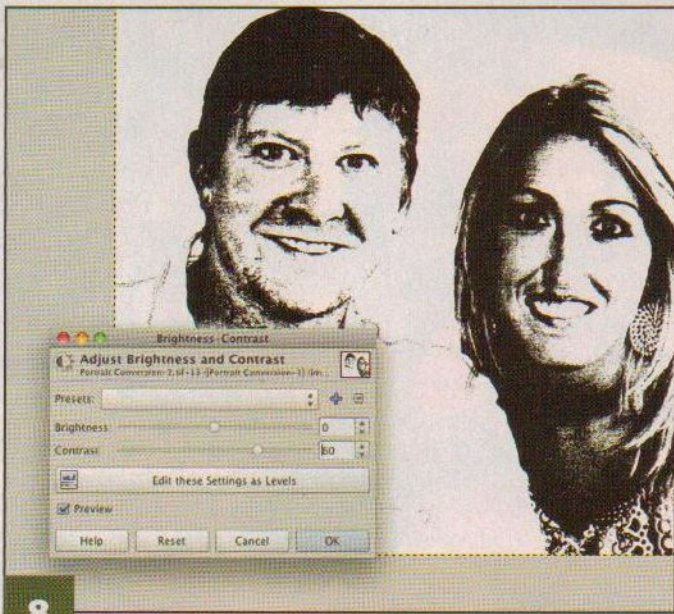
7 Equalize the image.

From the Colors menu, drop down to Auto and choose Equalize from the kickout menu. This option will bring the black back to the gray areas left as a result of the posterization.

TIP VISUALIZING THE END RESULT

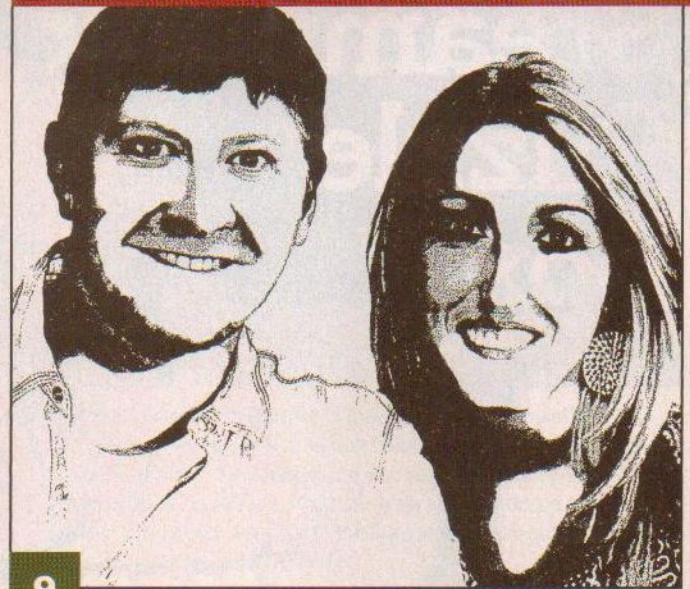
Try squinting at the screen preview to see if the values you've chosen are leading you in the right direction. Looking at the image this way can show you if your image is holding enough detail to become a pattern.

PHOTO PATTERNS: CLEANING UP THE IMAGE



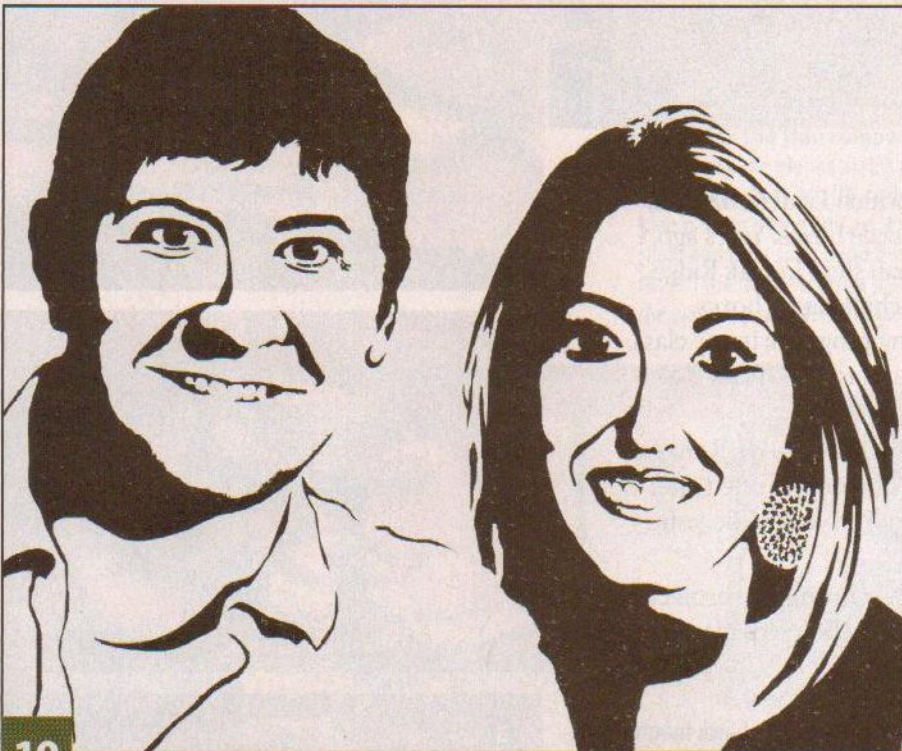
8

Finish up with contrast. Return to the Brightness-Contrast command and use Contrast to make strong blacks. Fine-tune the Brightness if necessary for your image. The software has done its work; now you must clean up the image to make a working fretwork pattern. Go to the File menu and select Save As. Retitle the end result so the original file is intact.



9

Clean up the gray areas. Begin filling in dotted, or gray, areas with white, leaving traces of the dots as placeholders so you can come back with black to add detail shadows. If you're cleaning up the image on the computer, use the brush tool as you did in Step 3. Or, you can leave the computer and work on a printout of the computer conversion using paint, pencils, or markers. Refer to the original photo to decide which parts of the image to detail or eliminate.



10

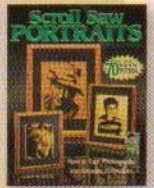
Finish the pattern. Continue to refine the image by converting the dotted areas to either black or white. Add black detail shadows along the dotted remnants you left in Step 9. Smooth the ragged edges left by the software, and bridge all floating white areas to connect them to the main pattern. Save and print the finished digital pattern, or make a master copy of the final version if you've been working on a printout.

Further Reading

Scroll Saw Portraits, Second Edition

By Gary Browning

Detailed instructions for making your own patterns from photos and tips for cutting them successfully, plus 55 ready-to-scroll portrait patterns.



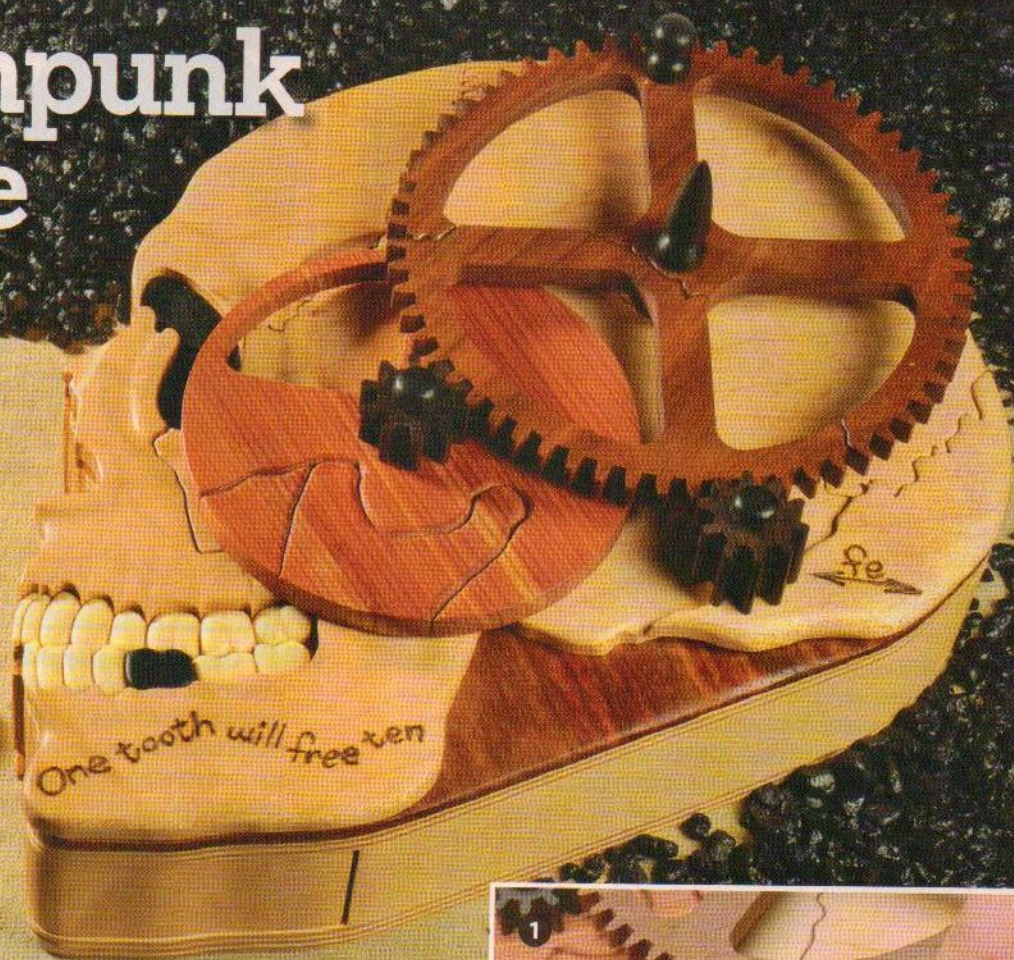
Available for \$17.95 + \$3.99 S&H (parcel post) from Fox Chapel Publishing, www.FoxChapelPublishing.com, 800-457-9112, 1970 Broad St., East Petersburg, Pa., 17520, or check your local retailer.

A BONUS PATTERN of **JOHN WAYNE** is in the pattern pullout section.



ON THE WEB Exclusive instructions for Photoshop users are online.
www.scrollsawer.com

Steampunk Puzzle Box



Follow the clues to
unlock the gears and
reveal a hidden box

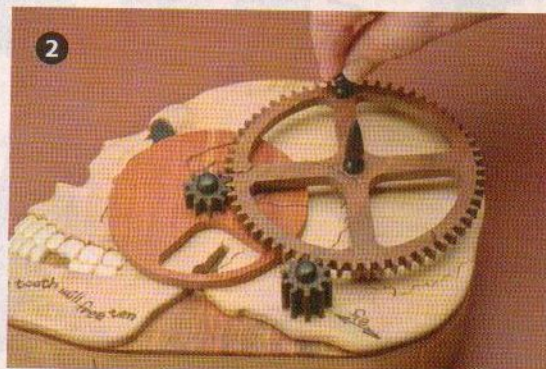
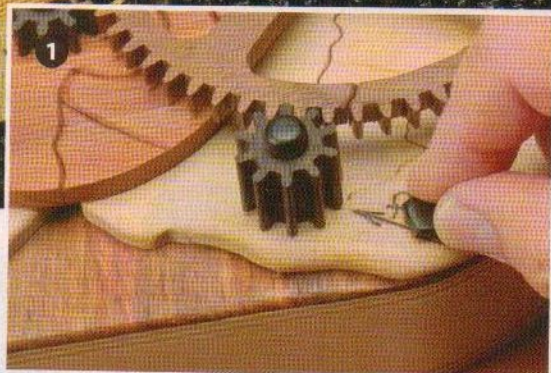
By John Rhyne

This steampunk-inspired puzzle box, which I call *Gearhead*, is at the top of the evolution of my puzzle boxes. Years ago, I made and sold simple puzzle boxes at a small shop in Oak Ridge, Tenn. My customers always wanted more challenging boxes. Then, I learned SolidWorks, a 3-D modeling program; in my class, we modeled and animated steam engines and robots. With 3-D modeling, it is easy to make more challenging boxes.

The key to successfully making *Gearhead* is to drill the holes precisely through all of the pieces of wood at one time. Then, align the holes using brass rods and tubing while you complete the other steps.

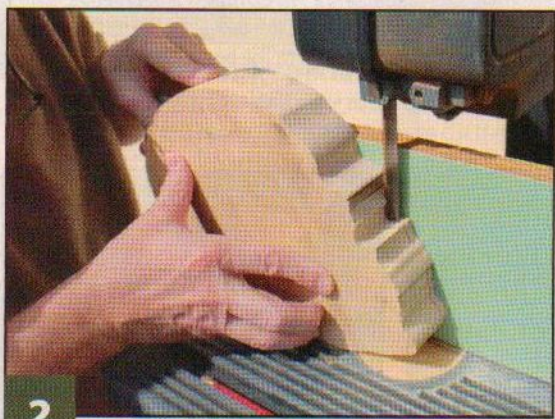
Please read the instructions before beginning the project. The tools you will be using may affect your choice of blanks.

To open the box, (1) slide the black magnetized tooth over the Fe (iron) symbol to move the locking pin and allow the 10-tooth gear to rotate. (2) Turn the gears to reveal the keyhole, and use the key to unlock the box. (3) Finally, rotate the center section to reveal the box.



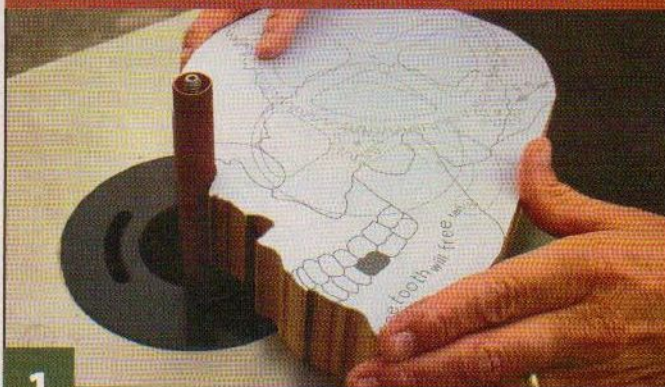
Making the Box Without a Band Saw

When I make this box, I use a band saw to cut the thick wood and to slice off sections for the intarsia and the box bottom. The thick wood can be cut with a scroll saw and appropriate blade, but it's difficult to slice off sections without a band saw. Instead, use several pieces of thinner wood. Replace the 1½" (38mm)-thick maple blank with a ⅝" (16mm)-thick piece, a ⅜" (10mm)-thick piece, and two ¼" (6mm)-thick pieces of maple. Stack all four together to perform Step 1; instead of Step 2, remove one ¼" (6mm)-thick piece from the stack to serve as the intarsia blank. When you get to Step 6, separate the other ¼" (6mm)-thick section from the box sides instead of slicing off the bottom. For Step 8, separate the ⅜" (10mm)-thick piece from the lock instead of slicing off the top.

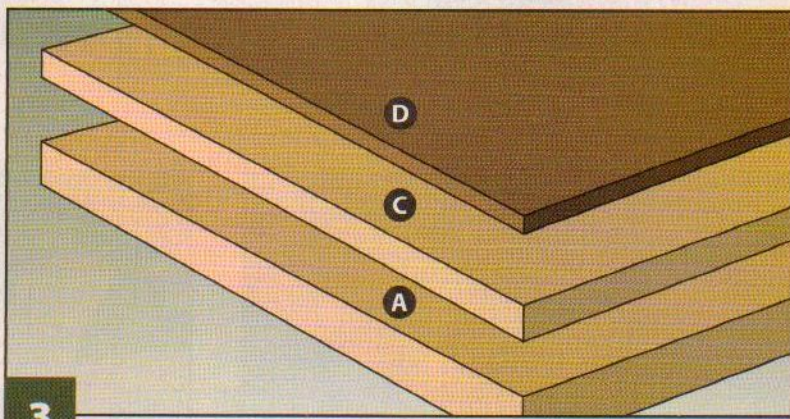


2 **Slice off the intarsia section.** Use a band saw with a ½" (13mm)-wide resaw blade to slice a ¼" (6mm)-thick piece from the cut box. Sand away the saw marks; I use a belt sander.

PUZZLE BOX: CUTTING THE BOX PIECES

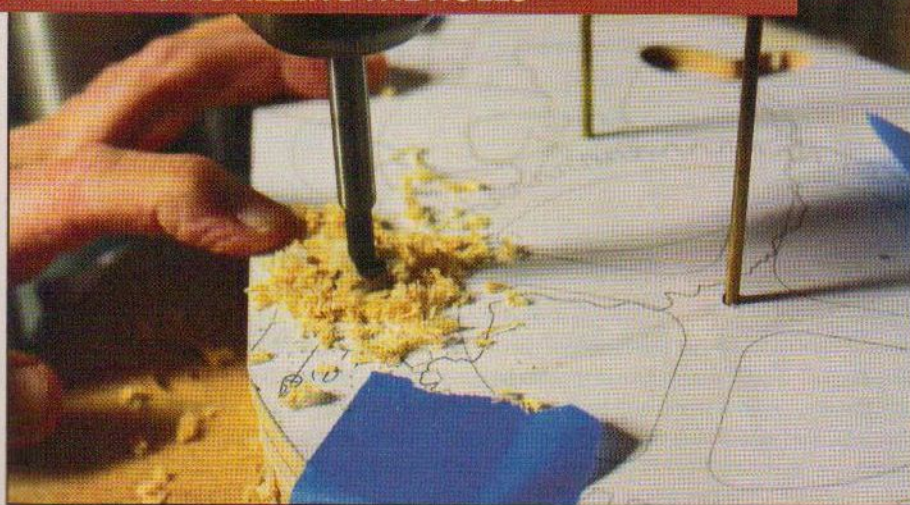


1 **Cut the box.** Cover the box blank (B) with blue painter's tape and use spray adhesive to attach the skull pattern to the tape. Cut the outline of the box. I use a band saw with a ¼" (6mm)-wide blade, but you could use a scroll saw with a #12 blade. Do not remove the pattern. Sand up to the lines and remove any saw marks; I use an oscillating spindle sander.

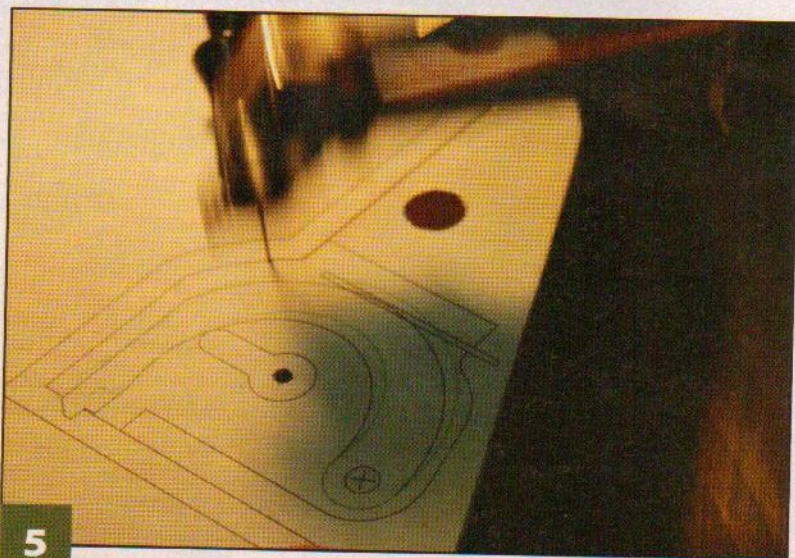


3 **Stack the thin components.** See page 78 for stacking methods; I use hot glue. Stack the blanks in this order from bottom to top: plywood project bottom (A), plywood box top (C), walnut intarsia backing board (D). Cover the walnut with blue painter's tape and attach the skull pattern to the tape. Cut the outline of the skull, and then sand up to the line. Remove the project bottom from the stack. Attach the maple intarsia piece to the walnut. *Note: Do not remove the pattern from the walnut; you will use it again later.*

PUZZLE BOX: DRILLING THE HOLES

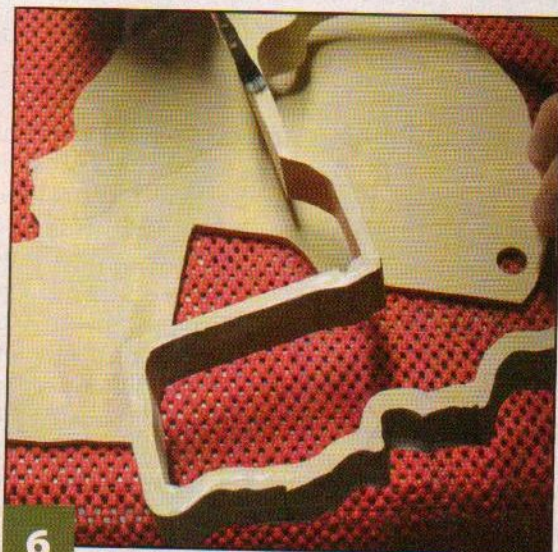


4 **Drill the first holes.** Measure the stack and mark the drill bit. Drill two ⅛" (3mm)-diameter holes as marked to within ⅛" (3mm) of the bottom of the plywood box top (C). Insert ⅛" (3mm)-diameter brass rods into the holes to keep the pieces aligned. Drill a blade-entry hole through the lock keyhole and use a #5 scroll saw blade to cut the keyhole. Align and attach the box (B) to the bottom of the stack. Use a ½" (13mm)-diameter Forstner bit to drill the hole for the locking gear to within ½" (13mm) of the bottom of the box section.



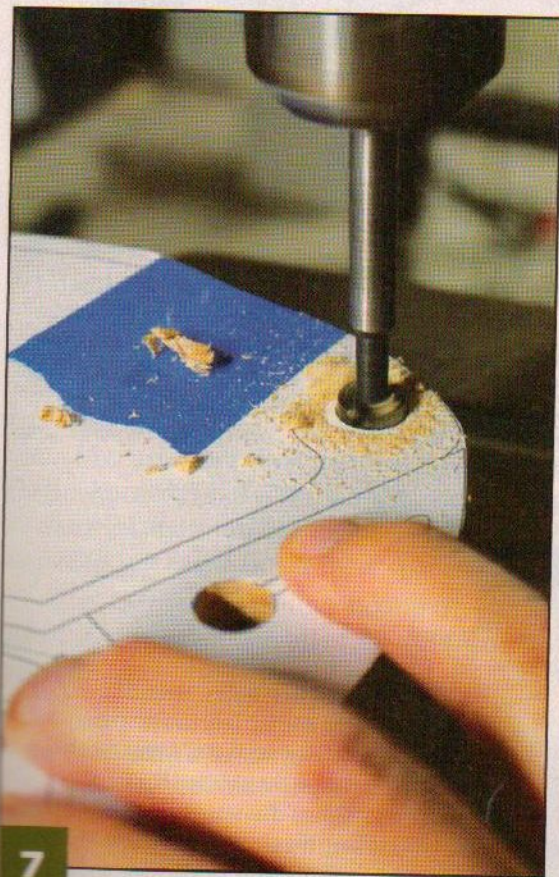
5

Divide the box section. Remove the box (B) from the stack. Apply blue painter's tape to its top, and then align and attach the box pattern. Using a #5 blade, cut the heavy line separating the box from the lock area. *Note: Do not cut the notch for the lock on the rotating box yet.* After you cut the lock area free, go back and cut the notch for the lock in the box. Do not remove the pattern.



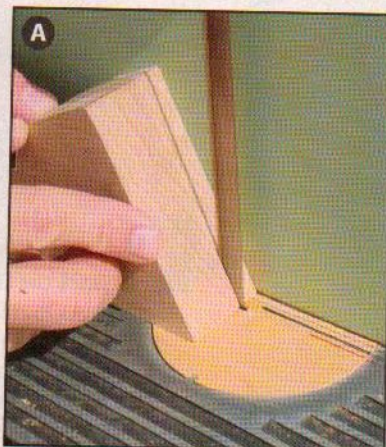
6

Cut the inside of the box. Slice $\frac{1}{4}$ " (6mm) off the bottom of the box section using the $\frac{1}{2}$ " (13mm)-wide band saw blade. Drill a $\frac{1}{16}$ " (2mm)-diameter blade-entry hole and cut the inside of the box with a #5 blade. Glue and clamp the box sides to the box bottom.

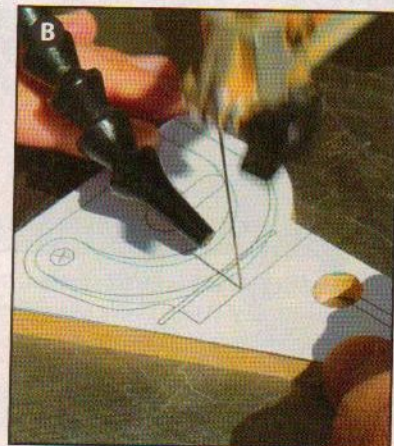


7

Drill a hole for the pivot dowel. Attach the plywood project bottom (A) under the box and, using a drill press and $\frac{1}{2}$ " (13mm)-diameter Forstner bit, drill the pivot hole through both pieces. Place a piece of $\frac{1}{16}$ " (2mm)-diameter tubing in the hole to keep the box aligned while assembling and testing the lock.



A

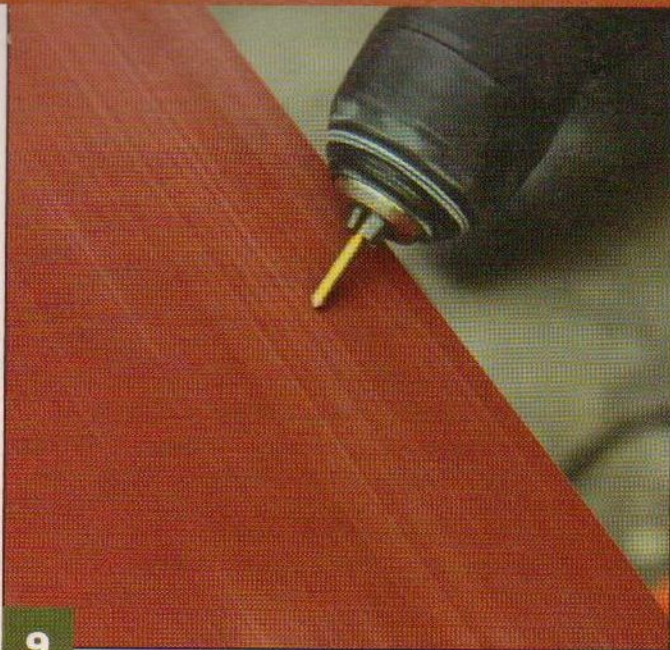


B



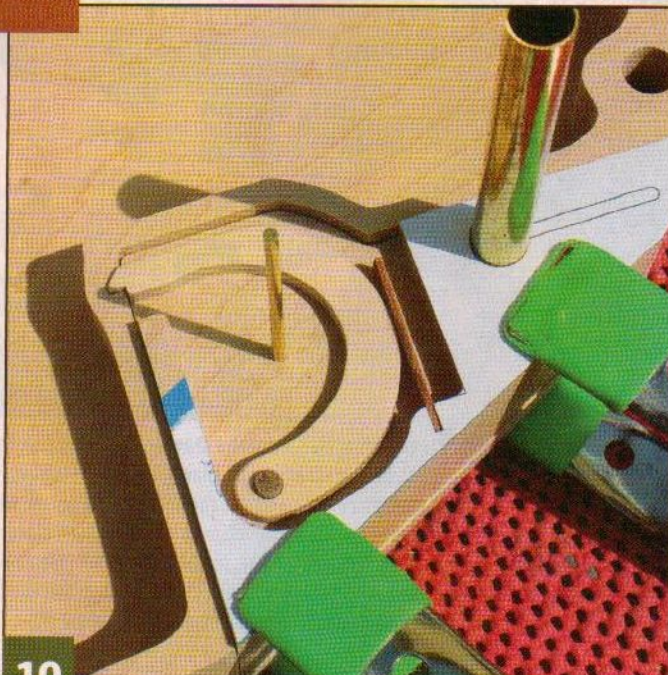
8

Cut the lock section. Drill a $\frac{1}{8}$ " (3mm)-diameter by 1" (25mm)-deep key-alignment hole in the lock housing. Drill a $\frac{1}{4}$ " (6mm)-diameter by $\frac{3}{4}$ " (19mm)-deep lock swing-arm pivot hole. (A) Using a band saw, slice $\frac{3}{8}$ " (10mm) off the top of the lock housing area. Use a belt sander to remove the saw marks. (B) Use a #5 scroll saw blade to cut the lock and spring area out of the top slice. (C) Align the edges of the two pieces, and glue and clamp the modified slice back in place.



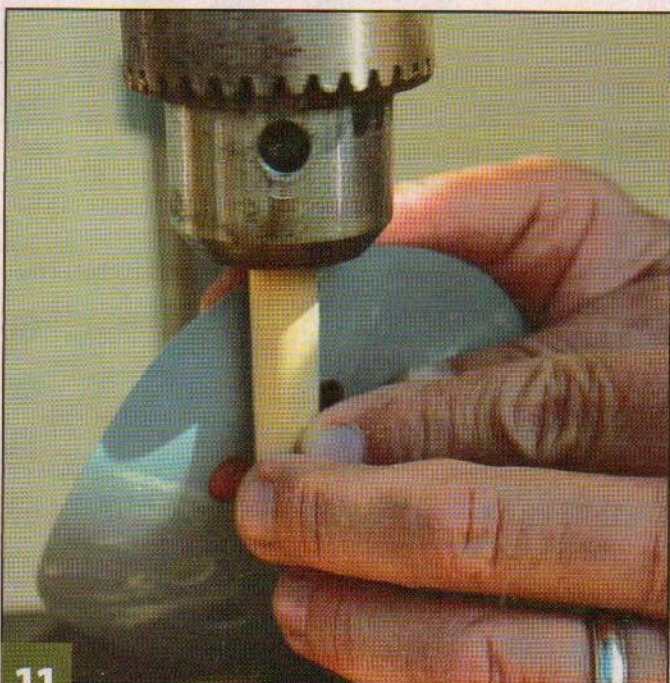
9

Make the key alignment rod (Q). Chuck a $\frac{1}{8}$ " (3mm)-diameter by 2" (51mm)-long piece of brass rod into a hand drill. (Use a cut-off wheel in a rotary tool or a hacksaw to cut the rod.) Spin the rod against a belt sander to round the end. Use progressively finer grits of sandpaper to smooth the rod. Chuck a polishing wheel bit loaded with polishing compound in a rotary tool and polish the brass rod. Cut the rod to $1\frac{3}{8}$ " (35mm) long. Use epoxy to glue the rod into the key guide hole with the rounded end up.



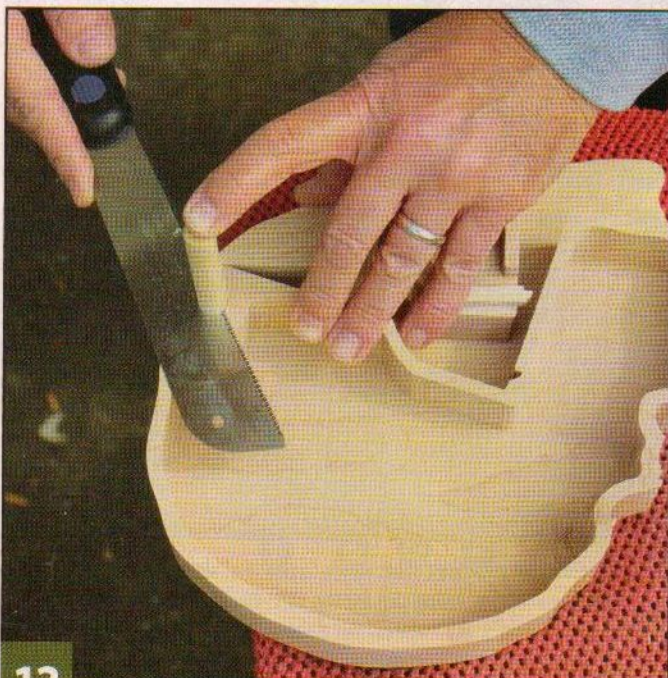
10

Assemble the lock. Cut the swing arm pivot dowel (G) and sand it smooth. Glue the dowel into the $\frac{1}{4}$ " (6mm)-diameter hole in the lock housing. Attach the pattern to the blank, drill the hole, and cut the lock swing arm (E). Place it on the dowel and ensure it moves freely. Cut the lock spring (F) to size and glue it into the notch in the lock housing. Glue and clamp the lock housing to the project bottom (A). Remove the patterns and tape from the box and lock.



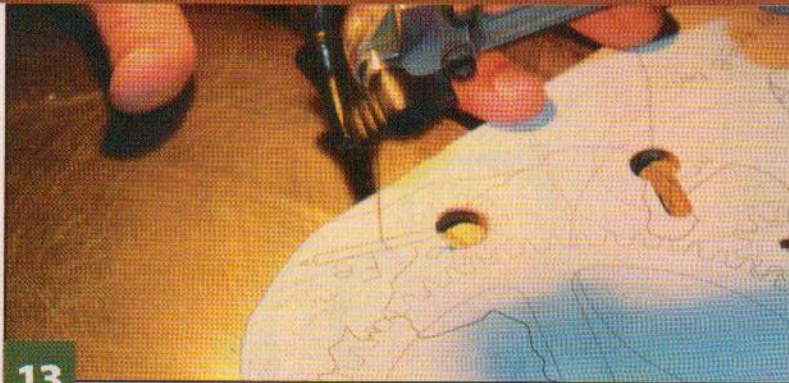
11

Prepare the pivot dowel (M). Cut the dowel to size. It should fit snugly in the hole in the project bottom and spin freely in the box. To ensure that it will spin, chuck the dowel in a drill and sand the upper part with 400-grit sandpaper.



12

Install the pivot dowel. Glue the pivot dowel into the project bottom, allowing the dowel to protrude through the bottom. Remove the excess glue. Place the box in position. Allow the glue to dry, and then cut the excess dowel at the project bottom and box section top.



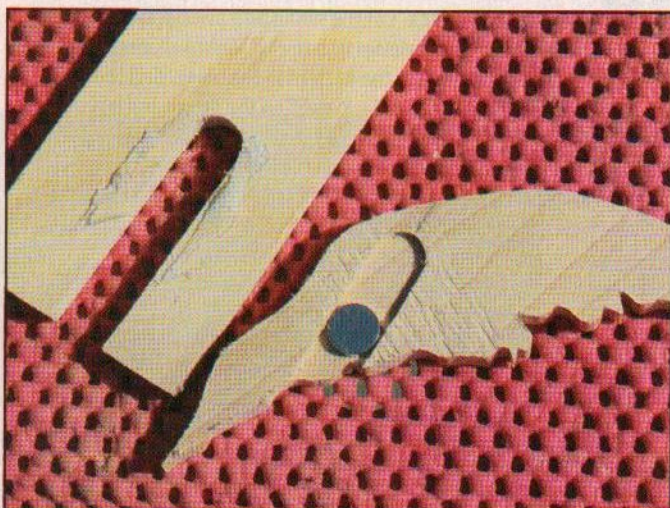
13

Attach the lid to the box. Separate the stacked plywood box top (C), walnut intarsia backing board (D), and maple intarsia blank. A pattern is already attached to the walnut; drill a blade-entry hole and cut the locking pin notch. Glue and clamp the walnut to the box top. Allow the glue to dry, and then place the assembly in position on top of the box. Drill pilot holes for two #8 by $\frac{3}{4}$ " (19mm)-long wood screws. Remove the pattern and tape from the walnut and attach the lid assembly to the lock section with the screws. Make sure the box opens freely.



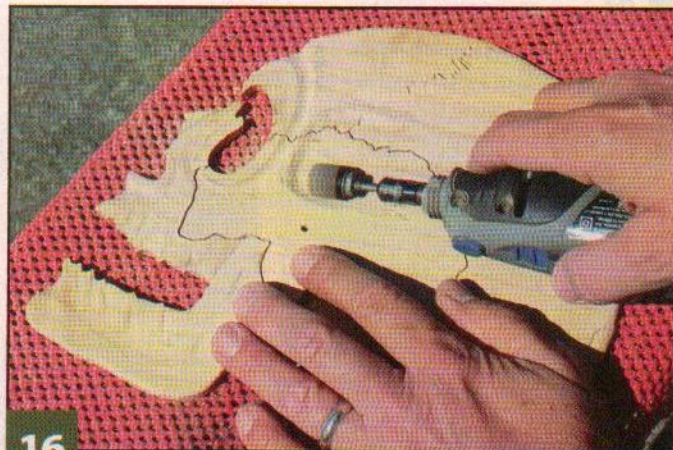
14

Refine the intarsia blank. The skull pattern should already be attached to the maple intarsia blank. Use a #2 scroll saw blade to cut the eye socket, mouth, and lower skull areas (cut the lower skull on the dotted lines). Then, cut along the lines to separate the skull plates. Remove the patterns and tape.



15

Cut the magnet slot. Refer to the "Fe" skull plate pattern to mark a $\frac{5}{16}$ " (8mm)-wide slot for the rare-earth magnet on the back of the bottom right skull plate. I cut a router template (V) with a scroll saw to use with a $\frac{1}{4}$ " (6mm) router bit and guide bushing. Attach the template to the back of the skull piece, cut the $\frac{3}{32}$ " (3.5mm)-deep slot, and remove the template. You could also use a $\frac{5}{16}$ " (8mm)-diameter Forstner bit and a chisel to cut the slot. To make the locking pin, use the technique in Step 9 to cut a piece of piano wire $1\frac{1}{8}$ " (29mm) long and round both ends. Use epoxy to attach a rare earth magnet to one end of the locking pin. Set the pin in the slot in the walnut.



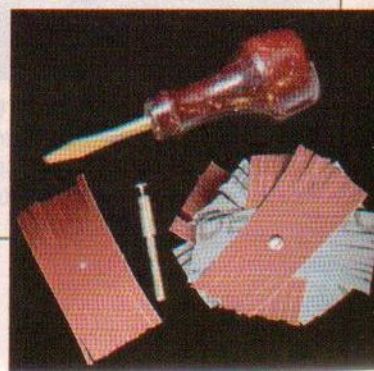
16

Shape the intarsia. Dry-assemble the maple intarsia pieces. Referring to the sanding guide at right, pencil-shade the areas where wood should be removed. Round the outer edges of the skull and feather around the joints using a shop-made flap sander (see Tip) in a rotary tool. Use a sanding drum to remove excess wood between the nose and the eye. Then, shape the rest of the skull.

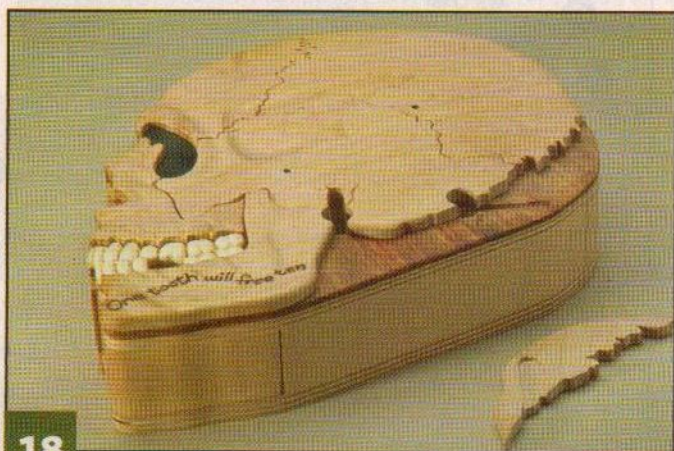
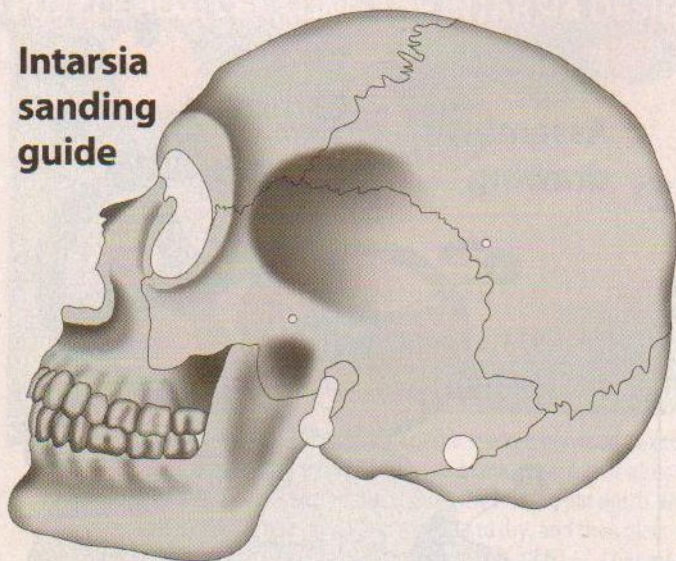
TIP

SHOP-MADE FLAP SANDER

Cut 1" (25mm)-wide cloth-backed turner's sandpaper into six $2\frac{1}{2}$ " (64mm) lengths. Cut $\frac{1}{8}$ " (3mm)-wide by $\frac{3}{4}$ " (19mm)-long strips into both ends of the pieces of sandpaper. Drill a $\frac{1}{16}$ " (2mm)-diameter hole in the center of the pieces. Place the sandpaper strips in alternating back-to-back units staggered around the screw of a rotary-tool mandrel, and tighten the screw. Wear safety glasses when you sand.

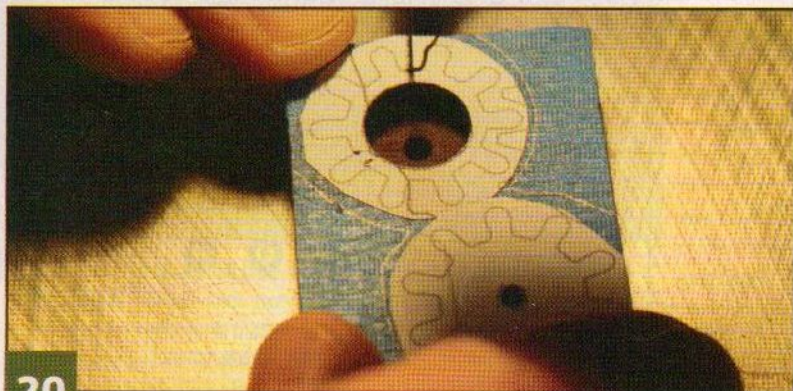


Intarsia sanding guide



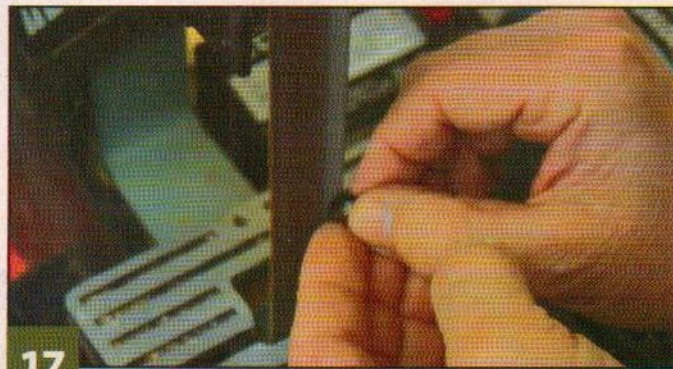
18

Assemble the intarsia. Carefully assemble the intarsia on the walnut backing board. Glue and clamp the intarsia and white teeth to the walnut. Then, glue the ebony eye socket plate into the eye socket. *Note: Do not glue the black tooth or the lower right skull plate.* Use epoxy to attach two rare earth magnets to the back of the black tooth, making sure the magnets match the polarization of the sliding magnet and that the tooth will still fit in its place. (See the photo in Step 15.)



20

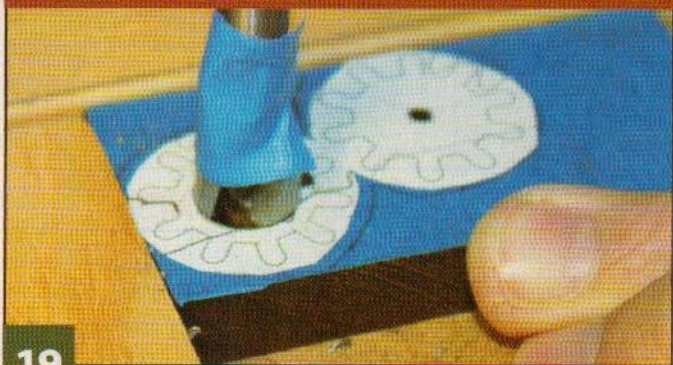
Cut the gears. Use a #2 blade to cut the gears. For the 60-tooth gear (R), first cut on the line around the perimeter. Next, cut the four spaces between the arms, and then cut the spaces between the teeth. Cut the perimeter of the keyhole-hiding wheel (I) and then cut the keyhole window. The 10-tooth gears (J, K) are small, so follow the lines in one continuous cut. Finally, cut the spacer (Y). Do not remove the patterns.



17

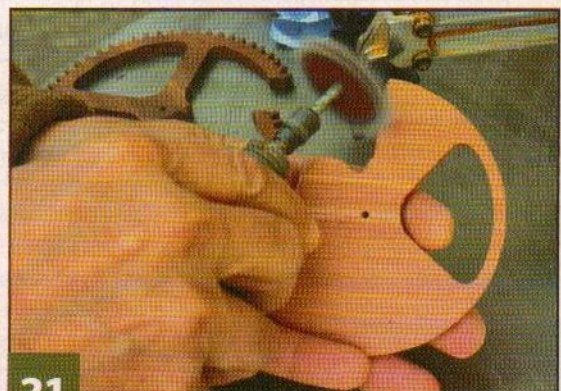
Cut and shape the teeth. With a #2 scroll saw blade, cut the white teeth (O) from aspen and cut the black tooth and eye socket plate (P) from ebony. Sand the eye socket plate smooth and set it aside. Sand the teeth at an angle sloping toward the gum line, and then round them; I use a belt sander. Remove a little wood from the back of the front teeth to make it appear that they round with the jaw. Dry-assemble the entire skull intarsia and set it aside. Glance at the pieces over the next few days and mark other areas to remove or shape. When you are happy with them, polish the pieces with progressively finer grits of sandpaper.

PUZZLE BOX: CUTTING THE GEARS



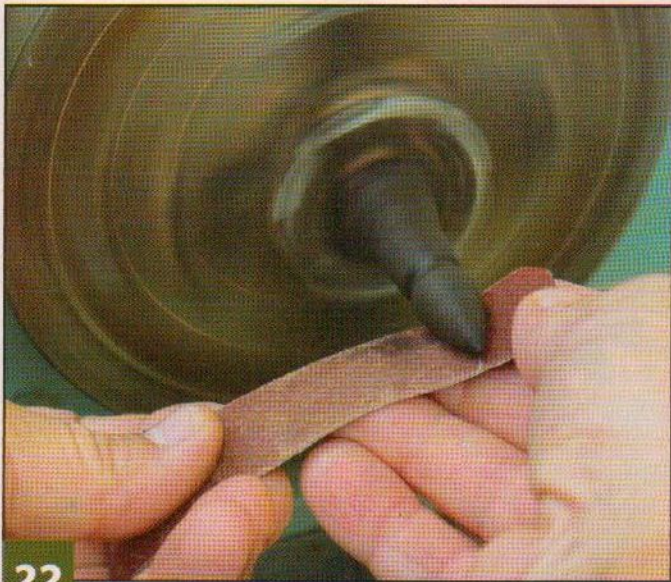
19

Drill the holes in the gears. Apply the gear patterns to the blanks. Drill the holes as marked. In the 10-tooth locking gear (K), counter-drill a $\frac{1}{2}$ " (13mm)-diameter by $\frac{1}{4}$ " (6mm)-deep hole for the locking pin.



21

Shape the gears. Use a #2 blade and follow the dotted pattern lines to cut the 60-tooth gear and the keyhole-hiding wheel into sections. Remove the patterns and tape from all gear pieces. Use a flap sander to round the edges of the cut pieces along the dotted lines only, and then glue them back together.



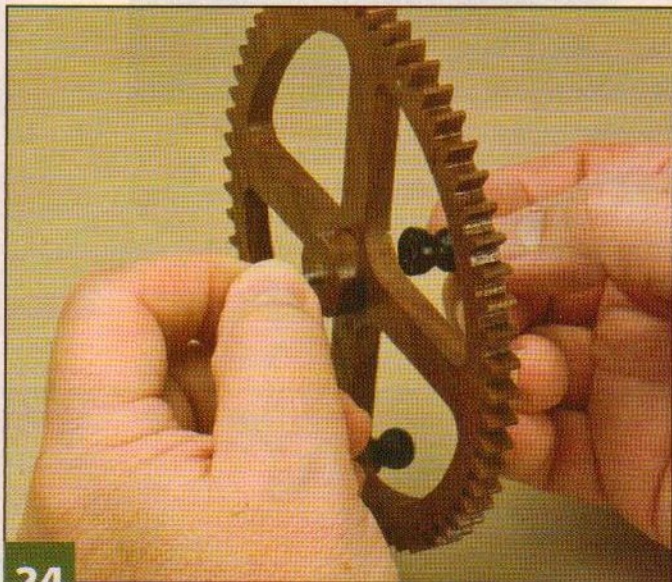
22

Make the knobs (L). Drill $\frac{1}{8}$ " (3mm)-diameter holes in the ends of the knob blank(s). Compound-cut the spike (L1), knob (L2), and two caps (L3) or turn them on a lathe. Sand and polish the pieces and set them aside.



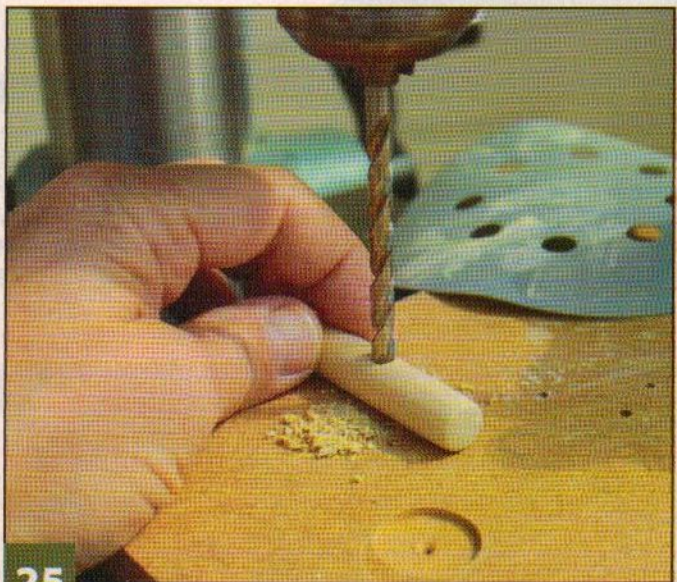
23

Prepare for assembly. Refer to the pattern and woodburn the clues on the jaw and the "Fe" skull plate. It is easiest to finish the box before assembling the gears; I use wipe-on polyurethane according to the manufacturer's instructions. *Note: Do not finish the walnut under the "Fe" skull plate. Avoid putting finish on the moving parts; it can interfere with the movement.*



24

Assemble the gears. *Note: The $\frac{1}{8}$ " (3mm)-diameter piano wire should create a tight friction fit in the holes drilled in the gears. If the gears are loose, epoxy them in place.* Use a cut-off wheel in a rotary tool to cut the piano wire (R, S, T). Round and polish the bottoms of the wires that will be inserted into the skull. Working from the bottom, gently press a piece of wire through the spacer (Y) and the 60-tooth gear (H) until it ends $\frac{1}{8}$ " (3mm) above the top of the gear; add the decorative spike (L1). Then, slightly smooth the burr at the end of another piece of piano wire, chuck the wire into a hand drill, and use it to gently ream the $\frac{1}{8}$ " (3mm)-diameter gear hole in the skull. Check the fit of the wire in the gear assembly to ensure the piece turns smoothly with little friction. Repeat the process to assemble the keyhole-hiding wheel (I) and 10-tooth gear (J) and to add the turning knob (L2) to the 60-tooth gear.



25

Make the locking gear shaft (N). Cut the locking gear shaft to length. Chuck it in a drill press and spin it against a sheet of fine sandpaper to round and smooth the bottom and sides. Check often to make sure you get a smooth and easy fit in the hole in the skull. Roll waxed paper and use it to lubricate the hole. When the dowel spins freely without binding, drop a brass washer into the hole and place the dowel on top. Use a pencil to mark the spot where the locking pin (U) hits the dowel. Drill a $\frac{3}{16}$ " (5mm)-diameter hole through the dowel at the mark. Measure and mark the shaft so that when you cut off its top, $\frac{1}{4}$ " (6mm) of the shaft goes into the 10-tooth locking gear (K) and the gear is positioned so it will engage with the 60-tooth gear. Cut the shaft, glue it into the gear, and add the top knob (L).

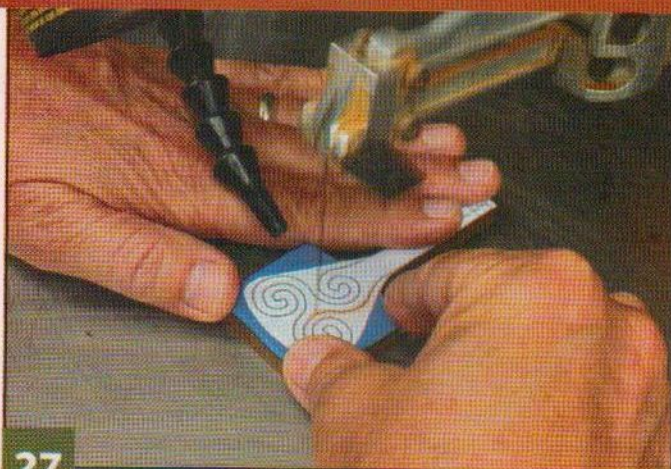


26

Assemble the gears. Place the gears into their holes, aligning the cut marks in the gears with the corresponding cuts in the skull. The locking pin should slide freely into the locking gear. Place the "Fe" skull plate in position and check that the black tooth with the magnet slides the locking pin under the wood. Adjust the gear heights with small brass #6

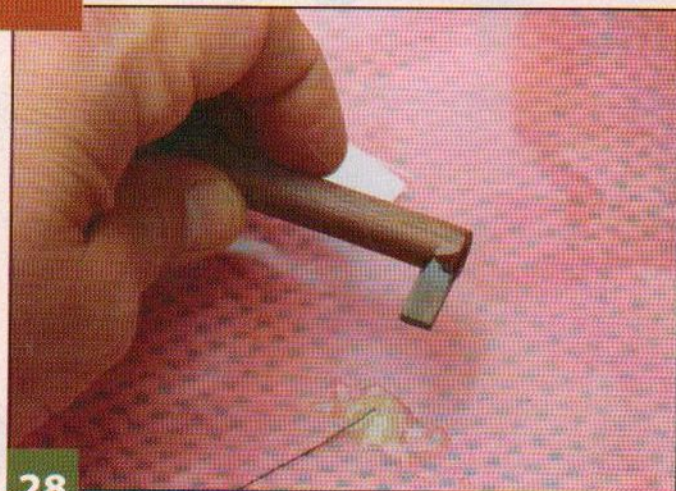
washers so they clear the skull and each other. Check that the gears rotate freely when unlocked to reveal the keyhole. If there is too much friction, adjust the part and re-test. When the mechanism works properly, use hot glue to tack down the "Fe" skull plate so you can easily take it off if there's ever a problem with the locking pin.

PUZZLE BOX: MAKING THE KEY



27

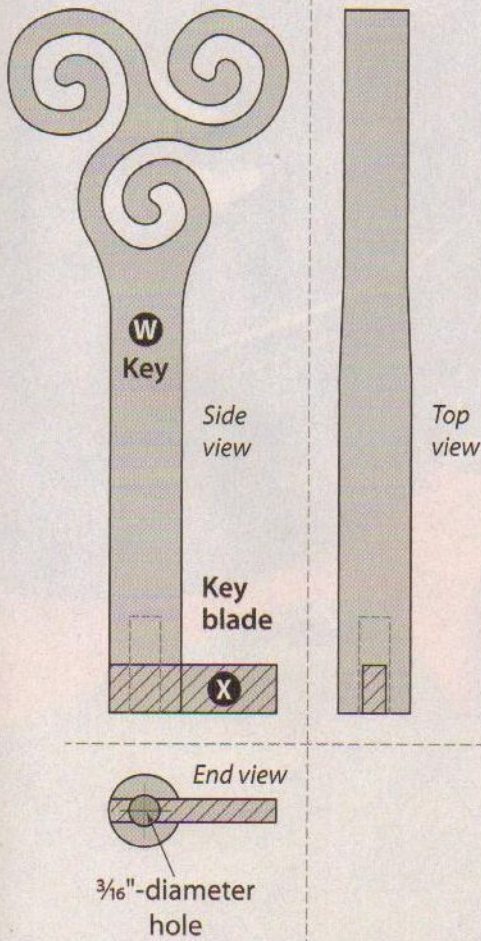
Cut the key. Attach the pattern to the key blank (W) and use a #2 blade to cut the key. Use a lathe or belt sander to round the shaft to about $\frac{3}{8}$ " (10mm) diameter. Sand the grip until it transitions well with the shaft.



28

Finish the key. Use a cut-off wheel in a rotary tool to cut the slot for the blade. Cut the blade (X), sand it as needed, and epoxy it in place. After the epoxy has set, drill a $\frac{3}{16}$ " (5mm)-diameter hole in the end.

Key pattern



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Materials:

- Baltic birch plywood, 3/8" (10mm) thick: 9" x 12" (229mm x 305mm)
- Baltic birch plywood, 1/4" (6mm) thick: 9" x 12" (229mm x 305mm)
- Baltic birch plywood, 1/8" (3mm) thick: 2" x 6" (51mm x 152mm)
- Maple, 1/4" (32mm) thick: 9" x 12" (229mm x 305mm)
- Cherry or maple, 1/16" (2mm) thick: 3/16" x 1 1/2" (5mm x 38mm)
- Walnut, 1/4" (6mm) thick: 6" x 6" (152mm x 152mm)
- Walnut, 1/8" (3mm) thick: 12" x 12" (305mm x 305mm)
- Walnut, 3/8" (10mm) thick: 1 3/4" x 4" (44mm x 102mm)
- Aromatic cedar, 1/4" (6mm) thick: 5" x 5" (127mm x 127mm)
- Wenge, 3/4" (19mm) thick: 1 1/2" x 1 1/2" (38mm x 38mm)
- Wenge, 1/2" (13mm) thick: 1 1/2" x 1 1/2" (38mm x 38mm)
- Ebony, 3/4" (19mm) thick: 3/4" x 6" (19mm x 152mm)
- Ebony, 1/8" (3mm) thick: 2" x 3" (51mm x 76mm)
- Aspen, 1/4" (6mm) thick: 2" x 3" (51mm x 76mm)
- Maple dowel, 1/2" (13mm) dia.: 5" (127mm) long
- Maple dowel, 1/4" (6mm) dia.: 1" (25mm) long
- Brass rod, such as K&S, 1/8" (3mm) dia.: 6" (152mm)
- Piano wire, such as K&S, 1/8" (3mm) dia.: 6" (152mm)
- Brass tube, such as K&S, 1/2" (13mm) dia.: 6" (152mm)
- Brass washers, #6S: 10 each
- Brass wood screws, #8: 2 each 3/4" (19mm) long

- Rare earth magnets, 1/4" (6mm) dia.: 3 each 1/16" (2mm) thick
- Blue painter's tape
- Spray adhesive
- Wood glue
- Sandpaper: assorted grits; 1" (25mm)-wide cloth-backed turner's
- Waxed paper
- Epoxy, 5-minute
- Polishing compound
- Finish, such as wipe-on polyurethane

Tools:

- Band saw with blades: 1/4" (6mm) & 1/2" (13mm) widths
- Scroll saw blades: #2, #5, #12 (optional)
- Oscillating spindle sander
- Belt sander
- Hot glue gun with glue
- Drill with twist bits: 1/16" (2mm), 1/8" (3mm), 3/16" (5mm), 1/4" (6mm); Forstner bits: 1/2" (13mm), 5/16" (8mm) (optional); #6 pilot; countersink
- Flush-cut hand saw
- Router with bit: 1/4" (6mm) straight, guide bushing
- Rotary tool with bits: shop-made flap sander, sanding drums, cut-off wheel with chuck, polishing wheel
- Clamps
- Hand drill
- Pencil
- Woodburner with writing tip
- Chisel (optional)
- Lathe (optional)

The author used these products for the project. Substitute your choice of brands, tools, and materials as desired.

Patterns for the **STEAMPUNK PUZZLE BOX** are in the pattern pullout section.



John Rhyne teaches computer-aided drafting and principles of engineering to high school students. In his free time he enjoys making puzzle boxes. His daughter Regan helped with the photos for this project. Check out more of John's work by searching for his name on Flickr and YouTube. Contact John at jrpuzzleboxes@yahoo.com.

ON THE WEB See online video of the puzzle box being opened. www.scrollsawer.com

Fauna and Fowl Trivet



Folk art-style fretwork protects your table and decorates your kitchen

By John A. Nelson
Cut by Leldon Maxcy

This beautiful trivet is almost too pretty to cover with a hot pan or dish. But, it was designed to keep hot things away from your table and it excels at the task.

Making the Project

Attach the pattern to the blank, drill blade-entry holes and the birds' eyes, and cut the fretwork. To cut the sharp corners in this

design, I suggest using flat blades. Choose a medium-tone or darker hardwood, such as cherry or mahogany; the darker wood hides any scorch marks from hot pots.

Most film finishes, such as varnish or lacquer, will break down over time with the application of heat. I suggest Danish oil or another oil finish, which tend to soak into the wood and protect it without flaking off.

Trivet pattern



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Materials & Tools

Materials:

- Hardwood, such as cherry or mahogany, $\frac{3}{4}$ " (19mm) thick: 8" x 8" (203mm x 203mm)
- Oil finish, such as Danish oil

Tools:

- Blades: #3 reverse-tooth
- Drill with bits: $\frac{1}{16}$ " (2mm) diameter

*The author used these products for the project.
Substitute your choice of brands, tools, and materials as desired.*



John A. Nelson is the author of Fox Chapel's popular Scroll Saw Workbook, available at www.foxchapelublishing.com.

CAT SUN CATCHERS

Stack-cut these charming felines for easy gifts

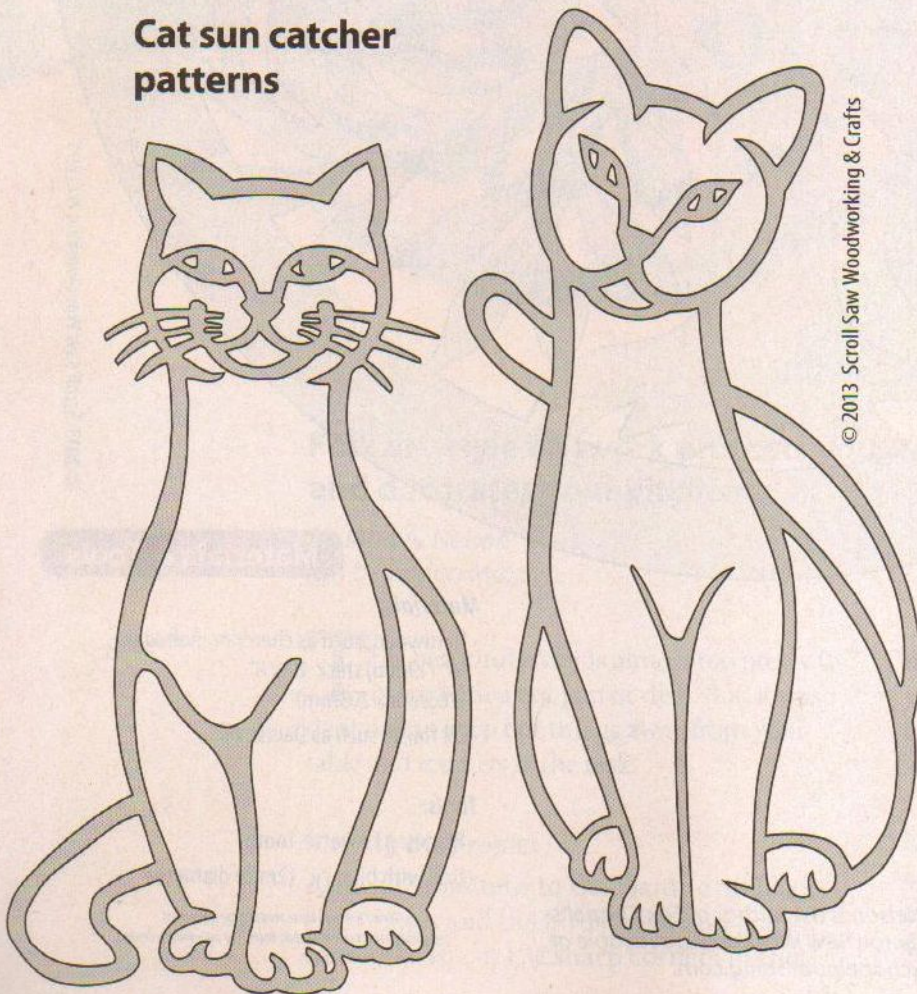
By Ellen Brown
Cut by Leldon Maxcy

These casual cats look great with the sun shining brightly through them, so they are sure to be a hit at craft fairs. There are several patterns to choose from, and by changing the color of the acrylic you use as a backer, there is no end to the variety. These sun catchers are as popular as gifts as they are to sell.

Making the Project

Start by attaching a photocopy of the pattern to the blank. Drill blade-entry holes and cut the fretwork but not the perimeter. Place a piece of colored acrylic plastic under the blank and wrap the stack with clear packaging tape to hold the blanks together. Then, cut around the outline of the cats. Separate the stack and sand as needed. Paint the wood black to look like the leading in stained glass or simply apply a spray lacquer finish. Use epoxy glue to attach the acrylic plastic to the wood and allow the epoxy to dry. Drill a small hole through the acrylic at the top to add a hanging ribbon or attach a hanger to the back.

Cat sun catcher patterns



Materials & Tools

Materials:

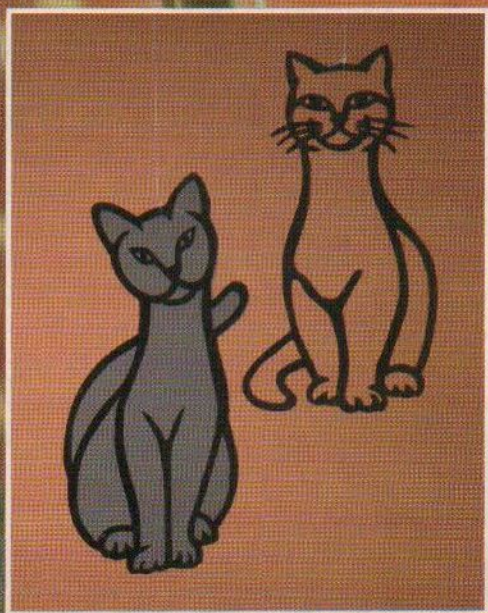
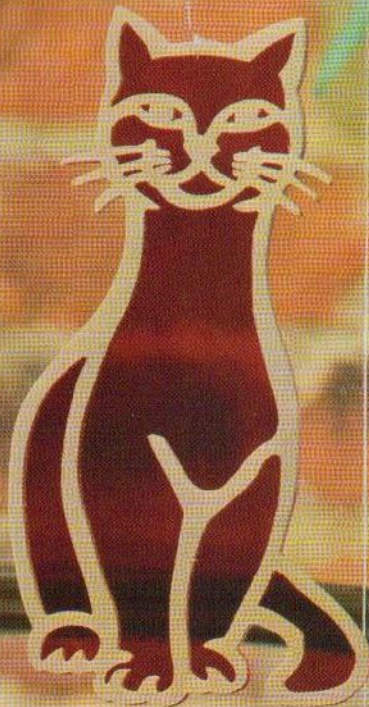
- Baltic birch plywood, $\frac{1}{8}$ " (3mm) thick: 2 each 3" x 5" (76mm x 127mm)
- Colored acrylic plastic, $\frac{1}{8}$ " (3mm) thick: 2 each 3" x 5" (76mm x 127mm)
- Sandpaper
- Spray paint (optional): black
- Finish, such as spray lacquer
- Epoxy glue
- Clear packaging tape
- Spray adhesive

Tools:

- Scroll saw blades: #3 reverse-tooth
- Drill with $\frac{1}{16}$ " (2mm) -diameter bit

*The author used these products for the project.
Substitute your choice of brands, tools, and materials as desired.*

ON THE WEB Download additional cat patterns from our website.
www.scrollsawer.com



Change the look with different colors of acrylic backers or by painting the cutouts. For ornaments, leave out the acrylic.

Better Scrolling with BATS



Check the blade, angle, tension, and speed before scrolling

By Tom Thompkins

We've all experienced those perfect moments at our scroll saws when the blade seems to glide effortlessly through the wood, following the cutting line as if it had eyes, and the project is cut out almost before you know it. I call them "Ah" moments—as opposed to "Ah, &#@" moments.

The trick to increasing the frequency of those moments is to establish a routine that you repeat every time you sit down at the saw and every time you change blades. I use a simple acronym: BATS.



Tom Thompkins discovered intarsia 15 years ago and was a member of Judy Gale Roberts' first intarsia class. He has completed more than 300 projects, won national and international awards for his work, and has taught intarsia in numerous Southern California venues. He and his wife live in Oceanside, Calif., with their three cats. See his work on Facebook at The Art of Wood.

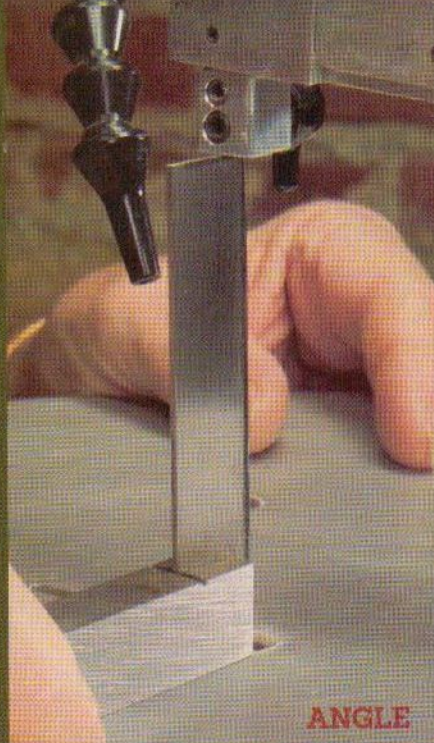
B is for Blade

Blade selection is something most of us do automatically, often because we have developed a degree of comfort with one particular size and type of blade. The truth is, unless you only saw one type and one thickness of wood, you need a variety of blades to get the job done properly. Instead of automatically inserting the same type of blade every time, ask yourself these questions: What type of material am I cutting? Will I need to make tight turns or long smooth cuts? Will the thickness of the blade (kerf) be a factor in the final fit of my project? With those answers in mind, choose a blade that matches your project. (See *Scroll Saw Woodworking & Crafts* Spring 2013, Issue 50, or visit www.scrollsawer.com for a helpful blade-choice chart.)

Finally, ask yourself: Is the blade mounted correctly in the saw? I have installed a blade or two upside-down. Sometimes—especially when using smaller blades like #2/0 or #1—it's hard to tell. Here's a technique I have found works every time. After you have made your best guess and installed the blade, put it under tension and lightly run your fingertip up the teeth. If it snags your skin, then the points are angled downward and the blade is installed correctly. If your finger slides smoothly up the blade, the blade is upside down. Doing this test without the blade under tension simply doesn't give you the same clear information.

A is for Angle

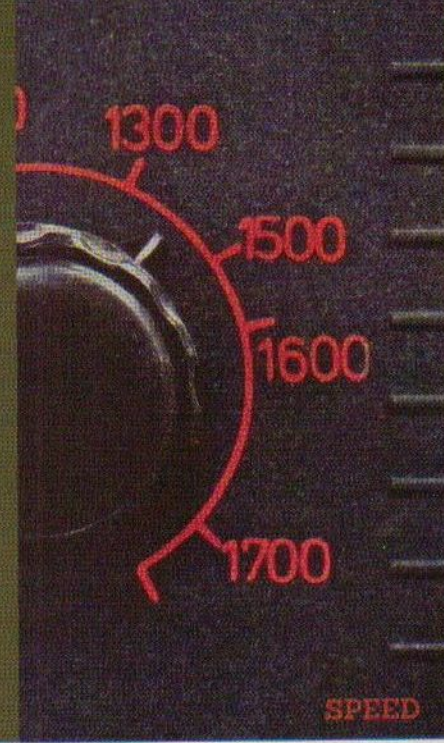
Most scroll saw tables today have some mechanism for adjusting the angle of the cut, and if you enjoy making



ANGLE



TENSION



SPEED

a variety of projects, chances are you adjust the angle frequently. It's pretty easy to tell if the table is angled 20°, but it may not be that easy to notice a 1° or 2° angle until you have begun cutting. By then, your piece is ruined and you have to start over again.

Prevent those problems by checking the angle every time. You cannot rely on your saw's angle indicator—I have seen many saws that were off by ½° to 1°. Using a small plastic or metal right angle, rest one side on the table, and then slide the perpendicular edge up against the blade. If it is perfectly square, the edge will line up perfectly with the blade. If it is off even a little, it will be obvious and you can easily make adjustments.

T is for Tension

There have been several methods proposed to determine proper blade tension. One author suggested achieving a specific musical note when the blade is “plucked” like a guitar string. I must be tone-deaf, because that technique has never worked for me. I rely on the first technique I was ever taught: the blade should not flex more than ¼” (2mm) when pushed from side to side or back and forth. Inadequate blade tension produces wandering blades and undesirable angles of cut. Too much tension increases the rate of blade breakage, so make sure you have adjusted the tension properly.

S is for Speed

I think this breaks down into two subsets: blade speed (often listed as strokes per minute/SPM) and the rate

at which you feed your work into the blade. My saw provides a listing of SPM, and I've found that 1400 SPM has worked for me over the years for most types of wood I cut. Extremely hard woods, such as ebony or maple, may require a slight increase in blade speed to accomplish a smooth cut, but I rarely exceed 1600 SPM. Not every saw provides this information. The point is to find a speed setting that works for you, and double check to make sure the speed setting doesn't change as you cut, such as after you change blades.

I have found that the rate at which I feed the work into the blade is what gives me the best control of the cut. I can still hear my seventh grade woodshop teacher, Mr. Thompson, telling us, “Let the blade do the cutting for you.” The rate of feed should be constant, smooth, and effortless. If you are pushing too hard or possibly flexing the blade from the side, try slowing down and letting the blade do the work. If it still doesn't go smoothly, change blades. Chances are your blade is dull, or you may simply be using the wrong blade for the job. I was taught to change blades whenever it occurred to me to do so. I still work on that basis because my subconscious mind is picking up on something of which I may not consciously be aware.

So there it is: BATS—Blade, Angle, Tension, Speed. Success starts with the saw, so if you use this acronym every time you sit down at the saw and each time you change blades, those “Ah” moments will become much more frequent. You'll be happier and your projects will be better, guaranteed.

Making a Guitar Puzzle

**Music fans will enjoy this
hardwood classic**

By Brian Beals

Reminiscent of evenings by the campfire, this guitar puzzle was a customer request and always attracts compliments. Plus, at a recent craft show, a guitar enthusiast pointed out that the puzzle could be either a right-handed or left-handed guitar depending on the way it is displayed.

Making the Puzzle

Choose a piece of cherry with an interesting grain. I found some gummy cherry at a local hardwood supply house. It contains pin knots and pitch pockets, which enhance the look of the puzzle more than the plain figure of regular cherry. Plane the cherry to $\frac{3}{4}$ " (19mm) thick, and then sand it with 150- to 180-grit sandpaper.

Attach the pattern to the blank with temporary-bond spray adhesive and cover the pattern with clear packaging tape. The pitch in the cherry causes it to burn easily, and the packaging tape lubricates the blade.

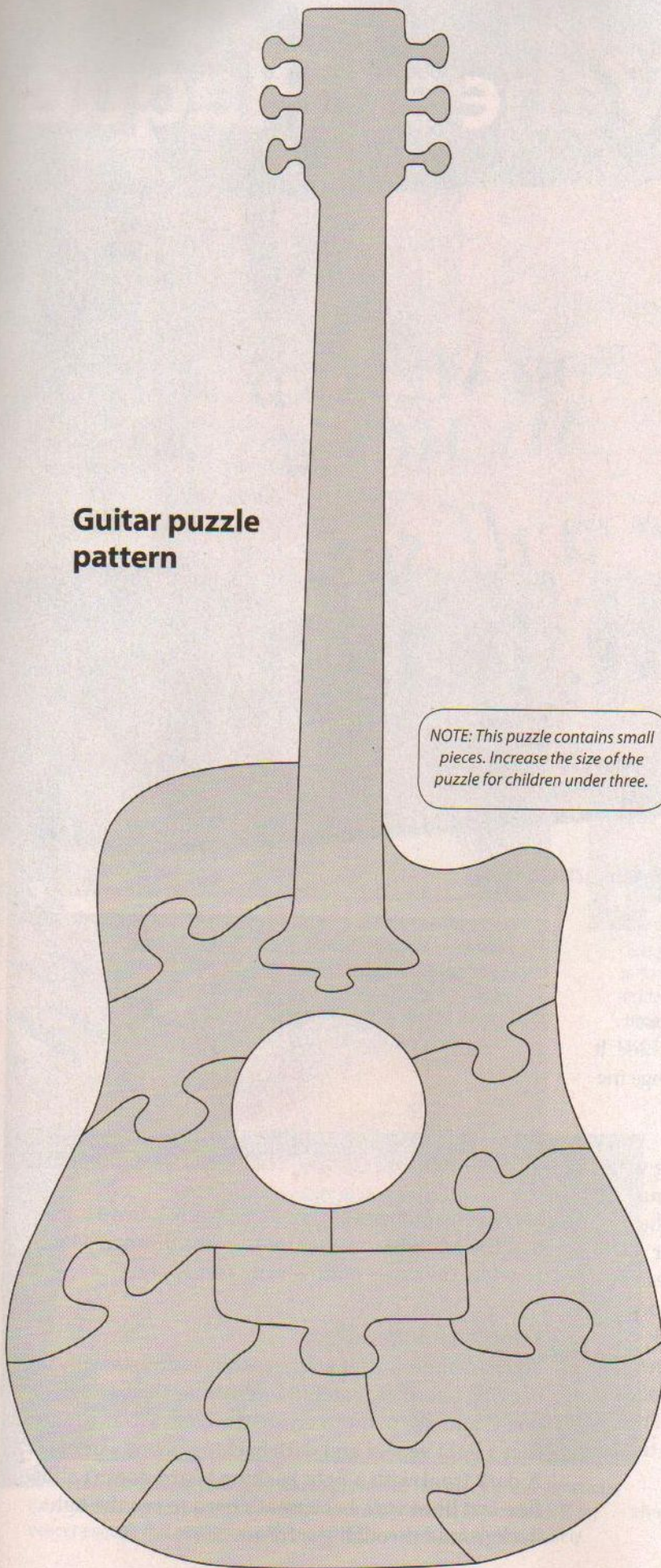
Drill the hole in the guitar puzzle with a $1\frac{1}{2}$ " (38mm)-diameter Forstner drill bit in a drill press. Be sure the saw blade is square to the table, and then cut the puzzle pieces. Change blades often; cherry is hard on blades, and a dull blade will be hard to control and can burn the wood. After cutting the pieces, remove the tape and pattern, and sand the puzzle again with 150- to 180-grit sandpaper. Carefully sand the edges to remove the sharp corners.

I use a $\frac{1}{2}$ " (13mm)-wide glue brush to coat all of the surfaces of the puzzle pieces with Minwax tung oil finish. Wipe each piece with a paper towel to remove the excess oil, and allow the finish to dry overnight. You can lightly buff the pieces and apply a second coat of tung oil to give it a shinier finish.



Guitar puzzle pattern

NOTE: This puzzle contains small pieces. Increase the size of the puzzle for children under three.



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Materials & Tools

Materials:

- Cherry, $\frac{3}{4}$ " (19mm)-thick: $4\frac{1}{2}$ " x $10\frac{1}{2}$ " (114mm x 267mm)
- Spray adhesive, temporary-bond
- Sandpaper: 150 to 180 grit
- Oil finish, such as Minwax Tung Oil Finish
- Clear packaging tape
- Paper towels

Tools:

- Blades: #5 reverse-tooth
- Glue brush: $\frac{1}{2}$ " (13mm) wide
- Drill press with bits: $1\frac{1}{2}$ " (38mm)-diameter Forstner

The author used these products for the project. Substitute your choice of brands, tools, and materials as desired.



A grandchild's interest in puzzles inspired Brian Beals, a retired engineer from Jasper, Ga., to make several wooden puzzles. Enthusiastic responses from friends encouraged Brian to exhibit his work at a local arts and crafts show, and when that was a success he formed Pickens Puzzles. To see more of his work, visit www.pickenspuzzles.com.

Making a Veneer Plaque



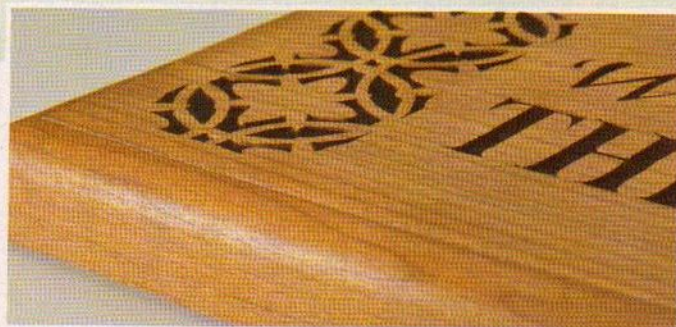
Sheets of two-sided tape simplify the technique

By David Griffin

Usually when scrollers discuss lasers, it's because people are duplicating handwork with a machine. It was an interesting twist for a shop owner to challenge me to make a hand-cut plaque with the look of dark laser-burned letters.

Around the same time, I was experimenting with methods of attaching complex fretwork to various backings. Liquid glue and spray adhesive work, but there are problems with both. While looking for ideas, I came across sheets of double-sided adhesive used for scrapbooks. I first tried it on thin plywood, which worked very well but the edges didn't look attractive when sanded. Then I tried cutting veneer. The adhesive sheet (which is actually very thin plastic) reinforces the veneer and makes it easy to cut. That discovery solved my fretwork problem and was the key to the plaque project.

This technique can be used on many different projects. I've made small magnets and text for



barrettes, among other projects. Note, however, that the adhesive is sensitive to paint thinner, which restricts the types of finish you can apply.

Selecting the Wood

You can either select a veneer that contrasts with the backing board or match the veneer to the backing board and use paint to create the contrast. I've found that a light veneer and dark backing board work best. A dark front with a light backing board doesn't show fine fret lines well, because it's hard to see the light background through the frets.

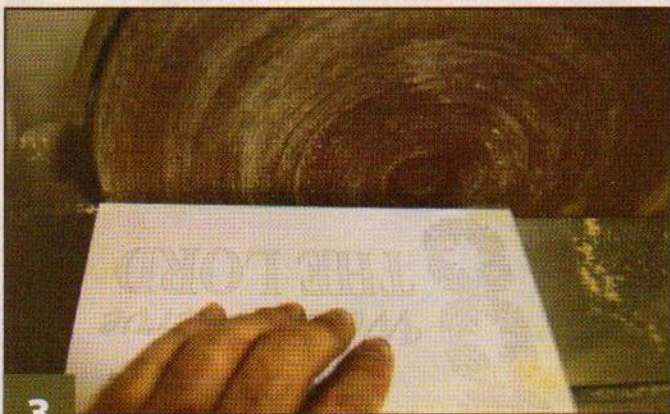
PLAQUE: CUTTING THE PIECES



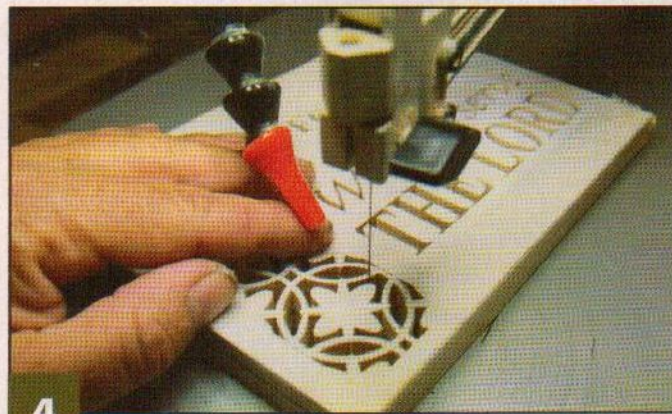
1 Prepare the plywood and veneer. Cut the two pieces of supporting plywood $\frac{1}{8}$ " (3mm) longer and wider than the pattern. Attach the pattern to one piece of plywood (see page 78 for methods). Cut the veneer slightly larger than the plywood. I use a paper cutter, but you could also use a knife and straight edge.



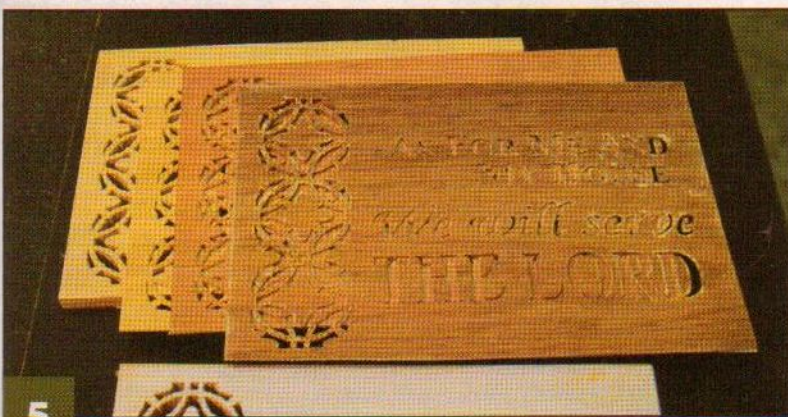
2 Add the adhesive sheet. Cut a sheet of double-sided pressure-sensitive adhesive (PSA) slightly larger than the veneer. Remove the liner from one side and place the veneer on the adhesive, making sure the entire piece is in contact with the adhesive sheet. Trim the adhesive sheet to size. Use a roller to press the veneer onto the sheet. If you plan to stack-cut several pieces of veneer, cut and adhere several pieces of veneer and adhesive sheets.



3 Create the stack. Sandwich the veneer between the pieces of plywood. Align the edges of the plywood as closely as possible. Apply packaging tape to three edges of the stack. Sand the fourth side flush using a disc sander. Apply tape to the sanded side. Remove the tape from an adjacent side, sand the side flat, and reapply the tape. Repeat the process for the remaining sides.



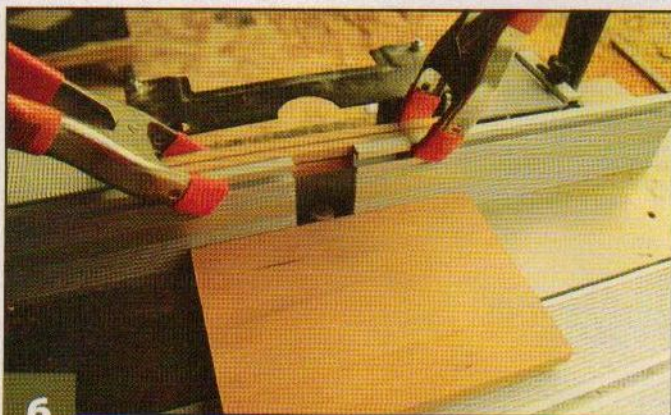
4 Cut the letters and fretwork. Cover the pattern with clear packaging tape and drill the blade-entry holes. If the veneer splits, save the pieces and glue them to the backing board. Cut the insides of the letters first. Then, cut the outsides. After you finish cutting, separate the stack by using a belt sander to remove the tape from the edges.



5 Free the veneer from the waste plywood. The adhesive can sometimes cause the veneer around a cut letter or fret to stick, but the paper supports the veneer enough that you can usually separate the veneer and plywood safely.

What About PSA Veneer?

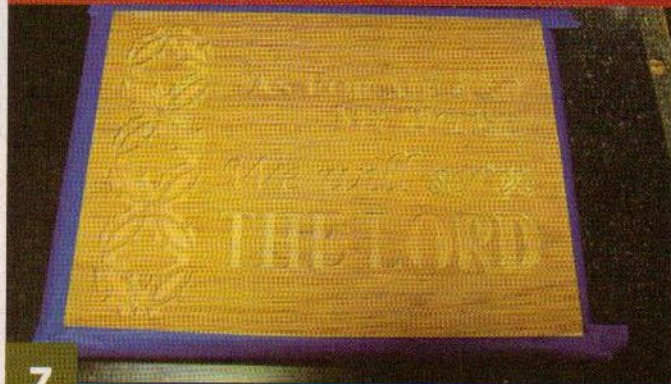
Since what we are doing is basically making our own pressure-sensitive adhesive (PSA) veneer, why not just buy commercial PSA veneer? I have tried cutting 10mil paper-backed veneer. Unfortunately, the paper does not cut cleanly; it leaves bits of waste paper and adhesive balls in the fretwork, which increases the time spent cleaning up the veneer. If you're careful to clean out the holes before separating the stack, you can remove most of the waste paper, but you will still need to clean the holes afterward.



6

Make the backing board. Cut the backing board to size. Round all four edges with a router and $\frac{3}{8}$ " (10mm)-radius round-over bit. Remember to round the ends, which have end grain, first, and then round the sides. This prevents the wood from chipping out. Sand the backing board using a belt sander and progressively finer-grit belts up to 180.

PLAQUE: ASSEMBLING THE PROJECT



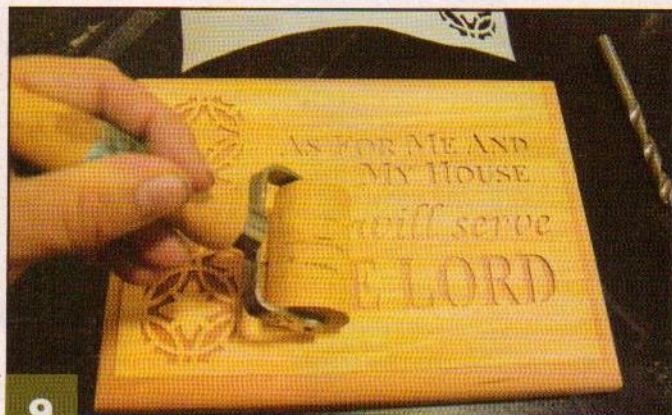
7

Paint the backing board. *Note: If you are using a contrasting wood for the backing board, skip this step.* Cover the edges of the backing board with painter's tape. Lay the veneer in place to make sure the tape is not visible through any of the frets or letters; remove the veneer. Paint the face of the backing board with black paint. Allow the paint to dry and then remove the tape.



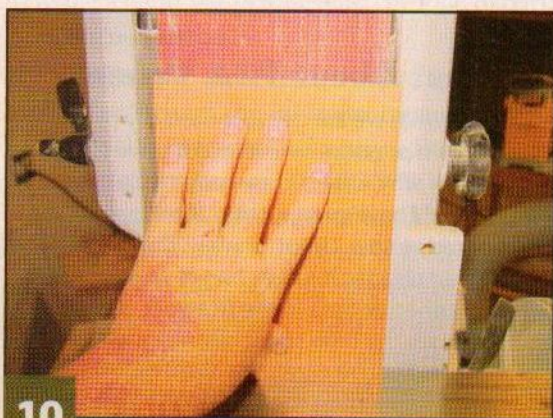
8

Remove the liner from the adhesive sheet. I use the point of a brad-point bit, which allows me to pull the liner off tricky spots like the inside of the O without actually touching the adhesive with my finger.



9

Attach the veneer to the backing board. Hold the veneer by the edges and place it in position over the backing board. If you painted the top of the backing board, make sure that the paint only shows through the fretwork, not at the sides. Place the veneer in position and use the roller to burnish the veneer to the backing board. Start rolling on the center of the veneer, and then make sure the edges are pressed down tightly.



10

Finish the veneer. Sand the top, bottom, and sides with a belt sander and 180-grit belt. Blow off the dust and apply a finish that does not have a mineral spirits base, such as Deft spray lacquer.

Materials & Tools

Materials:

- Veneer, cherry: 6" x 9" (152mm x 229mm)
- Cherry, $\frac{1}{2}$ " (13mm) thick: 6 $\frac{1}{4}$ " x 8 $\frac{1}{2}$ " (159mm x 216mm)
- Baltic birch plywood, $\frac{1}{4}$ " (6mm) thick: top and bottom cutting supports, 2 each, 6" x 9" (152mm x 229mm)
- Double-sided adhesive sheets, such as Grafix Archival Double Tack, Thermoweb Super Tape Double-Sided, or Silhouette Double-Sided Adhesive Paper (available from craft stores or art supply stores)
- Paint (optional): black
- Painter's tape

Tools:

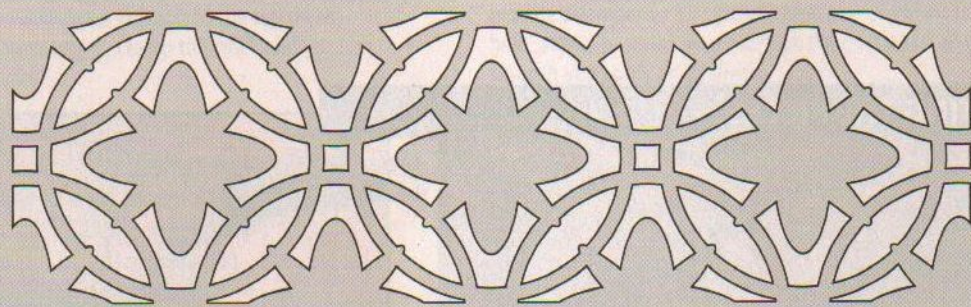
- Blades: #3 reverse-tooth, such as Pegas MGR
- Router in table with $\frac{3}{8}$ " (10mm)-radius round-over bit
- Small wallpaper roller
- Paper cutter or knife and straight edge
- Belt sander and sanding belts: assorted up to 180 grit
- Disc sander
- Table saw
- Drill or drill press with bits: #57 wire; brad point

The author used these products for the project. Substitute your choice of brands, tools, and materials as desired.

Veneer
plaque
pattern

AS FOR ME AND
MY HOUSE

We will serve
THE LORD



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TIP

USING THE SUPPORT LAYERS

I use 1/4" (6mm)-thick Baltic birch plywood for the outside layers of the stack. Other than some minor chipping on the bottom layer, these pieces come out in good shape, so there's no reason you can't use these pieces as stand-alone fretwork projects. Since these pieces don't have any adhesive, you can apply any finish.



David Griffin is a computer engineer for the Department of Defense by day and runs his scroll saw business, Tuliptree Crafts, by night. He lives in Huntsville, Ala.

Customize Your Keys



Use a simple lamination technique to embellish your keys

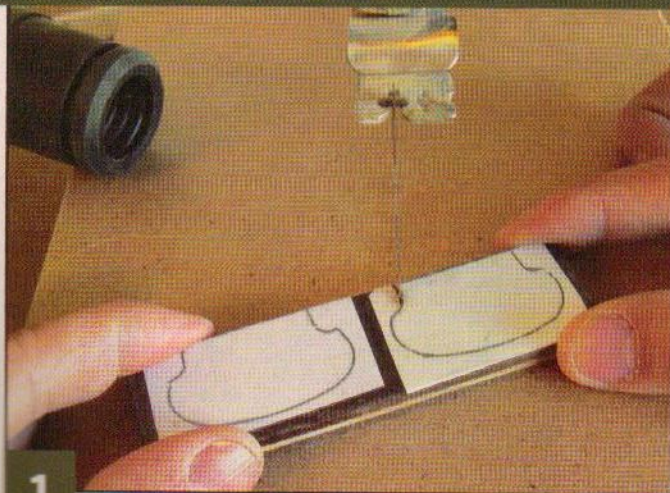
By Charles Mak

When some of my door locks became hard to open and lubrication no longer helped, I thought of key grips as a way to get more leverage when turning the keys instead of purchasing new locks. However, I did not like the store-bought grips' plain style or the plastic they are made of. I decided to design and make my own out of $\frac{1}{8}$ "-thick hardwood. You can find $\frac{1}{8}$ "-thick stock at your local wood supplier or craft store. I cut two grips at a time because the blank for one would be hard to hold.

Getting Started

Start by creating a stack of three $\frac{1}{8}$ " (3mm)-thick blanks (with the contrasting wood in the middle) and secure the pieces together with strips of double-sided tape. Attach the pattern to the stack with spray adhesive and cover the pattern with clear packaging tape.

GRIPS: CUTTING THE PIECES



1

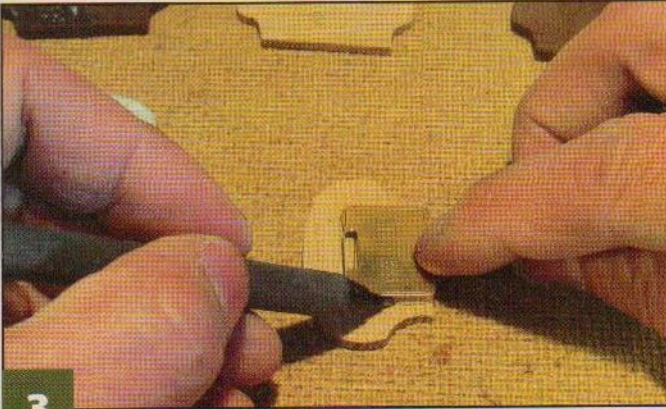
Cut the perimeter of the grip pieces. Cut the outside profile of the grip pieces, remove the pattern, and separate the stack. Put the top and bottom pieces aside for now.



2

Remove the excess material from the head of the key. I use a cut-off wheel in a rotary tool to remove the ring at the top of the key. You could also use a hack saw.

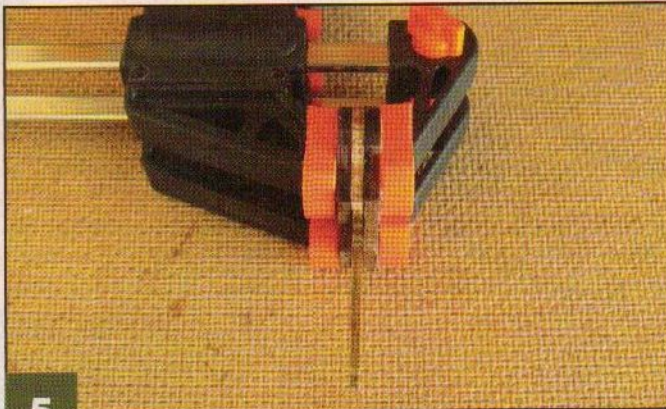
GRIPS: ASSEMBLING THE PROJECT



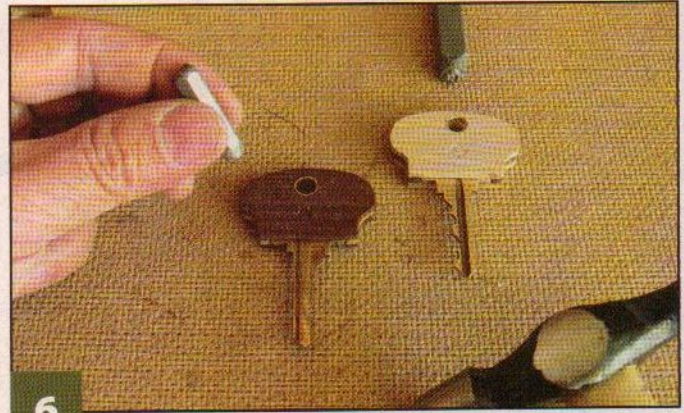
3 **Cut the middle piece.** Make sure the middle piece is as thick as the key's head. Sand the middle piece or the key head thinner if needed. Trace the outline of the key's head on the middle piece. Cut inside the outline. Place the key's head in position and adjust the fit as needed. Remove the key.



4 **Attach the middle piece to the bottom.** Apply a thin coat of cyanoacrylate (CA) glue to the underside of the middle piece and place it onto the bottom piece, aligning the outer edges. Clamp the two pieces in place and let them dry for a few minutes.



5 **Attach the key and top piece.** Apply a thin coat of CA glue to the middle piece and to both sides of the key's head. Place the key's head inside the middle piece and attach the top piece to the stack, aligning the outer edges. Clamp the stack and let everything dry for 15 minutes.



6 **Finish the grip.** Drill a $\frac{3}{32}$ " (7mm)-diameter hole at the desired location of the key ring hole. Insert and glue a $\frac{3}{32}$ " (7mm)-outside diameter by $\frac{5}{16}$ " (8mm)-long piece of brass tubing into the hole. Stamp or scribe your mark on the grip. Sand all of the edges smooth and apply an oil finish.

Materials & Tools

Materials:

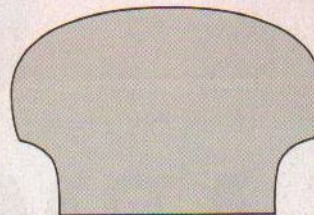
- House key
- Hardwood, such as maple, $\frac{1}{8}$ " (3mm) thick: to make two grips, 2 each $1\frac{1}{8}$ " x 4" (29mm x 102mm)
- Contrasting hardwood, such as walnut, $\frac{1}{8}$ " (3mm) thick: to make two grips, $1\frac{1}{8}$ " x 4" (29mm x 102mm)
- Brass tubing, $\frac{3}{32}$ " diameter: 2 each, $\frac{5}{16}$ " (8mm) long
- Spray adhesive: temporary bond

- Tape: double-sided; clear packaging
- Cyanoacrylate (CA) glue
- Sandpaper
- Oil finish

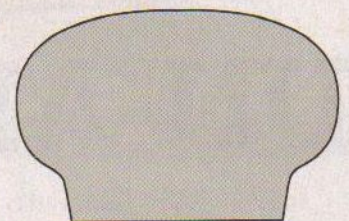
Tools:

- Blade: #5 reverse-tooth
- Clamps: spring and mini bar
- Rotary tool with cut-off disc or hack saw
- Drill and $\frac{3}{32}$ " (7mm)-diameter bit

The author used these products for the project. Substitute your choice of brands, tools, and materials as desired.



Key grip patterns



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Charles Mak is a semi-retired businessperson and amateur woodworker in Alberta, Canada. He enjoys writing, authoring shop tips, teaching, and woodworking with both power and hand tools. His e-mail address is thecanadianwoodworker@gmail.com.



UN-ALARMING CLOCK

**Cartoon clock is perfect
for a child's room**

By Paul Meisel

This adorable clock won't alarm anyone because it doesn't make noise. But the happy face and friendly wave make it perfect for any child's room.

We made the project from pine, but you could substitute other species of wood. The "bells" on top of the clock are actually birch half-balls painted gold. We painted some details red, but you should choose a color to match your child's room décor.

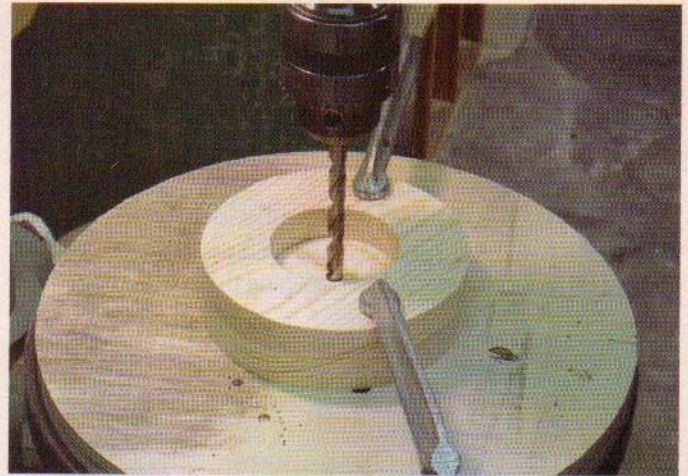
CLOCK: MAKING THE BODY

Step 1: Cut and chamfer the pieces. Begin by attaching the patterns to the blanks and cutting all pieces. Save the circular cut-outs from the center and back pieces to make a drilling jig in Step 5. Save the scraps from cutting the backing board to use in Step 12. Use a router and chamfer bit, file, or sander to chamfer the front, center, face, and back pieces as marked. Use a router to cut a $\frac{1}{4}$ "-wide by $\frac{1}{4}$ "-deep (6mm by 6mm) rabbet around the inside of the back piece.

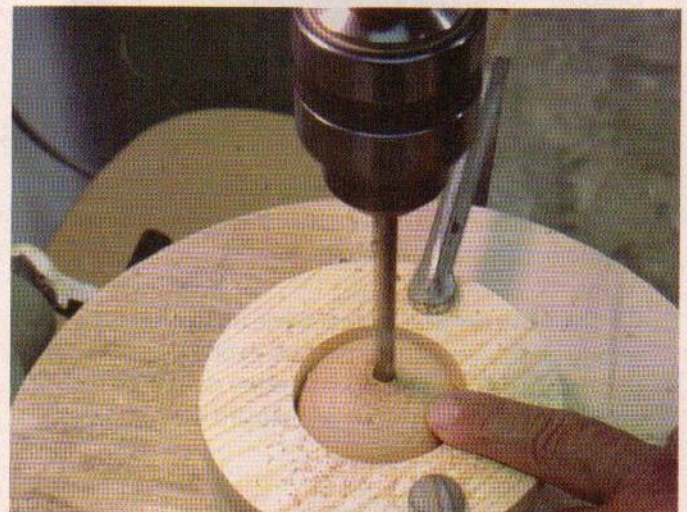
Step 2: Assemble the body. Drill the marked hole through the front piece. Dry-assemble the face, front, center, and back pieces, ensuring the chamfers and routed rabbet are facing the correct directions; face-glue and clamp the pieces, and let dry.

Step 3: Prepare the plastic face plate. Either drill and cut the clear plastic plate or use a pre-cut and pre-drilled plate; center it on the face piece. Rotate the plate so the four attachment holes are aligned as shown in the photo at left and mark the locations of the screw pilot holes. Drill $\frac{1}{16}$ " (2mm)-diameter by $\frac{3}{8}$ " (10mm)-deep holes on the marks. Set the face plate aside.

Step 4: Make the shoes. Use the pattern to cut the perimeters of two shoes. Then, cut the lower line as marked to separate the two pieces of each shoe, forming a half-oval top and a rounded-rectangle bottom. Chamfer both pieces as marked, and then glue and clamp the two parts of each shoe back together. Glue and clamp the shoe assembly to the front piece.



Step 6: Align the jig. With the $\frac{1}{32}$ " (9mm)-diameter bit in the drill press chuck and with the drill press turned off, lower the bit into the hole in the jig. This will insure the jig is centered directly under the drill chuck. Check to be sure the table is clamped tightly to the column of the drill press, and then clamp the jig to the table.



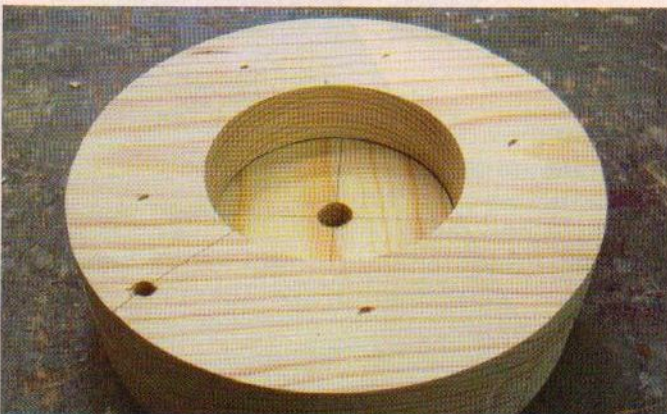
Step 7: Drill the holes. Place one of the half-balls into the jig and sand a flat spot on the top to prevent the drill bit from wandering. Then, drill the hole through the half-ball. Repeat for the second half-ball.

CLOCK: DRILLING THE TOP HOLES

Step 8: Mark the bell and hammer holes. Refer to the pattern and use a scratch awl to mark three holes across the top of the project on the center glue-line. Mark the center hole first, and then measure $1\frac{3}{4}$ " (44mm) to each side of center and mark the other two holes.

Step 9: Drill the center hole. Place the project on the drill press table and use the $\frac{1}{32}$ " (9mm)-diameter bit to drill straight down $\frac{3}{8}$ " (10mm) deep.

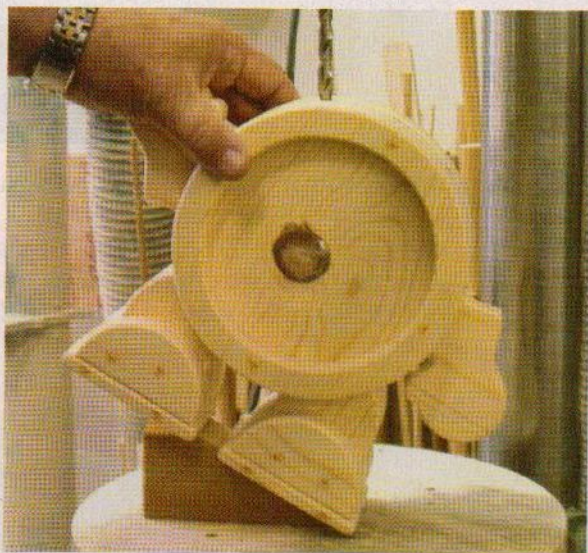
CLOCK: MAKING THE BELLS



Step 5: Make the drilling jig. Drilling a hole in the exact center of each half ball requires a special jig. Make the jig from the scrap wood cut from the center and back pieces. Drill or saw a $2\frac{1}{2}$ " (64mm)-diameter hole in the center of one piece, and drill an $\frac{1}{32}$ " (9mm)-diameter hole through the center of the other piece. Glue or nail the pieces together, making sure the smaller hole is centered in the bigger hole.

Step 10: Drill the angled holes. The outer holes must be drilled at a 30° angle. There are two methods to drill these holes accurately. One method is to tilt the drill press table to 30° and then drill the holes. Another method is to make a wedge-shaped drilling jig.

A: Make the drilling wedge. Transfer the wedge pattern to a scrap 2x4 or cut two wedges from ¾" (19mm)-thick stock and face-glue them together.



B: Attach the wedge to the project. Position the wedge as shown and nail or screw it to the bottom of the project. Do not glue it to the bottom.

C: Drill the angled holes. While the project is resting on the wedge, drill the hole in one side. Remove the wedge, nail or screw it to the other side, and then drill the other hole. Remove and discard the wedge.

CLOCK: ASSEMBLING & FINISHING THE PROJECT

Step 11: Install the plywood back. Test the plywood back in the rabbet in the back piece; sand as necessary. Drill ¼" (2mm)-diameter screw pilot holes for the turn buttons that hold the plywood back in place; install the turn buttons. Set the plywood back aside.

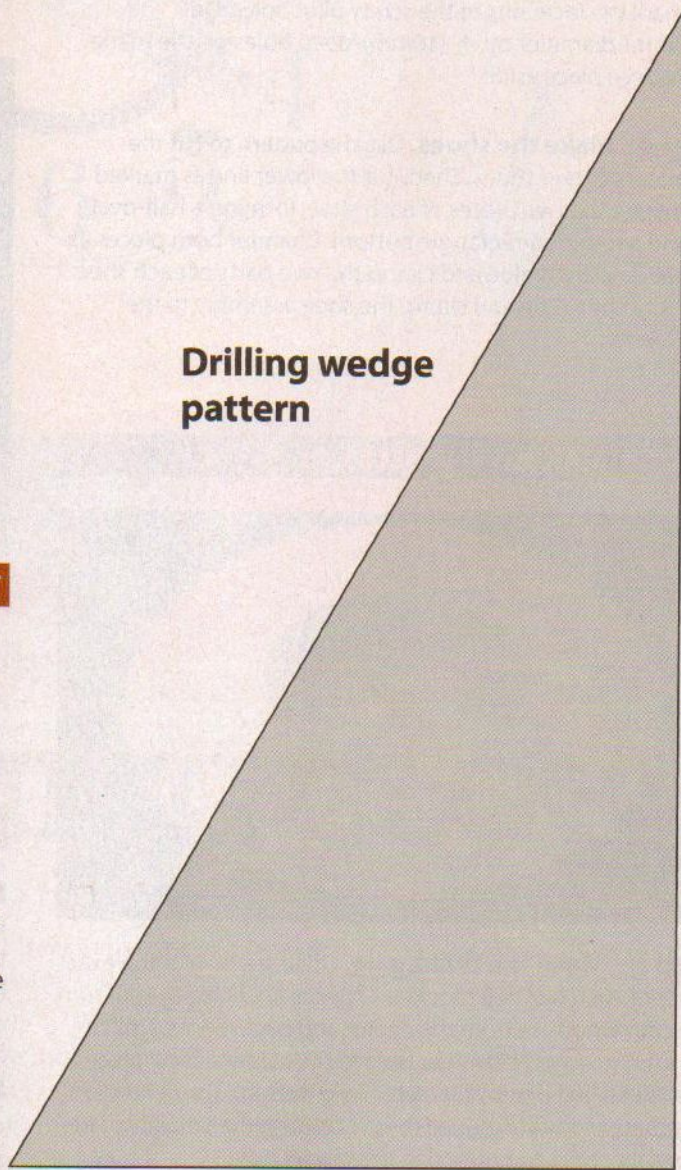
Step 12: Install the bells. Place scraps of ¼" (6mm)-thick wood between the top of the project and the bottom of each half-ball to act as spacers. Glue 2¾" (60mm)-long axle pegs into the holes in the half-balls and the angled holes in the project. Let the glue dry, and then remove and discard the spacers.

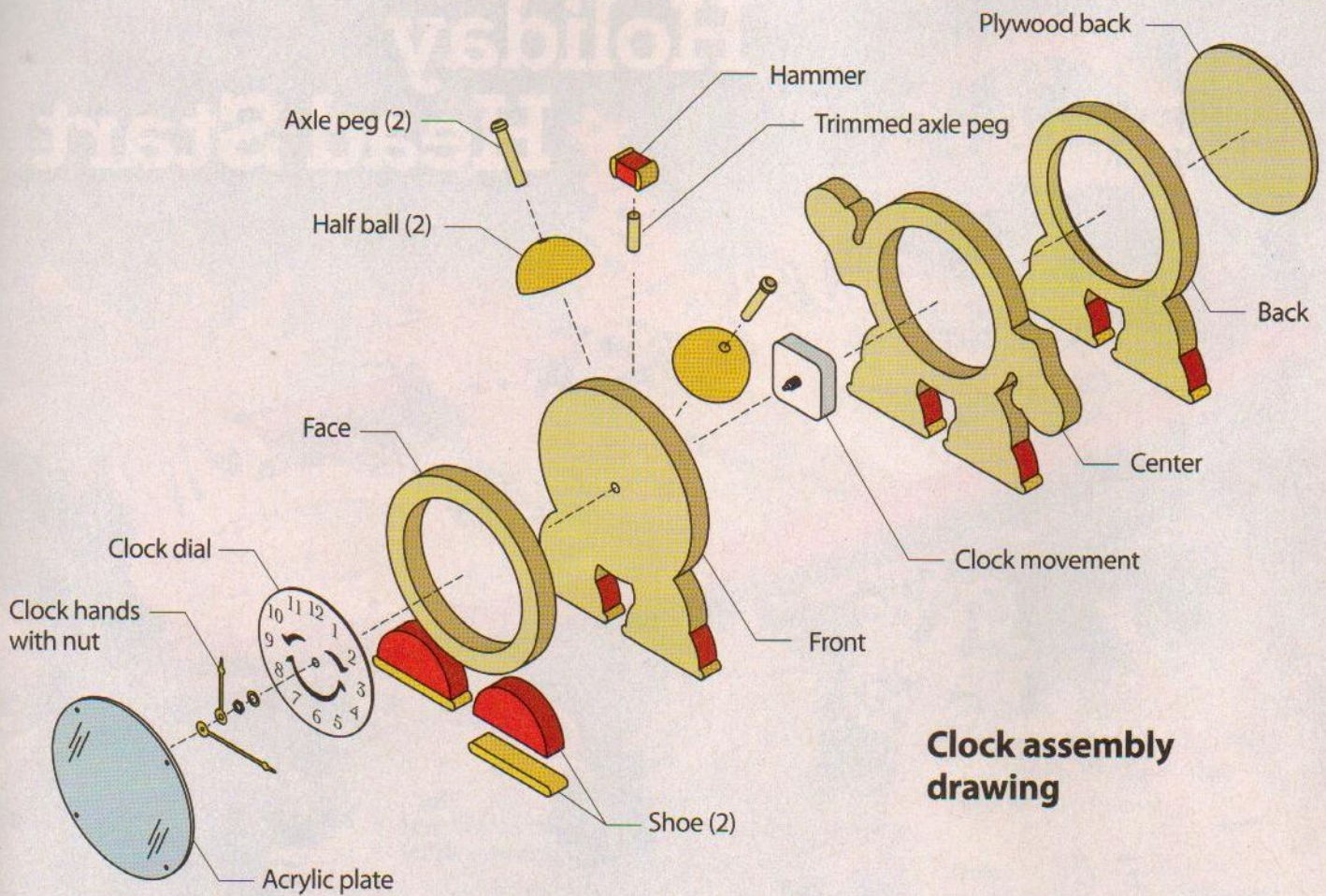
Step 13: Install the hammer. Cut a 1¾" (44mm)-long piece from the end of an axle peg and use it to glue the hammer in place ½" (13mm) above the top of the project.

Step 14: Paint and finish the clock. Brush a coat of sanding sealer on all wood surfaces, let dry, and sand with 220-grit sandpaper. Brush on the red and gold paint and allow the paint to dry. Paint the face and numbers if desired (if you are using a purchased clock face, you will install it in Step 15). Brush a coat of polyurethane finish on all parts.

Step 15: Install the clockworks. Push the shaft of the clock movement through the hole in the front piece, put the dial in place, put the brass washer on, and secure these parts with the shaft nut. Press the hour hand onto the shaft. Install the minute hand with the cap nut supplied with the movement. Add batteries and set the time. Re-attach the plywood back, tightening the screws as necessary. Screw the clear plastic plate to the front.

Drilling wedge pattern





Clock assembly drawing

Materials & Tools

Materials:

- Pine 1x10: 4' (1,219mm) long
- Plywood, 1/4" (6mm) thick: 6" x 6" (152mm x 152mm)
- Pine 2x4 (optional): scrap (see Step 11)
- Axle pegs, 1/32" (9mm) diameter*: 3 each 2 3/8" (60mm) long
- Half-balls*: 2 each 2 1/2" (64mm) diameter
- Clock face*
- Clock parts*: movement, hands
- Round acrylic plate with screws*: 6 1/8" (155mm) diameter
- Turn buttons with screws: 4 each*
- Sanding sealer

- Polyurethane
- Paint
- Spray adhesive
- Sandpaper
- Wood glue

Tools:

- Blades: #5 reverse-tooth
- Router with bits: chamfer; 1/4" (6mm)-diameter
- Drill press with twist bits: 1/16" (2mm) and 1/32" (9mm) diameters
- Screwdriver
- Clamps

The author used these products for the project. Substitute your choice of brands, tools, and materials as desired.

SPECIAL SOURCES:

The #5006 Un-Alarmingly Clock Hardware parts package, which contains all items with an asterisk above, is available from Meisel Hardware Specialties. To request a catalog, call 800-441-9870 or visit www.meiselwoodhobby.com.

Patterns for the **UN-ALARMING CLOCK** are in the pullout section.

ON THE WEB Download the clock dial painting pattern. www.scrollsawer.com



Paul Meisel of Mound, Minn., has designed more than 3,000 woodworking plans. For more ideas of what to build, to order parts, or to request a catalog, contact Meisel Hardware Specialties (see above).

Holiday Head Start



Cut these ornaments now and be ready for Christmas early

*By Rick and Karen Longabaugh
Cut by Rolf Beuttenmuller*

Many scrollers find themselves applying the last coat of finish to ornaments on Christmas Eve. To protect your family from finish fumes, we're presenting these ornament patterns a little early. Get started now and have time to relax on Christmas Eve.

Getting Started

Most of these ornaments can be cut from either hardwood or plywood. Because most of these designs are delicate, stack-cut them to support the fragile areas. Make a stack $\frac{3}{4}$ " (19mm) to 1" (25mm) thick using one of the methods explained on page 78. Attach the pattern to the stacked blank, drill blade-entry holes, and start cutting.

Finishing the Ornaments

Sand the ornaments with 220-grit sandpaper, and use small strips of sandpaper or needle files to clean the frets. Thoroughly remove the sawdust before applying the finish. Hardwood ornaments look nice when finished with an oil and sealed with a clear spray. Use acrylic paint, stain, or dyes to give plywood ornaments a pop of color.



Rick and Karen Longabaugh have been featured in many magazines and on television, and are well known among scrollers. Although they are now retired from woodworking, their simple and classic designs remain popular.

Christmas ornament patterns



Materials & Tools

Materials:

- Hardwood or plywood, 1/8" to 1/4" (3mm to 6mm) thick
- Spray adhesive
- Masking tape, hot glue, or brads (for stack cutting)
- Sandpaper: 220 grit
- Finish: oil, acrylic paint, dye, or stain
- Clear spray sealer, such as lacquer
- Glue: wood or silicone

Tools:

- Blades: #3 or #5 reverse-tooth
- Drill with bits: 1/16" (2mm) diameter
- Needle files
- Brushes

The author used these products for the project.
Substitute your choice of brands, tools, and materials as desired.

Further Reading

Christmas Ornaments for Woodworking

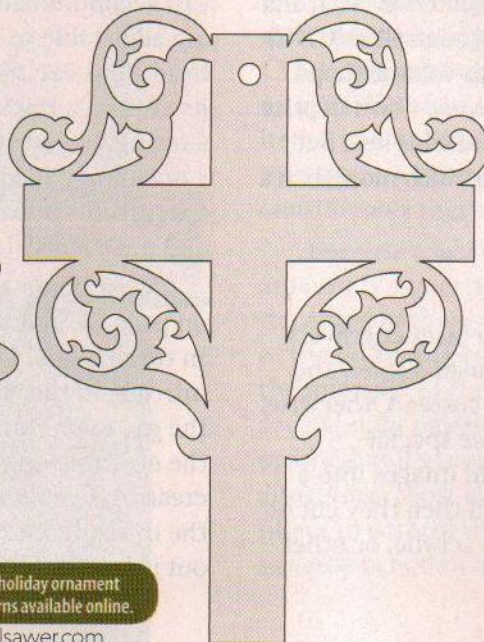
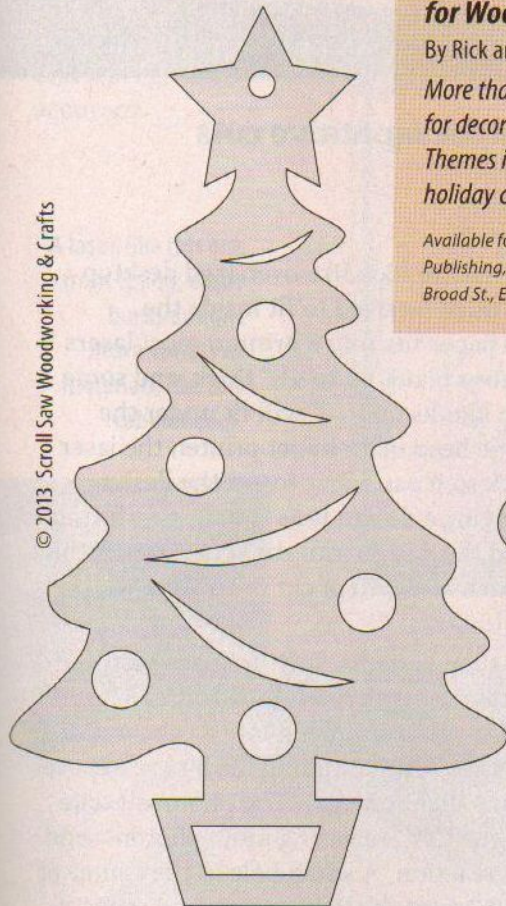
By Rick and Karen Longabaugh

More than 300 unique seasonal patterns for decorative Christmas ornaments.

Themes include the nativity, wildlife, and holiday classics like Santa, elves, and snowmen.



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Laser Cutting

& CNC Woodworking



Computer-controlled routers and lasers speed production for repetitive cuts

By Bob Duncan and Mindy Kinsey

Numerical-controlled tools have been used since the 1940s, when operators fed punch cards into machines to control the movements of the motors. Those early mechanisms were adapted as computers evolved and gave rise to today's computer numerical controlled (CNC) machines. Once expensive tools for high-volume shops, CNC routers and laser engravers have come down in price to about what you'd spend for a high-end table saw. But these computer-controlled tools can do much more than a simple saw.

CNC Systems

The fundamental difference between laser engravers and CNC routers is the cutter—one uses a laser, and the other uses a high-speed rotating cutter. Otherwise, the systems are similar. They both use special computer software to translate digital images into a format the machine understands, and then they cut or burn the image into the wood, brick, acrylic, or other material.

CO₂ Laser Engravers

Laser engravers tend to look like oversized desktop printers. Blanks must be sized to fit inside the machine, just as paper fits into a printer; most lasers can accommodate a blank up to 4½" thick, and some are adjustable so blanks up to 6" will fit under the head. And like the head of an inkjet printer, the laser itself is on a track so it can move to cut the design. Cutting or engraving a design is as simple as printing a document: load the design into the software; set the specifications, such as depth of cut or the line width; and push start.

Most home-shop systems, such as those pictured on page 76, operate using carbon dioxide (CO₂) lasers. In these lasers, CO₂ gas is pumped into a tube with mirrors on the ends. A surrounding flash tube exposes the gas to photons (light energy). The photons excite the electrons in the CO₂, releasing more photons, and creating a chain reaction. A small hole in the center of the mirror concentrates the light energy and sends it out in a useful beam.

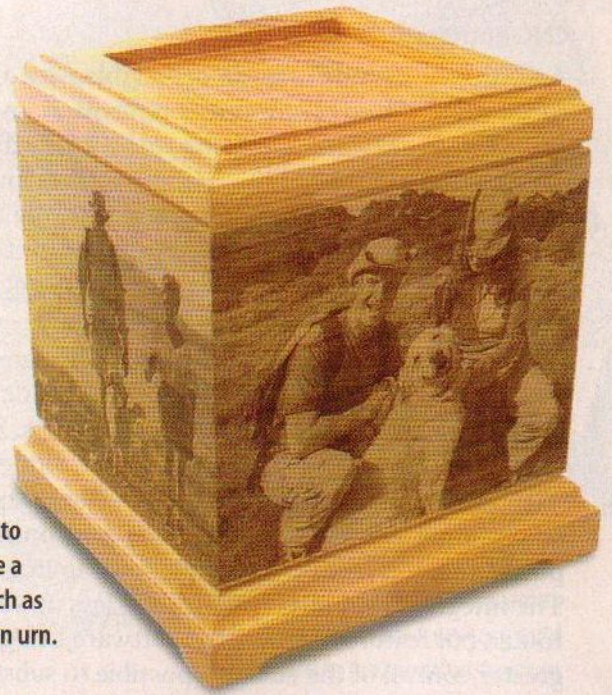
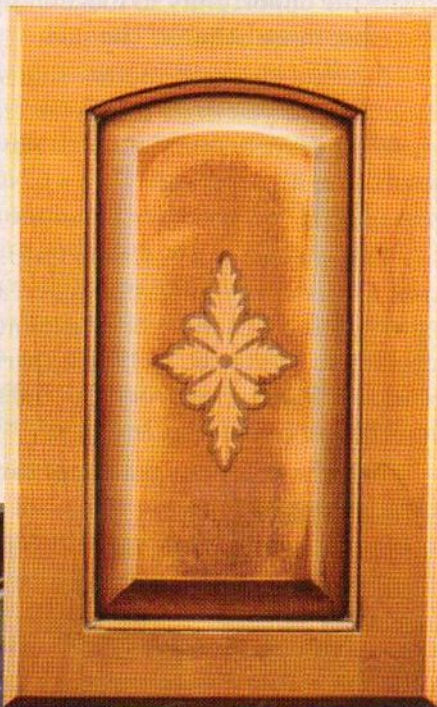
The power of a laser is determined by its wattage. As the wattage increases, so does the laser's ability to cut thick material. Home or small shop lasers generally range from 30 watts to 60 watts, while professional-grade lasers are 150 watts and higher. In general, a 25-watt laser can cut ¼"-thick material in one pass, and a 50-watt laser can cut ½"-thick material in one pass.

These tools are called engravers because they easily etch images and letters into many materials, including wood; painted or coated metals (the laser etches through the coating but doesn't mark the metal); some stone; and ceramics. The etching can be shallow and look like woodburning, or it might be more deeply carved into the object. Items ranging from ornaments and keychains to commemorative bricks are often etched using a laser engraver.

As useful as the engraving function is, the real value of a laser system lies in its ability to cut intricate parts very accurately. Lasers make finicky tasks easy, create elaborate products quickly, and speed production of items that could be cut by hand, just much more slowly. Manufacturers use high-end lasers to cut difficult or exacting items like car parts.

In a home shop, using thin wood, lasers can cut any project you can cut on a scroll saw, only faster and with greater accuracy.

A laser, like this one from Epilog, easily burns designs into a variety of materials, like this cabinet door.

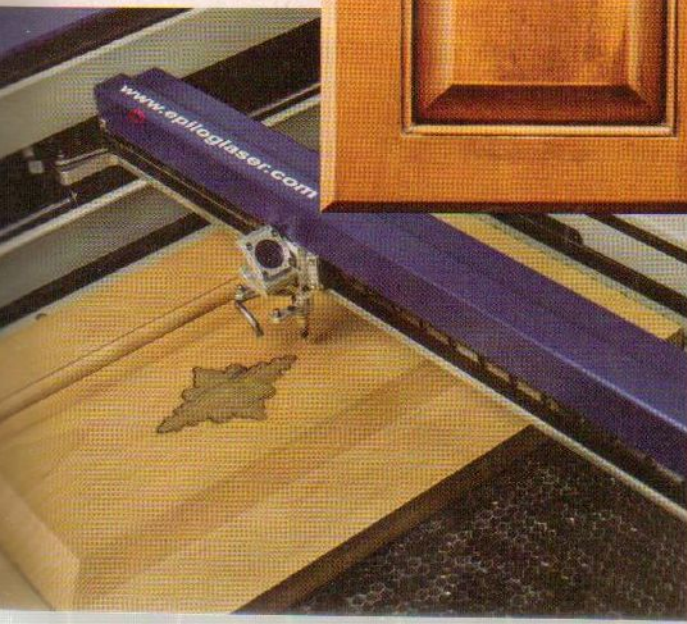


Use a laser to personalize a project, such as this wooden urn.

Using a laser, you could mass-produce your designs, thus expanding the market for your work by allowing you to offer two tiers of products: hand-cut originals and laser-cut duplicates which, like artists' prints, give collectors the opportunity to own your design without the expense of a hand-crafted piece. Even if you prefer to cut by hand, a laser allows you to experiment with designs and create quick prototypes and templates. They allow you to easily add a pyrography scene to a scrolled project, to personalize it with a woodburned name or inscription, and to sign and date your work.

Owners also value a laser's ability to cut a variety of substances. In addition to thin wood, CO₂ lasers can cut soft materials such as acrylic, fiberglass, fabric, paper, and even leather. Enthusiasts use lasers to cut delicate lamp shades and intricate cards from paper and thin wood, to etch leather belts and purses, to make acrylic sculptures, and much more. However, CO₂ lasers can't cut most metals (they reflect the light) or materials thicker than about ½". To etch or cut these items, you need either a laser with substantially more wattage or a different type of laser, both of which are considerably more expensive.

Because a laser actually burns away a small amount of material while it's cutting or engraving, the edges of the work area turn brown. The darkness of the browning can be reduced by turning down the intensity of the laser and cutting or engraving in several light passes rather than one or two intense passes, but it's impossible to eliminate browning altogether. Most laser engravers have built-in fans and filters to control the smoke created by the burning; sawdust is not an issue with lasers.



CNC Routers

A CNC router tends to be an open table with a high-speed router fitted on a framework above it. In most cases, the framework moves the router to do the carving, so the limits of the framework determine the size of the cutting area. One machine, the Carvewright, also has a roller table that moves the blank lengthwise, which allows it to carve long blanks.

Because they use routers, these systems are less expensive than lasers and can cut thicker materials. However, as you might expect, a spinning bit cannot cut fine details, and it can break fragile parts. Some CNC units assume you will add a router, while others come with integrated spindles. The advantages of adding your own router are that you can control its power and, if it breaks, it's simple to swap in a new one. The integrated spindles usually have less power than a router, but features of the CNC software can give you greater control of the cuts. It's possible to substitute a larger flexible-shaft rotary tool, like a Foredom, for the router, but high-speed, low-torque rotary tools like those made by Dremel don't work as well.

In the shop, a CNC router will reduce the time you spend working on repetitive cuts and let you move quickly to the fun detail work. You can use them to rough-cut intarsia pieces and to cut segmentation projects, backing boards, the rings for stacked-ring boxes or bowls, and the outlines of puzzles, ornaments, and word art. They are also useful for prototyping gears and complex gizmos, and for carving and lettering. You can take control of and even customize parts that you might otherwise buy or need specialized tools to make, such as frames, bases, and boxes.

Tools for Creativity

CNC lasers and routers are usually positioned as tools for making shops more efficient. For example, Ed Legler, a mechanical engineer in Denton, Tex., is fascinated by gears.



Paul Fleming used a CNC router to make this wooden padlock and embellish its face.

“Creating and designing wood articles on a computer and then seeing that creation come to actuality is very rewarding and just plain fun!”

—Paul Fleming

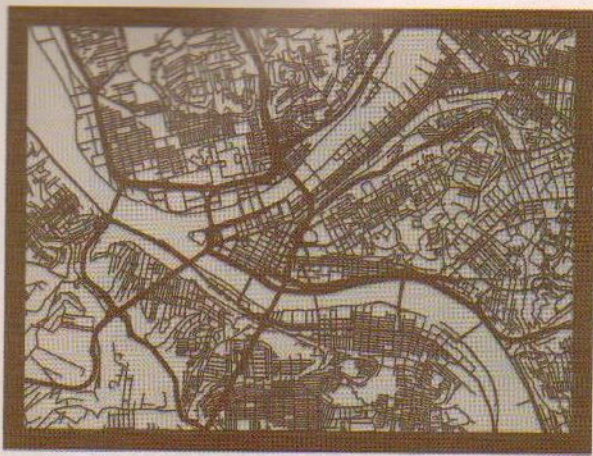
He originally cut them on a milling machine, which he later converted to CNC. A milling machine spins slower than a router, but operates on the same principle. It used to take Ed 30 minutes to cut a gear by hand, but he can cut the same gear in three minutes using a CNC machine. “And as long as I write the code correctly, it is error free.”

Paul Fleming, a CNC enthusiast in Blacksburg, Va., who teaches the technology to architecture students at Virginia Tech, highlights the economic benefit of the machines. “The additional speed and accuracy create the opportunity to make things efficiently and therefore more ‘sellable,’” he said.

But Paul also sees another side to the speed. “CNC routers allow you to do things faster, thus encouraging more experimentation,” he said. Have an idea but aren't sure it's practical? With a CNC machine, you can quickly and easily try it and see if it works.

Christy Oates of El Cajon, Calif., an artist who uses a laser cutter as part of her creative process, agrees. “I see it as more of an exploratory tool,” she explained. “It's faster, so I can experiment quickly, working through more designs and seeing how they look before I get a final result.”

But, she notes, the machines can also unlock the creative world for people who want options beyond traditional media, and that includes tech-savvy young people who have grown up with computers. “With CNC machines, 90% of the work is done in front of the computer. It's a completely different art form with a different learning curve,” she said. Students lack the hands-on knowledge of wood that the older generations of woodworkers have, but that's not necessarily a negative. “The new students are coming in with no knowledge of wood and coming up with completely different results. A lot of the woodworking I see doesn't look like what people do by hand. It's revitalizing the artwork.”

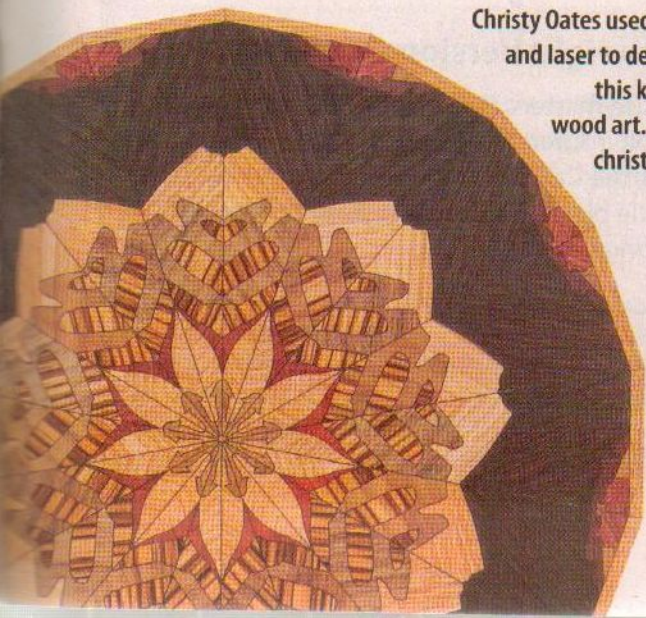


Dan Linden uses a laser to cut maps, like this one of Pittsburgh, that would be very difficult to cut with a scroll saw. See more at cutmaps.com.

Student Jack Kinsey, who lives in Pennsylvania, is a good example. Jack enjoys art, but prefers designing on the computer to doodling in pencil and doesn't have much experience working with wood. He thinks CNC machines make woodworking more accessible to kids. "It was cool to be able to design something without worrying if I'd be capable of cutting it on the scroll saw," said the 15-year-old, who learned how to use CNC systems in a high school tech-ed class. "Knowing that I have the ability to cut something with a CNC router makes me more likely to try woodworking in the future."

In fact, being able to cut things you couldn't do on a scroll saw is part of the fun of a CNC system. For example, Dan Linden, an artist in Elkton, Va., uses a laser to cut city maps, a project that would be very time-consuming on a scroll saw. And, a recent issue of *Make*: magazine featured wooden book covers cut with a laser. The fine cuts that create the hinge would be

Christy Oates used a computer and laser to design and cut this kaleidoscopic wood art. See more at christyoates.com.



Make: magazine's wooden book covers would be very hard to make without a laser.

very difficult for all but the most skilled scrollers, but a laser system does them with ease.

Plus, said Paul Fleming, "Creating and designing wood articles on a computer and then seeing that creation come to actuality is very rewarding and just plain fun!"

Not For Everyone

Some scrollers believe that lasers and CNC routers undermine handcrafts because vendors sometimes mislabel machine-cut pieces as handmade—and buyers sometimes assume that intricate work must be cut by machine instead of by hand. In some cases, market prices have been affected. However, there will always be people who prize handcrafted artwork featuring artist's designs made from high-quality materials, and they will not be tempted or fooled by machine-made pieces.

And, no machine can undermine your enjoyment of the time you spend choosing wood, making designs, and carefully cutting projects by hand. As Christy Oates said, "Most woodworkers I know are not doing it for the money, they're doing it for the love of the process."

Many hobbyist woodworkers—scrollers, carvers, and cabinet or furniture makers—don't want or need a CNC system. However, for those exploring new options for speeding and easing production, making prototypes, personalizing creations, making limited-edition versions of original pieces, and experimenting with artwork, CNC machines can be very useful in the modern woodshop.

CNC LASERS



Boss Laser LS-1415

Interested in engraving thick material? The Boss Laser's motorized table moves up and down as much as 6" to accommodate thick bricks, blocks, and blanks.

Prices start at \$2,897
www.bosslaser.com, 888-652-1555
Cutting area: 14" x 15"
Laser wattage: 40



Epilog Laser Zing 16

Epilog Lasers are widely available, and the company demonstrates its products at a variety of events. The lasers are designed, made, and supported in the U.S.

Prices start at \$7,995
www.epiloglaser.com, 303-277-1188
Cutting area: 12" x 16"
Laser wattage: 30 to 40



Full Spectrum 40W CO₂ Basic Hobby Laser

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Prices start at \$1,850
www.fslaser.com, 702-802-3101
Cutting area: 9½" x 14½"
Laser wattage: 40

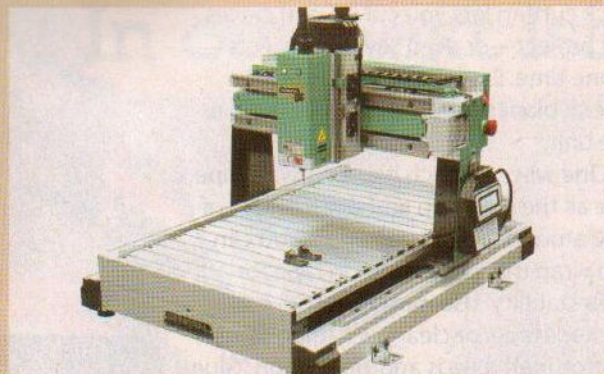
CNC ROUTERS



Carverwright Version C

When size matters, Carverwright is the answer. Most CNC routers hold the blank on a fixed table. Instead, the Carverwright uses a roller table to move the blank front to back, allowing you to carve long projects.

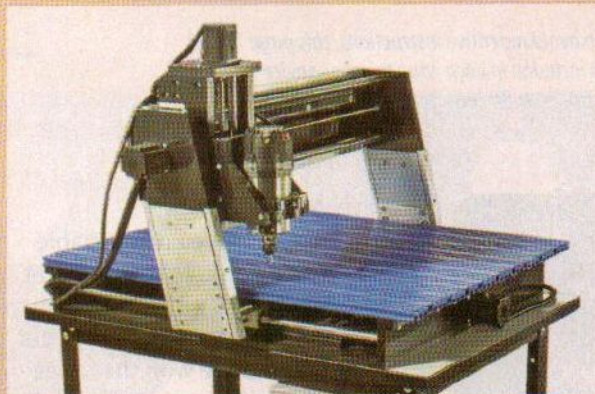
Prices start at \$1,399
www.carverwright.com, 713-473-6572
Cutting area: 5" x 14½" x 144" (approximate)
Spindle Motor: 1hp



General 13" x 18" iCarver

If you want a simple CNC that arrives almost ready to use, look to General. The iCarver uses an integrated spindle and comes with basic software, so everything you need is in the box. The unit is easy to assemble and to use without much instruction or practice.

Prices start at \$2,099.99
www.general.ca, 888-949-1161
Cutting area: 3" x 13" x 18"
Spindle Motor: 1/5 hp



Rockler Shark Standard

Woodworkers appreciate Rockler's Shark because it's compatible with a number of routers as well as a top dust-collection system. Plus, the popular VCarve software is included.

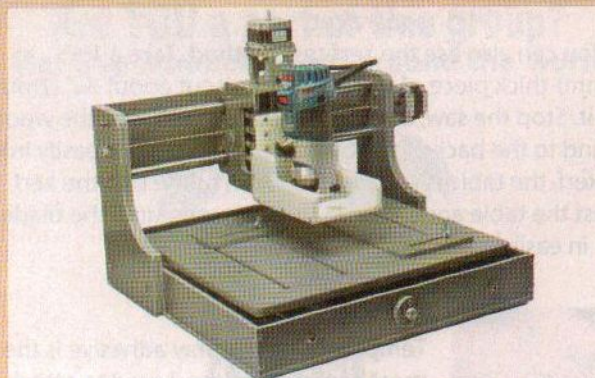
Prices start at \$2,899.99
www.rockler.com, 800-279-4441
Cutting area: 4 1/2" x 13" x 24"
Router Size: Add your own router; suggested size is 1 hp



Shopbot Desktop

The Desktop is the most powerful and has the most functionality of small CNC machines, placing it on the border between hobby and commercial shop systems.

Prices start at \$4,995
www.shopbottools.com, 888-680-4466
Cutting area: 4" x 18" x 24"
Spindle Motor / Router Size: Available with a 1 hp spindle for additional fee, or add your own router. Suggested router size is 2 1/4 hp.

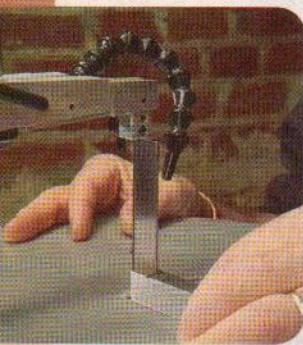


Zen Toolworks

Build and customize your own CNC unit with parts from Zen Toolworks. The parts are available packaged separately or as a complete kit. Because you do the work, prices are much lower than those of pre-assembled units.

Prices start at \$359.99
www.zentoolworks.com, 925-521-0368
Cutting area: 2" x 7" x 7"
Router size: Add your own router; suggested size is 1 hp

To avoid repetitive instructions, this page is included in each issue to assist novice scrollers with basic scrolling techniques.



Squaring Your Table

Most scroll saws have an adjustable table that allows you to make cuts at different angles. There are times when you want the saw set at an angle, but most cutting is done with the blade perpendicular to the table. If the table is even slightly off-square, the cuts will be angled. This interferes with puzzle pieces, intarsia, segmentation, and many other types of scrolling projects.

The most common method for squaring a table uses a small metal square, or right angle tool. Set the square flat on the saw table against a blade that has been inserted and tensioned. Adjust the table to form a 90° angle to the blade.



The cutting-through method is also popular. Saw through a piece of scrap wood at least 3/4" (19mm) thick and check the angle of the cut using a square. Adjust the table until you get a perfectly square cut.

You can also use the kerf-test method. Take a 1 3/4" (44mm)-thick piece of scrap wood and cut about 1/16" (2mm) into it. Stop the saw, back the blade out, and spin the wood around to the back of the blade. If the blade slips easily into the kerf, the table is square. If it doesn't slide into the kerf, adjust the table and perform the test again until the blade slips in easily.



Attaching Patterns

Temporary-bond spray adhesive is the most common method used to attach patterns to stock. Photocopy the pattern. Spray the adhesive on the back of the copy of the pattern, wait a few seconds, and then press the pattern down onto the blank. Rubber cement or glue sticks work similarly.

You can also use graphite or carbon transfer paper. Place the pattern on the blank and slip a sheet of transfer paper in between the pattern and the blank. Use a few pieces of painter's tape to hold the pattern and transfer paper in place. Trace around the pattern with a red pen (so you know where you have traced). Choose a light-colored transfer paper for darker woods. Carbon paper costs less than graphite paper, but must be sanded off before finishing.

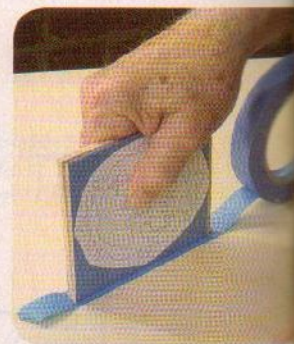
Stack Cutting

Stack cutting lets you cut several pieces of a project—or even several projects—at one time. Essentially, you attach several blanks together and cut them as one unit.

One way to attach blanks is with tape. Line all the layers up and wrap a layer of tape around the outside edge. You can also wrap the whole stack in tape for extra stability. Use masking tape, painter's tape, or clear packaging tape.

Hot-melt glue is another option. Glue the blanks together with a dot of hot-melt glue on each side.

You can also join pieces by driving brads or small nails into as many waste areas as you can. Cut off any overhanging nails as close to the surface as you can, and then sand them flush to avoid scratching or catching on the table.



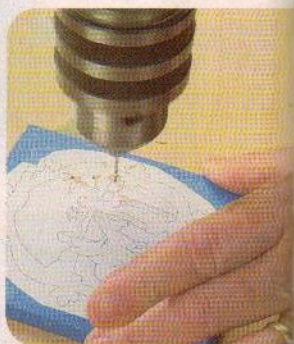
Blade Tension

Before inserting a blade, completely remove the tension. Clamp both ends of the blade into the blade holders and adjust the tension. Push on the blade with your finger. It should flex no more than 1/8" (3mm) forward, backward, or side to side.

A blade that does not have enough tension will wander. It will also flex from side to side, making for irregular or angled cuts. If you press too hard on a loose blade, it will usually snap. A blade that has too much tension is more susceptible to breaking and tends to pull out of the blade holders. In general, it is better to make the blade too tight rather than too loose.

Blade-entry Holes

Some patterns have blade-entry holes marked. If the pattern doesn't, place the holes near a line to be cut to prolong the blade life, but don't place the hole on a curving line or inside corner (if possible). Drill the hole perpendicular to the blank. Use a drill press if you have one; otherwise, use a hand drill and make the holes as vertical as possible. Drill through the blank into scrap wood to prevent tear out on the back side of the blank. If you have the space, use a larger bit—it will make it easier to thread the blades through. For thin veining cuts, use the smallest bit the blade will fit through.



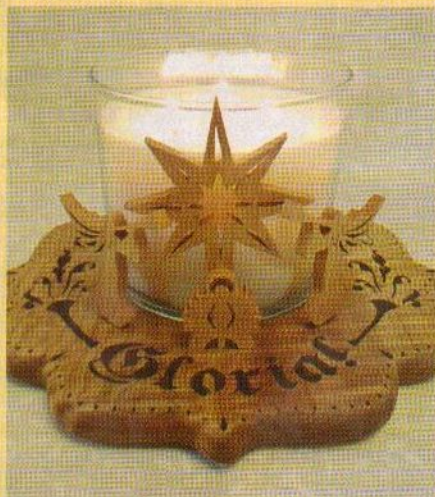
Removing Patterns

Dampen a glued paper pattern with mineral spirits to aid in removal. Commercial adhesive removers work as well. A quick wipe of mineral spirits will remove most adhesives left behind on the wood.

In our next issue...



Present gifts in style with a simple sleigh box.



Pretty candle plate is perfect for Advent.



Dainty angel ornaments feature fretwork detailing.

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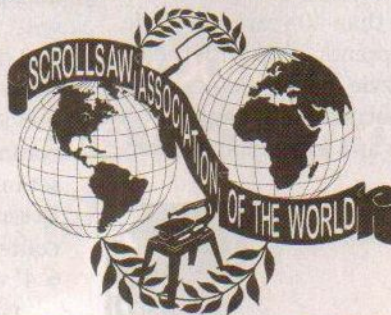
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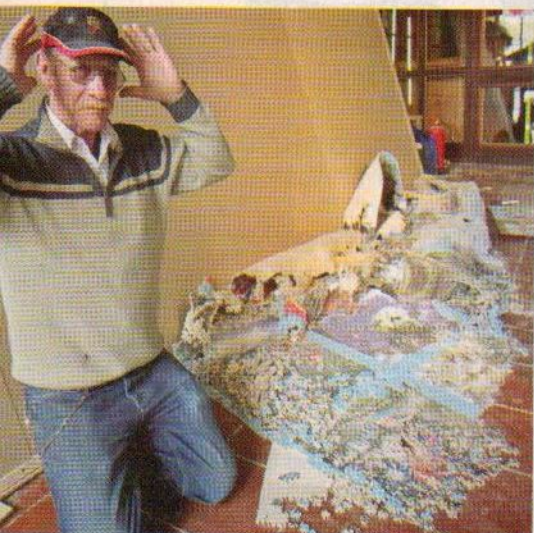
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World's Largest Jigsaw Puzzle Honors Queen's Jubilee

Dave Evans of Dorset, England, thinks big—really big. He recently set a new Guinness World Record for creating the largest hand-cut wooden jigsaw puzzle ever made. Dave cut the 40,000-piece puzzle, which measures a whopping 8' by 19'1", in recognition of Queen Elizabeth's Diamond Jubilee in 2012. The montage consists of 33 laser-printed images selected from thousands of photos taken at celebratory festivals, parades, and parties throughout the year.

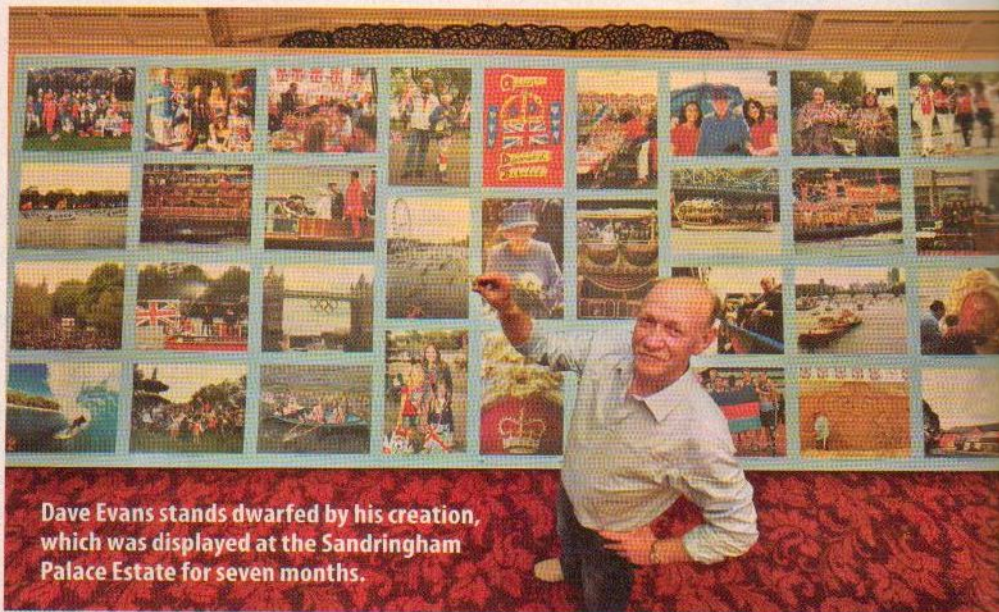
"This was a monster piece of work. By the time I was through, I had cut my thumb and my hands were aching," Dave admitted. "The Queen may think I'm mad taking on such a project, and she might well be right, but I have always been a lover of puzzles, and I know that she enjoys them too."

Dave learned the art of puzzle making more than 40 years ago while serving an apprenticeship with the renowned puzzle maker Victory Puzzles in Bournemouth, England. After a career as a professional boxer,



Disaster struck when the colossal puzzle slid from its frame during the installation.

Photo courtesy of Lymn News



Dave Evans stands dwarfed by his creation, which was displayed at the Sandringham Palace Estate for seven months.

he returned to the scroll saw 14 years ago and started cutting his own puzzle designs. "I'm one of the few people who are professionally trained to hand-cut jigsaws and I wanted to leave a legacy, so I thought maybe I could leave a giant jigsaw puzzle," he said.

It took Dave 35 days—more than 300 hours—to single-handedly cut the Jubilee puzzle in his workshop. He used 1"-thick birch plywood and an Excalibur EX-30 scroll saw. His wife, Margaret, and several volunteers and friends sanded and assembled the sections of the puzzle. The previous world record for the largest commercially made jigsaw puzzle was set in 2010 by Oxfordshire resident Rosemary Mulvaney. Her puzzle contained 32,256 pieces and measured 6' 4" wide by 17' 10" long.

Dave assembled the puzzle and inserted his final trademark piece in the shape of a dolphin before the gathering press. The next day when he framed and hung the puzzle for the first time, Dave noticed a small defect in the frame. When he attempted to repair it, disaster struck—the entire puzzle collapsed before his eyes. "It seemed to happen in slow motion," he recalled. "The puzzle is fully interlocking though, and it's made of birch plywood, so a lot of it held together. When it fell, it sort of rolled down off the wall like a carpet and crashed into a huge pile on the floor.

I was annoyed, to say the least, but I had no choice but to sit on the floor and start picking up the pieces one by one."

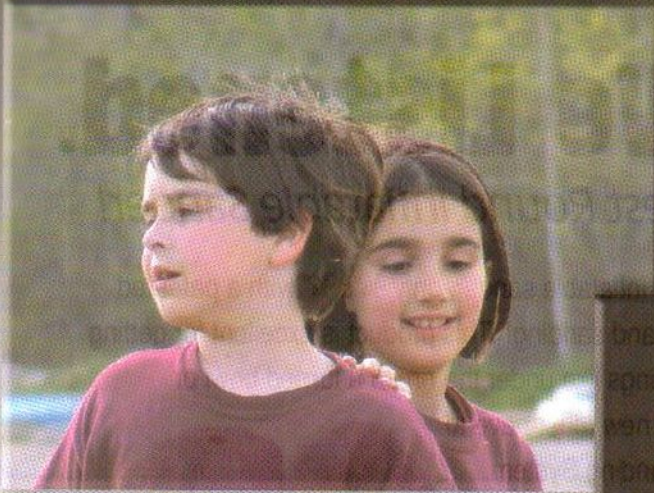
To qualify as a world record attempt, the entire puzzle-making process was filmed by Guinness World Records. The webcam was still running when the collapse occurred, so the whole disaster sequence was captured on film. The YouTube footage recorded more than 112,000 hits within the first few weeks.

When Dave learned that his puzzle was chosen to be displayed in the Queen's private residence at the Sandringham Palace Estate from April through November 2013, he was thrilled. He said, "When I first heard the news I thought, 'Wow! That'll do it for me!'"

The question then became how to get all 40,000 pieces to the palace without further incident. P&M Packaging came to the rescue. They constructed special wooden boxes for storing the sections of the puzzle and a van for the 240-mile journey. The puzzle arrived safely and in time for display.

Dave is cutting a replica 1,000-piece puzzle for Her Majesty, as well as another 99 limited-edition boxed sets. For more on the puzzle and the boxed sets, visit www.worldrecordjigsaw.com.

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Set #11305



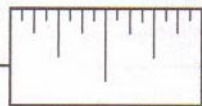
800-942-1300

Tools To Bring Your Vision To Reality

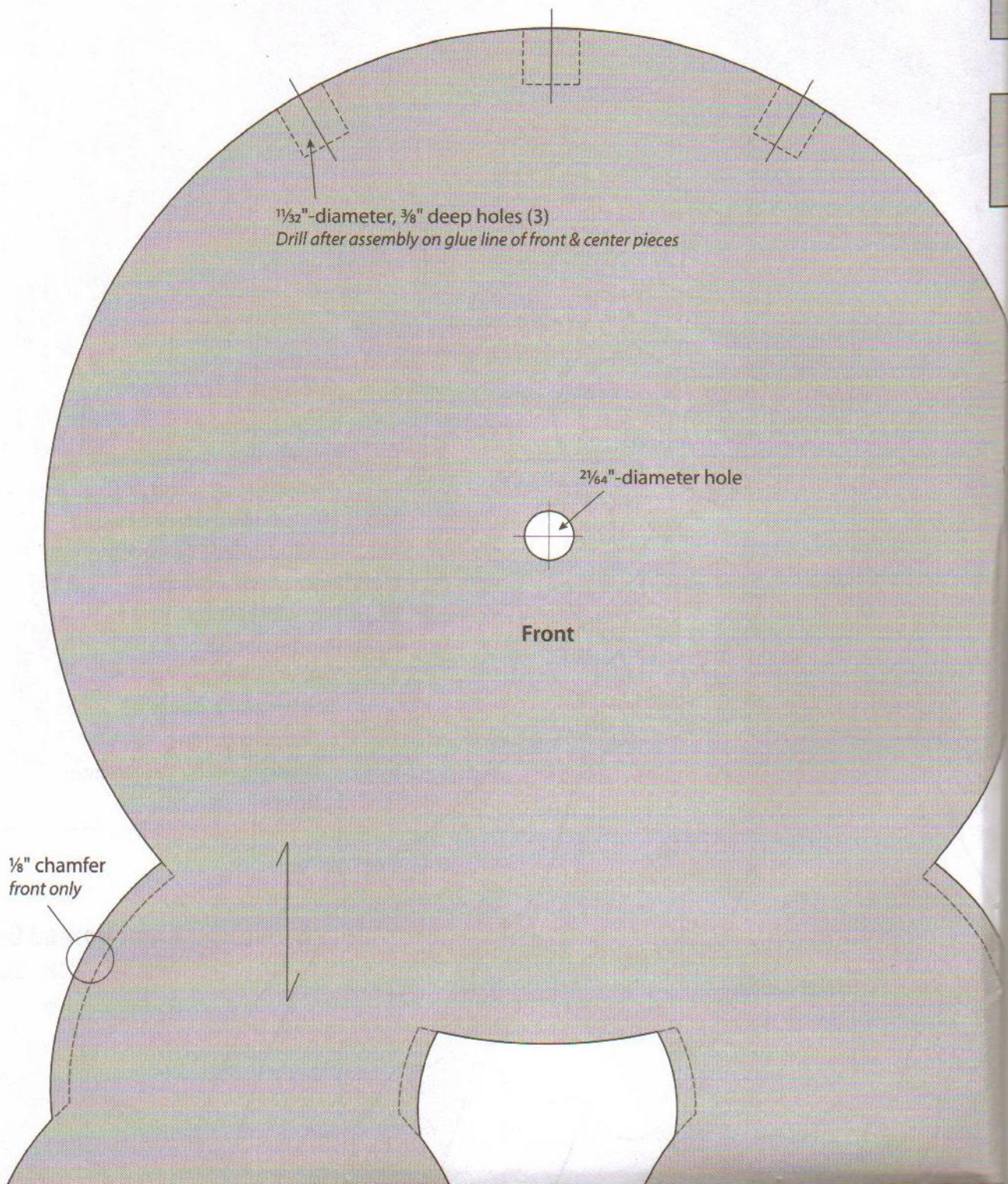
katools.com

Notice about photocopying patterns

Some photocopiers and home printers can distort patterns when you print them, making them slightly off-size or stretching the image. Use the 1" bar printed below as a guide when copying the patterns and hold the photocopies of the pattern up to the original to check for any distortion.



One inch



Handle

$\frac{7}{32}$ "-diameter hole

Trigger - $\frac{3}{8}$ " thick

$\frac{7}{32}$ "-diameter hole

Striker

$\frac{1}{4}$ "-diameter hole

Boomerang Launcher

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Designer: Bob Gilsdorf

$\frac{1}{8}$ "

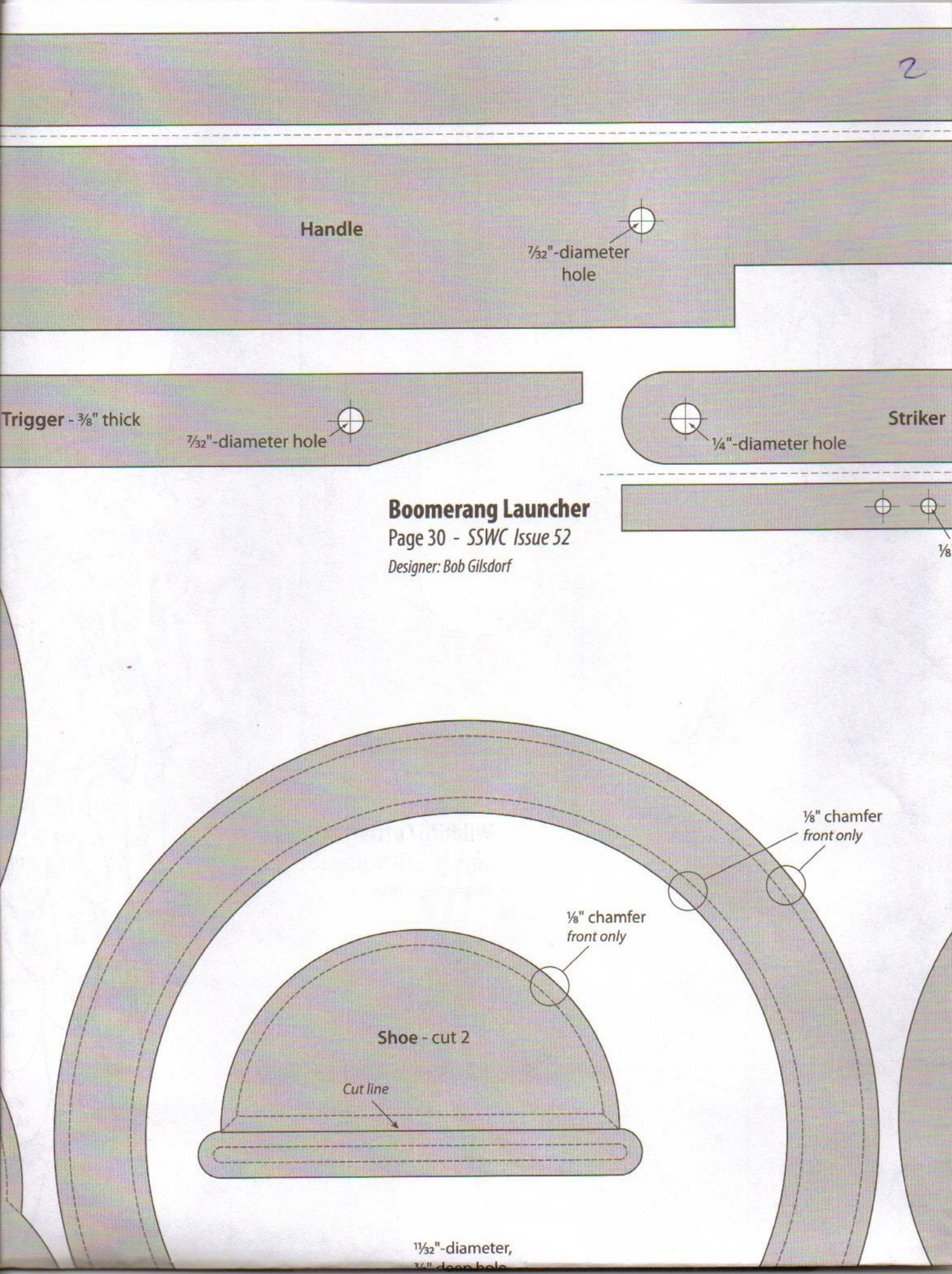
$\frac{1}{8}$ " chamfer front only

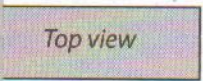
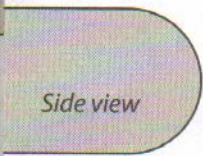
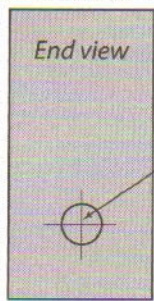
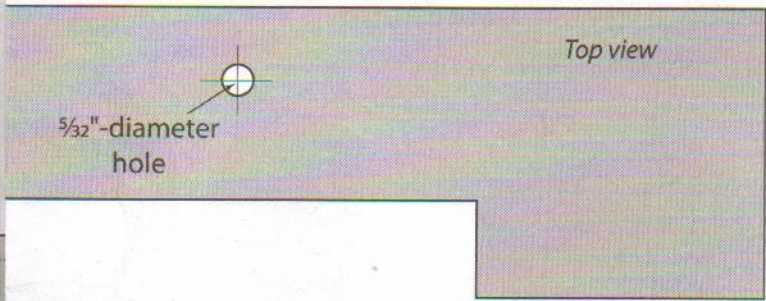
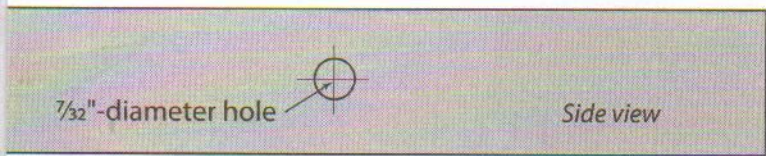
$\frac{1}{8}$ " chamfer front only

Shoe - cut 2

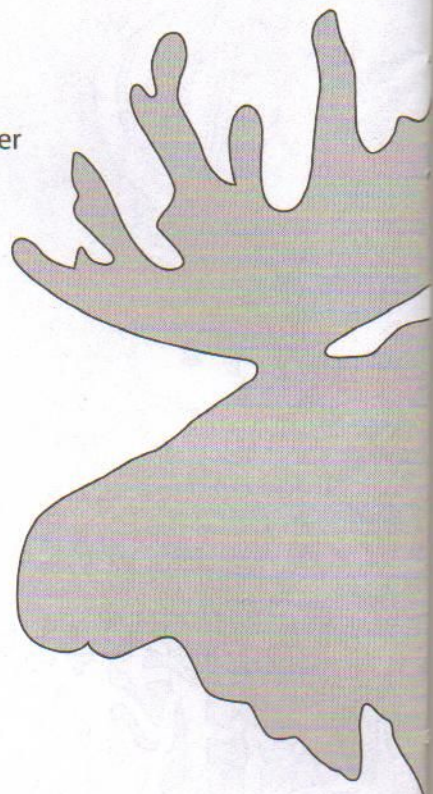
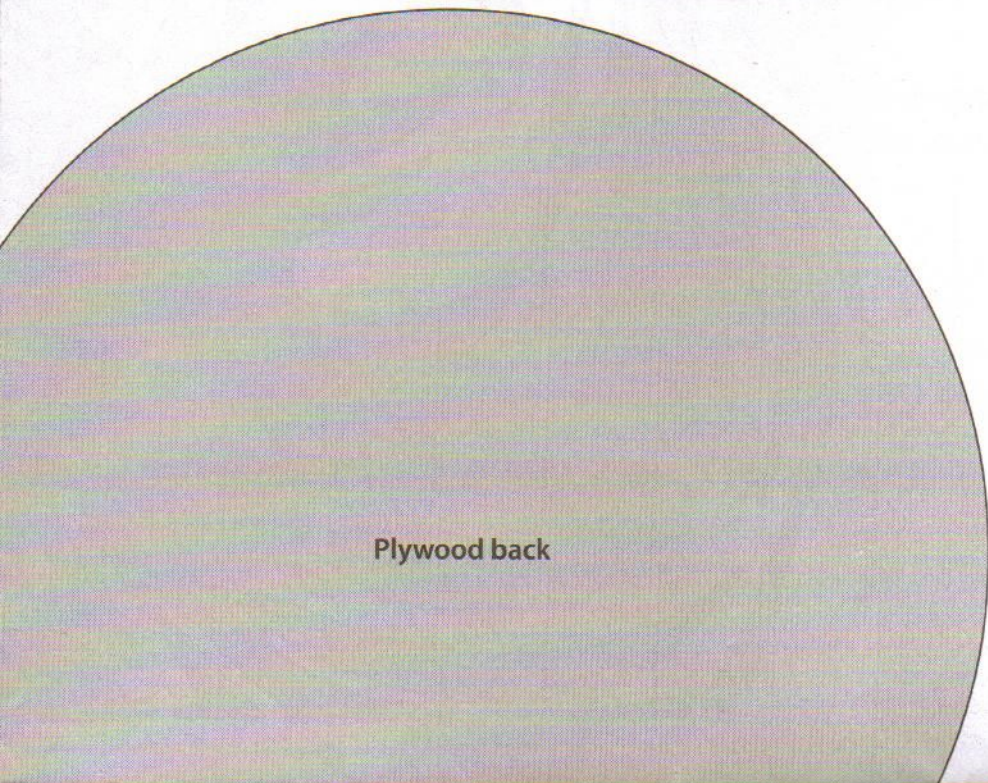
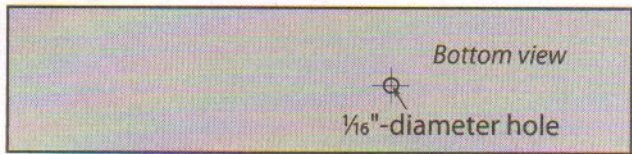
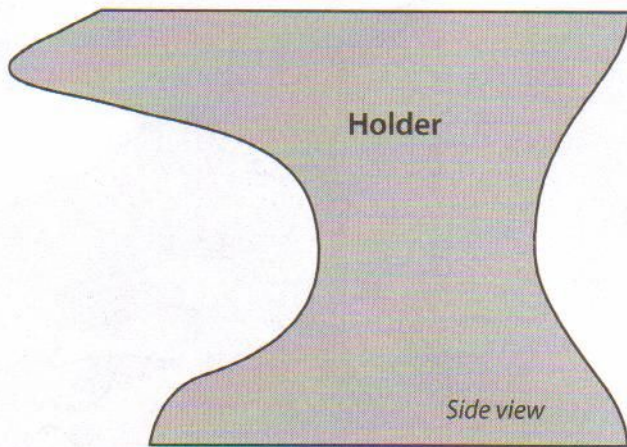
Cut line

$\frac{1}{32}$ "-diameter,
 $\frac{3}{16}$ " deep hole





1/8"-diameter holes (2)



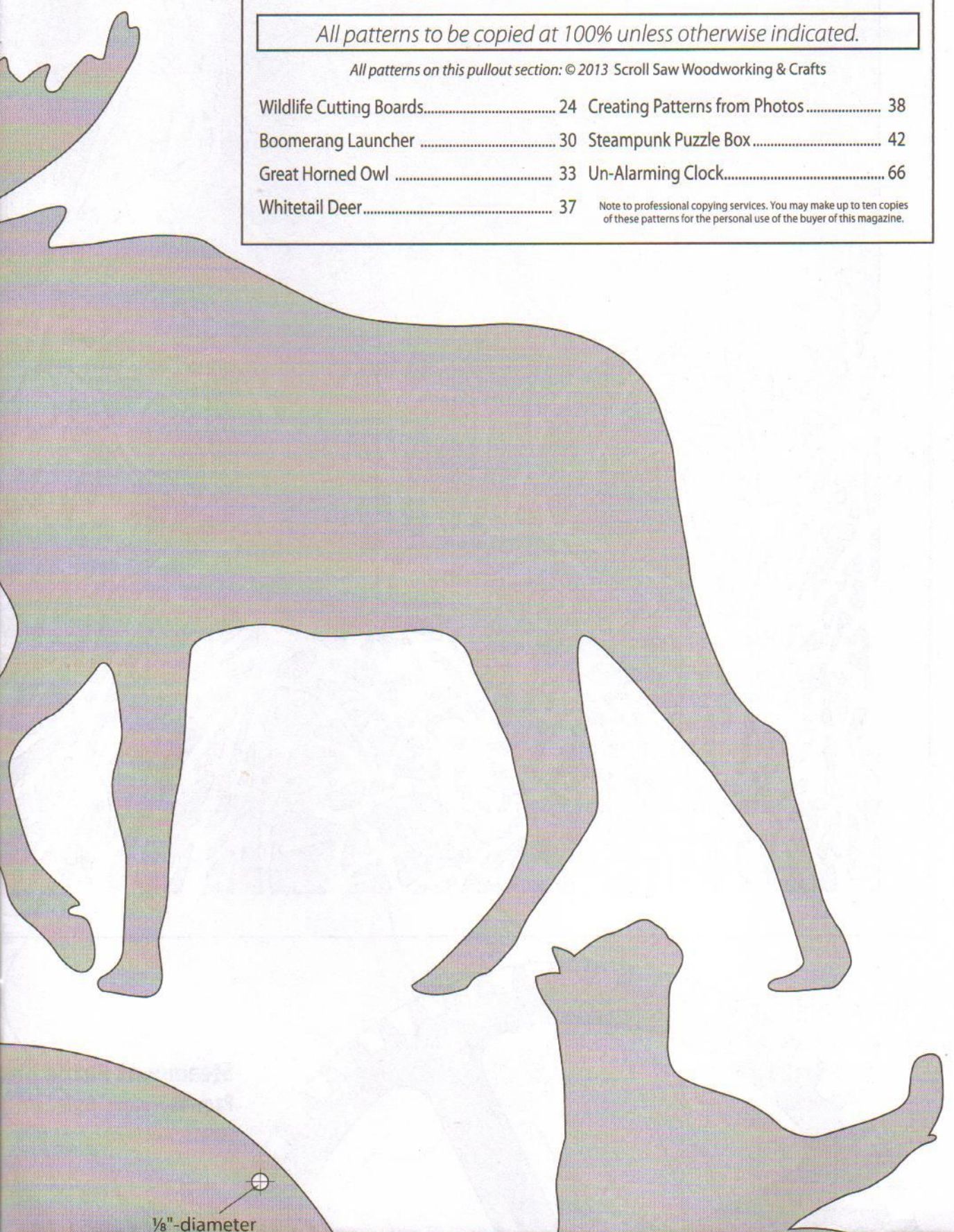
41


All patterns to be copied at 100% unless otherwise indicated.

All patterns on this pullout section: © 2013 Scroll Saw Woodworking & Crafts

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Boomerang Launcher	30	Steampunk Puzzle Box.....	42
Great Horned Owl	33	Un-Alarming Clock.....	66
Whitetail Deer.....	37		

Note to professional copying services. You may make up to ten copies of these patterns for the personal use of the buyer of this magazine.

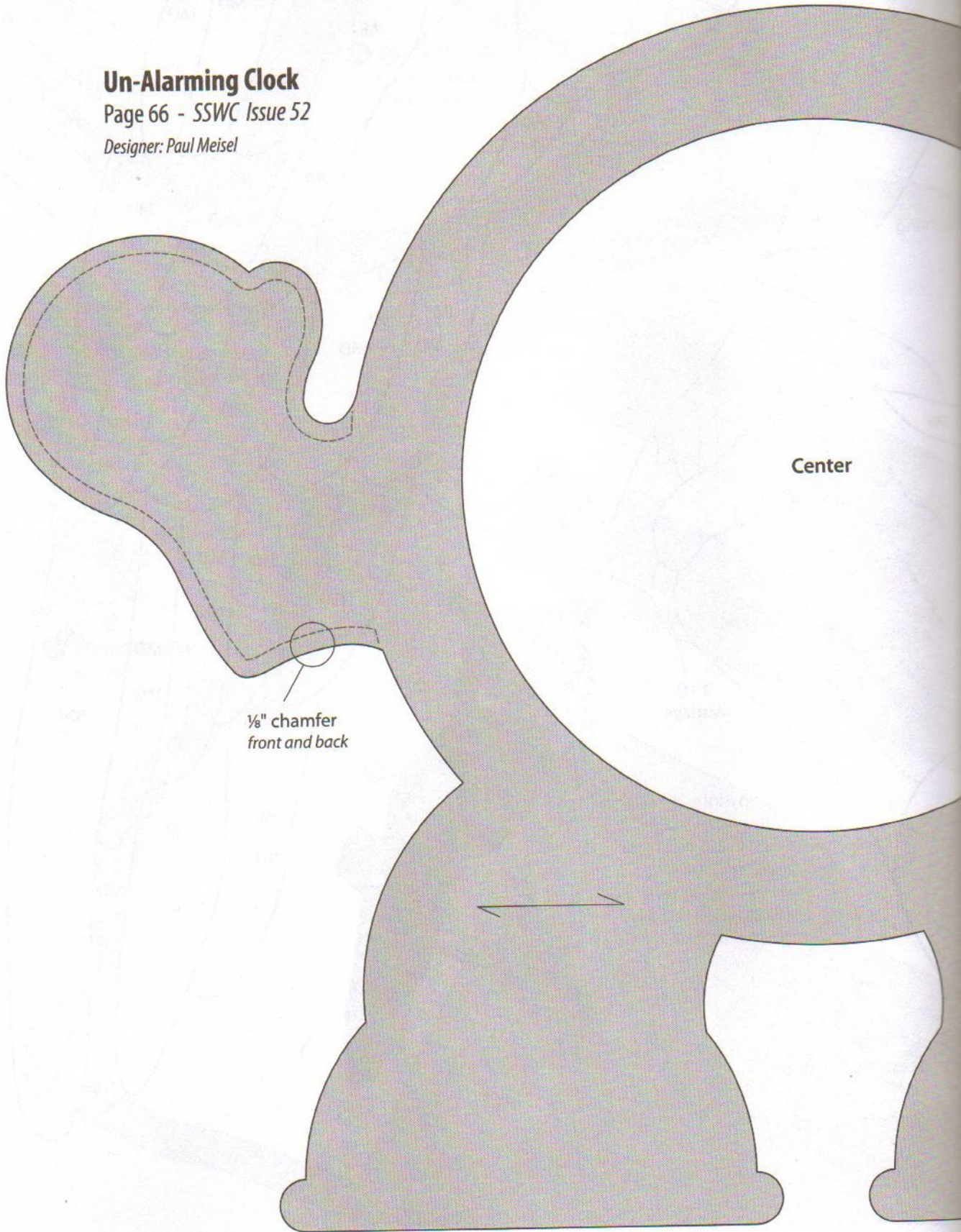



1/8"-diameter

Un-Alarming Clock

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Designer: Paul Meisel

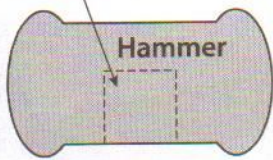


Center

1/8" chamfer
front and back



(On center)



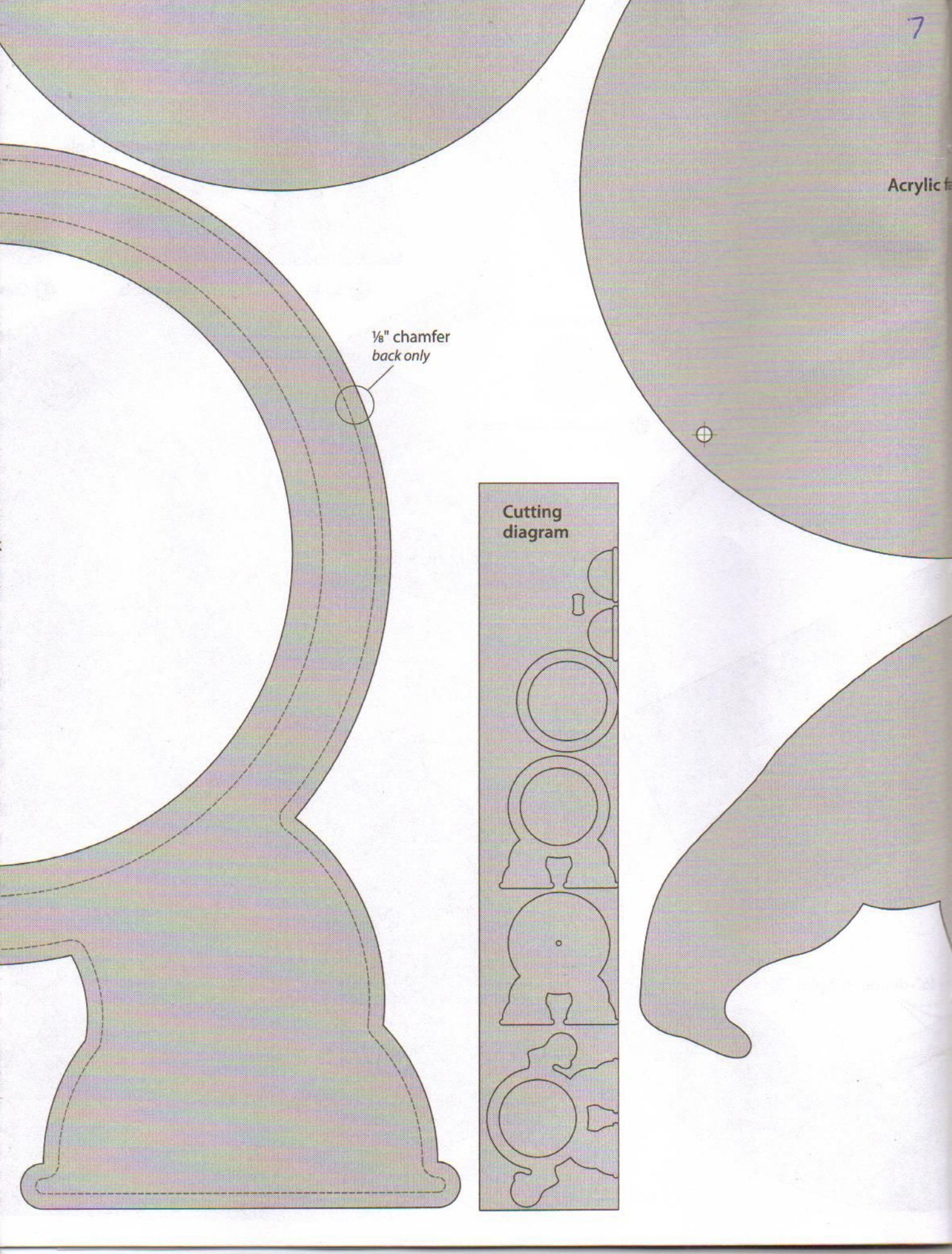
Hammer

Face

Back

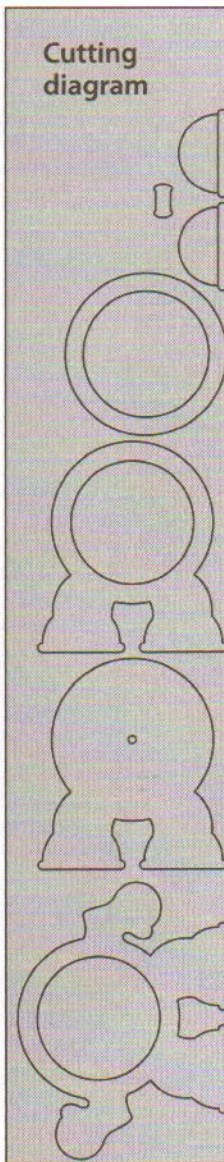
1/4" rabbet, 1/4" deep
back only





1/8" chamfer
back only

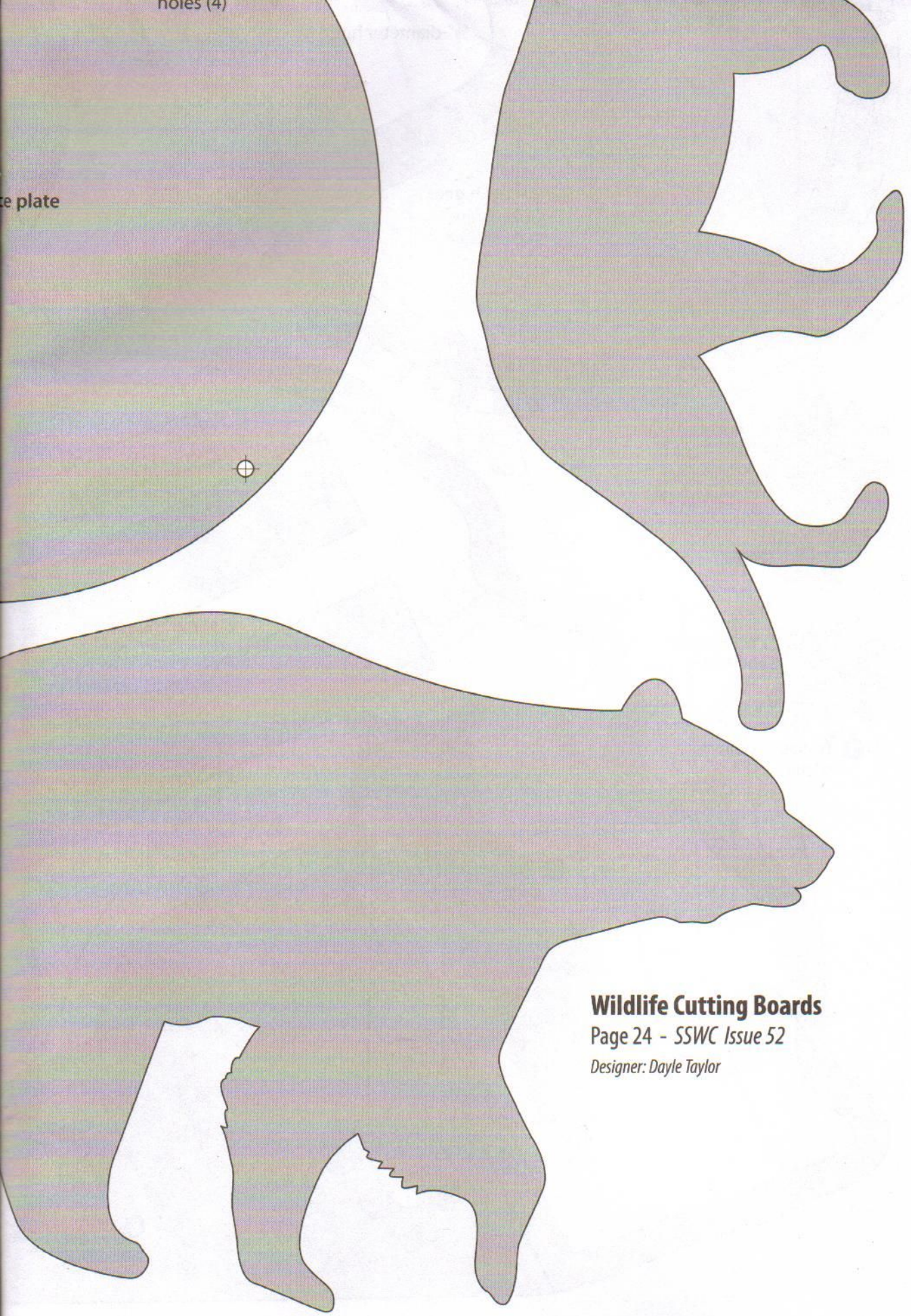
Cutting
diagram



holes (4)

8

te plate



Wildlife Cutting Boards

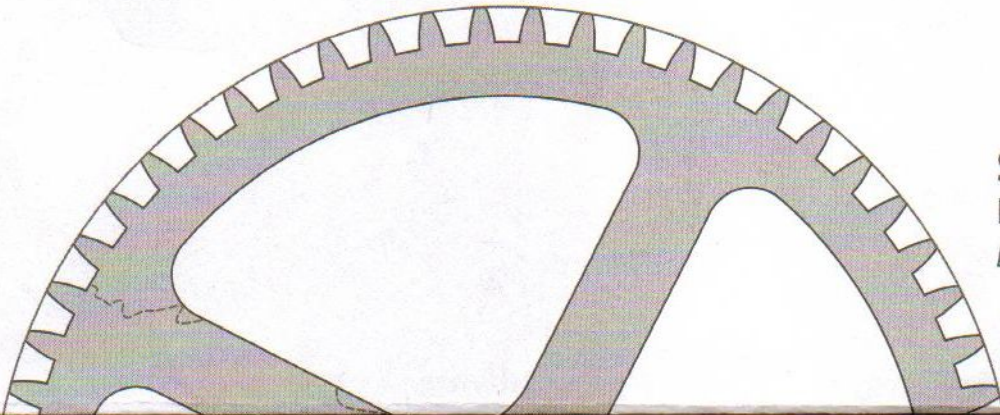
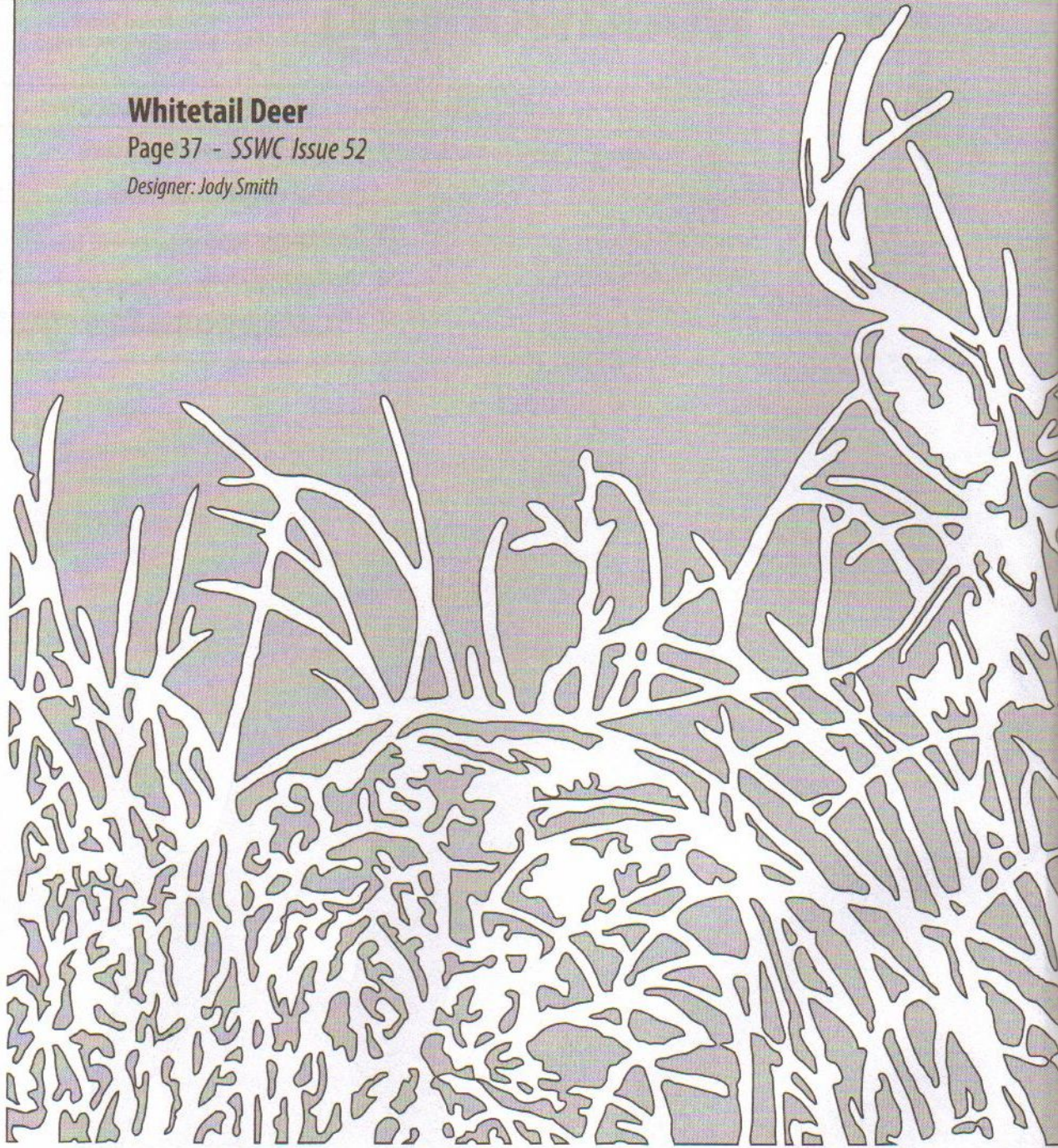
Page 24 - SSWC Issue 52

Designer: Dayle Taylor

Whitetail Deer

Page 37 - SSWC Issue 52

Designer: Jody Smith



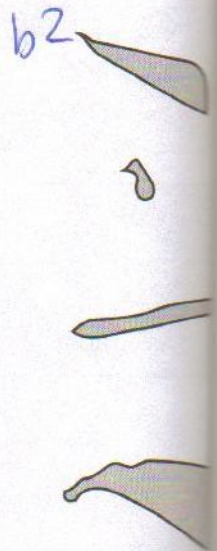
Steampunk Puzzle Box

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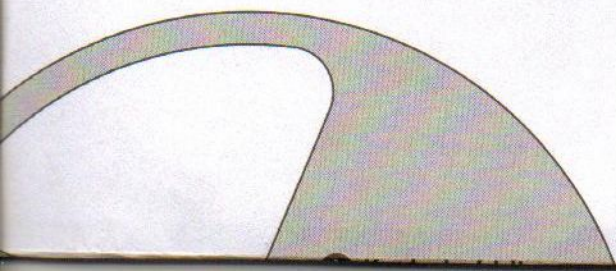
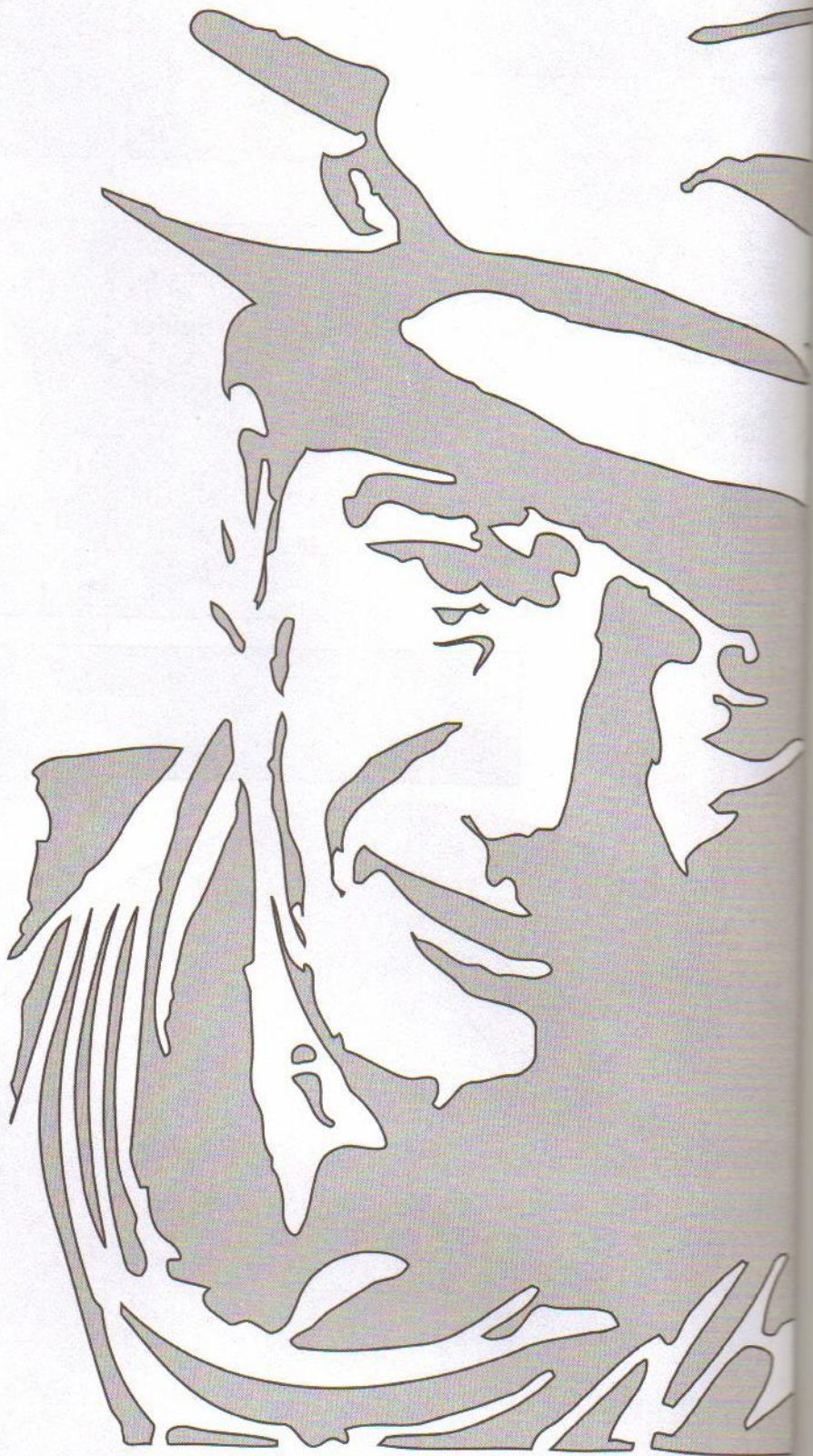
Designer: John Rhyne

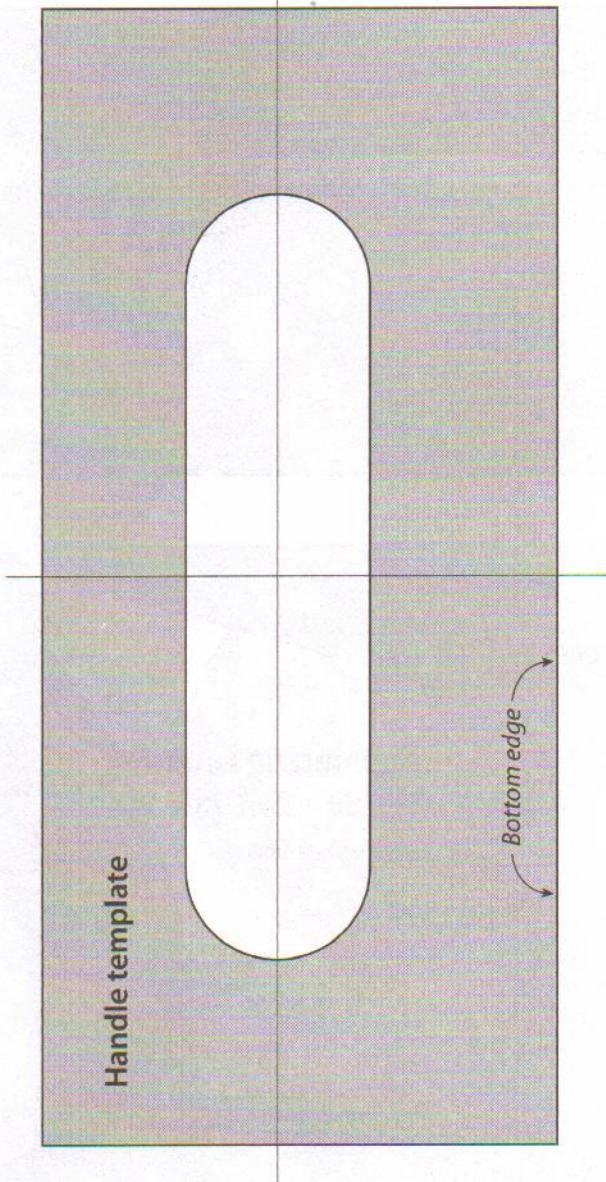
BONUS PATTERN:
John Wayne Portrait
Designer: Gary Browning

b2

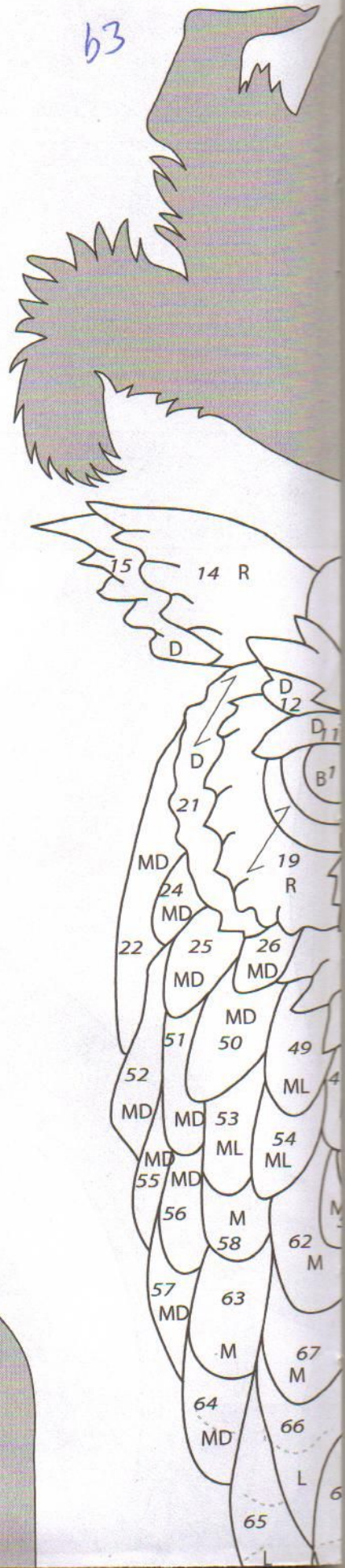


Creating Patterns from Photos
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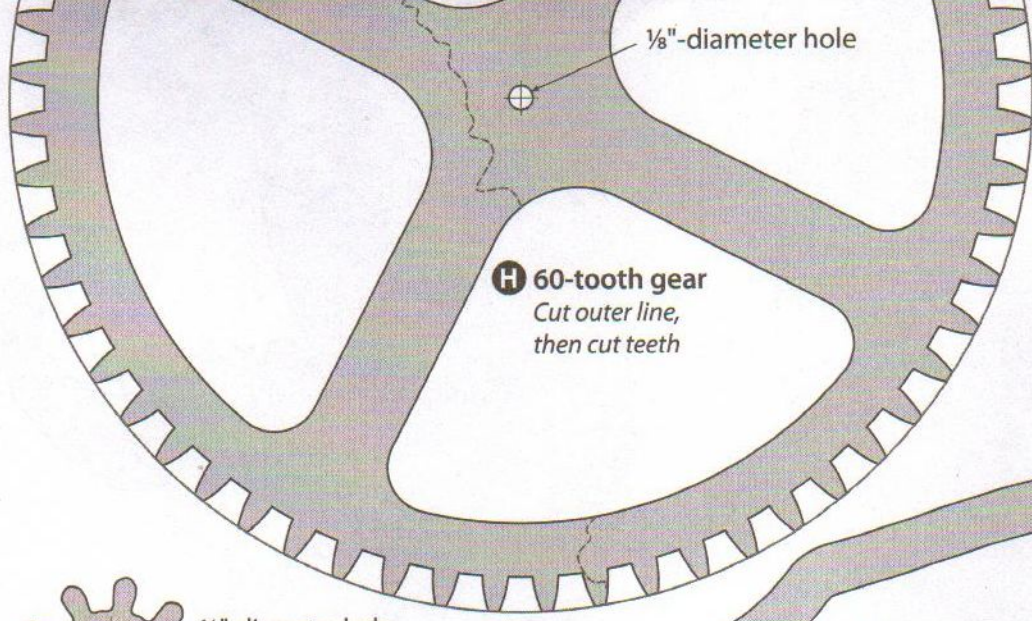


63

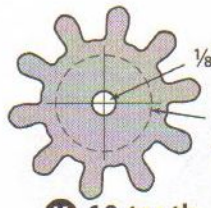


Wildlife Cutting Boards
Page 24 - SSWC Issue 52
Designer: Dayle Taylor

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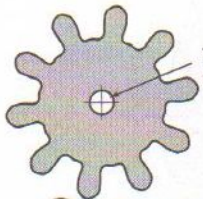


H 60-tooth gear
Cut outer line,
then cut teeth



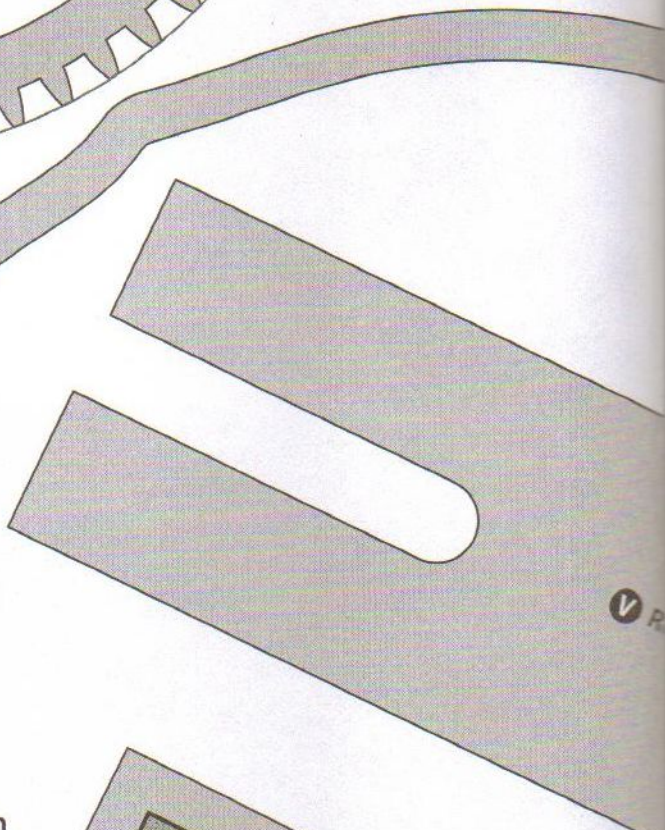
$\frac{1}{8}$ "-diameter hole
 $\frac{1}{2}$ "-diameter,
 $\frac{1}{2}$ "-deep hole

K 10-tooth locking gear
 $\frac{3}{4}$ " thick



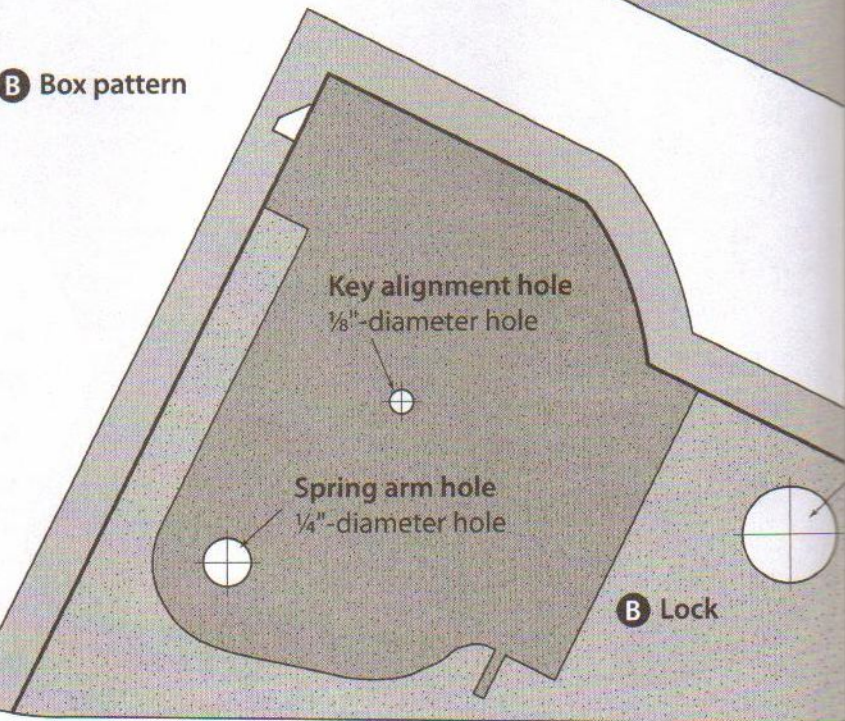
$\frac{1}{8}$ "-diameter hole

J 10-tooth gear
 $\frac{3}{8}$ " thick



V R

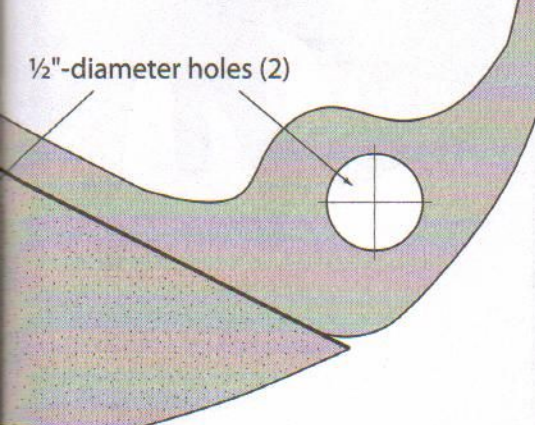
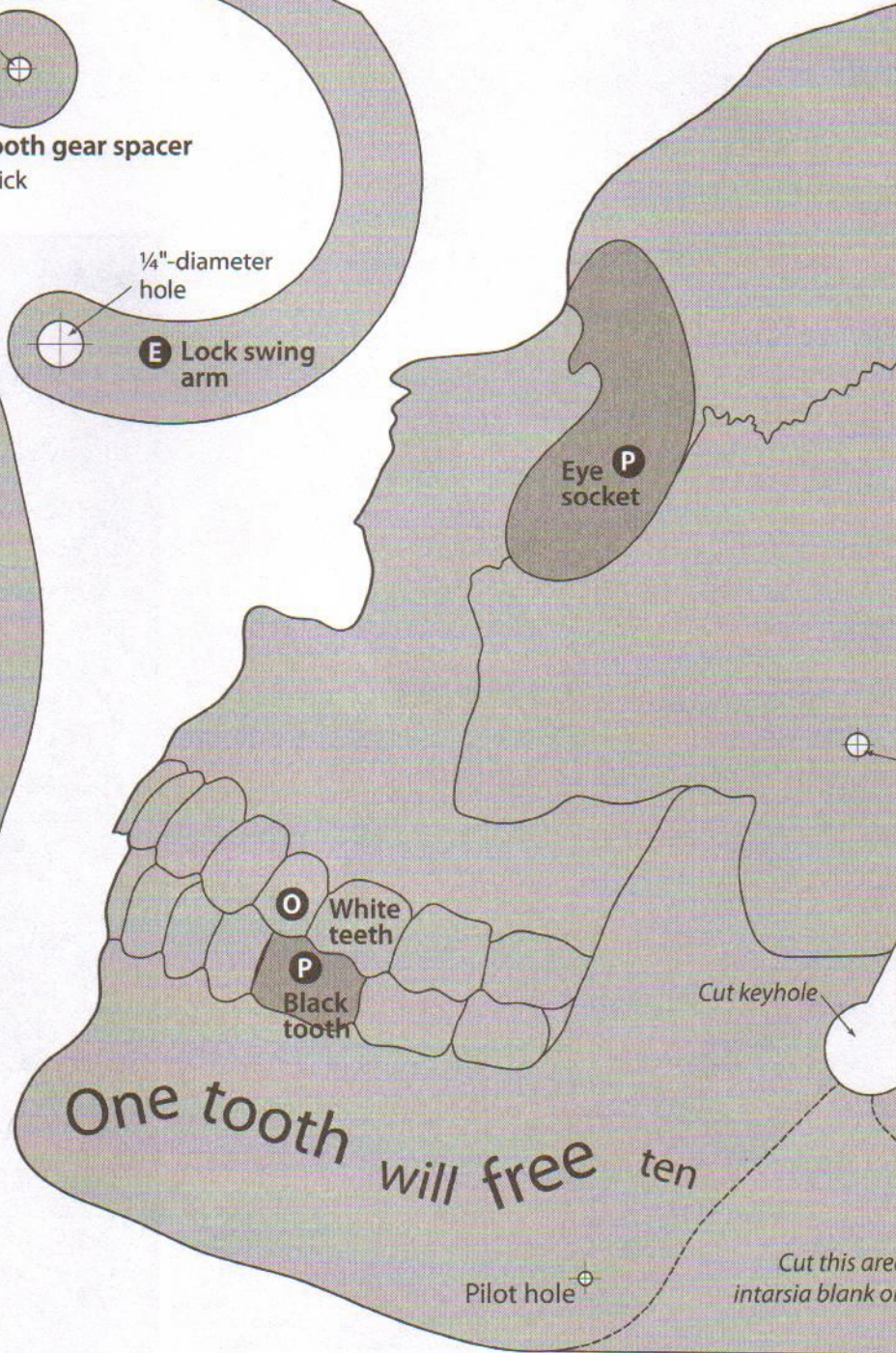
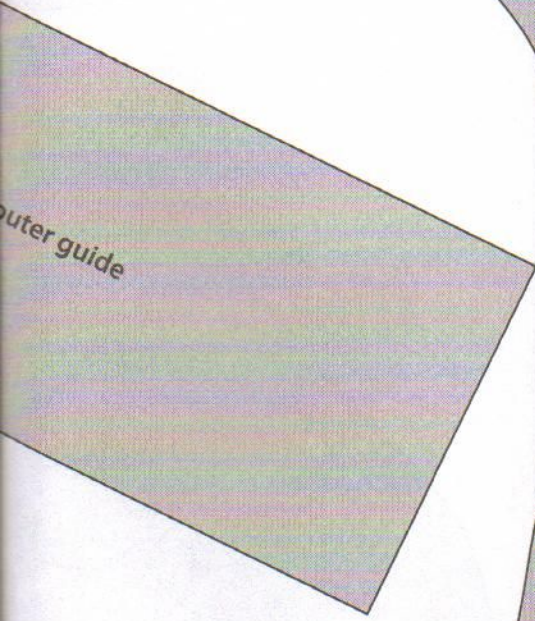
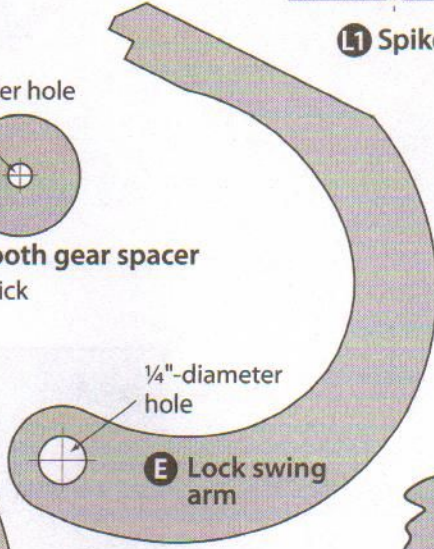
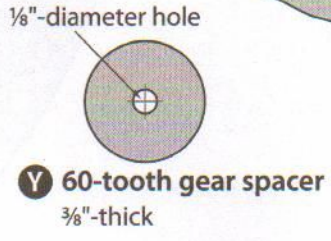
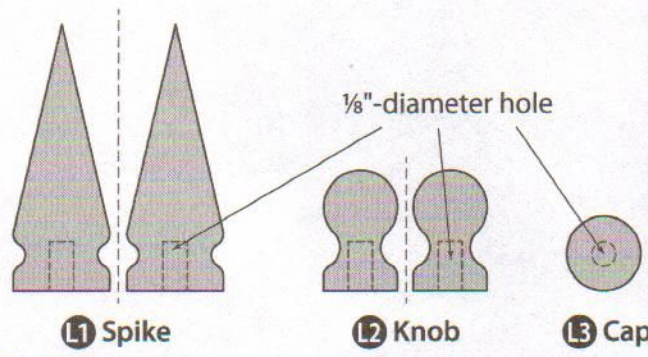
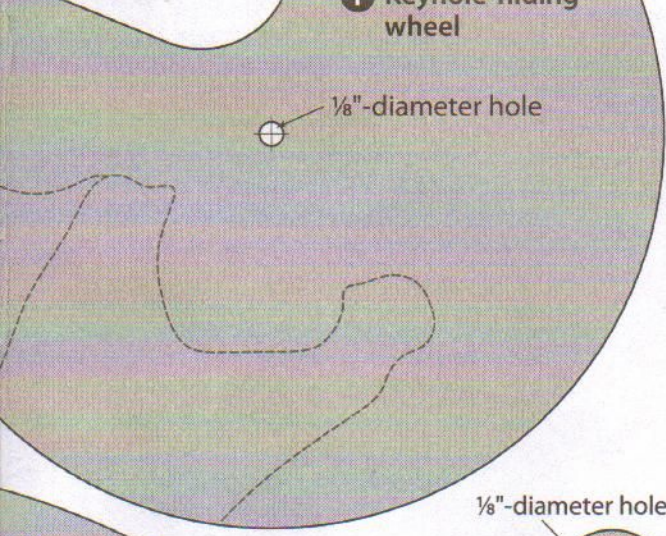
B Box pattern

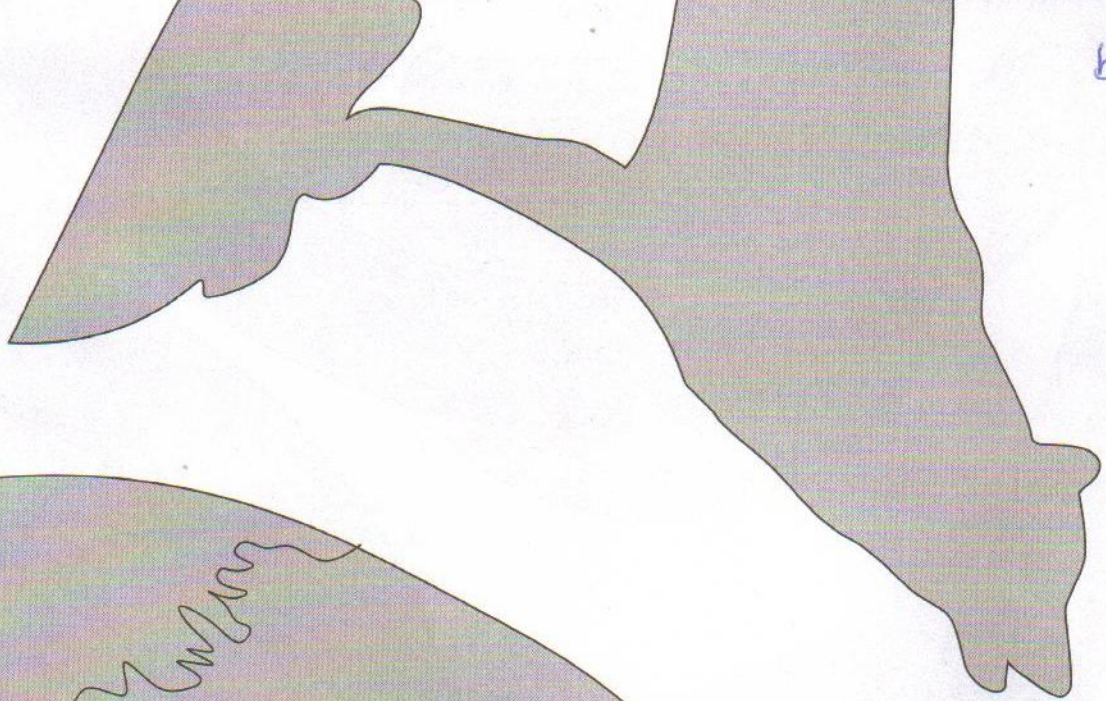


Key alignment hole
 $\frac{1}{8}$ "-diameter hole

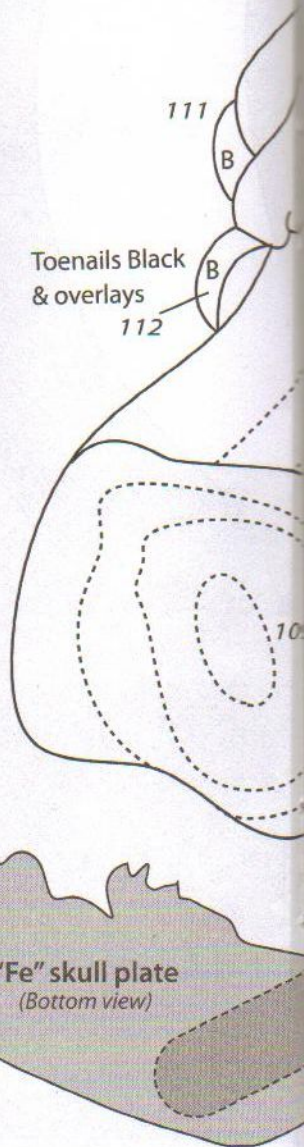
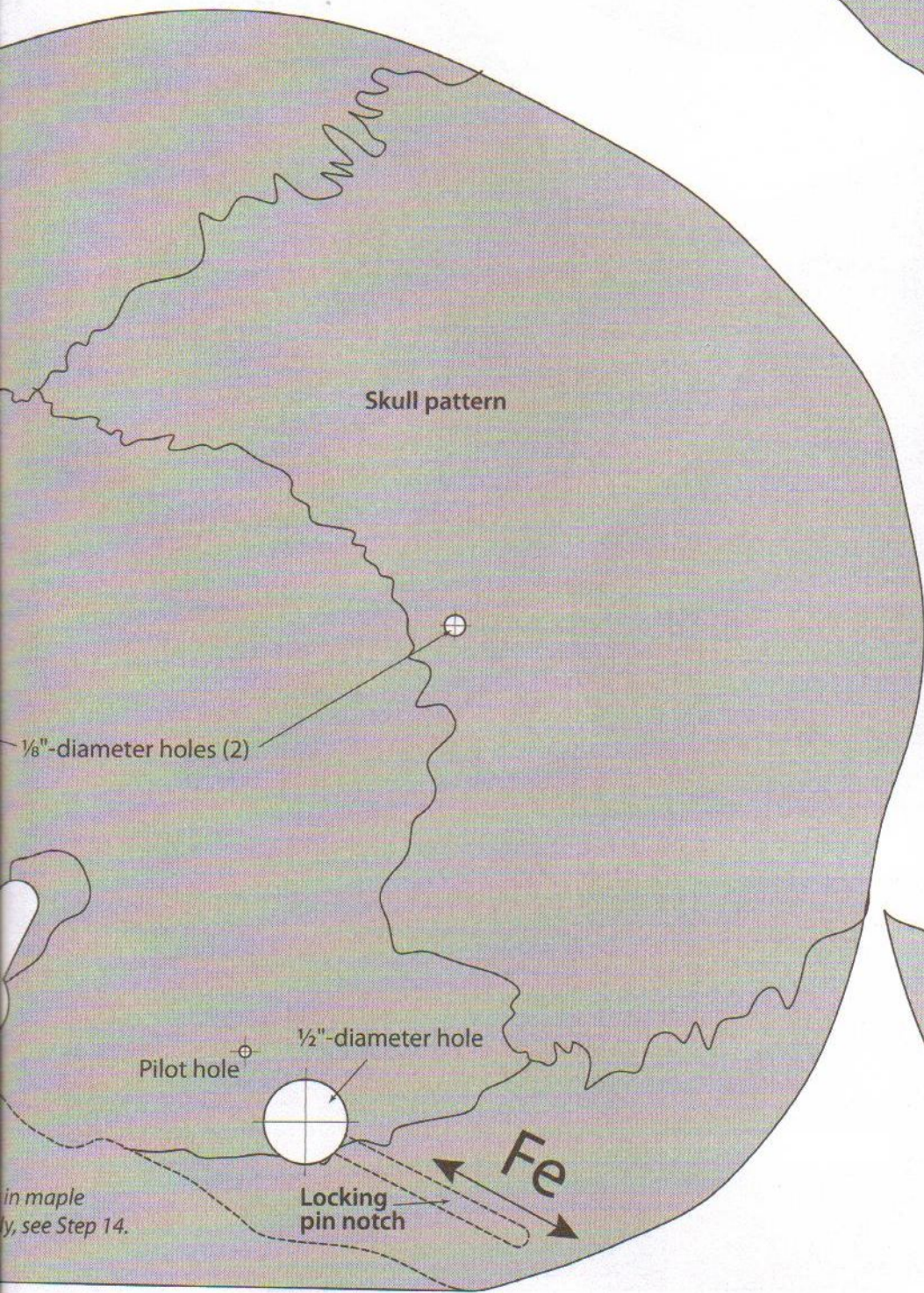
Spring arm hole
 $\frac{1}{4}$ "-diameter hole

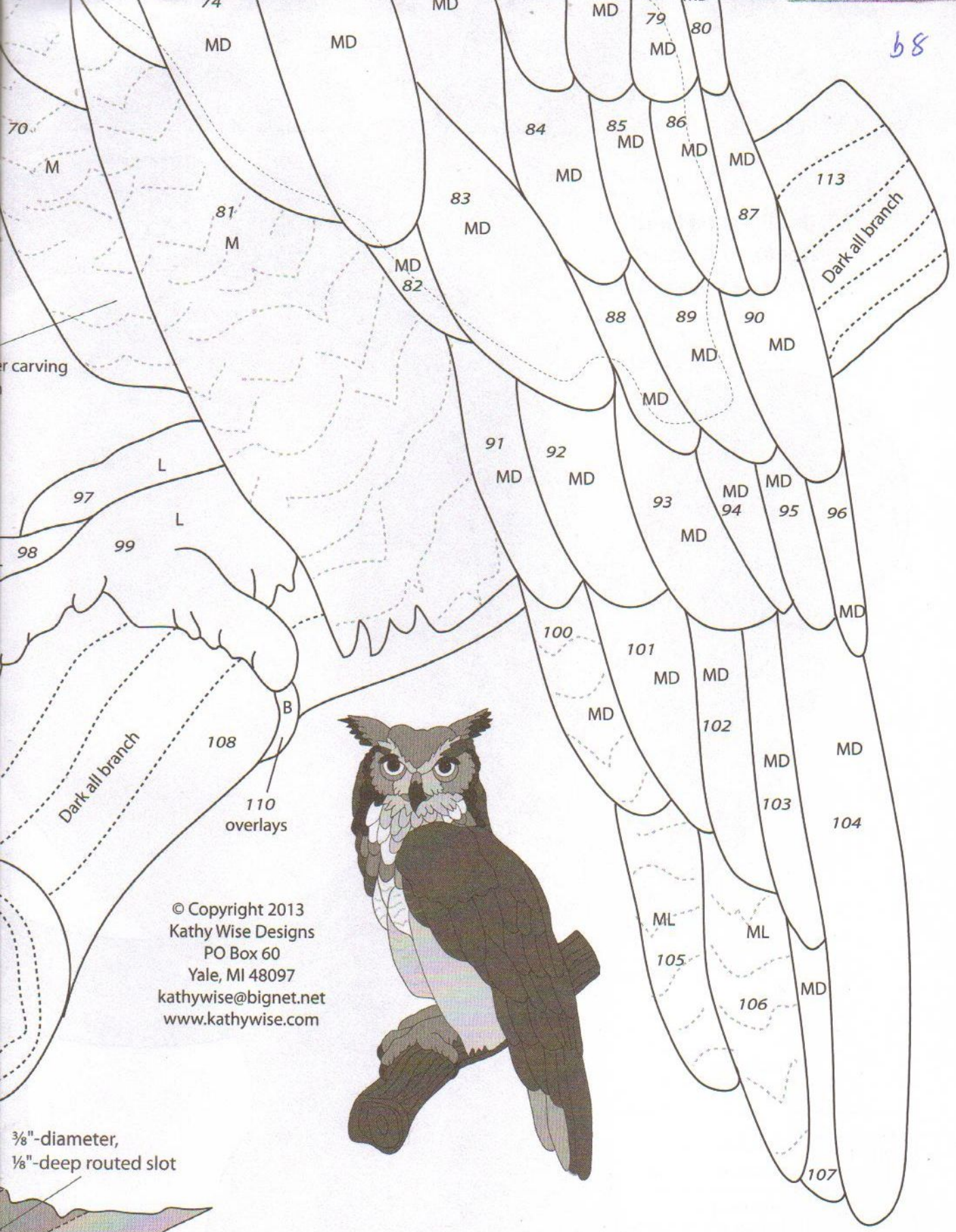
B Lock





Add feather
if you want





r carving

Dark all branch

Dark all branch

110 overlays

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 Kathy Wise Designs
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 Yale, MI 48097
 kathywise@bignet.net
 www.kathywise.com

3/8" - diameter,
 1/8" - deep routed slot

