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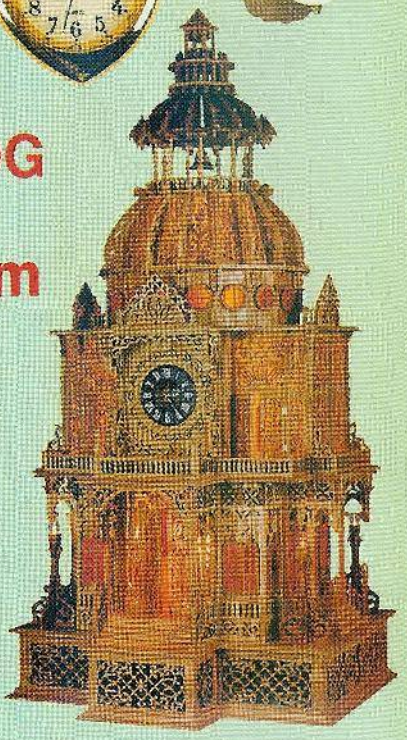

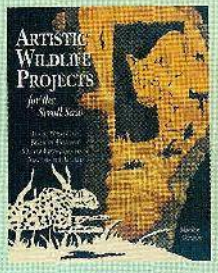

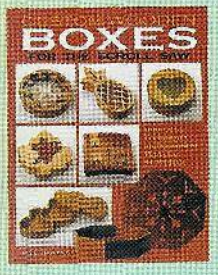

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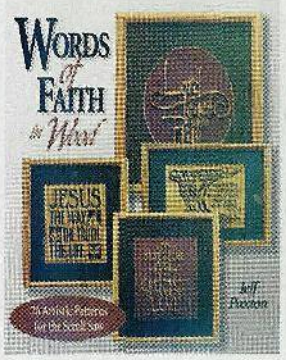

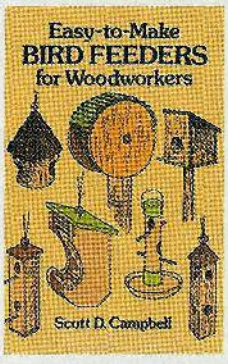

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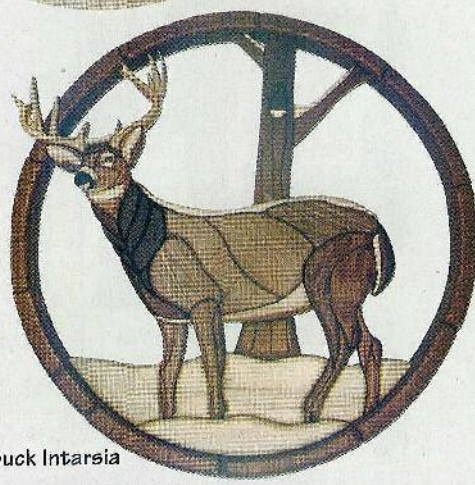

Snow Buck Intarsia

CREATIVE WOODWORKS & CRAFTS November 2004, No.104
All American Crafts, Inc. 2004

Printed in U.S.A. by Banta Publications Group
Cover design by Kelly Albertson

THE FULL SIZE PATTERNS FOR THE PROJECTS SHOWN ON THIS PAGE ARE LOCATED IN PULL OUT PATTERN SECTION NO. 1 FOUND IN THIS ISSUE.

Intarsia projects:

Woodcraft project:

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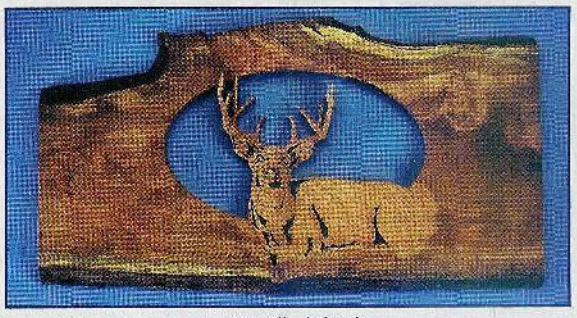
Features:

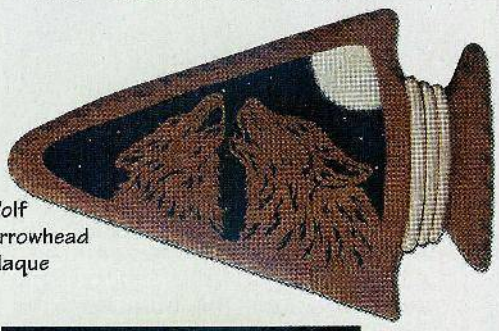
Projects in Full Size Pattern Section No. 2 shown on this page.

24-Karat "Slimline" Pen and Pencil Kits (no pattern for this project)



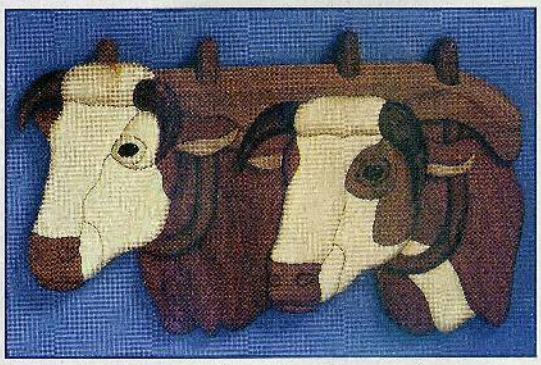
Scrolled Buck

Wolf with Inlay



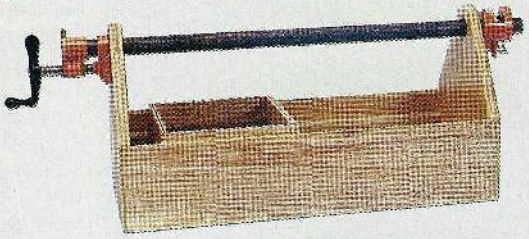
Wolf Arrowhead Plaque

Pumpkin Trivet



Oxen Intarsia

First Tractor

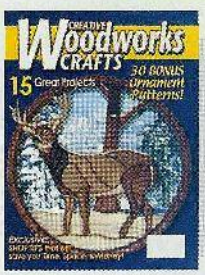


Tool Tote

Bobcat

Zoo Elephant

Bonus Project: Business Card Holder



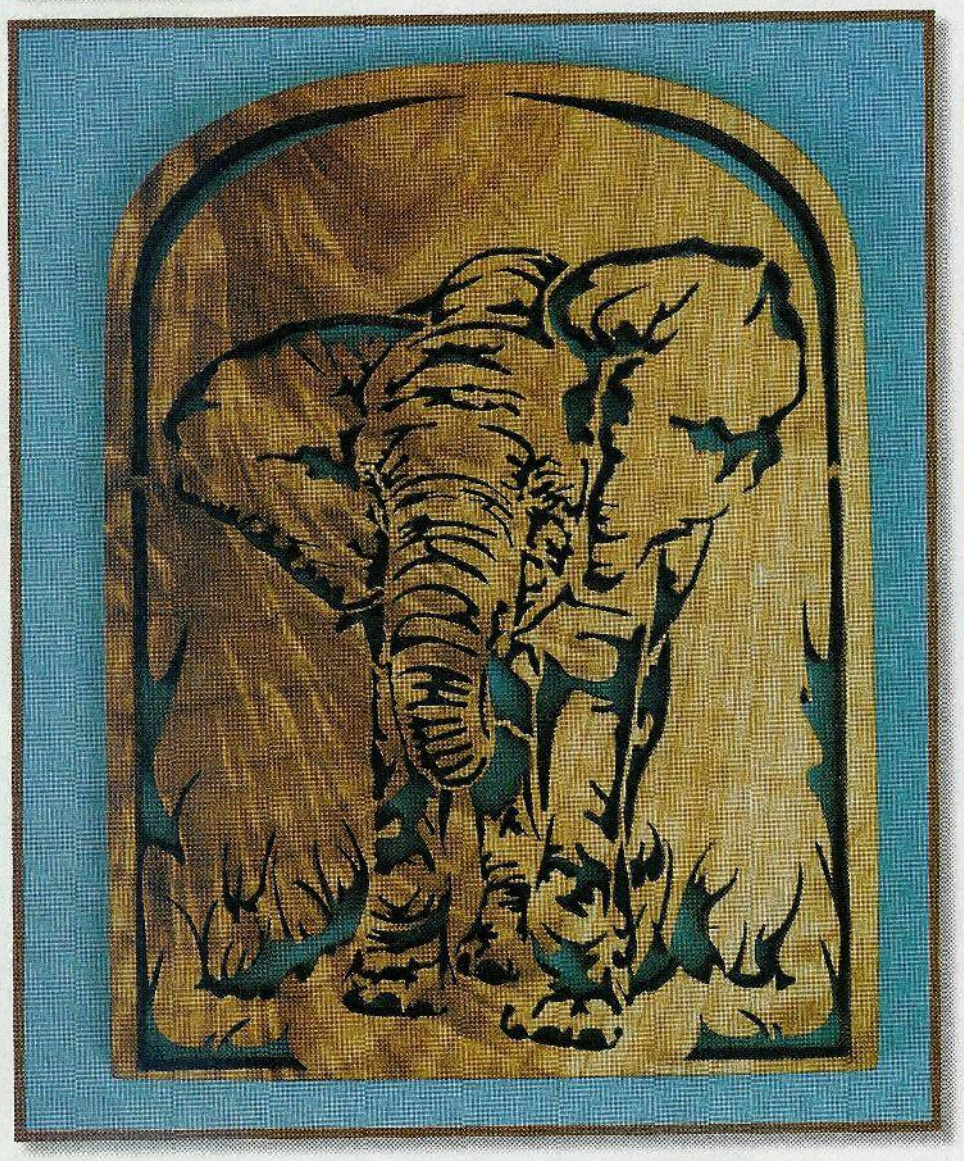
ON THE COVER: This issue's cover features the outstanding intarsia work of a new contributor to *Creative Woodworks & Crafts*, Rob Letvinchuck. The title of the piece is Snow Buck Intarsia, and instructions for designing it can be found on page 60. Great work, Rob!

THE FULL SIZE PATTERNS FOR THE PROJECTS SHOWN ON THIS PAGE ARE LOCATED IN PULL OUT PATTERN SECTION NO. 2 FOUND IN THIS ISSUE.

Pattern Located in Full Size Pattern Section No. 2!

Zoo Elephant

pattern by Jacob Fowler, cut and finished by Wayne Fowler



SUPPLIES

Wood: *hardwood* (mid-brown color, e.g. white or brown oak, willow or similar wood)—one piece 1/2" to 3/4" x 10-1/2" x 8"
Tools: scroll saw with No. 2R and/or 5R blade; fixed disc or belt sander with fine or extra fine (120/220) disc or belt; access to photocopier
Temporary-bond spray adhesive (such as 3M 777 adhesive)
1/4 sheet of 220-grit sandpaper
Finishing oil of your choice (e.g. tung, walnut, etc.)

Introduction

When Jacob was four, we had a membership at the Toronto Zoo. Four is a great age for kids to identify animals (long trips in the country with lots of cows and horses) and what better place than a zoo to see them. One of our favorites was the elephant compound because the elephants were REALLY big and we could get REALLY close. I took lots of pictures, one of which was a great head-on shot of an African elephant. When Jacob was nineteen, he took the elephant picture and turned it into a great elephant pattern.

The finished elephant was cut out of a piece of eastern cottonwood crotch from a stump recovered from a town dump in Durham, Ontario. When I saw the finished boards, I bought every one and have been rationing them for designs such as this.

Given that this is an elephant, it looks better bigger. If the piece of wood you are going to use is bigger than the pattern, feel free to enlarge the pattern in order to use all of the wood.

INSTRUCTIONS

Make a photocopy of the pattern and glue it to the wood. I recommend using clear packing tape on top of the pattern to reduce the burn from the tight turns you will have to make when cutting the pattern. For cutting, I recommend using a No. 5 or No. 2 reverse tooth blade in order to reduce chipping on the bottom of the piece.

After you have drilled the guide holes and cut out the fret pieces, either peel the pattern off or use a solvent such as paint thinner to remove the paper pattern. Let the piece dry before you sand the front and back on a disc or belt sander. This is your chance to ensure that the bottom of the frame is square and straight by sanding out any bumps on the outside frame. Also, you can smooth out the outside of the top arch until it is cleanly rounded. I find that then using a 1/4 sheet of 220-grit sandpaper is a good way of removing any remaining burs and lightly rounding the edges to give it a more finished look. Clean the elephant using your favorite tool of choice (I use a clean paintbrush). Finish with a thin oil to seal the inner edges (I use either walnut or tung oil).

If you are planning to display it on a shelf, this piece could be mounted on a rectangular base measuring about 8-1/2" x 2" using two dowels or screws through either end. I use a roundover router bit to give my bases a more finished look. Another option would be to round the ends of the base before routing, again to give it a more professional look.

Send questions concerning this project to: Wayne Fowler, 33 Longmeadow Cres, Markham, Ontario, Canada L3R 356. Email: fantasiesisaw@rogers.com

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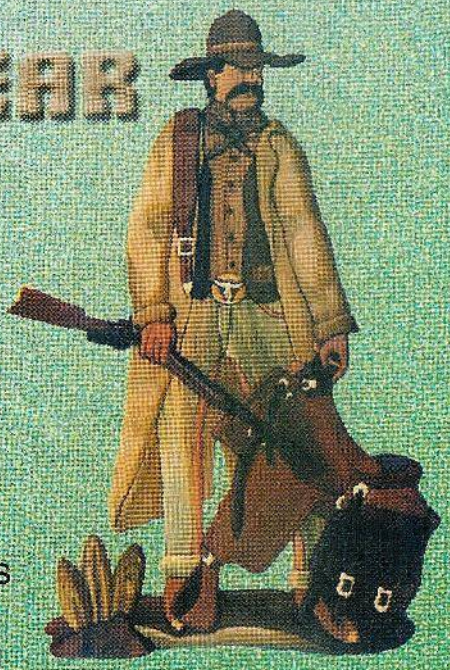

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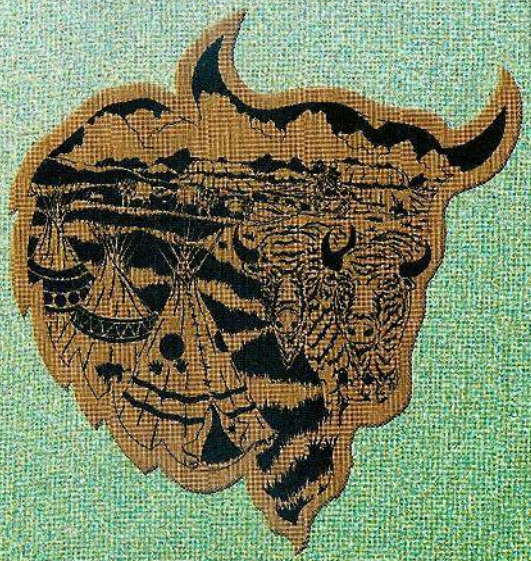

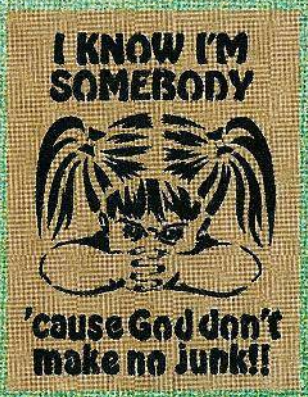

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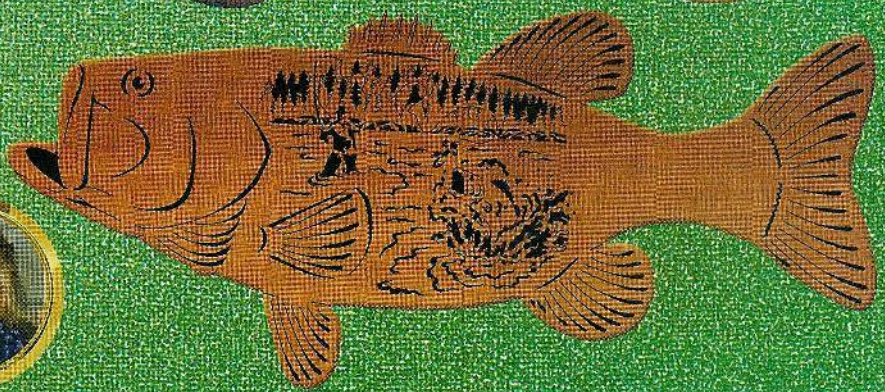

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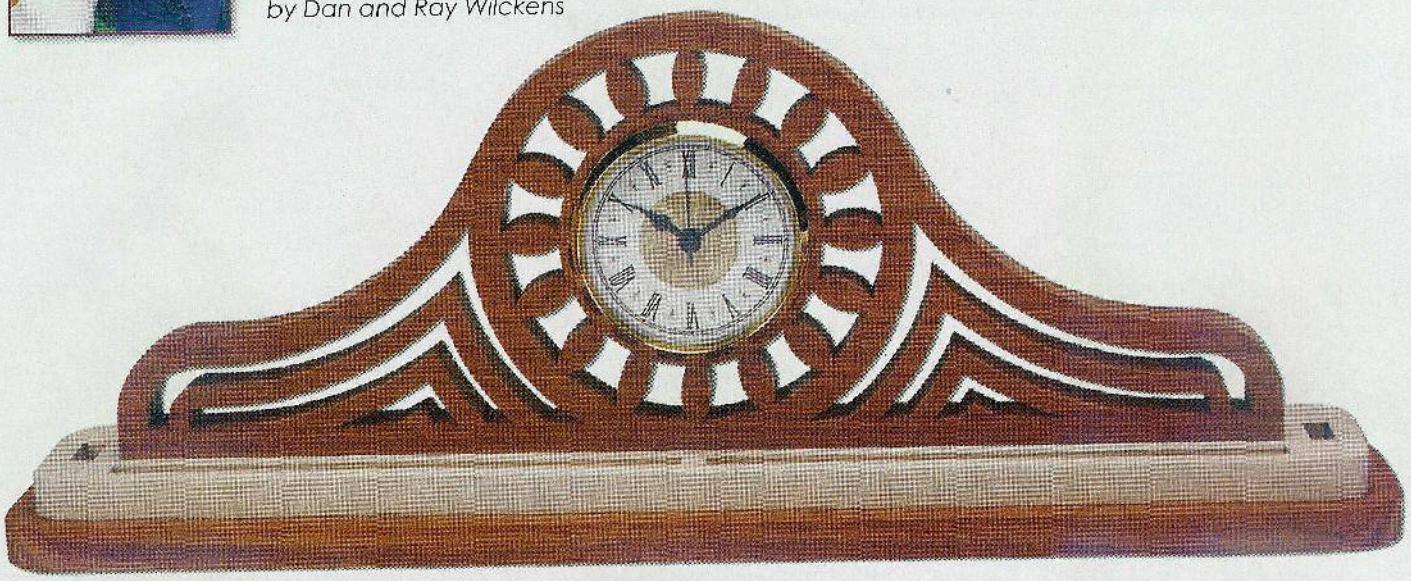
Tambour Clock

by Dan and Ray Wilckens



SUPPLIES

Wood: *wood of choice*—one piece 1/2" x 3-1/4" x 16-3/4" (for lower base), one piece 1/2" x 2-1/2" x 16" (for upper base*), one piece 3/4" x 5-1/2" x 14-1/4" (for the clock body)
Tools: scroll saw; drill press with very small drill press (for starter holes) and 2-3/8" Forstner bit (for clock movement); table saw or similar; planer (for proper wood thickness); belt and hand-held sander; various clamps
Temporary-bond spray adhesive
Sandpaper, assorted grits
Small file
Xacto® knife and/or needle pick
Wood glue
Oil finish
2-3/4"-Dia. clock insert
**We used contrasting wood for the upper base.*

INSTRUCTIONS

Step 1. Copy the patterns, saving the originals for later use.
Step 2. Select wood to use.
Step 3. Plane wood to proper thickness.
Step 4. Cut wood to size of patterns. All straight-edged pieces should be cut to size on a table saw or equivalent for accurate dimensions and straight edges. Cut scroll saw edges oversize.
Step 5. Attach the pattern to the wood with a spray adhesive. It takes practice to know the right amount: too much and the pattern is hard to remove; not enough and the pattern may come loose during sawing.
Step 6. With a small drill bit, drill a hole in the waste area of each cutout.
Step 7. Feed scroll saw blade through the small holes and cut along the lines. Feed the blade through the next hole and so on, making all of the interior cuts first. For exterior cuts, you can cut in from the edge or drill a small hole just outside the exterior line.
Step 8. Remove patterns from wood by peeling it off. If a pattern is attached too firmly, you can use a hair blow-dryer. Be very careful because some cuts are very fragile.
Step 9. Sand workpieces with belt or hand-held sander.
Step 10. Remove any burrs and clean up any cuts with an *Xacto*® knife or a needle pick.
Step 11. As an option, cut the clock body (A) as one piece or as two thinner pieces whose combined thickness equals 3/4". For example, you might consider cutting the clock body at 1/2" thickness and then cutting a solid 1/4" backer board to go behind it (see **Fig. 1**). Sand the contour flush all around.
Step 12. Drill a 2-3/8"-Dia. hole through the clock body at the clock location.
Step 13. Glue the upper base (B) to the lower base (C). Then glue the clock body/body assembly to the base assembly (see **Fig. 2**). All of these parts need to be centered.
Step 14. Allow glue to dry for one hour.
Step 15. Apply oil finish per manufacturer's instructions.
Step 16. Install the clock insert.
Step 17. Sit back and enjoy your new clock!

For questions concerning this project, send an SASE to: Wilckens Woodworking, P.O. Box 520496, Independence, MO 64052. Email: wilkswood@aol.com

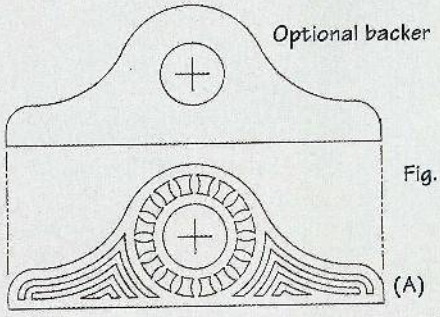


Fig. 1.

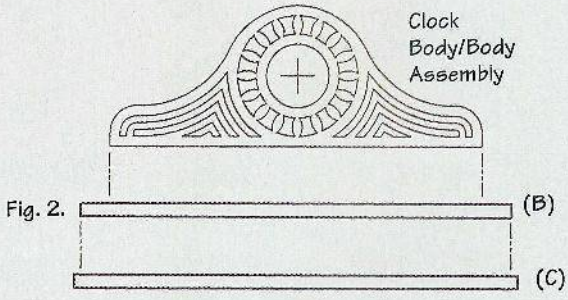


Fig. 2.

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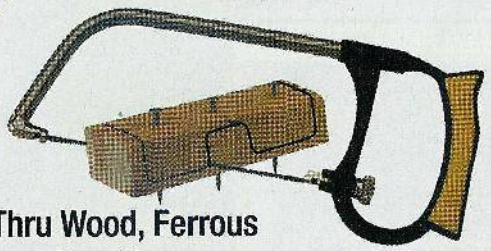

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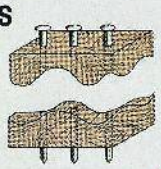

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From the Associate Editor's Desk

Our esteemed editor, Mr. Robert Becker, has asked me to step up to the plate and write the editorial for this issue of *Creative Woodworks & Crafts*, and I have gladly accepted the offer.

It has been my great pleasure to work very closely with Robert these last few months on producing for you, our readers, the best magazine possible. Over this period of time, I have had the opportunity, as well, to work with a team of great designers (Dirk Boelman, John Polhemus, Sheila Bergner-Landry, Larry Goodwin, Wayne Fowler, and so many others), our very talented art director Kelly Albertson, and of course our good friend, regular contributor and photographer Wes Demarest. I would like to thank all of our contributors, named and unnamed, for making our tasks here amicable, productive, and continually charged with creativity.

As to the specifics of this issue, we have a ton of exciting projects lined up for you.

A first-time contributor, Rob Letvinchuck, has crafted a beautiful Snow Buck Intarsia project that seems almost literally to jump out at you when you stand back and admire its very professional design and strong circular frame. We give Rob two thumbs up on his genuine creative effort, and certainly look forward to sharing more of his work with you in the future.

With the overwhelmingly positive reaction our editorial team and John Polhemus received following the publication of his shop tour (which in fact contributed greatly to our making this a regular feature in the magazine), we couldn't help but give you an update of what's going on in John's shop. Being the prolific designer that he is, John has also created an extremely practical pattern layout with which to fashion feet for those projects that need a little lift. Once again, John has somehow outdone himself, proving time and time again that there really are no limits when you allow your creativity to take over.

In addition to all of the other great scrolling projects we have here, the short history of saw blades (which you are sure to find amusing), and the second installment of our fantastic mini lathe series, we have also included some more ornaments from Dirk Boelman for your "last-minute" Christmas plans. Keep your eyes peeled for some more ornaments from B.J. Holm in the upcoming issue, as well as the projects featured below.

I wish I had more space to write specifically about all of the great stuff we have here, but as it is I will let you see for yourself. Enjoy!

Regards,

William Hansen

A Few Highlights From Our Next Issue

Kuttin' Kittens 2
by Sheila Bergner-Landry

If I Had A Hammer
by John Polhemus

Angel's Forget-Me-Not Frame
by Dirk Boelman

Great Horned Owl
by Wayne & Jacob Fowler

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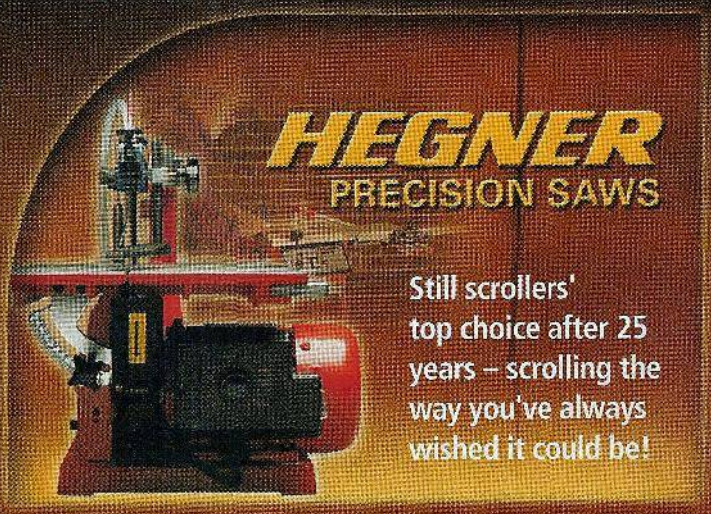

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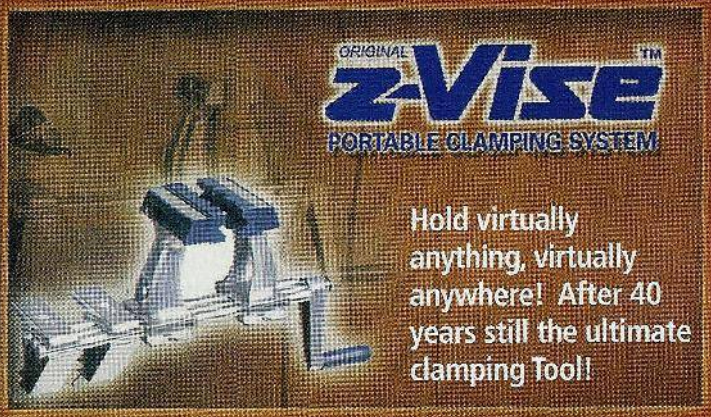

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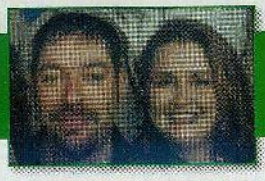

Pattern Located in Full Size Pattern Section No. 2!

First Tractor

drawn by Shelli Robinson, sawn by Kerry Robinson of SK Woodworks

SUPPLIES

Wood: *birch plywood*—one piece 1/8" x 12-11/16" x 9-7/8" (or size to fit your custom- or ready-made frame)
Tools: scroll saw with No. 2/0 spiral blades; drill with assorted (small) bits
Removable Adhesive Paper* (or spray adhesive)
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Sandpaper, assorted grits
Small square (for scroll saw blade)
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Introduction

You can't forget your first car, your first bike, or your first tractor. On your tractor, you could do what your daddy would do: mow the lawn, plow the garden, or just race the family dog. This pattern can be used for a boy or a girl (my daughter wears overalls all the time). It is modeled after a real toy tractor. As an option for those of you interested in extra detail (or fretwork) there is stitching drawn along the pockets and side seams of the child's overalls. They can be cut into the pattern or even burnt in with a woodburning pen.

I draw my patterns in the same style: I sketch the subject, finalize negative spaces, and then "ink it" with a fine-point felt-tip pen. I use "dots" to indicate negative space where a section will come out; however, the dots are only guidelines and not actually the best place to drill a hole. **Note:** I do not use a graphic arts program to finalize my patterns; they are all hand drawn. I have developed this style to make it easier for my husband to identify and drill the holes for the scroll saw. Some negative spaces are so small I cannot place a dot, but they are too big just to be drill press holes, i.e. the holes around the center of the tractor's rear wheel. I try to draw with as much detail as I think the wood can hold. The grill on the tractor is a bit delicate and requires a steady hand to cut. Since we do a lot of our stuff in Baltic birch plywood, which by nature is relatively plain, I draw with lots of lines in mind. When I draw for a something in oak or walnut, I leave more space for the wood or any special grain to be the center of attention.

While I have listed only one piece of 1/8" wood in the supply list, our preferred method is to stack cut six pieces of plywood. We apply double-sided sticky tape to the four corners of the wood, staying clear of the pattern. These boards are approximately 12-11/16" by 9-7/8", cut to fit the inside of some ready-made frames. Depending on your mounting preference, for a backer board you can use birch board spray painted black, the cardboard that comes with your frame spray painted black, colored or textured fabric, or a dark piece of walnut or other fine wood cut and edged appropriately.

INSTRUCTIONS

For those of you that use the spray glue method, adhere the pattern to your wood of choice. Make sure your surface is clean and your glue even. For those of you trying Removable Adhesive Paper, wipe off the top of your wood, remove a single strip of backing from the paper and center the pattern on the wood. Remember to center the pattern—NOT the paper. Remove the rest of backing and smooth out. No matter which pattern application you choose, it is a good idea to apply 2"- or 3"-wide clear packaging tape over the entire top of your pattern. This simple and inexpensive step will lengthen the life of your blades as it helps to keep them cooler by lubricating them while they cut. Do not wrap tape around to the bottom of your wood as this could make your board(s) uneven or take your blade out of square. While scrolling, check frequently that your blade is square, especially if you are stack cutting.

Pre-dril all holes, and put a starter hole at the end of all the single lines (i.e. down the front of the tractor). Cut your smaller areas first (usually at the center of the pattern). Take out the biggest areas last.

When you are finished, gently pry the boards apart. For those of you that sprayed your pattern, we will leave you here to scrape, sand, apply mineral spirits, scrape and sand some more. For those of you using the Removable Adhesive Paper, peel off and go to your belt sander to sand the backs of each board for any fuzz. Carefully blow the sawdust off of each piece with compressed air. Match to backers and frame.

For more information about us, pattern ideas, supplies and information on Removable Adhesive Paper, please visit out website (www.SKWOODWORKS.com). Or send us a note via snail mail to: SKWoodWorks, P.O. Box 583, Pleasant View, TN 37146.

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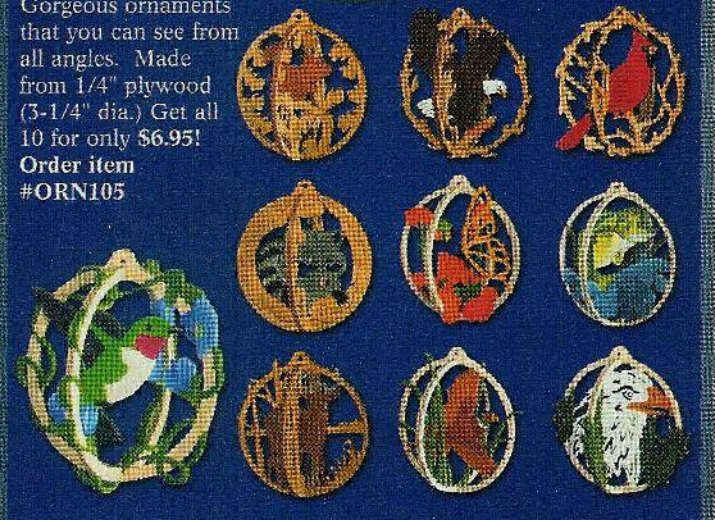

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Pattern Located in Full Size Pattern Section No. 21

Wolf Arrowhead Plaque

by Sheila Bergner-Landry

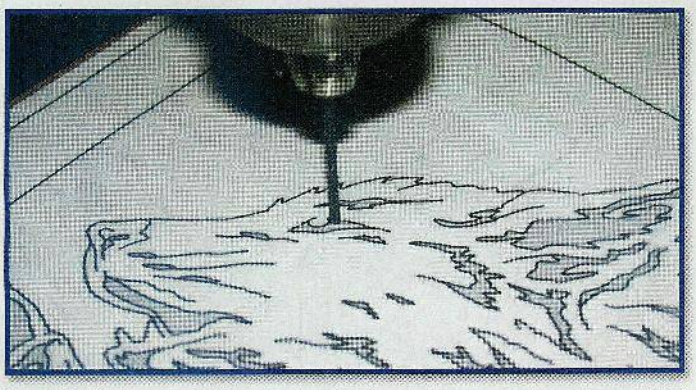
SUPPLIES

Wood: *hardwood of choice*—one piece 1/2" thick x 8" wide x 13" long (for plaque), one piece 1/4" thick x 5" long (with grain) x 2-1/2" wide (for bands); *Baltic birch plywood*—one piece 1/2" thick x 8" wide x 13" long (for backer board)
Tools: scroll saw with blade sizes 2/0R and 5R (reverse tooth); drill with 1/16" bit; rotary tool with sanding bit
Temporary-bond spray adhesive
Clear packaging tape
Sandpaper, assorted grits
Clear drying wood glue
Polyurethane varnish in the finish of your choice
Delta Ceramcoat paints—Midnight Blue, Custard, White
Loew-Cornell paintbrushes—Series 3550 1" glaze/wash and Series 410 1/4" deerfoot stippler
Hanger of your choice

INSTRUCTIONS

Please read all instructions before you begin! Copy your pattern so that you may retain the original. You may want to make several copies so that you can use the extra copies as references.

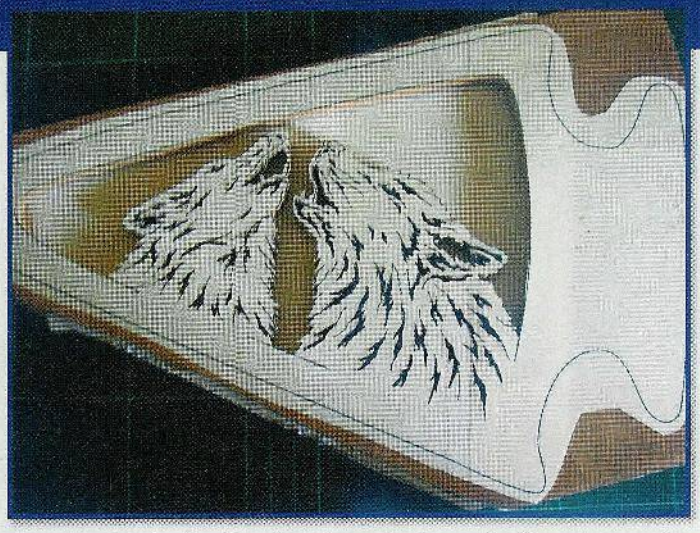
Step 1. Cut out the main pattern piece and place it on your wood. Spray a light coat of temporary adhesive on the back of the pattern. Allow this to sit a minute or two in order for it to tack up. It should feel like the back of a piece of masking tape—tacky, but not too sticky. Apply the pattern piece to the wood and smooth it out with your hand. Repeat for the band pieces. When all pattern pieces are applied, you may want to apply a layer of clear packaging tape over the entire surface of the design. This is especially helpful when you are using hardwoods, as the adhesive in the packaging tape acts as a lubricant and significantly reduces burning of the wood as you are cutting it out with your scroll saw.



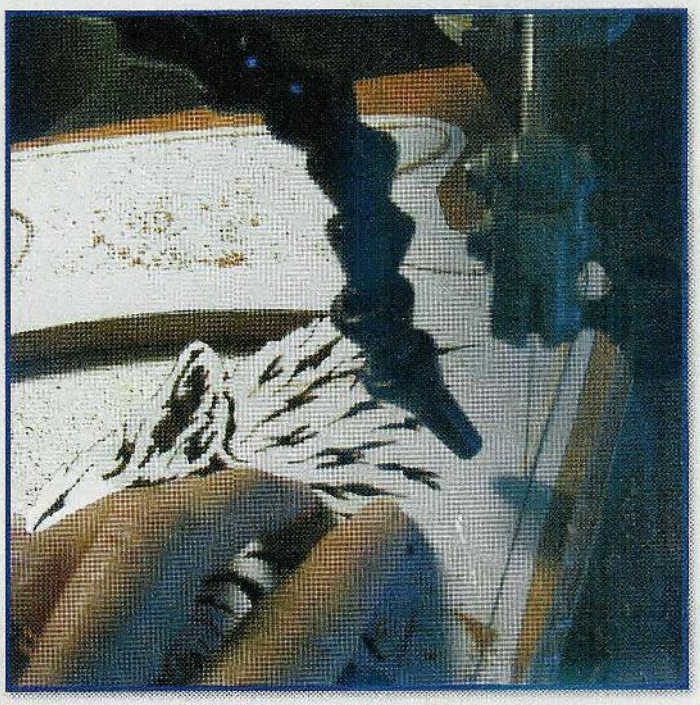
Step 2. Drill all of the holes in the plaque using the 1/16" drill bit.

Step 3. Use the 2/0 reverse tooth scroll saw blade to cut out the inside of the plaque. Do not cut the perimeter edge of the plaque at this time.

Step 4. Cut the backer board (to its approximate size) out of the Baltic birch plywood.



Step 5. Apply the backer board piece to the plaque by using spray glue and a piece of paper. First, mist one side of the paper and apply it to the backer board. Then spray the top side of the sheet and apply the plaque to the backer board.



Step 6. Use the No. 5 reverse tooth scroll saw blade to cut out the perimeter of the plaque. Carefully remove all pattern pieces from the plaque and backer board. Sand the plaque and the backer board. It is helpful to use double-sided tape to hold the delicate pieces of the plaque in place during sanding. To do so, first apply the tape to the back of the plaque, covering the most delicate parts. Next, expose the other side of the tape and tape the plaque onto a smooth and perfectly flat surface. You are now able to sand your piece and minimize the chance of breaking off small pieces. Carefully remove the tape from the back of the piece when you are finished sanding.

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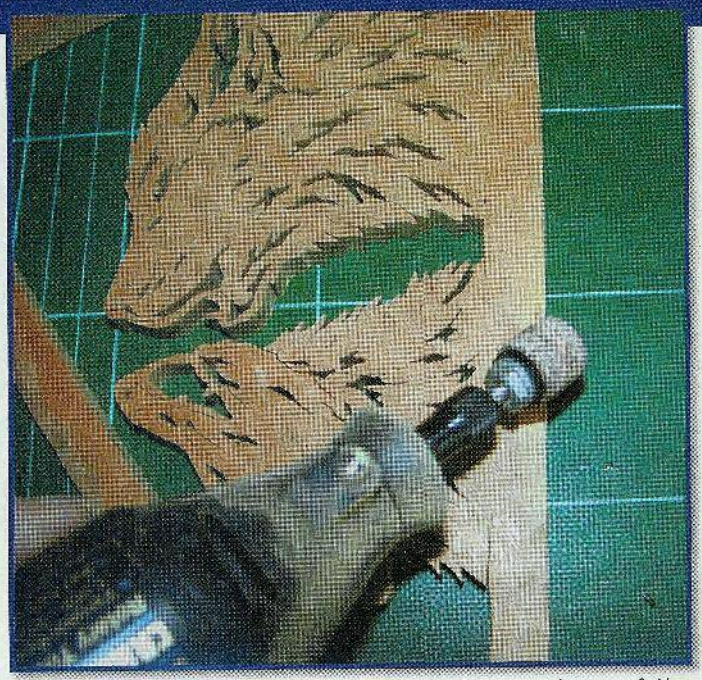
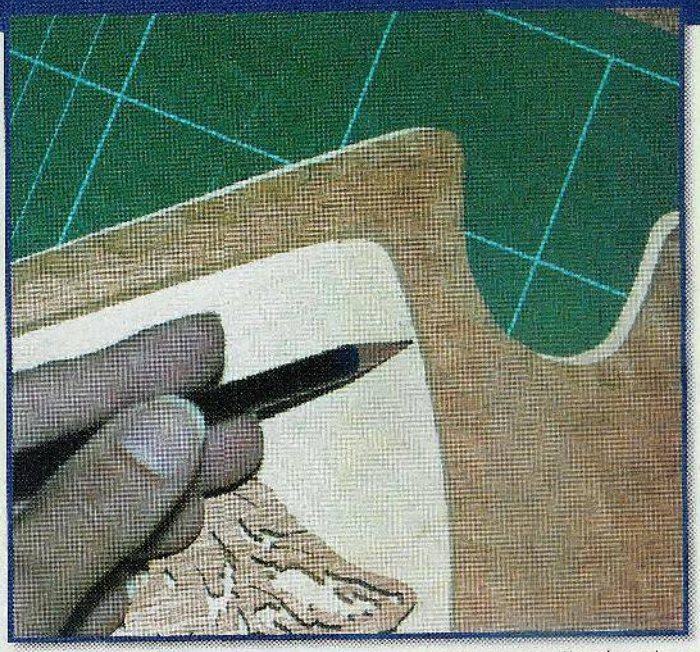
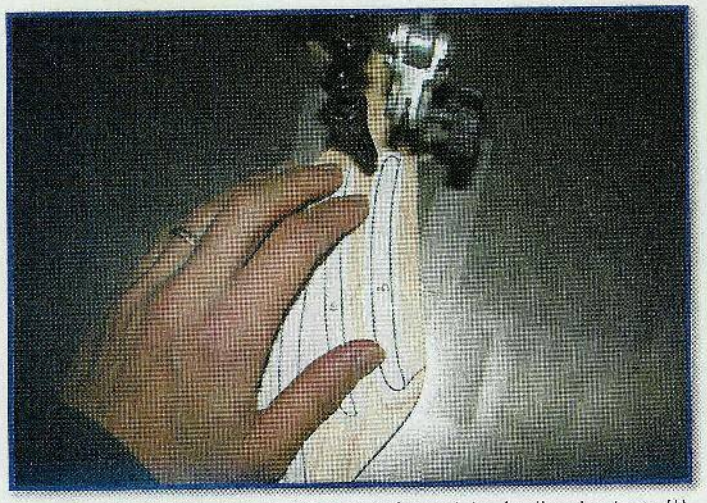


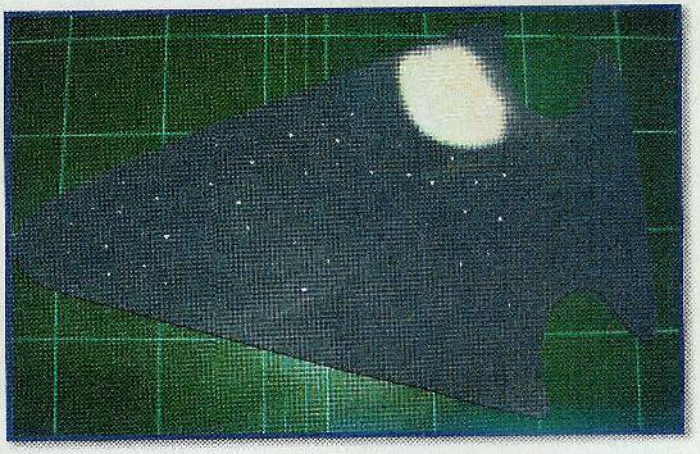
Step 7. Use the rotary tool to round the edges of the plaque randomly so that it resembles a carved arrowhead.



Step 10. Mark the placement of the plaque on the backer board and the moon on the upper right corner of the plaque.



Step 8. Mark the back of each band to indicate top (t), middle (m) and bottom (b) bands, and then cut.

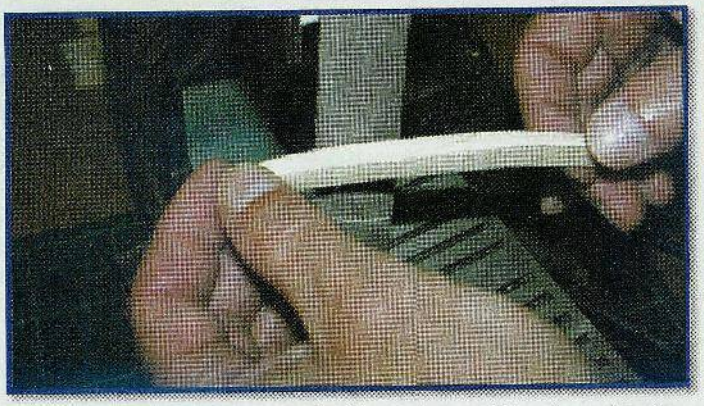


Step 11. Paint the background of the plaque with Midnight Blue. Paint the moon in Custard. Use a deerfoot stippler brush to daub White paint on the edges and inside the moon in order to soften the hard edges and colors. Use the back of the brush and more White paint to dot in the stars in the sky.

Step 12. Spray light coats of the finish of your choice on the plaque and the decorative bands, allowing it to dry thoroughly between coats. Then spray or brush on several coats of finish on all sides of the backer board, again allowing it to dry thoroughly between coats.

Step 13. Apply a bead of clear wood glue around the edge and to the back of the wolf design. Carefully clamp the backer board to the plaque and allow it to dry thoroughly. Then apply a bead of clear wood glue to the three decorative bands and place them on the front of the arrowhead plaque. Allow them to dry thoroughly.

Step 14. Apply hanger of your choice to the back. Enjoy!



Step 9. Round the top and side edges of the bands using a 1" belt sander, or do so by hand. Use fine-grit sandpaper to finish sand the bands.

For questions concerning this project contact Sheila Bergner-Landry, (902)245-5865. Email: Scrollgirl@comcast.net

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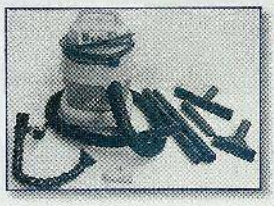

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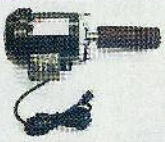

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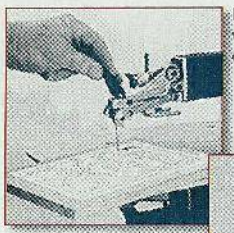
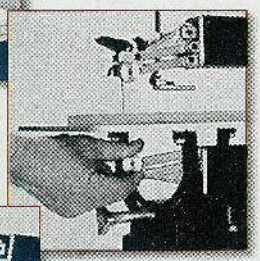
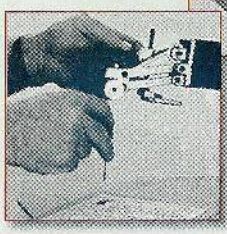


Flip the tension release forward to release the tension on the blade...

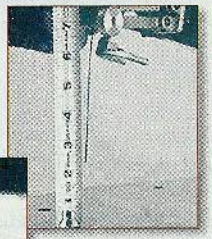


...Twist the BOTTOM clamp knob to release the bottom end of the blade...

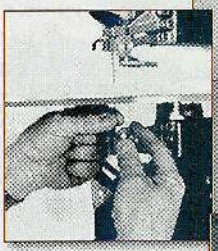


....Lift the top arm with the blade above the workpiece...

Add the optional PAL-01 "Top Arm Lift Pedal", to free both hands for guiding your blade and workpiece, by lifting the arm with your foot.



...The bottom end of the blade lifts up to 2-1/4" above the table top on the EX-30 & up to 1-1/4" on the EX-19...



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My Shop, Revisited

by John Polhemus

Introduction

"You don't get out much, do you?"

I don't have to explain what that question implies, but since I retired it's true. I did get out, though, to the SAW Expo in Lebanon, PA, on June 11 and 12, 2004. I had a great time and people's comments about my shop article reminded me that I was supposed to follow it up with an article that went into more detail about using some of the things in my shop. I also got a lot of comments about everything piled up on top of my saw, so I'll start there.

"What is all that stuff?"

Tools and things I use all the time and want near at hand where I can find them when I need them. They include: a steel ruler, some scissors, a 2" steel machinist's square, a 6" tri-square, some rotary tool bits, CA glue and accelerator spray, a dental tool, an X-Acto knife, an artist's paint spatula, a steak knife, an awl, a mini clock, an 8oz. hammer, a soldering iron, an oil bottle, some graduated circle templates, a stock of blades, a magnifier on a swing arm, and finally my Air Mate filter and mask (see **Fig. 1**).

Let look at some of these a little closer.

•Plastic cigar tubes: hold my stock of blades, several gross in each size I use. Magnets above them hold used blades, keeping them separated by size.

•2" steel machinists square: squares saw table to blade and pieces being glued. I use my saw table a lot as a work bench and scrape crud off the saw table with it too.

•Dental tool: scrapes fuzz off the inside of my 3D ornaments. Handy for dipping them in the Cash Coatings color dip I use, then hanging them on a nail to dry. Keeps the color dip off my fingers.

•X-Acto knife: used mostly with the ruler to cut a straight edge on a pattern I want glued flush to the edge of a piece of wood. Faster and more accurate than using the scissors (see **Fig. 2**).

•Artist's paint spatula: used instead of a fingernail. Used also with the ruler to fold 3D patterns. Gives a nice clean fold exactly on the line (see **Fig. 3**).

•Steak knife: stolen from the kitchen for opening boxes and packages.

•Awl: clears splinters from drilled holes and makes a starter point for drilling and alignment marks.

•Rotary tool grinding wheel: held by the shaft and used to take the corners off the end of a blade so it will go easily through the blade entry hole without catching (see **Fig. 4**).

•Mini clock: to get some idea of whether it's day or night.

•8oz. hammer with shortened handle: tapping nail points back in so they don't drag on the saw table. Nudging parts being glued into alignment. Coloring fingernails with bruises.

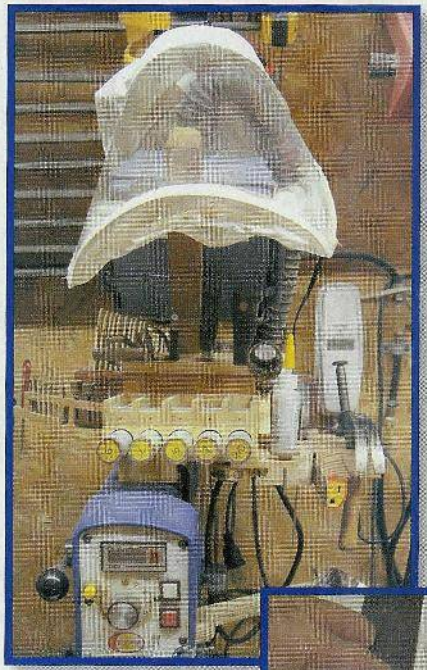

Fig. 1. Tools and things I want near at hand.

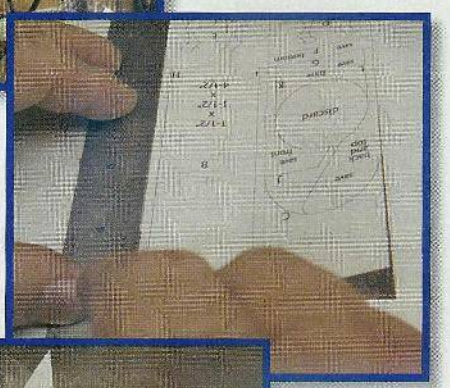

Fig. 2. Cutting a pattern with the ruler and X-Acto knife.

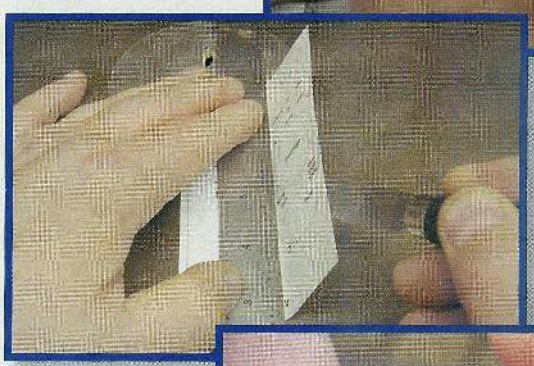

Fig. 3. Folding a pattern line with the ruler and artist's paint spatula.

Fig. 4. Taking the corners off the end of a blade.

•Soldering iron with round, flat head: heating and removing cut patterns. I like to use *3M* No. 77 spray glue—very sticky, patterns stay put. The soldering iron heats up the pattern and it comes off easily. It doesn't heat up the room and warp the wood like a heat gun can. The artist's paint spatula is handy for starting the removal so you don't burn your fingers (see **Fig. 5**). I prefer this method instead of using mineral spirits or turpentine because of a sensitivity to chemicals I've developed from using so many over the years.

•Graduated circle templates: I can't live without these! That was an article all by itself. Steps on how to make them and some of the ways to use them can be found in the April 2004 issue of *Creative Woodworks*.

•Air Mate filter and mask: if you don't use some sort of respirator or filter mask now, PLEASE start doing so; a dust collector or box filter IS NOT enough!

Changes to my shop since your last visit

Laying out your shop is a personal thing; it's an extension of you. Take time to observe how you work, what things you use, where you use them and why. Then you'll get a feel of where things should be for you and your shop will become a living, breathing thing instead of a room full of tools. It's a process that never ends. You change in some ways every day; so will your shop. Mine sure has since your last visit! I'm in the middle of observing where I want to move some things now.

The only change on the outside is the addition for the vacuum. The temporary 55-gallon drum it was in before worked well until I could get around to building this little house off the side of the shop (see **Fig. 6**).

When you open the door to the shop, you see the first change to the inside. I moved the fold-out table that had been attached to the wall next to my saw and attached it to the inside of the door instead. I hung the hose for my Apollo HVLP sprayer above it and now use the table for spraying the final finish on projects. Just open the door, raise the table, spray outside the shop, and move on (see **Fig. 7**).

The table space I lost next to the saw was replaced with a combined mobile table, seat, planer and jointer base, and storage unit made from items that were going to be trashed (see **Fig. 8**). The bucket stores my Apollo HVLP spray gun and other odds and ends (nice for stuff you don't want getting dusty in the shop). The bucket itself is a bit different, too. The lid screws on like the lid of a jar and has a locking tab that has to be held in to unscrew the lid. My local water utility gets the chlorine tablets with which they treat water in them and trash them when they're empty. As a result of my last shop article, I met a fellow scroller who works for the water utility and she saves the buckets for me when I want them.

When I take the wood table/seat off, it becomes a base for my planer or jointer. The boards to which each are bolted are cut to fit over the bucket lid (see **Fig. 9**). I use a rope hoist (one of the odds and ends stored in the bucket) attached to a hook in a ceiling rafter to lift them. It only takes one hand to hold the planer or jointer in the air while I use the other to slide the bucket base under (see **Fig. 10**). Lower it onto the bucket base, hook up the vacuum hose, and I'm ready to go (see **Fig. 11**). When that's done, I set the planer or jointer back on the floor

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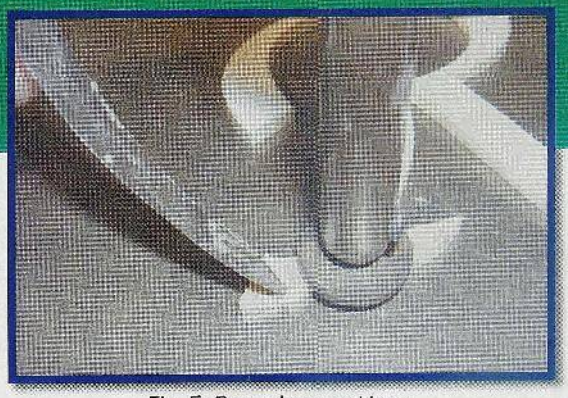

Fig. 5. Removing a pattern.

Fig. 6. House for vacuum.

Fig. 7. New table location and sprayer hose.

Fig. 8. New combined mobile table, seat, planer and jointer base, and storage unit.

continued from page 19

and roll them out of the way. The fact that they are on wheels makes them easy to move in order to be put on the bucket base and to be out of the way when cleaning up the shop. I also use the table/seat to hold my Hegner finger joint machine when I use it (see **Fig. 12**). That's one cool little machine! Easy to set up and use. Hook up the vacuum hose and there's no mess at all.

The next change is my box air filter—it died and it's gone. A filter is only as good as it's capacity and placement. My placement of it was not effective, and it would have been in my way where it should have been. It didn't make sense to replace it because I use an Air Mate filter and mask when cutting. I made better use of the space by storing my clamps and Hegner finger joint machine there (see **Fig. 13**).

I made a new stand for my sander from a welder's cart I salvaged. It also holds another bucket that contains the oil in which I dip finished projects. The sander has been moved from where it was in the first shop article and is now next to the air compressor under the bench that is behind me as I sit at the scroll saw (see **Fig. 14**). The space the sander was in is now occupied by an old 14" Rockwell bandsaw I picked up for $100. What a deal!

Another change was made to my radial arm drill press. I used a Corian sink cut out to make a larger table that also now doubles as a router table. I use it as a pin router, as well, by inverting drill bits of various sizes and centering them over the router bit (see **Fig. 15**). The rack on the table holds incrementally sized table inserts to fit my router bits.

I've changed table saws, too. The new one takes up a major piece of floor space but earns it by doubling as workbench. I use its large cast iron table for bigger projects the same way I use the cast iron table of my Eclipse scroll saw for smaller projects: doing glue ups, assembly, staining, painting, etc. If need be, a little scraping, WD40 and a palm sander makes them look brand new. This new table saw is the kind that has the motor hanging off the back. To save space and have it flush against the wall when not in use, I made a little modification. Like most table saws of this type that I've seen, the motor mount has two shafts that slide into the table saw. I cut the cord near the motor, installed plugs ends, and put a stop collar on one of the shafts. Slip the belt off the motor pulley, unplug the motor, and slide the motor and mount off. Reverse the process to put it back on. The stop collar assures the setting is always correct (see **Fig. 16**). I store the motor under the saw on top of the retractable wheel system that came with the saw. It's very easy to move the saw to use in the shop or out the patio as needed.

The last thing I'll try to squeeze in is the drill press stand next to my saw with the four drill presses on it (see **Fig. 17**). Why four drill presses? It doesn't take much for a small drill bit to deflect when you start to drill a hole, especially in a surface like a hammer handle or mini baseball bat. To counter this problem, I drill a starter hole with less than a 1/4" of the bit sticking out of the chuck, then finish the hole with the drill bit extended from the chuck long enough to complete the hole. The vast majority of the holes I drill are either 1/16" or No. 60. So, two drill presses are set up with a long and a short 1/16" drill bit and the two mini drill presses with a long and a short No. 60 drill bit.

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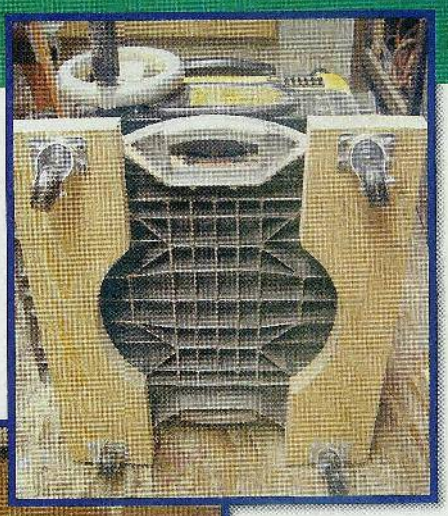

Fig. 9. Boards cut to fit stand.

Fig. 10. Hoisting the planer over the bucket base.

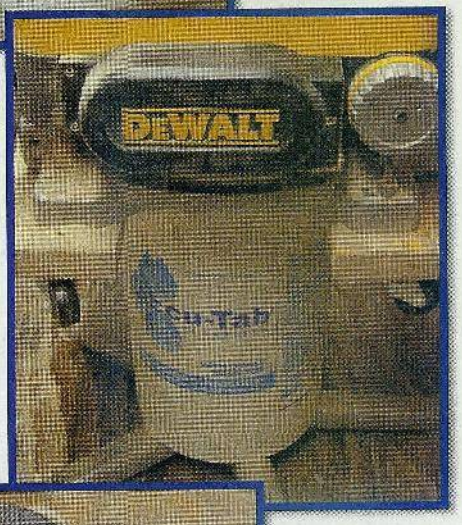

Fig. 11. Planer on bucket base, ready to use.

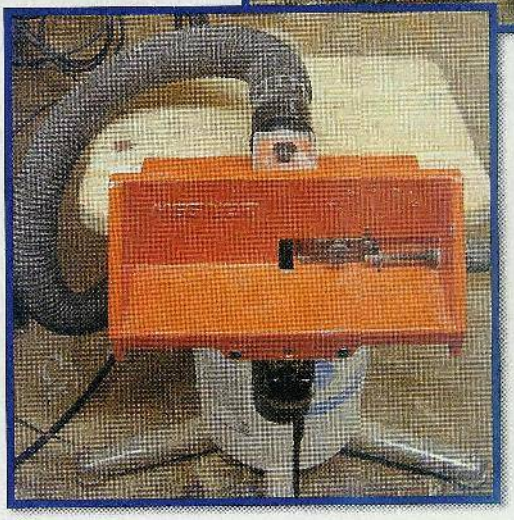

Fig. 12. Hegner finger joint machine ready to use.

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Fig. 13. Clamps and Hegner finger joint machine hung where box filter was.

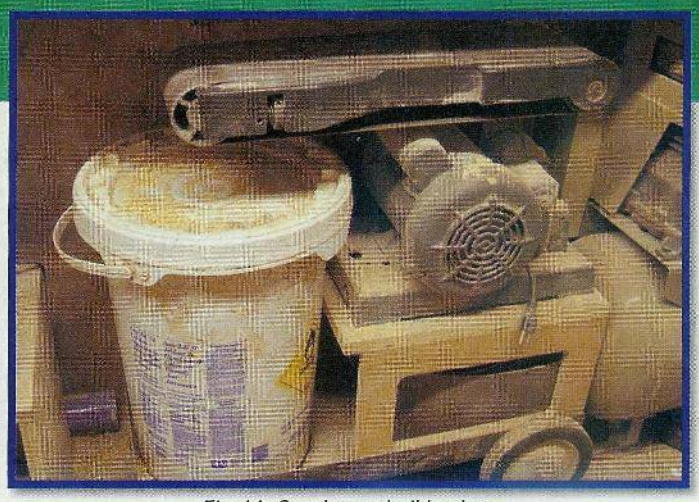

Fig. 14. Sander and oil bucket.

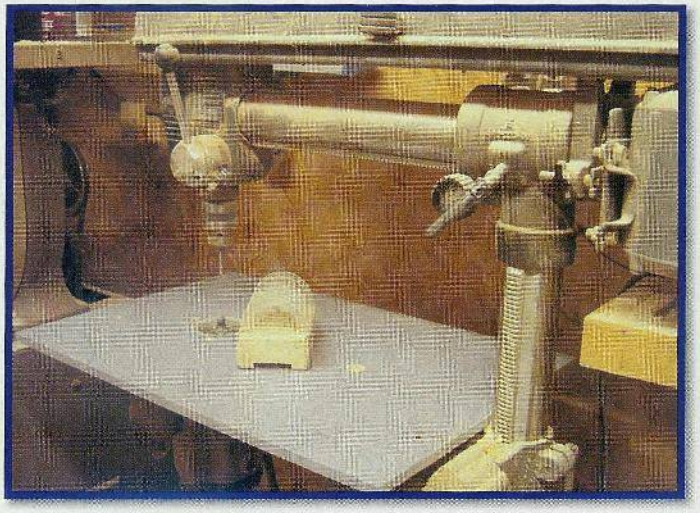

Fig. 15. Radial arm drill press table.

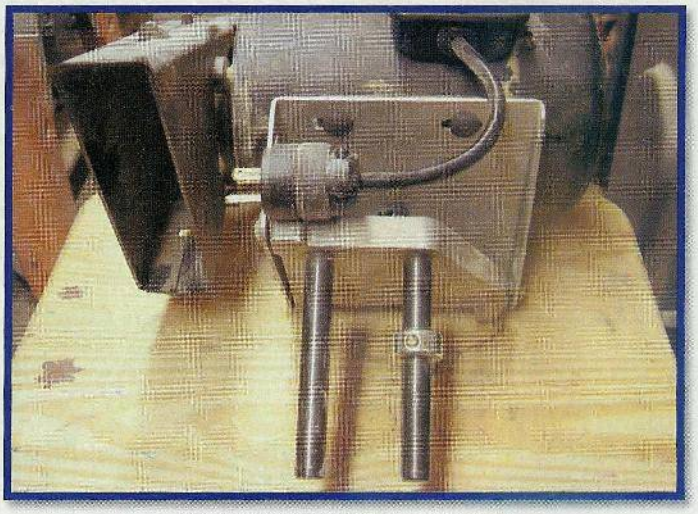

Fig. 16. Modified table saw motor.

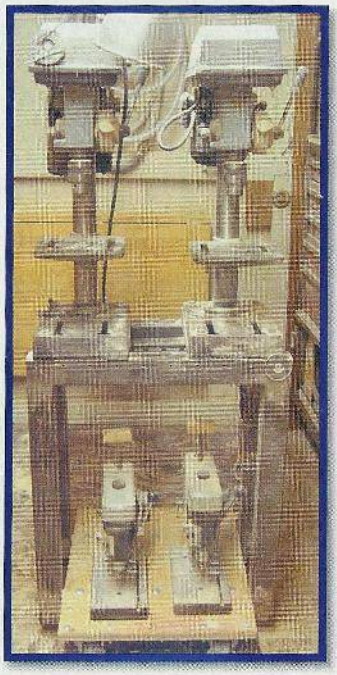

Fig. 17. Drill press stand.

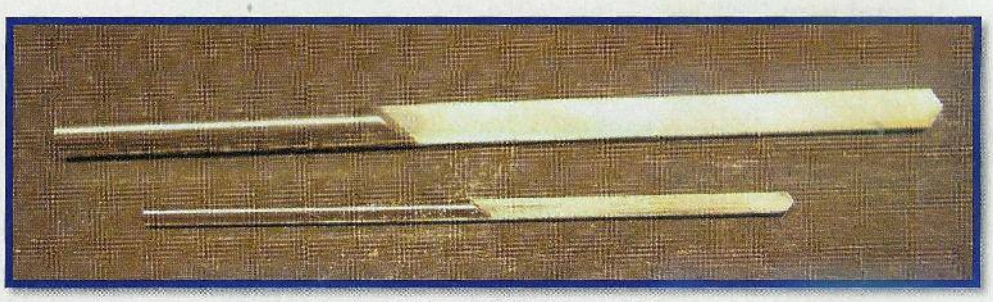

Fig. 18. 1/16" and 1/8" half round bits.

An extravagant luxury, but it has more than paid for itself in time saved from changing drill bit sizes and lengths at shows!

I've also stared using half round drill bits to manage the drifting problem (see **Fig. 18**). I get them from an industrial supply company called *MSC* (800-645-7270). They have them in 1/64" increments from 1/64" to 1/2" and numbered drill bit sizes from No. 1 to No. 80. Their free catalog is a 8-1/2" x 11" x 4"-thick hardcover book. There's a lot of stuff in it you'll never have a need for, but there's also plenty you will and won't find at a hardware store.

That's about all I can fit in one article. I hope you found it useful and inspiring!

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Bobcat

Pattern Located in Full Size Pattern Section No. 2!

by Darrin Baldini

INSTRUCTIONS

Trim the paper pattern, leaving about 1/8" around the perimeter. Apply spray adhesive and adhere pattern to the wood. Cover with clear packaging tape to reduce blade friction.

Drill starter holes in the waste areas to be cut out (see **Fig. 1**). Make all inside cuts (see **Fig. 2**) and then cut the decorative edge on the outside.

Remove the packaging tape, then peel paper pattern from the wood. Using mineral spirits, wipe away any excess glue from the project. Allow to dry.

Using 200-grit sandpaper, sand both front and back of the project to give it a smooth finish.

Apply a light colored stain or tung oil to the front and sides of the project. Allow to dry. Then apply a clear coat of choice.

When dry, trim the felt to cover the back of the project. Apply glue around the outside perimeter and carefully place felt over the cutout areas. Using a rolling pin with light pressure, secure felt to your project (see **Fig. 3**). Allow felt to dry in place, add sawtooth hanger and enjoy!

For questions concerning this project, contact: Darrin Baldini, Ambrichey Manor, P.O. Box 11, 65 Front St. West, Hastings, Ontario, Canada K0L 1Y0.

SUPPLIES

Wood: *white oak*—one piece 3/4" x 8" x 12"
Tools: scroll saw with No. 2 spiral blade and Olson No. 5 reverse tooth; drill with 1/16" bit
Temporary-bond spray adhesive
Sandpaper, 220-grit
Clear packaging tape
Mineral spirits
Wood glue
Sawtooth hanger
Black felt, one piece 7" x 8"
Clear finish of choice

Fig. 1. Drill starter holes in the waste areas to be cut out.

Fig. 2. Make all inside cuts.

Fig. 3. Apply glue, place felt in position, and secure felt to your project using a rolling pin with light pressure.

Pattern Located in Full Size Pattern Section No. 2!

Put Your Best Foot Forward

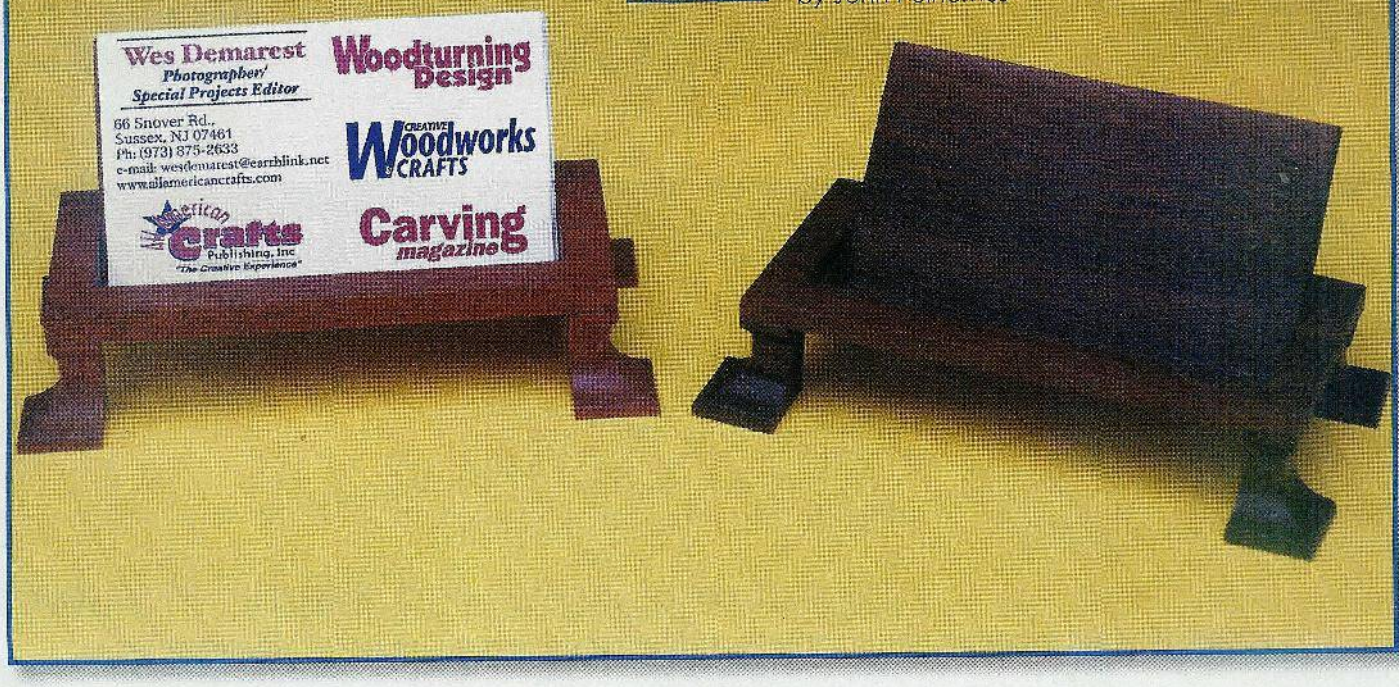
Feet designed by John Nelson, sawn and developed by John Polhemus

Compound Feet: 14 Designs To Choose From

BONUS PROJECT:

Business Card Holder

by John Polhemus



SUPPLIES

Wood: wood of choice—one piece 1/4" x 2" x 8" (for body of holder), one piece 3/4" x 3/4" x 6" (for feet)
Tools: scroll saw with assorted blades; drill with assorted bits
Temporary-bond spray adhesive
Sandpaper, assorted grits
CA (cyanoacrylate) glue
Finish of choice

Introduction

Put your best foot forward... or use one of John Nelson's fourteen compound-cut feet. Expand your creativity by adding these foot patterns to your library of woodworking plans. Make a simple project an elegant one with a minimum of effort and materials. As an example, you may recall Nelson's "Keepsake Chest" from the November 2003 issue of *Creative Woodworks & Crafts*. It was just a plain and simple box, until it was dressed up with some compound-cut feet, hinges and handles. What a difference that made!

Making samples of the feet and gluing them on 2" x 2" squares gives you something to help visualize scale and how they will look when applied to a project. They're also useful for showing your customers to choose from.

Let's beat feet to the shop

INSTRUCTIONS

Cutting feet

There are fourteen foot patterns found in the pattern pull-out section, all sized for cutting from 3/4" x 3/4" stock. Enlarge or reduce them to fit the scale of a given project. I enlarged the pattern for foot No. 13 by 200% and cut it from 1-1/2" x 1-1/2" poplar to illustrate the process involved in cutting all of the feet. The pattern is folded on the centerline and then glued to the wood. Drilling blade entry

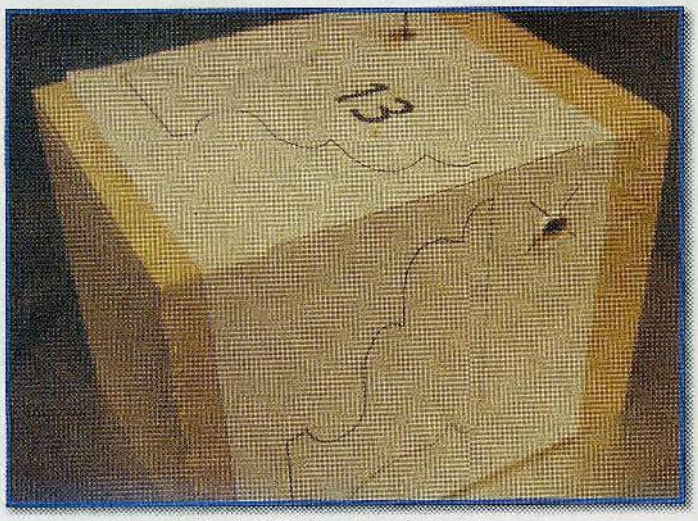


Fig. 1. Drilled and ready to cut.

Fig. 2. Making the first cut.

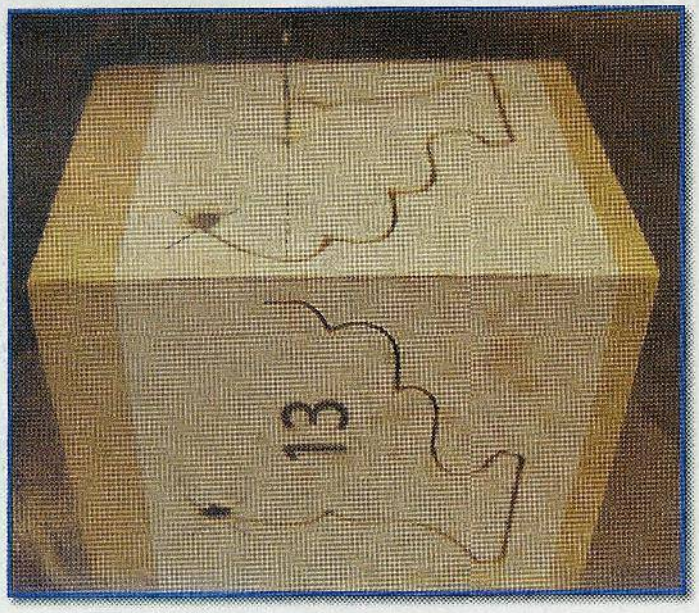


Fig. 3. Finishing the foot.

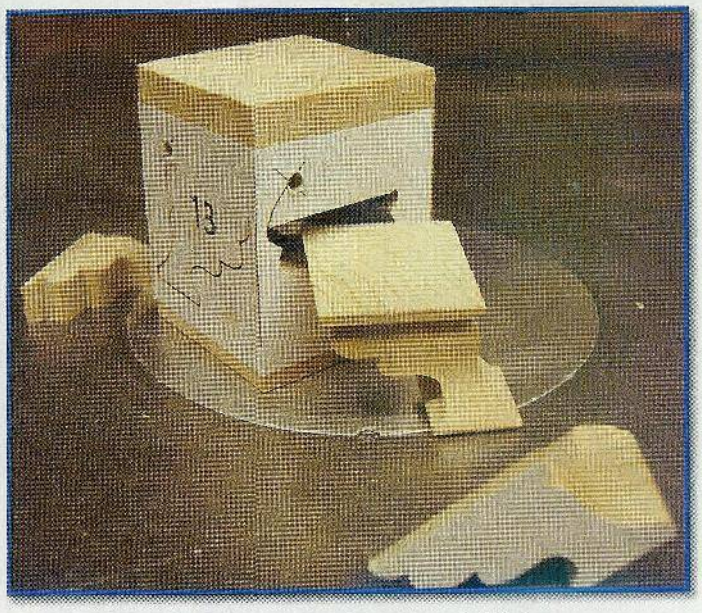


Fig. 4. Remove the foot from the block.

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holes on the "X" marks and cutting the foot as follows allows you to cut them without having to use clamps or tape (see **Fig. 1**).

The first cut is made on the side of the pattern on which the number of the foot appears. Cut around the foot and stop where the pattern ends (see **Fig. 2**). Turn the wood over to the other side of the pattern and cut, finishing it by cutting the dashed line across the top (see **Fig. 3**). Slide the finished foot out of the wood block (see **Fig. 4**).

That's it, start gluing feet to some of your projects!

Bonus Project: Business Card Holder

This business card holder shows another feature of the feet you don't want to overlook. You can turn many of the feet upside down and/or rotate them in a manner that changes their intended appearance. I chose to use foot pattern No. 7, inverted and rotated. You can do the same for yours or use one of the other feet patterns.

Glue the business card holder pattern to your stock of choice. Cut the outsides of pattern parts A and B.

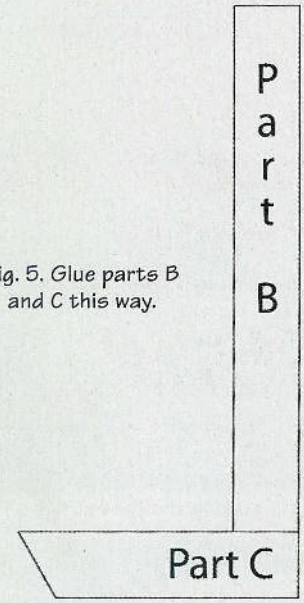


Fig. 5. Glue parts B and C this way.

Drill a hole where marked by the "X" and cut the inside of part A (also the outside of part C) on the solid line. Tilt your saw table 30° and cut part C on the dashed line, starting from the end indicated on the pattern.

Assembly

Finish sand the parts. Glue part C to part B as shown in **Fig. 5**. When the glue is dry, these parts will be glued in the hole in part A.

Apply glue to the beveled edge of part C. Place the assembly into the hole in part A so the back of part B is resting on the edge of the hole in part A and the beveled edge of part C is flush with the top edge of the hole in part A (see **Fig. 6**). The back of part B is glued to part A from the underside (see **Fig. 7**).

Cut the feet of your choice and glue them on (see **Fig. 8**). Apply the finish of your choice.

For questions concerning this project, send an SASE to: John Polhemus, 3000 Charleton Ct., Waldorf, MD 20602. Email: fretsawyer@worldnet.att.net

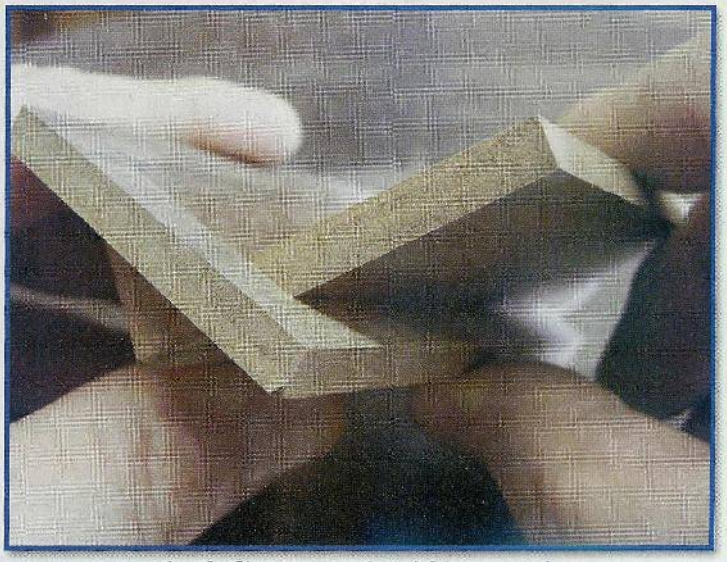


Fig. 6. Gluing parts B and C into part A.

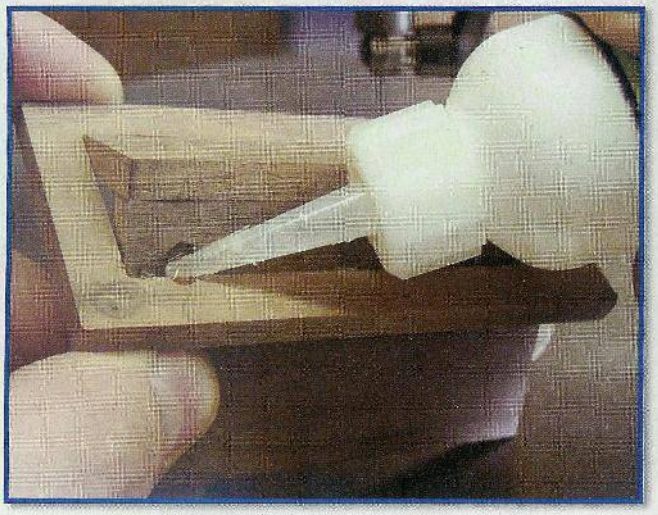


Fig. 7. Gluing the back of part B to part A.

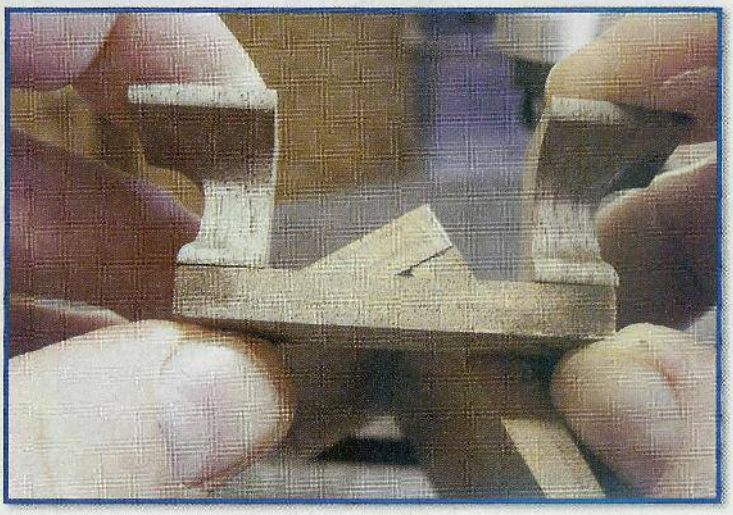
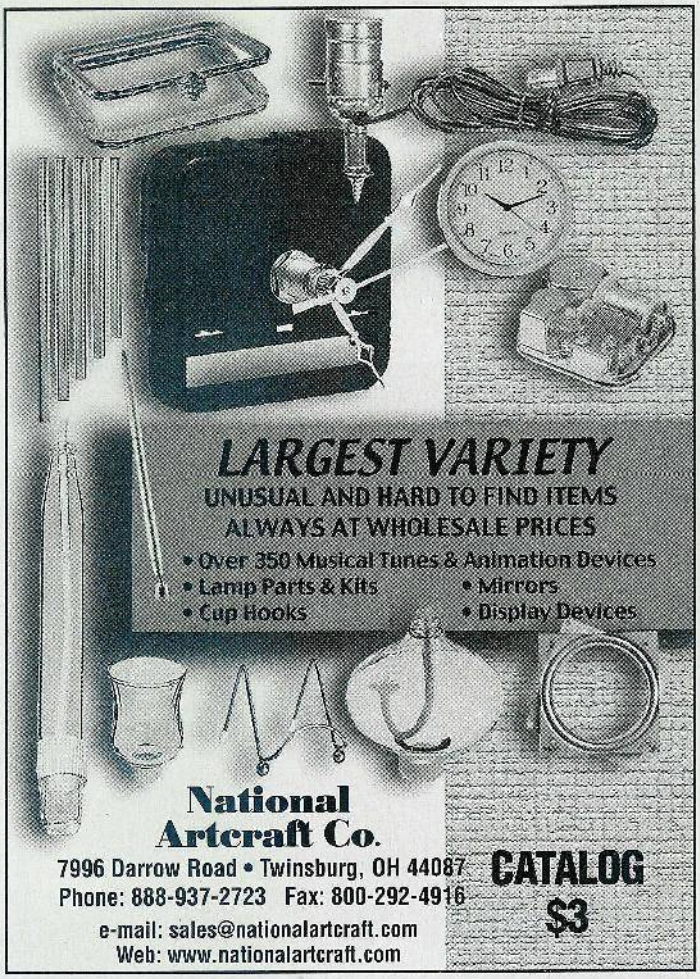


Fig. 8. Glue on the feet.



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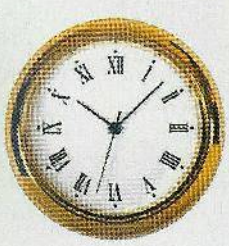
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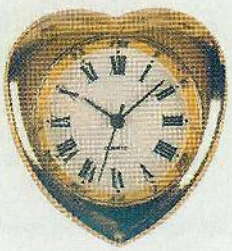
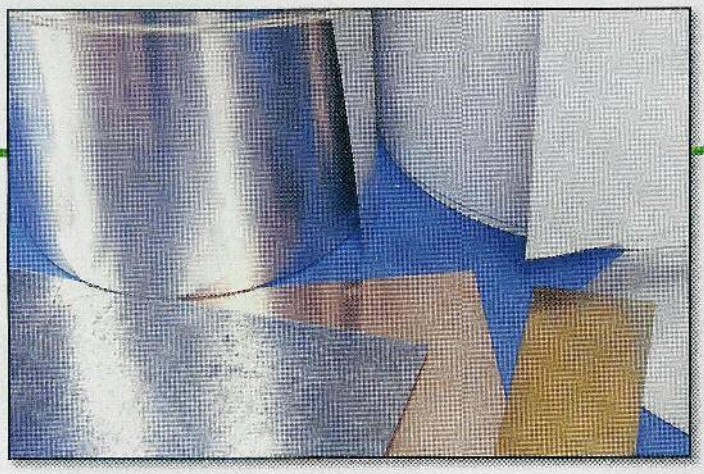

Ivory Roman

Alternate Material Selection

by Rick Hutcheson

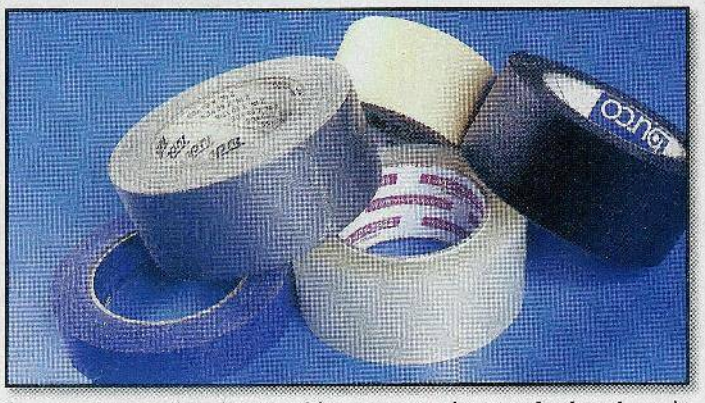
Endless Possibilities

Many people don't know that you can cut so many materials besides wood on a scroll saw. We'd like to think now about all of the other possibilities. In fact, the list seems endless: paper, Plexiglass®, metals, leather, cloth, glass, and so many more that we just don't have room to list. "How about metals?" you might ask. The scroll saw will cut nonferrous metals with ease. The easiest metals to find are aluminum and copper; they come in thin sheets and rolls that are sold as roof flashing. They are just the right thickness to cut easily, and are also perfect for making ornaments and stencils.



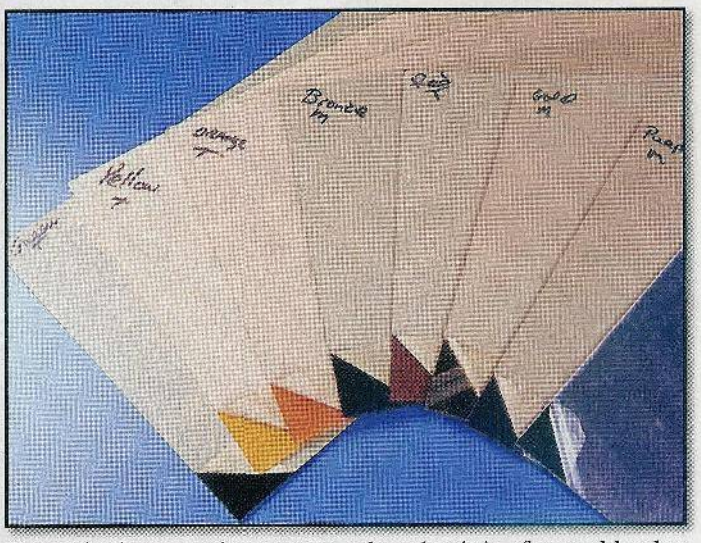
A great source for thicker brass is door kick plate panels, which can be found in just about any home improvement center and in many sizes. This thicker metal would be nice for key chain tags. For smaller sizes of a few different metals, try the hobby shops. Other metals, such as sterling silver, can be used to make jewelry. There are metal cutting blades, but sometimes they are not needed to cut these metals. Try using your regular saw blades first on some of the scrap area; you may not need that special blade.

Pictured here are some of the blades I have used for cutting metal. The Nos. 2/0 and 2 blades seem to work the best if you are using standard scroll saw blades.



I normally use the clear packing tape on the metal when I cut it. It protects the surface from scratches and gives enough lubrication to make cutting relatively trouble free.

On thicker metals, you may want to try a blade lube of some type. Suppliers have a hard stick lube, but mineral oil, water, or WD-40 work fine for some applications. Not all metals need the lubes, but you can try them if you are not getting the cutting results you need. I find the lube helps a lot on 1/8"-and-thicker aluminum. I normally use a zero clearance insert on the saw table and cut metals one layer thick at a time. Others like to sandwich the metals between thin layers of plywood. Like anything on the scroll saw, what blade you are using, the speed you are running, the vibration of your saw, and many other factors may affect the way the metal cuts. Don't be afraid to try different blades and speeds. Try using a backer, or try cutting the metal alone. Somewhere you will find the perfect combination for your cutting style.



Sheet plastic comes in so many colors that it is often real hard to make the decision on which one to use. There are the solid colors, translucent colors, and mirror finishes—each offering many different uses. The translucent colors are great for suncatchers and back-lighted scenes. The solid colors can be used instead of wood to eliminate painting; wood cannot be painted to show colors like plastic for projects such as outdoor sign letters. The mirrored colors of plastic can also add a unique look to many wood projects with pictures and/or background pieces. There are just so many places that it will really accent your project.

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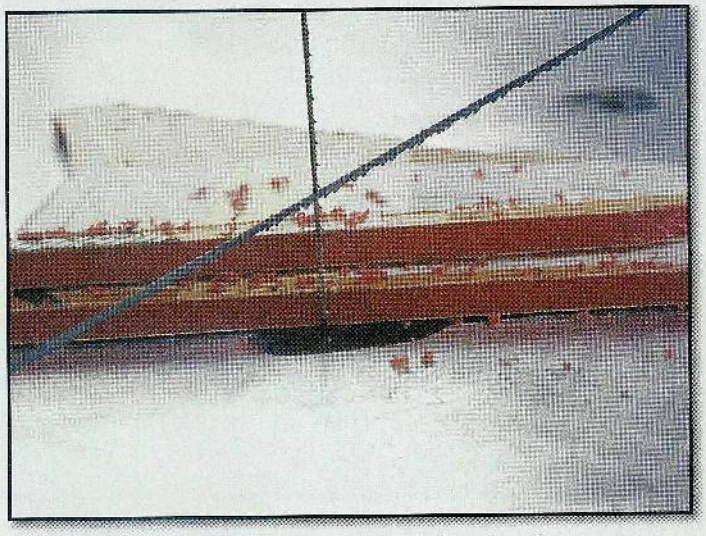
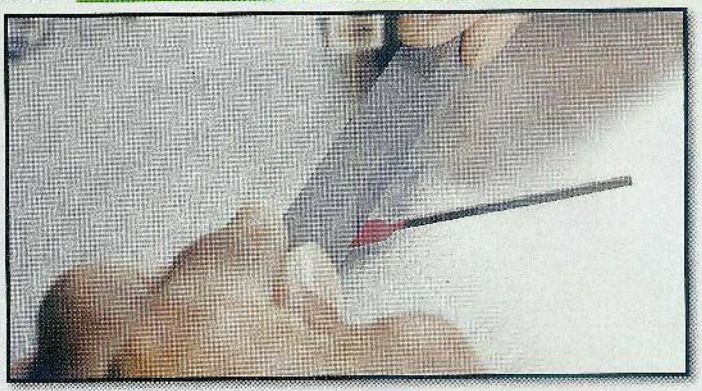
Alternate Material Selection

continued from page 31

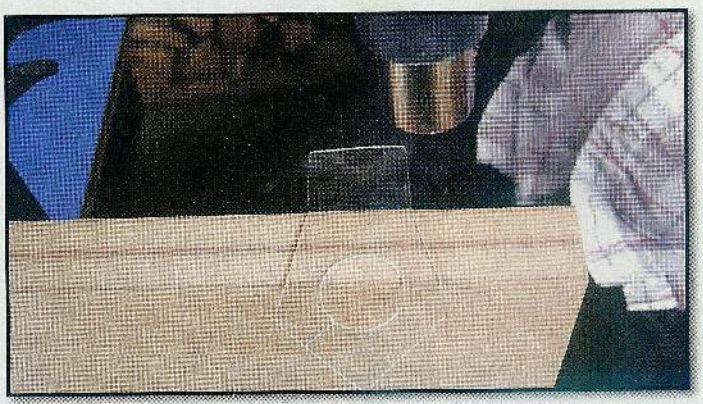
There are two types of sheet plastic, one that is cast and one that is extruded. The cheaper (extruded) type melts back together when you cut it. The more expensive (cast) type is usually carried by the scroll saw accessory suppliers and sold as Plexiglas®. It cuts easily with the scroll saw, but you will have to experiment with a variety of blades and speed rates. Normally speeds of 1000 or slower are used on cutting any plastic material. When setting up for the cut, don't remove the protective paper. If you have a pattern, apply it as if you were applying it to wood—by using spray adhesive and attaching the pattern to the protective film. Clear packing tape, masking tape, and duct tape can all be used when cutting both types of plastic. I have tried all of them and it seems that the blade choice, blade speed and feed rate can have an effect on the finished cut. I test the combination on scrap material before starting into my final cut.



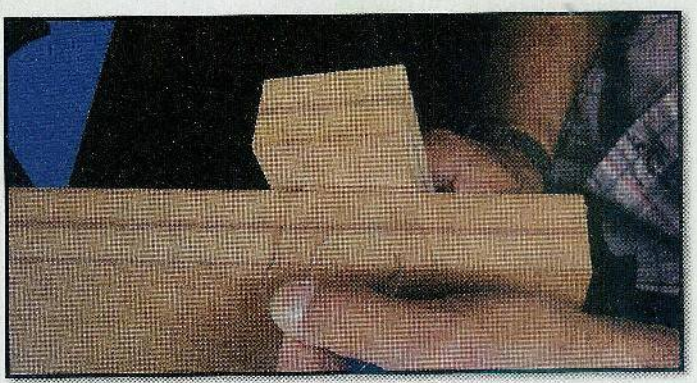
I like using the Olson double tooth blades, but there are many other blades that do just as nice of a job cutting. In the photo above, the top piece was cut with the double tooth blade and the bottom piece was cut with the PGT blade. The edges can be sanded to a gloss finish again, but if you can get the blade to produce a nice finish, why do the extra work? Like Corian®, the edge can be finished with a propane torch, but it will take some practice to learn this technique. For detail, I use smaller blades (as I do when cutting wood). Filing the sides and the back of the blades can help a lot in the melting back problem.



When filing the back side, you will want to file the side of the blade into a wedge toward the back. Hold your stone against the side of the blade and turn the saw on so that you are filing the back corners off. Be sure to not touch the teeth on the blade. What you are doing is making the teeth the widest part of the blade. That way very little friction is generated to melt the plastic.



Plexiglas® comes in a variety of different thickness for different uses. It can be heated and bent or shaped into the form you want. Jigs can be made to shape the heated plastic around to make identical types of pieces. In fact, a simple board can be used to bend the Plexiglas® over. I use a heat gun to heat it, but keep the gun moving and do not get too close to it. A propane torch could be used in the same way, but is a little harder to control in terms of the heat. Normally with the heat gun on high, about 3" is far enough away. If you heat the plastic too much in one place, it will start to bubble and distort. Practice on some scrap to learn the process.

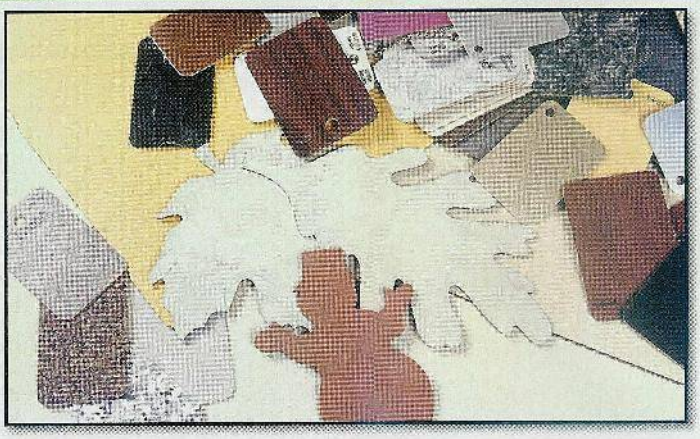


Once heated to the right temperature, the material will bend into just about any shape you need. When heated right, it becomes very soft (even its own weight will bend it). Instead of trying to force a bend, use more heat. If you do not have enough heat, there is a good chance it will crack when you try to bend it.

Once formed into the shape you need, just let it cool and it will be as solid as the original piece.

The piece shown here is a simple clock insert stand formed by cutting the shape into the Plexiglas® and then bending the bottom around to make a base for it to sit on. It is so easy to execute, and makes a stunning project when finished.

There are still other materials that are easy to cut with the scroll saw. I often work with a material called PVC board. It is somewhat porous and lightweight, and is available in a few different thicknesses. Yes, this is the same type of material that plumbing drainage pipes are made from. You use regular PVC cement to glue this material together. I find it neat stuff to use for outdoor signs because it is available in many colors, is impervious to weather, and doesn't require any finish.



Another product that has uses in scrolling is plastic laminate (normally referred to as Formica®). This material cuts well with a No. 2 or 2/0 blade. I find it my first choice for making tracing templates. Hundreds of template patterns can be stored in a small box and are very durable. It comes in many colors and finishes, from wood grain to stone, solid colors to metal, and provides a great accent to any wood project. I have made inlays from Formica® that have added just the special touch I wanted on some of my projects. The colors and textures available in Formica® are almost limitless, plus there are a number of other manufacturers of products that are similar.

Corian® is another product that can be used for scroll sawing. This material comes in a wide range of colors and in 1/4", 1/2", and 3/4" thicknesses. It can be sawn like wood and sanded to a gloss finish, and works best with carbide cutting tools (except for scroll saw blades). It can be polished to a gloss finish by using wet/dry sandpaper in the very fine grits, and a light pass with a propane torch over the surface will also bring up a gloss finish. However, the latter technique is one that will take some practice to master. If you use too much heat or get too close with it, you can ruin the surface. Corian® is made and controlled by the Dupont Company. It is not available through normal retail sources because it is sold only to certified cabinet manufacturers with properly trained technicians. The only material available to crafters are scrap pieces from a local cabinet shop, or through a limited number of craft suppliers. There are several other look-alike products that are available, but they do not work the same as Corian.

There are many other materials that can be cut on the scroll saw and that we have not covered here. Nonetheless, we hope that this short article has opened your mind to a good number of the options (outside of wood) that are available for scrolling.

Pattern Located in Full Size Pattern Section No. 1!

Classic Nativity

pattern by Jacob Fowler, cut and finished by Wayne Fowler

SUPPLIES

Wood: *any attractive hardwood* (e.g. oak, cherry, etc.)—one piece 1/2" to 3/4" thick x 13-1/2" long x 7-1/2" wide (for the main nativity); *white or yellow wood* (e.g. yellow pine, osage orange, etc.)—one small, thin piece 3" x 2" (for the star); *white wood* (e.g. pine, aspen, blond maple, etc.)—one piece 1/2" to 3/4" thick x 7" long x 3-1/2" wide (for the sheep); *hardwood*—one piece 15" long x 5" wide (for the base)
Tools: scroll saw with a No. 2R and/or 2/0 blade; fixed disc or belt sander with fine or extra fine (120/220) disc or belt; drill and/or drill press with 1/8" and 3/64" bits; router (optional); access to photocopier
Temporary-bond spray adhesive (such as 3M 777 adhesive)
1/4 sheet of 220-grit sandpaper
Carpenter's glue (optional)
One 1" finishing nail
Approximately 6" of 1/8" doweling
Light oil finish

Introduction

When we decided to do a nativity scene, our challenge was to come up with something unlike the many other nativities we'd seen at craft shows or in gift shops but which still maintained the essential religious nature of the scene. We took the approach of going back to basic sources; thus, the main piece of this pattern draws its roots from classic Renaissance paintings and adapts this style to the scroll saw.

In addition to the main scene (which can be made as an independent nativity), we have added in several features that you can use as optional extras. The first feature is a star over the crèche; the second is a base for the scene; and, finally, the third is a group of sheep to give the piece more of a 3D effect. We also considered wise men, shepherds, and camels and have freestanding drafts for those—but we ran out of time. Maybe next year.

The finished nativity was cut from grey elm with some burl and some very interesting lines in it. The star was cut from yellow pine and the sheep from aspen. The base was a small spalted maple plank that I was fortunate enough to find at a woodworking show recently.

INSTRUCTIONS

The nativity scene

Make a photocopy of the nativity pattern and glue it to the wood. I recommend using clear packing tape on top of the pattern to reduce the burn from the tight turns you will have to make when cutting the pattern. For cutting, I recommend using a No. 2 reverse tooth blade to reduce chipping on the bottom of the piece. The finished nativity was cut mainly with a No. 2R blade, but we used a 2/0 blade for the facial features.

After you have drilled the guide holes and cut out the fret pieces, either peel the pattern off and sand off the glue and remaining pattern pieces or use a solvent such as paint thinner to remove the paper pattern. Let the piece dry before you sand its two faces on a disc or belt sander. This is also a good time to use the sander to ensure

that the base of the piece is straight. I find that then using a 1/4 sheet of 220-grit sandpaper is a good way of removing any remaining burs and lightly rounding the edges in order to give it a more finished look. Clean off the dust (I use a clean paintbrush). If the nativity is the only piece you want to make, then finish the piece with a light oil of your choice.

Adding the star

Make a copy of the star pattern, glue it to the piece of wood, and cut it out. Remove the pattern and finish sand the star. Locate the center of the star and drill a 3/64" hole most of the way through the star and in the arch directly above the crèche (again not all the way through). I like to use a 1" finishing nail with its head cut off as the anchor for the star. Put the non-pointed end of the nail into the hole in the star. Attach the star to the arch on the main piece by putting the sharp end of the nail into the hole in the arch (see **Fig. 1**). To permanently attach it, add a bit of glue to the back of the star and clamp it in place until the glue dries.

Making the sheep

The sheep are two simple fret pieces that can be cut and finished in the same way as the main piece. Both should have flat bottoms so that they can stand alone or on the base.

Making the base

The base is a simple 15"-long x 5"-wide piece of hardwood. To make it more attractive, I rounded the corners and then used a sander to ensure that the sides were straight and corners round. You can also use a router to give a more finished look to the outside of the top of the base. Sand and finish to base with the same oil as the other pieces.

Mounting the pieces on the base

I prefer to use my judgement as to where the pieces should be placed on the base. Since I am a scroll saw person and not a woodworker, I usually place pieces on the base and move them around until they look good. The three pieces seem to be best positioned in such a way that the back edge of the nativity is 1" from the back edge of the base (when the nativity is centered on the base). I then angle the sheep in a "V" towards the crèche on either side, with the single sheep on the left.

Once you have the pieces where you like them, use a pencil to mark the back corners of each piece lightly on the base (see **Fig. 2**). Using a 1/8" drill bit, carefully drill 1/4"-deep guide holes approximately 1/2" in from either end of all three fret pieces (for the dowels). Insert 1/8" dowels cut to about 1/2" long into all three pieces. Now go back to the base and lay each piece on the base so that the corner marks are lined up with the pieces lying down. Mark the locations where the guide holes are to go into the base using the center of the dowels in the three pieces as guides (see **Fig. 3**).

Drill the six guide holes in the base approximately 1/4" deep. Erase the pencil corner marks. You are now ready to assemble the complete piece (see **Fig. 4**). Given that most Christmas decorations are in storage for most of the year, I recommend not gluing the three pieces to the base but, rather, just using the dowels to hold it together. This will allow you to collapse the base and three top pieces into a flat package for storage.

Send questions concerning this project to: Wayne Fowler, 33 Longmeadow Cres, Markham, Ontario, Canada L3R 356. Email: fantasiesisaw@rogers.com

Fig. 1. Attach the star by putting the sharp end of the nail into the hole in the arch.

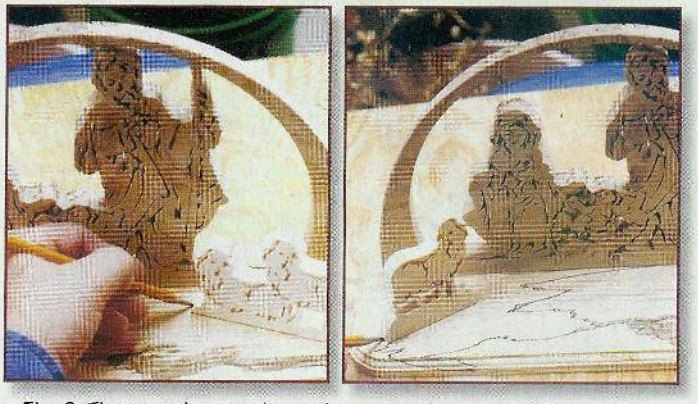


Fig. 2. The two photos above show me using a pencil to mark the back corners of each piece lightly on the base.

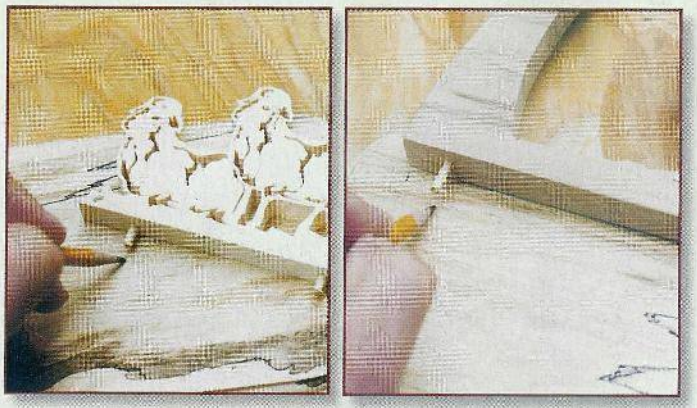


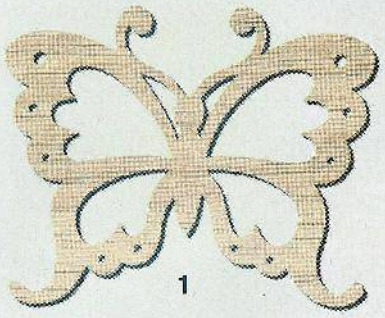
Fig. 3. As shown in these two photos, mark the locations where the guide holes are to go into the base using the center of the dowels as guides.

Fig. 4. Assemble the complete piece.

Pattern Located in Full Size Pattern Section No. 1!

30 Ornaments

by Dirk Boelman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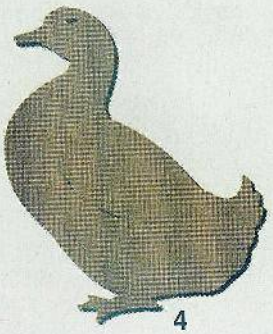
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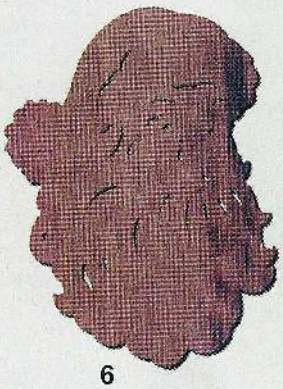
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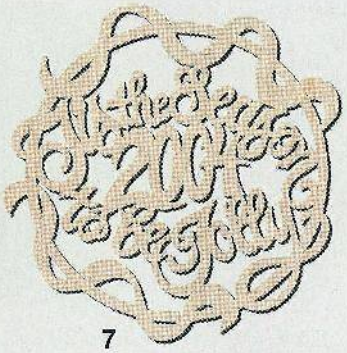
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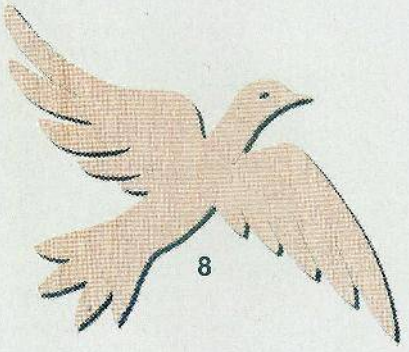
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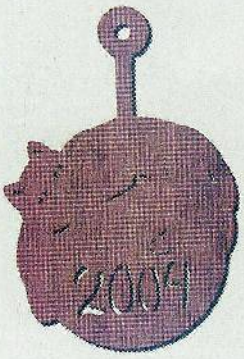
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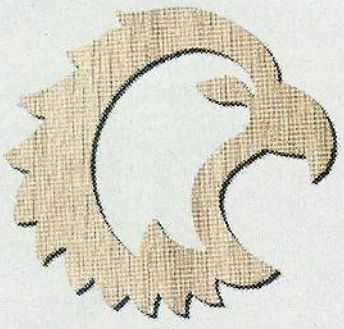
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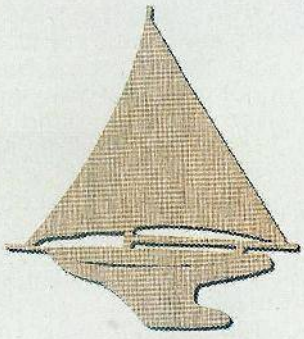
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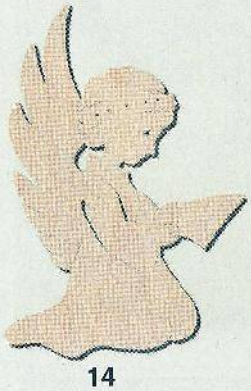
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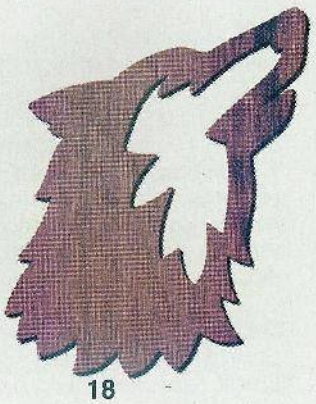
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SUPPLIES

Tools: scroll saw with assorted blades; drill with bits
Temporary-bond spray adhesive
Sandpaper, assorted grits
Finish of choice

A Few Tips from Dirk

Making ornaments is a terrific opportunity to experiment and be creative. They can be made from most any thickness and species of solid woods, or even from plywoods, Plexiglass®, thin metals, and any other material that can be cut on a scroll saw. It is great fun to experiment by making an ornament from a few different types of materials and then seeing the finished results! This is the way we all learn what looks and works the best.

Wooden ornaments that are to be hung on the Christmas tree will show up best when made from light colored woods such as birch, poplar, maple, or oak. Of course, ornaments can also be painted or stained, and glitter or other material can be added to make them sparkle, shimmer, and shine! We usually choose 1/8" to 1/4" thick wood for most ornaments that will hang on the tree because anything thicker gets too heavy and causes the branches to droop. Occasionally we use 1/16" material for small ornaments, but 1/8" to 3/16" thicknesses are our favorite.

Ornaments that are made for display in other areas (such as hanging from fireplace mantles, book shelves, ceiling hooks, or the wall) can be made from thicker materials if desired. The patterns can be enlarged to create a more dramatic, decorative piece for display, which is also a perfect opportunity to use gorgeous hardwoods like walnut, cherry, or purpleheart.

Have fun... and be creative!


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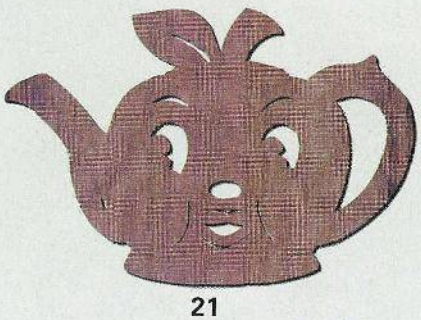
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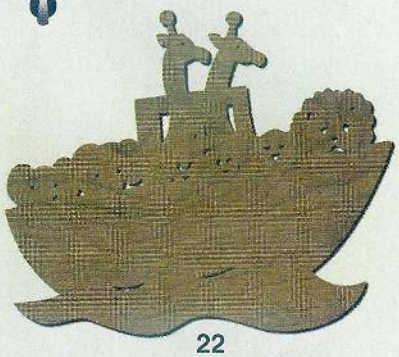
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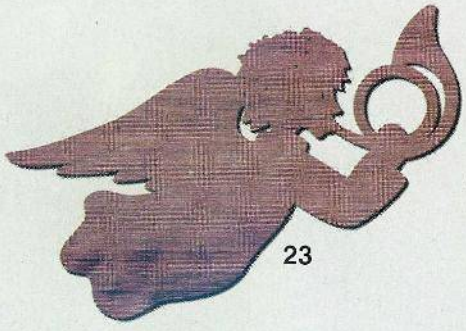
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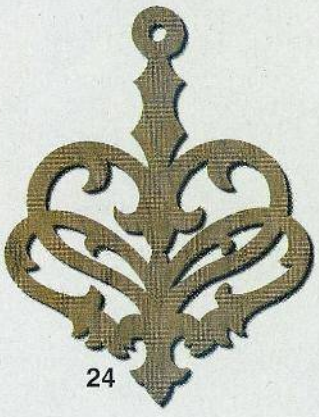
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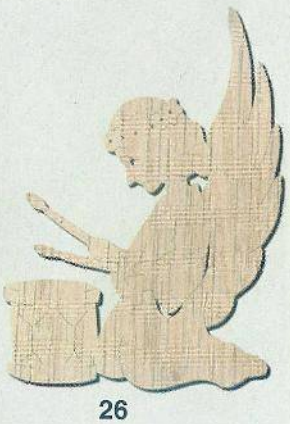
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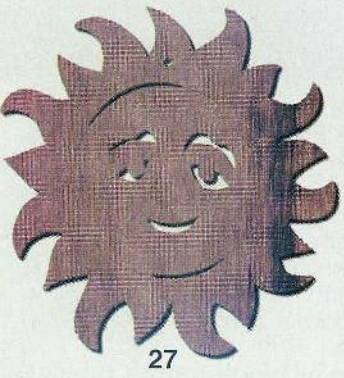
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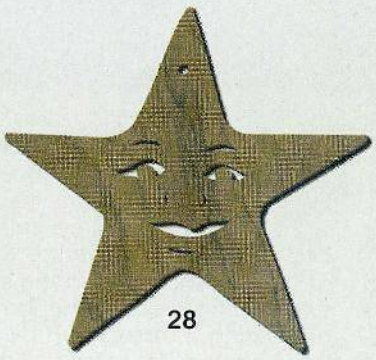
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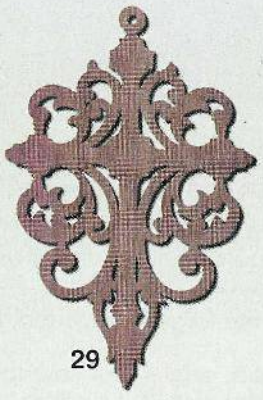
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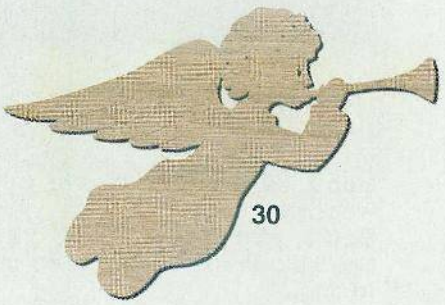
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Pattern Located in Full Size Pattern Section No. 2!

Wolf with Inlay

by Marilyn Carmin

INSTRUCTIONS

Step 1. Make one copy of the main pattern and two of the smaller pattern.

Step 2. Using spray adhesive, put the main pattern on your wood of choice.

Step 3. With the No. 58 bit, drill for all inside cuts. Use the No. 5 blade to cut, and keep all the larger scraps for inlay testing.

Step 4. With a No. 2 blade installed, angle your saw table 15° to the right. Moving counterclockwise, cut a circle from a piece of saved scrap wood. (**Note:** if your saw table is tilted to the left, make your cut in a clockwise direction.) The circle will drop into the surrounding wood, leaving a slight indentation. Keep increasing the angle and cutting circles until the difference is just enough to allow a piece of shell laminate, set in the indentation, to sit flush with the surrounding area. (If the laminate sits too high at the time of finishing, nothing can be done; if it sits low, paper can be used as shims to bring it flush.)

Step 5. Hold the small pattern in place on the project.

SUPPLIES

Wood: *wood of choice**—one piece 3/4" x 17" x 15" (for main project piece); *contrasting wood of choice*—one piece 1/4" x 3" x 3-1/2" (for smaller pattern piece); *shell laminate***—one piece 3" x 3" (for the inlay)
Tools: scroll saw with No. 5 (12.5 TPI) and No. 2 (20 TPI) blades; drill with No. 58 bit
Temporary-bond spray adhesive
Clear packaging tape
Sandpaper, assorted grits
Hot glue gun
Wood glue
Clear spray finish
**Natural edged slab wood is suggested, as it is a good complement to this pattern.*
***Available in 9-1/4" x 5-1/4" sheets of three colors (white pearl, black pearl, abalone natural) from Marilyn Carmin: (503) 255-5159.*

Carefully slip the shell laminate between the wood and the pattern until it is lined up for the moon. Carefully tape the laminate into place using clear packaging tape. Tape the pattern in place on top of the laminate. Drill a hole at "X" No. 1 and cut following the directional arrow. Do not remove any tape from the moon at this time, but remove all tape and pattern from surrounding areas.

Step 6. Retape the moon in place.

Step 7. Cut circles in scrap wood with the No. 5 blade until it drops about 1/4". When a piece of the contrasting wood is set into the resulting indentation, it should be flush with the surrounding wood. (**Note:** as with the inlay, if the wood ends up being too high, it can be sanded down; if too low it can be built up.)

Step 8. Using dots of hot glue, hold the contrasting (wolf) wood in place on top of the moon inlay. To help with alignment, leave the top of the moon exposed. Do not put any glue directly on the shell laminate.

Step 9. Secure the small pattern piece in place with packaging tape. Use the exposed part of the moon for help with placement.

Step 10. Drill the remaining "X"s with a No. 58 bit.

Step 11. Cut following the directional arrows.

Step 12. Remove the wolf from the surrounding wood. Replace the dark wood from between the wolf's leg with the light wood from the background (from the area just cut). Using a hair dryer will help in the loosening and removal of the hot glue when the cutting of the wolf is complete.

Step 13. Remove the shell laminate. *Carefully* remove any tape from the shell. Set it aside in a safe place.

Step 14. Put all but the shell back in the project (the wood behind the moon, the wood behind the wolf, and the wolf itself). Now the only thing that is not in place is the shell laminate.

Step 15. Sand all as needed.

Step 16. Sand the inlay area until the wolf is flush with the surrounding areas. Trim or sand flush any excess wood on the back of the project. (Remember that once the laminate is in place only a small amount of sanding can be done without damaging the shell.)

Step 17. Insert the laminate in its place and check that the following are flush: the moon to the surroundings, the wolf to the moon, and the wolf to the surroundings. Build up under the moon with paper if necessary.

Step 18. Once all is sanded and flush, glue everything in place. Let all glue dry.

Step 19. Do a light finishing sand over everything.

Step 20. Use a clear finish over the entire project.

For questions concerning this project, send an SASE to: Marilyn Carmin, 4569 NE 78th Pl., Portland, OR 97218.

A Brief History of Saw Blade Development

by Ralph Costa

From Cro-Magnon to 17th-Century England

Recorded history concerning saw blades is scarce, but in my travels I've managed to gather enough information to create this brief outline. Being in the saw blade industry, I thought it would be interesting to see how far into the past one could go.

Let's go back about 60,000 years. Yes, believe it or not, indications are that Cro-Magnons had actually developed a cutting instrument with teeth. They were only flint knives, but they did have a toothed edge. The teeth were obviously not uniform, but nonetheless, they illustrate that humans formed serrations on edges of hard materials that functioned as cutting tools.

From Cro-Magnon we jump straight to the Egyptians. In this period, about 6000 years ago, copper is discovered. The Egyptians soon made good use of the newly found metal and began creating small hand saws. They were about 18" long with a wooden handle lashed to one end of the blade. What an advancement! Hence, the handsaw is born, and the evolution begins.

Four thousand years pass and the Egyptians discover another new metal—bronze. Bronze proves to be more durable than copper, so the saw undergoes a revision. Blade life increases with this new metal, but there remains a major problem: when making deep cuts, the blade would bind in the work. So, to keep the blade moving freely, oil and wedges were used. This method of keeping the blade from binding was standard for a long period of time, but improvements were still needed.

The next set of improvements was made by the Romans between 100 B.C. and 300 A.D. They found that by slightly bending the teeth in opposite directions, the back of the blade did not bind in the work and the blade oscillated freely without oil and wedges. Also, the waste was conveniently expelled.

After putting on the blade teeth what we now know as "set," the Romans developed a saw frame. The frame held the blade at both ends. This feature kept the blade straight while cutting and made it possible to design a much narrower blade. The Romans also enhanced tooth design with more of a "V" shape, giving the blade a better cutting edge.

One could say, then, that the modern saw was created by the Romans, and that they inaugurated tooth set and kerf.

The next improvement comes around the middle of the 17th century in Sheffield, England. This region of England, by far, contributed reams of data relating to steel processing. The one process in particular that aided saw blade development was rolling steel into plates. These plate allowed flat, wider hand saws, which resembled the saws we have today, to be fabricated.

Fret and Scroll Saw Blades

What about fret and scroll saw blades? Ah, this is where it gets interesting.

As mentioned in the beginning of the article, not much has been recorded regarding saw blades. But fret saw manufacturers were fanatical about keeping information about the blades secretive; anything useful was closely guarded right from its inception. However, I did finally manage to gather some facts.

The farthest back that I was able to confirm the existence of fret saws is about the 1800s. I found a 1928 German publication named *Draht-Welt* (or *Wire-World*), which directly referenced fret saw blades from this time.

Let's start with the name. In German, the name for a fret saw blade is *laubsage* (pronounced loub-say-ga). Believe it or not, *laub* literally means "leaf" or "leaves," and *sage* means "saw."

Now, what do leaves have to do with fret saws? It was believed by some that the tooth of the fret saw blade resembles the edge of a tree leaf. There is no reference to a particular tree, but the name stuck.

The earliest blades were supposedly conceived when an inventive person needed a small saw blade to do some decorative cutting. Word has it that a main spring from a clock was straightened out and the teeth formed to the edge. Some say the teeth were filed and some say they were punched. Regardless of the method, a new product and a new industry was soon to be born.

According to *Draht-Welt*, this all started in an area between the Mosel and Rhine Rivers in western Germany called Hunsrücker.

Hunsrücker farmers were the primary manufacturers of the blades. Yes, farmers. During the winter months when they had much free time, the farmers took up blade making. Not only did it give them something to do, it also supplemented their income. Little did they know how supplemental it would become.

The entire process was done by hand, with each tooth notched or punched one at a time. Material was fed into a die and, through the use of a hammer and punch, each tooth was meticulously fabricated out of the steel. As primitive as it was, the workmanship was outstanding.

As demand for blades increased, an entrepreneurial spirit arose among some of the farmers. Soon, three manufacturers were formed in the central Rhine region, and these manufacturers employed 200-300 fret saw home workers. What an excellent example of the term "cottage industry"!

The original clock spring performed so well that the Hunsrücker farmers did not change the characteristics of the blade. In order to keep the composition and temper exactly the same, where do you think they sourced the steel? You guessed it—Switzerland. Who better to make the flat wire than the Swiss?

Additional articles in *Draht-Welt* show that heat-treating of the blades was done at a central location, which does stand to reason based on the equipment described in the article. The home workers could not have been able to maintain such an important process. There is an entire section of this publication describing the heat-treating, but it is very technical and probably would not make a good magazine article.

Names and dates are not known, but soon enough a large import house from North America sent a representative to Germany for the sole purpose of importing the blades to the United States. Running sales orders gave these humble new manufacturers an expanded market and now world recognition.

It is difficult to say what manufacturers still exist, as the publication never mentioned anyone directly by name. Who knows? At the time the article that I read was written, secrecy probably still remained a priority. I do know that the field is narrowed down considerably and is still centered in Europe.

Draht-Welt didn't go much further, but for me it was enough to answer my question of where the blades got their start. I hope that those of you who read this article find all of this entertaining, that you might think about the farmers making blades on a winter night when you are creating your next piece of art.

Just a closing note: All data can be disputed, this article included. As I mentioned earlier, records pertaining to saw blade development is scarce. In regards to fret saws, this is the most information I have uncovered in my tenure in the saw blade industry. The write-up is only intended to give some insight into the industry. If there is anyone who has additional information or corrections and is willing to share it, I would be pleased to hear from him or her.

Ralph Costa is a design engineer and has worked in the saw blade industry for the past 15 years. He has designed equipment for fabricating saw blades, developed new processes, and consulted for companies worldwide. Ralph is currently Worldwide Sales and Product Manager for Scies Miniature SA and Grobet USA (manufacturers of Pegas saw blades). Ralph can be reached at rcosta01@snet.net.

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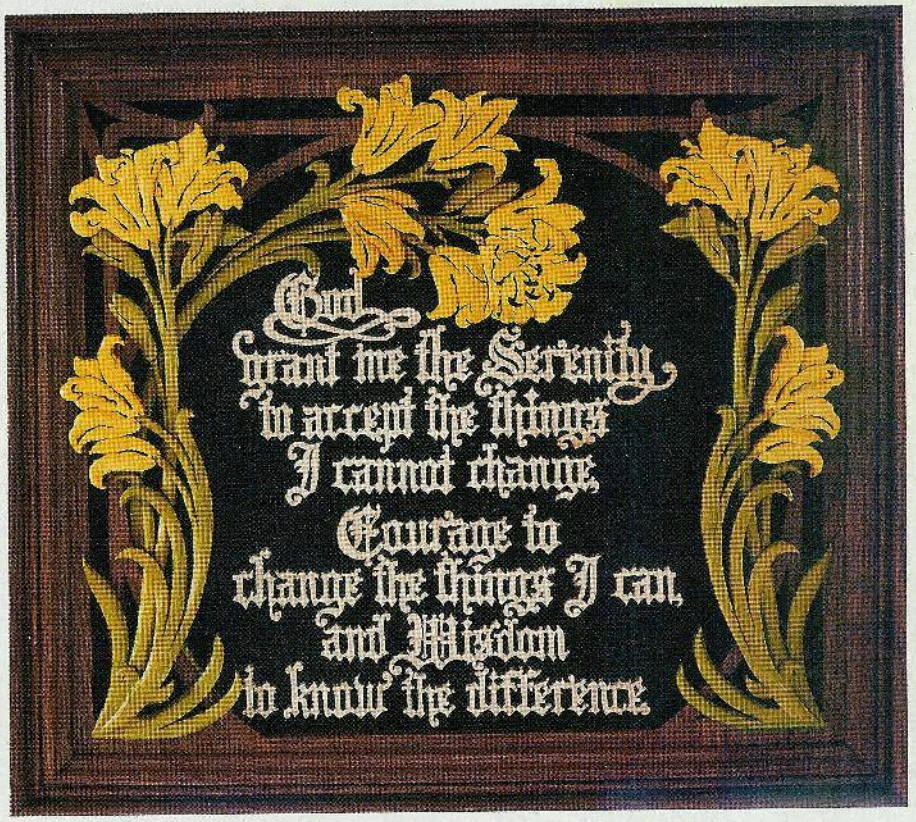

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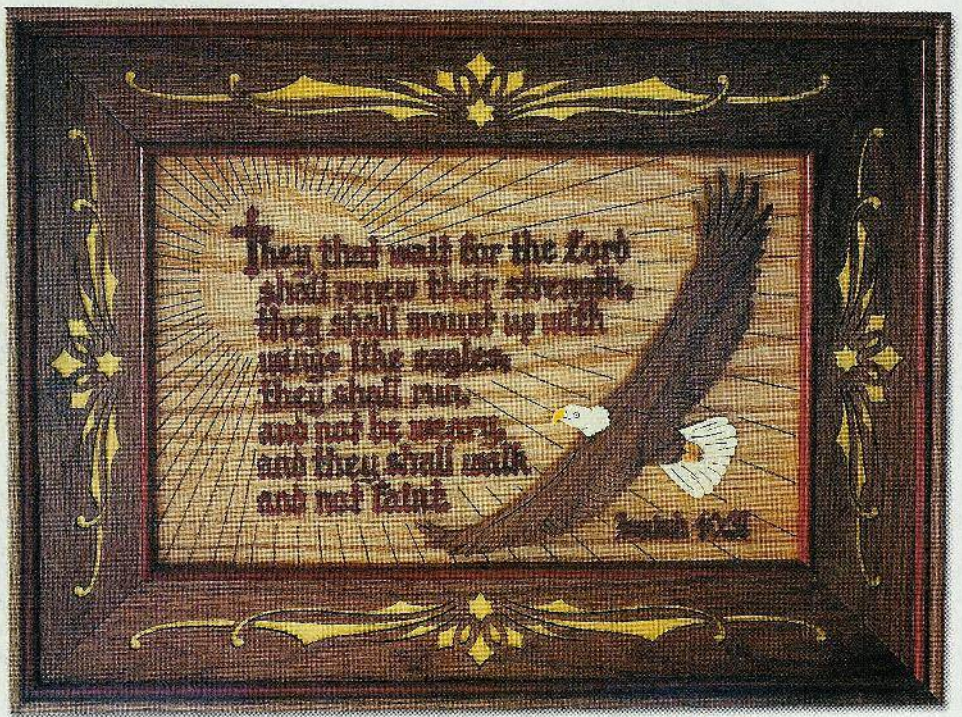

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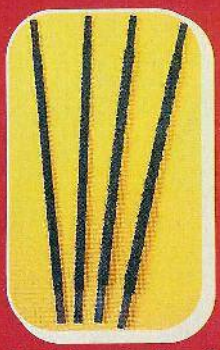

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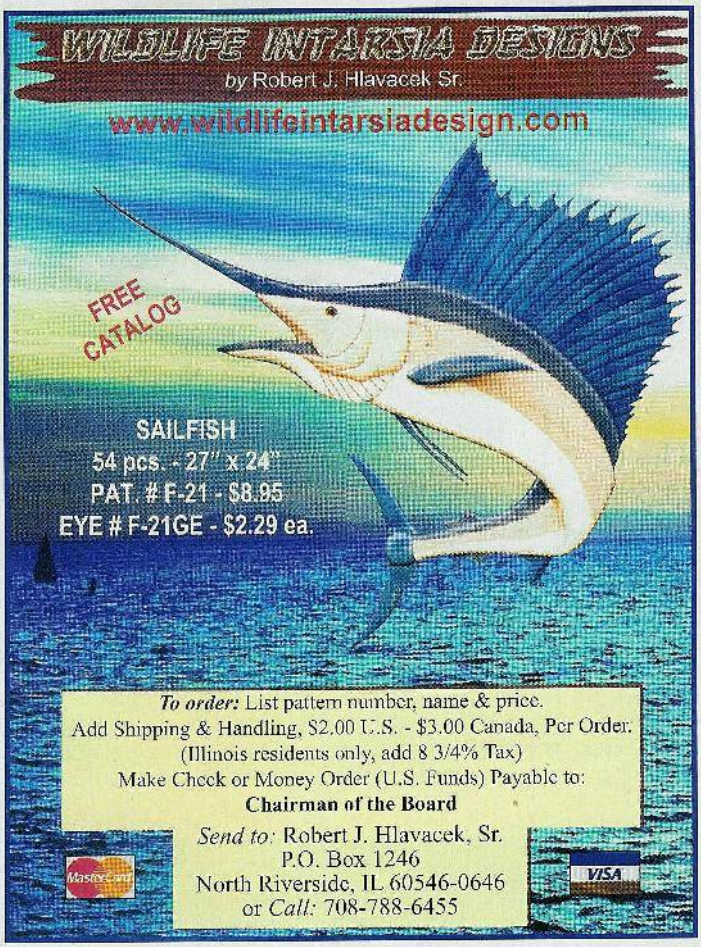

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	12"x12"	4.20	5.60	6.60
	12"x16"	5.60	7.50	8.80
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	12"x12"	5.20	6.90	8.10
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Pattern Located in Full Size Pattern Section No. 1!

Companions

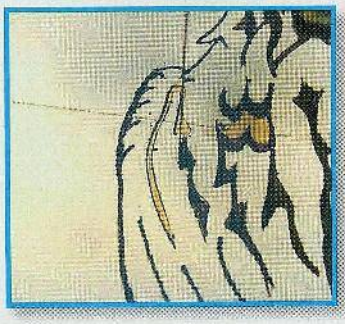
by Mark Brajevich of CKenMARK Designs

INSTRUCTIONS

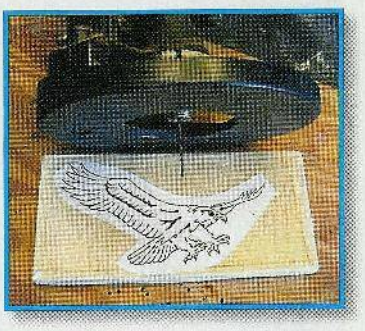
Make copies of patterns. As noted, the pattern for the backer board consists of the full circle created by extending the dashed line (shown on the faceplate pattern) into a full circle. If desired, multiples of all pattern pieces can be stack cut. Before applying the patterns to the stock, sand all wood pieces using fine-grit sandpaper. This will make it easier to finish sand the pieces once the patterns are removed.

SUPPLIES

Wood*: *oak and/or birch plywood*—one piece 3/8" x 14" x 14" (with vertical grain, for faceplate), one piece 1/4" x 12" x 12" (with horizontal grain, for backer board), one piece 1/8" x 5" x 2-1/2" (for soaring eagle)
Tools: scroll saw with assorted blades, including Nos. 2, 3, or 5; skip tooth fret blades (larger blades make better relief detail); drill and small drill bits (for inside cuts and relief cuts)
Temporary-bond spray adhesive
Masking tape
Pencil torch (for wood burning the tree limbs)
Sandpaper, assorted grits
Wood stains of choice
Small 1" paintbrush or sponge
Glossy or satin spray finish
Wood glue, 2-part epoxy and/or cyanoacrylate (for gluing overlays, spacers and faceplate to backer board)
Picture hanging eyes and wire
**All pieces can be mixed or matched. Use waste wood from faceplate and other cuts for clouds and spacers.*

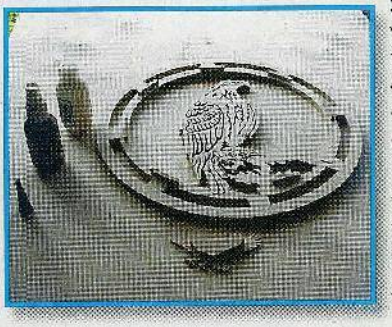


Step 1. Apply faceplate pattern to the wood of choice with the grain running vertical. Drill small holes for all inside and relief cuts. This pattern is best cut using a No. 2 fret or reverse tooth blade. **Hint:** cutting to the outside of the pattern lines with a No. 2 blade will yield the best results on relief cuts.



Step 2. I stack cut the soaring eagle using 1/8" plywood. For very small entry holes I use a small rotary tool on a small router base. You can use a drill press, but I like to keep my Dremel on a router base right near my scroll saw because this allows for quick and easy use when I've missed a hole for blade entry on inside and relief cuts.

Step 3. Once the faceplate has been cut out, I lay the 1/4" backer board material down and trace the inner circle from the faceplate (dashed line on pattern). I allow the grain on my backer board to run horizontally for contrast.



Step 4. Use the 1/4" waste wood from the backing plate to cut out the clouds and spacers. Place spacers on the back of the faceplate and soaring eagle in areas where they are least noticeable. Although not shown in this picture, I do put spacers on the back of the perched eagle in the head area for strength. I use CA glue with activator for this.

Step 5. I use small paintbrushes to apply different shades of stain for contrast. In this case, I used colonial cherry on the eagles, golden oak on the outer ring of the faceplate, and dark walnut to blend the rock where the eagle is perched. Dark walnut is also used on the backer board and the outer side edge of the faceplate. I leave the clouds the natural color of the birch plywood.

Step 6. Once all pieces have been stained, I finish them individually with Deft semi-gloss. It is better to finish all items first and then assemble them once they have all dried. I generally dry assemble the plaque and, when I am satisfied with the placement, use CA Glue with activator to put it all together. **Hint:** the two larger clouds should slide under the eagle's head for stability. Put screw eyes and picture hanging wire on the project and enjoy.

For questions concerning this project, send an SASE to: Mark Brajevich, 26323 Hohokam Ct., Sun City, CA 92586. Email: ckenmark@hotmail.com

Pattern Located In Full Size Pattern Section No. 2!

Pumpkin Trivet

by Barry Gross (Mr. Solid Surface) of BG Artforms

SUPPLIES

Wood: Corian®—one piece (Adobe color) 1/2" x 8" x 9" (for the pumpkin), one piece (Kiwi color) 1/2" x 2" x 2" (for the stem); SSV or plywood—one piece 1/8" (for trivet backer)

Tools: scroll saw with a No. 7 Artisan blade*; pneumatic sander Model 130 (optional)**; belt or disc sander with aluminum oxide sanding discs (optional)**; polishing wheel with muslin wheel and a good polishing compound (optional); random orbital sander (optional)

3M Spray Mount™ artist's adhesive

Sandpaper, assorted grits (including 220, 320, 400, and 600 wet/dry)

Hot Stuff Super "T" cyanoacrylate glue (CA glue)*

Masking or packaging tape

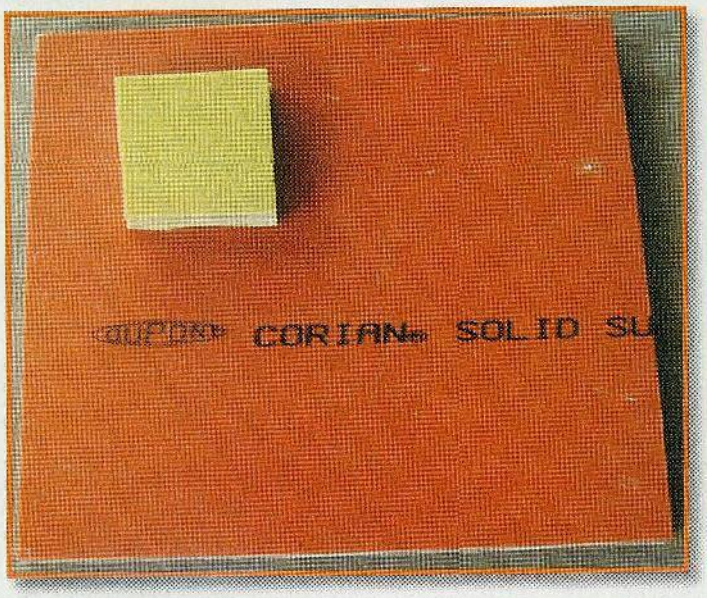
*Available from BG Artforms, 2189 Philip Drive, Bensalem, PA 19020; (888) 717-4202; or visit their website at www.bgartforms.com.

**The Model 130 pneumatic sander is available for $35.95, as is the solid surface aluminum oxide sanding kit (CSK-3) for $17.95, from BG Artforms. Photos and descriptions of these sanding tools can be found on BG Artforms' website.

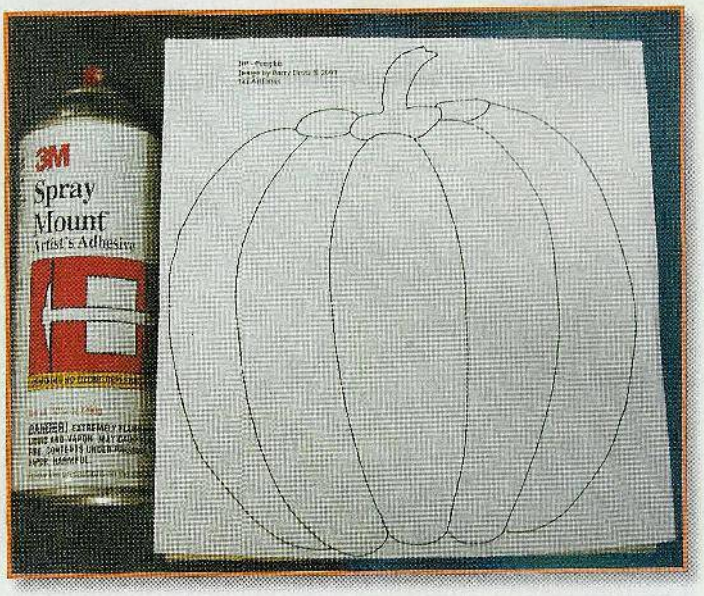
Introduction

Fall is here and pumpkins are everywhere. So why not have a pumpkin trivet? The color that is being used for the pumpkin is the Corian® color Adobe, which is closest in color to a real pumpkin. The stem is made from the color Kiwi, though any green would work just as well.

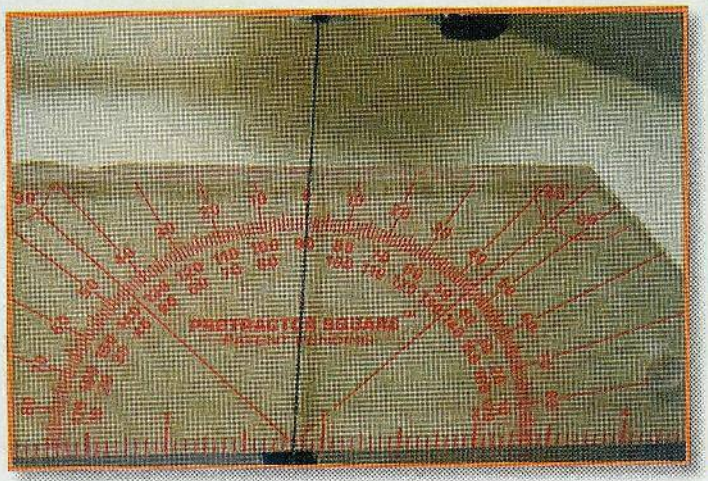
INSTRUCTIONS



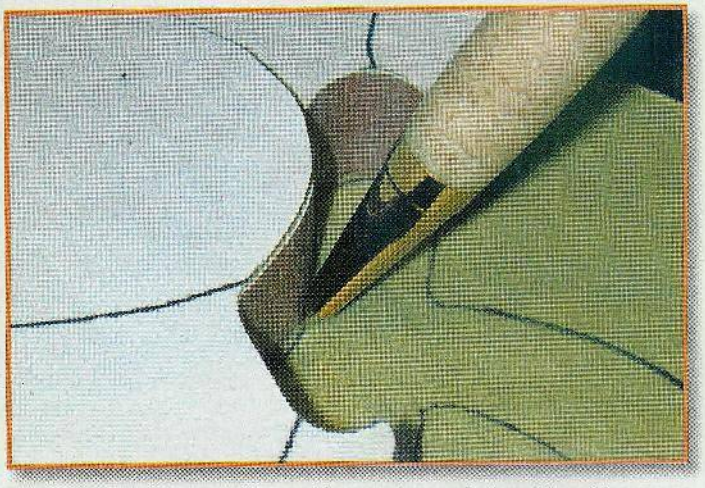
Step 1. Corian® has a definite top and bottom. The top is generally smoother than the bottom, and the bottom might have writing on it (as illustrated in the photo).



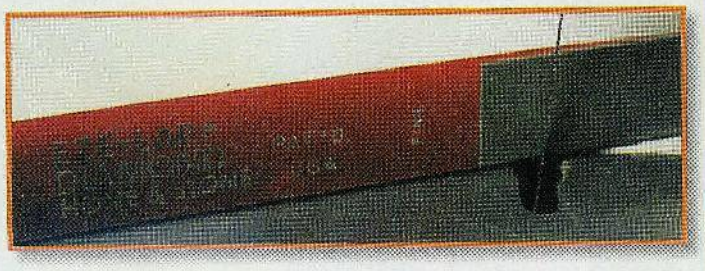
Step 2. Place masking tape on the surface of both the Adobe and Kiwi pieces. This will keep your blade from overheating when you are cutting the material. Use 3M Spray Mount™ artist's adhesive to adhere the pattern to the surface.



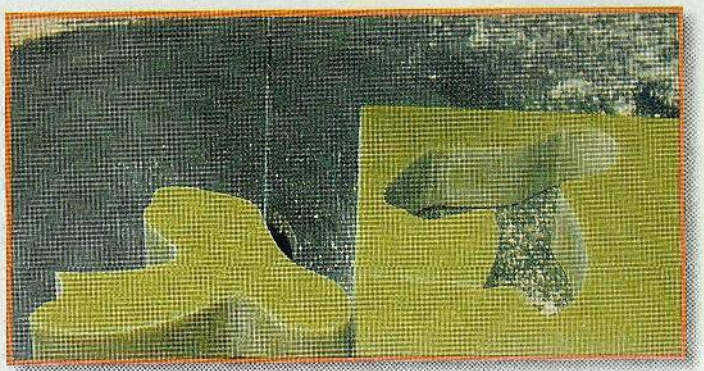
Step 3. Make sure that the scroll saw blade is exactly 90° to your scroll saw table. This is important because you will be trying to fit the pieces together as tightly as possible.



Step 6. Place the pumpkin on top of the 2" x 2" green piece and carefully trace the stem onto the taped Corian® surface.

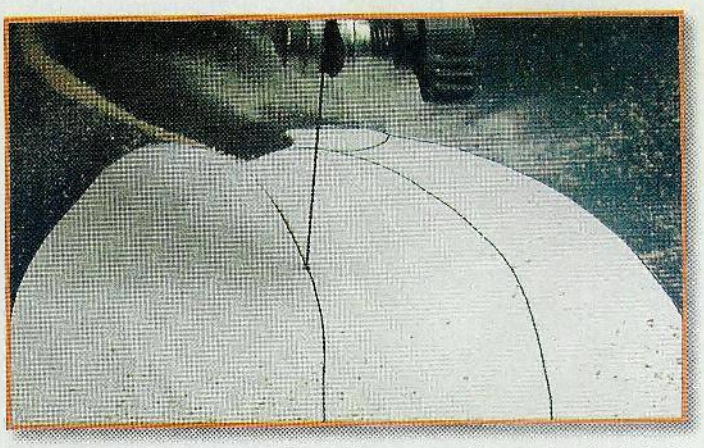


Step 4. Round over the back of the No. 7 scroll saw blade using a hone. This will help to eliminate any frictional heat that will build up when making tight turns.



Step 7. Cut the green piece of Corian® on the outside of the line you just traced to ensure a snug fit between the body of the pumpkin and the stem.

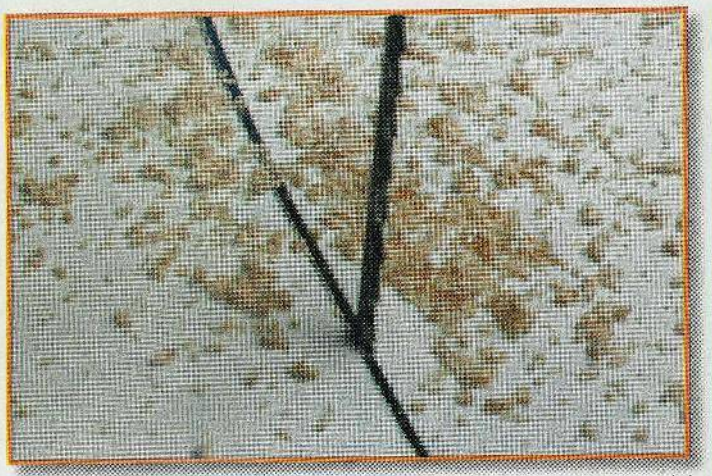
Step 5. Start cutting the pumpkin pattern from the outside. Cut the outside perimeter of the pattern first. Then cut and carefully remove the stem piece. Care should be taken to remove only the stem piece while not cutting any of the other pieces at this time.



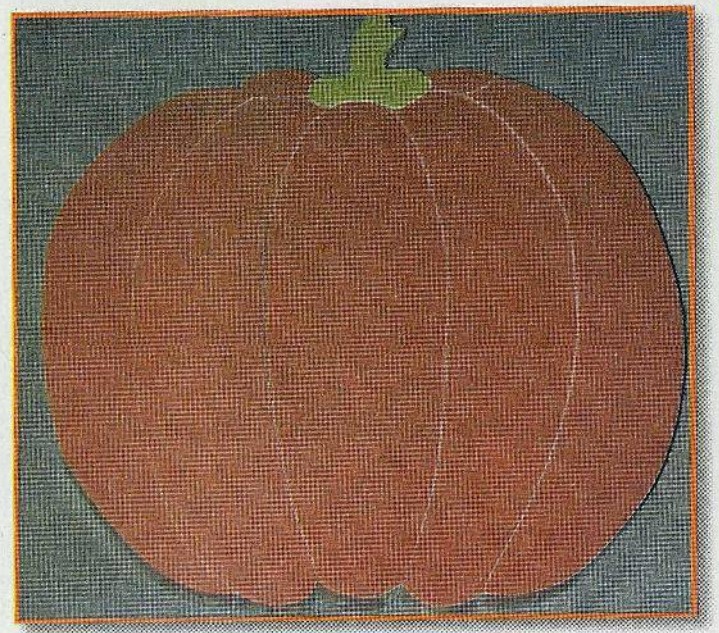
Step 8. Start at the outside of the pumpkin and cut straight in from one side and out the other side. Save the two smaller pieces at the top of the pumpkin for last.

continued on page 48

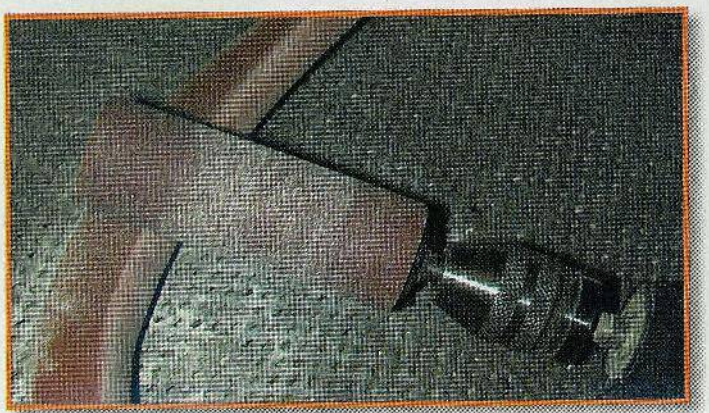
continued from page 47



Step 9. This is a close-up of the debris that you should obtain when cutting the Corian® properly.

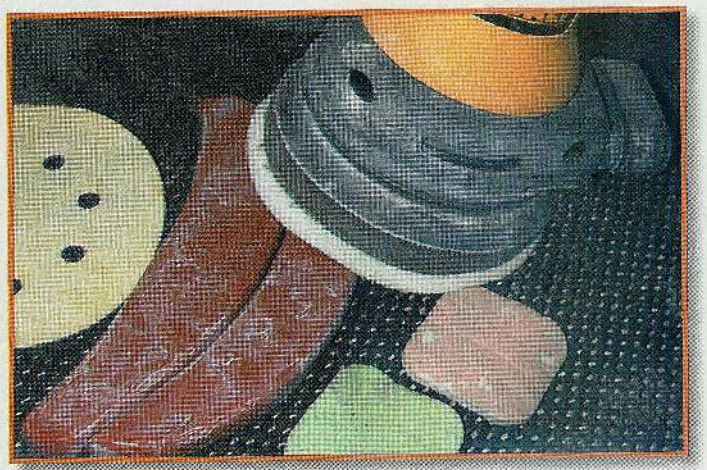


Step 10. Here is the pumpkin cut out and then fitted back together. If you have a piece that does not fit well, sand it with 220-grit sandpaper until you are satisfied with the fit.

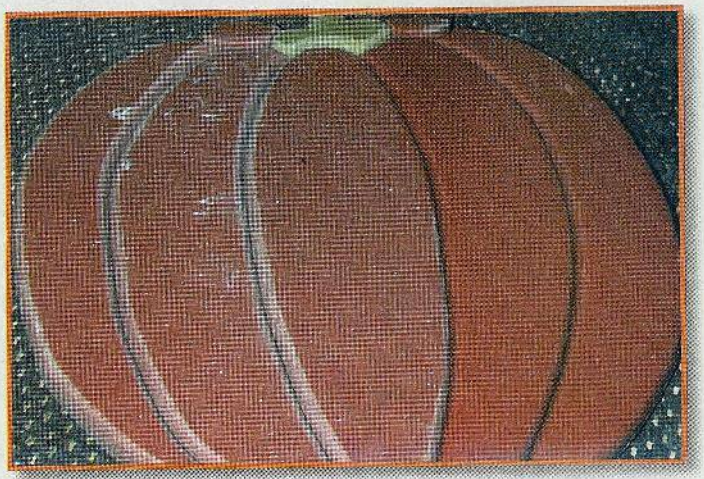


Step 11. Round over the edges of the pumpkin using a router or a pneumatic sander. If you place any value on your fingers and are using a router, do not use the router for the smaller top pieces of the pumpkin!

Step 12. Here are the pieces of the pumpkin with all the edges rounded over.

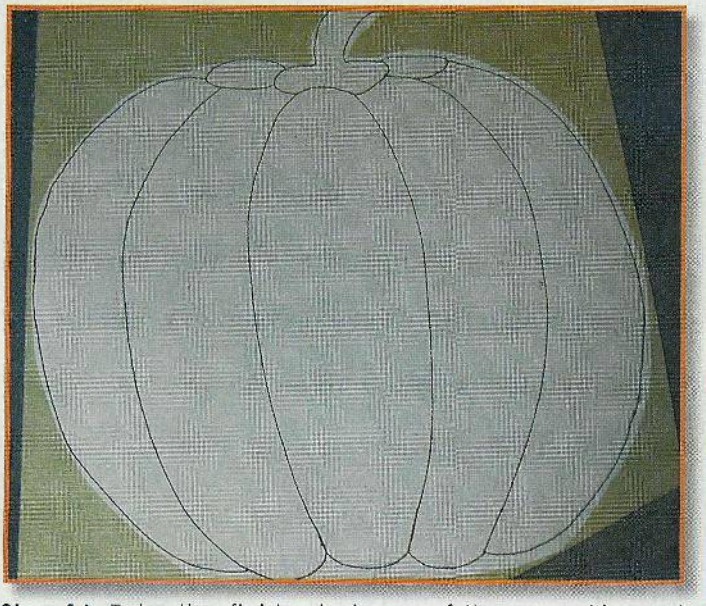


Step 13. Finish sanding the pumpkin with the padded aluminum oxide sanding discs, which are specially formulated to sand and polish the Corian® surface.



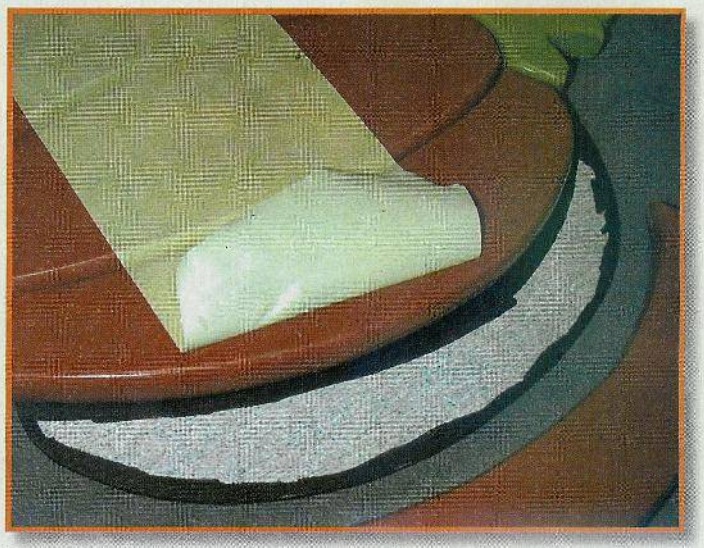
Step 14. Here is the pumpkin with a few sanded and polished pieces and others that have yet to be sanded and polished.

Step 15. Here are the sanded and polished pieces of the pumpkin, waiting for the backing piece to be cut.

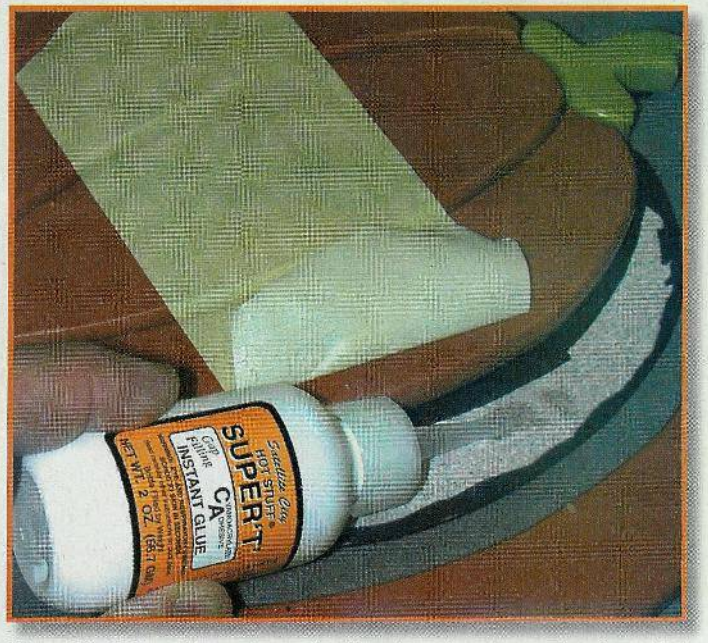


Step 16. Take the finished pieces of the pumpkin and place them on top of the SSV or 1/8" plywood and trace around the outside of the pumpkin. Cut the backer piece on the inside of the line you just drew. This will leave room to support the smaller top pieces of the stem area.

Step 17. Use a black magic marker to color the outside edge of the backer pad in black.



Step 18. Place masking tape on the outside of the pumpkin to keep it together and then place the taped pieces on top of the backer piece. Line up the pumpkin carefully and remove one of the side pieces as illustrated. Use a black magic marker to draw a thick line where the two sections meet. This is done just in case there is not a perfect fit between two pieces. Since the background is black, it cannot reflect light and show any imperfections you might have.



Step 19. Glue the piece to the backer board using *Hot Stuff* Super "T" Cyanoacrylate (CA) glue. *Hot Stuff* Super "T" dries in approximately 30 seconds, thus giving you some time to assure a good fit and bond between the two surfaces. Now glue the remaining pieces to the backer board, coloring any joint lines ahead of you.

Step 20. Enjoy your finished pumpkin trivet. Do not place it to near the stove; it might turn into a pumpkin pie!

For questions concerning this project, send an SASE to: Barry Gross, BG Artforms, 2189 Philip Drive, Bensalem, PA 19020. Email: 2bgross@prodigy.net

Pattern Located in Full Size Pattern Section No. 2!

Scrolled Buck

designed by George Ahlers, sawn and developed by Wes Demarest

SUPPLIES

Wood: *wood of choice—one piece 1-1/8" x 14" x 26"**
Tools: scroll saw with assorted blades, including a Woodrunner No. 5R; drill with No. 58 bit; belt and/or orbit sander; chisels or gouges
Sandpaper, assorted grits (to 500-grit wet or dry)
Finish of choice
Sawtooth hanger
**The size listed applies to the piece of live edge cherry we used. As always, you should feel free to apply the pattern to whatever you can get your hands on.*

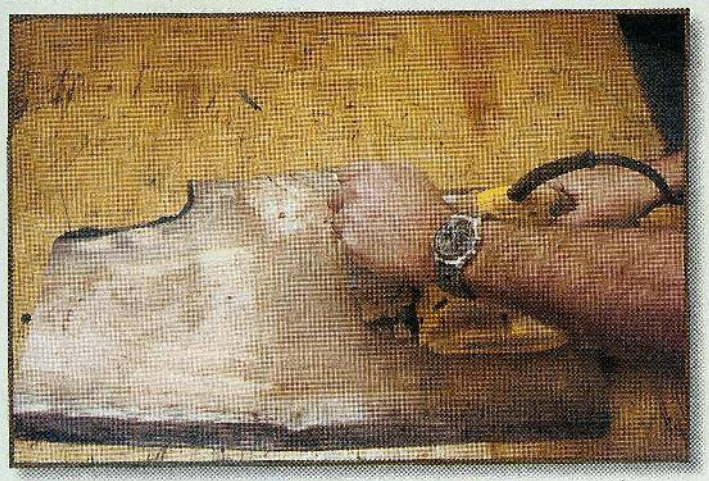
Introduction

When people ask me to explain what it is that inspires me to work beyond a pattern, I really don't know what to tell them. I'm not an artist that can sit down and draw an original pattern (like George Ahlers), but Alice and I always try to see beyond the lines. When I look at a pattern, I actually see grain direction and contrast and then color. It is kind of like watching a photograph come to life in a tray of developer. After that, all we have to do is find the right wood.

The problem with such a spontaneous approach is that things often go wrong, sometimes to the point of starting over again.

INSTRUCTIONS

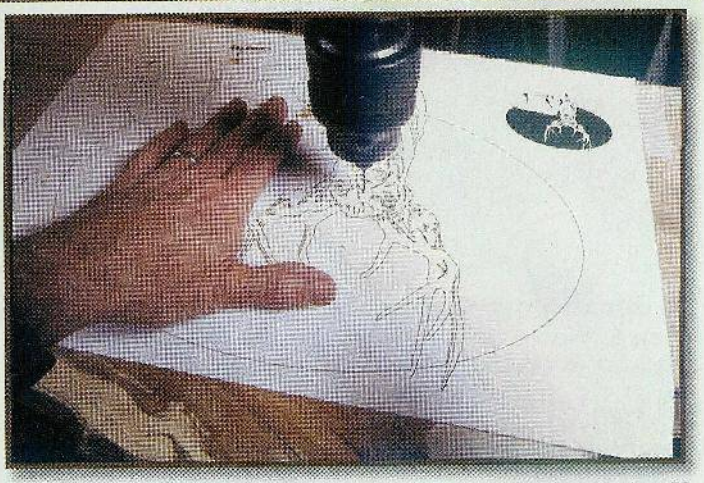
Step 1. Every project has a beginning: selecting the wood that will compliment the design. Fortunately, we still had some old grungy looking live edge cherry that I always keep for these types of projects. The grain in cherry is not as prominent as oak or ash, and blends well in wildlife scenes. You do, however, have to be careful of straight-line blemishes such as the sticker stain on the right side of this board.



Step 2. The next step is to smooth the surface and bring up the bright wood. We used a belt sander with 80 grit because the board was not flat and was too wide for my planer. Also, I wanted it to be over 1" thick.

Step 3. Once we got the surface relatively flat, we continued with the random orbit sander to 220 grit on the face and 120 on the back.

Step 4. At this point, it was a matter of placing the pattern so that we cut through as few knots and pitchy spots as possible. We intended at first to relief cut the interior so that the two pieces would drop down. We also considered cutting the deer so that it would pop out at least 1/2", but then we decided to not go with either of these options.



Step 5. We drilled the holes with a No. 58 drill bit set at a 3° angle for the outside cuts and 0° for the interior cuts.

Step 6. While it is more of a problem in hot humid weather than it is in the winter, I never like the wood to drag on the table as I cut. To alleviate this, I keep my table waxed. A little wax goes a long way. I bought this can a loooong time ago; the price tag on the lid is marked $0.98!

Step 7. It is easier to cut the interior waste areas first, then the relief cuts. That way there is less risk of breaking an antler while you are working with the piece. The relief angle was set to 2° for three main reasons: I wanted a deep drop, the wood was 1-1/8" thick, and I was using a Woodrunner No. 5R blade.

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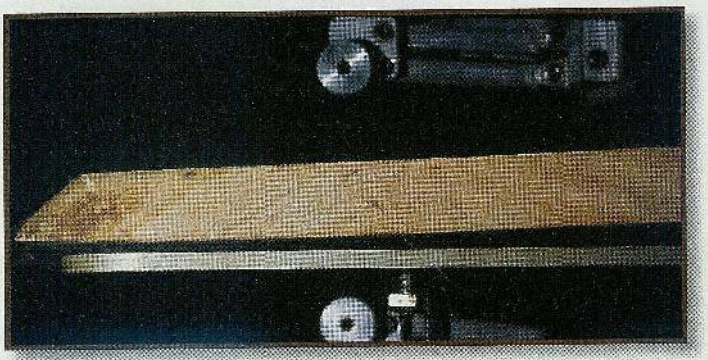
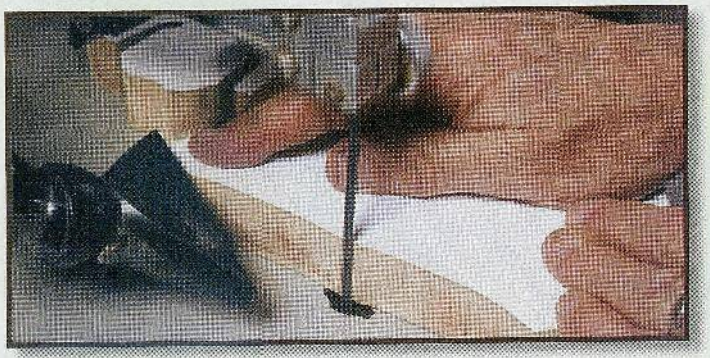
Step 8. We've all experienced bent blades. In over 20 years of scrolling, I haven't found a way around it, so I keep a pair of pliers on hand and straighten them as needed.



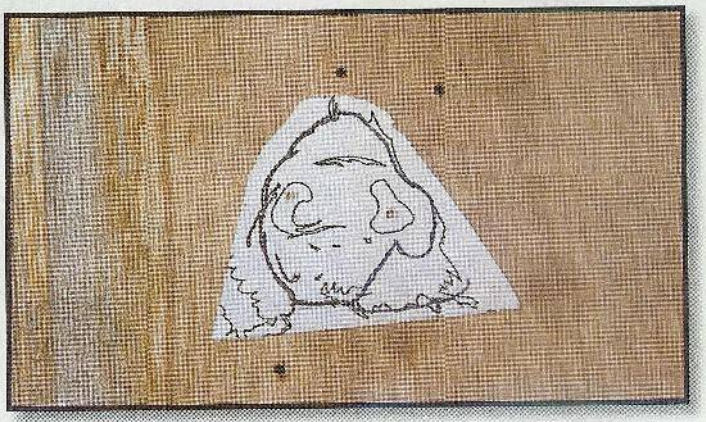
Step 9. One of my leading causes of bent blades is using wood that will not lie flat on the table. This further complicates matters because, as you follow the line, the angle of the wood to the blade changes and waste pieces will not come out without cutting them into smaller pieces. That's not too bad for regular patterns, but when you are trying to save waste pieces when relief scrolling, you have a problem: your relief angle is constantly changing. There are several things you can do. Complete the cut and see if the drop is acceptable. If it is, tape the piece(s) in place so they do not hang up on the edge of the table or blade slot. Another option is to carefully cut away the areas that are hanging up. Finally, you might also try keeping a finger or part of your hand under the wood as you cut so that the blade angle is more consistent.



Step 10. This piece of cherry had a lot of gum in it and there seemed to be no end to the burning problems, regardless of what blade or speed I used. Thankfully, I had an assortment of *Yorecraft* scroll saw files on hand and they soon took care of the burn marks. They are also real handy for adjusting the amount of drop on relief cuts in the event you miscalculated the angle, or grabbed the wrong size blade.

Step 11. My overall plan at this stage was to Sculptural Scroll© the project, but I wanted to wait until it was cut out before proceeding in that direction. Actually, this pattern looks just fine sawn, but we pushed on. I figured that if the carving didn't work out all we had to do was sand it flat and no one would be the wiser.

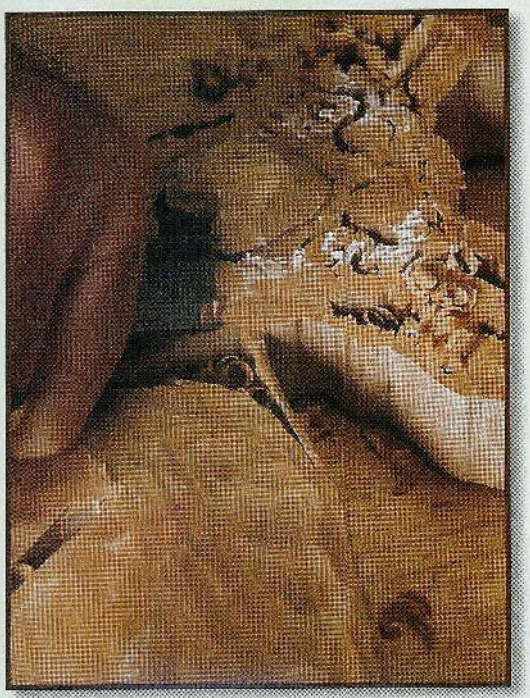
Because the nose will be the most forward element in the pattern, I elected to add wood to it. That required more to be added to the antlers as well. It was at this point that I could have relief cut the deer and brought it forward and not have been bothered with the glue up. However, I wanted the deer to emerge from the background, not to stick out from it.



Step 12. I drilled holes for these additional pieces, thinking that I shoulc cut them on the scroll saw then glue them in place. Then I thought that they would look better carved, so I repositioned the pattern. Well, read on before you do anything!

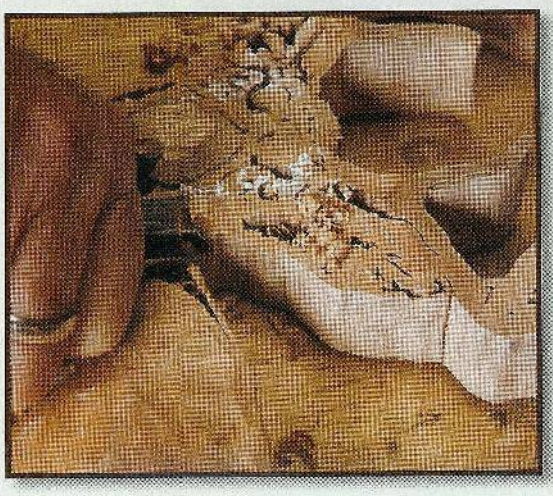
Step 13. The wood shown here is a lot thicker than required, but that allows a whole lot of fudge factor.

Step 14. Now is the time to commit. I started with the body, in order to get an overall sense of or feel for its shape, and then I went to the nose. Use a chisel or gouge according to the shape you are carving.



Step 15. A lot of carving will be done across the grain and will require a well-honed edge to keep from tearing the wood. Wood in the area of crotches and knots will be a lot harder to carve because the grain is denser and changes direction. The start of a slicing cut is shown above.

As you push forward with your right hand, apply resistance with your left so that you do not overrun if you slip. Roll the gouge by rotating your hands so that the wood is sliced.



Step 16. All you have to do is end the cut as you near the other side of the blade. This method works well in any area that has a tendency to break or tear (because of the wood) in spite of even a well-honed tool.

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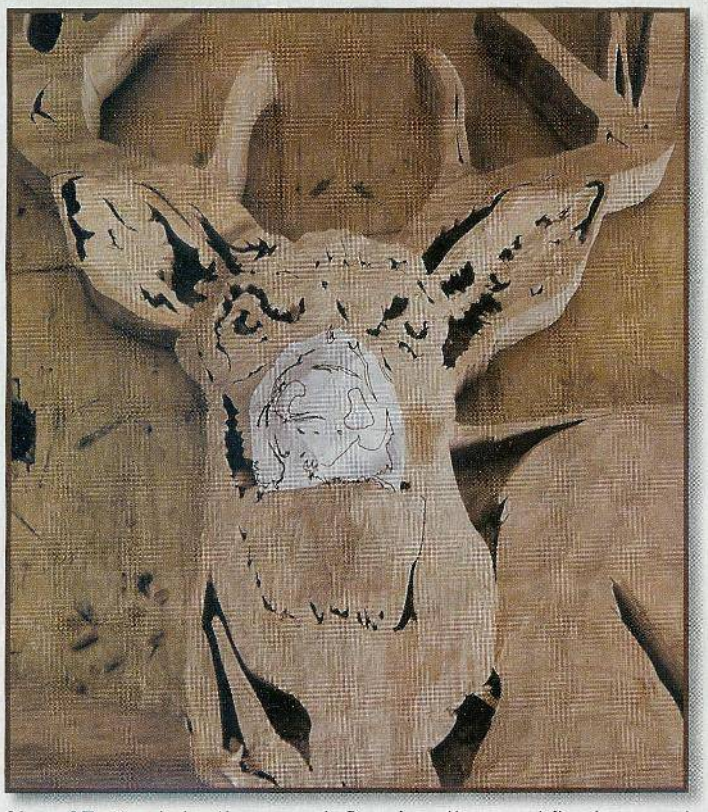
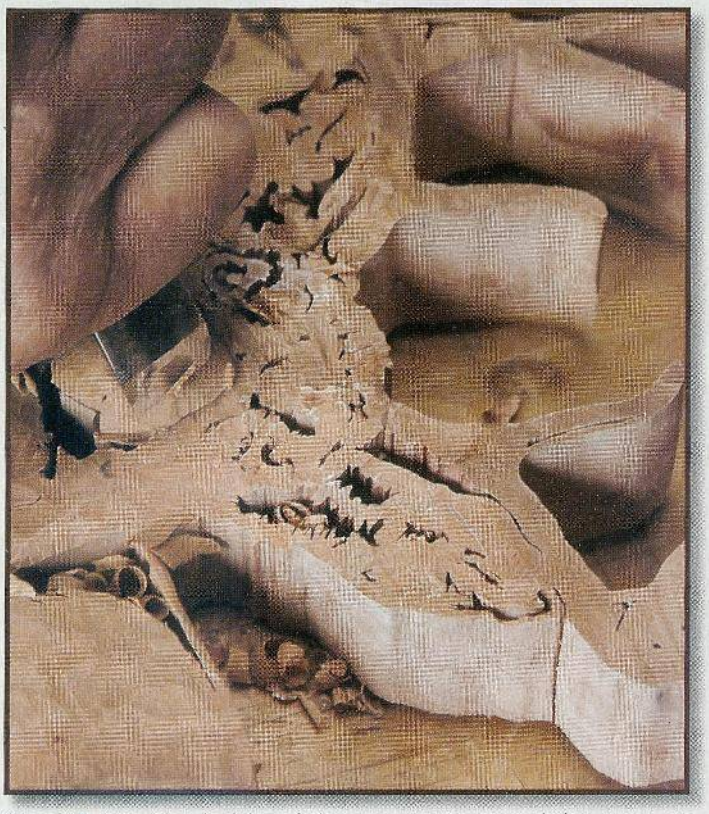


Step 17. Back to the nose! Carving the nostrils does not make them dark enough; they have to be cut on the scroll saw. We reapplied a section of the pattern and scrolled them.



Step 18. Use the inside of the gouge to round the nose as you carve it down to size.

Step 19. The antlers are quite fragile, so use a Kutzall® in a rotary tool to reduce them and then detail them with a 1/16" veining gouge.

Step 20. Sand the surface with 320 grit and remove any marks. Apply the finish of your choice (we used Watco natural danish oil, rubbing in four coats over a period of seven days). We apply the oil with a brush, making sure the entire piece of wood is well saturated and re-brushing the areas that soak it up and look dry. Once all surfaces appear wet, wipe the piece with a lint-free rag. Check the project over during the next twelve hours or so and wipe off any oil that bleeds out. Brush on the second coat, and then wipe it off. If the wood took the oil evenly with no dry spots, rub on the next two coats with lint-free rag, allowing several days between applications. If you want as smooth a surface as possible, rub in the last coat with 500-grit wet or dry paper. If you want, apply some oil as you sand, but do not flood the surface. Change the paper if you don't feel any drag and there is oil present. Wipe it off with a lint-free rag and you have a beautiful finish. Be sure to follow the instructions on the can for disposing of your rags. Danish oil is made from linseed oil that WILL cause spontaneous combustion if your rags are not disposed of properly. Don't take any chances.

Good, bad, or indifferent, there it is. I ended up doing a lot more carving than anticipated, but after all, that is the fun of this stuff, isn't it?

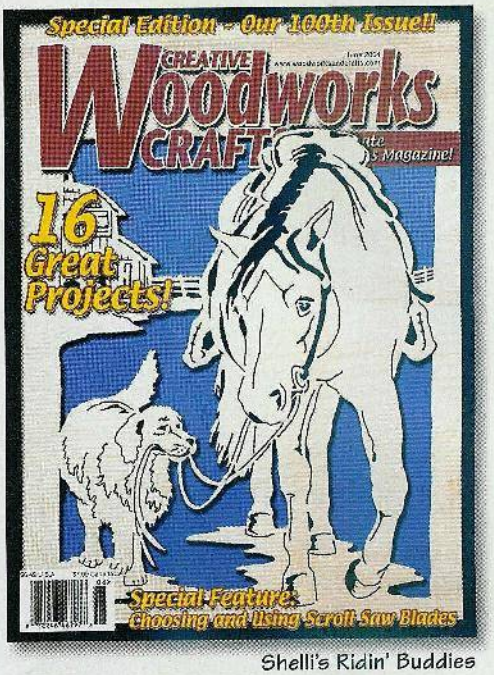
For questions concerning this project, send an SASE to: Wes Demarest, 66 Snover Road, Sussex, NJ 07461. Email: wes@woodworksandcrafts.com

HOT PRODUCT FIND:

Shelli Robinson creates an exclusive series of patterns for Sloan's Woodshop

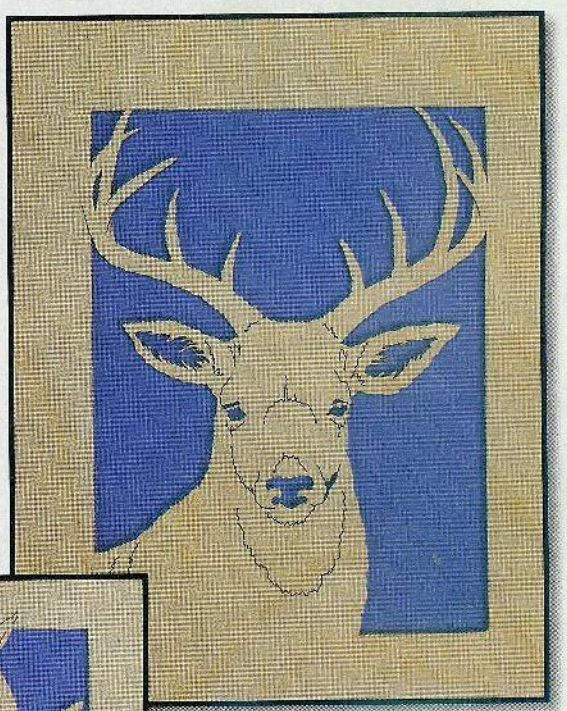
Shelli Robinson is relatively new as a designer for *Creative Woodworks & Crafts*. She made her artistic debut in our June 2004 issue by winding up on the cover with her heart-warming "Ridin' Buddies" project. Since then, Shelli has had a consistent presence in this publication with her own unique style of design, and we intend to maintain her presence with us. She has always loved animals, especially horses; her mother still has a horse picture Shelli drew at age three. During the past five years, Shelli has combined her love for drawing with her love for wood, and has designed dozens of high-quality scroll saw patterns. Her priority is realism—she tries to create patterns that are as authentic looking as possible, and all her patterns are hand drawn.

Shelli was introduced to us by David Sloan of Sloan's Woodshop, so it comes as no surprise to find that she has created ten exclusive patterns for the Sloans. Each pattern fits on an 8-1/2" x 11" sheet of paper (for easy copying), and all of them reflect Shelli's love for wildlife. Due to space considerations, only three of patterns from the series are shown here, but the other seven are: Lioness and Cub; Arabian Knights (horse); European Jay; Duck and Hunter Clock; Tawny Owl; Duck Retriever; and Ruffled Eagle. All these patterns may be viewed in color at www.sloanswoodshop.com.

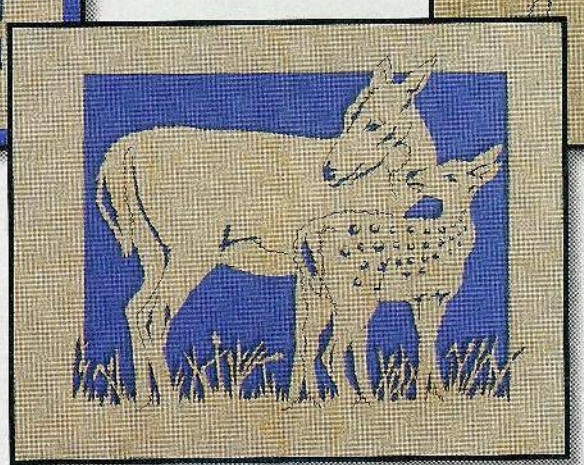


Shelli's Ridin' Buddies

Welcome Friend



Big Buck



Deer and Fawn

Pattern Located in Full Size Pattern Section No. 2!

Oxen Intarsia

By Robert J. Hlavacek, Sr. of Wildlife Intarsia Designs

INSTRUCTIONS

Copy the pattern and cut the pieces

Redraw the pattern on tracing paper. This will allow you to see and utilize the grain configuration when laying out the pieces. Use white transfer paper on the dark wood and red on the light colored wood. A ballpoint pen works best for tracing the project parts on the wood.

After cutting out each piece, sand the burr off the bottom with a hard-backed sanding block. This will ensure that the pieces lay flat. Sand the cut edges on the drill press with an auxiliary table or oscillating spindle sander and properly sized drum to create a smooth, 90° edge for tight fitting joints. Shown in **Fig. 1** is one of the noses with the nostrils taped in place.

Place the cut and sanded piece on top of the one it will adjoin and draw a new cut line using the edge as a template (see **Fig. 2**).

Cut the next piece out, keeping the blade just on the outside edge of the pencil line (see **Fig. 3**). Sand the cut edge up to the pencil line (see **Fig. 4**). After a little adjustment, you'll have a near perfect joint (see **Fig. 5**).

As you proceed, hold the pieces together with masking tape on both the front and back sides (see **Fig. 6**). Repeat this procedure until both heads are assembled. Then fit the heads to the top section of the yoke (see **Fig. 7**).

Cut the pieces of the neck within the lower section of the yoke out of 3/4"-thick wood to facilitate taping them in place (see **Fig. 8**). After all of the pieces are assembled, these pieces will be cut or sanded down 1/4" to a thickness of 1/2".

Tape the heads in place with the yoke. Lay the assembly on the 1/2"-thick wood for the neck and trace a cut line (see **Fig. 9**). Cut, sand and fit all of the pieces comprising the neck.

Raising and lowering pieces

Project pieces marked +1/8", +1/4", or +3/8" (refer to full-size pattern) should be raised the amount indicated by placing the part on a piece of wood the proper thickness and tracing around it (see **Fig. 10**). Cut the shim within the line so it doesn't protrude beyond the edge of the project part (see **Fig. 11**). Glue the shim to the back of the piece, making sure it doesn't protrude beyond the edges (see **Fig. 12**).

Lower the pieces marked –1/8", –1/4", etc., by sanding down or re-sawing the amount indicated. To safely resaw on a band saw, tape the bottom of the piece to a 2" x 4" block with double-sided tape. This will keep your fingers away from the blade (see **Fig. 13**). Be sure to remove the material from the top side of the pieces.

SUPPLIES

Wood*: *walnut*—one piece 3/4" thick (for the horns); *white oak*—one piece 3/4" (for the yoke); *aspen*—one piece 3/4" (for the white pieces); *cherry*—one piece 3/4" (for the noses); *maple*—one piece 3/4" (for the light parts of the ears); *ebony*—one small piece (for the eyeballs); *mahogany*—one piece (for all other parts of the oxen); *wood of choice*—one piece 1/2" (for all portions of the body outside the yoke, including the neck); *plywood*—one piece 1/4" x 11" x 17" (for the backer), small pieces at 1/8", 1/4", and 3/8" thick (for shims)
Tools: scroll saw with assorted blades; band saw (optional); drill press with assorted sanding drums and small drill bits; sanding mop with 120-grit abrasive; finish sander with assorted grit abrasive; C-clamps
Slow-set epoxy**
Carpenter's glue
Pencil
Ballpoint pen
White and red transfer paper***
Tracing paper**
Masking tape
Wax paper
Hard-backed sanding block
Sandpaper, assorted grits
Sanding mop****
Hanger
Matte spray or finish of choice
Gloss varnish
Paintbrush

*Exact sizes are not specified since scraps were used for this project.
**Available from Treeline, (800-598-2743) www.treelineusa.com
***Available from Dick Blick Art Materials, (800-828-4548) www.dickblick.com
****Available from Klingspor's Woodworking Shop, (800-228-0000) www.woodworkingshop.com

For a free catalog of Robert Hlavacek's intarsia patterns call: (708-788-6455), or write: Wildlife Intarsia Designs, P.O. Box 1246, North Riverside, IL 60546. Website: www.wildlifeintarsiadesign.com

Contouring and gluing

Begin contouring the lowest pieces first. Hold the piece in position and draw a pencil line on the edge of the piece it will adjoin (see **Fig. 14**). Now use the pencil line as a guide to contour the higher piece down to it (see **Fig. 15**). **Note:** sand the eyeballs convex, making sure you don't leave any flat spots on them.

Sand the top section of the yoke down at an angle toward the back, and round over the vertical pieces as shown in **Fig. 16**.

When contouring with drums has been completed, hand sand the pieces smooth or use a 120-grit sanding mop (see **Fig. 17**).

I edge glued this project together with slow-set epoxy because it allows ample time to get all of the pieces properly aligned before it sets. Place a sheet of wax paper on your worktable so the project doesn't become a part of it (see **Fig. 18**). Let the epoxy cure overnight. Do not glue the eyeballs in place at this time. They will be glued in last,

Fig. 1. One of the noses with the nostrils taped in place.

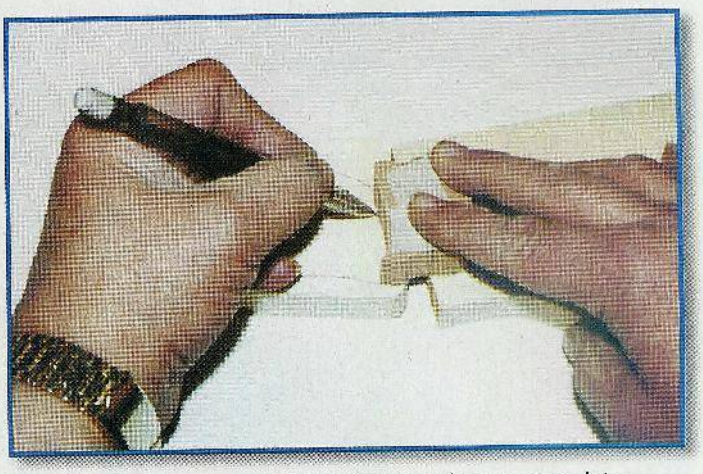


Fig. 2. Draw a new cut line using the edge as a template.

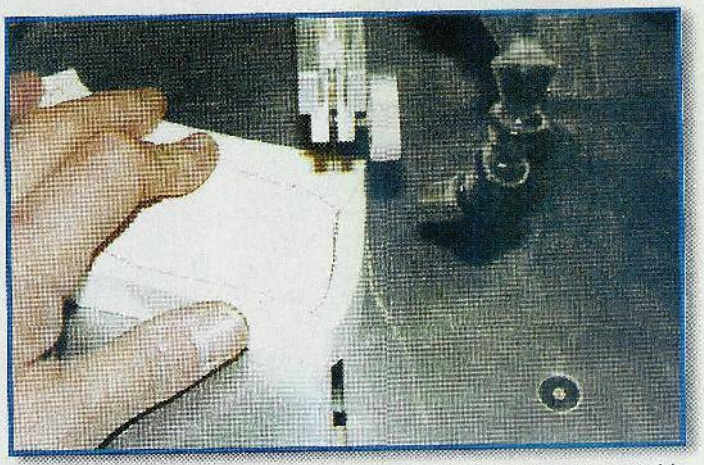


Fig. 3. Cut the next piece out, keeping the blade just on the outside edge of the pencil line.

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after several coats of gloss finish have been applied to them.

Lay the glued up project on the backer plywood and trace its outline. Tilt the saw table about 15° down toward the left and cut the backer approximately 1/8" inside the traced line (see **Fig. 19**).

Glue the backer to the project with carpenter's glue. Use a few C-clamps to ensure a good bond, placing scraps of the plywood under the clamps to protect the surface (see **Fig. 20**).

Finishing

I finished this project by applying several coats of Krylon matte finish to it, sanding lightly with 320-grit abrasive before the last coat (see **Fig. 21**). The eyes were finished with four coats of Delta gloss varnish, then glued in place. Attach a hanger and you're done!

For questions concerning this project, send an SASE to: Robert J. Hlavacek, Sr., c/o All American Crafts Publishing, 243 Newton-Sparta Rd., Newton, NJ 07860.

Fig. 4. Sand the cut edge up to the pencil line.

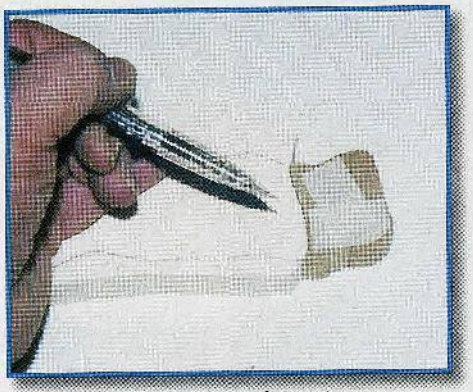


Fig. 5. A near perfect joint.

Fig. 6. Hold the pieces together with masking tape on both the front and back sides.

Fig. 7. Fit the heads to the top section of the yoke.

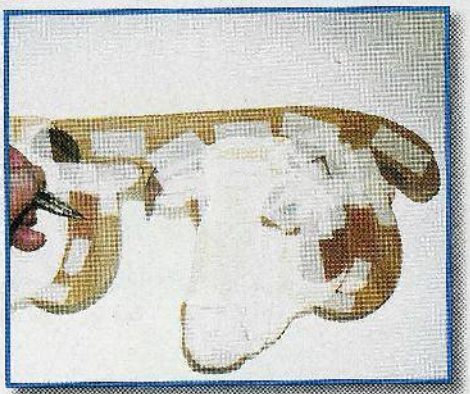


Fig. 8. The pieces of the neck within the lower section of the yoke are cut out of 3/4"-thick wood to facilitate taping them in place.

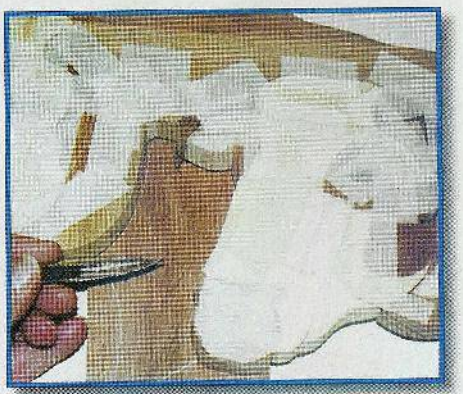


Fig. 9. Lay the assembly on the 1/2"-thick wood for the neck and trace a cut line.

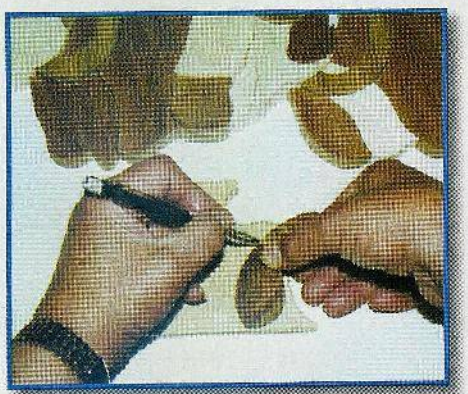


Fig. 10. Place the part to be raised on a piece of wood the proper thickness and trace around it.

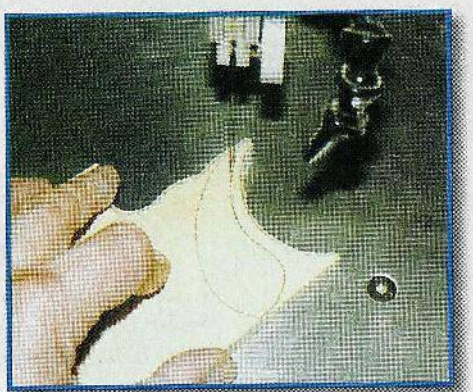


Fig. 11. Cut the shim within the line so it doesn't protrude beyond the edge of the project part.

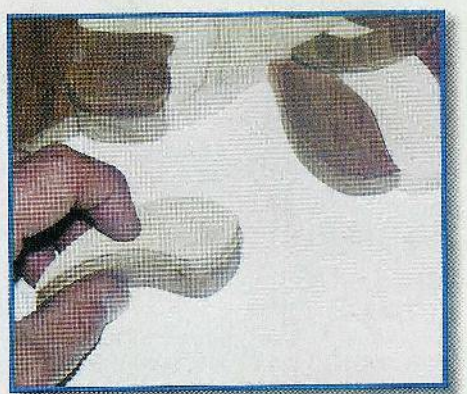


Fig. 12. Glue the shim to the back of the piece, again making sure it doesn't protrude beyond the edges.

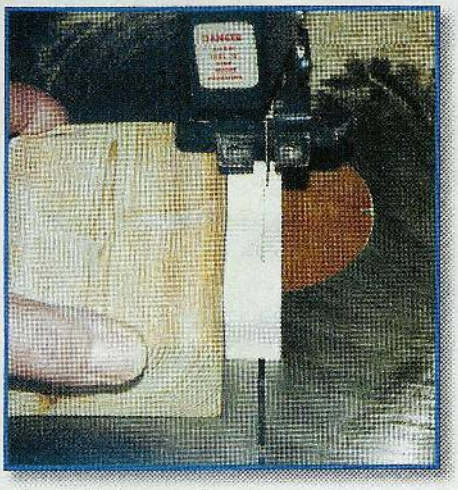


Fig. 13. Before cutting the smaller pieces, tape the bottom to a 2" x 4" block with double-sided tape.

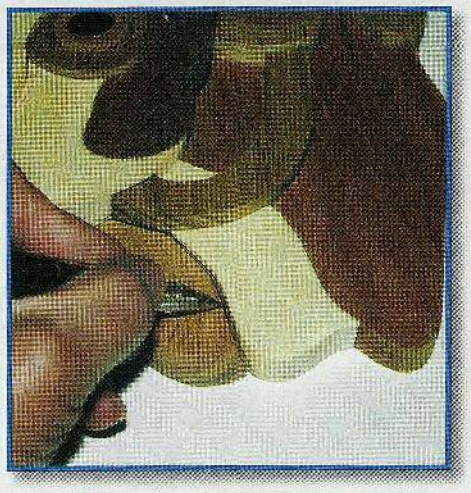


Fig. 14. To contour, hold a piece in position and draw a pencil line on the edge of the piece it will adjoin.

Fig. 15. Use the pencil line as a guide to contour the higher piece down to the lower one.

Fig. 16. Sand the top section of the yoke down at an angle toward the back, and round over the vertical pieces.

Fig. 17. Hand sand the pieces smooth or use a 120-grit sanding mop.

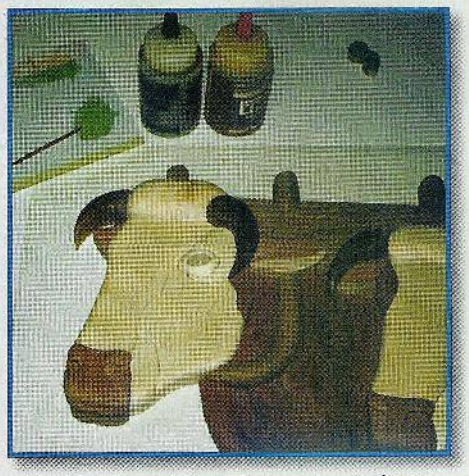


Fig. 18. When gluing, place a sheet of wax paper on your worktable so the project doesn't become a part of it.

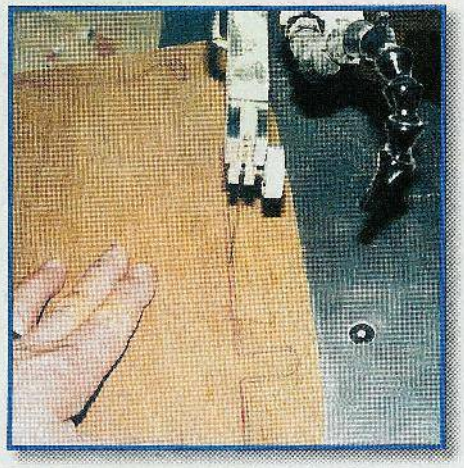


Fig. 19. Tilt the saw table about 15° down toward the left and cut the backer approximately 1/8" inside the traced line.

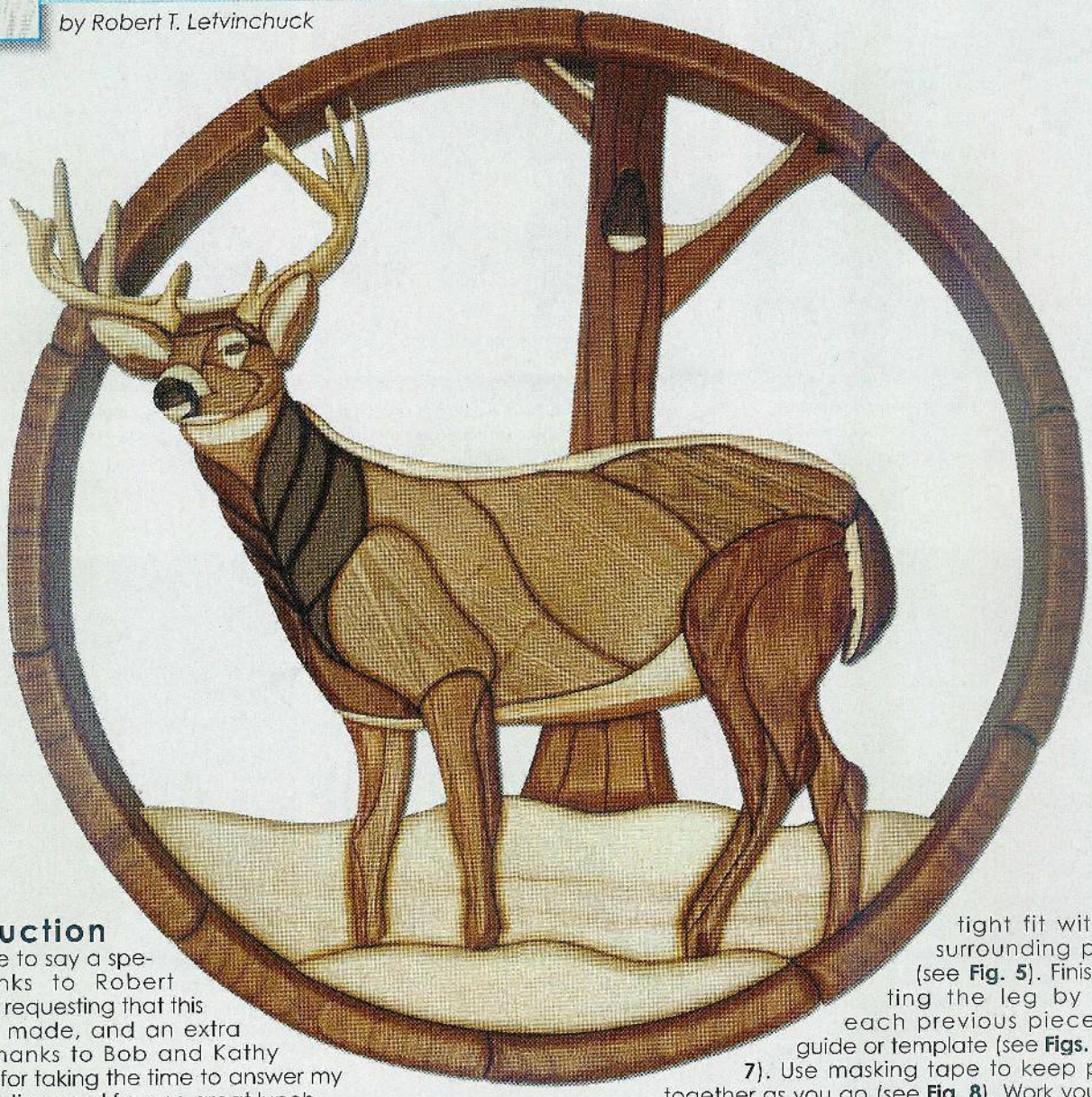
Fig. 20. Use a few C-clamps to ensure a good bond.

Fig. 21. Finish the project by applying several coats of Krylon matte finish.

Pattern Located in Full Size Pattern Section No. 1!

Snow Buck Intarsia

by Robert T. Letvinchuck



Introduction

I would like to say a special thanks to Robert Becker for requesting that this piece be made, and an extra special thanks to Bob and Kathy Hlavacek for taking the time to answer my many questions and for one great lunch.

This piece, the Snow Buck Intarsia, is the result of a chance encounter I had with a beautiful creature on one of my many hunting trips. On a day that was meant for staying home, I decided to brave the elements. As he revealed himself to me with a blanket of snow, I knew what I was witnessing could very well become a true work of art.

Here's how he is made.

INSTRUCTIONS

Basically, there are only a few steps involved in this project: copy the pattern, cut the pieces, contour and sand them, glue them together, and then spray on a finish and enjoy.

To be more specific, start with the front shoulders and use the trace and transfer method: trace the piece onto tracing paper (see **Fig. 1**); place paper onto desired wood (see **Fig. 2**); slide transfer paper under tracing paper and transfer piece to wood (see **Fig. 3**). Cut piece out on scroll saw (see **Fig. 4**). Turn piece over and sand off burrs. Using a spindle sander, square up the edges at 90°. This ensures a tight fit with the surrounding pieces (see **Fig. 5**). Finish cutting the leg by using each previous piece as a guide or template (see **Figs. 6** and **7**). Use masking tape to keep pieces together as you go (see **Fig. 8**). Work your way toward the tail, cutting and taping as you go (see **Fig. 9**). Cut the belly, rear legs, and then the tail. Go back to the breast area and cut the top right piece (see **Fig. 10**). Cut the breast plate and then the bottom section (see **Fig. 11**). Cut the last leg and the left side breast plate (see **Fig. 12**). Continue up to the top of the neck (see **Fig. 13**). Leave the neck piece in place and move the body section off the pattern (see **Fig. 14**). Continue cutting and fitting upwards (see **Fig. 15**).

Cut the center of the eye and then place it onto aspen. Trace around the piece (see **Fig. 16**). Drill a hole in the center of eye piece (see **Fig. 17**). Insert your blade through the hole and stay inside the line. Cut out the hole. Insert eye center into hole and squeeze glue into piece. Trace remainder of the eye and cut (see **Fig. 18**). Finish cutting the head assembly.

Cut the main beams of the antlers from the thicker aspen stock. Draw a line that gradually moves up from the top of the ears so the antlers are highest at the tip (see **Fig. 19**). Using your scroll saw, cut on the line (see **Fig. 20**). Finish

SUPPLIES

Wood*: *ash*—one piece 3/4" x 6" x 12"; *red oak*—one piece 3/4" x 6" x 6"; *western red cedar*—one piece 3/4" x 3" x 6"; *black walnut*—one piece 3/4" x 3" x 6"; *aspen*—one piece 3/4" x 4" x 11", one piece 1/2" x 4" x 15"; *cherry*—one piece 1-1/8" x 7" x 12"; *aspen or white pine*—one piece 1-1/2" x 4" x 4"; *medium to dark wood of choice*—one piece 1/2" (for the tree)
Tools: scroll saw with assorted blades; drill press with 1/8" bit (for eye); oscillating spindle sander or drum sander with assorted grits; Dremel tool (for small detail pieces)
Tracing paper
Transfer paper
Wax paper
Pencil
Glue of choice
Masking tape
Finish of choice**
Hanger of choice
*Refer to the pattern and the wood key in the pull-out section to determine which wood is used for each individual part.
**We used American Accents Clear Top Coat by Rust-oleum.

cutting the rest of the antlers. Finish the interior by putting the body back on the pattern and cutting the tree and snow.

Starting from the left, put the completed antler in place and trace the first two frame pieces. Cut and fit (see **Fig. 21**). Finish cutting the frame by working clockwise to the right until the frame is complete.

Use a sander of choice to round over the edges. I start with 150 grit and finish by hand with 220 grit. Raise and lower pieces by shimming and re-sawing or planning thicker stock down to size. Refer to the full-size pattern for further directions on raising and lowering.

To assemble, lay down wax paper over your pattern. Start by gluing the bottom four frame pieces together (see **Fig. 22**). Without gluing to the frame, start edge gluing the snow, tree and buck. When you get to the neck of the buck, shim the muscle groups up 1/16" at a time. The head assembly is shimmed up 1/8" higher than the neck (see **Fig. 23**). After the buck, snow and tree have dried, shim the assembly up 1/2" (see **Fig. 24**). Glue the frame assembly to itself and to the buck, snow, and tree as you go (see **Fig. 25**). Install hanger of choice.

To finish, I apply two coats of American Accents Clear Top Coat by Rust-oleum, and then lightly hand sand with 220 grit. Finish with one final coat. While your friends and family are admiring your piece of art, you can tell them your own hunting story.

For a free catalog of Robert T. Letvinchuck's patterns, or for questions or comments, call (920-922-4426) or visit his site online at www.againstthegrainwoodart.com

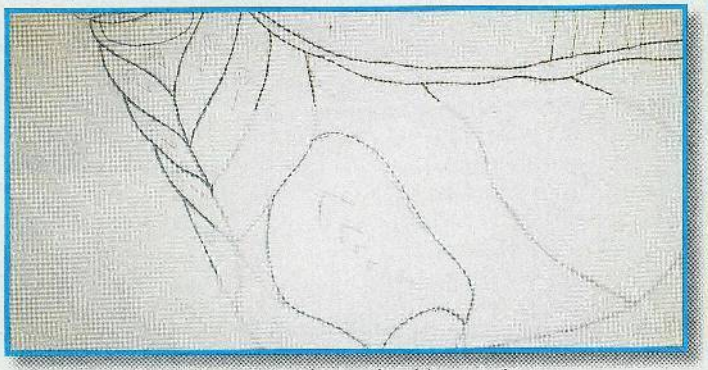


Fig. 1. Start with the front shoulders and trace the piece onto tracing paper.

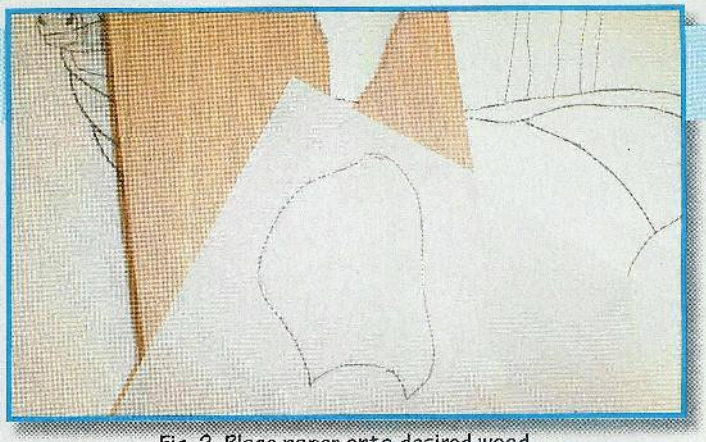


Fig. 2. Place paper onto desired wood.

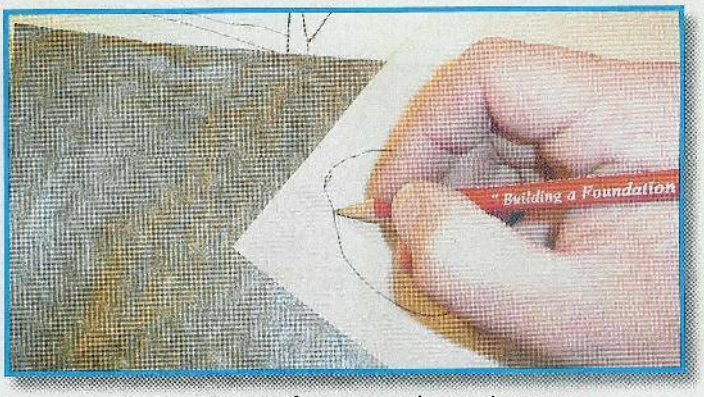


Fig. 3. Slide transfer paper under tracing paper and transfer piece to wood.

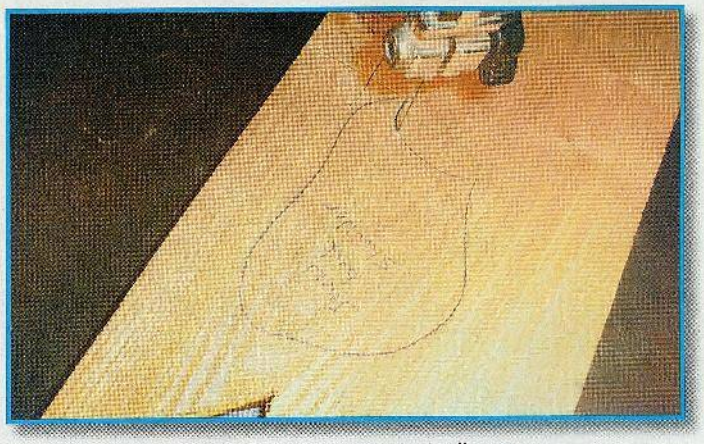


Fig. 4. Cut piece out on scroll saw.

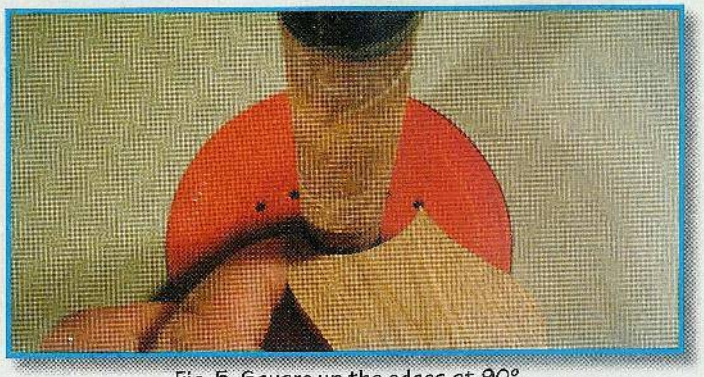


Fig. 5. Square up the edges at 90°.

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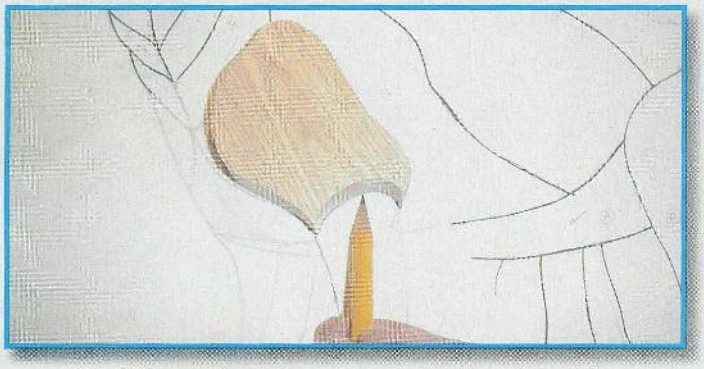

Fig. 6. Use each previous piece as a guide or template.

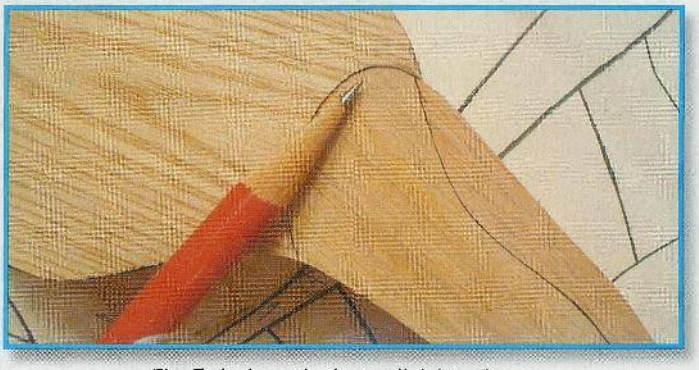

Fig. 7. A closer look at adjoining pieces.

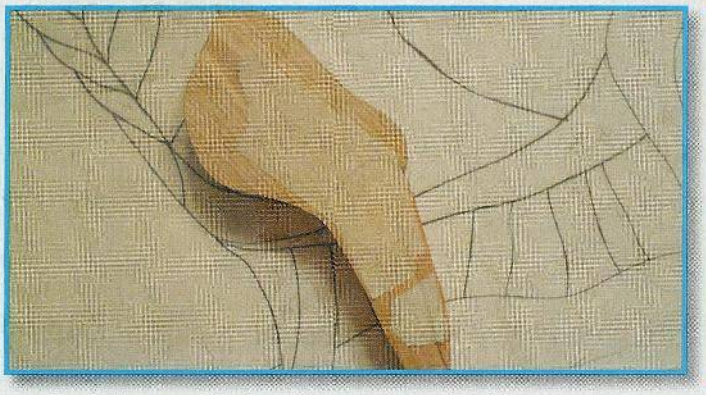

Fig. 8. Use masking tape to keep pieces together as you go.

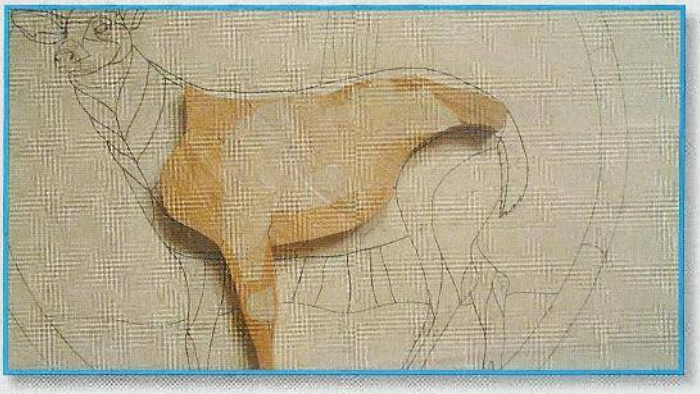

Fig. 9. Work your way toward the tail, cutting and taping as you go.

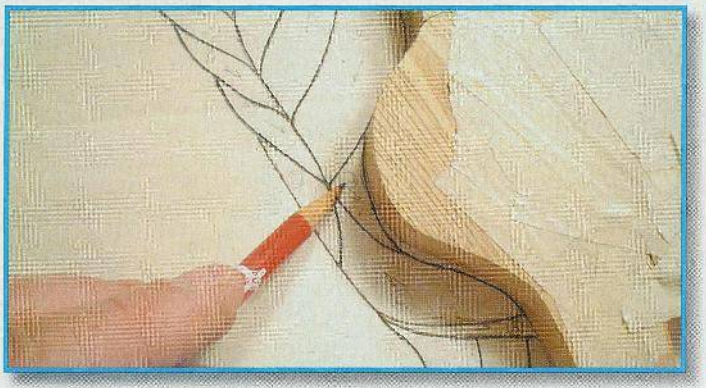

Fig. 10. Go back to the breast area and cut the top right piece.

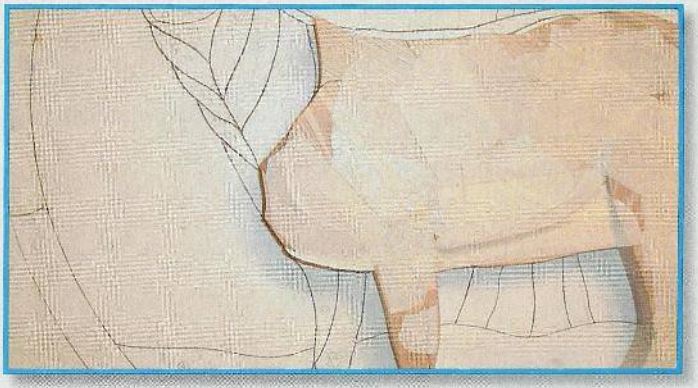

Fig. 11. Cut the breast plate and then the bottom section.

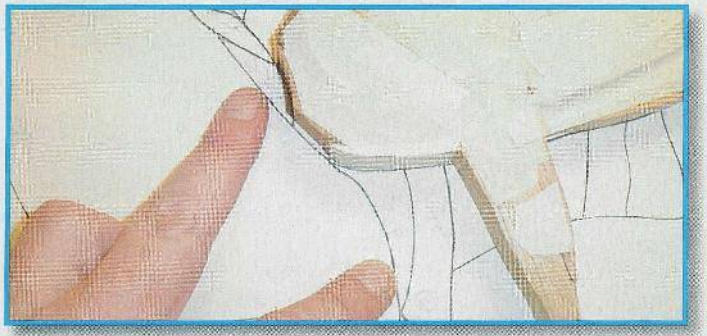

Fig. 12. Cut the last leg and the left side breast plate.

Fig. 13. Continue up to the top of the neck.

Fig. 14. Leave the neck piece in place and move the body section off the pattern.

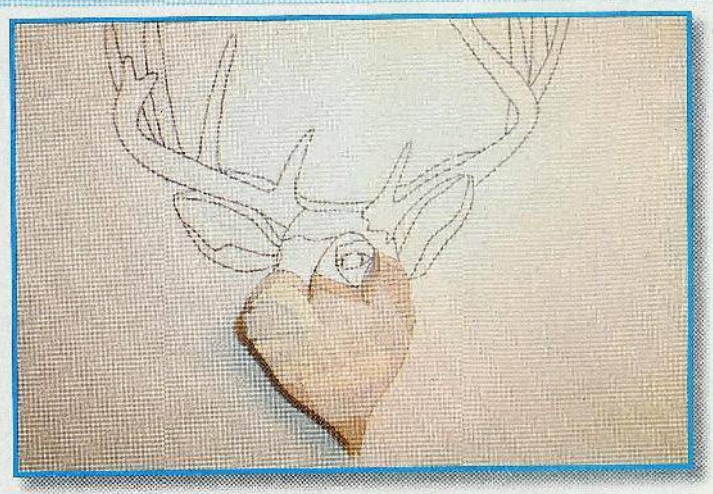

Fig. 15. Continue cutting and fitting upwards.

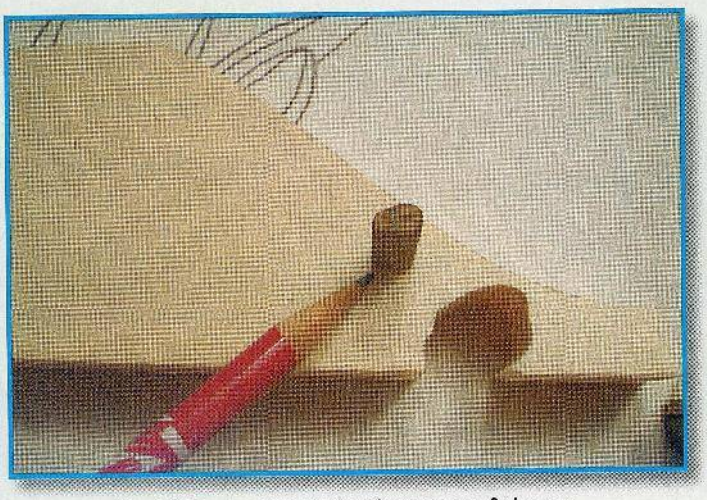

Fig. 16. Trace around the the center of the eye.

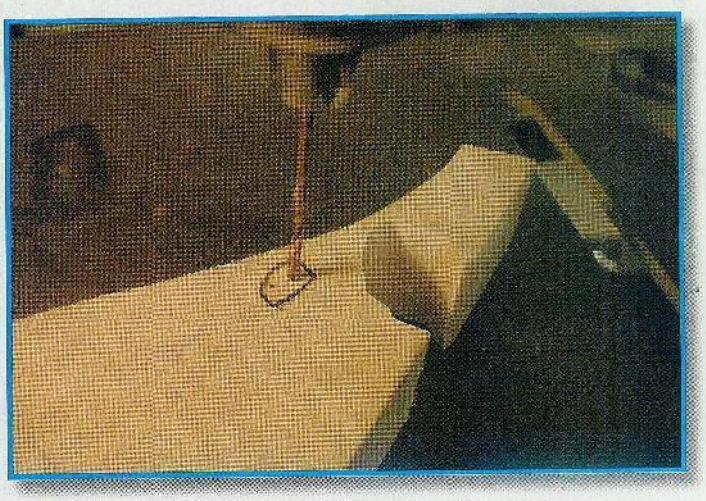

Fig. 17. Drill a hole in the center of eye piece.

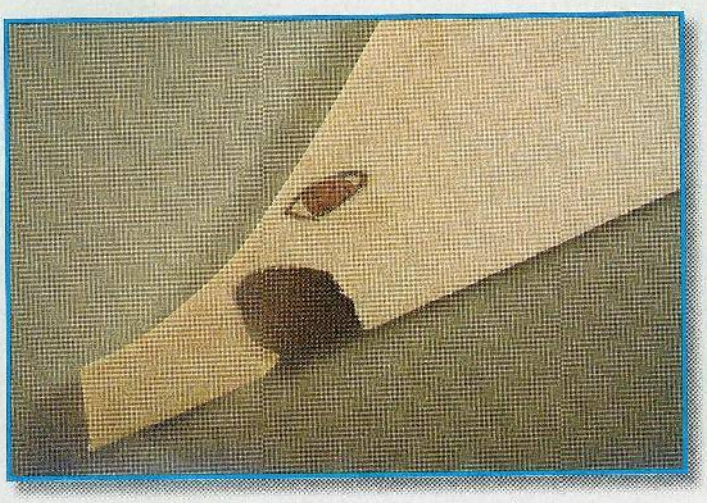

Fig. 18. Trace remainder of the eye and cut.

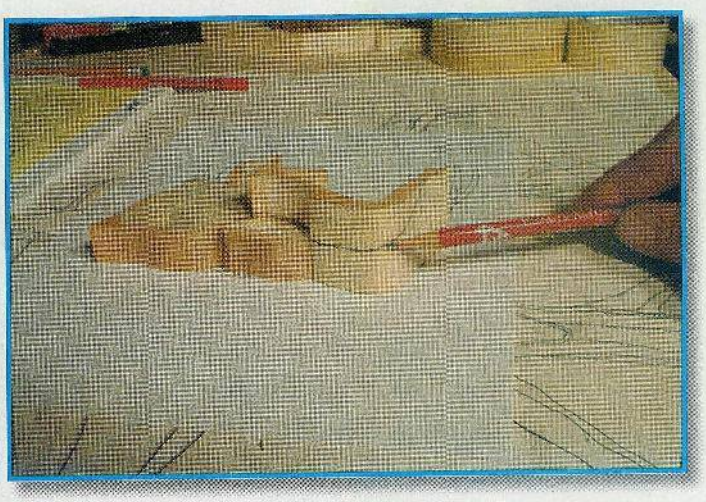

Fig. 19. Draw a line that gradually moves up from the top of the ears.

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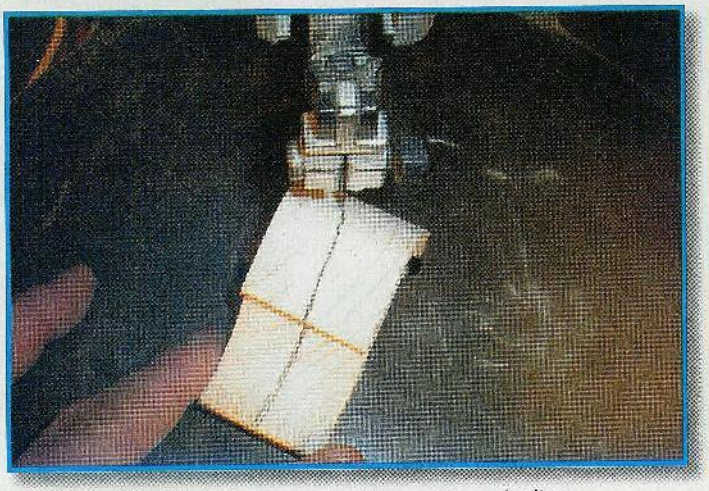


Fig. 20. Using your scroll saw, cut on the line.

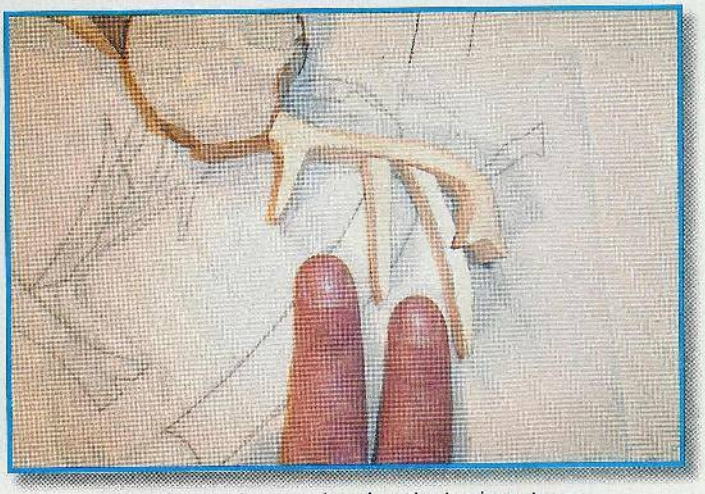


Fig. 21. Put the completed antler in place, trace the first two frame pieces, then cut and fit.

Fig. 22. Glue the bottom four frame pieces together.

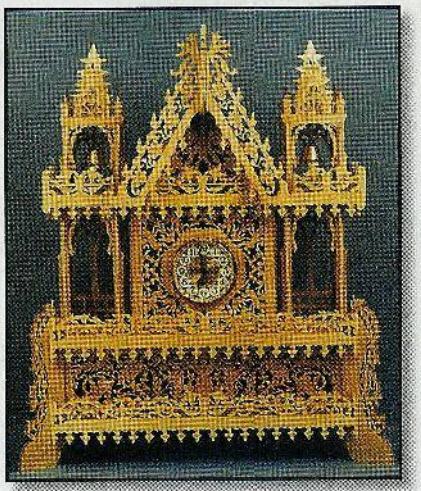
Fig. 23. Shim the head assembly 1/8" higher than the neck.

Fig. 24. Shim the buck, snow and tree assembly up 1/2".

Fig. 25. Glue the frame assembly to itself and to the buck, snow, and tree as you go.

WOODWORKING PLANS (Scroll Saw & Fretwork Clocks)

VICTORIAN QUEEN
Floral vines and exquisite fretwork combine to make this 21" high clock an impressive masterpiece. Uses a 90 MM (3 1/2") insert clock.
Order #P–571...$19.95



BELL TOWER
Inspired by 18th century elegance, this 23" high fretwork clock with towering spires is sure to become a family heirloom. Requires a 90 MM (3 1/2") insert clock.
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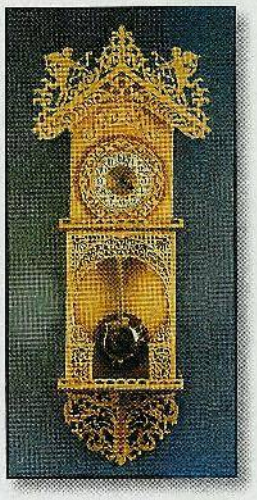
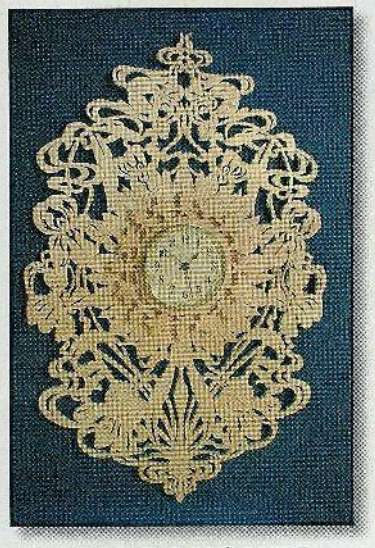


VICTORIA LYNN
Beautiful lines and lacey fretwork combine to make this 34" high pendulum clock a winner.
Order #P–572...$19.95

CATHEDRAL
An elegant 30" spire and an arched framed platform will elegantly display your favorite figurine.
Order #P-569...$19.95.



IRIS BOUQUET
This unique, 16" high, fretwork clock will fit in many decors. Requires a 72 MM (2 3/4") insert clock.
Order #P-494...$5.95.

THE STATESMAN
An elegant 17" high clock that will make an impressive addition to any decor. Requires a 72 MM insert clock.
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AMERICA'S PRIDE
A beautiful 28" high design to show your patriotism. Requires a 90 MM (3 1/2") insert clock.
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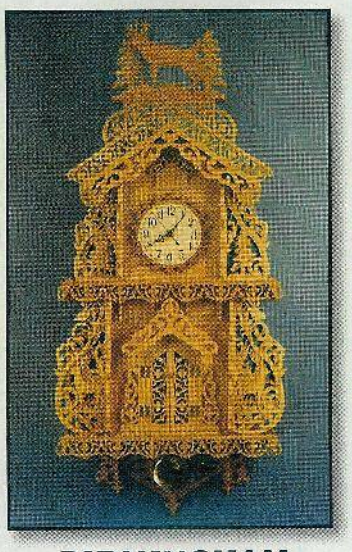

BIRMINGHAM
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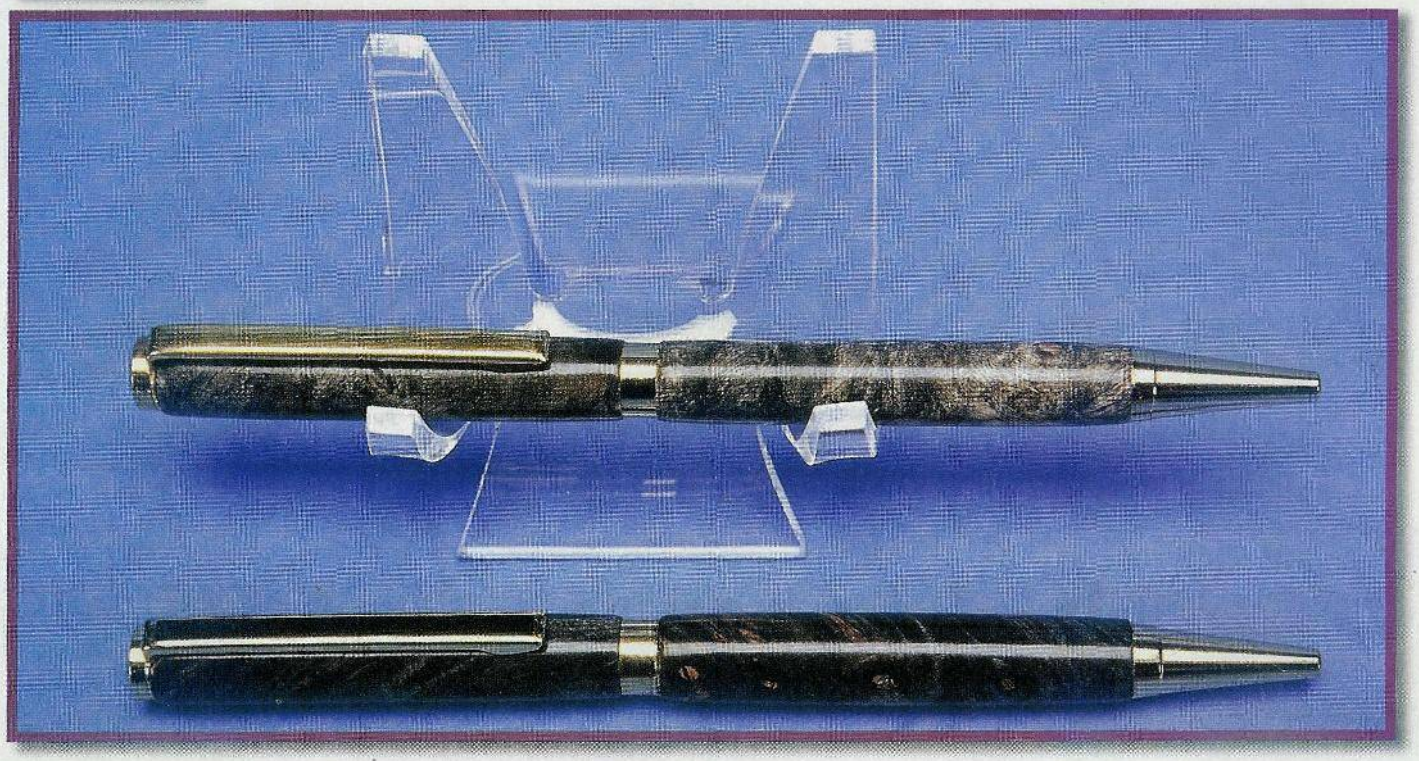
24-Karat "Slimline" Pen and Pencil Kits

by Scott and Kathy Griffith



SUPPLIES

Carba-tec Lathe CT-Lathe-1
Duplicator CT-Dup (optional)
Lathe Mandrel Set, PK1001
Barrel Trimmer Kit, PK1390
Pen Press, PK1008
Lace Sheoak Pen Blank, PB1631
Shellawax Cream, PK1009
Abrasive Rolls, PK1276
Slimline Pen Kit, PK1013
24kt Comfort Pen Kit, PK1015

*All of the supplies listed above are available from Steebar at: www.steebar.com; or Penn State Industries at: pennstateind.com, 1-800-377-7297.

Introduction

The "Slimline" kits are some of the simplest kits to make and offer an extraordinary number of variations. The 7mm tool components (drill bit, barrel trimmer, and mandrel) form the basics for many of the other kits available to turners. The "you-design-it" clips and bands offered by Penn State Industries and their distributors allow you to customize the basic Slimline pen and pencil. There are also Slimline kits available in satin (pewter), flat black, and titanium finishes. These kits offer an economical option for learning and experimenting with your woods. If the blanks crack or don't finish as well as desired, simply order extra tubes for the kit and try again. Once your pen is assembled, be sure it operates properly; if the pen point does not retract completely inside the pen tip, the brass tube was trimmed too short. There is a disassembly kit available that allows recovery of parts, and once new brass tubes are added you have a complete kit ready for another try.

The standard Slimline is a basic straight line cut which can be made using a skew chisel or gouge. The duplicator is a popular accessory to use with Slimline pen kits, and there are a variety of templates available. If you have turned a particularly pleasing pen design, you can use it as the master in the duplicator and make many more. The duplicator and the templates allow for the production of multiple items with matching designs. For example, turn a Slimline pen and pencil, letter opener, magnifier, key ring and a detachable pen or clip-on pen using the same template in the duplicator. Use one of the available glass-top display boxes for them and you have a unique presentation set for sales or gifts. The duplicator and templates expand the variety of designs and allow production of matching repetitive patterns.

Getting started

The following directions and photos illustrate our process of turning, so be sure to also read all directions related to your particular tools and kits. If you are cutting wood for a number of pens, here's a few tips to help keep them matched: cut long strips the proper width for your blanks; use a marker and the brass tube of the kit being made to mark lines down the stick 1/4" longer than the length of the tube; then number the pieces (see **Fig. 1**). The two pieces marked "1" will make pen No. 1, the two pieces marked "2" will make pen No. 2, and so on. This allows both pieces of each pen to have a continuing grain pattern. New turners should check

the grain of the wood to make sure it travels the length of the tube. Once you have a bit of experience, you can experiment with cross grain and diagonal grain blanks.

When drilling, do not apply excessive pressure to the 7mm drill bit (see **Fig. 2**). Be sure to repeatedly back out in order to clear the chips and help minimize the heat build-up. If you notice an egg-shaped opening at the entry point, not to worry; this is one of the reasons we recommend cutting the blank 1/4" longer than the tubes.

We use two-part liquid epoxy (usually in 15-minute or 5-minute set times) to glue in the brass tube (see **Fig. 3**). Be sure to have everything at hand and ready before mixing any epoxy. Using an index card, pour a 1" puddle of each part of the epoxy (be sure to secure lids) and use a craft stick to mix thoroughly. Spread a generous amount of the mix on the brass tube and use a twisting, plunging motion to spread the epoxy inside the wood.

As you twist, push and pull, keep an eye on the brass tube for dry spots and add more epoxy as needed (see **Fig. 4**). This may sound messy and involved, but once you get the hang of it the process moves quickly. Don't worry about how much epoxy is on the ends of the wood; the barrel trimmer will clean the ends and the tube. If you have an egg-shaped opening or any chipped edges, be sure to insert the brass tube beyond the damaged area (the extra 1/4" is important here). As you do more of this, it will get faster and easier to get the epoxy thoroughly spread out.

Creating a 24-Kt Slimline Pen

The wood blank has been cut and drilled, the brass tube is glued in, and the glue is dry. Using a pair of vise grips, locking pliers or the centering vise, true the ends of the blank. Secure the 7mm barrel trimmer with the 1/2" squaring cutter in your drill press and set it on low speed. Slowly lower the trimmer into the tube in your wood and apply gentle pressure to the cutter head (see **Fig. 5**). Repeat this until you see the shiny edge of the brass tube inside the level round depression made by the cutter head. (There are other methods of accomplishing this, but we find the barrel trimmer to be the quickest, surest and safest method.) Be sure to keep a firm grip on your gripping tool.

Using the standard 7mm mandrel, the bushings for the Slimline pen kit, and your prepared wood, follow the kit instructions for loading the mandrel (**Fig. 6**). When putting the wood on the mandrel, do not tighten the nut too much or the blank may split. Also, if the stock is too tight the mandrel may bow from the pressure. With the lathe on low speed, use a gouge to turn down your blanks (see **Fig. 7**). The first few minutes of turning are rough as the corners are knocked off the blank. As the wood becomes smoother, gradually increase the speed and use less pressure on the cutting tool. Finishing and shaping cuts can be done with a skew chisel.

This is the time to decide how abstract or straight your pen will become. For beginners, we recommend a straight cut, at least until there is more familiarity with finishing processes, tools and woods.

Remember that the wood is approximately 1/32" thick in its final shape, so use a light touch as you near completion. The bushings are a guide for the size of the wood, but do not turn flush to them with a chisel; rather, use cloth-backed sandpaper in progressively finer grits to bring the wood to the final dimension (see **Fig. 8**). We generally start with an 80-grit sanding cloth. It should be fairly flexible to prevent it from creating grooves in your wood. Use strips about 1" to 2" wide and about 4" to 6" long. We progress to 400 or 600 grit. Stop the lathe frequently to check the wood by rotating the mandrel by hand and determine if it is time to move to the

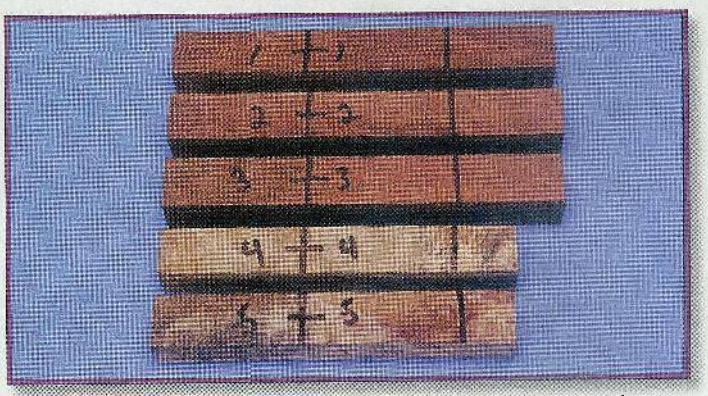


Fig. 1. Use a marker and the brass tube of the kit being made to mark lines down the stick 1/4" longer than the length of the tube, and then number the pieces.

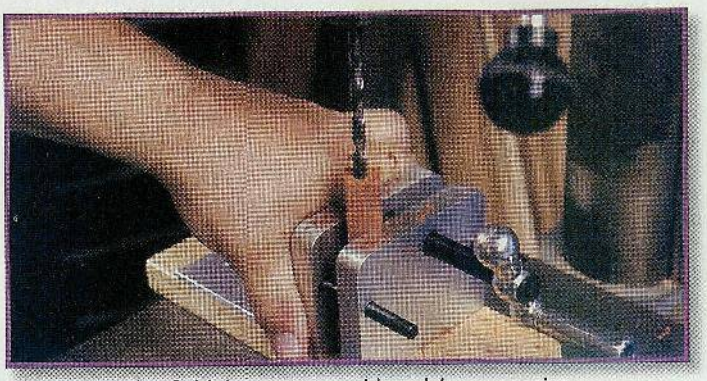


Fig. 2. Make sure to avoid applying excessive pressure to the 7mm drill bit.

Fig. 3. Use two-part liquid epoxy to glue in the brass tube.

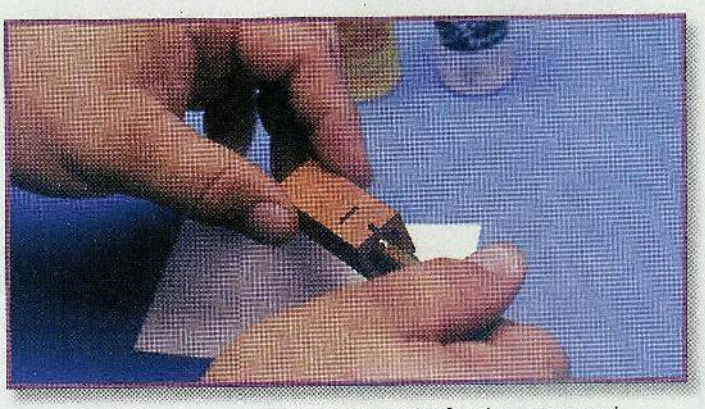


Fig. 4. Keep an eye on the brass tube for dry spots and add more epoxy as needed.

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next finer grit or to back up a bit. Also, check the dimensions to those of the bushings. The wood should have an almost satin feel to it and there shouldn't be any visible swirl marks from the sanding process (see **Fig. 9**).

Turning with a fine grade of a Scotch-brite (or similar) pad makes for a good last step. We don't recommend steel wool since small particles can break off in the grain of the wood and cause an unevenness in the finish. There are a variety of finishes on the market but our overall choice is Shellawax Cream. This is a friction polish that doubles as a buffing compound. It is neither a liquid nor a stick, but a fusion of white shellac and highly refined waxes (including carnauba and bees wax) forming a creamy paste consistency. Designed to be a total finish, Shellawax is absorbed into the pores of the wood.

Apply finish with a finger (see **Fig. 10**) or use a small piece of T-shirt fabric with the lathe on low. Switch to a clean area of fabric and buff while slowly increasing the lathe speed (see **Fig. 11**). Mind the amount of pressure applied and the heat that develops under your fingers.

When the polish is to your satisfaction, remove your turned wood from the lathe and prepare to assemble. If you are turning several pens, hang onto some of the bags in which the kits are packaged and place the tubes for one pen in a bag. Then, when assembly time comes there is no searching for the matching pieces. Always read your assembly directions completely and lay out the components before fitting them together to be sure no parts are overlooked. Take your time; the parts are precision pressure fitted and now is not the time to get it backwards (see **Fig. 12**).

The pen is a real gem when the point retracts completely and there are no bumps or protrusions where the metal meets the wood (see **Fig. 13**).

The Comfort Pen and Pencil

Once confidence and experience is gained through completion of several Slimline products, the natural progression is to advance to the comfort pen and pencil kits. The comfort pen and pencil have a special silicone grip that provides a flexibility and more relaxed grip of the writing instrument with less hand fatigue (see **Fig. 14**). This kit also has a wider profile, which allows more of the wood to show its figuring and also adds a more substantial feel to the pen.

These kits can be made with or without the silicone grip, so that an exceptionally figured piece of wood does not have to be cut as short if you simply don't use the silicone grip. On the other hand, if your wood is on the short side the silicone grip will provide the needed coverage of the brass tube. When assembling the mandrel for a pen without the silicone grip, the configuration will be: 7mm bushing > glued and trued blank > thick bushing > glued and trued blank > 7mm bushing. This assembly is also good for abstract designs, which can emphasize the grain (as long as you keep an eye on the bushings as you freehand the shape). When making the kit with the silicone grip, be sure to follow the directions enclosed in the kit package and use cyanoacrylate glue to secure the silicone grip.

These kits are available in 24-kt, titanium, brushed satin, or black enamel finishes. There are also duplicator templates available for comfort kits, so an abstract comfort pen can be used as the master to make matching accessories. These kits use the same 7mm mandrel, drill bit and barrel trimmer as the Slimline kits. Just add the comfort grip bushings.

For questions concerning this article, send an SASE to: Kathy and Scott Griffith, 672 Conowingo Rd., Quarryville, PA 17566. Email: griffduchess@yahoo.com

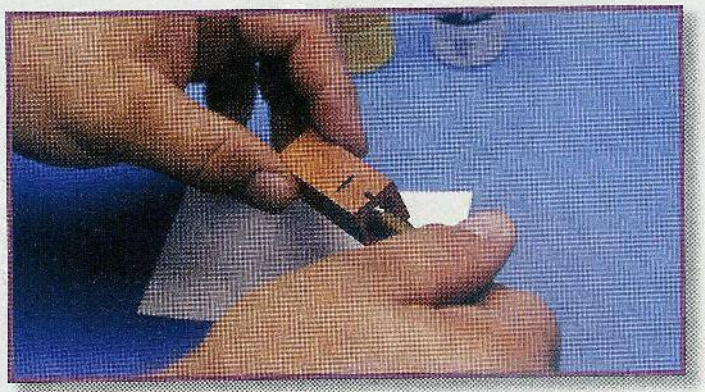

Fig. 5. Slowly lower the trimmer into the tube in your wood and apply gentle pressure to the cutter head.

Fig. 6. Follow the kit instructions for loading the mandrel.

Fig. 7. Use a gouge to turn down your blanks.

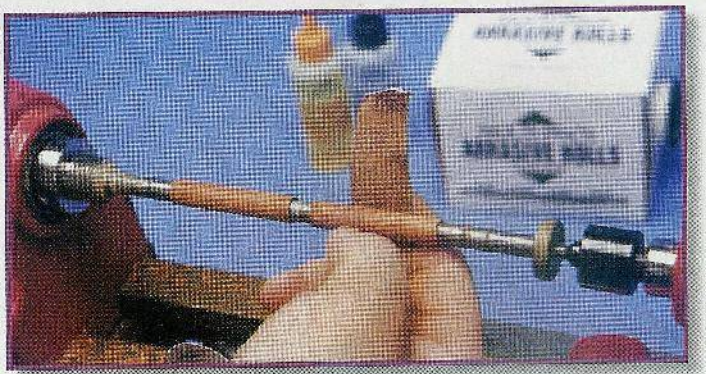

Fig. 8. Use cloth-backed sandpaper in progressively finer grits to bring the wood to the final dimension.

Fig. 9. There should not be any visible swirl marks from the sanding process.

Fig. 10. Apply finish with a finger or use a small piece of T-shirt fabric with the lathe on low.

Fig. 11. Buff while slowly increasing the lathe speed.

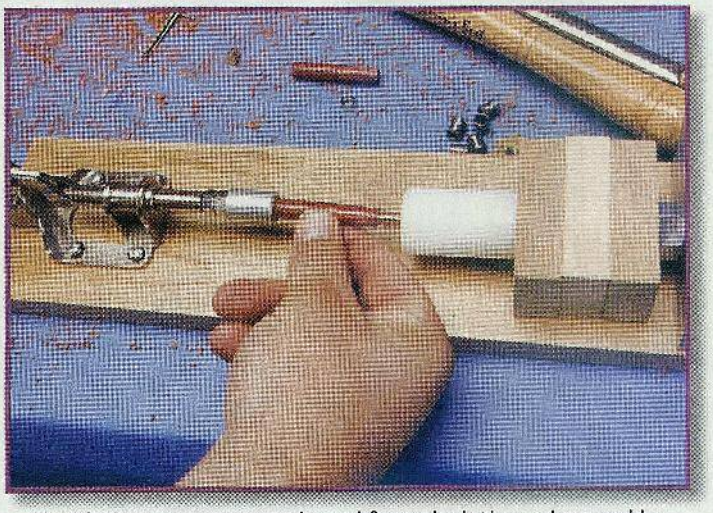

Fig. 12. Remove your turned wood from the lathe and assemble.

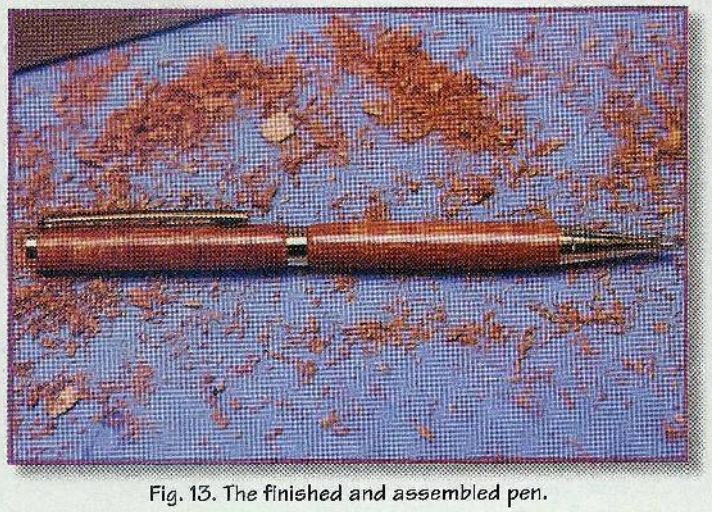

Fig. 13. The finished and assembled pen.

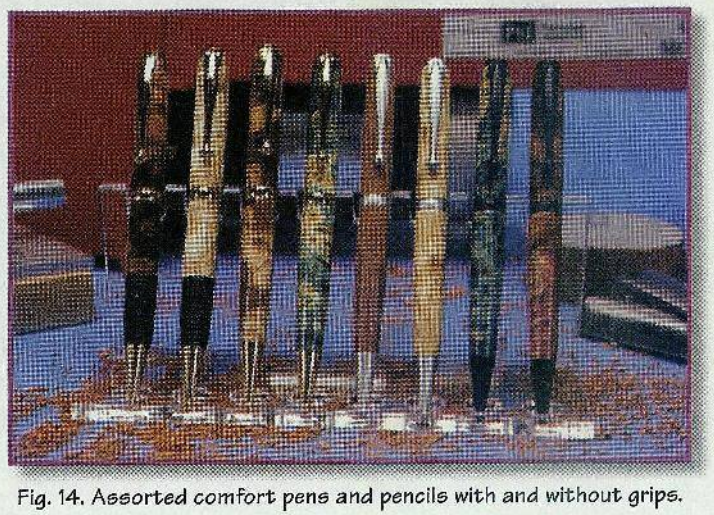

Fig. 14. Assorted comfort pens and pencils with and without grips.

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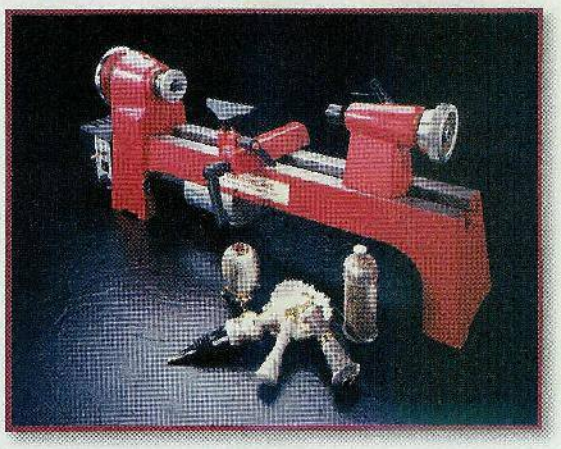

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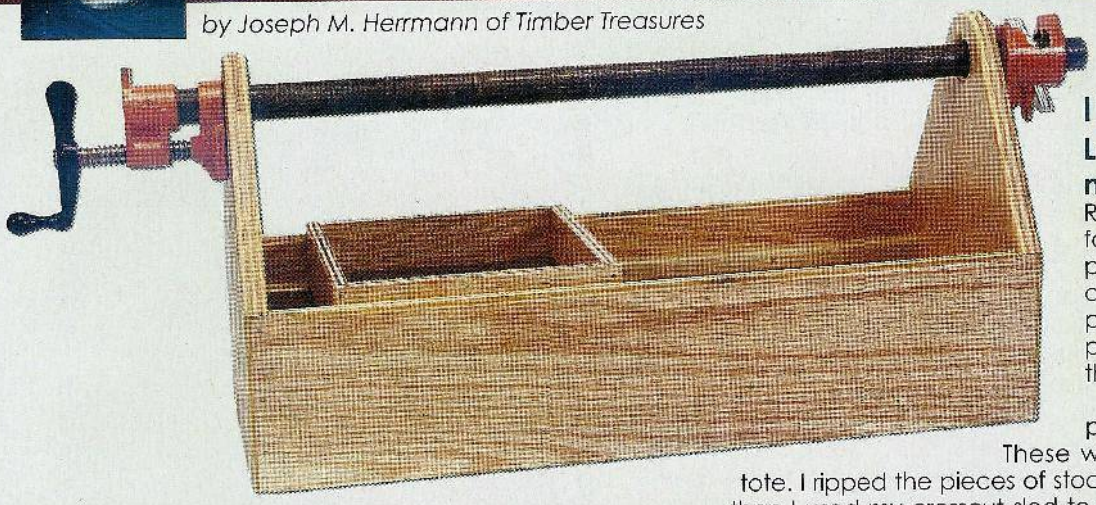
Tool Tote

by Joseph M. Herrmann of Timber Treasures



SUPPLIES

Wood: **tool tote**: *plywood*—two pieces 3/4" x 10" x 12" (for the ends), two pieces 3/4" x 5-1/2" x 24" (for the sides), one piece 1/2" x 9-1/8" x 23-1/8" (for the bottom); *poplar*—two pieces 3/4" x 3/4" x 22-1/2" (for the rails); **tray**: *plywood*—two pieces 1/2" x 2" x 8-1/2" (for the ends), two pieces 1/2" x 2" x 7-15/16" (for the sides); *masonite*—one piece 1/8" x 7-7/8" x 7-7/8" (for the bottom)

Tools: table saw and dado head; thickness planer; jointer; drill press and 1-1/8"-Dia. multi-spur bit; band saw with fence, disc or belt sander; chop saw; compass; ruler; combination square; hammer; router and 1/4" roundover bit; random orbit sander

Twenty-two 1-1/4" x No. 18 and eight 1" x No. 18 nails

Glue

Shellac

Abrasive paper

3/4" x 30" black pipe (for handle)

Pipe clamp fixture ("Pony" brand)

Introduction

I am in the process of constructing a new building to house my workshop. Naturally, this entails moving needed tools from my current basement shop to the building site and back. On one trip, the bottom of the cardboard box that I had been using dropped out and all of my tools cascaded onto the wet, muddy ground. While I was wiping off and re-oiling my tools, I decided that I needed a more substantial container in which to transport my tools.

I chose 3/4" birch and oak plywood to build my tool tote for a variety of reasons. The first of these was that I had a lot of scrap lying around. In addition, I think that this plywood is far more stable than the standard CDX grade—or even solid pine lumber—that is generally available at the home centers in my area. And finally, I just think it looks better!

I've been accused on more than one occasion of making shop cabinets and fixtures look too much like interior furniture; I plead guilty to the charge. However, in my defense, I think that whatever you build you should do your very best work. After all, my "name" goes on all my work, regardless of where it's used.

INSTRUCTIONS

Layout and cut the side notches

Refer to the pattern (which is for the ends only) in the full-size pull-out section, the assembly diagram (also in the full-size pull-out section), and the project photos for assistance throughout.

Begin by squaring up two pieces of stock to 10" x 13". These will form the ends of the tool tote. I ripped the pieces of stock to 10" on the table saw and then I used my crosscut sled to cut the pieces square and to the same length (see **Fig. 1**). You will notice that these pieces are oversized, but they will be trimmed to the correct length once the layout is completed and the top curve is cut.

I wanted a smooth profile on the outside of my tool tote, so I had to cut a notch to inlet the side panels. Measure up 5-1/2" from the bottom of each edge and draw a short pencil line. Next, measure over 3/8" from the edge and draw a parallel line, stopping at the line you drew earlier.

Set the height of the table saw blade for 3/8" and the fence for 5-3/8" (see **Fig. 2**). This should put the blade to the right of the layout line (see **Fig. 3**). Make the cut on both sides of both pieces, using the mitre gauge to guide the cut (see **Fig. 4**).

You could remove the remaining scrap "freehand" on the band saw, but I think that using the fence insures a far more accurate cut—providing that your blade is sharp! Set the fence for 3/8" and remove the scrap (see **Fig. 5**).

Layout and cut the top curve

I like to work with layouts such as this directly on the stock rather than to rely on a pattern. Patterns can shift and throw off the placement of the holes for the handles—and, if the holes don't line up...! However, you should feel free to use the pattern for the end pieces provided in the pull-out section. Begin by setting your combination square for 2-1/2" and draw a line parallel to the top of the ends (see **Fig. 6**).

Next, find the center of the width of the stock. You can do this by measuring the width and dividing by two, but I find that sometimes this method can be inaccurate. Instead, I prefer to find the center point by placing the end of a long ruler on one edge of the stock and the 12" graduation on the other edge. The 6" mark should be the exact center. Draw a vertical centerline through this point (see **Fig. 7**).

Set your compass for a 1-1/2" radius and draw a circle around this center point. Then complete the layout by drawing a line from the top edge of the notch on the edge of the stock tangent to the edge of the 3" circle. Remember that tangent means "touching the circle in just ONE point." Do the same on the other side (see **Fig. 8**).

Chuck up a 1-1/8" multi-spur bit in the drill press and drill a hole through the stock in the center of the 3" circle (see **Fig. 9**). This will form the hole for the handle, so be accurate. Be sure to have a scrap piece of stock under your stock to protect the edge of the drill bit and to prevent the veneer of the plywood from splintering as the bit exits the underside of the plywood.

Cut out the profile on the band saw and sand it smooth on either the disc or belt sander (see **Fig. 10**).

Layout and cut the side pieces

Square up two pieces of stock to 5-1/2" x 24".

Rabbets must be cut on each end to capture the ends and to fit the sides flush with the end pieces. Clamp a piece of wood to your rip fence to protect it and install your stacked dado head cutter on the saw arbor. Raise the dado head to 3/8" and slide the fence over so that it just touches the right-hand side of the cutters. Make a test cut on a piece of scrap plywood. (This is an important step because all plywood does not measure a full 3/4" thick. Remember, if the plywood was made in Canada, it's sized metrically.) Once you are satisfied with the setup, cut the rabbets on all four ends.

Now, reduce the thickness of your dado head to 1/2" WITHOUT changing the height of the cutter. Remove the sacrificial fence from the saw and set the rip fence for 3/8". Run the inside, the bottom of both sides, and both ends through the saw. When you have finished, be sure that you have both a left- and right-hand component for each part (see **Fig. 11**).

Routing the edges

Whenever I use plywood for a "working" project, I like to soften the edges as much as possible. I have found that if you catch the edges of one of the plies, you can chip off a large chunk of the wood. A 1/4" roundover bit in the router will solve this problem. Set up the router and make a test cut on a piece of scrap.

Some of the edges must be routed prior to assembly, while others must be routed after. The top inside edges of the sides must be routed their full length; however, the roundover on the outside edge must be stopped 1/2" away from the ends (see **Fig. 12**).

The inside of the ends above the notch and both sides of the interior of the holes for the handles must be done prior to assembly as well.

All other roundover operations will be done after assembly is complete.

Squaring up the bottom

The bottom is elevated above the base of the tool tote instead of being flush with the base. Elevating it provides an extra measure of strength because the bottom is actually supported by the thin sliver of wood that was left when the groove was plowed out. Now a heavy load can't push the bottom out of the box as it could if the bottom were left flush with the base.

Measure the distance between the notches on the sides and subtract 1/8". My dimension came out to 9-1/8".

The easiest and most accurate method to determine the length of the bottom is as follows: Place one of the ends into one of the rabbets for the sides and mark the interior edge of the rabbet with a sharp pencil (see **Fig. 13**). Do the same on the opposite end and measure the distance between marks. Again, subtract 1/8" from this dimension. Mine came out to be 23-1/8".

I squared up my bottom to 9-1/8" x 23-1/8". This allows for a 1/16" float around the bottom, providing for a sight expansion and contraction factor.

Assembly

I used glue and small 1-1/4" x No. 18 wire nails to assemble my tool tote. The nails just hold the pieces together until the glue dries and provide a little additional support to the joints. Care must be taken, however, to place the nails far enough back along the joint to avoid being hit by the router bit later.

Begin by drawing a line 7/16" over from the outside edge of the sides. This will be the nail placement line. I like to start the nails before I apply any glue. Put three equally spaced nails along each of the lines you've just drawn, being sure not to nail into the groove for the bottom.

Apply glue to the rabbets and nail both sides to one of the

Fig. 1. The mitre sled makes easy work of cutting the ends square and to the correct length.

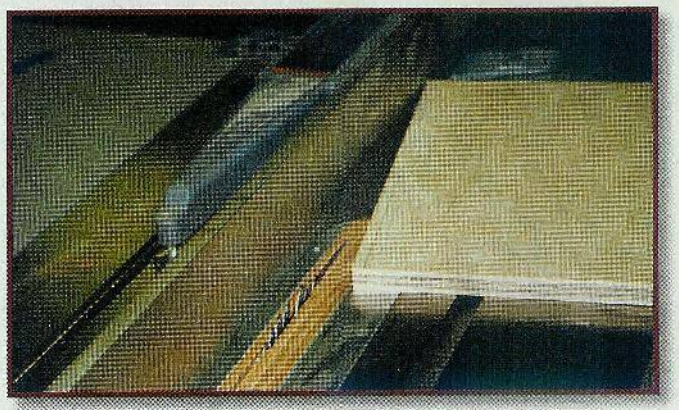


Fig. 2. The table saw set to 3/8" ensures that the end of the notch is square and at an equal depth on all four sides.

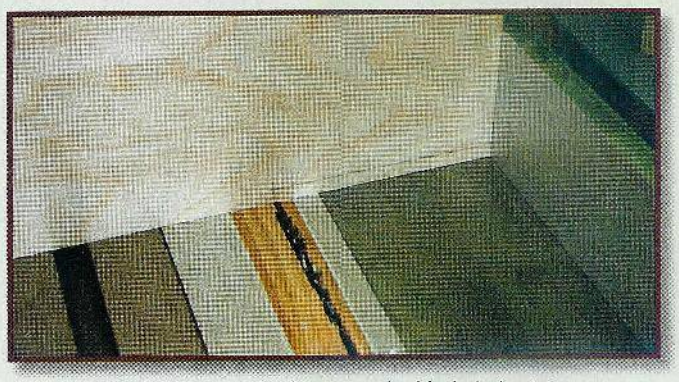


Fig. 3. I set up the fence so the blade is just to the right of the layout line. This assures me that all the notches will be the same length.

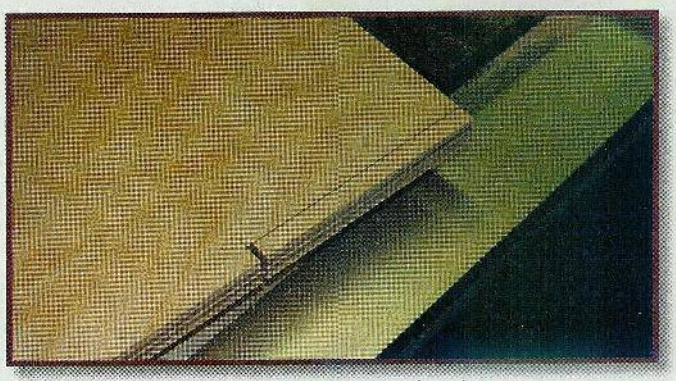


Fig. 4. The cut is completed.

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continued from page 73

end pieces. Slide the bottom into the groove and nail the other end in place. Check for square and apply clamps to the joints to draw them up snug (see **Fig. 14**). Allow the glue to cure for at least several hours, preferably overnight.

Once the glue has cured you can remove the clamps and finish routing the outer edges of the ends of the tote to complete the "softening" process started earlier.

Making the rails

I made two support rails out of hardwood to elevate the tool tray (see below for instructions). I started with a piece of poplar 3/4" x 2" x 24" and used a 1/4" roundover bit to soften the two outside edges. I then ripped off two strips of wood so I had two pieces of stock that measured 3/4" x 3/4" x 24". **Note:** I find that it is far safer to route a larger piece of stock and then rip off what I need for the molding.

I measured the inside of my tool tote and found it to be 22-1/2". I cut the two strips off to this dimension on the chop saw.

The easiest way to ensure that the two strips are parallel and equally spaced from the bottom is to use a gauge block, push the rails up tight against it, and then nail them in place. I used a little glue and five, equally spaced 1-1/4" x No.18 wire nails to secure the rails to the sides of the tote (see **Fig. 15**).

Making the tray

When I built my original tool tote, I didn't make the small parts tray included in this article. But after rummaging around the bottom of the tote for small tools such as nail sets, spare utility knife blades, and pencils, I decided one was needed.

My tool tote measured 8-1/2" across for an inside dimension. I started the tray by cutting a piece of 1/2" plywood to make four pieces of stock 2" x 8-1/2" long.

I cut 1/2" rabbet 1/4" deep on both ends of two of the pieces. Then I cut a 1/8" groove 3/16" up from the bottom on the inside edges of all four pieces (the same depth as the rabbet). This groove will house the masonite bottom. I cut the two remaining pieces without the rabbet to 7-15/16" long. I determined that the bottom had to be 7-7/8" x 7-7/8".

I dry fitted the box and, when I was satisfied, I applied glue to the joints and nailed the box together with 1" x No.18 wire nails. I clamped the joints together until the glue had cured (see **Fig. 16**).

Finishing

I wanted a simple finish that would protect the wood, but I didn't want to go overboard on the process. Since I had a small can of white shellac left over from an earlier project, I decided to use that. (Shellac has a shelf life and I couldn't foresee using it for another project before it went bad—call me cheap!)

I removed any stray pencil marks with a small piece of hand-held 120-grit abrasive paper and smoothed out any rough areas on the edges of the stock. Then I applied one coat of the shellac to all surfaces of the project and allowed it to dry.

Handle

Instead of the traditional "dowel rod handle," I decided to use a 30" pipe clamp that I purchased from my local home center. On just about every job site that I have ever worked, there has been at least one occasion when I wished that I had a clamp to use as an extra hand or to use to lever a twisted stud into place. The 30" length that I used here was long enough to do just about anything that I wanted it to do (see **Fig. 17**).

And the best part is, since I built this tool tote, I haven't had to dry off my tools once!!

For questions concerning this project, send an SASE to: Joseph M. Herrmann, 160 West Cedar Street, Jefferson, OH 44047. E-mail: latheturner@earthlink.net

Fig. 5. Removing the rest of the scrap in the notch is easier and more accurate if you use a fence on your band saw. However, if your blade is too dull, it will sometimes lead to the dull side and create problems.

Fig. 6. Begin the layout for the upper curve and the hole for the handle on the end.

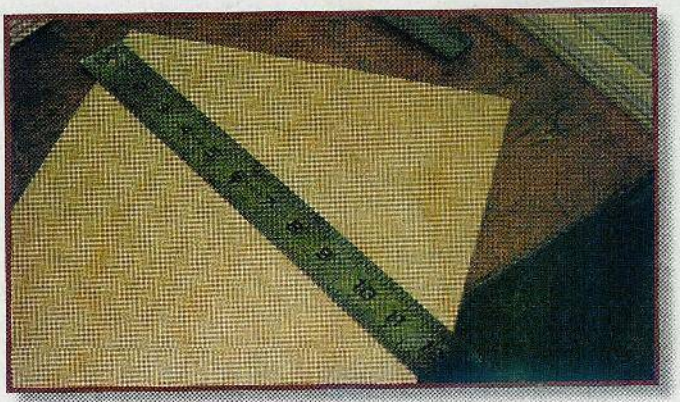


Fig. 7. Finding the center of the end is far easier and usually more accurate if you use the method shown here.

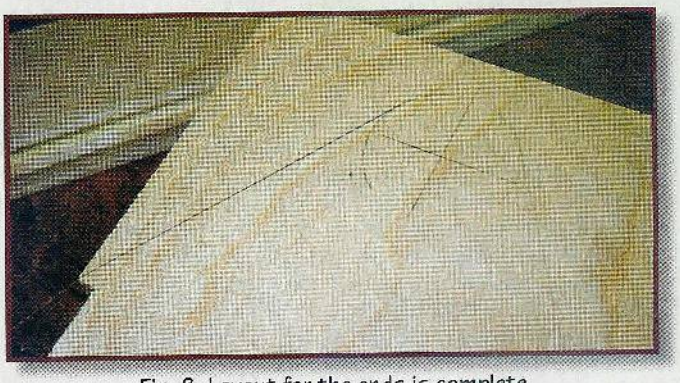


Fig. 8. Layout for the ends is complete.

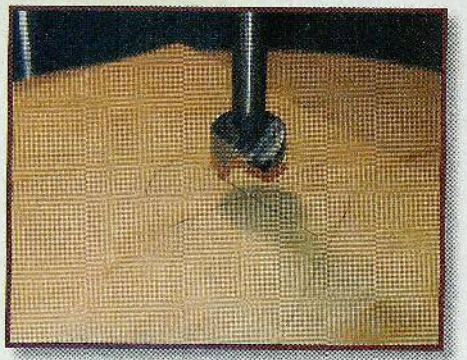


Fig. 9. Drill out the hole for the handle with a 1-1/8" multi-spur bit in the drill press.

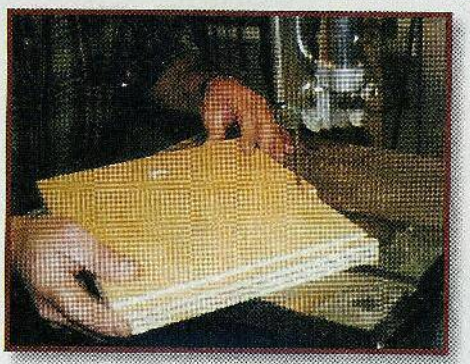


Fig. 10. Cut out the end profile on the band saw.

Fig. 11. The joints have all been cut. Note that I have both a left- and right-hand piece for both the ends and the sides.

Fig. 12. Stop the roundover approximately 1/2" from the end of top, outside edge of the side.

Fig. 13. Marking the side to determine the length of the bottom panel. Be sure to use a sharp pencil.

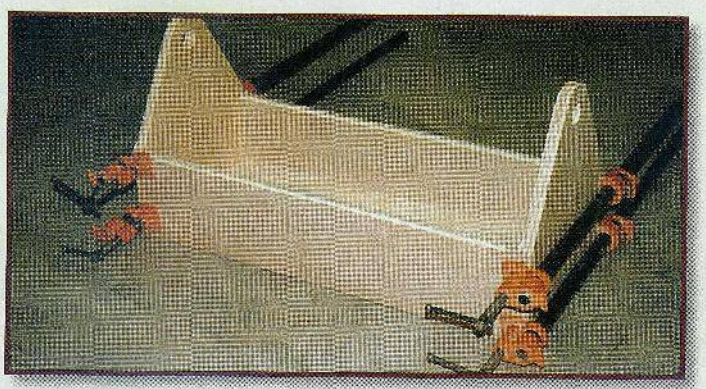


Fig. 14. Clamps help to snug up the joints until the glue is thoroughly cured.

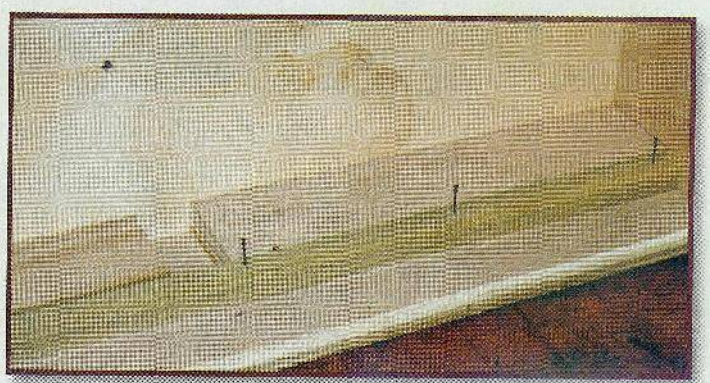


Fig. 15. A gauge block is used to line up the rails parallel with the bottom. Note that I used two short pieces rather than one long one because they are easier to remove when finished. You might want to pre-drill the holes in the poplar with a 1/16" drill bit; the small nails used bend easily.

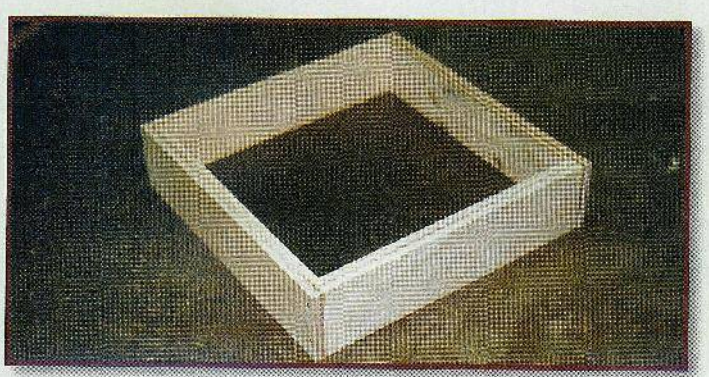


Fig. 16. Small parts tray assembled.

Fig. 17. The completed project is ready for use.

by Wes Demarest

Cherry

Black cherry (*Prunus serotina*; also known as rum cherry, wild cherry, wild black cherry, and mountain black cherry) has a wide range that extends from Nova Scotia across southern Quebec and Ontario, south to Texas and across to Florida, and one or two variants that are found in southern Texas and down the length of Mexico. It also has a wide tolerance for climactic, soil, and topographic conditions, with the best specimens found on fertile, well-drained sites that are cool and moist. Mature trees of this species found today will range from 60' to 80' tall with a DBH (diameter at breast height) up to 36", whereas old-growth trees could be found in excess of 100' tall and 5' DBH.

About the only places cherry will not grow are in swampy and very dry locations; however, specimens grown on wet (not swampy) sites will not set deep roots and are subject to wind-throw. This tree is not shade tolerant and sprouts from stumps or seeds die out if they do not receive sufficient light.

The bark is scaly, red brown in color and will show a red under-bark in mature specimens. It is distinctive (which aids in identification) even though it changes somewhat over its growth cycle and in young specimens additional keys maybe required. The under-bark has medicinal properties and is used in cough remedies and sedatives.

There are a number of species of cherry, some with overlapping ranges. This means that, as noted, in their young stages identification can be confusing; however, none of them attain the size of black cherry.

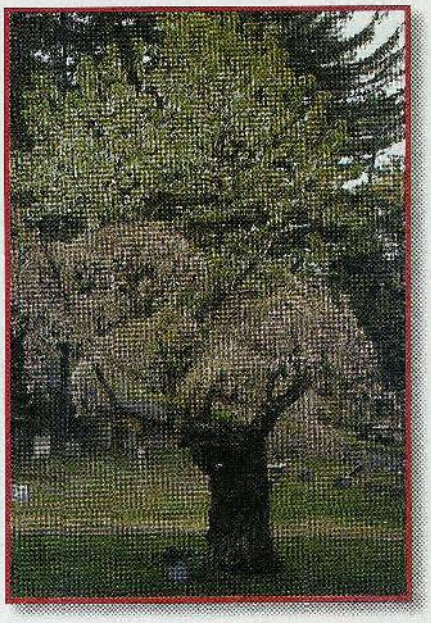
The photos above illustrate the differences in the bark configurations of fire cherry (left) and choke cherry (right).

Pictured here are fire cherry (*Prunus pensylvanica*), also called Pin cherry in some areas, and choke cherry (*Prunus virginiana*), which closely resembles black cherry. Both of these are shrubs and small tree species that occasionally grow 10" to 12" DBH. They can be milled, but the log is usually too short and crooked for the commercial market.

Cherry leaves bear similar resemblance to other trees in the Prunus family, namely wild plums and peach. The black cherry leaves, besides being long, narrow, and pointed with fine inwardly curving teeth, have a prominently fuzzy midrib on the bottom of the leaf with white to brown hairs.

The leaves, twigs and bark of all the Prunus family trees produce prunasin, a naturally occurring toxin that contains cyanide. In fact, I remember on the farm as a youth we were very diligent when it came to removing them and fencing in the peach orchards. Deer and, to a certain extent, livestock can eat green leaves and stems, but the cyanide is released when they wilt and at that point presents considerable danger, causing sickness and death.

Black cherry and choke cherry blossoms are quite similar, whereas those of the rest of the species are different. Their fruit provides an important food source for many species of birds and wildlife. It is also used for jam, jelly, and wine. Southern Appalachian folks have used them for several hundred years to flavor their rum and brandy and to make a drink called cherry bounce.



Sweet cherry (*Prunus avium*) was imported from France in 1629 and is now an important agricultural crop (photo shows a grafted specimen). The bark of the sweet cherry is very similar to fire cherry, but the fruit is entirely different. You can also throw in to the mix a large number of ornamentals, but none of them can equal the quality or volume of lumber from black cherry.

Cherry is classified as stiff, strong, moderately hard and heavy with a high resistance to shock. It is very stable in service and, because of this property, is used in pattern making. A flat-sawn 12"-wide board will shrink 1/4" from 20% down to 12%, and the same board will only move 1/8" between 12% and 6%. The wood varies in color, from sapwood that is white to heartwood that can vary in color, or from a pale pink to a deep reddish orange. It is said that the "best" cherry comes from certain areas, and that is true. Presently, it is the Allegheny Mountains of central Pennsylvania and lower New York State, but historically, (and not all that long ago) it was Connecticut.

Because the color can vary so widely, making furniture from this wood can be a challenge to color match. If you require a good grain and color match, order your lumber from an independent sawmill that can guarantee that all the boards originate from the same tree or, at the very least, from the same wood lot.

The wood can be difficult to work with hand tools and is subject to burning with power tools. From my experience, it burns more easily than maple, even with sharp tools and adjustment of the feed rate. Much of the problem is caused by gum pockets, such as those shown in the photograph. At one time, log buyers were exceptionally particular about gum. I have had more than one log rejected for veneer because it was "gummy." Now it is a different story. Cherry is in such high demand that logs we cut for firewood 30 to 40 years ago are now sold for lumber.

The cell structure is classified as diffuse porous and, as you can see, the difference between the growth rings is slight. Notice the gum pocket to the left of the pith. It may seem tiny from the end cut, but it could be a whole lot bigger once you get into the board. By the same token, it might not. Gum is not the defect it once was, but working lumber with them can be challenging. You can also see an example of saw burn as well as a bit of heart rot in this piece.

Milling cherry where the grain changes direction can also be a problem. The photo shows a crotch section. Although the finished piece will look good, getting there can be problematic. The planer blades were freshly sharpened, the feed rate was slowed, but the board was put through the planer against the grain. Turning it around did help, but we still got some tear out. You can eliminate tear out altogether by surfacing your boards on a drum sander (such as a Performax), but burning will be a problem because the gum will plug up the grit in a narrow band. If you think getting burn marks off from sawing is bad, wait until you burn it in on one of these machines.

Wiping the burned areas with mineral spirits will soften them, and then it is a matter of sanding or, better yet, scraping them off. Personally I like to scrape the surface with a good sharp scraper rather than sand it. If I do use sandpaper, I finish up with 320 grit for a varnish finish and 500 wet or dry for an oil finish.

As with most woods, pre-drill all holes for fasteners. I haven't found a wood glue that doesn't work on cherry, but be sure to wipe off ALL squeeze-out because the least little bit will show through any clear finish.

From my perspective, a natural finish is the best finish. Rubbed in danish oil is as trouble free as it gets, as long as your colors match. Color matching is your last challenge, especially if you leave part of a board exposed to light for a few days. The wood will darken over time through exposure to light and environment, taking on a progressively darker color distinctive to cherry. If you are looking for an even color, you are going to have to use stains, dyes or toners. If you use stains or dyes, figured or erratic grains will cause blotching. You will have to use either a conditioner before applying them or a gel stain. Toners and catalyzed finishes are a whole other world that will not be covered here. If you are using them, you didn't need to read this article.

Cherry is a beautiful and expensive wood with a few problems that can be overcome with a little effort. However, you can substitute birch, soft maple, or yellow poplar and, by using the proper colorants and finishes, fool all but the trained eye.

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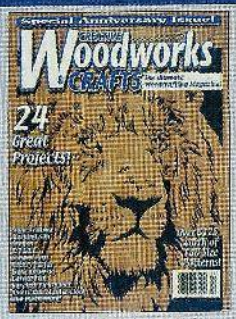

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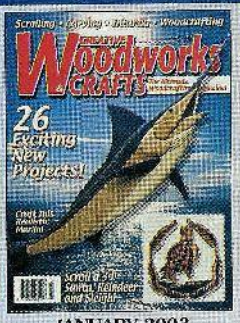

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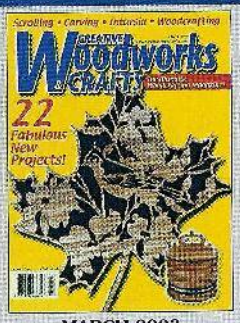

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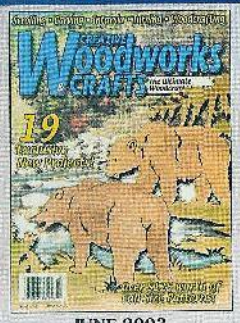

JUNE 2003
Doe & Fawn Mini Clock, Round Basket, Fretwork-Pendulum Mini Clock, Angel Keepsake Box, Guitar CD Rack, and more!

AUGUST 2000
French Lyre Clock, Noah's Ark Puzzle, Tiger Silhouette, Elk Desk Set, Two Wilckens Mini Clocks, and more!

OCTOBER 2000
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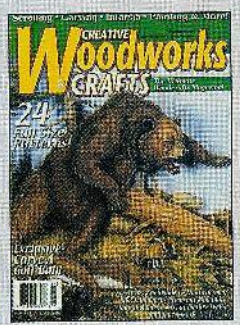
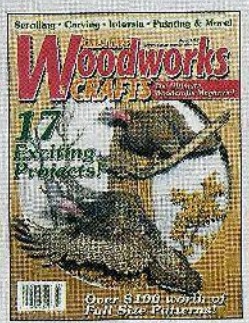
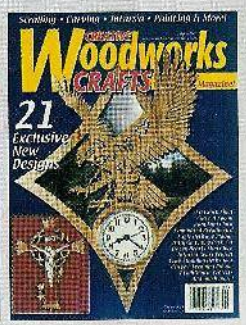


NOVEMBER 2000
Nine Cross Ornaments, Bass Mini Clock, Ship in a Bottle Silhouette, Nautical Shelf, Trout Frame, Southwestern Box, Pheasant Clock, and more!



MARCH 2001
Wild Turkeys, Fretwork Music Box, Nascar Plaque, 3-Dragons Nightlight, Fretwork Cross Candleholder, Grizzly Bear, Hawk, Sharpening Carving Tools, and much more!



APRIL 2001
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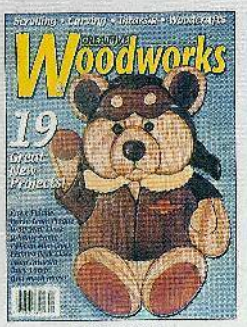
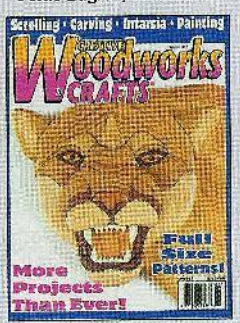


JUNE 2001
Loons Intarsia, Wolf Clock, Golf Desk Set, Duck Lamp, Horse Plaque, and more!

JUNE 1997
Tiger and Eagle Mini Clocks, Midnight Snacker (Raccoon) Intarsia, Fretwork Eagle, Carving a Frame, Christopher Mantel Clock, and more!



AUGUST 1997
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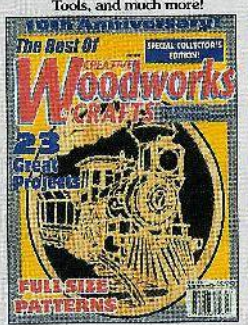

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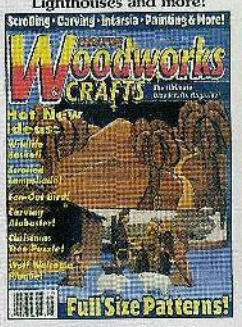
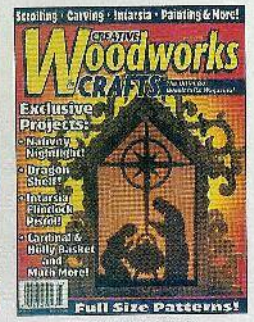


NOVEMBER 1998
Christmas Tree Puzzle, Mallard Silhouette, Wolf Welcome Plaque, Wild West Lampshade, and more!



JANUARY 1999
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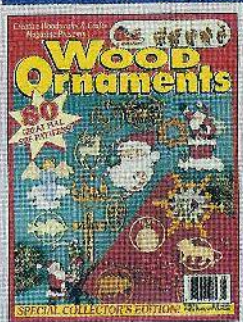

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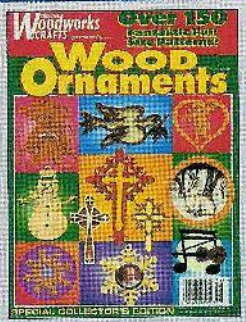

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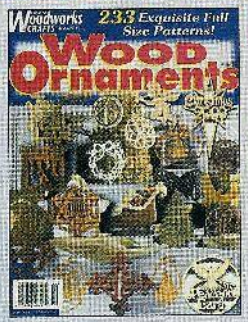

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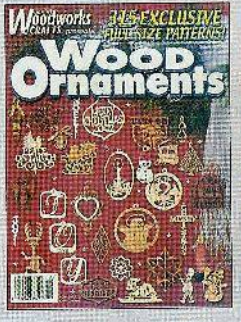

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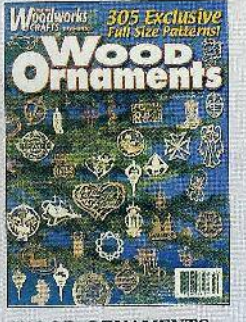

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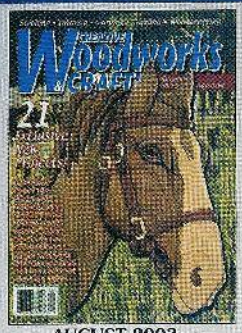

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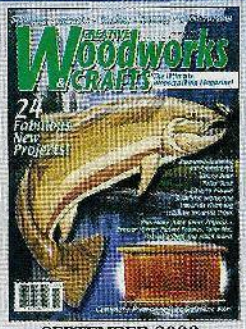
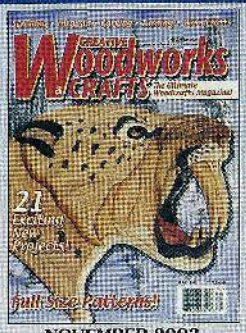
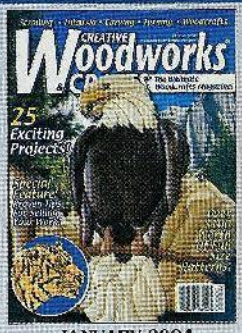


SEPTEMBER 2003
Rhinoceros Plaque, Giraffe Plaque, Tulip Box, Caboose, Wooden-Hinged Basket, Grizzly & Wolverine Plaques, and more!

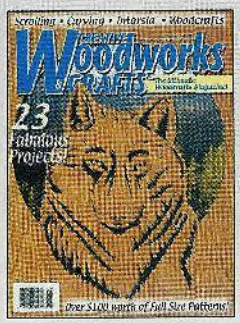


NOVEMBER 2003
Turkey Leaf, Turned Pens, Fretwork Pen Box, Eagle Feather, Quarter Pounder With Cheese, Lion, Carved Trout, Four Angelic Clocks, and more!

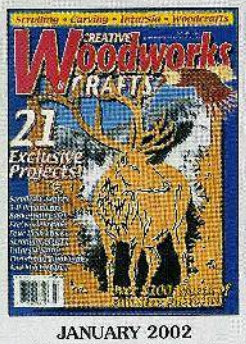


JANUARY 2004
Scrolled Tiger, Kitten In A Shoe, Cougar, Mantle Clock, Snowflake Ornaments, Native American Box & Frame, Chocolate Lab Intarsia, and more!

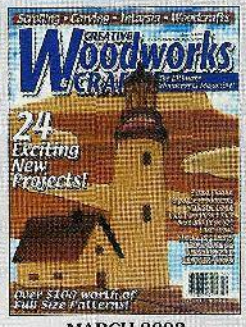
MARCH 2004
Caribou Weather Station, Smallmouth Bass Plaque, Basketweave Jewelry Box, Two Native American Silhos, Intarsia Mammoth and much more!



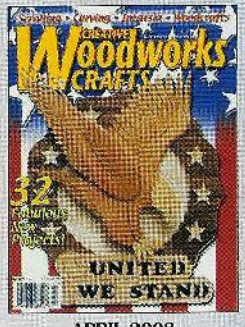
NOVEMBER 2001
Bass Plaque, Falcon Intarsia, Basketweave Clock, Fire-Breathing Dragon, Six Inspirational Ornaments, and more!



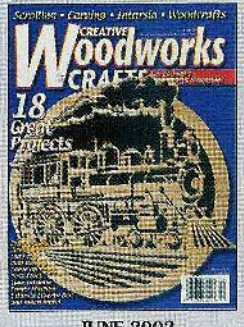
JANUARY 2002
Eagle Intarsia, Fretwork Frame, U.S. Navy Plaque, Basketball Clock, Cougar Plaque, Scrolling Antler, Three 3-D Ornaments, and more!



MARCH 2002
Baseball Desk Set, Horse Intarsia Clock, Lighthouse Intarsia, Guardian Angel Frame, Lake Trout Plaque, and more!



APRIL 2002
Cougar Plaque, Coin Cutting Project, Patriotic Jewelry, Train, Bison, and Angel Plaques, and more!



JUNE 2002
Liberty Bell Intarsia, Eagle Music Box, Two Train Projects, Candy Machine, Birdhouse, and more!

AUGUST 2002
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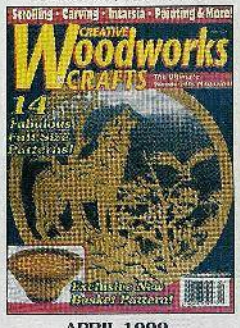

APRIL 1999
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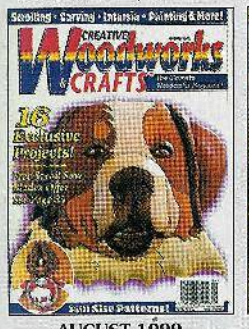

AUGUST 1999
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OCTOBER 1999
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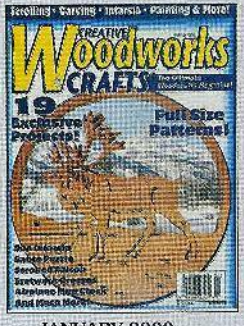
NOVEMBER 1999
Two Lighthouse Mini Clocks, Dragon, Butterfly Band Saw Box, Mini Grandmother Clock, and more!



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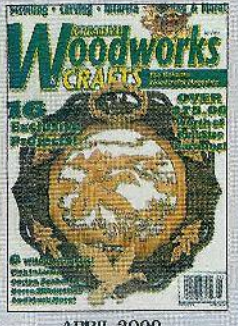

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All American Crafts,
243 Newton-Sparta Rd.,
Newton, NJ 07860,
Attn: Marie Arnold.
To order by credit card (Visa, MasterCard, & Amex accepted), call Marie at (973) 383-8080, ext.104
*U.S. Funds only

$15.95 plus $2.00 S&H

Note: Easy-to-order clock parts and hardware package not included. Ordering info specified with pattern.

MEMPHIS HARDWOOD LUMBER, INC.

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1-(800) 286-3949 (315) 689-3949
www.memphishardwoodlumber.com

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* FAST COURTEOUS SERVICE!
* 27 YEARS IN BUSINESS!!
* WE MAINTAIN AN INVENTORY OF 60 SPECIES, BOTH DOMESTIC AND IMPORTED HARDWOODS!
* HIGH-QUALITY, MILLED ACCURATELY AND CONSISTENTLY!
* COMPETITIVE PRICING!

80

BALTIC BIRCH PLYWOOD
1/8" thick – 12" x 30" – $1.79 (that's 69¢ per square ft.!)
1/4" thick – 12" x 30" – $2.48 (that's 99¢ per square ft.!)

TOP-QUALITY HARDWOODS
We sell top-quality hardwoods 1/8", 1/4", 3/8" and 1/2" thick at GREAT PRICES!

CUSTOMIZED GLUED-UP HARDWOOD PANELS
Available in any dimensions in thicknesses of 1/4", 3/8", 1/2", and 3/4". Call for pricing.

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Sloan's Woodshop
The Scroll Saw Store

Baltic Birch Plywood

The Best Grade available: B/BB

#101 - 1/8"x12"x12" - $1.00
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#102 - 1/4"x12"x12" - $1.30
#108 - 1/4"x12"x24" - $2.50
#103 - 3/8"x12"x12" - $1.75
#109 - 3/8"x12"x24" - $3.40
#104 - 1/2"x12"x12" - $2.00
#110 - 1/2"x12"x24" - $3.90
#105 - 5/8"x12"x12" - $2.95
#111 - 5/8"x12"x24" - $5.80
#106 - 3/4"x12"x12" - $3.95
#112 - 3/4"x12"x24" - $7.80

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The Best Grade Available !!!
No Patches on Back Face !!!!

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#5241A -1/32"x12"x24" - $4.60
#5242 -1/16"x12"x12" - $2.25
#5242A -1/16"x12"x24" - $4.40
#5249 - 1/8"x12"x12" - $1.70
#5249A -1/8"x12"x24" - $3.30

Italian Poplar Plywood

Great for scrolling & Wood Burning !!

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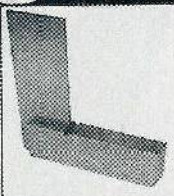
We now stock Olson® Band Saw Blades
In sizes: 56 1/8", 59 1/2", 80", 93 1/2", & 105"
We also have Olson® Genuine Cool Blocks®
to fit most band saws. *Highly Recommended by Professionals*

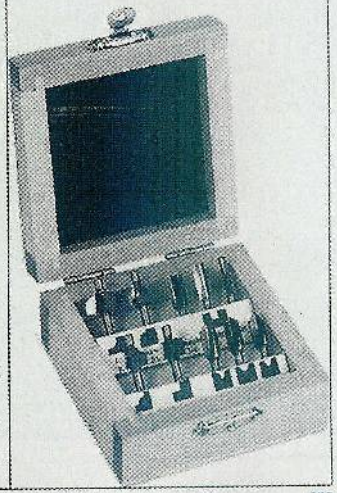
Forstner Bits - We stock a complete line of forstner bits. They are available in sizes: 1/4" to 3 1/8" in 1/8" increments. We also stock the hard to find: 5/16" to 2 1/16" in 1/16" increments. We also have 3 different sets available. Check our website for a complete listing or give us a call we probably have the size you need in stock and ready to ship.



2 inch Precision Machine Square
A must when stack cutting, Squares your blade with the table.
 # SQ-2 - $4.95

Needle File Sets
12 piece sets in 2 sizes of files.
Regular about 1/4" wide, 6" long
Mini about 1/8" wide, 4" long
Reg - #12pcnf - $10.95
Mini - #12pcmini - $6.95

10 piece - 1/8" Shank Router Bit Set
Fits Dremel Tools with Router Base. Ten High Speed Steel Bits come in a Wooden Storage Box
#D2721 - $25.00
These bits are also available separately for $3.65 each



When you call us you'll talk to more than just an order taker !!! We all own and use scroll saws !!!

Premium Grade Hardwoods: Clear on the front face. The back face may contain minor defects. Widths+/- 1/8"
MOST WOOD AVAILABLE IN WIDER WIDTHS, 7", 8", 9" & SOMETIMES WIDER !!! GIVE US A CALL !!!

Species	Stock # 1/8"x6"x24"	Cost Each	Stock # 1/4"x6"x24"	Cost Each	Stock# 3/8"x6"x24"	Cost Each	Stock # 1/2"x6"x24"	Cost Each
Red Oak	#RED186	$3.55	#RED146	$3.95	#RED386	$4.60	#RED126	$4.60
Hard Maple	#MPL186	$3.95	#MPL146	$4.45	#MPL386	$5.25	#MPL126	$5.25
Basswood	#BAS186	$3.83	#BAS146	$4.11	#BAS386	$5.04	#BAS126	$5.20
Walnut	#WAL186	$4.45	#WAL146	$4.95	#WAL386	$5.95	#WAL126	$5.95
Cherry	#CHY186	$4.75	#CHY146	$5.25	#CHY386	$6.25	#CHY126	$6.25
Purpleheart	#PHT186	$4.25	#PHT146	$4.95	#PHT386	$5.95	#PHT126	$6.95
Mahogany	#MAH186	$5.00	#MAH146	$5.60	#MAH386	$6.50	#MAH126	$6.75
Padauk	#PAD186	$5.15	#PAD146	$5.75	#PAD386	$6.75	#PAD126	$7.25
Canarywood	#CAN186	$4.95	#CAN146	$5.45	#CAN386	$6.25	#CAN126	$6.75
Yellowheart	#YEL186	$4.60	#YEL146	$5.10	#YEL386	$5.75	#YEL126	$6.25

To place an order, call, fax or write us. We accept Visa, MasterCard, Discover, Checks & Money Orders. Sorry No COD's
Please Include Phone # and Street address (No PO Boxes) - Most orders are shipped within 24 hours, We ship by UPS-100% Insured, No minimum order, No extra insurance charges, Our simple shipping chart is on the next page. Questions? Give us a call. We'll give you a Free Catalog and a Free call on our Toll Free Order Line. Many more items on our Web Site !!!

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"Olson®" Top Quality Scroll Saw Blades

Regular Skip Tooth Blades
3/0, 2/0, 0, 2, 4, 5, 7, 9, 11
$ 1.70 a Doz - $17.00 a Gross

Double Skip Tooth Blades
3/0, 2/0, 1, 3, 5, 7, 9, 12
$1.70 a Doz - $17.00 a Gross

Reverse Skip Tooth Blades
2/0, 2, 5, 7, 9, 12, 420R
$1.95 a Doz - $19.50 a Gross

Spiral Tooth Blades
2/0, 0, 2, 4, 6
$1.95 a Doz - $19.50 a Gross

Crown Tooth Blades
2/0, 2, 3, 5, 7, 9, 12
$2.30 a Doz - $23.00 a Gross

Precision Ground Tooth
5, 7, 9,
$3.50 a Doz - $35.00 a Gross

"NEW" PGT Double Tooth
5, 7, 9,
$3.50 a Doz - $ 35.00 a Gross

"NEW" Mach Series Reverse
3, 5, 7, 9
$2.75 a Doz—$27.50 a Gross

"NEW Thick Wood Blades
408-TW
$ 2.95 a Doz—$29.50 a Gross

Metal Cutting Blades
1, 5, 7, 9, 12
$3.00 a Doz—$30.00 a Gross

"NEW" Flat End Spiral
2, 4
$2.75 a Doz—$27.50 a Gross

You may mix or match the same style blades for gross pricing
All the blades above are 5" Plain End "OLSON" Blades

We also stock:
3" pin end blades -2 sizes
5" pin end blades - 8 sizes
6" plain end blades - 4 sizes
5" Plain End Jewelers Blades

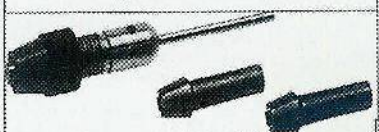
Acrylic Sheets

Solid Colors
$ 7.95 ea
1/8"x12"x24"
Red, Blue, Light Blue, Green, Yellow, Orange, Black, White, Pink, Ivory, Brown, Purple, Frost White, Turquoise, Gray

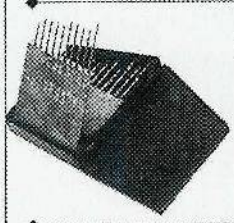
Transparent Colors
$7.95 ea
1/8"x12"x24"
Red, Blue, Light Blue, Green, Yellow,Orange, Smoke, Bronze, Purple, Clear
(clear only $ 5.50 each)

Mirrored Colors
$12.50 ea
1/8"x12"x24"
Red, Blue, Green, Yellow, Orange, Pink, Purple, Peach, Gold, Bronze, Gray, Teal, Clear
(clear only $ 9.00 each)

White Marble Acrylic Sheets
$12.50 ea
1/8"x12"x24"
We have more acrylic available. See our web site for a complete listing of sizes & types.



Precision Pin Chuck
Use mini bits in a drill press with this quality Pin Chuck. With 3 collets, it holds bits #80-#40. **# PC-1 $ 9.95**

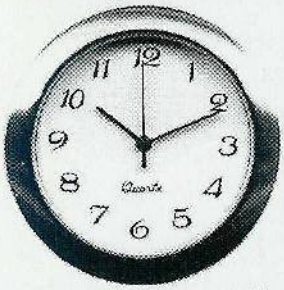


20 Piece Mini Drill Bit Set
#61 - #80
metal case
#20pcDS
$ 9.95

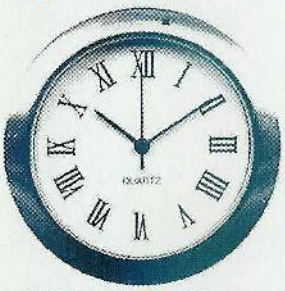
Mini Drill Bits
1/16", 3/32", 1/8" Bits **$4.50 Doz**

Numbered Drill Bits
#54, #56, #58, #61, #64, #67, #70, #72
$ 7.50 per Dozen
(sorry no mixing sizes of drill bits)

Top Quality Silcon Brand Inserts

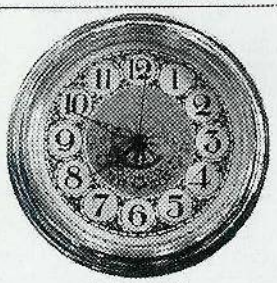


#CK100 - White Arabic
#CK103 - Ivory Arabic
#CK102 - Gold Arabic



#CK101 - White Roman
#CK104 - Ivory Roman
#CK105 - Gold Roman

1+ $4.75 ~ 10 + $4.35 ~ 30+ $3.95 ~ 100+ $3.65
1 7/16" Inserts, Glass Lens, Stainless Steel Back, With Battery
No Rubber Gaskets - Mix or Match Pricing !!!

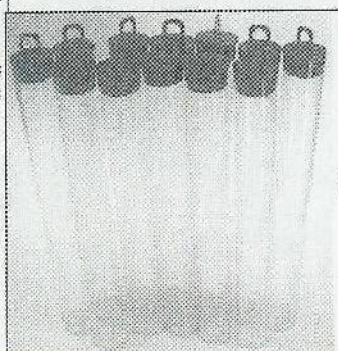


#CK106
1 7/16" Fancy Gold & Black Dial, Arabic Numbers
1+ $5.50 - 10+ $5.20
30+ $4.75 - 100+ $4.40

#PHOTO-1
1 7/16" Photo insert
1+ $1.75 - 10+ $1.55
30+ $1.35 - 100+ $1.25

All Clock & photo inserts have a gold tone bezel. Clocks include battery. All require a 1 3/8" mounting hole 5/16" deep.

1 3/8" Forstner Bit - #FOR138 - $ 9.00 each
We also stock 2", 2 3/4" & 3 1/2" clock & photo inserts



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Clear plastic tubes
3/4" dia. 6" long, tops have hangtabs
$3.95 dozen
#TUBE

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1a

2a

3a

4a

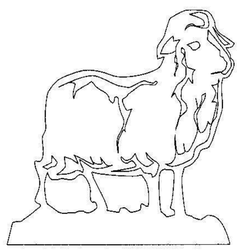
FULL SIZE PATTERN SECTION NO. 1 NOVEMBER 2004

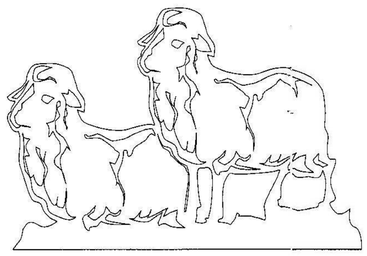
Metric Conversions:

1 Inch = 25.4mm = 2.54cm = 0.0254m

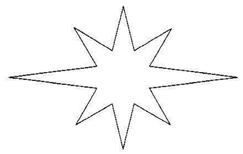
Common Measurements:

1/16" = 1.59mm	5" = 12.70cm
1/8" = 3.18mm	6" = 15.24cm
1/4" = 6.35mm	7" = 17.78cm
3/8" = 9.53mm	8" = 20.32cm
1/2" = 1.27cm	9" = 22.86cm
5/8" = 1.59cm	10" = 25.40cm
3/4" = 1.91cm	11" = 27.94cm
7/8" = 2.22cm	12" = 30.48cm
1" = 2.54cm	24" = 60.96cm
2" = 5.08cm	36" = 91.44cm
3" = 7.62cm	45" = 1.14m
4" = 10.16cm	60" = 1.52m

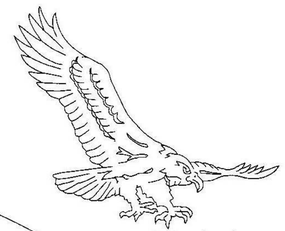




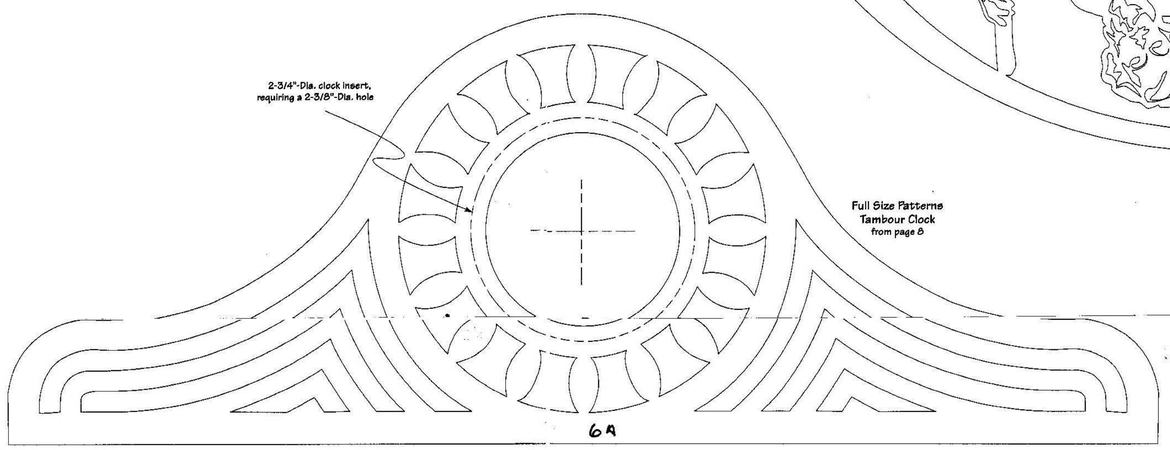
Full Size Patterns
Classic Nativity
from page 34



Cloude - make
from faceplate waste wood



Soaring eagle - make
from 1/8" material

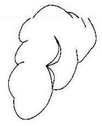


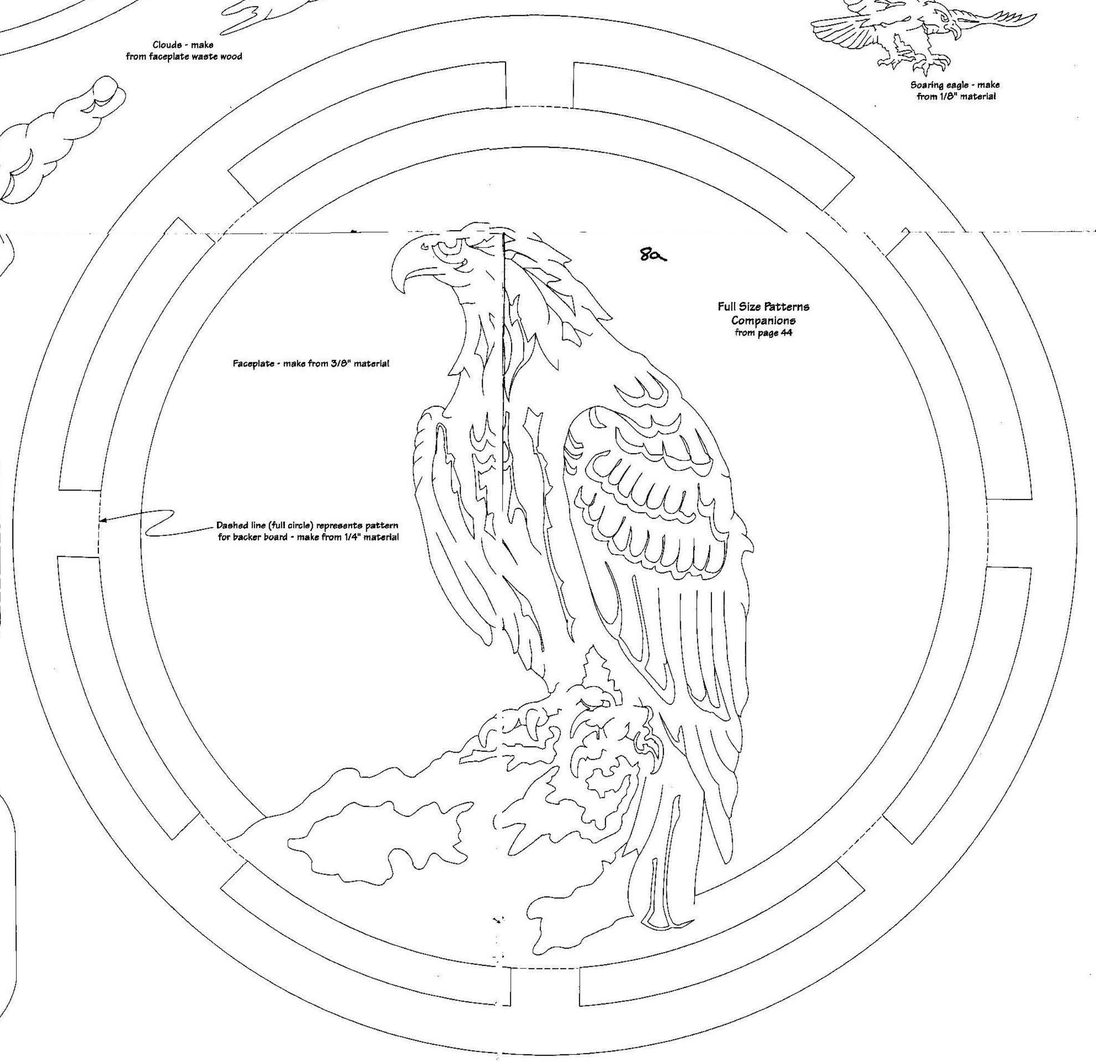
Full Size Patterns
Tambour Clock
from page 8

Clock - make one from 3/4" material

5a

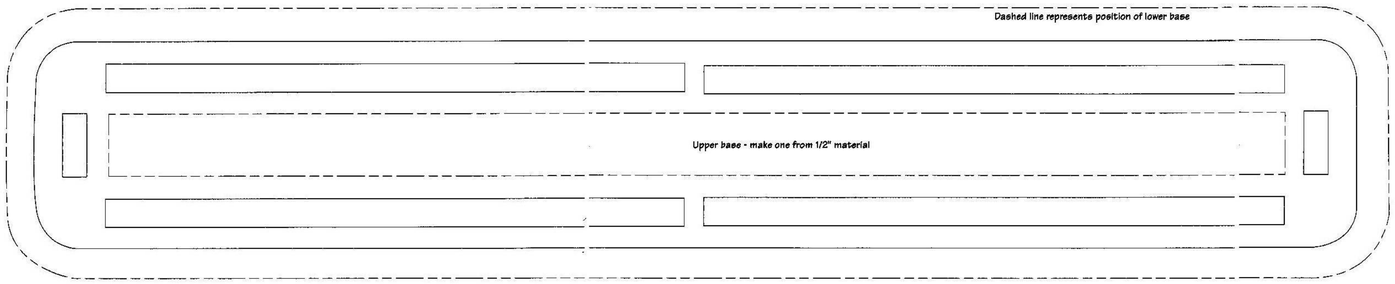
7a

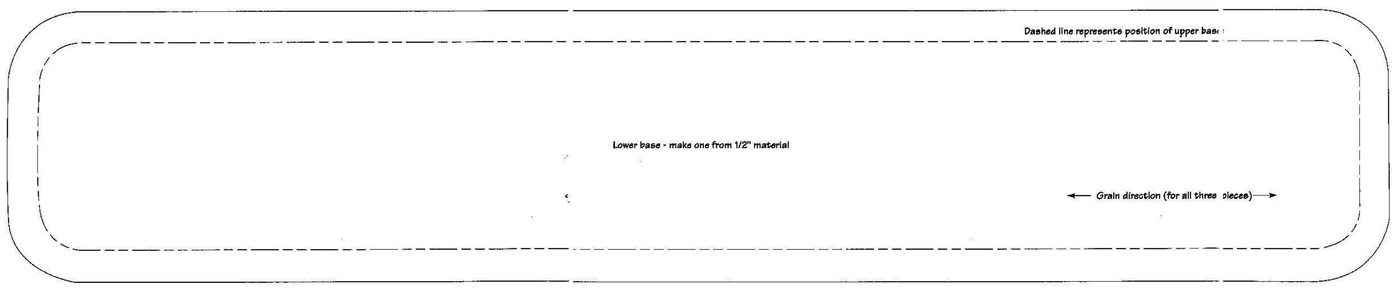




8a

Full Size Patterns
Companions
from page 44





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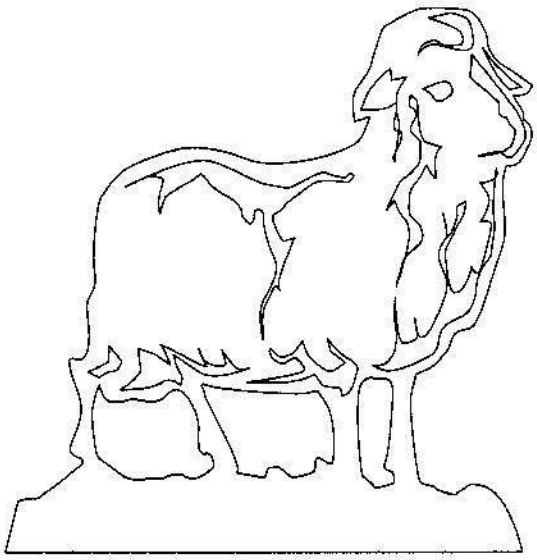

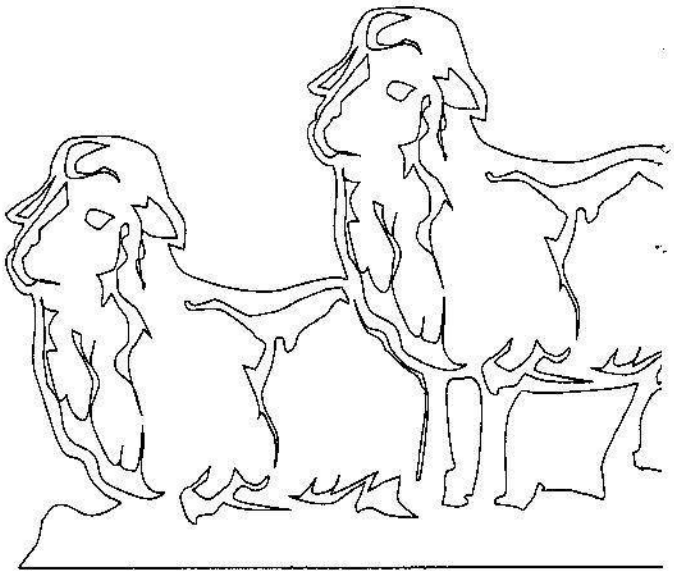

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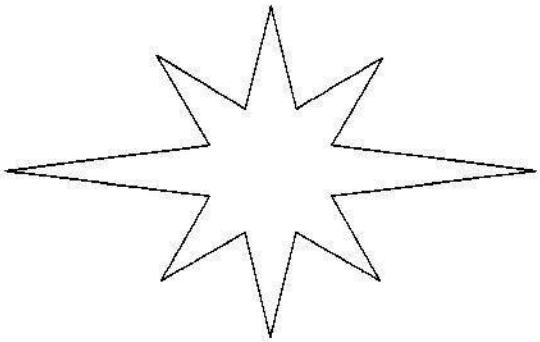

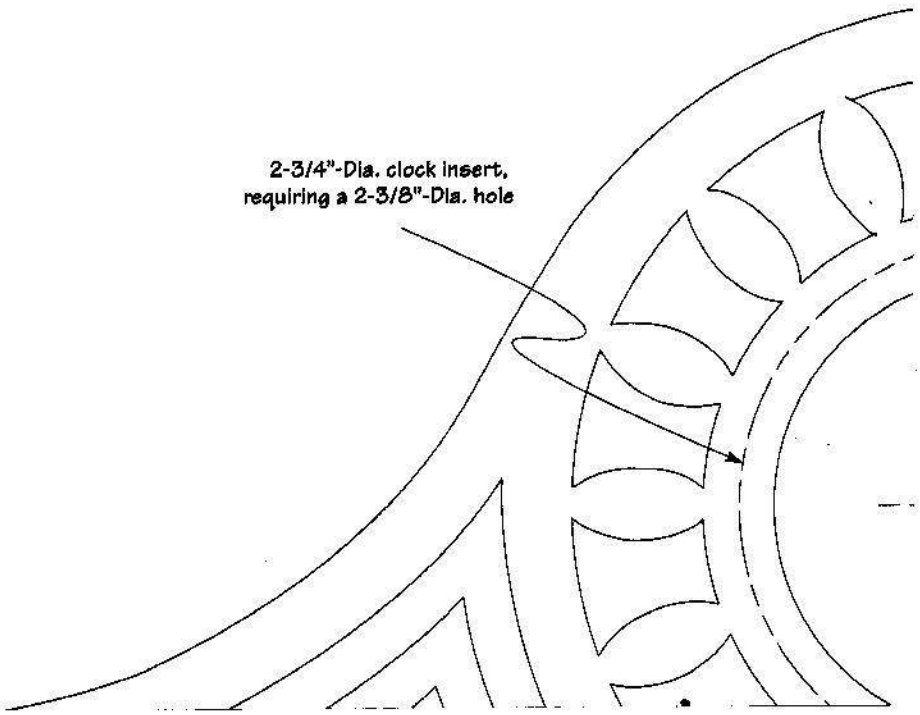

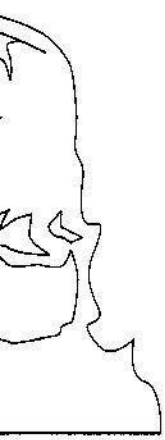

ze Patterns
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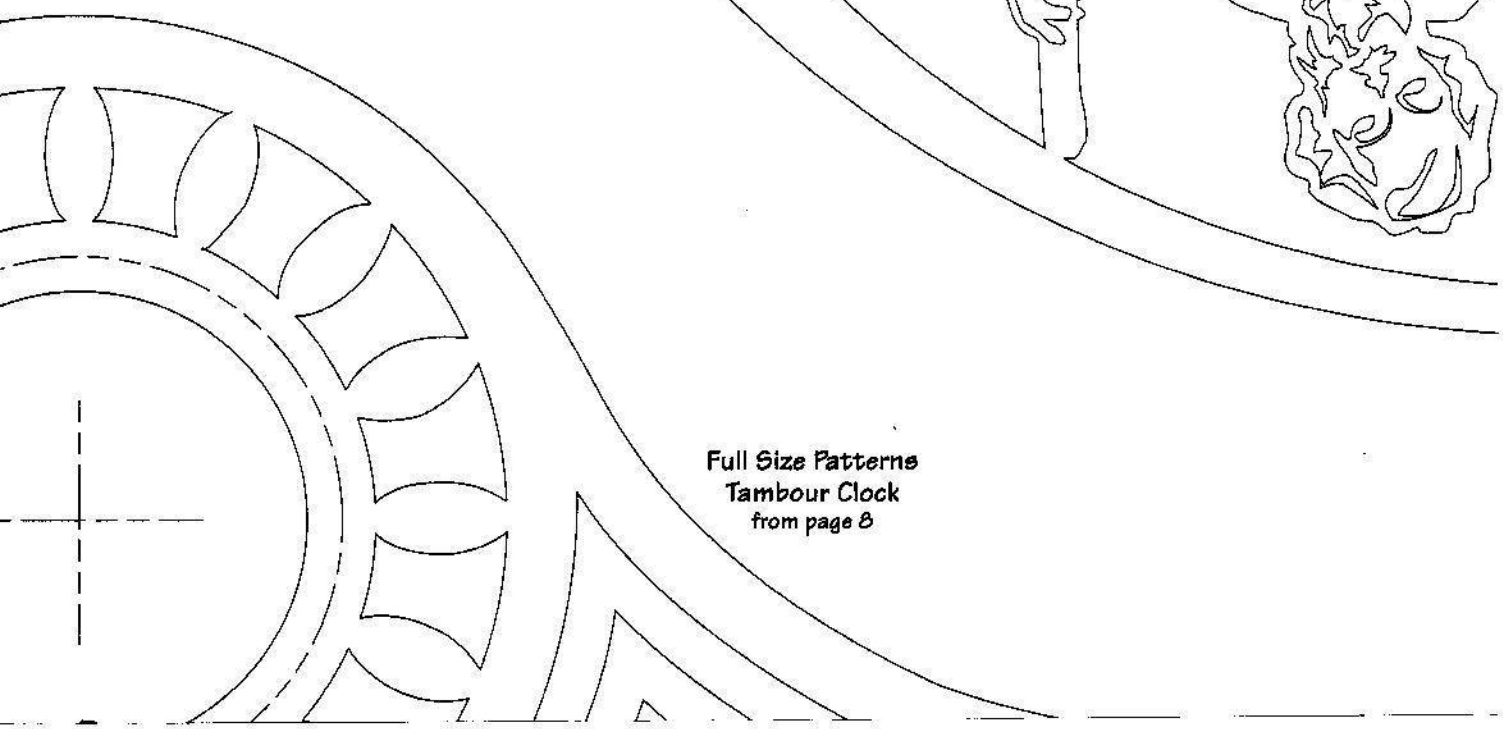
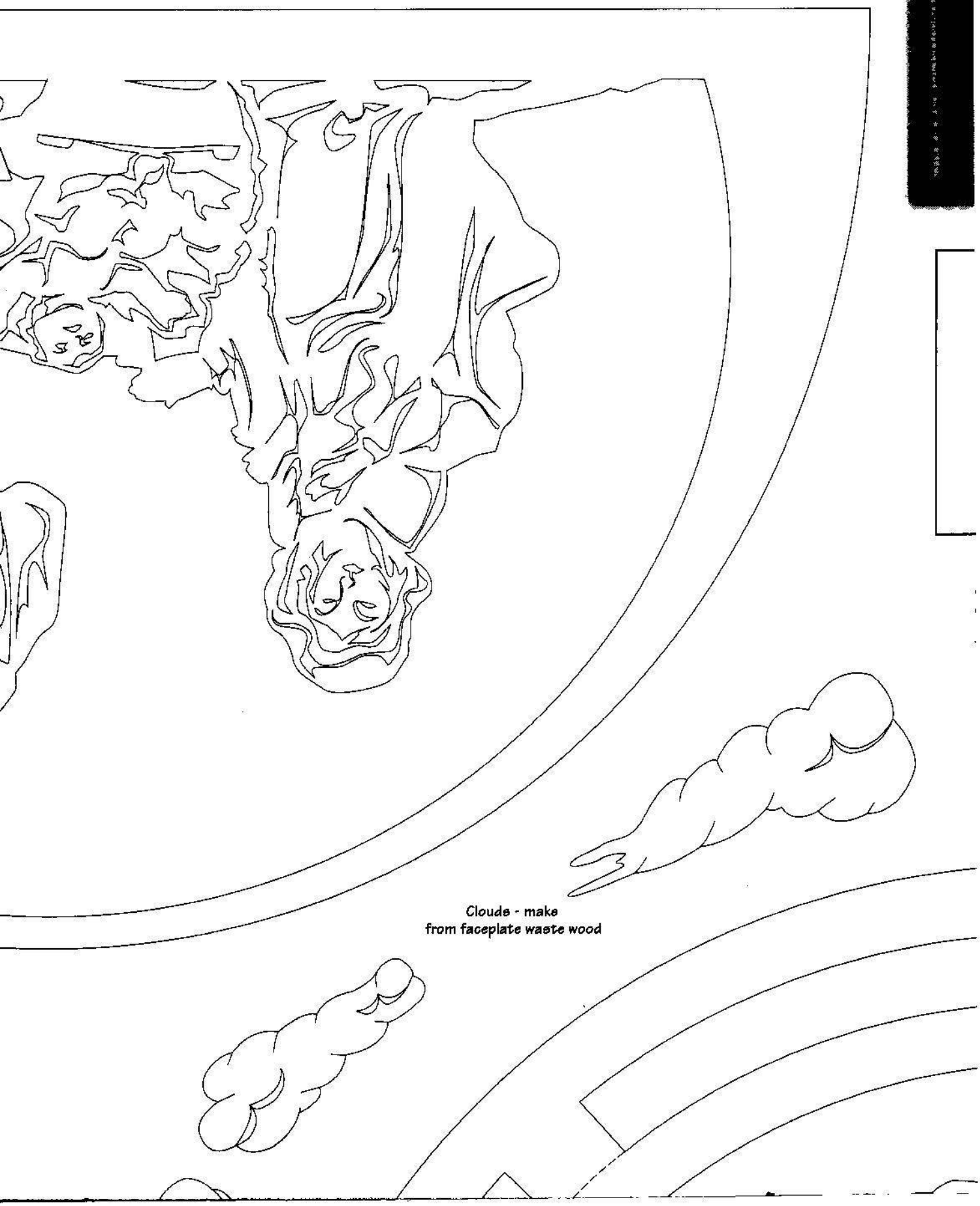


Full Size Patterns
Tambour Clock
from page 8

3a



Cloude - make
from faceplate waste wood

4a

Woodworks

FULL SIZE PATTERN SECTION NO. 1 NOVEMBER 2004

Metric Conversions:

1 Inch = 25.4mm = 2.54cm = 0.0254m

Common Measurements:

1/16" = 1.59mm	5" = 12.70cm
1/8" = 3.18mm	6" = 15.24cm
1/4" = 6.35mm	7" = 17.78cm
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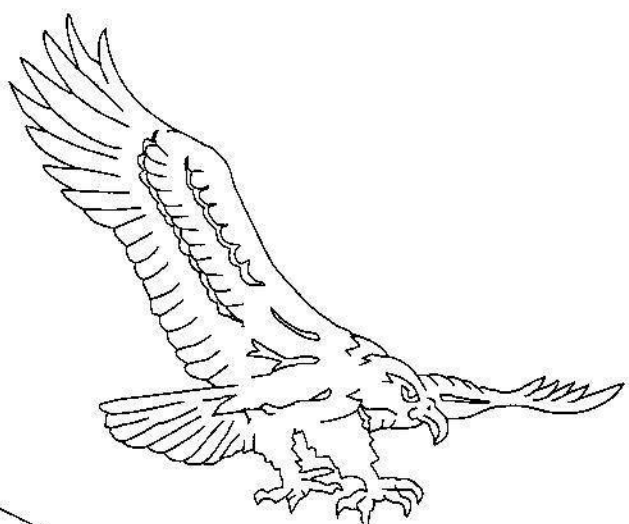
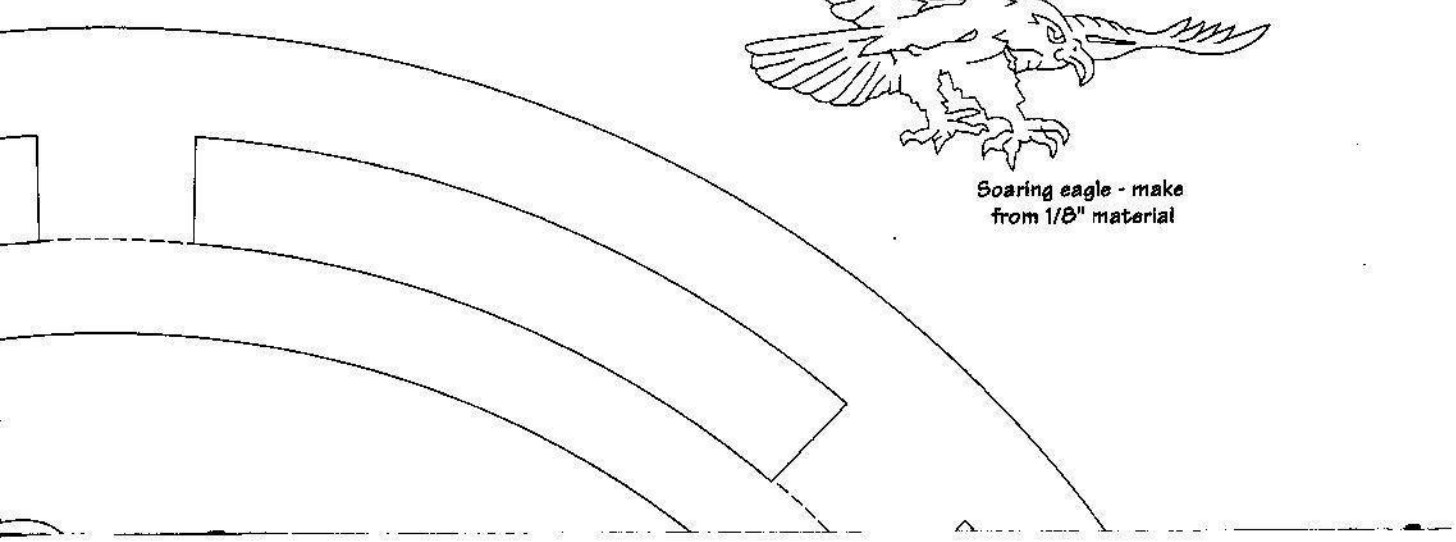
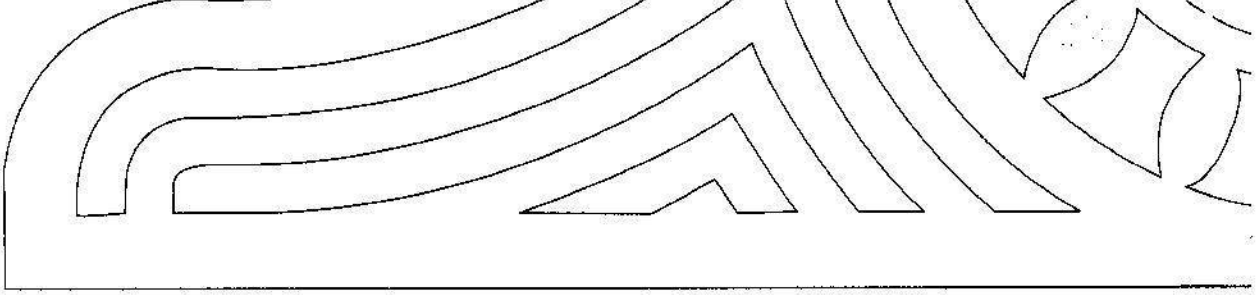
1/2" = 1.27cm	9" = 22.86cm
5/8" = 1.59cm	10" = 25.40cm
3/4" = 1.91cm	11" = 27.94cm
7/8" = 2.22cm	12" = 30.48cm
1" = 2.54cm	24" = 60.96cm
2" = 5.08cm	36" = 91.44cm
3" = 7.62cm	45" = 1.14m
4" = 10.16cm	60" = 1.52m



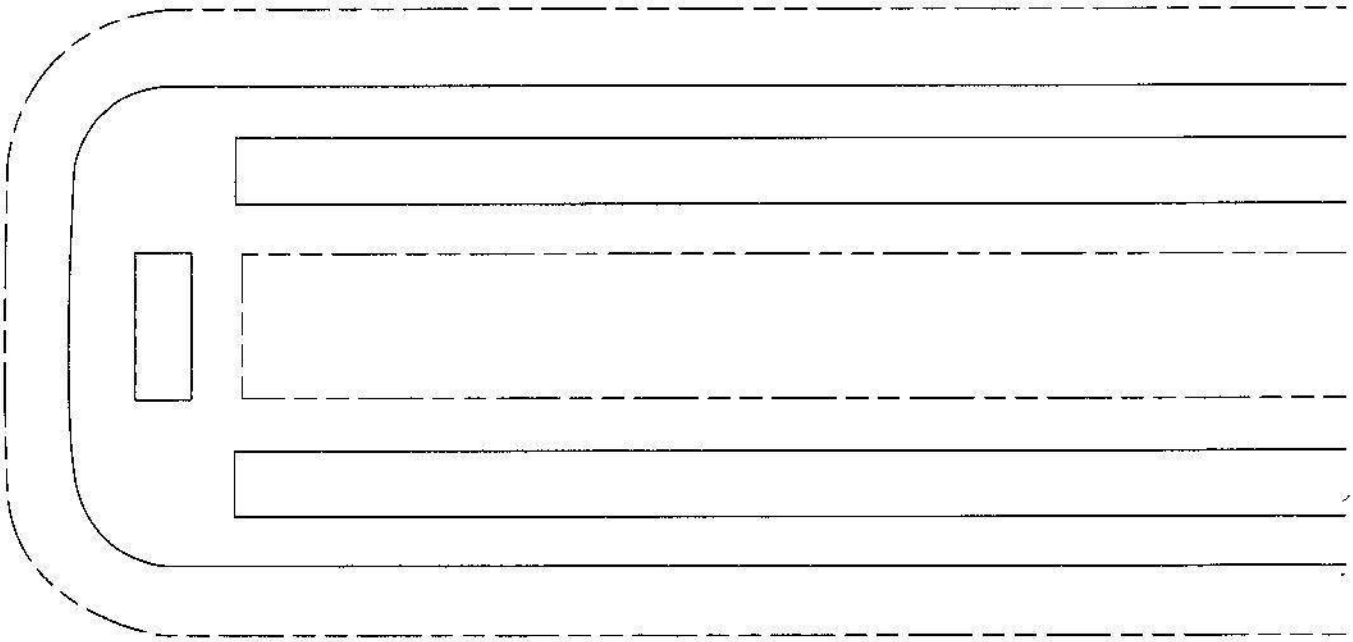
Soaring eagle - make from 1/8" material

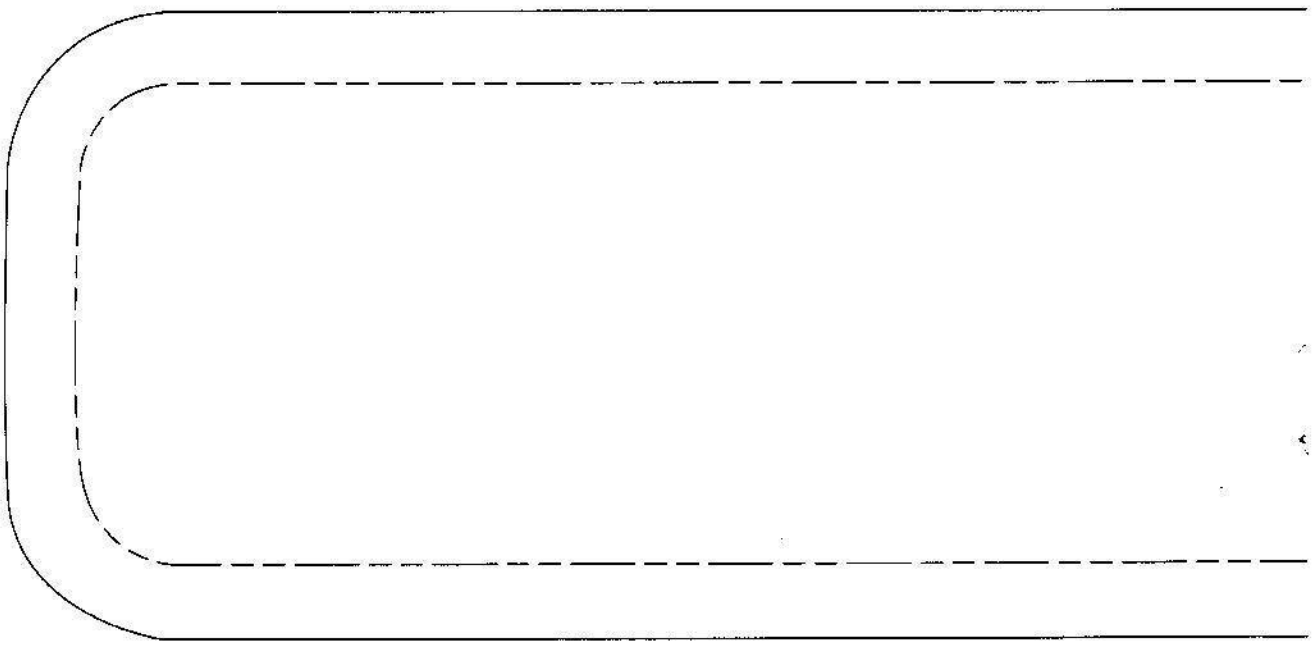


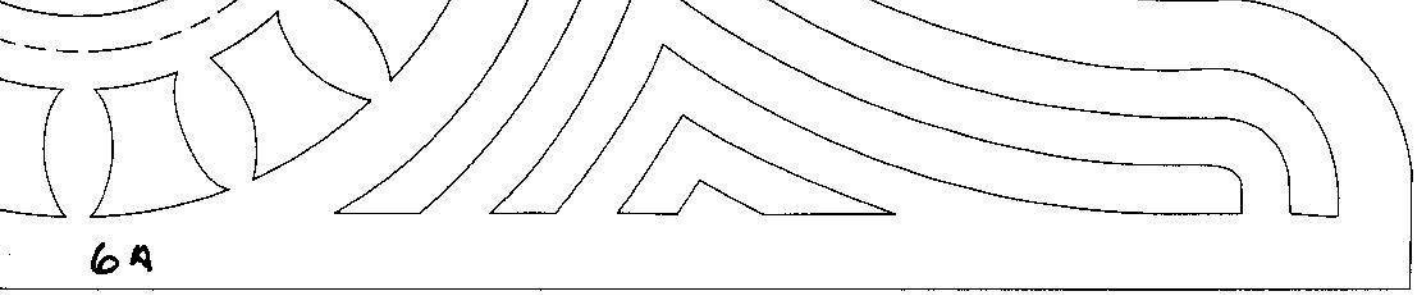
5a



Clock -







make one from 3/4" material

Dashed line represents position of lower base

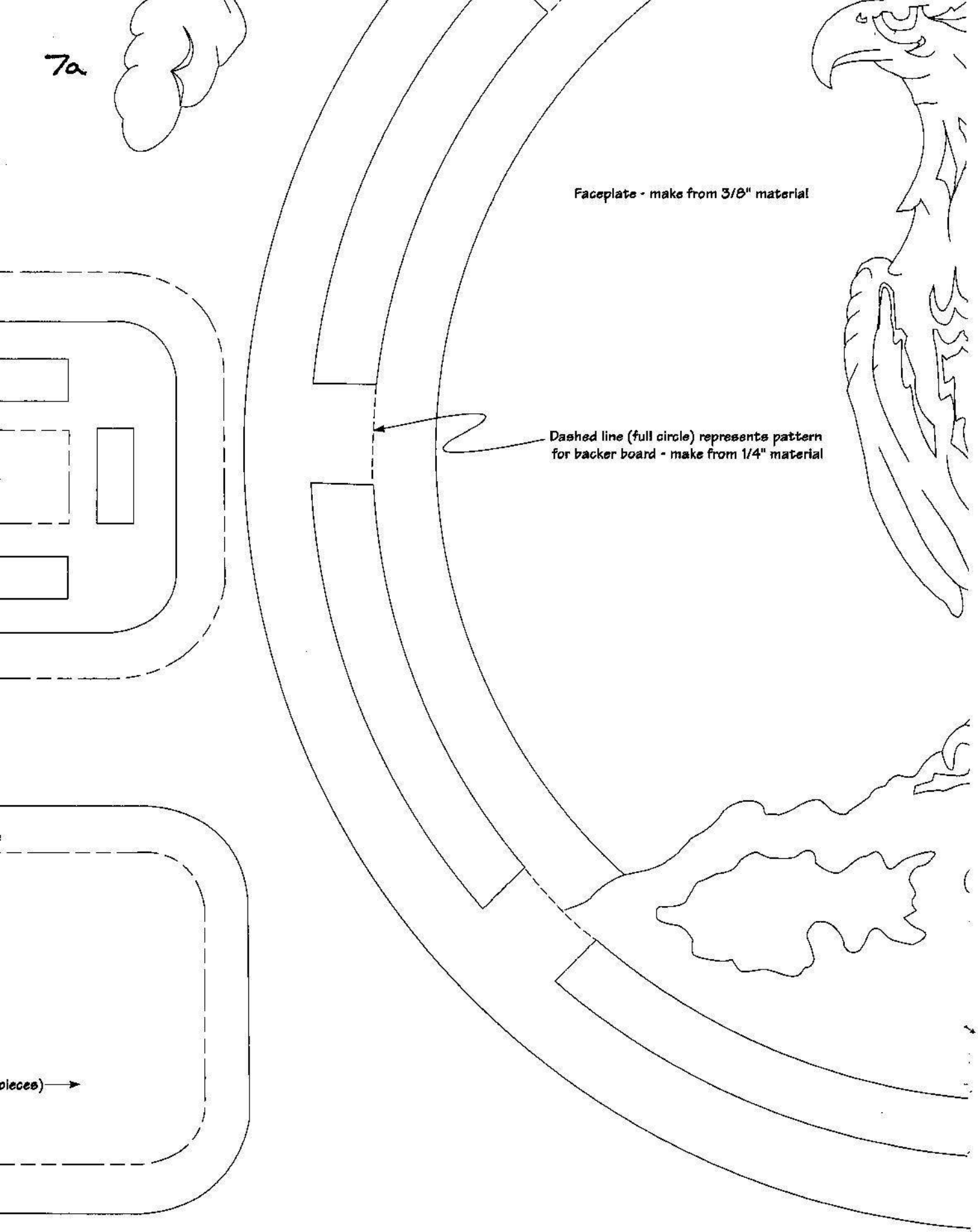
Upper base - make one from 1/2" material

Dashed line represents position of upper base

Lower base - make one from 1/2" material

← Grain direction (for all three

7a


Faceplate - make from 3/8" material
Dashed line (full circle) represents pattern
for backer board - make from 1/4" material

Full Size Patterns
Companions
from page 44

1b

2b

3b

4b

5b

6b

7b

8b

Full Size Patterns
30 Ornaments from Dirk Boelman
from page 36

Full Size Pattern
Snow Buck Intarsia
from page 60

Outer ring = + 1/8"

Snow = + 1/8"

Head assembly = + 1/8"
(from the neck)

Neck muscles = + 1/16"
(progressing upwards)

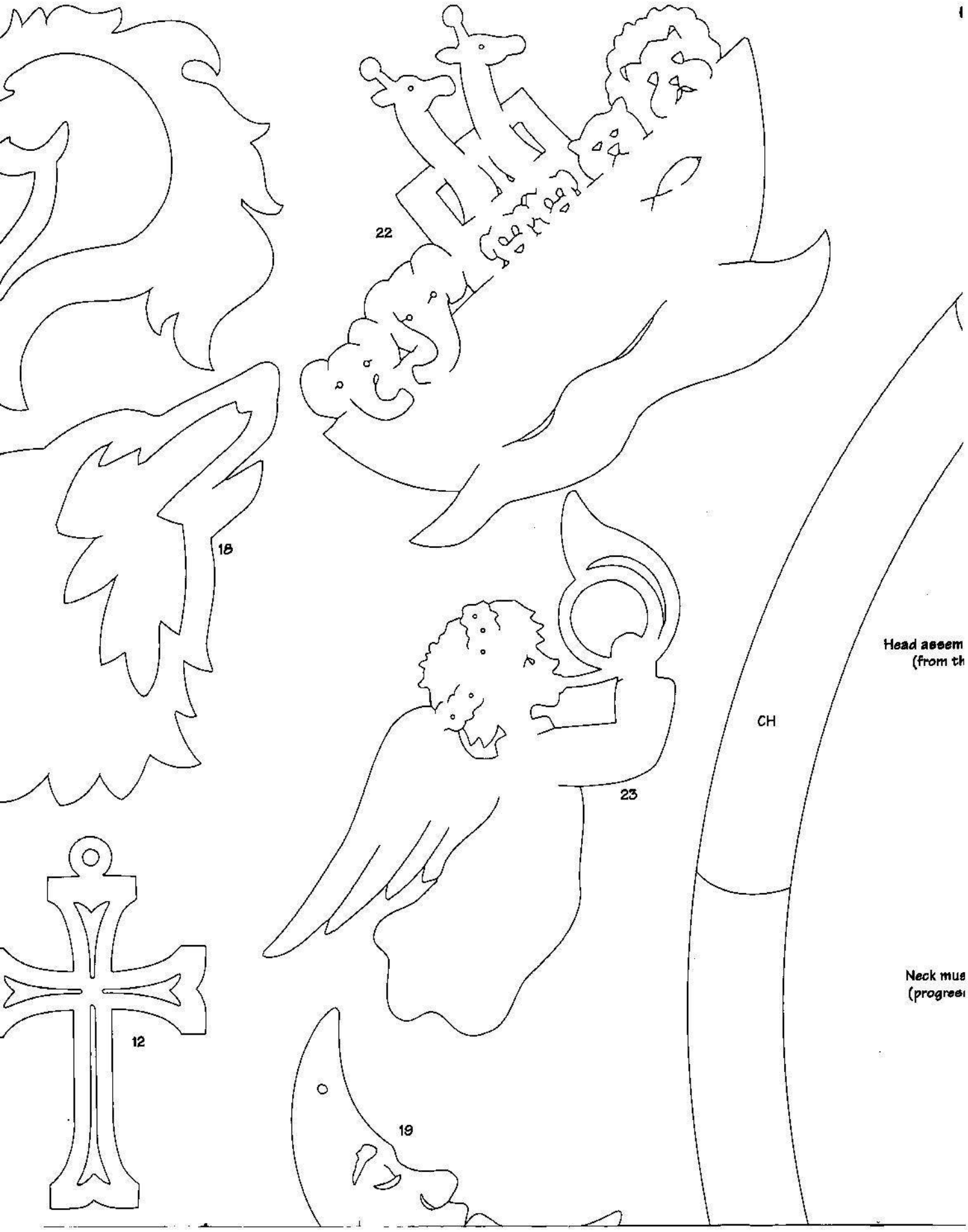
Leg = - 1/4"

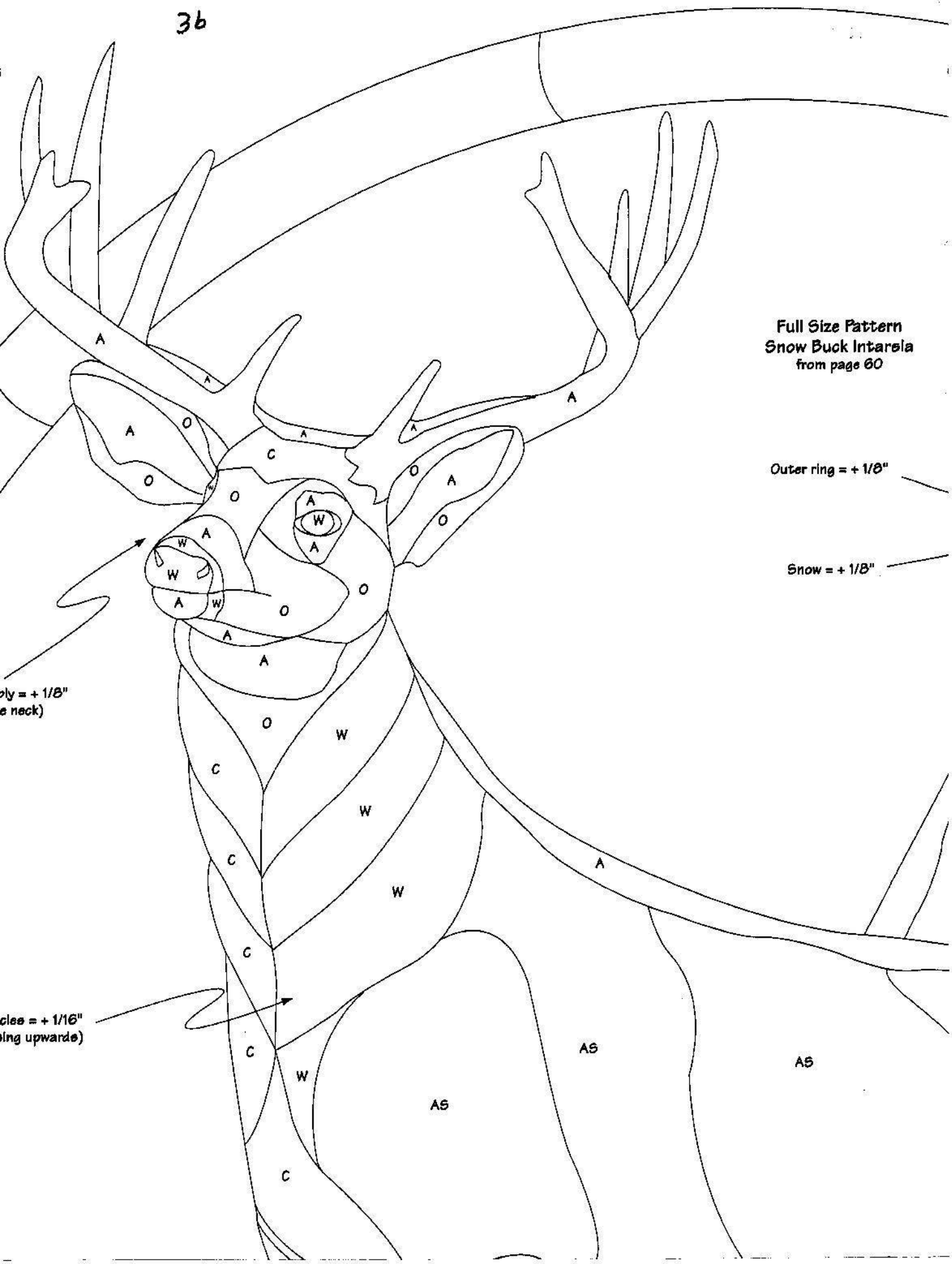
Entire second layer of snow = - 1/4"

Leg = - 1/4"

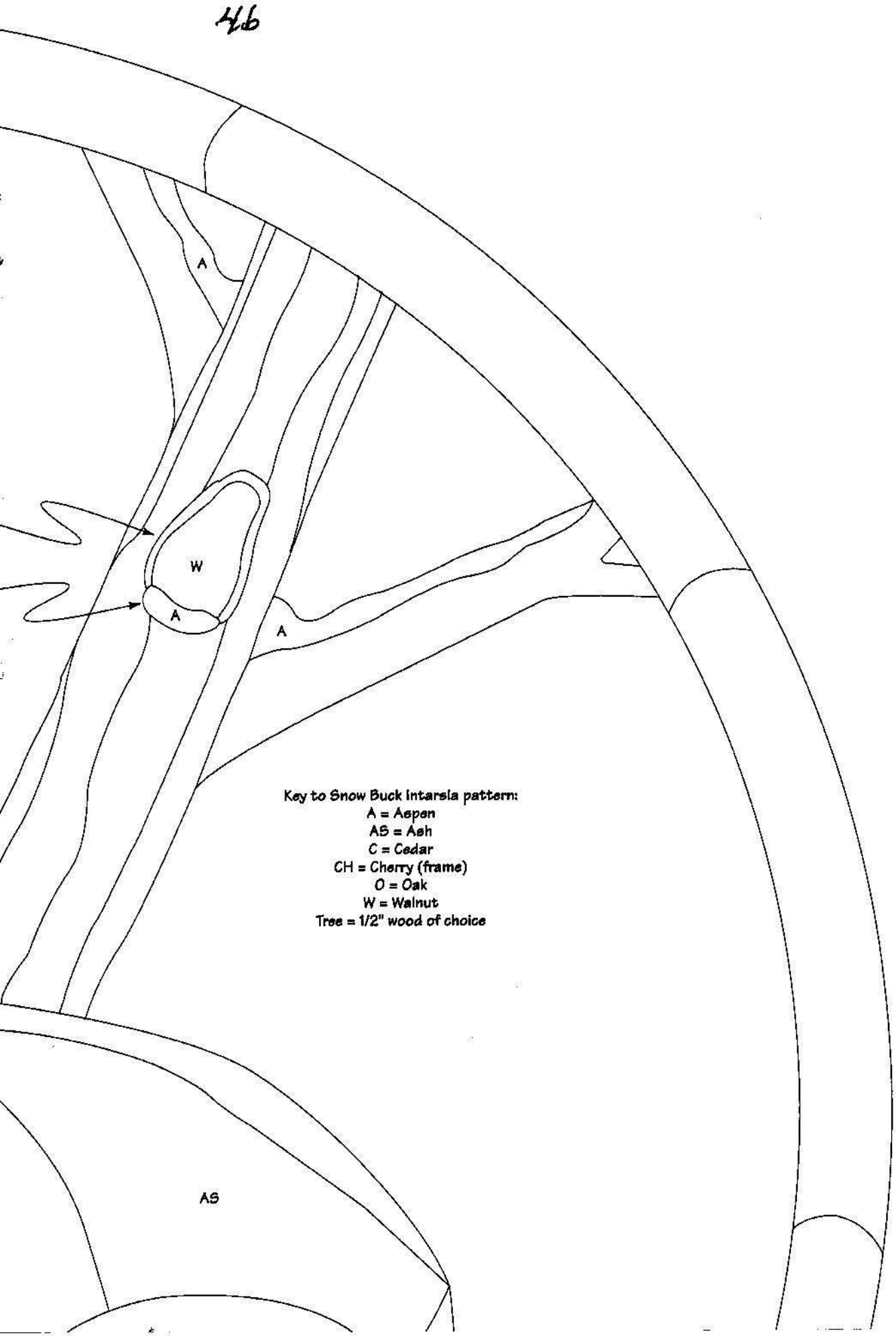
Key to Snow Buck Intarsia pattern:
A = Aspen
AS = Ash
C = Cedar
CH = Cherry (frame)
O = Oak
W = Walnut
Tree = 1/2" wood of choice

Full Size Patterns
30 Ornaments from Dirk Boelman
from page 36


22
18
23
CH
12
19
Head assem
(from th
Neck mus
(progres

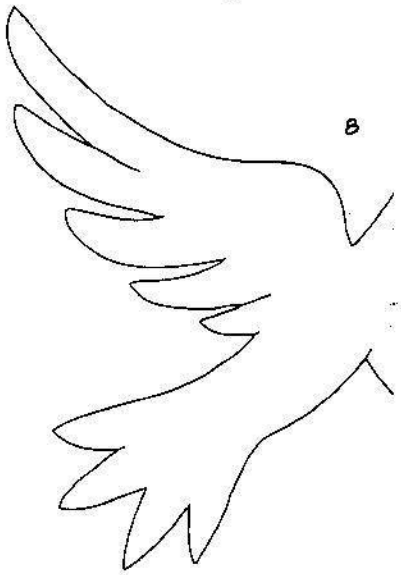


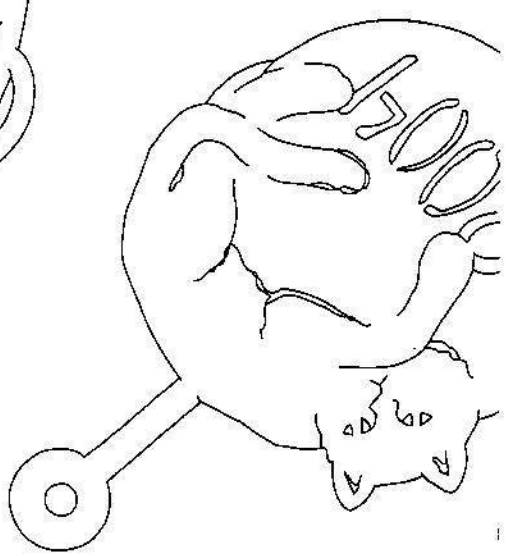
Full Size Pattern
Snow Buck Intarsia
from page 60



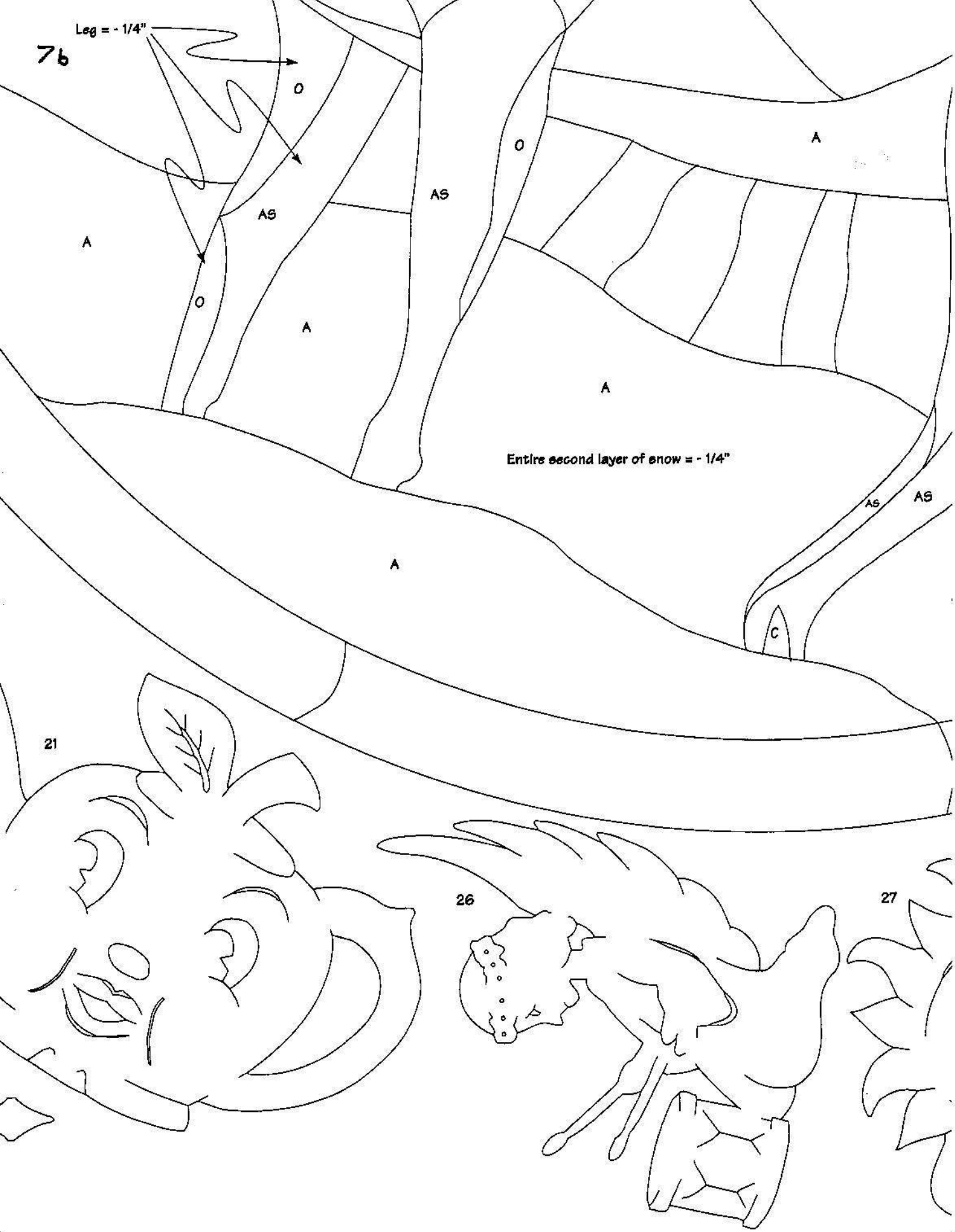
Key to Snow Buck Intarsia pattern:
A = Aspen
AS = Ash
C = Cedar
CH = Cherry (frame)
O = Oak
W = Walnut
Tree = 1/2" wood of choice

5b





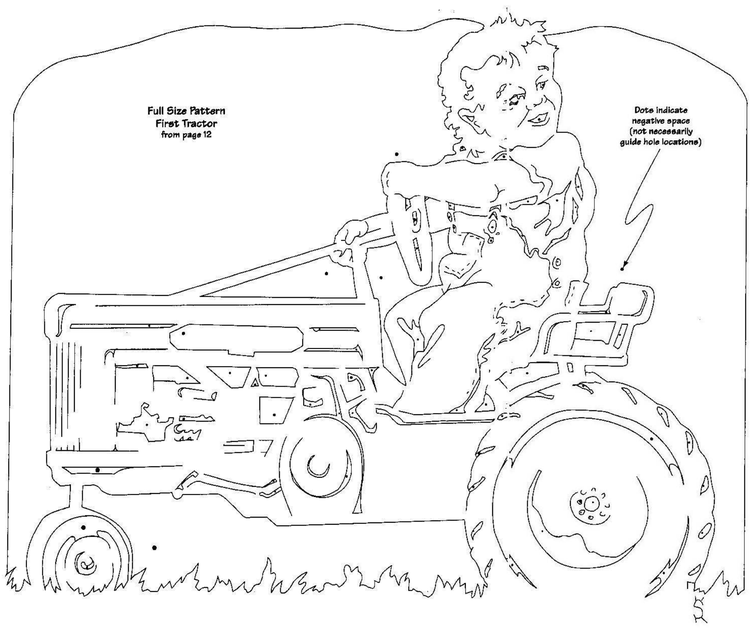

13
24
20
14
16
15
25


Leg = - 1/4"
7b
O
AS
A
O
A
O
AS
A
A
Entire second layer of snow = - 1/4"
AS
AS
A
C
21
26
27

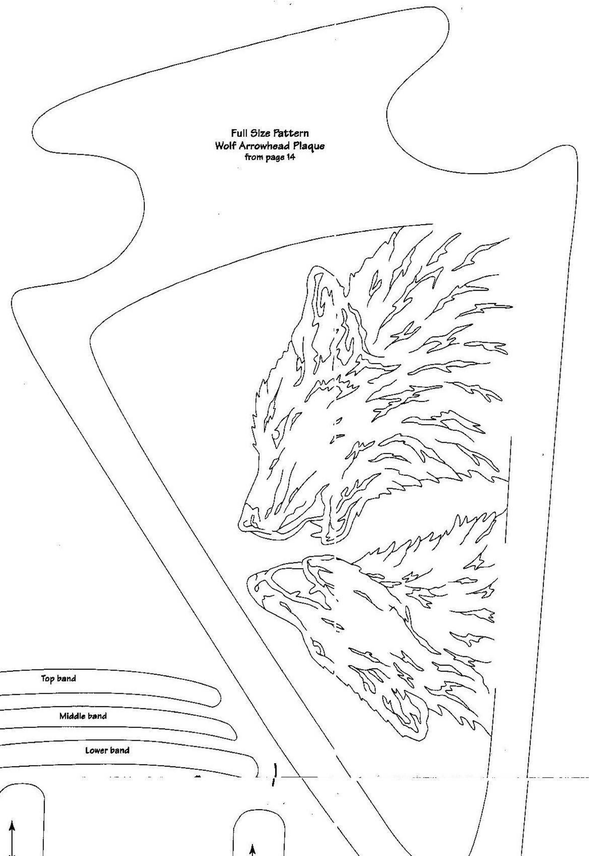

86
O
C
A
O
C
O
C
Leg = - 1/4"
A
O
C
30
28
29

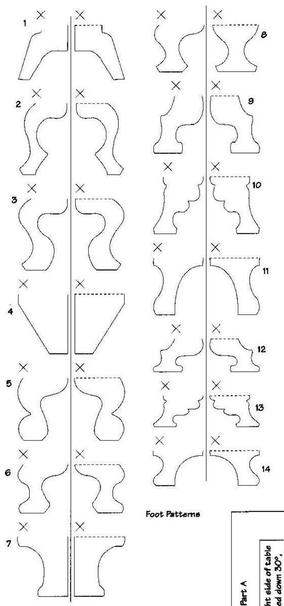
Full Size Pattern
First Tractor
from page 12

Dots indicate negative space (not necessarily guide hole locations)



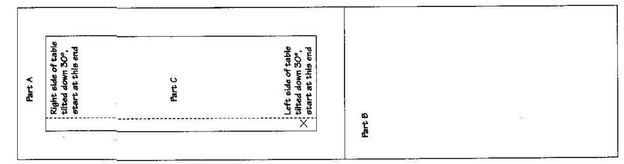
Full Size Pattern
Wolf Arrowhead Plaque
from page 14



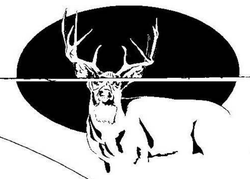


Foot Patterns

Full Size Patterns
Put Your Best Foot Forward
from page 26



Business Card Holder



Top band

Middle band

Lower band

Full Size Pattern
Oxen Intarsia
from page 56

Full Size Pattern
Scrolled Buck
from page 50

Woodworks

FULL SIZE PATTERN SECTION NO. 2 NOVEMBER 2004

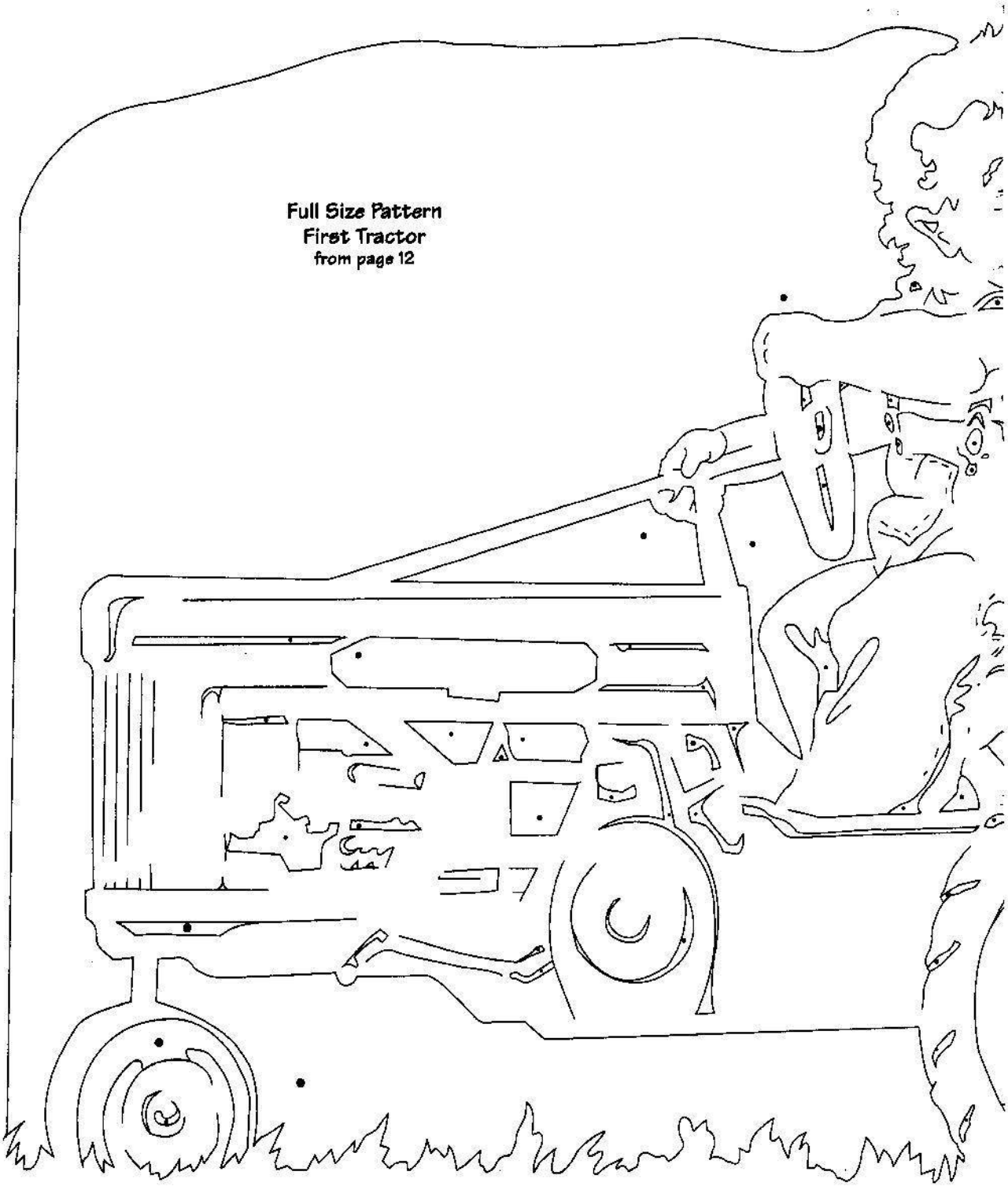
Metric Conversions:

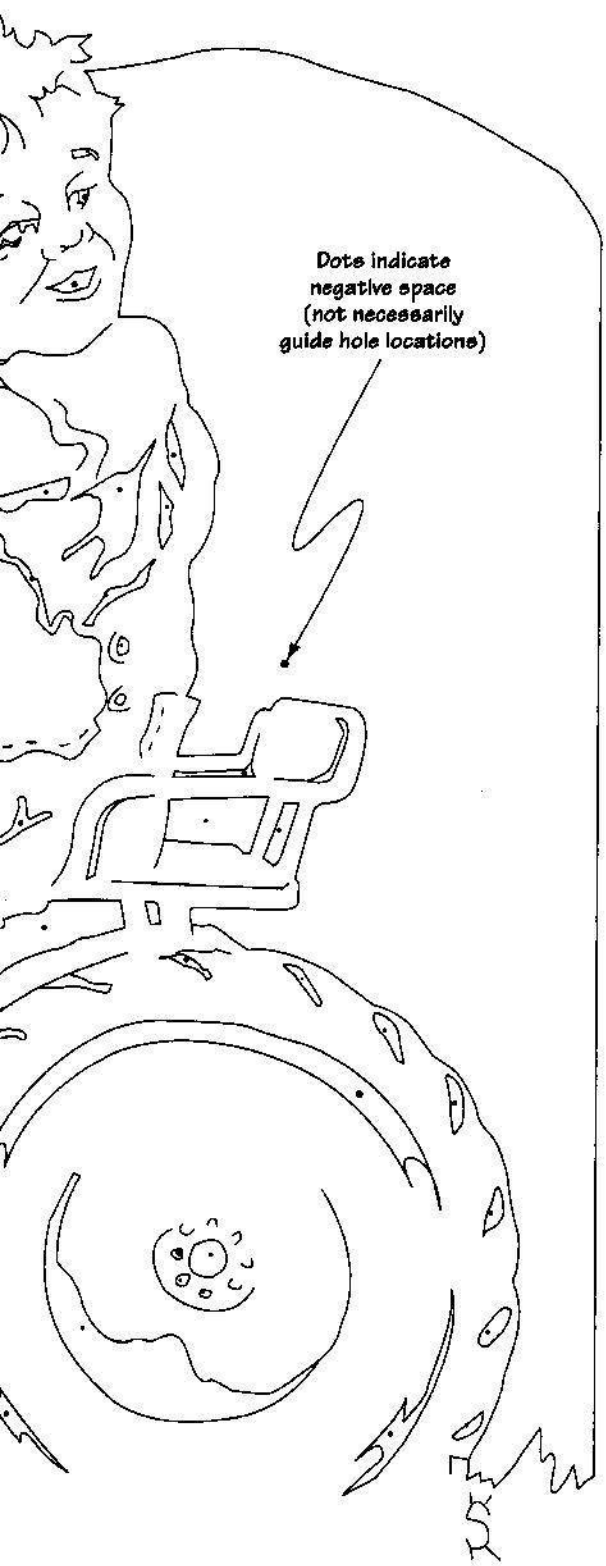
1 inch = 25.4mm = 2.54cm = 0.0254m

Common Measurements:

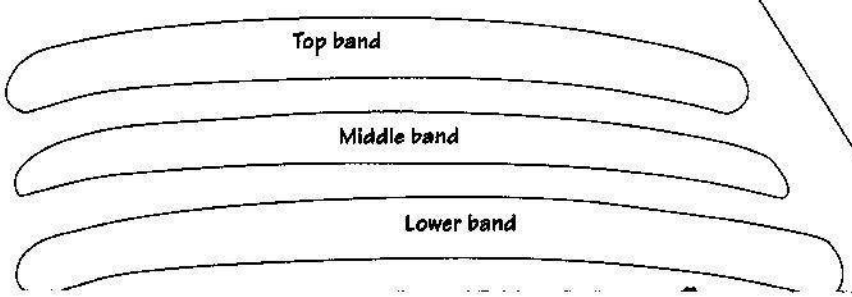
1/16" = 1.59mm	5" = 12.70cm
1/8" = 3.18mm	6" = 15.24cm
1/4" = 6.35mm	7" = 17.78cm
3/8" = 9.53mm	8" = 20.32cm
1/2" = 1.27cm	9" = 22.86cm
5/8" = 1.59cm	10" = 25.40cm
3/4" = 1.91cm	11" = 27.94cm
7/8" = 2.22cm	12" = 30.48cm
1" = 2.54cm	24" = 60.96cm
2" = 5.08cm	36" = 91.44cm
3" = 7.62cm	45" = 1.14m
4" = 10.16cm	60" = 1.52m

Full Size Pattern
First Tractor
from page 12

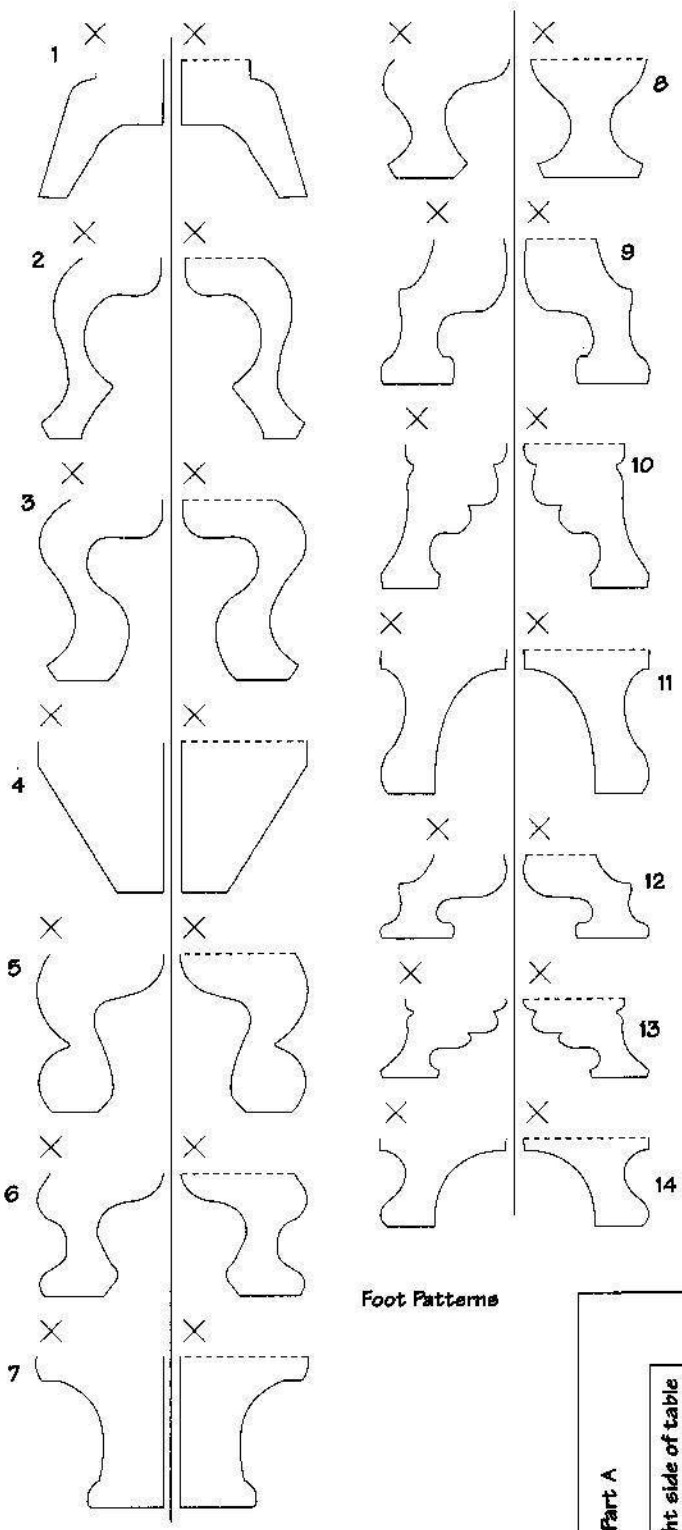




Full Size Pattern
Wolf Arrowhead Plaque
from page 14



3c



Foot Patterns

Part A

Right side of table tilted down 30°, start at this end

Full Size Patterns
Put Your Best Foot Forward
from page 26

4c

Woodworks

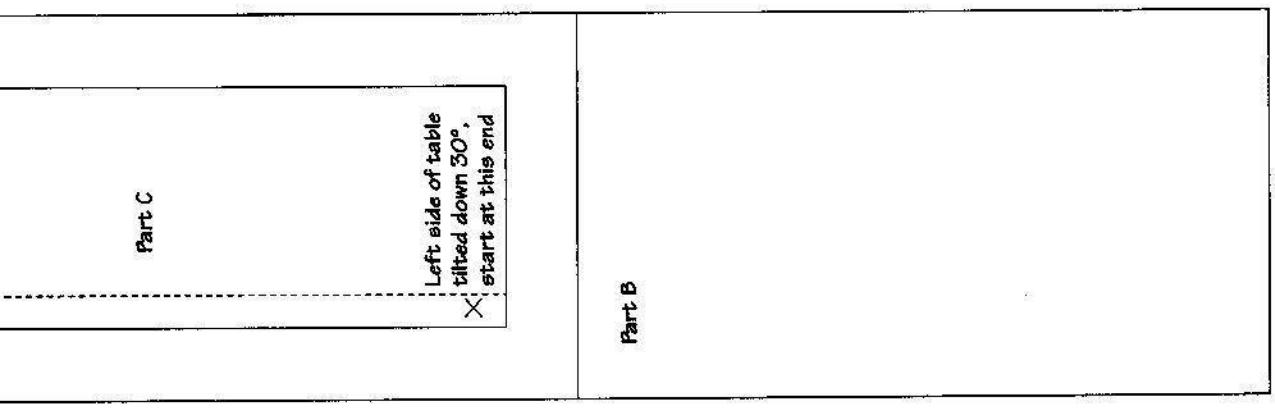
FULL SIZE PATTERN SECTION NO. 2 NOVEMBER 2004

Metric Conversions:

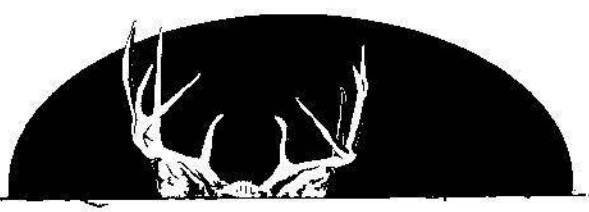
1 Inch = 25.4mm = 2.54cm = 0.0254m

Common Measurements:

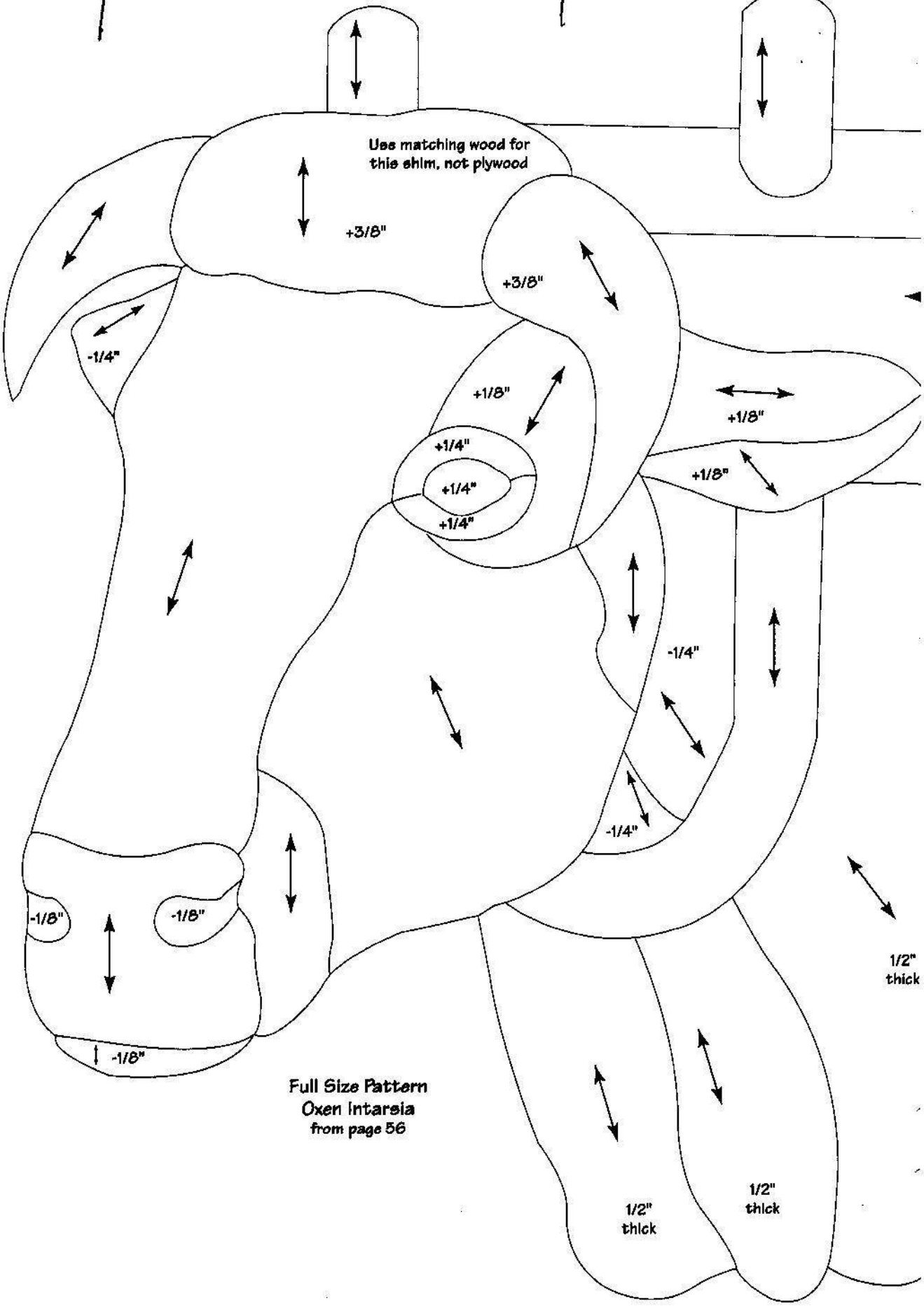
1/16" = 1.59mm	5" = 12.70cm
1/8" = 3.18mm	6" = 15.24cm
1/4" = 6.35mm	7" = 17.78cm
3/8" = 9.53mm	8" = 20.32cm
1/2" = 1.27cm	9" = 22.86cm
5/8" = 1.59cm	10" = 25.40cm
3/4" = 1.91cm	11" = 27.94cm
7/8" = 2.22cm	12" = 30.48cm
1" = 2.54cm	24" = 60.96cm
2" = 5.08cm	36" = 91.44cm
3" = 7.62cm	45" = 1.14m
4" = 10.16cm	60" = 1.52m



Business Card Holder

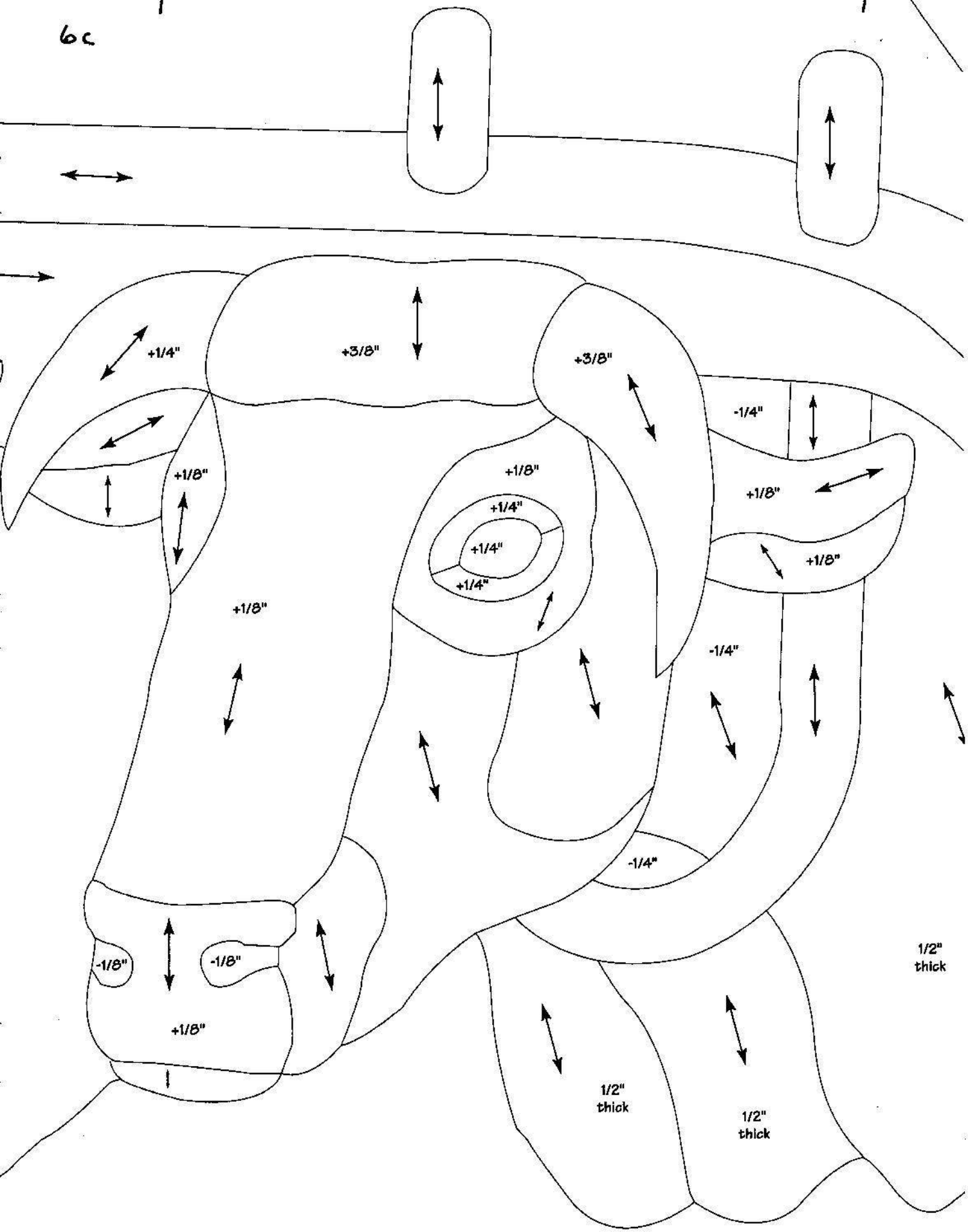


5c



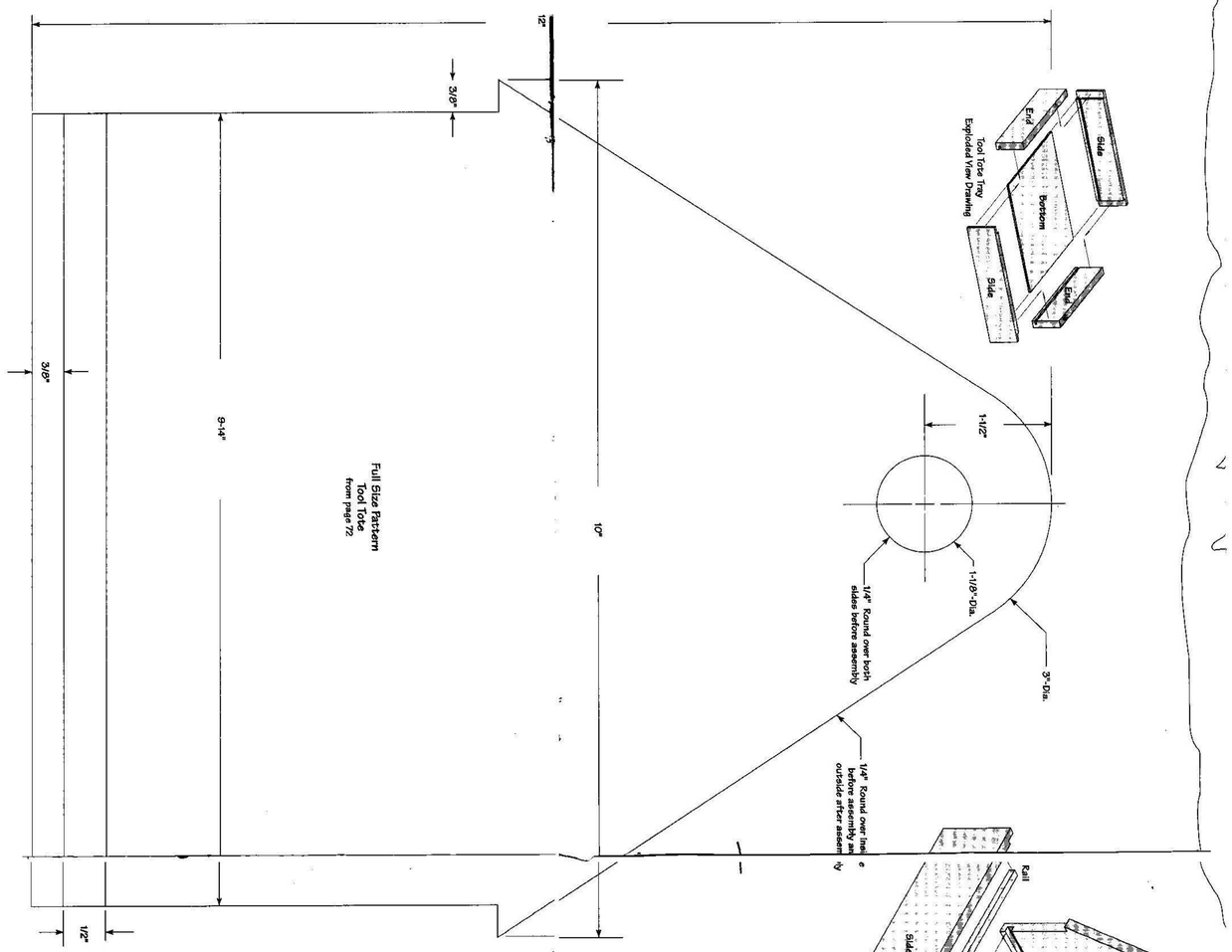
Full Size Pattern
Oxen Intarsia
from page 56

6c


+1/4"
+3/8"
+3/8"
-1/4"
+1/8"
+1/8"
+1/4"
+1/4"
+1/4"
+1/8"
+1/8"
+1/8"
-1/4"
-1/4"
-1/8"
-1/8"
+1/8"
1/2"
thick
1/2"
thick
1/2"
thick

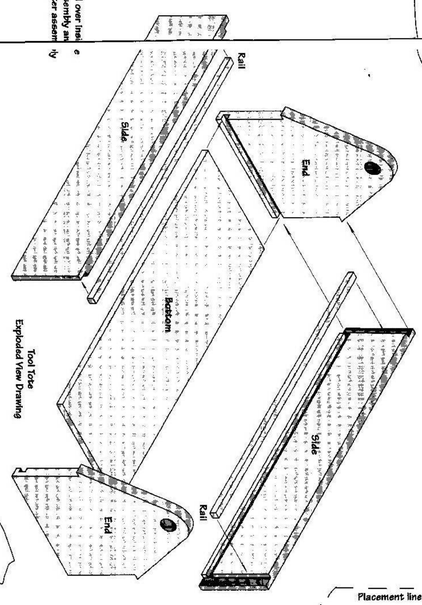

7c

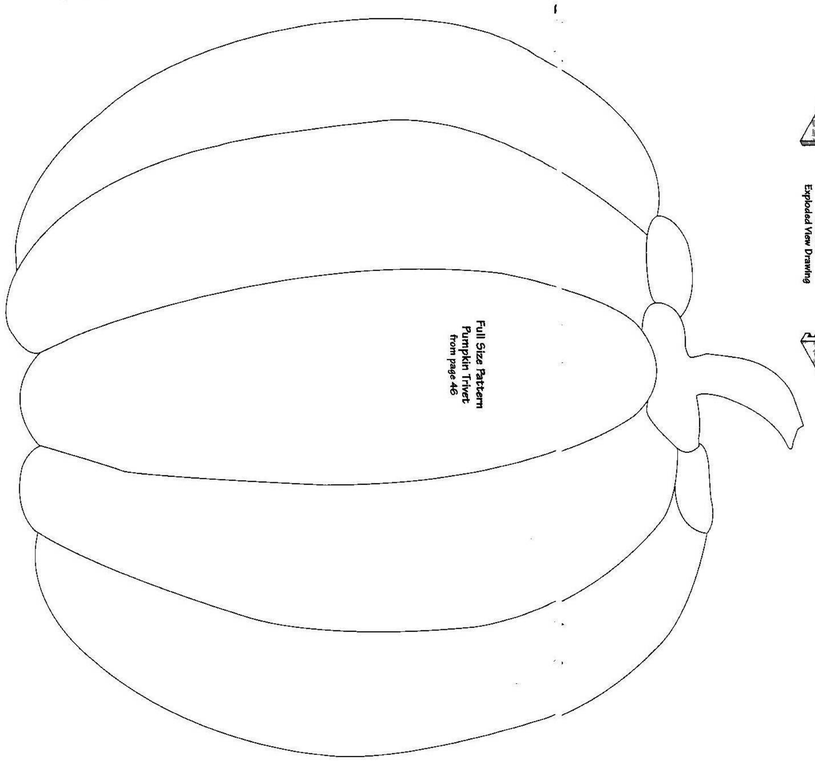
Full Size Pattern
Scrolled Buck
from page 50


12"
3/8"
3/8"
9-1/4"
10"
1/2"
Full Size Pattern
Tool Tote
from page 72

End
Side
Bottom
Side
End
Tool Tote Tray
Exploded View Drawing

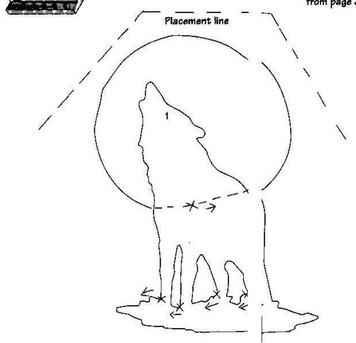
1-1/2"
1-1/8"-Dia.
3"-Dia.
1/4" Round over both
sides before assembly
1/4" Round over inside
before assembly and
outside after assembly


Rail
Side
End
Bottom
Tool Tote
Exploded View Drawing
End
Side
Rail

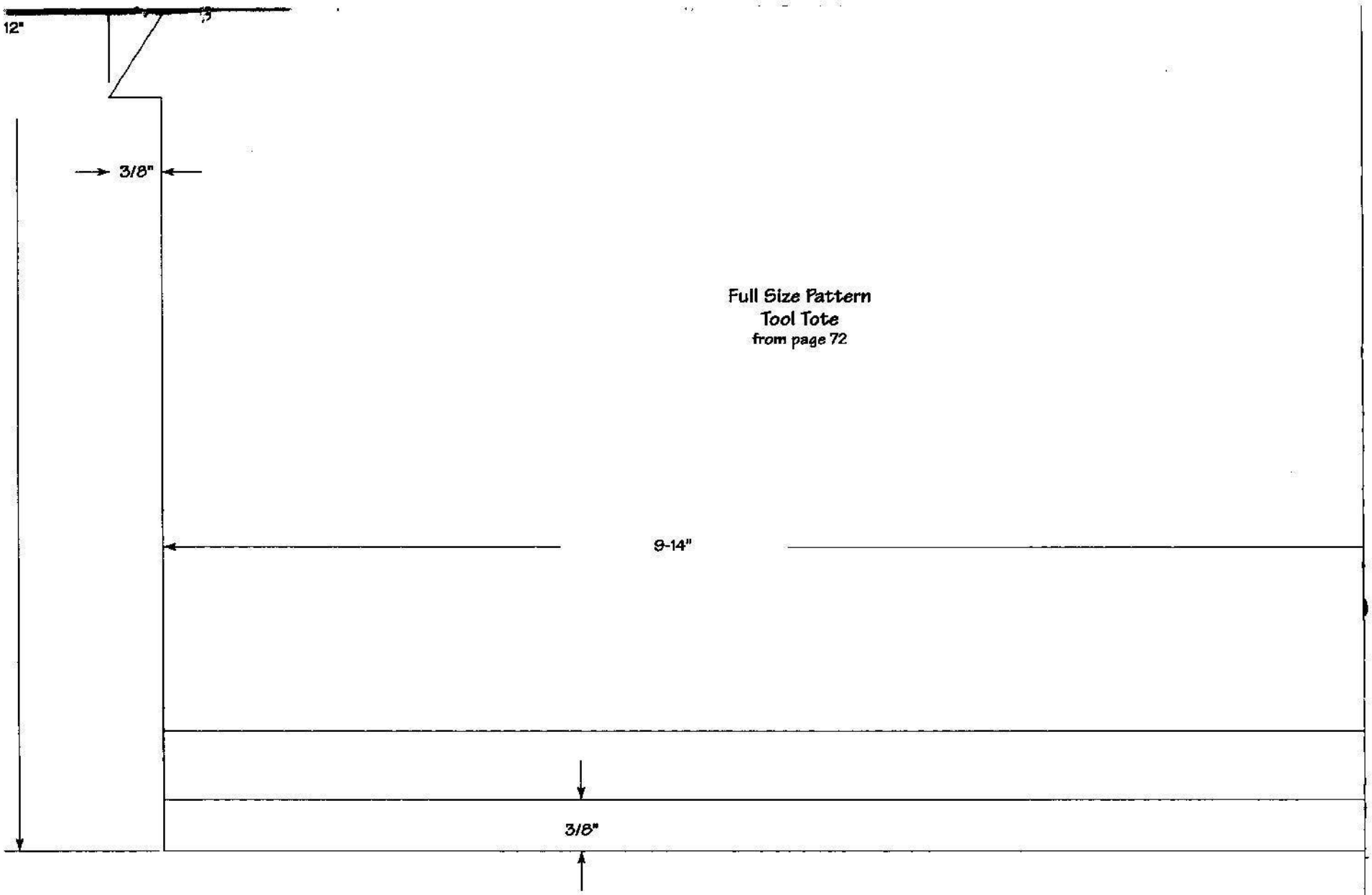

Full Size Pattern
Pumpkin Trivet
from page 46


Full Size Pattern
Bobcat
from page 24
LARRIN DALVINI 2004

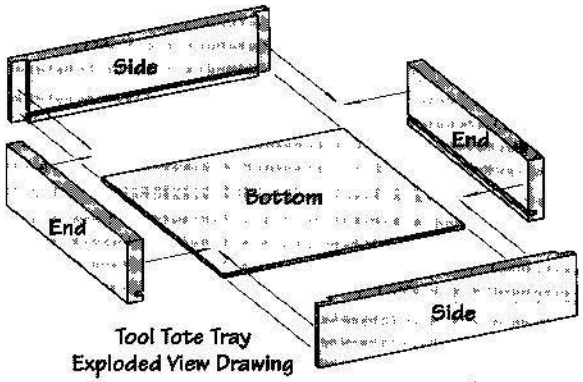

Full Size Pattern
Zoo Elephant
from page 6


Placement line

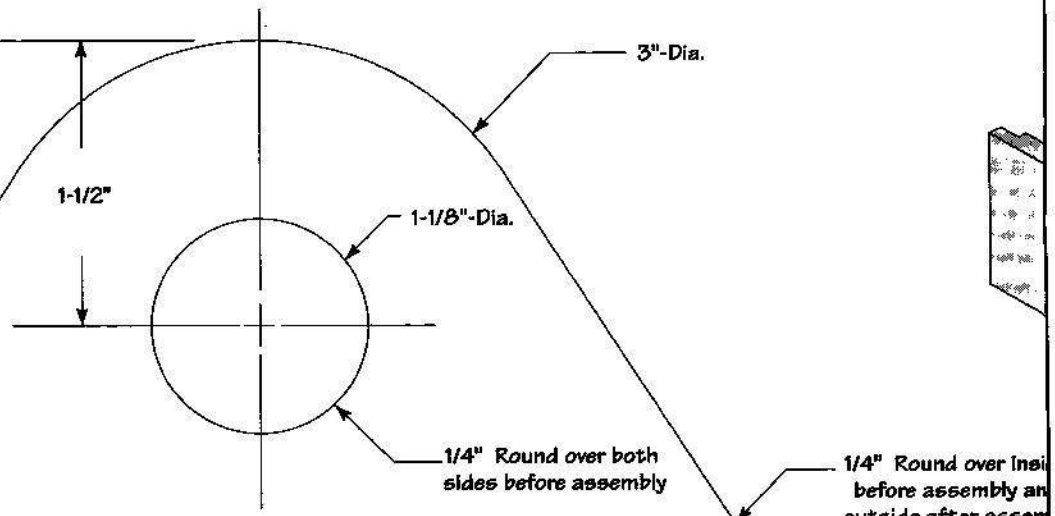

Full Size Patterns
Wolf with Inlay
from page 38
Placement line
ARMIN



Full Size Pattern
Tool Tote
from page 72

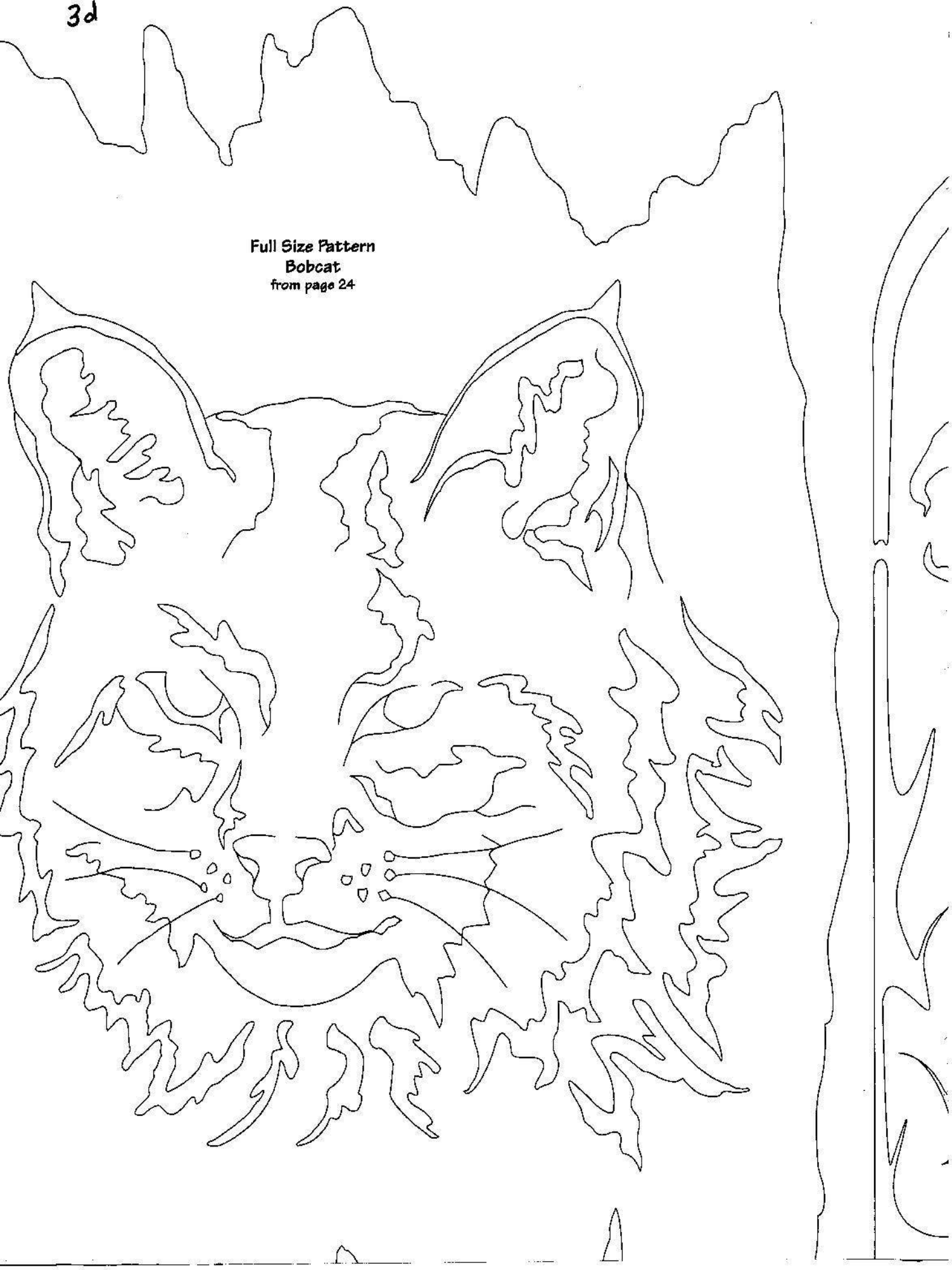


Tool Tote Tray
Exploded View Drawing

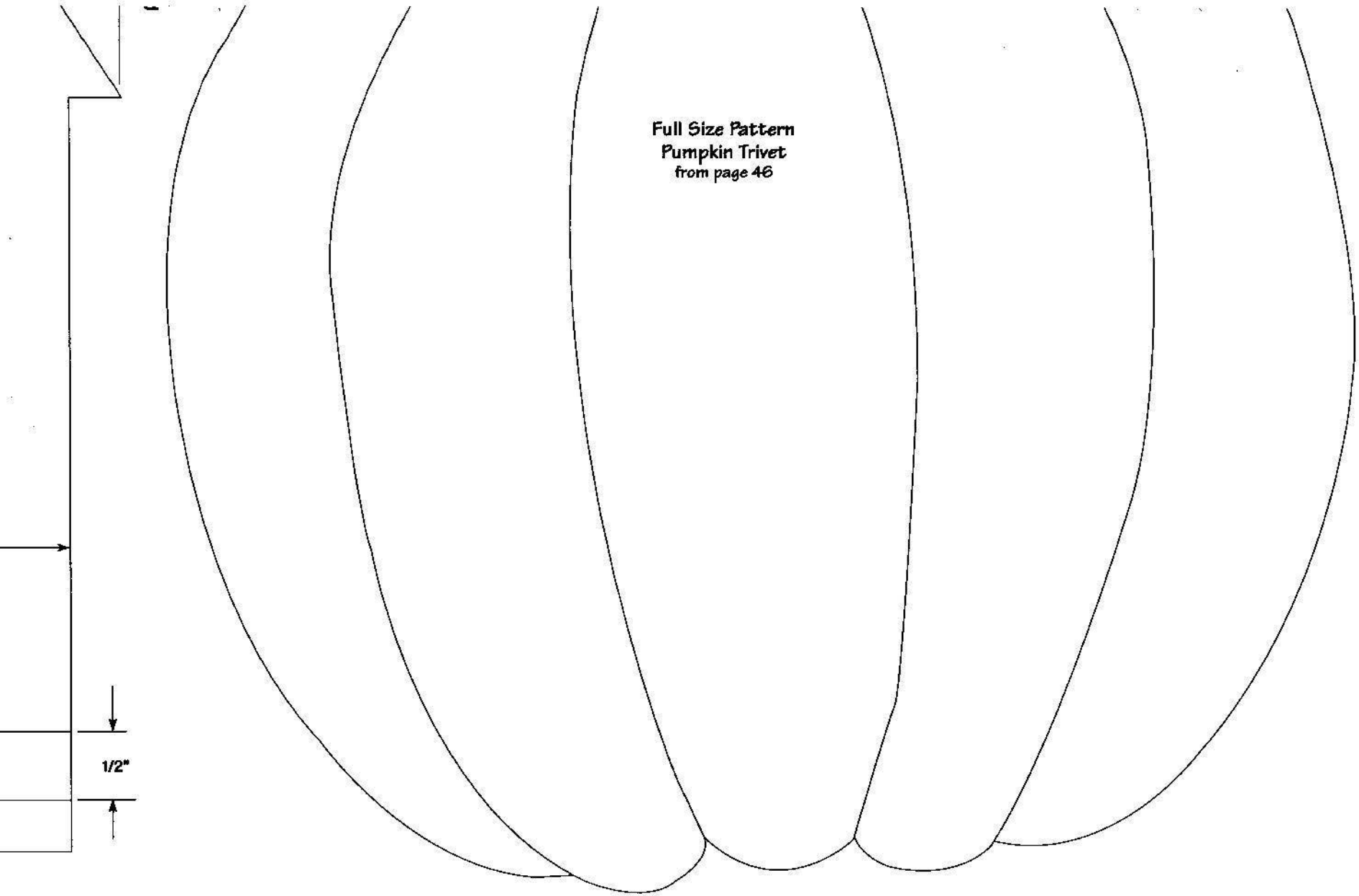


3d

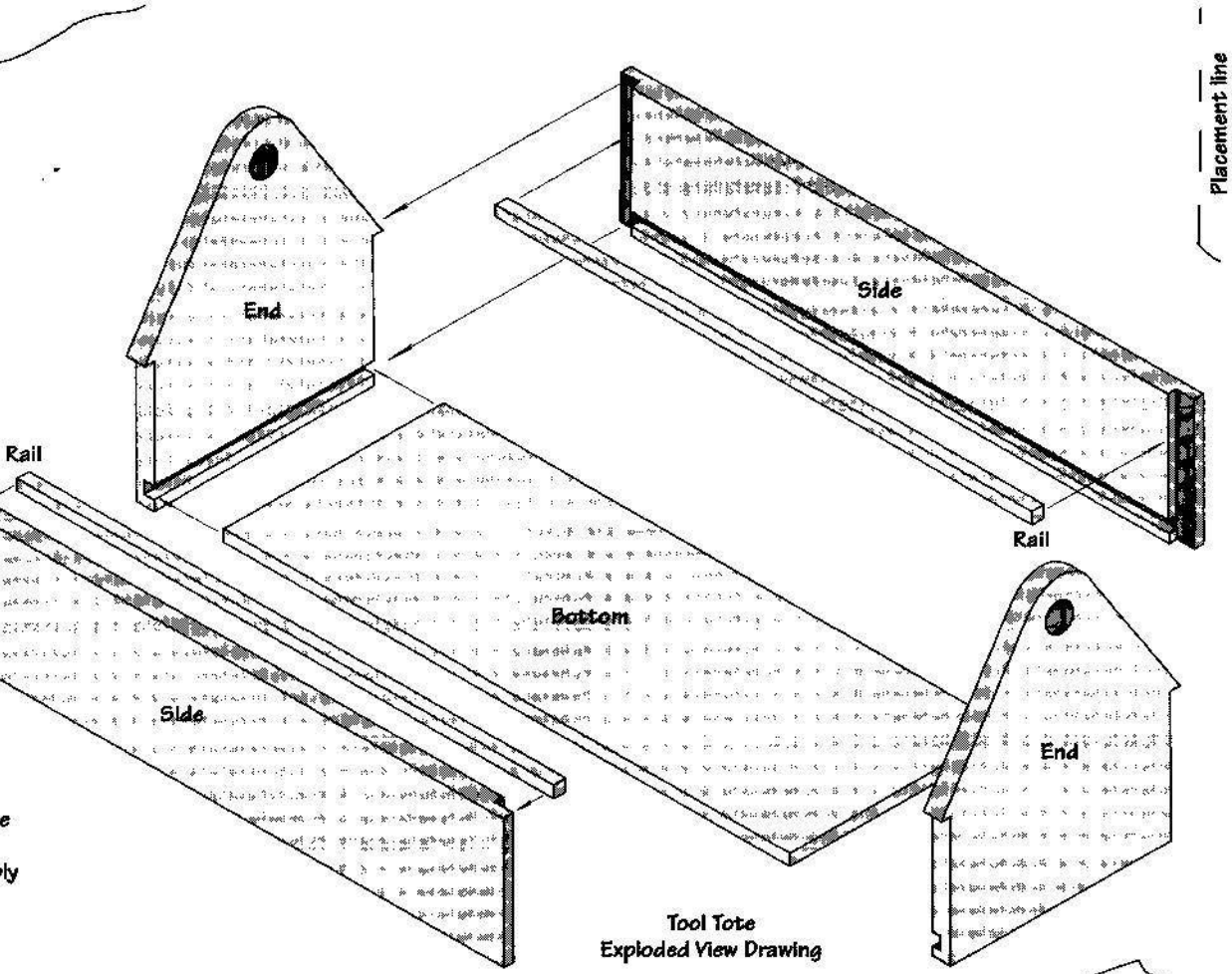
Full Size Pattern
Bobcat
from page 24



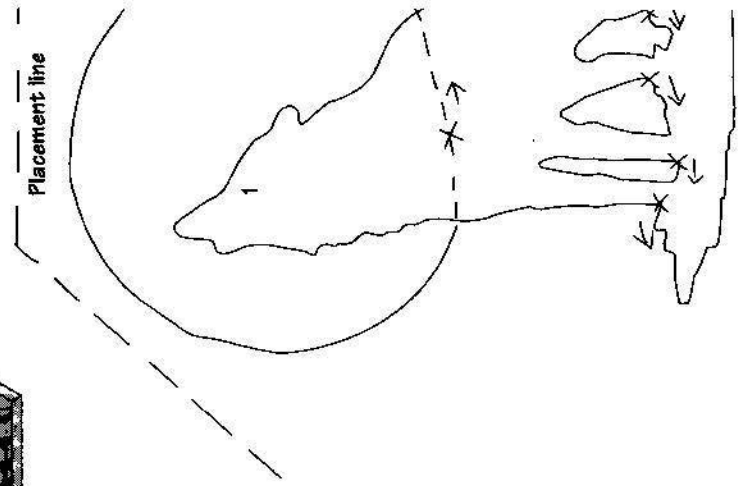
Full Size Pattern
Zoo Elephant
from page 6

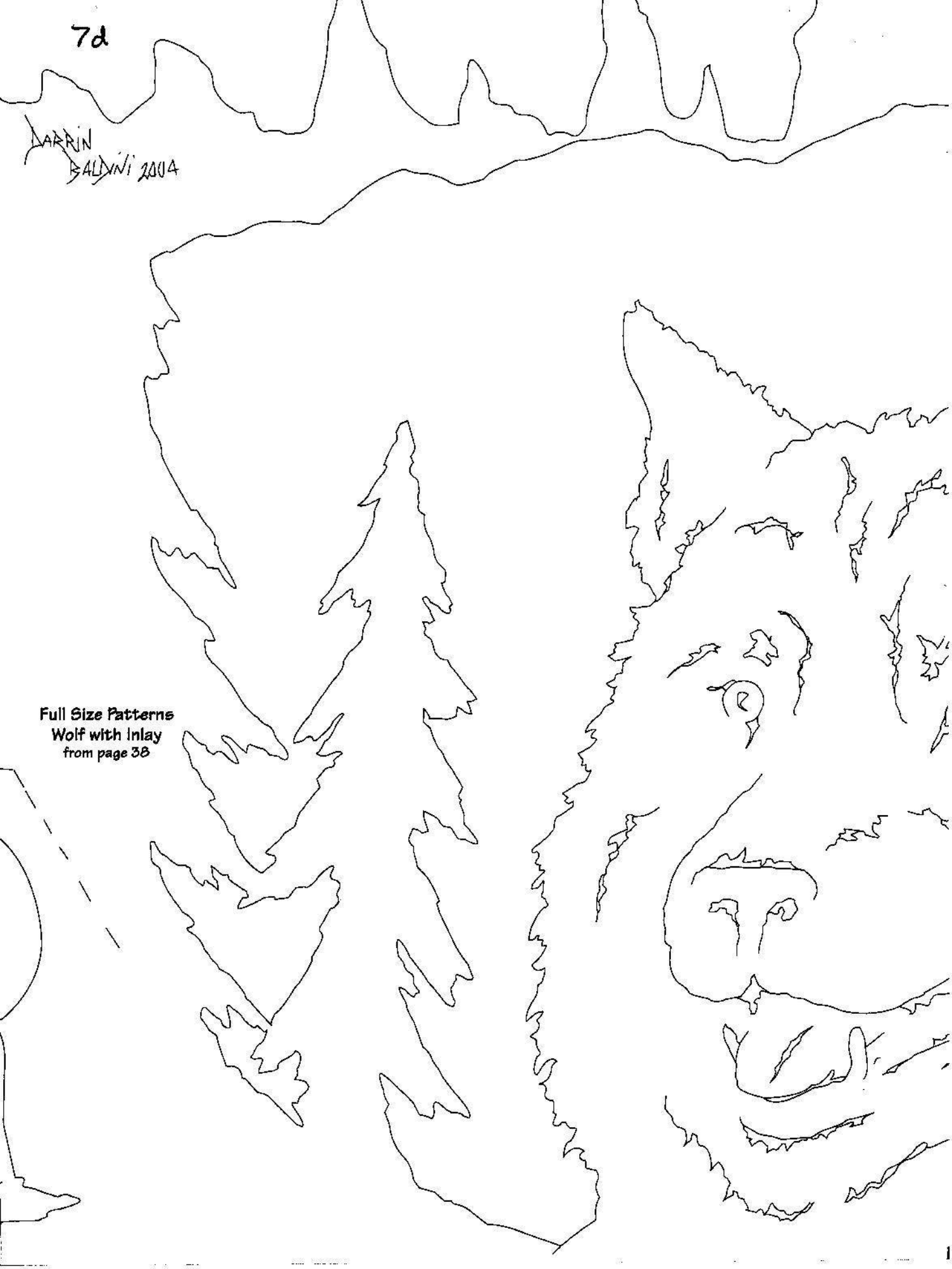


Full Size Pattern
Pumpkin Trivet
from page 46



Tool Tote
Exploded View Drawing





Full Size Patterns
Wolf with Inlay
from page 38

8d