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WOODWORKER'S JOURNAL

Number 3
Volume 23
June 1999

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woodworker

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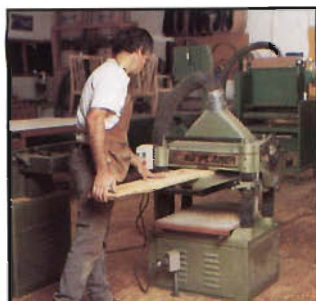


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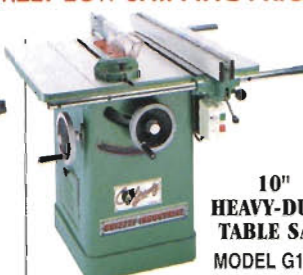
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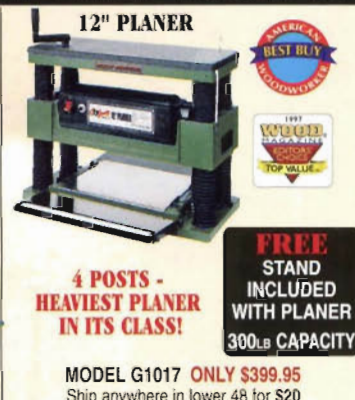
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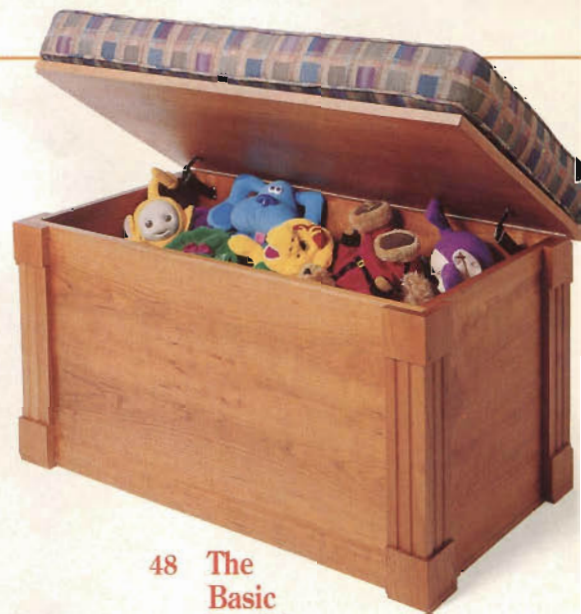
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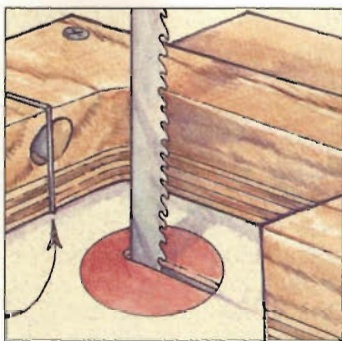
New companies, new gadgets and a free tune-up for some cordless tools.

74 End Grain

Readers — and their projects — are all winners.



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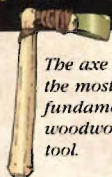
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Safety First

Learning how to properly operate power and hand tools is essential for developing safe woodworking practices. For purposes of clarity, necessary safety guards have been removed from the equipment shown in some of the photos and illustrations in *Woodworker's Journal*. We in no way recommend using this equipment without safety guards and urge readers to strictly follow manufacturers' instructions and safety precautions.



The axe is the most fundamental woodworking tool.

Herodotus talks about ebony from Ethiopia as a prized tribute.



Chinese use S-shaped cabriole legs.

German carver Tilman Riemenschneider is born.

Woodworker of the 20th Century

Woodworker of the 20th Century: who would that be?

As the 1900s draw to a close, it seems an appropriate time to ask. We have our own candidates, but a contest to help us decide seemed like a great idea. To keep things interesting, we asked Ridgid® Power Tools to offer a prize to the winner. They volunteered a whole shop!

Of course we couldn't just let a millennium slip by thinking only about the last century. Over the next three issues, we'll also feature the woodworkers of the 17th, 18th and 19th centuries (see page 8). In the meantime, send us your choice for the "Woodworker of the 20th Century." This October, we'll take note of your nominations and pick the winner, who will be featured in our December issue. And yes, your **Uncle Joe** is a legitimate candidate. You won't hurt your chance to win the tools if he isn't selected — your participation is all it takes to get involved. We've even supplied a card to make it easy (it's between pages 66 and 67)!



In case you haven't noticed, we enjoy giving tools away. As a matter of fact, we just heard from **George Tritthardt**, the winner of our Delta subscriber sweepstakes. He walked away with a Delta Unisaw and a free trip to the New Yankee Workshop. George wrote:

"I don't know how many times I've opened the pages of Woodworker's Journal to show my friends and relatives the pictures of my wife and me rubbing elbows with Norm himself. It was the thrill of a lifetime ... my Unisaw is getting a lot of use and the quality of my workmanship has increased. I don't know how I'd get along without it now."



Daniel Marot, whose table has stood the test of time, is our pick as the Woodworker of the 17th Century. Any arguments? You know where to reach us.

A number of our advertisers like the idea of tool giveaways, too. It's one more reason to participate in Stumpers (win a set of Quick Grip clamps from American Tool), Tricks of the Trade (win a tool from Makita), or End Grain (win a tool from Bosch). Recently Ryobi has joined in the fun by offering up some fine tools in our new renewal sweepstakes — keep an eye on your mail for a chance to win!



While you're watching your mailbox, we have some great projects to keep you busy. Get started now on **John English's** picnic table (see page 26), and you'll be done just in time for your first barbeque. John has some solid tips for laminating curves and routing circles. We don't feature a lot of turning projects, but **Ron Hampton's** attractive jewelry box (see page 43) struck all of us as the perfect project for the complete beginner. Contributing editor **Mike McGlynn** usually weighs in with some pretty complex projects. This time he pleasantly surprised us with a basic toy box (see page 48).

Larry N. Stoiaken

MAY/JUNE 1999

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Europeans discover mahogany through a carpenter traveling with Sir Walter Raleigh.



Chairs become popular throughout the century; earlier, they were reserved for nobility.



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Earliest documented piece of American-made furniture: riven wood chest by Thomas Mulliner

Daniel Marot: Woodworker of the 17th Century

By Joanna Werch

This article launches our series on "Woodworkers of the Millennium." Over the next few issues we'll introduce you to history's top woodworkers, concluding with the Woodworker of the 20th Century.

Back in the 1600s, Daniel Marot was the Frank Lloyd Wright of the day. His designs for furniture — and just about everything else in a house — influenced woodworkers from Holland to England to the American colonies.

Born in France around 1666, Marot designed clocks for André Charles Boulle, the cabinetmaker for Louis XIV who gained his own fame for inventing a breakthrough veneering technique. Marot himself did apprentice work on furnishings for Louis' famous palace at Versailles.



When Louis revoked the Edict of Nantes in 1685, Protestants could no longer worship freely in France, so Marot moved to Holland. He hooked up with more royalty there: the future King William III and Queen Mary II of England.

Marot's experience with Louis' courtly style helped his business while he worked for William and

Mary in both Holland and England. As he filled their palaces, his own interpretation of the baroque style continued to gain recognition.

He expressed this vision in tall-back chairs with turned legs and elaborately carved back panels. He featured shells and acanthus leaves in his designs, and sometimes carved and pierced the chairs' front stretchers, too. Some of Marot's chairs also had cabriole legs, which were just beginning the rise to the popularity they would enjoy under Queen Anne. He generally used walnut, the classy wood of the time.

Marot also gets credit for setting the 1690s trend of great state beds. They were a status symbol for their owners, and Marot made them as elaborate as possible. He frequently included flying or "angel" testers (a portion of the canopy frame which rose above the bed) carved into decorative shapes.

Textile coverings made the beds' finishes unimportant, but his cabinets, tables and mirror frames featured a wide array of veneers. Oak was popular for the carcasses, but the veneer might be anything — walnut, yew, mulberry, chestnut, olive, holly, beech, or even ivory, sometimes stained green.

One Marot set (a side table, candlestand and mirror) has been described as "figured and festooned" with "green covers." The mirror was gilded, and the table had a white marble top. That group was designed for a Dutch palace, but it was in England that Marot became known for the new concept of matching furniture, textiles, and other elements to make each room a unified, decorative space.

His influence on woodworking soon spread to England's American colonies. In the 1690s, wealthy American families imported



This carved and gilded limewood table was completed in 1692 for England's Queen Mary II. The inscription on the stretcher is probably in Daniel Marot's own hand.

photo courtesy of Sotheby's; engravings courtesy of the Rijksmuseum

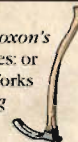
1648

Grinling Gibbons, English carver, born



Joseph Moxon's book *Mechanic Exercises: or the Doctrine of Handy-Works* published, identifying tools in use.

1677



1682

Four immigrants to Philadelphia identify themselves on ship's passenger list as cabinet-makers ... the first in America.



c. 1680s

Caning, a Chinese technique, gains popularity in Europe and America.

c. 1690s



Red oak first planted in England

1700

To be continued ...

English furniture — and local woodworkers copied the new ideas. Marot's influence shows up in high chests with multi-arched skirts and legs turned to resemble ancient Roman balusters.

Not one to limit himself, Marot also designed outdoor furniture: he introduced wooden garden benches with high, carved backs, often featuring elaborate carvings based on Greek and Roman mythology. His commitment to unity showed up in this arena as well, since he often laid out the gardens where his benches rested.

Although he's closely associated with William and Mary, Marot never chose to make England his



Marot's elaborate style extended to outdoor furniture, like this bench depicting the goddess Diana.

permanent home. He did work for the king's English properties until William's death in 1702, but Marot himself lived in Holland during the 1700s. He died in 1752.

Over the course of his life, Marot published several collections of engravings. One title demonstrates his range: *Works of Mr. D. Marot, Architect of William III, King of*

Great Britain, containing several thoughts useful to Architects, Painters, Sculptors, Silversmiths, Gardeners and others.

Marot's designs covered silver dishes, Delft pottery, corner chimneys, staircases and textiles. His furniture work incorporated turning, carving and veneering techniques, cabriole legs and a variety of woods. He created a recognizable style that 17th century royalty and modern art historians both appreciate. His influence stretched across the boundaries of geography and subject matter. For all these reasons, Daniel Marot was the woodworker of the 17th century.



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Official Rules No purchase necessary. One entry per household. Entries must be received by 10/1/99. Winner will be selected in a random drawing and will be notified within 10 days from deadline. All decisions are final. All prizes will be awarded. No duplicate prizes and no substitutions other than as necessary due to availability. Taxes are responsibility of winner. Odds of winning dependent on total entries received. Contest open to legal residents of the U.S. only. All federal, state and local laws and regulations apply. Void where prohibited by law. Employees (and their families) of Rockler Companies Inc. and Emerson Electric Corporation and their affiliates are not eligible. For winner's name, write: **WOODWORKER'S JOURNAL**. 20th Century Woodworker Winner. 4365 Willow Drive, Medina, MN 55340.



WOODWORKER'S JOURNAL

RIDGID

If a Tree Falls ... It's Furniture

By Joanna Werch

Sticks and stones and whatever one owns — that's what rustic furniture is made of. It's accessible, says Dan Mack, who has worked in the medium for 20 years and published a third book on the subject this spring. "It can be done wherever."

He's even found material in New York City. When parks or highway departments stack up trimmings, "If you're a rustic woodworker, it's like someone's left you a present," Dan said.

He started working in rustic furniture after stints as a teacher and a journalist. Part of the appeal was the risk. Every time he started a project, "It was not clear whether



Dan Mack uses driftwood and other found wood in his furniture. Here, he's created a coffee table with a beaver-chewed base.

it was going to be beautiful or ugly at the end," he said. In traditional woodworking, early drawings strongly resemble the finished project. In rustic woodworking, you can start with general dimensions, but the final form largely depends on the material.

Traditional and rustic woodworking merge in this reconstructed side chair.



That interaction is a big part of Dan's favorite projects: tree chairs. "As an artist, you want to display your ability as a woodworker. At the same time, you don't want to take away from the tree," he said. "There's a great moment between being a chair and being a tree."

Despite such moments, Dan has made most of the furniture he wants to make. Now, he shares the secrets of rustic woodworking through books and classes.

Most of Dan's work, like this wishbone chair, is made with maple. It's common in his area, bends differently than other woods, and finishes nicely.



"I'm much more interested in what the eyes do and what the heart does than in what the backside does."

Dan Mack



In part, he's reacting to his own experience as a furniture maker in his early 30s, with no woodworking background. "All the people my age who were doing woodworking when I started out wouldn't tell me a thing.

In the hands of a rustic furniture maker, an old toolbox mounted on legs from beaver-chewed trees becomes a cabinet.

"I said, 'If I ever learn how to do this stuff, I'm going to tell everything.'" To find out more, call Dan at Rustic Furnishings at 914-986-7293.

Images reprinted from *Simple Rustic Furniture*, *Making Rustic Furniture* and *The Rustic Furniture Companion*; Lark Books, 50 College St., Asheville, North Carolina 28801. For further information, call 800-284-3388.

June 1999 Woodworker's Journal

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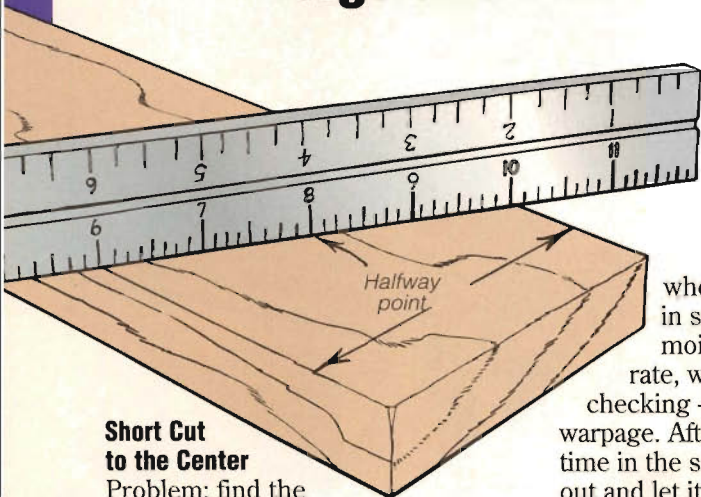


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Jigs and Fixtures Help You Shine in the Shop



Short Cut to the Center

Problem: find the center of a 5 $\frac{1}{16}$ " board.

Solution: Place a square at an angle on your board, with the inch marks on the edge of the board. Rotate it until two numbers easily divided in half are on the edges.

Walter Keller
Fritch, Texas

Successful Green Wood Experiment

I recently milled a 2x6 piece of stock from a green branch. Too busy to paint the ends, I put it in a box of planer shavings and forgot about it for several days. I took it out and, lo and behold, there was not one check in the end. It seems

when you put green wood in sawdust it draws the moisture out at a faster rate, with minimum or no checking — also very little warpage. After a certain amount of time in the saw dust you can take it out and let it continue drying. I tried all different kinds of wood: some dried faster than others. Stick wood worked best with the bark off. One problem — the moisture that comes out collects around the wood, and if it is left too long it will cause mildew. To remedy this, one has to check it every few days, just stirring up the shavings. I found my experiments exciting. Wood turners will love the results, and so will furniture makers who use stick wood.

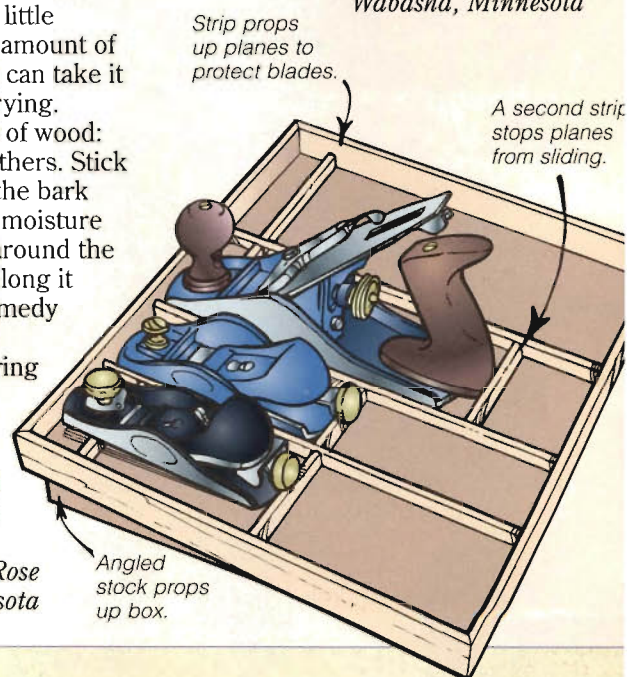
Jeff Rose
Monticello, Minnesota

Rotate ruler until two numbers easily divided in half are on the edges.

Storing Hand Planes

I wanted my hand planes to be within easy reach, but I also wanted to protect their cutting edges. So, I built a modified shelf to keep the planes on the benchtop. Small strips of wood raise the front of the planes and keep their sharp edges from resting on the shelf.

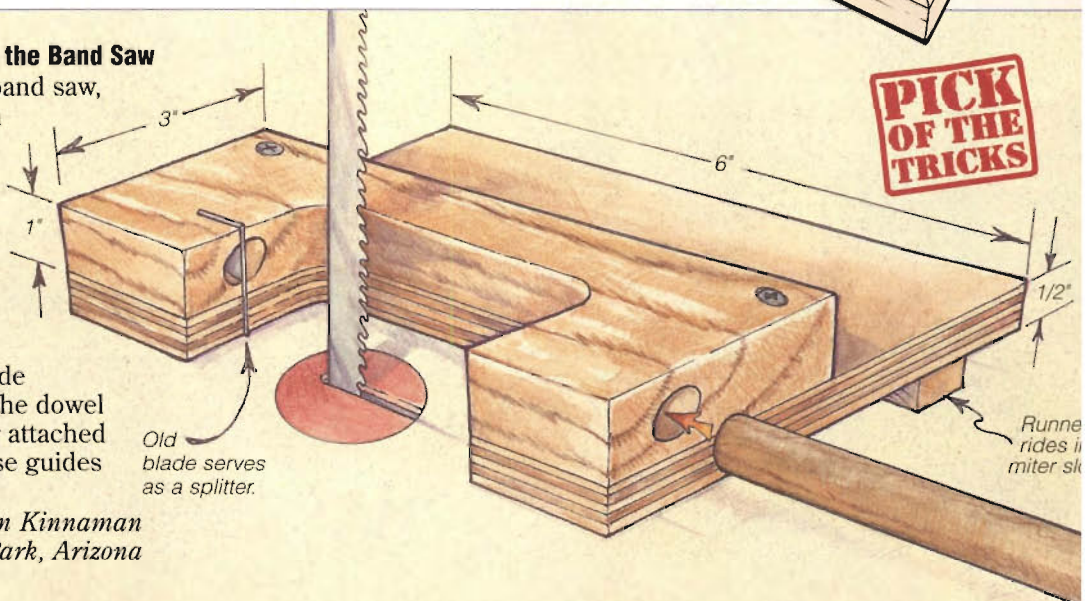
Kevin Hemmingsen
Wabasha, Minnesota



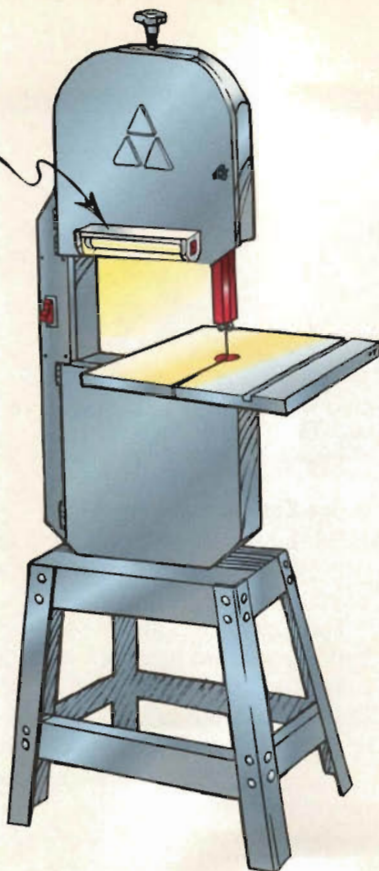
No Twist Dowel Splits on the Band Saw

To split dowels on my band saw, I use guide blocks, with holes drilled for each size dowel, screwed to a base. Make a 2" x 2" cutout in the jig, then draw a line through the dowel guide hole and make a band saw cut the width of a saw blade. Epoxy an old blade into the cut to prevent the dowel from twisting. A runner attached to the bottom of the base guides your cut.

Don Kinnaman
Munds Park, Arizona



Are you still cutting in a shadow? Try mating strips of Velcro on your saw and a small portable fluorescent light.



Let There Be Light on All Your Cuts

I recently found myself wishing I had an extra hand with which to hold a flashlight. Although I have fluorescent lights in my garage, my body blocks the light at times. I was using my band saw one day and found I was standing in my own light, but couldn't move the saw and couldn't see the pencil line. "If only this little saw had a work light like the big saws do," I thought. Well, now it does.

I remembered a little 6" fluorescent light my mom had given me for Christmas, the kind that runs off 4 AA batteries.

So I grabbed it, stuck one piece of Velcro® to it and one to the saw's upper blade cover, and *voila!* Instant light.

I've since found a half dozen other applications where a little extra light is needed (like the roof of the family tent, the inside of a large tool cabinet, etc.). My mom ordered this 6 1/2" light from a catalog; they also had a 12 1/2" light, and both cost \$10 or less. The Velcro® strips cost about \$2 at home improvement stores.

Lawrence Heinonen
Burlington, Michigan

Tricks continues on page 14 ...

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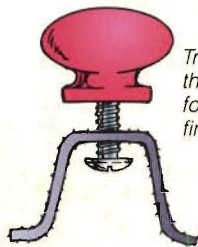
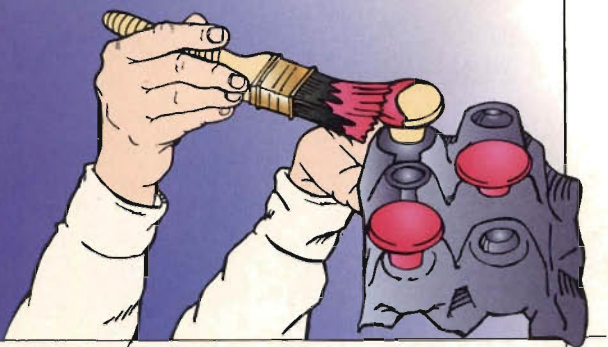
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To paint the knobs, temporarily put the mounting screw through the previously made knife hole.

Hold the screw with one hand and paint the knob with the brush held in your other hand.

The egg carton keeps paint off your hands and the work area, and makes a great support for the knobs while the paint is drying.

*Margie Kelland
St. John's, Newfoundland*



Winner! Don Kinnaman will receive a Makita 14.4 V cordless drill for submitting this month's Pick of the Tricks. **Woodworker's Journal** will pay from \$50 to \$150 for all Tricks of the Trade published. In addition, the reader whose trick is selected as our "Pick of the Tricks" will receive a free tool. To join in the fun, submit your original, unpublished trick to the editor. Include any photos or drawings needed to explain your idea. Send all tricks to Woodworker's Journal, Dept. T/T, P.O. Box 261, Medina, Minnesota 55340. Or send us an e-mail at: editor@woodworkersjournal.com.

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Form Follows Furniture

By Joanna Werch

A New Leaf:

Tables Turn on Design Concepts



One school of thought says furniture makers and turners don't have anything to offer each other. "We had people who looked at the brochure, saw the word 'furniture' and threw it in the trash,"

Stoney Lamar said of the *Evolution in Form:*

Furniture, Turnings & Sculpture exhibit.

Demonstrating the connections between the different forms was a big part of the show at Arrowmont School of Arts & Crafts. Lamar, who does sculptural work, and 31 other woodworkers submitted pieces that crossed category boundaries.

For example, Craig Nutt uses turning and carving as techniques, but doesn't think of himself as either a turner or a carver.

"I define myself more in terms of the work I do than in how I do it," he said. "I might use the lathe every day for a year, or I might go for a year without turning it on."

In pieces like "Onion Blossom Table," Craig Nutt says his furniture and sculpture work influence each other. He and exhibitors like William P. Smith, who turned "Red Hopi #3" (above), prefer to identify themselves by their works, not their techniques.



Looking at pieces from different disciplines can help woodworkers improve their own projects, Lamar said. "If you just look at wood turning, your set of solutions is going to be very limiting. If you just look at Stickley furniture, you're going to have a limited perspective."

In spite of the division between furniture makers and turners, "There is a thread that kind of ties the two disciplines together," Lamar said. Both groups love wood and the process of working with it.



Clifton Monteith exhibited his wrap-around-back armless knitting chair of nailed green bentwood at Arrowmont's provocative show.

For woodworkers who want to take their pieces to the next level of design, the first step is getting to know the materials and the techniques, Nutt said. After that, he added, the secret is to "find your own voice" and express it in your work. He admits, however, "It is kind of a tall order to find that voice. I wish I could just say, 'Read this book.'"

Lamar, on the other hand, doesn't think most woodworkers want to design. "They're not interested in art; they're interested in making a bowl," he said. For those who do have an interest in design, Arrowmont has classes on the subject. School info is available at 423-436-5860 or www.arrowmont.org.

Useless Tool Sets Record

Rare Plane Demands \$27,000 in Auction

The plane on the cover of the new Lee Valley Tools catalog is famous not because it's beautiful, but because it's extremely rare — and it's nearly useless.

Few examples of the plane have survived since M.B. Tiedey invented it in 1854, mostly because very few people ever wanted one.

Shop Talk continues on page 18 ...



Painted wood, plaster and eggshell are the components of David Rogers' "Resting Place II."



Travis Townsend carved and painted basswood for the piece "Duck."

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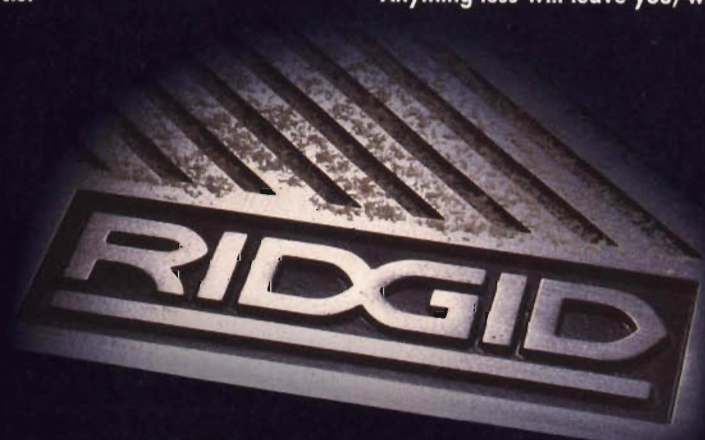


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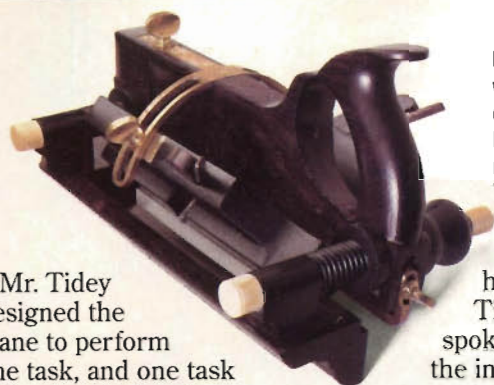


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M.B. Tidey's plane: worthless to nineteenth century woodworkers, it became quite valuable for modern collectors.

Mr. Tidey designed the plane to perform one task, and one task only: chamfering door rails and stiles. Not many nineteenth century woodworkers wanted to spend money for a plane with such a specific use. As a matter of fact, woodworkers in the 20th century ignored the tool as well — at least until 1997. That's when a tool collector made the final bid on Tidey's plane during an auction, and ended up writing out a check for \$27,000, a record for this type of tool.

Lee Valley Tools took notice and found a cover model in the ebony, ivory and brass plane that may

have actually belonged to Tidey himself. Lee Valley spokesperson Wally Wilson says the inventor "was kind of an odd duck." He designed a few more woodworking tools, including a saw gauge, and spent a lot of time trying to convince companies to manufacture them. His arguments included statements like "I'm an honest and honourable man and a Fremonter," a reference to the Republican candidate he supported in the 1856 presidential election.

Making Waves

Woodworkers Strut Their Stuff

An amazing array of talent was on display recently, as the winners of Rockler's 2nd annual National Woodworking Contest were announced. "We include a variety of categories to keep it interesting and open to a diverse group," spokesman Robert Jackson said.



Marie Davis' daughter enjoys a ride on her mom's winning entry in Rockler's 2nd annual National Woodworking Contest.

Woodworking Provides a Common Language with a New Friend

Subscriber Provides Woodworker's Journal With a View Into Africa



Cameroonian woodworker Abdou Boukar uses sapele and wengé woods for his armoires and other projects.

When subscriber Abdou Ibrahim Boukar of Koza, Cameroon, wrote to *Woodworker's Journal*, we got a fascinating view of woodworking on the other side of the world.

Abdou is one of eight woodworkers in Koza, a town of about 8,000 in the Extreme North Province of Cameroon. Most of his projects are furniture — chairs, tables, armoires, buffets — but he'll make whatever customers

order, from picture frames to caskets.

He started woodworking because he enjoys working with his hands and creating useful things. Also, he says, the craft provides him with year-round work, and that's important in Koza, where many people rely on

agriculture during the long May-October rainy season.

Abdou studied woodworking for four years at a technical college in the nearby city of Mokolo, and he's now worked in the field about 10 years. The biggest frustration for him and other Koza woodworkers is finding good tools and materials.

"Even if we find something of a good quality, it is often too expensive to buy. So, our work is

not as elaborate as the things we see in your journal, but we make do with what we have," he told us.

They mainly rely on two species of wood: sapele and wengé, both native to Cameroon.

Although Abdou only speaks French, Mafa (the language of the region's predominant tribe) and Fulani (a trade language used in west Africa), we think our shared love of woodworking gives us a common language.

Furniture is the mainstay of Abdou's business. His wife Aïsato and daughter Raïhanatov appreciate pieces like this lounge chair.





Bill Burpee of Milford, Michigan spent over 200 hours building this red cedar canoe with pine, cedar and mahogany trim. Bill's efforts earned him top honors in the Amateur category of Rockler's 2nd annual National Woodworking Contest.

Marie Davis of Brighton, Michigan, won first place in the *Projects for Kids* category with a carved basswood dolphin she made for her daughter's second birthday. The project was her first large sculpture in wood. In the *Furniture* category, David Frechtman of Medford, Massachusetts, took top honors with a quilted mahogany, half moon hall table he made as a class project. "I didn't know until after the table was made how rare it was," he said of his quilted mahogany. "Apparently, only one tree has ever been found."

Other winners included David Batten (Arizona) in the *Turning* category; William Edwards (Missouri) in the *Carving* category; and Larry Taylor (Connecticut) in the *Small Projects* category.

Entries for this year's contest are due November 1st. For more info, contact Rockler Woodworking and Hardware (the new name for *The Woodworkers' Store*) at 877-762-5537.



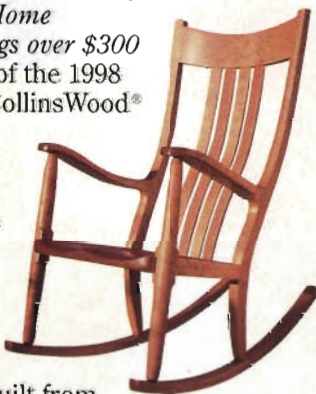
David Frechtman's table has quilted mahogany veneers on a basswood top and a brick-built mahogany apron. He also used pommele sapele and curly maple.

Rewarding Good Wood Spotlight on Certification

Texas resident Gary Weeks' long-term interest in sustainable forestry was rewarded recently, when his beautiful black cherry rocker won the *Home Furnishings* over \$300 category of the 1998 national CollinsWood® Awards.

Choice of materials was at the heart of the contest, which featured projects built from certified scrap wood or wood certified by the Forest Stewardship Council (FSC) as coming from well-managed forests. *Children's Furniture* winner Margaret Puckette used pine mill by-products with defects like blue stain, knots, cracks and wane. "To take something that's going to go in a waste pile and use it, is great," Stacy Brown of the FSC said. However, she thinks the contest's true benefit was demonstrating that certified wood can make high quality products.

Robin Tedeschi was the other winner, in the *Home Furnishings* under \$300 category, with his cherry bench. For more information on the contest, contact CollinsWood at 800-329-1219.



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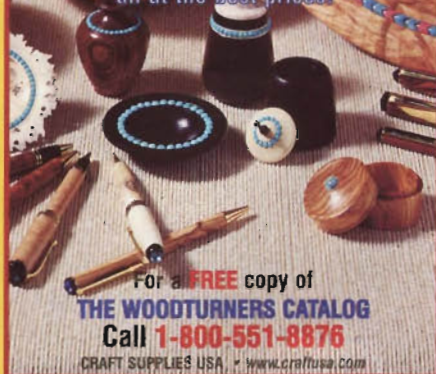
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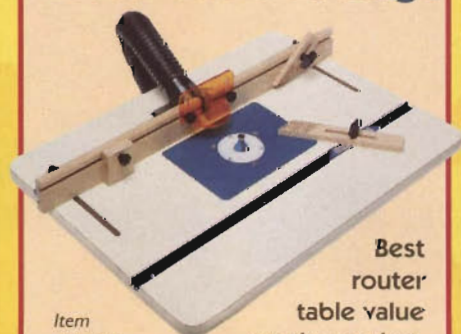
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Finding a Fitting Finish

By Rob Johnstone



... the finish is almost solely responsible
for that all-important first impression ...
and critical to the continuing
success of the piece.

Three identical boxes: built with the same set-ups on the same tools at the same time. Yet I'm sure if you saw them in three different homes, you would not connect them to each other.

That was the goal when art director John Kelliher and I set out to demonstrate how critical finishing is to the design process. Often, we view the finishing step as an afterthought, or perhaps a necessary evil. That's odd, because from the perspective of just about everyone else, the finish is almost solely responsible for that all-important first impression, and critical to the continuing success of the piece.

Start with a Flexible Design

I asked John for a basic box design that would offer plenty of options when it came to material selection and finishing. He suggested stick and cope stiles and rails with flat panels for the carcass and a lid made with Roman ogee edges and raised bead accents. Next, we selected three dramatically different themes — classic, contemporary and country. For the classic style we used mahogany lumber and created our own stain color. The country box features a two color rub-down painting technique over basic birch stock. Our contemporary offering was created from domestic white oak (quartersawn for dramatic visual effect) and purpleheart. Although built alike, each box presented its own finishing challenges. One thing they all had in common, however, was surface preparation. It's critical. How well a specific finish succeeds is determined by how smoothly

sanded the surface is. These boxes were sanded to 600 grit. If you take the time to properly sand, you're already a better finisher.

A Little Purple Pride

Mixed species of contrasting color are an earmark of contemporary design. For that reason, we chose to surround the mellow earth tones of white oak with the intense hues of purpleheart. But purpleheart's tone will quickly mellow into a poor cousin of walnut, not the dramatic look we were after. To preserve the essence of purpleheart's hues, we had a few options available to us.

Aniline dyes provide a reliable means of adding vibrant color to wood. There's also pure pigments available on the market, crystals or liquids that can be suspended in various vehicles ... they all work pretty well. But we decided to go with Woodburst™ brand stain, a simple but effective solution. Woodburst is made from finely ground colorants suspended in premium grade tung oil. To avoid transferring purple pigment to the white oak panels, I stained the stiles and rails before assembling the box. In the same manner, I stained the top completely before gluing the white oak accent strips in place. Obviously, the stain needed to be kept away from the glue joints. I was able to achieve this with a minimum of masking off.



To preserve the vibrant color naturally found in purpleheart, the author applied a purple Woodburst™ stain. With this finishing approach, you stain the stiles and rails before assembly.



After the stain has dried and the box is assembled, an oil/wax wipe-on finish is applied. While not as durable as some final coats, its ability to bring out the warmth and richness of hardwood is unsurpassed.

After the stain dried and final assembly was complete, we opted for a wipe on oil/wax finish created by Sam Maloof. Not a tough-as-nails product by any means, but with three coats applied to a well prepared surface, the visual effect is stunning. Each coat should be generously applied and hand



Creating your own custom stain color is easy and fun. We used Japan Color suspended in mineral spirits to good effect. Evaluate your formula on a test piece of the same species.



Apply your custom stain as you would a commercially prepared product. Always work in a well-ventilated area and dispose of used rags and contaminated newspaper properly.

rubbed for several minutes to ensure complete coverage and saturation. Remove the excess solution (Malooof recommends using cheesecloth; I've found any clean, soft cloth to be effective), and allow the finish to cure ... then repeat the process. About three coats should suffice.

A Mahogany Classic

Mahogany has long been the comfort wood of the upper crust — but it's well liked by us working stiffs as well. With its beautiful even grain patterns and easy-to-work characteristics, it's no wonder it's still a popular choice.

But the classic mahogany finish, an ultra-dark stain with a high gloss lacquer or spirit varnish, was developed for poorly lit Victorian households heated with black, dust-producing coal. The high gloss reflected their oil lamps and candlelight beautifully, and the dark stain disguised the black coal dust — very practical, those Victorians.

We chose to keep the high gloss finish, a basic nitrocellulose lacquer on a sanding sealer base coat, but lightened the stain color. In fact, we created our own custom stain by suspending shades of Behlen's Japan Color in mineral spirits. The final recipe I settled on to reach the color of the box below was: two teaspoons of Venetian Red, two teaspoons of Drop Black and four teaspoons of Bulletin Red suspended in 150 milliliters of mineral spirits. (The real fun here is to create your own custom color. Be creative and experiment; just be sure to make enough for your whole project and save the recipe!)

I found it necessary to stir the solution often during application, in order to keep the color consistent. I applied my stain as I would a commercially prepared product, wiping it on with one cloth and off with another. Because of the mineral spirits, adequate ventilation is a must during this process.

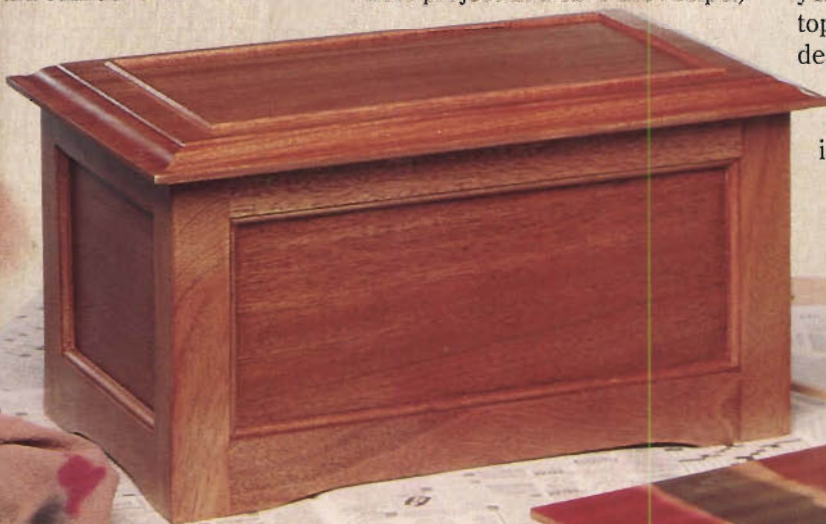
I wrapped up by spraying the box with lacquer sanding sealer (two coats), sanding lightly with 400 grit sandpaper, and applying a top coat of high gloss lacquer. If you don't spray lacquer, any high quality clear gloss finish will work.

Here's the Rub ... Down

Not too many years ago, I would have questioned the intellect and parentage of anyone who suggested painting perfectly good wood. I guess my personal taste and demeanor have matured because it was my idea to use this rubdown technique for our country finish.

Start with a paint-grade sort of wood. Poplar, aspen or even a sugar pine are all good options. We chose birch lumber because it's stable and readily available in our area. Next, select two compatible but contrasting colors of flat latex paint. Our undercoat was a medium yellow (Harvest Ochre), and our topcoat was a dusty, dark color described as Cape Cod Blue.

Apply each color evenly in successive coats. No priming is required as the undercoat does





Rubdown finishes consist of at least two contrasting colors of paint applied on top of each other. Flat latex is ideal for this technique; it is inexpensive and non-toxic.



Use denatured alcohol when rubbing through your topcoat to the contrasting color below. To mimic the effect of years of use, try to imagine how the piece would be handled over time.

that job. Sand lightly between the colors to knock down any grain raised by the paint's moisture, then apply the topcoat. I used a good quality polyester-nylon blend brush and long even strokes, after which I allowed each coat of paint to cure completely.

Once the topcoat was dry, I used ultra fine steel wool and denatured alcohol to rub through the top layer of paint, revealing the contrasting undercoat. The goal was to mimic a pattern of long-term wear — ages of use. I tried to think of how such a box would be held and used over the years, working on corners and exposed edges, carefully rubbing away the top color of paint.

Now your sense of design and creativity come into play. There's no exact formula for how much paint to take off or leave on; it's up to your own personal taste. You do need to be careful with the amount of alcohol you use at any one time, as the paint tends to get gummy and rub away in granular balls. Move to a different area if this happens and allow the alcohol to evaporate and the affected area of paint to re-cure. Don't overwork a specific section of the piece; instead, think of it as a complete object. Once I was satisfied with the overall look of the rubbed-down box, I used a soft cloth dampened with just a small amount of alcohol and gently rubbed down the entire piece, not wanting any sheen or remnant of a new, shiny paint job to remain.



A Stile and Rail Box

There are only a couple of tricks to making this box. Its cope and stick construction are best done with a special stacked router bit system, and you will need to carefully rout channels for the accent strips on the box's lid. We have compiled a material list and a set of elevations to help anyone who would like to build this box. You'll find them on the [Pin-up Shop Drawings](#) at the center of this issue.



A Backyard Feast for the Eyes

By John English



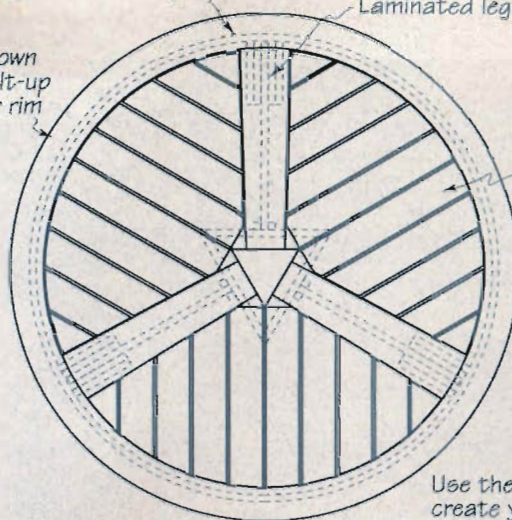
Surprisingly pleasing to the eye, Spanish cedar grows just about everywhere in South and Central America. While it's not a true cedar (in fact, it's a hardwood), it does carry that distinctive fragrance. Its long history in the boat building trades convinced me to give it a try for this outdoor project. More figured than teak or mahogany, but lighter and just as resistant to weather and mildew, it worked easily and provided stunning results once finished.

Storyboard Layout

Step-down and built-up circular rim

Apron

Laminated leg



The tabletop slats are fitted individually. Start at the center of the space and work your way out in both directions.

Use the Pinup Shop Drawings to create your own storyboard with a of the components of the table.

locate and mark pencil lines where all the elements of the tabletop will lie. You can draw the circles with a simple homemade compass made by driving a 4d finish nail into one end of a stick and attaching a pencil to the other with a small C-clamp.

Dry Bending the Apron

The apron is the heart of this table and the element to which almost all others are attached. By building it first, you deal with the most challenging task up front and determine all the other measurements, too.

Dry bending, for large radius curves, is one of the oldest ways of working wood into complex, stable shapes. It's also the simplest technique used to bend wood into a permanent shape, requiring little more than a form, some glue and a few bar clamps. Spanish cedar bends well. I used three laminations of 1/4" cedar (pieces 1) to build up the apron, but first, I built the form.

Building the Form

The apron's bending form is a pair of 1/4" thick hardboard circles separated by scrap wood cleats. After cross cutting the sheet of hardboard at 48", temporarily fasten the two halves together (face to face) with two-sided tape. Locate the center of the top piece, then use a circle cutting jig attached to your



Figure 1: Use a circle cutting jig attached to your router to cut the hardboard top and bottom of the apron form at the same time.



Figure 2: Using an extra spacer cleat as a guide, drill large clamp holes into the form to anchor your bar clamps during glue-up.

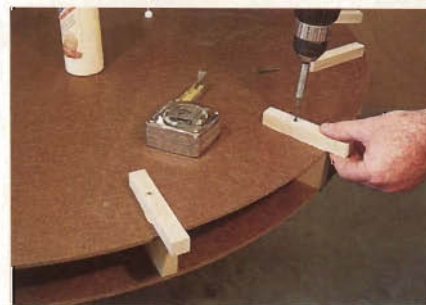
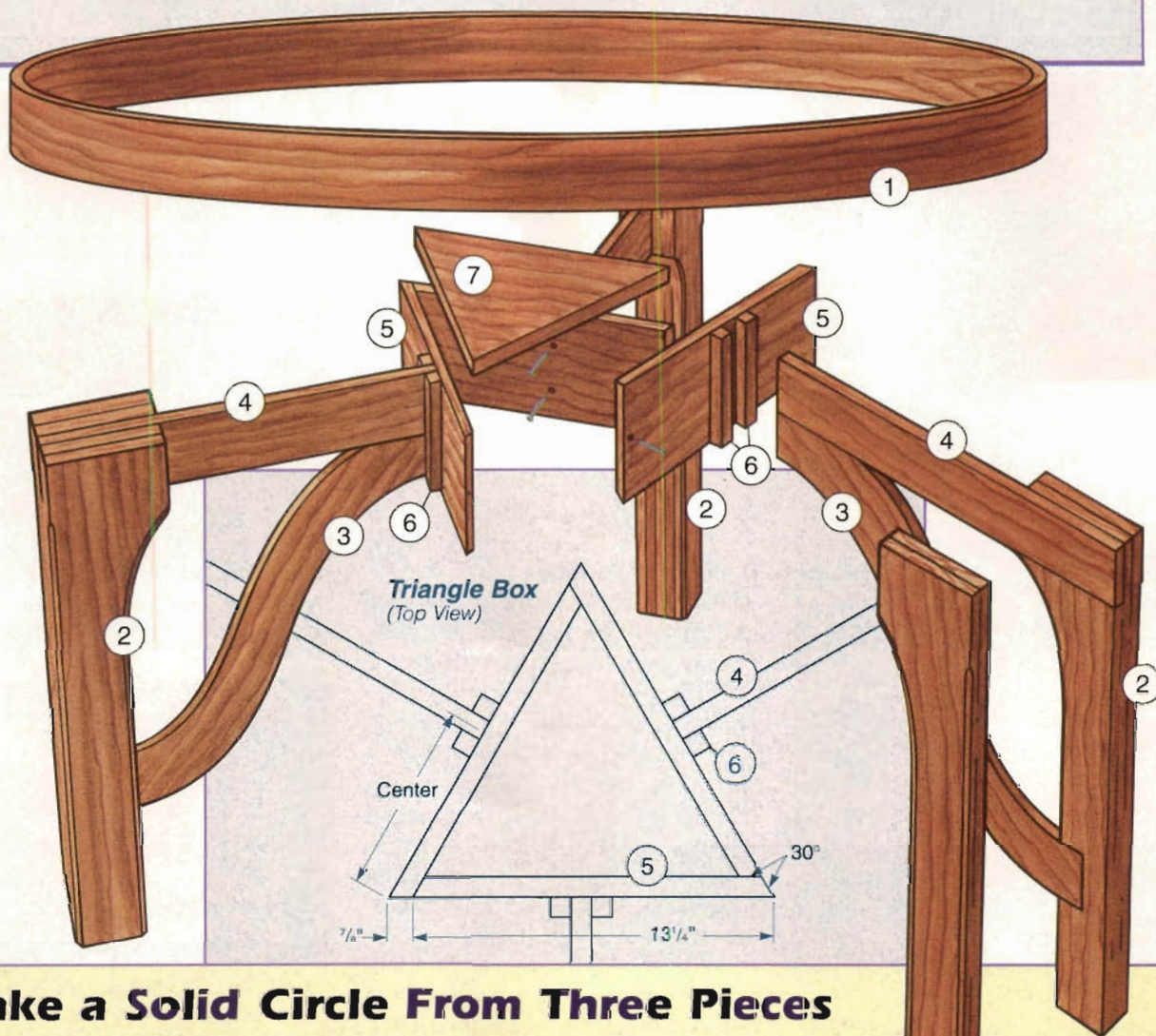


Figure 3: Flip the form over and screw 4" lengths of scrap to its bottom. They will support the apron laminations during glue-up.

Long ago, I learned the importance of working to a storyboard when making circular shaped projects. The idea is to lay out the elements of your project on a piece of sheet stock, which then serves as your workbench. I recommend using this approach on this project. Get started by reshaping a piece of particle board to accommodate a 53 1/2" diameter circle, the size of your tabletop. Follow the layout shown above to

MATERIAL LIST (Legset)

	T x W x L
1 Apron Laminations (3)	1/4" x 3 1/2" x 156 1/2"
2 Leg Laminations (15)	3/4" x 6 5/8" x 28 1/4"
3 Leg Stretchers (3)	3/4" x 6" x 26"
4 Leg Beams (3)	3/4" x 3 1/2" x 19 5/8"
5 Large Triangle Sides (3)	3/4" x 6" x 13 1/4"
6 Large Triangle Cleats (6)	3/4" x 3/4" x 6"
7 Large Triangle Cap (1)	3/4" x 14 1/8" (Each side)



Make a Solid Circle From Three Pieces

Dry bending this laminated apron was simple and enjoyable. For many outdoor uses, I recommend one of the new waterproof polyurethane glues spread liberally on all relevant surfaces. (See the glue sidebar on the last page of this article.) If the stock is especially dry, dampen the surfaces first, according to the manufacturer's instructions. Sight along the lamination stock to see if it has a natural bend in either direction, and take advantage of this tendency if it does.



To evenly spread the clamping pressure across the entire width of each lamination, I used one of our old *Tricks of the Trade*: scraps of pine hot-melt glued to the clamp faces.



Start and finish the final lamination at the spot where you drilled two holes side-by-side: this gives you the option of using two clamps to finish the operation.

router (see **Figure 1**) to cut both 47" diameter circles at the same time. A 1/4" straight bit will do the job in two passes. Plans for a quick release, circle cutting jig can be found on the **Pinup Shop Drawings** on the center pull-out.

Cut a length of 3/4" x 3" scrap into 8" long spacer cleats, then attach them between the circles with finish nails (see **Figure 2**). Locate them as shown in the **Elevations** on the **Pinup Shop Drawings**. Use a spare cleat to guide you when drilling clamp holes in the top circle. I used a hole saw large enough for the bar clamp heads. Size your own bit according to the diameter of your clamp heads, and drill two of the holes close to each other: this allows you to clamp the beginning and end of the lamination tightly.

Turn the assembly over to screw 4" lengths of 1" x 1" stock to the bottom circle, one at each cleat location (see **Figure 3**). These will support the bottom edges of the laminations as you build them up. Apply masking tape to their top edges, to prevent the glue from attaching the cleats to the apron laminations permanently. Now you're ready to glue up the apron, as described in the sidebar below.

Glue the first two laminations together, offsetting their ends by six inches. Be sure the outer lamination starts and stops where you drilled the two clamp holes side-by-side. Set the clamped-up apron and form aside to cure for at least two days. You want the wood to acquire a memory for its new shape before you release the clamps. Then apply the final lamination, offsetting and starting and stopping as described above. Leave this one clamped in place for a couple of days as well.

Build Up the Legs

To get nice, thick legs that wouldn't warp outdoors, I decided to laminate five layers of stock for each one. This process also allowed me to create mortise and tenon joints without a lot of drilling, fitting and chopping. I simply cut a notch in the middle lamination of each leg to serve as a mortise when the layers were glued together.

The first step in building the legs is to cut 15 laminations (pieces 2) to size on the band saw. Their scaled profile can be found on the **Pinup Shop Drawings**. Notch three of the laminations at the locations shown on the drawings, then trim the tops of these same three as indicated. Glue and clamp three sets of five laminations together to create the legs (making sure the middle lamination in each leg is the notched one). After the glue dries, drum sand the contoured edges, then belt sand the flat surfaces. Chamfer the edges of the legs with a bearing guided chamfering bit chucked in your router.



Figure 4: The stretchers of this table are curved to reflect the circular top. Create a template to ensure each piece is identical.

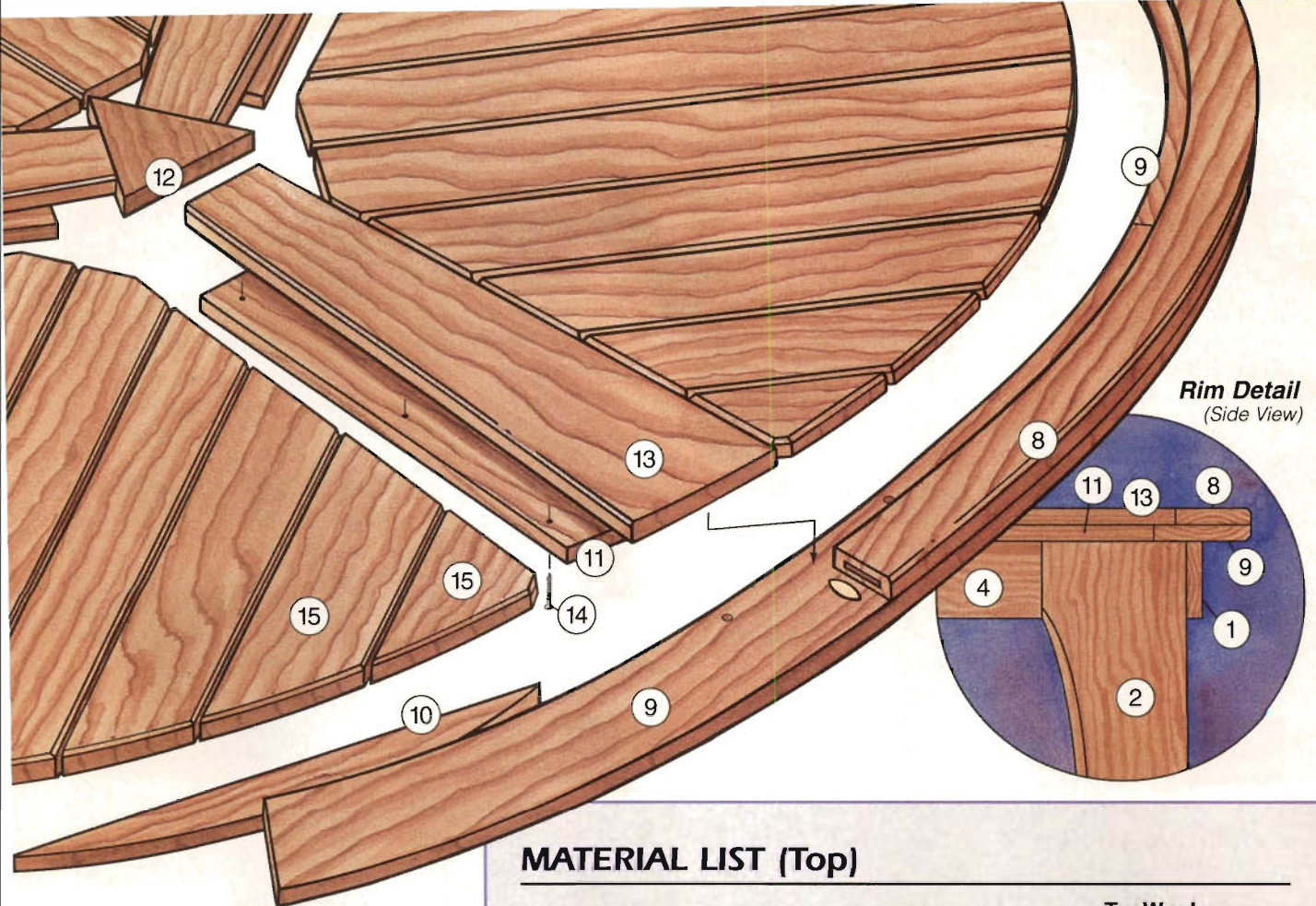
The Curved Stretchers

The strongest geometrical form is a triangle, and we took advantage of that fact to lock the legs in position. Three stretchers (pieces 3) extend from the leg mortises to the center of the table. In keeping with our round theme, their profiles are curved (see the **Pinup Shop Drawings**). To ensure all three are identical, make a template for the stretchers (**Figure 4**). Trace the profile onto a piece of scrap particle board, cut it to shape on the band saw, then clean up the edges with a drum sander.

Use glue and clamps to secure beams (pieces 4) into the open mortises where the middle leg

When building complex shapes, nothing is as helpful as a storyboard or a full-size layout drawing to build from. Here the author test fits his components to the storyboard. Any variations or potential problems are easy to spot as he builds each piece in sequence. Remember, a minute of planning is worth an hour of power.





laminations were trimmed short. After the glue dries, place one of the legs on your tabletop layout and dry fit the stretcher template to it. Make any needed adjustments to the template, then use it to lay out the stretchers. Cut all three to size, then sand out the saw marks.

Assemble the Legset

The assembly process is where making that full-size particle board layout really pays off. Dry fit the stretchers and then stand all three legs in position on the layout. The beams and stretchers should all meet at the lines you drew for the center triangle (see photo on the previous page). If they are a little too long, you can trim them to length. If they're too short, simply adjust the size of the triangle on the layout (note any changes on your **Material List**). Just make sure all three beams are the same length, so the triangle stays centered.

MATERIAL LIST (Top)

	T x W x L
8 Top Rim Segments (6)	3/4" x 8" x 27"
9 Bottom Rim Segments (6)	3/4" x 8" x 27"
10 Rim Glue Blocks (6)	Trim to fit
11 Beam Caps (3)	3/4" x 8" x 18 1/2"
12 Small Triangle (1)	3/4" x 7" (Each side)
13 Spokes (3)	3/4" x 5 1/2" x 21 1/4"
14 Spoke Screws (18)	1 1/4" x #6, Stainless
15 Tabletop Slats (1)	3/4" x 3 1/2" x 440"
16 Lazy Susan Tray (1)	3/4" x 18 1/4" Dia.
17 Lazy Susan Mechanism (1)	17 5/16" Dia.

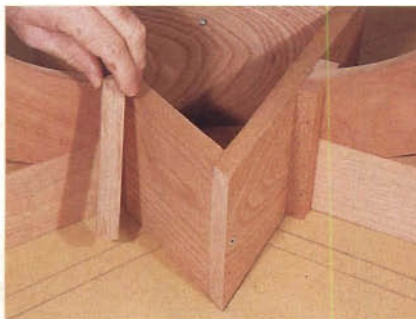


Figure 5: Strong and simple, cleats are used to capture the curved stretcher and the leg beams and secure them to the center triangle.

Set your table saw blade to 30° and use your miter gauge to trim the triangle sides (pieces 5) to length, as shown in the **Elevation Drawing** on page 28. Glue and finish nail them together (I also added a single screw in each, to keep the joint tight while the glue dried). Set the triangle in place on the layout. Apply glue to the ends of the stretchers and beams, then secure them to the triangle with three pairs of cleats (pieces 6), as



Figure 6: Form the circular rim from mitered segments of 3/4" stock. The storyboard temporarily holds (tack glued) the segments together as you rout both radii of the rim.

shown in **Figure 5**. Glue and nail the cleats in place, then use glue and four 8d galvanized finish nails to attach each leg to the apron. Set the nail heads and fill them with a waterproof filler: I mixed Titebond® II weatherproof glue and some fine Spanish cedar sanding dust to make my own. Follow up by driving two screws through each triangle side, into the beams and stretchers.

Edge glue some stock to create a large enough blank for the cap on the legset triangle (piece 7). Set the dried blank on top of the triangle and mark its outline, then band saw it to shape. Set it aside for now.

The Circular Rim

The top edge of the tabletop is a continuous circular rim, built with two layers of 3/4" thick stock. Set your saw's miter gauge to

30°, then use your full-size storyboard to guide you when mitering the top and bottom rim segments (pieces 8 and 9) to length.

Dry fit one layer at a time to the layout and temporarily secure it in place with two-sided tape or hot melt glue. Use your circle cutting jig to trim both the inside and outside edges to shape in several passes. You'll need to secure a piece of 3/4" thick scrap to the center of your storyboard template to complete this operation, or your jig won't be level with the surface (see **Figure 6**). Save the cutoffs — you'll use them later.

When both layers are cut to size, tape some clear poly to the layout (I used 4mm vapor barrier left over from another job). This is done to prevent the rim from being glued to the storyboard during assembly.

Mark all the joints in both layers of the rim for #20 biscuits, then cut the relevant slots. These biscuits will help keep everything in line during assembly, and also stop the end of a segment from curling up if the glue ever fails. Use one biscuit in each top layer joint and two in the wider bottom layers. Offset the segments so each top layer joint is between two bottom layer

joints, then apply a liberal amount of glue to each segment and clamp them together, as shown below.

Secure the Legs to the Top

After the glue in the rim segments dries, give the rim a thorough sanding. Then set it upside down on your workbench and center the legset on it. Mark its location, and use these marks to locate and attach curved glue blocks (pieces 10) to the rim with glue and pneumatic pins, as shown in **Figure 7**. Use clamps if you don't have access to an air nailer. Make these blocks



Figure 7: Glue blocks are used to help secure the top to the leg/apron subassembly. These blocks should be glued and nailed to the underside of the circular rim.

Round Picnic Table Project Supplies

The following supplies are available from the Woodworker's Journal.

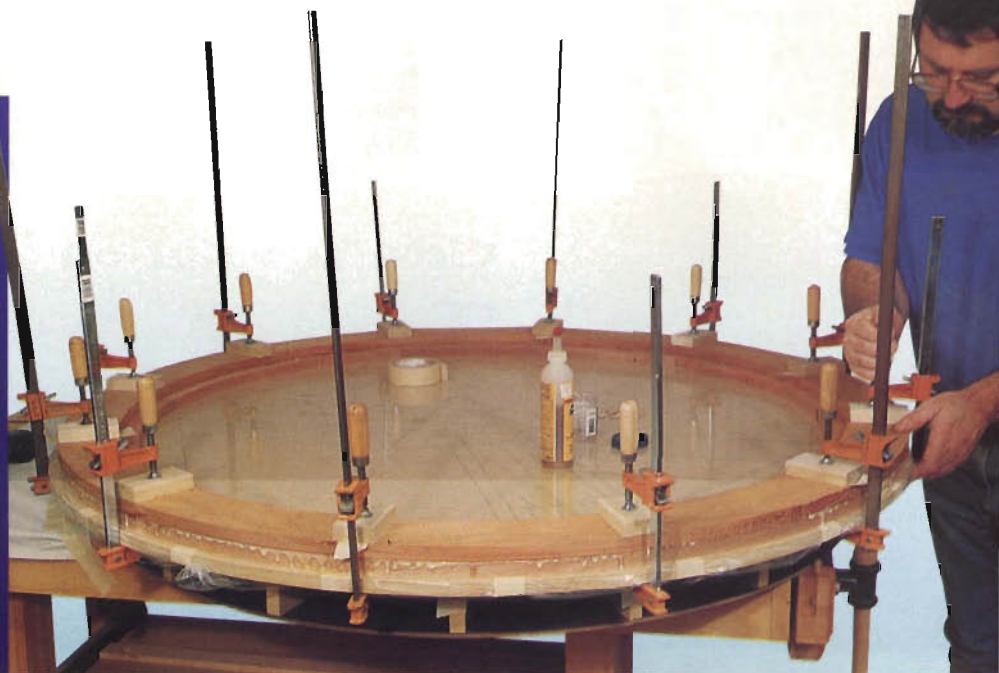
Lazy Susan #12451.....\$59.99

Gorilla Glue® #21659...\$19.99

TW Issue 15 #66878.....\$2.47

*18 ounces.

To order your supplies, call 800-610-0883. Please mention code W0699.





The top of this picnic table is a beautiful study of lines and angles. However, fitting the tabletop slats is a time-consuming process. Transfer the front curve and the back angle to each piece as you space them evenly across the opening.

from the cutoffs you saved earlier as you trimmed the rim.

The final step is to slip the legset back in place, dry fitting it to the glue blocks. When everything fits, glue and clamp the rim to the apron.

Complete the Framing

Take a moment to permanently secure the large triangle top in place, attaching it with glue and nails. Now, again referring to your storyboard, create three caps (pieces 11) for the beams. Band saw the arc on the ends that meet the bottom layer of the rim, then trim each to length on your table saw. Refer to your storyboard to locate and mark the taper on each edge, then trim the caps to this shape on your band saw. Here's a tip: stay a hair outside the line, and give each edge a single pass on

the jointer to clean it up. Glue and screw the caps to both the beams and the tops of the legs, predrilling and countersinking the screw heads as you go.

Use your layout to draw and cut the small triangle (piece 12) to shape. Center it on the large triangle cap, then glue and nail it in place. Follow the procedure you used for the beam caps when making the three spokes (pieces 13). These butt up to the small triangle at one end and a top rim segment at the other. Trim each to size and shape, then chamfer their top long edges (but not the ends). Center each spoke on a beam cap and glue and screw (piece 14) them in place. (Note: Drive these screws up from the bottom, through predrilled pilot holes, making sure they don't peek through the top.)

Install the Slats

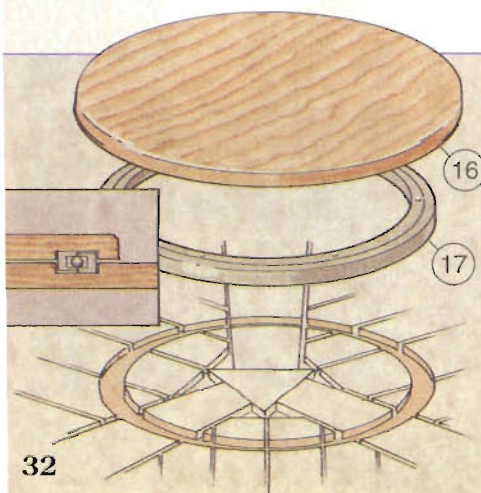
There's no quick and easy way to trim all the slats (pieces 15) to length. You'll have to invest the better part of a day trimming and tweaking them for a perfect fit. The first step is to rip and joint material to the right width then crosscut it into slightly overlong slats.

You can use the arched cutoffs you saved when trimming the rim to help you draw the arc where each slat meets the rim. A straight-



Figure 8: An 8d nail driven through a block of wood is useful as a spacer when attaching the table slats of the bench seat slats.

edge will help you transfer the angle at the other end onto your stock. Band saw both ends to shape, then belt or disk sand the cut edges. Mill a small chamfer on the top edges of each slat, then glue and screw them in place.



Circular Solution

Edge glue enough stock to create a blank for the tray, then band saw it to shape. Chamfer the top edge, then use your circle cutting jig to create a 1/4" deep groove in the bottom face for the lazy Susan mechanism (piece 17). Next, move to the assembled tabletop and center the circle cutting jig. Rout a 1/4" deep groove onto the tabletop which matches the circle routed into the tray. Finish the tray as you did the table and mount the lazy Susan to the tray. The tray and hardware rest firmly in the table groove, but are removable for cleaning and service.

The Lazy Susan Tray

The circular tray with a lazy Susan (pieces 16 and 17) at the center of the table has two functions. First, it hides the exposed ends of several structural components, protecting them from the weather. And, second, it's a great way to make condiments available to all the diners without anyone having to develop a boardinghouse reach.

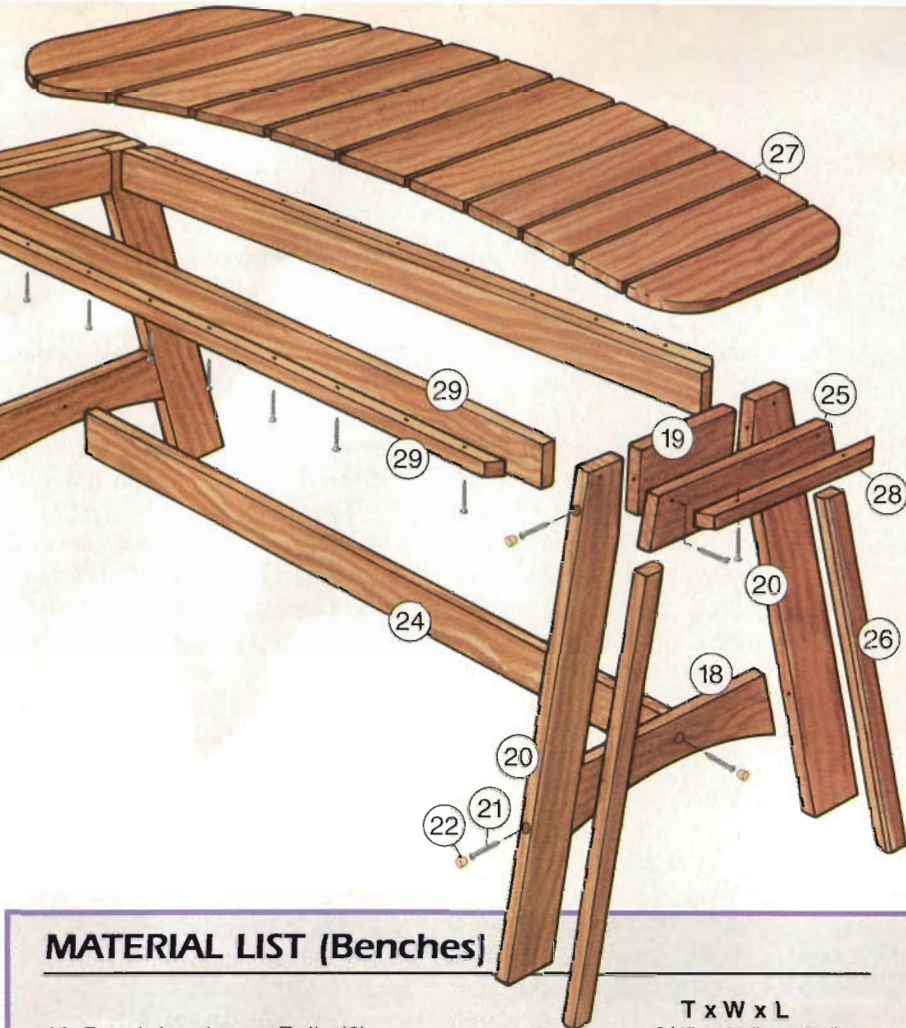
The Bench Legs

The three lightweight benches are designed to allow two people to sit between each pair of legs. While the tops are kidney-shaped to pick up the curve of the tabletop, the legsets are rectangular and easy to build.

Start by building two A-frames for the legs. Cut the rails and legs (pieces 18, 19 and 20) to the sizes and shapes shown on this issue's **Pinup Shop Drawings**. Counterbore and predrill for screws (pieces 21). This is best done on a drill press, and you may want to make an auxiliary fence to get the angles right.

Glue and screw the legs to the leg rails, then use your drill press and a plug cutter to make plugs (pieces 22) to cap the screw heads. Drill into end grain for the best results.

Cut the top rails and stretchers (pieces 23 and 24) to size and follow the **Pinup Shop Drawings** to locate them on the side assemblies. Counterbore the screw holes and use glue and screws to draw these pieces together. Follow up with plugs on the lower rails. You won't need them on the top because end slat supports (pieces 25) are attached to the outside



MATERIAL LIST (Benches)

	T x W x L
18 Bench Leg Lower Rails (6)	3/4" x 2 3/4" x 10 1/4"
19 Bench Leg Upper Rails (6)	3/4" x 2 1/4" x 5 1/2"
20 Bench Legs (12)	3/4" x 2 5/8" x 18 1/2"
21 Bench Leg Screws (108)	2 1/2" x #8 Stainless
22 Bench Leg Screw Plugs (30)	3/8" Dia.
23 Bench Seat Rails (6)	3/4" x 2 1/4" x 33"
24 Bench Seat Stretchers (3)	3/4" x 2 7/8" x 33"
25 End Slat Supports (6)	3/4" x 2 1/4" x 10 7/8"
26 Decorative Leg Appliques (12)	3/4" x 1" x 15 3/4"
27 Bench Seat Slats (1)	3/4" x 3 3/8" x 468"
28 Seat End Cleats (6)	3/4" x 1 1/4" x 10"
29 Seat Side Cleats (6)	3/4" x 1 1/4" x 33"

face of each A-frame with glue and clamps. Once they're in place, chamfer some stock to make the leg appliques (pieces 26). Trim these to length (the cuts are angled), then glue and clamp them to the legs.

The Bench Tops

Each seat's slats (pieces 27) are held in place by glue and screws driven up through four cleats

(pieces 28 and 29). Miter the cleat ends as shown and then soften the cuts with an orbital sander. Glue and clamp the cleats to the legset, as shown above.

Use the scaled drawing on the **Pinup Shop Drawings** to create a template for the kidney-shaped benchtops. This can be done on the piece of particle board left over from making the tabletop layout. Cut the

slats to approximate length, then chamfer the top edges of each slat. Screw them in place, using spacers to set each one the correct distance from its neighbors. These spacers are simply 8d common nails driven through a small piece of scrap, as shown in **Figure 8**. Now use the template you created to trace the correct shape onto the seat. Number and remove the slats, and cut their shape on the band saw. Reinstall them on the legset (using the numbers to place them properly), this time with screws and glue.

Applying a Finish

Spanish cedar is a somewhat oily wood, even after kiln drying. With that in mind, and considering that most of the parts of this project are glued together, I needed a finish compatible with both the glue and the characteristics of the wood. It turned out that the range of choices was actually quite limited.

A poured resinous finish would not quite suit the fine lines of this furniture. Remembering the boat building past of Spanish cedar, I went with Spar marine varnish. It's compatible with the glue's polyurethane and really brought out the deep, rich brown tones of the Spanish cedar. In fact, the finish is so rich that several knowledgeable woodworkers have since asked if the species is teak — something that wouldn't have happened with standard red cedar.

After sanding the entire project down to 220 grit, I applied a thinned coat (25% paint thinner) of varnish as a sanding sealer. When it was dry, I knocked down the surface with 400 and 600 wet/dry paper, then sprayed on three topcoats of unthinned varnish. The net result was a family style picnic table that enhances the flavor of even the very best bratwurst. And sorry, but I don't know yet how I'll react to its first mustard stain.

SPOTLIGHT ON THE PAST:

Smaller family ... smaller yard? Plans for this little redwood table appeared in issue 15 of Today's Woodworker magazine (See Project Supplies). Featuring a marble center tile, it's been in art director John Kelliher's back yard for 8 years now. He reports that it's holding up well!

A SOLID CURE



A new generation of weatherproof, polyurethane based, woodworking glues is revolutionizing outdoor construction. Once set, these glues are virtually impervious to water, so it's no surprise the construction industry is giving them a warm welcome.

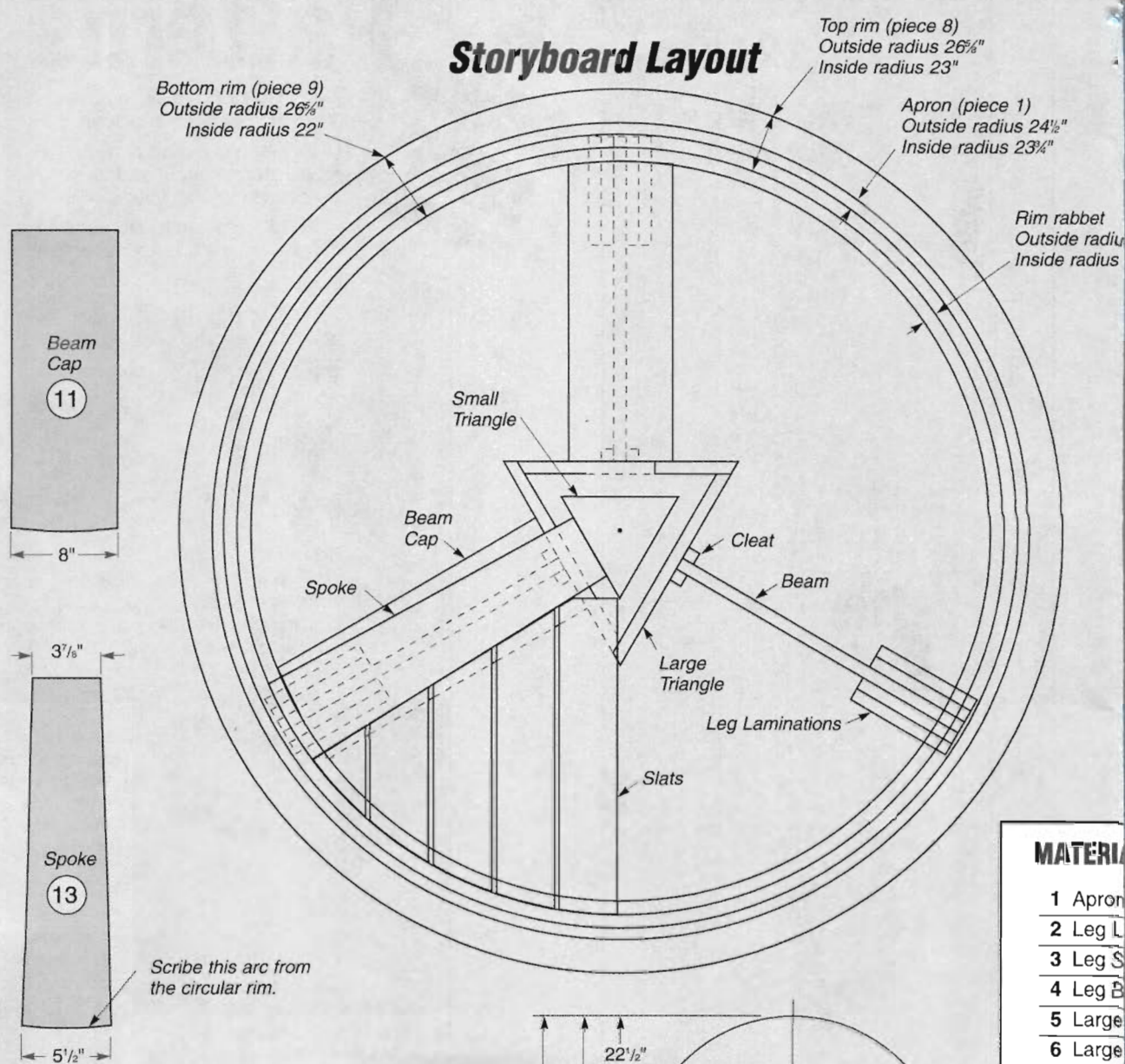
These new glues take a bit of getting used to. First of all, if your stock is very dry, it's recommended that you dampen one or both surfaces before applying the glue. Second, keep the stock clamped overnight, especially in cool conditions. While most makers claim a 90% bond in three hours, that's a bit of a stretch in my experience. When working with oily woods like Spanish cedar, it's a good idea to wipe your glue joint with acetone before you laminate.

Squeeze-out is another interesting facet of these glues. Polyurethane glue expands on contact with air and quickly becomes a hardened yellow foam. That's not as big a problem as it sounds — most of the excess can be cleaned up with a sharp knife or chisel. However, some residue may remain in the wood, and this needs to be sanded out before a finish is applied. My best advice: mask areas where squeeze-out may be a problem.

Polyurethane glues have one annoying side effect: they stain your hands dark brown, and there doesn't seem to be an easy way to remove the stain. While it isn't toxic, it will be unsightly for about a week. So I recommend wearing disposable gloves during glue-ups.



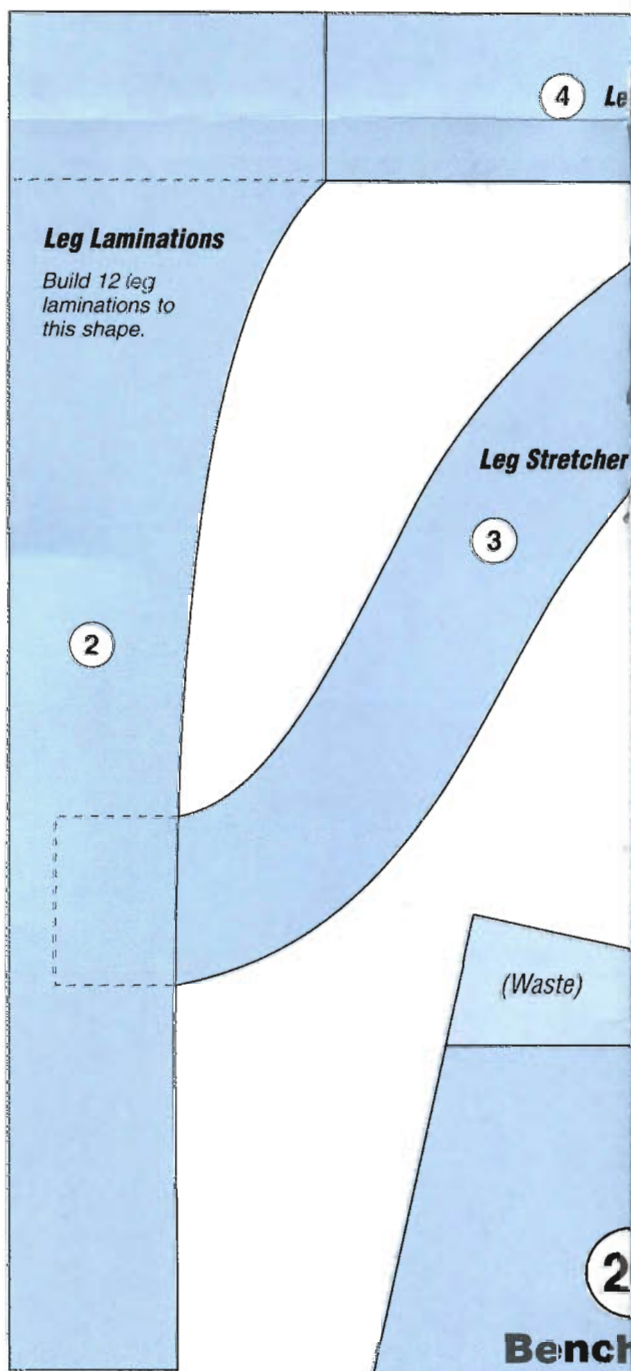
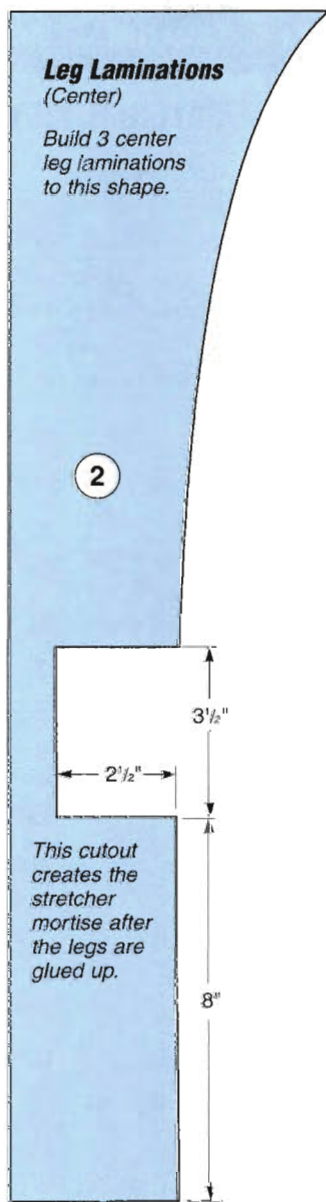
Storyboard Layout



MATERIALS

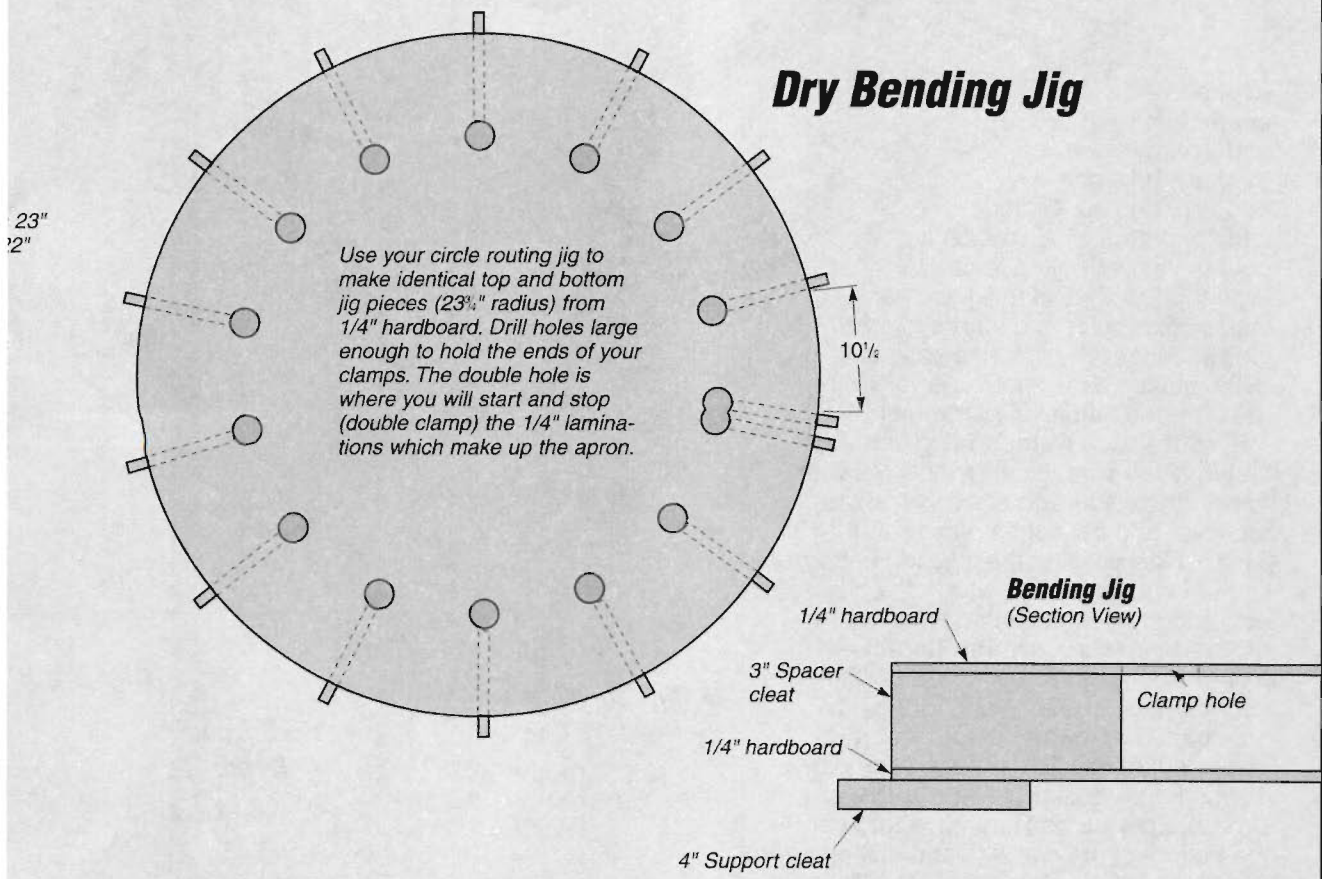
- 1 Apron
- 2 Leg Lamination
- 3 Leg Stretcher
- 4 Leg Beam
- 5 Large Triangle
- 6 Large Triangle
- 7 Large Triangle
- 8 Top Rim
- 9 Bottom Rim
- 10 Rim Rabbet
- 11 Beam Cap
- 12 Small Triangle
- 13 Spoke
- 14 Spoke
- 15 Table

Each square equals 1/2 inch.

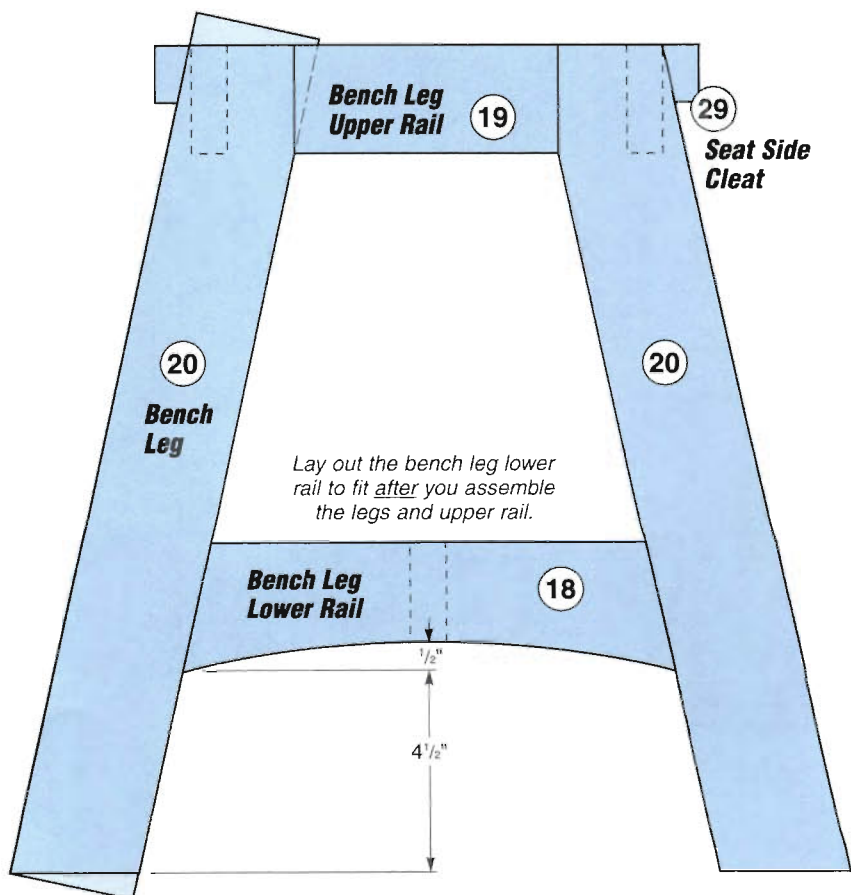
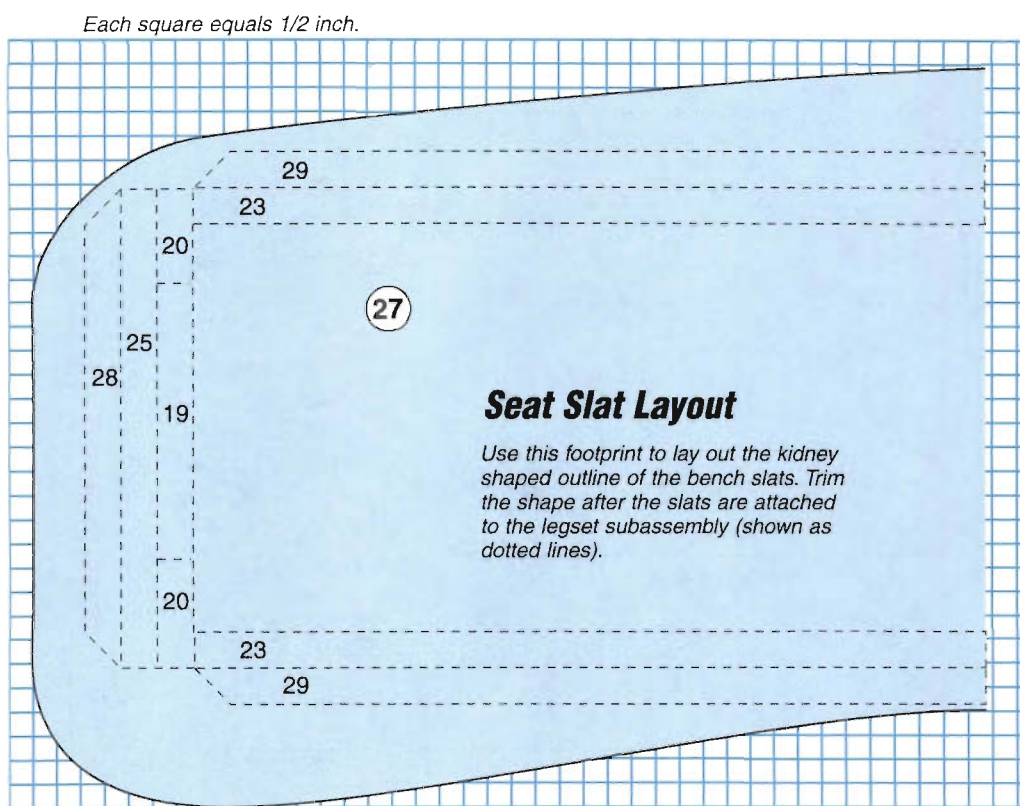
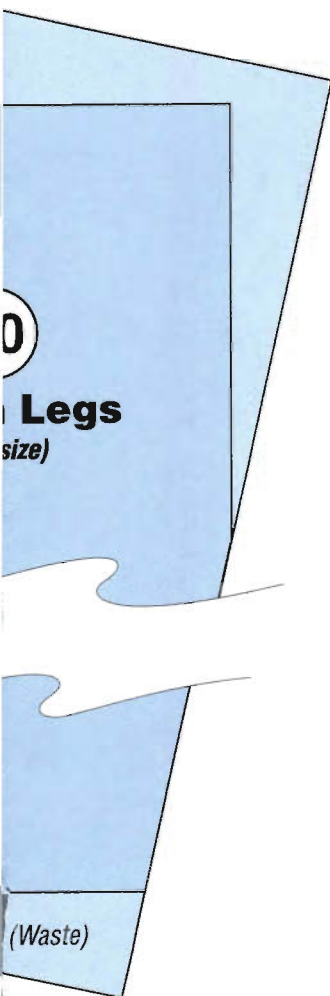
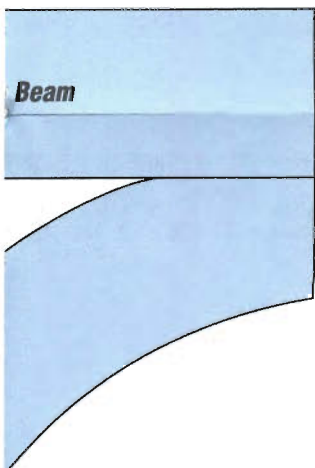


Picnic Table Notes:

- The ends of the bench legs are presented full-size. All the other pieces are shown 1/4 scale, i.e. 1/4" equals 1".
- When creating the gentle curves on the table legs and lower bench rails it's not critical to follow our drawings exactly. Just use the basic measurements to form a curve that looks right.
- When forming the stretcher and kidney shape for the bench top slats, we recommend transferring the grids to pieces of 1/4" hardboard. After shaping each hardboard template, it's easy to transfer their shapes onto your workpieces.
- Reminder: It's really worth the effort to make the storyboard. The rest of the project will be much easier if you do.



L I S T			
	T x W x L		T x W x L
Laminations (3)	1/4" x 3 1/2" x 156 1/2"	16 Lazy Susan Tray (1)	3/4" x 18 1/4" Dia.
Laminations (15)	3/4" x 6 5/8" x 28 1/4"	17 Lazy Susan Mechanism (1)	17 5/16" Dia.
Stretchers (3)	3/4" x 6" x 26"	18 Bench Leg Lower Rails (6)	3/4" x 2 3/4" x 10 1/4"
Beams (3)	3/4" x 3 1/2" x 19 5/8"	19 Bench Leg Upper Rails (6)	3/4" x 2 1/4" x 5 1/2"
Triangle Sides (3)	3/4" x 6" x 13 1/4"	20 Bench Legs (12)	3/4" x 2 5/8" x 18 1/2"
Triangle Cleats (6)	3/4" x 3/4" x 6"	21 Bench Leg Screws (108)	2 1/2" x #8 Stainless
Triangle Cap (1)	3/4" x 14 1/8" (Each side)	22 Bench Leg Screw Plugs (30)	3/8" Dia.
Trim Segments (6)	3/4" x 8" x 27"	23 Bench Seat Rails (6)	3/4" x 2 1/4" x 33"
End Rim Segments (6)	3/4" x 8" x 27"	24 Bench Seat Stretchers (3)	3/4" x 2 1/8" x 33"
End Blocks (6)	Trim to fit	25 End Slat Supports (6)	3/4" x 2 1/4" x 10 7/8"
Caps (3)	3/4" x 8" x 18 1/2"	26 Decorative Leg Appliques (12)	3/4" x 1" x 15 3/4"
Triangle (1)	3/4" x 7" (Each side)	27 Bench Seat Slats (1)	3/4" x 3 3/8" x 468"
Legs (3)	3/4" x 5 1/2" x 21 1/4"	28 Seat End Cleats (6)	3/4" x 1 1/4" x 10"
Screws (18)	1 1/2" x #6, Stainless	29 Seat Side Cleats (6)	3/4" x 1 1/4" x 33"
Top Slats (1)	3/4" x 3 1/2" x 440"		



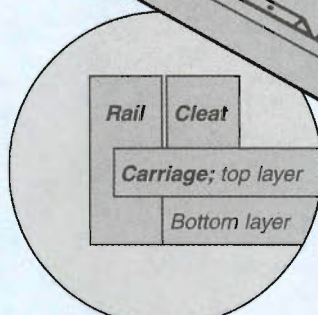
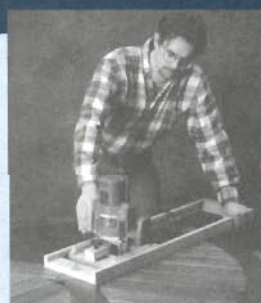
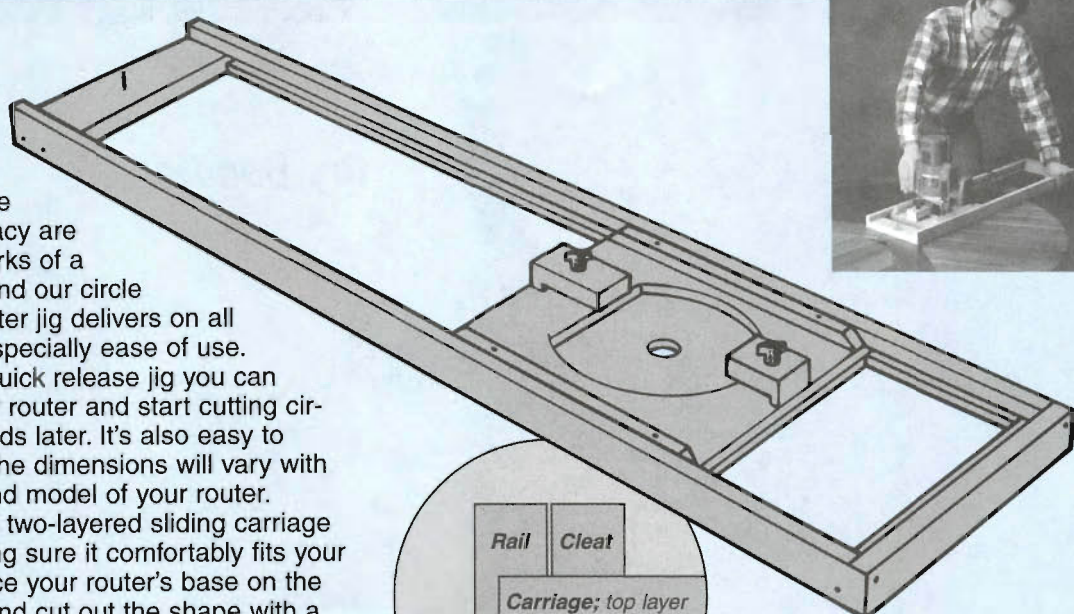
Quick Release Circle Cutting Router Jig

Speed, ease of use and accuracy are the hallmarks of a good jig, and our circle cutting router jig delivers on all counts - especially ease of use. With this quick release jig you can install your router and start cutting circles seconds later. It's also easy to build, but the dimensions will vary with the size and model of your router.

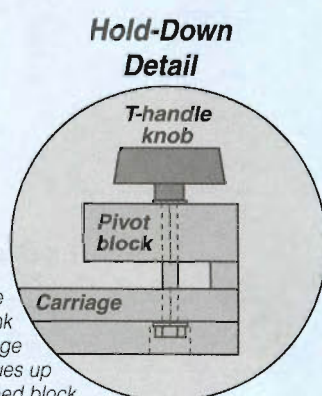
Build the two-layered sliding carriage first, making sure it comfortably fits your router. Trace your router's base on the top layer and cut out the shape with a jigsaw. Now position the smaller, bottom layer (it should be 1/2" short of each edge) to create the lip that rides in the grooved rail (**see Carriage Detail**). A pair of cleats (which allow you to clamp your carriage in place) are added next.

L-shaped hardwood blocks that pivot in and out of position are used as hold-downs for the router (**see Hold-Down Detail**). Epoxy a hex head bolt through the bottom of the carriage and drill an oversized hole in your blocks. Position the blocks over the bolts, as shown at right. T-handle knobs make it easy to secure your router in place.

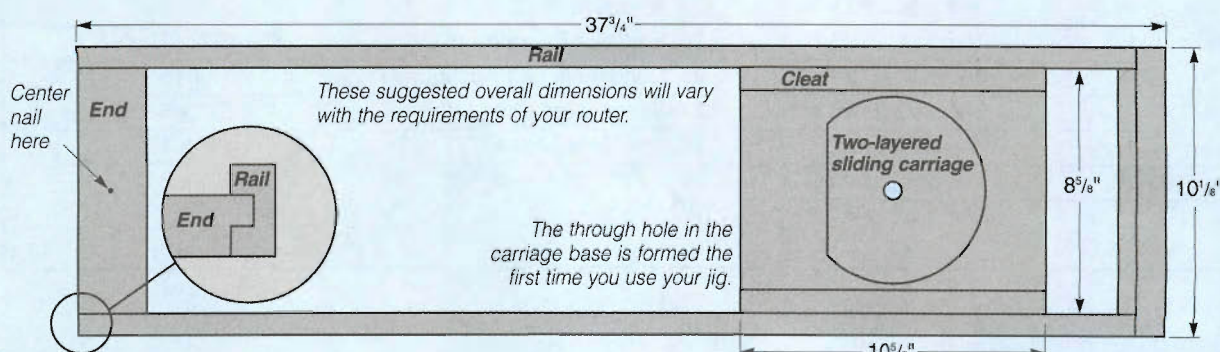
Next, create two grooved rails and the end pieces from 3/4" hardwood stock (**see Elevation Drawing below**). Assemble the frame, capturing the carriage. You want a tight fit, but make sure the carriage can easily slide. A little wax will help.



Carriage Detail
(Section View)



Adjust your hold-downs to work with your size router. The hex head bolt is countersunk and epoxied into the carriage bottom layer and continues up through the pivoting L-shaped block.

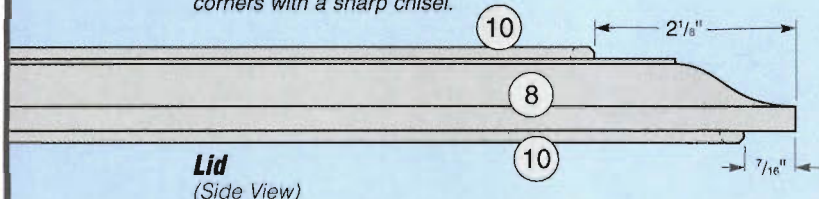


42

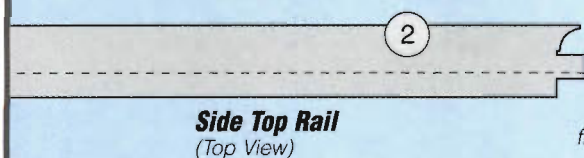
Pinup Shop Drawings

Letter Box

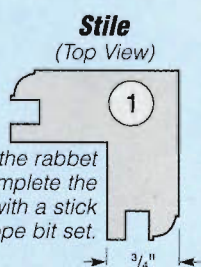
Rout stopped dadoes and grooves for the bead molding. Clean up the corners with a sharp chisel.



Lid
(Side View)

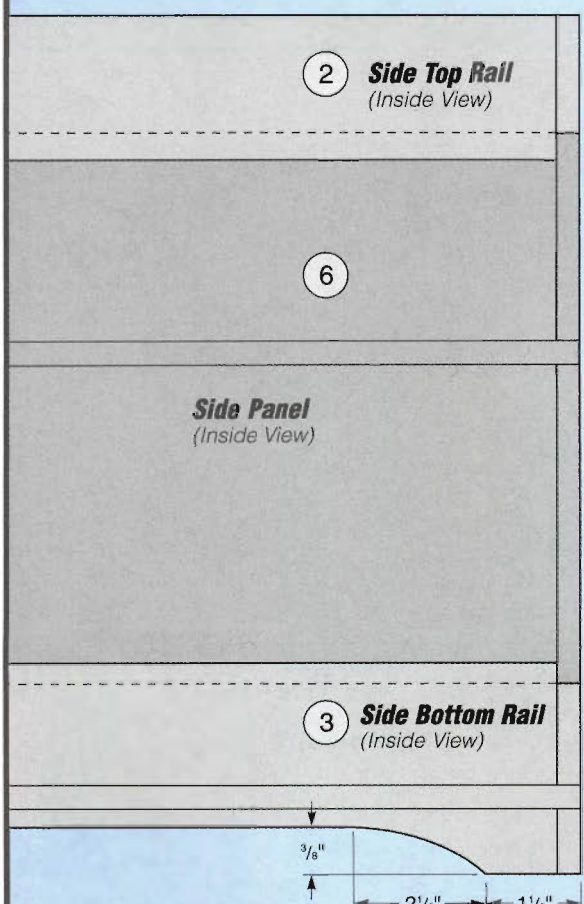


Side Top Rail
(Top View)



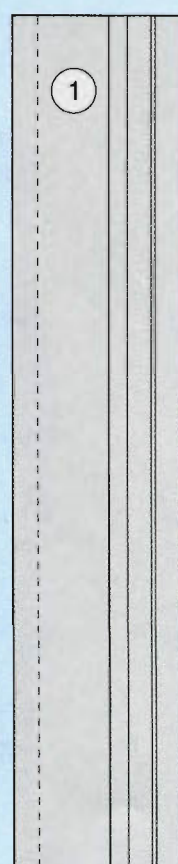
Form the rabbet first. Complete the stiles with a stick and cope bit set.

Stile
(Top View)

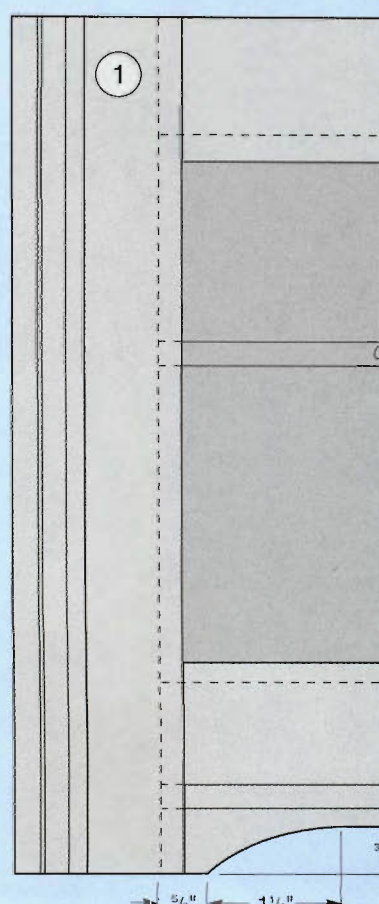


Side Panel
(Inside View)

Side Bottom Rail
(Inside View)



Stile
(Inside View)



Full-Size Patterns

PINUP SHOP DRAWINGS

- Open staples carefully, remove pattern and fold staples back in place.
- Use graphite paper (available at art supply stores) or cut and trace full-size patterns onto your stock.
- Cut out the elevation drawings and pin them to your shop wall.



Round Picnic Table

Dimensions for creating a full-size storyboard. Scaled drawings for the legs and stretchers. Shapes to complete the bench rails and slats.



Letter Box

Full-size pattern. Elevation drawings and a material list to help you build the boxes on page 24.

Quick Release Circle Cutting Jig

Complete details on how to design and build your own quick release circle cutting router jig.



WOODWORKER'S JOURNAL

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9 Bottom (Top View)



End Subassembly (Top View)

Section

4 End Top Rail (Inside View)

7 End Panel (Inside View)

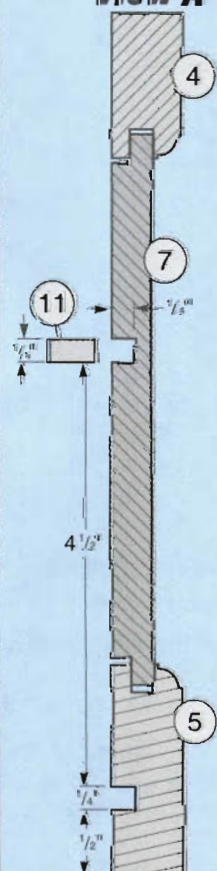
5 End Bottom Rail (Inside View)

End Subassembly (Inside View)

MATERIAL LIST

	T x W x L
1 Stiles (4)	1 3/8" x 1 3/4" x 9"
2 Side Top Rails (2)	3/4" x 1 1/2" x 14"
3 Side Bottom Rails (2)	3/4" x 2 1/4" x 14"
4 End Top Rails (2)	3/4" x 1 1/2" x 8 3/16"
5 End Bottom Rails (2)	3/4" x 2 1/4" x 8 3/16"
6 Side Panels (2)	7/16" x 5 5/8" x 13 7/8"
7 End Panels (2)	7/16" x 5 5/8" x 8 1/8"
8 Lid (1)	3/4" x 12 3/4" x 18 3/8"
9 Bottom (1)	1/4" x 9 7/8" x 15 3/4"
10 Bead Molding (1)	1/4" x 1/4" x 110"
11 Tray Slides (1)	1/4" x 1/2" x 44"
12 Tray Sides (2)	3/8" x 2" x 9 1/2"
13 Tray Ends (2)	3/8" x 2" x 6"
14 Tray Bottom (1)	1/4" x 5 1/2" x 9"
15 Tray Corner Keys (8)	1/4" x 1/2" x 1"

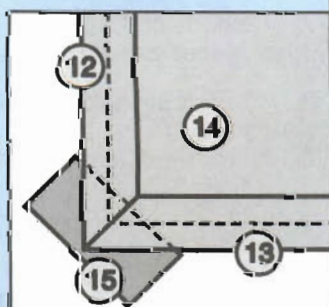
Section View A



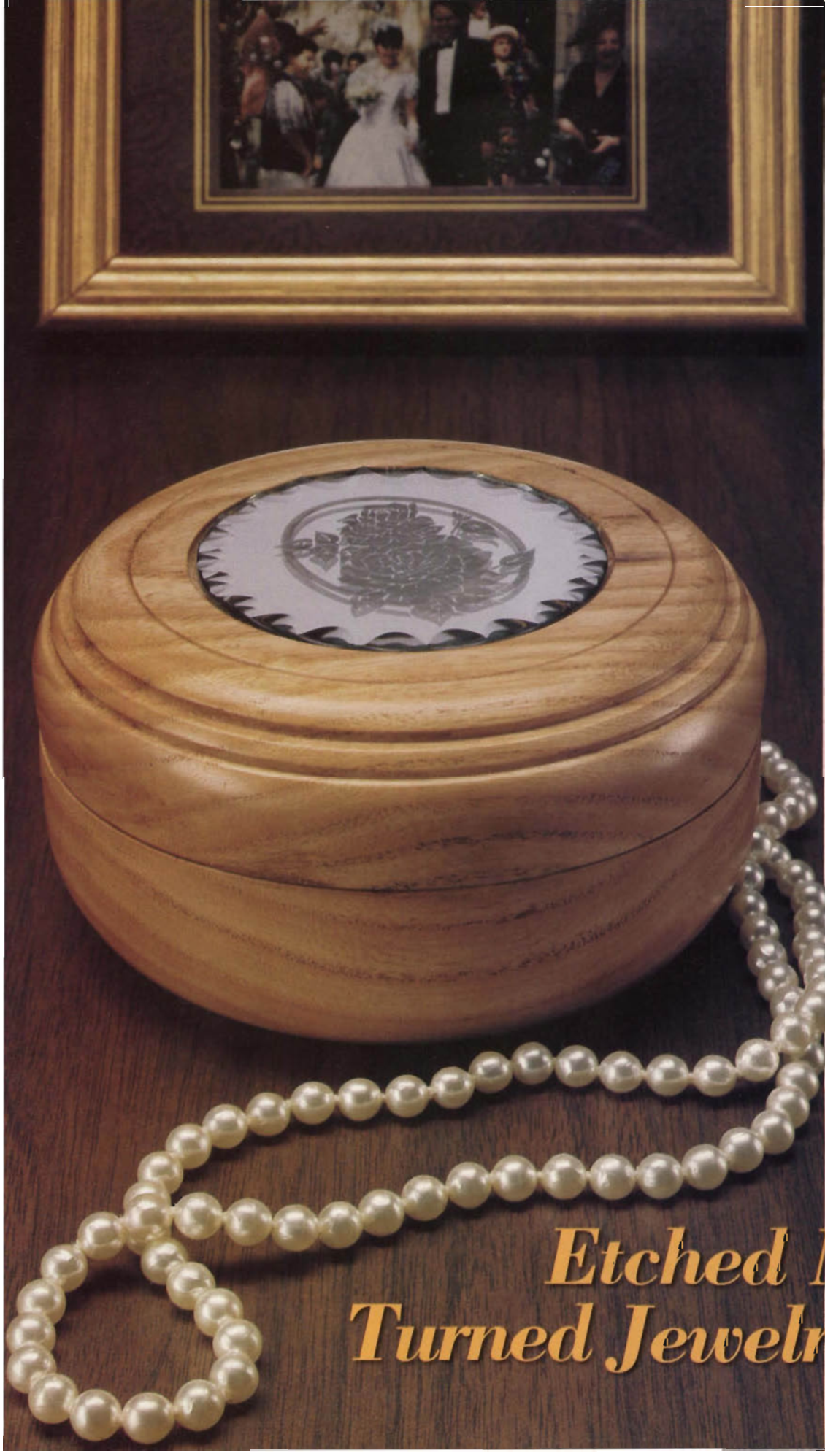
End Subassembly (Section View)

Letter Box Basics

- This simple frame and panel box was completed using a stick and cope router bit set.
- The lid's profile was formed with a large panel raising bit.
- Make the end subassemblies first (stiles, rails and panels) and then complete the carcass by adding the side subassemblies (rails and panels).
- Don't forget to trap the bottom during glue up.



Tray Corner Key Detail (Top View)

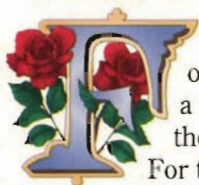


I've heard
more than one
woodworker
express the
opinion that
woodturning
is but a poor
cousin to the
"real thing."
Absolutely
untrue!
Woodturning
opens up new
frontiers of
organically
shaped, useful
and beautiful
projects. It may
be woodworking's
purest form.

By
Ron Hampton

Etched Mirror Turned Jewelry Box

*For everything, turn, turn, turn ... there is a season,
turn, turn, turn ... and a time for everything, under heaven.*



For years I've thought that was a nice turn of a phrase, but then most of us turners do!

For those of you who haven't made the leap to the wood lathe, I designed this elegant but simple turned jewelry box to serve as a great starter project.

Make your jewelry box from two separate pieces of hardwood. Choose a species you are familiar with that is hard, tightly grained, stable and attractive. For this project, I used two pieces of kiln-dried ash (5½" square by 2" thick) because they contrasted nicely with my wife's dressing table. I kept almost the entire two inch thickness for the bottom, losing only 1/8" of height from sanding and finishing. The top was turned down to about one inch thick, with a stepped cutout in the center to accept an etched mirror.

Start with the Bottom

Your first move is to glue 1/2" thick plywood to the back of each of your turning pieces, as shown in Figure 1. Your faceplate will attach to the plywood so you won't lose any thickness from your turning



Figure 1: Glue 1/2" pieces of plywood to the hardwood blanks. They will be mounted to your faceplate with screws. The plywood will be removed later.

blank as a result of wood screw holes. Next, find the center of your blanks by marking diagonal lines from corner to corner. Use your compass to draw the largest circle you can fit on the blank.

Round up the square blank using your band saw. This will make it easier to begin

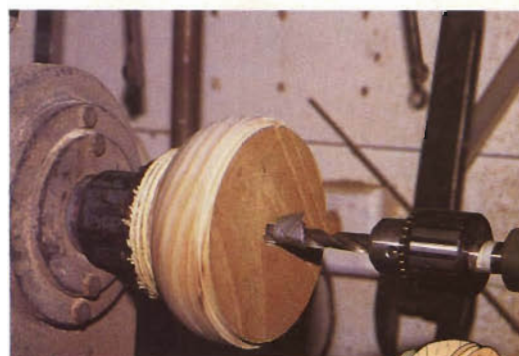


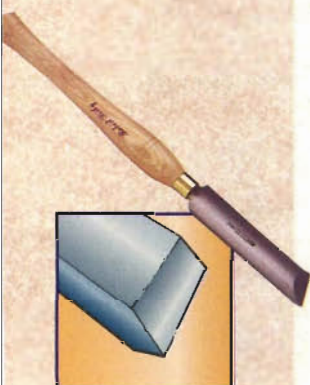
Figure 2: Use a drill bit mounted in a Jacob's chuck (held by your tailstock) to start the hollowing process.

turning the blank. Now screw your faceplate to the bottom of the base, using eight #8 metal hex head screws. These metal screws have long blades on their threads that hold well. The hex heads also allow you to use a power drive socket on your drill to drive them in. They won't strip out like Phillips head screws do, and they can be used over and over. Most face plates have four holes in them. For safety reasons and extra gripping ability, I drilled four additional holes in between the original holes in my face plate.

Now you're in business. Refer to the **Full-size Section View** on page 46 for the general shape and the dimensions of the jewelry box. Turn the bottom blank round on your lathe and then continue to reduce the diameter by 1/4". This will ensure you will be able to create a large enough circle from the top blank so the top fits.

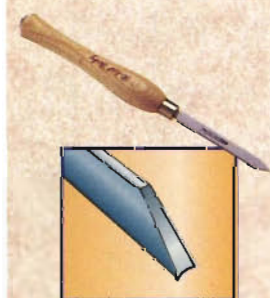
Use your skew to mark the bottom of the bowl and then turn to your bowl gouge to bring the base to the correct diameter of about 5¼". Reduce the diameter toward the bottom to create a more delicate look. Shape the outside curve, using your bowl gouge or skew. Next, using your skew, cut a 3/8" tall by 1/4" deep rabbet. This is the spout of the base that will fit into the lid.

Start hollowing the center of the bowl by drilling a hole to the correct depth. This hole makes the job of hollowing out the wood much easier. Control the depth of the



The Skew,

also called a long cornered chisel, is ground with an angled edge to aid its planing tasks.



Parting Tools

are plunged into turning stock to "part" the piece from the lathe.

hole you're making by using a marked drill bit. Put a piece of tape on your drill bit about 1 1/4" down the shaft. Check to make sure you leave at least 1/4" to 5/16" of wood remaining for the bottom of the bowl. Using your skew, make a small indentation at the center of the bowl. This will give your drill bit a nice starting point. Chuck the drill bit in a Jacob's chuck that is mounted in your tailstock (see **Figure 2**).



Figure 3: It's important to finish your project as you turn; it will minimize cracking and other moisture-related problems.

Now you're ready to make some shavings! Hollow out the inside of the bowl using a bowl gouge, leaving the rim a full 1/4" thick. Use a sharp round nose scraper to flatten out the bottom and make it smooth. Next, sand to 440 grit and apply the finish of your choice (see **Figure 3**). For this project, I needed a fast satin finish. I applied wipe-on polyurethane with a paper towel and immediately wiped it off while the bowl was spinning. This created enough heat to quickly set the poly and bring out the nice satin finish I wanted.

Next, finish shaping the outside of the bottom of the bowl (see the **Section View Drawing**). Taper the bottom of the bowl working from the rim toward the face plate. The shape of the base is now complete except for reverse turning the bottom, which you will do after you've started on the lid. But first we will use the lid as a ram chuck.

Turning the Lid

Start off by turning the lid round, as you did with the bottom. Leave the lid diameter a 1/4" larger than the bottom, so the lid can serve as a ram chuck. A ram chuck is a piece of stock — in this case the lid of the project — created to hold by friction (ramming) an open vessel (in this case, the base of the project). You could use a three-jawed spigot chuck, but this technique is cheaper.

Use a set of calipers to find the widest measure across the lip of the base. Transfer this measurement to the bottom of the lid as shown in **Figure 4**. Using your skew, make a cut, just inside the mark, 1/32" deep. Test fit the base until it fits snugly into the 1/32" cut. Now, using your bowl gouge, hollow out most of the wood in the center of the lid. Use your skew to remove the wood on the inside edge of the lid, making sure you leave a clean, sharp edge to create a very snug fit with the bottom. It is better to make the lid too tight at first and then slowly go back and remove wood with a scraper.

The lid is now going to be used as a ram chuck so you can reverse turn the bottom of the base. Press the base into the lid. It should be held very firmly by the lid (see **Figure 5**). Use a bowl gouge and a light touch to shape the bottom — it should be concave to prevent rocking. Wrap up this step by sanding and finishing the bottom.

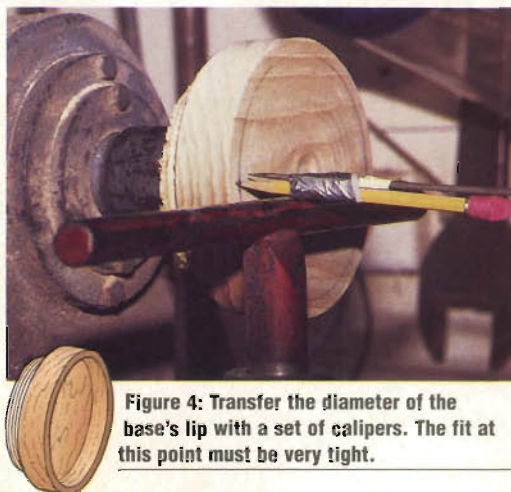
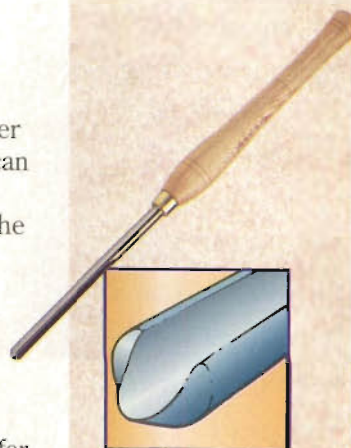
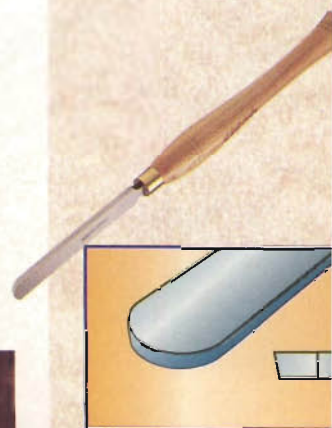


Figure 4: Transfer the diameter of the base's lip with a set of calipers. The fit at this point must be very tight.



A Bowl Gouge,

as its name implies, is used primarily for hollowing bowls.

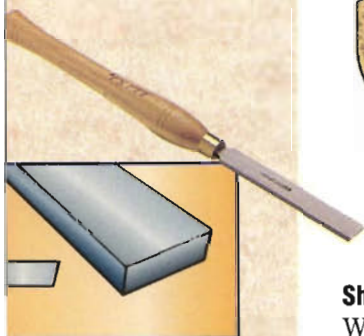


Round Nose Scrapers

are part of a family of turning tools that come in a variety of shapes and sizes.

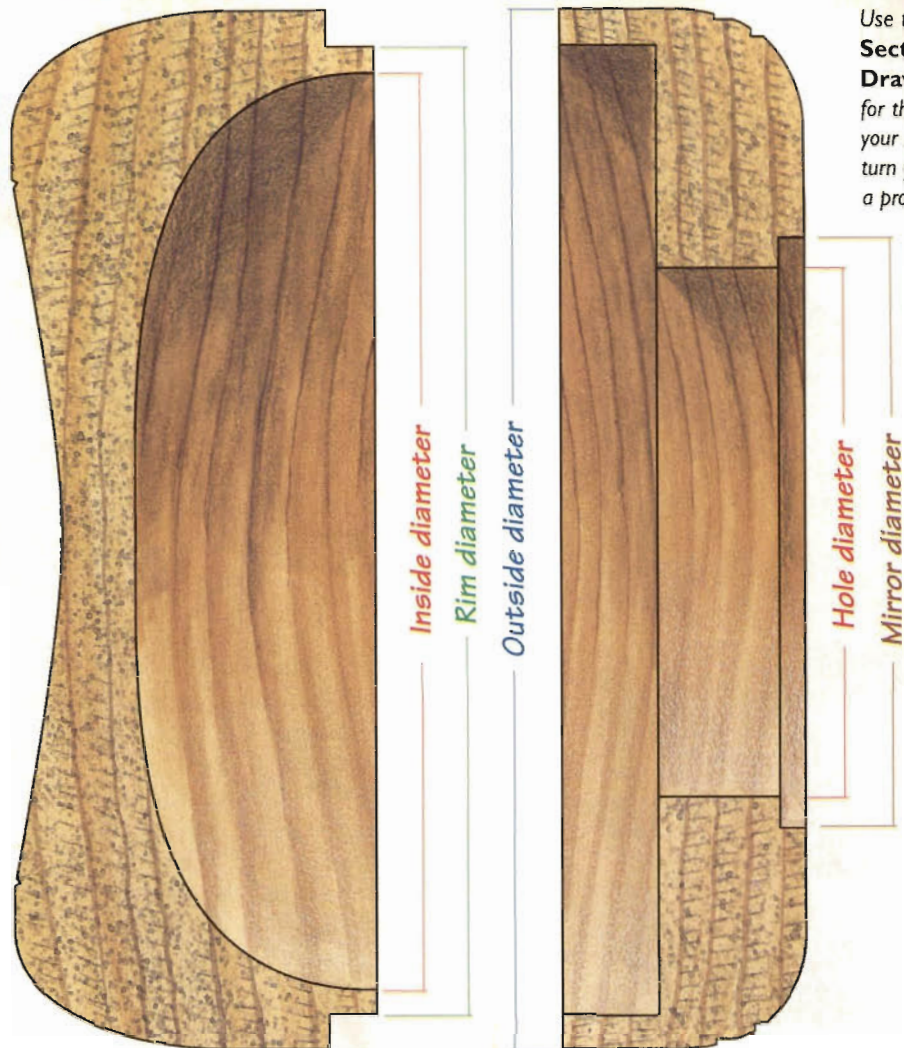
When turning this box, use a moderate speed setting of 300 to 500 RPM.

For safety reasons, high speeds should be used only on very small objects ... such as pen sets.



Straight Edge Scrapers

are used to remove small amounts of wood and produce a very smooth surface.



Use this **Full-size Section View Drawing** as a guide for the jewelry box. Have your mirror on hand as you turn your project to ensure a proper fit.

Shaping the Lid

With the bottom of the bowl still pressed into the lid, start shaping the lid so it fits flush with the bottom. This gives you a perfect opportunity to exactly match the diameter of the base. It's almost like turning the top and bottom from the same piece of wood. Shape the entire outside of the lid using a skew, and then round the top of the lid for a delicate look. Since you'll probably have a few small scratches in the bottom of the bowl, go back and resand and finish the entire outside of the bowl (see **Figure 6**).

At this time, the lid of the box fits too snugly for easy use. Using a straight edge scraper, remove small amounts of wood from the inside of the lid so the bottom slides in easily. Remove only a small amount of material at a time, and check the fit often. With the proper fit, the lid will settle into place on a cushion of air. Sand

and finish the inside of the lid, being careful not to sand so much that you make the fit of the lid sloppy. When you're happy with the fit, put the bottom of the bowl away for safekeeping.



Figure 5: Use the lid blank as a ram chuck to reverse turn the concave bottom of the base. Then size the lid to the base's exact diameter. A very slick technique!

Etching the Mirror

I used a kit (see project supplies) to etch the mirror. It's pretty easy ... you just apply the stencil to your mirror, as shown below. I got better results by doubling the suggested etching time from one minutes to two minutes, at seventy degrees. Then you just rinse the acid off the mirror with running water and let it dry.

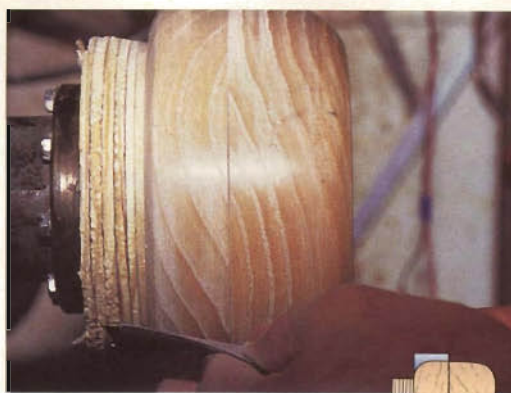


Figure 6: Gently shape the profile of your jewelry box. View the piece as an entire shape, not two separate pieces. Resand and refinish as needed.

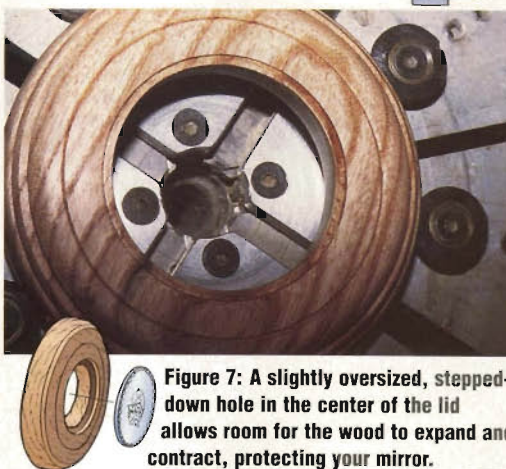


Figure 7: A slightly oversized, stepped-down hole in the center of the lid allows room for the wood to expand and contract, protecting your mirror.

Finish Turning the Lid

You're getting down to a few final steps now. First, create the outside shape of the lid and sand and finish it. Now part the lid off from the head stock and reverse turn it with a second ram chuck or a four-jaw chuck, like the one shown in **Figure 7**. Make gentle cuts so you don't dislodge the lid from the chuck. If you'd like, add some decorative steps or beads, then move on to sanding and finishing.

The next step is to cut the stepped center hole where the mirror will sit. Set your calipers to mark a circle the same size as your mirror and scribe this circle onto the center of the lid. With your skew, make a very shallow cut just inside of the line (see **Figure 7**). Test fit the mirror: it should still be too tight. Enlarge the hole until the mirror fits with just a little extra space all around — too tight and the mirror will crack. Cut the step-down deep enough for the top of the glass to fit flush with the top of the lid. Sand and finish the edges of the lid. This completes the turning of the box.

Attaching the Mirror

The mirror is now ready to be glued in place. It is important to remember that the wood will expand and contract with

moisture and temperature changes. Thus the hole must be a little larger than the mirror, and the glue must be soft and flexible. Use a small amount of Elmer's® rubber cement to line the inside of the hole. Apply the cement with a toothpick, putting a small amount on the back edge of the mirror. Allow the glue to dry for several minutes before putting the mirror in the rebate. Center the mirror and let the glue harden. Clean any excess glue and *voila!* You've turned yourself a wonderful present, appropriate for all seasons!

To order a 3" diameter mirror with scalloped edges (identical to the one shown in this project), call 800-225-1153 and ask for part #126653.



Four-Jaw Chucks

are used to mount hollow bowls and boxes. They are expensive, but worth the cost.

Jewelry Box Supplies

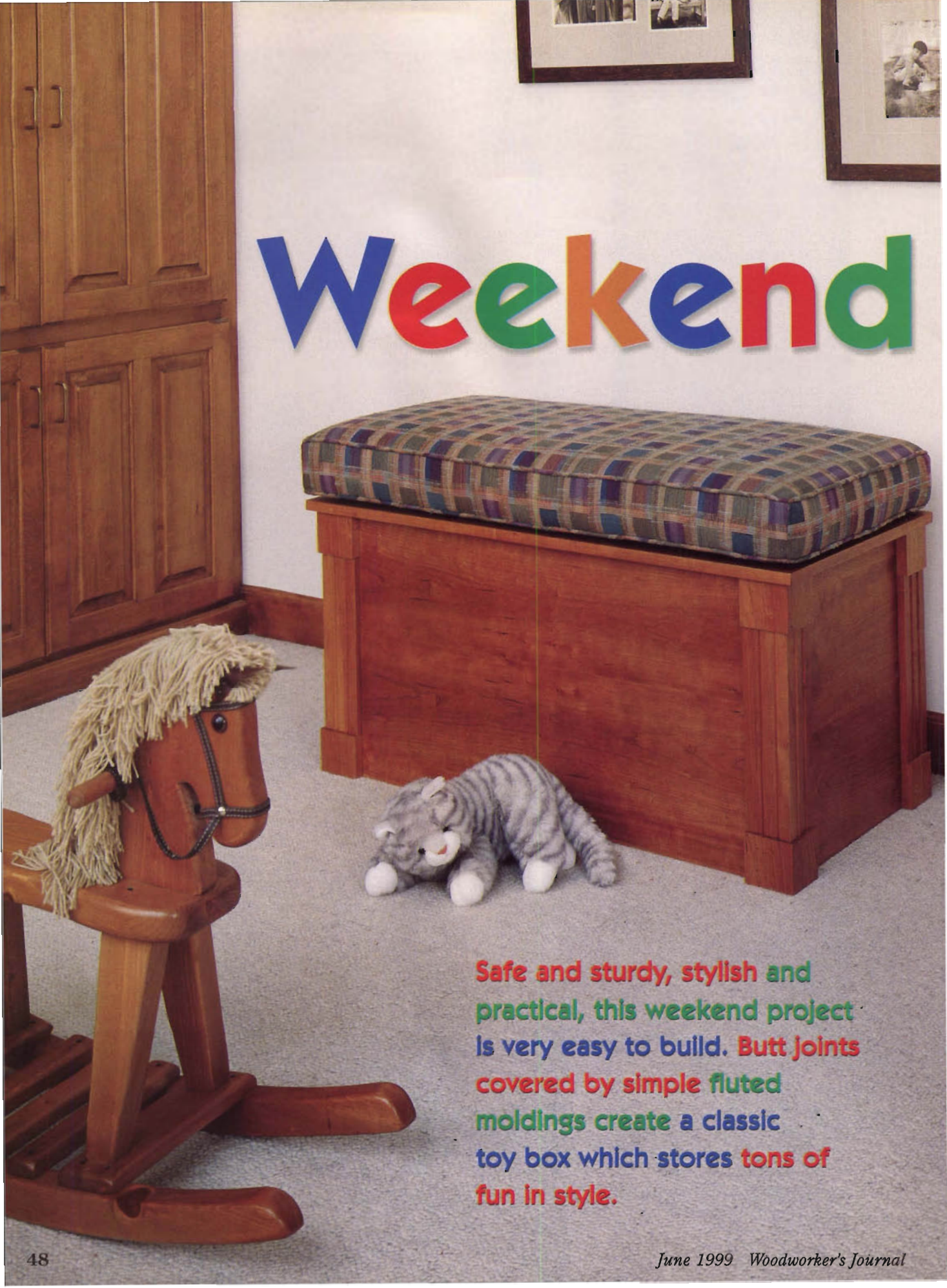
The following supplies are available from the Woodworker's Journal.

Glass Etching Kit #68544.....\$21.99
Nova Chuck #90317.....\$159.99
Nova Chuck Insert* #90319.....\$24.99

*1" by 8 tpi (ask about other sizes).

To order your supplies, call 800-610-0883.
Please mention code W0699.



A photograph of a child's room. On the left is a wooden rocking horse. In the center is a large wooden toy box with a plaid cushion on top. A stuffed cat is lying on the floor in front of the toy box. In the background, there is a wooden cabinet and two framed pictures on the wall.

Weekend

Safe and sturdy, stylish and practical, this weekend project is very easy to build. Butt joints covered by simple fluted moldings create a classic toy box which stores tons of fun in style.

Toy Box

By Mike McGlynn



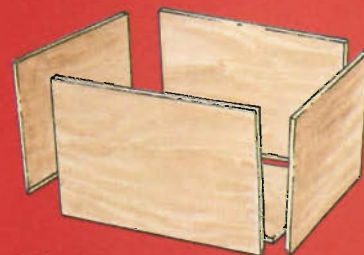
oys are a lot more than mere playthings. They represent everything from a child's dreams for the future to a parent's paradise lost. But even with such wonderful esoteric values, the reality is that most of the time they're just a huge mess all over the house. That's particularly true nowadays, when a kid seems to own every toy that's ever appeared on TV.

(I know, all we needed was a Captain Midnight decoder ring and a couple of paper clips to keep us occupied for hours on end.)

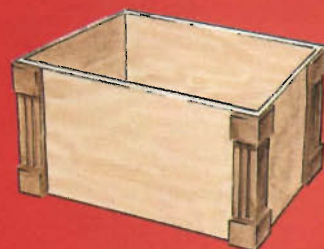
The rules are a little different these days too. Kids are allowed to set up fun shops in the middle of the living room. My old toy box, while sturdy and well used, would not have "gone" with mom's decor.

So here is a toy box for today. Designed to look great in the living room or basement. Featuring basic construction with elegant results. Purchase or have the cushion made, and you have a toy box that will easily convert to a blanket chest or perhaps an extra seat for the big game.

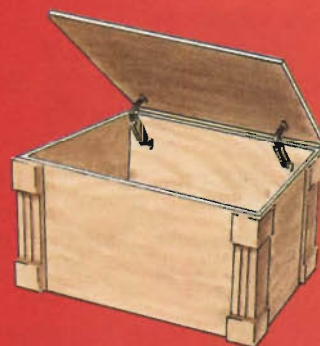
As easy as
1-2-3 ... 4



1 Cut the plywood panels to size, machine four rabbets and test the fit.



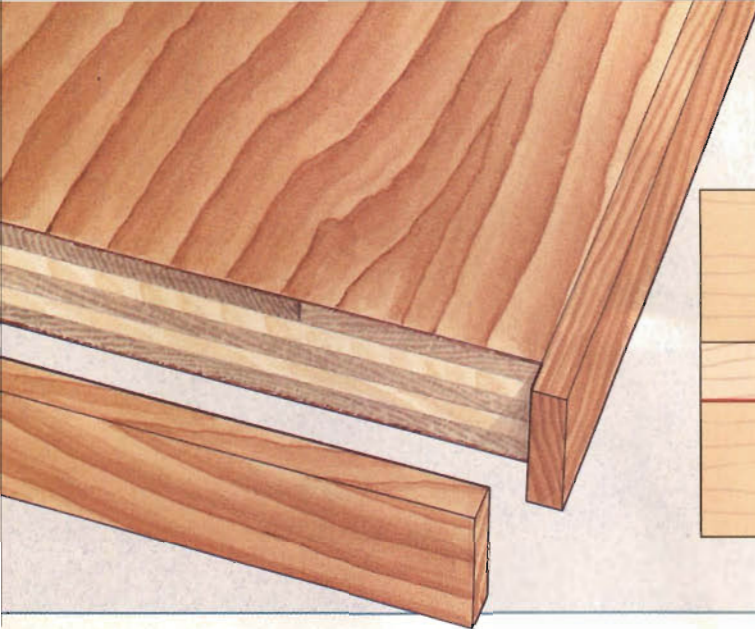
2 Add the edge banding, fluted molding and plinth blocks.



3 Attach the lid, and add the hardware: two child-safe lid supports and a simple piano hinge.

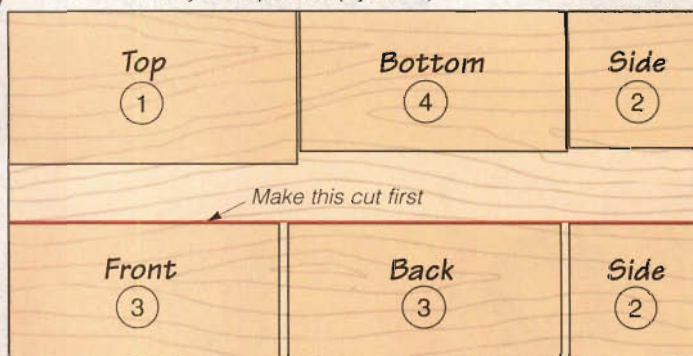


4 Add the finish of your choice, a few strips of Velcro® and a nice cushion.



Plywood cutting guide

(Note: You don't have to cut the bottom piece from your expensive plywood.)



Whether you're an old hand at woodworking or a raw recruit, this project is manageable with just the barest array of tools. All you'll need are a table saw, router and a few basic hand tools. A circular saw might come in handy, but isn't absolutely essential.

Keep two things in mind when choosing the wood for your toy box. First, look for a species your lumberyard stocks in both 3/4" thick hardwood stock and 3/4" veneered plywood. I was fortunate to find both in cherry. Second, think about how your choice will match the existing room's decor.

Cut the Major Components to Size

Dimensions for the top, sides, front and back (pieces 1, 2 and 3) are given in the **Material List** at right. All five parts can be cut from a single sheet of veneered plywood, as shown in the cutting diagram above. When laying out these cuts, pay special attention to grain direction, as you'll want the lines to

run horizontally around the box. You'll find some helpful pointers on handling large sheets at the bottom of page 52. The bottom (piece 4) can be squeezed out of your nice plywood, but since it won't be seen, you're better off cutting it from any halfway respectable looking sheet stock you have laying around.



Figure 1: A simple rabbet is formed at the bottom of the sides, front and back for the bottom piece. There's no need to stop the cuts since molding will cover the corners.

Most hardwood veneered sheets come with an A (or A2) and a B side. The A side is a better quality veneer, and should be facing out on the finished project. With that in mind, the blade should always enter the good side and exit the B side, to avoid splintering. So, if you're using a circular saw to cut a full sheet to size, the A side should be facing down. On the table saw, the A side should be face up.

Mill Rabbets for the Bottom

The bottom is secured to the sides, front and back by setting it in matching rabbets. These can be cut on the table saw using a dado head, or with a router using a 1/2" straight bit. For the table saw method, just set the fence and blade according to the dimensions shown above, and make the cuts. If you choose to go with a router (either portable with a clamped-on guide, or table mounted), make each rabbet in two passes.

Disguise the Plywood Edges

Although veneered plywood is an excellent building material, and it does a wonderful job of replicating wide boards, it has one minor drawback. The edges of a cut sheet reveal the alternating layers or plies within the board. There are a couple of ways to deal with this. One is to apply an iron-on veneer tape, but with the usage this toy box may see over the next several decades, I thought strips of hardwood edge banding (piece 5) would be much more durable.

Rip enough 1/4" thick stock to cover both the top edges of the carcass and the outer edges of the lid. This stock should be the exact width of the plywood thickness. Trim it to length (create mitered corners on the lid pieces), and apply it with glue and clamps. If you're

Toy Box Project Supplies

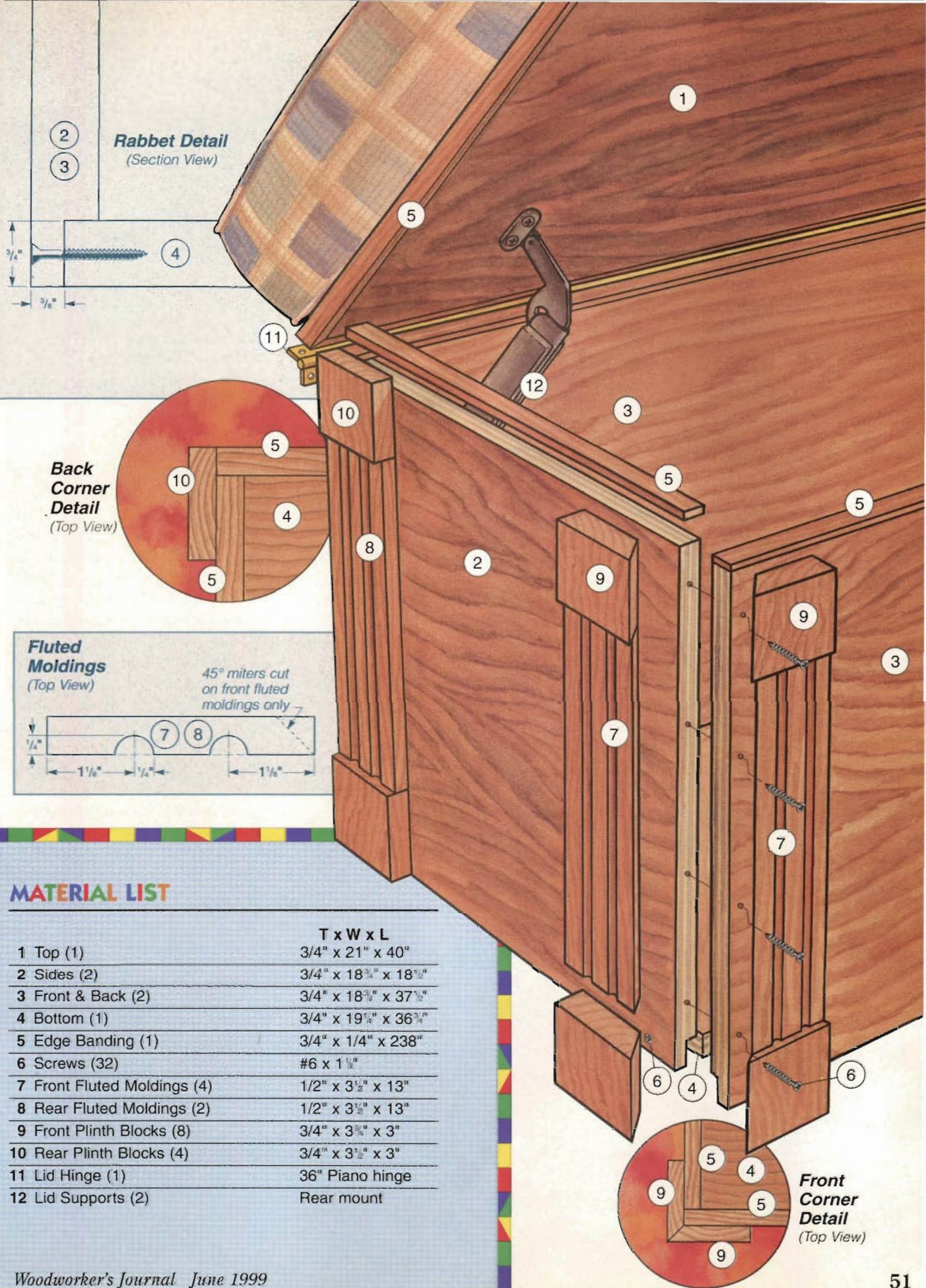
The following supplies are available from Woodworker's Journal.

Lid Support #26187*\$3.49

36" x 1 1/16" Piano Hinge #19241\$6.79

*Two required.

To order your supplies, call 800-610-0883 and mention code W0699.



MATERIAL LIST

	T x W x L
1 Top (1)	3/4" x 21" x 40"
2 Sides (2)	3/4" x 18 3/4" x 18 1/2"
3 Front & Back (2)	3/4" x 18 3/4" x 37 1/2"
4 Bottom (1)	3/4" x 19 1/2" x 36 3/4"
5 Edge Banding (1)	3/4" x 1/4" x 238"
6 Screws (32)	#6 x 1 1/2"
7 Front Fluted Moldings (4)	1/2" x 3 1/2" x 13"
8 Rear Fluted Moldings (2)	1/2" x 3 1/2" x 13"
9 Front Plinth Blocks (8)	3/4" x 3 3/8" x 3"
10 Rear Plinth Blocks (4)	3/4" x 3 3/8" x 3"
11 Lid Hinge (1)	36" Piano hinge
12 Lid Supports (2)	Rear mount

short of clamps, you can use 1¼" hardened trim nails, predrilling the trim every six inches so it won't split (I chuck one of the nails in my drill and use it instead of a drill bit). Set the nail heads after the glue dries, then fill and sand them.

If the trim is minutely wider than the plywood, make sure the outsides (appearance sides) are absolutely flush. You can belt sand the inside faces with 220 grit after the glue dries. Go slow: you don't want to sand through the veneer.

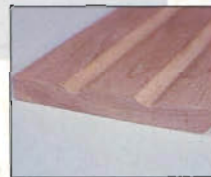
Assemble the Box with Butt Joints

The box carcass is held together with glue and screws driven through simple butt joints. Refer to the **Exploded View** on page 51 to orient the parts properly. With the bottom in place, butt the joints together and hold them temporarily with clamps (or an extra pair of hands if they're available). Predrill for the screws (pieces 6), using a bit about half the thickness of the screws in the second piece, and the full thickness of the screws through the first piece. This will ensure the screws pull the joints tight as they are driven home. Be sure to countersink for the heads so they'll

Keepp those little fingers safe with a quality support like the one used for this project, approved for use on toy boxes by the Consumer Product Safety Commission.



Figure 2: Rout the flutes in your stock before cutting it to length to ensure uniformity.



Fluted Corners

A simple molding application takes this project from a mundane cube to an elegant toy box. I used a fluted molding, created by milling a pair of large grooves (called flutes) in one face of 1/2" thick pieces of stock (pieces 7 and 8). The best way to do this is with a table mounted router (see **Figure 2**), using an inexpensive 1/4" radius core box bit to form 1/2" flutes. Refer to the **Elevation Drawing** on page 51 for the dimensions, and make the cuts in two passes.

After the grooving is complete, use your table saw to create a 45° chamfer on one edge of each piece of the front molding, as shown in the inset at left. The rear moldings need not be chamfered. Now use

lie flush with the wood. Apply glue to both joint surfaces, making sure the bottom is in its rabbet, and drive the screws home.

As you work, make sure the carcass is square and plumb. Measure diagonally across the top in both directions: when these measurements are identical, your assembly is square. Keep a damp cloth handy to wipe off any excess glue. If you miss some glue spots, wait until they become rubbery, just before they harden. Then clean them up with a sharp chisel, using the blade as a scraper.

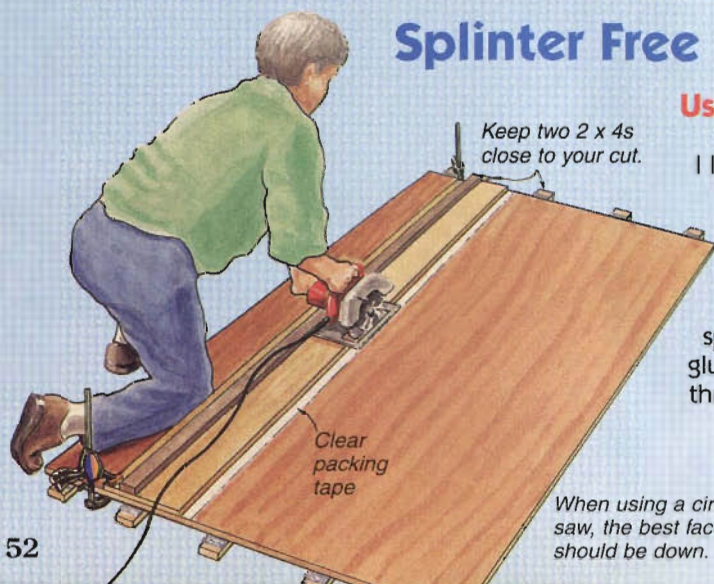
Splinter Free Cuts on Large Sheet Stock

Using a Circular Saw

When cutting a full sheet of plywood into components, I lay a few 9' long 2 X 4s on the floor. Since the best face of the stock should face down (the exit side of a cut is more likely to splinter), I glue thin carpet to one face of each of my 2x4s to protect the plywood's veneer.

I also recommend applying 3M brand clear packing tape along the path of the cut (both sides) to reduce splintering. To get a perfect cut every time, make a jig by gluing an 3" wide length of 1/4" ply to a straightedge. Trim through this piece with your saw against the straightedge.

Until you get a new saw, that's where your blade will always cut. Just line up that trimmed edge with your pencil mark and clamp the jig in place.



When using a circular saw, the best face should be down.

the same saw angle to chamfer one edge of each of the front plinth blocks (pieces 9). Again, since the back is flush, it's not necessary to chamfer the rear plinth blocks (pieces 10). Glue and clamp the blocks in place, using the **Exploded View** for orientation. Now trim the lengths of molding to fit snugly between the blocks and glue and clamp them in place. Clean up any glue squeeze-out, and set the project aside to dry.

Applying a Finish

The most important step in any finish is the preparation that goes into it. Fill all the nail holes and any minute gaps that appear in the mitered joints, then let the filler dry thoroughly. Sand the entire project with 120, then 180, and finally 220 grit paper. Chisel out any minor accumulations of glue in the corners and you're ready to apply a finish. Many furniture builders like to wipe on a matching stain (in my case, medium cherry), to even out any tonal differences between the plywood veneers and the solid hardwoods. This is also a great way to achieve instant aging — that magnificent patina cherry

develops over the years due to exposure to light and air.

Since this toy box will receive heavy usage over the generations, I suggest applying three or four coats of nontoxic clear finish over the stain, sanding all but the final coat with 400 grit wet/dry sandpaper.

Installing the Hardware

After the finish is dry, attach the lid with a continuous piano hinge (piece 11), predrilling for the screws. Piano hinges are durable, strong and will provide years of service for a very reasonable price. You can rout a mortise for this in the bottom of the lid if you like, but it isn't necessary. To save little fingers from getting pinched, install a pair of child-safe lid supports (pieces 12) which will regulate the speed at which the lid closes. Installation instructions are included with this hardware.

Now all that's left to do is to convince a houseful of boisterous kids that those scattered toys belong in their brand new, fluted, cherry toy box when not in use. You're on your own for that job!

Toy Box Options

We've featured a few toy boxes over the years, and we're probably not done yet. The **Deluxe Lego Center**

appeared in the July/August, 1996 issue of Today's

Woodworker. (Item #17302, on sale for \$2.47).

The November/December, 1991 issue of

Woodworker's Journal featured the **Heirloom Toy Chest** (Item #33289, \$3.95).

And of course

who could forget Rick White's **Technicolor Toy**

Box from the March/April, 1991

issue of Today's Woodworker (Item #66860, on sale for \$2.47). If one of these doesn't suit your fancy, don't worry, there's always something on the drawing board.

To order these plans, call (800) 610-0883.



Keep the plywood's back edge slightly elevated as you start the cut to prevent it from "walking up" on the blade.

Splitter

When you're on the outfeed end, just support the material, don't guide it.

Using a Table Saw

In this case, the best face of your plywood must face up as you cut. Full sheets shouldn't really be handled alone on a table saw — you're just a bit too far from the shut-off to be safe. And if your stock is more than a couple of feet long, be sure to provide a solid outfeed support; roller stands or a large outfeed table are two good options. Take care when cutting thin sheet stock like laminate ... it may slide under the fence and go out of alignment, causing binding on the blade. And speaking of blades, a blade with a reverse hook angle (a melamine blade) works much better than a crosscut version on veneered panels. I like to score through the veneer on cross grain cuts, setting the blade at about 1/32" for the first cut, then turning the sheet over and raising the blade to about one and a half times the thickness of the stock for my second cut.

Flat Pencils Make Their Point

Q When Louisville, Kentucky subscriber Mike McCarty posed the flat carpenter's pencil stumper in our February issue, he got quite a discussion rolling. The experts drew a blank, but readers sharpened their own pencils and provided the answer(s).

The Editors
Woodworker's Journal

A John H. Barrett of Pine, Arizona, hearkened back to his childhood. "When I was a young lad, looking to my father for all sorts of wisdom necessary for coping with the wonders of the world, I asked him why his carpenter's pencil was flat rather than round, like mine. With no hesitation he replied succinctly, 'So it won't roll off the roof.'" It won't roll off other places, either. "What if you were working on a bridge?"

asked reader **Richard Spiekhout** of Morgantown, Kentucky. "You put it down, and right there is where it stays," added **Chuck Kubin** of Denver, Colorado. "You aren't paying your carpenters a bazillion dollars an hour to chase round pencils around the job site."

When **Wesley K. Salvo** of Watertown, Wisconsin, started work as a carpenter, he heard that a round pencil, sharpened correctly, gave a sharper mark than a regular pencil. "Also, when marking next to a square or a straight edge it made a line like when using a marking

knife. I have used the round carpenter's pencils and found the point did not stay sharp as long as the flat ones," he wrote.

You read it right: round carpenter's pencils. "Having been a carpenter for 35 years, I have seen many round carpenter pencils," says **Stan Murray** of Auburn, Washington. "They are much larger than the regular pencils, and have been passed out as advertising, the same as the flat ones."

WJ's readers are quick to point to the advantages of flat pencils. "A chisel point on a carpenter's pencil is much stronger and much less prone to breaking than a point on circular lead," said **Stanley Thompson** of Edmonton, Alberta. "Keep in mind," he added, "that these pencils are used on wood, which is not as smooth as paper. Hence, a point on a circular lead can easily catch on the grain, for example, and snap off. This doesn't happen with a chisel point."

The last thought (please) on the shape of carpenter's pencils comes from shop teacher **Jack Rudder** of Sanford, Colorado. "I tell my students that they are flat so that they are more comfortable when stuck between my cap and my ear—that's where I park 'em when I'm not using one."

Q I am enclosing a picture of a tool that we hope one of your readers can identify. There are no markings on it at all. The jaws are serrated, and there is a spring under the jaws. My guess is that it could be a nutcracker.

Vernon F. Smith
Inver Grove, Minnesota

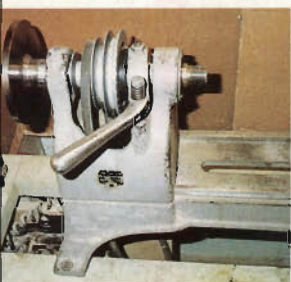
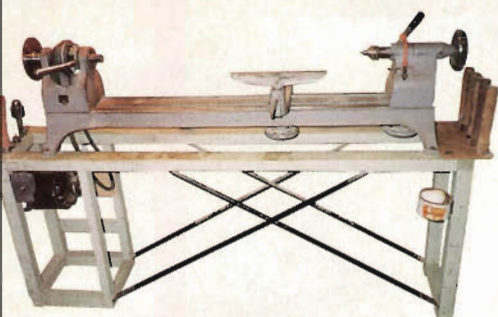


Spring forward with your answers to this mysterious old tool: it has a spring under serrated jaws, but no helpful markings.

A Or maybe it's designed for cutting something else, like barbed wire or nail heads. Anyone out there want to take a crack at this tool mystery? You might end up with an arm full of clamps, just for trying!



Winner! For taking time to respond to Stumpers, John Barrett of Pine, Arizona wins a collection of American Tool's Quick Grip clamps. We toss all the Stumpers letters into a hat to select a winner. If you have a question or answer, send it to the editor: Stumpers Dept., Woodworker's Journal, P.O. Box 261, Medina, Minnesota 55340. E-mail: editor@woodworkersjournal.com.



It's hard to use a tool if you can't find parts — and hard to find parts if you don't know what tool you have. That's the dilemma with this lathe.

Q Some years back, I inherited a wood lathe from my dad. I've not used it as much as I would like because I need to obtain and replace a part or two. First and foremost, I need a motor pulley so I can change belt speeds easily. There is no commercial pulley that duplicates the pulley diameters on the lathe. I would like to know who manufactured this lathe or who may carry parts for it.

It has a 1 x 16 thread, #2 Morse taper, spindle, 12" swing (approximately 6 1/2" center to bed). The four-step, "A" pulley has 4 1/2", 3 3/4", 3" and 2 1/4" steps. It has one flat way and the other is a hex with a bed width of 5" (way to way). The lathe is of cast iron construction. There are no casting numbers to be found on it which could aid in identifying it. I have contacted the most likely woodworking machine tool sources locally without success.

Ed Zilk
Portland, Oregon

A Is there anyone in our readership who can do a good turn for Ed in the case of the mystery lathe? We tried to identify his lathe — and to read the label on this tool — and came up blank. Let's try to get Ed's dad's lathe up and running again.



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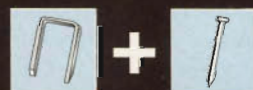
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(Circle No. 80 on PRODUCT INFORMATION form)

INCRA: Third Time's the Charm

By John English

It's been twelve years since the original INCRA Jig™ appeared in stores. Since then, woodworkers have either wondered what all the fuss was about, or become sworn disciples. The original wasn't that exciting to look at — a gray plastic affair with a two-wing clamping knob on the top. But those of us who bought one quickly discovered a whole new world of accuracy. It was built around two pairs of plastic racks with triangular ridges cut into their interlocking faces. Those ridges allowed it to be adjusted in precise 1/32" increments, a real boon for those of us who had always used C-clamps and a straightedge to locate and secure our router table fences.

While the jig offered reliable repeatability, it was limited in size. For example, its maximum travel was just 8". So, in 1991, INCRA's parent company (Dallas, Texas-based Taylor Design Group, Inc.) continued the revolution with the introduction of the INCRA Jig Pro.

The Pro looked decidedly more complicated than the original, but it was almost as simple to operate. Unfortunately, some of the literature used in its marketing gave the impression that this wasn't so. In an effort to reveal its huge potential, Taylor's brochures showed several intricate joints, executed in exotic species and featuring mind boggling combinations like double double dovetail joints. Unfortunately, *that level of sophistication* may have scared off customers whose work would have benefitted immensely from its core values: simple, precise, repeatable joinery. With that in mind, the manufacturer has adopted a different marketing strategy with their newest offering.

Introducing the Ultra

The third generation INCRA Jig, the Ultra, is without a doubt the most accurate and versatile shop jig I've ever seen. Requiring almost no assembly, it was ready to use minutes after I opened the box. This test involved an Ultra jig equipped with a 28", one-piece, Ultra Pro fence system (an optional split fence also is available). The unit came with a right angle fixture (included in the price), eliminating the need to cut a miter gauge track into my table.

Silky-smooth Action

The first thing I noticed about the jig, once it was attached to the tabletop — was how rigid it was. This is due to a reinforced aluminum carriage that glides effortlessly through 24" of travel. The generous size of the jig allows the operator to mill dovetail and box joints on wide assemblies, such

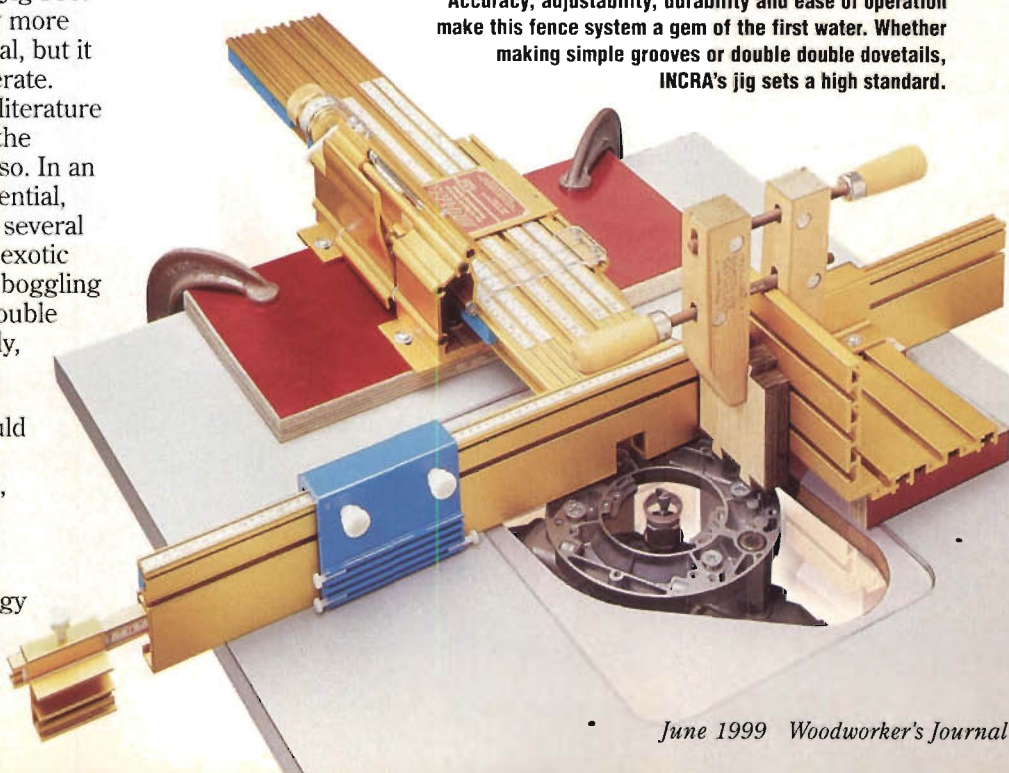


as file drawers. The carriage contacts the base at three separate points, each one surfaced with a low friction coating. A clever design keeps sawdust out, virtually eliminating wear and drag.

How the System Works

If you keep in mind that this is really just an elaborate fence system, it's no surprise its operation is simple. After you slide the jig in place, you can pull a large lever to lock it. The Ultra is micro-adjustable to less than 1/1000" — something one usually associates with metalworking, not wood. The result is incredibly snug joinery that is utterly repeatable. The rotating micro-adjustable scale can

Accuracy, adjustability, durability and ease of operation make this fence system a gem of the first water. Whether making simple grooves or double double dovetails, INCRA's jig sets a high standard.



be set to 0" when the fence is at the desired position. Then the jig can be used for other operations and returned to precisely the same position, still accurate to 1/1000".

Using Templates

The Ultra's 40-page master reference guide shows full-size drawings of every joint the jig can make, and each drawing lists the type of bit needed, the required stock thickness, and which one of the included templates to use. Templates for the 24" Ultra are approximately 16" long by 1/2" wide. I used the #25 template to mill a through dovetail in 1/2" stock. I slid it into one of five parallel slots cast into the top of the sliding carriage: these allow simultaneous set-up of up to five different joints. A laser cut hairline cursor crosses all five slots. After making the first cut, I simply unlocked the carriage and slid it



Milling through dovetails with the INCRA Jig Ultra system is a matter of aligning the jig with the correct template, then clamping two workpieces to a sliding right-angle fixture before making the cut.



until the reference mark for the second cut was lined up under the hairline. I encountered no problems whatsoever with this aspect of the system: each and every cut I made was lined up exactly where it should have been.

A Great General Purpose Fence

The accuracy of a table saw, drill press, band saw or router table depends primarily on its fence, so the Ultra can enhance each of these tools with its accuracy, instant repeatability, micro-adjustability, built-in strength and rigidity. I tested my unit on a drill press with excellent results.

Two built-in stops (one rides the fence, while the other extends about 18" past the end of the fence; see the photo on the previous page) were especially useful for drilling identical

holes in similar workpieces. Unfortunately, the Ultra didn't fare well with my band saw, as the saw table wasn't quite big enough to handle it. This could have been

Tool Preview continues on page 58 ...

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(Street prices)

... continued from page 57

remedied by using Taylor's new Ultra Lite™, a smaller version of the Ultra that retains all its best features. With 12½" of travel, the Lite is large enough for many router table operations, too. And while the Ultra worked well enough on my table saw, the version I tested was designed primarily for a router table. Taylor Group does manufacture another unit called the TS II, for table saws. My test did not include that unit.

Overall Impressions

The Ultra system delivered exactly what it promised: incredible accuracy and built-in repeatability. For larger bits and dust collection, I would recommend equipping the Ultra with Taylor's dual-carriage split fence or their new Intelli-Fence™, rather than the Ultra I tested. Billed as "the one-man cabinet shop", the Intelli-Fence can handle router and shaper bits up to 4½" wide. All three fences come with detachable sliding stops.

The company offers a one-year warranty on absolutely everything and a full lifetime warranty on the



Micro adjustments in 1/1000" increments are made with a well-machined, knurled knob. An easy-to-read scale can be reset to zero after each adjustment.



The INCRA templates are narrow strips of printed matter that slide into grooves in the top of the carriage. You can set up, simultaneously, up to five different joints.



While you don't have to regularly make ultra-fancy joints to benefit from this jig, its micro-adjustability does make such sophisticated joinery much easier and more accessible.

notched racks which lie at the heart of this very impressive system. When one considers the cost of most after-market saw fences, or some of the more sophisticated dovetailing tools out there, the INCRA Ultra jig is a reasonably priced, superbly engineered, highly accurate jig that can enhance the workmanship and results of both old pros and new woodworkers alike. For more info, call Taylor Design Group at 972-418-4811, or look them up on the web at www.incra.com.

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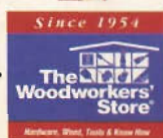
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Seven Scroll Saws Under \$200

By Jim Barrett



Scroll saws can become addictive once you start playing around on them. I've whiled away more than a few spare hours on a scroll saw, transforming small wood scraps into toys, puzzles and other gift items for friends and family. Also, because they're relatively safe to use, you can let kids work on them, too (supervised, of course). My own children (Sara and Sam) have enjoyed scrolling stuff since they were 9 and 10 years old. And the best thing is, you don't have to bust your budget to get into a good scroll saw: all of the benchtop models featured in this review can be had for less than \$200.

Delta 40-540

While not as "sleek-looking" as many of the other saws, the Delta sports a rock-solid design: a heavy cast iron base with rubber feet inserted into the mounting holes to reduce vibration, cast iron table and arm housings. All this, plus nicely machined parts, made it one of the quieter and smoother running saws in my tests.

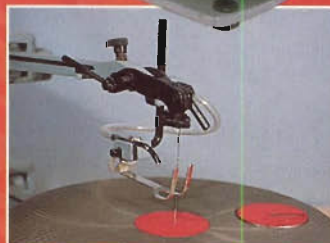
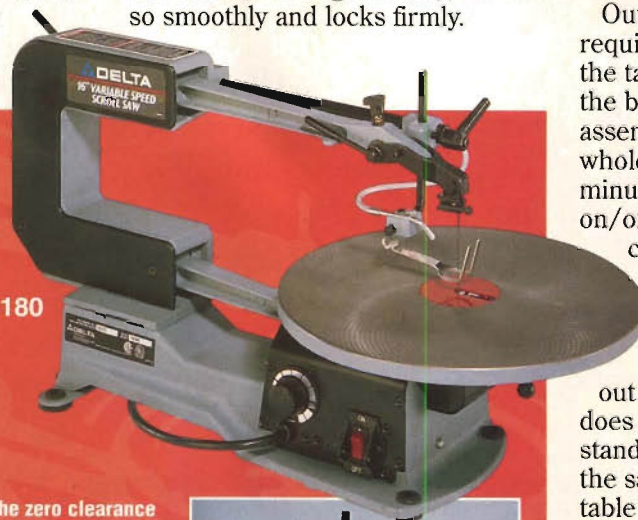
Delta 40-540

Motor: 2 amp (induction)
Speed: 400-1800 SPM
Average Street Price: \$180
Service: 800-223-7278



The zero clearance insert adds support for cutting very small parts or cutouts. The Delta saw features a speed control separate from the on/off switch.

I liked the finger-operated quick tension and blade release levers and tensioning knob, all conveniently located on the front end of the saw's upper arm. Releasing the blade from the lower clamp does require a special tool (supplied), and the clamps accept plain-end blades only. The overall blade changing process is easier than on the saws with knob-operated quick change clamps — not too much fussing with aligning the blades in the large clamp jaws, which hold securely with only slight clamping pressure. The large, ratcheting levers used to adjust the table tilt and height adjustment on the hold-down foot/guard assembly provide plenty of leverage to lock things tight. To adjust the hold-down foot to the corresponding table angle, you'll need a hex wrench (supplied) and screwdriver. While the table tilts only in one direction (0-45 degrees left), it does so smoothly and locks firmly.



Dremel 1672

Motor: 1.65 amp (induction)
Speed: 890/1790 SPM (2-speed)
Average Street Price: \$150
Service: 800-437-3635



The option of mounting plain-end saw blades at 90° to the saw arm allows you to scroll edges of stock otherwise limited by the throat depth. The Dremel also comes with a two-speed switch and a dust port.

Out of the box, the Delta will require some assembly: mounting the table and table lock assembly to the base and the hold-down/guard assembly to the upper arm. The whole procedure takes about 15 minutes. Delta has a rocker-type on/off switch and separate speed control dial mounted on the left side of the saw.

It has no provision for a vac hookup, but its overall design makes it easy to blow out or vacuum up any dust that does get inside the saw. A nice standard accessory included with the saw: a plastic "zero clearance" table insert that provides extra support when making very small inside cutouts. Optional accessories include a solid assortment of blades and a sturdy three-legged stand (Model 40-654, about \$50).

Makita SJ401

Motor: 1.2 amp
(permanent magnet)
Speed: 400-1,600 SPM
Average Street Price: \$179
Service: 800-462-5482



The Makita scroll saw table tilts 15° to the right and a full 45° to the left — handy for creating opposing angle cuts without flipping the stock over.

Dremel 1672

The Dremel is the only two-speed saw reviewed for this article, but it has many of the same features found on the other saws, plus a few unique ones of its own. Features include a quick tension release lever (located at the back end), removable quick blade release clamp on the upper arm (operated by a large T-handle wrench, included), 1 1/4" dust port for vacuum hookup, blade storage box (mounted on the back arm housing), and mountings on both sides of the upper arm for attaching a magnifier lamp (available from Dremel as an optional accessory). Depending on which side you mount the lamp, the mount on the opposite side can be used to store the T-handle wrench. A hinged door on the left side of the saw provides access to the lower blade clamp and motor assembly.

The saw comes set up to accept pin-end blades. Separate plain-end adapter clamps are supplied. You'll need to remove these clamps from the blade holders when changing blades; however, they do enable you to mount the blade at right angles to the arm — handy when you want to scroll the edges of boards longer than the saw's 16"



My children, Sara and Sam, have enjoyed scrolling stuff since they were 9 and 10 years old.

throat depth. A separate "quick change" clamp adapter (also provided) fits into the top blade holder, enabling you to quickly release the top end of the blade for threading it into starter holes in your work piece.

Optional accessories include a steel leg set (No. 16436, about \$55), magnifier lamp with mounting bracket (No. 1304, about \$35) and a sign-making kit that includes three styles of letters and numerals (No. 10, about \$18). I would suggest picking up the leg set, as it provides better support than most workbenches, further reduces saw vibration, and eliminates the need to drill mounting holes in your bench.

Makita SJ401

The Makita saw comes out of the box wholly assembled and ready to use. A well-thought-out design enables the saw table to tilt 45 degrees left and 15 degrees right,

Shop Test continues on page 62...

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Scroll saws can become addictive once you start playing around on them ... turning scraps into toys and other gift items.



clearly indicated on the tilt scale. This feature enables you to cut dovetail joints without having to flip the work piece. Another nice feature: a single, flip-up, quick blade release lever, conveniently located on the front of the saw's top arm. To release blade tension, you flip the lever up, then twist it clockwise or counterclockwise to fine-tune the blade tension. Then, flip the lever back down, and you're ready to go. Permanently attached upper and lower blade clamps accept both pin- and plain-end blades, but require a hex wrench (provided) to loosen and tighten them. A second hex wrench is provided to adjust the finger guard, hold-down foot angle and dust blower nozzle. Even so, the clamps were easily accessible and held the blades securely. On the left side of the saw base, you'll find a handy plastic compartment for storing wrenches and extra blades. I found the front-mounted pull on/push off variable speed switch easily accessible and clearly visible from the operator's position. A large ratcheting lever locks the table firmly at any angle, although it's a bit inconvenient to operate when you have a vac hose hooked up to the dust port located directly beneath the lever. The Makita fared well in my tests; it has enough power to produce clean, accurate cuts.

Pro-Tech 3303

With only a few minor design differences, the Pro-Tech is virtually identical to the Makita. You'll notice the Taiwanese-made Pro-Tech has a different profile on the base and arm housings, neither of which affects the performance of the saw, as compared to the Makita. The open slot at the back of the Pro-Tech base does make it a little easier to pick up the saw, however. Another handy feature in Pro-Tech's offering is a T-handle hex wrench to loosen and tighten the blade clamps. The 1.2 amp motor provides sufficient power to drive the Pro-Tech through most hobby applications without a hitch. If your choice is between these two very good saws, the best advice is simply to shop for price and determine how convenient it would be to have the saw serviced through local outlets when the need arises.



Pro-Tech 3303

Motor: 1.2 amp (permanent magnet)
Speed: 400-1,600 SPM
Average Street Price: \$129
Service: 800-888-6603



A flip-up blade release is a quick — and slick — feature. A handle slot is located at the back of the saw's base.

Ridgid SS1650

Ridgid's offering belongs to a relatively new family of benchtop and stationary tools made by the Emerson Tool Company,

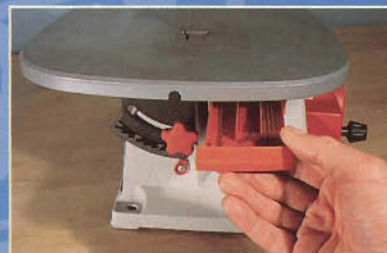


Ridgid SS1650

Motor: 2 amp
(permanent magnet)
Speed: 500-1700 SPM
Average Street Price: \$169
Service: 800-474-3443



Soft-Touch™ handles and knobs, as well as a hidden blade storage compartment, are examples of Ridgid's attention to detail.



distributed exclusively through Home Depot stores.

On this saw, I especially liked the large, comfortable Sof-Touch™ knobs (made from a rubberized thermoplastic material) used to adjust blade tension, table tilt, and the hold-down assembly. These, combined with small knobs on the permanently attached upper and lower blade clamps, provide quick, completely toolless blade changing and adjustments.

The Ridgid also sports the largest table of all the saws, providing plenty of support on all sides of the blade. The table also incorporates a pull-out plastic blade storage tray under the front edge.

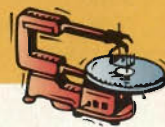
I did find the location of the pull on/push off variable speed control knob (mounted on the motor housing on the right-hand side of the saw) is not as visible from the

normal operating position as I would prefer. Instead of a quick tension release, Ridgid's tension knob is mounted on the back of the saw. The USA-built Ridgid is exceptionally user-friendly, with superior ergonomics, good precision, a cast iron base and a gutsy two-amp induction motor. This saw also features the Ridgid lifetime warranty ... a definite value not matched by other manufacturers.

Ryobi SC165VS

As do most of the other saws, this one comes completely assembled in the box. It sports permanently installed upper and lower blade clamps that accept both pin- and plain-end blades. Thumb screws on both clamps facilitate changing plain-end blades, although perfectly aligning the plain-end blades in the V-shaped clamps might take a little

... the best thing is, you don't have to bust your budget to get into a good saw: you can spend less than \$200.



getting used to. You will need a hex wrench to adjust the tilt and lateral position of the hold-down foot.

Overall, you'll find yourself spending a tad more time changing blades than on some of the other saws tested, but it is easily done.

The pull on/push off variable speed switch and clearly marked table tilt mechanism are highly

Shop Test continues on page 64 ...

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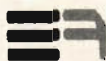
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visible and readily accessible from the operator's position. A dual knob at the back end of the saw provides quick tension release (by turning the outer knob a 1/4 turn) and fine tunes the tension (via the inner knob). A very nice touch.

Also, because the motor is mounted on the left side of the saw, the major table tilt (47 degrees) is to the right, rather than to the left, as on most other saws. This simply means you'll have to rotate the work piece clockwise, as opposed to counterclockwise, when making steeply beveled cutouts (no big deal, once you get used to it). The table also tilts 12 degrees to the left and features a pull-out plastic tray for blade and wrench storage.

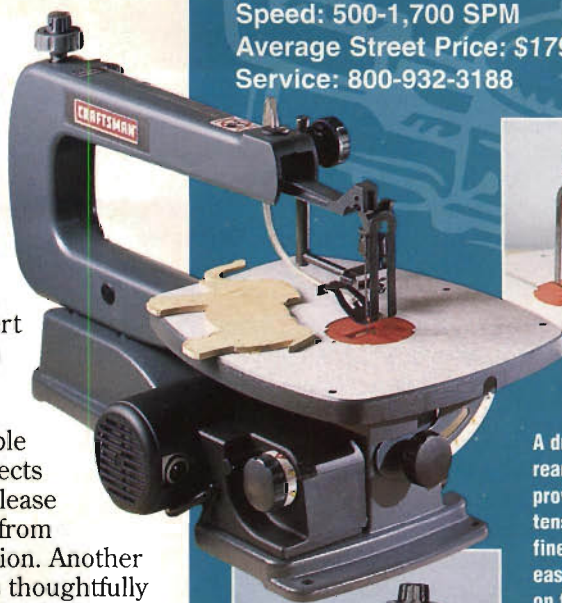
Sears Craftsman 216260

The latest scroll saw from Sears shares the same basic arm design, base, motor and controls as the Ryobi. However, this saw has

been tricked out a bit differently. The Craftsman has a different table shape offering a little extra support behind the blade and a plastic insert that can be set in four different positions. At the back end, a flexible rubber boot protects the dual quick-release tensioning knob from sawdust penetration. Another nice touch: Sears thoughtfully provided a large knob (instead of a hex-head screw) to adjust the position of the hold-down foot/guard in relation to the blade and table. Like the Ridgid, this saw

Sears Craftsman 216260

Motor: 1.2 amp
(permanent magnet)
Speed: 500-1,700 SPM
Average Street Price: \$179
Service: 800-932-3188



A dual knob at the rear of the saw (left) provides both quick tension release and fine tuning. The large easily gripped knob on the foot hold-down (above) makes adjustments especially easy.

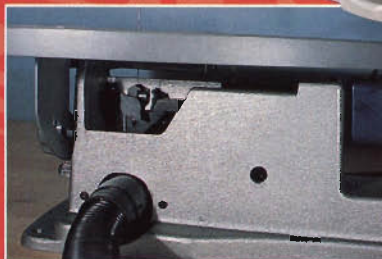


Ryobi SC165VS

Motor: 1.2 amp
(permanent magnet)
Speed: 500-1,700 SPM
Average Street Price: \$169
Service: 800-525-2579



Unique to the Ryobi saw is the 47° right table tilt — it also tilts 12° to the left. A dust port is standard on the Ryobi.



features completely toolless adjustments and blade changing. The 1.2 amp permanent magnet motor powers the saw at a range of 500 to 1,700 strokes per minute, comparing well with the competition.

Final Thoughts

When you get right down to it these saws are all winners, more than adequate for the average hobbyist. Motor size and depth of cut are similar, if not identical, on all seven saws. (Ridgid and Delta saws have the largest motors). The amount of vibration is acceptable in all of the models tested, although the Delta was the smoothest in that department. Saw capacity or throat depth was also similar enough to be a non-factor when comparing one saw to another. All the saws except the

When you get right down to it, these seven saws are all winners and will provide years of service for the average hobbyist.



Delta had dust collection ports which performed with varying degrees of efficiency, and several had zero clearance inserts for cutting extra fine parts and details. After running all these saws through their paces, I found that all of them performed quite well, making clean, controlled cuts in a variety of materials — not a single bad banana in the bunch. My comments on the various conveniences each saw has to offer are subjective, of course. Anyone thinking of buying a new scroll saw (or any tool for that matter) would be best served by taking time to check out demo models of the saws you're interested in. Even if you can't plug the tool in and make cuts on it, go through the drill of

changing and tensioning blades, tilting the table, adjusting the hold-down foot, and so on. In my tests, I particularly liked the models that offered completely toolless blade changing and tensioning — a real time saver when making intricate inside cutouts. Also, think about the type of projects you want to tackle on the saw, and whether your choice will accommodate them.

The average street prices listed in this article are just that ... average. Many retail outlets and tool catalogs will run discounts from time to time, so keep an eye out for these. Also, you should check out manufacturer's warranties and availability of

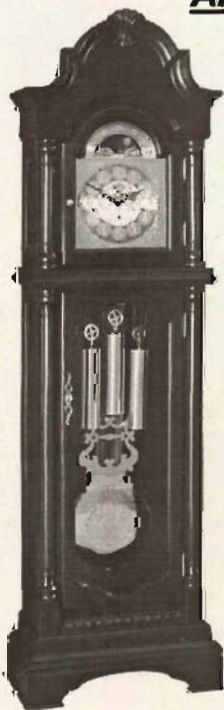
replacement parts and service. And after you do all that, remember that the main component in all of these scroll saws is fun; don't forget to have a bunch of that.

Jim Barrett is a woodworker, writer and long-time contributor to Woodworker's Journal. Jim makes his home in California.

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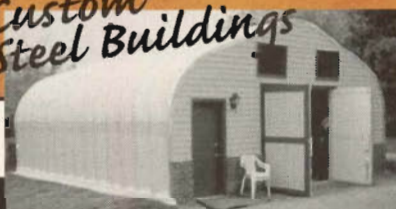
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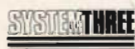
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WOODWORKER'S JOURNAL Resource Directory

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New Foreign Tools Enter the Fray

Germany's Festo Makes Their Mark

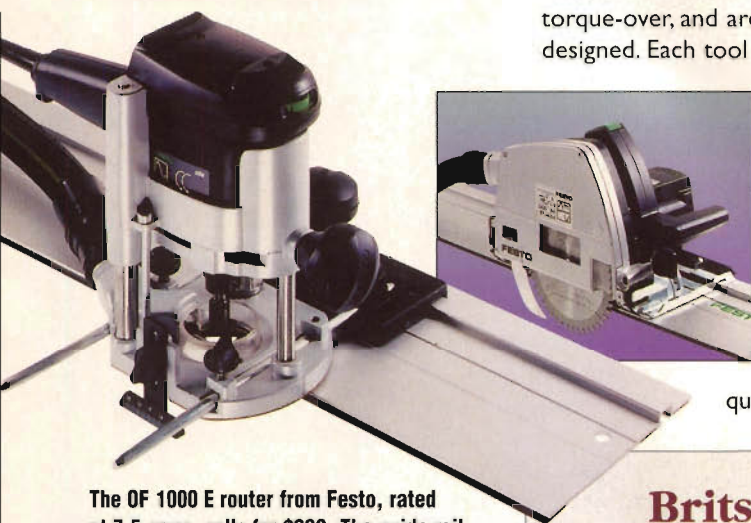
In Europe, German toolmaker Festo Tooltechnic is known as the "Rolls Royce of portable power tools," Michael McGibbon says. A devoted Festo user in Europe, McGibbon is now CEO of Toolguide Corporation, Festo's sole U.S. distributor.

Woodworkers can save space and get shop quality results with hand tools, McGibbon claims. "They could have a garage shop and still keep their vehicle in the shop; just pull it out on the driveway and have the shop up and running in 10 minutes."

Festo tools have soft starts, with no torque-over, and are ergonomically designed. Each tool that produces

dust is either equipped with tool-triggered internal dust extraction or can be connected to a dust collector.

They're also quiet: the OF 1000



The OF 1000 E router from Festo, rated at 7.5 amps, sells for \$330. The guide rail system works with all their saws and routers, allowing precise cuts and angle routing.

Toolguide offers 14 Festo tools, and plans to add more. U.S. sales began in 1997, but the German company is actually 70 years old. All the tools are still manufactured in Germany. A guide rail system works with all the saws and routers, allowing precise cuts and angle routing, and each tool fits into its own "systainer" for storage. The systainers clip together for easy transportation.

Festo contends that, along with accuracy and durability, their portable tools offer an alternative to stationary tools.

Festo's Cordless Drill Driver CDD 12 ES weighs four pounds, runs from 0 to 1,100 rpm and has a price tag of about \$340.



router has a noise level of 78 decibels. The tools now come in black casings, with green switches and other elements, reflecting Festo Tooltechnic's recent change in logo color.

Toolguide has a two and a half day turnaround on repair, although Festo products are durable, McGibbon said: he cited his own 15-year-old portable saw, which he said is as accurate as the day he bought it.

For more info, call 888-337-8600.

Brits Target Benchtop Market

A new brand of tools is showing up in woodworker's hands: Clarke Power Products, the American affiliate of a British company, is increasingly available in stores on this side of the pond.

Based in Bowling Green, Ohio, Clarke has a strong focus on benchtop power tools. Included in their line is a 10" compound miter saw with a 14 amp, 2 horsepower motor. It bevels from 0 to 45 degrees and reaches speeds of 4,700 rpm.

An extra-long arbor provides greater stability and accuracy in cutting. The table has a diameter

of 11½". The saw comes with a dust collection bag and a vise to secure the workpiece.

Clarke says their prices will be comparable to other brands. The 10" compound miter saw, for instance, is priced at about \$169. For more info, call 419-352-2299.





If you had a mallet

Tiny but effective, the Veritas Journeyman's brass mallet has the same feel and force on the sides and the 1 5/8" diameter top, due to a blind threaded connection between the head and the cherry handle. It weighs 1 1/4 pounds, with an overall length of 6". Retail price is \$14.50. For more info, call 613-596-0350.

continues on page 70 ...

HOTLINE

Festo888-337-8600

<http://www.toolguide.com>

Clarke419-352-2299

<http://www.clarkeusa.com>

Veritas800-871-8158

<http://www.leevalley.com>

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<http://www.timberking.com>

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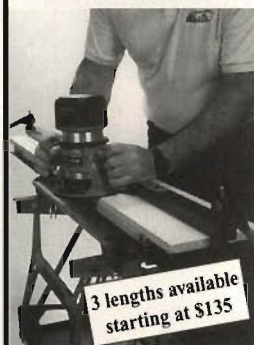
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Gentlemen:

My brother and I each bought one of the smaller JOINT A-billi-T units and we also bought one larger unit to share for those rare (for us) projects that require the large model. These were purchased some years ago at the Columbus, Ohio woodworking show.

I judge any tool that I purchase by how easily it works into my normal woodworking routine and ultimately how often that I use the tool or device. I am pleased to tell you that the JOINT A-billi-T was instantly a tool that I used as regularly and as easily as my table saw. The glue joints that I was able to obtain when preparing stock were nothing short of amazing compared to my old method using the jointer. I recently completed a trestle table with a top that is 81 inches long and 31 inches wide and was constructed of full 2 inch white pine. Obviously this project required the use of the large size JOINT A-billi-T to prepare the edges of the boards for gluing. It worked perfect and by using the method described with the A and B edges in the operating instructions, I was able to obtain joints that are impossible to see except for the change in grain pattern.

I simply had to write and inform you of how pleased that I am with your product. I recommend it to any serious woodworker.

Best Regards,
Robert K. Wallace

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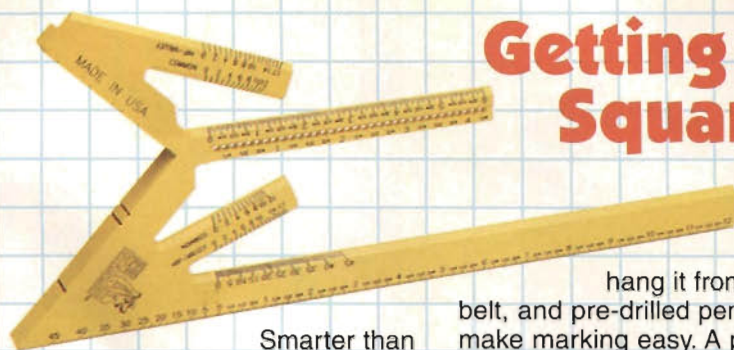
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Getting All Squared Up

Smarter than the average square? That's what the folks at Bear Square have to say about their tool, which combines the functions of a 6" speed square, a 12" speed square, a framing square and a combination square. You can

hang it from your belt, and pre-drilled pencil holes make marking easy. A pivot point means you can mark reverse angles without flipping the square. It scribes margin lines quickly and easily, and it even serves as a circular saw guide. Bear Square retails for \$19.99. For more info, call 877-311-2327.

King of the Forests

For truly committed woodworkers who want to do *everything* themselves, TimberKing Inc. now offers the Model 1200 Personal Sawmill.

A four-post cutting head carries the blade, motor and lubrication system down a one-piece, welded cutting deck. The four-post design eliminates the sagging and bounce of "cantilever" type heads, and the one-piece cutting deck prevents "soft spots" found in bolt-together decks.

Standard features on the TimberKing 1200 include log-loading ramps, water lubrication system and cant hook for log turning. An optional Transport Package lets the owner pull the 1200 right to the cutting site.

The Model 1200 cuts a 12 foot log up to 29" in diameter and will handle a 24" square cant. Optional extensions allow



Feeling some lumberjack envy? TimberKing can help.

cuts of almost any length. An optional toe-board provides the best cuts from tapered logs.

A simple but unique double-crank system lets the operator control blade movement. One crank powers the cutting head through the log, and the other crank raises and lowers the blade. "We wanted a feed system that would eliminate the danger of push-me-pull-me feed while keeping the design simple," TimberKing president Will Johnson explained.

The TimberKing 1200 sells for \$4,699. For more info, call 800-942-4406.

A Mouse for Your House – and Shop

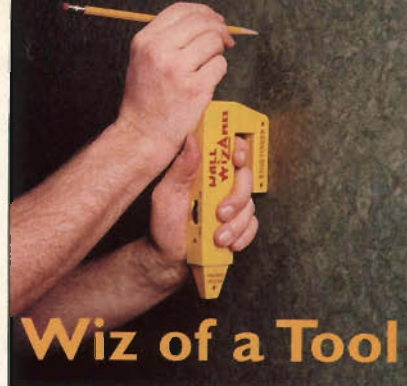
Black & Decker calls its new Mouse™ sander/polisher “the only mouse you want in your house.” From general sanding to tight corners, the Mouse sands, polishes, detail sands and scrubs — whatever the project. The Mouse runs at 11,000 orbits per minute and features soft rubber grips and an ergonomic design for comfort and control.

It comes with a storage case, user guide and 23 polishing, sanding and scrubbing accessories. A finger sanding attachment allows for intricate detail sanding, and finger sanding pieces let you sand between chair spindles and in other hard-to-reach areas.



When it comes to detail sanding or reaching into tight spots, Black & Decker's new Mouse is the perfect tool.

The Mouse comes with a full two-year warranty, and a variety of replacement Mouse accessories available at national retailers where the Mouse is sold. Its retail price is \$59.99. For more info, call 800-544-6986.



Wiz of a Tool

If ever an impressive stud finder there was, the Wall Wizard is one because it also finds metal (like old nails), detects electrical current and checks polarity.

VER Sales' new tool locates dry wall screws to find studs. Turn the Wizard over, hold the tip up to an electrical outlet or a battery (while grounding the negative post), and it detects A/C electrical current (from 12 to 600 VACs) and D/C voltage (over nine volts).

The Wall Wizard costs \$24.95. For more info, call 800-229-0518.

A Convenience Switch

Craftsman's new Automatic Power Switch lets you turn on three different items with just one flick of the wrist.

Here's how it works: the top outlet, labeled “power tool,” is set up to accept the machine — a table saw, radial arm saw, band saw or

scroll saw. The lower two “accessory” receptacles are where you plug in a vac and/or a work light. Once the Automatic Power Switch is inserted into a standard 110/120, three-prong grounded outlet and the mode switch is turned on, it's ready for operation.

As long as you remember to put the accessories on/off switch in the “on” position, you'll automatically turn on your vac and light when you turn on your power tool. (They'll also turn off when you turn off the power tool.)

The Craftsman Automatic Power Switch (#24031) is rated at 125 volts, 15 amp/20 amp and is UL listed. It sells for \$19.99. For more info, visit your local Sears store.



Stylin' for Safety

MSA Safety Works' Harmful Dust Respirator features a contoured sealing surface which improves the seal and the feel. It filters over 95% of harmful dusts as small as 0.3 microns, meets the latest U.S. government test requirements and has heavy-duty elastic straps. Two sell for \$3.89. MSA's new close-fitting safety glasses have a wraparound design and anti-fog lens. Styles in the line sell for \$10 or less. For more info, call 888-672-4692.



A Plethora of Pulls

You'll find your knives, forks and spoons on the outside of your cabinet drawers when you use the Accent'z™ line of specialty hardware from Amerock.

Their knobs and pulls come in a variety of shapes, colors and finishes. Chrome and brass finishes are available for Utensil'z™ — the knife, fork and spoon set — and for Veggie'z™: knobs in the shape of a pea pod, an ear of corn, a tomato and a chili pepper.



Both collections have standard 3" hole centers.

The Essential'z™ collection offers pulls with extra-long (5") hole centers in shapes like a subtle arch, an open arch and a wavy pull. A cup pull has a 2½" hole center.

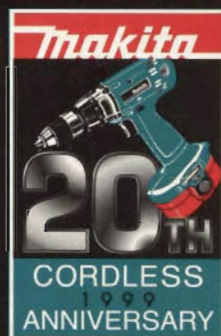
A lifetime finish warranty covers all the Accent'z collections, which include 47 different knobs and pulls. Each piece retails for \$5 or less. For more info, call 800-618-9559.



Free Tune-up

Who says nothing's free in this life? Certainly not Makita: the company is offering free labor during 1999 on tune-ups for all Makita cordless products. It's Makita's way of celebrating their 20-year cordless anniversary: in 1979, they introduced the world's first cordless power tool, the 6010D cordless drill. Since then, Makita has come out with the world's first cordless chain saw and the world's first cordless concrete vibrator. You might have to

pay for parts if you bring one of those tools in for a tune-up this year — but the labor's free. For more info, call 800-462-5482.



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Woodworker's Journal, January/February 1998

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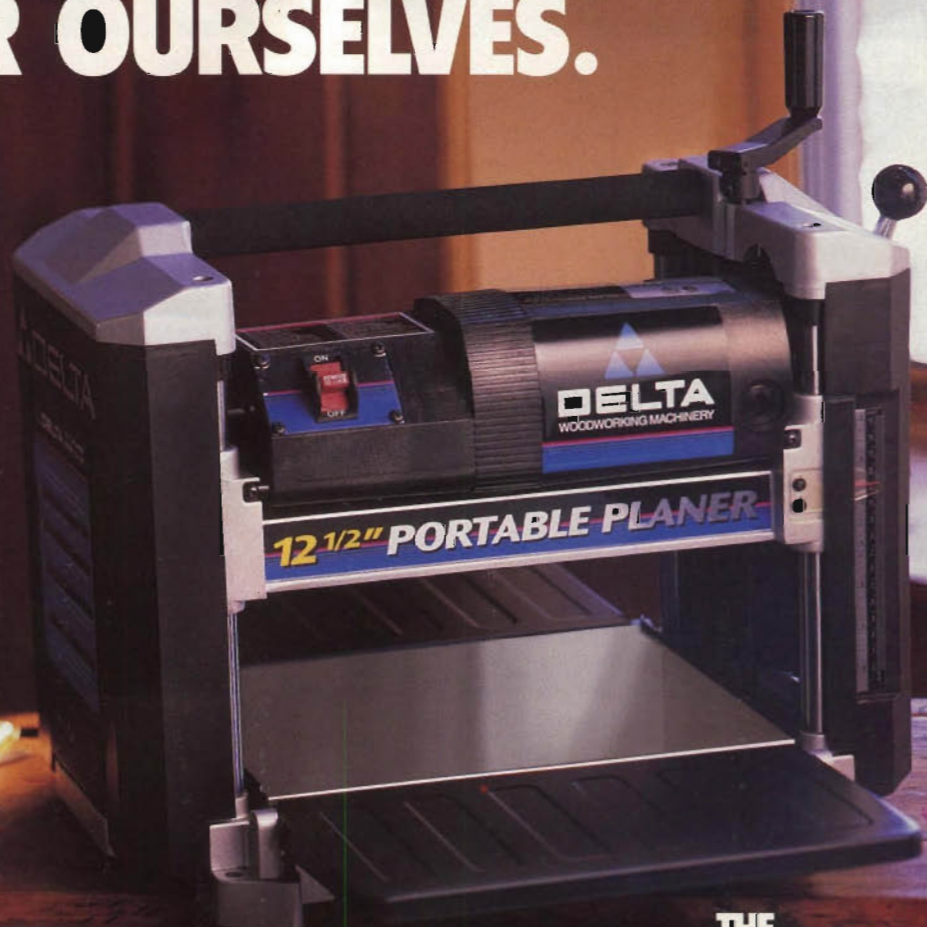
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"The Delta got great marks for quality of cut and portability, and for its innovative cutterhead assembly lock." "Editors' Choice"

American Woodworker,™ December 1996

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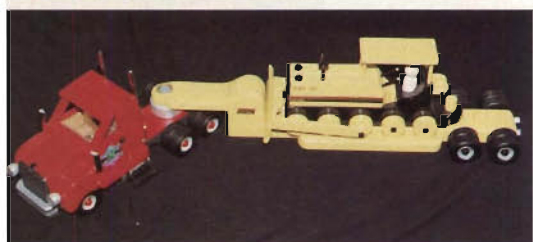
Movin' on Down the Road

As you can see from the enclosed pictures, I made a few modifications to two of the projects that appeared in previous editions of *Woodworker's Journal*. First, the 1937 Pontiac coupe from the December 1994 issue: as you can see, mine's a convertible. Second, the dozer with tractor and trailer from the April 1995 issue. The red paint really brightened it up. I sure did enjoy building the projects, with the aid of my wife, and hope you keep on bringing more.

Herve Boutin
Hull, Quebec



WJ responds: Your new fleet certainly looks roadworthy. Bet you'd enjoy adding the Beanie Baby Bus from our December 1998 issue.



A Beginner's Success Story

This letter is late, but to refresh your memory, I was building the two-drawer filing cabinet from *Today's Woodworker* Issue 40. I found that a measurement in the box joints for the drawers was marked $\frac{3}{4}$ ", but should have been $\frac{1}{2}$ ". I love your plans for beginners like myself. I'm sending you some pictures.

Dean L. Brown
New Port Richy, Florida



WJ responds: Thanks for letting us know your file cabinet turned out more than OK. Now, readers can thank your sharp eyes for the correction sheet included with this back issue.

A Real Winner's Story

When I received the note from the Post Office to pick up a certified letter, my first thoughts were "not again ... another offer to buy something." But upon opening the letter I received the best surprise I have ever had! I had won the prize in *Woodworker's Journal's* Renewal Sweepstakes. Like most people, I always wondered if it would ever happen to me. I have assembled the Delta Dust Collector and it is working wonderfully. Thanks!

Bob Kriese
Modesto, California

WJ responds: Congratulations Bob, and thanks for the letter. Of course we think you're a winner just for renewing your subscription, but winning a brand new tool helps, too. We're always striking up deals with our advertisers to reward our readers (see below). For more on our latest sweepstakes, turn to *On the Level* (page 6).



Winner! Herve Boutin will receive a Bosch 1617 EVS router for his contribution to *End Grain*. You can send your letters and photos to: *End Grain, Woodworker's Journal*, P.O. Box 261, Medina, Minnesota 55340. If we publish yours, we'll throw your name in a hat for our free tool drawing. Photos of projects from the *Woodworker's Journal* or *Today's Woodworker* are eligible.

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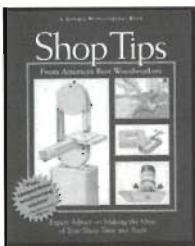
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- Ends scratchy saw cuts
- Ends second-step finishing

- Ends cutting 1/16" oversize to allow for RESURFACING
- BUY AND SHARPEN 1 BLADE INSTEAD OF 3

5/8" holes, boring thru 1-1/4" add \$7.50. Larger at Time Basis—Shipping \$4.50

WOODWORKER II	LIST	SALE	10%	20%
14"X40TX1"	\$215	\$149	\$134	\$119
14"X30TX1"	\$195	\$139	\$125	\$111
12"X40TX1"	\$183	\$129	\$116	\$103
12"X30TX1"	\$162	\$119	\$107	\$95
10"X40TX1/8" or 3/32"	\$156	\$119	\$107	\$95
30T 1/8" or 3/32"	\$135	\$99	\$89	\$79
9"X40T	\$146	\$109	\$98	\$87
30T	\$125	\$99	\$89	\$79
8-1/4"X40TX 3/32"	\$136	\$99	\$89	\$79
8"X40T 3/32"	\$136	\$99	\$89	\$79
30T	\$115	\$89	\$80	\$71
7-1/4"X30T 3/32"	\$112	\$69	\$62	\$55
**6"X40T 3/32"	\$136	\$89	\$80	\$71

*NEW for Sears & Makita Table Saws **New For Saw Boss

CHOPMASTER FOR SLIDING COMPOUNDS & MITER SAWS

New specs, 5° Neg. Pts. & flat, runs out less than .002 for perfect, tight, smooth, splinter-free miter joints.

TAKE EXTRA
10%-20% OFF
COMBO SALE!

NEW SIZES AVAILABLE	LIST	SALE
Delta Sidekick 6-1/2"x40TX5/8"	\$149	\$99
Sears 8-1/4" & Delta 8-1/4"x60TX5/8"	\$170	\$109
Hitachi 8-1/2"x60TX5/8"	\$179	\$119
DeWalt 8-1/2" & Ryobi 8-1/2"x60TX5/8"	\$179	\$119
Delta 9"x80TX5/8"	\$204	\$129
Ryobi-Makita & all 10"x80TX5/8"	\$207	\$139
DeWalt, Makita, B&D, Hitachi 12"x80TX1"	\$229	\$149
Ryobi-Makita 14"x100TX1"	\$266	\$189
Hitachi 15"x100TX1"	\$277	\$199

For good general purpose cuts use Woodworker II 30T & 40T or Woodworker I. Use small stiffener where possible.

THE ONE BLADE
THAT LEAVES A
SMOOTH-AS-
SANDED SURFACE!

SAVE ANOTHER
\$45 to \$90
After using 9 - \$5
sharpening coupons -
one per blade or dado

WOODWORKER I - CROSSCUT — 7 1/4" - 14"

For TABLE and RADIAL SAW - 10% to 20%
NON-SPLINTERING PLYS

WOODWORKER I	LIST	SALE
14"x60TX1"	\$224	\$159
12"x60TX1" or 5/8" 1/8" K	\$198	\$139
10"x60TX5/8" 3/32" K	\$162	\$129
8-1/4"X60T	\$150	\$109
8"X60T	\$150	\$109
7-1/4"X60T	\$150	\$109

OTHER SIZES AVAILABLE - 7 1/4" - 14"

DURALINE HI-A/T FOR TABLE & RADIAL SAWS

5/8" HOLES. Boring up to 1-1/4" \$7.50 extra.
Larger holes-time basis. Shipping \$4.50.

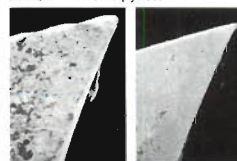
TAKE 10% TO 20% MORE
OFF THESE PRICES

Faster feed rates & absolute splinter control. Stops splintering on OAK/BIRCH PLY VENEERS & MELAMINE

SIZES AVAILABLE	LIST	SALE	SIZES AVAILABLE	LIST	SALE
7-1/4" x 60T x 3/32" K	\$149	\$129	300mm x 100T x 1/8" x 30mm	---	\$197
8" x 80T x 1/8" & 3/32" K	\$202	\$169	12" x 100T x 1-1/8" K	\$253	\$215
220mm x 80T x 1/8" & 30mm	---	\$167	14" x 80T x 1"	\$232	\$197
9" x 80T x 1/8" & 3/32" K	\$207	\$179	14" x 100T x 1"	\$266	\$226
10" x 80T x 1/8" & 3/32" K	\$207	\$159	16" x 80T x 1"	\$262	\$223
12" x 80T x 1-1/8" K	\$212	\$181	16" x 100T x 1"	\$294	\$243

Above 1 bore standard.
CARBIDE IS THE HARDEST OF THE
C-4 GRADES AND 40% STRONGER, NOT WEAKER!
FOR 50% TO 300% LONGER LIFE.

Standard C-2 Carbide (below, left) and
FORREST still sharp Oxidation and Corrosion
Resistant Sub-Micron C-4 Carbide (below,
right). Each shown after cutting 3,500 feet of
MDF. Similar results obtained cutting particle
board, melamine, and plywood.



STILL SHARP
AFTER 3,500 FEET
OF CUTTING!

FREE 10" ORANGE PLASTIC BLADE RUNNER-CARRIER!

**\$23
Value**

SHIPPED WITH 6", 8" & 10" DADO SETS.
HOLDS UP TO 10 BLADES, 5 PER SIDE
ON CENTER BOLT OR DADOS.

DELUXE DADO-KING!

AS LOW AS \$184 NET

AFTER USING SHARPENING COUPONS

WORLD'S NO. 1 DADO - NO CHIP ON PLYS & MELAMINE



C-4 Carbide Tips — 4 on each chipper with special negative face hooks. Shims & 3/32" Chipper. Cuts 1/8" to 29/32" wide!!	LIST	SALE	10%	15%
6" D. 5/8" Bore NEW	\$299	\$269	\$242	\$229
8" D. 5/8" Bore	\$321	\$289	\$260	\$245
10" D. 5/8" & 1" Bore	\$389	\$349	\$314	\$297
12" D. 1" Bore	\$499	\$449	\$404	\$382

(Bore up to 1-1/4" Add \$25 — Plus \$5.50 S&H)

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FREE technical help!!

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973-473-5236

(9 am to 6 pm Eastern)

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OUTPERFORMED (E-EXCELLENT)
23 other 40T & 50T premium blades
both foreign & domestic on Ply,
Melamine, MDF and Oak/Rip!**

Editors' Choice and Top Rating over 18
competing combo saw blades!
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award for the best performance, regard-
less of price. The 10" x 40T produced
super-smooth ripped edges in 3/4 in. pine
and oak, with absolutely no saw marks
visible to the eye... we also got excellent
crosscuts, surpassed only by an 80-tooth
dedicated crosscut blade."
See *American Woodworker* April 1998, pp. 64-69.

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FOR BETTER CUTS on all brands of blades,
use our large 1/8" DAMPENERS-STIFFENERS
against one side.

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5"	\$24
6"	\$25

7" AND LARGER AVAILABLE
REDUCES NOISE 50%-75%

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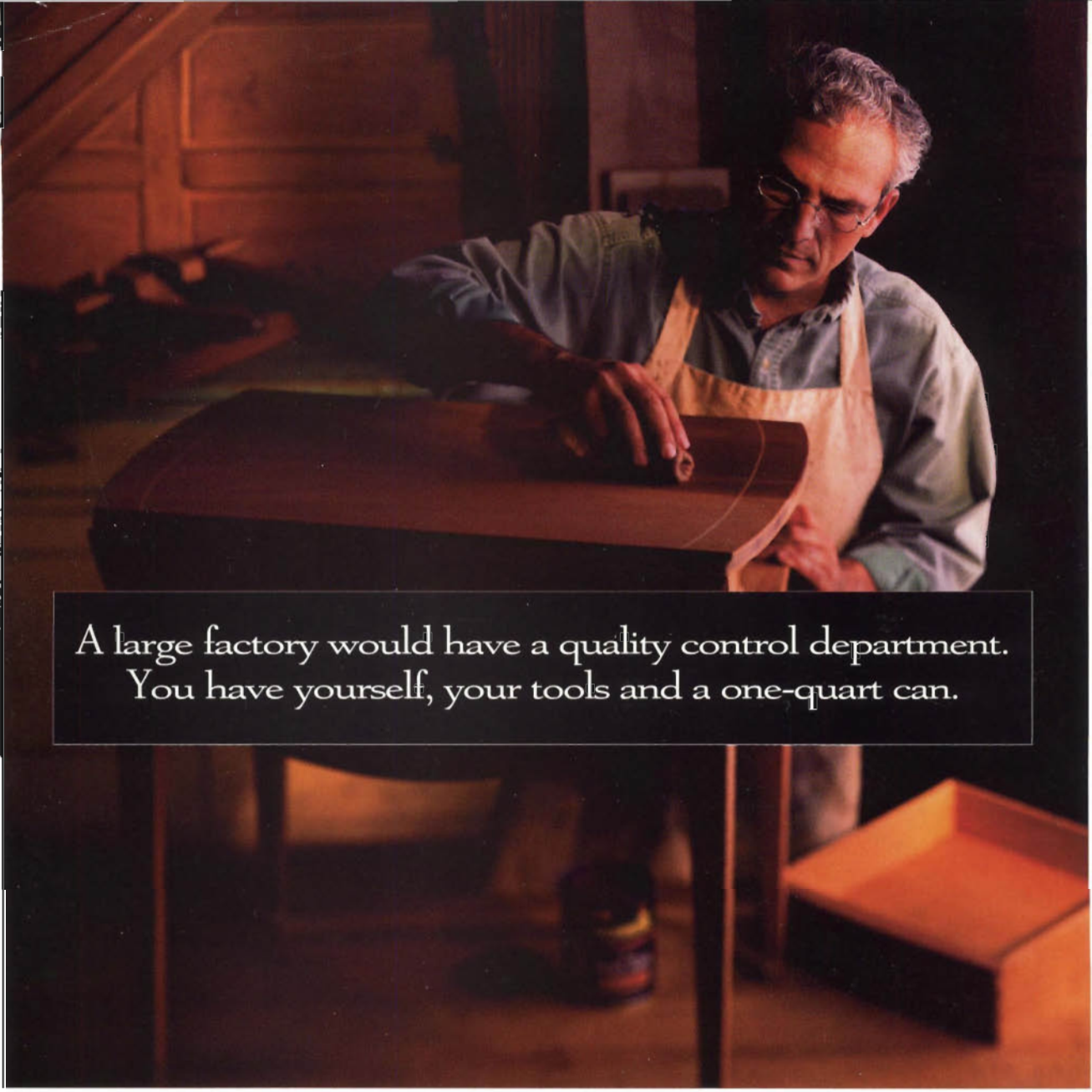
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