

SCROLLSAW

WOODWORKING & CRAFTS

11 One-Day

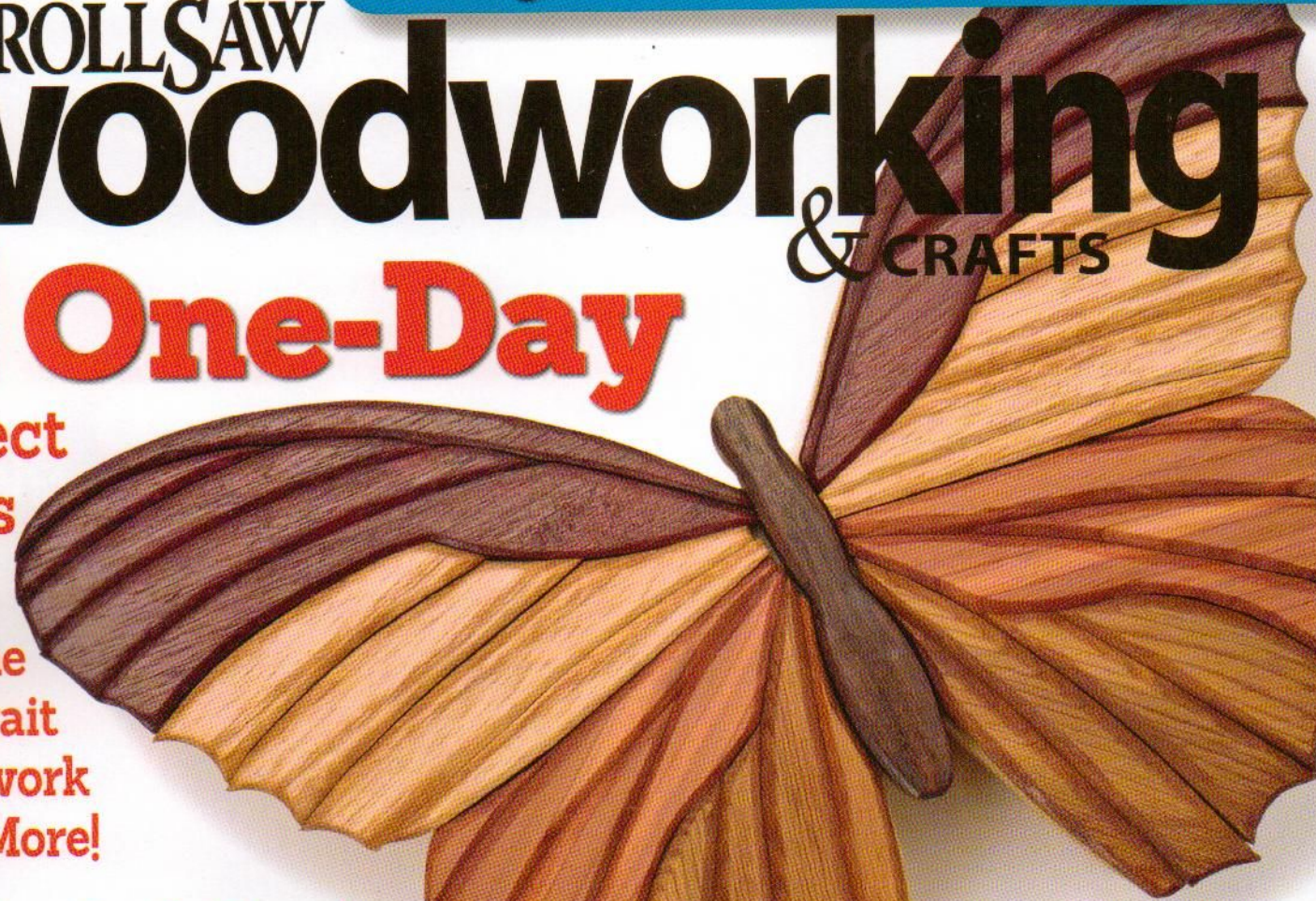
Project Ideas

- Toys
- Frame
- Portrait
- Fretwork and More!

Build a Doll-Sized Little Red Wagon

Make Challenging Multilevel Puzzles

5 Gorgeous Gift Boxes Your Family Will Love



FOX CHAPEL PUBLICATION

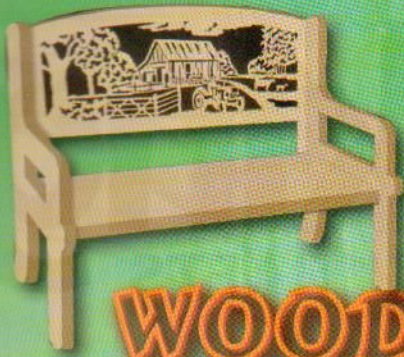
DISPLAY UNTIL APRIL 21, 2014

\$7.99



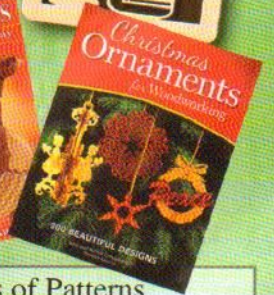
0 71658 01671 2

Independently Owned and Operated



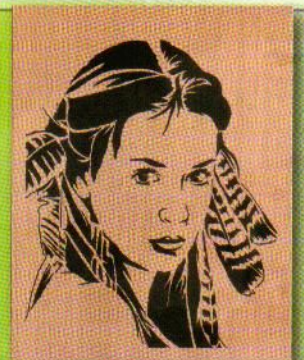
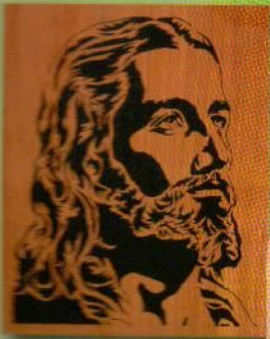
THE WOODEN TEDDY BEAR COLLECTION

Free Catalog
1-888-762-9149



**Patterns, Plans,
& Supplies for
the Woodworker.**

- Thousands of Patterns
- New and Discounted Patterns on the Web Site
- Half-Price Section (web site)
- Olson Scroll Saw Blades (as low as \$23.88 per gross)
- Flying Dutchman Scroll Saw Blades (as low as \$27.96 per gross)
- Olson Band Saw Blades
- Forstner Bits
- Woodburning Tools
- Clock Fit-Ups
- Acrylic
- Small Wood Parts



THE WOODEN TEDDY BEAR, INC.

P.O. Box 33917

Portland, OR 97292-3917

www.woodenteddybear.com

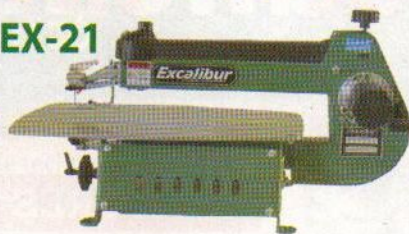
EXCALIBUR TILTING HEAD SCROLL SAWS by GENERAL INTERNATIONAL

"Absolute scroll sawing pleasure"

EX-16



EX-21



EX-30



CALL SEYCO AT 1-800-462-3353 For Current Pricing & Specials or Visit Our Website at: <http://www.seyco.com>

- Finger Operated Blade Clamps • Large Tables (EX-16 = 12" X 18 1/2") (EX-21 = 13 1/2" X 23 1/2") (EX-30 = 14" X 32 1/2")
 - 2" Thickness Capacity • 21" & 30" Throat Depths • Smooth Operating Rack & Pinion Tilt • Easy Access Controls
 - Excaliburs brilliantly engineered "Parallel Link" Drive design • Seyco's Satisfaction Guarantee • General's Lifetime Warranty
- PLUS Seyco's Complete Customer Support Services - backed by over 25 years of Excalibur Scroll Saw experience.**



SDM-02\$79.95
Seyco's Magnifier Worklamp

Excalibur's unique Top Arm Lift (both 21 & 30)

Head tilts full 45 degrees Left & Right*
(*with minor clamp knob adjustment)

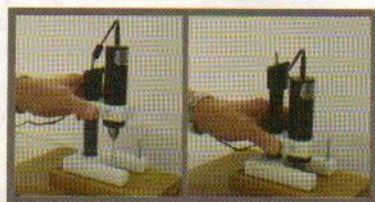
Adjustable Height stands
available for all 3 saws.

CALL SEYCO AT 1-800-462-3353 FOR More Information or Visit Our Secure Website at: <http://www.seyco.com>



SEYCO'S FANTASTIC NEW SCROLLERS DRILL

Scrollers can finally be free from the throat depth restrictions of a standard drill press and be able to drill perfect 90 degree holes! A simple adjustment screw provides precise angles from 90 degrees to approximately 30 degrees - *even in the center of a 8' sheet of plywood!* This compact Scrollers Drill comes complete with a heavy duty DC power supply that plugs directly into your standard AC wall plug. Built-in overload protection - 1 year replacement warranty. Comes with a drill index and 20 small bits size #61 through #80.



- #SSD-1 Reg. \$149.00 ... Introductory Special 129.00
- #XB-SET Set of 20 bits #61 thru #80 w/indexed case 9.75
- Extra Bits 10 Pack choice of #50, #60 or #70 6.75

UNIQUE "WOOD SHAPING" ACCESSORIES

You will find these tools perfect for Intarsia; Carving; Gunstocks; Canes and all other "wood shaping" projects!

SEYCO'S "SeeSander" Kit



PATENT PENDING

Kit consists of 3 disks - 1 ea. Coarse - Medium - & Fine grit & 1 arbor.
Replacement disks & arbors available.

See your work clearly as you remove the precise amount of material to form your desired shape in wood, plastic, metals, etc. Sharpen chisels & cutting tools. Fits 1/4" or larger chuck in a drill press, hand drill, etc. with 3,500 maximum RPM.

STD-06 Kit w/3 disks and arbor \$23.95*
*Plus Shipping

SEYCO'S "FLEX DRUM" SANDER

#GWSC-01 DUAL DRUM SANDER KIT.

Comes completely pre-wired including the worklamp. Base has rubber pad feet and holes for mounting to your workbench or stand. 2 DS-01 Flex Drum kits are included with the motor. For added versatility to this wood shaping center, ask about optional accessories such as the 1/2" Chuck with adapter on the right side and use the flex shaft option to support use of STD-06; small 1/4" shaft sanding drums; polishers; rotary cutters, etc.

- #GWSC-01 (Without Stand) 184.95
- #GWSC-ST STAND 79.95
- #FXQ-40 Flex Shaft Kit Complete* 89.95

*Flex Shaft Kit is our Heavy Duty 56" Flexible shaft with a Quick Connect Chuck on the tool end; a 1/4" hex adapter on the motor end; & a Quick Connect Chuck for the motor shaft.



Seyco
The Scroll Saw Specialist
(800)462-3353

TO ORDER CALL
1-800-462-3353

On the web at... <http://www.seyco.com>
P.O. BOX 1900 • Rockwall, Texas 75087

IN THIS ISSUE

54 Beautiful hardwoods and a working lock make this a special keepsake box.



FEATURES



14 *A Puzzling Art Form*

By Kathleen Ryan
Behind the scenes with nine outstanding puzzle-makers



74 *Top Ten Derby-Winning Tips*

By Troy Thorne
Tricks and tips to help win this year's Pinewood Derby

TECHNIQUES



25 *Gluing—up Wide Boards*

By Bob Duncan
Three techniques to reduce wood movement and create more cost-effective large boards



35 *Sanders for Scrollers*

By Bob Duncan
Basic tools to create smooth wood

DEPARTMENTS

- | | |
|--------------------------------|-----------------------------|
| 4 <i>Editor's Note</i> | 78 <i>Scroll Saw Basics</i> |
| 6 <i>Letters to the Editor</i> | 79 <i>Coming Features</i> |
| 8 <i>Reader Gallery</i> | 79 <i>Ad Directory</i> |
| 10 <i>Info Exchange</i> | 80 <i>Sawdust</i> |
| 76 <i>Product Review</i> | |

PROJECTS



18 Making a Multilevel Jigsaw Puzzle

By Shawn Ferguson

Learn the simple technique and apply it to other puzzles



26 Butterfly Box

By Gary MacKay

Segmentation design brings the tidings of spring



36 Embellish a Bowl with Plywood

By Carole Rothman

Inexpensive plywood can make an elegant accent ring for a scroll-sawn bowl.



44 Building a Little Red Wagon

By Dennis Simmons

Whether you pair it with a doll or use it as décor, this wagon will delight



50 Spring Fawn

By Kathy Wise

Combine intarsia with inlay to create this cute project



54 Locking Heart Box

By John Rhyne

A layered design and simple lock form a beautiful but easy box



64 A Tale of Two Frogs

By John Hutchinson

Mechanical frogs hop or crawl—and open wide to reveal a hidden box

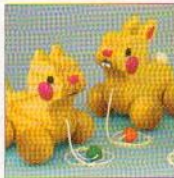
PATTERNS



31 Crown of Thorns Portrait

By John A. Nelson

A poignant image for Christians this season



32 Creating Pull-Toy Friends

By Paul Meisel

Delight toddlers with these easy toys



48 Cutting Fretwork Crosses

By Jay Hammerle

Create a variety of meaningful gifts



60 Blooming Spring Fretwork Flowers

By Gloria Cosgrove

Use these versatile patterns in several ways



62 Simple Fretwork Box

By Sue Mey

Make a box using just four pieces—no joints

ON THE WEB WWW.SCROLLSAWER.COM/SSW54

➤ Bonus Projects and Patterns

Creating Pull-Toy Friends, pg. 32

Cutting Fretwork Crosses, pg. 48

➤ Video

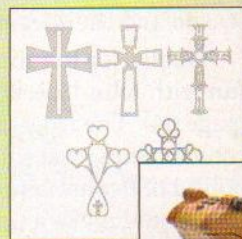
A Tale of Two Frogs, pg. 64

See these wooden toys in action.

➤ Article Extra

A Puzzling Art Form, pg. 14

See an extended article featuring more puzzles and pictures.



Look for Scroll Saw Woodworking & Crafts on Facebook



Follow us on Twitter, twitter.com/scrollsawer

Additional online features: community forum • scroller galleries • tips article index • free patterns • product reviews • subscriber services

Signs of Spring

During my sophomore year of college in upstate New York, it started snowing in November and didn't stop 'til early April. I love snow, but.... As the days slowly warmed and the snow reluctantly melted, my roommate and I made a game of searching for "signs of spring"—patches of green grass, buds on trees, the first spears of crocuses in the flowerbeds, and goslings on the lake.

Many years have passed since then, but my former roommate and I still send each other photos of snowdrops and lambs each year. So although there is snow on the ground as I write, I planned this Spring issue with an eye toward signs of the season.

For flowers we have three lovely patterns from Alison Tanner (page 60). Alison actually designs paper-cutting patterns, which translate beautifully into fretwork. Make wall hangings and a frame, as we did, or find your own inspiration in them.

You could also choose to showcase real flowers in a bowl made from Carole Rothman's new pattern (page 36). Carole uses plywood, of all things, to add a pretty accent to the design, as well as varying the sizes of the rings to give the bowl an attractive shape. Just place a glass jar in the bowl to hold water and it's ready for your first spring bouquet.

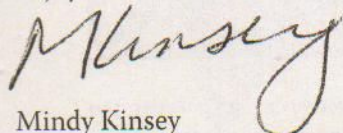
Thinking of flowers brings me to butterflies and Gary MacKay's beautiful box (page 26). Gary uses natural wood tones to depict the delicate design, which conceals four useful compartments. I'm sure this box will be a favorite for Mother's Day this year.

Speaking of spring holidays, for Valentine's Day we have a gorgeous heart-shaped box from John Rhyne (page 54), whose skull box you'll remember from the Fall issue. We include instructions for making the box using a band saw as well as just a scroll saw. And for Easter, we have a set of crosses from Jay Hammerle (page 48) and a Crown of Thorns Portrait from John Nelson (page 31).

If Easter reminds you of baby animals, turn to page 32 for charming pull-toy designs from Paul Meisel. They are perfect for babies and toddlers, but will also make delightful seasonal decorations. For a completely different but equally appealing design, consider Kathy Wise's fawn intarsia (page 50), which captures the innocence, softness, and tentativeness of both the season and the species.

Finally, for the sheer outrageous joy of spring, I hope you have fun with John Hutchinson's Bullfrog and Rainforest Frog projects (page 64). The frogs are toys, and boxes, and collectibles, and conversation pieces. I have it on good authority that an entire pound of peanut butter cups will fit in the frog's mouth. I think a frog would make a unique—and very memorable—Easter basket. Send me a photo if you do it!

And send me photos of your signs of spring, too—either your versions of these projects or the little indications that winter is giving way to warmer weather and kinder days are on their way. Enjoy!



Mindy Kinsey

kinsey@FoxChapelPublishing.com

SCROLLSAW woodworking & CRAFTS

Printed in the USA

SPRING 2014

Volume 15, Number 1, Issue 54

1970 Broad Street, East Petersburg, PA 17520

Phone: 717-560-4703 Fax: 717-560-4702

Website: www.ScrollSawer.com

Our Mission:

To promote scrolling as an artform and an enjoyable pastime—for all ages and all skill levels.

Publisher	Alan Giagnocavo
Editor	Mindy Kinsey
Technical Editor	Bob Duncan
Creative Director	Troy Thorne
Art Director	Jon Deck
Studio Photographer	Scott Kriner
Advertising	Jane Patukas
Advertising Account Manager	Cindy Fahs
Technical Illustrators	Jon Deck
.....	Carolyn Mosher

Customer Service for Subscribers

Visit www.ScrollSawer.com, call 888-840-8590, or write:
Scroll Saw Woodworking & Crafts, Subscriber Services,
1970 Broad Street, East Petersburg, PA 17520

Newsstand Distribution: Curtis Circulation Company
Circulation Consultant: National Publisher Services
Printed by Fry Communications

©2014 by Fox Chapel Publishing Co. Inc.
All Rights Reserved. Printed in USA

Subscription rates in US dollars:

One year	\$24.95
Two years	\$49.90

Canada

One year	\$29.95
Two years	\$59.90

International

One year	\$34.95
Two years	\$69.90

Display Advertising/Classified Ads

For rates and/or a media kit, please contact Jane Patukas at ext. 127
or Patukas@FoxChapelPublishing.com.

Wholesale/Distribution

Scroll Saw Woodworking & Crafts is available to retailers for resale on advantageous terms. Contact Wendy Calta (ext. 114) for details.

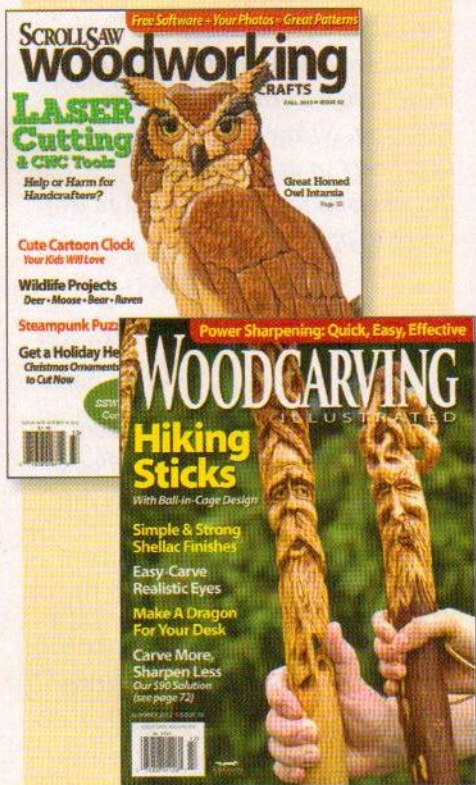
Identification Statement: Scroll Saw Woodworking & Crafts, vol.15, no. 1 (Spring 2014) (ISSN#1532-5091) is published four times a year in the months of January, April, July & October by Fox Chapel Publishing Co. Inc., 1970 Broad Street, East Petersburg, PA 17520. Periodical Postage paid at East Petersburg, PA and additional mailing offices. POSTMASTER: Send address changes to Scroll Saw Woodworking & Crafts, 1970 Broad Street, East Petersburg, PA 17520.

Publication Mail Agreement #40649125
Return Undeliverable Canadian Addresses to:
Station A, PO Box 54
Windsor, ON N9A 6J5
andria@FoxChapelPublishing.com

Note to Professional Copy Services — The publisher grants you permission to make up to ten copies for any purchaser of this magazine who states the copies are for personal use.

Claim Your **FREE** Trial Issue!

Choose Scroll Saw, Woodcarving, or Review Both! No cost, No obligation.



If you choose to subscribe, you'll get four more issues (5 in total) for just \$19.95*. If you find the magazine is not for you, simply write "cancel" on the bill, return it, and owe nothing. Either way, the FREE ISSUE is yours to keep.

*Free trial offer valid in U.S. and Canada only. One-year Canadian subscription is \$24.95.

www.scrollsawer.com/freeissue
www.woodcarvingillustrated.com/freeissue

800-457-9112

Pégas[®] sawblades

The Swiss Scroll Sawblades

Skip Tooth

Double Skip Tooth

Reverse Skip Tooth

Double Skip Tooth Reverse

Modified Geometry

Spiral

NEW Super Skip Tooth

The gaps between the teeth of the Super Skip blades are wider than the normal skip-tooth configuration. This enables the blade to cut very quickly, leaving a smooth finish. The surface sawdust is whisked away and the edge remains clean. Use the new Pégas Super Skip Sawblade when you want to achieve a smooth finish from an aggressive blade.

Sizes from #0 through #12

All Pégas[®] Sawblades are manufactured in our Swiss factory from the best carbon steel available. Tradition, Precision and Expertise, since 1966, are fundamental in the production of these very high-quality, world-class sawblades.

- Leaves a smooth finish
- Alternatively set teeth
- Consistent quality
- Long lasting

GROBET USA
www.grobetusa.com
800-635-2993

SAUSA
www.scies.ch

Mfg. in Switzerland by Scies Miniatures, a Division of Grobet USA, Carlstadt, NJ 07072

Seeking a Balancing Dragonfly Pattern



This decorated bamboo dragonfly will balance on the end of a finger.

I was interested to see the patterns for various dragonfly decorations in *Scroll Saw Woodworking & Crafts* Summer 2013 (Issue 51). They reminded me of a trip I made to London several years ago. At a street market, there was a young Asian woman selling "Balancing Dragonflies." These were made of bamboo and about 7½" long with a 6½" wingspan. The remarkable thing was that if the dragonfly's nose is placed on your fingertip, the dragonfly balances, moving with any slight breeze. I tried making one from basswood, but I could not get it to balance. On the Internet I could find them, but they had to be imported in large quantities from Vietnam. I'm wondering if anyone has a pattern or any ideas on how to make one.

Mike Rebhahn

Via E-mail



Fox Hunt

Zed A. Stone of Salmon, Idaho, and Elvin Tanner of Park Falls, Wisc., were randomly drawn from the participants who located the fox in our last issue (Holiday 2013, Issue 53). The fox was located in the Step 7 photo on page 67, in the Book Box 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 December 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.

Using Patterns

I have a large pattern of a Kathy Wise intarsia project. One of the patterns is a lion. Do I cut the pieces out of that pattern? It also has a pattern of a calf roper on the back.

Greg Smith

Via E-mail

Technical editor Bob Duncan responds: Don't ever cut an original pattern. Make a bunch of photocopies instead. You can use the original as a master pattern (protect it from glue drips with a piece of waxed paper) and then make as many copies as there are colors of wood. That way you can cut the pieces apart to adhere them to the different colors of wood you will be using. Just cut roughly around the pattern pieces. That's why you have more than one copy, so you don't have to cut exactly with scissors.

Buying Acrylic

In your Holiday 2013 (Issue 53) and Fall 2013 (Issue 52), you have patterns calling for ¼" colored acrylic plastic. I cannot find any at a reasonable price. The best is \$5.99 for a 12"x12" plus \$15 S&H. Help!

Chuck McCracken

Via E-mail

Editor's note: Despite calling several lumber, craft, and hobby stores, we could not find the acrylic locally, so we ordered it from Amazon. Numerous sellers carry the sheets in assorted sizes, thicknesses, and colors, and in a range of prices, as well.

Facebook Feedback

On occasion, we ask our readers for their opinion on our Facebook page. Here's a recent question and answer:

Metrics. Everyone but the U.S.A. uses them. Are they helpful in the magazine, or do they just make the captions and materials lists longer? Do you rely on our conversions or do your own? Talk to us about metrics, please.

Cheryl C.: Well, I am Canadian and old enough to remember that I learned metric around about grade 3 as the country converted, but I still use imperial in my shop more than anything metric. Even if I am designing my own original plans, metric never gets used.

Jim C.: Helpful. I am used to going back and forth between the two, and all my tools are imperial. But plans I work with are in metric many times. So I have a few metric measuring tools to help.

Steven G.: Metric or imperial is fine, but I prefer decimals to fractions. Either way, I convert to decimal inches.

Bruce S.: Metric seems much easier to me, once you have become accustomed to it. When working on machinery, it is simpler for me. However, imperial is what I was taught and grew up with, and the only measure I use in woodworking.

Jan D.: I love metrics. I'm a medical person and have used metrics for years. Much easier and much more precise.

Matthew S.: I use the metrics (even convert from imperial) even though I grew up and live in the U.S. Engineer school only used the metric system.

David C.: Australia went metric when I was in grade 4 at school; no more funny conversions, thankfully. Imperial measurements are harder and harder to find 40 years later. Your magazine is wonderful, metric or not. Now, as an engineer, I can measure in millimeters, angstroms, parsecs, or even furlongs. Both are useful, if it helps one scroller, use both. Computers and lasers will eventually make both metric and imperial redundant, anyway.

SET IT STRAIGHT

On the pattern for Shelia Landry's Gloria Candle Tray, published in Holiday 2013 (Issue 53), two placement notes are reversed: the pattern shows the star in front of Baby Jesus, but Baby Jesus should be in front.


Also in the Holiday issue, we mistakenly noted that Rolf Beuttenmuller cut the Scroll Sawn Greeting Cards (page 72). In fact, they were cut by Dale Helgerson. We apologize for the errors.

Est. About 1937


AMERICAN SCIENCE SURPLUS

INCREDIBLE STUFF, UNBELIEVABLE PRICES!


When it comes to Woodworkers We're very popular!




Classic Woodcarving Set
\$9.95




Woodburning Pen
\$9.95



DaVinci Catapult Kit
\$19.95



Pocket Survival Tool
\$2.50



Diamond Hole-Saw Set
\$59.95

See what we're all about!
www.sciplus.com

Call us for a Free Catalog
888-724-7578

The Affordable CNC Kit for Engraving, Roughouts & Much More!

3D Printing Available...
Right on the Same Platform!



Turn Your Hobby Into a Career...for a Great Price!

Now you can do 3D relief carvings, letter cuttings, inlays, routing and mold making with precision accuracy. The small foot print make this machine a great add-on to your home shop. Many satisfied customers from school students to professional woodworkers.

ZEN

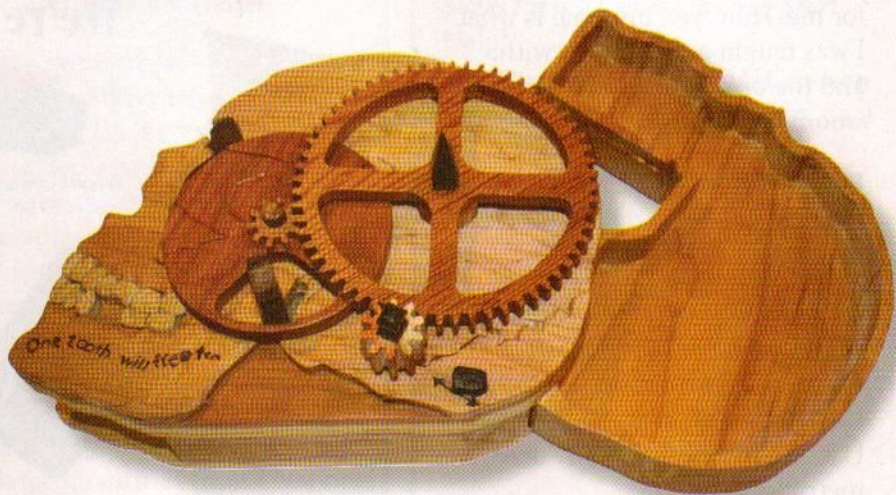
Toolworks

Send us an email today at zentoolworks@gmail.com for complete details,
Or visit www.zentoolworks.com or call **925-521-0388**.



▲ **Fretwork Wildlife Portraits**

Gary Johnson of Chilliwack, B.C., Canada, cut this great blue heron from a piece of pine reclaimed from a tree killed by the pine beetle. He cut the juvenile bald eagle eating a salmon in a tree from a piece of silk wood.



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.

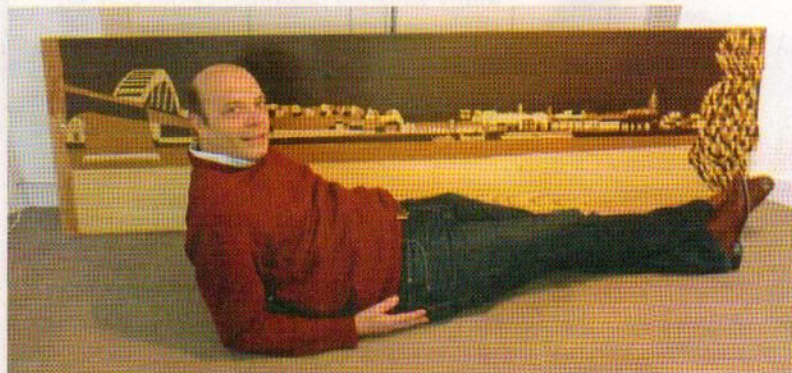
▶ **Intarsia Fish Tank**

James Nicholson of Medina, N.Y., created this intarsia fish tank based on a pattern by Janette Square that was published in *SSW* Summer 2013 (Issue 51). James has been doing intarsia for about seven years.



▲ **Steam Punk Box**

Reilly Earle, 14, of Alto, Tenn., created this box based on patterns by John Rhyne, which appeared in *Scroll Saw Woodworking & Crafts* Fall 2013 (Issue 52). Reilly has been working with wood since he was 12, and he has a small scroll saw-based woodworking business selling boxes, puzzles, ornaments, and intarsia at local craft shows and fairs. He attends the meetings of the Tennessee Valley Woodworkers.



▲ **Intarsia Town Scene**

Valentijn Phijffer of the Netherlands created this 7½'-long (2½ m) intarsia scene of Nijmegen, the oldest town in the Netherlands. The piece took him 11 months to create, and it was all done with a scroll saw. It was finished with Rubio oil, a green finishing oil.

Ben's Scroll Saw



NEW!
Pégas
Super Skip
Blades

- Aggressive Blade
- Smooth Cut
- No Burn Marks
- Cuts Acrylic with No Melting
- We also stock miniature drill bits to match your blade sizes

Pégas
 Scroll Saw Blades

<http://bensscrollsaw.com>

Phone: 717-367-8064

BUSHTON MANUFACTURING

MAKERS OF



HAWK
 Woodworking Tools



Direct marketing wood working tools to the serious hobbies/professional user.

SCROLL SAWS, PLANER/SANDER/MOLDER/GANG SAW
 ROUTERSHOP, PANELMASTER, JOINTABILITY, BUSHTON CLAMP
 VERTICAL CLAMPING SYSTEM, BLADES, KNIVES, SANDPAPER,
 LUBES, PATTERNS, ACCESSORIES, AND MUCH MORE.

P.O. BOX 127 • BUSHTON, KS 67427 • 620-562-3557

www.hawkwoodworkingtools.com

Just FLOCK IT! with DonJer Spray-on Fibers

Line Box and Gourd Interiors in just minutes.

Create soft, fuzzy effects on your wood crafts such as:

- | | |
|---------------|----------------------|
| Santas | Clouds |
| Dolls | Angels |
| Toy Furniture | Flower Petals |
| Jewelry | Model Car Seats |
| Decoys | Tree Ornaments |
| Tool Handles | Fretwork Backgrounds |

....the possibilities are endless!

Available in over 30 colors.

Call for brochure & color chart 800-336-6537

Flock It! d/b/a DonJer Products Co.
 13142 Murphy Rd., Winnebago IL 61088

www.donjer.com



Welcome to
 the wonderful world of High Speed
 Engraving/Carving

I created this stencil from my granddaughter's photo in 10 minutes using Coyote Stencil Shop Software.

YOU CAN DO THIS!

You'll be amazed at how easy it is to do very fine detail work. It's like using a ball point pen. Many scroll saw enthusiasts use this rotary tool to enhance their work. It's powerful & quiet, with no chatter or vibration.

Custom Carving at
 360,000 rpm

Yes, YOU CAN DO THIS—with no artistic ability necessary! If you can trace a line, you can carve beautiful art in almost any surface. The all-metal Shofu Lab Air-Z is built for a lifetime of use. Everything in it is rebuildable or replaceable. A great addition to your workshop!



MANY PEOPLE EARN AN EXTRA INCOME USING THE SHOFU LAB AIR-Z!

For more details about this fantastic tool:
 ORDER OUR FREE DVD at www.graphictransfer.net
 or call us today 928-453-2652

Graphic Transfer, 4021 Tropicaire Drive, Lake Havasu City, AZ 86406



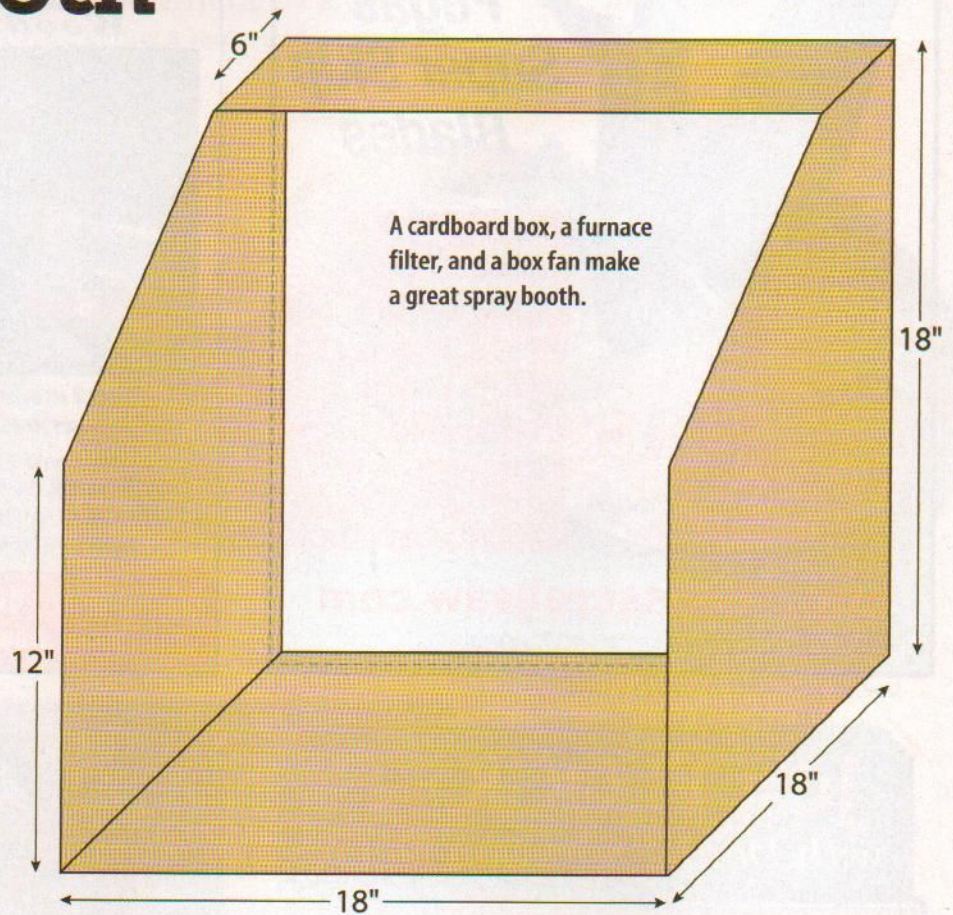
10-Minute Portable Spray Booth

TOP TIP

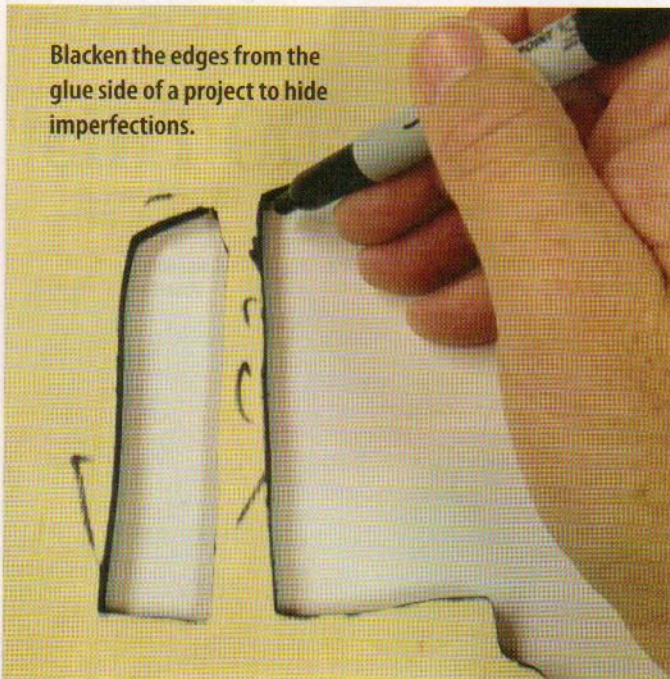
From Dave Van Ess, Arlington, Wash.

When I needed to spray a project with an airbrush, I realized that a spray booth would prevent a light coat of paint over a section of my shop. I used a cardboard box (#1001006 from Home Depot), a furnace filter, and a box fan.

Start by cutting the top and bottom flaps from the box. Use the drawing as a guide to make the other cuts. Stuff an 18" (457mm) furnace filter (#9817 at Home Depot) into the back hole, and use the box fan to pull air through the filter. To store, remove the filter and fold up the box. The box, folded with the filter, fits into a 2" by 18" by 18" (51mm by 457mm) space.



Blacken the edges from the glue side of a project to hide imperfections.



Controlling a Marker

From Jerry Blair Duncanville, Tex.

When preparing a backing board for an intarsia project, I blacken the edges with a marker. But sometimes, the marker slips and leaves a mark on the face of the wood. I hate to have unsightly black marks on the visible back of the backing board, so I always place the backing board glue-side up. Then, if the marker slips, it makes the mark on the glue side of the board, which will be covered by the intarsia pieces.

MEMPHIS HARDWOOD LUMBER

- Over 40 species of domestic and imported hardwoods—Everything from Alder to Zircote!
- **Basswood for carving**
- 1/16" to 3/4" or custom sizes/glue ups also available
- **Serving Laser Woodworkers and Turners Too!**
- Fast Courteous Service since 1974
- **Competitive Prices!**

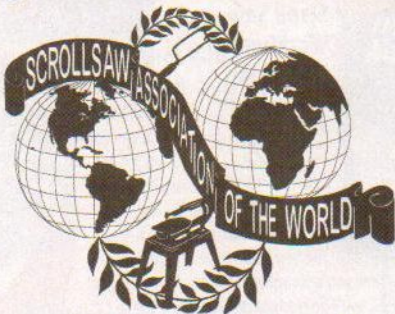
And visit our website for
free wood finishing tips!

Paul Anthony
Owner



Memphis Hardwood Lumber
6535 Church Street
Memphis, N.Y. 13112
(315) 689-3949 (800) 286-3949
Email: memphishardwoods@msn.com
www.memphishardwoodlumber.com

Are YOU a part of this group?
Meeting scrollers from around the world



Visit us at: www.saw-online.com
a huge web site packed full of information

Benefits of Membership:

Annual Resource Directory

Quarterly Newsletter

Scholarship and

Opportunity Grant programs

**Members only website full of helpful tools
Plus a lot more**

Application available online

or write
SAW, PO Box 340, Botkins, Oh. 45306
mention Fox7 on your application for a free gift

Flying Dutchman



The Amazing Ultra Reverse Scroll Saw Blade



Available in sizes **\$3.30** / dozen
#1, 3, 5, 7 & 9. **\$18.50** / 1/2 gross
\$3.00 shipping & handling. **\$31.50** / gross

MIKE'S WORKSHOP

P.O. Box 107 • Brandon, SD 57005
Ph: 605-582-6732 • Fax: 605-582-3792
www.mikesworkshop.com

Once you try it, you'll never go back!

PROXXON

TOOLS WITH CHARACTER

Super cutting capacity and extremely quiet!
With electronic scroll stroke speed control.



Scroll Saw
DSH/E

The perfect machine for model building, toy and puzzle making, architectural models, etc. Sturdy die-cast table with large work area which tilts for miter cuts. Cutting wood (up to 1 1/2"), plastic (up to 13/16") or non-ferrous metals (up to 13/32"). Dust blower with adjustable nozzle ensures clear sight of the work piece and cutting line. For use with both pin and plain end blades.

The PROXXON line is the assortment for the serious model builder. Every machine one could wish for the delicate project. More than 50 tools, all in a compact size, thus lightweight and easy manageable without ever compromising performance. High quality German engineered power tools - no matter which project is next on your list, we have the right tool for you!

More information on the line and PROXXON dealers:

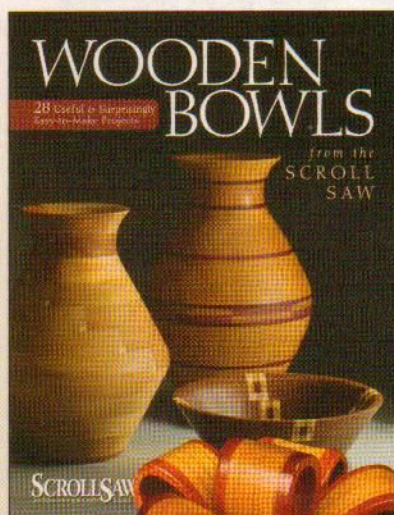
— www.proxxon.com/us —

PROX-Tech, Inc., P.O. Box 1909, Hickory, NC, 28603-1909
Toll free 1-877-PROXXON, sales@prox-tech.com



Free Gift with your order of any book in this ad

CLASSIC BOOKS for Creative Scroll Sawing



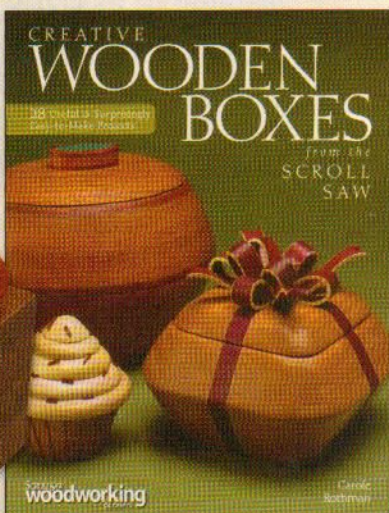
Wooden Bowls from the Scroll Saw

28 Useful and Surprisingly Easy-to-Make Projects

By Carole Rothman

Create amazing bowls, vases, candy dishes and jars with just a flat piece of wood and your scroll saw. You will not believe these bowls were made without a lathe!

\$19.95 • Code: 4338



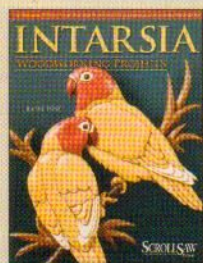
Creative Wooden Boxes from the Scroll Saw

28 Useful & Surprisingly Easy-to-Make Projects

By Carole Rothman

Use the versatility of the scroll saw to make 28 unique and interesting bandsaw-style boxes, jewelry boxes, lidded boxes, and more.

\$24.95 • Code: 5410



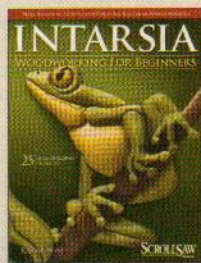
Intarsia Woodworking Projects

21 Original Designs with Full-Size Plans and Expert Instruction for All Skill Levels

By Kathy Wise

Capture the beauty of wildlife and the magnificence of the great outdoors, with full-size patterns and step-by-step demonstrations.

\$19.95 • Code: 3393



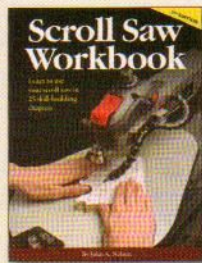
Intarsia Woodworking for Beginners

Skill-Building Lessons for Creating Beautiful Wood Mosaics: 25 Skill Building Projects

By Kathy Wise

Learning intarsia is easier than you think! This book breaks down the important techniques into manageable and easy-to-understand steps.

\$19.95 • Code: 4420



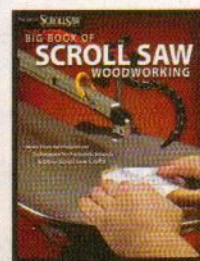
Scroll Saw Workbook, 2nd Edition

Learn to Use Your Scroll Saw in 25 Skill-Building Chapters

By John Nelson

The best beginner's scroll saw guide! By the time you've completed these 25 skill-building exercises, you'll be ready to tackle any project with experience and confidence.

\$16.99 • Code: 7667

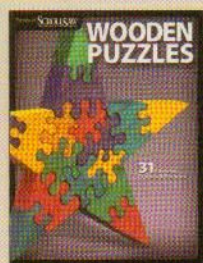


Big Book of Scroll Saw Woodworking

More Than 60 Projects and Techniques for Fretwork, Intarsia & Other Scroll Saw Crafts

By the Editors of *Scroll Saw Woodworking & Crafts*
This all-in-one scroll saw reference offers projects for all skill levels, along with detailed patterns, step-by-step instructions, crisp photos, and expert tips & techniques.

\$24.95 • Code: 4260



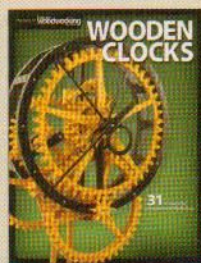
Wooden Puzzles

31 Favorite Projects and Patterns

By the Editors of *Scroll Saw Woodworking & Crafts*
Puzzle makers will love these creative patterns for cuddly

cats, Jonah and the whale, a woolly mammoth, and many more, organized by difficulty level for easy selection.

\$17.95 • Code: 4291



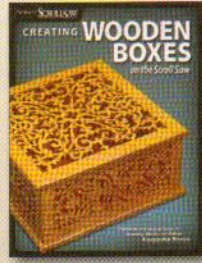
Wooden Clocks

31 Favorite Projects & Patterns

By the Editors of *Scroll Saw Woodworking & Crafts*
These beloved clock projects are arranged by skill level. Build

grandfather clocks, pendulum clocks, desk clocks, and much more.

\$24.95 • Code: 4277



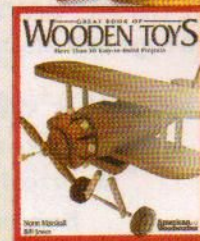
Creating Wooden Boxes on the Scroll Saw

Patterns and Instructions for Jewelry, Music, and Other Keepsake Boxes

By the Editors of

Scroll Saw Woodworking & Crafts
Includes 26 projects for making a variety of beautiful music boxes, desktop organizers, magazine storage case, memory boxes, and more.

\$19.95 • Code: 4444



Great Book of Wooden Toys

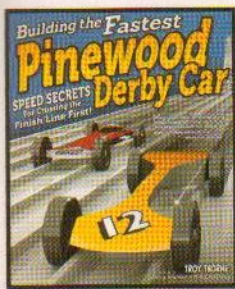
More Than 50 Easy-to-Build Projects

By Norman Marshall

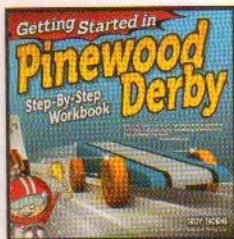
Over 50 easy-to-follow projects for building classic wooden toys, including a Model T car, a bulldozer, steam engine, biplane and many more.

\$19.95 • Code: 4314

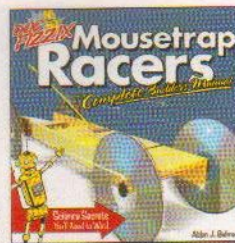
ORDER TODAY! 800-457-9112 • www.FoxChapelPublishing.com



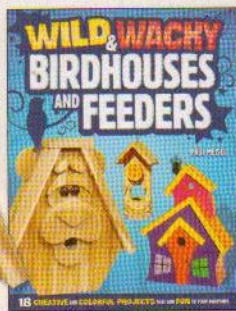
Building the Fastest Pinewood Derby Car
Speed Secrets for Crossing the Finish Line First!
By Troy Thorne
 "Get the authoritative lowdown for Pinewood Derby success. Filled with helpful graphics and super photos, the book transports you from beginning car construction to prize-winning modifications." —*Scouting Magazine*
\$14.99 • Code: 7629



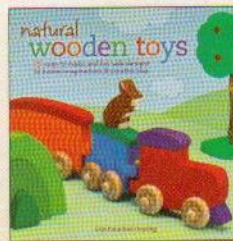
Getting Started in Pinewood Derby
Step-By-Step Workbook to Building Your First Car
By Troy Thorne
 "Hands down, this is one of the best little books I've seen on basic woodworking skills. This is the perfect gift for any new Cub Scout." —James Floyd Kelly, *Wired/GeekDad*
\$12.95 • Code: 6172



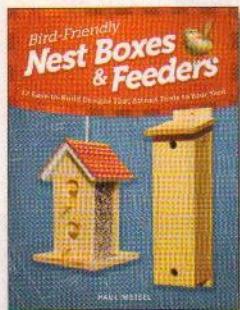
Doc Fizzix Mousetrap Racers
The Complete Builder's Manual
By Alden J. Balmer
 Learn how to construct very cool, very fast vehicles that are powered by the energy of a wound mousetrap spring, in this guide written by a Teacher-of-the-Year winner.
\$14.95 • Code: 3591D



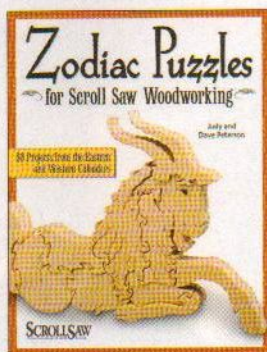
Wild & Wacky Birdhouses and Feeders
18 Creative and Colorful Projects That Add Fun to Your Backyard
By Paul Meisel
 Make your backyard more exciting with colorful and creative projects designed to bring out the fun in building birdhouses.
\$19.95 • Code: 6790



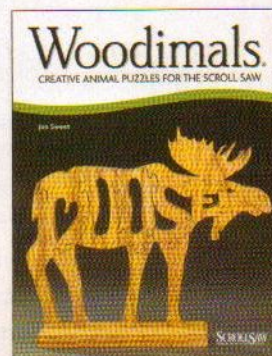
Natural Wooden Toys
75 Easy-To-Make and Kid-Safe Designs to Inspire Imaginations & Creative Play
By Erin Freuchtel-Dearing
 Learn how to make safe, colorful, and imagination-building wooden toys, using just a scroll saw, a palm sander, and a drill.
\$19.95 • Code: 5243



Bird-Friendly Nest Boxes & Feeders
12 Easy-to-Build Designs that Attract Birds to Your Yard
By Paul Meisel
 Each project is designed to help you create the most natural bird environment possible, with complete plans and full-color photographs.
\$14.95 • Code: 6929



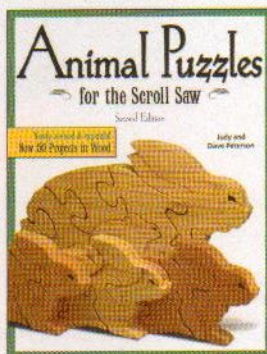
Zodiac Puzzles for Scroll Saw Woodworking
30 Projects from the Eastern and Western Calendars
 Find inspiration in the stars with this collection of scroll saw patterns based on the astrological signs of the zodiac.
\$17.95 • Code: 3935



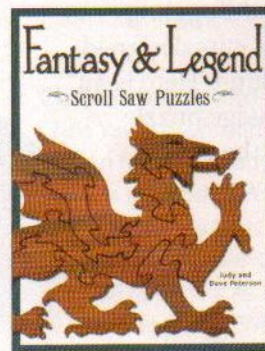
Woodimals
Creative Animal Puzzles for the Scroll Saw
By Jim Sweet
 Learn to make 56 lettered puzzles in the shapes of animals from around the world, with patterns for everything from lions and elephants to frogs and raccoons.
\$16.99 • Code: 7483



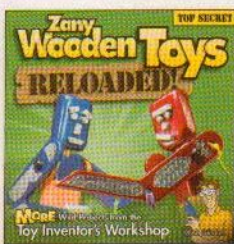
Zany Wooden Toys that Whiz, Spin, Pop, and Fly
28 Projects You Can Build From The Toy Inventor's Workshop
By Bob Gilsdorf
 Have fun making these cool wooden toys, games and even gumball machines that are unexpectedly action packed.
\$19.95 • Code: 3942



Animal Puzzles for the Scroll Saw, 2nd Edition
Now 50 Projects in Wood
By Judy and Dave Peterson
 These fascinating patterns for upright and interlocking puzzles include a beagle, bison, panda bear, caribou, red fox, and much more.
\$17.95 • Code: 3911



Fantasy & Legend Scroll Saw Puzzles
Patterns & Instructions for Dragons, Wizards & Other Creatures of Myth
 Discover 29 ready-to-cut puzzle patterns depicting fabled creatures.
\$14.95 • Code: 2569



Zany Wooden Toys Reloaded!
More Wild Projects from the Toy Inventor's Workshop
By Bob Gilsdorf
 Disarm spy robots, launch flying discs, throw cards magically across the room—each of these 9 imaginative woodworking projects ranks high on the fun scale!
\$12.99 • Code: 7308



SCROLLSAW
woodworking
 & CRAFTS

By Phone: 800-457-9112 • Direct: 717-560-4703
 Fax: 717-560-4702
 Online at: www.FoxChapelPublishing.com
 By Mail: Send Check or Money Order to
 Fox Chapel Publishing
 1970 Broad St.
 East Petersburg, PA 17520

# Item	Shipping Rate
1 Item	\$3.99
Each Additional	.99

Canadian & International Orders - please email info@foxchapelpublishing.com or visit our website for actual shipping costs.

A Puzzling Art Form

Behind the scenes with nine outstanding puzzle makers

By Kathleen Ryan

In this high-tech, fast-paced world where online games and entertainment offer instant gratification, it is refreshing to find a group of skilled craftsmen who carry on the traditions of hand-cut wooden jigsaw puzzles. But make no mistake. Today's top-of-the-line jigsaw puzzles are not the simply constructed puzzles your grandparents played with. These puzzles combine old-fashioned charm with mind-boggling techniques and outrageous cuts designed to challenge and even astound. Here is an overview of some cutting-edge puzzle artists who are redefining the art of puzzle making. Look for more photos on our website, www.scrollsawer.com.



Steve Malavolta

Steve Malavolta's puzzles range from single-layer entertainment pieces to multi-layered sculptural creations. His designs include landscapes, abstracts, geometrics, and three-dimensional architectural forms created for both visual pleasure and intellectual challenge. Steve hand-cuts each inlaid piece from exotic hardwoods on a scroll saw with a jeweler's blade and finishes them on both sides. He uses a standard-shaped puzzle piece with a well-defined lobe and socket on each side to lock it to another piece. "My goal as a woodworker is to create an enjoyable, playable piece of heirloom quality ... and my challenge to you is to find peace by piece," he said. *Pyramidal 551* (above) was cut from wenge wood (African rosewood) and accented with sterling silver. It measures 10" by 10" by 12" and contains 551 pieces stacked in 36 layers. *Cradle of Piece* (left) consists of 14 layers cut from wenge and maple, is 350 pieces, and measures 6" by 6" by 10". Visit Steve's website at www.stevemalavolta.com.



ON THE WEB See an extended version of this article on our website. www.scrollsawer.com

Thingamajigsaw Puzzles

Artist Andrea Farnham began as a cutting apprentice at Stave Puzzles and discovered that she had a talent for designing puzzles, as well. In 2003, she started her own company and began creating handcrafted wooden puzzles ranging from traditional, photo, and guestbook puzzles to newfangled and treacherously tricky puzzles. "The thing I find most intriguing about puzzle-making is trying to incorporate surprises for the puzzler, like a dropped-out element, an unexpected edge design, a two-way solution, or the realization that the most obvious way to assemble a puzzle might not be the correct way." *Black Cat Magic* is a two-way puzzle cut from custom-made ¼"-thick plywood with a cherry veneer backing. It measures 6⅞" in diameter and has about 70 pieces. In the first view, the cat is looking for his catnip mouse, located directly behind him on the rug. But by rearranging some of the pieces, the puzzle can also be assembled so that the cat grabs the mouse with his paws. The challenge is to assemble the puzzle both ways. See more of Andrea's work at www.thingamajigsaw.com.



Chris Yates Studio

Chris Yates is a prolific multimedia artist primarily known for his handmade wooden jigsaw puzzles. He sells his work through his website and at conventions and festivals around the country. He also licenses his designs to puzzle manufacturer Ceaco, which stocks The Baffler series in stores all over the world. "My goal is not just to make challenging puzzles, but also to create a more sculptural and artistic experience," he said.

"Each puzzle is created with the knowledge gained through hundreds of previous puzzle experiments." *The Test*, one of Chris's most challenging puzzles, consists of five bases, each with five layers, adding up to 1,239 pieces total. It

took Chris about two weeks to create, and four full days of serious attention from the expert Baffler Assembly Team to put back together. The puzzle was completely hand-cut on scroll saws from ¼"-thick medium density fiberboard and then handpainted. The central base is 13½" by 13½", and the cardinal bases are 6½" by 6½". Visit Chris online at www.chrisyates.net.

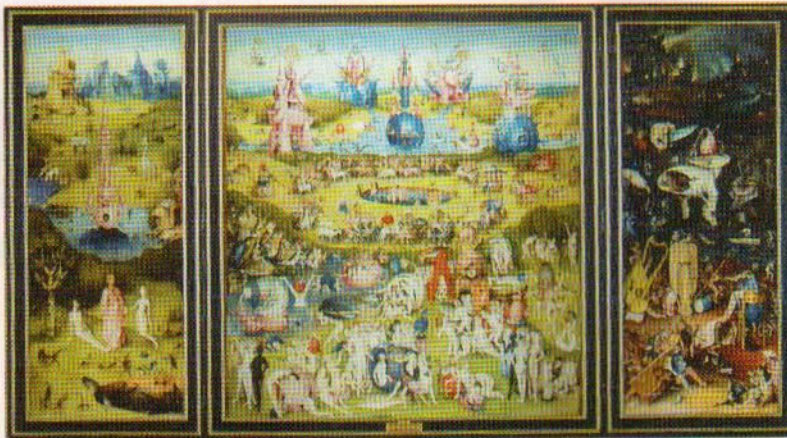
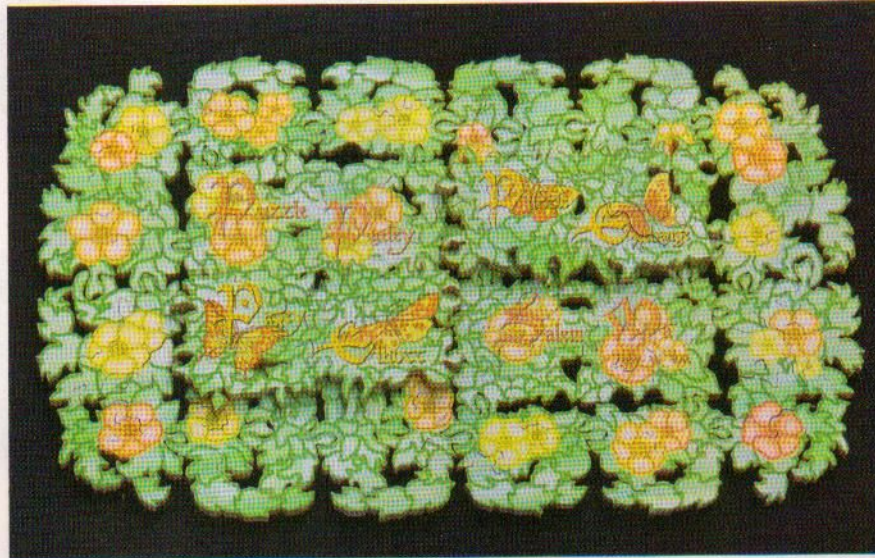
Ferguson Puzzle Company

Shawn Ferguson's life is filled with kids and puzzles, and they fit together perfectly. In addition to caring for his own two children, the 43-year-old pediatrician runs a busy medical practice. "I have always loved assembling puzzles and take great enjoyment in not only reviving the tradition of early American wooden jigsaw puzzles, but exploring new ways to make them even more appealing to all ages. My philosophy is to treat every puzzle as a piece of art and not simply cut a picture into pieces. I believe that every puzzle has a story to tell, and I absolutely love being part of that process." *It Takes A Village* is cut from layered mahogany plywood so it has four individual levels of depth. It has 191 pieces, measures 11" by 14", and is fully interlocking. The scene was etched with colored pencils to look like an elementary school drawing. Shawn donated the puzzle to an auction to raise money for a local school. Visit Shawn's website at www.fergusonpuzzles.com. For instructions to make one of Shawn's layered puzzles, see page 18.



Jardin Puzzles

Melinda Shebell first pieced together puzzles with her grandmother. With a high-tech career winding down and time for puzzles again, she discovered wooden puzzles. "Being an engineer at heart, I started to create some of my own," she said. Today Melinda is known for high-quality hand-cut craftsmanship, a skilled use of multiple cutting styles, and compelling artistic beauty. *Exchanging Flowers*, 7" by 13" and 100 pieces, can be assembled as two separate one-layer puzzles, a double-layer puzzle, or one large single-layer puzzle. It's possible to assemble this puzzle in thousands of incorrect ways. The puzzle uses unique hidden positioning pieces to hold the top layer in place. See more designs at www.jardinpuzzles.com.



Custom Puzzle Craft

John Stokes was putting 500-piece puzzles together at the age of four. In mid-life, he discovered wooden jigsaw puzzles and decided to make them. He made it his mission to develop the most interesting cutting styles—and have fun doing it. "I enjoy exploring swirls, curls, and spirals, and all of the things that can be done on the way out after spiraling in on a deep curl cut," he said. John's puzzle version of *The Garden of Earthly Delights* by Hieronymus Bosch (©Museo Nacional del Prado – Madrid, Spain) measures 56 1/4" by 30", consists of 4,271 pieces, and was cut in three different styles. It sold on eBay for \$25,100! Contact John via his website, www.custompuzzlecraft.com.

Bogarts Wooden Jigsaw Puzzles

Jay Hollis started his company after a chance encounter with a famed puzzle maker, the late Pagey Elliott. "We met at a craft show and she invited me back to her home to talk about puzzles. I've been hooked ever since," Jay said. Trained as an architect, Jay pours his visual sense, keen attention to graphic design, and commitment to perfection into each puzzle. His work pays off; Jay was selected from among 1,300 applicants to display his jigsaw puzzles at the 2010 Smithsonian Craft Show at the National Building Museum in Washington D.C. *Chips* features pop-up figural pieces, layered segments, and whimsies. It is 10" by 10" and consists of 250 pieces. The layered portions of the puzzle protrude 1/8" above the surface, and a secondary puzzle constructed of figured ebony is beneath the layered pieces. The three geese in flight are detailed with wing and tail feathers, and painted a contrasting gloss white. See more designs at www.bogartswoodenjigsawpuzzles.com.



Platinum Puzzles

Steve and Dee Rogers founded Platinum Puzzles in 2006. They enjoy designing puzzles that are also a game you can play. "In a world where high technology storms our lives, it is nice to know there is something low tech that can relax and challenge us at the same time," Dee said. *Homer's the Odyssey* has two and sometimes three layers, pop ups, tray slide puzzles, and a three-layer standing Trojan horse. A guidebook, a gadget box, and a copy of *The Odyssey* will help you solve the mini puzzles that lie within the larger puzzles. The puzzles measure 29" to 57"; the bottom layer is a map of the Mediterranean, and the second layer is puzzles of places Odysseus visited. See more at www.platinumpuzzles.com.



Fool's Gold Custom Wooden Jigsaw Puzzles

David Beffa-Negrini founded Fool's Gold in 1997 as a result of his long-standing love affair with antique wooden jigsaw puzzles. "There is just no comparing the puzzles of years gone by to the standard cardboard variety of today," he said. David uses time-honored methods of puzzle cutting, but also incorporates special tricks to challenge puzzlers, such as cuts along color lines, irregular edges, drop-outs, silhouettes, and false edges. "The true test of a great jigsaw puzzle is how satisfying and consuming it is to put the pieces together," he said. *Back-to-Back Butterflies* is a tricky two-sided puzzle consisting of 225 pieces and measuring 10" by 12". It has identical butterfly images on both front and back so puzzlers won't know which side is which. The entire puzzle interlocks and holds together once assembled. As with all Fool's Gold Puzzles, you're on your own—no pictures are included. Visit David online at www.foolsgoldpuzzles.com.





Making a Multilevel Jigsaw Puzzle

Learn the simple technique and apply it to other puzzles

By Shawn Ferguson

When I see a wooden jigsaw puzzle, I am reminded of a simpler time in America, before the days of mass production, when things were individually and lovingly crafted by hand. Many early wooden puzzles still survive today in good condition, showing that, with proper care, they can be enjoyed by generations to come.

For this project, I chose Winslow Homer's *Snap the Whip* as an example of early American art from a time when wooden jigsaw puzzles were just making their appearance. Painted in 1872, shortly after the end of the Civil War, the painting depicts the jubilation of youth and is symbolic to me of a young America recovering itself and finding hope in the brighter days ahead.

While I retain many early traditional cutting styles in my designs, I love finding ways to make puzzles more appealing. Here, I have developed a multilevel concept, where parts of the puzzle are elevated to various thicknesses, giving it an eye-catching sense of depth. The assembler will surely enjoy watching the boys come to life, popping out of the picture as they snap their "whip."

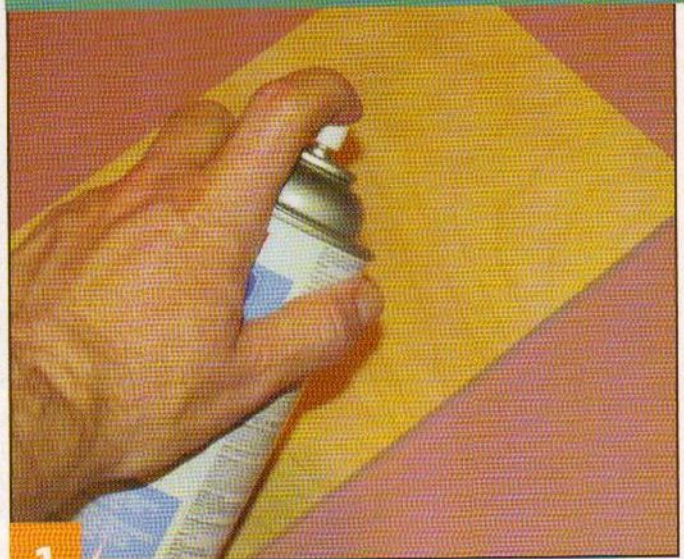
As I craft my designs, I love using interactive whimsical figural pieces. In the foreground of this puzzle, two such pieces, a pair of butterflies, have fluttered by to enjoy the summer flowers. In addition, a kite figural piece soars high in the sky as a representation of the limitless future America holds. Finally, as a secret surprise, a schoolhouse cat can be discovered padding along the top of the roof.

Getting Started

Make several copies of the picture and patterns. Always copy both the picture and the pattern at the same time. Copies can be different sizes on different days. Do not mix and match copies made at different times or they may not match.

Cut the plywood to size. You will use one layer to mount the picture, one layer to mount the pattern, and the final layer as the shim. Choose the best piece for the picture layer, sand it smooth, and carefully remove all dust with a tack cloth.

Cut the photocopy of the picture along the outer dashed lines. Dry-fit the picture to the board in the approximate center, with extra wood around all four edges.

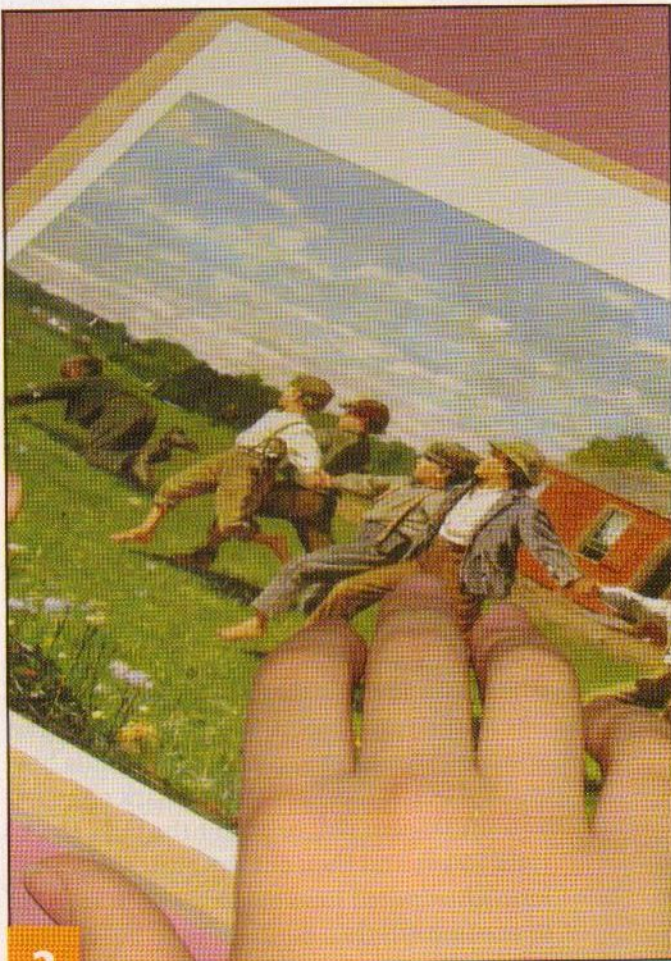


1

Glue the picture to the puzzle board. Apply a light coat of spray adhesive to the back of the picture and the front of the puzzle board. Position the picture in the approximate center of the puzzle board.

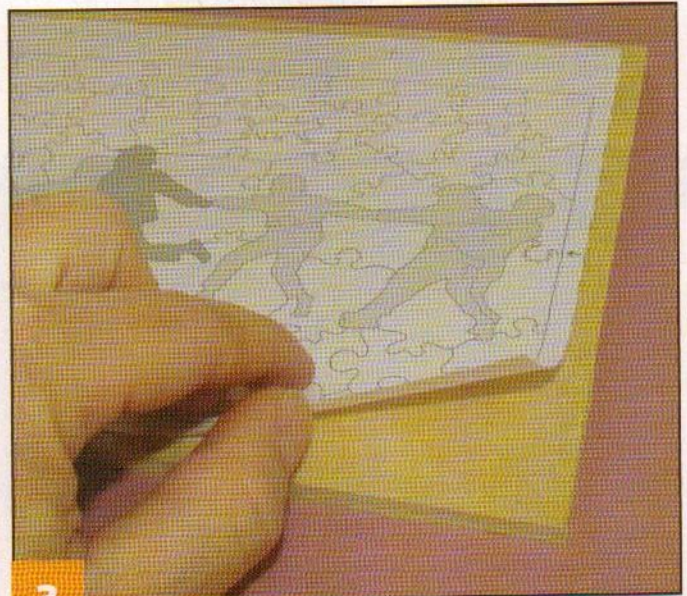
TIP**BUYING PLYWOOD**

Five-layer plywood is the most durable, but cutting three layers of it can be difficult. For easier cutting and longer blade life, use a softer species of five-layer plywood or use three-layer instead.



2

Smooth the bubbles. You may have none, but pesky bubbles sometimes appear under the paper immediately after gluing. Should this occur, use a clean, dry hand to smooth the bubbles by rubbing in gentle circles, similar to waxing a car.



3

Mount the pattern. Cut the pattern along the outer dashed lines and glue it to one of the other pieces of plywood using the technique described in Step 1. Allow the glue on the picture and pattern to dry fully.



4

Apply a protective coat. Because jigsaw puzzles are meant to be handled, it is a good idea to spray the picture with a protective coating. General protective sprays designed for photos work, but if you want something more durable, use a spray-on triple-thick glaze. Allow the coating to dry fully.

TIP

PRACTICE MAKES PERFECT!

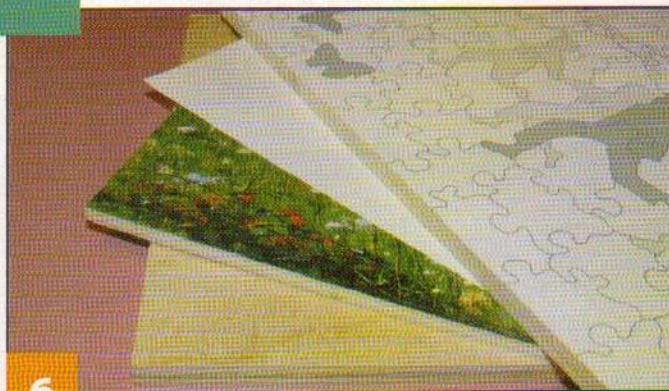
If you have never glued thin paper to wood, practice the technique using scrap magazine pages and plywood before mounting your real picture. Once you get the feel for it, attach the picture to the puzzle board.

PUZZLE: PREPARING THE STACK



5

Cut the alignment edges. With a #1 blade, cut directly along the bottom and left edges of the picture, trying not to stray off the line. When you get to the end of each edge line, simply continue to run the blade in the same direction until it's off the wood. Do not cut the top or right side edges of the picture yet. Repeat this procedure with the pattern board.



6

Stack the plywood layers. Place them in the following order: shim layer (bottom), picture board (middle), pattern board (top). The picture and pattern should both face up and be oriented the same. Place a piece of parchment paper between the picture and pattern boards. Align all three layers so their bottom and left edges are perfectly flush, which aligns the pattern with the picture. The shim layer will be larger, which is normal. Temporarily secure the edges with tape.



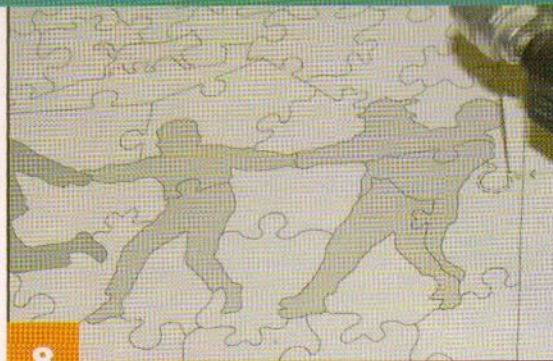
7

Secure the stack. Be careful to keep the edges flush as you drill two 1/8" (3mm) pilot holes where indicated at the top of the pattern. Insert two #8 wood screws into the holes to secure the layers together. Tighten the screws until they protrude out the back, and then unscrew them just enough that they no longer protrude (the screw tips will scratch the scroll saw table).

Cutting the Puzzle

Before you start cutting, study the pattern. The two-layered pieces are shaded light gray, and the three-layered pieces (the middle boy and the butterflies) are shaded dark gray. The initial plan will be to cut the boys from right to left and then cut the butterflies and kite. The dashed lines suggest a path to take to accomplish this, but be sure to cut on the pattern line, not the dashes.

PUZZLE: CUTTING THE PUZZLE



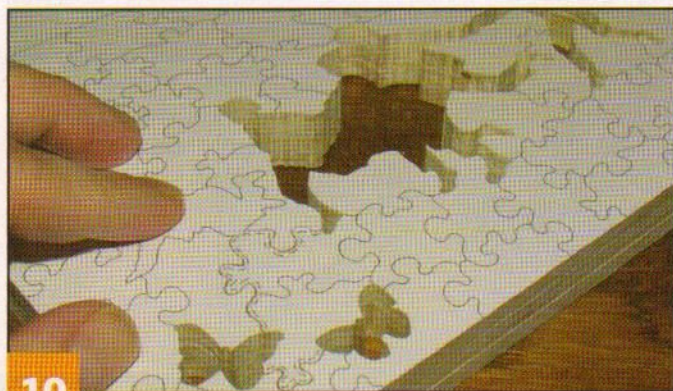
8

Start cutting the boys. Drill a blade-entry hole near the arrow on the right side of the pattern. *NOTE: Do not cut in from the edge.* Begin cutting with a #1 blade where indicated. Starting with the boy on the right, cut and remove each piece before proceeding. Remove all three layers.



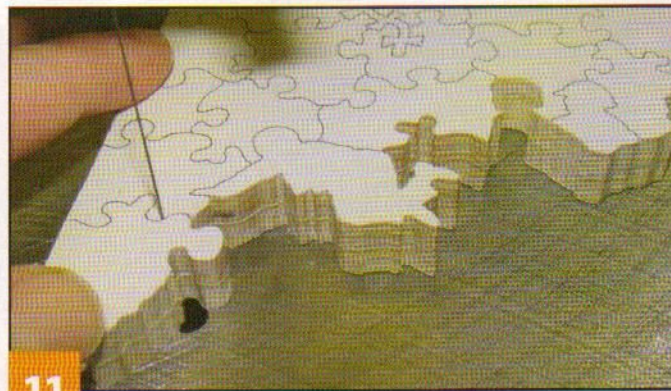
9

Separate the layers as you cut. For the gray pieces, discard the pattern layer and set the picture and shim layers aside for later gluing. For the dark gray pieces, save all three layers. When cutting the white single-layer pieces, keep only the picture layer. In all cases, carefully remove the parchment paper and dust each piece with a tack cloth. Also, watch out for the small foot of the fourth boy from the left. It is a puzzle piece all of its own and will be two layers thick.



10

Cut the butterflies and kite. Using the dashed lines as directional guides, scroll toward the butterflies and then the kite. Cut each of these whimsical pieces one at a time and set them aside with the other multilayered pieces. Remember to save all three butterfly layers. Release the screws enough to remove the bottom shim layer, taking care to keep the other two layers secure. Make sure the screw tips don't protrude.



11

Cut the rest of the puzzle. Use a puzzle blade to cut the remaining pieces one at a time, working from the bottom of the puzzle to the top. The screws must keep the pattern and picture aligned, so do not cut multiple-piece sections at once. Similar to the "Don't Break the Ice" game, do not remove a piece that makes all of the pieces around it fall out.

TIP

ASSEMBLE AS YOU CUT

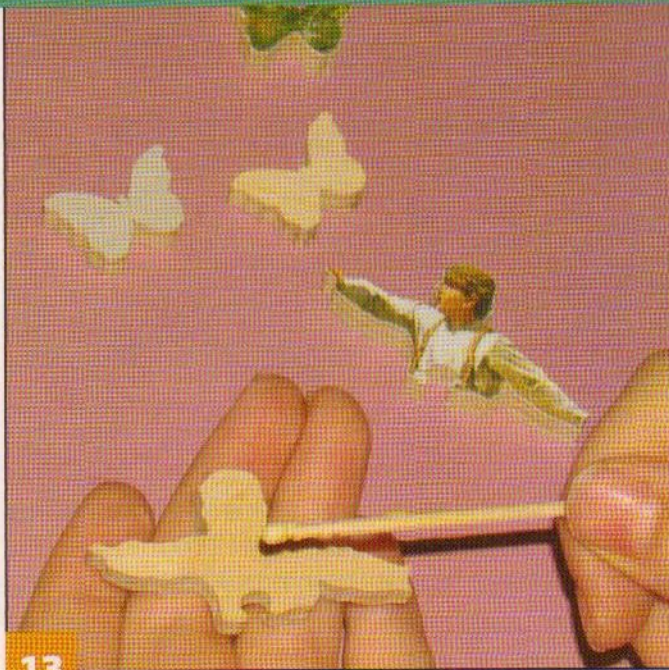
If you enjoy cutting puzzles more than putting them together, assemble the puzzle as you cut the pieces. You won't be able to put the elevated pieces in yet, but you'll have a head start.

PUZZLE: ASSEMBLING THE MULTILAYERED PIECES



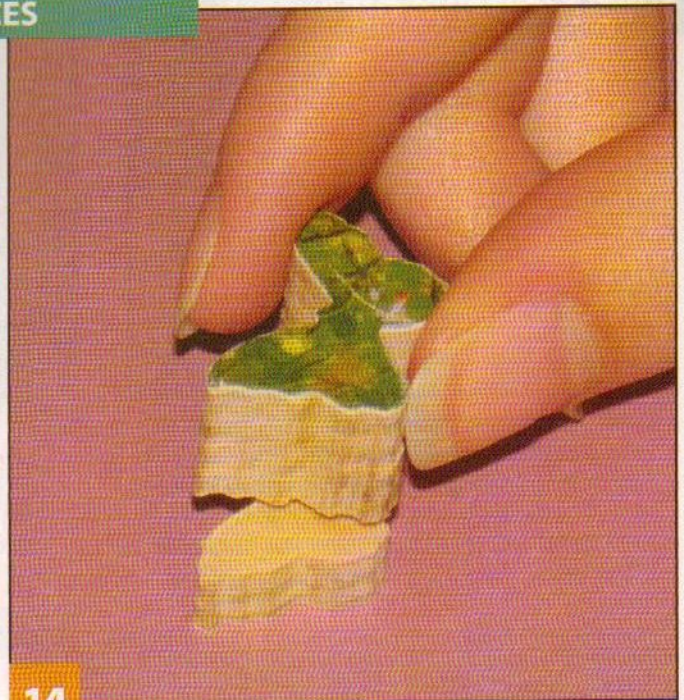
12

Prepare to glue the pieces. Group together each of the multilayered pieces. You should have three layers each for the butterflies and for the pieces making up the middle boy. The remaining pieces should have two layers each, including that small foot.



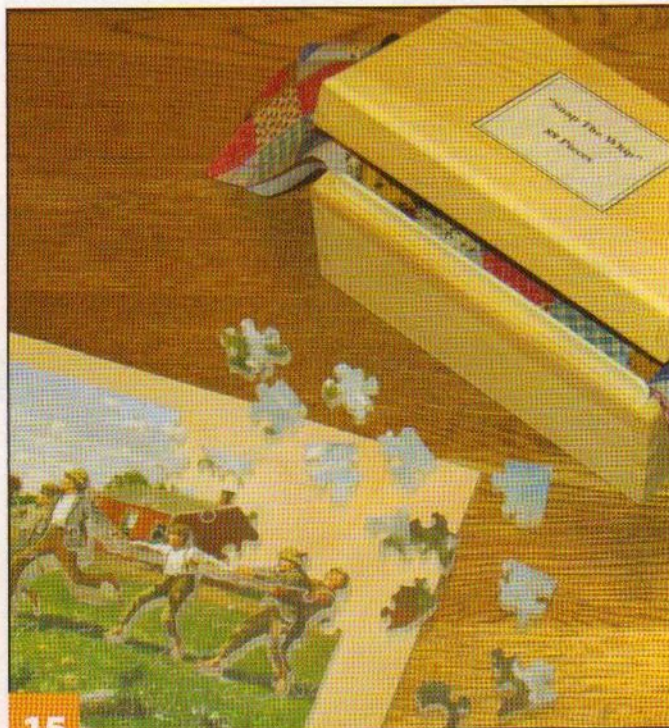
13

Glue the double-layer pieces together. Spread a small amount of glue onto the top of the second layer with a toothpick. Place the picture layer on top, squeeze the layers gently together, and hold them for a few seconds. If there is any squeeze-out, wipe it away; I use the other end of the toothpick. Make sure the layers are perfectly flush with each other.



14

Glue the triple-layer pieces together. For these pieces, the third layer will be the one that had the pattern on it. Carefully sand off the pattern paper. Then, use the process from Step 13 to glue the third layer onto the glued-together stack, keeping the picture layer on top.



15

Package the puzzle. To avoid losing pieces, create a nice package. You can use a plastic bag, a tin can, a cigar box, or any other practical container. I enjoy crafting my own boxes and lining them with nice fabric to protect the pieces. Label the packaging with the puzzle's title and piece count.

Materials & Tools

Materials:

- Plywood, ¼" (6mm) thick: 3 each 7½" x 10½" (191mm x 267mm)
- Wood screws, #8: 2 each 1¼" (32mm) long
- Sandpaper
- Tack cloth
- Spray adhesive
- Photo protective spray or triple-thick glaze spray
- Parchment paper
- Wood glue
- Toothpicks

Tools:

- Scroll saw blades: #1, such as FD Penguin Silver; puzzle blade such as FD Special Puzzle Blades or Ben's Ultra Thin Puzzle Blades
- Drill with bit: ⅛" (3mm) dia.
- Screwdriver

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



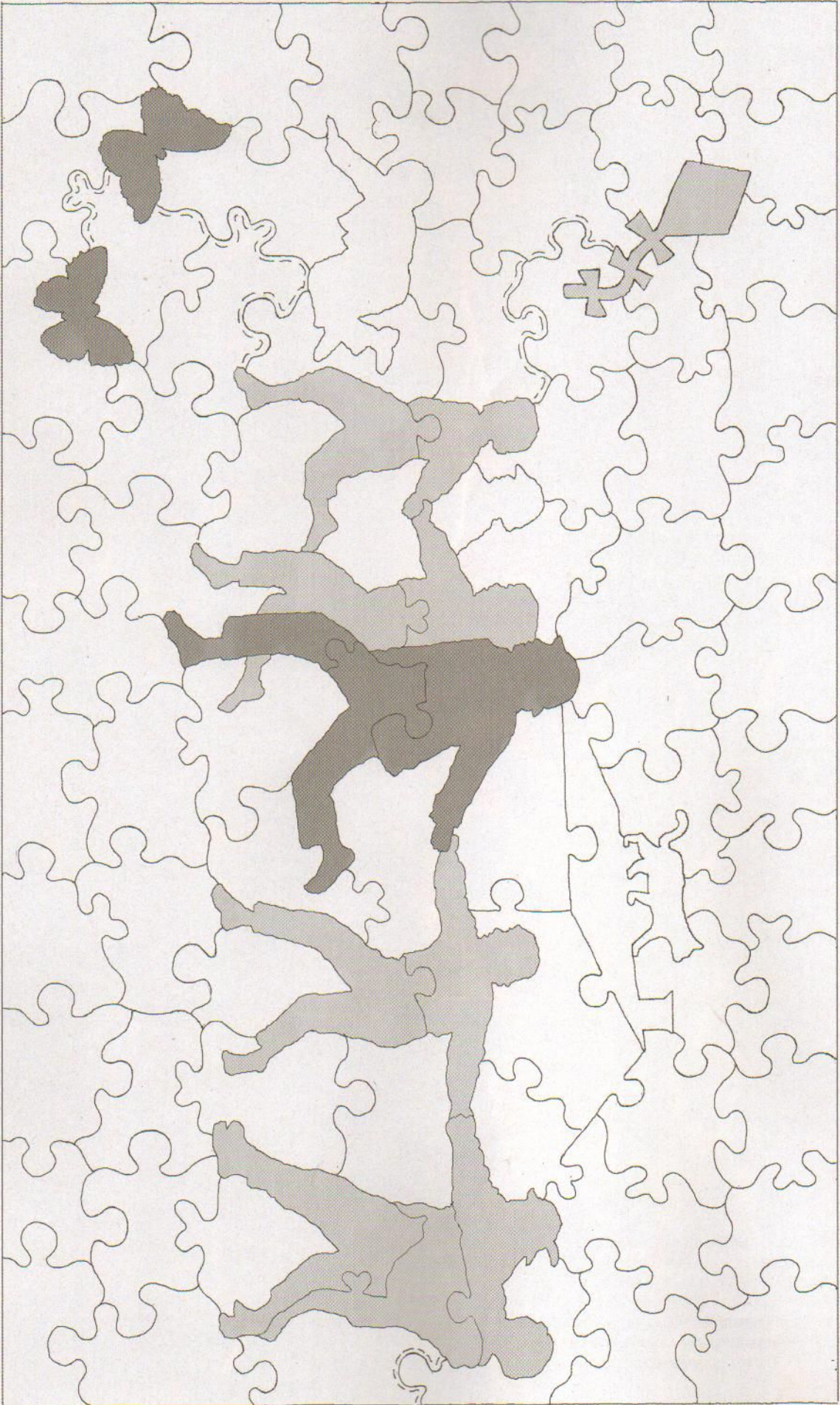
Shawn Ferguson lives in Youngstown, N.Y., where he created The Ferguson Puzzle Company. His young son, Jeremy, is the Chief Puzzle Assembler and his daughter, Jamie, is the Chief of Inspiration. When not crafting jigsaw puzzles, Shawn enjoys solving the "puzzle" of childhood illnesses as a busy pediatrician. See more of Shawn's puzzles at www.fergusonpuzzles.com.

Multilevel puzzle picture

© 2014 Scroll Saw Woodworking & Crafts



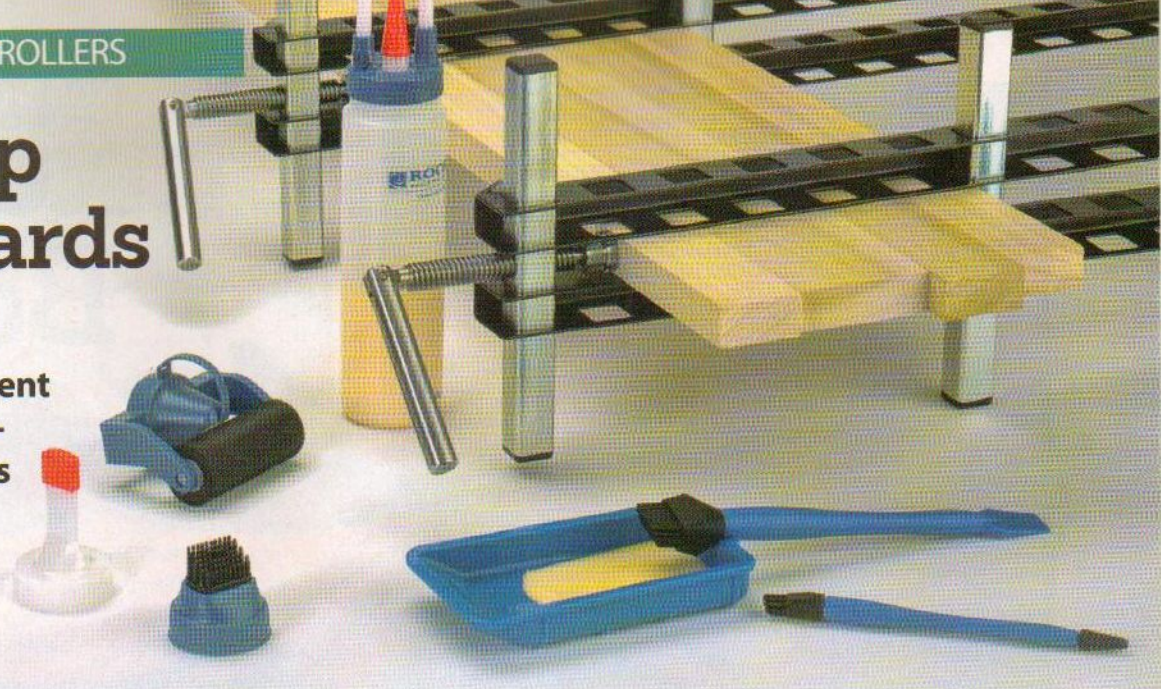
Multilevel puzzle pattern



Gluing-up Wide Boards

Three techniques to reduce wood movement and create more cost-effective large boards

By Bob Duncan



Some scrolling projects, like fretwork, puzzles, and frames, call for wide boards. You can find wide boards in a variety of thicknesses, but there are disadvantages to simply buying wide wood. The wider the board, the more expensive the board will be. The tree a 12"-wide board came from was at least 30" in diameter and 60 years old. Because there are fewer trees that size, wide boards are getting more expensive. Plus, wide boards warp and twist more than narrow boards.

Solve these problems by gluing up panels using narrow boards. Narrow boards cost less, and the glued-up panels will actually be more stable than a single wide board.

There are three parts of a good glue joint: wood preparation, glue coverage, and proper clamping.

Preparing the Wood

For woodworking glue to bond, the joining surfaces need to be as smooth and flat as possible. If you have a jointer (available for around \$220), this process is easy, but it's possible to do with a sharp hand plane. In a pinch, you can use progressively finer grits of sandpaper up to 320 grit in a sanding block.

If this is something you only plan to do occasionally, you can often pay to have the edges of the board surfaced. Ask the person selling the wood, local cabinet shops, or school woodshops. If you plan to glue up boards often, a jointer is a good investment.

Glue Coverage

Make sure the glue is fresh; wood glues have a two-year shelf life, and they go bad if exposed to extremely high or low temperatures. Apply the glue down the center of the edges to be joined and spread it with a

glue brush if desired (Rockler has nice gluing kits that make this process easy). Because wood glue requires pressure to set up properly, quickly place the boards together on the clamps and tighten. Remove the glue squeeze-out and allow the glue to dry.

Proper Clamping

You can't have too many clamps when you're gluing up larger boards. I use a minimum of four clamps for any project, and for longer boards, I suggest using even more. Although many quick-grip trigger-type clamps are available, I suggest using bar or pipe clamps for glue ups.

Bar clamps work well because the flat surface of the bar helps ensure flat panels, but bar clamps are expensive, and you're limited to a few standard sizes. Pipe clamps use iron pipe, which can be cut to any length. One end of the pipe clamp threads onto the end of the pipe, and the other end of the clamp slides along the pipe. Unfortunately, pipes are round, so you have to be careful to make sure the glued-up panels are flat. To be cost effective, I use bar clamps on the ends and pipe clamps in the middle of the panel. Alternate between clamping from the top and bottom for best results.

A few companies, such as Damstom, make specialty clamps that allow you to apply pressure not just to the edges, but also the top and bottom, to ensure flat panels.

Although you will need to invest in clamps to glue up large panels from narrow boards, the practice will save money and reduce warping in your projects. Give it a try!

Butterfly Box



Segmentation design brings the tidings of spring

By Gary MacKay

I based the design for this butterfly box on a photo of a real butterfly. The box is a standard stacked-ring design; I use two $\frac{3}{4}$ "-thick rings, but you can use more rings to make a deeper box. What makes it different is that there are four separate lids for the four compartments. The colorful butterfly disguises the different lids.

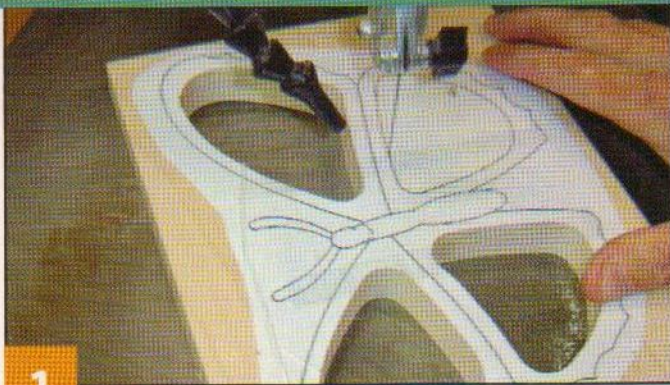
Getting Started

To begin, make three copies of the pattern, keeping one as a master copy. Cut the blanks to the sizes in the materials list. Attach the appropriate patterns to the ring blanks, the lid liner blank, and the box bottom blank.

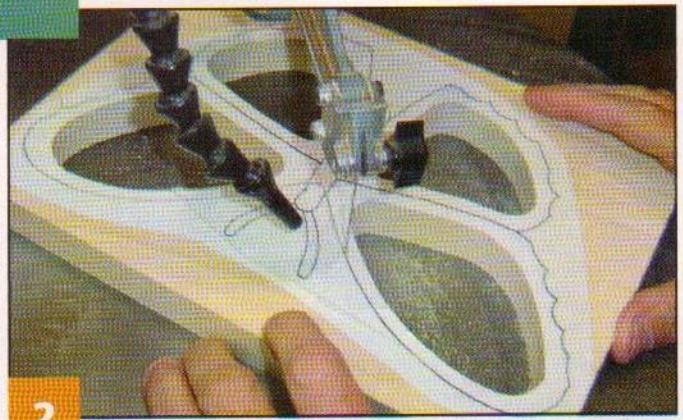


Removing the wings reveals the box compartments.

BUTTERFLY: MAKING THE BOX



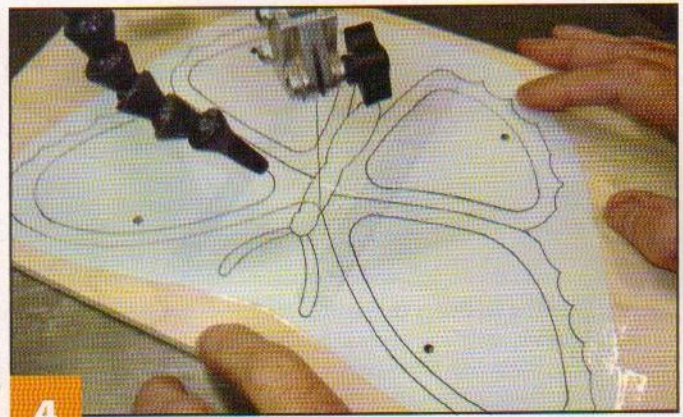
1 **Cut the box compartments.** Make four copies of the box pattern. Attach a pattern to each box ring blank. Drill $\frac{1}{8}$ " (3mm)-diameter blade-entry holes and cut the compartments. I use a #9 blade. Save one set of four cutouts, with the pattern attached, if you plan to line the compartments with felt.



2 **Cut the box rings.** Cut the perimeters of the box rings for both blanks. Then, remove the patterns.

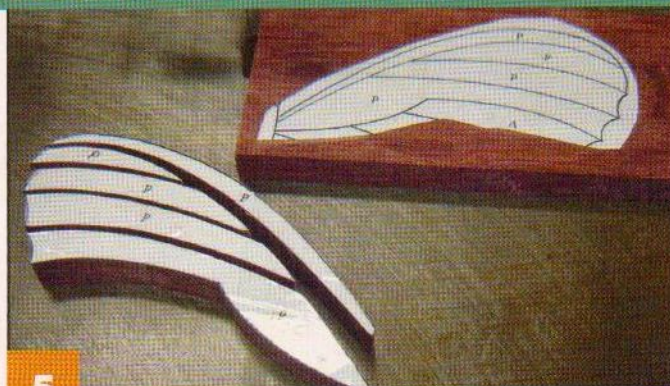


3 **Glue the box rings together.** Apply a light layer of wood glue to one surface of the rings. Place the other ring on the glued surface and clamp them together until the glue is dry. Use a drum sander or sandpaper wrapped around a dowel to sand the inside of the compartments smooth.

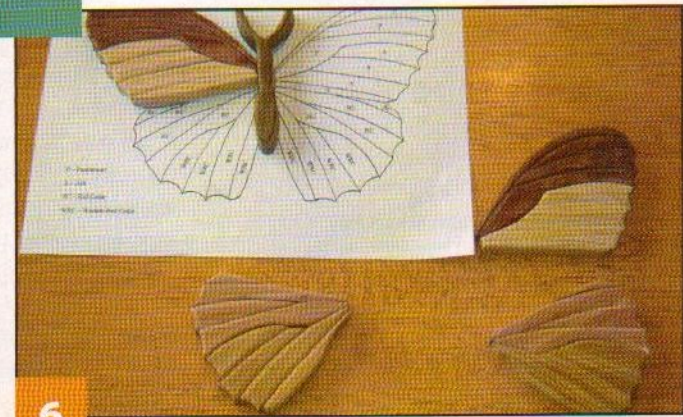


4 **Cut the box bottom.** Attach a copy of the box pattern to the bottom blank and cut the perimeter. I use a #5 blade. Remove the pattern. Glue and clamp the bottom to the box rings.

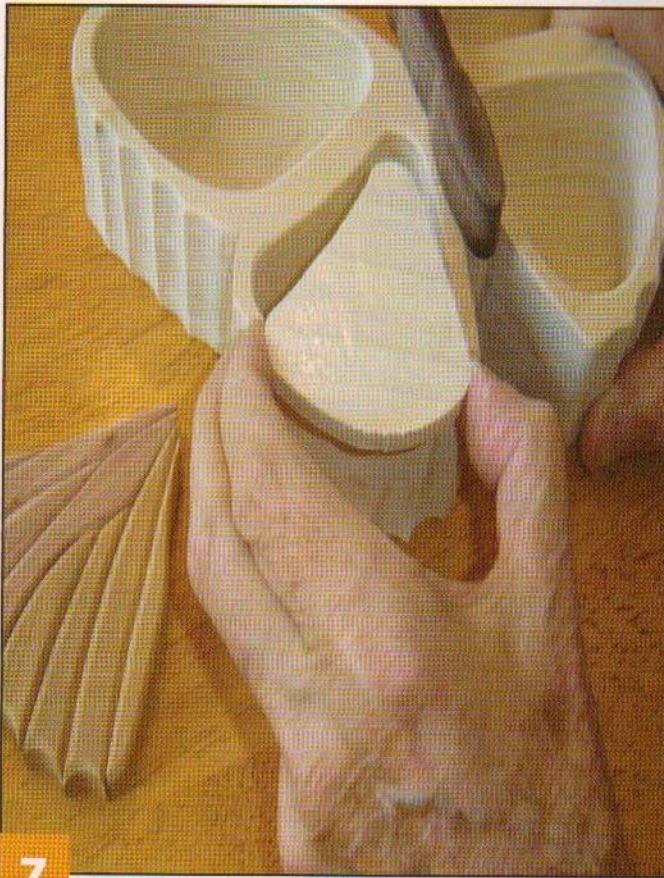
BUTTERFLY: MAKING THE LIDS



5 **Cut the wing segments.** Make six copies of the body and lid pattern. Cut apart the paper patterns by color groups (not segments), and cut out one central body pattern. Attach the patterns to the blanks, cover them with clear tape, and use a #5 blade to cut along the segment lines. Mark an "X" in pencil on the bottom of each piece. When you cut the body, be sure to include the antennae; do not cut them off. Remove the patterns.

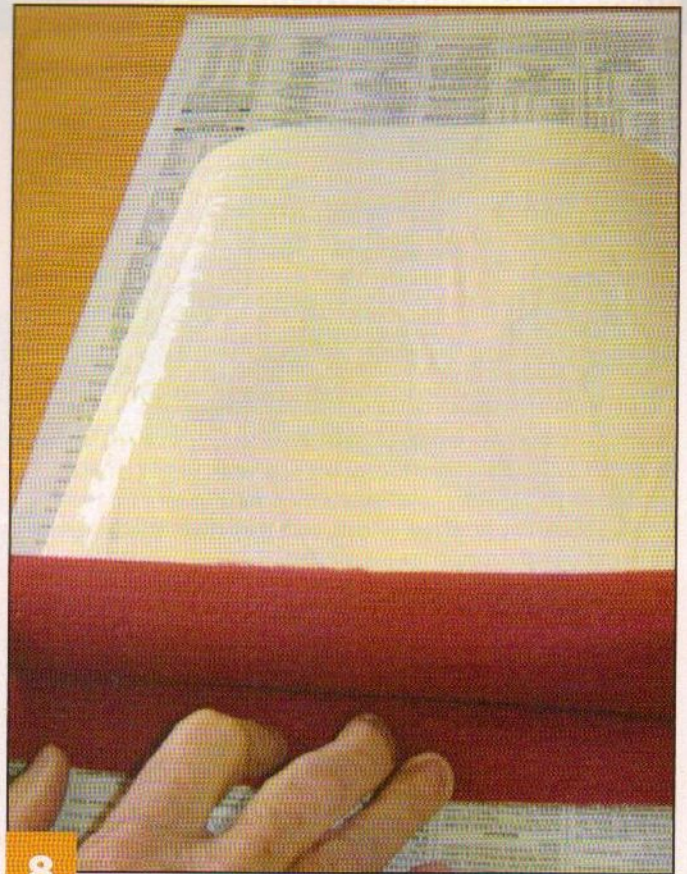


6 **Glue the wing segments together.** Round the top edges of the wing segments with sandpaper. Place a copy of the body and lid pattern on a flat surface. Edge-glue the appropriate wing segments together to form the compartment lids. Remove any glue squeeze-out. Then, let the glue dry. Round all of the edges with sandpaper or a drum sander. Use a belt sander to remove any glue or paper from the bottoms of the lids. Glue the butterfly body onto the box rings.



7

Glue the lid liners to the lids. Attach a box ring pattern to the lid liner blank, drill blade-entry holes outside the compartment lines, and cut on the insides of the lines. Remove the patterns and fit the liners into the corresponding compartments, sanding as necessary to fit. Apply wood glue to the top of one liner. Place the liner, glue side up, in the compartment. Place the proper lid on top and flip the box, dropping the liner onto the lid. Lift off the box and hold the liner in place for 20 seconds; clamp and let dry. Repeat the process to attach the remaining liners to the lids. Apply a finish of your choice.



8

Line the box compartments with felt (optional). Apply wood glue to poster board and set the felt onto the glued surface. Place several books or other weights on top of the felt and allow the glue to dry overnight. Place one of the cutout pieces saved from Step 1, pattern side down, on the back of the poster board and trace around it. Cut along the line, and use tacky glue to attach the felt liner to the inside of the compartment. Repeat for the remaining compartments.

Materials & Tools

Materials:

- Poplar, $\frac{3}{4}$ " (19mm) thick: box rings, 2 each 7" x 10" (178mm x 254mm)
- Poplar, $\frac{1}{4}$ " (6mm) thick: box bottom, 7" x 10" (178mm x 254mm); lid liners, 2 $\frac{1}{2}$ " x 14" (64mm x 356mm)
- Walnut, $\frac{5}{8}$ " (16mm) thick: body, 2" x 5" (51mm x 127mm)
- Purpleheart (P), $\frac{1}{2}$ " (13mm) thick: wings, 3" x 11" (76mm x 279mm)
- Ash (A), $\frac{1}{2}$ " (13mm) thick: wings, 2 $\frac{1}{2}$ " x 9" (64mm x 229mm)
- Red cedar (RC), $\frac{1}{2}$ " (13mm) thick: wings, 2 $\frac{1}{2}$ " x 8" (64mm x 203mm)
- Western red cedar (WRC), $\frac{1}{2}$ " (13mm) thick: wings, 2 $\frac{1}{2}$ " x 8" (64mm x 203mm)
- Spray adhesive
- Clear packing tape

- Wood glue
- Sandpaper: assorted to 220 grit
- Finish: clear
- Felt: 9" x 12" (229mm x 305mm) (optional)
- Poster board: 9" x 12" (229mm x 305mm) (optional)
- Tacky glue (optional)

Tools:

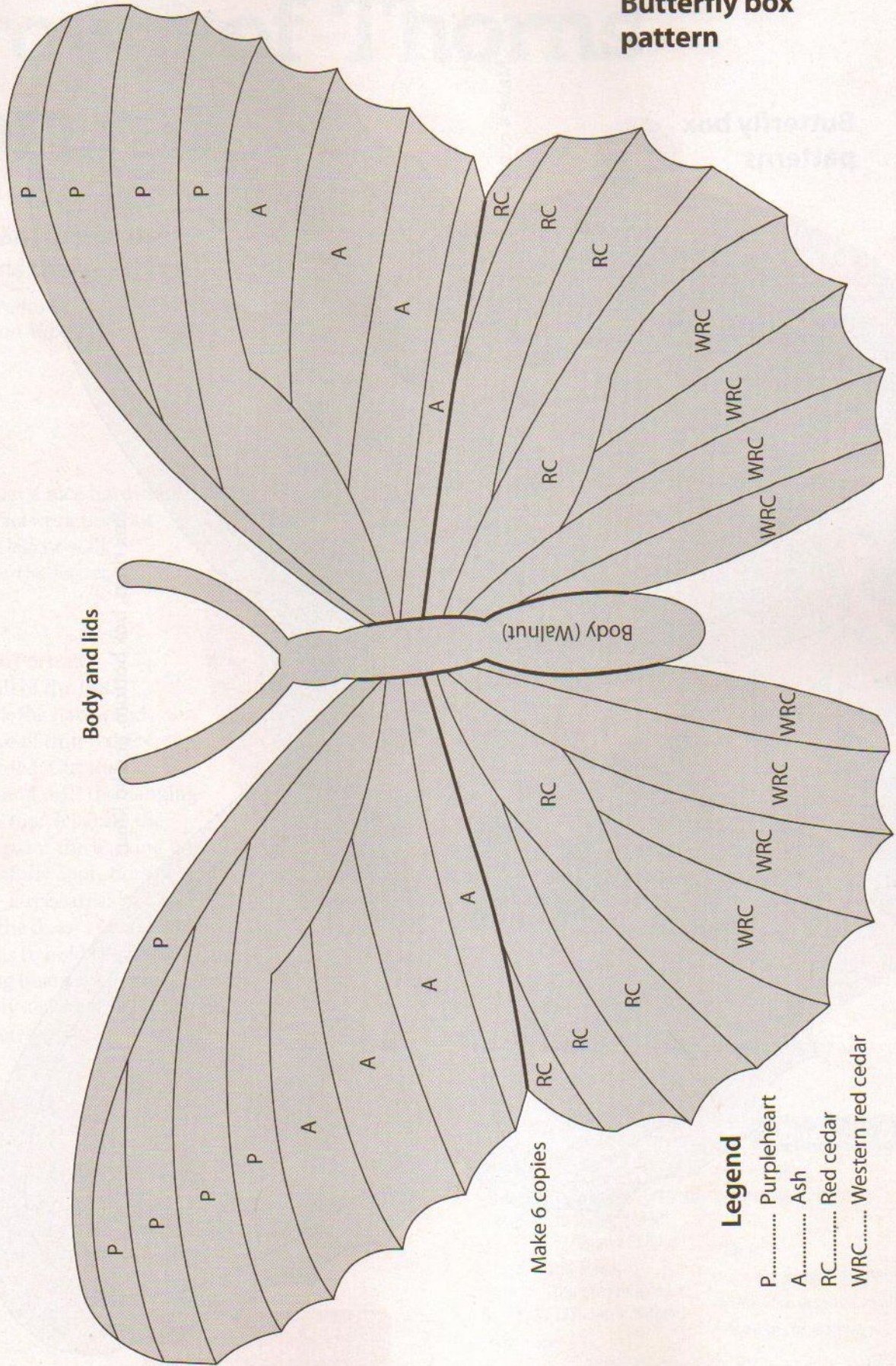
- Blades, reverse-tooth: #5 and #9 or larger
- Drill with bit: $\frac{1}{8}$ " (3mm)-dia. bit
- Belt sander
- Drum sander or large dowel and sandpaper
- Clamps

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



Gary MacKay of Myrtle Beach, S.C., is the author of *Box-Making Projects for the Scroll Saw*, available from Fox Chapel Publishing, www.FoxChapelPublishing.com.

Butterfly box pattern



Body and lids

Body (Walnut)

Make 6 copies

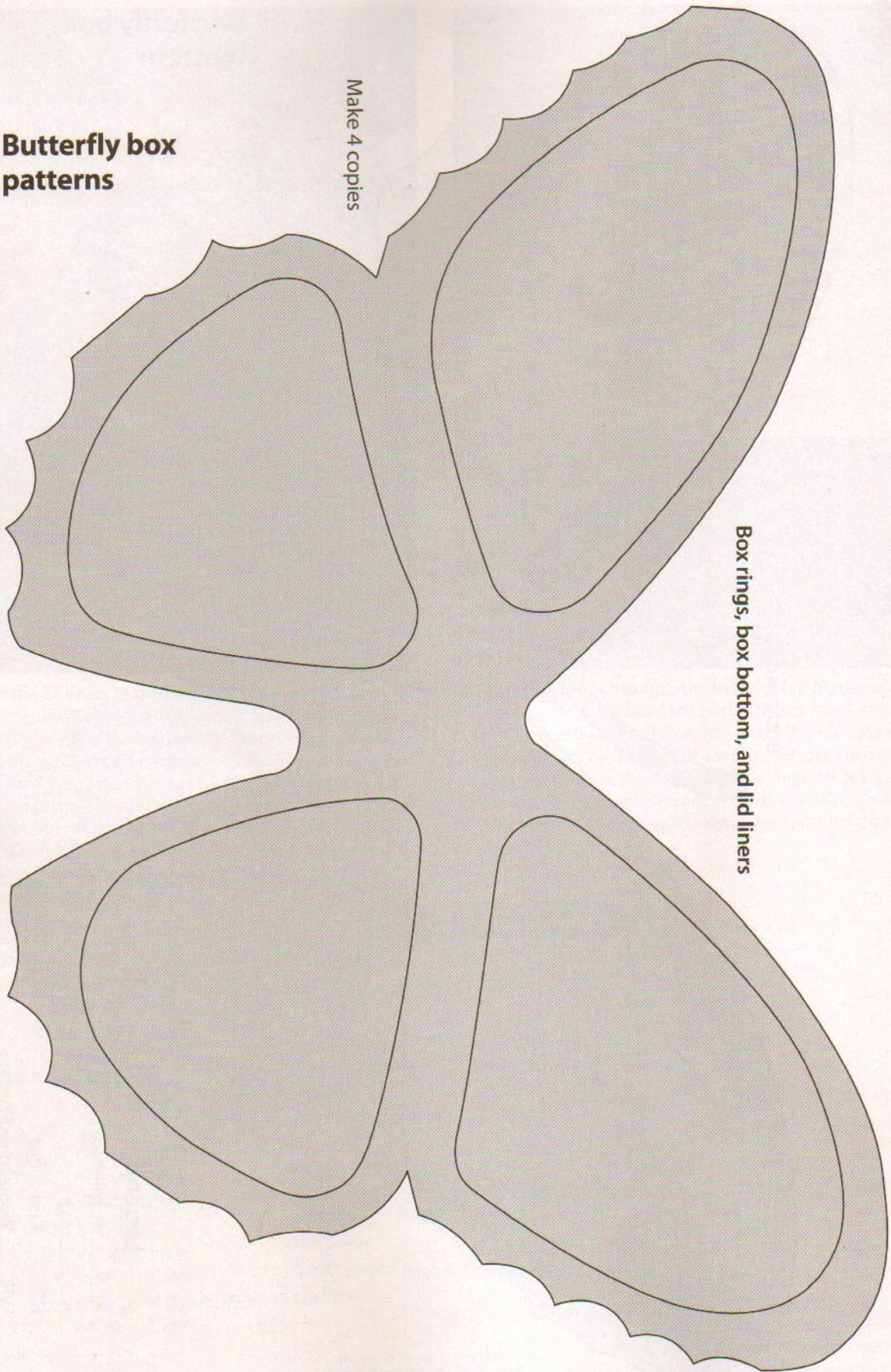
Legend

- P..... Purpleheart
- A..... Ash
- RC..... Red cedar
- WRC..... Western red cedar

© 2014 Scroll Saw Woodworking & Crafts

Butterfly box patterns

Make 4 copies



Box rings, box bottom, and lid liners

Crown of Thorns Portrait

A poignant image for Christians this season

By John A. Nelson
Cut by Leldon Maxcy

Cut from a nice hardwood, this fretwork portrait makes an elegant wall hanging for the Easter season.

Cutting the Portrait

First, cut all of the frets. Then, stack the hardwood with a piece of thin Baltic birch plywood. Cut the perimeter and drill the hanging hole in the top. Separate the stack, and paint the backing board black. Carefully apply dots of wood glue to the larger areas of wood (between the frets) and use weights or sandbags to hold the fretwork to the backing board while the glue dries. Apply a clear spray finish to the completed piece.



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

Pattern for the **JESUS
PORTRAIT** is in the pattern
pullout section.

Materials & Tools

Materials:

- Hardwood, such as cherry, 1/2" to 5/8" (13mm to 16mm) thick: 11" x 11 3/4" (279mm x 298mm)
- Baltic birch plywood, 1/8" to 1/4" (3mm to 6mm) thick: 11" x 11 3/4" (279mm x 298mm)
- Paint: black

- Wood glue
- Spray finish: clear

Tools:

- Blades: #3 reverse-tooth
- Drill with assorted small bits
- Weights or sandbags

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



Creating Pull-Toy Friends

Delight toddlers with these easy toys

By Paul Meisel

These lovable pull-toy animals are perfect for toddlers and smaller children. They are easy to make using three layers of $\frac{3}{4}$ " (19mm)-thick lumber. And, because they are fairly small, they are a great way to use up wood scraps!

I designed them to be easy to finish. Just brush on a clear finish and add a few colorful paint highlights. I've included the patterns for all three projects.

Making the Pull-Toy Friends

Transfer the patterns to the stock and cut them out. Remember to cut the puppy's separate ears. Drill the holes for the plastic eyes, screw hole buttons, and pull-string knot and shoelace where indicated. Use an awl to mark the centers of the axle holes, but do not drill those holes yet. Finish-sand all of the parts and round all of the sharp edges for safety.

Refer to the drawing to begin assembling the toy. *Note: The assembly drawing shows only the puppy pull toy; the bunny and kitten are identical to the puppy, except the puppy's ears are attached separately.* Glue the right side to the center. Cut half of the aglet off one end of a shoelace (see Tip), pass the shoelace through the appropriate hole in the center piece, and tie a knot in the end. Tuck the knot into the hole in the center piece and smear glue on it to keep it from untying during use. Glue the left side to the center. Although the drawing shows attaching the bead to the other end of the shoelace, it is easier to paint the bead prior to attaching it. From the right side, drill the axle holes through the project. Glue the screw hole buttons in the appropriate holes on the right and left side pieces. Glue the puppy's ears in place.

Finishing the Toys

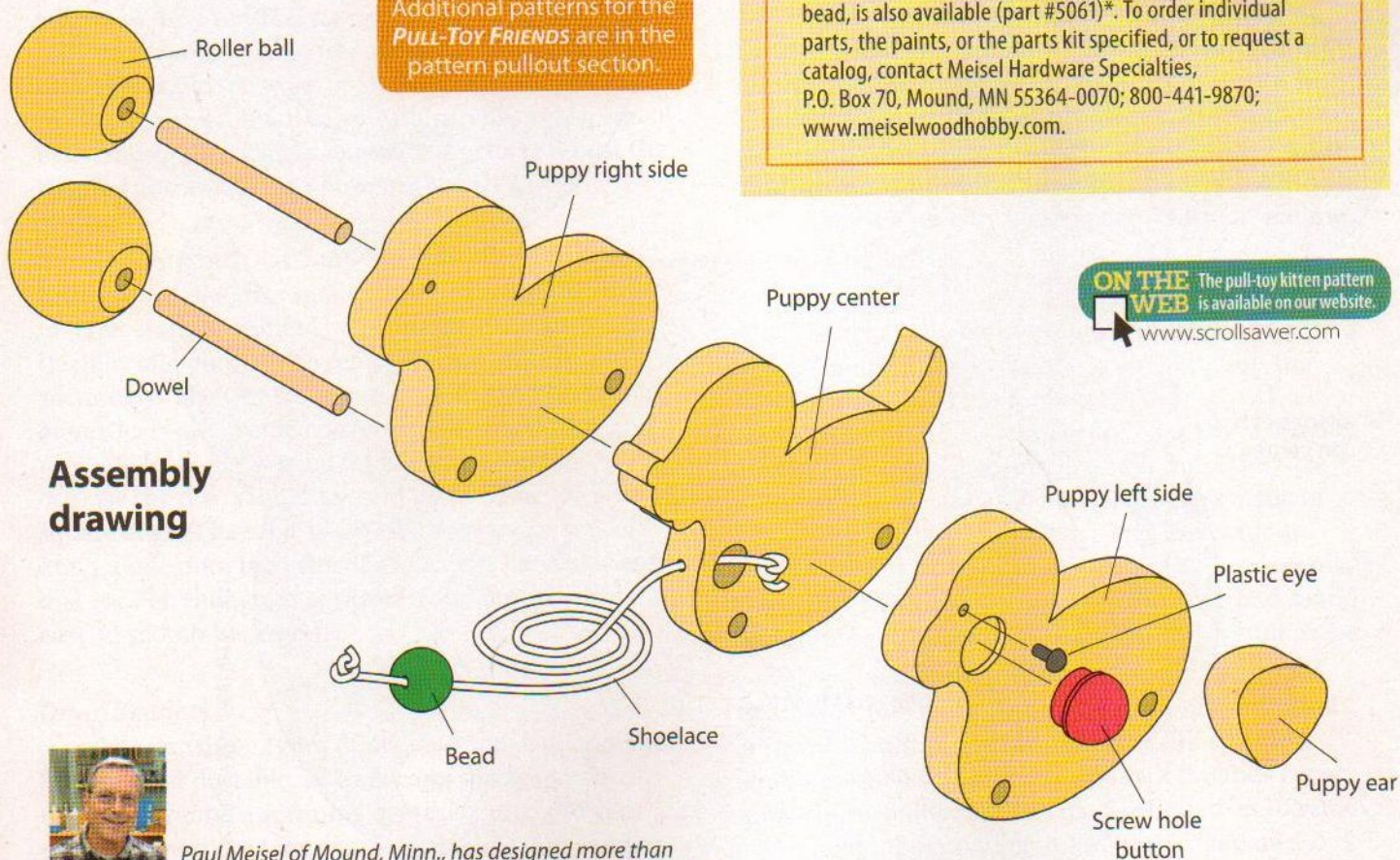
Begin by brushing a coat of sanding sealer on all of the parts except the axles. For the puppy, paint the cheeks red and the bead yellow. For the bunny, paint the cheeks pink and the bead orange. For the kitten, paint the cheeks pink and the bead green. Paint additional color highlights as shown in the photo. After the paint has dried, brush a coat of polyurethane over all sealed and painted surfaces. Assemble and glue the roller balls and dowels to the project. Insert the plastic eyes in the holes in the right and left side pieces. Tie the bead to the end of the shoelace.

TIP

PULL CORD

You can use almost anything as the pull cord, but I prefer to use a shoelace with a wooden bead on the end. Shoelaces are finished at each end with a stiff section known as an aglet. I cut one of the aglets in half to shorten it and then cut a 25" (635mm) long section of shoelace; longer lengths tend to get tangled. It's best to cut the shoelace as short as practical for toddlers; 12" (305mm) is recommended.

Additional patterns for the *PULL-TOY FRIENDS* are in the pattern pullout section.



Materials: (for 1 project)

- Pine, 3/4" (19mm) thick: 8" x 2' (203mm x 610mm)
- Round-top screw hole buttons, 1" (25mm) dia.: 2 ea. (#1438)*
- Roller balls, 2 1/4" (57mm) dia.: 4 ea. (#225)*
- Wooden dowels, 3/8" (10mm) dia.: 2 each 4" (102mm) long (#8996)*
- Plastic eye, 7/16" (11mm) dia.: 2 each (#8627)*
- Shoelace: 1 each 54" (1371mm) long (#1287)*
- Wooden bead: 1" (25mm) dia. (#3025)*
- Clear finish, such as polyurethane
- Sanding sealer

- Acrylic paint, such as Delta® Ceramcoat: black (#02506)*, white (#02505)*, red (#02507)*, orange (#02042)*, pink (#02481)*, green (#02662)*, yellow (#02509)*
- Temporary bond adhesive spray (#1447)*
- Sandpaper
- Wood glue

Tools:

- Blades: #5 reverse-tooth
- Drill with bits: 3/16" (5mm), 13/64" (5.25mm), 13/32" (10.5mm), and 1" (25mm)
- Clamps
- Paintbrushes

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

SPECIAL SOURCES:

The individual parts and the paints marked with an asterisk above are available from Meisel Hardware Specialties. A convenient hardware parts package, which contains four roller balls, two axle dowels, two plastic eyes, two screw hole buttons, a shoelace, and a wooden bead, is also available (part #5061)*. To order individual parts, the paints, or the parts kit specified, or to request a catalog, contact Meisel Hardware Specialties, P.O. Box 70, Mound, MN 55364-0070; 800-441-9870; www.meiselwoodhobby.com.

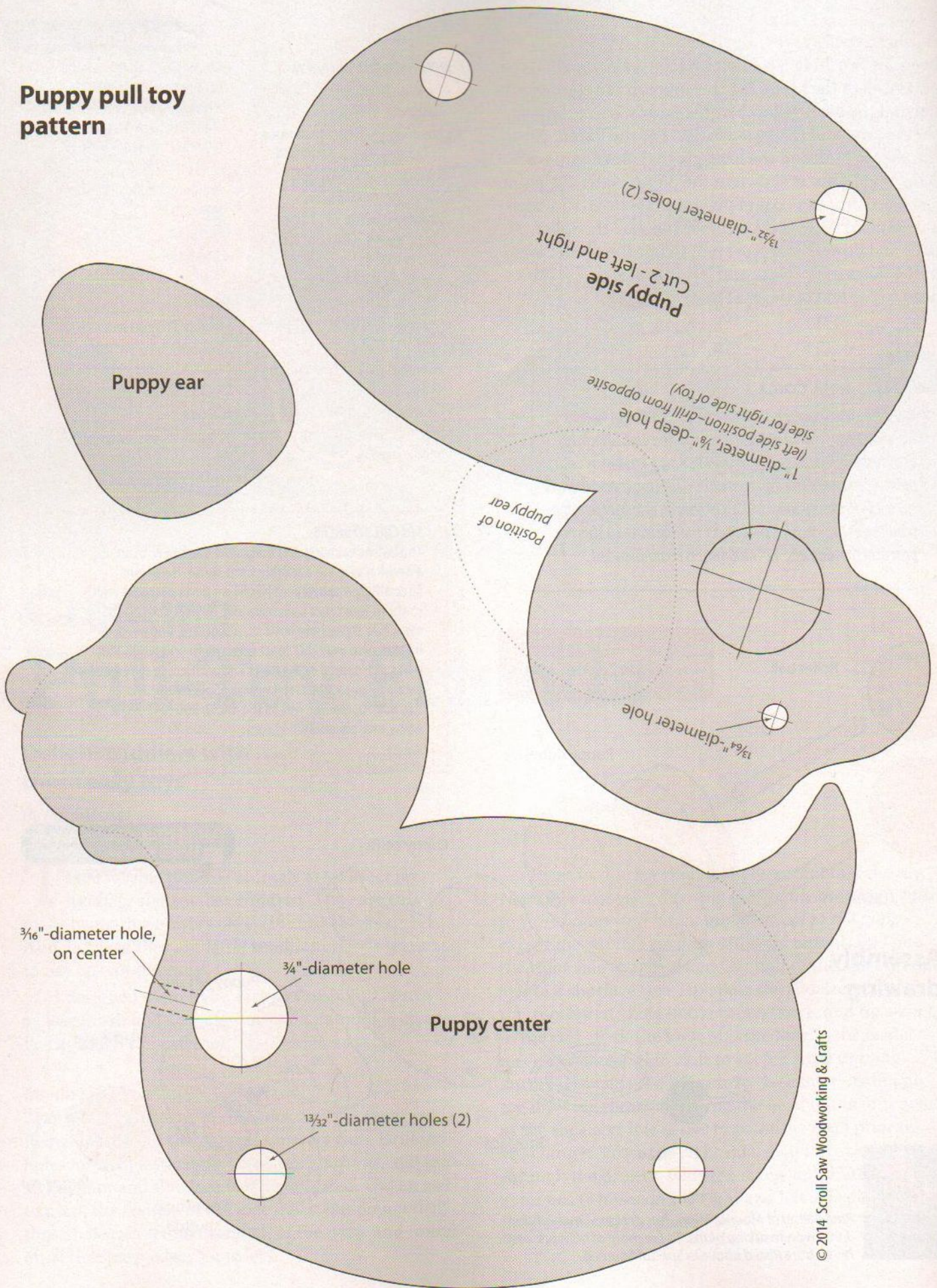
ON THE WEB The pull-toy kitten pattern is available on our website. www.scrollsawer.com

Assembly drawing



Paul Meisel of Mound, Minn., has designed more than 3,000 woodworking plans. To see more of his work, visit his website (listed above in Special Sources).

Puppy pull toy pattern

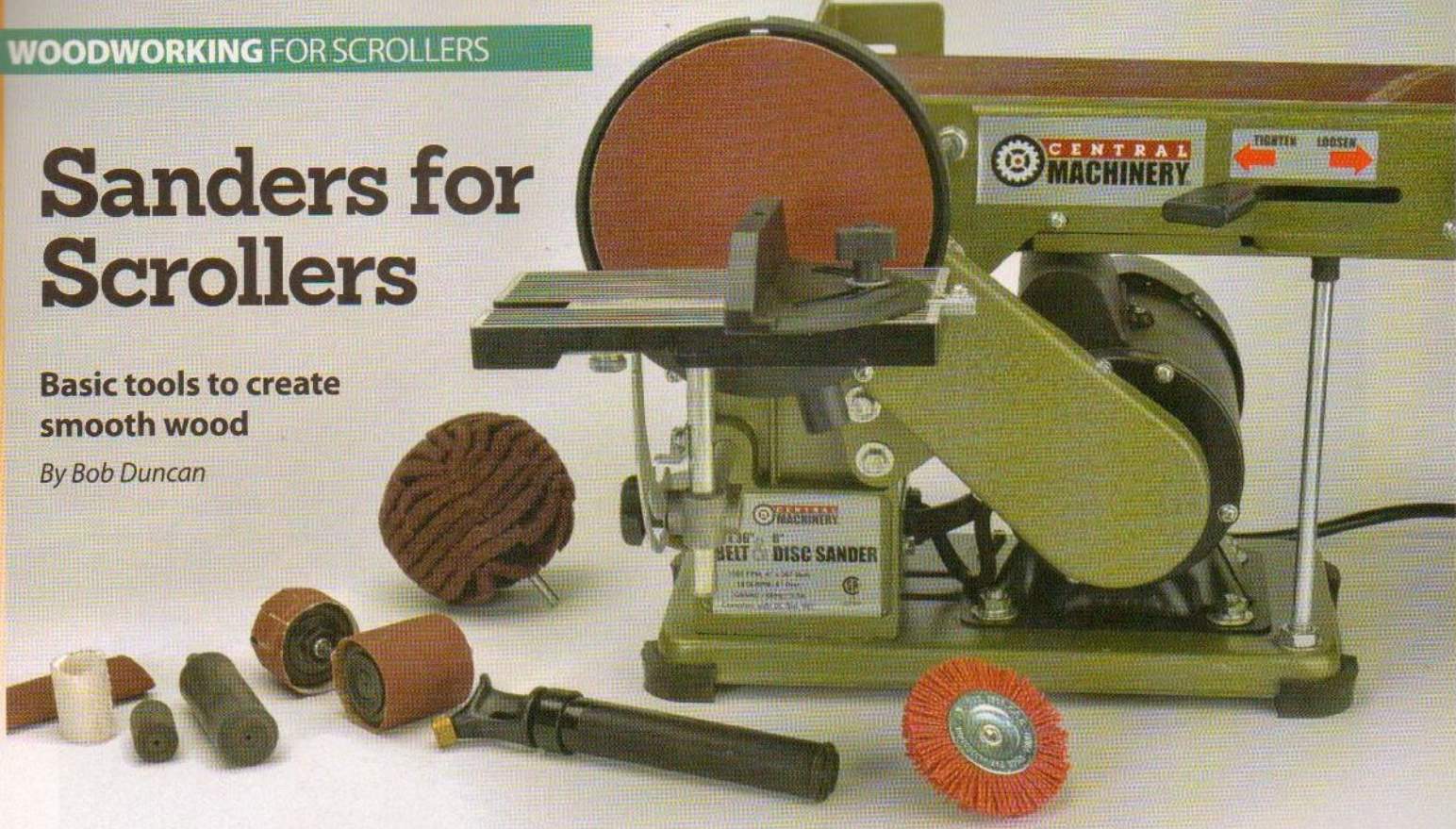


© 2014 Scroll Saw Woodworking & Crafts

Sanders for Scrollers

Basic tools to create smooth wood

By Bob Duncan



When you work with wood, chances are good that you're going to need to do some sanding. In general, any sander you use on a woodworking project will work for a scroll saw project. But these more specialized tools make the somewhat tedious job of sanding fragile fretwork or shaping intarsia pieces faster and easier. In all cases, you can buy replacement belts, discs, and sanders in assorted grits to adjust the shaping and smoothing power of the tool.

Belt Sanders and Disc Sanders

Belt sanders and disc sanders are often combined in a freestanding unit. These combination units are flexible, allowing you to remove wood quickly and accurately. The belt sander portion may be horizontal or vertical—and some convert between the two. Either way, a belt sander is good for sanding larger items. You can use the disc sander to sand up to a line to create a square edge. The table often tilts so you can sand an exact angle onto the edge of a piece. Be careful using a disc sander, though; it removes wood quickly, and it's easy to scorch the wood.

Drum Sanders

Scrollers use three types of drum sanders: pneumatic, flexible, and portable. In each case, sandpaper is wrapped around a spinning central drum, and you pass the wood over the drum. Portable drum sanders, such as the Sand Flee, let you control the amount of wood that comes in contact with the sanding drum

and thus adjust the amount that will be sanded off in each pass. They are useful for sanding stock perfectly smooth and flat. Because you can make light passes, you can even sand fragile fretwork.

Pneumatic drum and flexible drum sanders are similar, but the sandpaper is wrapped around a flexible foam drum or an air-filled bladder. These sanders conform somewhat to the shape of the piece you are sanding, but they still remove wood quickly. These tools are often used by intarsia artists when sanding and shaping pieces.

Flap Sanders, Mop Sanders, and Buffing Discs

While hand-sanding with the grain gives you the ultimate surface, these tools get you close with much less effort. Flap sanders are basically strips of sandpaper gathered around a center hub. They are used in a rotary tool or drill. Flap sanders made of large strips are more aggressive and can actually change the shape of a piece. I prefer flap sanders made of smaller strips, which are less aggressive and round and soften pieces without changing the overall shape.

Mop sanders are soft balls of sandpaper used in a rotary tool or drill to further smooth the wood surface. A buffing disc, usually made of synthetic steel-wool strips attached to a mandrel, sands even more finely. Some scrollers use buffing discs to remove any remaining visible scratches from sandpaper and provide a smooth, polished surface.

Embellish a Bowl with Plywood

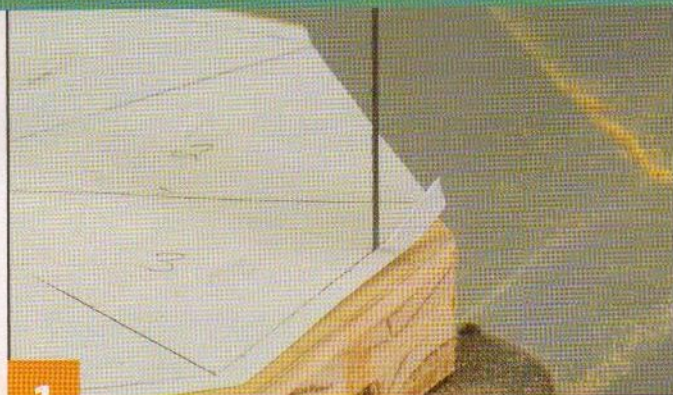


Inexpensive plywood can make an elegant accent ring for a scroll sawn bowl

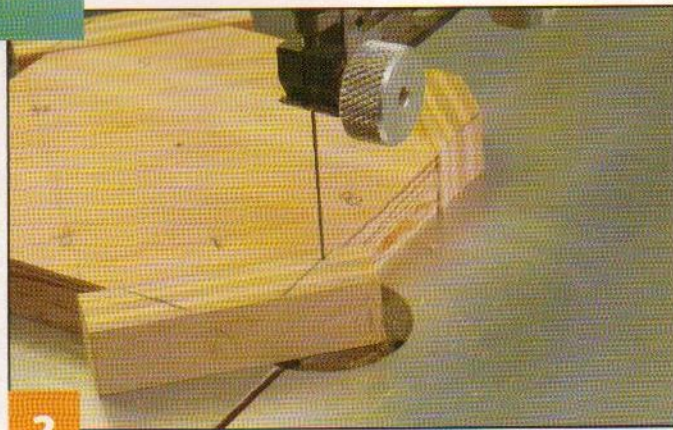
By Carole Rothman

Looking for new ideas for scrolled bowls, I came upon some attractive projects made from laminated blocks of plywood. Impressed by the economy of this approach and its unusual beauty, I created a bowl that features a center accent ring made of plywood embellished with contrasting pieces of veneer. The round shape, generous ring width, and construction shortcuts make this bowl ideal for anyone looking to make something different, but not extremely difficult or time consuming.

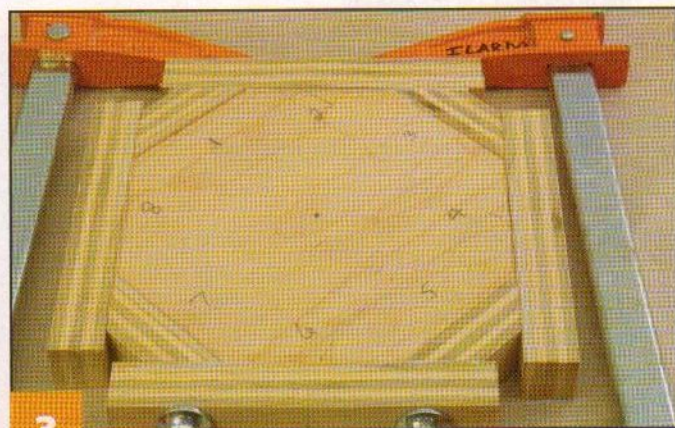
BOWL: MAKING THE ACCENT RING



1 **Cut and mark the octagon.** Attach the octagonal pattern to the accent-ring blank using repositionable adhesive. Cut the perimeter only of the octagon. Mark the center with an awl, remove the pattern, and copy the numbers from the pattern to the face of the wood near the edges of the wedges.



2 **Attach and trim the short plywood strips.** Glue and clamp two 3" (76mm)-long strips to segments 1 and 5 of the octagon. Repeat the process on segments 3 and 7. Be sure the striped edges of the plywood are facing up. Draw cutting lines across the strips, using the edges of the octagon as a guide. Cut the strips flush with the edges of the octagon.

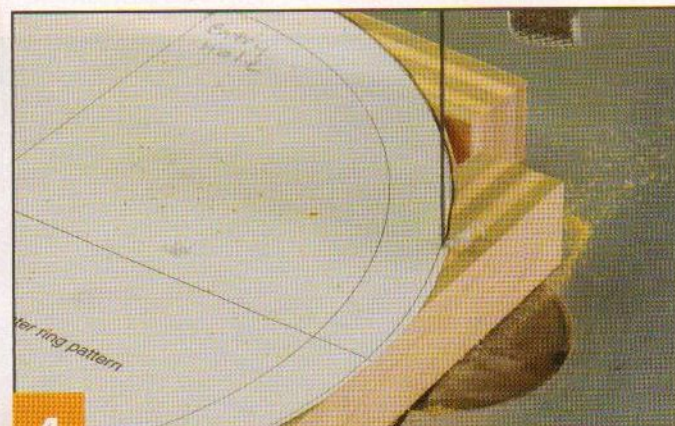


3 **Attach the long plywood strips.** Glue and clamp 5" (127mm)-long plywood strips to segments 2 and 6. Repeat for segments 4 and 8. Sand the upper and lower faces of the piece until the plywood strips are smooth and even.

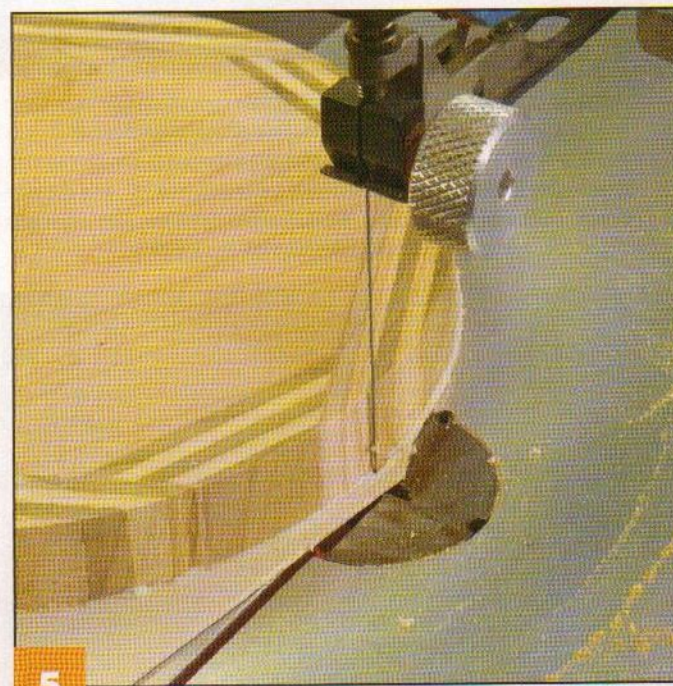
TIP

ATTRACTIVE GRAIN

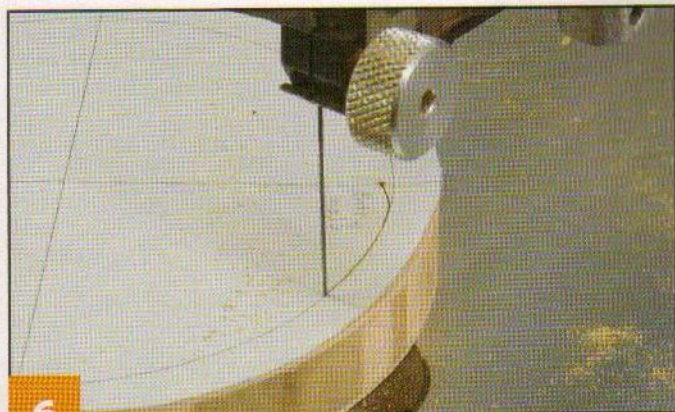
For the most attractive grain match, cut both bowl blanks consecutively from the same board. Mark the top edge of each blank before cutting them apart to help keep the rings aligned.



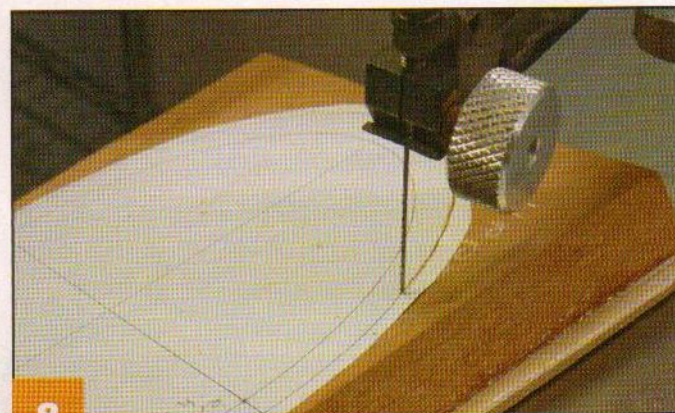
4 **Cut the accent ring.** Attach the accent-ring pattern to the sanded piece using repositionable adhesive. Use the awl to align the center of the pattern with the mark made in Step 1. Cut along the outer circle of the pattern. Carefully remove the pattern and save it for Step 6.



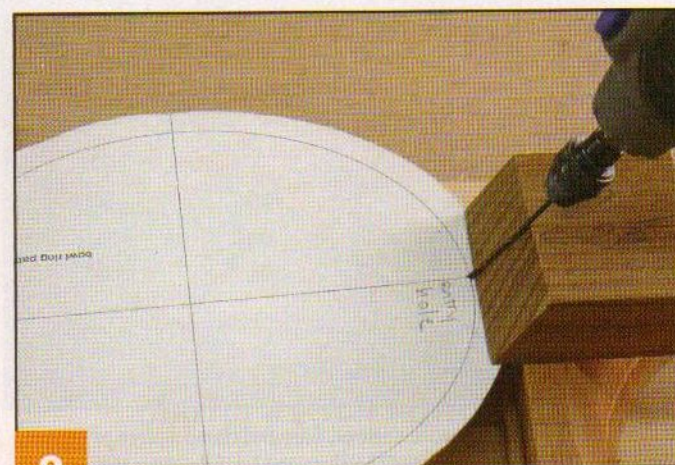
5 **Attach the maple veneer.** Glue and clamp a piece of maple veneer to one face of the circle and let it dry. Trim the excess with a #2 blade, and then sand the veneer flush with the side of the circle. Use the same technique to glue a second piece of maple veneer to the other face, with the grain of both pieces of veneer running in the same direction.



6 Complete the center ring. Reattach the pattern removed in Step 4 to the veneered accent-ring blank. Drill an entry hole where indicated on the pattern and cut the inner circle to create a plywood ring. The remainder of this blank is not used for this project.

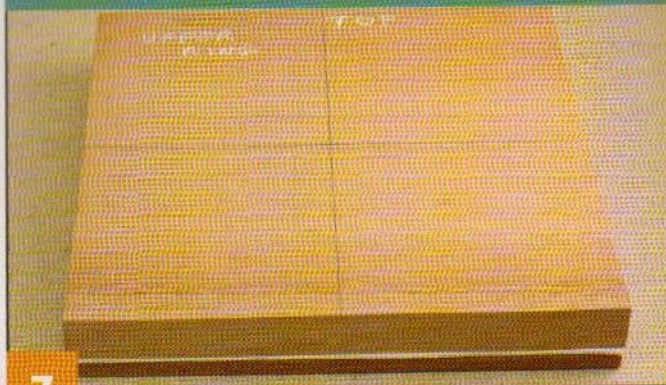


8 Cut the outside of the top ring. Use repositionable adhesive to attach a bowl pattern to the upper face of the layered blank you assembled in Step 7. Use an awl to align the pattern with the guidelines. Tilt the left side of the saw table down to 28°, and cut clockwise along the outer line. *NOTE: You will invert this ring when you glue it to the accent ring (the thinnest layer is the bowl rim).*



9 Drill a blade-entry hole. Mark the blade-entry hole on the pattern with an awl. Use a 35° angle guide (see Tip) to drill the hole, facing the center of the blank. The two different cutting angles give you extra wood to shape the opening of the bowl.

BOWL: MAKING THE BOWL

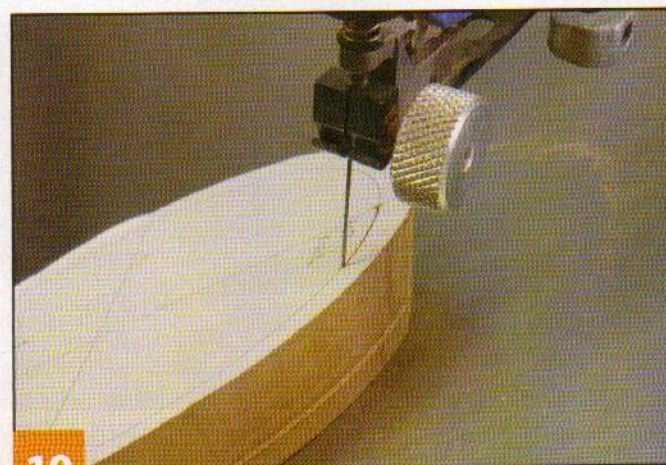
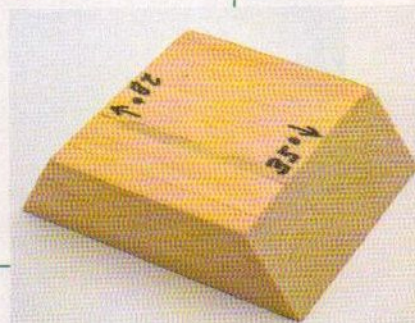


7 Prepare the bowl blanks. Mark the two ¾" (19mm)-thick mahogany blanks to help you keep the grain aligned during glue-up. Choose one piece for the top ring and one for the bottom set of rings. Draw intersecting guidelines on both blanks. Then, glue and clamp the remaining piece of maple veneer and the square of ¼" (6mm)-thick mahogany to the underside of the blank for the top of the bowl. Let the glue dry.

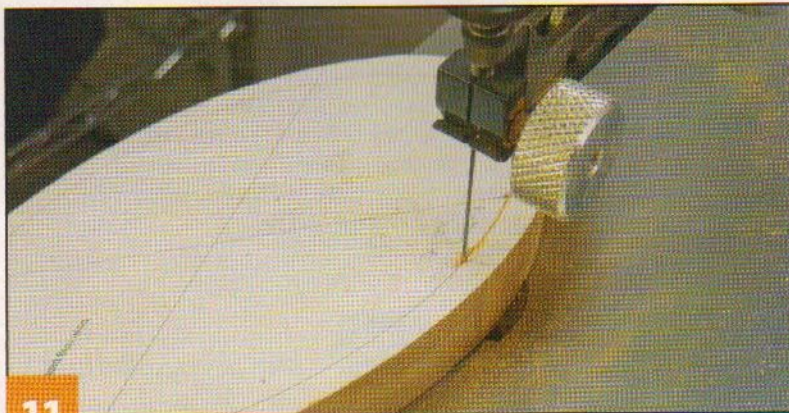
TIP

SHOP-MADE ANGLE GUIDE

On a scrap piece of wood, cut one edge at a 28° angle and the other edge at a 35° angle. Use the appropriate angle as a guide for the drill bit as you drill blade-entry holes for the rings.

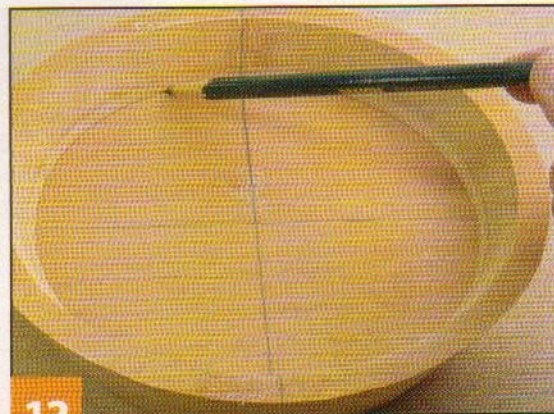


10 Cut the inside of the top ring. Tilt the left side of the saw table down to 35°. Insert the saw blade and cut clockwise along the inner circle. Mark the top of the ring and set it aside. The remainder of the blank is not needed for this project.



11

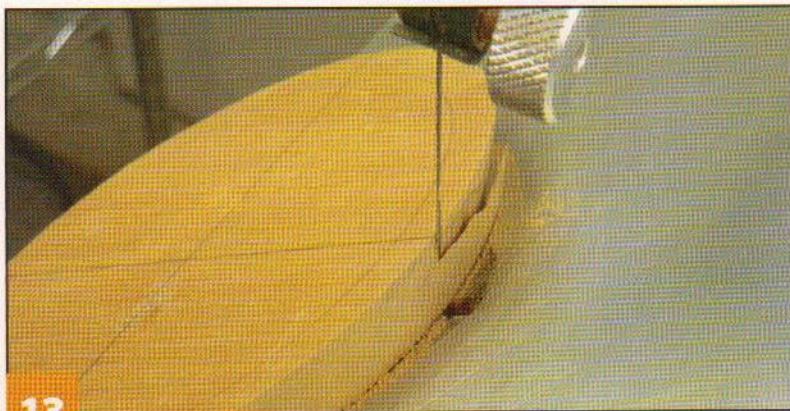
Cut the first bottom ring. Use spray adhesive to attach the second bowl pattern to the remaining piece of mahogany, aligning the pattern as in Step 8. Tilt the left side of the saw table down to 28°. Cut clockwise along the outer circle. Use a 28° angle guide to drill a blade-entry hole where indicated on the pattern, facing the center of the blank. Insert the saw blade and cut clockwise along the inner circle. Mark the top of the ring.



12

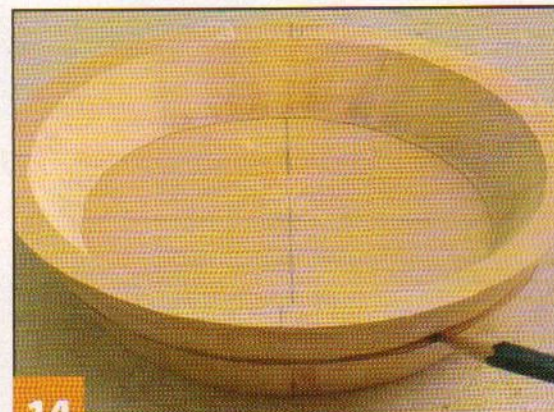
Mark the cutting line for the second ring.

Place the ring on the remainder of the same blank, matching the top edges, and trace along the inside edge to form the cutting line for the second ring.



13

Cut the second bottom ring. Tilt the left side of the saw table down to 35°. Re-cut the outside of the blank to 35°, cutting clockwise. Do not cut into the top edge of the blank—use the top edge as the line to cut along. Use a 35° angle guide to drill a blade-entry hole on the line you drew in Step 12, facing the center of the blank. Insert the saw blade and cut clockwise around the inside of the ring with the table still angled to 35°. Mark the top of the ring.

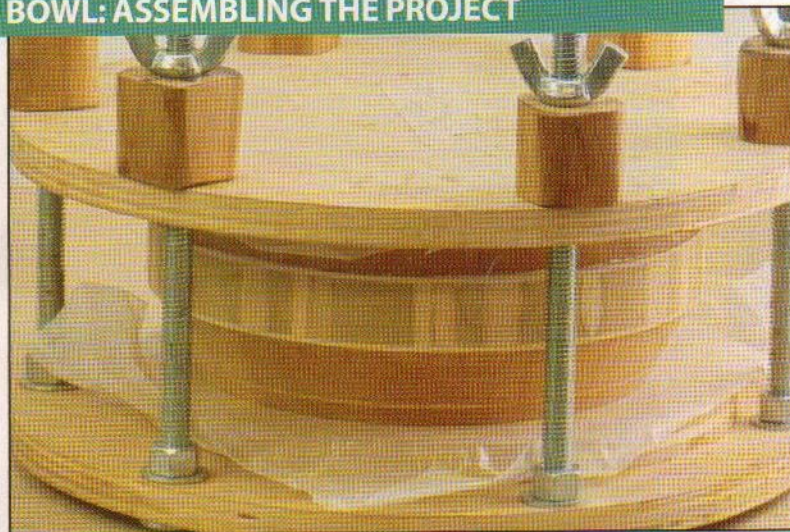


14

Cut the base. Center the ring you cut in Step 13

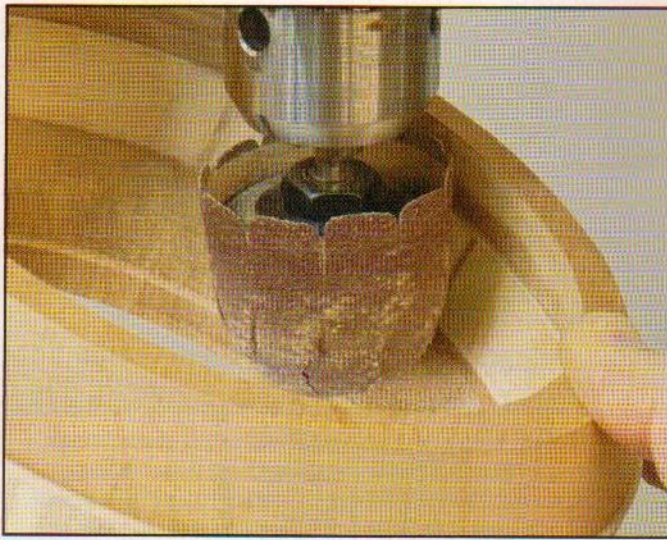
on the remainder of the same blank, keeping the tops aligned. Trace the outside of the ring to form the cutting line for the base. Tilt the left side of the saw table down to 45° and cut clockwise along this line to form the base. Mark the top of the base and set it aside.

BOWL: ASSEMBLING THE PROJECT



15

Glue the angled rings to the accent ring. Transfer the guidelines and top marks to the outsides of the rings, and then remove all of the marks from the gluing surfaces. Align and glue the top ring and first bottom ring to the plywood ring. The inner edges of the three rings will match, but the outside of the accent ring will protrude slightly to allow extra wood for shaping. Clamp the rings; I use a shop-made bowl press, but you can use clamps and scrap wood. Let the glue dry. *NOTE: In the photo, the bowl is upside down in the press.*



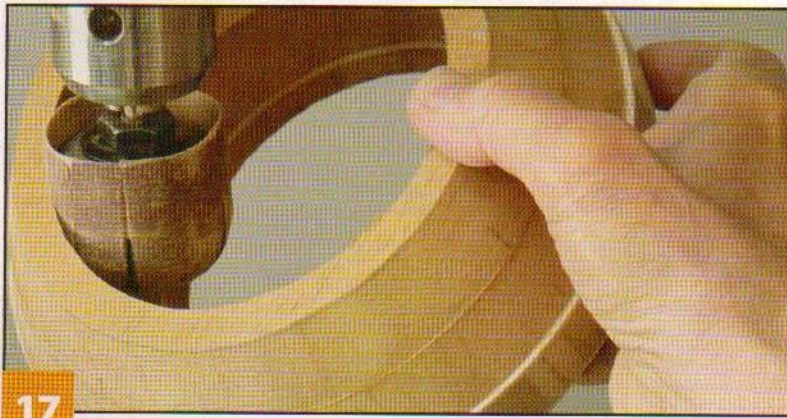
16

Sand the inside of the rings. Using a round inflatable sander and an 80-grit sleeve, sand the inside of the rings to remove any glue and irregularities. Then, use 150- and 220-grit sleeves to sand the assembly until smooth. Be careful when sanding near the lower edge of the bottom ring—you must leave enough wood to attach the next ring.

TIP

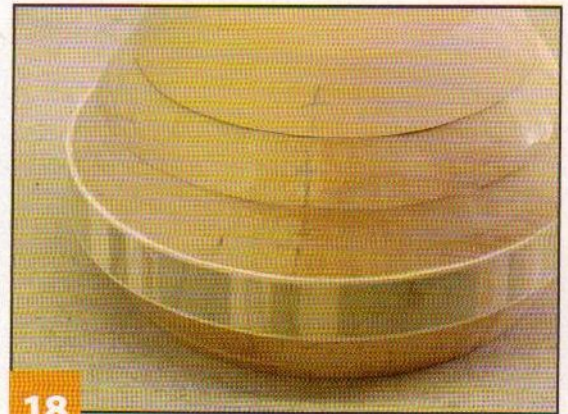
SAND INSTEAD OF CUT

If you have a sander with a tilting table, you can set the table to 45° and sand the base to the marked line. This is easier than cutting at a 45° angle.



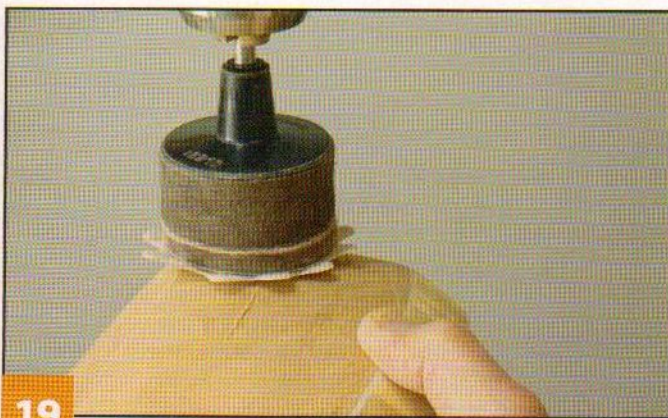
17

Attach the second bottom ring. Glue the second bottom ring into place. Clamp, let dry, and sand the inside until smooth. Be sure the bottom edge of this ring is perfectly round to give the base an attractive appearance from the inside of the bowl.



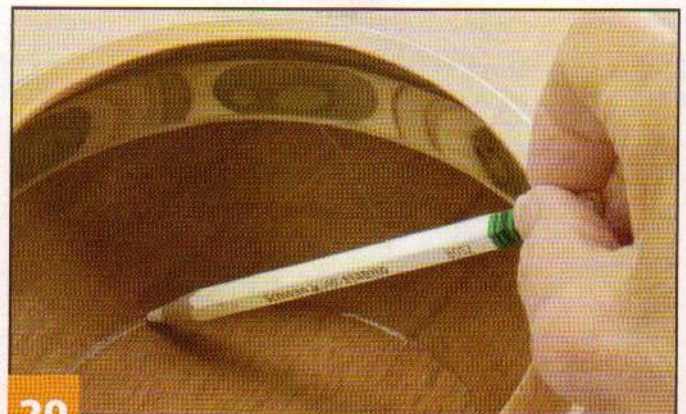
18

Attach the base. Glue the base to the bottom ring, keeping the tops aligned. Clamp, wait 5 minutes for the glue to set, remove the clamps, and scrape off the excess glue. Re-clamp and let the bowl dry thoroughly.



19

Sand the outside of the bowl. Sand the outside of the bowl with a 2" (51mm) pad sander. Shape the accent ring and the sharp edge of the top ring to match the curvature of the bowl (see sidebar). Once you have completed the shaping, soften the inner edge of the opening with the round sander, and then sand with progressively finer grits until the bowl is smooth.



20

Finish the bowl. Apply mineral spirits to the bowl and use a white pencil to mark any glue spots that appear. Sand away these spots once the mineral spirits have dried. Apply a coat of spray shellac to seal the wood. Smooth the shellac with 0000 steel wool. Remove the dust with a vacuum and wipe the bowl before applying several coats of spray lacquer.

Sanding the Outside of the Bowl



A

1. (A) Start with the accent ring, sanding it from the center outward until it blends with the angled rings on either side. (B) Continue sanding from the accent ring outward until the sides are smooth and nicely shaped. (C) If the plywood ring resists smoothing, use a small detail sander to even it out.



B



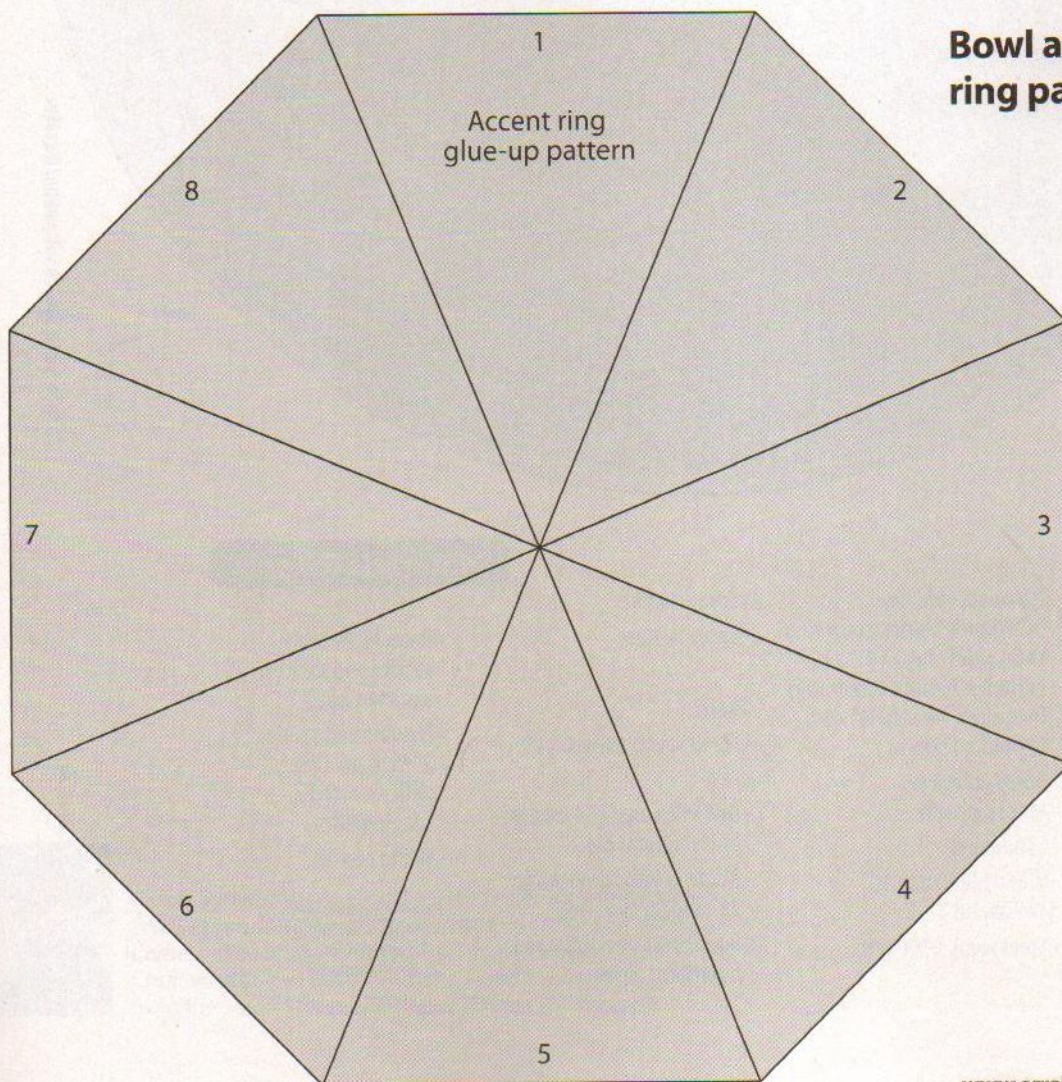
C



2. Shape the sharp outer edge of the top ring to a smooth curve.

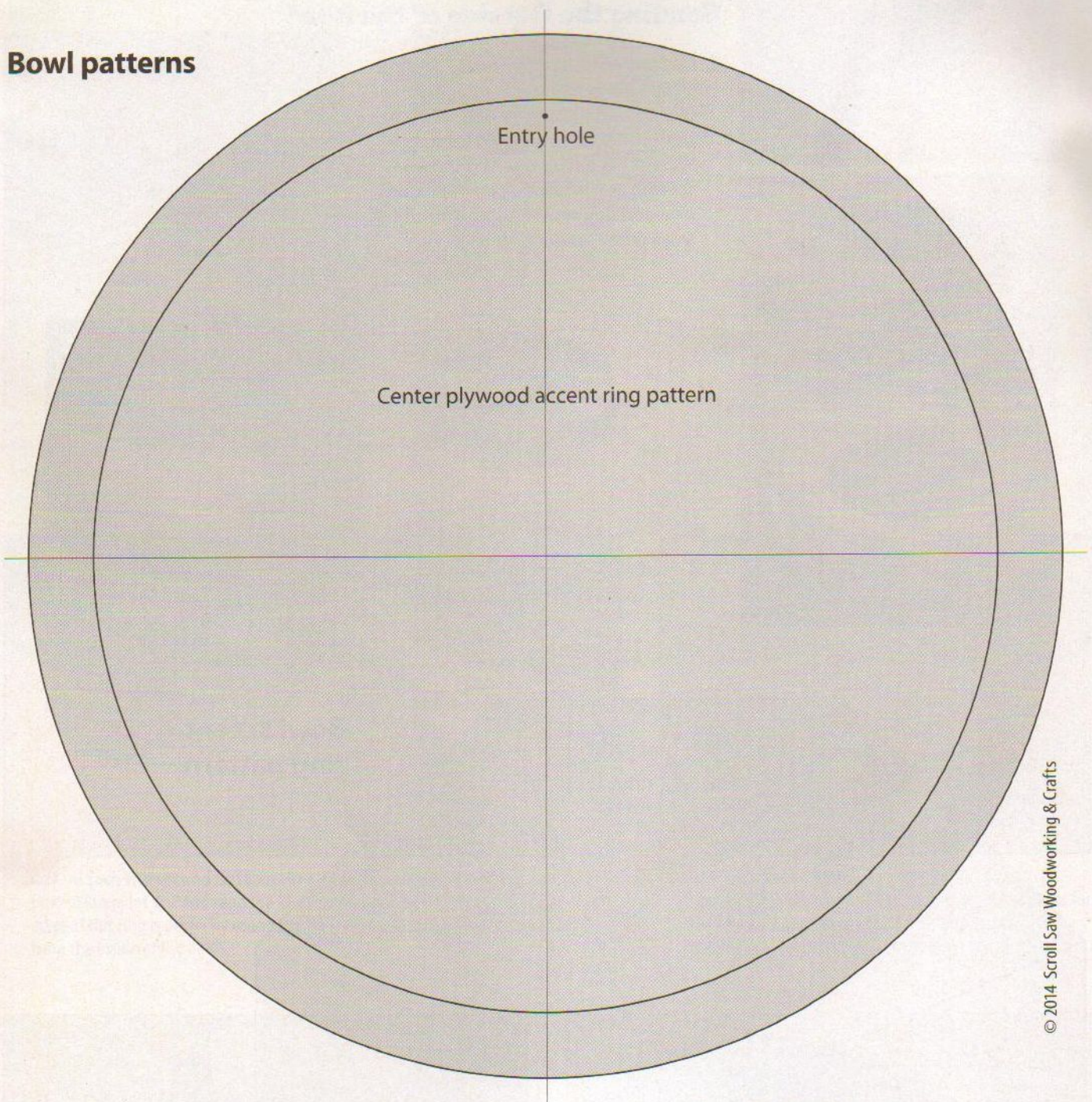


3. Sand the inside of the bowl opening to a soft edge, using the ring of maple veneer as a guide.



Bowl accent ring pattern

Bowl patterns



© 2014 Scroll Saw Woodworking & Crafts

Materials & Tools

Materials:

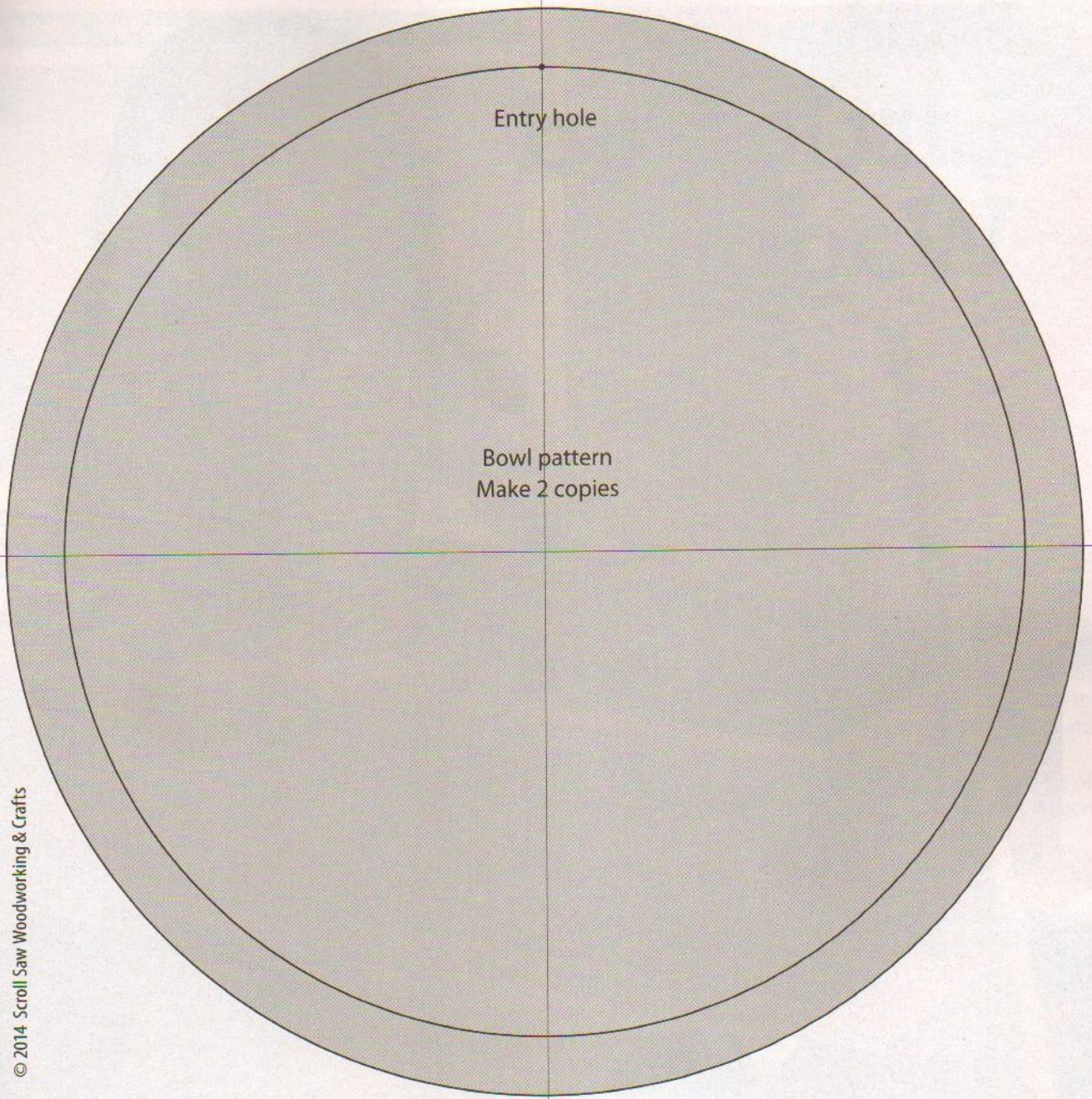
- Mahogany, $\frac{3}{4}$ " (19mm) thick: 2 each $7\frac{1}{2}$ " x $7\frac{1}{2}$ " (191mm x 191mm)
- Mahogany, $\frac{1}{4}$ " (6mm) thick: $7\frac{1}{2}$ " x $7\frac{1}{2}$ " (191mm x 191mm)
- Maple veneer, $\frac{1}{16}$ " (2mm) thick: 3 each $7\frac{1}{2}$ " x $7\frac{1}{2}$ " (191mm x 191mm)
- Wood of choice, $\frac{3}{4}$ " (19mm): accent ring guide, 6" x 6" (152mm x 152mm)
- Plywood, void free, $\frac{3}{4}$ " (19mm) thick: accent ring short sides, 4 each $\frac{3}{4}$ " x 3" (19mm x 76mm); accent ring long sides, 4 each, $\frac{3}{4}$ " x 5" (19mm x 127mm)
- Spray adhesive: repositionable
- Sandpaper
- Wood glue, such as Weldbond
- Steel wool: 0000 grit
- Spray shellac
- Spray lacquer

Tools:

- Scroll saw blades: #2, #9
- Awl
- Drill with bits: #54 wire size or $\frac{1}{16}$ " (2mm) dia.
- Angle guides, shop made: 28° and 35° (see Tip)
- Bowl press or clamps and boards for gluing

- Round inflatable sander and sleeves: assorted grits
- Flexible pad sander, 2" (51mm)-dia., with assorted sanding discs
- White pencil

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



Carole Rothman of Pawling, N.Y., is a retired psychologist and college professor. She is also an award-winning cake decorator. Visit Carole online at scrollsawbowls.blogspot.com. You'll find her books Creative Wooden Boxes from the Scroll Saw and Wooden Bowls from the Scroll Saw at www.foxchapelpublishing.com.

Building a Little Red Wagon



Whether you pair it with a doll or use it as décor, this wagon will delight

By Dennis Simmons

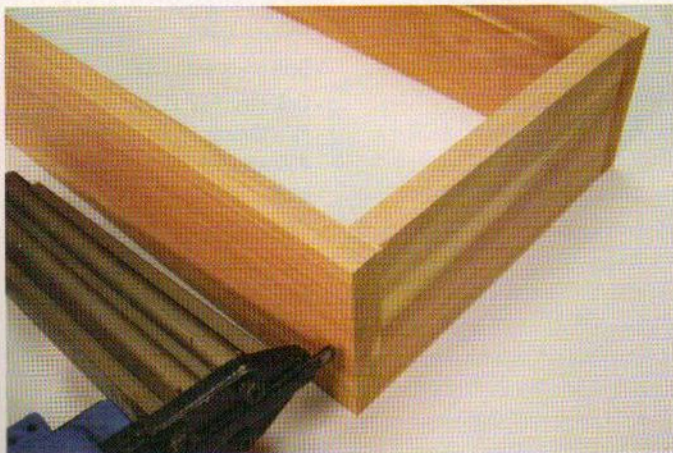
This wooden wagon is sized to make a great play item for use with the 18" American Girl® doll. Your child or grandchild will have hours of fun imagining all that could be done with a little red wagon. This wagon could also be used as a household decoration.

Full-sized patterns are provided in the pull-out section for the parts with intricate details. The dimensions for the simple pieces are in the parts list.

MAKING THE WAGON BOX



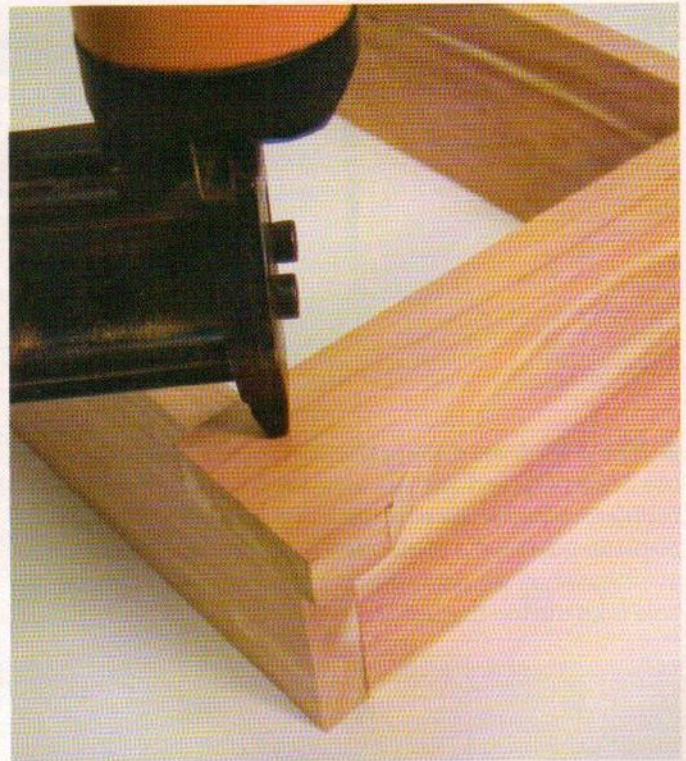
▲ **Step 1: Make the wagon floor (A).** To keep the floor from warping, I glue together thin strips, alternating the grain direction from strip to strip (see page 25). Cut the strips to the dimensions in the parts list. Glue and clamp the strips together. Plane the floor down to ½" (13mm) thick.



▲ **Step 2: Make the wagon box (B, C).** Cut the wagon box sides and ends to size. Apply glue, and nail the sides to the ends. Use a square and measure the diagonals to make sure the assembly is square.

Step 3: Prepare the simple wagon box top trim (D). Cut the trim strip to size. Use a router with a ⅜" (10mm)-radius roundover bit to round the top edge, and use a ⅛" (3mm)-radius roundover bit to round the bottom edge. Rip the strip down to ⅞" (22mm) wide. *Note: The strip was oversized to make routing safer.*

Step 4: Make the curved wagon box top trim (E). Cut the strip to size and attach the pattern. Use a scroll saw to cut the curved side. Use the ⅜" (10mm)-radius roundover bit on the top curved side and the ⅛" (3mm)-radius roundover bit on the bottom edge of the curved side.



▲ **Step 5: Finish assembling the wagon box.** Glue and nail the front top trim to the wagon box. Then, cut the rest of the trim pieces to size (measure and cut the pieces to match your box), and glue and nail them to the box. Use the ⅛" (3mm)-radius roundover bit to round the inside edge of the trim. Then, glue and nail the wagon sides to the wagon floor (drive nails up through the floor into the sides).

MAKING THE TONGUE AND AXLES

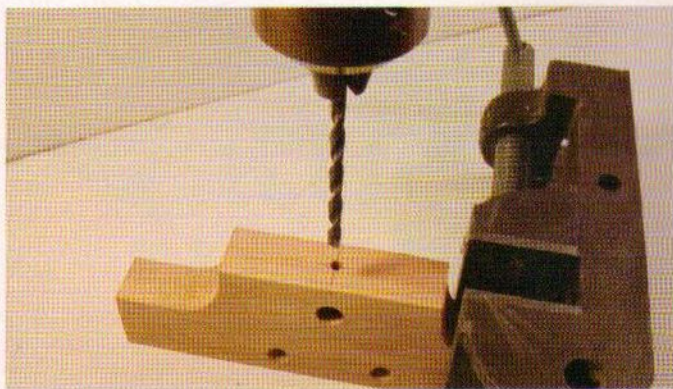
Step 6: Make the tongue (F). Attach the pattern to the blank and cut the shape of the tongue with a scroll saw. Drill a ¼" (6mm)-diameter hole for the handle. Drill a hole with a ⅝" (2.75mm) bit for the pivot pin. Round the edges of the tongue with a ⅛" (3mm)-radius roundover bit.

TIP

ALTERNATE TO #50 BIT

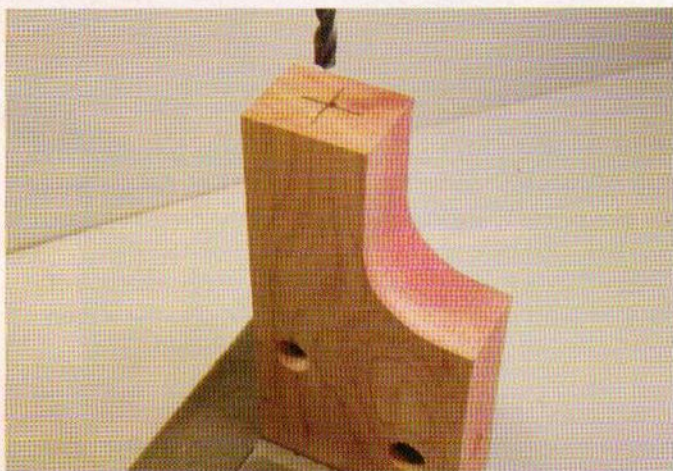
If you do not have a #50 drill bit, chuck a 3d finish nail in your drill to use as a bit. The nail will be used as the fastener when you attach the frame to the front axle.

Step 7: Cut the axles (G, J), front bolster (I), and front axle pivot support plate (H). Attach the patterns to the blanks and cut them with a scroll saw. Drill the #50 holes in the bolster.

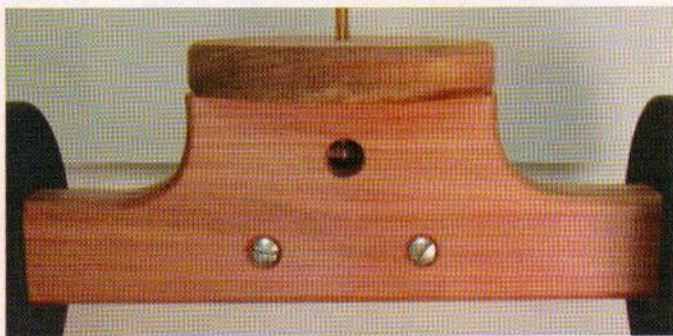


▲ Step 8: Start drilling the holes in the front axle.

Use a drill press and drill vise to hold the front axle. Drill and countersink two screw pilot holes and drill a $\frac{3}{8}$ " (10mm)-diameter hole for the pivot screw nut on the back of the piece as indicated on the pattern. Drill a $\frac{1}{64}$ " (5.75mm)-diameter hole from the top through the axle.



▲ Step 9: Drill the holes for the axle pegs. Drill $\frac{1}{32}$ " (9mm)-diameter by 1" (25mm)-deep holes in the sides of both axles for the axle pegs. The diameters of axle pegs can vary, so double check the diameter of the pegs you purchase.



▲ Step 10: Assemble the front axle. Glue and screw the bolster to the front side of the front axle, using the pilot holes. Center the pivot disk on the top hole, and glue and nail it in place. Drill a corresponding hole through the disc for the pivot screw. Position the pivot screw nut in the hole in the back of the axle.

Finishing the Wagon

Center the front and rear axles on the under side of the wagon box floor, $1\frac{1}{2}$ " (38mm) in from each end. Drill and countersink three holes through the floor to attach the axles. Use two wood screws for the back axle, and a machine screw for the front axle assembly. Thread the machine screw through the floor, through the pivot disk, and through the pivot screw nut placed in Step 10. Tighten the machine screw until the front axle is flush with the floor but still spins freely. Use a 3d finishing nail to attach the tongue to the bolster. Glue a piece of $\frac{1}{4}$ " (6mm) dowel into the hole in the end of the tongue. Paint the tires black. Apply a clear finish. Then, add glue to the holes in the axles and push axle pegs through the wheels and into the holes. Make sure the wheels spin freely on the pegs.

Materials & Tools

Materials:

- Pine, $\frac{3}{4}$ " (19mm) thick:
9" x 16" (229mm x 406mm)
- Red cedar, $\frac{1}{2}$ " (13mm) thick:
6" x 45" (152mm x 1143mm)
- Red cedar, $\frac{3}{4}$ " (19mm) thick:
2 $\frac{1}{2}$ " x 16" (64mm x 406mm)
- Dowel, $\frac{1}{4}$ " (6mm) diameter:
handle, $1\frac{1}{2}$ " (38mm) long
- Wood glue
- Wood screws, flat-head: 2 each
#8 x 1" (25mm) long and
#6 x 1 $\frac{1}{2}$ " (38mm) long
- Machine screw with nut,
flat-head: #8 x 2" (51mm)-long
- Axle pegs, $\frac{1}{32}$ " (9mm) dia.:
4 each 2 $\frac{1}{16}$ " (65mm) long
- Wheels, wooden: 4 each
3" (76mm) dia.
- Acrylic paint: black
- Finish of choice

Tools:

- Band saw or table saw
- Scroll saw blades: #9 or #12
reverse-tooth
- Drill press with vise
- Drill bits: $\frac{1}{64}$ " (5.75mm),
 $\frac{3}{8}$ " (10mm), $\frac{1}{32}$ " (11mm),
#50 wire size (or 3d finishing
nail)
- Pipe clamps
- Brad nailer or hammer
and brads
- Paintbrushes

SPECIAL SOURCES:

Wheels (part #71) and axle
pegs (part #323) are available
from Cherry Tree Toys,
800-848-4363,
www.cherrytreetoys.com.

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

Patterns for the
LITTLE RED WAGON are in
the pattern pullout section.

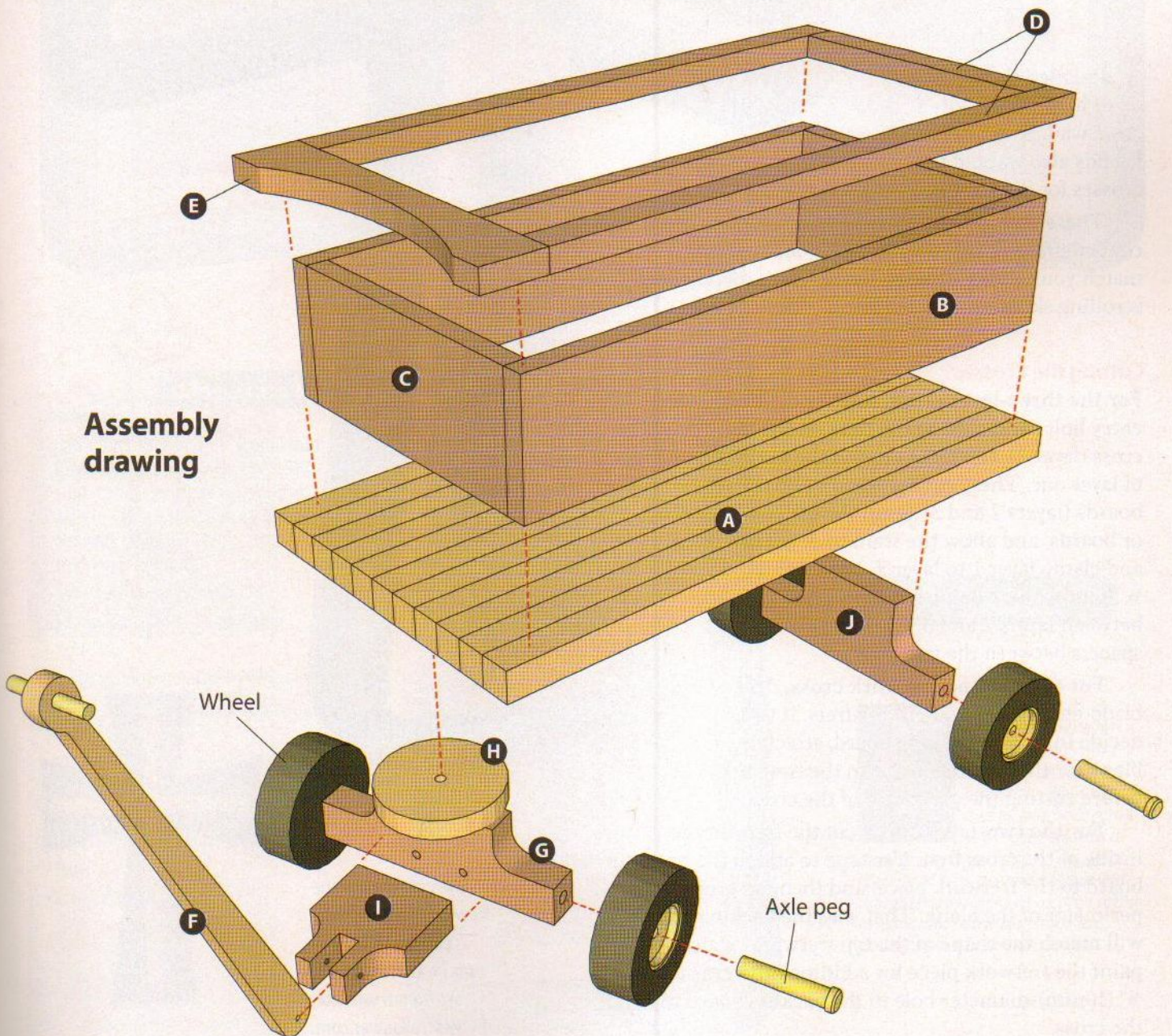


Dennis Simmons lives
in Rushville, IN. You may
contact him by e-mail at
Intarsiawood@hotmail.com.

Parts List

	Label	Quantity	Dimensions	Material
A	Wagon Box Floor	11	¾" x ¾" x 16" (19mm x 19mm x 457mm)	Pine
B	Wagon Box Sides	2	½" x 3" x 14¾" (13mm x 76mm x 375mm)	Red cedar
C	Wagon Box Ends	2	½" x 3" x 6½" (13mm x 76mm x 165mm)	Red cedar
D	Wagon Box Simple Trim	1	½" x 2" x 36" (13mm x 51mm x 914mm)	Red cedar
E	Wagon Box Curved Trim	1	½" x 1½" x 8¼" (13mm x 38mm x 209mm)	Red cedar
F	Tongue	1	½" x 7⁄8" x 12" (13mm x 22mm x 305mm)	Maple
G	Front Axle	1	¾" x 2½" x 6" (19mm x 64mm x 152mm)	Red cedar
H	Front Axle Pivot Support Plate	1	½" x 3" x 3" (13mm x 76mm x 76mm)	Red cedar
I	Bolster	1	¾" x 2½" x 3" (19mm x 64mm x 76mm)	Red cedar
J	Rear Axle	1	¾" x 2½" x 6" (19mm x 64mm x 152mm)	Red cedar

Assembly drawing



Cutting Fretwork Crosses

Create a variety of meaningful gifts

By Jay Hammerle

I designed these crosses to help fill my wife's cross wall. A few of her friends also wanted new crosses for their walls.

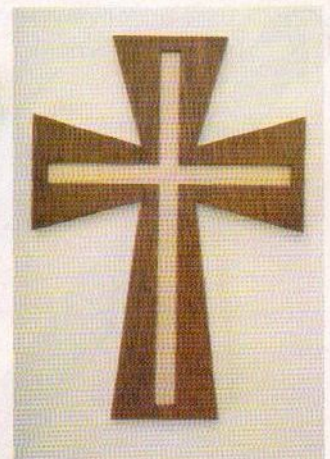
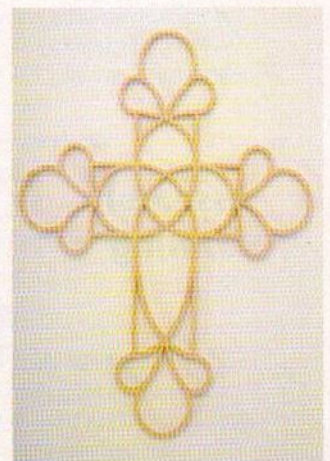
These crosses vary in difficulty; some are more challenging to cut than others. Choose one to match your ability or stretch a bit and expand your scrolling skills.

Cutting the Crosses

For the three-layer cross, start by drilling blade-entry holes and cutting the frets on the main cross (layer 1). Next, cut around the perimeter of layer one. Then, cut the backing board or boards (layers 2 and 3). Stain the backing board or boards, and allow the stain to dry. Then, glue and clamp layer 1 to layer 2. I use small circles of $\frac{1}{4}$ " (6mm)-thick Baltic birch plywood as spacers between layers 2 and 3. Glue and clamp the spacers between the two layers.

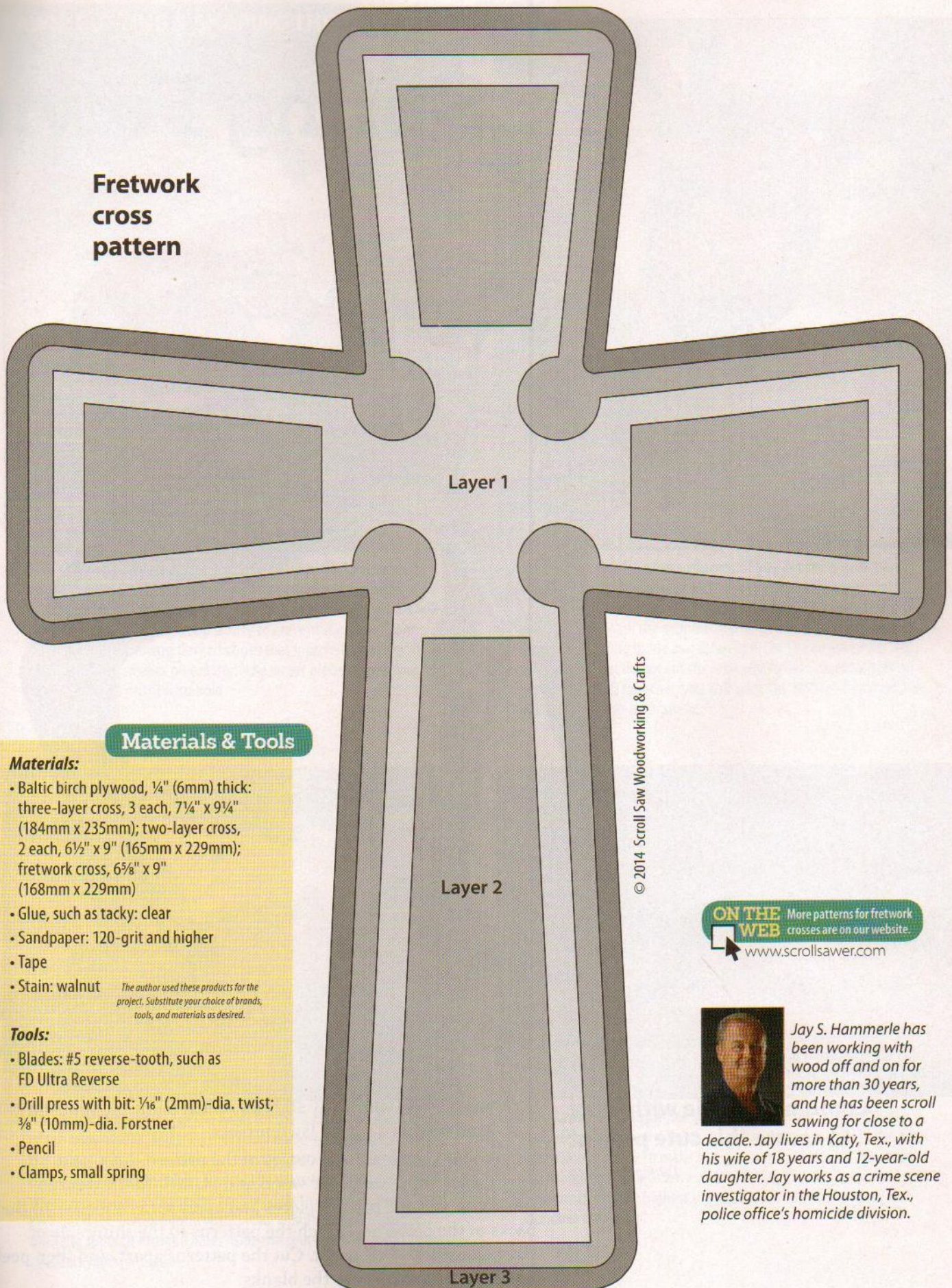
For the flowing fretwork cross, drill blade-entry holes and cut the frets. If you decide to make a backing board, attach the blank for the backing board to the fretwork before cutting the perimeter of the cross.

For the two-layer cross, cut the frets on the inside of the cross first. Use tape to attach the backing board to the fretwork piece, and then cut around the perimeter of the blank. That way, the backing board will match the shape of the top fretwork. Stain or paint the fretwork piece for additional contrast. Drill a $\frac{3}{8}$ " (10mm)-diameter hole in the backing board to hang the cross.



The patterns for the flowing fretwork cross (above, right) and two-layer cross (right) are on our website, www.scrollsawer.com.

Fretwork cross pattern



Materials & Tools

Materials:

- Baltic birch plywood, 1/4" (6mm) thick: three-layer cross, 3 each, 7 1/4" x 9 1/4" (184mm x 235mm); two-layer cross, 2 each, 6 1/2" x 9" (165mm x 229mm); fretwork cross, 6 5/8" x 9" (168mm x 229mm)
- Glue, such as tacky: clear
- Sandpaper: 120-grit and higher
- Tape
- Stain: walnut

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

Tools:

- Blades: #5 reverse-tooth, such as FD Ultra Reverse
- Drill press with bit: 1/16" (2mm)-dia. twist; 3/8" (10mm)-dia. Forstner
- Pencil
- Clamps, small spring

© 2014 Scroll Saw Woodworking & Crafts

ON THE WEB More patterns for fretwork crosses are on our website.

www.scrollsawer.com



Jay S. Hammerle has been working with wood off and on for more than 30 years, and he has been scroll sawing for close to a decade. Jay lives in Katy, Tex., with his wife of 18 years and 12-year-old daughter. Jay works as a crime scene investigator in the Houston, Tex., police office's homicide division.

Spring Fawn



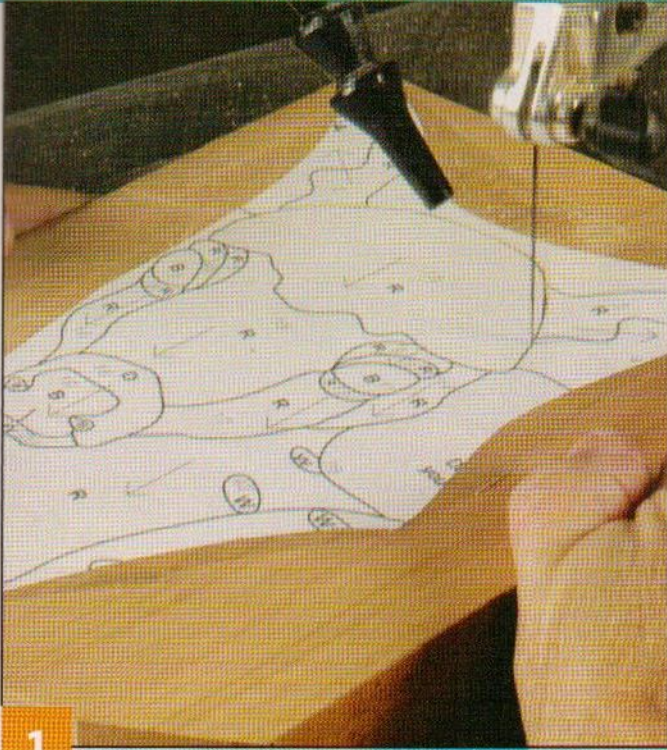
Combine intarsia with inlay to create this cute project

By Kathy Wise

You can test your inlay abilities or just paint the spots on this newborn spring fawn project.

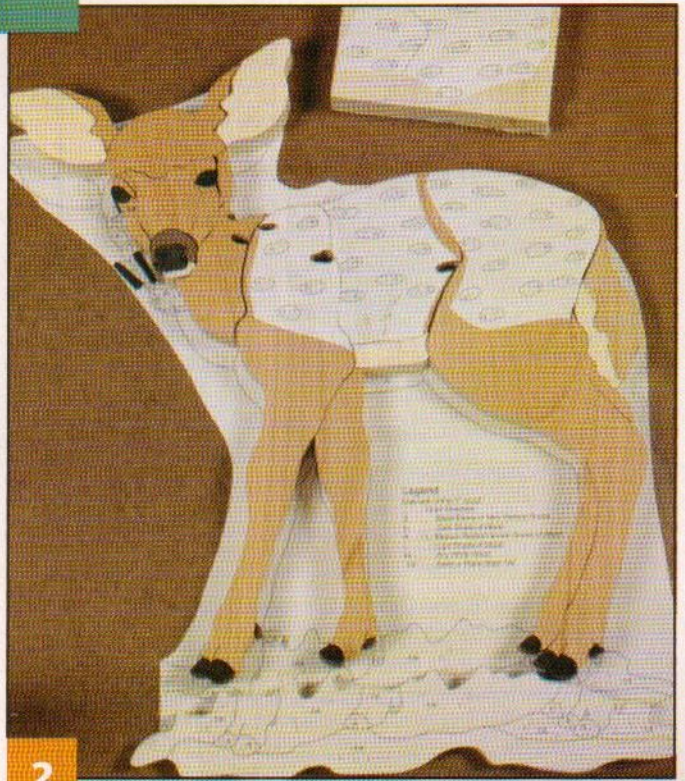
To start, make several copies of the pattern. Keep one as a master copy. Select the wood and plane it to the desired thickness. Cut the pattern pieces and apply spray adhesive to the backs of the patterns. Attach the patterns to the shiny side of clear Con-Tact® shelf paper. Cut the patterns apart, and then peel and stick the patterns to the blanks.

FAWN: CUTTING & SHAPING THE PIECES



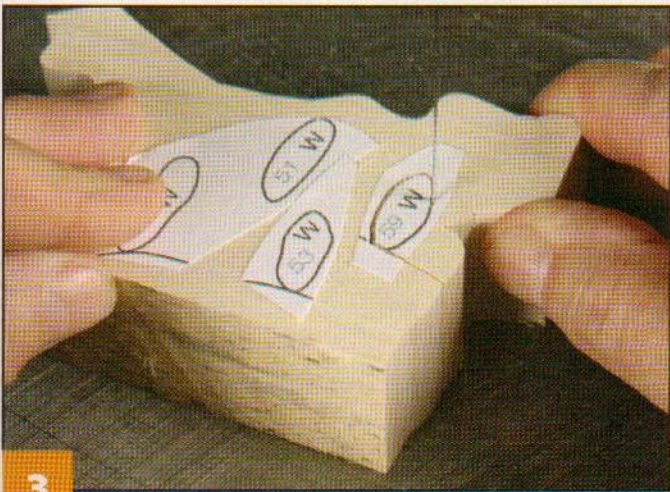
1

Cut the pieces. Use a #5 reverse-tooth blade to cut slowly on the lines. Be careful where two pieces of different colored wood meet; the more accurately you cut, the better the pieces will fit together. Cut thicker wood slowly to prevent the blade from bending and producing slanted edges that interfere with the fit. Always cut the smaller pieces from the larger pieces to give you as large a piece as possible to hold.



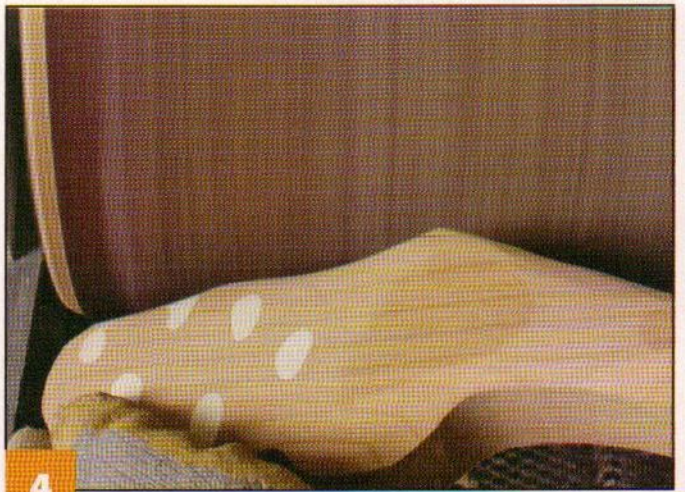
2

Check the fit of the pieces. As you cut the pieces, mark the number on the bottom with a pencil so you sand the right side. Place the pieces on a pattern taped to the backing board to check the fit. Mark the sanding depths on the sides of the pieces using the shaping guide as a reference. Cut the perimeter of the base pieces, but do not cut the area where the feet attach. After gluing the fawn together, you will trace the feet on the top of the pattern to get an accurate fit.



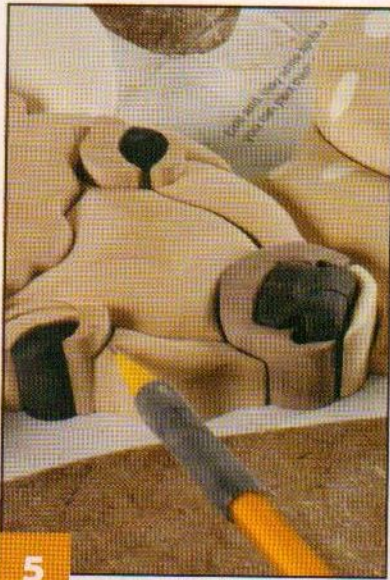
3

Inlay the spots. Cut the holes for the spots along the edges of the body blanks, and then drill small blade-entry holes and cut the holes for the other spots. Cut exactly on the lines to remove them with the blade. When you cut the spots from the contrasting wood, cut just outside the line for the spots to eliminate the kerf. Sand the pieces lightly with a rotary tool or spindle sander until the spots fit into the holes. Glue the spots in place with cyanoacrylate (CA) glue.



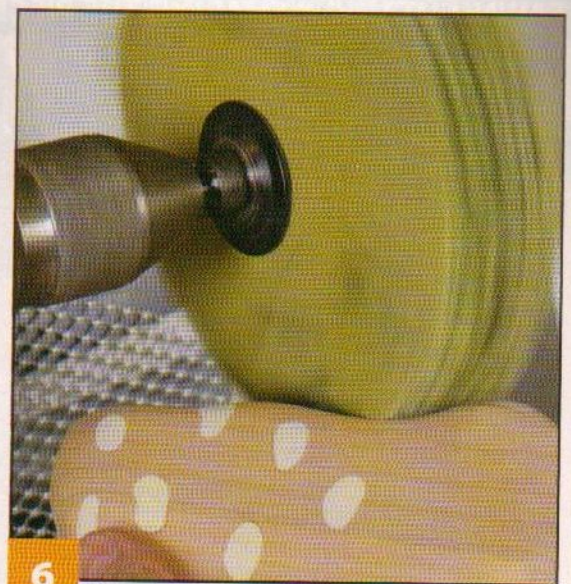
4

Sand and shape the pieces. Use a drum sander to sand each piece down to the levels you marked in Step 2. Hold the piece so the line is visible to make sure you don't sand away too much. Start sanding with the lowest pieces (1, 4, 29, 28, 42); by the time you get to the highest pieces (22, 25, 13), you're really just rounding the edges.



5

Check the fit and flow of the pieces. Place the pieces on the pattern to check the fit and overall appearance, and make any necessary adjustments. Mix cherry sawdust with CA glue and use it to fill any gaps around the spots. Let the glue dry, and lightly sand any excess glue off the surface.



6

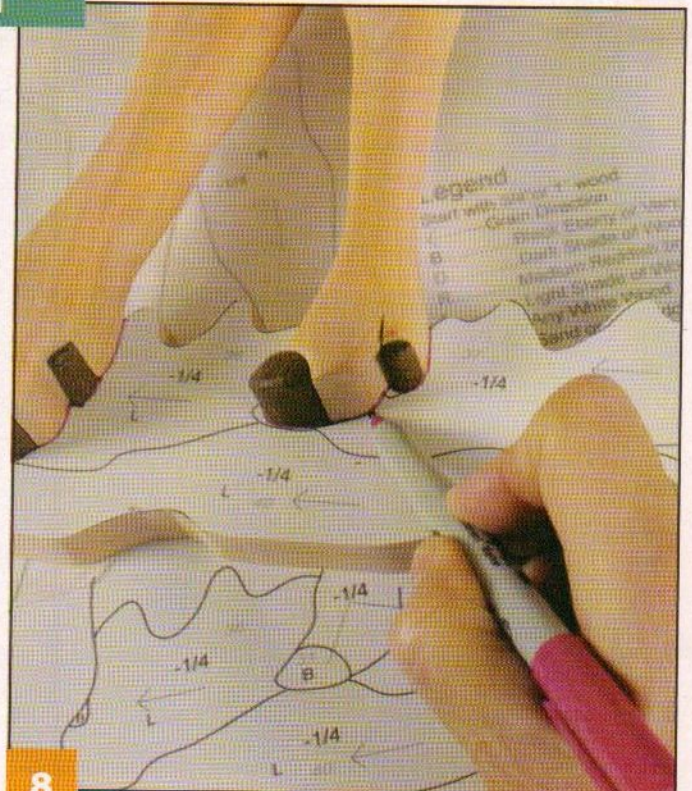
Buff the pieces. I use a 220-grit sanding mop to buff all of the pieces. This tool removes any scratches left by coarser grits of sandpaper and creates a smooth surface that makes it easy to apply a finish.

FAWN: ASSEMBLING & FINISHING THE PROJECT



7

Assemble the project. Place the pattern on a flat surface and cover it with waxed paper. Starting with the head, place dots of CA glue between three or four pieces and hold the pieces together until the glue sets. Then, move on to the adjoining pieces. It's possible to use CA glue accelerator, but you have to get the parts into position quickly. Then, use a portable drum sander, such as a Sand Flee, to flatten the bottom of the intarsia to ensure a tight joint between the intarsia and backing board.



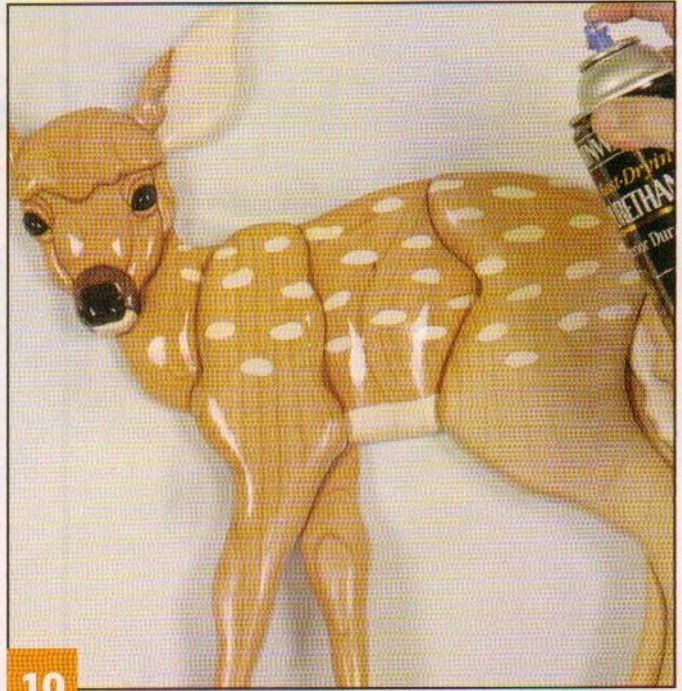
8

Cut the base. Place the fawn on top of the base and retrace the outlines of the feet. Cut the base, and then shape, sand, and glue it together. Then, place the fawn on top of the backing board and trace the outline. Cut $\frac{1}{8}$ " (3mm) inside the lines, and sand the edges if needed.



9

Attach the fawn to the backing board. Turn the intarsia face down and apply dots of CA glue and wood glue to the back. Spray CA glue accelerator onto the backing board. Place the backing board in position and hold for about 30 seconds until the glue sets. Flip the piece right side up and apply uniform pressure to lock everything in place.



10

Apply the finish. I use a clear satin spray finish. 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.

Materials:

- Red wood such as cherry, 1" (25mm) thick: 8" x 40" (203mm x 1016mm)
- White wood such as poplar, 1" (25mm) thick: 6" x 12" (152mm x 305mm)
- Dark wood such as wenge, 1" (25mm) thick: 2" x 4" (51mm x 102mm)
- Dark wood such as black walnut, 1" (25mm) thick: 3" x 4" (76mm x 102mm)
- Black wood such as ebony, 1" (25mm) thick: 2" x 3" (51mm x 76mm)
- Light wood such as figured maple, $\frac{3}{8}$ " to $\frac{3}{4}$ " (16mm to 19mm) thick: 4" x 16" (102mm x 406mm)
- Tempered hardboard, $\frac{1}{8}$ " to $\frac{1}{4}$ " (3mm to 6mm) thick: 20" x 20" (508mm x 508mm)
- Glue: cyanoacrylate (CA) glue with accelerator; wood
- Shelf paper, such as Con-Tact® brand: clear
- Spray adhesive
- Acrylic paint (optional, to paint spots): white

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

Materials & Tools

- Finish: clear satin spray, clear gloss
- Mirror-style hanger

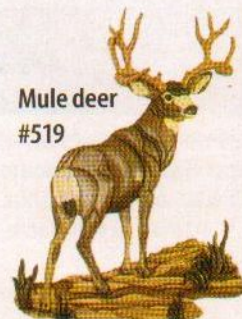
Tools:

- Blades: #5 reverse-tooth
- Sanders: pneumatic drum, portable drum, sanding mop
- Rotary tool or oscillating spindle sander
- Paintbrush

Patterns for the **SPRING FAWN** are in the pattern pullout section.



Nationally acclaimed intarsia artist Kathy Wise has written two books and more than 39 articles. Her new book, *Intarsia Birds: Woodworking the Wise Way*, is available now for \$23 including shipping. For a free catalog of 500 patterns, contact: Kathy Wise Designs Inc., P.O. Box 60, Yale, Mich. 48097; fax 810-387-9044; www.kathywise.com; kathywise@bignet.net.



Mule deer #519

Locking Heart Box



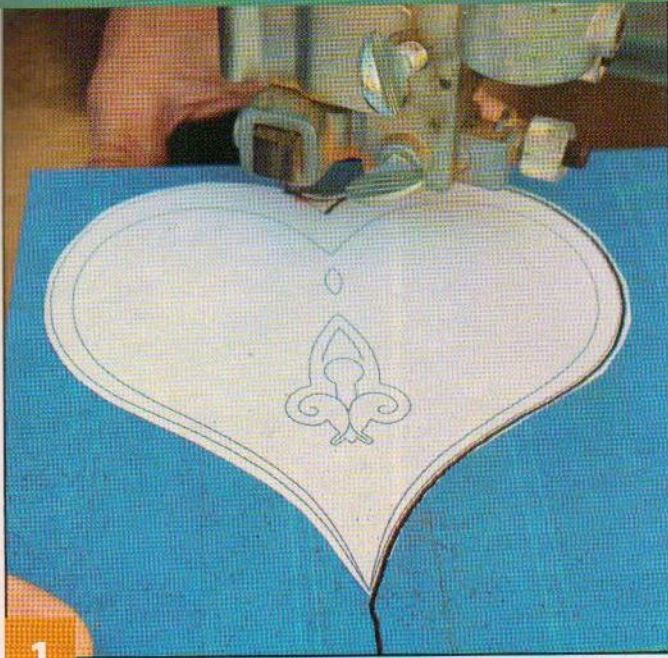
A layered design and simple lock form a beautiful but easy box

By John Rhyne

The locking heart box is a small, intimate box perfect for that special piece of jewelry. Gradual sweeping lines combined with figured wood give the box a romantic air. This gift will be treasured by a special person in your life.

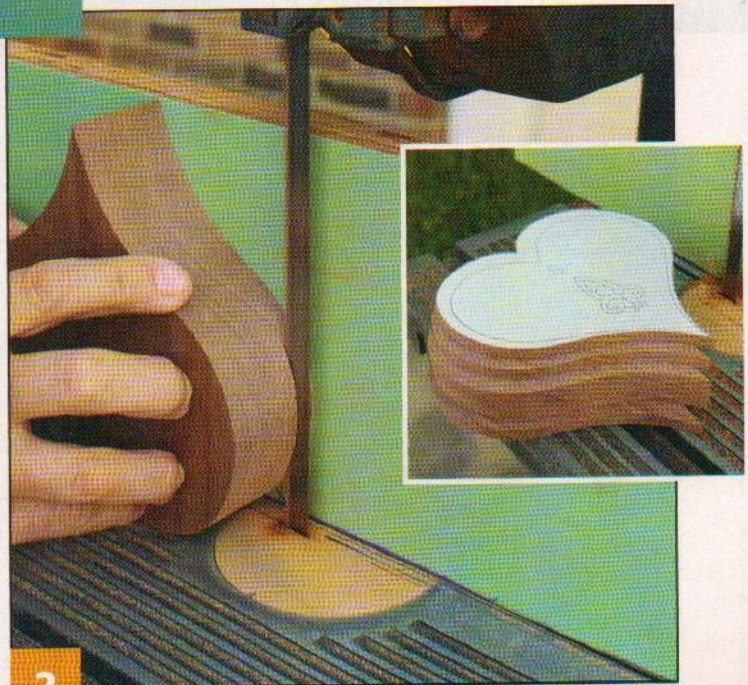
I make the box by cutting slices off a single thick piece of wood using a band saw. See page 58 for instructions to make the box without a band saw. Plan ahead and read all instructions thoroughly before you begin work.

HEART: CUTTING THE PIECES



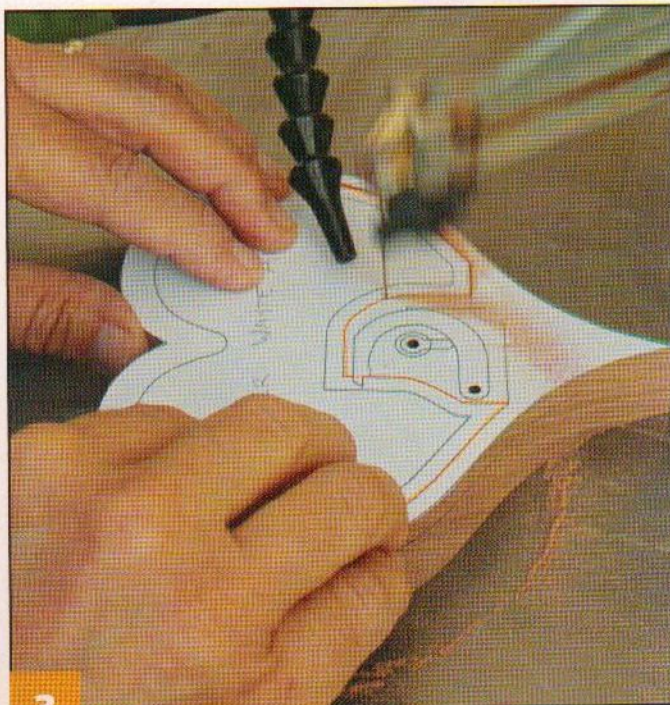
1

Cut the perimeter. Attach blue painter's tape to the blank with the point of the heart parallel with the direction of the grain. Cut just outside the outer line with a band saw and $\frac{1}{4}$ " (6mm)-wide blade, or a scroll saw with a large blade. Remove the saw marks and sand up to the line with an oscillating spindle sander.



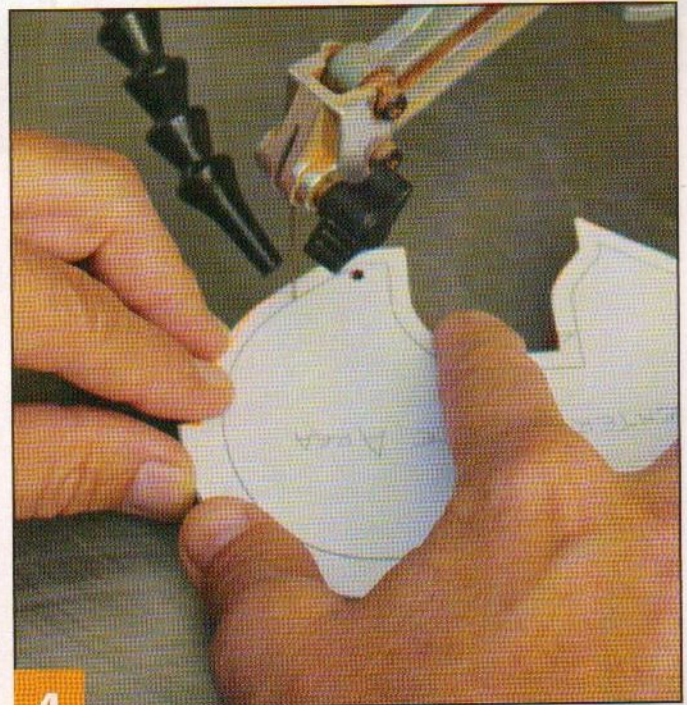
2

Slice the heart into sections. Cut a $\frac{1}{4}$ " (6mm)-thick slice from the front/top (B) and back (F) using the band saw with a $\frac{1}{2}$ " (13mm) resaw blade. Remove the saw marks with a 4" (102mm) belt sander and set aside pieces B and F. Cut another $\frac{1}{4}$ " (6mm)-thick slice (C) from the center of the heart. Remove the saw marks and apply a well-trimmed inner-workings pattern to piece C. Use hot glue in the center waste area to tack C back to the piece it was just cut from.



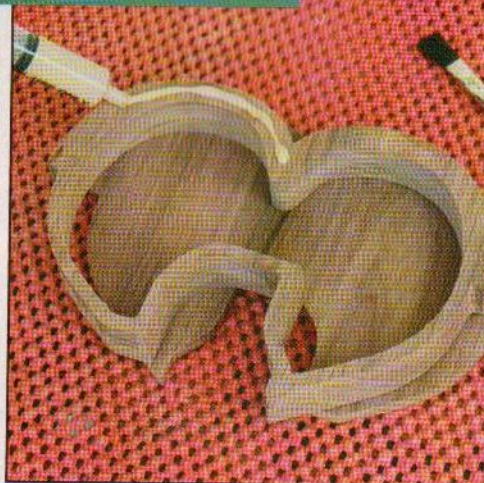
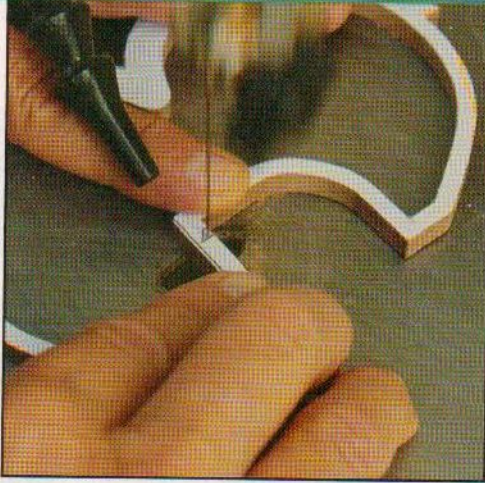
3

Cut the box section free from the locking section. Use a $\frac{1}{8}$ " (3mm)-diameter brad-point bit to drill $\frac{5}{8}$ " (16mm)-deep holes for the key alignment rod (L1) and the lock swing arm pivot rod (L2). Use a #5 blade to cut the locking section free from the box, forming pieces C2 and D2. Highlight the line to make sure you cut the correct one.



4

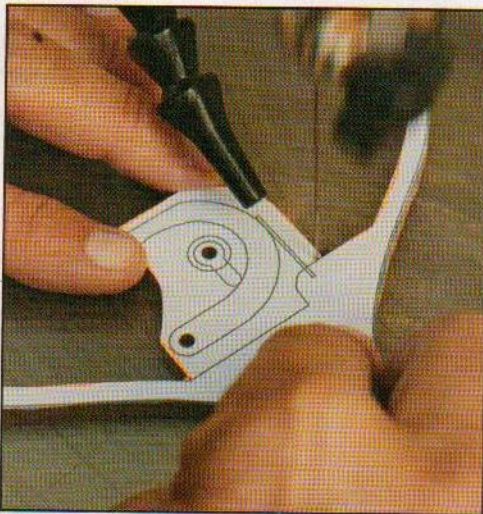
Cut the box section. Use the band saw to slice $\frac{3}{16}$ " (5mm) from the bottom of the box portion to form piece E, remove the saw marks, and set the piece aside. Drill a blade-entry hole and cut the inside of the box. This should free C1 from D1.



5

Prepare the lock housing.

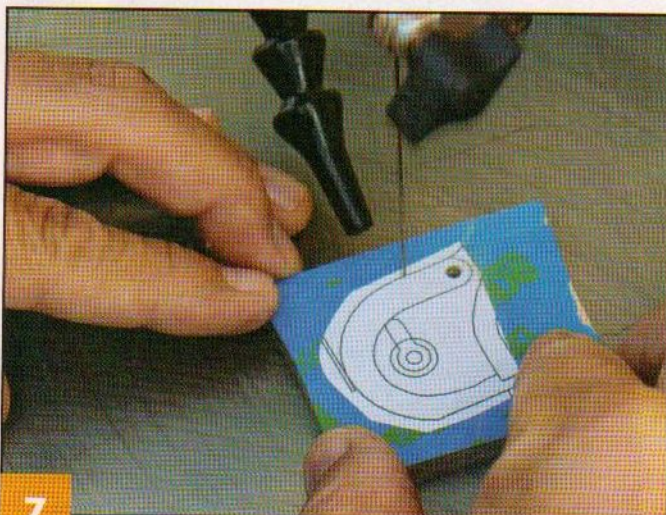
Cut the notch for the lock swing arm in C1 only. Glue and clamp C1 to D1. Sand the inside of the box smooth with an oscillating spindle sander, and then glue and clamp E to the bottom of the C1/D1 assembly. Sand the outside of the box smooth, but do not sand too much from the bottom of the box where it engages the lock.



6

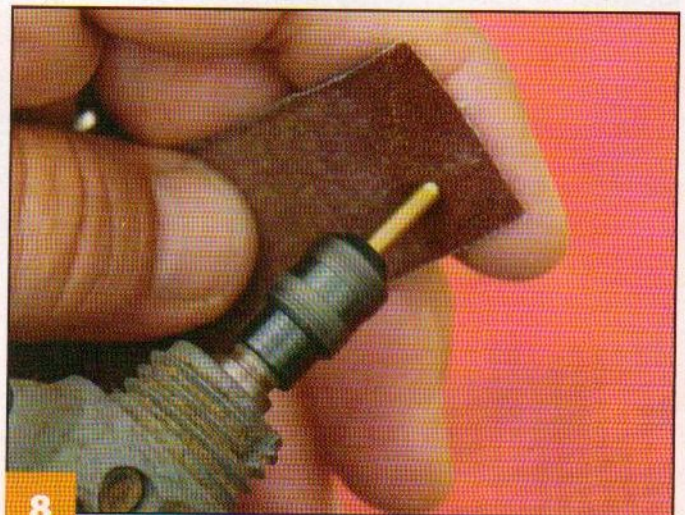
Make the lock housing.

Cut the lock section free from C2. Then, cut the notch for the spring. Glue and clamp C2 to D2. Use an oscillating spindle sander to clean up the glue lines, and then glue the C2/D2 assembly to F.



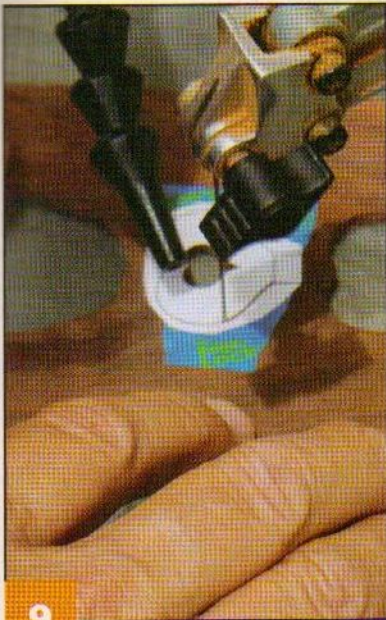
7

Cut the lock swing arm and the spring. Attach a pattern for the lock swing arm (G) to 1/4" (6mm)-thick Baltic birch plywood. Use a 1/8" (3mm)-diameter brad-point bit to drill the hole for the swing arm pivot, and cut the arm with a #5 blade. Cut a piece of maple or cherry to size to form the spring (K). You may need to try several before you find one that bends without breaking and springs back to shape.



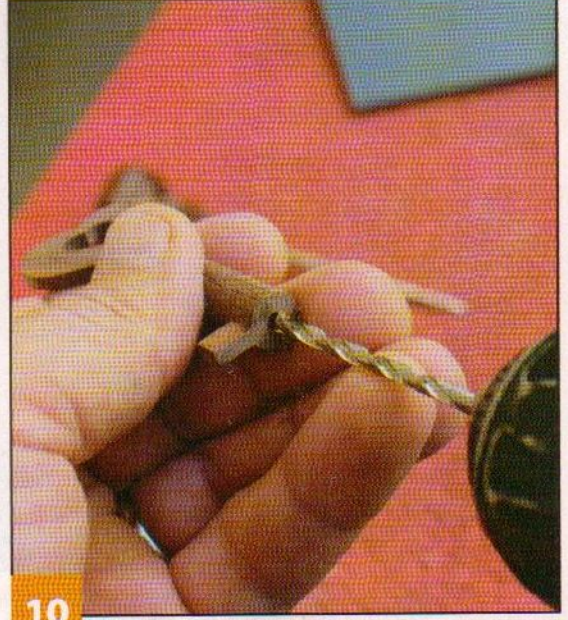
8

Cut and shape the rods. Cut the key alignment rod (L1) and swing arm pivot rod (L2). Chuck each rod in a rotary tool and hold the spinning rod against sandpaper to round one end, and then polish both rods.



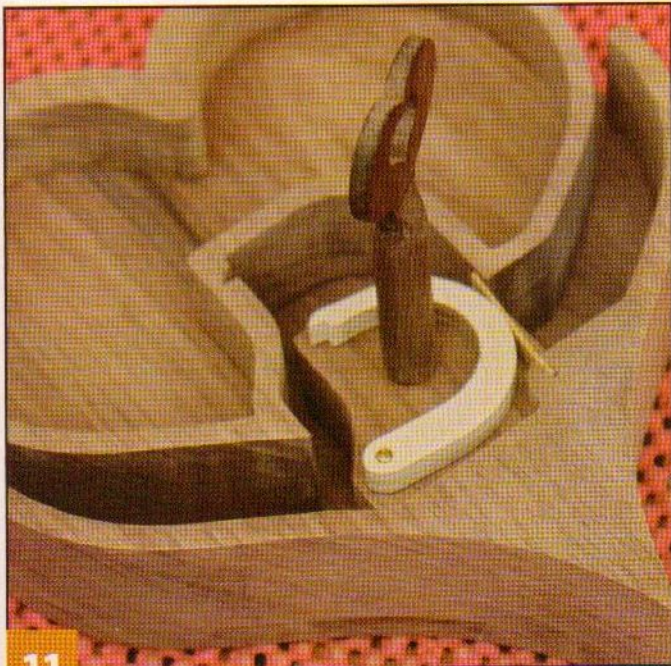
9

Make the key handle and shaft. Cut the key handle (H) and lever (I) with a #5 blade. To cut the shaft (J), cut the dowel to length. Then, drill a $\frac{3}{8}$ " (10mm)-diameter hole in the center of a piece of scrap $\frac{1}{2}$ " (13mm)-thick plywood. Set a table saw fence to cut down the center of the hole, and set the blade to cut $\frac{3}{16}$ " (5mm) deep. Use hot glue to lock the dowel in the hole. Cut the slot down the center of the dowel. Flip the dowel and cut a parallel slot in the other end.



10

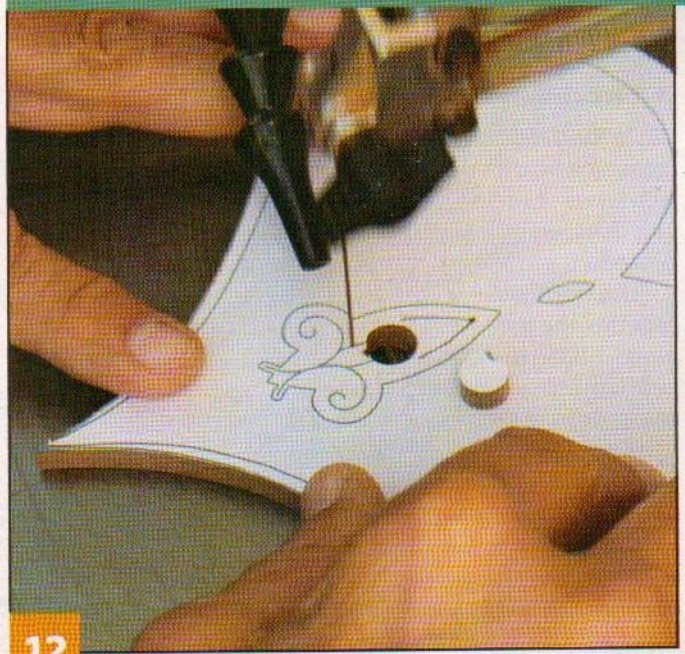
Finish the key. Glue the key handle (H) and lever (I) into the slots. Use a $\frac{1}{2}$ " (4mm)-diameter brad-point bit to drill a $\frac{1}{2}$ " (13mm) deep hole in the center of the bottom of the shaft (J) for the key alignment rod (L1). Use the oscillating spindle sander to blend the handle with the shaft and sand the key smooth with 400-grit sandpaper.



11

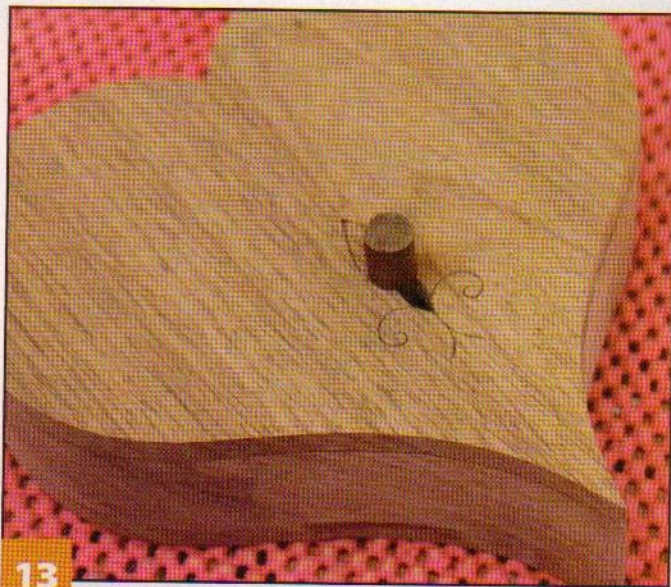
Test the lock mechanism. Dry-assemble the lock components into the lock housing. Test that the box will slide into place and lock, and that the key will engage the swing arm properly. Sand the wood with 400-grit paper and polish it with wadded-up waxed paper to create a slick surface for the swing arm (G). When the lock is working properly, glue the spring (K) and the swing arm pivot rod (L2) in place. Do not put finish on any part of the working lock mechanism because humidity will make it sticky.

HEART: FINISHING THE BOX



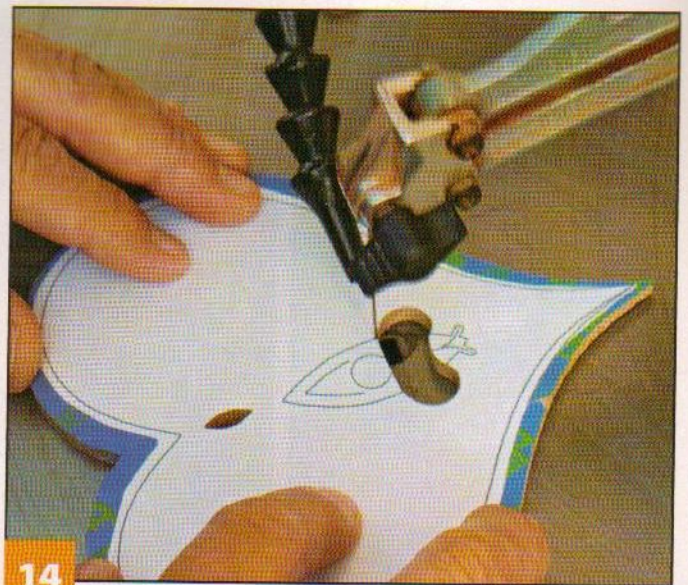
12

Cut the top (B) fretwork. Drill a $\frac{1}{32}$ " (1mm)-diameter blade-entry hole at the top of the peak. Cut along the vein line with a #2 blade. Then, cut along the vein line with a #5 blade to disguise the blade-entry hole. Drill a $\frac{1}{8}$ " (3mm)-diameter blade-entry hole for the keyhole and cut it with a #5 blade. Sand the top smooth with a palm sander.



13

Glue the top in place. Drill a $\frac{1}{8}$ " (3mm)-diameter hole in the center of a $\frac{3}{8}$ " (10mm) dowel. Place this on the key alignment rod and clamp the top in position. Remove the dowel and double check that the key and lock mechanism move properly. Then, replace the dowel, and glue and clamp the top in place. Smooth the sides of the box with an oscillating spindle sander. Round the corners of the top and bottom edges of the box, and finish-sand it with 400-grit paper.



14

Finish the box. Attach the overlay pattern to the blank (A), drill blade-entry holes, and cut the frets with a #5 blade. Then, cut the perimeter and sand the wood smooth. Round the corners with 400-grit sandpaper. Glue and clamp A to B. Polish the wood with 0000 steel wool, and finish the piece with wipe on polyurethane. Apply a coat of wax to the dry finish to create a high luster.

Making the Box Without a Band Saw

While the band saw makes it easier to create the box, it's possible to stack thin layers of walnut to make the box. This does require a few changes to the procedure.

Use the drawing as a guide to stack together the different thicknesses of wood. Attach the pattern to the top and cut the outline with a #12 skip-tooth blade. Separate the top two layers (B, C) and the bottom layer (F) from the stack. Attach a well-trimmed copy of the inner workings pattern to C. Use hot glue in the center waste area to attach C to D. Follow Step 6 to drill the holes and cut the locking section free; this separates C1, D1, and E1 from C2, D2, and E2. Then, separate E1 from D1, drill a blade-entry hole, and cut the center section. This will free C1 from D1. Glue and clamp together C1, D1, and E1, and follow the instructions from Step 7 onward to finish the box.

A $\frac{1}{8}$ "-thick *Do not stack-cut with other layers*

B $\frac{1}{4}$ "-thick

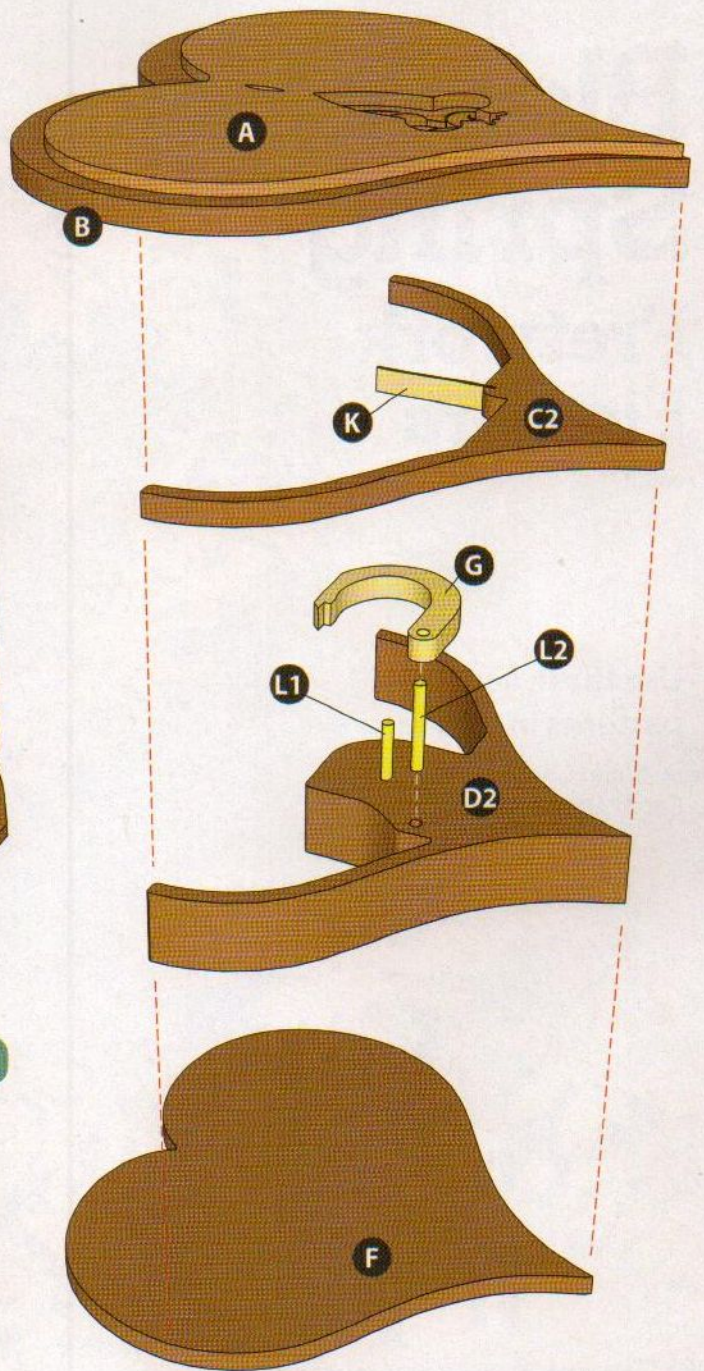
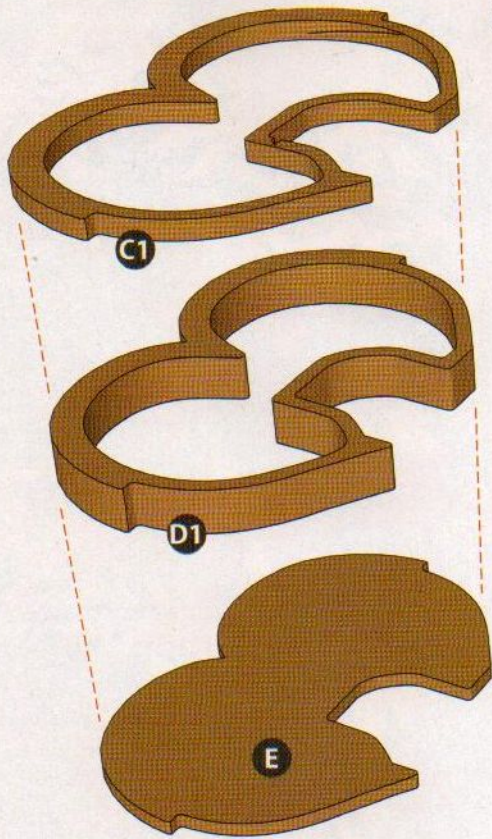
C1 C2 $\frac{1}{4}$ "-thick

D1 D2 $\frac{1}{4}$ "-thick

E1 E2 $\frac{3}{16}$ "-thick

F $\frac{1}{4}$ "-thick

Heart box assembly drawing



Materials & Tools

Materials:

- Walnut, 1 5/8" (41mm) thick: top (B), center (C, D), back (E), back (F), 7" x 7" (178mm x 178mm) OR walnut, 1/4" (6mm) thick: 4 each 7" x 7" (178mm x 178mm) and 3/16" (5mm) thick: 7" x 7" (178mm x 178mm)
- Walnut, 1/8" (3mm) thick: key handle (H), lever (I), 2" x 2" (51mm x 51mm)
- Maple, 1/8" (3mm) thick: overlay (A), 6" x 6" (152mm x 152mm)
- Maple or cherry, 1/32" (1mm) thick: spring (K), 1/8" x 1" (3mm x 25mm)
- Baltic birch plywood, 1/4" (6mm) thick: swing arm (G), 2" x 2" (51mm x 51mm)
- Brass rod, 1/8" (3mm) dia.: key pin (L1) 5/8" (16mm) long; swing arm pin (L2) 1/2" (13mm)
- Spray adhesive
- Dowel, walnut, 5/16" (8mm) dia.: key shaft (J), 1 3/4" (44mm) long
- Sandpaper: assorted to 400 grit

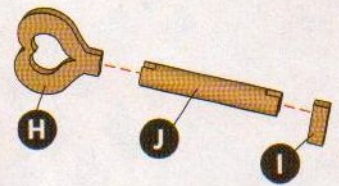
- Dowel, 5/16" (8mm) dia.: scrap (see Step 13)
- Blue painter's tape
- Wood glue
- Polyurethane, wipe-on
- Steel wool: 0000
- Wax

Tools:

- Band saw with blades: 1/4" (6mm), 1/2" (13mm)
- Scroll saw with blades: #2, #5, #9 or #12 (optional)
- Table saw
- Sanders: belt, oscillating spindle, palm
- Rotary tool
- Drill press with bits: 1/32" (1mm), 1/8" (3mm) dia. brad-point
- Hot glue gun
- Clamps

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

Patterns for the **LOCKING HEART 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 with his daughter Regan. Check out more of John's work by searching for his name on Flickr and YouTube. Contact John at jrpuzzleboxes@yahoo.com.

Blooming Spring Fretwork Flowers

Use these versatile
patterns in several ways

By Gloria Cosgrove
Cut by Leldon Maxcy



These fun fretwork designs can be used any number of ways, from wall hangings to photo frames. Use your imagination to come up with your own unique project. To get you started, we've developed a way to use each design.



Fretwork rose pattern

Flower Basket

Drill blade-entry holes and cut the fretwork for the flowers in the basket design. Create a stack of the fretwork and the backing board, and cut around the perimeter of the design. Separate the stack and sand both pieces smooth. Dab acrylic paint on the backing board so the colors are visible through the frets and accent the work. Glue the fretwork to the backing board.

Simple Rose

Cut the rose fretwork from an attractive hardwood. If you choose thin wood, you can frame it in a shadow box. Cut from thicker wood, it can be hung directly on the wall with or without a backing board.

Fretwork Frame

Cut the fretwork for the heart-shaped flower design. Then, cut the backing board, and use the backing board as a guide to trim the photo. Use double-sided tape or spray adhesive to attach the photo to the backing board, and use rare earth magnets or small screws in the indicated areas to hold the backing board to the fretwork frame. Attach a small hanger with small screws or epoxy.

Materials & Tools

Materials (all projects):

- Spray adhesive
- Finish

Flower Basket

- Baltic birch plywood, $\frac{1}{8}$ " (3mm) thick: 2 each $6\frac{1}{4}$ " x $7\frac{1}{4}$ " (159mm x 184mm)
- Wood glue
- Acrylic paints: assorted colors

Simple Rose

- Mahogany, $\frac{3}{4}$ " (19mm) thick: 6 " x $9\frac{1}{4}$ " (152mm x 235mm)

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

Fretwork Frame

- Baltic birch plywood, $\frac{1}{8}$ " (3mm) thick: 2 each 8 " x $8\frac{1}{2}$ " (203mm x 216mm)
- Double-sided tape (optional)
- Small screws or rare earth magnets
- Small hanger
- Epoxy

Tools (all projects):

- Blades: #3 reverse-tooth
- Drill with assorted small bits
- Paintbrushes
- Screwdriver



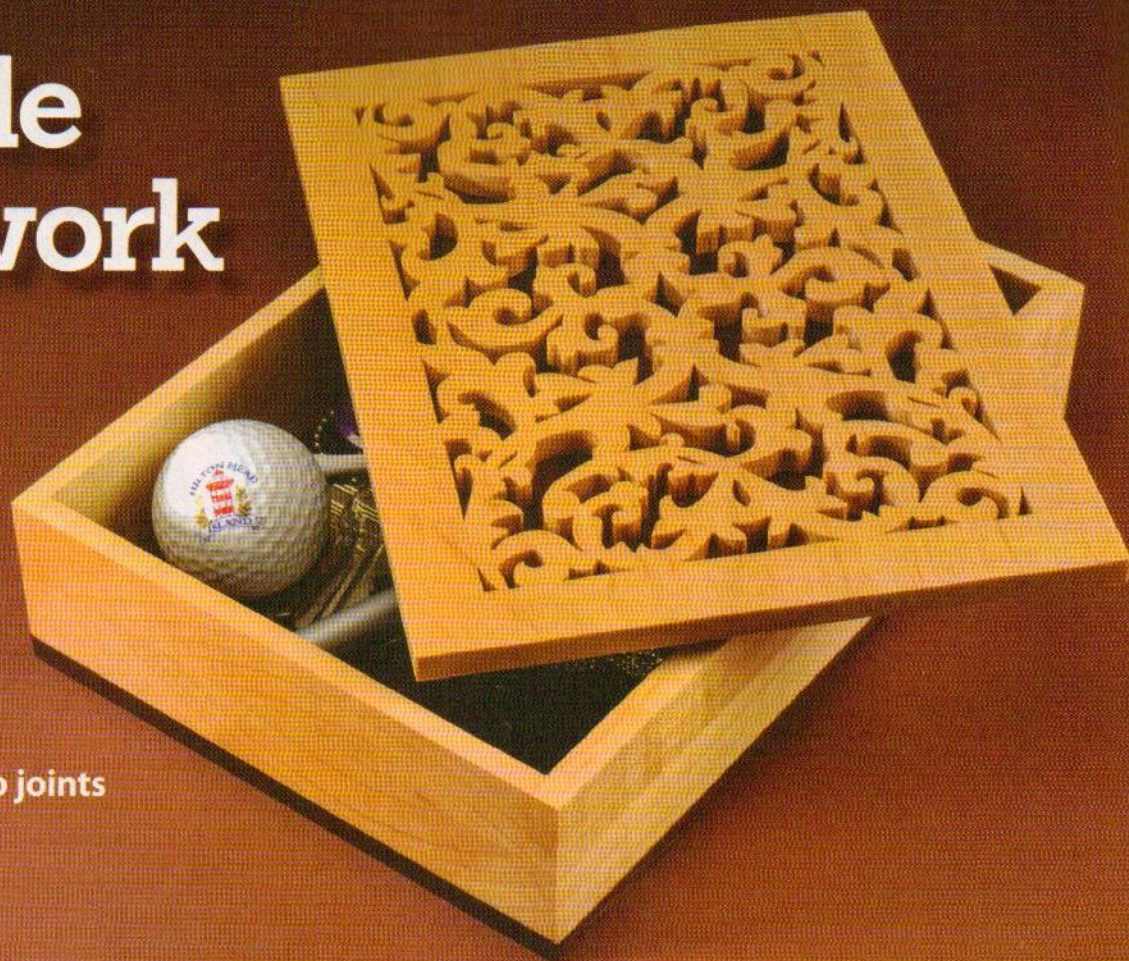
© 2014 Scroll Saw Woodworking & Crafts

Additional patterns for the **BLOOMING SPRING FRETWORK** are in the pullout section.



Art has always been a part of Gloria Cosgrove's life. Gloria started sketching as a child. She quilted and worked with pastels, watercolors, and oil paints before discovering scherenschnitte (paper cutting). With her daughter, Alison, she maintains a mail-order business selling original artwork and papercutting patterns. For more of her work, visit www.papercuttingsbyalison.com.

Simple Fretwork Box



Make a box using just four pieces—no joints

By Sue Mey
Cut by Leldon Maxcy

While the fretwork will take a bit of time to cut, the simple ring-style box sides make this project easy to finish in a weekend. If you plan to make more than one box, stack-cut the fretwork lids to further increase your production speed. If you have the tools, you can cut the straight edges of the box pieces with a band saw or table saw.

Making the Box

Start by drilling blade-entry holes and cutting the fretwork; cut the perimeter last. Then, drill a blade-entry hole and cut the center out of the box sides. Choose a blade based on the thickness and hardness of the wood. Stack the box-sides blank with the bottom blank and cut the perimeters of both. Place the box sides on the lid-liner stock and trace the inside of the sides piece. Cut along the line and test the fit of the liner in the sides. Sand any tight areas.

Sand all of the surfaces, and round the outer edges of the box slightly. Remove all of the sanding dust. Then, flip the lid upside down, and apply glue to the wood between the frets. Use the box sides to help you position the lid liner on the lid. Carefully lift off the sides and clamp the liner to the lid, and glue and clamp the bottom to the sides. Allow the glue to dry, and then apply several thin coats of clear spray varnish to the box and lid. You could also apply flocking to the inside of the box.

Materials & Tools

Materials:

- Maple, 1½" to 2" (38mm to 50mm) thick: box sides 7" x 9" (178mm x 230mm)
- Maple, ¼" (6mm) thick: lid, 7" x 9" (178mm x 230mm)
- Walnut, ¼" (6mm) thick: bottom, 7" x 9" (178mm x 230mm)
- Walnut, ⅛" (3mm) thick: lid liner: 7" x 9" (178mm x 230mm)
- Tape: masking or blue painter's

- Temporary bond spray adhesive or glue stick
- Sharp pencil
- Wood glue
- Sandpaper
- Spray varnish: clear

Tools:

- Blades: #3 and #12 reverse-tooth
- Drill press with bits: ⅛" (3mm), ¼" (1mm)
- Disc sander
- Clamps

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

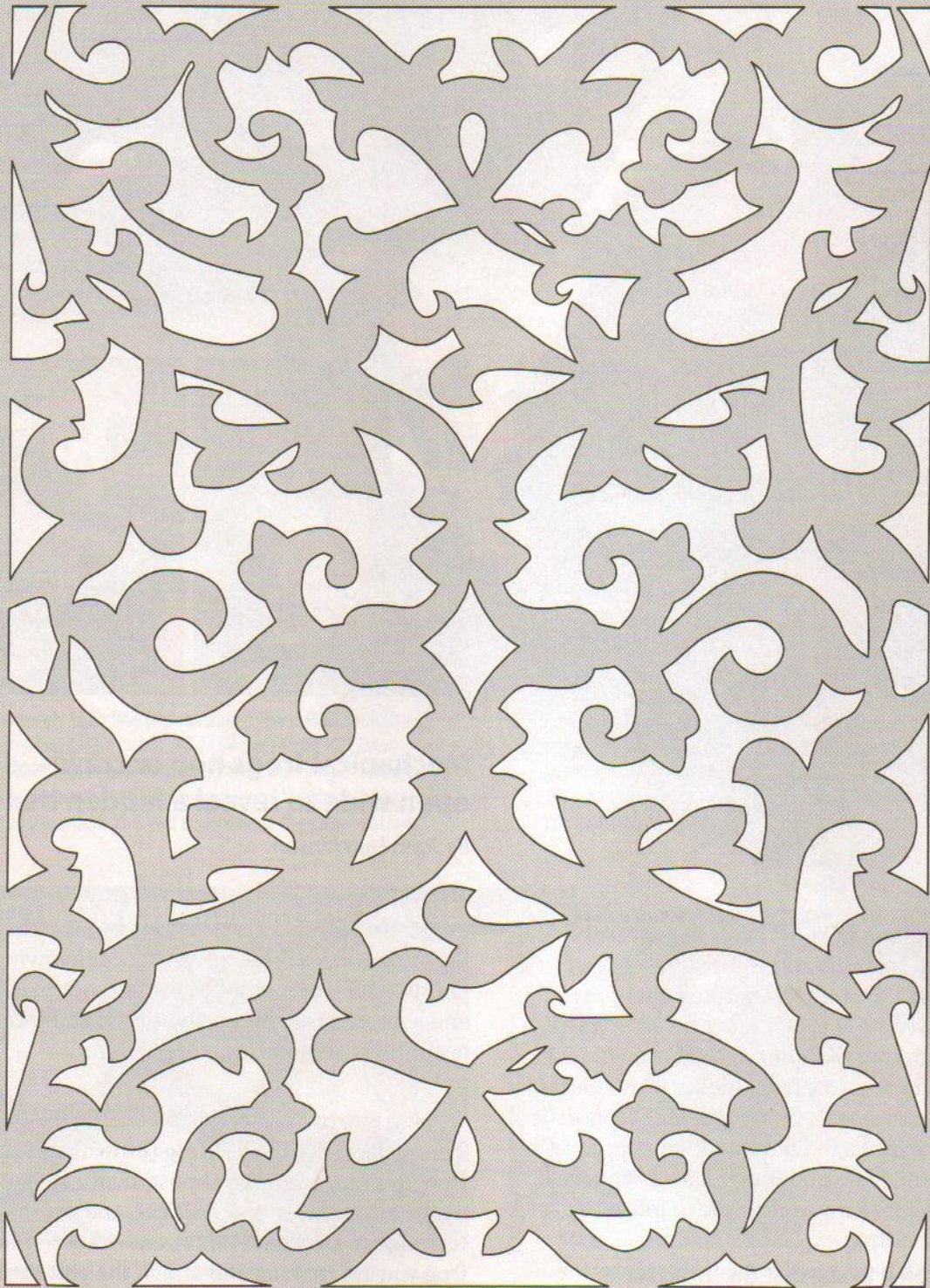


Sue Mey lives in Pretoria, South Africa. To see more of her work, including a wide variety of patterns and pattern-making tutorials available for purchase, visit www.scrollsawartist.com. She can be contacted at suem@storage.co.za. Her pattern book,

Lighted Scroll Saw Projects, is available from www.schifferbooks.com and other outlets.

Fretwork box and lid pattern

Box side



A Tale of Two Frogs



Mechanical frogs hop or crawl—and open wide to reveal a hidden box

By John Hutchinson

Somewhere along the line, my frog and toad boxes, in all their iterations, became a rite of summer. Because I dislike the confinement of my shop when the weather's nice, I move an assortment of small woodworking tools out to our covered deck (appropriately adjacent to a frog-filled stream) and begin to produce the year's brood that will eventually become gifts to friends and family. What started as a slavish copy of an iconic pull toy by David Wakefield have now evolved into my multicolor rainforest frog and ponderous bullfrog.

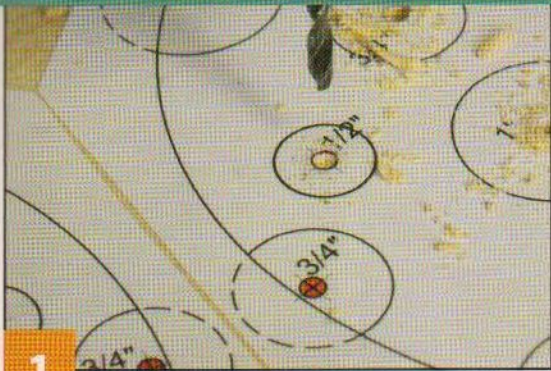
It's not a stretch to say that the boxes have developed through the process of natural selection. Every year I make a mental list of tips on how I'll make them better (okay, more outlandish) the next time. I encourage everyone who decides to take on this

project to use my latest versions as a starting point for his or her own subspecies and accompanying stories. For me, this one's about well-used toys that grew up and accepted the responsibilities of adulthood by becoming useful boxes.

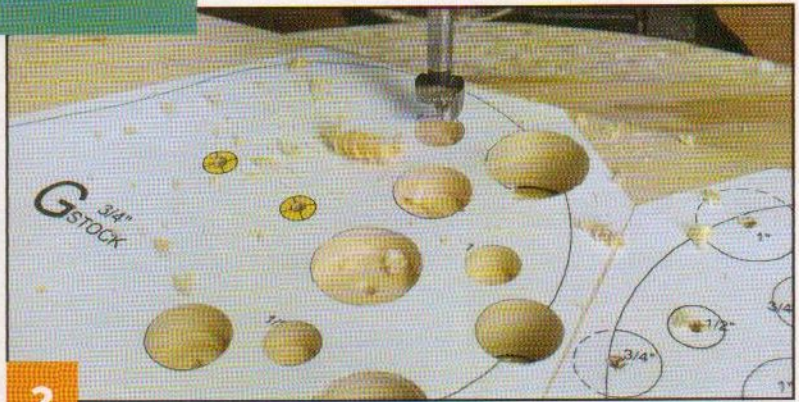
Getting Started

The patterns for the bullfrog (brown) and rainforest frog (multicolored) are almost identical, but the materials, number of pieces cut, and finishing techniques are slightly different. Choose the type of frog you are making and attach the patterns to the appropriate blanks. You may wish to make several copies of the patterns so you can reverse them (by tracing on the back, saturating the page with oil, or using a computer) to make right- and left-side pieces. Nest the patterns within each other to conserve wood.

FROG: ADDING THE SPOTS



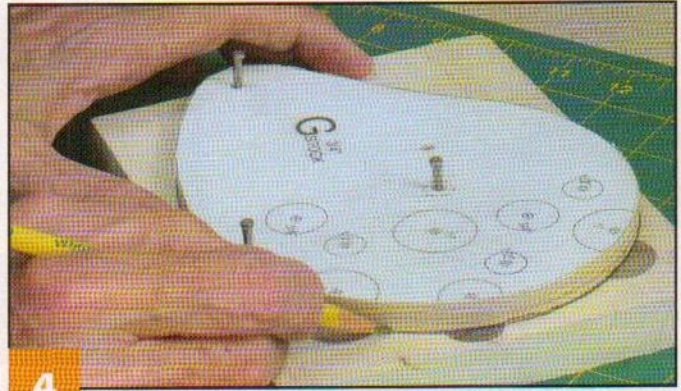
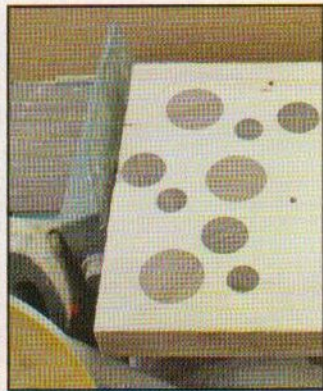
1 **Drill the pilot/registration holes in all of the pieces.** Pilot holes are in the center of larger drill holes, and registration holes are the smallest holes. I use a $\frac{1}{8}$ " (3mm)-diameter twist bit instead of a brad-point bit. Tap the bit lightly over the mark until you see that you're hitting the bull's-eye, and then slowly plunge the bit through the work piece.



2 **Drill the holes in pieces G, J, and K.** Mark the pieces so you know which is the right and left in each set, and refer to the assembly diagram (page 72) to mark the inside and outside of each piece. Use $\frac{1}{2}$ " (13mm)-, $\frac{3}{4}$ " (19mm)-, and 1" (25mm)-diameter Forstner bits to drill the holes for the spots as marked. For the perimeter spots, drill through-holes. On the hips, where the back side is hidden, drill $\frac{3}{8}$ " (10mm)-deep holes on the front of each piece. For the legs, drill all of the holes through. Do not drill the axle and pivot pin holes yet.

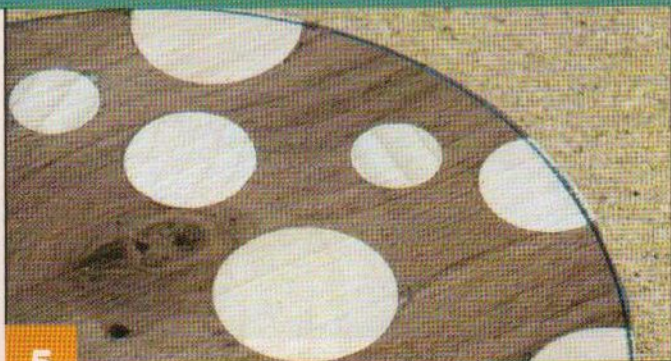


3 **Glue dowels into the holes.** Glue a few dowels at a time, matching the sizes to the holes. *NOTE: Do not fill the $\frac{1}{8}$ " (3mm) registration holes.* Then, cut the dowels off roughly flush with the surface of the wood. Use a belt sander to sand the dowels flush with the surface of the wood. This will also remove the paper pattern.

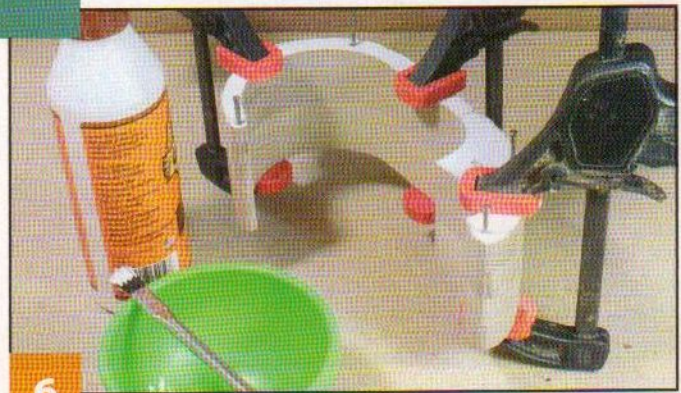


4 **Restore the pattern outlines.** I made templates, complete with registration holes, from Baltic birch plywood, but you could use cardstock. Use the registration holes to align the template and trace the outlines and locations for pivot pins and the axle onto the blanks.

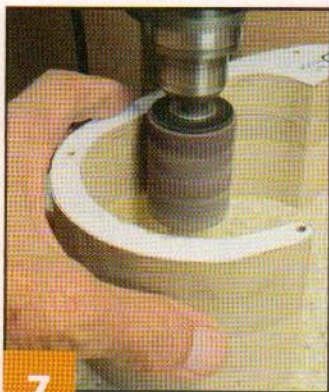
FROG: CUTTING & ASSEMBLING THE LAYERS



5 **Cut the pieces.** Use a scroll saw and #9 reverse-tooth blades. Stack-cut pieces as desired to save time. The frog-box layers are not the place to display your line-splitting prowess; this is counterproductive. Instead, cut away from the line. A good glue-up results in a tiny bead of dried glue along the joining line. This is best removed by sanding to the cut line, thereby removing squeeze-out and the last bit of stock in a single pass.



6 **Assemble the frog box layers.** Group the pieces by type and remove the patterns from all but the top layer. Apply a thin film of wood glue and adhere the pieces, using 10d finishing nails through the registration holes to align the layers. These nails are perfect for the job because they have an outside diameter a hair less than $\frac{1}{8}$ " (3mm). Clamp the layers and allow the glue to dry.



7

Sand the pieces. Sand each subassembly to the cutting line with a sanding drum in a drill press or with an oscillating spindle sander. Use nails through the registration holes to align complementary parts, such as the unglued hips, and sand the pair as a single unit. Continue gluing and sanding, working out from the center, until you have assembled the head, body, and tongue. Do not glue pieces G, J, K, or the wheels.

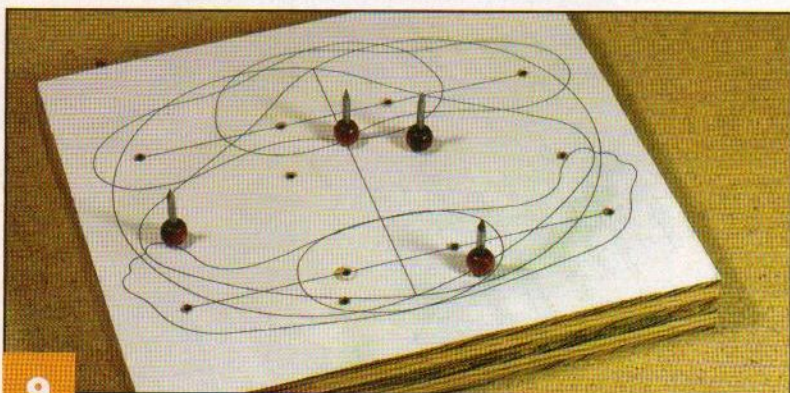


FROG: SANDING THE PIECES



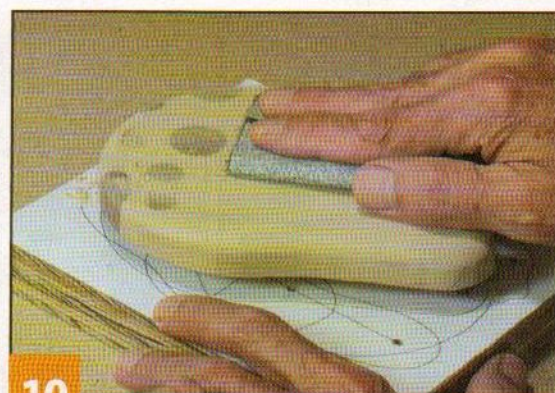
8

Prepare the holding pins. For this project, I created a custom sanding and finishing support. Start by cutting 10d finishing nails into 1½" (38mm) to 2" (51mm) lengths. To hold the nails, drill a ⅛" (3mm)-diameter hole in scrap wood and clamp the wood in a table vise. Cut the heads off the nails with a hacksaw. Then, glue them into the pre-bored holes in small wooden beads.



9

Make the support base. Glue together two layers of ½" (13mm)-thick plywood. Attach the universal support pattern to the blank, and drill the ⅛" (3mm)-diameter holes. Insert the holding pins into the appropriate holes with the pointed ends up. The pins extend into the support base and the blank, which prevents side-to-side movement. The beads separate the blank from the base.



10

Sand the hips. Sand the hips with 80-grit sandpaper and sculpt the outside edges to a gentle quarter round. Oil from your hands and water-based dyes don't get along very well; whenever possible, hold the support base rather than the blank.



11

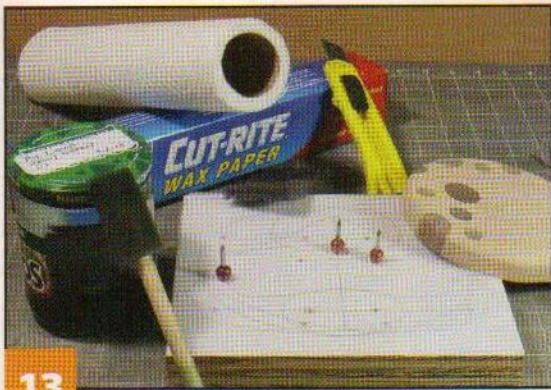
Sand the legs. Use the appropriate pins and holes to support the legs. Then, sand the legs lightly, just rounding the sharp corners slightly (a process called "breaking the edge"). Refer to Step 3 and use lengths of ⅛" (3mm) dowel to fill all of the registration holes, and then final-sand the pieces.

FROG: DYEING THE PIECES

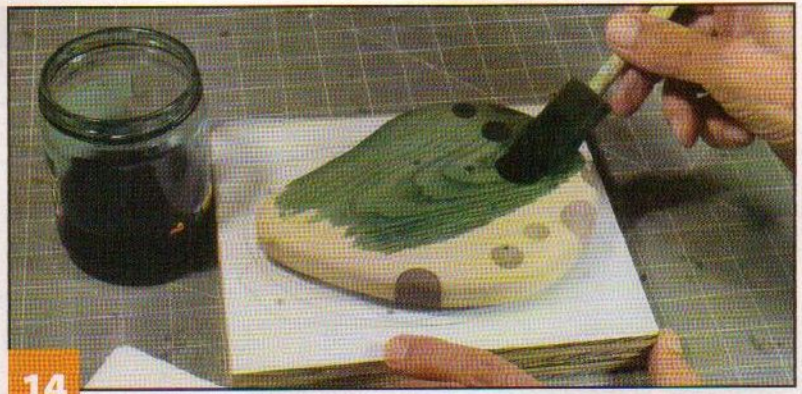


12

Mix the dye. *NOTE: If you are making the bullfrog, dye only the tongue and eyes, and then apply clear topcoat to all of the pieces.* Work neatly from the beginning of the dyeing process to ensure successful results. Mix a 1:1 water/dye solution by first pouring 1 cup of water into a wide-mouth jar. Mark the water level with tape, then empty the jar. Pour ½ cup of water into the jar, then pour in the dye until it reaches the tape line. The dye will never touch the measuring cup. Add a single drop of liquid soap to the mix to improve dispersion.



13 Prepare to dye. Place a small sheet of waxed paper over the holding platform. Secure it with the pins. Stir the water/dye/soap solution with the handle of a small foam brush. That brush will become your "forever" applicator for that color.



14 Apply the dye. Long sweeping strokes are key when applying the dye. So is patience. If puddles form, let them soak in and then spread them out. And then spread out the smaller puddles, etc. If there's any secret to working with dye, it's to work as dryly as possible. You'll be surprised by how little dye is needed for excellent coverage.

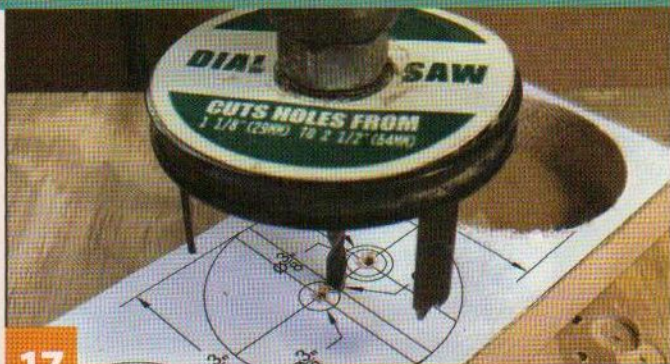


15 Remove the fuzzies. When you have finished brushing the dye on, the piece will look dark and blotchy. Be patient. The color will become lighter and more uniform as it dries. Water will raise the grain of the wood, but that's a good thing! It allows the dye to penetrate deeply into all the nooks and crannies. Knock down the fuzzies with synthetic steel wool. *NOTE: Don't use actual steel wool in combination with waterborne dyes, because any metal that embeds in the grain will rust and discolor the wood.*

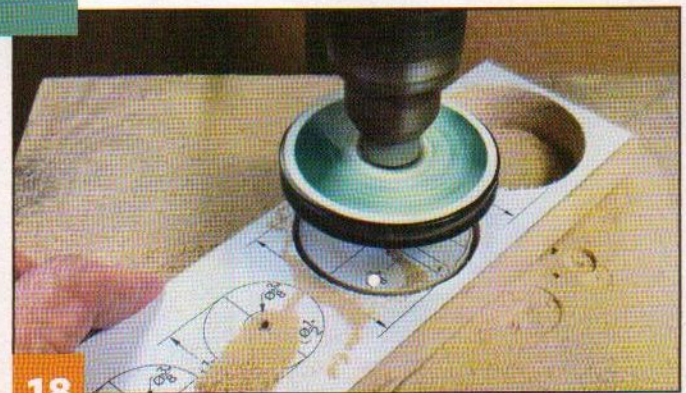


16 Finish dyeing the pieces. Burnish the dyed surfaces with a dry paper towel to remove the stray particles of dry dye solids, and then apply a clear protective topcoat. Repeat Steps 12 to 16 to dye the rest of the pieces.

FROG: MAKING THE WHEELS



17 Prepare to cut the wheels. Apply the wheel patterns to the blank and drill $\frac{1}{8}$ " (3mm)-diameter holes through the bull's-eyes. Center a hole cutter's $\frac{3}{16}$ " (5mm)-diameter pilot bit over the center of a circle. Here the cutter is shown set at its maximum $2\frac{1}{2}$ " (64mm)-diameter hole capacity, which produces a $2\frac{3}{8}$ " (60mm)-diameter wheel.

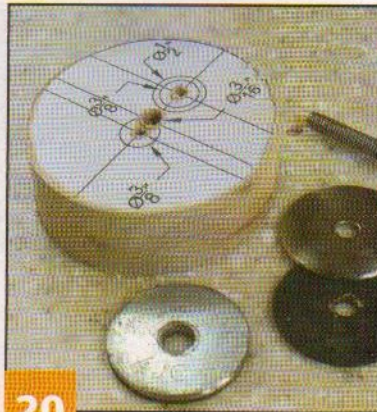


18 Cut the wheels. Because the cutter is basically a six-tooth scraping tool, it produces a considerable amount of torque and heat while doing its job. For those reasons, it's safer to cut the wheels from a long strip rather than random bits of scrap—you have something to hold onto and your fingers can participate in the action from afar. Don't try to cut a wheel with one continuous plunge. Shoot for cutting a quarter of the thickness at a time.



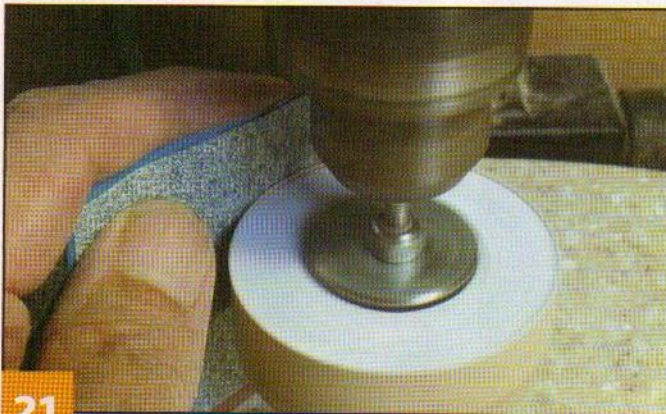
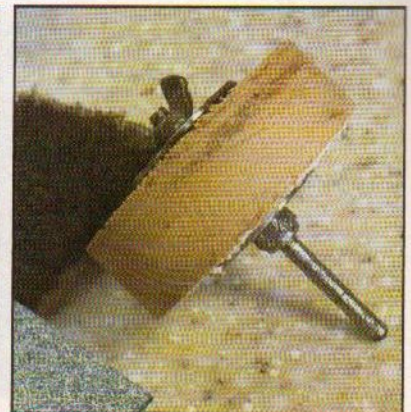
19

Free the wheel from the cutter. After the cutter has made its way through the stock, it will hold the wheel tight to the vertical saw blades. Raise the quill of the drill press, slide the stock out of the way, and let things cool down before attempting to slide the wheel down the pilot bit.



20

Prepare to sand the wheels. Although a cutter with sharp blades produces a fairly smooth wheel, some sanding is still required. I mount the rough-cut wheel on a homemade mandrel consisting of a section of $\frac{3}{16}$ " (5mm) bolt, a locking nut, a couple of stainless steel and rubber fender washers, and a wing nut. Chuck the mandrel in a drill press.



21

Sand the wheels. Hold a piece of sandpaper against a spinning wheel on the left side, where the direction of rotation is away from you. Apply light pressure and don't go crazy with the sanding. Because you're alternately sanding face and end grain, overzealous sanding produces an ellipse rather than a circle.



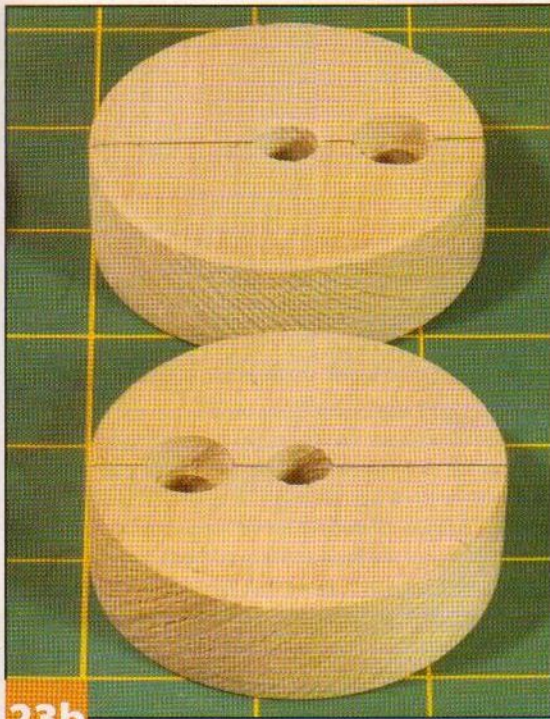
22

Fill the holes in the back wheels (bullfrog only). On the bullfrog's back wheels, the only reasons for the center hole are cutting and spin-sanding. So now it's time to fill the hole. Glue in a section of $\frac{3}{16}$ " (5mm)-diameter dowel and cut it flush to the face of the wheel.



23a

Drill the axle holes for the hopping bullfrog. *NOTE: If you are making the rainforest frog, skip to Step 23B.* Use the hopping frog back-wheel pattern. First drill the $\frac{1}{2}$ " (13mm)-diameter by $\frac{1}{4}$ " (6mm) deep stop-hole that will house the pivot pin's cap. Then, drill a $\frac{3}{8}$ " (10mm)-diameter through-hole. Finally, drill a $\frac{3}{8}$ " (10mm)-diameter through-hole at the offset axle location. Offsetting the dowel axle makes the frog hop. Drill a single set of $\frac{1}{2}$ " (13mm) and $\frac{3}{8}$ " (10mm) concentric holes at the center of each front wheel. Also, drill concentric holes for the pivot pins as marked on the insides of pieces G and J, and drill $\frac{3}{8}$ " (10mm) stop holes in the insides of pieces J and K.



23b

Drill the axle holes for the crawling rainforest frog. *NOTE: If you are making the bullfrog, skip this step.* Use the crawling frog back-wheel pattern. Refer to Step 23A and drill the concentric and through holes for the pivot pin. Then, drill a $\frac{3}{8}$ " (10mm)-diameter through-hole at the centered axle location. Drill concentric holes at the center of each front wheel. Also, drill concentric holes as marked on the insides of pieces G and J, and drill $\frac{3}{8}$ " (10mm) stop holes in the insides of pieces J and K.

TIP

DRILLING HOLES IN BALLS

To drill holes in balls, I create a simple jig based on old-fashioned clothespins. Attach a scrap piece of hardwood to a larger piece of wood with two screws. Drill a $\frac{3}{16}$ " (5mm)-diameter pilot hole in the center of the hole location. Cut or drill a hole the same diameter as the ball in the top piece of wood. Separate the pieces and cut an angled wedge of wood from the edge of the scrap up to the hole. Reattach the top piece, and use the pilot hole to position the jig directly below the drill press chuck and clamp the jig in place. Place the ball in position and use another clamp to squeeze the wedge-shaped opening closed, locking the ball in place.



24

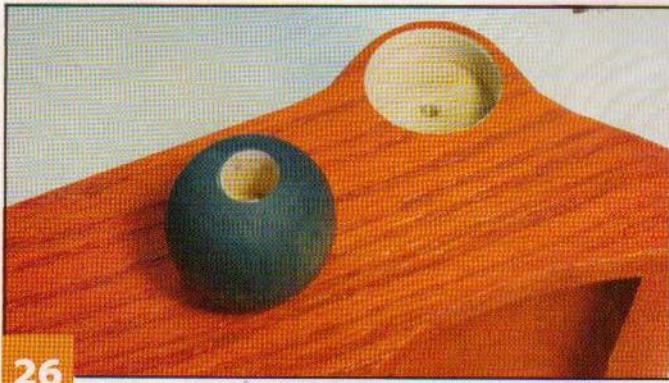
Refine the pivot pins. The $\frac{1}{2}$ " (13mm)-diameter stop-holes for the pivot pins present a dilemma because they're the same size as the pin caps. Rather than increasing the size of the holes, reduce the diameter of the caps by spin-sanding them on a hand-held drill. Reduce the overhang between cap and shaft by about half, then polish both cap and shaft with synthetic steel wool to reduce friction.

FROG: ADDING THE EYES



25

Drill the pupils. The wooden spheres that I use for eyes are actually small knobs with a flat bottom. A large eye seems to decrease the size of a frog and vice versa. Because the rainforest frog is the smaller of the two in nature, I gave it huge eyes. The relatively beady eyes on the bullfrog make it look bigger. The eyes serve as handles for opening the box. For the bullfrog, drill $\frac{1}{4}$ " (6mm)-diameter holes in the 1" (25mm)-diameter eyes. For the rainforest frog, drill $\frac{3}{8}$ " (10mm)-diameter holes in the $1\frac{1}{4}$ " (32mm)-diameter eyes.



26

Install the eyes. For the bullfrog, drill $\frac{3}{4}$ " (19mm)-diameter by $\frac{3}{8}$ " (10mm)-deep holes for the eyes. For the rainforest frog, drill $1\frac{1}{8}$ " (29mm)-diameter by $\frac{3}{8}$ " (10mm)-deep holes. Drilling the holes smaller than the eyes makes the eyes bug out. Place each eye in position and use a bit the same diameter as the pupil hole to drill the holes for the attachment posts (dowels the same diameter as the pupil holes). Pour glue into the holes, insert the dowels, and clamp the eyes in place.

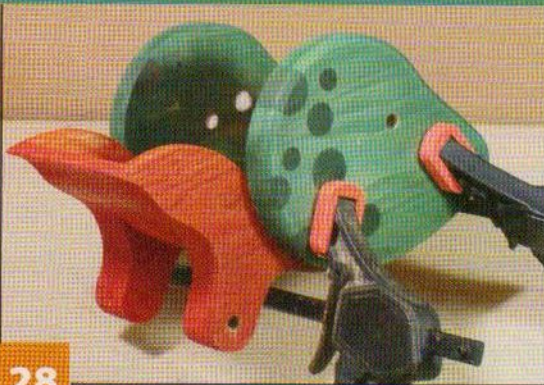


27

Add the ears and warts (bullfrog only). Technically, the ears are known as tympanum. Create a small recess by drilling a $\frac{3}{4}$ " (19mm)-diameter stop hole where indicated. Then, glue in $\frac{3}{4}$ " (19mm)-diameter screw button plugs. To position the wart pattern, place the head in the body in the full open position and mark a line on the back of the head at the head/body intersection. Place the pattern with the warts above that line, drill $\frac{1}{2}$ " (13mm)-diameter holes as desired, and glue the screw button plugs in place.

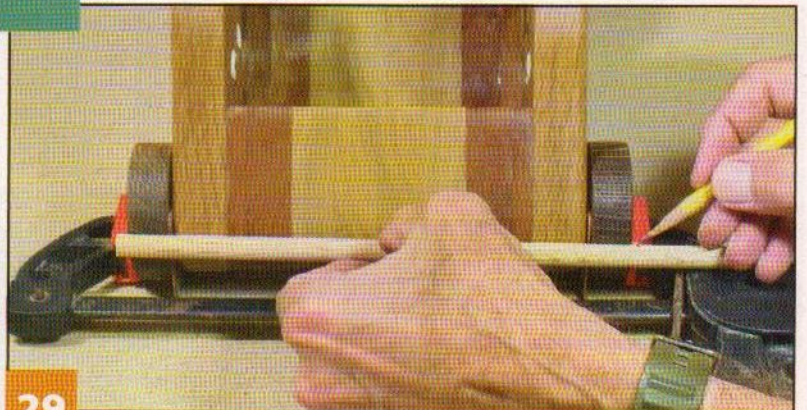


FROG: ASSEMBLING THE BOX



28

Glue the hips to the body. Refer to the assembly diagram to position the hips on each side, and glue and clamp them in place.



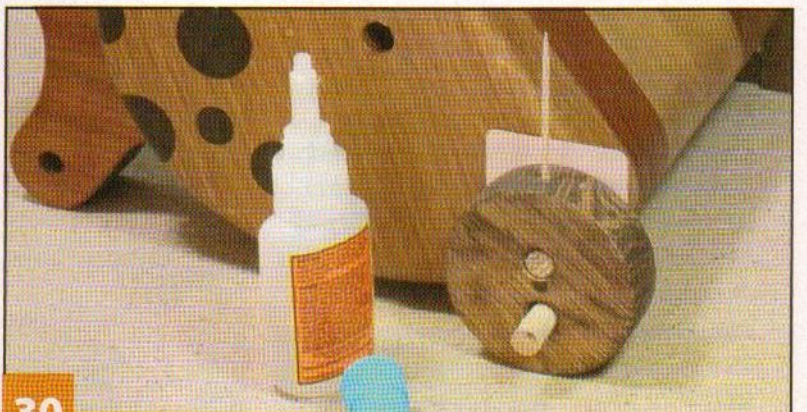
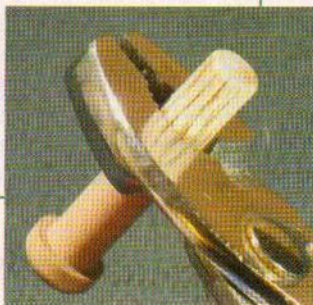
29

Determine the axle length. Begin the final assembly by clamping, but not gluing, the back wheels and $\frac{1}{16}$ " (2mm) spacers to the lower body. Mark the outside-of-wheel length for the $\frac{3}{8}$ " (10mm) axle dowel. Cut the dowel to length.

TIP

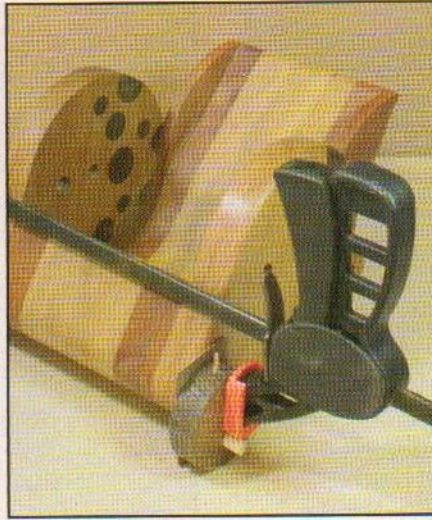
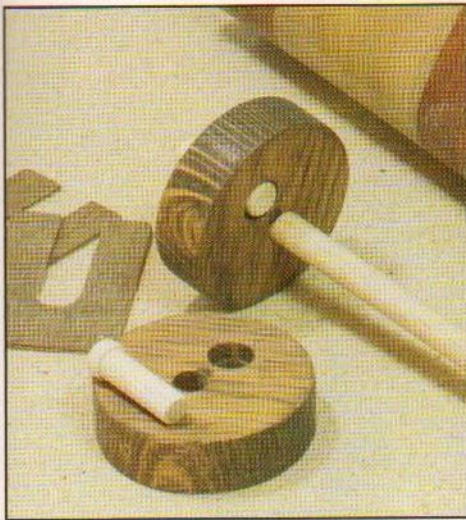
REDUCING DOWEL SIZES

Unfortunately, the $\frac{3}{8}$ " (10mm)-diameter axle dowel won't fit into $\frac{3}{8}$ " (10mm)-diameter holes, and $1\frac{1}{32}$ " (9mm)-diameter pivot pins won't fit into $1\frac{1}{32}$ " (9mm)-holes—there is zero clearance. Rather than trying to increase the diameter of the holes by moving to a larger bit or reducing the diameter of the axle or pin through sanding, crimp the ends with pliers. Besides reducing the diameter of the shaft, you'll be creating channels that will hold the glue.



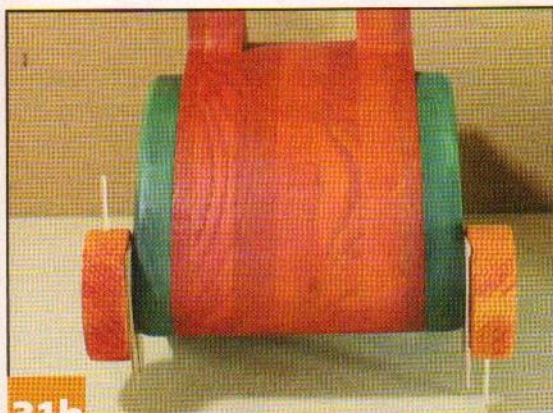
30

Lock the back wheels to the axle. Use a drill press to drill a $\frac{3}{32}$ " (2.5mm)-diameter hole through each back wheel from the tread in a straight line through the axle and pivot-pin holes. Insert (do not glue) round toothpicks and complete Step 31A/B. After gluing the wheels to the axle, remove the toothpicks and rebore the holes through the axle with a hand drill. Glue the toothpicks in place, let dry, and cut them off evenly with the wheels. This will prevent the wheels from slipping on the axle should the axle-to-wheel glue bond fail.



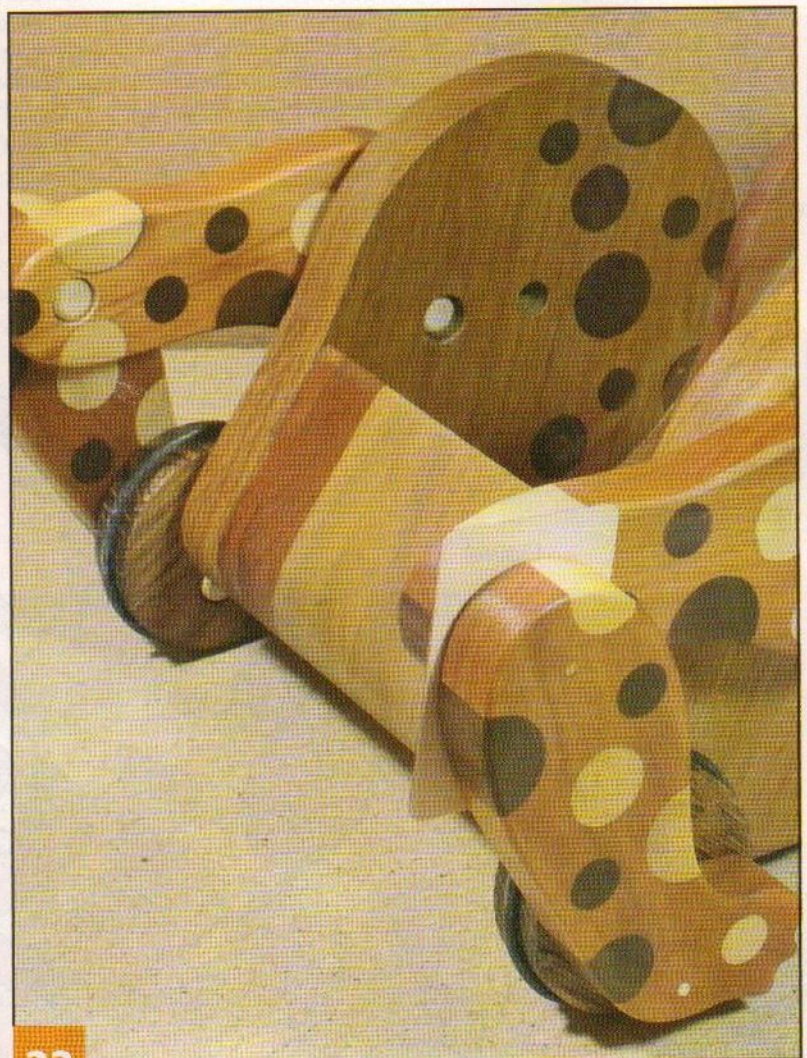
31a

Assemble the back wheels for the bullfrog. *NOTE: If you are making the rainforest frog, orient the wheels per Step 31B. Insert a 1 $\frac{3}{8}$ " (35mm) pivot pin into the concentric pivot holes in a back wheel, and glue one end of the axle dowel into the other hole; the axle and pivot-pin cap should both be on the body side of the wheel. Thread the axle through the holes in the body with a $\frac{1}{16}$ " (2mm)-thick spacer between the wheel and the body. Orient the toothpick pins to 12 o'clock, ensure the second spacer and pivot pin are in place, and glue the second wheel to the drive axle. This orientation of pivot pins will make the frog hop when it rolls. Complete Step 30 to glue the toothpicks to the axle.*



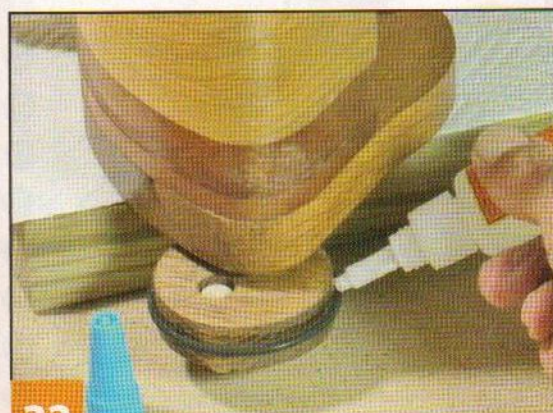
31b

Assemble the back wheels for the rainforest frog. *NOTE: If you are making the bullfrog, skip this step. Follow Step 31A to glue the pivot pins in place, but orient one toothpick pin to 12 o'clock and the other to 6 o'clock. This orientation will make the frog crawl rather than hop. Complete Step 30 to glue the toothpicks to the axle.*



33

Attach the legs. Insert pivot pins through the concentric wheel holes in the front wheels, add the spacers, and glue the pins into the holes in the body front. Push pivot pins through the hips from the inside and glue them into the upper legs. Then, glue the lower legs to the pins in the back wheels. Put a pivot pin through the "elbow" joint and glue it into the hole in the lower leg. In all cases, the glue should go on the end of the pin, not on the cap.



32

Add the tires. Stretch an O-ring tire over each wheel, and secure them with a continuous bead of cyanoacrylate (CA) glue, such as Super Glue, around the inside face of the band. The bands should cover the toothpicks in the back wheels.



34

Add the tongue. Place the tongue into position in the head and slide a $\frac{1}{16}$ " (2mm)-diameter brass rod through the pivot holes. Cut the rod so that it is recessed $\frac{3}{16}$ " (5mm) from the outside of both cheeks. Center the shortened rod between the cheeks, and then plug the holes with short lengths of $\frac{1}{8}$ " (3mm)-diameter wooden dowel.

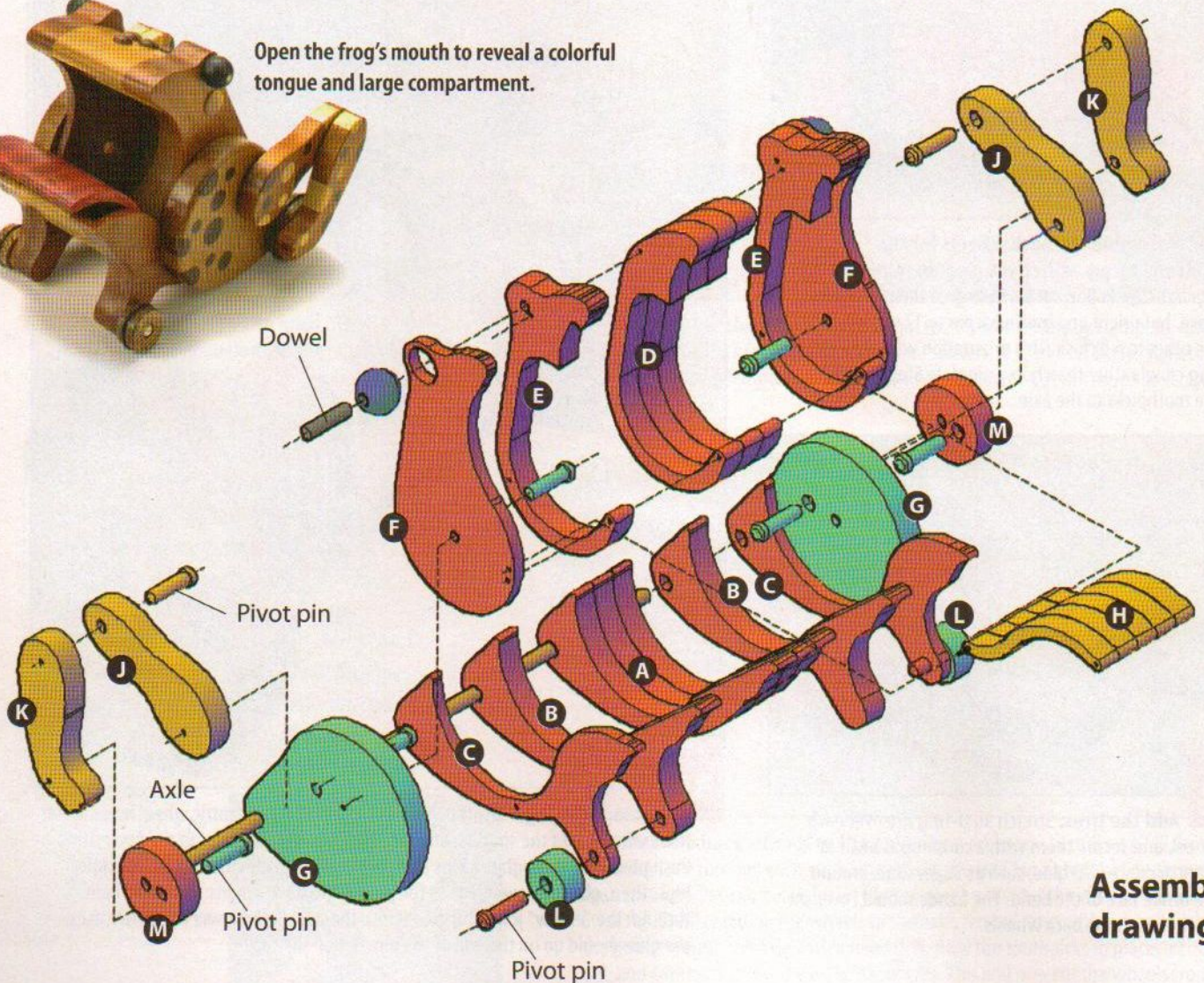


35

Join the head and body sections with short pivot pins through the head pivot hole. Pay careful attention to this operation; it's unique to this location. Apply glue ONLY to the underside of the pivot-pin cap (the flat area between the cap and the shaft). The pivot pins and head thereby become one piece that rotates freely in oversized dry holes in the hips. This completes the frog.



Open the frog's mouth to reveal a colorful tongue and large compartment.



Assembly drawing

Materials:

- Bullfrog cherry, 3/8" (10mm) thick: 6" x 33" (152mm x 838mm)
- Bullfrog cherry, 3/4" (19mm) thick: 8" x 40" (203mm x 1016mm)
- Bullfrog sassafras, 3/4" (19mm) thick: 8" x 49" (203mm x 1244mm)
- Bullfrog white oak, 3/4" (19mm) thick: 6" x 24" (152mm x 610mm)
- Rainforest (RF) frog red oak, 3/8" (10mm) thick: 6" x 33" (152mm x 838mm)
- Rainforest (RF) frog red oak, 3/4" (19mm) thick: 8" x 8" (203mm x 203mm), 6" x 24" (152mm x 610mm)
- Dowels, walnut, 1/2" (13mm), 3/4" (19mm), 1" (25mm) dia.: spots, approx. 12" (305mm) each for bullfrog; approx. 24" (610mm) each for RF frog
- Dowel, 3/16" (5mm) dia.: holes in wheels (bullfrog only), 2" (51mm)
- Dowels, standard light wood, 1/2" (13mm), 3/4" (19mm), 1" (25mm) dia.: spots, approx. 12" (305mm) each (bullfrog only)
- Dowels, standard light wood: hole fillers and axle, 1/8" dia. x 10" (3mm x 254mm); 3/8" x 2" (5mm x 51mm); 3/8" dia. x 9" (10mm x 229mm); bullfrog pupils, 1/4" dia. x 2"

(6mm x 51mm) OR RF frog pupils 3/8" dia. x 2" (10mm x 51mm)

- Wooden knobs with flat bottoms: 2 each 1" (25mm) dia. for bullfrog OR 1 1/4" (32mm) for RF frog
- Pivot pins, 1 1/32" (9mm) dia. maple toy axles: 10 each 1 3/8" (35mm)
- Screw hole buttons, 3/4" (19mm) dia.: ears, 2 each cherry (bullfrog only)
- Screw hole buttons, 1/2" (13mm) dia.: warts, 32 each walnut (bullfrog only)
- Brass rod, 1/16" (2mm) dia.: approx. 5" (127mm)
- Dye, such as Rit liquid: cherry red (both frogs); green, yellow, blue (RF frog only)
- Finish, such as Minwax Fast-Drying Polyurethane (bullfrog) or Krylon (RF frog): clear, satin, water-based polyurethane
- O-rings, approx. 1 3/8" (35mm) and 2 1/2" (64mm) dia.: wheel tires, 4 (the inside diameters of the rings should be slightly smaller than the outside diameters of the wooden wheels; I suggest taking the wheels to the hardware store when buying the rings)
- Glues: temporary bond spray; cyanoacrylate (CA) and wood glues

- Cardstock, such as an empty cereal box
- Sandpaper
- Masking tape
- Liquid soap
- Waxed paper
- Paper towels
- Synthetic steel wool
- India ink: bullfrog eyes, black
- Toothpicks, round wooden: 2
- Dowel cutting jig: scrap wood
- Sanding jig: 15 each 10d finishing nails; 2 pieces plywood, 1/2" x 7 1/8" x 8 1/4" (13mm x 181mm x 209mm); 15 wooden beads, any dia. that has 1/8" (3mm) hole
- Wheel sanding mandrel: 3/16" (5mm) bolt; 2 each stainless steel and rubber fender washers; wing nut; 3/16" (5mm) locking nut
- Eye drilling jig: 2 scraps hardwood; 2 screws
- Wheel spacers: 1/16" (2mm)-thick plywood or plastic laminate samples, cut to fit around the axles

Tools:

- Blades, such as Olson Mach Speed: #9 reverse-tooth
- Drill press
- Hand-held drill
- Drill bits: Forstner, 3/8" (10mm), 1/2" (13mm), 3/4" (19mm), 1" (25mm), 1 1/8" (29mm); twist, 3/32" (2.5mm), 1/8" (3mm)
- Flush trim saw, such as DeWalt Flush-Cut
- Belt sander
- Sanding drum for drill press or oscillating spindle sander
- Table vise
- Hack saw
- Jars, wide mouth: 1 per dye color
- Foam brushes: 1 per dye and ink color
- Hole cutter, 2 1/2" (64mm) dia.
- Clamps
- Pliers

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

SPECIAL SOURCES:

- Maple axle dowels are available from Rockler, 800-279-4441, www.rockler.com
- 1/16" (2mm)-diameter brass rod is available in hardware stores

Cutting List

	Material, Bullfrog	Material, Rainforest Frog	Quantity
A	3/4" sassafras	3/4" red oak	Bullfrog: 4; RF frog: 3
B	3/4" cherry	3/4" red oak	2
C	3/8" cherry	3/8" red oak	2
D	3/4" sassafras	3/4" red oak	Bullfrog: 4; RF frog: 3
E*	3/4" cherry	3/4" red oak	2
F*	3/8" cherry	3/8" red oak	2
G	3/4" white oak +walnut dowels	3/4" red oak +walnut dowels	2
H	3/4" sassafras	3/4" red oak	Bullfrog: 6; RF frog: 5
J	3/4" cherry +walnut & standard dowels	3/4" red oak +walnut dowels	2
K	3/4" cherry +walnut & standard dowels	3/4" red oak +walnut dowels	2
L	3/4" white oak	3/4" red oak	2
M*	3/4" white oak	3/4" red oak	2

*Note: There are different versions of these patterns for each frog.

ON THE WEB See video of the frogs in motion on our website.

www.scrollsawer.com

Patterns for the **FROG BOXES** are in the pattern pullout section.



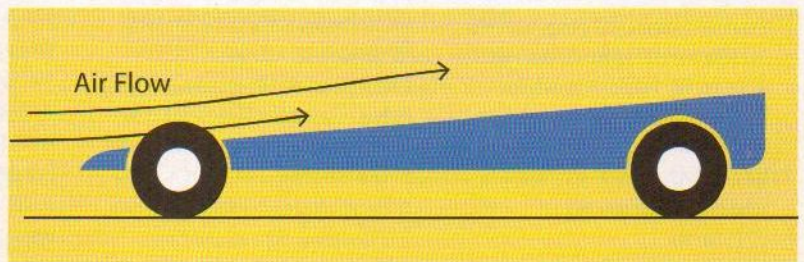
When not woodtinkering, John Hutchinson finds a few spare moments for his multiple professions of architect, illustrator, and writer. His work has appeared in *Fine Woodworking*, *Woodworker's Journal*, *Popular Woodworking*, and *American Woodworker*, as well as three books by *Popular Woodworking Books*. His role model is architect Morris Lapidus, designer of the *Fontainebleau Hotel* and author of *Too Much Is Never Enough*.

TOP TEN Derby-Winning Tips

Tricks and tips to help win this year's Pinewood Derby

By Troy Thorne

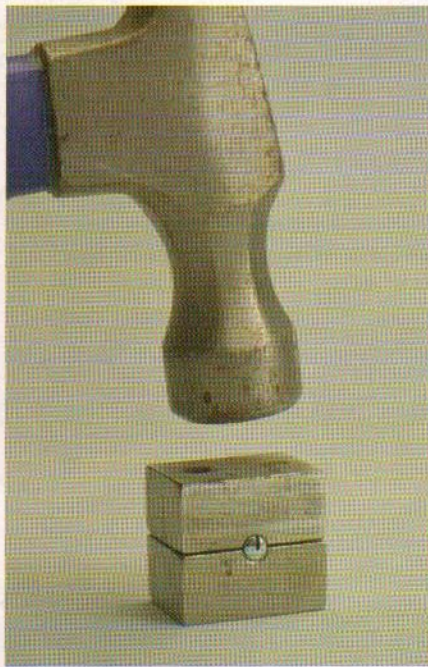
The Pinewood Derby was founded as a wholesome skill-building activity that kids and parents could do together. Be true to that spirit by teaching your young Scout or Awana racer good woodworking habits, good sportsmanship—and good physics. Winning cars are aerodynamic, engineered to reduce friction, and designed to turn potential energy into speed. These tips will help you and your child harness gravity to create a winning car.



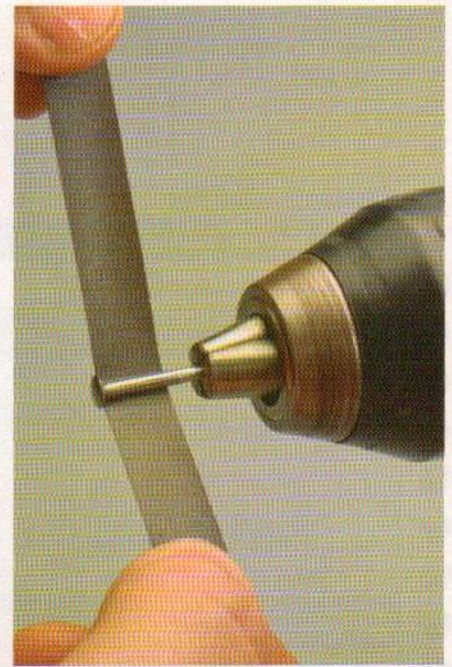
1. Wedge cars usually win. Not only are wedge cars more aerodynamic than big, blocky designs, but they put the weight in the back of the car, which increases the potential energy (speed!) of the car.



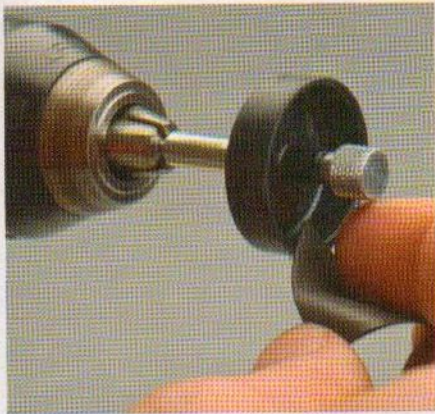
2. Let your child build the car. You can build a car alongside your child and help with power tools, but let him or her build the car. A car you build may be a winner, but both of you will know your child didn't make it.



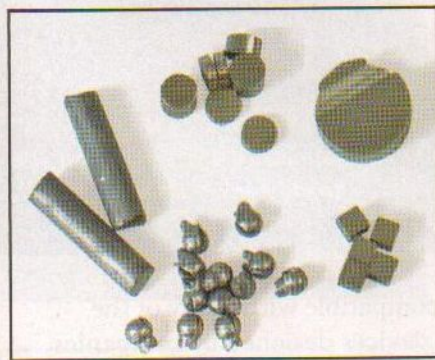
3. Straighten the axles. Out of the box, the axles might not be perfectly straight, so the wheels won't spin as fast as they could. Use the Derby Worx Pro-Axle Press to straighten the axles for good rotation.



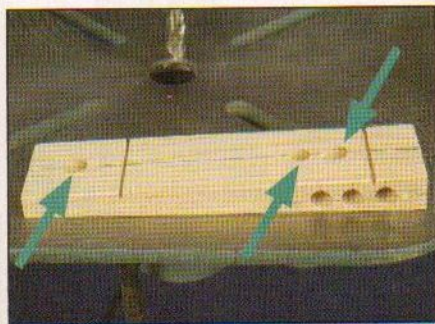
4. Polish the axles. Friction is the enemy of these gravity-powered cars. The more polished the axles are, the less friction there will be and the faster the wheels will spin. Use wet sandpaper to gently remove the manufacturing burrs from the axles.



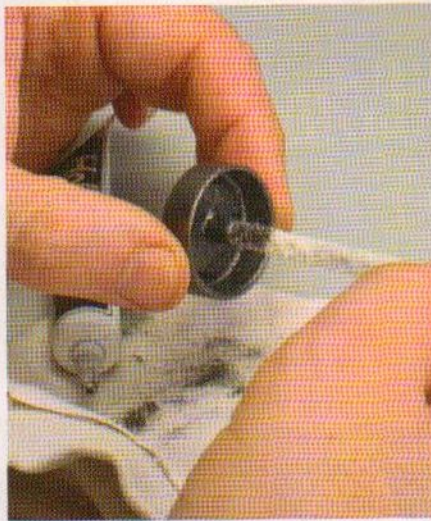
5. Smooth the wheels. Another friction-busting tip: use fine-grit sandpaper to smooth the inside of the wheel where it rubs against the car.



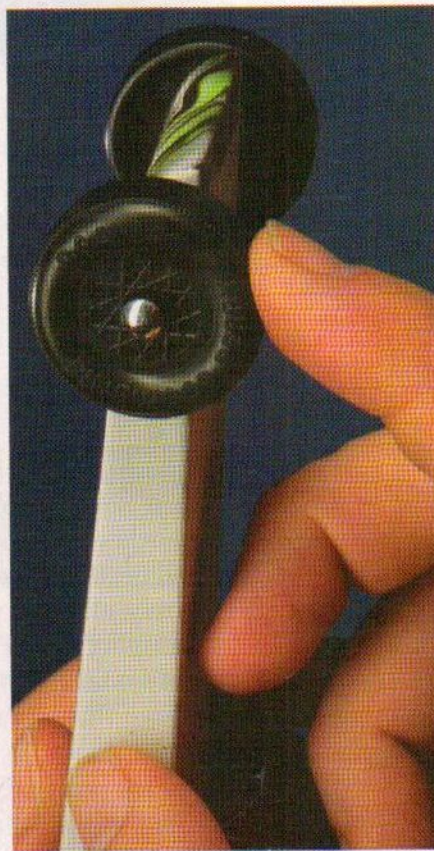
6. Get the right weight. According to official rules, the cars can weigh up to 5oz. Heavier cars go faster, so make sure your car weighs exactly 5oz. Lead is often used for weights, but if your car design limits the free space, use tungsten, which is denser than lead so you can use less.



7. Position the weight correctly. The longer the weighted part of the car is on the inclined track, the faster the car will go, so position the weights toward the back of the car. Just make sure the weight is not so far back that the front wheels are lifted off the track.



8. Lubricate the wheel bores. Another way to reduce friction is to use graphite to lubricate the inside of the wheel bores (holes). Use soft pipe cleaners charged with graphite powder, available at craft and hobby stores, to work the graphite into the wheel bores.



9. Pre-race the car. Graphite lubricates better after it starts to break down, so the more the car is raced, the faster it will be. Just spin the wheels gently with your fingers for the length of time it takes to watch a movie.



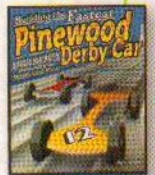
10. Make sure the wheels are aligned properly. The fastest cars travel in a straight line down the track. Roll the car down a slanted board and pay attention to the how the car travels. Bend the axles a tiny bit to help the car travel straight down the track.

Further Reading

Building the Fastest Pinewood Derby Car

Speed Secrets for Crossing the Finish Line First!

By Troy Thorne



Learn the tips for tricking out your car for maximum speed. These are the ultimate championship techniques that will let you shave those last tenths of a second off your time and go home with the trophy.

Available for \$14.99 plus \$3.99 S&H from Fox Chapel Publishing, 1970 Broad St., East Petersburg, Pa., 17520, www.foxchapelpublishing.com, 800-457-9112, or check your local retailer.



A designer, woodworker, and Fox Chapel Publishing's creative director, Troy Thorne has drawn on his artistic roots and personal experience to write books for both first-time Pinewood Derby participants and experienced racers. For many years he participated in Scouting activities with his son, Nathan, who is now an Eagle Scout. Troy builds furniture, canoes, and even a street-legal AC Cobra replica in his spare time.

Sjöbergs Smart Vise

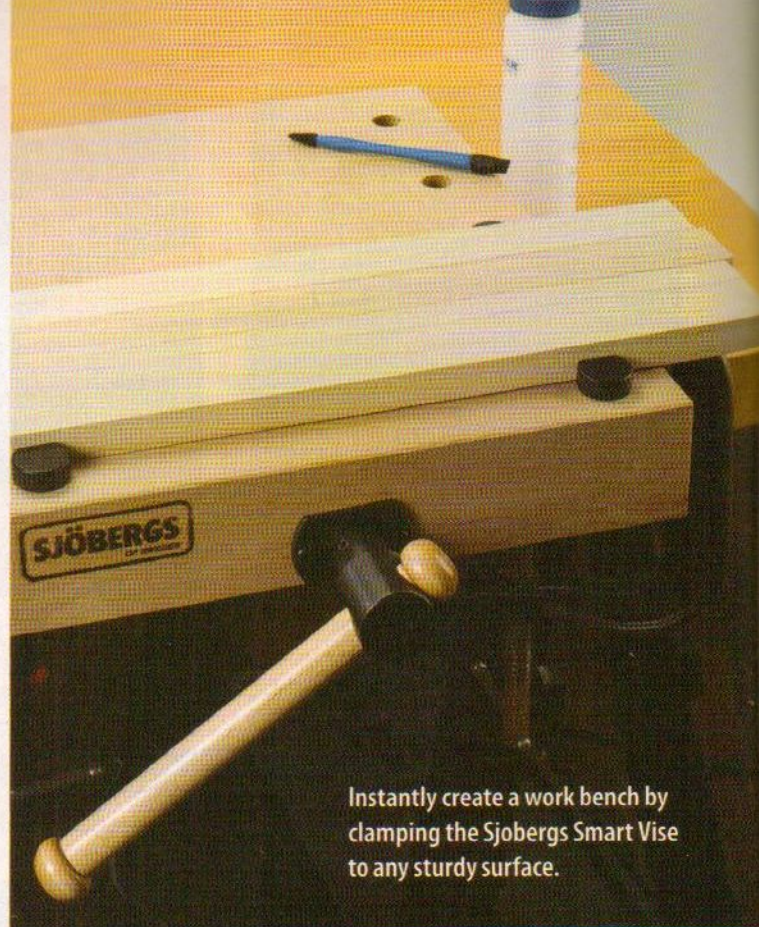
Sjöbergs, the company that has set the standard for full-size workbenches and smaller carver's benches, has created a mobile workstation they call the Smart Vise.

The Smart Vise measures 14¼" by 14¼", can be clamped to any table or workspace, and includes a versatile bench vise. Not only can you use the bench vise (covered with waxed paper) for small glue-ups, but you can securely clamp pieces when sanding, routing, or shaping. The vise clamps well, but the wooden jaws and plastic bench dogs won't mar a project unless you clamp it too tightly.

The stability of the Smart Vise depends on how you attach it to the bench. If you use carriage bolts to fasten it to the bench or table, it's as strong as the bench. You can also use clamps, although you will lose some stability. If you do use clamps, I suggest using strong C clamps or traditional bar clamps; quick-grip clamps don't hold tightly enough.

The top of the Smart Vise is plastic-laminated MDF, which may not be as strong as the glued-up hardwood tops used on the other benches, but requires no maintenance. Solid hardwood tops can warp slightly with seasonal changes in humidity and need to be planed flat every year or two.

A useful addition to any shop, the Smart Vise can be used for carving, as well as to hold anything you need to cut, rout, or shape using a variety of tools.



Instantly create a work bench by clamping the Sjöbergs Smart Vise to any sturdy surface.

The product is also compatible with many of the aftermarket holding devices designed by companies like Lee Valley and Rockler.

The Smart Vise is available at your local Rockler, Woodcraft, or Home Depot stores; the MSRP is \$149. Search online or visit www.sjobergs.se/en/ to find more retailers.

Rockler Bench Cookie Bridge Caps

Bridge Caps fit on bench cookies and protect delicate fretwork during finishing.



Rockler popularized non-skid work supports with their Bench Cookies Wood Grippers, which resemble a hockey puck and have non-slip rubber on the top and bottom. They grip both the bench and the project firmly, allowing you to work on a piece without clamping it. The company has introduced many additional accessories, including both pyramid- and bridge-shaped caps to use with the Bench Cookies for finishing.

For scrollers, the Bridge Caps are especially useful. The pyramids elevate projects well, but they tend to slip into the holes in fretwork projects. The bridges, on the other hand, have an elongated shape that ends at a rounded point, which spans openings like frets without disturbing fresh finish.

A set of four Bench Cookies is available for \$12.49 and a set of four bridges is available for \$5.99 from Rockler, 800-279-4441, www.rockler.com.

Grand Stand

The ONLY Adjustable PWD Multi-Car Display System

Proudly Display Up to Five Pinewood Derby® Cars + Trophies!

Stand Upright or Wall Mount
Excellent Organizer • Solid Poplar



Prefinished or Unfinished Kit
Perfect Group Project • Made in USA

Preserve Fond Memories

www.derbygurus.com

DerbyGurus

Power Sharpening: Quick, Easy, Effective

WOODCARVING

ILLUSTRATED

Hiking Sticks

With Ball-in-Cage Design

Simple & Strong
Shellac Finishes

Easy-Carve
Realistic Eyes

Make A Dragon
For Your Desk

Carve More,
Sharpen Less
Our S90 Solution
(see page 72)

SUMMER 2013 \$3.95 US

FREE Trial Issue!

- Full size patterns from today's top carvers
- Expert tips and techniques
- Improve your skills with step-by-step projects

800-457-9112

woodcarvingillustrated.com/freeissue

Free issue offer valid in U.S. and Canada only.

BestTrack®

Produced by SRM Enterprises, Inc.

All Aluminum
Pinewood Derby® Tracks
and Timers

Patented
Design

Lifetime
Warranty

1 to 8 Lanes
Complete Tracks:
Stand, Start Gate, Stop System

The World's Best Selling
All Aluminum Pinewood Derby®
And Space Derby® Tracks

www.besttrack.com

888-582-2299 or 641-585-2299

40 Species of Exotic & Domestic Hardwoods

FROM 1/16" TO 3/4" THICK

14 Species of Plywood

PEGAS SCROLL SAW BLADES (Swiss Made)

For Price List Call:

Toll Free: 1-888-751-1400 or
610-381-2286 • Fax 610-381-5155

D & D Woodcrafts

RR 3 Box 3066 • Saylorsburg, PA 18353-9617
www.dndplywoodonline.com
www.dndsawbladesonline.com www.dndhardwoodsonline.com

Ocooch
Hardwoods

Scroll Saw Ready Hardwoods

1/8" to 3/4" thick and
4" to 12" wide

- Lower Prices
- Fast Service
- Satisfaction Guaranteed

Carving Stock
Turning Blanks
Intarsia Lumber
Plywood

Free Catalog

1-888-322-2432

Order online or call toll free

www.OcoochHardwoods.com

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.

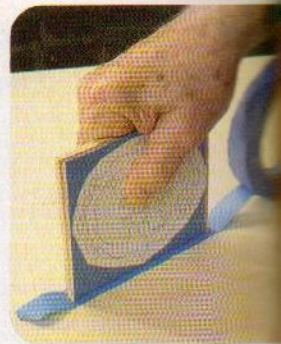
Stack Cutting

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...



Easy bug boxes are quick to cut and fun to paint.



Build an adirondack chair perfectly sized for a Barbie® or American Girl® doll.



A tranquil pond puzzle picture does double duty as décor.

SUBSCRIBE TODAY—Don't Miss a Single Issue!

Phone **888-840-8590**, or visit us online at www.scrollsawer.com

ADVERTISING DIRECTORY

American Science & Surplus – page 7
888-724-7578
www.sciplus.com

Ben's Scroll Saw.com – page 9
717-367-8064
www.benscrollsaw.com

Bushton Manufacturing – page 9
620-562-3557
www.hawkwoodworkingtools.com

D&D Woodcrafts – page 77
303-751-1400
www.danddwoodcrafts.com

Derby Gurus – page 77
657-229-1953
www.derbygurus.com

Flock It – page 9
800-336-6537
www.donjer.com

Graphic Transfer – page 9
866-453-2652
www.graphictransfer.net

Grobet USA – page 5
800-635-2993
www.grobetusa.com

King Arthur's Tools – Back Cover
800-942-1300
www.katools.com

Memphis Hardwood Lumber – page 11
800-286-3949
www.memphishardwoodlumber.com

Mike's Workshop – page 11
605-582-6732
www.mikesworkshop.com

Ocooch Hardwoods – page 77
888-322-2432
www.occochhardwoods.com

Prox-Tech, Inc. – page 11
877-PROXXON
www.proxxon.com/us

Scrollsaw Association of the World
page 11
www.saw-online.com

Seyco, Inc. – page 1
800-462-3353
www.seyco.com

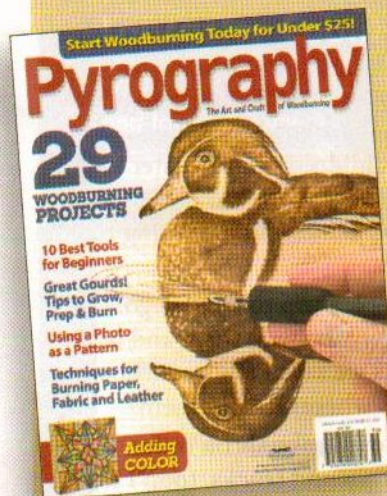
SRM Enterprises, Inc. – page 77
888-582-2299
www.besttrack.com

Wooden Teddy Bear – Inside Front Cover
888-762-9149
www.woodentedybearonline.com

Zen Toolworks – page 7
925-521-0388
www.zentoolworks.com

Learn to Burn

2013 Edition Now Available!



Packed with 19 projects that teach techniques like burning on paper, leather, gourds, and canvas; making realistic reflections; practicing tips and textures; and adding color to pyro projects.

Includes stunning artist galleries as well as information about choosing a woodburner, basic supplies, and safety tips.

\$9.95 plus shipping

www.PyrographyOnline.com

800-457-9112 (international 717-560-4703)

The Littlest Scroller

Like most four-year-old little girls, Ellie Radden enjoys dancing, playing with dolls, and drawing pictures. What's different about Ellie is that after she makes those pictures, she sits down at her mother's scroll saw and cuts them out.

"She even made a little puzzle as a card for a friend's birthday," said Danielle Radden, Ellie's mother and the talented scroll saw artist behind Takara Wooden Treasures. "I cut a 4" by 6" piece of 1/8"-thick plywood and sanded it for her. Ellie drew her design on it and wrote her name. Then we traced a car shape from a cookie cutter to use as a whimsy figural piece, and she was able to follow the lines pretty well. The rest of the puzzle was freehand."

With Danielle watching over her shoulder, Ellie directs the wood on her own. "Ellie is a little cautious, so it was easy to convince her that she needed to keep her fingers away from the blade. That has never been an issue for her," Danielle explained.

Ellie may not be nervous, but Danielle sometimes gets a bit squeamish. "When the wood is smaller and I feel like she may be moving her fingers too close to the



Ellie Radden is a puzzle prodigy, as she cuts her drawings on her mom's scroll saw.

blade for my comfort, I put my fingers overlapping hers to hold the wood down and act like a bit of a shield," she said. "Ellie probably won't advance to larger projects until she can hold the wood steady on her own, but for now she is enjoying the thrill of making puzzles just like her mommy."

Danielle hopes that Ellie will take her scroll sawing more seriously someday and maybe even join her business venture. But for now, Ellie is content being a cute little girl who likes to use a scroll saw and proudly proclaim, "It isn't scary at all, 'cause I don't get cut."

For more information, visit www.takarawoodentreasures.com.

Pockets Full of Happiness

Woodworker Richard Myers is just a humble guy who likes to use his scroll saw and make kids happy. So he stuffs his pockets full of tiny scroll-sawn toys and gives them away to children he sees.

Years ago, Richard and his scroll saw club, the Blazin' Blades of Western PA, began cutting toys to give to various organizations. Richard made hundreds of toys for the local hospital's children's ward, foster kids, the Salvation Army, and other organizations. He found giving the toys away to be so personally gratifying that he wanted to do even more of it.

"When my wife and I took a trip to San Diego, I took a lot of toys with me. All along the way, there and back, I passed out these toys to kids we saw. I enjoyed it so much that now I give them to kids wherever I see them."

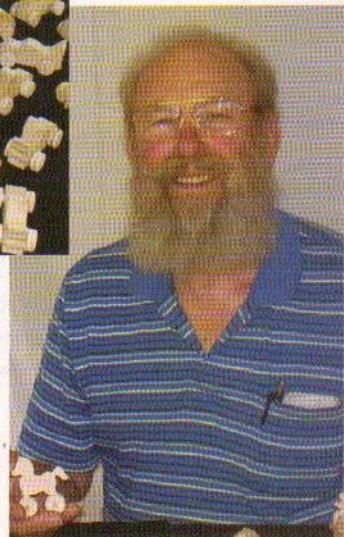
Richard calls his mini toys "animals on roller skates," although some are cars and trucks, too. "I found the website www.toymakingplans.com (previously by another name) and started making toys from their plans. I made quite a number of them, along with patterns I found in other places. I had so many that they were all over the house. That's when I got the idea to just start giving them away," he explained.

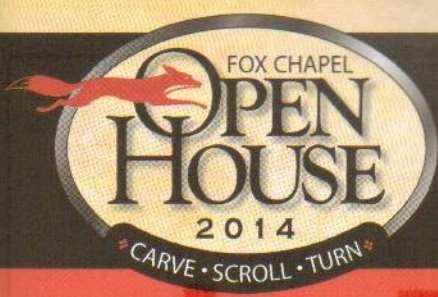
To keep the good feeling going, Richard also cuts jigsaw puzzles using pictures from calendars and takes them to church each Sunday. "It keeps the kids busy in our church Sunday school class," he said with a laugh. Richard also enjoys fretwork, clocks, baskets, and jigsaw puzzles, but making and giving away toys to random children warms his heart the most. "It really makes you feel good when you see the expressions on their faces."

Contact Richard at fordcity2@windstream.net.



Richard Myers makes hundreds of cars, trucks, and wheeled animals that he gives to children for the joy of it.





Scroller's Open House & WOODWORKING SHOW

May 9-10, 2014

Back and BIGGER THAN EVER!

Featuring

- ◆ Meet and learn from your favorite authors and teachers
- ◆ Latest supplies and tools from today's **leading woodworking manufacturers**
- ◆ **Live** demonstrations
- ◆ **Hourly** door prizes
- ◆ **Talk shop** with other woodworkers
- ◆ Scratch and Dent **book sale**

Stay Up-to-Date on the Latest Show Information! Visit: Wood-Show.com

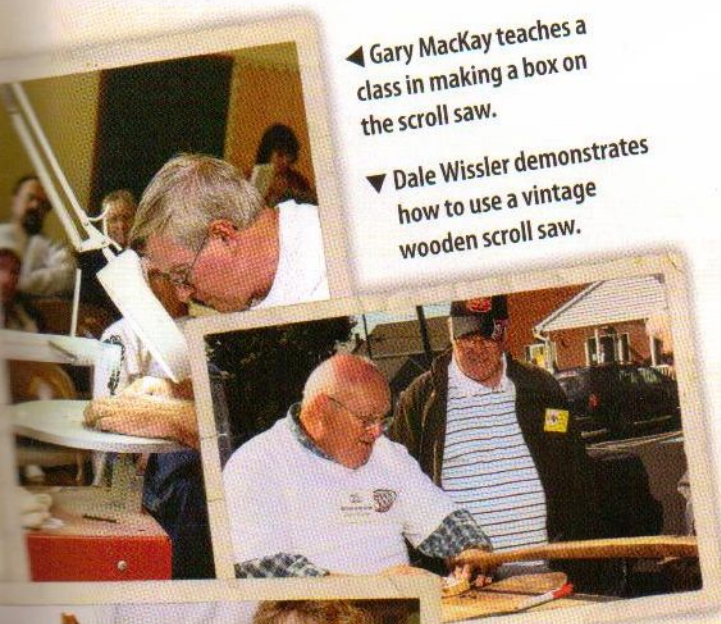
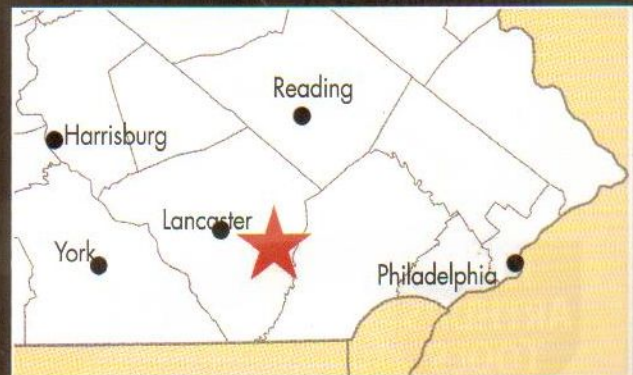
◆ Instructors & Class Coming Soon

In early January, we will be revealing the classes and making them available for purchase. Due to class sizes, pre-registration is highly recommended to guarantee you a seat. **Remember to join our newsletter at Wood-Show.com to be notified when the class schedules and instructors have been posted.**

◆ New Location: Rough and Tumble Historical Association, Lancaster County, Penn.

One of the world's best museums of old tools and farm equipment.

RoughAndTumble.org



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

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



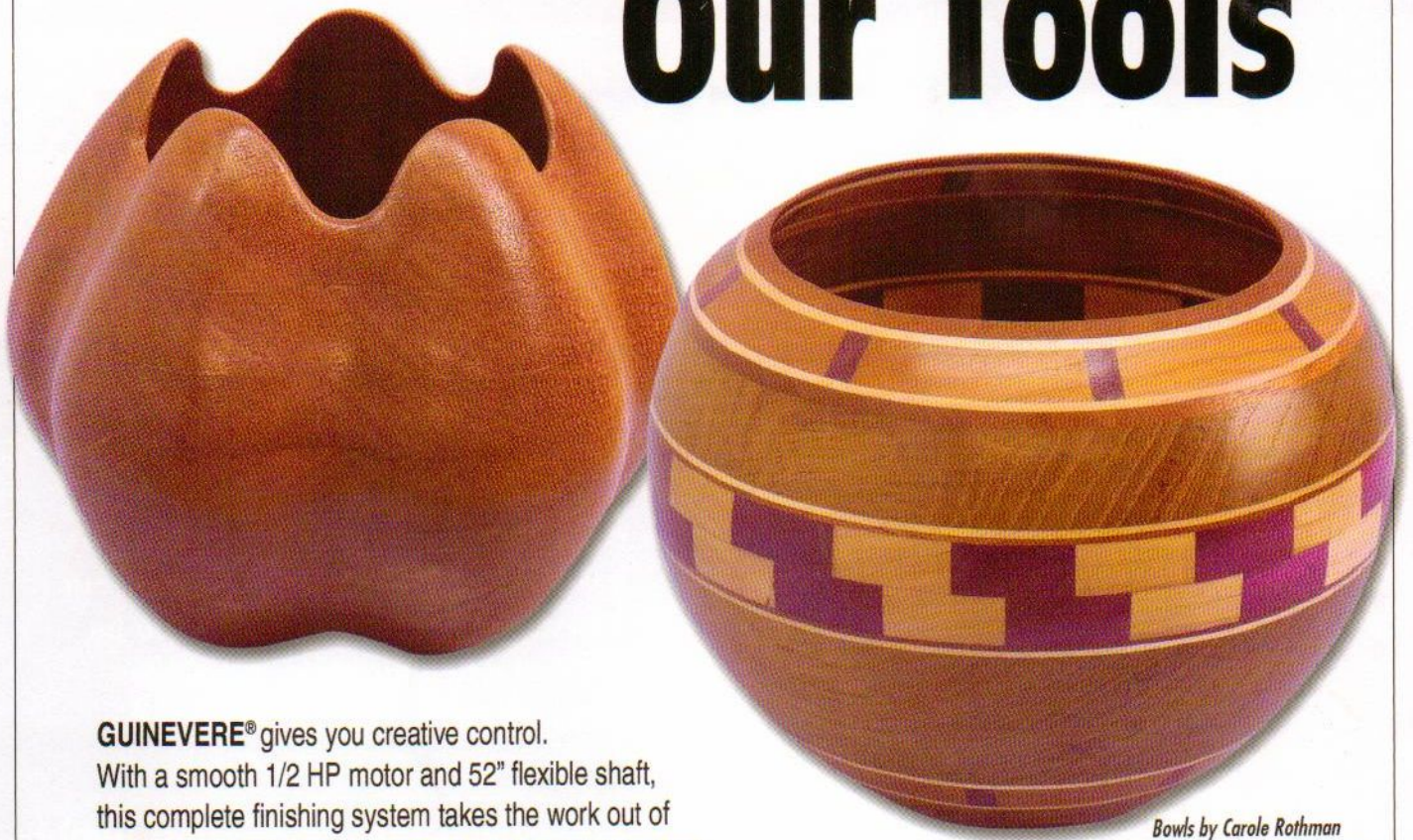
◀ Between instructing intarsia classes, Kathy Wise poses with one of her popular designs.

SCROLLSAW
woodworking
& CRAFTS


FOX CHAPEL
PUBLISHING

WOODCARVING
ILLUSTRATED

Your Vision Our Tools



GUINEVERE® gives you creative control. With a smooth 1/2 HP motor and 52" flexible shaft, this complete finishing system takes the work out of sanding and finishing. You can achieve a unique velvet finish only possible with the Guinevere® patented system. Choose from five pneumatic heads that conform to the surface they touch and put Guinevere to work.

*Bowls by Carole Rothman
www.scrollsawbowls.blogspot.com*

Add sanding and polishing sets to fit every need, from polishing wax to a dust extractor!

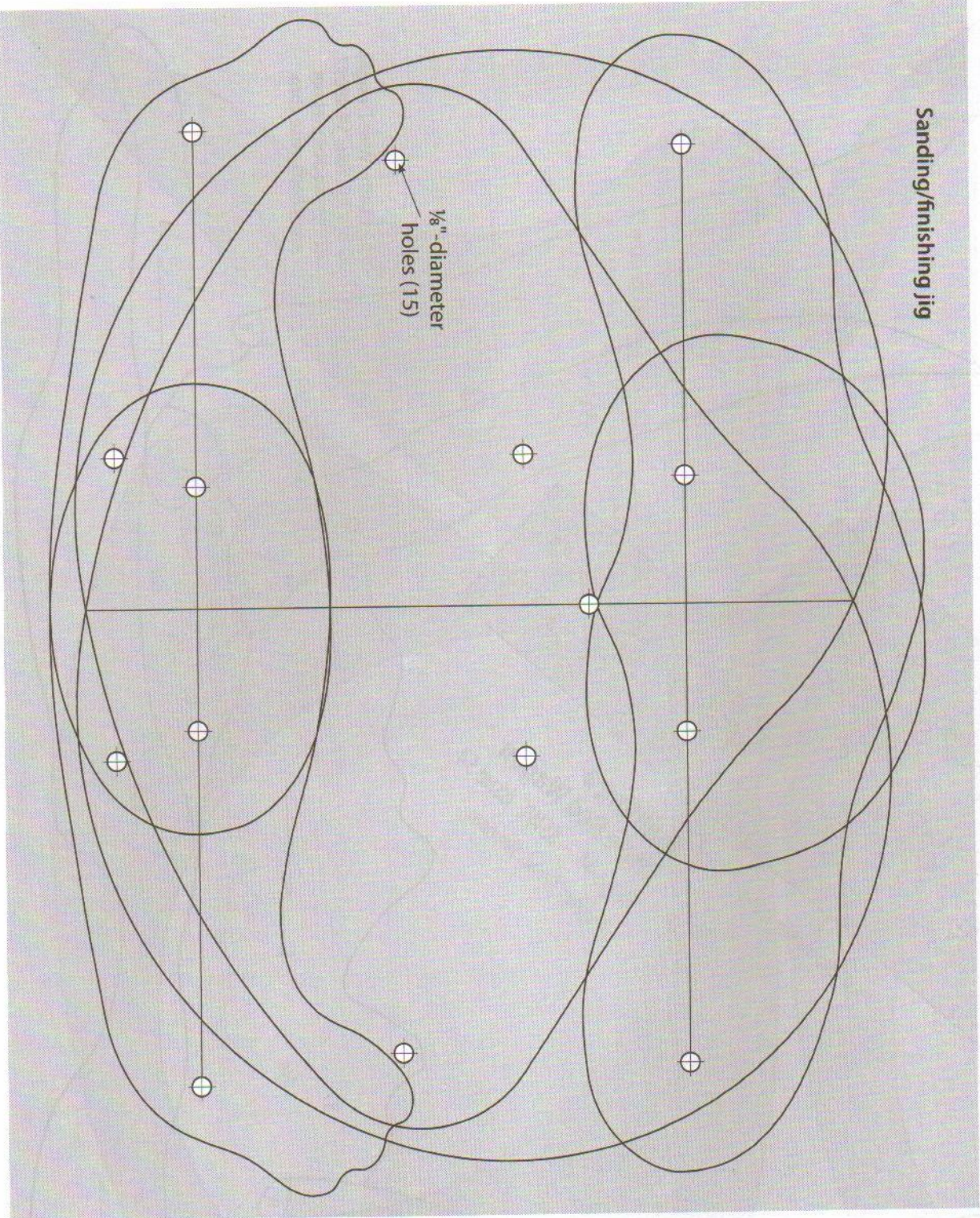


katools.com

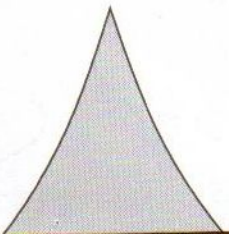
Tools To Bring Your Vision To Reality

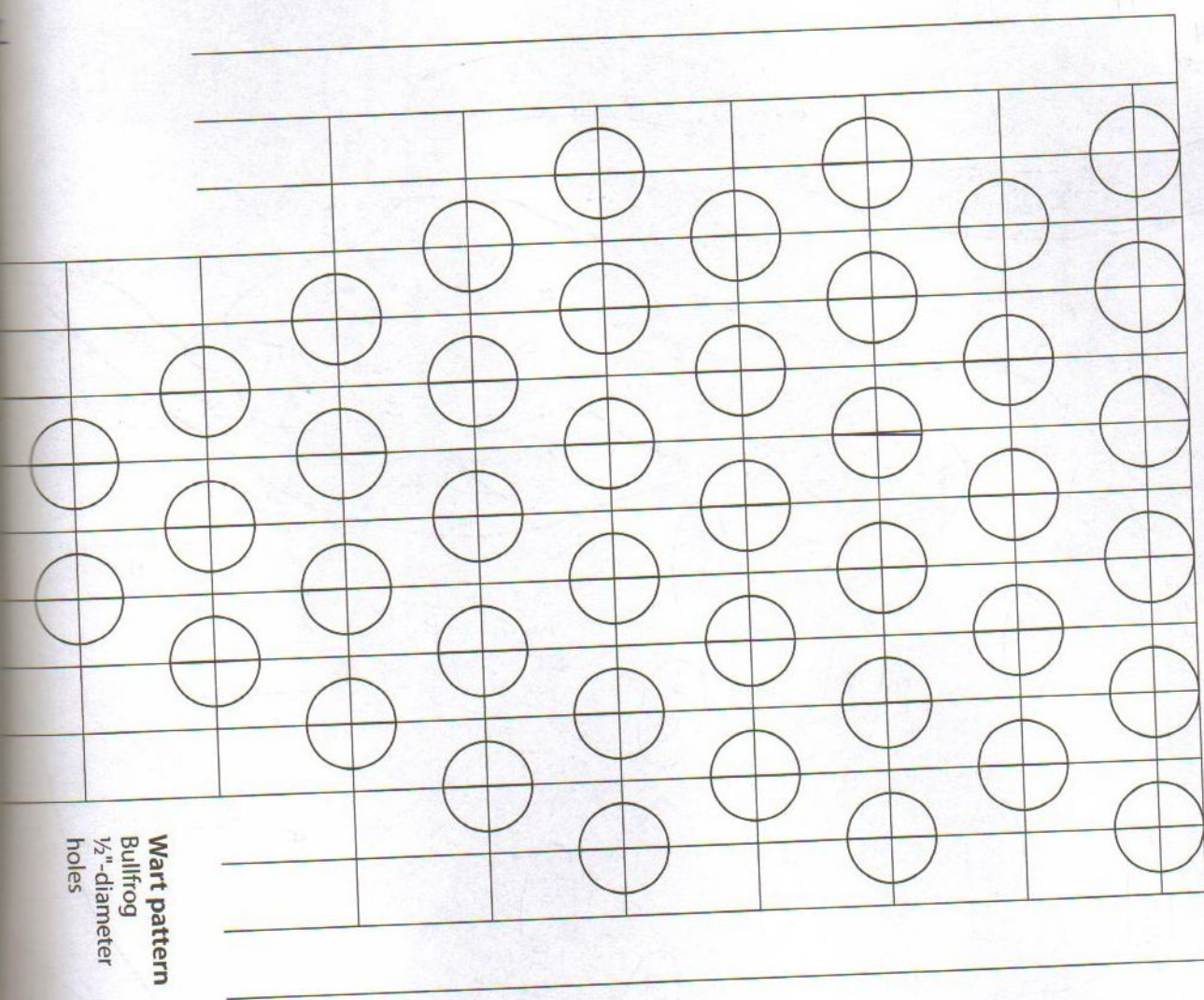
800-942-1300

Sanding/finishing jig



Outline only
for box bottom

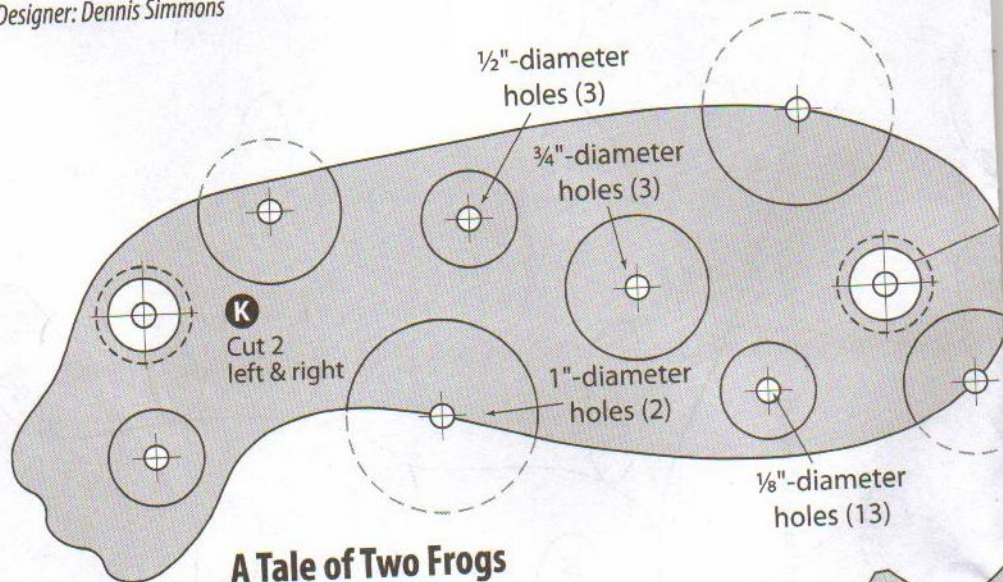




Wart pattern
Bullfrog
1/2"-diameter
holes



Building a Little Red Wagon
Page 44 - SSWC Issue 54
Designer: Dennis Simmons

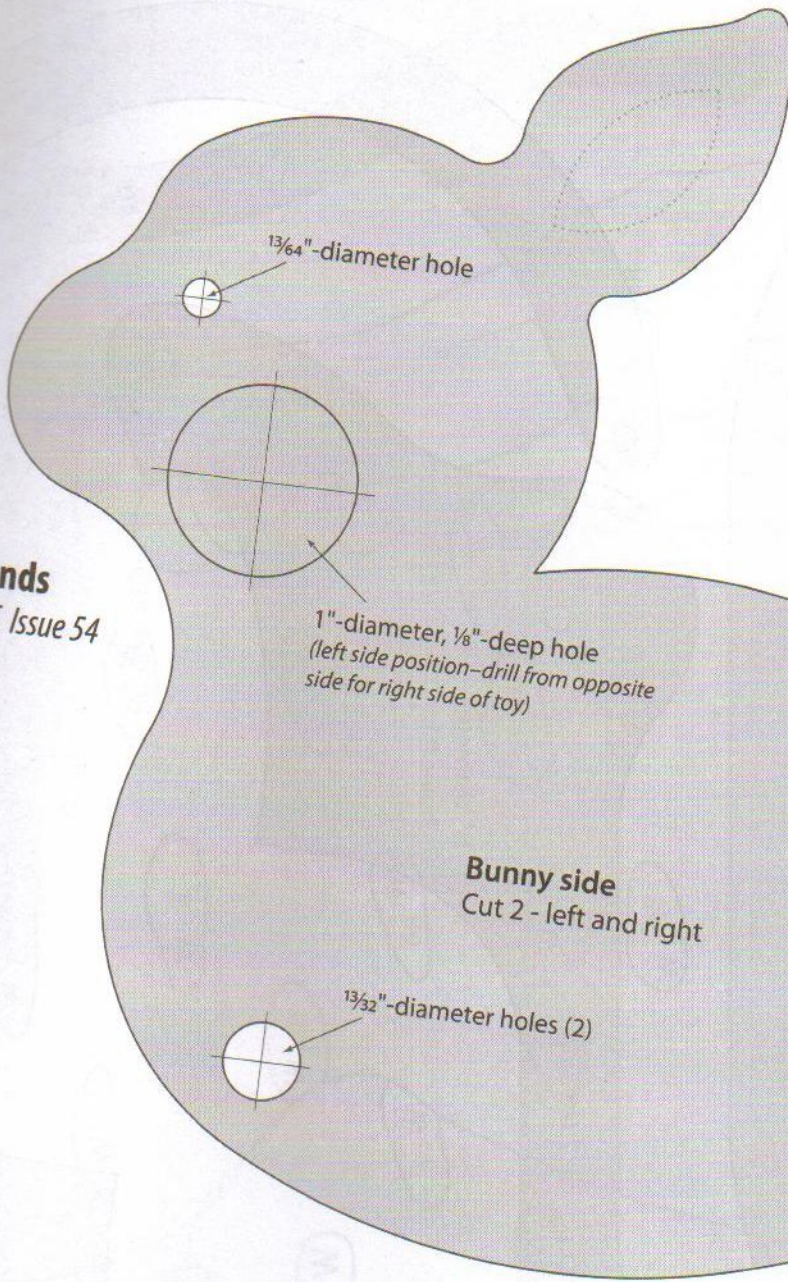


A Tale of Two Frogs
Page 64 - SSWC Issue 54
Designer: John Hutchinson

Pull-Toy Friends

Page 32 - SSWC Issue 54

Designer: Paul Meisel

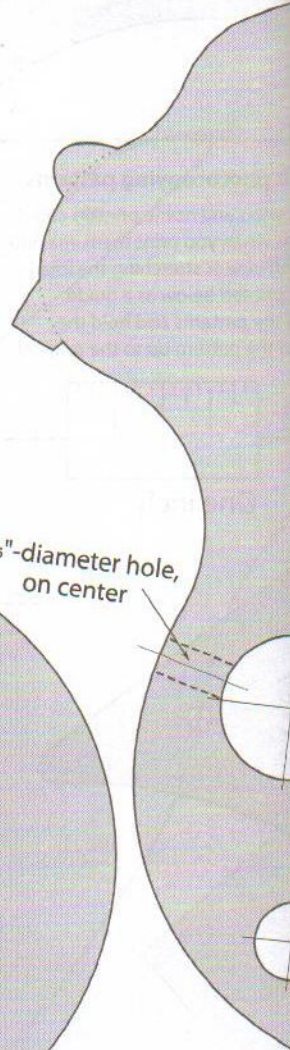


$\frac{13}{64}$ "-diameter hole

1"-diameter, $\frac{1}{8}$ "-deep hole
(left side position—drill from opposite
side for right side of toy)

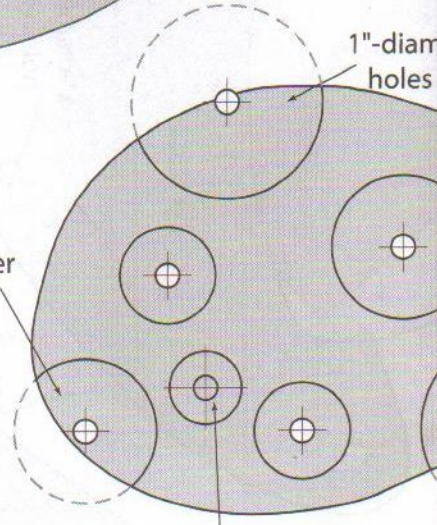
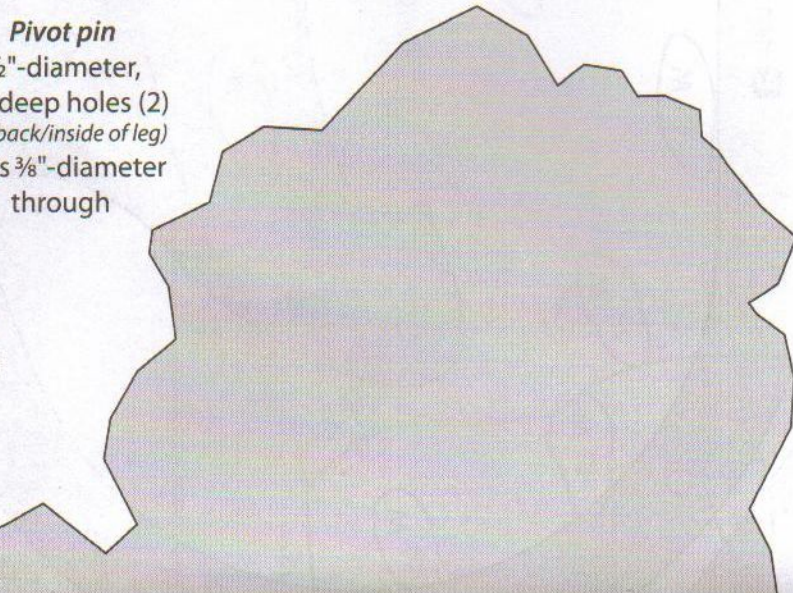
Bunny side
Cut 2 - left and right

$\frac{13}{32}$ "-diameter holes (2)



$\frac{3}{16}$ "-diameter hole,
on center

Pivot pin
 $\frac{1}{2}$ "-diameter,
 $\frac{1}{2}$ "-deep holes (2)
back/inside of leg)
plus $\frac{3}{8}$ "-diameter
through



1"-diam
holes

$\frac{3}{4}$ "-diameter
holes (3)

A Tale of Two Frogs

Page 64 - SSWC Issue 54

Designer: John Hutchinson

Pivot pin
 $\frac{3}{8}$ "-diameter,
 $\frac{1}{4}$ "-deep hole
(on back)

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

All patterns on this pullout section: © 2014 Scroll Saw Woodworking & Crafts

Crown of Thorns Portrait.....	31	Locking Heart Box.....	54
Pull-Toy Friends.....	32	Blooming Spring Fretwork Flowers.....	60
Building a Little Red Wagon.....	44	A Tale of Two Frogs.....	64
Spring Fawn.....	50		

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.

$\frac{3}{4}$ "-diameter hole

Bunny center

$1\frac{3}{32}$ "-diameter holes (2)

$\frac{1}{2}$ "-diameter holes (5)

1 Cut 2, left & right

$\frac{1}{8}$ "-diameter holes (13)

Pivot pin

$\frac{1}{2}$ "-diameter,
 $\frac{1}{4}$ "-deep hole
(on back)

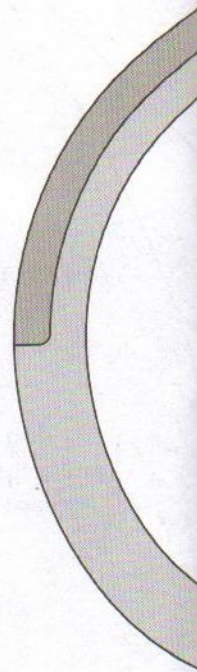
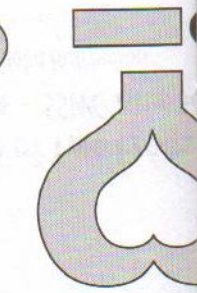
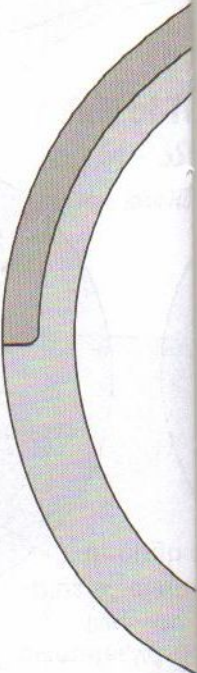
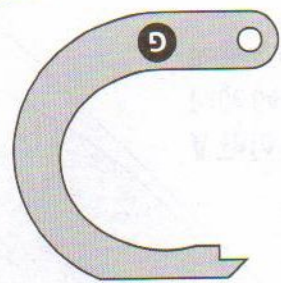
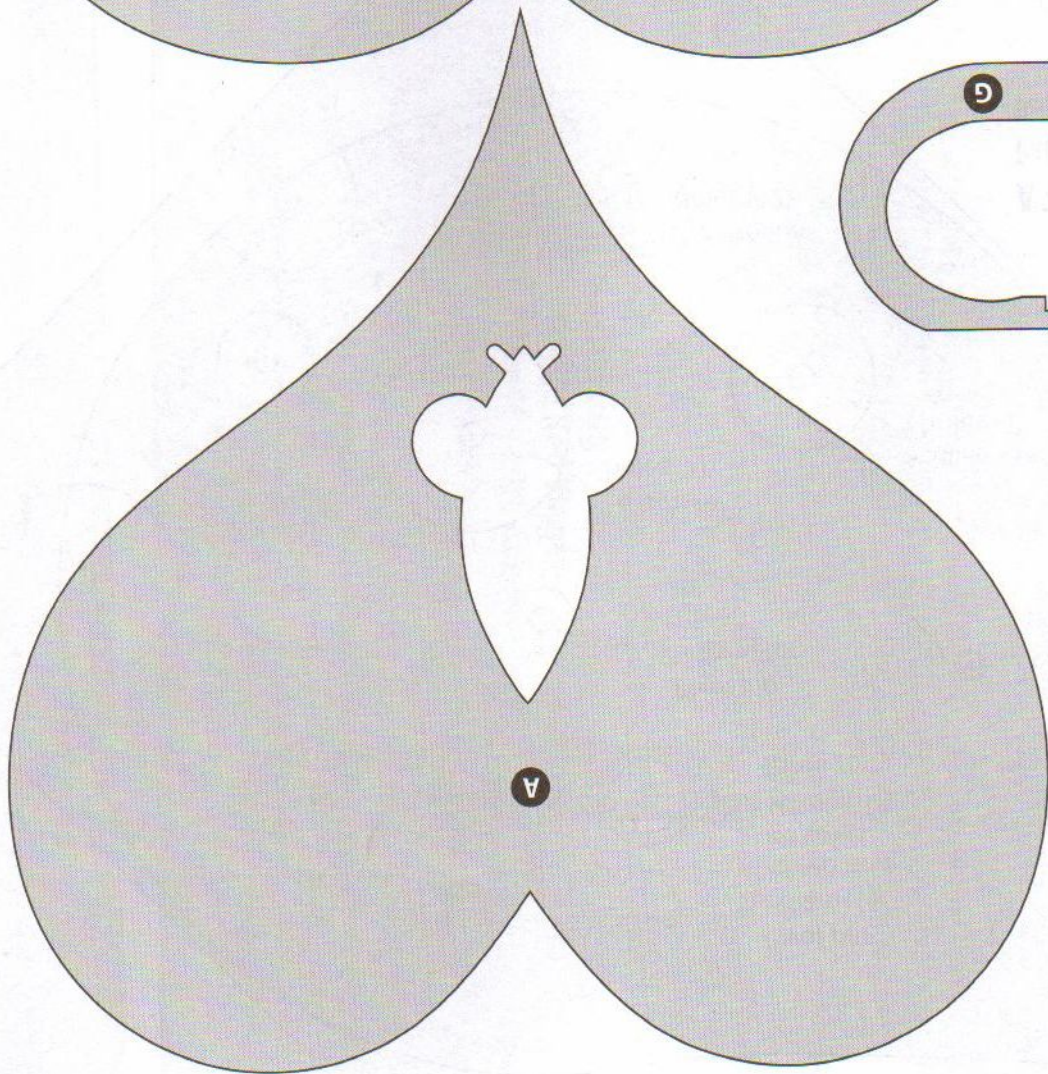
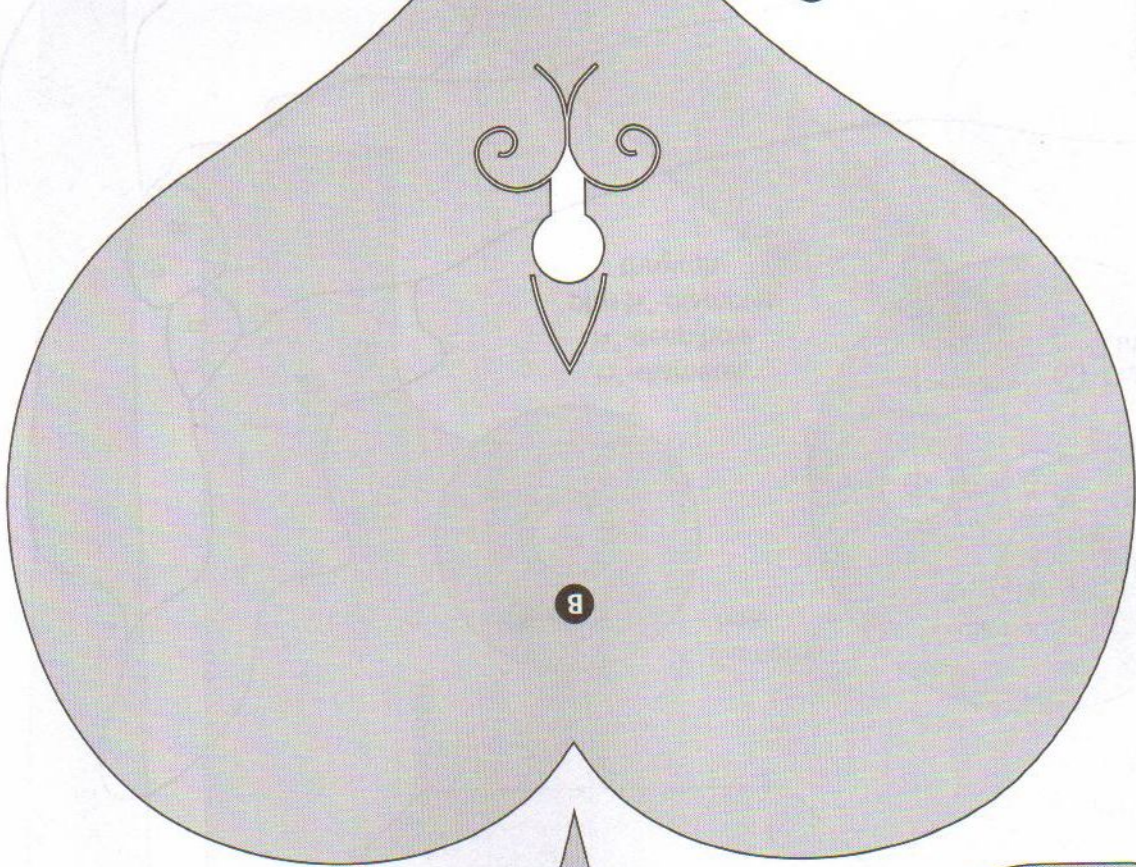
plus $\frac{3}{8}$ "-diameter through

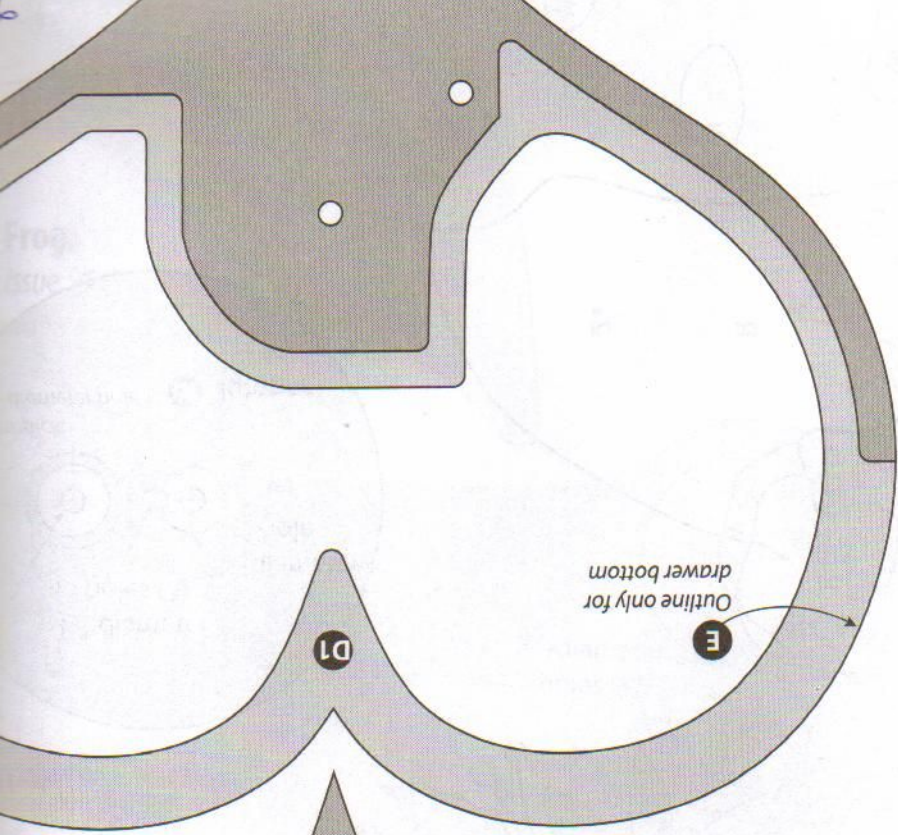
Notice about photocopying patterns

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.

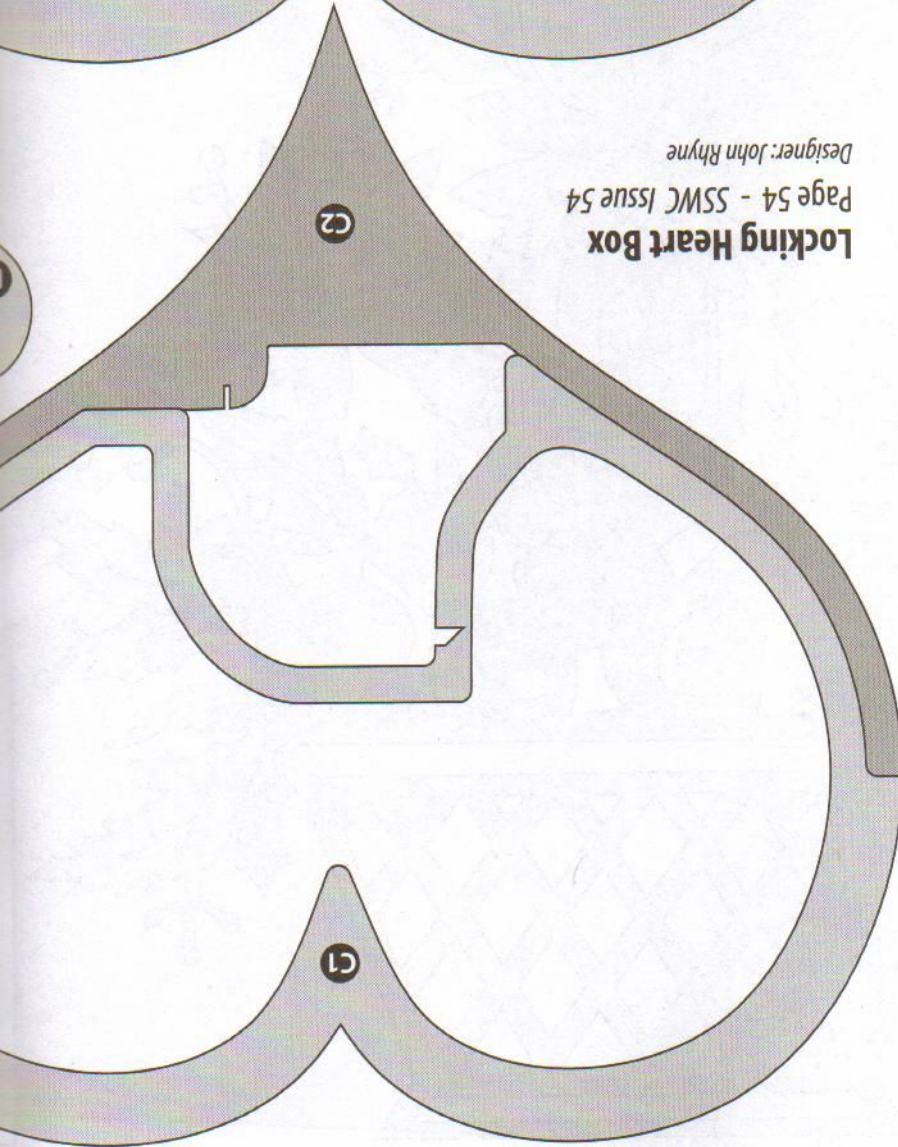


One inch

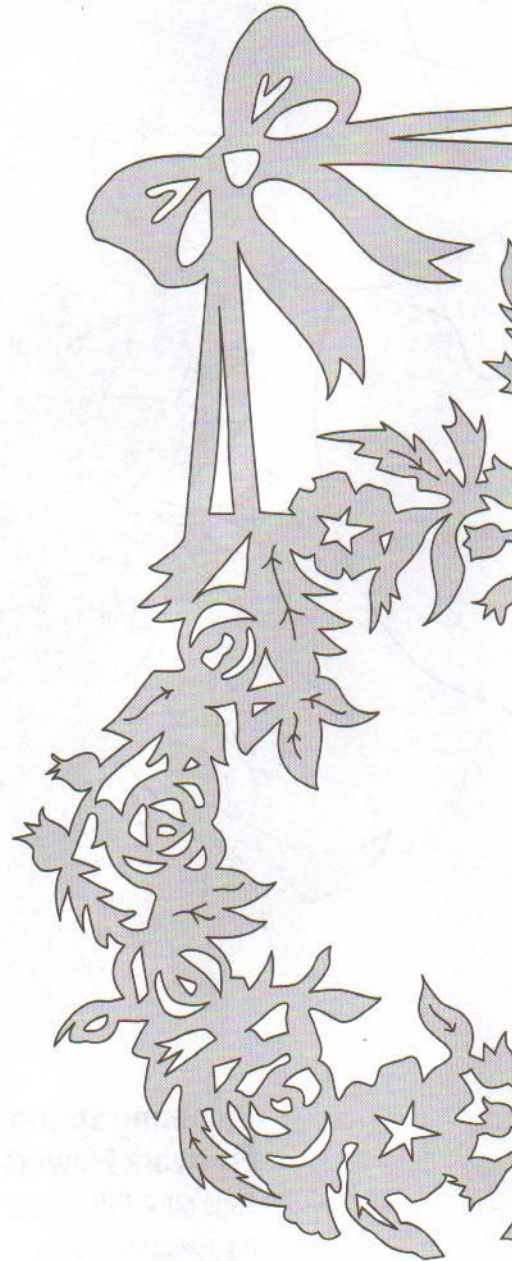




Outline only for
drawer bottom



Locking Heart Box
Page 54 - SSWC Issue 54
Designer: John Rhyme



Backing board

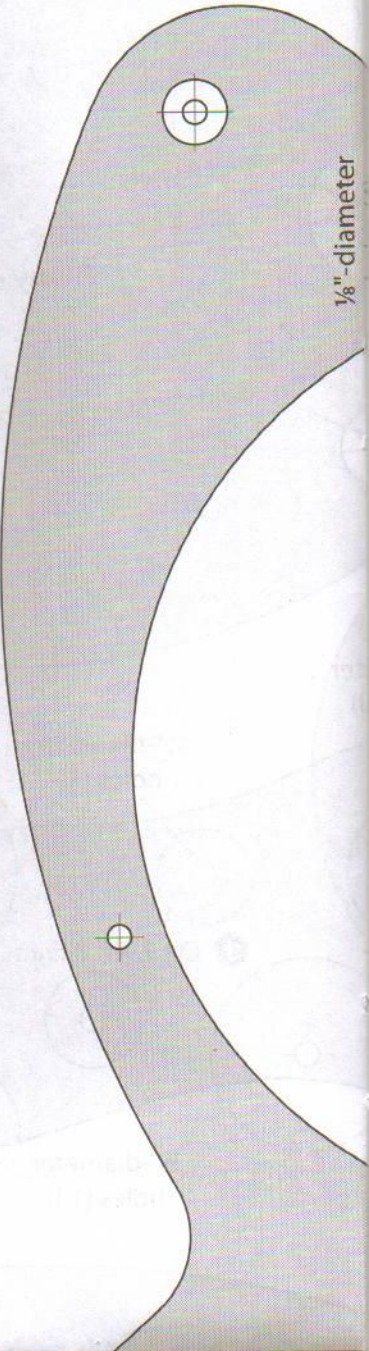
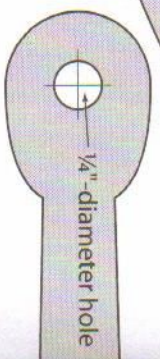
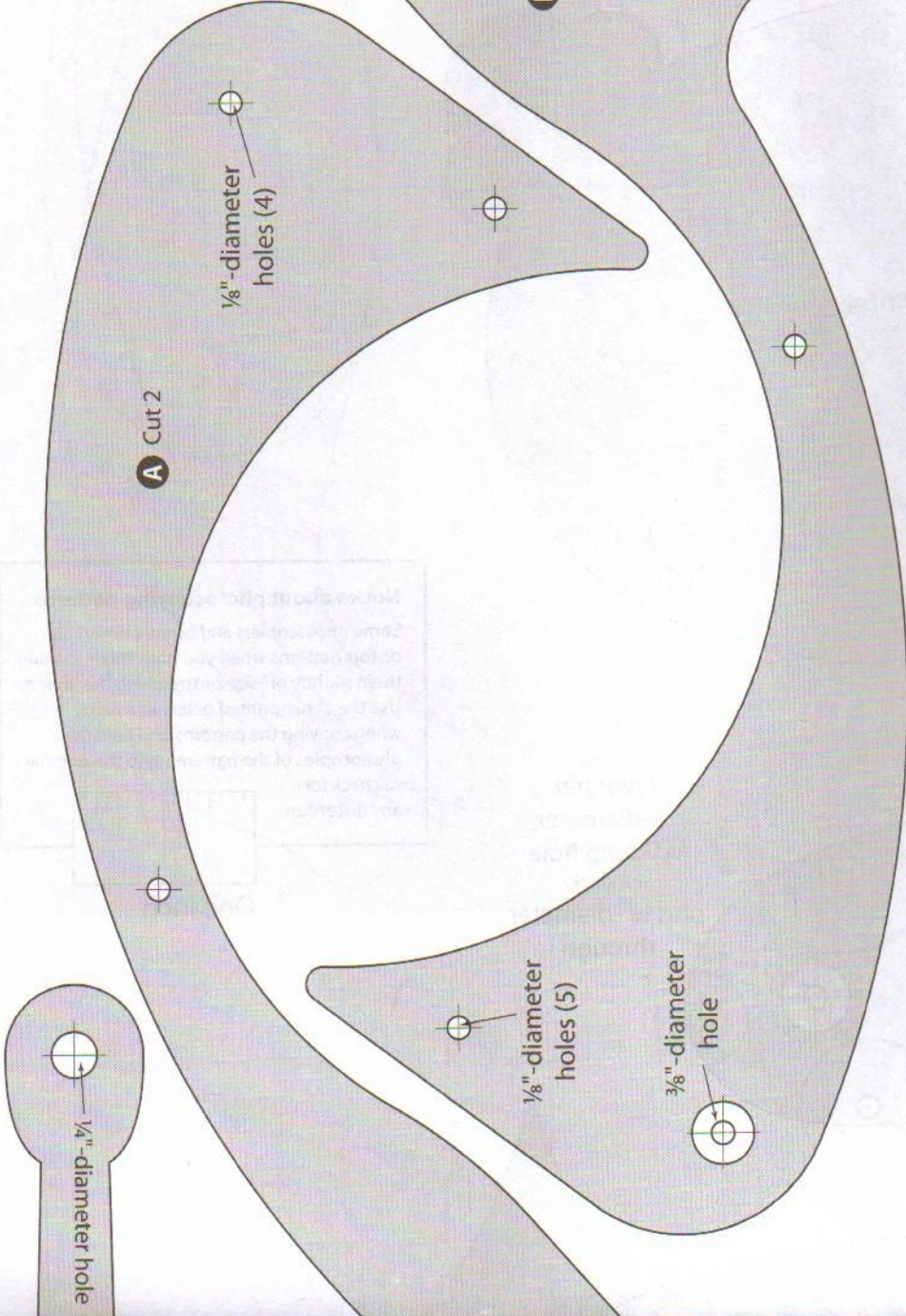
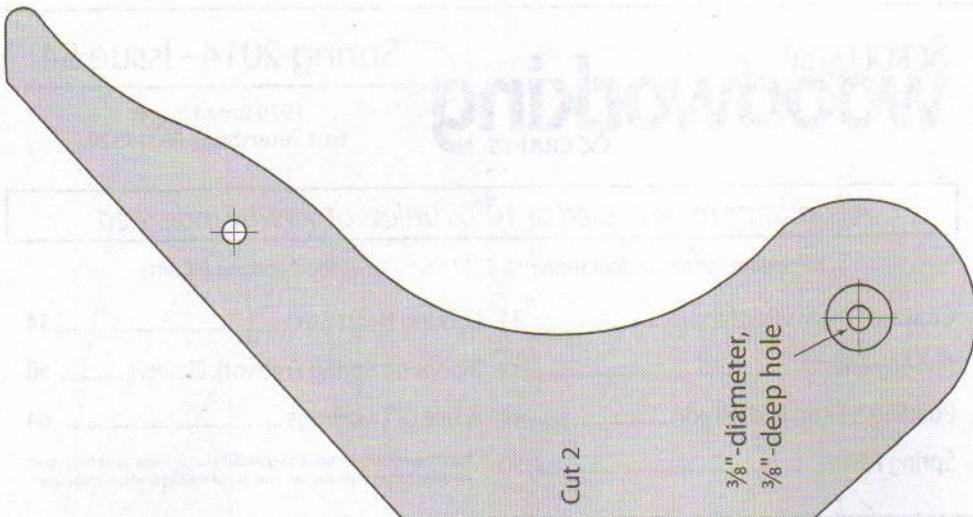


Blooming Spring
Fretwork Flowers
Page 60 - SSWC Issue 54
Designer: Gloria Cosgrove



**Crown of
Thorns Portrait**
Page 31 - SSWC Issue 54
Designer: John A. Nelson

3/16" diameter
hole



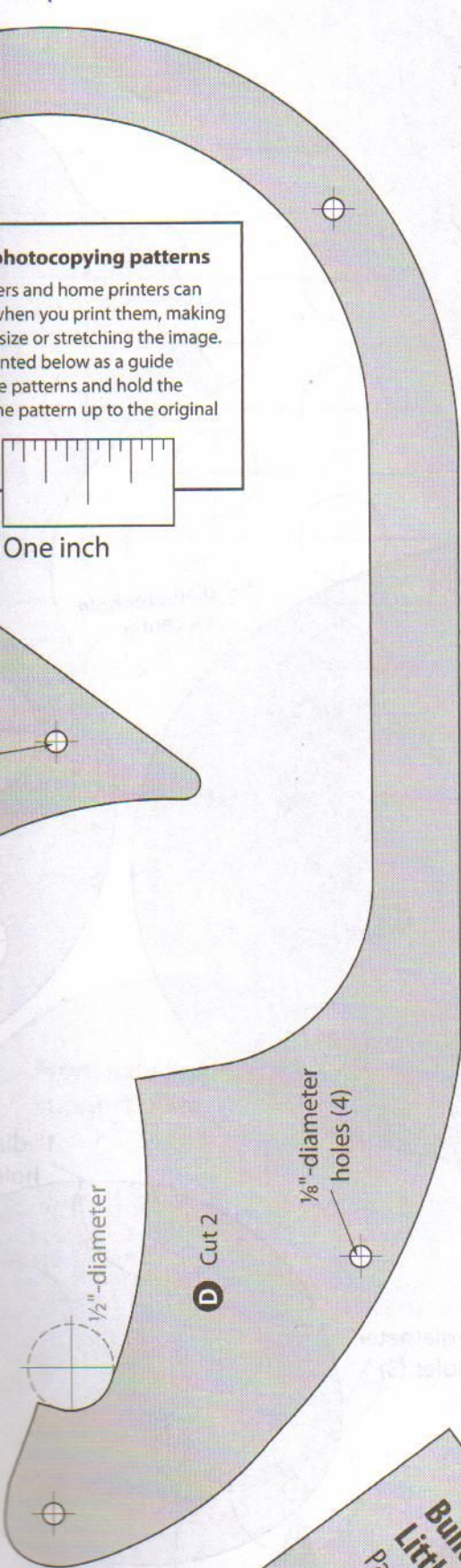
Notice about
Some photos distort patterns slightly. Use the 1" bar when copying photocopies to check for any distortions.

Photocopying patterns

Users and home printers can photocopy these patterns when you print them, making sure to maintain the original size or stretching the image. The patterns are printed below as a guide. To use the patterns, hold the paper up to the original and trace the pattern up to the original.



One inch

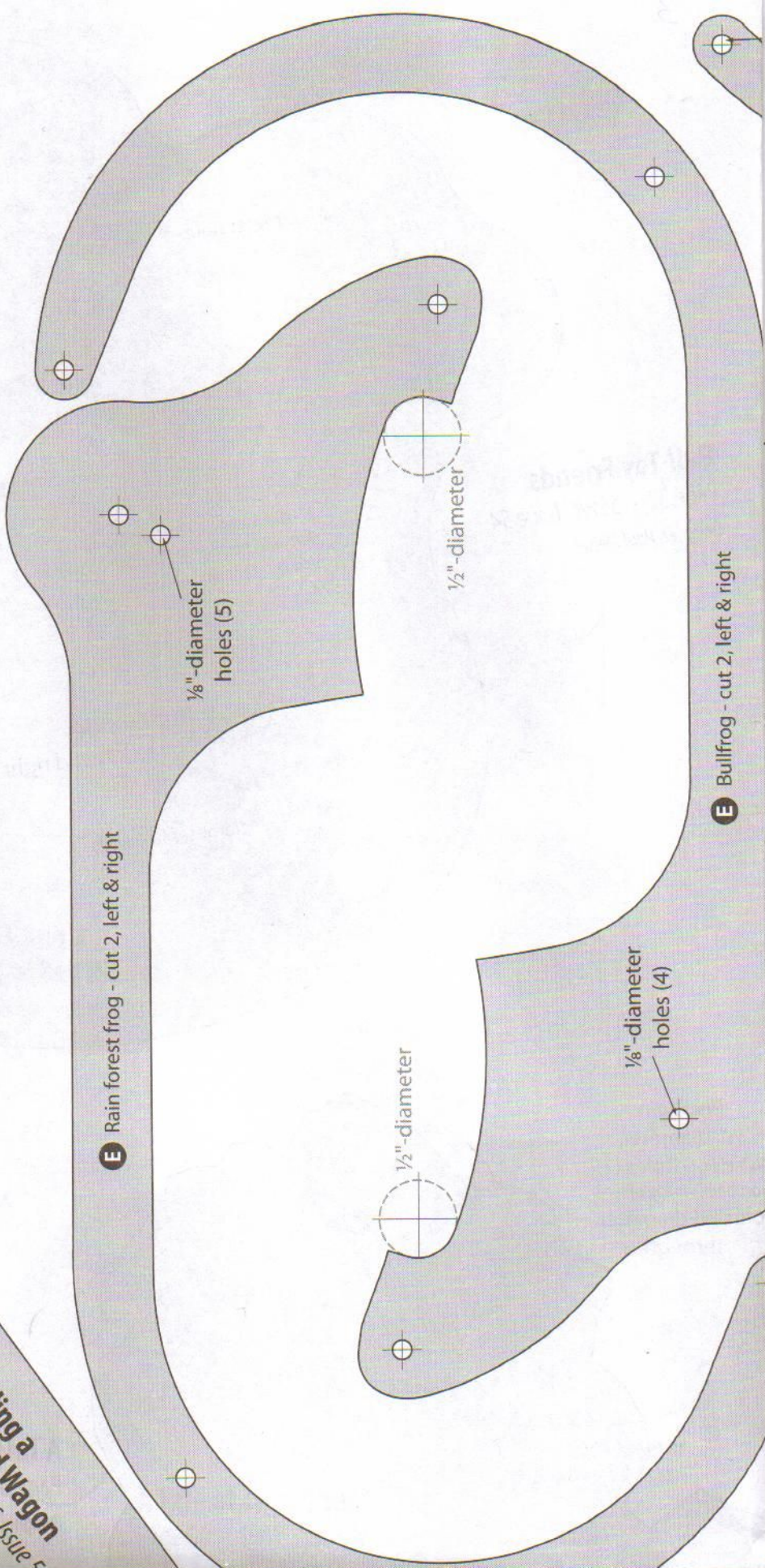


D Cut 2

1/2"-diameter

1/8"-diameter holes (4)

E Rain forest frog - cut 2, left & right



1/8"-diameter holes (5)

1/2"-diameter

1/2"-diameter

1/8"-diameter holes (4)

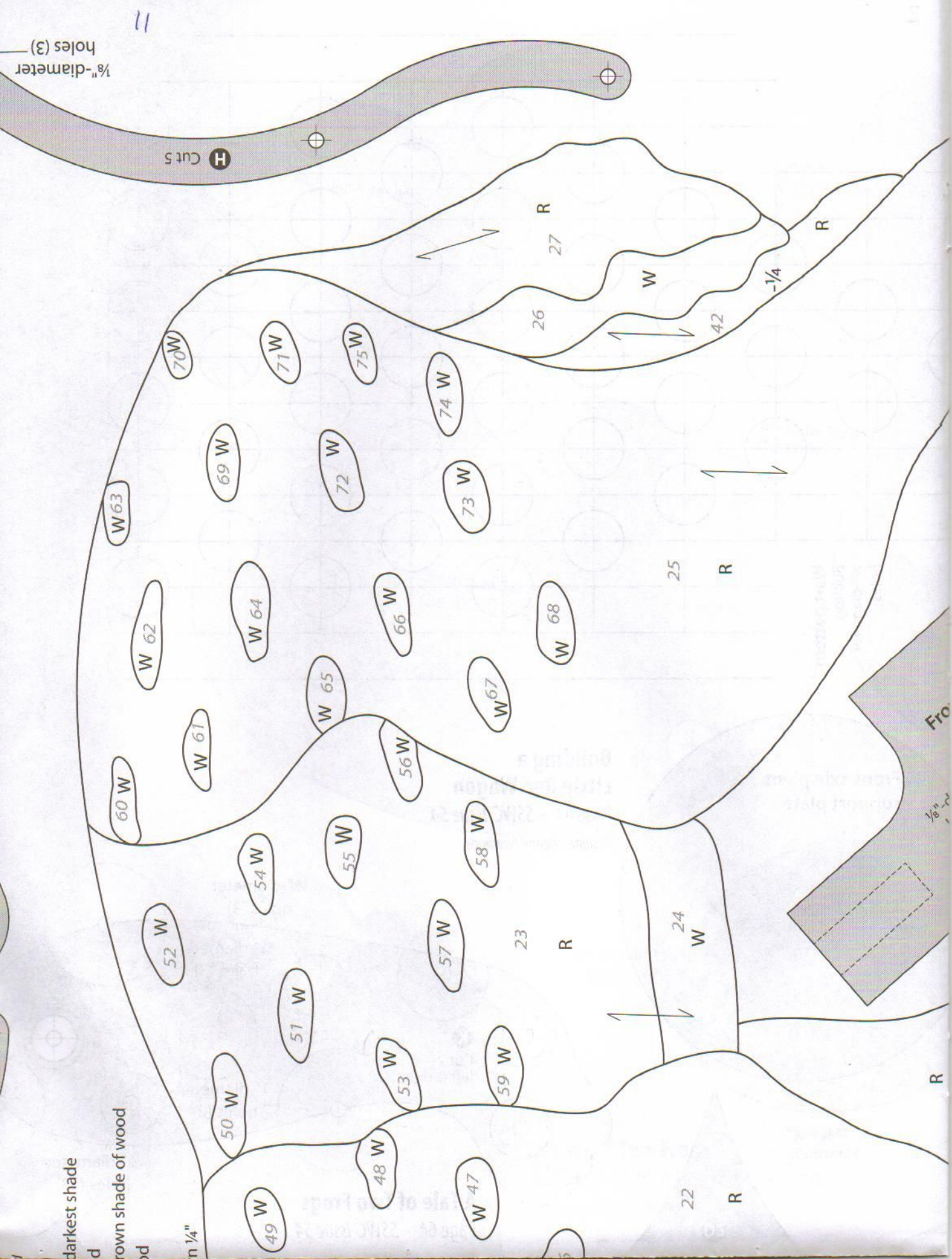
E Bullfrog - cut 2, left & right

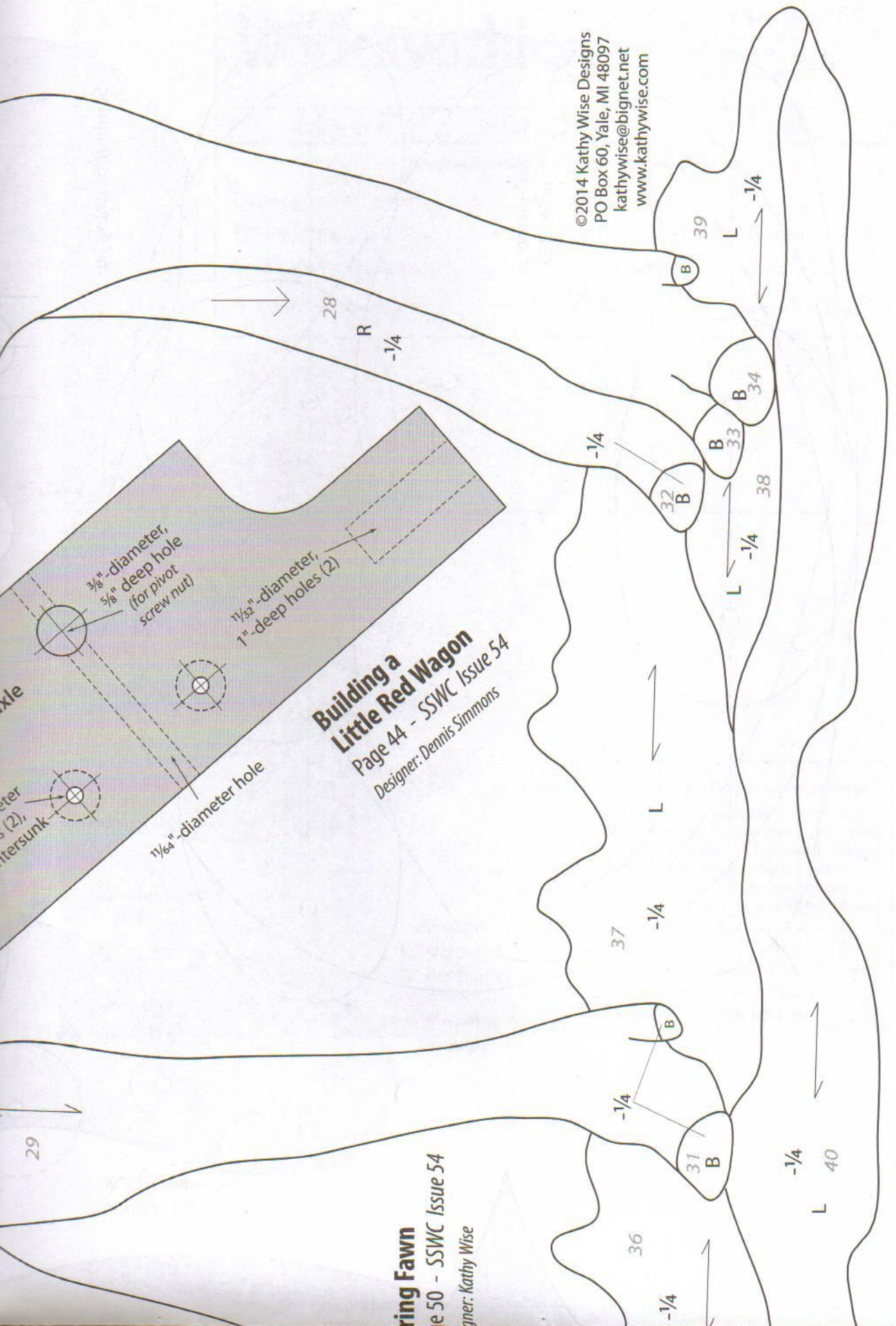
Building a Little Red Wagon
Page 44 - SSWC Issue 5
Designer: Dennis Simmons

1/8"-diameter
holes (3)

Cut 5

darkest shade
brown shade of wood
in 1/4"





©2014 Kathy Wise Designs
 PO Box 60, Yale, MI 48097
 kathywise@bignet.net
 www.kathywise.com

Building a Little Red Wagon
 Page 44 - SSWC Issue 54
 Designer: Dennis Simmons

Building a Spring Fawn
 Issue 50 - SSWC Issue 54

Designer: Kathy Wise

axle

center
 (2),
 countersunk

3/8"-diameter,
 5/8" deep hole
 (for pivot
 screw nut)

1/32"-diameter,
 1"-deep holes (2)

1/64"-diameter hole

29

28

R
 -1/4

-1/4

B

39

L

-1/4

B

34

B

33

38

L

-1/4

L

L

-1/4

37

B

-1/4

B

31

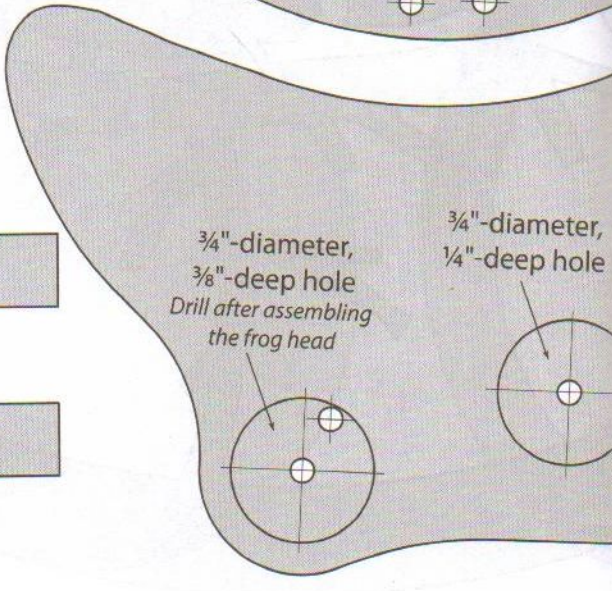
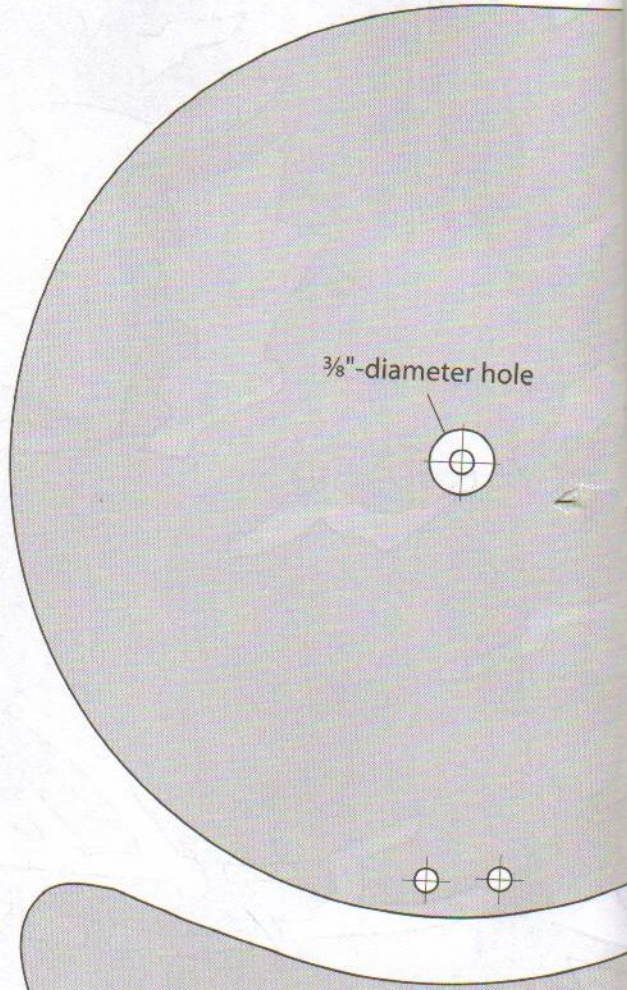
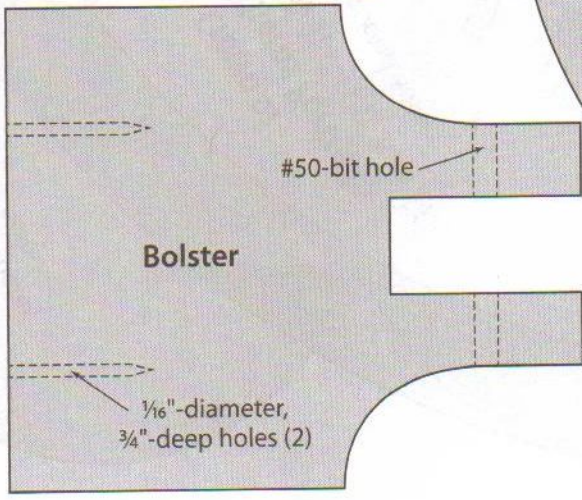
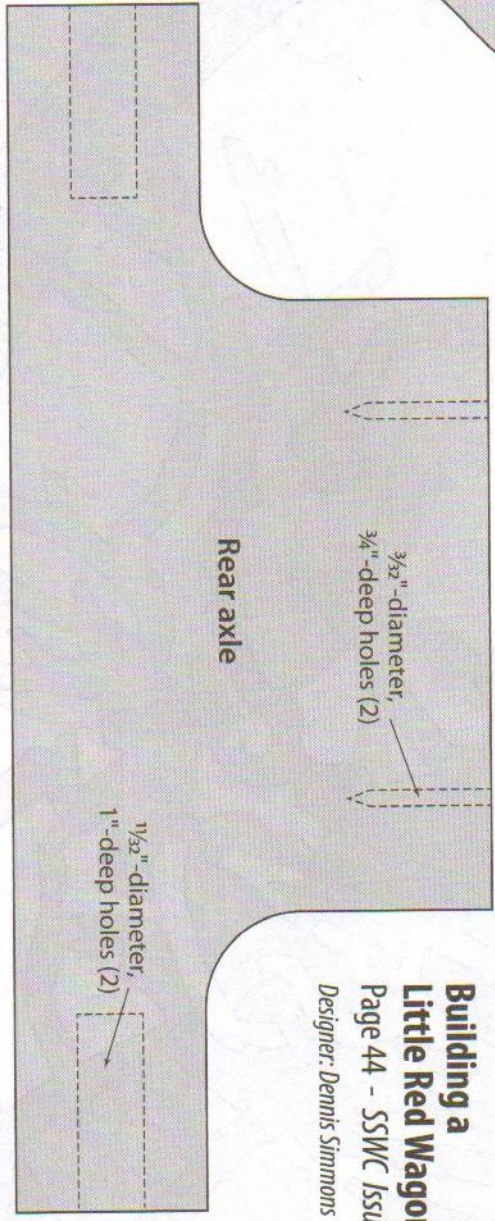
-1/4

L

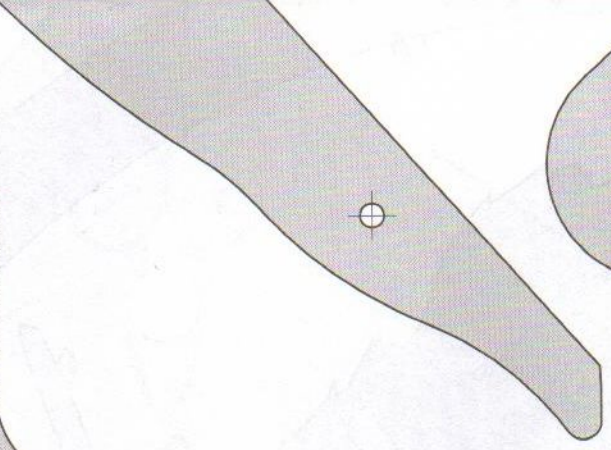
40

36

-1/4



Building a Little Red Wagon
Page 44 - SSWC Issue 54
Designer: Dennis Simmons



Curved trim

-1/4

W

4

3 R

1/8"-diameter holes (5)

1 1/8"-diameter, 3/8"-deep hole

F Rain forest frog - cut 2, left & right

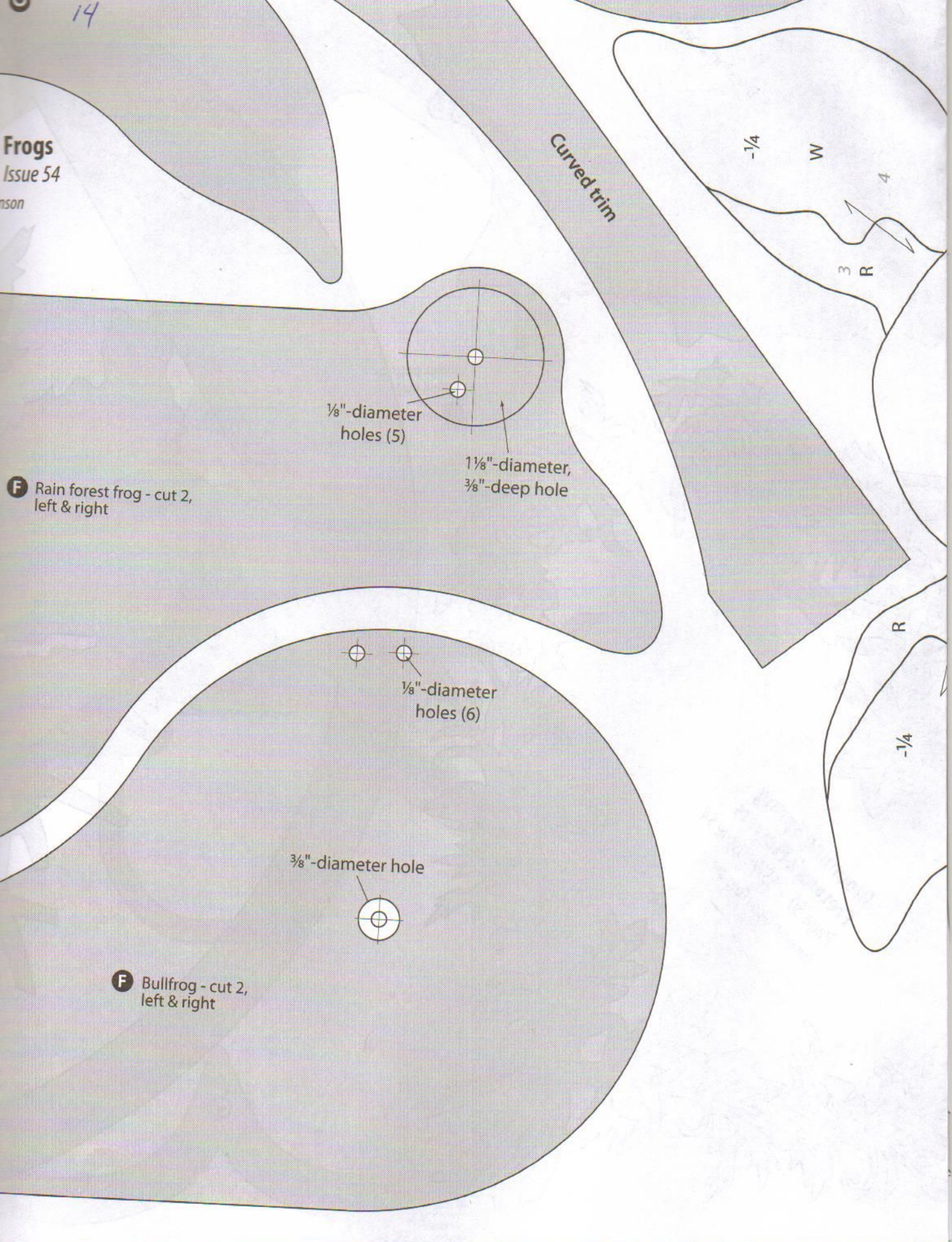
1/8"-diameter holes (6)

R

-1/4

3/8"-diameter hole

F Bullfrog - cut 2, left & right

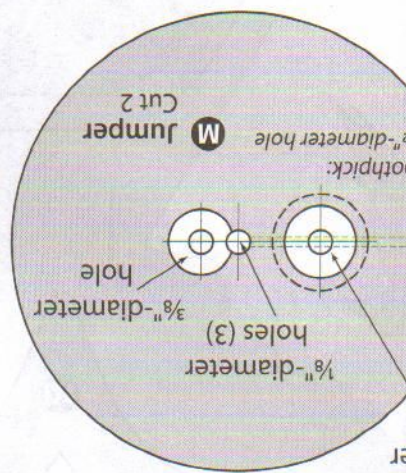


Legend
 Start with 3/4" or 1" wood

- Grain direction
- B..... Dark ebony / very
- D..... Dark shade of wood
- M..... Medium reddish b
- L..... Light shade of wood
- W..... Any white wood
- 1/4..... Sand or plane down



**Blooming Spring
 Fretwork Flowers**
 Page 60 - SSWC Issue 54
 Designer: Gloria Cosgrove



p hole

