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# WOODWORKER'S JOURNAL

October 1999  
Volume 23  
Number 5

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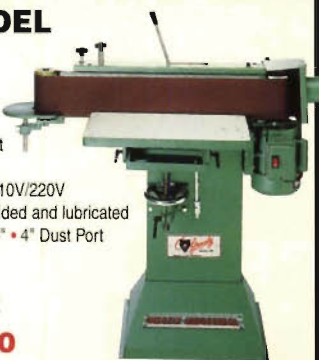
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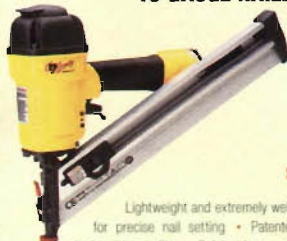
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*By Al Krogh*

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*By Rick White*

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*By Joanna Werch Takes*

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*By Nina Childs Johnson*

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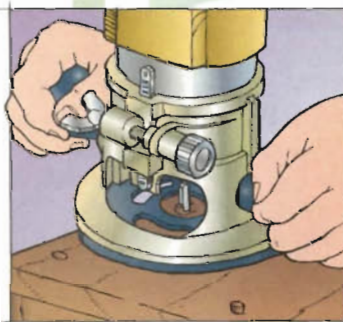
New tools and accessories to light up your life.

### 74 End Grain

Readers share their gifts with us — and with their families.



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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.



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## Baby Boomers in the Shop

According to a recent article in the *New York Times*, affluent baby boomers — the same group who've had a hand in the popularity of everything from bell bottoms to SUVs — are now taking up fine woodworking in dramatic numbers.

*Times* author William L. Hamilton talked about the expanding \$14 billion industry for woodworking tools, materials and supplies, pointing to the vein of gold tool manufacturers are targeting: "the new, upscale, fine woodworking hobbyist, for whom extraordinary hand tools are like French cooking knives or English gardening implements."

This "explosion of interest" in woodworking, the author contends, is largely the work of our friend **Norm Abram**, whose renovation and woodworking shows are now reaching upwards of 14 million people a week. That's a lot of fresh sawdust, Norm!

I've got nothing against "extraordinary hand tools", but I'll bet many of you — especially those who have been at this craft a little longer — would agree with a point Norm makes later in that article: "It's the hand of the craftsman and not the rosewood handle that makes woodworking fine."

A person with as fine a hand as we've seen in a while is award-

winning woodworker **Nina Childs Johnson**. That's her narra and machiche dovetailed box on the cover, a challenging project starting on page 28, and that's Nina in the background, cutting dovetails. **Rick White** is back with an Arts and Crafts table (see page 48) to go with the chairs in our April '99 issue. Or is it Mission? Of course, those strong vertical lines are reminiscent of the Prairie style .... Let's see, can anyone clear this whole style question up? That was associate editor **Joanna Werch Takes's** "mission" in this issue. Check out her article on page 54 for the final word. Rounding projects out is **Al Krough's** Beanie Baby Biplane on page 43, a great gift you can complete in a weekend. You might not have to reach for your brass and rosewood plane while building it, but you should know that these easy little weekend projects make for extremely popular gifts.

And a handmade gift, fellow woodworkers, is another thing that makes our craft so fine.

*Larry N. Stoiaken*

P.S. This is your last chance to enter our **Woodworker of the 20th Century** contest: Details on page 23!



### Don't try this at home

Both the author and Delta were quick to point out that this photo from our last issue (on page 54) shows an unsafe technique. The minimum thickness for safe planing, say both, is 3/16". We should have used a carrier board clamped to the bottom table (as correctly shown on page 31 of this issue), since the board is being reduced to 1/8" in thickness.

OCTOBER 1999

Volume 23, Number 5

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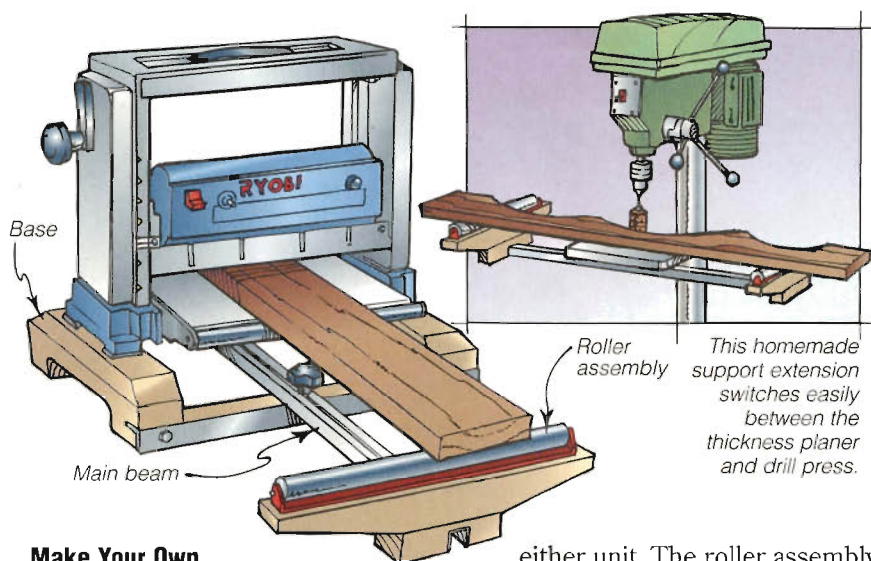
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## Homemade Solutions to the Rescue



### Make Your Own Support Extensions

For creating extra support when working with long stock on the drill press and the thickness planer, I have devised a simple support extension system that is portable, interchangeable and requires no adjustment. The main component is a 1" x 4" square tube attached to the drill press (with two carriage bolts and T knobs) or to the planer (with two threaded T knobs). The roller assemblies are always level and move vertically with the drill press table. They offer less friction and require no modification of

either unit. The roller assembly is mounted on a support made of two pieces of 3/4" stock glued together, then mounted on the square tube. With the exception of the rollers, the entire system cost me less than \$10.00

*Raymond P. Cetnar  
Amsterdam, New York*

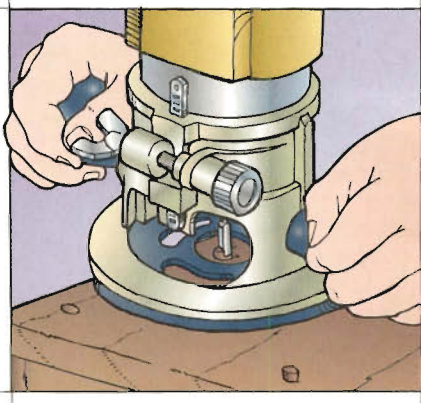
### Plugging Holes in Premium Wood

I have found a method that is quite effective for getting seamless plugs without marring fine woods.

Use a plug cutter to cut perfectly sized plugs from your scrap wood, keeping an eye out for grain match.

Once the plug is inserted, you'll need a flat-ended bit and about five pieces of paper trimmed to fit inside the opening on the base of your router (3M Post-it notes work great). Stack the paper so that when you set your router on it, the bit just touches the top of the fifth sheet.

Now run the router with the flat-ended bit over the plug, moving slowly in a circular motion. If it is still too high, you



can take off several pieces of paper and try again until the plug is just slightly above the surface. Finish off with a light sanding.

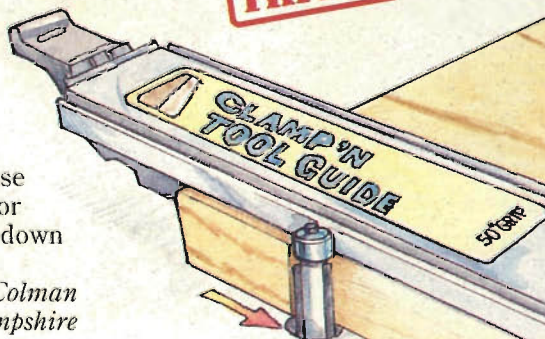
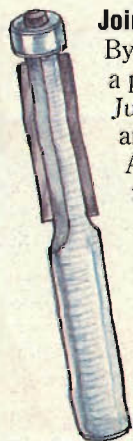
*James A. Johnson  
Brunswick, Ohio*

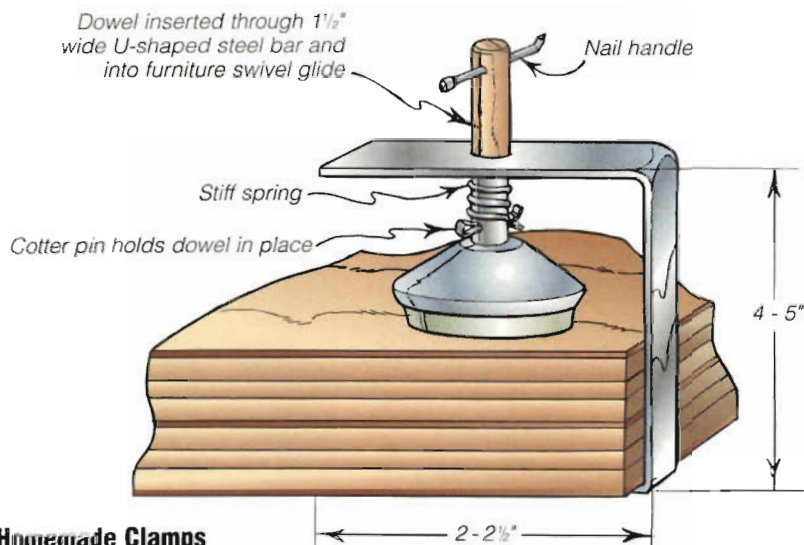
### Join Boards Using Existing Tools

By coupling a straight edge with end clamps and a pattern-cutting bit, I can easily join boards. Just chuck a pattern-cutting bit in your router and mount it in your router table.

Adjust the bit so the height equals the thickness of the board, then clamp the edge guide along the edge you want to cut. Pass the board along the router bit with the bearing running along the edge guide. You can also use this guide/pattern bit combination for other operations, such as trimming down doors to fit.

*Richard L. Colman  
Boscawen, New Hampshire*





### Homemade Clamps

It may be true that you can't have too many clamps, but they do get expensive! Using affordable items, I crafted several versatile little clamps that work quite well for joining sheet stock, attaching trim and doing similar light-duty jobs. It doesn't require more than several readily available items, such as

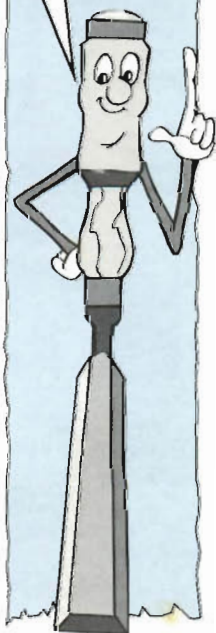
a stiff spring, a dowel, a cotter pin and a 1 1/2" steel bar. Swivel furniture guides (with their no-mar plastic bottoms) work well as clamping pads. Not only are these clamps inexpensive, they even work where larger clamps are called for!

R.B. Himes  
Vienna, Ohio



**W**inner! Richard Colman will receive a Porter Cable 543 jig saw 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 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](mailto:editor@woodworkersjournal.com).

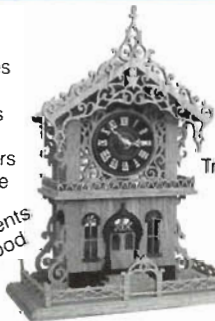
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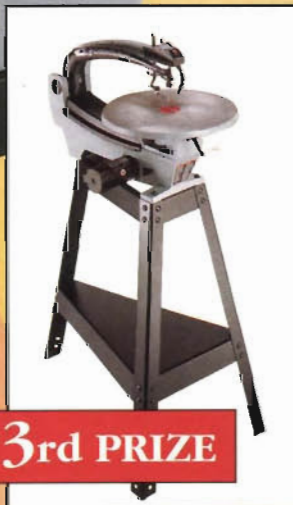
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## Piecing Stories Together

By Joanna Werch Takes



The structural portions of this fall front desk are crafted out of maple.

spent a couple of years as an apprentice to others. It was during this time that he noticed all the woodworkers he admired had a signature style, and he decided he needed his own.

When he studied furniture history, "I tended to gravitate toward the pieces that used marquetry as a technique," Silas said. "It seemed to me

**T**hrough marquetry, Silas Kopf pieces together stories in wood. When he began fitting the pieces of his life together, however, it looked like a different tale.

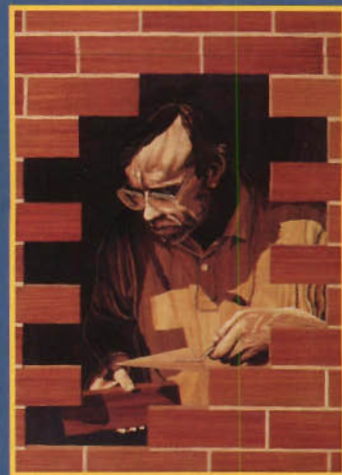
He was interested in design, which led him to pursue an undergraduate degree in architecture, but Silas wanted to do something more hands-on. "I was wrapped up in the idea of furniture as totally under the control of one person," he said.

Having decided to pursue a career in woodworking — but lacking skills in the area — Silas

Marquetry techniques enable Silas Kopf to "fool the eye" in this trompe l'oeil cabinet with cherry and madrone.



The artist's sense of humor shows up in this piece, a maple and walnut desk featuring a never-ending school of marquetry fish. The work's title ... "School Days."



"When people look at [marquetry] closely, I want them to say, 'Oh, this is wood; it's not paint.'"

Silas Kopf

that no one else was doing it in the United States in contemporary furniture, and that could be my signature."

A trip to Paris gave him confidence. "I had seen marquetry pieces from the 1700s in books, but seeing it in the Louvre kind of demystified it," he explained. "It let me know I was on the right track."

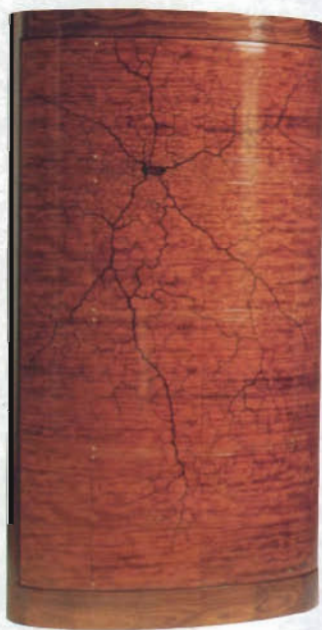




On an average project, Silas uses around 30 different kinds of wood. Sassafras frames the marquetry on this floral cabinet.

Silas' goal is to create not only a picture, but a display of wood. Observers of a finished work should be able to discover the individual pieces of wood. "When people look at it closely, I want them to say, 'Oh, this *is* wood; it's *not* paint," he said.

Most of Silas's projects use about 30 different kinds of wood, sometimes several varieties within the same species. With walnut, for example, he might use the sapwood, the heartwood, the burl and a crotch. "Each one gives a different look and tone



Some time-consuming work went into this digital clock, fashioned with bubinga and chechem woods.

— it's a matter of choosing the right part of each sheet of veneer to tell a story," he said.

The character of the wood is also important to his artistry. Silas might use a particular piece of wood so the grain's curve follows

Pucte, ebony and locust woods create the look on the outside of this fall-front desk, which becomes even more intriguing when it's open: inside the desk is an image of a young woman hard at work — at the same desk.



Ash and walnut come together in this corner cabinet. Within even a single species of wood, Silas can achieve a variety of looks.

that of a flower petal. Through such choices, he employs marquetry to tell stories in his own signature style.

*Silas's work is on display at Yale University Art Gallery.*

Piece by piece, Silas laid a foundation — of narra wood — for the work "bricolage," which includes a self-portrait of himself as a bricklayer.



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## Prospecting for Prizes at California Show

By K.C. Lauten



photo courtesy of Glen Cormier

Last year's best of show was this beautiful mahogany and black marble Boston pier table by W. Patrick Edwards.

### Blue Ribbons

#### Woodworkers Show at the Fair

The annual contest and exhibit of the San Diego Fine Woodworkers Association is, indeed, a really big show.

The largest woodworking association in the country (membership exceeds 1,600) cosponsors, with the Del Mar, California Fair, the largest competitive

woodworking exhibition: "Design in Wood."

This year, the 18th annual Design in Wood drew 344 entries in 17 categories. Woodworkers competed for over \$12,000 worth of prizes — including, we're proud to say, subscriptions to *Woodworker's Journal* for the



In 1997, Nikolai Ossipov received best of show for "Leaves in the Fog," a turned and carved set of goblets and their mahogany storage box.

### 1999 Best of Show

A bust entitled "Of One Earth-Grace" was the 1999 best of show winner at the San Diego Fine Woodworkers Association's Design in Wood Show. William M. Churchill, Jr. carved the piece which captured top honors at the country's largest competitive woodworking exhibition. Norma Pizzaro was the woodworking artist responsible for the poplar, maple and milkpaint bench which took honorable mention in the art furniture category — she also came away with a free one-year subscription to *Woodworker's Journal*.



photos courtesy of Lynn Rybarczyk

### A Woodworker's Goal: Ready for Some Football?

Willie Maddox of Huntsville, Alabama isn't the kind of guy who punts on 4th and short. He goes for it. And that's exactly what he did when he got the idea to build a cabinet in the shape of a football. "I was thinking, 'What had I never seen before?'" he explained. "I thought, 'I like football; I like challenges; and I like woodworking. Let's put them together.'"

Willie bought traditional tools, then used them to make his own tools. He employed a 3,000 pound winch to steam bend oak and mahogany into a 10 degree arc,

*Shop Talk continues on page 18 ...*

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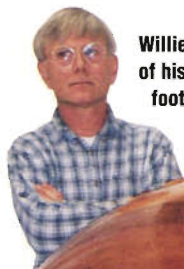
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Willie Maddox stands just proud of his Honduran mahogany football, with its white oak stripes and birch laces.

then assembled groups of "orange peel" wood sections into a fourth of a football. To get the accuracy and smoothness he needed for assembly, Willie modified the base of a planer and put it to use as an angled joiner.

When he finished, the football cabinet was five feet long and weighed 280 pounds. Willie said he plans to display the football for a while and then offer it for sale. He's been busy on the football



According to its builder, the football cabinet could store wines, home theater equipment — or Super Bowl rings — in its oak interior.

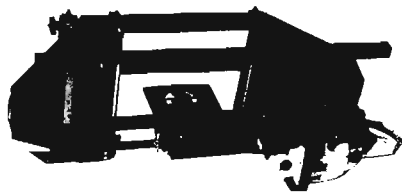
for three years, working evenings, after his day job as a programmer. "I did it to set a good example for my kids," Willie explained. "If you've got a dream and you really want to see it through, stick with it." Interested in owning a true one of a kind item? Give Willie a call at 256-828-5298.

**WHOOPS!** In the June "Shop Talk," we incorrectly stated the home state of Larry Taylor, one of the Rockler National Woodworking Contest winners. He hails from Minnesota.

*Shop Talk continues on page 20 ...*



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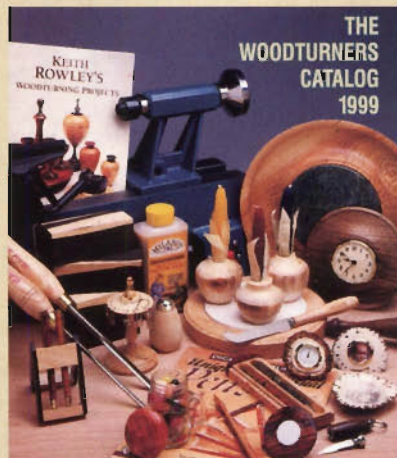
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... continued from page 18

## Little Bitty Critters

*A Carver's Birds & Beasts*



A miniature menagerie marches through Steve Tomashek's life. This year alone, the Minnesota whittler has carved nearly 200 tiny basswood figures.

He specializes in animals, Steve says, because they come in so many varieties of shape. "You can have a four-legged creature, or you can have a bird."

Steve carved wooden airplane models as a child, but didn't really think much about his skill until he got to college and found himself trading stories with another carver. Inspired, he dug his knives out again.

Steve prefers to use two knives, one flat and one curved, as he

shapes basswood and, occasionally, birch pieces for added strength. He finishes his work with acrylic paint.

Instead of whittling away his income, Steve used his

carvings to supplement a beginning teacher's salary.

Then, three

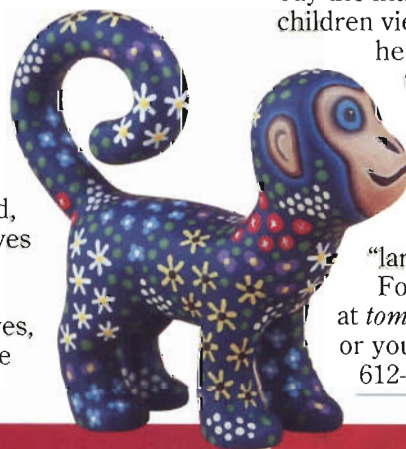
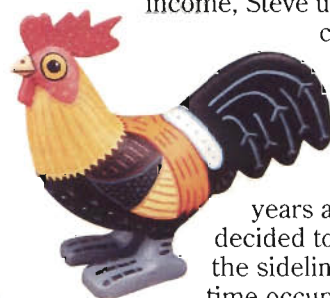
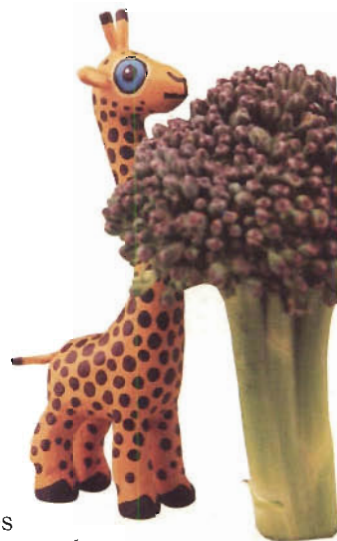
years ago, he decided to transform the sideline into a full-time occupation.

He sells most of his work at art fairs, although some collectors call him directly. Even people who buy the little critters for their children view them as collectibles,

he said: ranging from \$30 to \$250, they're too expensive to be toys.

While it's hard to pick favorites, Steve said he has done a lot of monkeys and a lot of "large" wild cats.

For more info, e-mail Steve at [tomashek@compuserve.com](mailto:tomashek@compuserve.com), or you can give him a call at 612-944-8033.



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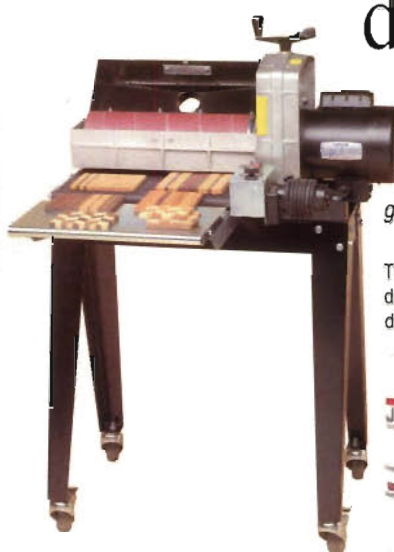
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## John Henry Belter: Woodworker of the 19th Century

By Joanna Werch Takes

**T**his article introduces you to a woodworker from the mid-1800s. Who will be featured next time, as the Woodworker of the 20th Century?

Teeming with newly-arrived immigrants, 19th century New York was a bustling town. Among the crowd was woodworker John Henry Belter.

Best known as the leading maker of Victorian rococo revival furniture, Belter also would've understood how close to the heart today's woodworkers hold their jigs and shop tricks: he received four different patents in his lifetime.

Born in Ulm, Germany, in 1804, Belter served an apprenticeship in the province of Würtemberg before emigrating to the United States in the early 1840s. Records of his life in Germany are sketchy, but it was obvious he was well-



No one has found pictures of John Henry Belter himself, but he did put an image of his Third Avenue and Seventy-Sixth Street factory on the bills he sent out from New York City.

photo supplied by J.H. Belter & Co. Cabinet Factory Billhead; May 20, 1864; Museum of the City of New York

trained and ready to set up shop as soon as he stepped foot into the New World. He did have his own shop at 40½ Chatham Square by 1844, when his name first appears in the New York City directory.

Belter didn't waste any time filing patent applications, either. He received his first patent, for

"Machinery for Sawing Arabesque Chairs," on July 31, 1847. The vise and jig saw apparatus held and cut chair backs with openwork designs. The saw was adjustable to allow for curving chair backs.

Modern familiarity with Belter's pieces generally comes from parlor sets, because that's what survived the years, but his own advertisements say he made "all kinds of furniture." The style he worked in was Victorian rococo revival. The inspiration came from the 18th century movement of the same name, but the rococo revival of the Victorian age wasn't an exact copy. Furniture manufactured in the 19th century, for example, tended to be larger in both weight and height. Belter and his contemporaries got ideas from the past, but adapted them to fit their own time.

For example, they used naturalistic carvings, as the original rococo artists did, but made them bigger and more true to life. Belter's favorite subjects included grapes, pomegranates, roses and morning glories. Throughout his career, he produced pieces with both simple and complex carvings incorporating these elements.

Belter also popularized laminating wood as a means of giving it the strength to support intricate carvings and piercings. Generally working with rosewood, he layered between three and 16 thicknesses together — the usual number was six to eight — with the grain in every layer running at a 90° angle to the one before. Each sheet of wood was about 1.6 mm thick. After gluing and pressing the layers together, Belter placed them into an iron mold which created bends and curves, then steamed the laminations.

He became so well-known for this process that people referred to



photo supplied by National Museum of American History, Smithsonian Institution



photo supplied by The Baltimore Museum of Art; Gift of Abram Mosses, in memory of his wife, Carrie German Moss; BMA 1883.225.4

Belter was well-known for carved, pierced works like the armchair at right, which incorporates rosewood, rosewood veneer, pine and chestnut. The patent model at left is for his "dishing pressed work" technique, which formed chair backs that curved in more than one direction to create a concave dish.

c. 1835

Designs of English Gothic revivalist Augustus W. Pugin (a later influence on Arts and Crafts founder William Morris) affect woodworkers.



c. 1840

Henry Disston starts sawmaking business. Develops angle saw for removing waste between multiple tenons or dovetails.

1850

William Marples of Sheffield, England develops the "ultimate" brace.



carved, laminated rococo revival furniture as "Belter furniture," no matter who made it. A description of his process is included in his second patent application, granted on August 19, 1856.

This patent was for an "Improved Bedstead." The improvements included eliminating posts and the stile and rail construction common during the time period. Belter constructed his bed, instead, with a two-piece notched frame held together at the center. Easy to assemble, it also smoothed out sharp corners. Each of the two pieces curved smoothly from headboard to footboard.

In the same year he received his bed patent, Belter moved his



This Belter bed of laminated rosewood, which dates to around 1860, demonstrates the kind of smoothly flowing curves described in his bedstead patent.

showroom to 522 Broadway. He'd split up the showroom and the shop a couple years before, moving the workshop to a new location at Third Avenue and Seventy-sixth

Street. He'd had a Broadway showroom, however, since 1853, when he opened his doors at 547. One function of his shop was to provide jobs for relatives: his brother-in-law, John Springmeyer, was working with him by 1854.

It was Belter, though, who kept the innovations coming. He received his most famous patent, entitled "Improvements in the Method of Manufacturing Furniture," on February 23, 1858. In the "dishing pressed work" process Belter described, he molded his layers of veneer into barrel-shaped cylinders, then applied steam and pressure. This

*continues on page 24 ...*

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**WOODWORKER'S JOURNAL**

**RIDGID**



c. 1867

Patents issued for first folding armchair.

1877

Edward W. Godwin publishes *Art Furniture in London* — most influential 19th century design book on Anglo-Japanese style furnishings.

c. 1885



Archimedian drill appears in American tool catalogs.

1900

To be continued ...

created chair backs which curved in two different directions, forming a concave or “dish” portion. He could cut six to eight chair backs from each mold.

Such inventions brought Belter recognition, but credit reference company R.G. Dun & Company evaluated his furniture in 1861 as “too good to be profitable.”

Their assessment came a year after he received his final patent, on January 24, 1860, for “Improvements in Bureaus.” Belter used one large piece of laminated wood for the front, sawed it apart for drawers, and joined it to the back with a glued scarf. Besides creating a unity of form, this also meant he could eliminate stretchers and dust boards — and, as he mentioned in his patent, it was possible to lock all the drawers with one turn of a key.

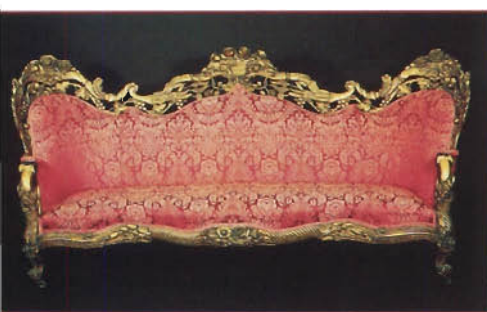


Photo supplied by Virginia Museum of Fine Arts

Parlor furniture was popular in the mid-1800s, and Belter made several sets. This carved and gilt rosewood sofa, upholstered in red silk damask, is one of a pair.

In 1863, Belter died of tuberculosis. His Springmeyer brothers-in-law took over the business, but had run it into bankruptcy by 1867.

Through his Victorian rococo revival work, Belter epitomized an era in furniture. His inventions illustrate the woodworker’s perpetual search to improve quality work — the sort of work which made his shop successful. For these reasons and more, John Henry Belter is our selection as the woodworker of the 19th century.

## Duncan Phyfe, 1768-1854: “So Much the Rage”

No story of woodworking in the 19th century can be complete without mentioning Duncan Phyfe. His work in New York City from the 1790s to the 1840s spanned several styles, including the neoclassical work for which he’s best known.

Unfortunately, few documented Phyfe pieces survive, and recent research indicates that some furniture previously attributed to him was actually the work of other New York cabinetmakers.

Nevertheless, Phyfe deserves his fame: letters from his day include comments like “Mr. Phyfe is so much the rage” and his cabinet shop “[is] the largest and most fashionable [such] establishment in the country.”

Like Belter, Phyfe was an immigrant, arriving from Loch Fannich, Scotland, with his family in 1783. The 15-year-old Duncan served an apprenticeship in Albany, then moved to New York City. He opened a shop on Broad Street around 1792, and in 1806 relocated to Partition (later Fulton) Street.

The historical judgment has been that Phyfe’s earlier work was better than his later pieces. Described as Federal or Sheraton, his furniture from the 18th and early 19th centuries drew heavily on popular Greek, Roman and

The Grecian-inspired “klismos” chair design, with a slightly curved back and saber-shaped legs, was typical of Phyfe’s early work.

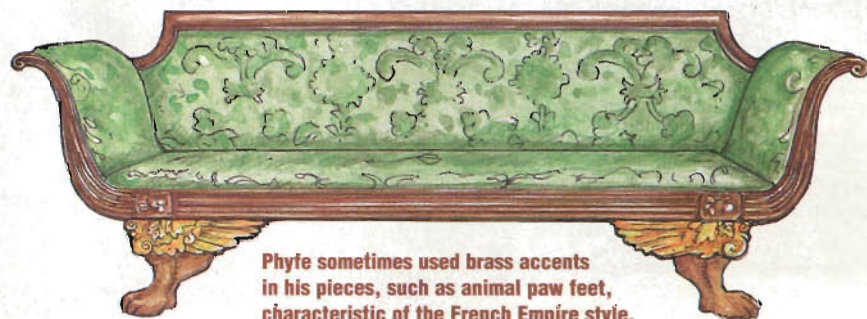


Egyptian influences.

Throughout his career, even when styles shifted and he applied gothic or rococo ornament to classic forms, Phyfe worked with high quality mahogany veneers. He was known to pay \$1,000 apiece for lumber West Indian harvesters referred to as “Duncan Phyfe logs.”

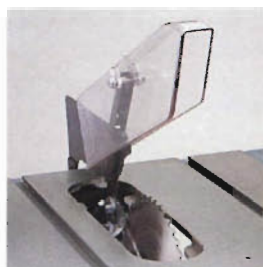
Phyfe could afford those prices: in 1816, he charged \$265 for a table. By the time he auctioned off the business in 1847, Phyfe was ready for a nice retirement, building doll furniture on his backyard workbench. He died in 1854, with an estate worth nearly \$500,000.

Woodworkers still recognize the value of Phyfe’s work — and so does *Woodworker’s Journal*. He was a strong contender for woodworker of the 19th century, but the lack of surviving attributable furniture worked against him. It’s an historic loss, in more ways than one.



Phyfe sometimes used brass accents in his pieces, such as animal paw feet, characteristic of the French Empire style.

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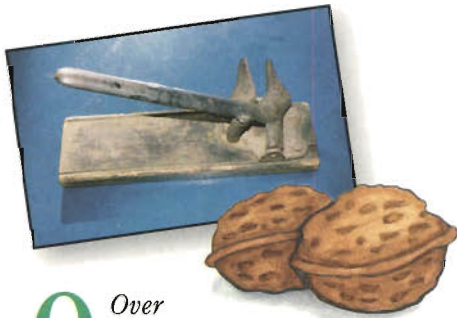
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## New Mystery Tool



**Q** Over 100 of you wrote to crack the mystery of the tool Vernon Smith submitted for the June issue: it's a nutcracker.

*The Editors  
Woodworker's Journal*

**A** The most authoritative answer came from **David Neumann** of Valentine, Nebraska: "The tool pictured was designed for cracking hickory nuts," David wrote. "My father, Milton F. Neumann of Oshkosh, Wisconsin, assembled them for many years. He bought the rights and company from his uncle. I don't believe my dad's uncle invented the tool; it was just one of those things that was always around. The company was the P&L Co."

We heard about other companies, too — and other favorite nuts. Sargent & Co., Carolina Cracker and White Mountain Freezer have

all manufactured this kind of nutcracker in the past or the present. And readers have used them for pecans, butternuts, brazil nuts and even walnuts, as well as hickory nuts.

**Stan Horne** of Sussex, Wisconsin, did say, "As a farm boy with a pocket full of nuts, it was easier to just use a hammer and any hard surface to crack them on." But **Ralph J. Schupp** of Cheshire, Connecticut pointed out the nutcracker's advantage: "you can control the cracking without pulverizing the shells."

From other letters, it seems the device was also used to squeeze corks so they'd fit into bottles — although, according to **Art Luedtke** of Woodbury, Minnesota, "The tool appears to be a cow toenail cutter."

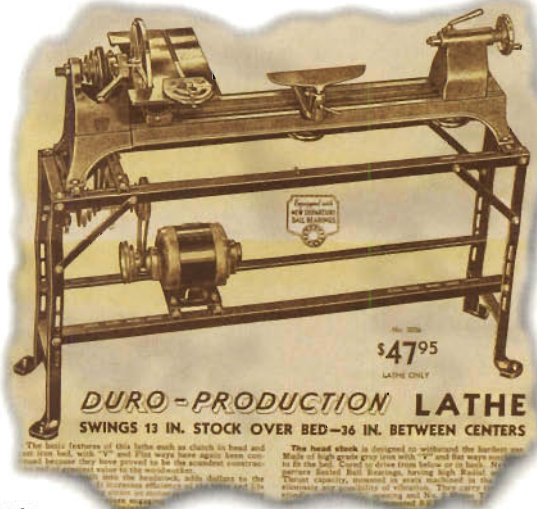


**Q** Our June issue posed a stumper from Ed Zilk of Portland, Oregon, who was seeking a motor pulley to get his dad's lathe in motion. Several readers wrote to give Ed a good turn.

*The Editors  
Woodworker's Journal*

**A** Although some could identify the lathe — both the Duro Company and Montgomery Ward's made similar items in the 1930s and 40s — they said it wasn't necessary for Ed to fix the problem.

**W. Kenneth Hallett Jr.** of Wall, New Jersey, sent a picture of his nutcracker — and **Betty Schroeder** of Hendersonville, North Carolina showed us how to use June's mystery tool.



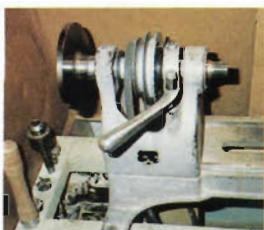
Readers turned out to help Ed Zilk identify his lathe. **Jeff McVey** of Boise, Idaho, even sent us this picture from a 1939 Duro Metal Products Co. Catalog.

Instead, **Kenneth F. Wiedemann** of Pine City, Minnesota had directions for building a four-step pulley out of hard maple. After buying a steel hubless pulley of the largest size of the step pulley to the motor, he said, Ed could drill a shaft hole in the maple with a drill press, then epoxy and



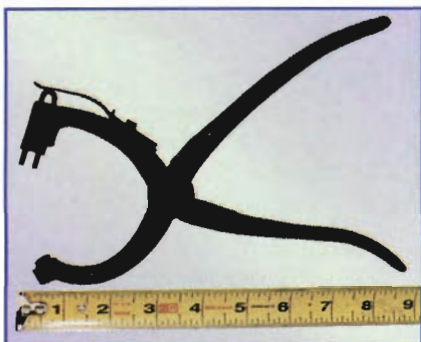
**W**inner! For taking time to respond to Stumpers, **Fred Ditto** of Sun City, Arizona wins a collection of American Tool's Quick Grip clamps. We toss all the Stumpers letters, published and unpublished, into a hat to select the winner. If you have a question or answer, send it to the editor: **Stumpers Dept., Woodworker's Journal, P.O. Box 261, Medina, Minnesota 55340.** E-mail: [editor@woodworkersjournal.com](mailto:editor@woodworkersjournal.com).





screw the wood to the side of the steel pulley. Then he could install the assembly on the motor "and, with a makeshift tool rest, turn it right on the motor, so as to have it all 100% true," Kenneth wrote.

Ron Hampton of Texarkana, Texas, suggested buying a single or step pulley from the hardware store. In his plan, Ed would remount the motor so it's hinged to swing upward: to change speeds, he'd lift the motor and set the belt to the desired location.



The measure of the tool is about 9 inches. The purpose of the tool? We're hoping you can tell us.

**Q** I came by this tool about a year ago, and so far it has stumped me and many of my friends and co-workers. Around the pivot are the words: "Mfg by Elliott Heaton Peninsular Corp. Boston Mass." The length of the tool is about 9 1/2". Any ideas ...?

Stephen P. Tyler  
Garnerville, New York

**A** Oh, we have ideas. The two prongs on your tool have us thinking that it may be some kind of hole punch: for a belt? a harness? some heavy-duty construction paper? Let's hear what our readers think.



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# Undelivered Letter Box

By Nina Childs Johnson

*Originally a wedding present for a family member, this box traveled a circuitous path before it was finished. Here's one woodworker's tale of love lost and lessons learned.*

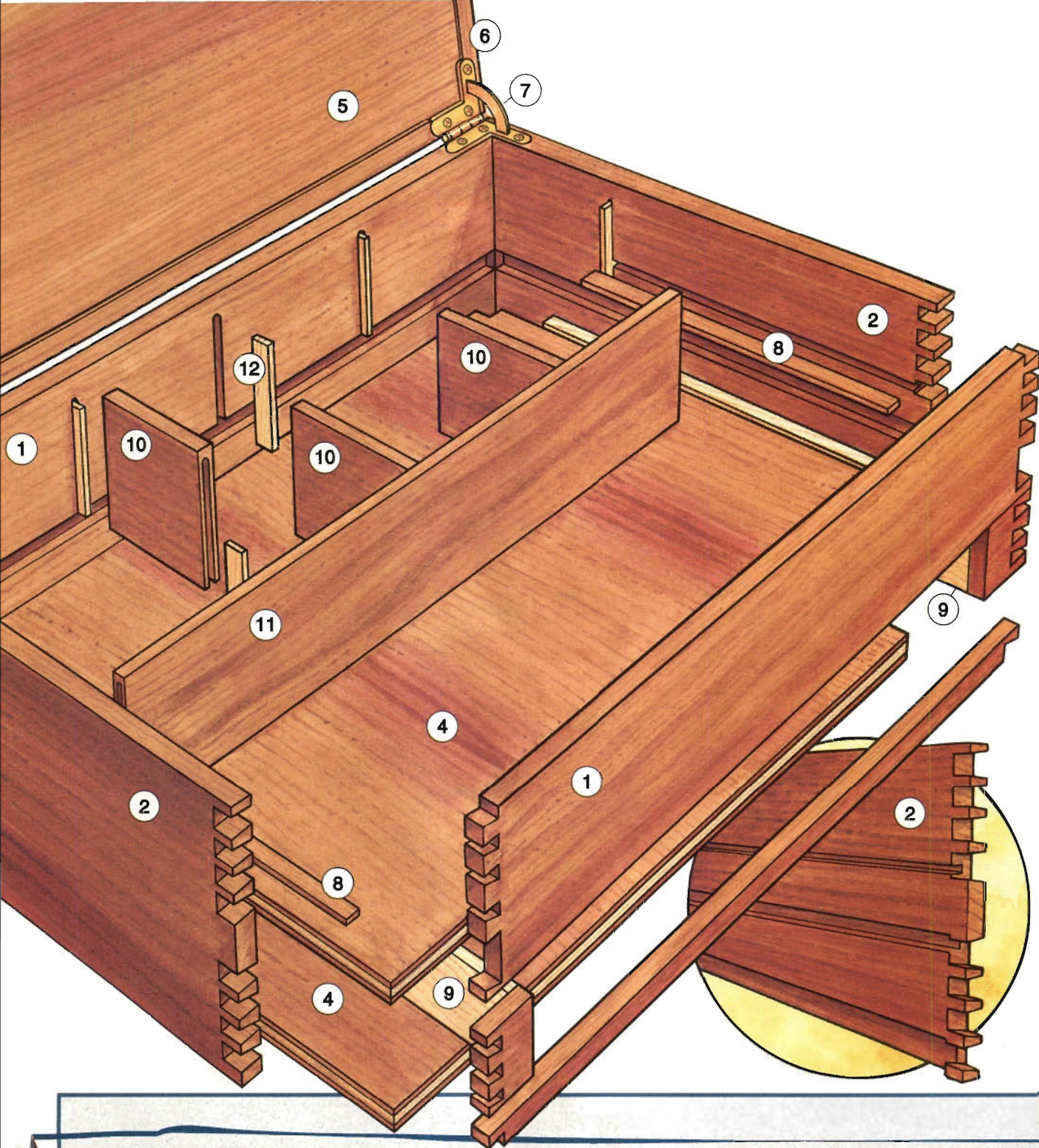


ast summer, my sister-in-law-to-be asked me to make something for my brother for their upcoming wedding. My brother, an English teacher, collects fountain pens. We decided that a box to hold his pens and ink would be just right. Unfortunately, the relationship wasn't just right, and before

I finished with the gift ... the wedding was cancelled. Alas, life is unpredictable.

The design began with the dimensions of pens, ink bottles and paper. I juggled them around until I found a layout I liked — it even allowed for a hidden compartment.

I began this project with a drawing: it helped me to fully understand what I was in for and identified aspects which needed further planning. Some parts of my drawings became templates for exact duplication in wood, and others changed completely as I built. Wood is alive and moving, and so should be our attitudes about how to shape it. Nothing in woodworking, as in life, ought to be entirely predetermined.



## MATERIAL LIST

|                           | T x W x L                                                                   |                           | T x W x L                                                                  |
|---------------------------|-----------------------------------------------------------------------------|---------------------------|----------------------------------------------------------------------------|
| 1 Front and Back (2)      | 3/8" x 4 <sup>5</sup> / <sub>8</sub> " x 13 <sup>5</sup> / <sub>8</sub> "   | 7 Quadrant Hinges (2)     | Solid brass                                                                |
| 2 Ends (2)                | 3/8" x 4 <sup>5</sup> / <sub>8</sub> " x 10"                                | 8 Tray Supports (2)       | 1/8" x 7/16" x 6 <sup>7</sup> / <sub>8</sub> "                             |
| 3 Drawer Front (1)        | 3/8" x 1 <sup>3</sup> / <sub>8</sub> " x 11 <sup>5</sup> / <sub>8</sub> "   | 9 Drawer Pocket Sides (2) | 3/8" x 1 <sup>7</sup> / <sub>16</sub> " x 9 <sup>1</sup> / <sub>4</sub> "  |
| 4 Horizontal Dividers (2) | 9/32" x 13 <sup>1</sup> / <sub>4</sub> " x 9 <sup>7</sup> / <sub>16</sub> " | 10 Small Dividers (3)     | 1/4" x 2 <sup>1</sup> / <sub>8</sub> " x 2 <sup>1</sup> / <sub>16</sub> "  |
| 5 Lid (1)                 | 9/32" x 9 <sup>3</sup> / <sub>8</sub> " x 13 <sup>1</sup> / <sub>16</sub> " | 11 Long Divider (1)       | 9/32" x 2 <sup>3</sup> / <sub>8</sub> " x 12 <sup>7</sup> / <sub>8</sub> " |
| 6 Edge Banding (1)        | 7/16" x 3/8" x 50"                                                          | 12 Splines (8)            | 1/8" x 1/4" x 1 <sup>7</sup> / <sub>8</sub> "                              |

## Box Basics

Step one on virtually any box design is to select an attractive plank and cut it so the grain



Quadrant hinges look simple, but require hidden mortises for the support arms to hide in. For this box, some of the screws provided needed to be cut down in length to fit properly.

is continuous around the front, back and ends (pieces 1 and 2). With this particular box, the process called for a little early planning. I had to be sure to allow for saw kerfs when determining the final height and length of the drawer front (piece 3). This, in turn, affected the dimensions of the back and ends. For the drawer front's first cut, I chose a place in the grain where a glue line would be least conspicuous. Then I ripped the front into three pieces, and crosscut the drawer front out of the middle. Next, I glued these pieces back together (except for the drawer



The front panel of the box was sliced into five separate pieces in order to achieve a tightly fitting drawer front.

front). I wanted the drawer front slightly larger than the drawer opening (to allow for cutting dovetails later on), so I had to move the two small pieces toward the center slightly. I then trimmed off both ragged ends, cut the back piece to match, and machined the two end pieces to exact dimensions.

To prevent the thin piece below the drawer opening from breaking, I recommend you cut a piece of wood the same width as the drawer opening and tape it into the opening.

to laying out the dovetails. I was looking for a different rhythm than usual, so I varied the size and spacing. (Look to the **Pinup Shop Drawings** for construction details.)

## Horizontal Dividers

This box has two levels, the upper for the ink and pen storage, and the lower for the paper drawer. This requires two horizontal dividers (pieces 4) — the lower one serves as the box's bottom. Since these pieces would be fully captured by the walls of the box, they needed to be plywood. It wouldn't do to have them

expanding and contracting with the seasons. I made these panels from handmade veneers and 1/8" plywood. I also made a third panel which would become the lid of the box (piece 5), with the application of thick handmade edge banding (piece 6). The lid is eventually attached to the box with quadrant hinges (pieces 7).

To capture the middle divider, I routed grooves around the inside of the box, stopping the cuts before the dovetailed ends. Later, I routed slots for the supports (pieces 8)

Once the sides were cut to final size, and the inside faces were both flat and smooth,

I moved on



Resawing fat 1/8" veneer is the first step in creating handmade plywood. A point fence and a properly tuned band saw are essential.



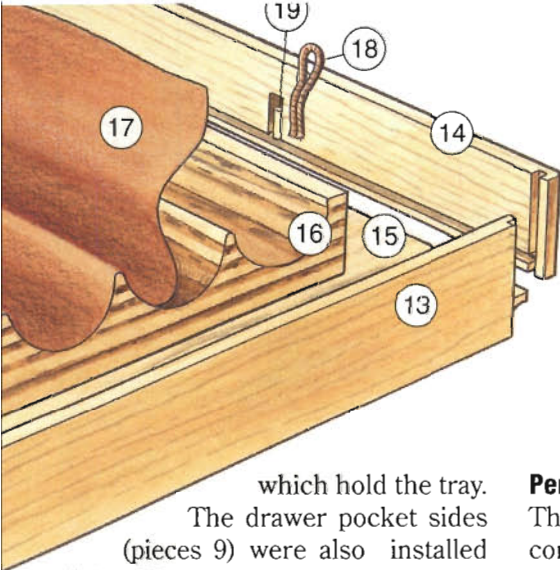
Use a slave board clamped in place to aid in planing your veneer pieces smooth. They must all be uniform in thickness.

Making your own plywood gives you total control of your project's appearance. You're not limited to the commonly available species of plywood, and you can match the color and figure of the wood used on all aspects of your piece. As an example, I book matched the veneer I used on the top and bottom layers of this project's lid from successive flitches. When you open the box, the plywood appears to be a solid piece of book-matched narra lumber.

To apply these veneer pieces to the 1/8" plywood core, use the same series of steps you would for any standard veneering job. For added strength, however, I do recommend white or yellow glue instead of contact cement.



To book match the veneer, select successive flitches and join two pieces with packing tape, glue and a heavy weight.



## MATERIAL LIST

|                            | T x W x L               |
|----------------------------|-------------------------|
| 13 Tray Front and Back (2) | 1/4" x 1 3/8" x 12 5/8" |
| 14 Tray Ends (2)           | 1/4" x 1 3/8" x 6 7/8"  |
| 15 Tray Bottom (1)         | 1/4" x 6 5/8" x 12 5/8" |
| 16 Carrier (1)             | 3/4" x 6 3/8" x 12 3/8" |
| 17 Fabric (1)              | Brown velvet            |
| 18 Loops (2)               | Brown string            |
| 19 Loop Dowels (2)         | 1/8" Dia. x 5/16"       |

which hold the tray.

The drawer pocket sides (pieces 9) were also installed later. Next I formed a rabbet along the bottom of the two ends and back to capture the bottom divider. This way, the piece served double duty as the bottom of the drawer pocket. I didn't cut this rabbet in the box front: the bottom would be glued flush with the drawer pocket opening.

### Ink Dividers

My next step was to go back to my drawings for the layout of the upper compartment. I cut the dividers (pieces 10 and 11) to size and milled the small slots in the ends of each piece for the splines (pieces 12). Next I cut the corresponding slots into the long divider and the interior walls of the box.

### Pen Tray and Slides

The pen tray is a simple lidless box consisting of sides and ends (pieces 13 and 14), a captured panel bottom (piece 15) and a fabric-covered pen carrier inset (pieces 16 and 17).



The tray bottom's edge is first shaped with a gentle cove and then captured by stopped grooves routed into the sides.

I made the pen carrier by cutting a piece of 3/4" plywood a bit smaller than the tray (allowing for the fabric), and dividing it up into eight

sections. After testing several angles, I clamped a temporary fence on my table saw at an angle to the blade. I cut the outermost slots at both ends of the board first, then moved the fence further away from the blade for the successive slots. To form each pair of slots, I raised the blade in small, safe increments. I then lightly sanded the grooves and applied the fabric. The pen tray fits quite closely to its space. To facilitate removal (and gain access to the hidden compartment), I added loops secured with tiny dowels (pieces 18 and 19) on the sides.

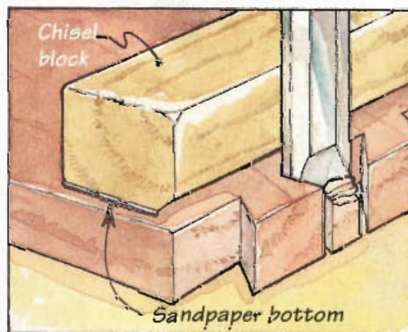
Because the pen tray is shallower than the compartment it sits in, I held it up just a little from the floor. I used my 1/8" router bit and formed grooves along the sides of the box to receive narrow supports.

Finishing the inside of the box would have been much more difficult to do after it was assembled, so

## Great results with delicate dovetails: Five tips from a pro

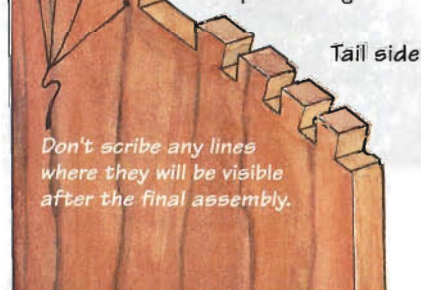
**H**and-cut dovetails are a sign of excellence in woodworking. Alas, practice is still the key to success, but here are a few of my best tips to help you to advance your skills.

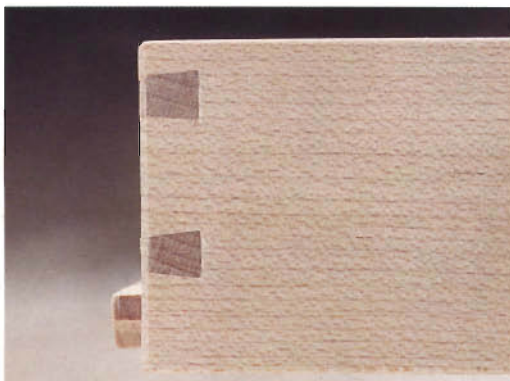
**1** I use a Zona saw (a thin-kerf back saw, inexpensive — but effective). I slant the saw slightly back (towards me) so the saw reaches the line on my side of the stock first. Then I level it up and cut to the line on the other side, careful NOT to cut into the scribe line.



**2** I also cut all the same sides of the pins and tails at the same time in order to keep my posture in line with that angle, decreasing my chances of deviating (screwing up).

**3** For chopping out waste, I use a chisel block (shown at left) to keep the cuts vertical. The hardwood block is as long as necessary and has a sandpaper bottom to keep it from moving. The bottom also has one long edge slightly beveled to keep the scribe line visible during positioning.





The drawer bottom was made longer than the sides. Later, it was trimmed to perfectly register the drawer in its opening.

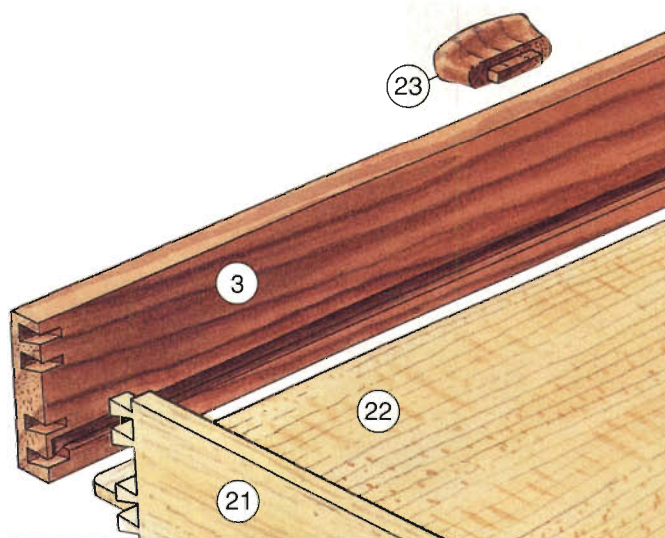
I taped off the exposed pins and tails and applied several coats of shellac to the inside surfaces of the box.

### First Glue-up

I was now ready for glue. In this first stage, I glued the four sides of the box, making sure to include the middle horizontal divider. After the four corner joints had cured, I moved on to the internal dividers. First, I glued the splines into the sides of the box and then I slid the dividers onto them. To aid in clamping the small dividers to the bottom of the compartment, I made a clamp block thick enough so the clamp would reach around the sides of the box and put pressure on the underside of the horizontal divider. I also glued in the supports for the pen tray. At this point all of the interior work was done.

### The Drawer

The next step was to build the drawer and its pocket. The drawer was built to be a little bigger than a standard sheet of paper, with room for a finger to lift the paper out. The drawer front was already cut to size, so I went ahead and sliced the stock for the back, sides and bottom (pieces 20 through 22). When creating drawers, generally I set the shoulders deeper than the thickness of the side material and file or plane off the excess after glue-up. This time I had to be very careful because the front was so close to final size already. The front joints are half-blind, and the back corners are through dovetails. I made the

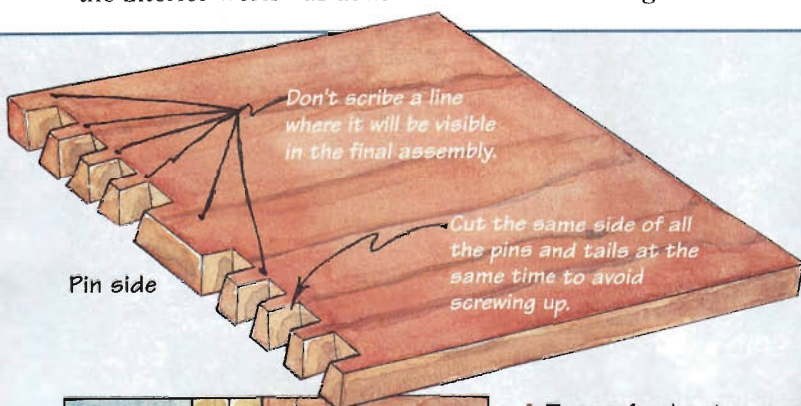


### MATERIAL LIST

|                      | T x W x L               |
|----------------------|-------------------------|
| 20 Drawer Back (1)   | 1/4" x 1" x 11 5/8"     |
| 21 Drawer Sides (2)  | 1/4" x 1 3/8" x 9 3/8"  |
| 22 Drawer Bottom (1) | 1/4" x 9 3/8" x 11 3/8" |
| 23 Drawer Pull (1)   | 3/8" x 1 1/8" x 3/4"    |

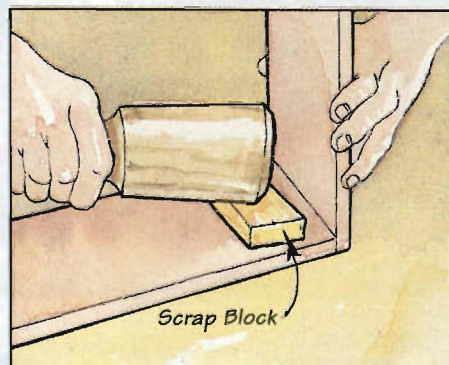
drawer bottom a bit longer than the drawer so it could be trimmed later to serve as the drawer stop.

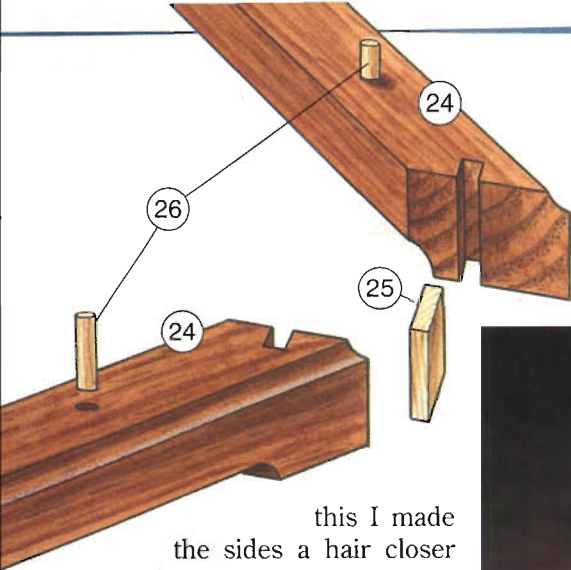
Contrary to the usual process, I built the drawer before completing the space for it to fit into. Once I knew the drawer fit well through its opening, I concerned myself with its relationship to the drawer pocket sides. I wanted the sides of the pocket to provide slight resistance so the drawer wouldn't come flying out when pulled. To achieve



**4** To transfer the pin pattern to the tail stock, clamp a tall narrow scrap (shown at left) in the end vise and lay your tail stock inside-up, butted against the scrap. Place the pin stock on end against the scrap. Sand a flat side on your pencil lead and hold the pin piece against the scrap. Mark along the pin sides, being sure to get them all.

**5** Slowly work the joint together, paring the tails as you go, to make a snug fit. Where there is too much pressure, the pencil markings will drag and burnish the insides, indicating where to pare. Seat the joint together, about 3/4 of the way with hand pressure, the rest with light mallet blows. Never wiggle your joints apart when test fitting. It will crush fibers and cause a bad fit. Lightly tap the pieces apart, as shown below.





## MATERIAL LIST

|                     | T x W x L          |
|---------------------|--------------------|
| 24 Base (1)         | 7/8" x 7/8" x 50"  |
| 25 Base Splines (4) | 1/8" x 5/8" x 7/8" |
| 26 Dowels (8)       | 3/16" Dia. x 1/2"  |



The mitered corners on the machiche base were reinforced with splines. The base is attached with dowels and glue.

this I made the sides a hair closer together at the front of the box than at the back. This way the drawer would move well, but would slow down as it was pulled further out. I then attached the drawer pocket sides to the box's bottom. (I did a dry run to fine tune the fit before final glue-up.) When I was satisfied, I secured this subassembly into the rabbet on the bottom of the box, applying glue to the rabbet, the top of the pocket sides and the front edge of the divider. This completed the drawer pocket and closed the bottom of the box.

### Lid and Hinges

I made the top panel with the hand-made plywood mentioned earlier, and trimmed it with edge banding. I formed this banding by hand and mitered it at the corners. At first the lid had a handle carved out of the front piece of edge banding, but as soon as I made and attached the drawer pull (piece 23), I decided the handle had to go. I simply took the lid to the band saw and removed what looked to me like a second nose on the face of my box. I felt a little nervous about amputating something which had been part of the design from the start, but again, I realized change is good and wood-working requires flexibility. Once the lid was finished, I attached it to the rest of the box. I chose brass quadrant hinges for strength and simplicity. At least the appearance is simple; the actual

installation was not so easy. The support arm of the hinge keeps the lid from falling backwards, but requires a deep channel to rest in. After locating and setting the hinge into the edge of the box, I had to drill a long, deep mortise into the side. I then cut a similar channel into the lid, but more shallow. I also ended up filing a little off of the top of the support arm so it would fit within the thickness of the lid. The hinges came with screws, but due to the thickness of the top I cut half of them quite short.

The author purchased the lumber used in this box from **EcoTimber®**, a company specializing in **sustainably harvested lumber**. You can find them on the web at [www.ecotimber.com](http://www.ecotimber.com) or call them at 888-801-0855. Nina's narra was salvaged from the bottom of the **Mekong river** and the machiche was grown in **Central America**.



### The Base

The last, but definitely not least, aspect of this piece was the base. The base (piece 24) lifts the box off the table and provides a more finished look. It is made out of machiche, which is close in color to the reddish aspect of the narra (near the bottom of the box). I ripped the pieces to size and then roughly to length. Then I worked on the miters until I got a good square fit. To strengthen the joint I added splines (pieces 25) to the mitered corners. Before gluing I shaped the bottom edges to create the feet. The final shaping occurred after glue-up, using files and sandpaper. The base was attached to the box with one or two small dowels (pieces 26) per side. A drop of glue ensured I'd have a strong connection.

### Changes

I began working on this writing box in June of 1998, three months before the ill-fated wedding date. A broken leg, a cross country move and a cancelled commission later, I resumed work. Fitting it in between commissions, I finally finished the box in April of 1999. The whole process has been a lesson in the uncertainty of life. Changes can be scary and frustrating, but are almost always for the better. Wood will warp and move, screws will be too long, and things you thought were crucial to the piece will need to be cut off. Such is the beauty and fun of woodworking.

Table Elevation (Top View)

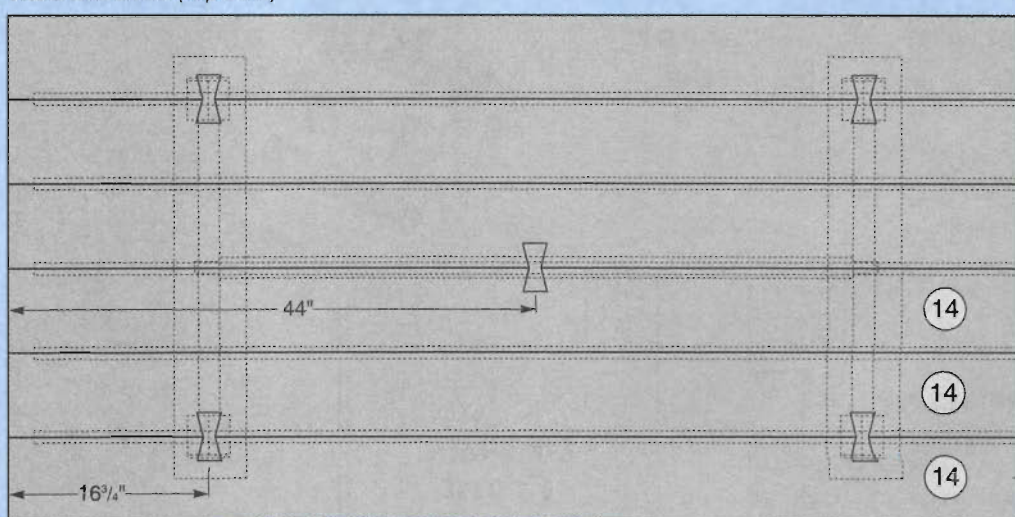
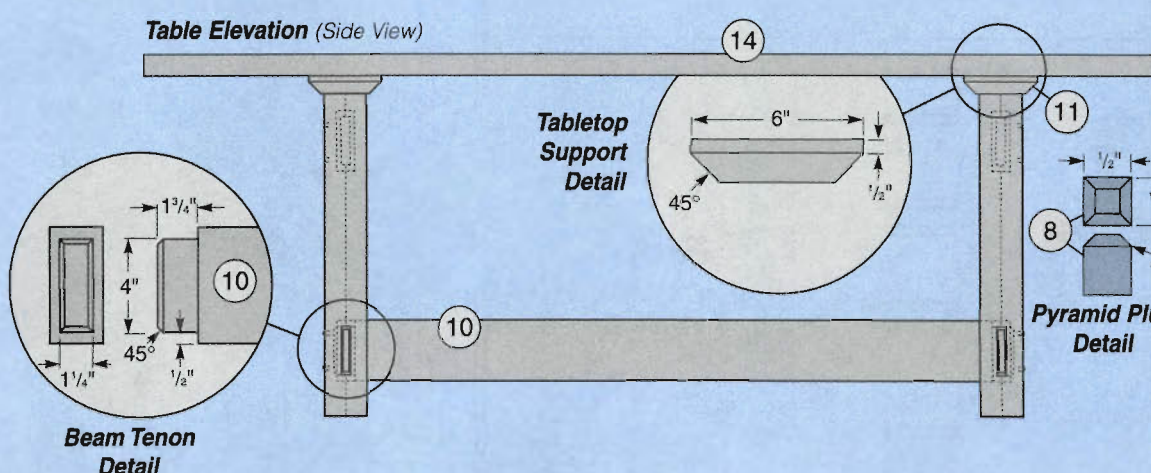
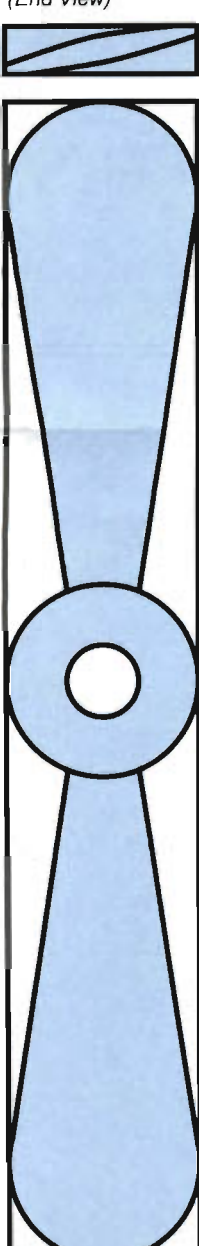


Table Elevation (Side View)



(End View)

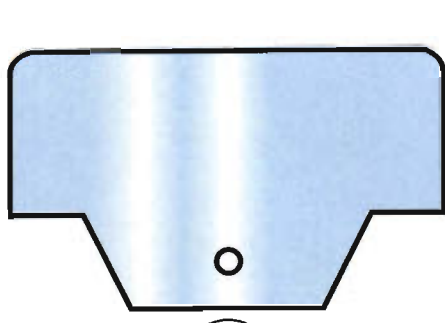


**6 Propeller**

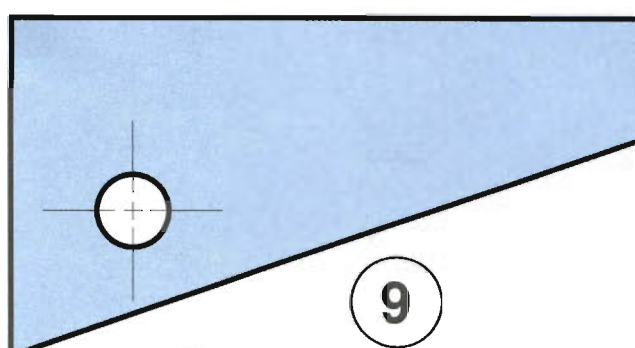


**2 Wing**

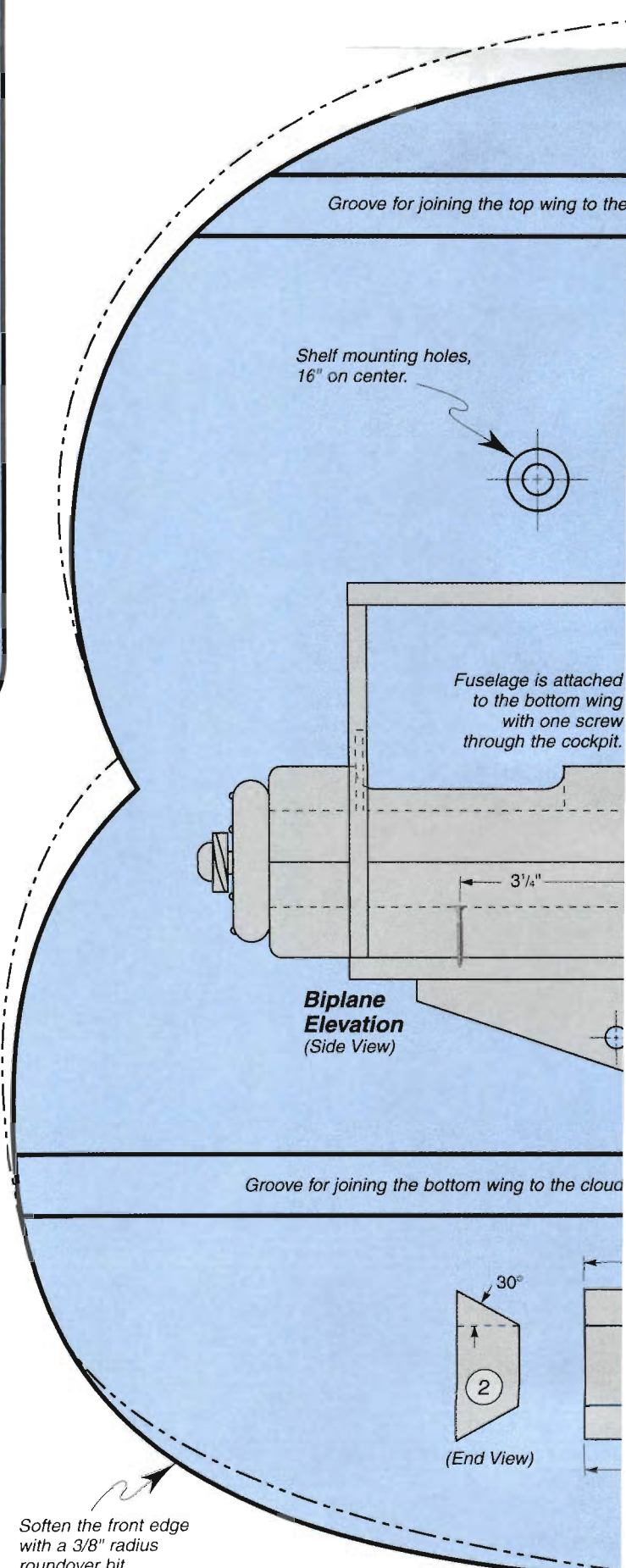
Shape the outer corners of the wings to match this 1/2" radius.



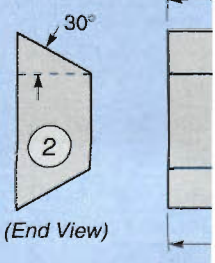
**4 Windshield**



**9 Landing Gear Frame**



**Biplane Elevation (Side View)**

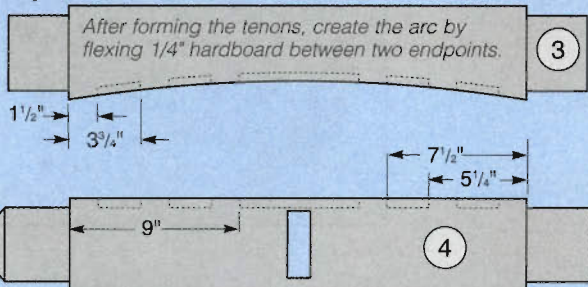


(End View)

**T x W x L**

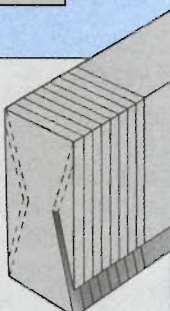
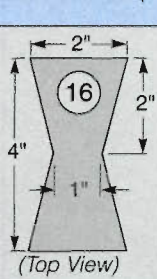
- | P X W X L                     |                  |
|-------------------------------|------------------|
| 1 Leg Laminations (8)         | 1¼" x 3¼" x 26¾" |
| 2 Leg Veneer (4)              | 1¼" x 3½" x 26¾" |
| 3 Top Rails (2)               | 1¾" x 5" x 31"   |
| 4 Bottom Rails (2)            | 1¾" x 5" x 32"   |
| 5 Edge Slats (8)              | 1½" x 2¾" x 14"  |
| 6 Center Slats (2)            | 1½" x 7" x 14"   |
| 7 Rail Screws (16)            | #8 x 2"          |
| 8 Pyramid Plugs (16)          | 1½" x 1½" x 5/8" |
| 9 Flush Plugs (16)            | 1½" x 1½" x 1½"  |
| 10 Beam (1)                   | 1¾" x 5" x 56¾"  |
| 11 Tabletop Supports (2)      | 1¾" x 6" x 35"   |
| 12 Support Leg Screws (4)     | #12 x 3"         |
| 13 Splines (2)                | 1½" x 1" x 84"   |
| 14 Tabletop Segments (6)      | 1¾" x 7" x 88"   |
| 15 Support Top Screws (16)    | #8 x 2"          |
| 16 Decorative Butterflies (5) | 1¼" x 2" x 4"    |

After forming the tenons, create the arc by flexing 1/4" hardboard between two endpoints.

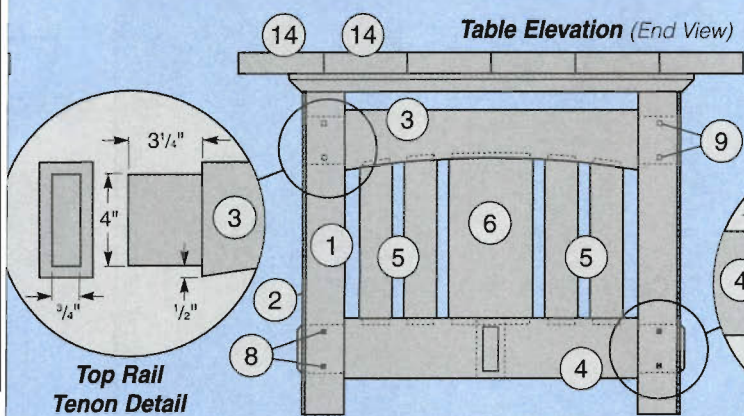


### ***Decorative Butterflies***

The best way to make your butterfly keys is to clamp a set of blanks together and, with your table saw blade set to 14°, make four cuts, as shown at right.

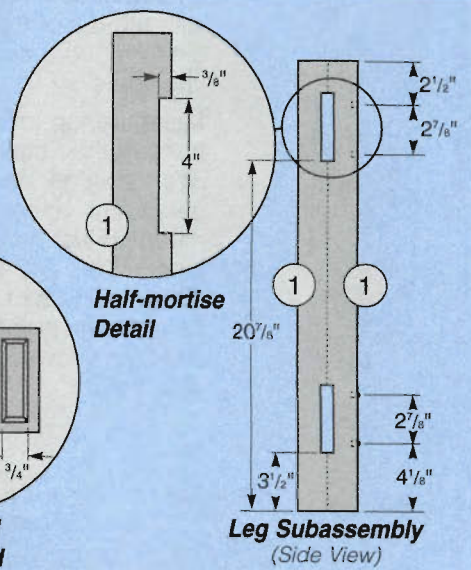


### Table Elevation (End View)



### Top Rail Tenon Detail

### Bottom Rail Tenon Detail



### Half-mortise Detail

**Leg Subassembly**  
(Side View)

**12**  
**Cloud**

**NOTE:** The author's cloud is not symmetrical; alter your cloud shape slightly, side to side, as shown by this dotted line.

**T x W x L**

- |                                  |                         |
|----------------------------------|-------------------------|
| <b>1</b> Wings (2)               | 3/8" x 5 1/2" x 24"     |
| <b>2</b> Fuselage Segments (5)   | 3/4" x 1 7/8" x 6 1/2"  |
| <b>3</b> Cockpit Segments (2)    | 3/4" x 1 7/8" x 1 1/2"  |
| <b>4</b> Windshield (1)          | 1/8" x 1 1/2" x 2 1/4"  |
| <b>5</b> Windshield Screw (1)    | #4 x 3/4"               |
| <b>6</b> Propeller (1)           | 1/4" x 1" x 6"          |
| <b>7</b> Engine Cowling (1)      | 2 3/4" Dia. wagon wheel |
| <b>8</b> Propeller Hub (1)       | Wagon wheel axle        |
| <b>9</b> Landing Gear Frames (2) | 3/8" x 1 3/4" x 4"      |
| <b>10</b> Axle (1)               | 3/8" x 8"               |
| <b>11</b> Wheels (2)             | 1 3/4" Dia. solid wheel |
| <b>12</b> Cloud (1)              | 3/4" x 12" x 22 1/2"    |
| <b>13</b> Screw Plugs (2)        | 3/8" Dome               |
| <b>14</b> Fuselage Screws (5)    | #6 x 1" Countersunk     |
| <b>15</b> Escutcheon Pins (12)   | 16 Gauge x 3/4" Brass   |
| <b>16</b> Front Wing Struts (2)  | 3/8" x 3/8" x 6"        |
| <b>17</b> Back Wing Struts (2)   | 3/8" x 5/16" x 6"       |

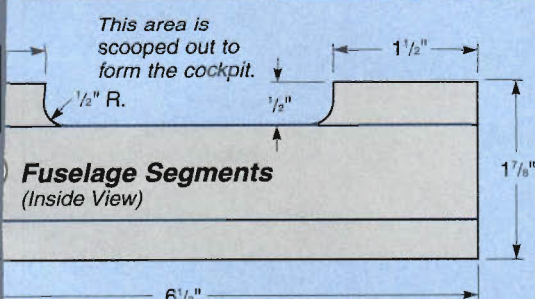
Struts are located 6" from center.

Center the escutcheon pins on each fuselage segment 1/4" from the inside edge.

Landing gear frames  
are located  $2\frac{3}{4}$ "  
from center.

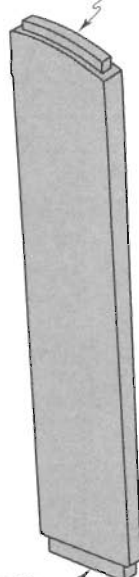
*This area is scooped out to form the cockpit.*

### Fuselage Segments (Inside View)





Curved shoulder top tenon.

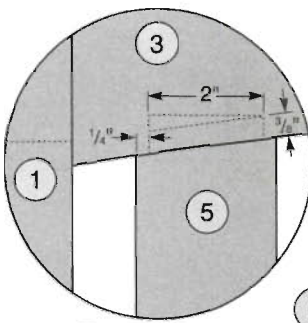


Square shoulder bottom tenon.

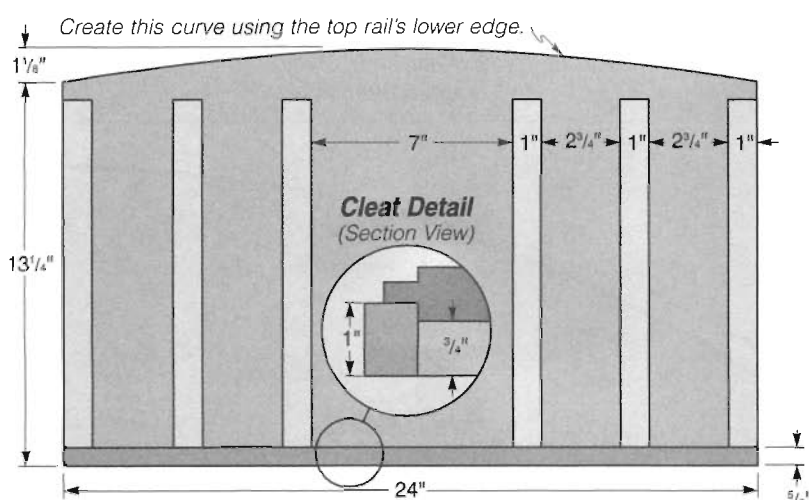
## Routing Round the Bend

Matching the tenon shoulders to the top rail's graceful arc is simple with this shop-built jig. By holding the slats in the exact relationship as they will have in the table, the jig allows you to rout curved ends onto the slats and then, with the aid of a piloted  $\frac{3}{8}$ " rabbeting bit, form the tenons' curved shoulders.

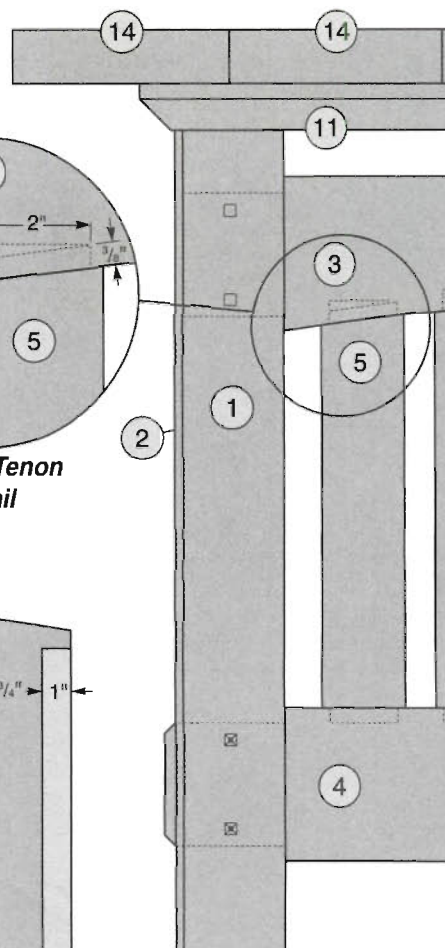
Make the top rails first, then transfer their curve to the jig's top edge, as shown below. The bottom cleat is mounted just proud of the plane of the jig's surface. The shoulders of the bottom tenons register against this cleat, as shown in the section view below.



Curved Tenon Detail



Create this curve using the top rail's lower edge.

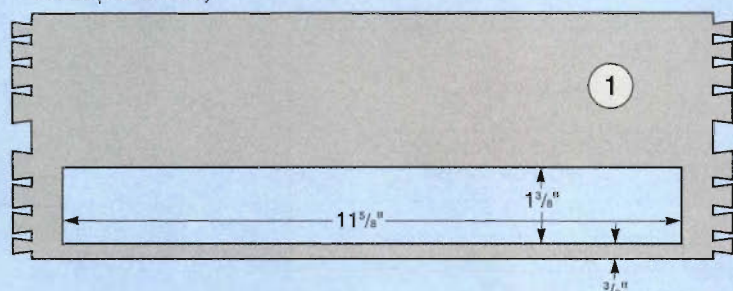


# Pinup Shop Drawings

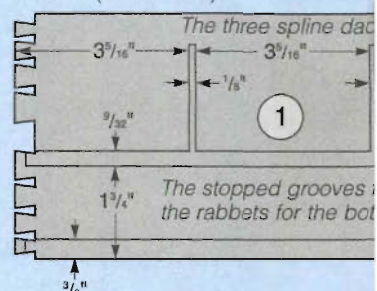
## Letter Box

Note: The full-sized dovetail lay

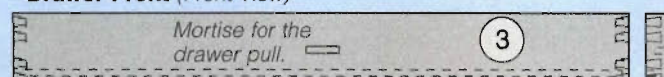
Front (Front View)



Back (Inside View)

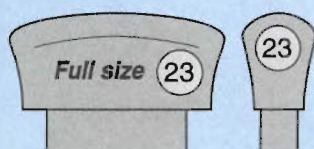
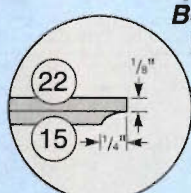


Drawer Front (Front View)



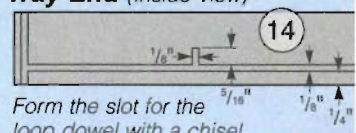
The drawer front's final dimensions are determined by the opening created in the box front. The drawer pull is centered vertical and horizontally.

Tray and Drawer Bottom Cove Detail (Side View)



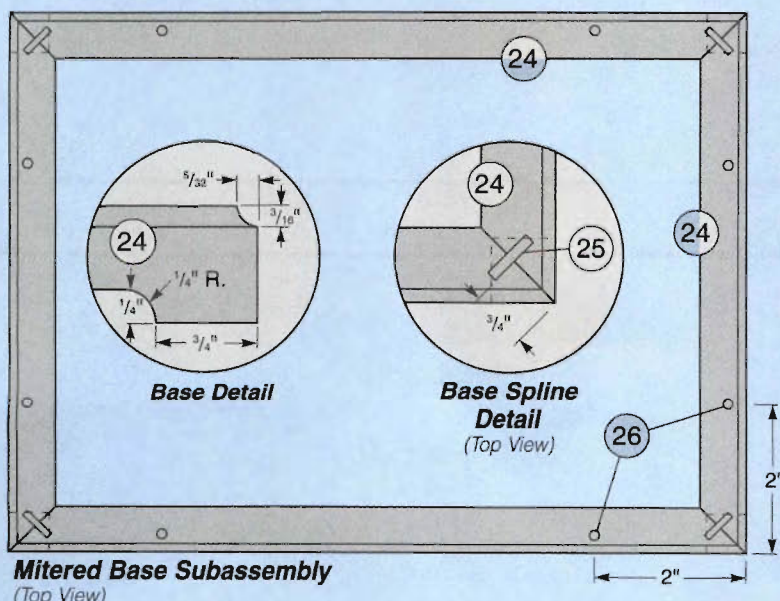
Drawer Pull (Side and End View)

Tray End (Inside View)

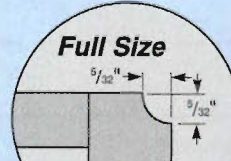


Carrier (End View)

The carrier grooves are formed on the top of the carrier by an angled fence. Once you've got your fence established, start on the outside and form the grooves each time you move the fence.

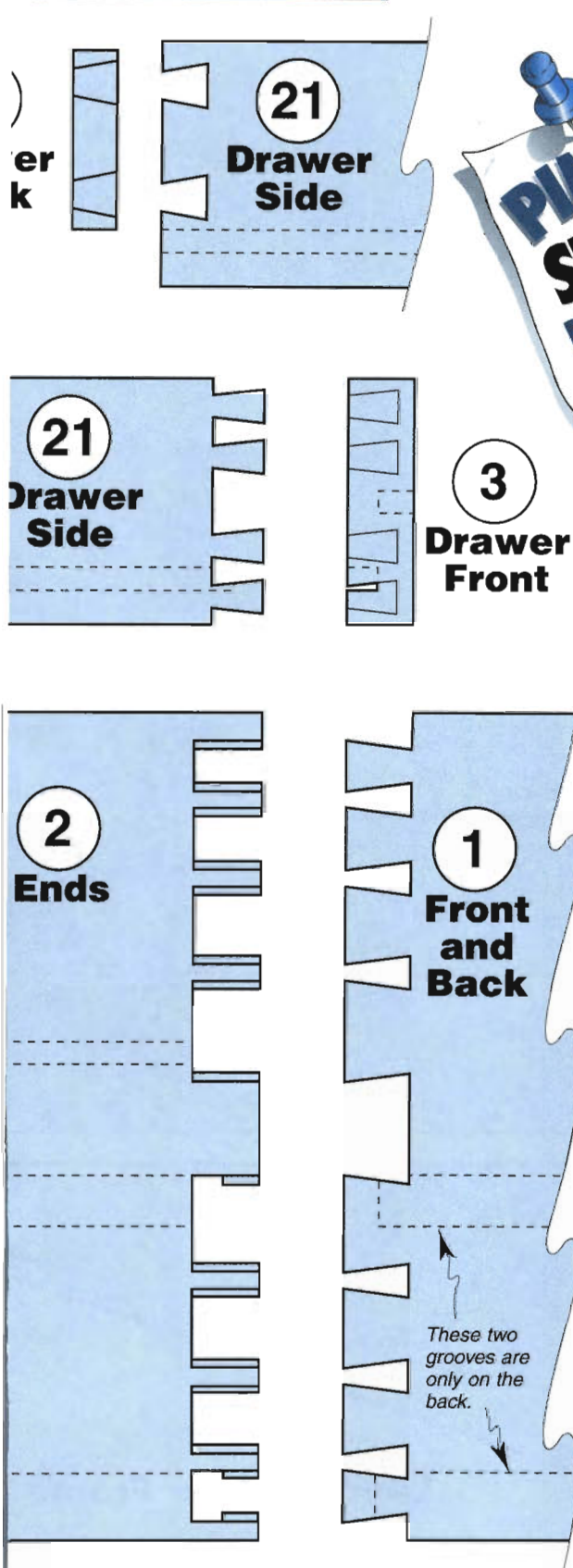


Mitered Base Subassembly (Top View)



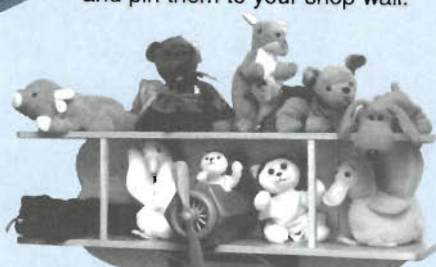
Edge Banding Detail (End View)

## Letter Box



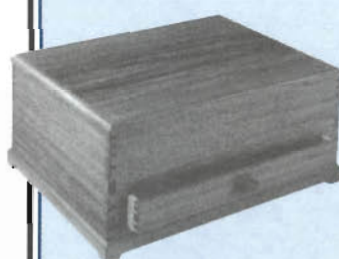
## Full-Size Patterns

- 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.



### Beanie Babies Biplane

Full-size drawings and detailed elevations lead you through this fun weekend project.



### Letter Box

Full size dovetail layouts and all the joinery details needed to complete this beautiful piece.

### Arts & Crafts Dining Table

Mortise and tenon locations and sizes. Details for the jig used to create the curved tenons on the slats.



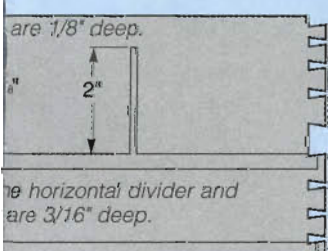
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35

Woodworker's Journal

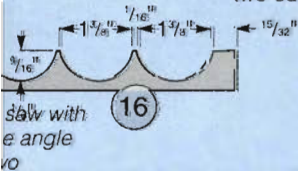
September/October 1999

ts are shown above

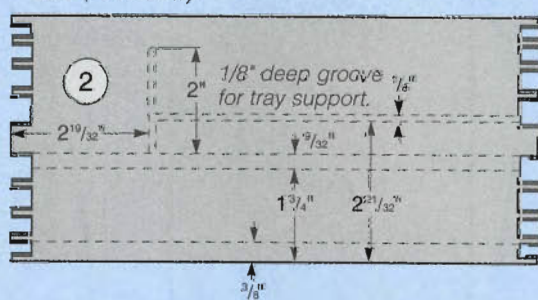


### Tray Corner Detail

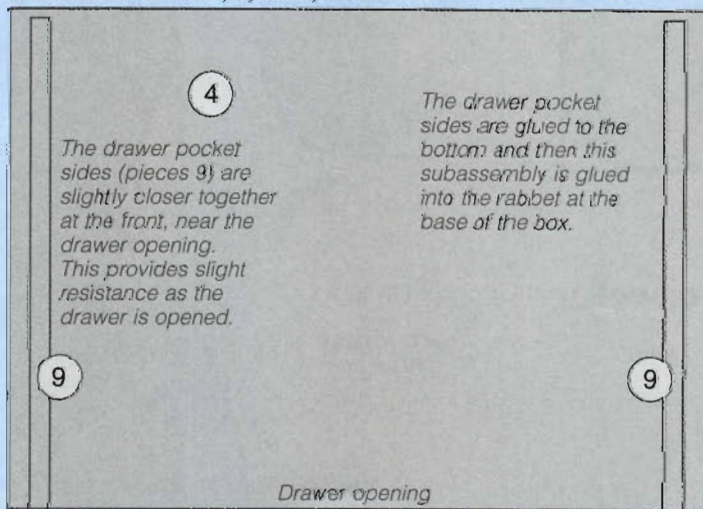
Use a 1/8" kerf saw blade in your table saw to create the corner joinery for the tray. Set the fence 1/8" from the blade and set the blade 1/8" high. This way, each corner can be completed with two cuts.



### End (Face View)



### Horizontal Divider (Top View)



## MATERIAL LIST

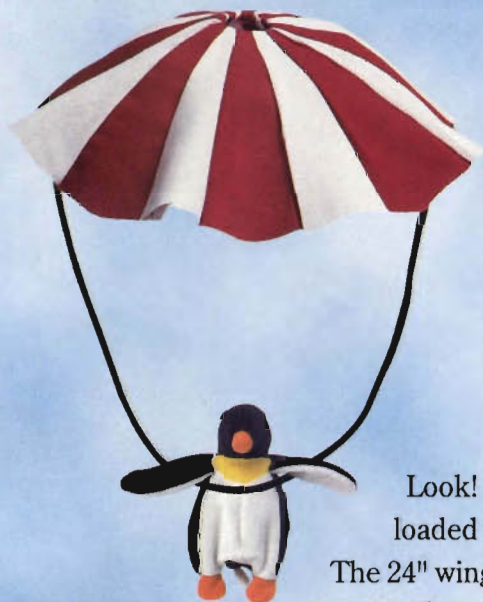
|                            | T x W x L                 |
|----------------------------|---------------------------|
| 1 Front and Back (2)       | 3/8" x 4 5/8" x 13 5/8"   |
| 2 Ends (2)                 | 3/8" x 4 5/8" x 10"       |
| 3 Drawer Front (1)         | 3/8" x 1 3/8" x 11 5/8"   |
| 4 Horizontal Dividers (2)  | 9/32" x 13 1/4" x 9 7/16" |
| 5 Lid (1)                  | 9/32" x 9 3/8" x 13 5/8"  |
| 6 Edge Banding (1)         | 7/16" x 3/8" x 50"        |
| 7 Quadrant Hinges (2)      | Solid brass               |
| 8 Tray Supports (2)        | 1/8" x 7/16" x 6 7/8"     |
| 9 Drawer Pocket Sides (2)  | 3/8" x 1 7/16" x 9 1/4"   |
| 10 Small Dividers (3)      | 1/4" x 2 1/8" x 2 1/8"    |
| 11 Long Divider (1)        | 9/32" x 2 3/4" x 12 7/8"  |
| 12 Splines (8)             | 1/8" x 1/4" x 1 7/8"      |
| 13 Tray Front and Back (2) | 1/4" x 1 3/8" x 12 5/8"   |

|                      | T x W x L               |
|----------------------|-------------------------|
| 14 Tray Ends (2)     | 1/4" x 1 3/8" x 6 7/8"  |
| 15 Tray Bottom (1)   | 1/4" x 6 3/8" x 12 3/8" |
| 16 Carrier (1)       | 3/4" x 6 3/8" x 12 3/8" |
| 17 Fabric (1)        | Brown velvet            |
| 18 Loops (2)         | Brown string            |
| 19 Loop Dowels (2)   | 1/8" Dia. x 5/16"       |
| 20 Drawer Back (1)   | 1/4" x 1" x 11 5/8"     |
| 21 Drawer Sides (2)  | 1/4" x 1 3/8" x 9 3/8"  |
| 22 Drawer Bottom (1) | 1/4" x 9 3/8" x 11 3/8" |
| 23 Drawer Pull (1)   | 3/8" x 1 1/8" x 3/4"    |
| 24 Base (1)          | 7/8" x 7/8" x 50"       |
| 25 Base Splines (4)  | 1/8" x 5/8" x 7/8"      |
| 26 Dowels (8)        | 3/16" Dia. x 1/2"       |



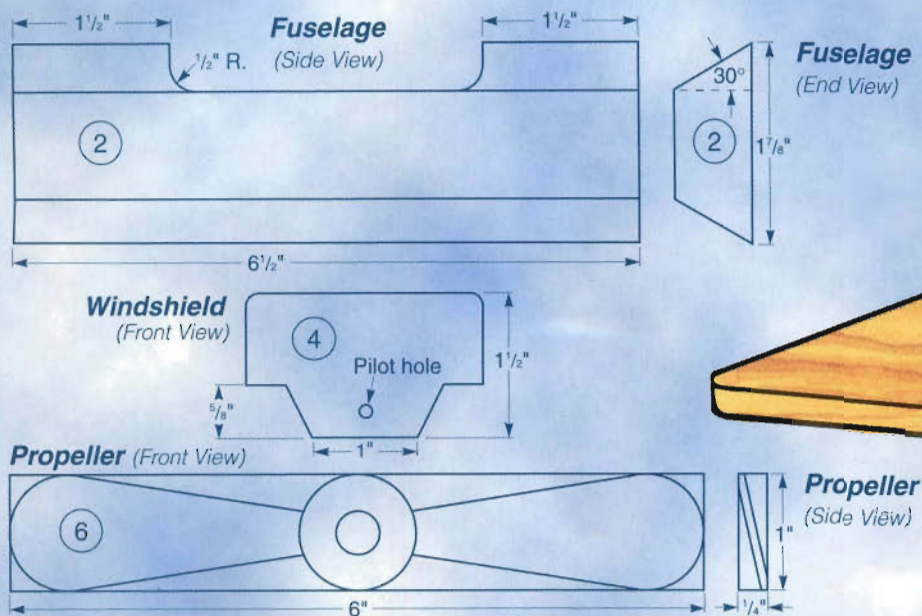
# Beanie Babies™ Biplane

By Al Krogh



Look! Up in the sky! It's a bird! No, it's a plane ... and it's loaded with more of those disarming little Beanie Babies! The 24" wing span and open cockpit of this biplane are designed to provide ample seating for any youngster's precious collection of stuffed passengers. Constructed from hardwoods and assembled with simple joinery, this shelf was designed to be well within the reach of most woodworking skill levels.

I chose ash for most of the parts because it is strong, light, and has a pleasant grain pattern. The cloud/back is made from poplar, which has a long grain similar to the layered look of clouds. The propeller and axle are cherry, while the wheels, engine cowling and windshield are modified store-bought items.



### Finishing as You Go

All of the staining, and most of the top coating, on this project are completed prior to assembly, so it's good to think about the process before you start cutting parts to size.

I used Woodburst® brand stain for the yellow wings, the red fuselage and the wheels. Minwax® Pastel's white stain is a good choice for the

### Start with the Wings

Use the **Material List** on the facing page to cut the wings (pieces 1) to size, then round off their corners to a 1/2" radius with a sander (see the **Pinup Shop Drawings** after page 34). Sand the wings down to 220 grit, then stain them bright yellow. When they are dry, apply the first two coats of finish.

### The Fuselage Segments

The biplane's fuselage is a stave construction, rather like an old-fashioned barrel. There are six sides to the fuselage: five of the pieces are full-length (pieces 2), and the other (pieces 3) has a piece removed from the middle to form the cockpit seat. All of these parts can be made from a single length of 36" long by 3/4" thick ash.

With the table saw blade set to 30° and the fence at 2 1/8", rip one edge. Then turn it around, set the fence to 1 7/8", and rip the second edge to final width. Form the five full segments by crosscutting the strip to length, and then cut two shorter pieces to form the front and back end of the cockpit. To test your bevel cuts, lay two pieces of 15" long duct tape (The plane builder's secret



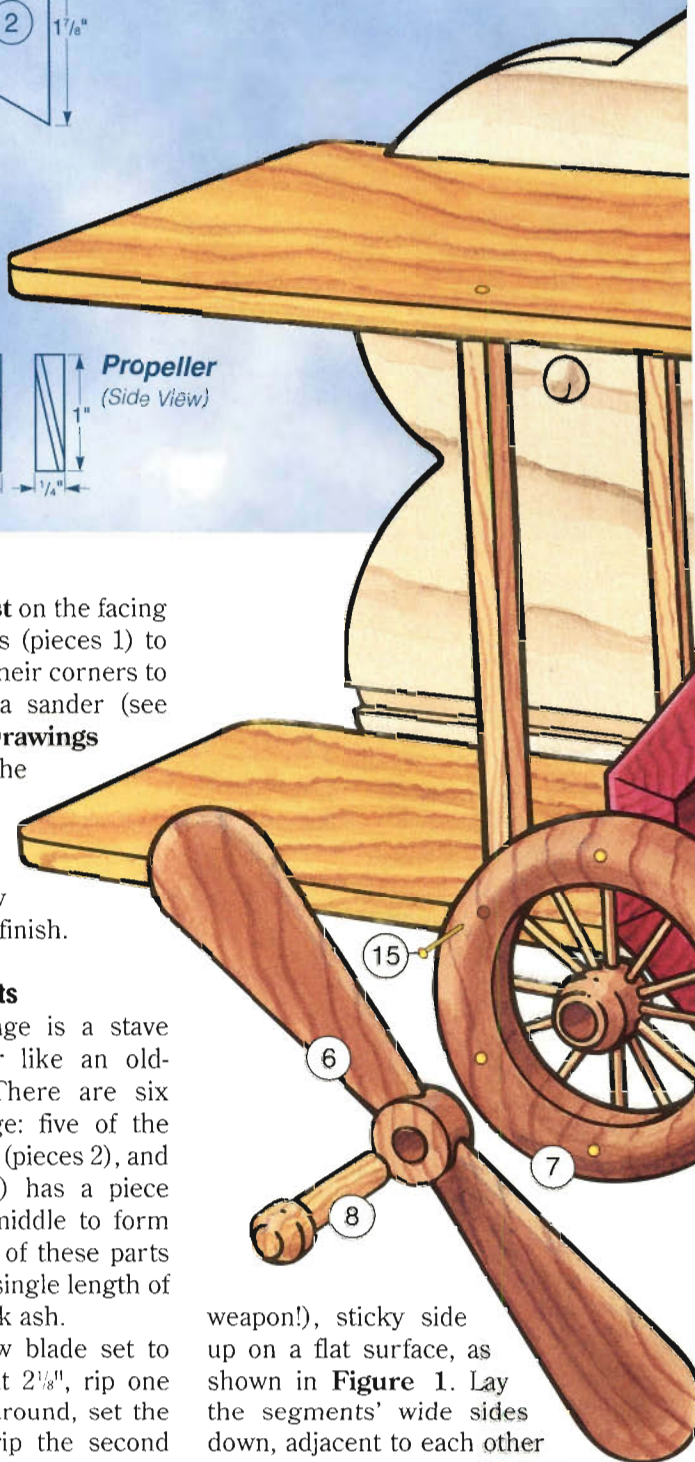
**Figure 1:** Duct tape, an airplane builder's secret weapon, comes in handy for testing the fit of the fuselage segments.

cloud and screw hole buttons. On my plane, all of these were topped with two coats of white shellac (1 lb. cut) prior to assembly, and a third coat after assembly.

I like the ease of application and rapid drying time of shellac. White shellac also dries crystal clear (no amber tint to diffuse the bright colors) and provides a natural looking and durable finish.

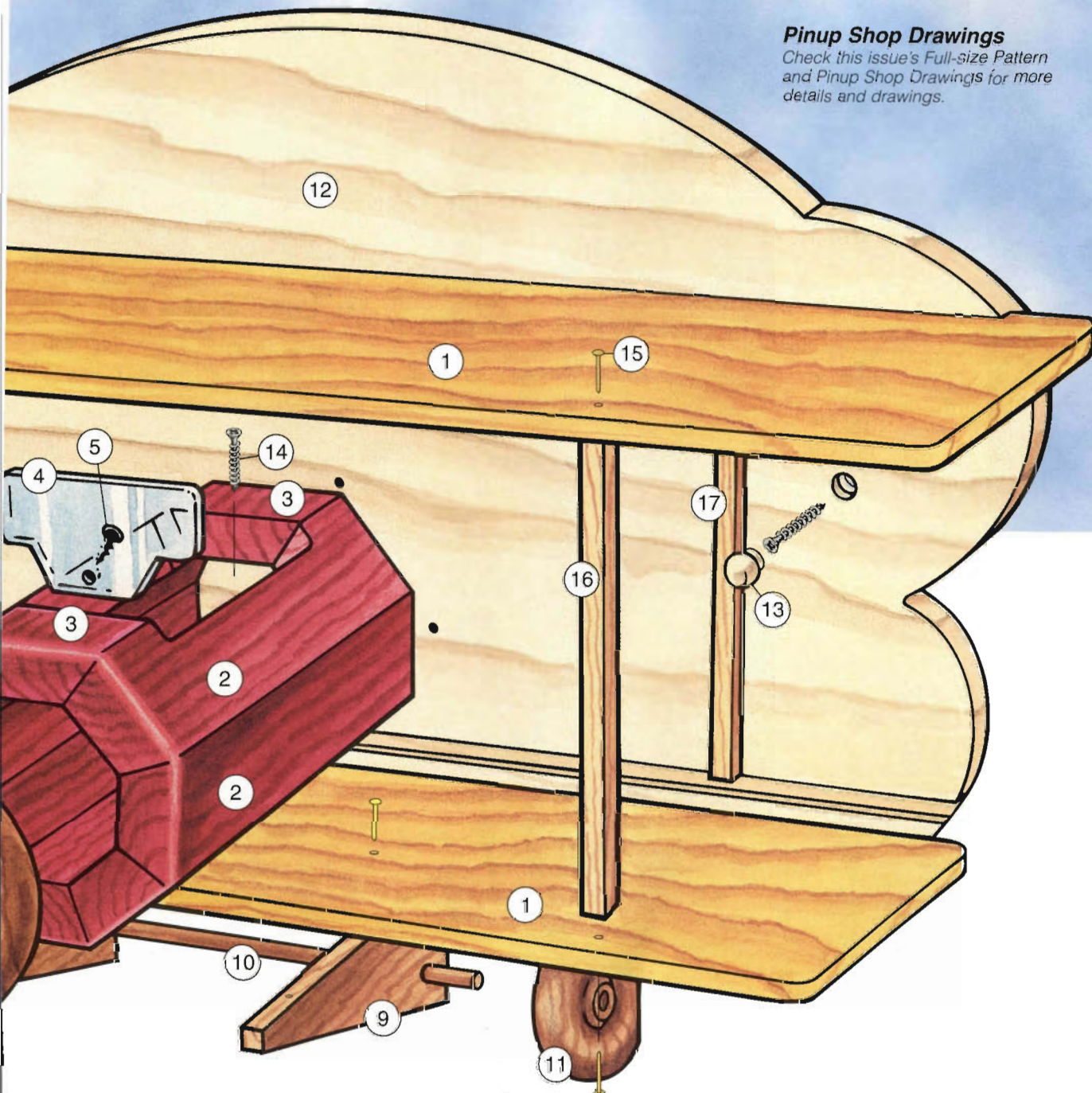
weapon!), sticky side up on a flat surface, as shown in **Figure 1**. Lay the segments' wide sides down, adjacent to each other on the tape, then roll up the tape to form a hexagon. As long as the exterior joints are tight, small gaps in the interior are O.K.

Before you glue-up, you'll need to do a little machining on the two segments adjacent to the cockpit. Use



## Pinup Shop Drawings

Check this issue's Full-size Pattern and Pinup Shop Drawings for more details and drawings.



## MATERIAL LIST

|                           | T x W x L               |
|---------------------------|-------------------------|
| 1 Wings (2)               | 3/8" x 5 1/2" x 24"     |
| 2 Fuselage Segments (5)   | 3/4" x 1 7/8" x 6 1/2"  |
| 3 Cockpit Segments (2)    | 3/4" x 1 7/8" x 1 1/2"  |
| 4 Windshield (1)          | 1/8" x 1 1/2" x 2 3/4"  |
| 5 Windshield Screw (1)    | #4 x 3/4"               |
| 6 Propeller (1)           | 1/4" x 1" x 6"          |
| 7 Engine Cowling (1)      | 2 3/4" Dia. wagon wheel |
| 8 Propeller Hub (1)       | Wagon wheel axle        |
| 9 Landing Gear Frames (2) | 3/8" x 1 3/4" x 4"      |

|                          | T x W x L               |
|--------------------------|-------------------------|
| 10 Axle (1)              | 3/8" x 8"               |
| 11 Wheels (2)            | 1 3/4" Dia. solid wheel |
| 12 Cloud (1)             | 3/4" x 12" x 22 1/2"    |
| 13 Screw Plugs (2)       | 3/8" Dome               |
| 14 Fuselage Screws (5)   | #6 x 1" Countersunk     |
| 15 Escutcheon Pins (12)  | 16 Gauge x 3/4" Brass   |
| 16 Front Wing Struts (2) | 3/8" x 3/8" x 6"        |
| 17 Back Wing Struts (2)  | 3/8" x 5/16" x 6"       |

the **Pinup Shop Drawings** to locate and mark a small cutout in each of these pieces, then scoop out the waste on your scroll saw. Check the fit against the front and back cockpit strips, then sand and bevel the sharp edges. These cutouts provide a more comfortable and properly scaled seating space for the pilot.

### Assemble the Fuselage

I recommend polyurethane glue to assemble the fuselage because it expands while curing, filling any gaps. Slightly dampen one edge of each joint with water and apply the glue to the mating edge. Use tightly stretched packaging tape as a clamp, and make sure the ends are square. After a couple of hours, remove the tape so it doesn't end up getting captured by the adhesive. When the glue has completely cured, scrape and sand any squeeze-out. Lightly break the sharp joint corners with sandpaper, and trim the ends square.

Use a 3/8" roundover bit in your router table to round over the leading edge of the fuselage, where the engine cowling will be installed. Then, working through the cockpit opening, drill a countersunk pilot hole through the bottom strip for mounting to the wing later (the location is shown on the **Pinup Shop Drawings**).

Complete your final sanding of the fuselage and apply bright red stain to both its inside and outside. (The inside will be visible through the engine cowling.) After the stain has completely dried, apply two coats of shellac.



**Figure 2:** After cutting the propeller to shape on the band saw, clamp your belt sander upside down in the jaws of your workbench to carve the angled faces.

### The Windshield and Propeller

Make the windshield (piece 4) from 1/8" Plexiglas™, cutting it to the shape shown on the **Pinup Shop Drawings** and filing it to final size. Drill a hole in this piece for a small panhead screw (piece 5), and mount the windshield to the dashboard of the cockpit.

Draw vertical and horizontal centerlines on the stock you'll use to make the propeller (piece 6), and drill a 3/8" hole where the lines meet (see the **Full-size Pattern** at the center of the magazine). Transfer the pattern to the workpiece and cut out the propeller. Use a belt sander, clamped upside

down to your workbench (see **Figure 2**), to angle the faces of the blades, as shown on the pattern. (Just for the record, I went through a couple of these blade blanks before I got one that looked good enough to use.)

### The Engine Cowling

A manufactured 2<sup>3</sup>/<sub>4</sub>" spoked wagon wheel makes an excellent engine cowling (piece 7). The spokes resemble the old radial motors that powered early airplanes. These wheels generally come with an axle, which in our case becomes the propeller hub (piece 8). Stain this hub yellow, then apply two coats of shellac to both the wheel and hub.

### Landing Gear and Wheels

The landing gear frames (pieces 9) are a pair of small triangles with their ends squared off (see the **Pinup Shop Drawings**). After cutting them to size, locate and drill the axle hole in each one and slide the axle (piece 10) into position. Use your belt sander to flatten one edge of each wheel (pieces 11), so it appears to be emerging from the cloud.

Now use a walnut stain on the tire portion of each wheel, and drill a 3/8" hole through each hub. Apply two coats of shellac and set these parts aside for now.

### The Cloud

Edge glue a few narrow, knot-free boards together to make a blank for the cloud (piece 12), keeping an eye peeled for grain patterns that might enhance your cloud. Use the **Full-size**

## A Trilogy of Beanie Babies Projects

The Beanie Babies Biplane completes our trilogy of Beanie Babies projects. The first two, shown here, are now available as a combined plan.

If you're interested, call us at 800-610-0883 and ask for item #52448. (\$14.99)

The Beanie Babies Bedroom (above) and Bus (right) have been our top selling gift projects for the younger generation.





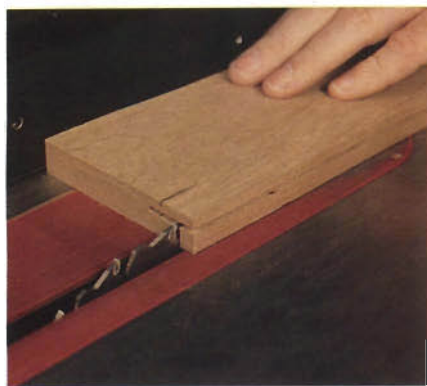
**Figure 3:** After gluing up a blank large enough to make the cloud, plow two shelf grooves before band sawing this piece to final shape.

**Pattern** to lay out the cloud's profile, then plow the two wing grooves in the front face, using a 3/8" straight bit in your router table (see **Figure 3**). Band saw the cloud to shape, then use a 3/8" radius roundover bit to soften its front edges. Locate the shelf mounting holes (see **Full-size Pattern**), and drill these stopped holes 3/8" deep with a 3/8" Forstner bit.

After sanding, use a pastel white stain to give the cloud a white tint without eliminating the grain (stay clear of the grooves). Stain the plugs (pieces 13) at this time, then apply two coats of shellac.

### Final Assembly

Glue and clamp the lower wing into its groove, then place the fuselage in the center of the cloud, where it will sit atop the lower wing. Trace its inside shape onto the cloud, then



**Figure 4:** The safest way to cut the four thin struts on the table saw is to rip them off the edge of a wider board in two passes.



Once you've formed the grooves for the wings, use the **Full-size Pattern** to transfer the profile of the cloud onto the glued-up blank, then cut it to shape on the band saw.

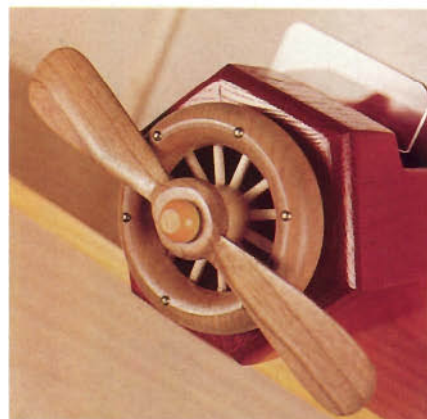
use this as a guide to predrill for the four countersunk screws (pieces 14) you'll drive in from the back to attach the fuselage to the cloud. Place a fifth small screw through the cockpit bottom and into the wing, using the predrilled pilot hole you made earlier.

Epoxy the landing gear and wheels in place next, holding them in position with clamps and two escutcheon pins (pieces 15), driven down through the wing into predrilled pilot holes.

Now cut the four wing struts (pieces 16 and 17) to size (see **Figure 4**), and finish them. Glue and clamp the top wing into its groove next, then attach the wing struts using epoxy and pins driven through predrilled pilot holes.

While you've got the epoxy out, glue the propeller shaft into the engine cowling, letting the propeller spin freely. Predrill some 5/64" pilot holes, lining them up with the junction of every other spoke, as shown in the **Pinup Shop Drawings**. Place the propeller and cowling assembly on the fuselage front, apply epoxy, and drive the six escutcheon pins home, as shown in **Figure 5**.

Apply the final coat of shellac to all surfaces. The shelf can be mounted by screwing it directly into the wall studs, or you can use hollow wall anchors. Cover the screw heads



**Figure 5:** A standard toy wagon wheel makes a great engine cowling: the spokes resemble the old radial motors on antique aircraft.

with their plugs, and get ready to load the aircraft with passengers. By now the recipient of this weekend project is probably parked at your shop door, ready to take delivery. Just don't let them see the other two Beanie Babies projects on the facing page, or you'll have to get right back to work!



# A Stickley Inspired Table



Why I didn't see it coming is a good question ... I guess it was inevitable. As soon as I finished the Arts & Crafts dining chairs that were featured in the April 1999 *Woodworker's Journal*, my trusty old dining room table began a slow, sad journey to a garage sale. My wife, Susie, mentioned how much nicer those chairs (and our dining room) would look with a new table to match their style and finish, and I had to admit she had a good point. So I went to art director John Kelliher and asked him to work with me on a design to reflect the details featured in the chairs and the Mission style that I like so well. The resulting table was even better than I could have hoped for ... Susie approved as well.

### Two Suggestions — Before You Start

Throughout this project, you will be chopping stopped and through mortises to fit the various tenons and plugs. If I didn't convince you to buy a mortising machine with the Mission chair project, this table might just push you over the edge.

Suggestion one: get a mortising machine. They look like a small drill press but can literally drill square holes for you ... what a time-saver.

Gustav Stickley built most of his pieces from quartersawn oak for good reasons. It's attractive and one

Butterfly joints, also known as double dovetails or butterfly keys, are an ancient joinery technique. Arts & Crafts designers liked their straightforward function and essential good looks.

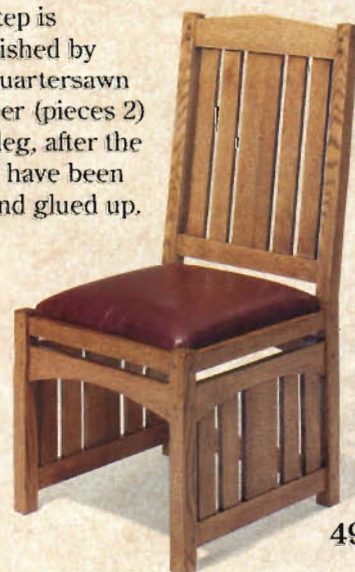


of the strongest species available in North America. Suggestion two: stay with quartersawn oak for this project. The cut yields straight boards with tight, parallel grain — ideal for tables.

### Laminated, Quartersawn Legs

The legs of this table are built up in two major laminations (pieces 1), and the first step in construction is to cut these to the dimensions shown in the **Material List** on the following page. If the wide faces of these boards are quartersawn lumber, the thin edges will be plain sawn. The leg's most visible face after machining and glue-up would be the plain sawn view so, for appearance's sake, it must be hidden.

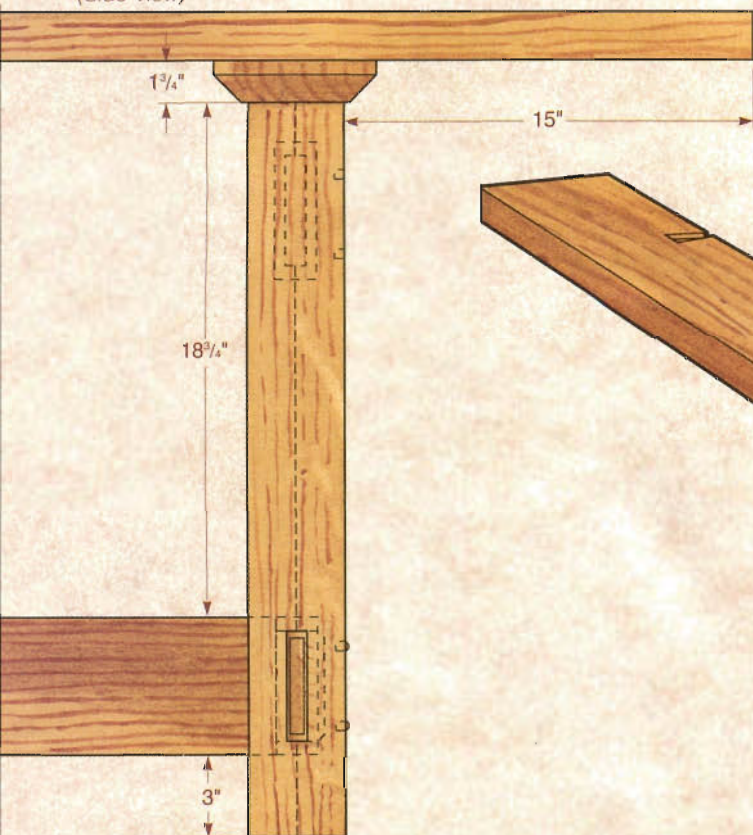
This step is accomplished by gluing quartersawn leg veneer (pieces 2) to each leg, after the first two have been milled and glued up.



The chairs Rick built in our April 99 issue are a perfect match for this impressive, solid oak table. With its medieval good looks, this project provides a setting fit for kings and commoners alike.

By Rick White

**Table**  
(Side View)



**Figure 1:** The leg mortises are formed before the legs are glued up. Simply slice wide dados to form one half of each mortise.

### Machining the Legs

Each leg is mortised twice for a couple of rails. The dados for the top and bottom rails (pieces 3 and 4) are easily created on the table saw, as shown in **Figure 1**. Both are machined into the leg laminations before they are assembled. Follow the locations and dimensions on the **Pinup Shop Drawings** on the center pull-out to lay out both mortises. After milling, glue and

## MATERIAL LIST

|                       | T x W x L                 |
|-----------------------|---------------------------|
| 1 Leg Laminations (8) | 1 3/4" x 3 3/4" x 26 3/4" |
| 2 Leg Veneer (4)      | 1/4" x 3 1/2" x 26 3/4"   |
| 3 Top Rails (2)       | 1 3/4" x 5" x 31"         |
| 4 Bottom Rails (2)    | 1 3/4" x 5" x 32"         |
| 5 Edge Slats (8)      | 1/2" x 2 3/4" x 14"       |
| 6 Center Slats (2)    | 1/2" x 7" x 14"           |
| 7 Rail Screws (16)    | #8 x 2"                   |
| 8 Pyramid Plugs (16)  | 1/2" x 1/2" x 5/8"        |

clamp each leg together. After the glue has dried, sand each leg thoroughly and clean out any excess glue left in the mortises.

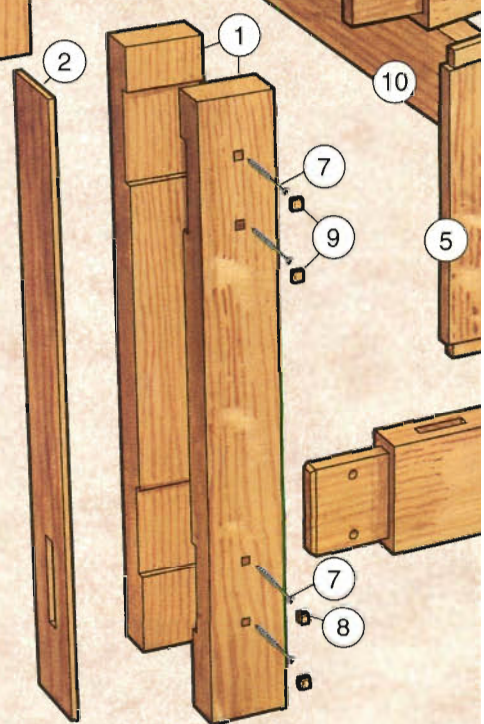
Although both of these openings are technically through mortises, I covered the top mortise with the leg veneer (pieces 2) to create, in effect, a stopped mortise. The bottom mortise is continued through the leg veneer to expose the chamfered end of the lower rail's tenon.

### Make the Rails Next

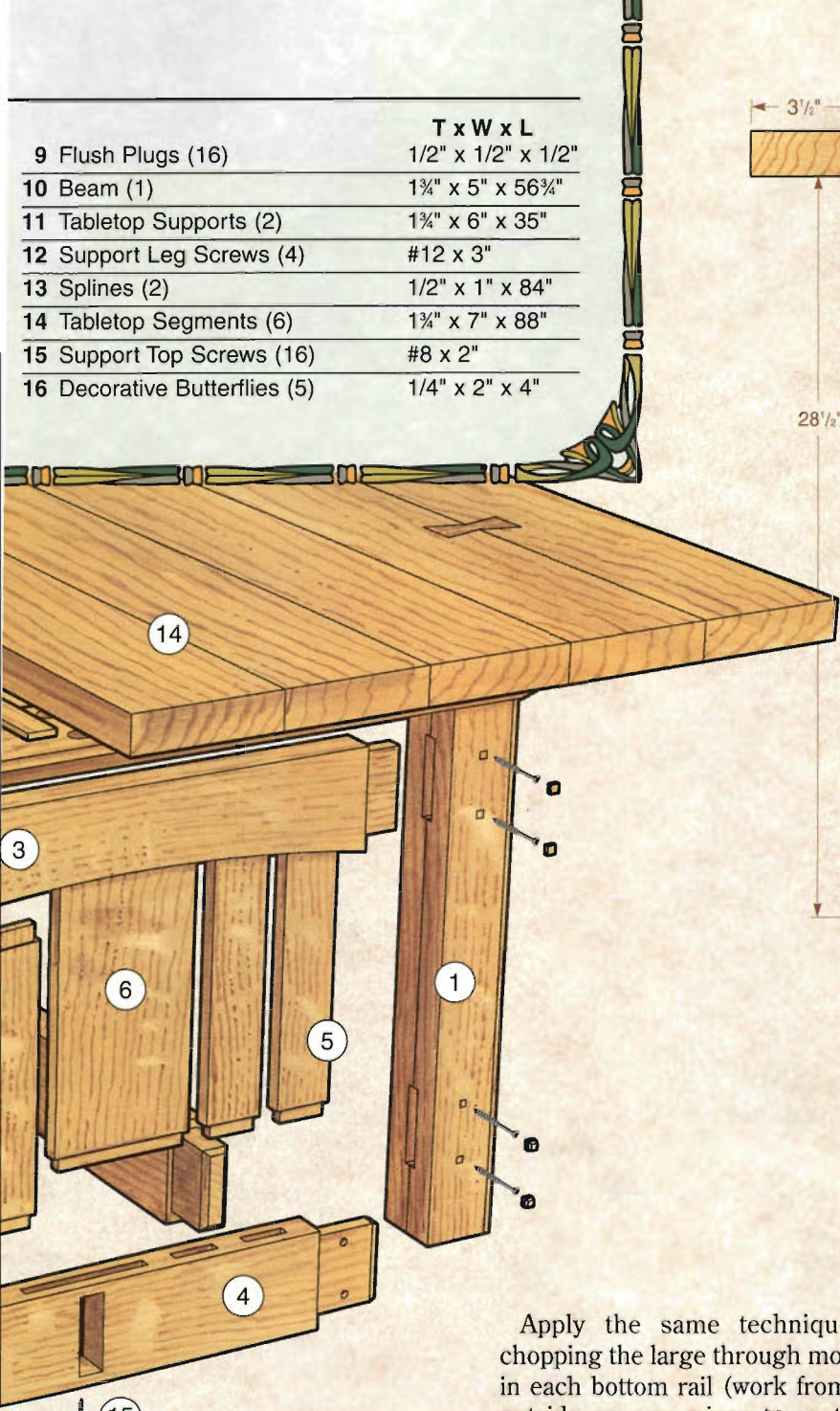
After cutting all the rails to the dimensions given in the **Material List**, refer to the **Pinup Shop Drawings** to lay out and mill their tenons. This is a job for your dado head and miter gauge on the table saw. (And don't forget to chamfer the tenon ends on the bottom rails.)

If you decided to invest in

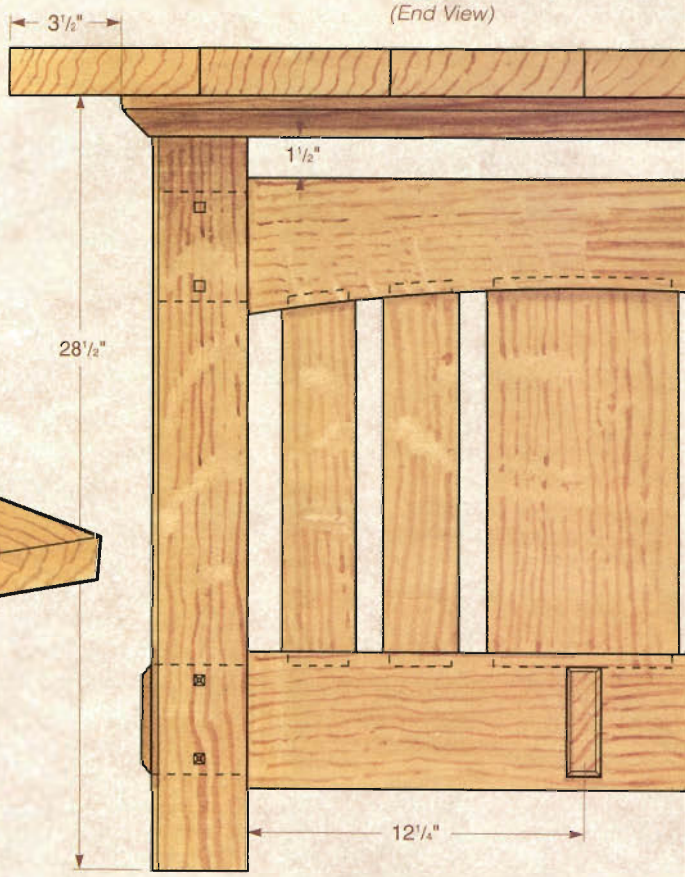
a mortising machine, this next step will be your first chance to use it. Again referring to the **Pinup Shop Drawings**, lay out and chop the five



|                               | T x W x L             |
|-------------------------------|-----------------------|
| 9 Flush Plugs (16)            | 1/2" x 1/2" x 1/2"    |
| 10 Beam (1)                   | 1 3/4" x 5" x 56 3/4" |
| 11 Tabletop Supports (2)      | 1 3/4" x 6" x 35"     |
| 12 Support Leg Screws (4)     | #12 x 3"              |
| 13 Splines (2)                | 1/2" x 1" x 84"       |
| 14 Tabletop Segments (6)      | 1 3/4" x 7" x 88"     |
| 15 Support Top Screws (16)    | #8 x 2"               |
| 16 Decorative Butterflies (5) | 1/4" x 2" x 4"        |



**Table**  
(End View)



15 mortises in each rail. In the bottom rails, these are a strong 3/8" deep, while those in the top rail are deeper. If you don't own a mortising machine, remove most of the waste on the drill press and finish up with chisels. This is also a good time to chop the small mortises in the legs for the plugs — the locations and dimensions are on the **Pinup Shop Drawings**.

Apply the same technique to chopping the large through mortise in each bottom rail (work from the outside so any minor tearout will occur on the inside, hidden face). Then refer to the **Pinup Shop Drawings** to lay out and band saw the arc on the bottom edge of each top rail. Chuck a drum sander in your drill press, and sand this curve to remove the saw marks.

**Complete the Legsets**

There's just one more task to perform before you can assemble



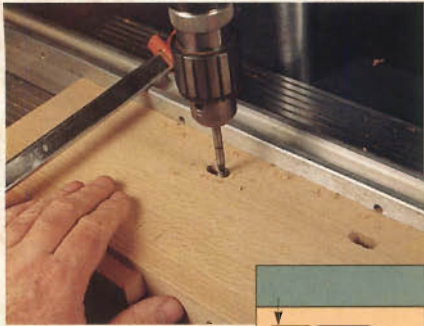
**Figure 2:** A mortising machine will make short work of the many mortises featured in this project's Stickley-inspired joinery.

the legset: you must make the ten slats (pieces 5 and 6). Cut all ten to the dimensions in the **Material List**, then follow the **Pinup Shop Drawings** to lay out the 3/8" long tenons on their bottom ends.

The tenons on the top ends are a little trickier. I used a jig very similar to the one I designed for the dining room chairs. Details for how to make and use the jig are shown in the sidebar on the following page.

"The objects which form our material environment exert upon us an influence that is not to be withstood."

— Gustav Stickley



**Figure 3:** The glued-up tabletop will expand and contract to a significant degree. Oblong slotted screw holes allow that movement to take place while firmly securing the top to the leg sets.

Dry fit the leg set together and, when everything is fitting well, start the assembly process by gluing and clamping the rails and slats together. Next apply glue and seat the tenons into their leg mortises. Predrill for the screws (pieces 7) and drive them home. Then cap the bottom ones with glued-in, pyramid plugs (pieces 8, see **Pinup Shop Drawings**) and the top ones with flush plugs (pieces 9). After the glue dries, sand the top plugs flush.

### Build the Beam

The long, one-piece beam (piece 10) is tenoned on each end to fit the mortises you chopped earlier in the bottom rails. This would be an unwieldy job for the table saw, so use the **Pinup Shop Drawings** to lay out the tenons and mill them with a portable router. Chuck a straight bit in the router and clamp guide blocks to the beam to keep the cuts straight. When the tenons are completed, switch to a chamfering bit to create a traditional profile for the tenon's ends.

Dry fit the beam to the legsets, then temporarily clamp it in place. Cut the tabletop supports (pieces 11) to size next, and use your table saw to mill the large chamfer all around both of these pieces (see the **Pinup Shop Drawings**). Next, use your drill press to create oblong screw holes in the supports, as shown in **Figure 3**. These allow for wood movement in the tabletop.

Predrill for the large screws (pieces 12) used to attach the supports to the legs, then apply glue to the top of each leg, set the supports in place and drive the screws home.

### Glue Up the Top

The top of this table is the most critical element, simply because it's the most visible. Choose defect-free, straight, quartersawn boards, cutting them a bit longer than their final 88". Equip your router table with a feather board to machine the 1/2" wide by 1/2" deep grooves in these long, wide pieces, stopping the cuts two inches from each end of your boards. (Mill both edges of the internal pieces, and the inside edge on the outside pieces.) Rip splines (pieces 13) from oak lumber, and then test fit the top (pieces 14) together. The splines aid in registering these long pieces of lumber during glue-up and add

Strip to accommodate the bottom tenons

Bottom bearing flush trim bit

Plywood spacers

## Cutting Curved Tenons

**A**fter you cut the slats to size and machine their bottom tenons, the spacers of this jig will keep the slats properly spaced as you rout the curve onto their opposite ends. The **Pinup Shop Drawings** provide construction details and directions for building the jig.



Use a flush-trimming, bottom-bearing router bit to shape the gentle curve onto the top end of the legset slats. See the **Pinup Shop Drawings** for jig construction details.



Move to your router table and use a 3/8" rabbeting bit to form the shoulders of the curved tenons. Cut the cheeks on a band saw.

Use a template to rout the mortises for the decorative butterflies.

A rub collar mounted in your router, coupled with a 1/4" straight bit, will get you started right. Be sure to test your set-up in scrap lumber before you move to the tabletop.



considerably more glue area to the top. If everything fits, glue up the top and allow the glue to cure for 24 hours.

While I am a great fan of hand tools, in this case I wouldn't recommend planing the tabletop after the glue dries: it's just too large. Instead, bring it to a local cabinet shop and have them run it through their wide belt sander. (Make sure they can handle the 42" width before you haul the top to their shop, and be sure to scrape off any excess glue: you won't want to clog up their belts.)

After sanding, trim the ends with a clamped-on straightedge and a straight bit chucked in your router. Then gently break all the edges with sandpaper. Glue and screw (pieces 15) the beam into the legsets (drive the screws up from the bottom) and, after extending the pilot holes through the support pieces into the top, secure the top to the supports with the same screws (pieces 15). Don't glue these pieces together.

### Decorative Butterflies

Aside from the exposed joinery and plugs, the only truly decorative elements in this project are the five butterflies (pieces 16) inlaid into the solid oak top. In earlier days, before modern glues, these butterflies would have been cut deeper than the 1/4"

shown here, and would also have served to hold the top together. Note the grain pattern of the butterflies is at odds with that of the tabletop. These butterflies are easier to complete than you'd think. I like to create several at once on the table saw, cutting them to the shape shown on the **Pinup Shop Drawings**. I clean up the edges with files, rasps and sandpaper.

Next, I make a melamine or hardboard template to be used with a rub collar and a 1/4" straight bit in my portable router. It's important to rout a couple of practice butterfly mortises in scrap lumber to test the template before you move on to the actual tabletop. Locate the butterfly positions on the tabletop (see the **Pinup Shop Drawings**), and mark their outlines with a pencil. With a 1/4" straight bit chucked in the router, use your template to safely remove most of the inlay mortise waste. The mortise is 1/16" shallower than the thickness of the

butterflies. Clean up each outline with sharp chisels, then glue the butterflies in place. When the glue dries, simply sand them flush.

After thoroughly sanding all surfaces of the entire project, apply the stain of your choice (I used Bartley's dark walnut gel stain), followed by several coats of clear satin finish. Polyurethane or catalyzed lacquer are the best choices for a tabletop whose primary use is serving food and drink. Apply a couple of extra layers to the top. Remember, a thorough knockdown sanding between coats with 400 grit wet/dry paper is the key to a great-looking finish. Then set the completed table in your dining room, and pray your spouse doesn't start talking about how nicely a Mission hutch would match your table and chairs.



Function and style, a true reflection of the Arts & Crafts philosophy, are combined to create a project that will last for many generations.

# ARTS AND CRAFTS WITH A MISSION

By Joanna Werch Takes

This article began as a search for enlightenment. The difference between the terms Mission, Prairie and Arts and Crafts has mystified woodworkers for years, so we set out to seek some simple truths about each style. It turns out that the major figures in these movements thought their work brought Truth, with a capital T, into the home – and that defining each term separately isn't so simple.

**T**he genesis of these styles was the Arts and Crafts movement. While Mission and Prairie had their own disciples, even these artisans pledged allegiance to Arts and Crafts. More than a style, Arts and Crafts is an attitude.

Its prophet was Englishman William Morris, who dropped out of Oxford seminary after deciding he could save more souls through the decorative and applied arts. Instead of debasing themselves at the machines of the Industrial Revolution, Morris's followers would create handcrafted items of practical beauty.

Their customers were also supposed to find their work uplifting. As designer Charles Voysey wrote, "Cold vegetables are less harmful than ugly dish covers. One affects the body and the other affects the soul."

The natural materials and exposed construction associated with Arts and Crafts furniture express the value Morris and his

followers placed on traditional techniques. In addition, elements of gothic and medieval design and occasional folk art decorations reflect the movement's reverence for history and for designs accessible to the masses. Some Arts and Crafts designers even explored Japanese or Italian Renaissance influences.

What all of them had in common was a view of their work as art,

The Arts and Crafts movement of 19th century England produced designs inspired by forms and materials from nature; construction might incorporate handworked materials in wood, glass or textiles. The influence extended even to Art Nouveau designers like Charles Rennie Mackintosh, who made the chairs at right — although some Arts and Crafts figures tried to distance themselves from his bold stylizations.



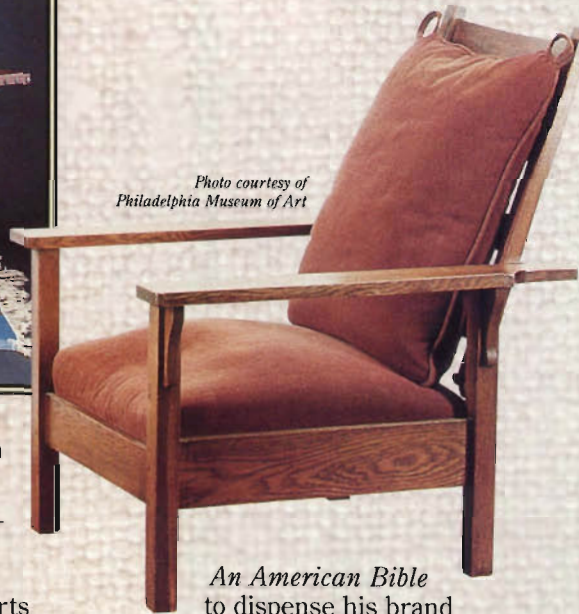
*Photos courtesy of Virginia Museum of Fine Arts*

Photo courtesy of  
David Rago Auctions, Inc.,  
Lambertville, New Jersey



Named for Arts and Crafts guru William Morris (although it was his friend Philip Webb who actually created them), the Morris chair became one of the most typical pieces of Mission furniture. Gustav Stickley made these two examples of the large armchair with adjustable back and removable cushions.

Photo courtesy of  
Philadelphia Museum of Art



*An American Bible*  
to dispense his brand  
of practical wisdom.

Gustav Stickley, the best-known Mission designer, used his Craftsman magazine as a pulpit.

Influenced by an 1898 trip to Morris's England, Stickley wrote, "We must support an art created by the people for the people ... an art wherein the designer and the craftsman shall be one and the same individual, creating for his own pleasure and unassailed by commercialism."

The Mission furniture designs themselves incorporated morals: some of Stickley's heavier pieces, for instance, symbolized stability. If you couldn't budge the

not mass production. They created furniture, textiles, stained glass and other media with this concept in mind, and, to carry their message to the world, Morris and his committee named their 1880s organization the Arts and Crafts Exhibition Society. "The aim," as *Hobby Horse* magazine stated in 1884, "is to render all branches of Art the sphere, no longer of the tradesman, but of the artist."

England's Arts and Crafts artists supported each other with publications, a network of guilds, and even a number of communal societies. Later, when the movement reached American shores in the 1890s, all these aspects went with it.

### The Mission Style

Among those preaching the Arts and Crafts gospel of good design in the U.S.A. were the Mission furniture makers. That's not the name the designers would have chosen, but it caught on after New York salesman J.P. McHugh used it to sell a line of furniture patterned after a California chair. McHugh encouraged stories that the original chair had come from an old Spanish mission.

Despite disliking the name, the American designers did view themselves as missionaries of a sort. Elbert Hubbard, founder of the Roycroft crafters' community, asked people to call him "Fra Elbertus" and published

Photo courtesy of the Virginia Museum of Fine Arts



In a time of increasing literacy, bookcases like this one from Roycroft indicated a family was "cultured."

"If we, our children and our successors are to be true citizens and integral parts of the Commonwealth, we must choose carefully the objects by which we surround ourselves."

— Gustav Stickley



Photo courtesy David Rago Auctions, Inc., Lambertville, NJ

This Gustav Stickley drop-leaf table employs cathedral shaped cut-outs as a decorative element.

Photo at left courtesy of Virginia Museum of Fine Arts. Photo below courtesy of David Rago Auctions, Inc. Lambertville, New Jersey.



**The Roycroft craftsmen lived in a communal society in New York state, where their woodworkers produced pieces like the magazine pedestal at left and the sewing stand in the photo above.**

sideboard, the logic went, you would have a strong marriage. The lack of

excessive ornaments and the exposed construction details, like tenons, dovetails and butterfly joints, were supposed to make the furniture more "honest." Straight lines and solid vertical and horizontal members were also characteristic of the style.

When selecting materials to express this style, Mission designers often looked to Mother Nature. Stickley noted that oak, the style's wood of choice, adapted well to Mission's simplicity — and that the simplicity showed off the natural character of the tree. Other Mission crafts also emphasized the connection to nature: leather, wool and linen fabrics were popular textiles. Natural elements appear in some of the decorative motifs as well; stylized florals and geometric repeats were both common.

In making their furniture and crafts, several Mission designers did use machines. They still paid homage to the Arts and Crafts idealization of handmade items, though, by courting at least a handmade appearance for any hardware or ornaments — like hammered copper drawer pulls.

Although Mission is most closely

identified with furniture, some of the designers tried to extend these concepts to the houses that would hold the furniture. Stickley, for example, published Craftsman home plans that employed materials indigenous to their location: pine, oak and limestone in the Midwest, for example, and redwood in California.

### The Prairie Style

This is where Prairie comes in. Like Mission, it's an offshoot of the Arts and Crafts movement. Prairie's strength, however, is architecture.

Prairie architects designed homes which fit into their natural surroundings — like low, horizontal houses that conformed to the flatness of the prairie. Blueprints provided interaction with nature through porches and patios, and rooms flowed into one another to encourage informal gatherings. Most important, however, was the concept of unity: between the exterior and the interior, between the interior and the furniture. "The whole must always be considered as an integral unit," wrote noted architect Frank Lloyd Wright.

Photo below courtesy of David Rago Auctions, Inc. Lambertville, New Jersey.



Photos courtesy the Art Institut of Chicago

To create this unity — based on the Arts and Crafts desire for a harmonious whole — Prairie architects sometimes became Prairie furniture makers. Their creations were usually specific designs for specific houses, and they often incorporated Japanese influences.

Although Prairie furniture generally had a rectilinear, geometric base, it frequently displayed rhythmically repeated slats, radiated stretchers, mullioned case pieces and an Oriental "cloud" shape in bracings. When brothers Charles and Henry Greene



Photo below courtesy of Virginia Museum of Fine Arts



**Warm, natural or hand-worked materials were important to Gustav Stickley, who put a leather seat and cushions on the settle at left and copper pulls on the oak sideboard above.**



The furniture designs inspired by Frank Lloyd Wright — and other Prairie architects — were usually meant for a specific location. These oak pieces include a desk (at left) for the Coonley House (built by George Niedecken), an arm chair for the Evans House and a side chair for the Larkin Administration Building.

revealed the structure of their Prairie furniture, they did so in a delicate manner that owed more to Japanese aesthetics than the brash aspect of Mission's exposed construction.

Prairie architects, who had their heyday in the 1910s and teens, also moved away from the faith of the Arts and Crafts fathers on the subject of the machine. For them, machines represented not a symbol of the apple corrupting Eden, as they had to William Morris, but a tool that freed designers to concentrate more on creativity.

Still, even the Prairie designers worshiped at the Arts and Crafts altar. Frank Lloyd Wright said in 1904, "[Morris] did sublime work ... when he fought the innate vulgarity of theocratic impulse in art as opposed to democratic; and when he preached the gospel of simplicity."

### The Spirit Lives On

Ironically, in bringing art to the masses, Wright, the other Prairie architects, and his colleagues in the Mission and Arts and Crafts movements exercised their own theocratic impulses: their designs expressed what they considered divine.

"The ideal home is one in which the family may be most completely sheltered to develop in love, graciousness and individuality, and which is at the same time most accessible to friends, toward whom hospitality is as unconscious and spontaneous as it is abundant."

— Charles Keeler

Simplicity, democracy, tradition and nature were their ideals. It's arguable how well they practiced what they preached (Wright and Morris created designs only the wealthy could afford), but the Arts and Crafts designers and their Mission and Prairie apostles all thought a well-designed chair, for example, wasn't just good for the seat, it was good for the spirit.

At the end of the 20th century, bookstores are filled with spiritual tomes and the search for simple living. Like our counterparts during the last turn of the century, we're facing rapid technological changes that propel us into the future, while we gaze wistfully at an idyllic view of the past. We've resurrected a respect for handcrafting and for past traditions, including *feng shui*, an



Japanese influence likely contributed to brothers Charles and Henry Greene's use of exotic woods in their architecture and furniture. This wall sconce and coordinating sideboard are mahogany and ebony, with silk, glass, copper, pewter and mother-of-pearl.



George Grant Elmslie's mahogany tall clock, with its brass inlay and bronze, demonstrates the rectilinear qualities of the Prairie style.

Photo courtesy of the Art Institute of Chicago

ancient science of furniture arrangement which, its proponents say, brings unity and morality into the home.

All these facets of our modern life touch on issues which the arts and crafts of a hundred years ago are ready to address. In this atmosphere, it's no wonder that those designs crafted with a mission still hold such appeal.

## Six Drill Presses for Under \$450

By Charles Self

**F**or most woodworkers, there comes a time when a hand held drill just isn't accurate enough, doesn't have the right combinations of speed and power, or is too difficult to control in precise situations.

If you decide to step up to a floor model drill press, you'll find they come in a wide variety of shapes and prices, and are made by a good many manufacturers. Instead of looking at all drill presses available, I focused on quality units in the 14" to 17" size (this measurement represents twice the distance from the center of the chuck to

the edge of the column), with a top price of under \$450. Otherwise this article might have turned into a book. Grizzly alone, for instance, makes eight drill presses, seven of which could easily be of interest to woodworkers (number eight would be, too, but the \$1500 cost is out of most of our ranges).

### Craftsman's 22917

The Craftsman 17" 22917 draws 12 amps at 115 volts, has a 16 speed range that starts at a lovely low 200 rpm and goes up to 3,630 rpm.

I found belt changeover for speed selection to be easy: a standard lever and knob set-up you twist and unlock, allowing the motor to slide forward. Move the belts, slide the motor back and tighten the knobs. The chuck is a 5/8" model, and the table is a machinist's 14" square with an arched front. Craftsman drill presses come with a sheet steel fence that is easy to assemble and quite useful. Rack and pinion table elevation saves lots of work and wondering if you are close enough. There is a built in light socket,

### Craftsman 22917

Price: \$429.99  
12 amps @ 115 volts  
16 speeds (200 - 3,630)  
5/8" chuck  
14" table

Craftsman: 888-809-7158



The Craftsman depth adjuster (left) is easy to reach. Above right, the author sets up a measuring device to check runout.

### Delta 17-965

Price: \$369  
10 amps @ 115 volts  
16 speed range (215 - 2,719)  
5/8" chuck  
14" table

Delta: 800-438-2486



Delta's unit features a spindle lock that's easy to reach throughout its 4 7/8" drilling depth.



with a switch, and the depth stop is American shaft and nut style for greatest efficacy. Overall fit and finish are good, and the runout was quite low: .00175". That's as good as it gets, and it was achieved with no tune-up. To be perfectly honest, I was amazed and checked it twice.

### Delta's 17-965

The new Delta 17-965 was a bit hard to find in early summer, but I suspect it's widely available as you read this. The 16 speeds start at an ambling 215 rpm and go up to 2,719. The chuck is 16mm, which translates to 5/8". The motor draws 10 amperes at 115 volts, five at 230 volts. Motor rpm is 1720. An extra long quill stroke of 4 7/8" is

good news for those of you with a mortising attachment. The depth stop is a threaded shaft, with nuts: there is a lock on the quill handle, so the shaft can be locked for those times you want to use the drill press as a drum sander.

Delta's unit came with a 14" square woodworker's table. Speeds were easily changed with a fairly standard double knob lock and lever movement: unlock, move the motor forward, move belts to get the speed desired, move back and lock. Runout was an excellent .0015.

All in all, this is a fine drill press (at a great price point) that can be expected to last two or three lifetimes in the hobby shop, and do a good job all the way.

### Grizzly's G7944

Grizzly's G7944 14" unit has a 16mm chuck (5/8") and 12 speeds start at a lower-than-low 140 rpm and rise to 3050. I found the lowest speed to be especially useful when testing the unit with very large Forstner bits or fly and circle cutters. The 1720 rpm motor is listed as a 3/4 horse and pulls nine amps at 110 volts. Considering the price (\$199.95 plus \$40 shipping), the runout on this unit was amazingly low at .00375".

Like Ridgid, Grizzly makes use of the soft plastic handles: I love them on both machines because they're less slippery and more comfortable. The motor is a TEFC

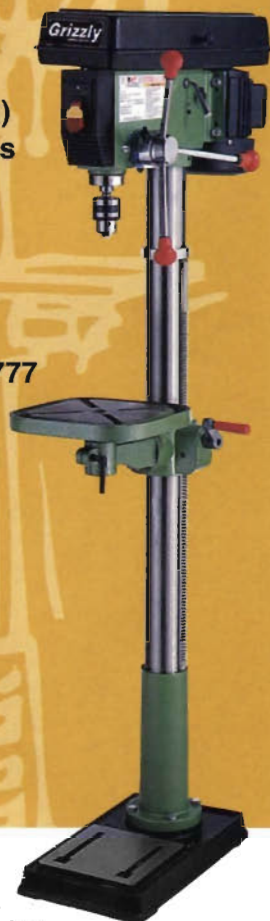
## Grizzly G7944

**Price: \$199.95  
(plus \$40 shipping)  
9 amps @ 110 volts  
12 speed range  
(140 - 3,050)  
5/8" chuck  
11<sup>3</sup>/<sub>8</sub>" table**

**Grizzly: 800-523-4777**



**The finned motor on the Grizzly G7944 helps to dissipate heat.**



(totally enclosed, fan cooled) capacitor start induction, which surprised me for a unit in this low price range. The table is a respectable 11<sup>3</sup>/<sub>8</sub>" square metal working style. Vertical movement is achieved by rack and pinion gears and the spindle travel is 3<sup>1</sup>/<sub>4</sub>". The easy belt change requires a standard lock

*Shop Test continues on page 60 ...*



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**All of the floor  
model drill  
presses tested  
use rack and  
pinion gears to  
vertically move  
the table.**



and lever release and pull. Fit and finish were a little rough in a couple of spots on the unit I tested, but wherever smoothness was absolutely needed, it was in place.

A little safety note here, concerning all machines in this article. This happened to be the tool that taught me not to put my hand over the sheet metal cover of the spindle return spring when lifting the head in place. Getting the thing up to eye level is no fun anyway, but when the sheet metal shifted and the spring uncoiled into my hand and sliced open two fingers and my palm, I learned an important lesson. To add to my difficulty, I was in a position that didn't allow dropping or lowering the drill press head. And when all was said and done, I still had to readjust the spring pressure.

### **JET's JDP-17MFW**

JET's JDP-17MFW is a 16 speed drill press with speeds ranging from 200 to 3,630. The motor, rated at 14 amps at 115 volts or 7 amps at 230 volts, is also a TEFC unit, and is finned for additional heat dissipation.

Pulleys are nicely and cleanly made: in fact I found the internal superstructure of the JET to be the

best looking of the bunch. There is an American threaded shaft-style depth stop lock, with a 5/8" chuck. The round woodworker's style table is 13<sup>5</sup>/<sub>8</sub>" in diameter, and the spindle has 4<sup>3</sup>/<sub>8</sub>" travel.

This is another rack and pinion table rise model: in fact all the floor drill presses in this test were. Everything works well, with the table locking quickly and securely. JET has what feels and appears to be the heaviest base on any of these tools, but the Delta and Powermatic come very close, with the Craftsman a few pounds down.

After a couple of clean-ups and insertions, the Jet pulled a runout figure of .003. Most of these machines use the same chuck, a take-off on the Jacobs design. To really reduce run out, you might consider buying a Jacobs chuck: but you'll get a very small benefit while adding well over \$100 to your

tool cost. Retired machinists might be the only candidates for this approach — and even they should first check their spindle runout, and do what they can to tune that up before springing for another chuck.

Overall, the JET JDP-17MFW is a solid, accurate tool that will serve you well (and probably the next generation of woodworkers in your shop, too).

### **Powermatic's 1170**

Powermatic's model 1170 is a golden machine, and it performed for me in a golden manner. The 17" drill press features 16 speeds, from a low of 220 to a high of 3,380. That's fine for almost any

### **JET JDP-17MFW**

**Price: \$440**  
**14 amps @ 115 volts**  
**16 speed range (200 - 3,630)**  
**5/8" chuck**  
**13<sup>5</sup>/<sub>8</sub>" round table**

**JET: 800-274-6848**



**The internal superstructure of the JET JDP-17MFW was the best looking of the bunch. Note the double latches. JET's machine was the only unit with a round woodworker's table.**



hole making tool, including larger Forstner bits. The 115 volt version of the one horse motor pulls 11 amps. Changing to 230 drops amperage needs to 5.5. The motor turns at 1,725 rpm.

I thought the depth stop, with its threaded rod and nut style, worked great, and Powermatic supplies the unit with a nicely finished 12" square woodworker's table. Spindle travel is a respectable 3 1/4", and at .00225, the runout was very low. Weight, for shipping, is 180 pounds. Peel off about 8 - 10 pounds for packaging and you are close to what the machine will weigh in your shop. The base is fairly massive, which I found helps to further stabilize the machine. The unit does come with a light, which is positioned behind the chuck.

Overall impressions put the Powermatic in the top four, which is an area where it is really too close to call, and where personal choice has to take over.

### Ridgid's DP 15000

For those looking a bit lower on the price scale, Ridgid produces the DP 15000, their 15" capacity floor model drill press. With an Emerson motor that draws eight amperes at 115 volts, this version is not convertible to 230 volts. Motor speed is 1,725 rpm, running through spindles giving the drill press a dozen speeds, ranging from 250 to 3100 turns per minute. Currently, the carry home price of the unit I tested was \$297, at your local Home Depot.

As with all the units I tested, the rack and pinion gearing helps reduce effort, and makes exact placement of the table a breeze. The table is a machinist's model in appearance, is 12" square and

*Shop Test continues on page 62 ...*

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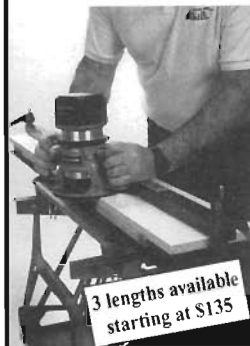


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Sincerely,  
George Coates

*unsolicited*

## Joint A-billi-T the new matched edge jointer

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features through slots for easy clamping. This unit also comes with a built-in work light.

Belts adjust after you release the locks on the head, move the motor in with a short lever, and lift the lid. I found adjustment, as was the case with all of these machines, to be easy. Runout measured about .00375, more than decent. The spindle moves a maximum of 3 1/4" and the spindle lock is on the handle base.

The windings on the Emerson motor are wide open to the shop: while this doesn't promise the durability of a TEFC motor, it does make the motor easy to blow clean once dust build-up becomes visible.

Ridgid calls its bright orange soft material handles Sof-Touch™, and

I find them exactly as I found the ones on Grizzly's drill press: excellent. They give you a little better sense of control, while providing greater comfort. It may be they'll become dirty earlier than the slick plastic models on other machines, but in the meantime, they're making life with the tools easier and safer (your hands and fingers are less likely to slip).

Watch for sales (as always) for the greatest value here and remember, the DP 15000, like all of Ridgid's tools, is backed by

## Ridgid DP 15000

Price: \$297  
8 amps @ 115 volts  
12 speed range (250 - 3,100)  
5/8" chuck  
12" table

Ridgid: 800-4-RIDGID



The crank on Ridgid's rack and pinion mechanism features the same Sof-Touch™ ergonomic handle as the feed control lever.



a lifetime warranty against defects in materials and workmanship.

## Conclusion

Somewhere in the above, there is a machine for just about every woodworker. There are plenty of others on the market, but this is a representative selection from most of the major manufacturers.

The obvious conclusion here is you get what you pay for, almost to the penny. The most expensive machines tend to have the most features, while those lower in cost can present good value, but with some drawbacks. Any of the top 16 1/2" (classed as 17") drill presses provide excellent value for the money (figure close to \$500 delivered for most, including shipping and tax, and maybe a bit over for some). For less money, sometimes considerably less, the lower cost units can, and will, do the job for years on end.



## Powermatic 1170

Price: \$399  
11 amps @ 115 volts  
16 speed range (190 - 3,500)  
5/8" chuck  
12" table

Powermatic: 800-248-0144

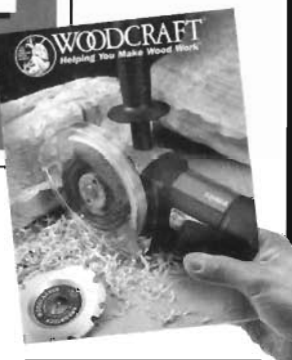


Powermatic was one of the first to use a screw shaft depth adjuster on a drill press in this price range.



Run-out testing on the 1170 (left) was favorable.

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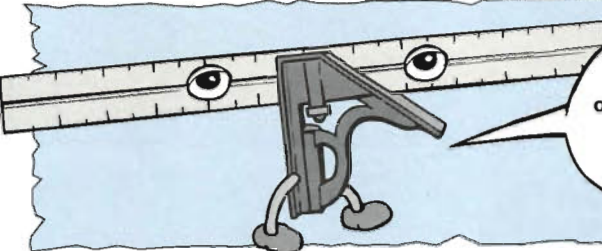
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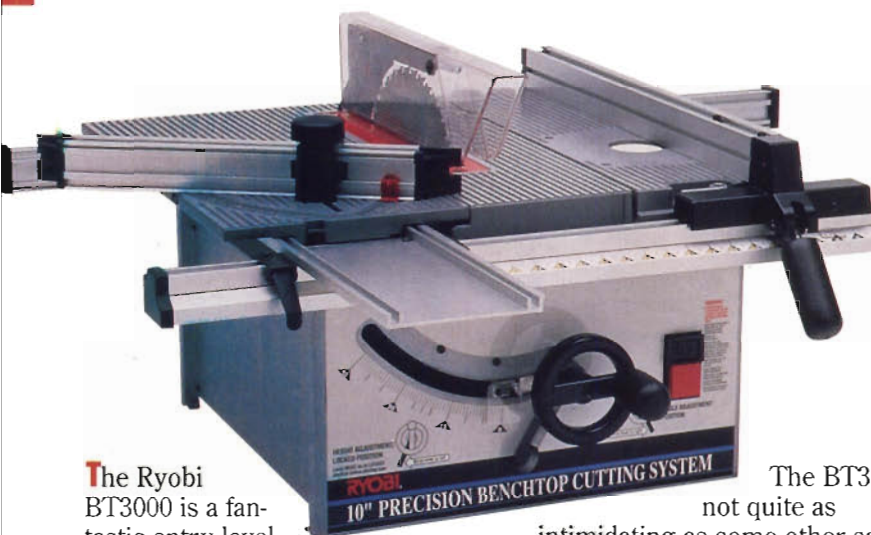


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## Ryobi's Versatile and Accurate BT3000

By Russel Trainum



It's easy to move the sliding miter fence to either side of the saw blade. The saw's aluminum construction is both lightweight and strong.

The Ryobi BT3000 is a fantastic entry level saw which will carry a person doing light work (small furniture, boxes and similar projects) a long, long way. It is not a cabinet saw, and probably won't take the battering of working heavy sheet stock over a long period of time.

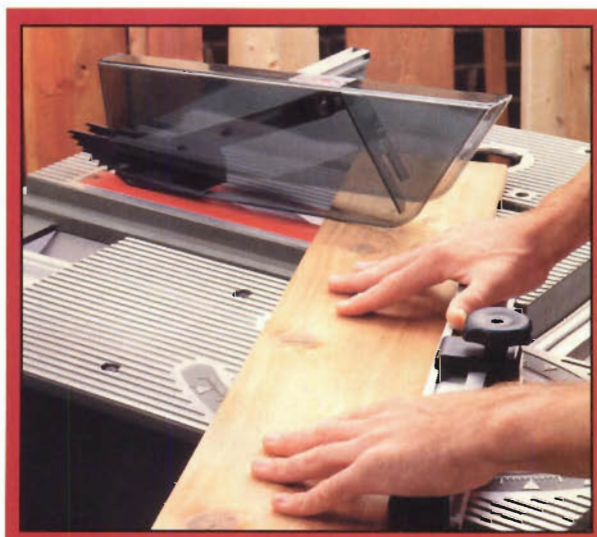
An enclosed cabinet, slotted for a 2" dust collector port, surrounds the guts of the machine. Standard features include a cast aluminum top, extension wing, an extruded aluminum fence, and a sliding miter table. It comes from Ryobi with a 10 inch, 36 tooth carbide tipped blade, and offers good power delivered from a 15 amp, 120 volt motor.

The fence went together easily and worked nicely — I was working with aluminum extrusions, so care was needed in handling. These extrusions and castings are nicely done, but not quite as durable as cast iron. The aluminum gives the saw a positive characteristic: low weight. The saw ships at about 107 pounds.

The BT3000 is not quite as intimidating as some other saws: its table is 22 1/4" deep, and the blade rises 7" behind the front edge of the table (the slot is 6 7/8"). However, crosscut size limitations are dependent on the sliding miter table, not on a miter gauge ... though I've been told an accessory table and miter gauge will be available soon. The smaller table (about 4 1/2" shallower than some of its competitors) may be a problem

if you do a lot of work with large sheet stock, or very long boards.

Overall, the saw did what was asked of it with good faith, and showed nearly as much power as contractor style saws I have used. The BT3000 is \$75 to \$125 cheaper than other saws on the market and, for moderate use, is sure to be a great workshop addition — particularly for novice woodworkers. I cut selections of ash, poplar and yellow pine on this saw, using the freud 24 tooth thin kerf blade. The BT3000 also comes with an instructional video tape and a well illustrated manual.



The author finds the BT3000 to be a great entry level tool. It fills a unique niche between benchtop and contractors' table saws.

### General Recommendations:

Ryobi's BT3000 is a very good beginner's saw that can move into a moderately skilled person's workshop. Power is adequate and accuracy is good. I was told the bearings under the sliding table may need to be replaced occasionally, so I replaced a set here to determine how difficult a task it was. I found the job to be an easy one ... about five minutes' work.

The Ryobi BT3000, is available for right around

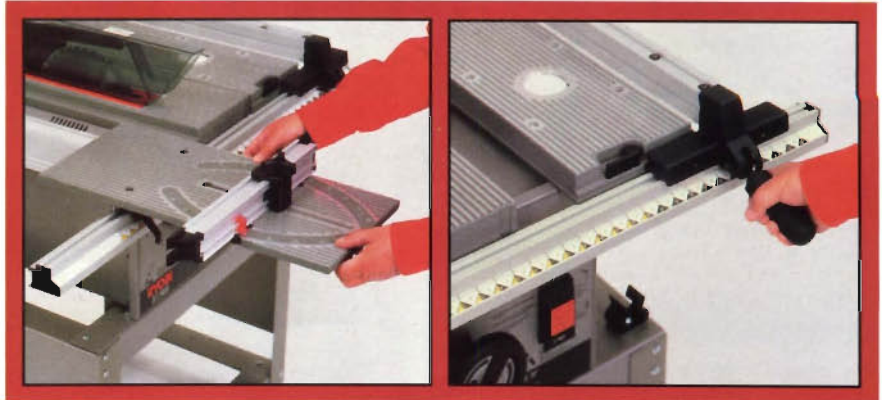
## Tools by the Numbers

|                    |                                                  |
|--------------------|--------------------------------------------------|
| Motor .....        | 15 amp                                           |
| Blade Speed .....  | 4,800 rpm                                        |
| Weight .....       | 107 lbs                                          |
| Street Price ..... | \$550                                            |
| Ryobi Info.....    | 800-525-2579                                     |
|                    | <a href="http://www.ryobi.com">www.ryobi.com</a> |

\$550. It features aluminum and sheet steel construction, plus two wheels on the front of the stand to increase mobility. The sliding table aids accurate cut-offs but allows no use of miter slot based jigs.

A bunch of accessories are currently available for the BT3000. Wide table and legset kits, air flotation/vacuum clamping system, multiple fences, RapidSet® micro positioning device, and the list goes on. Quite impressive.

Falling between a benchtop saw and a contractors' saw, the Ryobi BT3000 is a reasonably low cost table saw that, in my opinion, offers very good value.



The sliding miter fence, standard on the BT3000, helps ensure accuracy. The table saw's triple axis self-aligning rip fence is another well designed feature. Standard accessories include a metal work stand, accessory table and instructional video.

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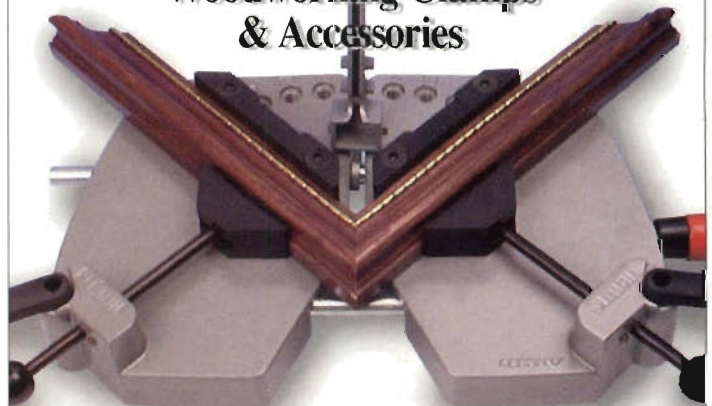
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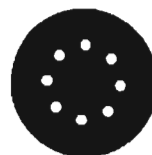
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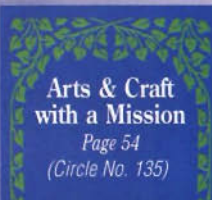
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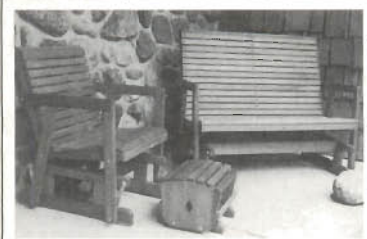
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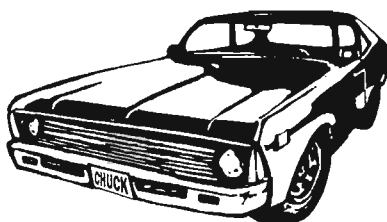
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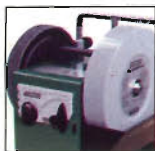


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Dept. #99WJ09CP

## Fall Tool Preview

### Old Milwaukee Releases Some New Tools

Milwaukee Electric Tool Corporation celebrates its 75th anniversary this year — an old company — with some new tools.

User-friendliness is the theme for the new 7<sup>1</sup>/<sub>2</sub>" circular saw. The patented "Tilt-Lok" handle is an eight-position, user-adjustable main handle designed for comfort and control. The 0° to 50° bevel scale faces the operator, and depth adjustments are located near normal hand positions.

The saw features 15 amp, 3.25 peak horsepower — the highest horsepower currently available in 7<sup>1</sup>/<sub>2</sub>" circular saws. At 10.4 pounds,

it's also one of the lightest.

Milwaukee's new saw is available in two versions. Model 6390-20 includes only the saw and has a suggested retail price of \$165. Model 6390-21 includes the saw and an impact-resistant carrying case: suggested retail price is \$175.

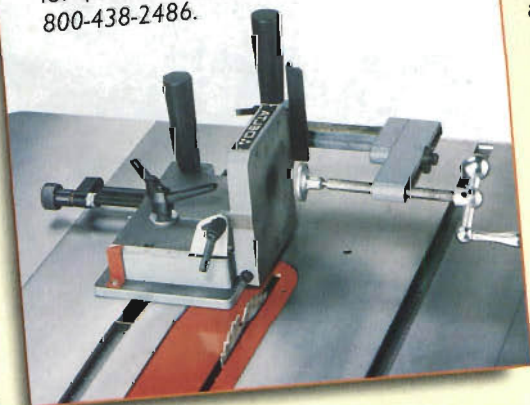
Milwaukee is also offering the model 49-24-0160 rechargeable work light. It uses an 18V Power-Plus battery, along with a Xenon bulb and a parabolic faceted reflector, to create an

extremely bright, uniform light, with no dark spots or rings. Suggested retail price is \$35. For more info, call 800-732-4578.



### Tighter Tenoning

Delta International Machinery Corp.'s "best-selling accessory" is about to get better, according to accessories manager Don Guillard. Woodworkers are already using the 34-182 tenoning jig for accurate cuts on tenons and other popular joints. Later this fall, the 34-183 will be available, with a slotted and adjustable miter bar to create "a tighter fit and a more accurate cut," Guillard said. The jig fits both left- and right-tilting arbor saws with 3/8" to 3/4" miter gauge grooves. With the 34-183, the 45° - 90° backstop will also get wider. The 34-183 will retail for \$134.95. For more information, call 800-438-2486.



### Just Turn the Crank, and Watch It Go

Crank your router up — or down — with the Kwik-Crank™ from Eagle America. The new height adjustment system is an aluminum crank-style handle which extends beyond the router housing.

Because it's an off-center crank, turning the adjuster is much faster and easier than using either a standard knob or the manufacturer's height adjustment system. You also get more precise adjustments with less effort.

Although Eagle America specifically designed the Kwik-Crank for Porter Cable's new 7529 router, they're making the new height adjustment accessory available for all

popular routers. Prices range from \$29.99 to \$34.99, depending on which router you're outfitting. For more info, call 800-872-2511.



## HOTLINE

**Milwaukee** .....800-732-4578  
<http://www.mil-electric-tool.com>

**Delta** .....800-438-2486  
<http://www.deltawoodworking.com>

**Eagle America**...800-872-2511  
<http://www.eagle-america.com>

**Edroy Products**..800-233-8803

**Way Cool** .....800-779-3267  
<http://www.schaeferfan.com>

**Hot Tools** .....781-639-1000  
<http://www.mmnewman.com>

**Ruler Stop**.....613-733-6740  
<http://www.storm.ca/~mjt>

**Rhino Tools**...44-116-273-9446  
<http://www.rhinotools.com>

**Lenox** .....800-628-3030  
<http://www.lenoxsaw.com>

## Bigger and Brighter

"Let there be light," the folks at Edroy Products said. Then they added an 8,000 candlepower Xenon Laser Spot<sup>®</sup> beam to their hands-free magnifier, the Magni-Focuser. The light draws on AA alkaline batteries to shine for six to seven hours.

The Magni-Focuser itself has been around since 1930. It's a binocular magnifier with 3 $\frac{3}{8}$ " x 1 $\frac{1}{8}$ " lenses made from shatter resistant, optical quality acrylic. Bifocal lenses are available. The padded vinyl headboard is contoured for fit. Suggested price is approximately \$75. *For more information, call 800-233-8803.*



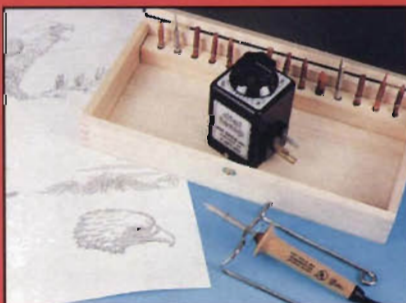
## Waaay Coool!

Looking to cool off your shop? The Waycool<sup>®</sup> portable air conditioner is ready. Schaefer Fan's patented product has a centrifugal blower that means you feel cool air up to 100 feet away. Evaporative cooling pads on all four sides maximize effectiveness in small spaces. Suggested retail is \$1,895 for a 1 hp version and \$1,095 for 1/3 hp. *For more info, call 800-779-3267.*



## Burning Hot!

Hot Tools are just that: the Hot Tools Woodburning Kit WBK-1 features a woodburner and a controller that adjusts tip temperatures from 150° to 900°F for working with hard and soft woods. A wire stand, 14 specialty tips and a storage box are also included. The complete Hot Tools Woodburning Kit WBK-1 sells for \$171.95 retail. *For more info, call 781-639-1000.*



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- One-half degree increments
- Removable T-Bar
- Centering Rule
- And more...

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To learn more about INCRA's new line of Precision Marking Protractors, Marking Rules, T-Rules, Bend Rules, and Centering Rules call, write, or fax:

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 P.O. Box 810262, Dallas, TX 75381  
 Tel: (972) 418-4811 Fax: (972) 243-4277  
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Rated "Excellent" by Wood Magazine

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- Use standard 18 ga staples 3/8" to 1"
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## Follow the Rules

Stop! In the name of accuracy! The Ruler Stop is a handy accessory for your shop. Position the Ruler Stop on your steel ruler and tighten the red knob to set a measurement as exact as the graduations on your ruler. The Ruler Stop makes it easy to repeat measurements or test width and thickness, and it can act as a marking gauge or a mini-square. It fits 7/8" to 1 1/2" wide steel rulers and

comes off quickly so you can keep using your ruler in the traditional way. The suggested retail price is \$10.95. For more information, call 613-733-6740.



## Tiny Tools Meet Big Expectations



and dollhouses, or for marking dovetails. Despite their size, the tools are made from top quality materials, such as hardwoods and brass fittings, to the same standards as their regular sized counter-

parts. Available in the U.S. through catalog or retail, they range in price from approximately \$2 to approximately \$15. For more info on this English company, send e-mail to [info@rhinotools.com](mailto:info@rhinotools.com).

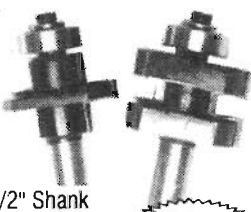
Tiny tools are a big part of business for Rhino International, a British company that manufactures the Sanderson brand. Managing director Deepak Rajput says they're useful for making models

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(Circle No. 16 on PRODUCT INFORMATION form)

## Straight – and Narrow



Smoother, straighter cuts are promised with Lenox® Pro Master™ band saw blades—which come in some hard-to-find narrow widths. Sizes from 56 1/2" x 1/8" to 111" x 3/4" are available, with custom sizes on request. The long-lasting blades come with carbon tips for cutting soft woods, bi-metal tips for hardwoods or carbide-tipped blades for very dense woods or composite. Retail prices are \$10 to \$20 for the carbon, \$20 to \$40 for the bi-metal and \$90 to \$150 for the carbide. For more info, call 800-628-3030.

"Compared to the other machines in the test, the Delta produced the cleanest surface and the least amount of snipe. The other planers in the test also gave us excellent surface finishing, but the Delta stood out as just a bit better."

*Woodworker's Journal, January/February 1998*

"...quick-change knives that we found easy and accurate to install. We found that with the quick-change systems we aligned the knives within .001!" And, we could install both knives in about five minutes." "Editors' Choice Top Tool™"

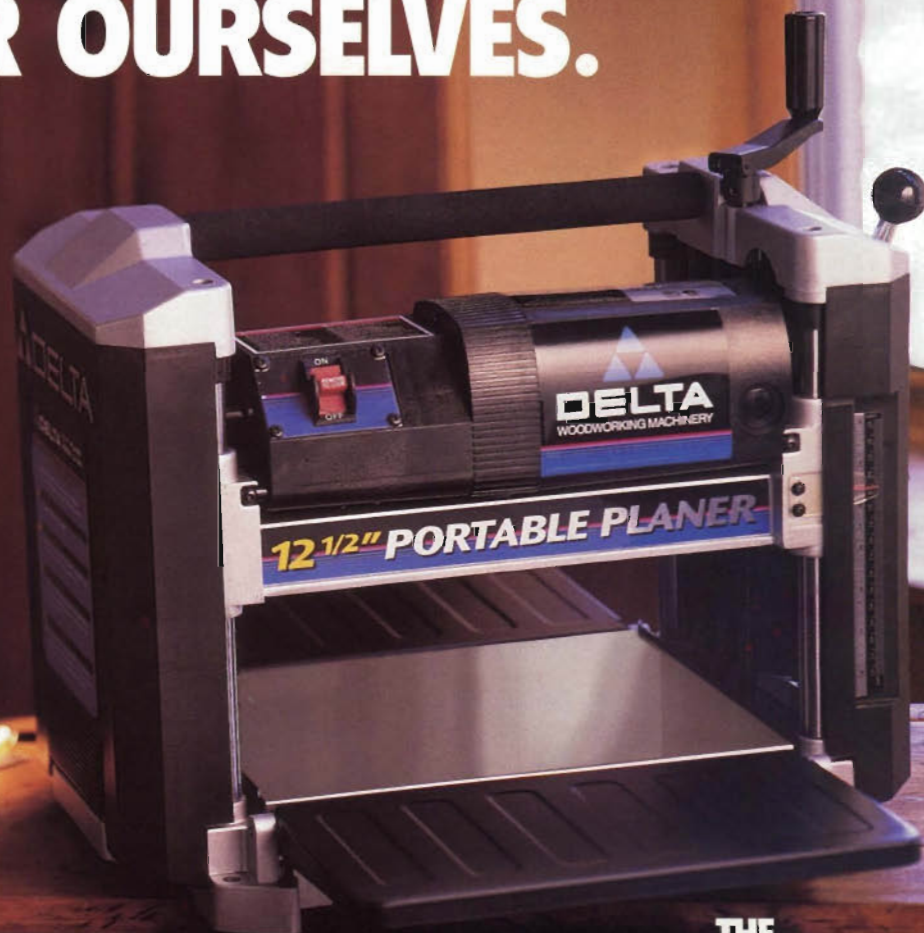
*Better Homes & Gardens® Wood, November 1996*

"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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All of which leaves us with very little to say except this: If our planer fails to perform up to your expectations within 30 days of purchase, you can return it for a full refund. That's our Superior Performance Guarantee. And now, for a limited time, we'll even throw in an extra set of knives – a \$30 value. Call toll free for the name of your nearest Delta dealer. Delta International Machinery Corp., 800-438-2486. In Canada, 519-836-2840.



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## Gifts Galore



### Meeting the Challenge

*My wife has an old steamer trunk, but it's in rough shape. Since I love a challenge, I built the trunk that appeared in Today's Woodworker Issue 29. I made dados and mitered corners for the first time.*

*Jim Barry  
Gander, Newfoundland*

WJ responds: For someone just learning miters and dados you've done some great work, Jim!



### Bench Sprouts Chairs

*Three years ago my wife, Patty, asked if I could make a redwood bench for the breezeway between our garage and side entrance. Being no more than a weekend woodworker, I turned to my only true source of inspiration and guidance, the Woodworker's Journal. The cover story in March/April 1987 was soon located. Three months later my wife had her 21st anniversary present.*

*This spring, Patty asked if four deck chairs could be made. By modifying your original design, a wonderful compliment to your initial idea was created.*

*Your Journal is an inspiration and much appreciated. My wife now has her 24th anniversary present. It greets her each morning on the deck outside of her kitchen. We thank you for your creative support.*

*Paul J. Friday  
Oakmont, Pennsylvania*

WJ responds: You're a productive weekend woodworker, Paul. Your wife probably just loved the picnic table from our June 1999 issue.



*Paul Friday's dog relaxes on the redwood bench from Woodworker's Journal Volume 11, Issue 2. Paul adapted the plans to make matching chairs.*



### Buses Keep Rolling Along

*I have 12 grandchildren and a tradition of building them wooden toys for Christmas. The older boys have outgrown playing with trucks and things, but I found out they like to collect Beanie Babies™. The plan in the December 1998 Woodworker's Journal for the Beanie Babies Bus was the perfect solution. I made three of them and they were greatly appreciated by young and old alike. Thank you for the plan.*

*Gerald Jacobs  
Chisago City, Minnesota*

WJ responds: If your children keep having children, you're going to be one busy woodworker, Gerald.



**W**inner! Paul Friday will receive a Bosch 1295DH orbital sander for his contribution to End Grain. 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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A quarter of a million satisfied woodworkers agree: the Forrest Woodworker II blade is worth its weight in gold. Maybe more. And it doesn't take a jeweler to see why. It rips through thick hardwoods with no scratches or tearouts. Miter and cross-cuts with flawless precision. It makes short work of one-sided laminates and splintery oak plywoods... flawlessly. In short there are sawblades... and there are Forrest blades.



Here's why. The hardness of C-4 carbide, combined with the low breaking point, of C-2 carbide, creates a tooth that's as permanently tough as it is sharp. Once that tooth is hand-brazed to the plate, the blade is hand-straightened to a perfect flatness—and an astonishing  $\pm .001$ " runout for peak performance.

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All-purpose—tablesaws and portable circular saws.

Special 10% Discount! Take 20% off second blade of your choice.

|                           | Sale Price       | 10% Off First Blade | 20% Off Second Blade |
|---------------------------|------------------|---------------------|----------------------|
| 14" x 40T x 1"            | <del>\$149</del> | \$134               | \$119                |
| 14" x 30T x 1"            | <del>\$139</del> | \$125               | \$111                |
| 12" x 40T x 1"            | <del>\$129</del> | \$116               | \$103                |
| 12" x 30T x 1"            | <del>\$119</del> | \$107               | \$95                 |
| 10" x 40T x 1/8" or 3/32" | <del>\$119</del> | \$107               | \$95                 |
| 10" x 30T x 1/8" or 3/32" | <del>\$99</del>  | \$89                | \$79                 |
| 9" x 40T                  | <del>\$109</del> | \$98                | \$87                 |
| 9" x 30T                  | <del>\$99</del>  | \$89                | \$79                 |
| 8 1/4" x 40T x 3/32"      | <del>\$99</del>  | \$89                | \$79                 |
| 8" x 40T x 3/32"          | <del>\$99</del>  | \$89                | \$79                 |
| 8" x 30T x 3/32"          | <del>\$89</del>  | \$80                | \$71                 |
| 7 1/4" x 30T x 3/32"      | <del>\$89</del>  | \$62                | \$55                 |
| 6" x 40T x 3/32"          | <del>\$89</del>  | \$80                | \$71                 |

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### WOODWORKER I: 7 1/4"-14" dia. avail.

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|                                  | Sale Price       | 10% Off First Blade | 20% Off Second Blade |
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| 8", 8 1/4", 7 1/4" x 60 Tooth    | <del>\$109</del> | \$98                | \$87                 |
| 10" x 60 Tooth (1/8" hole)       | <del>\$129</del> | \$116               | \$103                |
| 12" x 60 Tooth (1/8" or 1" hole) | <del>\$139</del> | \$125               | \$111                |

### DURALINE HI A/T: 7 1/4"-16" dia. avail.

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| 8", 7 1/4" & others available        |                  |                     |                      |
| 10" x 80 T (1/8" or 3/32" K)         | <del>\$159</del> | \$143               | \$127                |
| 12" x 80 T (1/8" or 1" hole, 1/8" K) | <del>\$169</del> | \$163               | \$145                |
| 14" x 80 T (1" hole)                 | <del>\$179</del> | \$177               | \$158                |
| 14" x 100 T (1" hole)                | <del>\$209</del> | \$203               | \$181                |
| 16" x 100 T (1" hole)                | <del>\$245</del> | \$219               | \$194                |

### CHOP MASTER BLADE: 6 1/2"-15" dia. avail.

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New specs, 5" neg pto. & flat, runs out less than .002 for perfect, smooth, splinter-free miter joints.

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| 6 1/2" x 40 T | <del>\$99</del>  | \$89                | \$79                 |
| 8 1/4" x 60 T | <del>\$109</del> | \$98                | \$87                 |
| 8 1/2" x 60 T | <del>\$119</del> | \$107               | \$95                 |
| 10" x 80 T    | <del>\$139</del> | \$125               | \$111                |
| 12" x 80 T    | <del>\$149</del> | \$134               | \$119                |
| 14" x 100 T   | <del>\$189</del> | \$170               | \$151                |
| 15" x 100 T   | <del>\$199</del> | \$179               | \$159                |

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Use any of the blades for a month. If you are not completely satisfied, return the blade for a complete refund. No other blade company will make that kind of guarantee—because there's no other blade like a Forrest blade!

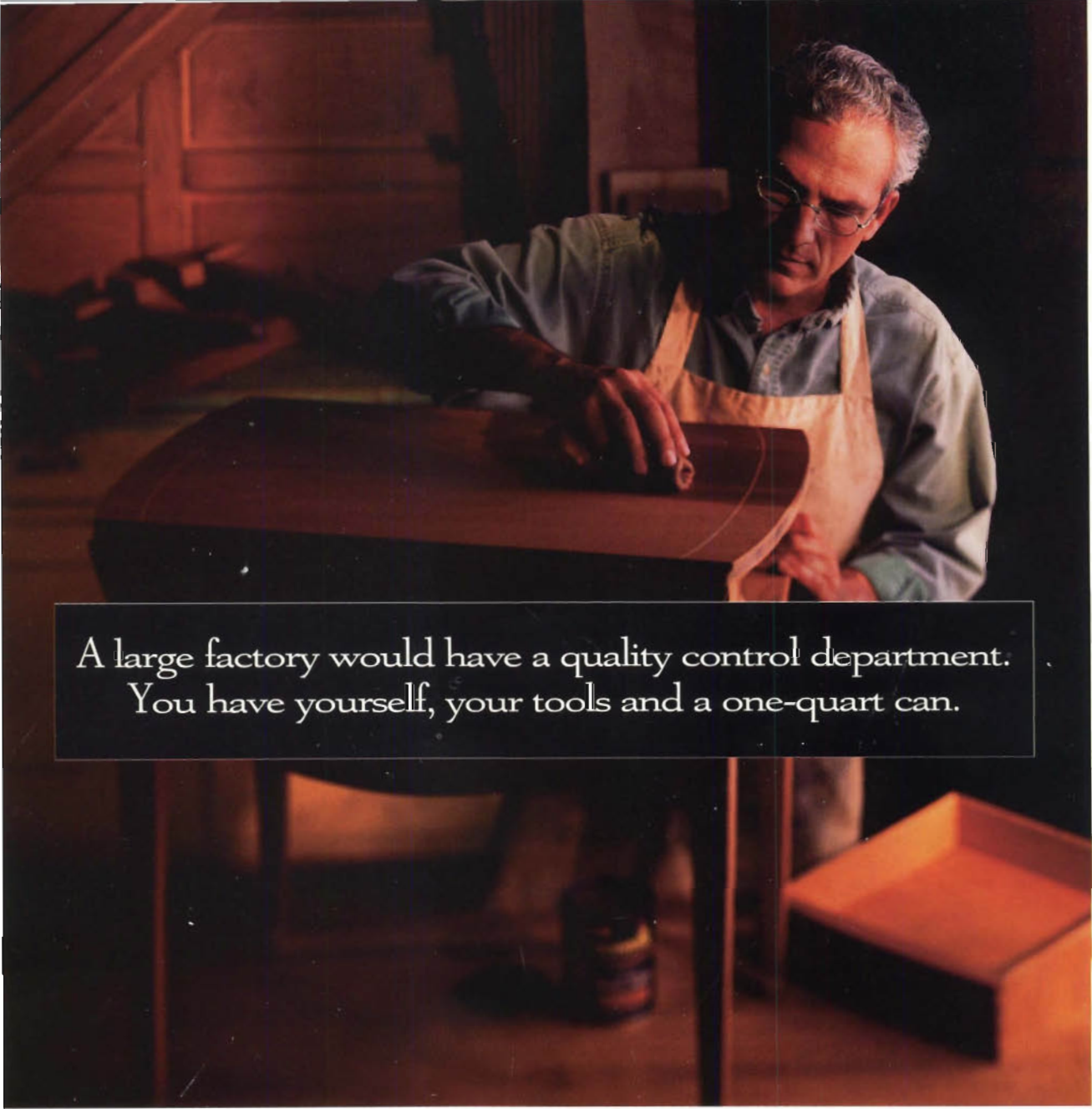
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A man with glasses and a light-colored shirt, wearing a tan apron, is focused on working on a large, dark wooden piece, possibly a table or a cabinet. He is using a tool, likely a sandpaper or a brush, to finish the surface. The background is a workshop with wooden walls and various tools and materials scattered around, creating a warm, rustic atmosphere.

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