

Better Homes and Gardens®

# WOOD®

Try  
your hand  
at  
**TIN-PUNCHING**  
Page 42

THE WORLD'S LEADING WOODWORKING MAGAZINE

AUGUST 1992 • ISSUE NO. 53

Please display until August 10

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59 FINISH REMOVERS**

**CRAFT-SHOW  
TOYMAKER SHARES HIS  
SECRETS FOR SUCCESS**

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THAT PLEASE**

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**Turned music box**

**Caterpillar puzzle toy**

**Teddy bear wall plaque**

**Kachina pendant**

**Kid's wooden wagon**

## PUNCHED-TIN PIE SAFE

See page 47







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# THE EDITOR'S ANGLE

## HOW ABOUT A ROUND OF APPLAUSE FOR THE WOOD® MAGAZINE TECHNICAL-ILLUSTRATION TEAM



Four of the very best technical illustrators in the woodworking-publication business (Bill Zaun, Mike Henry, Jim Downing, and Kim Downing) talking things over in Jim's office.

 Print this article

No doubt you've heard the old saying, "A picture is worth a thousand words." Well, in the woodworking-publication business, it's literally true. If you're like me, you know that words alone don't always explain things sufficiently. More often than not, I need to actually see it to really understand how to do something.

That's why at *WOOD* magazine we feel that it's important to include exploded-view drawings to show how projects go together, section-view drawings to illustrate an important joinery detail, or whatever else you need to ensure your success when building one of our projects. We think we owe you that.

As you might expect, it takes people with special skills to execute the technical illustrations you see in each issue of this magazine. And we're lucky indeed to Photograph: Wm. Hopkins

have some of the very best talent in the country to help us with this important part of our product.

You probably recognize Jim Downing, our Design Editor and resident technical illustrator. Jim's the person who assigns a particular project to one of the three freelance technical illustrators shown in the photograph with him. On the left we have Bill Zaun, next to him, Mike Henry, and to Jim's left, Kim Downing. This talented group of guys work and rework the drawings that accompany our projects until they've eliminated the bugs for you.

Over time, we've heard from lots of readers who appreciate the skill with which our technical-illustration team handle their work. So I thought it was high time you got an opportunity to meet them.

*Larry Clayton*

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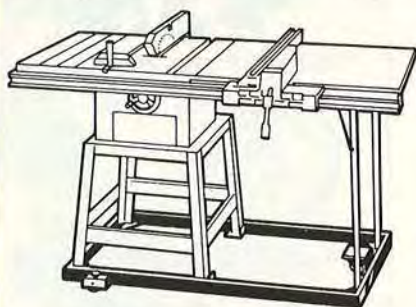
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Better Homes and Gardens.

# WOOD®

THE WORLD'S LEADING WOODWORKING MAGAZINE

This issue's cover wood grain: Idaho white pine

Cover photo: Wm. Hopkins

AUGUST 1992

ISSUE NO. 53

WOOD PROFILE

## Eastern white pine 35

Along the East Coast, early settlers harvested this all-around conifer for home construction, furnishings, and masts for their sailing ships.



## CRAFTSMAN CLOSE-UP Toys by Hank 37

Tugboats, trolley cars, and old-time trucks head the list of some very special creations by full-time toymaker Hank Gorczynski of Buffalo, New York. Discover how Hank manages his successful toy business in the highly competitive craft-show circuit.

SHOP-TESTED TECHNIQUES

## For fun, try tin-punching 42

Learn how to make decorative tin panels for use in wall plaques, pie safes, bread boxes, and other projects. Get started with one or more of our five patterns.



## NOW YOU CAN BUILD IT Punched-tin pie safe 47

Add a touch of country to your kitchen with this showy project. Then, use it to store pastries, canned goods, or other kitchen-related items.

CARVING

## Kachina doll 53

Carve and paint this colorful pendant representing a Hopi Indian deity.

## BUYMANSHIP Finish removers 54

Looking for the strongest finish remover, or the safest? *WOOD* magazine covers the field, testing a total of 59 paint-and-varnish removers from 18 manufacturers.





CARVING

**Gardening with a gouge 60**

While real flowers bloom and wilt, our carved daffodil lasts and lasts. It requires no sunlight or rain, only a little loving care in the crafting.

**Back to school... 64  
for woodworking**

Visit three contrasting schools that teach woodworking skills and/or help launch careers in the field. Then, see the companion piece listing 18 such schools from the United States and Canada.



DEVELOP YOUR SHOP SKILLS

**The long and short of it 68**

Take the wobble out of your legged projects and get them to stand on all fours with the leveling advice found here.

TURNING

**Masterpiece music box 69**

You'll come away singing after tooling this treasure. Measured cuts along the box side and top make room for beautifully patterned inlay pieces.



THE CRAFT SHOP

**King of the caterpillars 72**

Kids will love this critter to pieces, and why not? It's a puzzle. Just bandsaw or scrollsaw out the pattern inside, woodburn in the details, and it's ready to paint and finish.

**Teddy bear in tin 74**

Show your true colors by tin-punching our flag-waving teddy bear pattern. Then, surround your handiwork with a handsome painted frame. You will have to look long and hard to find a better accent for a young child's room. It's loaded with charm.

**Wagons, ho! 76**

Helping Mom and Dad pick up the toys around the house can be a chore for a youngster, but having a really neat wagon could make the job fun!



**SHORT-SUBJECT FEATURES**

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WOOD Magazine Apr. 88

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WOOD Magazine

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WOOD Magazine Oct. 91

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THE WORLD'S LEADING  
WOODWORKING MAGAZINE

August 1992 • Vol. 9, No. 5 • Issue No. 53

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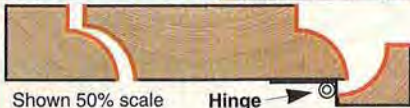
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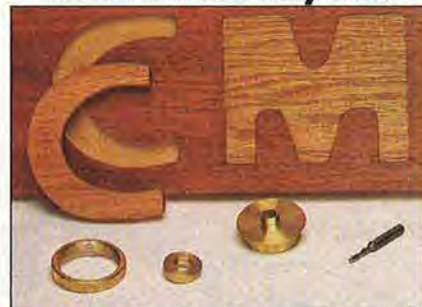
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\*1/2" Shank

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CMT offers nine premium router bit sets. Six sets include the beautiful Italian hardwood case shown at right, and every set features bits with CMX-4 Micrograin carbide, Teflon® coating, anti-kickback design and the engineering expertise of CMT! All bits carbide-tipped or solid carbide.



### Sets With Hardwood Case:

800-500 1/4" Shank Set For Inkra, 6 Dovetail & 2 Straight **Sale: \$ 99.00**

800-501 1/2" Shank Set For Inkra, 6 Dovetail & 2 Straight **Sale: \$109.00**

800-502 1/4" & 1/2" Shank Set for Leigh w/ 7 Dovetail & 3 Straight **Sale: \$129.00**

800-503 12-Pc. 1/4" Shank Set, w/ Chamfer, Rabbet, Radius, Flush Trim, Cove, Ogee, Dovetail, V-Groove, Mortising, Round Nose & 2 Straight **Sale: \$159.00**

800-504 6-Piece 1/2" Shank Set, w/ Round Nose, Cove, Rabbeting, Roundover, Ogee & Chamfer Bits **Sale: \$119.00**

800-505 13-Pc. 1/2" Shank Set, w/ Cove, Rabbeting, Ogee, Chamfer, Roundover, Dovetail, Round Nose, V-Groove, Flush Trim, Mortising and 3 Straight **Sale: \$199.00**

### Brand New Sets carefully packed in sturdy cartons:

800-611 1/4" Shank Set for Porter-Cable OmniJig, w/ 3 Dovetail, 2 Straight & 1 Top Bearing Bit **Sale: \$89.00**

800-609 1/4" Shank Set for JoinTECH Jig, w/ 3 Dovetail & 2 Str. **Sale: \$62.00**

800-610 1/2" Shank Set for JoinTECH Jig, w/ 3 Dovetail & 2 Str. **Sale: \$69.00**

## Why should CMT bits be in your shop?

To find out, take the CMT "self test" below:

	CMT		Your Bits	
	Yes	No	Yes	No
1) Do your bit bodies have <b>Anti-kickback Design</b> for safety (3/4" diameter or larger)?...	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2) Are your bits <b>Teflon®</b> coated to help reduce pitch and gum buildup?.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3) Are your bits machined from a <b>Solid Block of Steel</b> instead of investment castings?.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4) Does every bit feature <b>Micrograin Carbide</b> for sharper edges and longer life?.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5) Do your straight bits have <b>Radially-relieved Cutting Edges</b> for faster feed rates?..	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6) Are both the face & outside diameter of the carbide <b>Precision Ground</b> for better cutting?..	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7) Do your bits have a <b>Mirror Finish</b> on the carbide for long-lasting sharpness?.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8) Do all profile bits have <b>Shear Angles</b> that allow the cutters to slice rather than "chop"?....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9) Does your router bit supplier offer a lifetime warranty?.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Now, check your score. If there is even one "No" in your present bits' column, then you need CMT bits.

Send \$2.00 For Our Catalog. In Canada call 1-416-663-8665

Call 1-800-531-5559 For The Dealer In Your Area. Dealer Inquiries Welcome!



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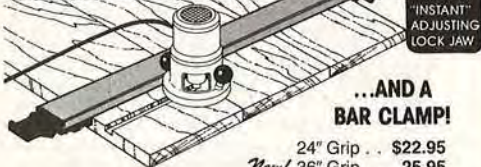


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The perfect clamp for your drill press table. Reliable and effective for any drill press operation!

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**TITEBOND II WOODGLUE**



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Great for belt sanding, routing, palm sanders, hand scraping, drilling, and more...all without clamping!! This mat is NOT foam, NOT carpet padding, and NOT underlayment material!!! IT IS 1/8" dense rubber that will NOT slide on wood, laminate, corian, plywood, etc.

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MAT SIZE 36" x 24"



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**CLAMPS**  
**CLAMPS**

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#2008 -	12"	7.99	42.00
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#2010 -	24"	8.99	48.00
#2011 -	30"	9.49	52.00
#2012 -	36"	9.99	54.00

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#2006 - Clamp Pads . \$3.99 4 packs for \$12.00

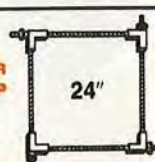


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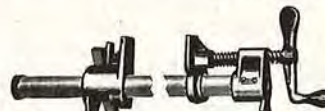
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#2103	24"	17.95
#2104	36"	19.95
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Strong, yet lighter  
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(MIX and MATCH ITEMS O.K.)  
ANY ITEMS LISTED IN HOUSE

## (FREE ITEM = LESSER VALUE OF ALL 3)

EXAMPLE MR. JONES BUYS:

- (1) Box 100 Bosch "F" Wt. Discs 80X ... \$39.99
- (1) Box 100 Bosch "F" Wt. Discs 120X ... 39.99
- (1) Box 100 Bosch "F" Wt. Discs 150X ... 39.99
- (1) Box 100 Bosch "F" Wt. Discs 200X ... FREE!!!

### BUY 3...GET 1 FREE!

#### BULLDOG GOLD STICKY DISCS for your PORTER-CABLE RANDOM ORBIT SANDERS.

Heavier and with more Adhesive! Buy 3 Boxes of Sticky Discs (100/box), Get 1 Box FREE! (Mix and Match grits O.K.) Extra Heavy Duty "D" weight Sticky Discs.  
Buy 50 ... GET 50 FREE!  
#1170 - 5" BULLDOG Discs ... \$20.99  
#1180 - 6" BULLDOG Discs ... 25.99  
(Order in multiples of 50 per grit size. Available in 80, 100, 120, 150, 220 & 320 grits.)

### BUY 3...GET 1 FREE!

#### BOSCH/MAKITA RANDOM ORBIT DISCS "F" and "B" Weight

*New!* SUPER STONG BOSCH "F" Weight, Velcro, 8-hole Sanding Discs that last longer!  
Buy 50 ... GET 50 FREE!  
(Avail. in 80, 100, 120, 150 & 200 grits.)  
5" BOSCH "F" Wt. ... \$39.99/100 Discs  
6" BOSCH "F" Wt. ... \$49.99/100 Discs

BOSCH Aluminum Oxide non-loading "B" Weight, Velcro backing with 8-hole pattern. Buy 3 boxes of Velcro Discs (100/box), get 1 Box FREE! Buy 50 ... GET 50 FREE!  
(Order in multiples of 50 per grit size. Available in 80, 100, 120, 150, 220 & 320 grits.)  
5" BOSCH "B" Wt. Discs ... \$26.99  
6" BOSCH "B" Wt. Discs ... 29.99

### BUY 3...GET 1 FREE!

#### RYOBI 4 1/2" SANDING DISCS

Aluminum oxide non-loading "B" weight Velcro backing with 8 hole pattern. Buy 50... GET 50 FREE! Order in quantities of 50 per grit size. (Avail. in 80, 100, 120, 150, 220 & 320 grits.) O.K. to Mix and Match.  
#1282 - 4 1/2" RYOBI "B" Wt. ... \$26.99

EXAMPLE MR. SMITH BUYS:

- (1) Box 100 Bosch "F" Wt. Discs 80X ... \$39.99
- (1) 4 1/2" x 10 yd. Sticky Roll 120X ... 12.99
- (1) Pk. 50 9x11 s/c n/l Sheets 320X ... 12.99
- (1) ITEM WORTH \$12.99 ... FREE!!!

### BUY 3...GET 1 FREE!

#### SUPER STRONG "F" Weight ROLLS

Rolls for your 1/4 and 1/2 Sheet Vibrating Sander. Buy 3 Orange "F" Weight Rolls, Get 1 Roll FREE! Mix and match grits O.K. 4 1/2" x 25' Rolls, Orange, Aluminum oxide. Will outlast regular "C" weight Cabinet Paper 5x or more. Available in 80, 100, 120, 220 grits.  
#1012 - 1 Roll for ... \$12.99 ea.

### BUY 3...GET 1 FREE!

#### STICKY ROLLS

Buy 3 Sticky Rolls ... Get 1 FREE! Mix and match grits O.K. 4 1/2" x 10 yds. for finishing sanders. Silicon Carbide, "White" non-loading available in 80, 100, 120, 150, 220 & 320 grits.  
#1120 - 1 Roll for ... \$12.99 ea.

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#### SILICON CARBIDE Non-Loading 9" x 11" SANDING SHEETS

Buy 3 Packages Get 1 FREE!  
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#1305 - 50 Sheet Package ... \$12.99  
"BLACK" Waterproof Silicon Carbide. Available in 220, 320, 400, 600 & 1200 grits.  
#1311 - 50 Sheet Package ... \$19.99

## QUAKER STATE has all your SANDING NEEDS ...all under one roof!

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You've Tried The Rest...  
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### BUY 12 BELTS... Get a Baker's Dozen FREE!

(A Total of 25 Belts)

BELT SIZE	PRICE 25 BELTS	BELT SIZE	PRICE 25 BELTS
1 x 30	\$17.99	3 x 24	\$20.99
1 x 42	18.99	4 x 21	25.99
2 1/2 x 16	18.99	4 x 21 3/4	25.99
3 x 18	19.49	4 x 24	26.99
3 x 21	19.99		
BELT SIZE	PRICE FOR 13 BELTS	(Avail. in 40, 60, 80, 100, 120, 150 & 220 grits.)	
4 x 36	\$25.99	Buy 6 Get 7 FREE	
6 x 48	36.99		

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- 3/4" x 3" Long ... \$15.95
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- 2" x 3" Long ... 18.99
- 3" x 3" Long ... 19.99
- Kit of all 4 above ... 64.99
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- 3" x 6" Long ... 29.99

**BONUS:** 1 FREE Roll with every Drum ordered!  
3" x 10" "F" Weight, Available in 80, 100, 120, 150, 220 grit.

### 3" x 10" "F" Weight ROLLS



Orange, Aluminum Oxide. Will outlast regular "C" Weight Cabinet Paper.  
#1003 - 3" x 10' Roll ... \$4.99  
#1006 - 3" x 10' 3 Roll Pack ... 12.99  
(Available in 80, 100, 120, 150 & 220 grit. O.K. to Mix and Match.)

### New! DUST COLLECTION

For P-C Random Orbit Sanders. The RIGHT WAY to DUST COLLECT...hood connects your sander to your Shop Vac. 6'Flex Hose included ... \$26.99



- 5" Replacement Pad \$14.99
- 6" Replacement Pad 17.99
- 5" Contour Pad ... 14.99
- 6" Contour Pad ... 17.99

### BOSCH 5" RANDOM ORBIT SANDER

- VARIABLE SPEED
- DUSTLESS

#3480 - 5" Bosch Sander ... \$109.99

NOW ON SALE... \$99.99



Sanders Shipped FREIGHT FREE!  
Model # 3283 DVS

### PORTER-CABLE Random Orbit Riot!



Sanders shipped freight FREE!  
Models #7334, 7335, 7336

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- 5" V.S. Random Orbit ... 129.99
- 6" V.S. Random Orbit ... 134.99

### RYOBI 4 1/2" RANDOM ORBIT SANDER

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- LIGHTWEIGHT
- VARIABLE SPEED

#3200 - 4 1/2" Ryobi Sander ... \$79.99

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Sanders Shipped FREIGHT FREE!  
Model # RS115



### New! MAKITA 5" Random Orbit SANDER

10,000 rpm. Uses 5" Velcro Discs w/8 Hole Pattern.  
Model #BO5000 ... \$84.99

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Dust Collection Hose ... \$19.99

### New! RANDOM ORBIT SANDER KIT



- #3017K - 5"SS KIT ... \$205.99
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Kit Includes: Sander, Dust Collector, Velcro Conversion Pad, Buffing Kit Contour Pad & 100 Assorted Discs, and Case.

### New! CONVERT YOUR PORTER-CABLE SANDER TO TAKE VELCRO DISCS!



Tired of using Sticky Discs! Kit includes:  
(1) 5" or 6" Velcro Conversion Pad, Buffing Bonnett and an Assortment of (10) each Super Strong "F" Weight Sanding Discs. 80, 120, 220 grit.

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## Round and round it goes. Where it stops nobody knows.

The Dremel Moto-Tool is a compact, high-speed rotary tool that really gets around. With variable speeds, ranging from 5,000 to 30,000 RPMs, and over 150 specially designed bits and accessories, it allows you to complete all kinds of tasks, on all kinds of materials.

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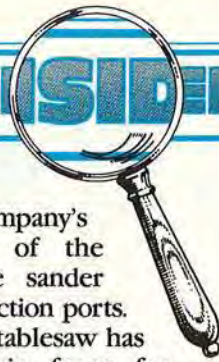
Moto-Tool, this ad would go on forever. However, you can get a 95 page, detailed guide that explains bits, speeds and 175+ uses, in specially marked Moto-Tool boxes at Hardware, Home Center and Hobby Stores. Or write to Dremel, Marketing Dept., P.O. Box 1468, Racine, WI 53406-1468, for a free copy.

**DREMEL MOTO-TOOL**  
High-Speed Rotary Tool





# TOOL-INDUSTRY INSIDER



## Skil dives into the benchtop-tool market

Building on a reputation made in the portable power-tool market, officials at the Skil Corporation recently unveiled a line of new benchtop power tools. The six new models include a 10" table saw (about \$200); 16" scrollsaw (\$170); 8" drill press (drills to the center of an 8" board, \$170); 4" belt/6" disc sander (\$170); and 5" and 6" bench grinders (\$50-\$60). The company's only previous benchtop tool was an 8 1/4" table saw that now will be phased out of production. A Skil spokesman told us that the company has more benchtop power tools on the drawing board, but he wouldn't elaborate.



To the company's credit, both of the saws and the sander have dust-collection ports. And, the new table saw has a beefed-up rip fence for improved accuracy.

Why has Skil decided to enter a highly competitive field dominated by Sears and Delta? According to Skil estimates, home hobbyists purchased more than two million benchtop power tools in 1991, at a manufacturing value in excess of \$200 million. And, company officials feel that benchtop tools represent one of the fastest-growing power-tool categories for home woodworkers and hobbyists.

During a two-year research and development phase, Skil studies revealed that purchasers of benchtop tools base their buying decisions on the following factors (in order of importance): product performance, durability/reliability, motor power, brand reputation, warranty, price, dust-collection capability, and salesperson's recommendation.

## How to save money on your next Sears purchase (even if the item is already on sale)

If you're planning to buy any Sears woodworking or home-improvement products, you'll want to become a member of the company's new Craftsman Club now. You can join the club for free by filling out an application at any Sears retail store.

As a member, you will receive a calendar that includes a coupon for every month. The coupons vary, but all are good for \$3-\$20 or 10 percent off regular and sale prices. For instance, redeeming the June coupon allows you to save \$10 on the purchase of \$100 or more in merchandise. In July, you can save 10 percent on any tool-storage product. Club members

also receive advance notice of sales, information on new Craftsman product developments, and advice from home-improvement experts through a quarterly newsletter. Interesting concept, don't you think? ♣



# GUARANTEED TOUGH™ DEWALT

High Performance Industrial Tools

#DW705

12" Compound

Miter Saw

With Brake

DW704 12" miter saw w/brake & ct bl **319**

DW304K VS reciprocating saw kit **139**

DW318K VS orbit jig saw kit **139**

#DW364

Rear Pivot

Saw With

Brake

DW360 7-1/4" circular saw with brake **139**

DW377 7-1/4" worm drive saw **159**

#DW120K

1/2" Right

Angle

Drill Kit

DW124K 1/2" joist & stud drill kit **299**

DW610 1-1/2hp, 9 amp, router **139**

DW500K 3/8" VSR hammerdrill kit **149**

DW510K 1/2" VSR hammerdrill kit **169**

#DW254

Deck

Screwdriver

0-2500 RPM

DW250 drywall 0-4000 screwdriver **94**

DW290 1/2" impact wrench w/detent **169**

DW411 1/4 sheet sander with bag **59**

#DW100

3/8", 4 Amp,

0-2500 RPM

VSR Drill

DW102 3/8" VSR 4.5amp, 0-1200 drill **94**

DW103 3/8" VSR 5amp, 0-1200 drill **109**

DW110 1/2" VSR, 5amp, 0-600 drill **129**

DW944K 3/8", 9.6V, VSR cdl's drill kit **159**

DW945K 3/8", 12V, VSR cdl's drill kit **169**

DW947K 3/8", 13.2V, cdl's drill kit **209**

#1707

8-1/2" Slide

Compound

Miter Saw

7770-10 10", 3.5 HP radial arm saw **899**

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8" DRILL PRESS



8 1/4" COMPOUND MITER SAW



CONTRACTOR SERIES  
10" COMPOUND MITER SAW



8" BENCH TOP TABLE SAW



10" DRILL PRESS



10" COMPOUND MITER SAW



CONTRACTOR SERIES  
8 1/4" SLIDE COMPOUND MITER SAW



10" BENCH TOP TABLE SAW

Because Craftsman has the most complete line of quality bench top power tools in the industry... backed up by the Craftsman guarantee of satisfaction and Sears legendary service.

You can't top that promise of reliability because we life-test every new Craftsman bench-top tool we design. In fact, it takes ten separate steps just to jam-test our radial arm saw. And that's only one of 40 separate tests we run on this saw. To motor-test our 8 1/4" slide compound miter saw, we put it through 20,000 cycles in less than three working days.



# Our Bench Tops...



4"x6" BELT/DISC SANDER



8 1/4" COMPACT RADIAL SAW



13" SCROLL SAW



16" SINGLE SPEED SCROLL SAW



10" BENCH TOP BAND SAW



12" WOOD LATHE



16" VARIABLE SPEED SCROLL SAW



CONTRACTOR SERIES  
20" SCROLL SAW  
(INCLUDES LEG SET)

Our 20" variable speed scroll saw was tested at its maximum speed of 2,000 rpm for 500 hours. Of course, then we ran it some more at 150% of its maximum, to insure it will pass every test our customers can give it.

To see all of these great looking bench-top tools for yourself, just zip on down to your Sears store. Or order direct from our Sears catalog, 1-800-366-3000, toll-free, 24 hours a day, 7 days a week.

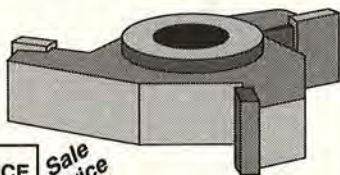
# CRAFTSMAN®

*Only at Sears*



### Rabbeting

This indispensable cutter is used for many shaping operations from plowing to rabbeting.

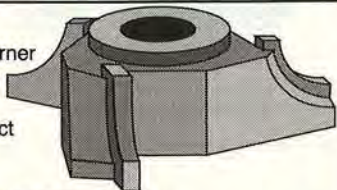


3/4" BORE				PRICE	Sale Price
PART	CUTTER DIA. A	CUTTING LENGTH B			
C2030	2-5/8"	1/4"		<del>\$24<sup>95</sup></del>	\$22 <sup>45</sup>
C2031	2-5/8"	3/8"		<del>\$26<sup>95</sup></del>	\$24 <sup>25</sup>
C2032	2-5/8"	1/2"		<del>\$28<sup>95</sup></del>	\$26 <sup>05</sup>
C2033	2-5/8"	3/4"		<del>\$32<sup>95</sup></del>	\$29 <sup>65</sup>
C2034	2-5/8"	1"		<del>\$35<sup>95</sup></del>	\$32 <sup>35</sup>
C2035	2-5/8"	1-1/2"		<del>\$36<sup>95</sup></del>	\$33 <sup>25</sup>
C2036	2-5/8"	2"		<del>\$59<sup>95</sup></del>	\$53 <sup>95</sup>



### Corner Round

We offer a wide selection of corner round cutters to handle your every need. These cutters are also used to produce perfect quarter round mouldings.

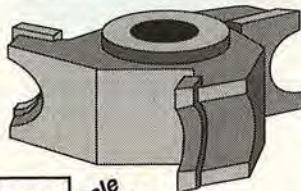


3/4" BORE				PRICE	Sale Price
PART	CUTTER DIA. A	CUTTING LENGTH B	CUTTING RADIUS r		
C2059	2-5/8"	7/16"	1/4"	<del>\$24<sup>95</sup></del>	\$22 <sup>45</sup>
C2060	2-5/8"	9/16"	3/8"	<del>\$26<sup>95</sup></del>	\$24 <sup>25</sup>
C2061	2-7/8"	5/8"	1/2"	<del>\$28<sup>95</sup></del>	\$26 <sup>05</sup>
C2062	3-3/8"	7/8"	3/4"	<del>\$35<sup>95</sup></del>	\$32 <sup>35</sup>
C2063	3-7/8"	1-1/4"	1"	<del>\$49<sup>95</sup></del>	\$44 <sup>95</sup>
C2064	4-1/2"	1-1/2"	1-1/4"	<del>\$49<sup>95</sup></del>	\$44 <sup>95</sup>



### Bead

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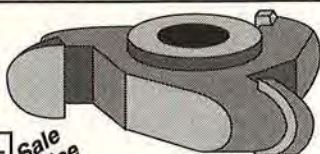


3/4" BORE				PRICE	Sale Price
PART	CUTTER DIA. A	CUTTING LENGTH B	CUTTING DIA. d		
C2052	2-5/8"	1/2"	1/4"	<del>\$24<sup>95</sup></del>	\$22 <sup>45</sup>
C2053	2-5/8"	5/8"	3/8"	<del>\$26<sup>95</sup></del>	\$24 <sup>25</sup>
C2054	2-5/8"	3/4"	1/2"	<del>\$28<sup>95</sup></del>	\$26 <sup>05</sup>
C2055	2-5/8"	1-1/16"	3/4"	<del>\$32<sup>95</sup></del>	\$29 <sup>65</sup>
C2056	2-5/8"	1-1/4"	1"	<del>\$35<sup>95</sup></del>	\$32 <sup>35</sup>



### Flute

These cutters work great for reproducing period architecture.



3/4" BORE			PRICE	Sale Price
PART	CUTTER DIA. A	CUTTING LENGTH B		
C2046	2-5/8"	1/4"	<del>\$24<sup>95</sup></del>	\$22 <sup>45</sup>
C2047	2-5/8"	3/8"	<del>\$26<sup>95</sup></del>	\$24 <sup>25</sup>
C2048	2-5/8"	1/2"	<del>\$28<sup>95</sup></del>	\$26 <sup>05</sup>
C2049	2-5/8"	3/4"	<del>\$32<sup>95</sup></del>	\$29 <sup>65</sup>
C2050	2-5/8"	1"	<del>\$35<sup>95</sup></del>	\$32 <sup>35</sup>



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Print this article

### Don't forget that label

The "Ask Wood" column of the February 1992 issue had a question about storing water-based finishes. I'd like to add that I purchase heavy-duty, clear-plastic containers at flea markets at reasonable prices in various sizes with tight-fitting lids. Prior to using any water-based finishes, I remove the labels to preserve them. I pour the finish into the plastic container, and then attach the label using a rubber band. When I use the finish, I remove the label for safekeeping.

—Gene Ciccone, Staten Island, N.Y.

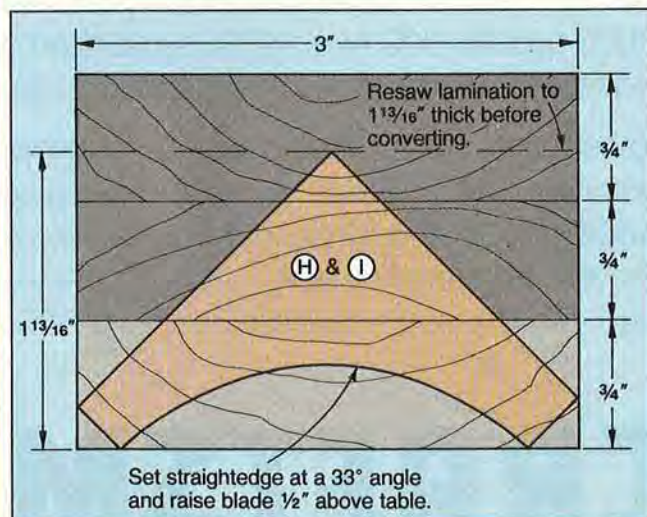
*Good idea, Gene. And here's still another one. Use double-stick tape to attach a locking plastic bag to the side of the container. Then, just drop the label into the bag and seal it. That way it's always there and you never have to remove it for pouring.*

### Cove cost-cutting makes sense

Due to the price of fine woods, I must always look for cost-cutting factors. I noticed in your "Shelving Showcase" in the February 1992 issue that to construct the cove molding (page 42) you use three pieces of 3/4" walnut lumber. Only one piece of the 3/4" walnut is actually exposed. Wouldn't it be less wasteful to use only one piece of walnut stock and rely on pine or plywood for the other two layers since they aren't visible?

—George Stevens, Cochrane, Ont., Canada

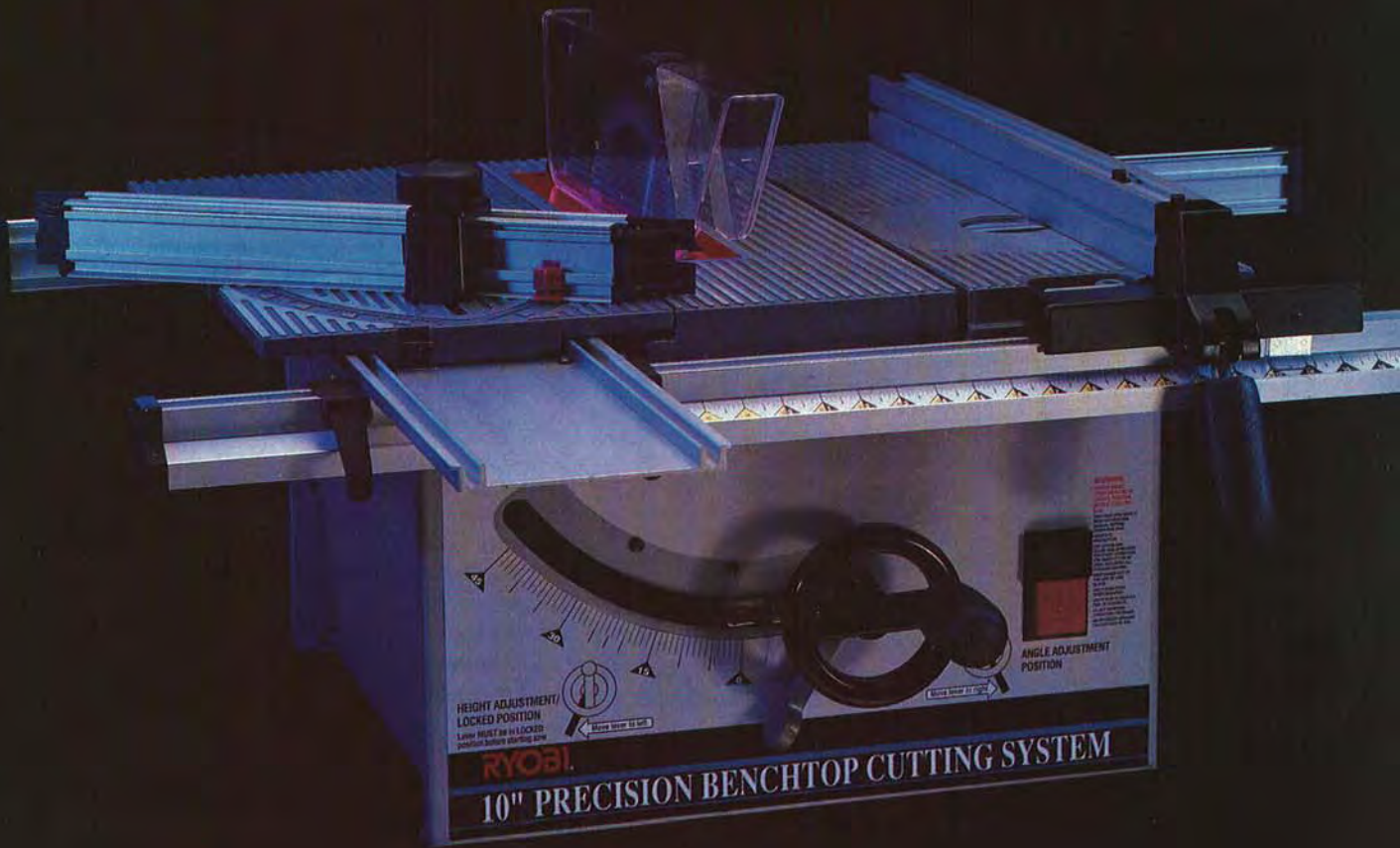
*Yes, George, we agree. Thanks for coming up with a helpful money-saving tip.*



Continued on page 14



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## TALKING BACK

Continued from page 12

### High Chair Corrections

In building the high chair in the April 1992 issue, Jack E. Battalia of Portland, Oregon, caught several items we missed. They are as follows:

- Step 8 on page 58 should read outside face up, not outside face down as stated.
- For a better fit, use 1/8" pilot holes and 3/16" shank holes for the drywall screws. These are slightly larger in diameter than the hole sizes dimensioned.
- The centerpoint for the back end of the 1/4" strap slots on page 61 should be 2 1/8" from the back edge of the seat, not the 1 3/4" dimensioned (1 1/8" plus 5/8").
- To prevent your router bit from dipping into the plug holes in the edges of the backrest stiles (H) when routing the 1/8" round-overs, plug the holes before routing.
- In step 5 on page 61, set your miter gauge 5° from center and not 10° from center when bevel-ripping the bottom edge of the backrest assembly.
- When attaching the armrests (L) to the top ends of the armrest supports (M), use one screw as shown in the Seat Assembly drawing and not two screws as shown in the accompanying detail. Also, for a smooth-sliding tray on the metal tray slides, make sure the armrests are parallel to each other.

Thanks, Jack, for your input. Although we reviewed the article numerous times and built two chairs to verify everything, a few errors snuck in and we apologize.

### Timber producer deserves a medal



Your article in the February 1992 issue on the Anderson-Tully logging operation was very informative and timely. It seems to me the U.S. Forest Service and the loggers in the Northwest could take a lesson from this timber company that operates along the Mississippi River. Maybe those folks could keep their forest, jobs, and also the habitat for the spotted owl. I think this operation deserves some kind of medal. Companies with their level of concern are hard to find. 🌲

—Godfrey Klimesh, Calmar, Iowa



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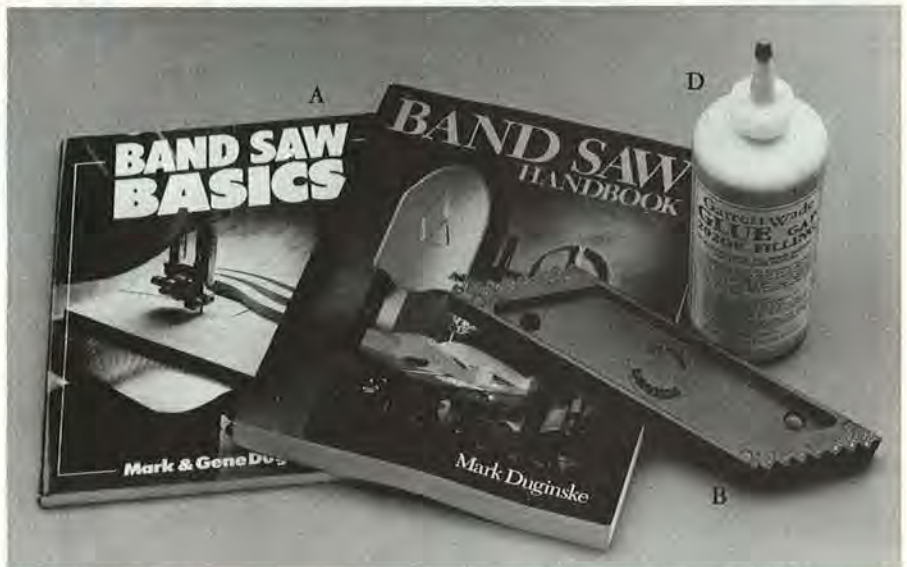
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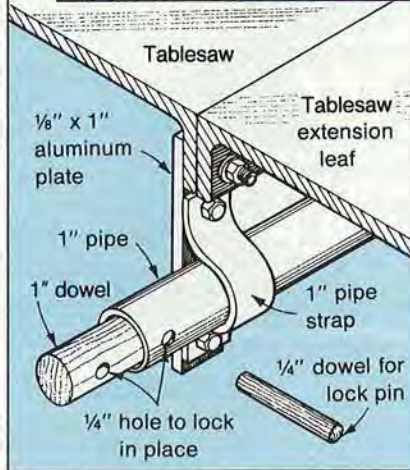
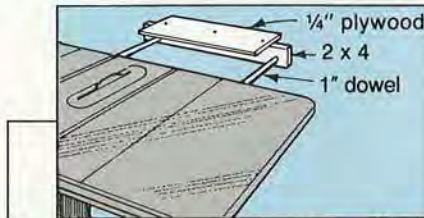
*Cut pieces fall off over the back edge of most saw tables because of the limited area behind the blade. Woodworkers sometimes reach across the blade to grab the piece—a dangerous thing to do.*

**TIP:** Add a sliding extension to the back of your saw table. When pushed against the table edge, it will catch small pieces. Extended, it will support longer material.

To make one, start by cutting two pieces of plastic (or other) pipe long enough to extend from the front to the back of the table. Attach one to each side of the saw beneath the table with custom-built brackets. (See the drawing right.) Make sure that they don't interfere with the saw controls or limit blade tilt and elevation.

For the table, fasten plywood to a piece of 2 × 4 that's long enough to span the pipes, with an extra inch or so at each end. Then, cut two pipe-length dowels that fit snugly inside the pipes. Drill holes in the 2 × 4 to accept the dowels, glue the dowels into place, and then slide the table into the pipes. To lock the table in position, drill through the pipe and into the dowel, and insert a piece of 1/4" dowel. For cutting

For his tip, Dave wins a Black and Decker Workmate 400, shown right.

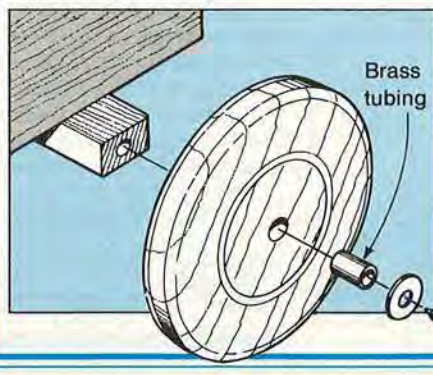


heavy material, attach one or two legs to the back of the extension for extra support.

—Dave McFarlane, Fredericton, New Brunswick

## Bushings take toys out of bush league

*A wooden wheel mounted on a wooden toy with a screw or bolt eventually becomes wobbly as the metal axle wears the center hole to an ever-larger egg shape. The wheel could even split.*



**TIP:** Keep those wheels turning with fewer problems by incorporating bushings into the wheels. Simply select a piece of brass or copper tubing that fits snugly but freely over your axle screw or bolt. Size the axle hole in the wheel so the tubing fits into it tightly. Press a piece of tubing about 1/16" longer than the wheel thickness into the axle hole. (To prevent the tubing from getting a kink in it, place the screw or bolt into the tubing as you press it in.) Secure the bushing by flaring the ends with a center punch.

—Howard K. Gaston, Naples, Fla.

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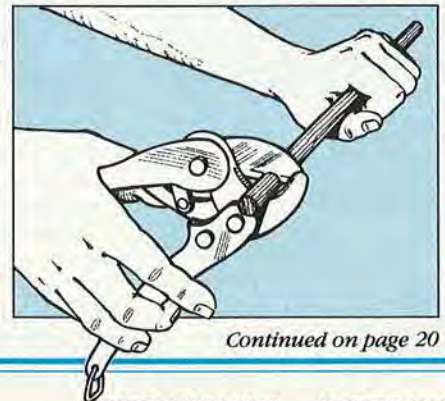
**Top Shop Tip**  
WOOD magazine  
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## PVC-pipe cutter makes short work of short dowels

*You can fiddle away a lot of time setting up jigs to cut short lengths of small dowels. Wouldn't it be great to have a simple way to snip off those little rounds?*

**TIP:** Drop by a plumbing-supply shop or hardware store, and buy a PVC pipe cutter—the squeeze-handle type. With a razor-sharp blade and a ratchet mechanism with high mechanical advantage, this tool clips cleanly through dowels up to 1/2" diameter with little effort. A good one with metal handles will cut dowels for a long time to come.

—Charles Simpson, Guntersville, Ala.



Continued on page 20



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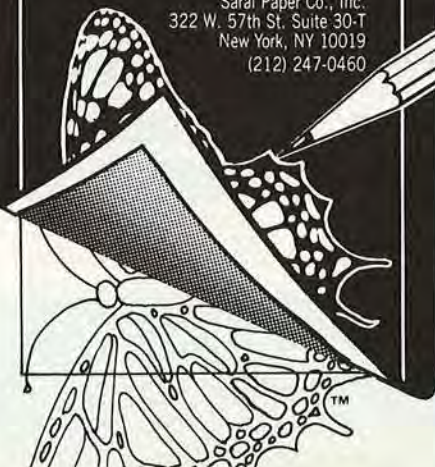
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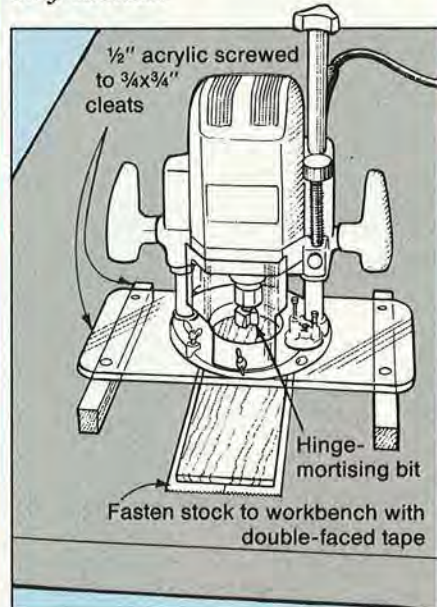
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## TIPS FROM YOUR SHOP (AND OURS)

Continued from page 18

### Router stands in for a surface planer

You need a small piece of thin stock for a project, but not enough to justify the cost of a planer. Or, maybe you have a planer, but the piece you need to plane down is just too short to run safely through the machine. Are resawing or hand-planing your only choices?



**TIP:** Put your router on the job with an easy-to-build elevated base, shown above. Bore a 2" hole through the center of a piece of clear polycarbonate plastic or plywood as wide as your router's base and about twice as long. Attach the router over the hole on top of the piece with the handles aligned lengthwise. On the bottom, attach a 1X1X12" strip centered across each end.

Fasten the workpiece to a saw table or other flat, smooth surface with double-faced tape. Use plenty of tape, and tap the face of the wood after fastening it down to ensure a tight bond. Now, with a hinge-mortising bit in the router, adjust the depth of cut to skim off enough material to leave the thickness you need. If you need to remove a lot of material, take it in small increments.

—William Kappele, Mission Viejo, Calif.

Continued on page 22





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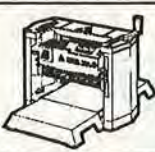
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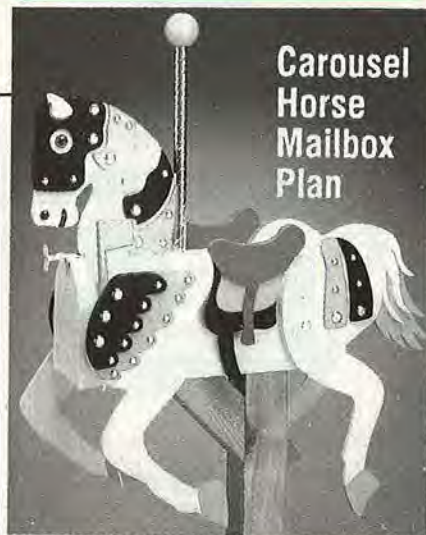
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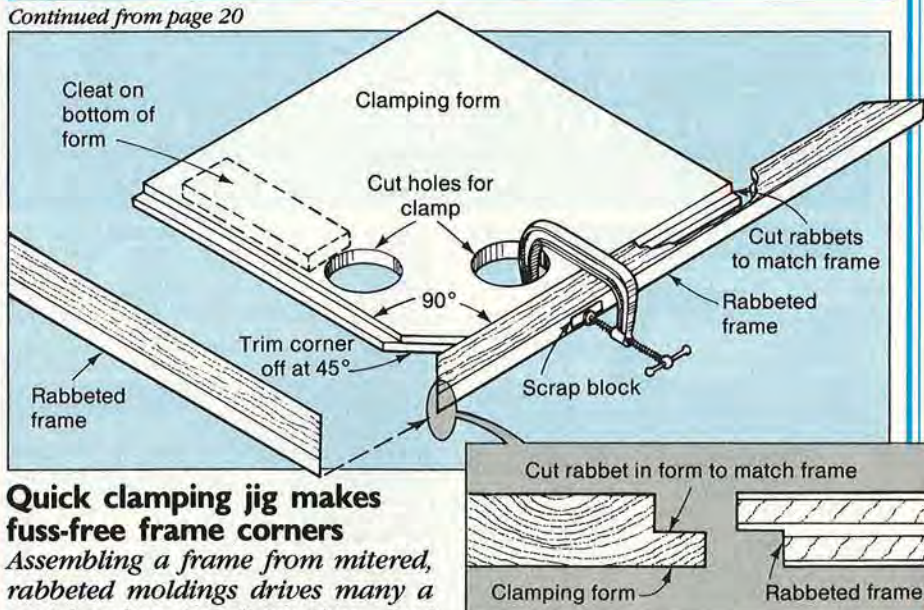
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## TIPS FROM YOUR SHOP (AND OURS)

Continued from page 20



### Quick clamping jig makes fuss-free frame corners

*Assembling a frame from mitered, rabbeted moldings drives many a woodworker to distraction. And the project can really go haywire when you try to reinforce the corners with small brads.*

**TIP:** Bring those corners under control with an easy-to-make jig. On a square of 3/4" plywood that is smaller than the narrowest inside dimension of your frame, rabbet two adjacent edges to mate with the frame molding, as shown *above right*. Then, cut a 2"-diameter opening 1" in from each rabbeted edge, 2" from the corner. Cut off the corner where the rab-

beted edges meet; then you won't glue the frame to the jig. Attach a cleat to the bottom of the jig so you can hold it in your vise.

To assemble a frame corner, apply glue to the mitered ends, and then place the moldings on the rabbeted edges of the fixture. Bring them together at the corner and clamp each side, placing the fixed end of the C-clamp in the hole. With the pieces held firmly, you can even drive in brads now, if you want.

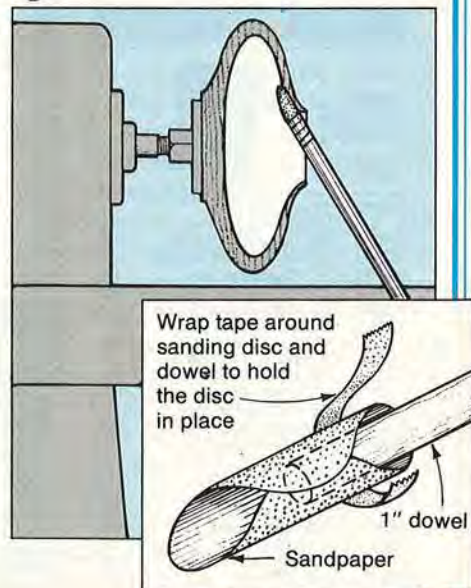
—Joe B. Godfrey, M.D., Forest City, N.C.

### Carry a big stick to sand turnings

*There are times when you just can't get your hand inside a turned bowl or vase on your lathe for sanding. And sometimes it may be too dangerous to try sanding by hand—when you're turning distressed wood, for instance.*

**TIP:** Reach into that turning with a sanding stick made from a 1x36" dowel and a sanding disc. Wrap the sanding disc (any size from 3" to 6" will work) around the dowel with about 1 1/2" of it extending past one end. Secure the disc with masking tape. With the dowel against the tool rest, insert the sanding disc into the vessel in the 2-4 o'clock area.

—Marc Wroe, Tempe, Ariz.



Continued on page 24



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The Marshco Random Orbit Sanding Head fits onto any 4"-5" angle grinder allowing you the speed of a disc or belt sander and the control of an orbital sander. This powerful sanding head combines orbital and spinning action at 10,000 orbits per minute leaving you with no cross grain scratch, swirl or hook marks and no corner edge round-off. The exclusively patented Marshco Random Orbit Sanding Head has rugged ball-bearing construction and adapts to any surface. Suggested retail:

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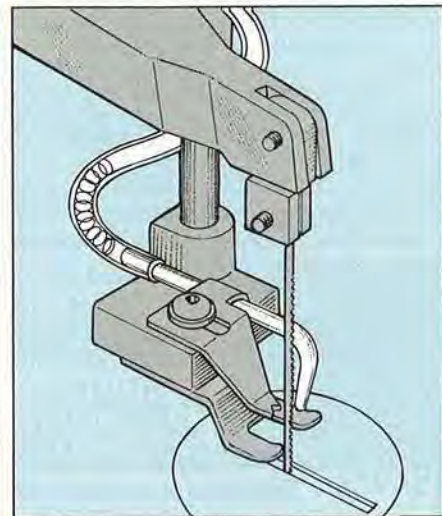


## TIPS FROM YOUR SHOP (AND OURS)

Continued from page 22

### Scrollsaw dust blower springs back into action

On some scrollsaws, the plastic tubing connecting the bellows to the dust-blower nozzle can kink. This restricts air flow, reducing the blower's usefulness.



**TIP:** Slide a spring from an old ballpoint pen into the tubing. Push it in far enough that the spring's middle falls at the middle of the curve where the kink occurs. The spring will prevent the tubing from collapsing, so you'll have full air flow to keep your pattern line clear.

—Paul Backer, Mason City, Iowa

### MORE TIPS FROM OUR WOODWORKING PROS

- Brush up on marking dowel joints with the photos and instructions on page 48.
- To make your project look old, check out the finishing techniques on page 52. For an additional old-time touch, refer to the Buying Guide on page 51 for our source of steel cut nails.
- In our child's wagon article on page 76, we show you how to make a sturdy and attractive box joint. We also feature a jig that makes the job easier.
- You can make a quick country frame for anything from a photograph to a sampler with the instructions on page 74. ♣



# JoinTECH Ultra - Precision Woodworking System

A major engineering advancement for precision positioning has now come to Woodworking in the IPM-1

## IPM-1

(patent pend.)

### INCREMENTAL POSITIONING MACHINE

The Heart of the System, IPM-1 has unparalleled accuracy and superiority in design and quality. Makes your router table an Ultra-Precise System to accomplish perfect and beautiful joinery.



### LEAD SCREW ACCURACY

Precision lead screw design provides the ultimate in accuracy and repeatability with Zero backlash; Reliable accuracy unobtainable from sawtooth racks or gears.



### SPECIAL FEATURES

- **Rapid Positioning** - less than two seconds to change any setting with the push of a button
- **Incremental Positioning** in multiples of 1/32" over a 10-1/2" range (16-1/2" range for the IPM-2)
- **Calibrated Thumbwheel** allows micro adjustments in detented .002" increments.
- **Optical Cursor** for easy and continuous position readout of scale or template.

**Rugged, Rigid, and Durable.** All metal design of machined high-grade aluminum, brass and stainless steel. Precision roller bearing movement.

## IPM-1 FENCE SYSTEM

Complete accessory system for making all Dovetail and Box Joints.

U.S. Patent No. 5,018,562



27" fence shown.  
18", 36" and 48" also available

### IPM FENCE SYSTEMS INCLUDE:

- **Rugged and Solid Aluminum Fence** has a dovetail slot for interlocking Stop Block and optional Vertical Push Fixture. No holes in fence surface.
  - **X-Y Positionable Stop Block** locks into fence dovetail. Patented design also adjusts for vertical height - especially useful when making half-blind joints.
  - **Retractable Stop Extender** stored inside fence can be extended and locked into any position. Swivel stop on end eliminates need for clamps.
- Optional Vertical Push Fixture** for end-grain cutting interlocks into fence dovetail and is impossible to tip over or kick out from fence during use. Safety of this patented fixture far exceeds any other design or method.

# JoinTECH

Made in U.S.A.  
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Ready to Use.

## IPM-1

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IPM-1 combined with an IPM fence is an extremely rigid and accurate replacement set-up for your present table saw fence and at less than the cost of any other quality fence alone!



### JoinTECH TEMPLATES

JoinTECH, the inventor of pre-printed templates, offers 38 different patterns for making every size dovetail and box joint including the intricate Double and Double-Double variations.

U.S. Patent No. 4,965,943



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The Woodfind computer program indexes every issue of: *WOOD*®, *Weekend Woodworking Projects*®, *Fine Woodworking*, *American Woodworker*, *Today's Woodworker*, *Woodsmith*, and *Woodwork*. The program also indexes 1985-to-present issues of *Woodworker's Journal* and *Workbench*. Since few of us subscribe

to all of these magazines, Woodfind also provides the information you need to write to each publisher for back issues.

I found the program immensely helpful and user-friendly. For example, to find information on dovetail joinery, I only had to key in the word "dovetail" and my computer found all the articles with that word in their titles.

Since some article titles do not contain a word that describes the article content (short articles especially, such as shop tips) the program also indexes articles by topic. I especially appreciate that I can buy updated versions every year for only \$7.95.

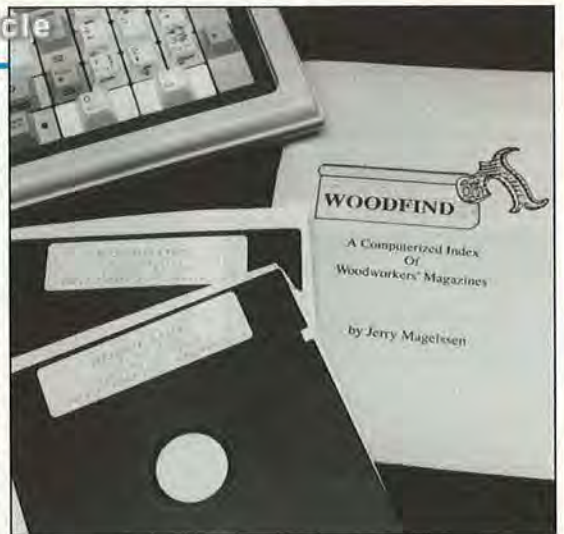
To use the program, you need an IBM or IBM-compatible computer with a hard drive, at least

512K memory, and DOS 2.0-plus. The program also works in Windows 3.0/3.1 environment.

—Tested by Margaret Clossner

*Woodfind Computer Index, \$54.45 ppd. from Woodfind, PO Box 2703, Dept. K, Lynnwood, WA 98036. Free brochures available upon request.*

Continued on page 28



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#SVS ..... \$169.95 (UPS \$10)

**Dust Collectors**

**750 CFM Portable Dust Collector:**

This 1-1/2HP model is lightweight and portable at less than 50 lbs.

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#DC3 ..... \$209.95 (UPS \$10)

**900 CFM Dust Collector:**

This 1-1/2HP model allows for use in 2 or more machines & gives improved service for long runs of hose.

- 1-1/2HP, 110/220V • 2 outlets @ 4" • 2 Bags @ 30 gal • Wt: 120lbs • 900CFM • Free: 50' of hose, 1 ea 4" to 3", 2 ea 4" to 2" adaptors.. \$40Value

#DC2 ..... \$299.95 (UPS \$30)



**610 CFM Dust Collector:**

This collector is perfect for hook-ups to almost any single machine.

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#DC1 ..... \$199.95 (UPS \$20)



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cloth...let formula set and adhere to surface and lift away old paint. It is as simple and easy as that!

**SO ECONOMICAL TOO! REMOVES  
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30 LAYERS AT A TIME!**

"PEEL-AWAY" is every home-owners dream come true. Ideal for indoors on walls, windows, furniture, etc.—Plus 101 outdoor uses too. And it's so economical too. Homeowner's size alone gives enough coverage to strip away as much as 50 to 80 feet of average wall and door trim, window frames, furniture molding, stair railing, patio furniture, edging, roof gutters...its uses are almost endless!

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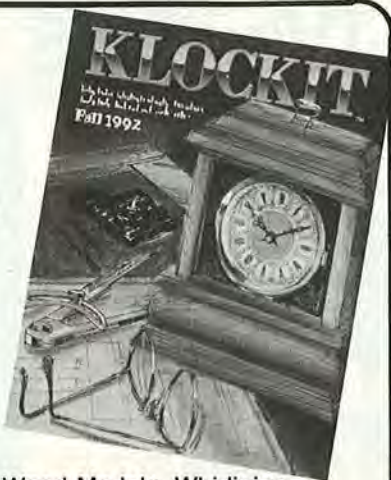
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## PRODUCTS THAT PERFORM

Continued from page 26

### Flush-trimming bit tackles the tough jobs

Recently, I needed a router bit with exceptional talents. For a rocking horse project, I needed to bandsaw two identical rockers out of 3/4" black cherry. Because I wanted to make several rocking horses, I looked for a flush-trimming bit capable of handling the 1 1/2" thickness of two rockers temporarily fastened together with double-faced tape. Since cherry tends to burn, I was hoping to find a bit with cool-cutting spiral edges. After a lot of searching, I found a bit from Woodhaven that fit the bill.



The Woodhaven No. 21288 flush-trimming bit shown above handled the job superbly. With the pattern in place, I trimmed out the rockers quickly and smoothly. The trimmed edge required no sanding before I cut a bead into it. The bit's cutting edges are angled in opposite directions (referred to as up-shear and down-shear) to reduce splintering on both sides of a piece of plywood. Woodhaven also offers similar bits in different lengths and diameters. (Some bits have up-shear only.)

—Tested by Bill Krier

Woodhaven model No. 21288 flush-trimming bit, \$39.99 plus \$3.50 postage (free shipping for orders over \$50), from Woodhaven, 5323 W. Kimberly Rd., Davenport, IA 52806. Call 800/344-6657 or 319/391-2386.



## This turning tool gets into tight openings

If you're ready to turn a hollow vessel with a narrow opening, then let the Cross-Tip Turning Tool help you. During my test, I successfully hollowed out the Southwest-style pot shown *below*. So far, I've turned a half dozen vessels with this tool, and I've been completely satisfied.

The tool has two key features. You can mount its  $\frac{3}{16} \times \frac{3}{16} \times 2\frac{1}{2}$ " high-speed steel tip at either  $10^\circ$  or  $33^\circ$  to the tool shank, allowing you to remove stock not accessible with conventional, straight-shanked turning tools. To change the position of the bit, you simply loosen a set screw at the end of the shank.

Put to use, the bit makes the tool want to rotate in your hand, but here's where the second feature comes in. A movable sleeve, tightened in place on the  $\frac{5}{8}$ " tool shank, sits flat on the tool rest to prevent twisting during operation. The sleeve allowed me to keep a relaxed grip on the tool.

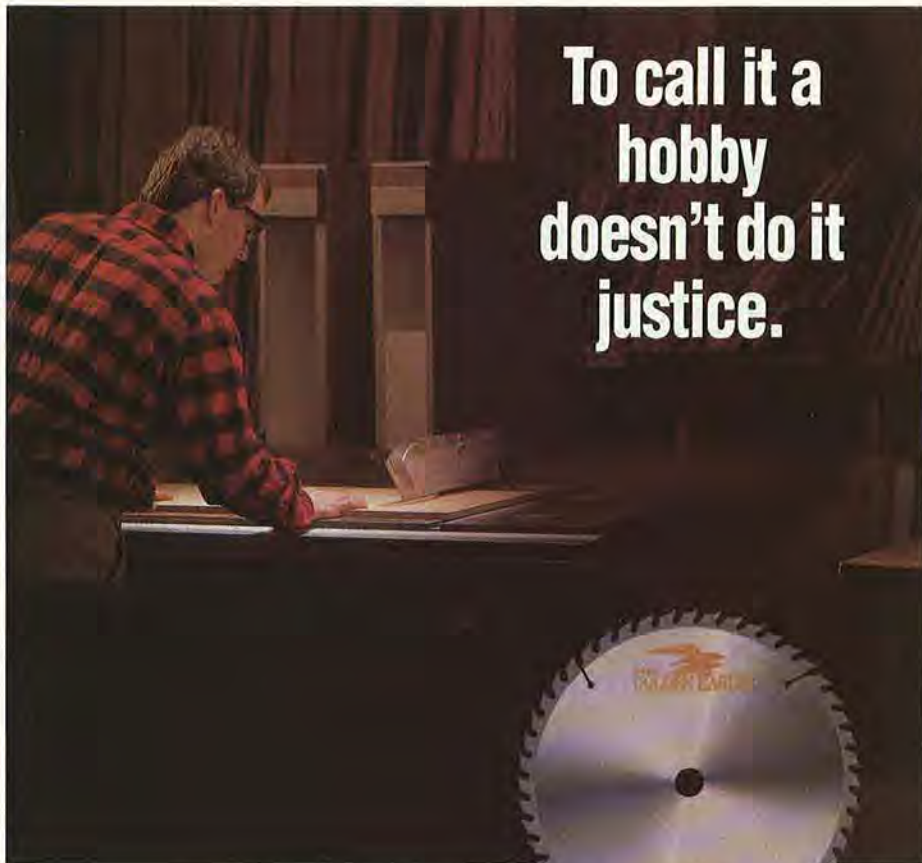
I was able to sharpen the bit in just a few seconds by touching it to my grinder. John Lea, the tool's creator, told me that you can purchase replacement bits at machinist-supply stores for under \$5.

—Tested by Marlen Kemmet



Cross-Tip Turning Tool, \$48 ppd. without handle, and \$55.50 ppd. with handle. Lea's Tools, 1651 South Pecan Circle, Mesa, AZ 85202. Call 602/838-6452.

Continued on page 31



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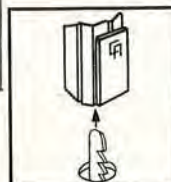
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## PRODUCTS THAT PERFORM

Continued from page 29

### A new, high-quality router bit with the edge on safety

The minute I laid my eyes on some router bits from CMT Tools I knew I had to take them for a test spin. For starters, all of the larger

bits have an anti-kickback design that limits the amount of bite each cutting edge can take. I've previously tried other products with this feature, and the CMT bits were equally effective at preventing kick-

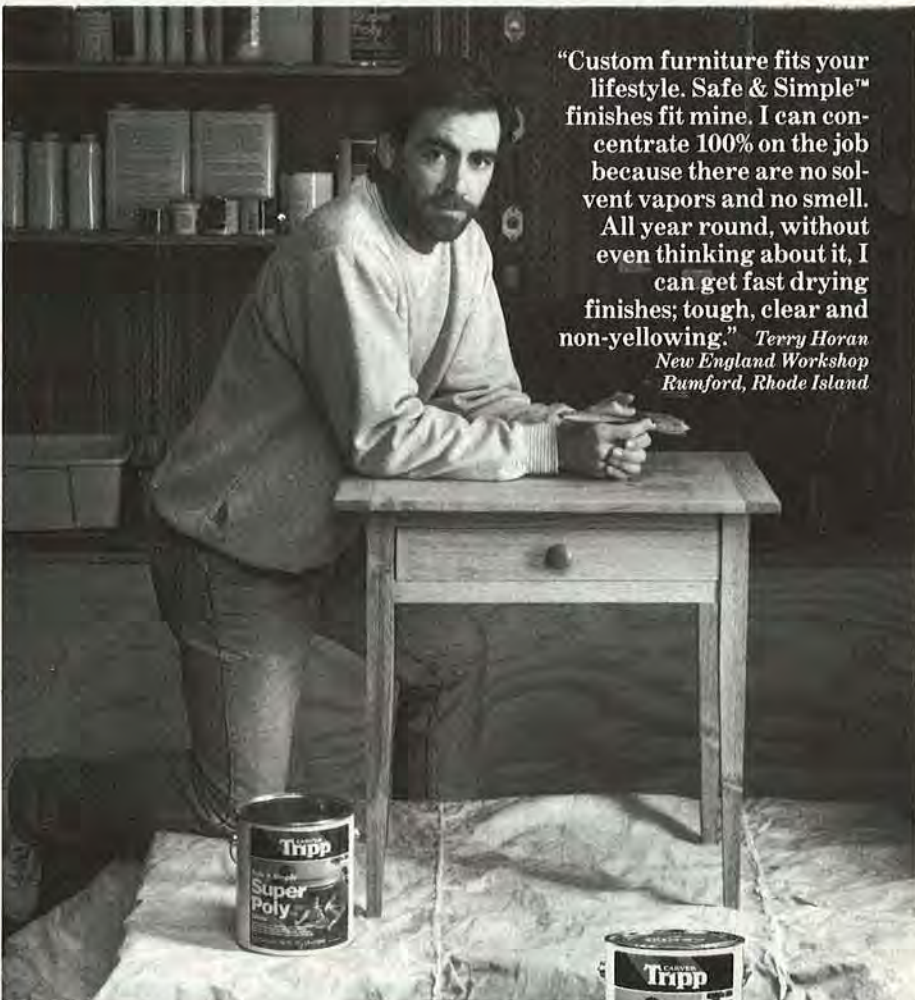
back. This design also made the bits less grabby when I backed the router into a workpiece. (With grain that's prone to tearing out, I feed the router backwards for the final cut to get the smoothest possible results.)

Next, I noticed that the entire bit (except for the carbide tips) appears to be smoothly machined from one piece of steel. A quick call to Carlo Venditto of CMT confirmed my observation. Although this process raises the manufacturing cost slightly, it makes the bit stronger and better-balanced than one that is cast.

So far as I know, no other router bits share the baked-on Teflon coating found on CMT bits. This orange-colored coating makes the bits easy to see—an important safety consideration. And, this coating may have also contributed to the excellent performance of a CMT dovetail bit that I tried. Teflon is supposed to reduce residue buildup and clogging; the CMT dovetail bit didn't clog the way that many other such bits do.

—Tested by Chuck Hedlund

*CMT router bits, about the same price as other high-quality router bits (a 3/8" rounding-over bit lists for about \$30). Contact CMT at 5425 Beaumont Center Blvd., Suite 900, Tampa, FL 33634. Call 800/531-5559 or 813/886-1819. ♣*



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Nutmeg is the ground seed of a tall and handsome tree called darah darah (*Myristica fragrans*). Until the late 1700s, the species grew only in the Moluccas, or Spice Islands, now part of Indonesia. It was from there that the surviving ship of Ferdinand Magellan's fleet returned to Spain in 1521. Most of the crew had starved, but the ship's hold was laden with spices, especially nutmeg, destined for the wealthy.

When Portugal wrested control of the Moluccas, its merchants distributed false maps so that spice traders from other countries would smash on the coral shoals. Eventually, the Dutch

claimed the islands from the Portuguese, and they cut down the darah darah trees on every island they couldn't defend. Carrying nutmeg seeds without authority even became punishable by death.

The Dutch hold on nutmeg lasted until the late 1700s, when the French planted smuggled seeds at their island colony of Mauritius in the Indian Ocean. When the British seized the Moluccas in 1796 and spirited away nutmeg seeds to Grenada in the West Indies, the spice wars ended.

Today, only the Moluccas and Grenada produce nutmeg. Because only the female trees bear fruit, growers harvest all males except a pollinating few. The easily worked, walnutlike wood becomes house framing, furniture, and millwork. But unlike globe-trotting nutmeg, darah darah wood remains mostly at home. 🌱

Illustration: Jim Stevenson

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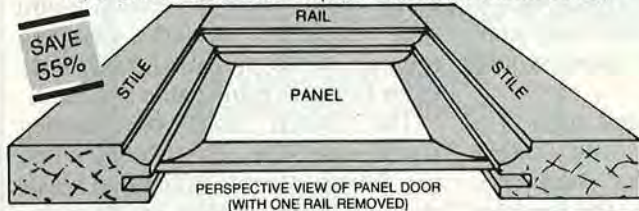
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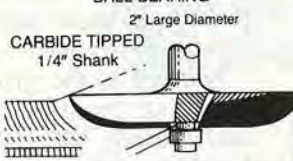
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#205		1/4" Cove	1/4" R	1"	1/2"	1/4"	\$12.00	
#206	3/8" Cove	3/8" R	1 1/4"	9/16"	1/4"	\$13.00		
#207	1/2" Cove	1/2" R	1 1/2"	5/8"	1/4"	\$14.00		
#643	1/2" Cove	1/2" R	1 1/2"	5/8"	1/2"	\$15.00		
#208	3/4" Cove	3/4" R	1 7/8"	3/4"	1/2"	\$26.00		
#231		5/32" Roman Ogee	5/32" R	1 1/4"	1 5/32"	1/4"	\$16.00	
#232		1/4" Roman Ogee	1/4" R	1 1/2"	3/4"	1/4"	\$17.00	
#506	1/2" Pattern	Flush Trim		1/2"	1"	1/4"	\$15.00	
#508	3/4" Pattern	Flush Trim		3/4"	1"	1/4"	\$17.00	
#366		1/8" Slot Cutter	3/8" Deep	1 1/4"	1/8"	1/4"	\$14.00	
#368		1/4" Slot Cutter	3/8" Deep	1 1/4"	1/4"	1/4"	\$14.00	
#204		3/8" Rabbeting	3/8" Deep	1 1/4"	1/2"	1/4"	\$13.00	
#670	3/8" Rabbeting	3/8" Deep	1 1/4"	1/2"	1/2"	\$14.00		

ITEM NO.	BEST CUT BEST PRICE	DESCRIPTION	ANGLE/DEPTH/RADIUS CIRCLE DIAMETER	LARGE DIA.	CUTTING LENGTH	SHANK SIZE	PRICE
#211		3/8" Core Box	round nose	3/8"	3/8"	1/4"	\$10.00
#212		1/2" Core Box	round nose	1/2"	1 1/32"	1/4"	\$13.00
#418		3/4" Core Box	round nose	3/4"	5/8"	1/4"	\$15.00
#213		1" Core Box	round nose	1"	3/4"	1/2"	\$17.00
#548		Lockmitre		2"	7/8"	1/4"	\$32.00
#214		1/4" Straight	plunge cutting	1/4"	3/4"	1/4"	\$ 6.50
#216		3/8" Straight	plunge cutting	3/8"	1"	1/4"	\$ 6.50
#474		1/2" Straight	plunge cutting	1/2"	1"	1/4"	\$ 7.00
#219		3/4" Straight	plunge cutting	3/4"	1"	1/4"	\$ 9.50
#779		3/4" Straight	plunge cutting	3/4"	1 1/2"	1/2"	\$10.00
#462		1/2" Bull Nose	1/2" Dia. of Circle		3/4"	1/4"	\$16.00
#464		3/4" Bull Nose	3/4" Dia. of Circle		1"	1/4"	\$21.00
#764		3/4" Bull Nose	3/4" Dia. of Circle		1"	1/2"	\$21.00
#545		Tongue & Groove	Straight	1 5/8"	1"	1/4"	\$29.00
#845		Tongue & Groove	Straight	1 5/8"	1"	1/2"	\$29.00
#546		Tongue & Groove	Wedge	1 9/16"	1"	1/4"	\$29.00
#846		Tongue & Groove	Wedge	1 5/8"	1"	1/2"	\$29.00
#450		1/8" Beading	1/8" R	3/4"	3/8"	1/4"	\$11.00
#233		1/4" Beading	1/4" R	1"	1/2"	1/4"	\$13.00
#454		3/8" Beading	3/8" R	1 1/4"	5/8"	1/4"	\$15.50
#455		1/2" Beading	1/2" R	1 1/2"	3/4"	1/4"	\$17.00
#500		3/8" Flush	Trimming	3/8"	1/2"	1/4"	\$ 7.00
#501		3/8" Flush	Trimming	3/8"	1"	1/4"	\$ 7.50
#503		1/2" Flush	Trimming	1/2"	1"	1/4"	\$ 8.50
#221		1/2" Flush	Trimming	1/2"	1 3/16"	1/2"	\$ 8.00
#558		Thumb nail		1 9/16"	3/8"	1/4"	\$18.50
#858		Thumb nail		2 1/2"	3/4"	1/2"	\$35.00
#579		Molding Plane		1 1/8"	1 3/4"	1/4"	\$31.95
#879		Molding Plane		1 1/8"	1 3/4"	1/2"	\$31.95

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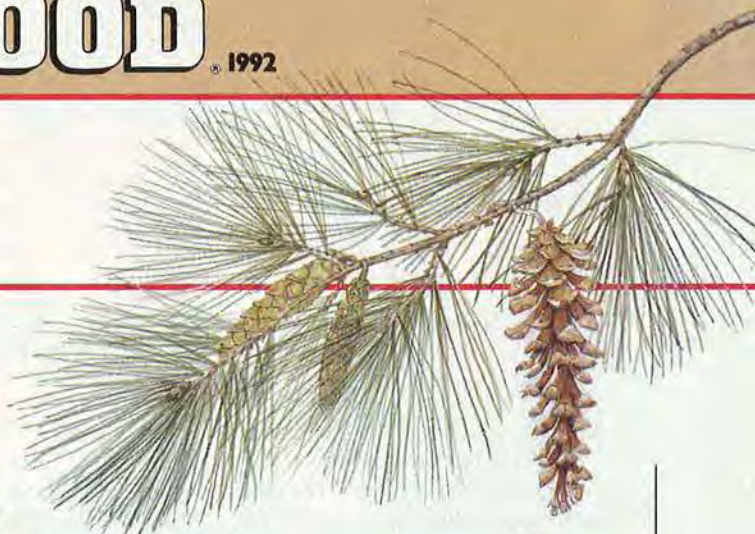
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# EASTERN WHITE PINE



**From coins to carpentry, it was colonial America's treasured tree**

**W**hen the Pilgrims arrived at what was to be called Massachusetts in 1620, stands of tall, stout eastern white pine grew everywhere. In fact, adults could stroll easily beneath them without ducking, since the pines were often branch-free for 40' or more of their 200' height.

Even Captain John Smith noticed more than Pocahontas in the New World, and wrote at length about the great storehouse of trees, not the least of which was the eastern white pine. In fact, this same towering conifer was chosen as the symbol of wealth on the first coin minted in the New World—the Massachusetts Bay Colony's pine-tree shilling.

Once estimated as a resource of some three-quarters of a *trillion* board feet, the eastern white pine became a favorite of New England settlers. They felled the trees in great numbers for sailing-ship masts, charcoal, and other items of commerce. But most of the timber went into homes and furnishings.

## Wood identification

Second only to California's sugar pine in size among the pines, the eastern white pine (*pinus strobus*), can, in old forests, reach 230' heights and diameters of nearly 10'. Today, though, white pines grown for lumber rarely reach 100' and a diameter of 2-4' before harvest. Yet, in their natural range from Manitoba to New England and southeastern Georgia, they are the fastest-

growing trees, shooting up 18" per year.

The eastern white pine, sometimes called northern white pine and soft pine, prefers deep, sandy-loam soils, but will grow anywhere with sufficient moisture—often in pure stands. With its straight trunk, irregular crown, and horizontally layered branches, you can spot this monarch easily. Up close, look at the 3-5" long, blue-green needles. They're in clusters of five. And the curved, narrow cones can be as long as 8".

The soft, fine-textured, and straight-grained wood of white pine varies in color from creamy white to red-brown, with little distinction between earlywood and latewood. Even with a finish, it mellows with age to a pumpkin color. Light, it weighs about 25 pounds per cubic foot air-dried, but is no stronger than basswood. The least resinous of all pines, eastern white pine remains quite stable while fulfilling many construction and woodworking needs.



Natural range



## Uses in woodworking

As did their pioneer ancestors, today's woodworkers can use eastern white pine for everything from house construction to furniture, carving to millwork, boats to musical instruments. And as "knotty pine," it's a favorite for bookcases and paneling.

## Availability

Although the wide, clear boards of yesteryear's woodworking stock are very seldom available today, most wood retailers in the Midwest and East carry eastern white pine. Expect to pay \$2 or more per board foot for furniture-grade. As 3/4" plywood, its cost can be \$60 or more.

*Continued*



## eastern white pine (*Pinus strobus*)



Eastern white pine

It's true that America's settlers relied heavily on eastern white pine—mainly because of the old-growth trees' yield of long, wide, clear boards. Today, it's a different story. The biggest, oldest trees were cut long ago, and today's white-pine lumber comes from second-, third-, fourth-, and even fifth-growth stands. This means narrower boards with more knots. So, when you buy white pine:

- Ask for No. 1 Common and Better, or No. 2 Common grades. Similar to hardwood grades, these yield 66⅔ percent and 50 percent clear cuttings respectively (tight knots are allowed).

- Specify only kiln-dried (to 8 percent or less) white pine for your furniture projects. Why? Kiln-drying increases stability and sets the resinous pitch that otherwise can aggravate gluing, or bleed through a finish.

### Machining methods

All pines are considered softwoods, but they actually fall into two categories: soft pines and

hard pines. White pine lists as a soft pine, and it's easily worked with all hand and power tools. *Keep these tips in mind, however:*

- Eastern white pine has less pitch in its wood than other pines, but gum buildup on cutting edges still occurs. To avoid burning and blade wander from gum buildup when ripping, stop sawing after every 50' or so to clean the saw's teeth with acetone and steel wool or oven cleaner. Better yet, make the switch to a Teflon-coated blade for this wood.

- The wood has little tendency to chip or splinter, so the only precaution necessary in machining white pine is to use a backing board when routing across the grain. If you'll be doing much routing, see the above note about gum buildup.

- Seal all knots in the wood with shellac before finishing to prevent bleed-through.

- When selecting a stain and clear finish, remember that white pine will naturally age darker.

- Even though white pine accepts

stains better than most other pines, first use a wash coat of shellac thinned with denatured alcohol to prevent blotchiness.

### Carving comments

- The difference in hardness (density) between earlywood and latewood is hardly noticeable when carving eastern white pine, a trait that also means that the wood can take fine detail.

- In thick carving stock, though, watch for resin that may bleed through a painted surface. Either let the completed carving season for a few weeks in a warm, dry place, or seal it with shellac before finishing.

### Turning tips

- As in carving, thick stock may contain resin canals in which the pitch has not set, and droplets may appear on the freshly turned surface. When dry, the hardened droplets can be scraped off.

### SHOP-TESTED TECHNIQUES THAT ALWAYS WORK

*Any exceptions and special tips pertaining to this issue's featured wood species appear under headings elsewhere on this page.*

- For stability in use, always work wood with a maximum moisture content of 8 percent.

- Feed straight-grained wood into planer knives at a 0° angle. To avoid tearing, feed wood with figured or twisted grain at a slight angle (about 15°), and take shallow cuts of about ⅓₂".

- For clean cuts, rip with a rip-

profile blade with 24–32 teeth. Smooth cross-cutting requires at least a 40-tooth blade.

- Avoid drilling with twist drills. They tend to wander and cause breakout. Use a backing board under the workpiece.

- Drill pilot holes for screws.

- Rout with sharp, preferably carbide-tipped bits and take shallow passes to avoid burning.

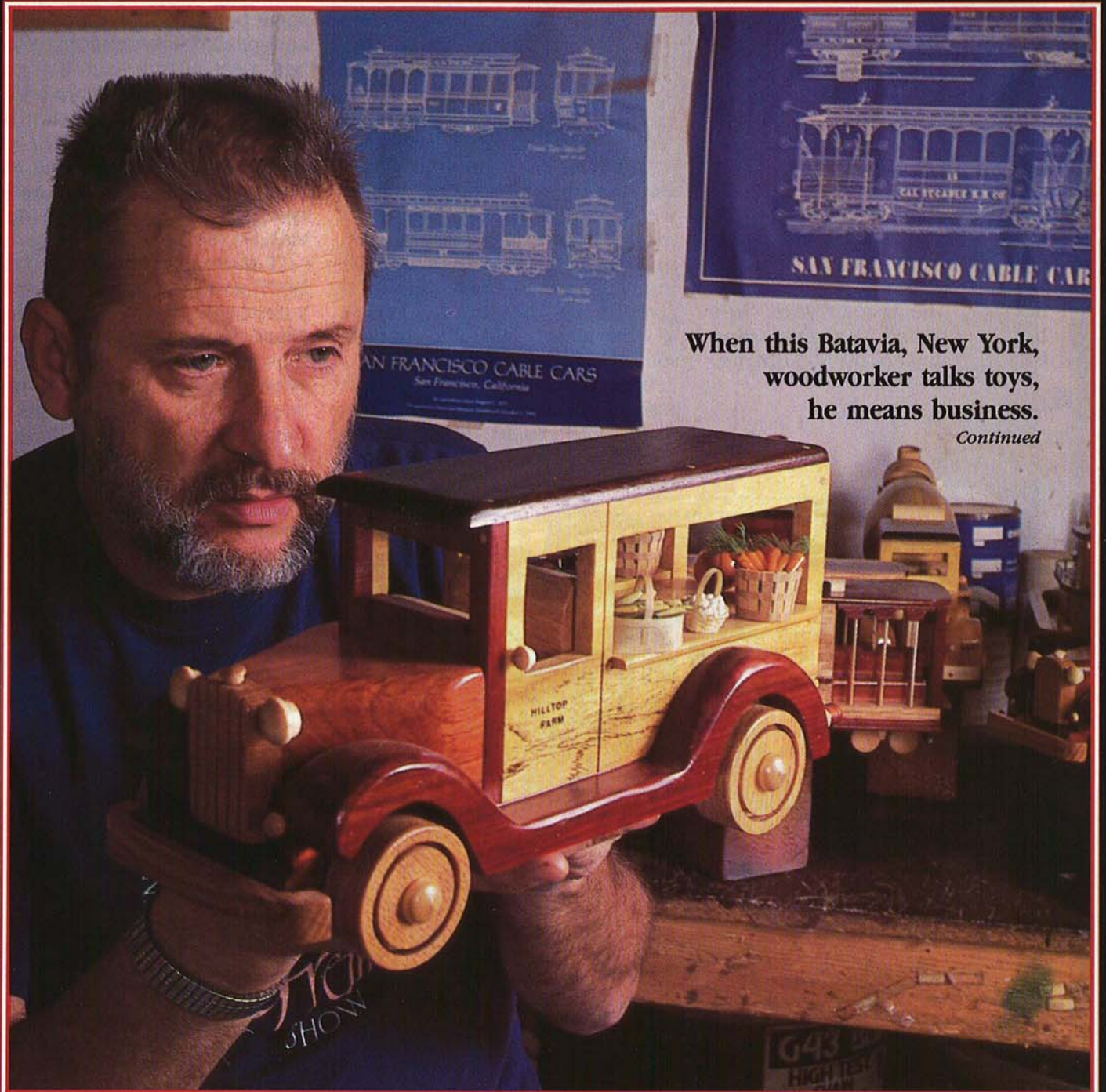
- Carving softwoods generally means fairly steep gouge bevels—20° or more—and deeper cuts.

### E. WHITE PINE AT A GLANCE

Cost	\$ \$ \$ \$ \$
Weight	
Hardness	T T T T T
Stability	
Durability	
Strength	
Toxicity	
Workability	
Look-Alike	Sugar pine



# TOYS BY HANK



When this Batavia, New York, woodworker talks toys, he means business.

*Continued*



# TOYS BY HANK

"I don't make one-offs. I build 18 to 20, maybe two dozen at a time," says Hank Gorczynski of his line of wooden toys. The 50-year-old woodworker sits on a stool by his workbench, carefully sanding a foot-long model of a 1931 Ford huckster.

After a minute, he sets it down, picks up a glass of ginger ale, and continues. "Before I start building, I figure out how many it takes of each model to carry me through a show. Right now, if I had a full inventory, I'd have well over 600 toys boxed up—in 24 to 27 different models!" Now, that's talking business.

Comfortable in his knit pull-over sweater, Hank exudes the confidence that comes with hard-won success. And why wouldn't he? Over the last 20 years, he's built a full-time, self-supporting business based on designing,

building, and selling wooden toys. But bringing \$85 or more apiece, these pricey playthings definitely aren't destined for the toy box. They're collector's items.

## From parcels to playthings

Twenty years ago, Hank wore the dark brown uniform of the United Parcel Service. He admits he made good money, but had little time he could call his own. And, frankly, he had always dreamed of working for himself.

"Sometime during the Christmas holidays in 1970, my sister-in-law visited from Baltimore. She was always into crafts, and as we were talking, she suggested that I try making wooden toys because they seemed to be selling well," recalls Hank. "I said I'd give it a try. The next day I went to the lumberyard and bought some redwood."

Back then, Hank's hobby was assembling scale-model kit cars—from metal! So he didn't have a shop full of woodworking tools. Fortunately, among those he did


own were a coping saw and an electric drill.

"At first I made some crude silhouette toys with wheels," he says, "but even they sold for a few bucks apiece. So, I bought a scrollsaw and started making more of them. There was a train set that sold for \$15—and that was a hot item. Then, I got into some bigger things, all pine now, and geared for children. I even had a set of little cars that came with a gas pump. People told me that their kids would play with those all day."

As Hank's woodworking skills improved, so did his sales and his business sense. But most important, so did his toys.

"I started staining a few of the better models I made, and added a clear coat of urethane to them," Hank remembers. "That brought their price up to about \$45. And what's funny, I noticed more women than ever were buying them. They weren't buying for children, but as collectibles."

Finally, in 1976, Hank turned in his UPS uniform. "It took six years to build up my confidence

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A cement truck like this won Hank a prize in *WOOD* magazine's 1991 Build-a-Toy contest.





enough to go on my own," he says. "It wasn't easy, and it still isn't. There's no guarantee in this business. It's tough, but it's what I want to do."

### Building what sells

In parade lineup, a full inventory of Hank's toys could practically stretch from goal line to goal line of nearby Buffalo's Rich football stadium. To see all those boats, planes, trains, trolleys, cars, and trucks spread out like that, you'd think there was absolutely nothing Hank couldn't build, and you'd probably be right. But there are things he *won't* build.

"Cars and trucks, as long as they have flat windows, you don't have to worry. They're buildable," he explains. "But in wood, you can't get into any models newer than the early forties. That's because they have too many curves: windows, fenders, flares. Forget it. For ease of cutting and building, you want rectangular, boxy shapes."

"Don't get me wrong," Hank cautions. "You *can* make later model, more rounded vehicles, but you'll never get your money out of them. For instance, I know of a guy who makes Corvettes from wood, and gets \$1,500 each. But he doesn't go around doing arts- and-crafts shows with those. If you want to spend the time, you can make any vehicle. Then, though, you have to get big bucks out of it, and there aren't that many people willing to pay the price."

So how does Hank make sure he never runs out of buildable, salable ideas? To fire his imagination, Hank dives into file drawers full of old car calendars and clippings of automotive advertising from yesteryear. He also attends antique car shows frequently, although not as a collector.



Hank uses templates to help him lay out the parts for a trolley car. With track, his trolley will bring \$125.

"I grab a camera and get maybe six shots of a car or truck I think would be good to make. You need all of the views you can get," he says. "In fact, when people give me a commission to make a special vehicle, I ask them for lots of photos. And you know, there's a good number of car collectors out there."

### Home on the assembly line

"One time, my neighbor asked me to rip a sheet of plywood for him. I had to turn him down because I don't have a way to do it," says Hank. "My shop is set up for small parts."

The toymaker's shop is actually two rooms in the basement of his

ranch house. The larger room, about 18x25', contains the stationary power tools. Next to it, a shorter, narrower room houses a long assembly bench, file cabinets, and storage shelves. "I do my finishing here, too, with spray Deft," Hank adds.

The layout of the larger room exemplifies a well-planned workshop. In the center of the room Hank lined up his machines in a bank—from the bandsaw at one end to the planer at the other. In between, there's a tablesaw, inflatable sanders, and a router table. For a cleaner work environment, Hank connected the machines—via metal duct—to a central dust-collector.

*Continued*



# TOYS BY HANK

"My Makita planer is the handiest machine I've got in the shop," says Hank. "That's because I resaw a lot, starting with five-four (1¼") stock. Then, I run the resawed boards through the planer to finished thicknesses of ¼", ⅜", 7/16", and ¾"."

Resawing demands a lot of time at the bandsaw, and there Hank has developed his own technique. "I guess I'm pretty much an unorthodox woodworker," he says, grabbing a 1¼" walnut board and stepping up to the bandsaw. "I don't believe in using a fence. Instead, I use my thumb and index finger as guides when I resaw. The trouble with a fence is that pressure from it on the wood, combined with blade wobble, gives you a slightly wavy cut. So, I just draw a line down

the length of the board, then follow it by eye." (Note: *WOOD* magazine recommends not using this technique.)

Hank, of course, relies little on pine these days. His toys feature naturally colorful tropical woods or exquisitely figured native ones. "There are about eight to 10 tropical woods and three native woods I use now," he says. "Among them are padauk, zebra-wood, lemonwood, satinwood, rosewood, lacewood, purple heart, gonalco alves, walnut, oak, and, of course, curly maple. And I often laminate them."

Hank also gives his bandsaw a workout crafting his secondary line—wooden nameplates. "Back in 1977, I decided I needed a crazy item to augment my toys at crafts shows. You know, the kind

of thing you can sell for a couple of dollars. Well, I did first names, and sold them for \$3. They went over big. Now, they're \$5, no matter how long the name. The longer the name, the better the deal. I'll sell more names at a show than someone who sells by the letter."

For nameplates, Hank works common pine. "I just rip a 1×6 board down the middle and use the halves cut to length. There's not much waste, and I can bandsaw about 35 names an hour."

## Have toys, will travel

When he turned pro, Hank had to learn what every full-time woodworker finds out: for every hour you spend in the shop, you have to spend at least another one selling. And for Hank, that means hitting the road.

"I've been doing 20 to 23 arts-and-crafts shows a year, but eventually, I'll be cutting back," he says. "For one thing, I don't like summer street shows out in the heat. The way it is now, my business generates from May through November, with June and September being my best months."



*Left.* Hank resaws all his wood at the bandsaw minus its fence, a technique *WOOD* magazine can't recommend. He believes that he gets a straighter cut.





*Left.* You'll find the inspiration for this tugboat still at work in the Lake Erie port of Buffalo, New York.

That means that during the summer I'm often gone seven weekends in a row, with a total of five days away from the shop for each trip. January and February are the only months I'm around home for any length of time."

Hank drives to each show in a full-sized van loaded to the roof, usually spending six to eight hours on the road to get there. And there's no guarantee he'll recover his expenses, let alone make a profit. "To go to a good show, with fees, travel expenses, and everything, I could have

\$800 tied up in a weekend and not know if I'll make even that amount back in sales," Hank says.

### Talking it up on the road

What about selling wholesale and skipping all the travel? Hank will tell you that wholesale has its own rules of the road. "If you sell wholesale, you have to stay home and produce to get the volume needed to make up for the 50 percent lower selling price. So, if you want to get full price for your work, you have to produce at home, then take it on the road to sell."

With the caliber of design and craftsmanship Hank brings to his creations, you'd think he'd have to turn customers away. But he'll tell you that it's not that easy.

"Today, people pay \$5 to \$6 to come through the show gate, and most of them don't know what they're looking at in terms of quality." Hank laughs, "I've had people come up and ask me 'Where do you buy this stuff that you're selling?' And some think I've made them from kits! So I have my pitch. First of all, I have to explain the exotic woods that I use—most people think the toys are either painted or stained." Again, Hank chuckles recollect-

ing. "Then, I have to point out where the woods come from—the different countries and where they are—and how I finish my toys, and all the rest that goes into it."

"But I guess the thing that really gets me—and it never fails to happen at each show I go to—is the man and woman who will typically look over my things carefully. The couple will seem real interested, especially the woman when I explain the woods and their expense. Then I'll hear the husband say, 'Oh, Honey, I can make you one of those little things in no time at all.'" Hank shakes his head as a sign of dismay. "Like I said before, this life isn't easy." ♣



*Above.* Hank's booth appeals to the kid in everyone. "In fact," says Hank, "about 25 percent of my sales I can attribute to the look of my booth."

### WRITE TO HANK FOR A BROCHURE

For your copy of a brochure describing Hank's toys, send a self-addressed, stamped, business-sized envelope to: *Batavia Wooden Toys, 12 Fordham Dr., Batavia, NY 14020.*

Written by Peter J. Stephano  
Photographs: Jerry Irwin  
Design: Perry McFarlin



# FOR SOME “HOLESOME” FUN, TRY

TIN

Looking for a way to lend an authentic appearance and distinctive flair to your country-style woodworking projects? Then, welcome aboard! Tin-punched panels will make most any project look as though it hails from the 1800s.



**B**efore the turn of the century, punched-tin panels not only were decorative, they were downright practical. In pie safes, the panels allowed air to circulate around the food while keeping flies out. Lanterns also were fashioned from punched-tin panels that allowed light beams to pass while blocking the wind and preventing it from blowing out the candle.

The simple technology and tools for punching tin have hardly changed since those days. But as we discovered while punching tin in the *WOOD*® magazine shop, there are plenty of little tricks you can use to guarantee a high-quality end product.

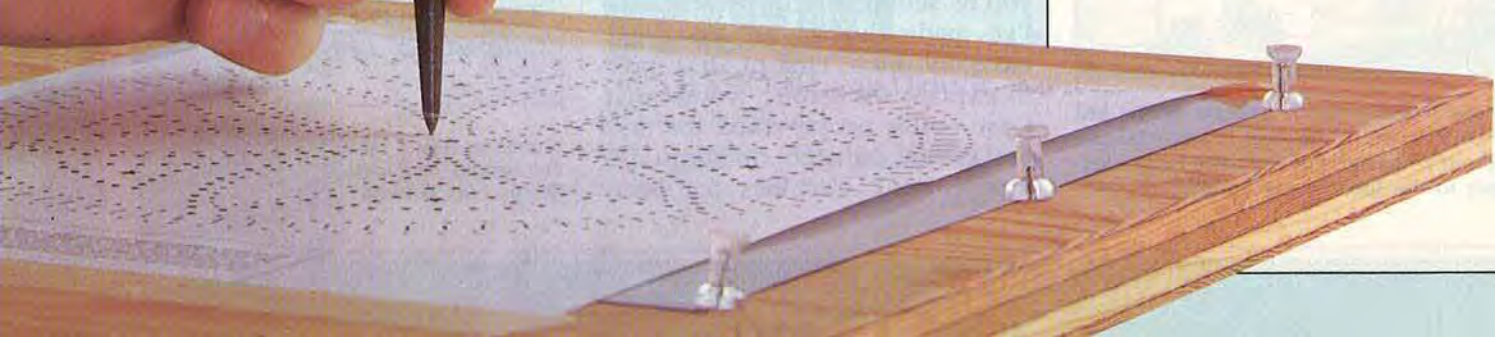
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## You'll need these tools and supplies

To get started, you may need to run out to your local grocery or hardware store for several items not found in most workshops:

- White cotton gloves for handling the tin panels. The gloves keep the tin's lead plating off your hands and your skin oil off the tin. Keep the gloves clean of oils.
  - Pushpins (like those in the photo *below*) for holding the tin in place atop a scrap of  $\frac{3}{4}$ " plywood.
  - Distilled white vinegar. The acid in vinegar dulls and darkens the lead in the tin plating to give the panels an aged look. One quart goes a long way.
  - A 2"-or-wider foam brush for applying the vinegar.
  - Semigloss or satin spray lacquer or polyurethane for sealing in the lead and protecting the punched and aged panel.
  - Tin panels. It's difficult to find tin locally these days, but you can order tin panels from Country Accents, a mail-order supplier of tin-punching materials. See the Buying Guide on *page 46*. When ordering, be sure to specify "old-look tin," a thin sheet of steel with a plating of 80 percent lead and 20 percent tin.
- We suggest you avoid so-called "black-tin" panels: heavier-gauge steel sheets without any plating. These panels are harder to punch, rust in no time at all, and do not

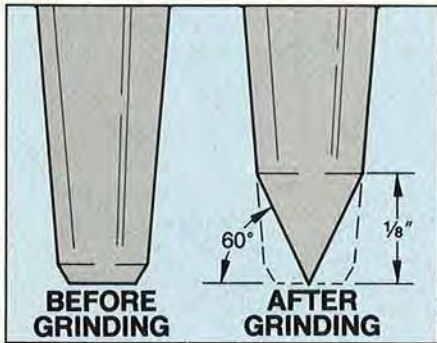




# PUNCHING

age as nicely as old-look tin. Likewise, you can purchase other sheet metals, such as galvanized steel and aluminum flashing, locally at relatively low prices, but these products will not give an authentic punched-tin look.

● **Punches.** You can make your own punch for round holes by grinding a  $\frac{1}{16}$ " nail set according to the before-and-after illustration below. With just this one tool you



can punch many patterns, but some designs require more varied tool tips such as those shown below. Grinding these shapes into various punches and chisels yourself can be difficult, if not impossible, so you're probably better off ordering them (see the Buying Guide on page 46).



A sampling of specialty punches and the holes they make. From left: C chisel, curved chisel, star punch, willow punch, and lampmaker's chisel.

## Start by preparing the tin panels

After your tin panels arrive, you'll notice that they have a light protective coating. Clean this away from both sides of the panel, using a rag dampened with mineral spirits or lacquer thinner as shown on page 45.

Then, lightly and evenly scuff both surfaces with 0000 steel wool. Be careful not to press too hard with the steel wool. Otherwise, you might put some scratches in the panel. Because the steel wool contains oil, you need to wash both sides of the panel with dish-washing soap after scuffing. Rinse away all traces of the soap with water.

From here on, you must be careful not to get any fingerprints, oils, or dirty smudges on either side of the panel. These contaminants may cause a splotchy appearance during the aging process, so remember to wear white cotton gloves whenever you handle the panel.

## Now, age the panels for that authentic look

At this point the tin panels look too shiny, so you need a way to dull and darken the surface. Here's a simple method.

After spreading some newspapers over your work surface, pour some vinegar into a clean, shallow container (a tuna or cat-food can works well). Saturate a foam brush with vinegar, and apply the vinegar to the panel in straight, overlapping strokes as shown below. Do not rebrush the vinegar once you have applied it. Work quickly and pause no longer than a second or two between strokes. Otherwise, the vinegar will react unevenly with the metal plating to create a streaked appearance. Leave the vinegar undisturbed for five minutes, then rinse the panel with running water and dry it with a clean, soft rag.

Repeat this procedure on the other side of the panel. Be careful not to get any vinegar on the side you just completed.

*Continued*



For an evenly aged panel, generously apply the vinegar in quick, overlapping strokes. Be careful not to allow vinegar to leak onto the opposite side of the panel.



# TIN PUNCHING

## Next, prepare the tin panel for punching

Before you start punching, you need to position the panel and pattern on a sturdy base of plywood that's larger than the panel by at least 1" all around. Because tin panels are cut from large rolls, they tend to have a slight bow. Place the panel, with the peak of its bow up, onto the base. The punching tends to counteract the panel's bow, and may actually cause it to bow the other way. After punching each panel, you'll need to punch the next panel over a new portion of the base.

Try to avoid low-quality plywoods with lots of voids beneath the surface. If you punch into one of these voids, the punch tip will go deeper than intended and create a hole that's too large.

Secure the tin panel to the base with at least six pushpins (see photo on page 45). Now, center the pattern on the panel and adhere it with masking tape.

## Woodworkers, start your punches!

You can start punching at any place on the pattern; just keep track of what holes you punch so you don't accidentally punch the same ones twice. Most patterns have both large and small round holes, but you can make both hole sizes with the same punch. Just strike the punch harder for the larger holes. Remember to punch all the holes of one size before punching all of the holes of another size. This will help you punch consistently sized holes. We had smashing good success with a 16-oz. hammer.

As you punch away, take your time and concentrate on cleanly striking the punch. If the hammer deflects off the punch, it will either strike your hand (ouch!) or put a dent in the panel (drats!). You also can lessen the chances of hammer deflection by grinding flat the head of the punch when it starts to mushroom from repeated hammer blows.



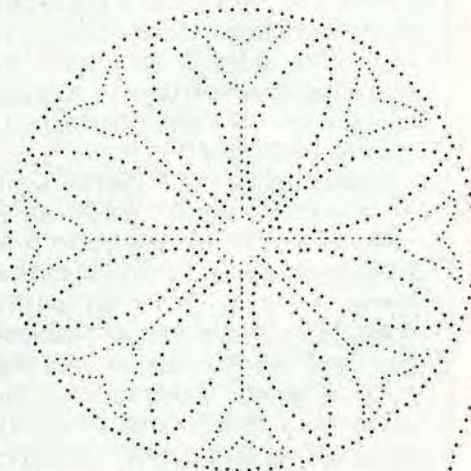
## GREAT DESIGNS FOR YOUR TIN-PUNCHING PLEASURE

We thought you would like some design options for the 10×10" panels in the pie safe on page 47, or some other project you have in mind. So, we had the five original patterns below drawn up. You

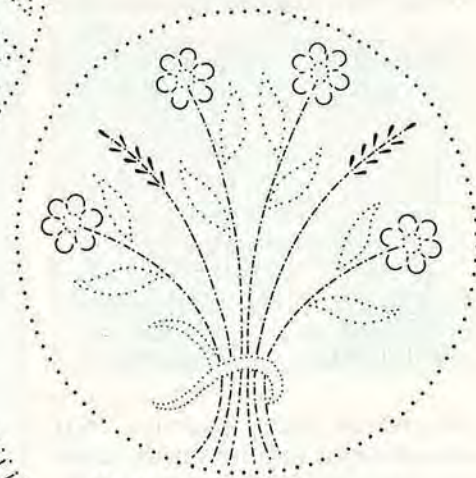
can order full-sized patterns for \$1 each and make your own copies (you need one pattern for each panel). Or, send \$3.50 for four copies of one design or one copy each of four different designs.

### PATTERN POSSIBILITIES

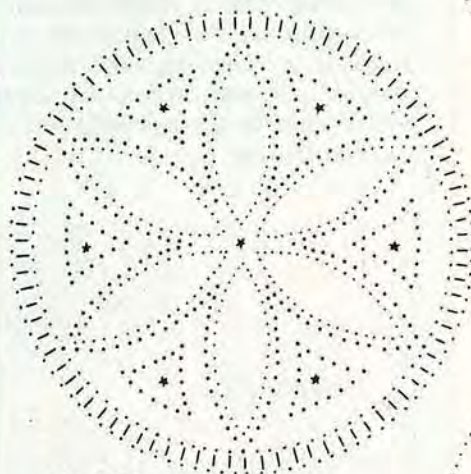
All patterns require a sharpened 1/16" nail set. Required special tools are noted next to pattern. See Buying Guide on page 46 for prices.



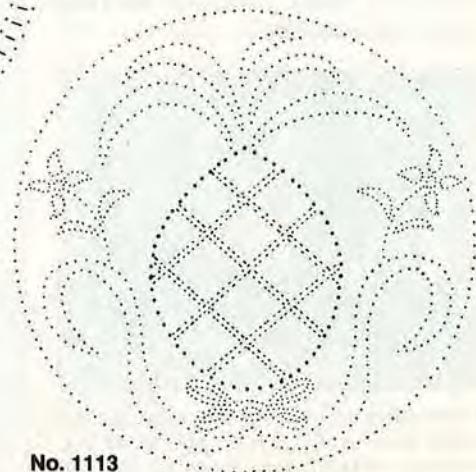
No. 1041



No. 1042-C  
Special tools required:  
T-0259 mini chisel  
T-0459 3/16" "C" chisel  
T-1181 willow punch



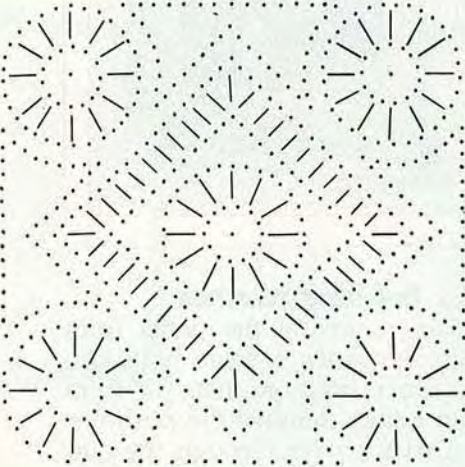
No. 1074  
Special tools required:  
T-0259 1/4" chisel  
T-0759 star punch



No. 1113



Note that three of the patterns require special tools other than a sharpened nail set. To order, send a stamped, self-addressed, business-size envelope to the Country Accents address on *page 46*.

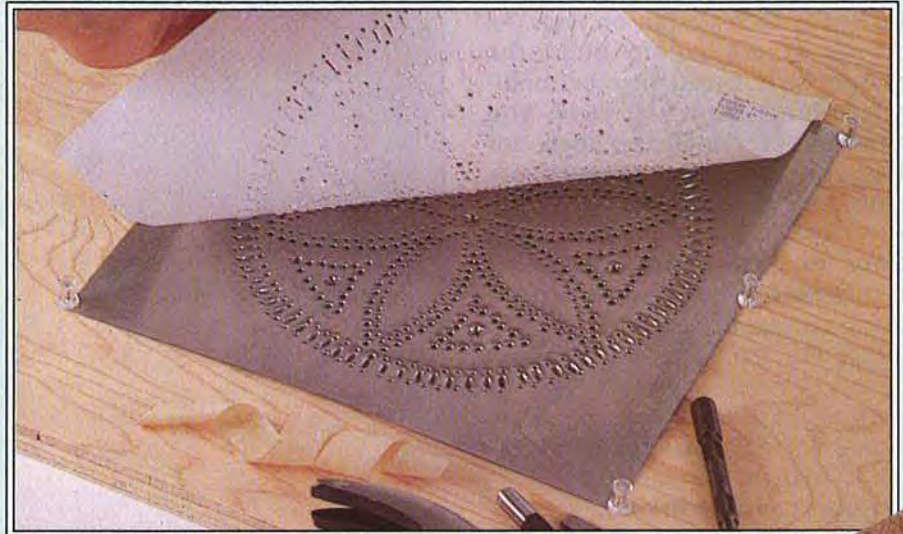


**No. 1017-A**  
Special tool required:  
T-0259 7/16" chisel

Even a simple panel can take 20 minutes or so to punch, and your eyes and arms can become quite fatigued. We found that the longer we worked, the more mistakes we made, so for best results we suggest you take good, long breaks between panels.

After you've finished the punching, remove all but one of the pieces of masking tape holding the pattern in place. Lift the pattern up, and inspect for any missed holes as shown *below*. If necessary, replace the pattern.

*Continued*



Before completely removing the pattern, check for holes you may have missed.





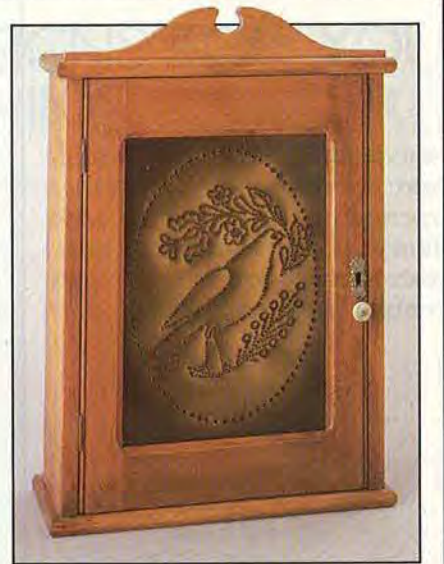
# TIN PUNCHING

## A FEW OTHER PROJECT POSSIBILITIES

Although punched-tin panels show up mostly in pie safes, you can use them in a variety of other projects such as kitchen cabinetry, buffets, dry sinks, back-lit signs, and painted plaques such as the Teddy-Bear design on *page 74*. If you would like to build the country-style bread box or medicine cabinet shown at *right*, you can buy prepunched panels for these projects from Country Accents (see the Buying Guide *below right*). And, we'll send you plans for either project for \$2 each (\$3 for both). Just send a

self-addressed, No. 10-size (4×9½") envelope, and a check or money order to:

**Terrific punched-tin patterns**  
**WOOD Magazine®**  
**Box 11454**  
**Des Moines, IA 50309-1454**



## The finishing touches

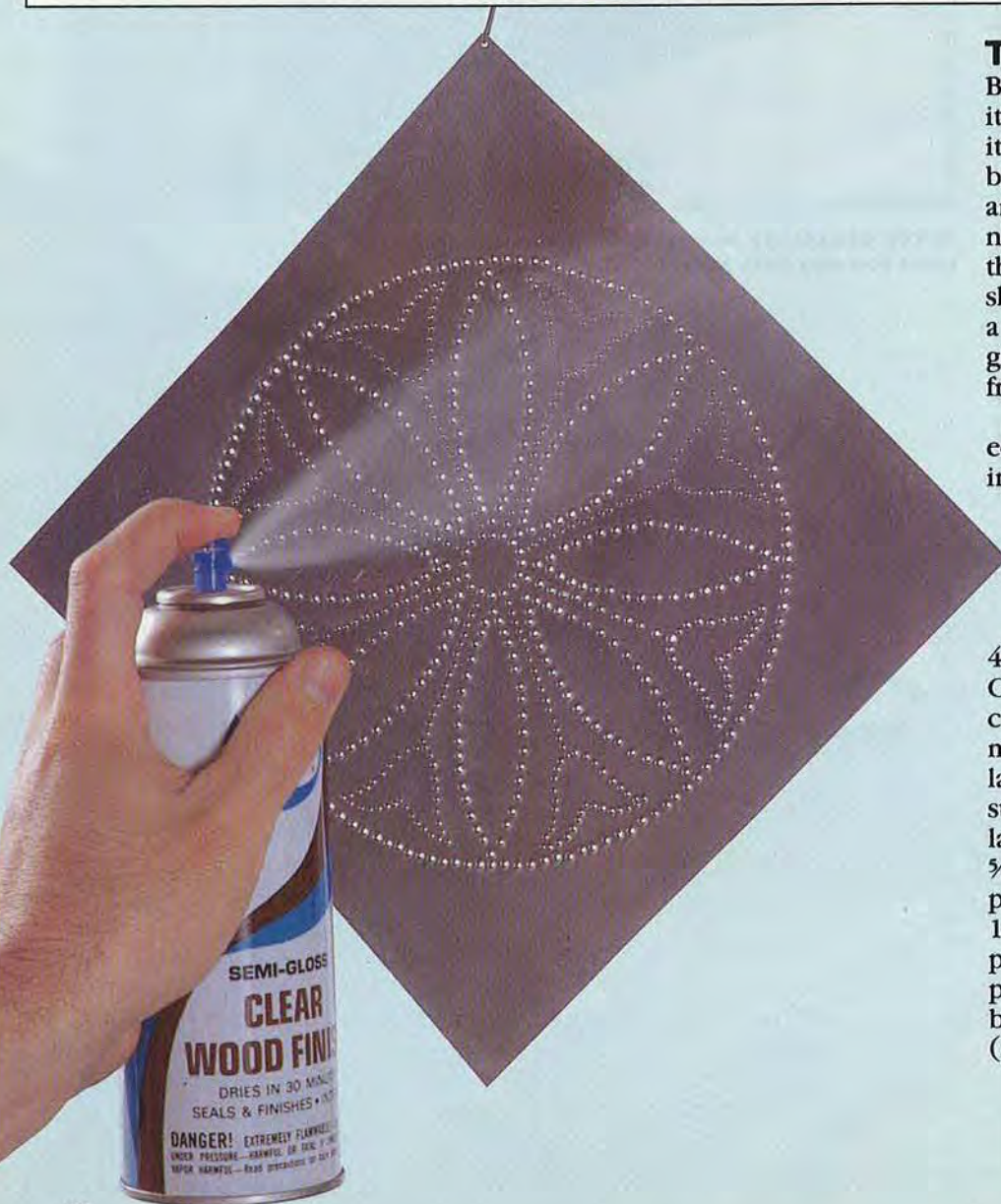
Before removing the panel from its base, punch a small hole into its corner, no more than ¼" from both edges. Remove the pushpins and pass a wire through the corner hole. Use this wire to suspend the panel for spray finishing as shown at *left*. Apply two coats of a clear finish (we prefer semi-gloss or satin finishes) to both the front and back of the panel.

See *page 50* of the pie-safe project for a typical means of installing a punched-tin panel.

## Buying Guide

• **Metal panels, punching tools, and punched-tin patterns.** Country Accents, Box 437, Montoursville, PA 17754. Call 717/478-4127. Prices for specific items: T-0259 7/16" lampmaker's chisel, \$7.85; T-0259 ¼" lampmaker's chisel, \$5.95; T-0759 star punch, \$18.90; T-0259 mini lampmaker's chisel, \$4.95; T-0459 5/16" C chisel, \$11.90; T-1181 willow punch, \$9.85; prepunched 14×10" zinc-plated bread-box panel (item RP-1108), \$17.80; prepunched 10×14" antique-brass medicine-cabinet panel (item RP-1166), \$35.75. ♣


Written by Bill Krier with Jim Boelling  
Photographs: Scott Little  
Illustration: Kim Downing



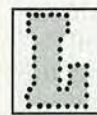




# PIE SAFE

 Print this article

## JUST LIKE GRANDMA USED TO HAVE



Long before iceboxes became a common household item, frugal homemakers everywhere stored their breads and pastries in a pie safe. The pie safe's decorative punched-tin panels allowed ventilation that retarded molding, and protected baked goods from flies and rodents at the same time. It also added a little spice to the kitchen's decor.

Our 14 × 20 × 59¼" pine replica does the same thing, but as you can see, it holds a lot more than pies and pastries.

*Note: Unless you already know how to punch tin, see the preceding technique article for our step-by-step instructions. Also, take a*

*look at the Buying Guide at the end of this article for our source of blank and prepunched tin panels. Or, if you want to save a few dollars (and obtain a little different look), use wood panels in the side-frames, where shown in the inset photo at left.*



*Continued*







## Begin with the face frame

**1** From  $\frac{3}{4}$ "-thick kiln-dried pine (we used #2 common), cut the two stiles (A), top rail (B), and bottom rail (C) to the sizes listed in the Bill of Materials.

**2** Taper-cut the bottom inside edge of each stile (A) where shown on the drawing below.

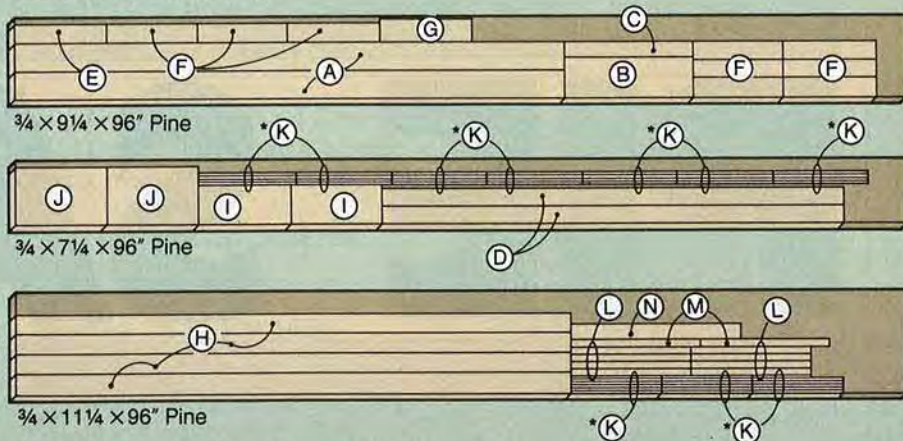
**3** Lightly dry-clamp (don't glue) the rails between stiles where shown on the Face Frame drawing below. Then, using a square, carefully make the dowel-hole alignment marks where dimensioned on the Face Frame drawing and as shown in Photo A. Remove the clamps.

**4** Align a doweling jig with the marked centerlines, and drill  $\frac{3}{8}$ " holes  $1\frac{1}{16}$ " deep as shown in the Photo B. (We wrapped masking tape around our drill bit to make sure we drilled all holes to the same depth.)

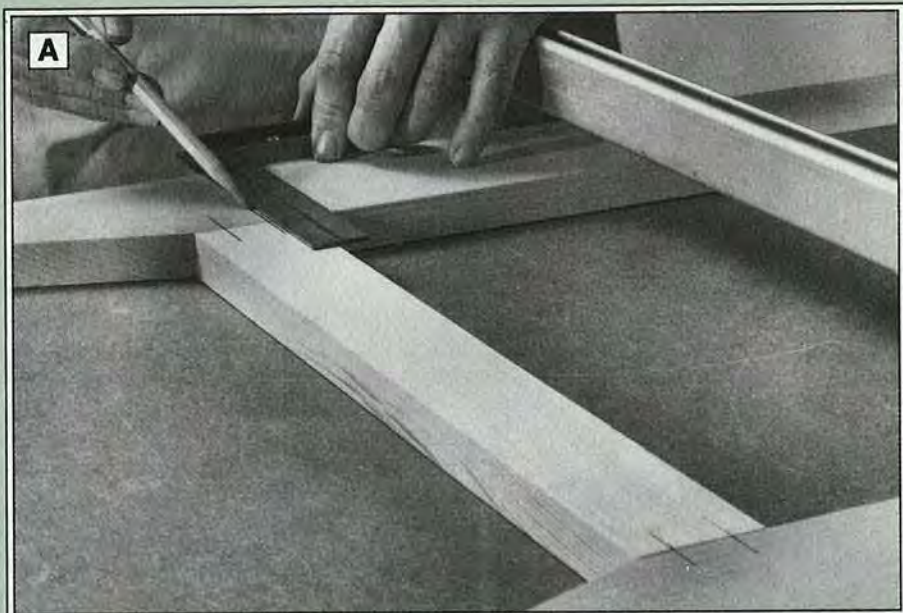
**5** Glue, dowel, and clamp the rails between the stiles. Check for square, and make sure that the assembly lies flat. Wipe off the excess glue with a damp cloth.

*Continued*

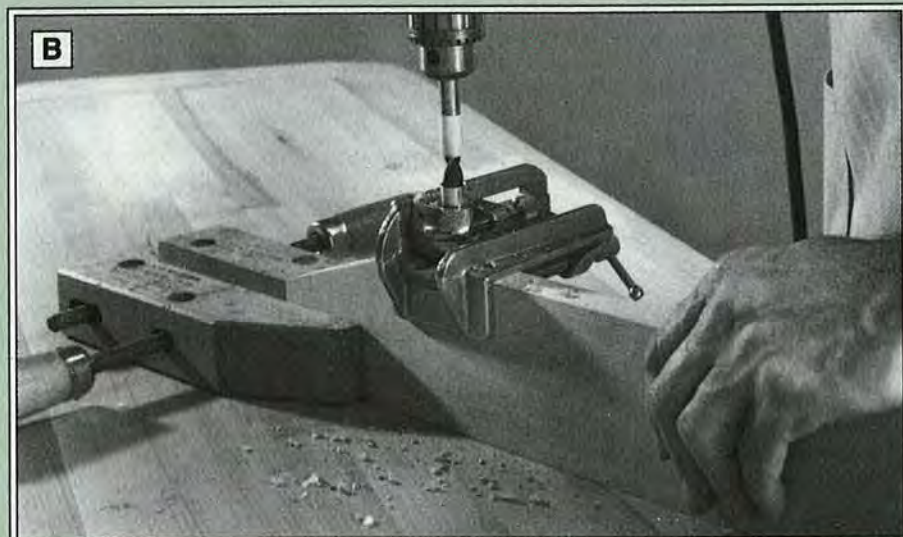
## CUTTING DIAGRAM



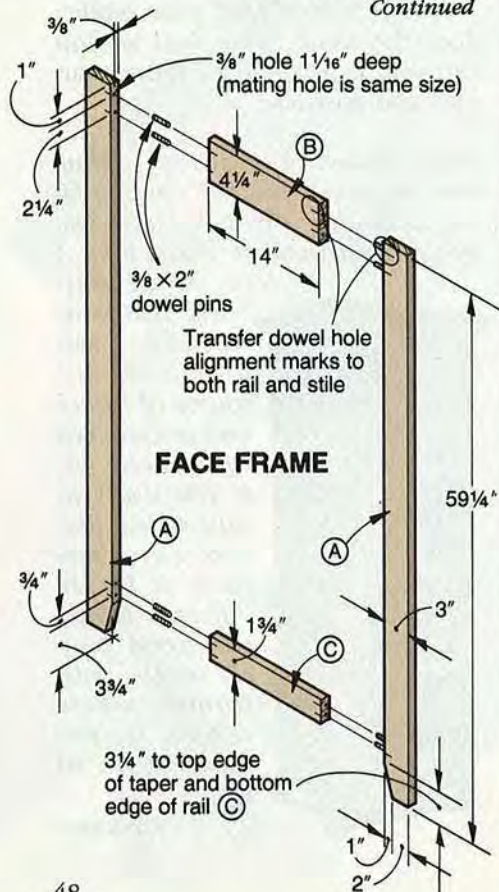
\*Plane or resaw to size listed in the Bill of Materials



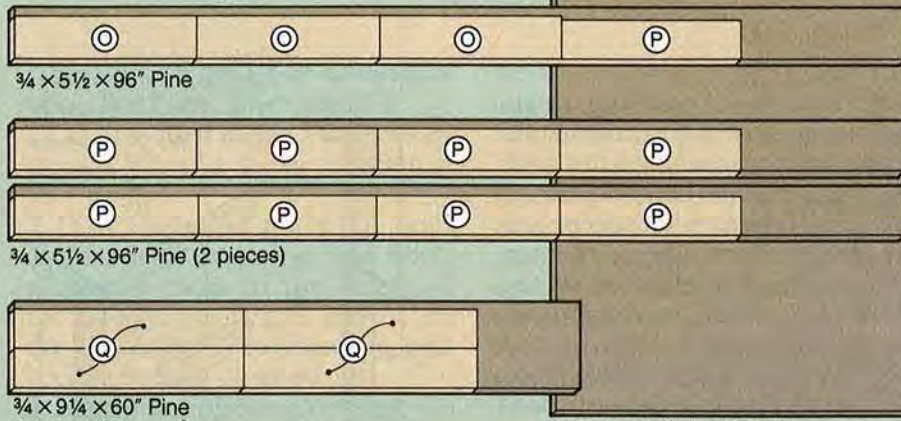
Dry-clamp the frame pieces, and use a square to make the dowel-hole alignment marks on both mating pieces.



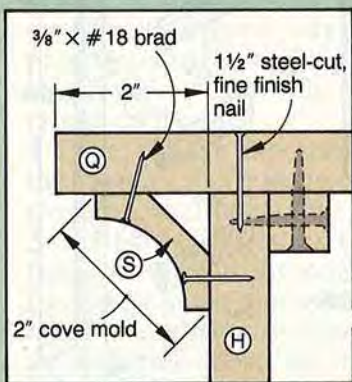
Using a doweling jig for proper alignment, drill  $\frac{3}{8}$ " dowel holes  $1\frac{1}{16}$ " deep in the face frame pieces where marked.







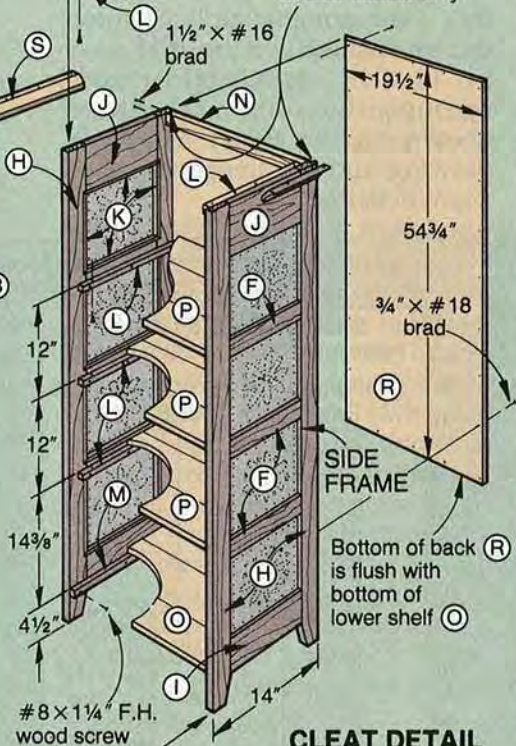
$\frac{1}{4} \times 48 \times 96$ " Fir Plywood



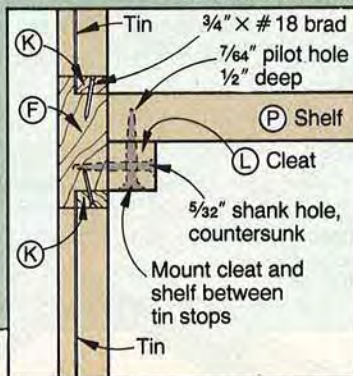
**COVE DETAIL**



$\frac{1}{4}$ " rabbet  $\frac{1}{2}$ " deep on inside back edges of side frames only



**CLEAT DETAIL SECTION VIEW**



(R)

**Bill of Materials**

Part	Finished Size*			Mater.	Qty.
	T	W	L		
<b>FACE FRAME</b>					
A stiles	$\frac{3}{4}$ "	3"	$59\frac{1}{4}$ "	P	2
B rail	$\frac{3}{4}$ "	$4\frac{1}{4}$ "	14"	P	1
C rail	$\frac{3}{4}$ "	$1\frac{3}{4}$ "	14"	P	1
<b>DOOR AND SIDE FRAMES</b>					
D stiles	$\frac{3}{4}$ "	$2\frac{1}{8}$ "	$49\frac{3}{4}$ "	P	2
E rail	$\frac{3}{4}$ "	$2\frac{1}{8}$ "	$9\frac{1}{2}$ "	P	1
F rails	$\frac{3}{4}$ "	$2\frac{1}{4}$ "	$9\frac{1}{2}$ "	P	9
G rail	$\frac{3}{4}$ "	$2\frac{7}{8}$ "	$9\frac{1}{2}$ "	P	1
H stiles	$\frac{3}{4}$ "	$2\frac{1}{4}$ "	$59\frac{1}{4}$ "	P	4
I rails	$\frac{3}{4}$ "	$4\frac{3}{4}$ "	$9\frac{1}{2}$ "	P	2
J rails	$\frac{3}{4}$ "	$6\frac{1}{2}$ "	$9\frac{1}{2}$ "	P	2
K* stops	$\frac{1}{4}$ "	$\frac{1}{2}$ "	10"	P	48
<b>CLEATS</b>					
L shelf	$\frac{3}{4}$ "	$\frac{3}{4}$ "	$12\frac{3}{4}$ "	P	8
M bottom	$\frac{3}{4}$ "	$\frac{3}{4}$ "	$13\frac{3}{4}$ "	P	2
N back	$\frac{3}{4}$ "	$1\frac{1}{2}$ "	$18\frac{1}{2}$ "	P	1
<b>EDGE-JOINED PARTS</b>					
O* bottom	$\frac{3}{4}$ "	$13\frac{3}{4}$ "	$18\frac{1}{2}$ "	EJP	1
P* shelves	$\frac{3}{4}$ "	$12\frac{3}{4}$ "	$18\frac{1}{2}$ "	EJP	3
Q* top	$\frac{3}{4}$ "	$16\frac{3}{4}$ "	24"	EJP	1
<b>BACK</b>					
R back	$\frac{1}{4}$ "	$19\frac{1}{2}$ "	$54\frac{3}{4}$ "	FPly	1
<b>MOLDING AND OPTIONAL PANELS</b>					
S sides	$\frac{3}{4}$ "	2"	$16\frac{1}{4}$ "	PCM	2
T front	$\frac{3}{4}$ "	2"	23"	PCM	1
U panels (opt.)	$\frac{1}{4}$ "	10"	10"	EJP	8

\*Initially cut parts marked with an \* oversized. Then, trim each to finished size according to the how-to instructions.

**Material Key:** P-pine

EJP-edge-joined pine

FPly-fir plywood

PCM-pine cove molding

**Supplies:**  $\frac{3}{8}$ " x 2" dowel pins, #8 x  $1\frac{1}{4}$ " flat-head wood screws,  $\frac{3}{4}$ " x #18 brads,  $1\frac{1}{2}$ " x #16 brads, stain, finish.





## Next, make the door and side frames

**1** Cut the door stiles (D) and rails (E, F, G) to size. Note in the Bill of Materials that you need to cut 9 F's. Set aside six of them for building the side frames later.

**2** Using the method just described, make the dowel-hole alignment marks, drill the holes, and then glue, dowel, and clamp the door frame together. Check for square, and make sure the assembly clamps flat.

**3** Cut the side-frame stiles (H) and rails (I, J) to size. Mark and taper-cut the bottom inside edge of each stile. Make the dowel-hole alignment marks, drill the holes, and then glue, dowel, and clamp each side frame. Again, check for square, and make sure that the assembly clamps flat.

**4** Cut or rout a  $\frac{1}{4}$ " rabbet  $\frac{1}{2}$ " deep along the back inside edge of the side frames to accept the plywood back (R) later.

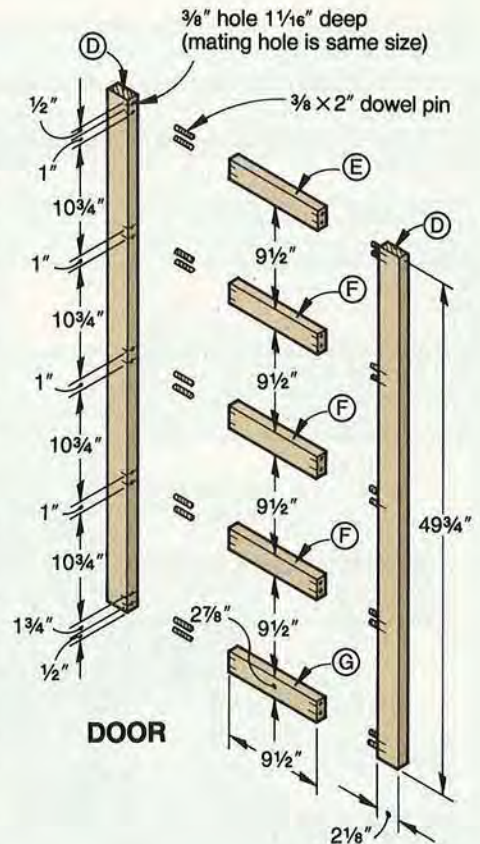
**5** Fit your router with a  $\frac{1}{4}$ " rabbeting bit. Rout a  $\frac{1}{4}$ " rabbet  $\frac{1}{2}$ " deep along the back inside edge

of the door-frame openings to accept the punched-tin panels later. Repeat the process along the back inside edge of all panel openings in the side frames to accept the punched-tin or wood panels later.

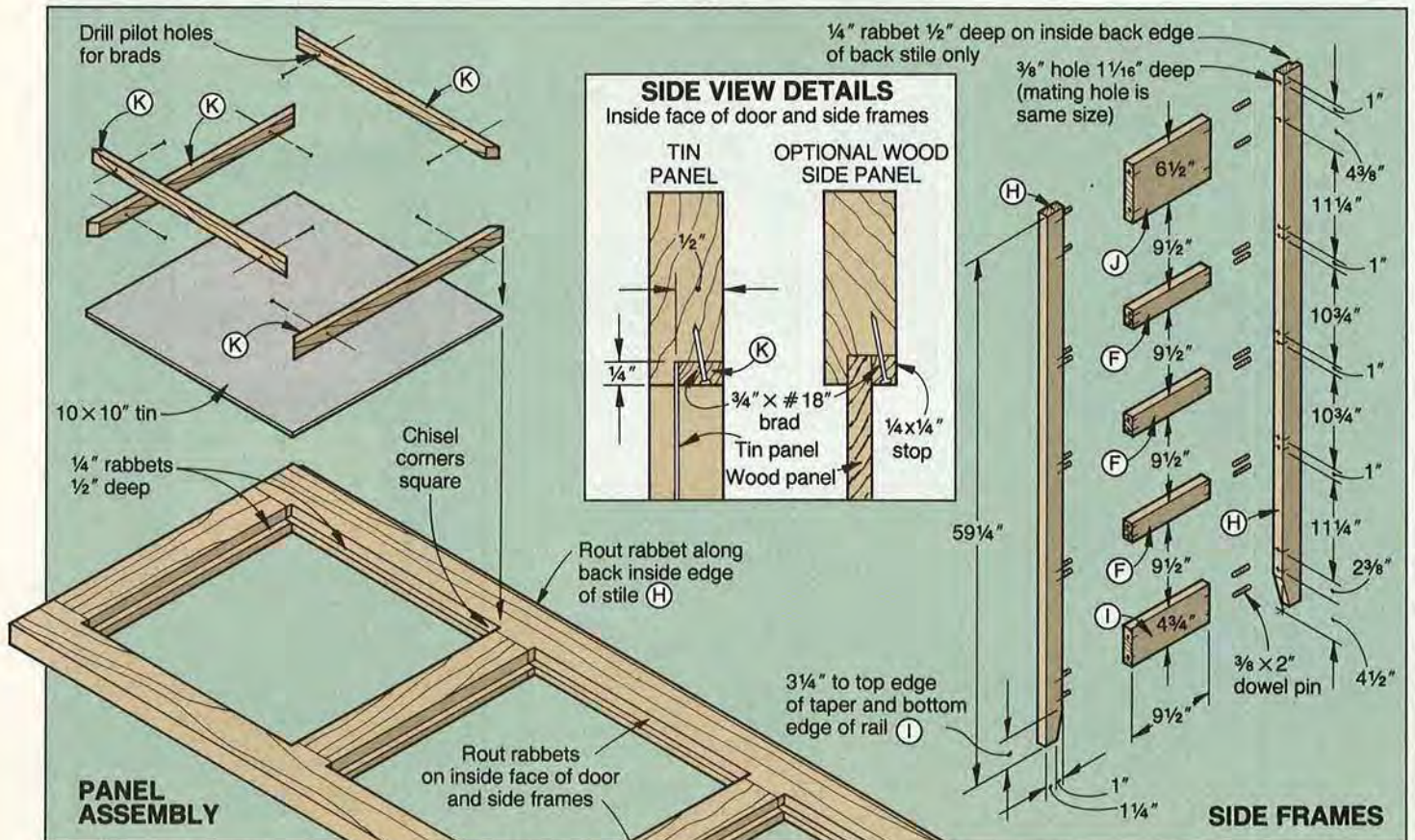
**6** Use a sharp chisel to square the round routed corners in the door- and side-frame openings.

**7** Rip and then miter-cut the stops (K) for all the punched-tin panels. (We planed  $\frac{3}{4}$ "-thick pine to  $\frac{1}{2}$ " thickness, and then ripped  $\frac{1}{4}$ "-wide strips from the edges for the  $\frac{1}{4} \times \frac{1}{2}$ " stops.) If you plan to use the solid-wood panels, cut stops to  $\frac{1}{4}$ " square and to the same length as those used for the punched-tin panels.

**8** Snip the head off a  $1\frac{1}{2} \times \#16$  brad, and chuck the headless brad into your portable drill. Sharpen the point, and use the brad as a bit to drill angled pilot holes through the stops (K) where shown on the Panel Assembly drawing and accompanying Side View detail below.



DOOR





## It's time to add the cabinet's top, bottom, and shelves

**1** Cut the shelf cleats (L), bottom cleats (M), and upper back cleat (N) to size.

**2** Drill mounting holes (in both directions), and screw (but don't glue) the cleats to the inside of the side frames where shown on the Exploded View drawing and accompanying Cleat detail.

**3** Edge-join enough stock for the bottom (O), shelves (P), and top (Q). Cut the individual pieces oversized so each edge-joined panel measures an extra 1" in length and 1/2" in width. Glue and clamp each panel.

**4** Later, remove the clamps, trim the bottom (O) to its finished size, and sand it smooth.

**5** With the edges of the face frame flush with the outside surface of the sides, glue and nail the face frame to the side frames. (For an authentic look, we used old-fashioned steel-cut nails, commonly called square nails. See the Buying Guide for our source.

When you use these, be sure to align the rectangular head of each nail with the grain to lessen the chances of splitting the wood.)

**6** Screw the bottom (O) in place to help hold the assembly square while the glue dries. Check for square. Nail the upper back cleat (N) in place.

**7** Measure the openings, and cut the shelves (P) to finished size. Trim the top (Q) to size. You want the top to overlap the front face frame and side panels by 2". Sand the parts smooth.

**8** Center the top (Q) from side to side on top of the assembly, and align its back edge flush with the back edge of the cabinet. Nail it in place (without glue), using the 1 1/2" steel-cut nails. Then, working from the inside of the cabinet, drive screws through the two top cleats (L) into the bottom surface of the top panel (Q).

**9** Measure the routed opening, and cut the back (R) to size from 1/4" fir plywood.

## And lastly, add the molding, and finish your pie safe

**1** As shown in the drawing at left, miter-cut the side cove molding pieces (S) and front cove molding piece (T) to the length listed in the Bill of Materials. (We purchased 2" pine cove molding at a local homecenter for these pieces. Then, as shown in the drawing at left, we angled the miter saw 45° from center, supported the flat areas of the molding against the miter saw table and fence, and miter-cut the pieces to length.)

**2** Using the Cove detail accompanying the Exploded View drawing for reference, nail the cove moldings (S, T) to the cabinet and to the top (Q).

**3** Finish-sand the pie safe cabinet, door, stops, shelves, and wooden side-panel inserts if you're using them. Remove the sawdust (we used our shop vacuum and a tack cloth) from the cabinet and the other parts. Finish the pieces as desired. (We chose a distressed antique look. For more informa-

tion on this process, see the article on the next page titled "How to Make Your Pie Safe Look Like an Antique."

**4** If you've decided on wood panels for the side frames, edge-join enough 1/4" pine stock (we planed thicker stock) for eight panels (U) for the side frames. (Because we wanted 1/4" panels with two good faces, we shied away from using 1/4" plywood.)

**5** Punch the tin panels, using the technique and pattern shown in the previous article. Install the tin panels, and then nail the stops (K) in place.

**6** Install the shelves (P) and screw them in place. Attach the hinges and fasten the latch to the door where shown on the Exploded View drawing. Nail the back (R) in place. Finally, bake a few pies, and head to the store for some ice cream while they cool slowly in your new pie safe.

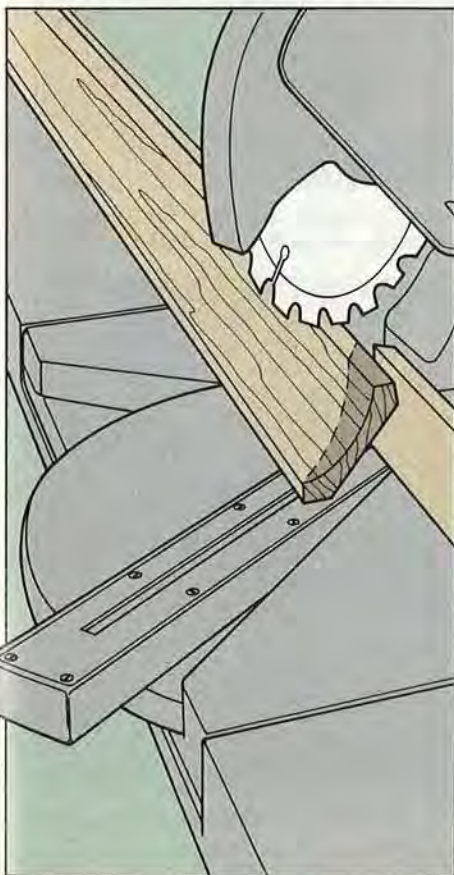
## Buying Guide

• **Old-look tin panels.** 4—10×10" blank panels (unpunched) for \$17.39 ppd., 12 blanks for \$45.40 ppd. Or, if you prefer to buy prepunched panels, order 4—10×10" RP-1041 panels, \$55 ppd., or 12 panels for \$157 ppd. Country Accents, P.O. Box 437, Montoursville, PA 17754. Prices are for continental U.S.; elsewhere, please call for quotes. Catalog \$5. To order, call 717/478-4127.

• **Hardware.** Two pairs of 3/4×2" antique finish no-mortise hinges, and one cast iron latch with catch. Kit, no. 71161, \$9.50 ppd. Geneva Specialties, P.O. Box 636, Lake Geneva, WI 53147. Or, call 800/556-2548 to order.

• **Old-fashioned steel-cut nails.** 4d, fine finish nails, 1 1/2" long. 1 pound box (approx. 322 nails), \$10.95 ppd. Tremont Nail Co., P.O. Box 111, Wareham, MA, 02571. Or call 508/295-0038. ♣

Produced by Marlen Kemmet  
Project Design: James R. Downing  
Photographs: Hopkins Associates  
Illustrations: Kim Downing; Mike Henry  
Photo Stylist: Nancy Briggs





# HOW TO MAKE YOUR PIE SAFE LOOK LIKE AN ANTIQUE



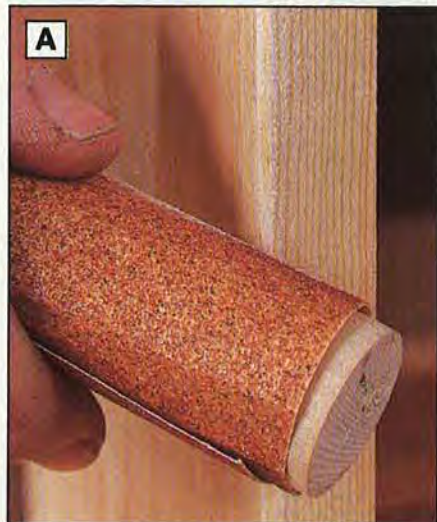
 Print this article



To make a natural wood surface look old, as we did with the pie safe on *page 47*, follow the following steps:

**1 Distress the piece** by scratching and denting parts of the cabinet where the original piece would have received the greatest wear through the years. For the pie safe, this would have been near the feet, edges and top, and around the latch. We used a ball peen hammer to make dents, a screwdriver for scratches, and a rasp to scuff areas of heavy use. As shown in Photo A, round over the edges and corners with 80-grit sandpaper wrapped around a 1" dowel. For a natural "worn" look, remember to sand the edges unevenly from spot to spot.

**2 Apply a dark stain** to areas such as the base of the legs, around the latch, and other places along edges where dirt would likely accumulate over time as shown in Photo B. Add the same stain to scratches and nicks to accentuate these blemishes. For greater controllability when applying, we prefer gel stains.



For an edge-rounding tool, wrap 80-grit sandpaper around a 1" dowel.

**3 Apply a lighter stain** to the remaining areas, and blend the stains where they meet. Let both stains sit for a few minutes, then wipe away the excess.

**4 Lighten heavily worn areas** with paint thinner *before* the stain dries, as shown in Photo C. The thinner partially removes stain to simulate wear the pie safe would have incurred over time.

**5 Add a bit more character** by spattering the surface. To achieve this accent (called "fly specks" by

some), first mix two parts gel stain with one part mineral spirits in a shallow container. Then, dab an old toothbrush, or a paintbrush with the bristles trimmed to 1/2" long, into the mix. Practice your spattering technique on a piece of paper before trying it on the pie safe. Place the brush about 6" away from the paper, and run your finger through the bristles as shown in Photo D. Don't overdo it. A little spattering goes a long way. Later, apply a clear finish. 🍷



Apply a gel stain to areas prone to dirt and grime buildup.




Using a toothbrush, give the project a uniform coat of fine speckles.



Before the stain dries, lighten any high-wear areas with paint thinner. Don't forget to wear the protective gloves.



CARVE  Print this article

# SHALAKO

## A KACHINA-STYLE PENDANT

Designed by Kansas City carver Bobbie K. Thurman, this stylish wearable celebrates the beauty of Pueblo Indian art

Carver and teacher Bobbie K. Thurman proves his respect for the Native Americans of the Great Southwest every time he picks up a carving knife. That's because he specializes in kachina-style dolls. What are they? According to Bobbie, kachinas are the spiritual symbols used in ceremonies by the Hopi and other Pueblo peoples.

"There are probably 600 different kachina patterns," he explains.

"They represent spirits involved in harvest, weather, hunting, birth, death—all aspects of life."

We liked Bobbie's colorful work so much that we asked him to provide a design for *WOOD*® magazine readers. Bobbie calls this pendant *Shalako*, a design based on the kachina that portrays a role in the rain ceremony.

### Begin with basswood

For the pendant, you'll need a blank of basswood (or other fine-grained wood) measuring  $\frac{1}{2} \times 2\frac{3}{4} \times 5$ ". Trace the pendant outline from the pattern. Then, mark a vertical centerline and reference lines for the front and back of the head, the bottom of the cape, and the skirt.

With a  $\frac{1}{2}$ " No. 3 straight gouge, remove wood on the front and back of the headdress (leave the head full thickness for now) until it is about  $\frac{1}{8}$ " thick. Next, slightly round the face mask and the back of the head.

Now, mark the necklace, collar, and front of the cape and carve them in. A  $\frac{1}{8}$ " V-tool will work for detailing necklace lines.

After shaping the cape and folds with a  $\frac{1}{4}$ " No. 9 gouge, move to the legs and feet. Round the legs and boots. Use a  $\frac{1}{8}$ " V-tool to define the soles and wrappings.

### Feather the skirt

The shalako's skirt has seven rows of feathers, with each full row containing 12 feathers (front and back). The first row begins behind the necklace. Pencil in the first six rows evenly from top to



bottom. Make the feathers in the seventh, or bottom row, a bit longer so that the other rows will appear to overlap.

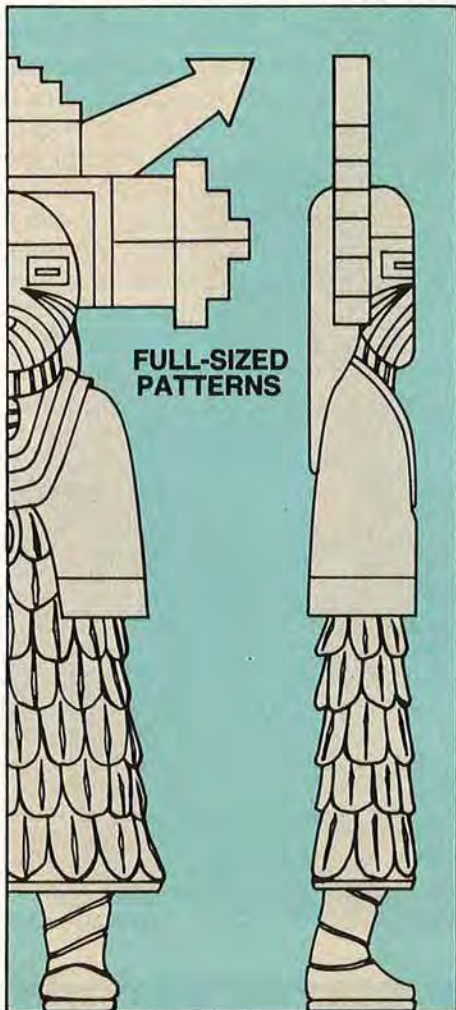
Next, with a knife, make straight cuts into the wood (stop cuts) to define the feather rows. Then slice into the stop cut of each row at a slight angle to remove the chips that create the undercuts of the overlapping feathers. Now, define the feathers with a knife. Cut a center barb in each.

### Paint on a colorful costume

After sanding your carving, smooth the surface by burnishing (rubbing) with the back of a gouge or a spoon. Then, seal the wood with satin-finish lacquer.

You'll need acrylic paints in red, turquoise, black, white, burnt umber, and gold. Leave the cape and boots unpainted; the wood simulates deerskin.

When the paint has dried, rub on paste wax and buff. Add a screw eye to the top of the headdress and fit it with a lace. 🍷




Design: Bobbie K. Thurman    Photograph: Wm. Hopkins



# GETTING UNDER THE SURFACE OF TODAY'S

# FINISH

 Print this article

If you've gone shopping for a finish remover lately, you know how confusing the experience can be. Most container labels reveal little about how effectively the product removes a specific finish, how easy it is to apply and clean up, or how quickly it works. To help you answer these important questions, we tested and evaluated 59 paint-and-varnish removers from 18 manufacturers.





# REMOVERS

Formulators of finish-removal products have been doing quite a juggling act lately. Not long ago, these manufacturers had to be concerned only about putting out products that performed well and were affordable. Today, however, there is a growing public awareness of the health hazards associated with some of the chemicals in paint-and-varnish removers. This heightened



concern has added safety to the factors manufacturers must juggle. The result, for consumers, has been the introduction of a dizzying array of products containing chemicals not previously seen in furniture-refinishing formulas. However, these "safe" products have drawbacks of their own. Some brands work slowly (overnight or longer), and other types carry a relatively high price tag.

## First, let's get to the bottom of the safety issue

Until recently, removing the finish from a piece of furniture meant you had to choose among finish removers containing powerful solvents such as methylene chloride (MC) or acetone, toluene, and methanol (ATM). Another option was caustic alkalines (CAs), otherwise known as lye.

These tried-and-true chemicals work quickly and effectively, but may pose threats to your health if not handled properly. For example, the highly flammable vapors released by ATMs can cause dizziness, headaches, and possibly nerve damage after extended exposure. Using CAs can result in severe skin and eye damage, and can actually harm a project if misused. For this reason, removers containing CAs have been reserved largely for professional use.

*Note: To keep things simple, we'll use abbreviations throughout this article for the handful of chemicals found in finish removers.*

As nasty as these solvents sound, even more controversy swirls around the safety of MC. Although nonflammable, this chemical was proved to cause cancer in mice, and it also has been linked to heart and kidney ailments. However, MC manufacturers point out that the chemical caused cancer only after the mice inhaled air containing 4,000 parts per million of MC. Cancer was not found in rats or hamsters at similar exposure levels.

Nevertheless, these findings prompted several companies to manufacture so-called safe strippers, containing the chemicals N-methyl pyrrolidone (NMP) or dibasic esters (DBE). Unlike other finish removers, these products release little odor. Although we did not feel any ill effects from their vapors during our tests, the material safety data sheets for some of the NMP products list dizziness and nausea as possible side effects of extended inhalation.

What do these considerations mean to you? Any of these chemi-

cals can be used safely, but some require you to take more precautions than others. So, your choice of product depends on how much effort you want to expend in safe handling. The chart on *the following page* shows, among other things, the safety precautions required for each of the six types of finish-removal products.

## How to choose the type of stripper that's right for you

Okay, so safety is important, but there's a lot more to consider. Some of us can't wait all day for a finish remover to work. And for most woodworkers, price also matters. Since everybody has different requirements when it comes to price, safety, and performance, we've spelled out the key differences between the types of finish removers in the chart on *the following page*. After you've had a chance to weigh the advantages and disadvantages of each type, we'll take a look at our test results and the top-performing products in each group.

*Continued*



# FINISH REMOVERS

## What our tests revealed

Of all the testing we've conducted in the *WOOD*® magazine shop, sampling 59 finish removers proved to be one of our toughest chores ever. But now that all of the testing is behind us, we feel confident that we know what type of product to choose for our next refinishing project. As you will see, the situation sometimes determines your product choice.

• **Methylene chloride (MC) finish removers: a hard-working bunch.** In our tests, the MC products proved themselves tops in

stripping effectiveness. (For complete results of our performance test, see the product-comparison chart on *pages 58 and 59*) We especially liked the spray-on formulations for their ease of application. As shown in the photo at *right*, you can apply a uniform layer of remover by simply pumping the spray bottle included with the spray-on products. We didn't even find it necessary to don our rubber gloves until we cleaned up the removers.

Besides offering convenience, this system eliminates a serious drawback of brush-on finish re-



Sprayable MC finish removers deliver great results and convenience. To prevent running, the formulations gel on contact with finished surfaces.

## HOW THE SIX TYPES OF FINISH REMOVERS STACK UP

PRODUCT TYPE	ADVANTAGES	DISADVANTAGES	PRECAUTIONS YOU NEED TO TAKE
Methylene Chloride (MC)-based finish removers (products containing more than 70 percent MC)	The strongest and quickest removers available. Powerful enough to remove even polyurethanes and epoxy paints. Nonflammable. Some brands available in convenient sprays.	MC has caused cancer in certain laboratory animals. Also has been linked to heart and kidney ailments. Some brands have globs that make cleanup difficult.	
Acetone, Toluene, Methanol (ATM)-based finish removers	Remove most paints and clear finishes quickly. Inexpensive. Liquid forms work well for dissolving finishes in small crevices. Easy cleanup.	Highly flammable. Vapors can cause headaches and dizziness. Some brands evaporate quickly, requiring you to scrub work surface vigorously for products to perform.	
MC/ATM finish removers (less than 70 percent MC, with ATM for balance of product)	Not as strong as MC-based products, but more effective than ATM finish removers. ATMs bring down the price.	Flammable. Products have all the safety hazards of MC and ATM formulations.	
N-Methyl Pyrrolidone (NMP)-based finish removers	Fastest of the "safe" products (15 minutes to more than 1 hour, depending on the concentration of NMP). Slight odor. Nonflammable.	Expensive (cost nearly twice as much as MC removers). Can cause dizziness and nausea after prolonged exposure.	
Dibasic Ester (DBE)-based finish removers	Least expensive of the "safe" products (about the same cost as MC-based removers). Almost no odor. Cling well to vertical surfaces. Nonflammable.	Work slowly (take 12-24 hours). Leave wood surface slightly fuzzy.	
Caustic Alkalines (CA)	Effective on multiple layers of enamel paint. Nonflammable.	Can cause severe skin burns. Darkens wood, so you must apply paint over treated surfaces.	



Eye protection



Approved respirator



Adequate ventilation



Rubber gloves



Do not use near an open flame



We prefer plastic scouring pads like those made by 3M for working loose the remover-finish residue.

removers. The manufacturers' directions listed on these products state that you should brush the remover as little as possible and in only one direction. This way, you don't disturb the waxy skin that forms on top of the finish remover to prevent the evaporation of solvents. We found brush-on MC removers difficult to apply properly, especially on vertical, turned, and carved surfaces. No matter how hard we tried, we could not apply the strippers uniformly; we often wound up with thin areas that required a second coating.

Although the sprayable products have a liquid consistency, they thicken when they come in contact with a finished surface. This property helps them cling to vertical surfaces better than most other MC and ATM strippers.

Among the brushable MC products, we found differences in ease of cleanup. Some of them came out of their containers in slimy globs that made cleanup exasperating. Globs like the one in the photo *below* slithered all over the work surface. Products with this problem earned a "poor" rating in the cleanup category on the *following pages*.



Some of the finish removers have slimy globs that make even application and quick cleanup a frustrating and nearly impossible chore.

Manufacturers of some of the MC-based finish removers claim that you can clean up their products with water. Although water works with these products, we didn't find this to be an advantage. In our tests, washing the workpiece surface with water made it slightly fuzzy. For this reason, we suggest washing away the residue of nearly all stripping products with a rag soaked in mineral spirits. (DBE formulations require a water rinse.)

● **Acetone, toluene, methanol (ATM) formulations: a smart choice at times.** Sometimes, MC strippers, the workhorses of our tests, may have more muscle than you need. As you can see in the chart on the *following pages*, an ATM or MC/ATM stripper may remove the finish just fine—and save you a little money. However, remember that these products are flammable; also, they require vigorous scrubbing with a plastic scouring pad or steel wool in order to do their work. Some of them evaporate quickly, so you need to work quickly. On the plus side, ATM-only products clean up in a flash.

● **N-methyl pyrrolidone (NMP) removers: good stuff if you can afford them.** Although the NMP finish removers work more slowly than MC and ATM products, you should give them serious consideration. Here's why. You get the same results if you wait just a few minutes longer—and you avoid noxious fumes in the process. Because of the expense of NMP, manufacturers vary the concentration of this chemical in an attempt to hold down the cost of the product. That's why some brands work more effectively than others, as shown in the chart.

● **Dibasic ester-based products: safe but slow.** Of all the tested products, the DBE finish removers were the most pleasant to use—if you don't mind waiting 12 to 24 hours for results. We did notice that these strippers tended to fuzz the wood surface slightly. So, you need to sand the workpiece lightly before applying new finish.

These products also cause metals to rust, so you must avoid steel wool when scrubbing the work surface. Instead, use plastic scouring pads like those made by 3M and shown *above right*. Since these pads do not quickly load up with finish residue the way steel wool does, we prefer using them with all of the finish removers.

*Continued*

Woodfinisher's Pride Paint Gel (*opposite bottom corner*), an NMP-based formula, gave off a nonirritating citruslike odor. 3M Safest Stripper (*right*), a DBE product, released almost no odor.







# OUTSTRIP THE COMPETITION

PRODUCT	CONSISTENCY (1)	EVAPORATION (2)	SPEED (3)	CLEANUP (4)	EFFECT ON VARIOUS FINISHES (5)							PRICE (6)	
					STAIN	VARNISH	POLYURETHANE	SHELLAC	LACQUER	ENAMEL PAINT	LATEX PAINT		
MC/ATM FINISH REMOVERS	BIX QUICK STRIP	L	●	☉	G	G	G	G	G	G	G	G	\$ 5.86
	FORMBY'S AEROSOL PAINT REMOVER	L	●	☉	G	F	G	G	G	G	F	F	7.87@
	KLEAN-STRIP KLEAN-KUTTER	L	●	☉	E	E	E	E	G	G	G	G	6.36
	NASCO LIQUID STRIPPER	L	●	☉	E	G	G	G	G	G	E	E	5.99
	PARKS LIQUID STRIP	L	●	☉	E	E	G	G	G	G	G	G	5.99
	RED DEVIL NO. 99	L	●	☉	E	G	G	G	G	G	G	G	5.93
	RED DEVIL NO. 77	S	●	☉	P	G	G	G	E	E	G	G	5.93
	SAVOGRAN KUTZIT	S	●	☉	E	G	G	G	G	G	G	G	6.24
	SAVOGRAN STRYPPEEZE	L	●	☉	F	G	G	G	G	G	F	F	7.16
	SUNNYSIDE LIQUID	L	●	☉	G	G	G	G	G	G	G	G	4.70
	ZAR FURNITURE REFINISHER	S	●	☉	E	G	G	G	G	G	E	E	7.94
	ZIP-STRIP FURNITURE REFINISHER	L	●	☉	E	G	G	G	G	G	G	G	5.73
NMP-BASED FINISH REMOVERS	INNOVATIVE SOLVENTS INNO-STRIP	P	●	☉	G	G	G	G	G	G	G	G	15.95
	INNOVATIVE SOLVENTS MAXI-STRIP	P	●	☉	E	P	G	G	G	F	F	F	19.95
	JASCO 1-HOUR PAINT REMOVER	S	●	☉	F	G	F	G	G	G	F	G	9.99
	NASCO ULTRA SAFE	S	●	☉	F	F	F	F	F	F	F	F	8.99
	PARKS ECO STRIP	S	●	☉	F	G	G	G	G	F	F	F	15.99
	PARKS ULTRA STRIP	S	●	●	P	F	F	F	G	F	F	F	10.99
	WOODFINISHER'S PRIDE PAINT GEL	S	●	☉	F	G	G	G	G	E	E	E	10.99
	WOODFINISHER'S PRIDE VARNISH GEL	S	●	☉	F	G	G	G	G	F	F	F	10.99
DBE-BASED FINISH REMOVERS	KLEAN-STRIP EASY OFF	S	●	●	F	E	F	F	F	F	G	F	8.64
	PEEL AWAY 6	P	●	●	F	G	E	E	E	G	G	G	45.00*
	SAVOGRAN STRYPSAFER	S	●	●	F	E	F	F	F	F	G	F	11.13
	3M SAFEST STRIPPER	S	●	●	F	E	F	F	F	F	G	F	5.99
CAUSTIC ALKALINES	BEHLEN MASTER PDE	S	●	●	F	P	F	F	G	P	E	P	8.39#
	PEELAWAY 1	P	●	●	F	P	F	F	G	P	G	G	21.99*

## MANUFACTURERS' LISTING:

**Behlen**  
518/843-1380

**Bix**  
615/792-3260

**Dad's Easy Spray**  
219/484-2000

**Formby's**  
800/367-6297  
901/685-7555

**Innovative Solvents**  
800/545-7658  
718/832-3600

**Jasco**  
415/968-6005

**Klean-Strip**  
800/238-2672

**Minuteman**  
800/733-1776  
414/478-2846

**NASCO**  
800/321-8404  
216/725-4991

**Parks**  
800/225-8543  
508/679-5938

**Peel Away 1 and 6**  
212/869-6350

**Red Devil**  
901/685-7555

**Savogran**  
800/225-9872  
617/762-5400

**Sunnyside**  
800/323-8611  
708/541-5700

**3M**  
612/731-6680

**UGL, Zar**  
800/272-3235  
717/344-1202

**Woodfinisher's Pride**  
800/457-7433  
803/271-9194

**Zip-Strip**  
800/321-9870  
216/823-1550

1. (L) Liquid, (P) Paste  
(S) Semi-paste

2. Length of time until product dries  
☉ 3-5 Minutes  
☉ About 30 minutes  
● Over 1 hour

3. Minimum time required to soften finish  
☉ 0-15 Minutes  
☉ 15 Minutes-1 hour  
● Over 1 hour

4. Ease of removing stripper before applying wash

**E** Quick removal with rag only  
**G** Quick removal with spatula followed by rag  
**F** Can't be picked up with spatula; can be scraped  
**P** Slippery, inconsistent globs; difficult cleanup


5. Three thin coats of finish applied to oak plywood and then baked on. Finish remover left on surface for recommended time; products rated by amount of residue remaining after cleanup and wash.

**E** Complete removal  
**G** Some sanding required to remove residue  
**F** Second application of stripper required  
**P** Little effect on finish

6. Suggested retail price per quart, unless noted otherwise. Actual selling prices may be 10-30 percent lower.  
\* 1 Gallon  
# 1 Pound  
@ 15 oz.  
● Price includes spray pump



# GARDENING WITH A GOUGE

 [Print this article](#)

## CAPTURE A DAFFODIL'S BEAUTY IN WOOD



John Hagensick digs into a daffodil carving. He's removing the top layer from the flower blank.

### TOOLS AND SUPPLIES

#### Stock

Basswood 2×4×4" for flower, ½×2×14" for stem, four ¾×¾×10" and one ¾×¾×8" for leaves, 4×4×6" for pot. For a kit of precut blanks and a turned pot, see the Buying Guide, *opposite page*.

#### Tools

##### Gouges

10mm or larger no. 7, no. 5  
5mm no. 9

##### V-Tools

6mm no. 12, 4mm no. 12

##### Knife

Bench knife

##### Power carver (optional)

Rotary carver with burrs

##### Finishing

Aerosol clear lacquer  
Liquitex acrylic paints  
•Gesso—primer  
•Cadmium yellow medium  
•Chromium oxide green  
•Burnt umber  
•Brilliant orange





If you're starting with a kit, skip to "Rough out the flower" below. Otherwise, locate the center on top of a 2×4×4" block. Trace the full-sized flower pattern, *right*, onto it, centering the pattern over the block center.

Adjust the pilot bit of a 2" holesaw (inside diameter approximately 1¾") so it projects ¼" or less beyond the cutting edge. With the holesaw chucked into your drill press, pilot on the center mark to bore 1" deep, forming a cylinder which will become the flower's trumpet. Change to a ½" bit, and drill 1" deep, following the pilot hole. (We held the block with a handscrew clamp.)

Mark the center on the bottom of the piece, and bore ½" deep with a 1" holesaw (inside diameter about ¾"). Again, set the pilot bit for minimum protrusion. Then, cut around the pattern outline with a bandsaw or scrollsaw.

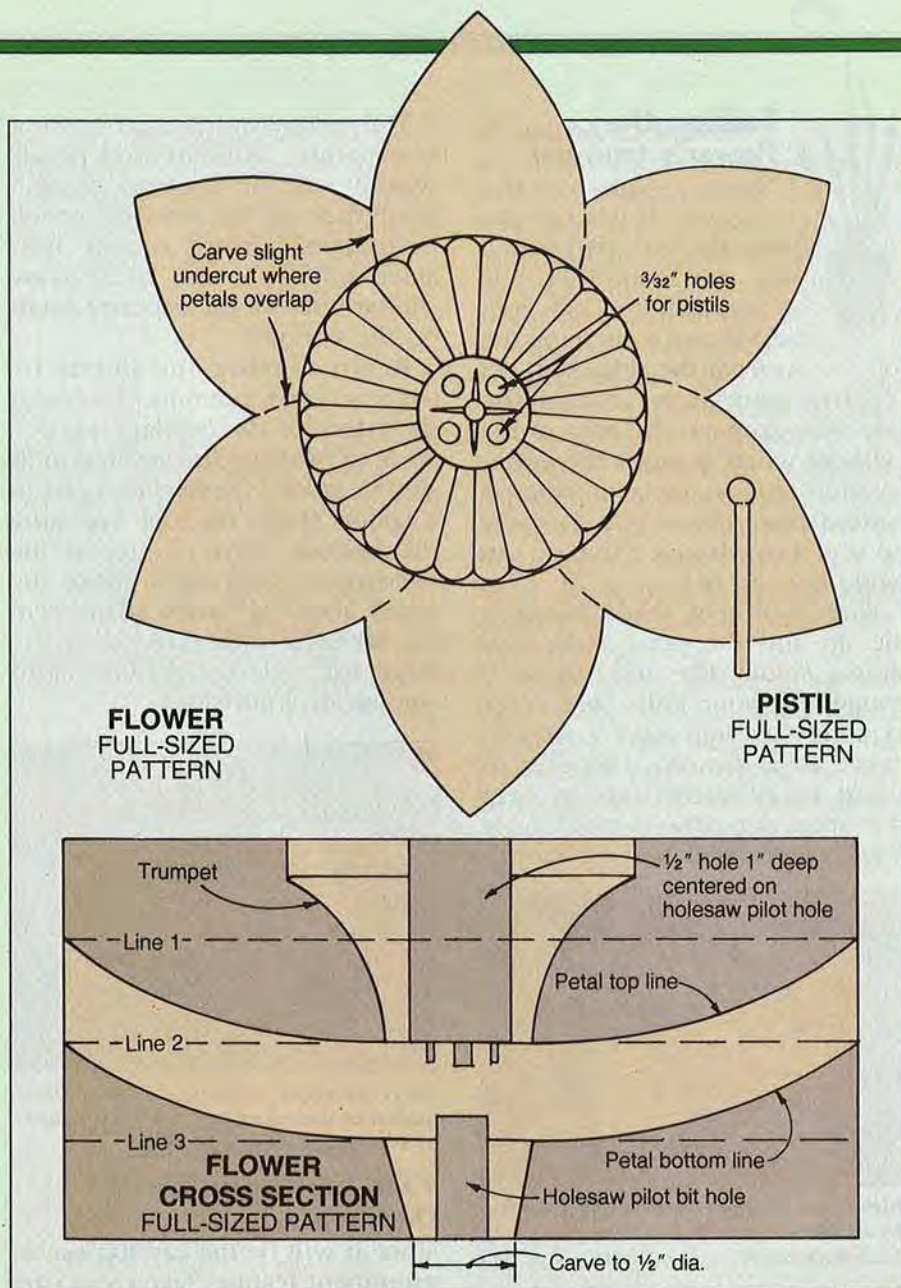
### Rough out the flower

Divide the flower blank into four equal horizontal segments by drawing three parallel lines ½" apart around the sides. Place the first line ½" from the top, as shown on the Flower Cross Section drawing at the *right*.

Next, brace the blank against a bench stop, and remove the top ½" section of the petals with a 10mm or larger no. 5 or no. 7 gouge. (You could make quick work of this by using a ¾" carpenter's chisel, too.) Do not cut away any of the central cylinder—leave it full height. Grain direction changes from petal to petal, so be careful to avoid chip-out.

Draw the curved petal top line between the point of each petal on the upper line and the base at the next lower line, as shown on the Flower Cross Section drawing. Accurate curves aren't critical here; you can draw the lines free-hand. Carve down to them with your gouge as shown *right*.

*Continued*



As you carve down to the petal top line, take care to avoid chip-out near the petal tips and bases.

### Buying Guide

**Complete kit.** Precut parts, turned flowerpot, *Carving Realistic Flowers* book by John Hagensick; \$34 ppd. in U.S.

**Parts only.** \$20 ppd. in U.S.

**Book only.** \$17.50 ppd. in U.S.

(Illinois residents: please add 7% sales tax to prices shown.) All available from: L/C Publishing Co., 531 Thatcher Rd., River Forest, IL 60305.

No telephone orders, please.





## Fashion the flower's trumpet

Next, rough out the trumpet. Mark off the flared lip with two pencil lines, one around the side of the cylinder  $\frac{1}{4}$ " from the top and a circle on the top  $\frac{3}{16}$ " in from the side. Stop-cut the line you drew around the side. Also stop-cut the base of the cylinder where it meets the petals. (A *stop cut*, an incision along a pattern line, allows you to carve up to a line without chipping out wood beyond it.)

Form a funnel shape between the lip and the petal surface, as shown *below*. The no. 7 or no. 9 gouge and your knife will come in handy as you carve a smooth curve to a bottom diameter of about 1". Be careful not to snap the trumpet off—the  $\frac{1}{2}$ " hole leaves a thin wall at the bottom.



Form the trumpet shape by carving down from beneath the trumpet lip to petal surface.

Rough out the inside of the trumpet with your knife and gouges, matching the inside contour to the outside shape. (You could shape the trumpet with a flexible shaft machine or hand-held rotary tool and cutting burrs, too.)

## Create natural-looking petals

Draw the petal bottom lines parallel to the top lines and  $\frac{1}{2}$ " below them. Cut away the bottom  $\frac{1}{2}$ " section of the petals, and then carve to the petal bottom lines. Taper the calyx (the cylinder from the bottom of the flower) to about  $\frac{1}{2}$ " diameter at the end.

The petals overlap each other alternately. Indicate the petals which will be entirely visible from the top by drawing pencil guidelines (shown on the full-sized pattern), and then draw similar lines on the *opposite* petals on the bottom.

Begin carving the petals by shaping their bottoms. Undercut the edges of the overlapping petals to accentuate the separation as shown *below*. Carve each petal to a spoon shape on top, matching the bottom curve. Undercut the overlapping top edges. Make the petals about  $\frac{1}{8}$ " thick at the center, tapering to about  $\frac{1}{16}$ " at the edge for a delicate look. Sand smooth on both sides.



Carve alternate petals to full shape, and undercut the edges to create the illusion of separate, overlapping petals.

## Take time to refine the trumpet

Since it will be the carving's most prominent feature, take extra care in detailing the trumpet. Reduce the wall thickness to about  $\frac{1}{8}$ " as you refine the shape and smooth the surface. Draw pencil lines vertically on the inside and outside of the trumpet, dividing it into four sections. Subdivide each of those roughly into thirds. Don't try to make all 12 sections exactly equal—that wouldn't look natural.

With a small V-tool, carve along the guidelines inside and outside to give the impression of creases. Bring the carving line over the edge of the trumpet rim, and then widen the notch with your knife to create a scalloped effect. Carve

V-tool grooves about  $\frac{5}{8}$ " long on the top of the lip between the lines to heighten the scalloped look. Sand the trumpet, softening any sharp edges. A conical rotary burr works well to detail the trumpet, too, as shown *below*.



A hand-held rotary tool with a conical carbide or ruby burr does a great job on trumpet details. You could carve the entire flower with power tools.

Carve five pistils about  $\frac{3}{32}$ " diameter with a ball on one end from  $\frac{3}{16}$ " square stock  $1\frac{1}{4}$ " long. Drill  $\frac{3}{32}$ " holes where shown on the pattern, and then glue the pistils into the holes with the tops about  $\frac{1}{16}$ " below the trumpet rim.

## Now, make the stem

Trace the full-sized pattern for the upper stem onto a  $\frac{1}{2} \times 2 \times 14$ " piece of basswood. Extend the lower part, making the stem  $14$ " long overall. Bandsaw the stem blank, and then drill a hole the size of the one in the flower where shown.

Carve the top to  $\frac{1}{2}$ " diameter as far back as the dotted line on the pattern. Then, study the flower photo on *page 63*, noticing how the green stem emerges from the brown bud shield.

Round the edge just below the upper stem, and then carve the long, oval bud-shield opening. The top of the shield forms a rounded point. Hollow it out about  $\frac{3}{16}$ " deep above the stem. Form a slight bead where shown. Carve the stem below it to about  $\frac{1}{4}$ " diameter.



**UPPER  
STEM  
FULL-SIZED  
PATTERN**

1/4" hole  
3/8" deep  
centered



A twisted leaf starts with square stock. First, carve a flute partway down one face, turning to an adjacent one. Then, shape the back.

**LEAF  
CROSS SECTION**

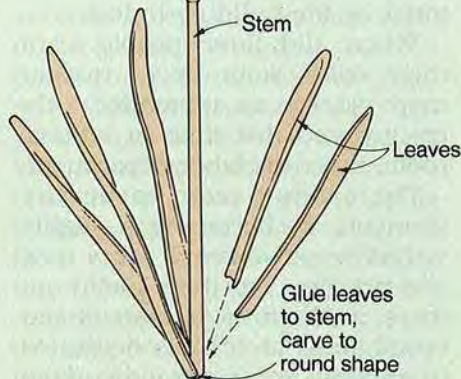
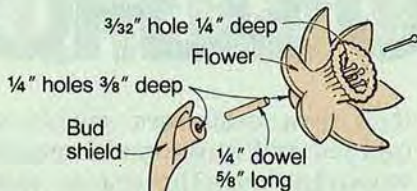


**LEAF LAYOUT**



Transition zone

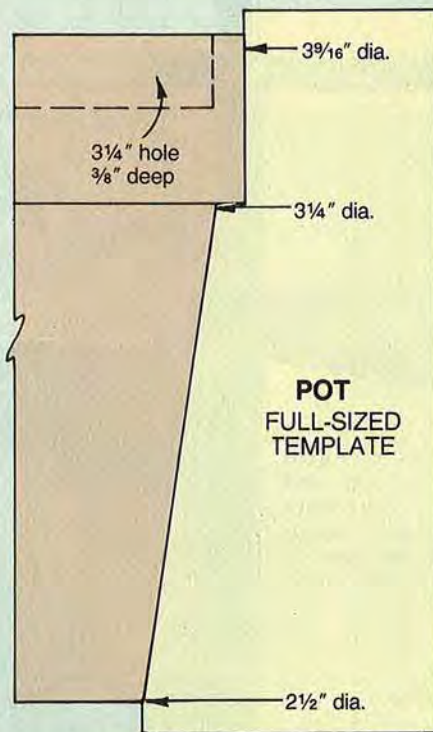
14" overall length



Glue leaves to stem, carve to round shape

Drill hole 1/4" deep to match outside diameter of leaves

Pot



**POT  
FULL-SIZED  
TEMPLATE**

Project Design: John Hagensick,  
Photographs: Frank Cozza, Photographic  
Impressions; John Hetherington  
Illustrations: Kim Downing; Bill Zaun

**A lesson in leaves**

Carve the leaves from five pieces of 3/4 x 3/4" basswood, four 10" long and one 8" long. On each, mark off a 3" section approximately in the middle for the transition area where you will carve around a corner to create a cupped, twisted leaf.

Draw two parallel lines about 1/2" apart along one side of the stock from the bottom to the transition zone. There, curve the lines to the edge and continue them on the adjacent face—either left or right. Bring them to a gentle point at the top, shown in the Leaf Layout drawing, left.

Gouge out a groove about 3/16" deep between the lines. Then, rough out the back of the leaf with your knife. Make the finished leaf about 3/16" thick at the center, with thin edges.

**Paint it, and pot it**

Attach the flower to the stem with a 1/4" dowel (or one to fit the pilot hole). Fair the stem and calyx. Sand, and then paint all parts except the bud shield on the stem with gesso, a white primer. Sand the gesso coat smooth. Mask off the stem and flower, and then coat the bud shield with clear spray lacquer. Paint the flower with yellow acrylic paint. (See the supplies list for the colors we used.) Bring the green of the leaves and stem up onto the calyx, almost to the petals.


File, sand, or carve the bottoms of the four long leaves to fit together around the stem. Glue them to the stem, clamping with a heavy rubber band. Place a small spacer block between each leaf and the stem until the glue dries. Insert the short leaf between the stem and any other leaf.

Carve the bottom to a drill-bit diameter. Turn a flowerpot using the template left, and drill a hole for the stem. Paint the soil burnt umber and the pot orange mixed with burnt umber. 🌱



# BACK TO SCHOOL... FOR

Want to really hone your woodworking skills? Maybe even turn pro? Well, if you're willing to spend the time and money, there are plenty of schools that can teach you to do just that. Here, we look at three of them.

 [Print this article](#)

According to the U.S. Department of Labor's latest figures, there are about 376,000 people employed as full-time woodworkers in the U.S. About 10 percent of them work in

their own businesses, mainly as cabinet- and furnituremakers and wood finishers. The rest do their woodworking in furniture factories or the building industry.

Where did these people learn their skills? Some spent two or more years as an apprentice. Others invested that time in a classroom, notes the labor department.

There don't seem to be any shortcuts to becoming a highly skilled woodworker. It takes time and practice. But there's help out there, in the form of courses and curriculums at schools dedicated to teaching not just woodworking

skills, but the art and business sides of it, too. We found three facilities in divergent parts of the U.S. with programs for woodworkers—each quite different. What they offer may help you select a program from one of the many schools scattered across the country (see our listing of schools and programs on *page 90*).

## Artistry in wood at Oregon School of Arts and Crafts

"We don't have a 'typical' student," boasts Stephen Grove, head of the Wood Department at the Oregon School of Arts and Crafts in Portland. "Last year, the youngest student was 18 and the oldest was 56. Some students come as serious avocational people; others come for the three-year certificate track. And lately, there's been a 50/50 split between women and men."

Stephen enrolls people with an interest in making a career change to woodworking, but younger students

*Right.* Tina Chinn, resident artist in wood at Oregon School of Arts and Crafts, demonstrates scraping.



*Left.* At Oregon School of Arts and Crafts, students learn artistic furnituremaking, such as this student's chair.

*Right.* Clamping is the focus of attention for these aspiring woodworkers at Oregon School of Arts and Crafts.





# WOODWORKING

can have a different mind-set. "The younger ones desire to become independent artists in wood. And that's really what we're here to do," he says. "We're not commercially oriented, although we do teach some of what it takes to earn a living."

In the creative atmosphere of the school's hilltop campus a few minutes outside Portland, students pursue interests in fiber, clay, book arts, painting and drawing, metals, photography, and, of course, wood. They can choose a three-year program that earns them a certificate in crafts, an achievement honored by the National Association of Schools of Art and Design. Or, they can elect one- or two-year individual study programs. The school also offers short courses and seminars.

Enrollment is limited to 12 students for the certificate program and for open (noncertificate) evening classes. Because it's custom-

designed, the Individual Woodworking Study (IWS) program has a five-student limit.

"Generally speaking, the program here emphasizes furniture-making," says Stephen, once a professional furniture maker himself. "We take an eclectic approach and teach how to make a variety of types of furniture. We really believe that if you're going to make it in the real world, you have to be comfortable doing a lot of things to make ends meet."

Although the school's woodworking courses don't include offerings on how to run a business, the subject isn't dismissed. "In individual study, we address dealing with clients, designers, galleries, commissions, presentations, portfolios—everything it takes to do business on your own," says Stephen. "And in the certificate program, there's a course titled The Business of Being an Artist.

The woodworking curriculum that Stephen directs covers all aspects of woodworking, including bending wood and turning. He sums it up: "The first year is all basic stuff—hand tools, machine tools, and methods for designing furniture, including [building] scale models. As classes approach higher [skill] levels, the principles remain the same, only the techniques change."

*DATA: Full-time students in the three-year certificate program pay \$5,784 per year or \$1,928 per quarter. Part-time students pay \$482 per class. Tuition varies for seminars, workshops, and other short-term offerings during the year. Material fees cost extra. Some financial assistance is available. There's no on-campus housing, but the school maintains references. For more information, write: Oregon School of Arts and Crafts, Dept. WD, 8245 S.W. Barnes Rd., Portland, OR 97225. Phone 503/297-5544.*

*Below. Rockingham Community College instructor David Kenealy, left, guides his students through the building of traditional furniture for commercial woodworking.*



## North Carolina college targets business, industry

"The furniture industry employs very skilled workers on a small basis, but it's difficult for companies to find people who have been formally trained in furniture-making," says woodworking instructor David Kenealy. David has worked wood professionally in the United States as well as England. Before coming to the rural North Carolina environment of Rockingham Community College at Wentworth, he taught an award-winning, high school shop program at Chapel Hill.

"Now we're becoming more and more prepared to place students in the furniture-making industry, especially here in North Carolina," David continues. "Too, there are literally hundreds of

*Continued*



# BACK TO SCHOOL

small businesses that cater to the larger industry. They subcontract, and the manufacturers themselves have sample rooms, where skilled woodworkers make prototypes of designs for the International Home Furnishings Mart's showrooms in nearby High Point. We can put people from our program right into their own business or those sample rooms."

Rockingham's two-year curriculum produces graduates with an associate degree in woodworking, and the knowledge and skills to begin a woodworking career. "Students come here with a desire to build high-end, custom-made furniture," notes David, "and most of them have aspirations of having their own small business. So, we offer courses such as marketing and merchandising, and shop operation and management, and we have them do a business plan. In our studio, we photograph their projects for a portfolio."

Rockingham students do build furniture, and in related courses such as finishing, equipment maintenance and repair, greenwood woodworking, and jigs and fixtures, they also learn production techniques. "In reality," says the instructor, "a graduate's custom-furniture work must be supplemented by building a limited-production line."

*DATA: The woodworking associate degree program runs seven continuous quarters, and begins each fall. Enrollment is limited to about 20 students. Students wishing to take only selected courses are welcome, but degree-oriented students have priority. Some weekend workshops are offered.*

*North Carolina residents pay \$170 tuition and fees per quarter for 15 credit hours; nonresidents, \$1,514. Material fees are extra, and students can apply for financial assistance. No on-campus housing is available. For more information, write: Rockingham Community College, P.O. Box*

*38WD, Wentworth, NC 27375-0038. Phone 919/342-4261.*

## Woodworking in Vermont's Green Mountains

"It's never ugly up here." That's how John Connell, executive director, describes the setting of his Yestermorrow school on the outskirts of Warren, Vermont.

Perhaps it's the scenery that brings aspiring woodworkers to Yestermorrow for weeklong classes each summer. John thinks there's more to it. "Attendance in our woodworking courses often surpasses that in other ones we offer [in home building and architectural design]. It seems the courses fit the format that an awful lot of people like—they're short, intense, project-oriented, and 100 percent hands-on. People go home feeling that they have accomplished a lot."

*Right. Rockingham students learn machine setup and repair, and (below) develop a photographic portfolio of pieces.*

John likes to keep the woodworking classes small—five students maximum. "Our experience has been that when dealing with power tools, you have to keep the ratio of teacher to student very high," he explains. "And it works pretty well—if we have five students in a class, we send away five students ecstatic about woodworking. There's a high percentage of them who even go on and make an income from it."

Yestermorrow originally opened its doors to home builders, not woodworkers. Its first stu-



Written by Peter J. Stephano

Photographs courtesy of David Browne, Oregon School of Arts and Crafts; T. Gunn, Rockingham C.C.;

Yestermorrow



dents were owner-builders who came to learn the principles of quality design through hands-on construction experience. Then came the woodworking courses. "We started them as an extension of the building courses—how to build vanities and cabinets with the tools they had used in learning to build the home," says John. "Now, we demystify woodworking for our students in a couple of very small shops."

"We've avoided making the big, vocational school shop," he adds. "What we do is try to work with

people at the scale that they're likely to work in when they leave. We're trying to create the experience of dropping in on a professional for a visit, then staying on to work side by side and pick up some tips."

About 40 percent of Yestermorrow's students are hobbyists. Another 40 percent want to learn woodworking skills for a specific purpose, such as cabinetmaking so they can redo their kitchens. And the remainder are testing the water for a career change. "They use us for kind of a peek hole to their future," says John. "They say, 'I'll take a week of this, and maybe my calling will show up.'"

Although Yestermorrow offers courses throughout the year, woodworking shop classes only happen from May to August. Students select from five one-week courses, beginning with an entry-level class that in-

troduces basic cabinet design and construction, and ending with one that teaches how to reproduce period furniture. There's also a special two-week course of intensive skill honing with hand and power tools.

*DATA: As part of the accommodation's package, Yestermorrow's students stay at a nearby inn in order to take full advantage of the learning environment. Tuition, room, and board for a one-week session costs \$1,025; a two-week workshop \$1,950 (write for tuition-only rates). For more information, write: Yestermorrow, P.O. Box 344WD, Warren, VT 05674. Phone 802/496-5545. ♣*



*Above.* Yestermorrow's classes in traditional furniture include carving to produce fine detail.

*Right.* Woodworking courses teach the skills to build custom-furniture, such as this contemporary rocker, or make cabinets for your kitchen.



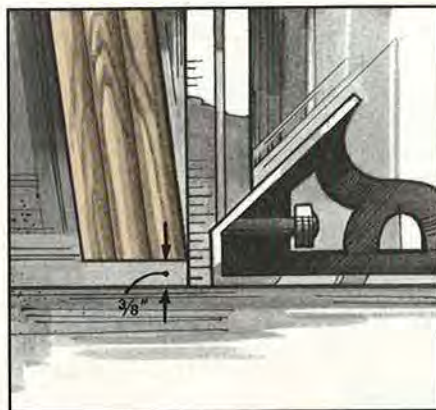


## THE LONG AND SHORT OF IT

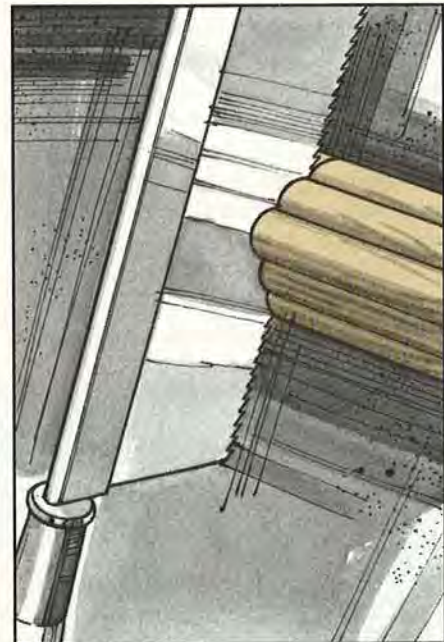
Getting the wobble out of a four-legged project



Few of us can assemble a four-legged chair, table, stool, quilt rack, or other piece of furniture without there being a little wobble when you set the piece on a flat surface. This happens because one or more legs are longer than the others. Here's a simple solution that takes just a few minutes of your time.

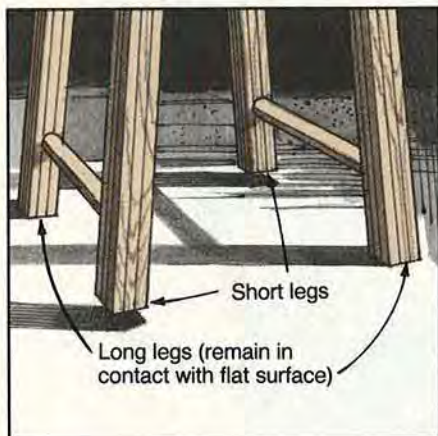


**2** Tip the project so that three legs touch the flat surface, and with a combination square measure the gap between the work surface and the fourth leg. (In the example shown above, the gap measures  $\frac{3}{8}$ ".) Divide your measurement by two ( $\frac{3}{16}$ " in this instance). You will need to remove this much stock from the ends of both long legs.

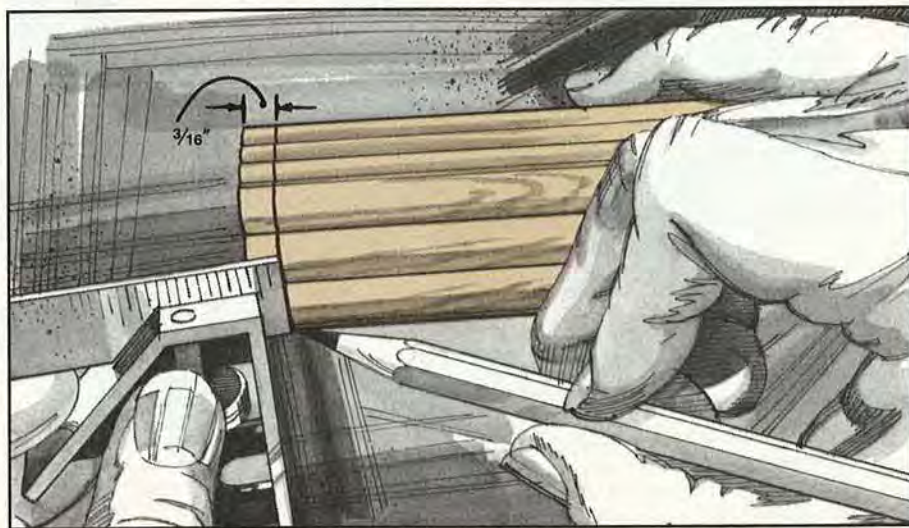


**4** With a crosscutting hand-saw (we used a dovetail saw), carefully cut along the marked lines. (If you don't follow the lines, you may wind up repeating the whole process.) To remove  $\frac{1}{8}$ " or less of stock, use a portable belt sander. Be careful not to remove too much stock. ♣

Written by Bill Krier  
Illustrations: Jim Stevenson



**3** Adjust your combination square (to  $\frac{3}{16}$ " in our example) and then mark around the long legs as shown below to establish your cut-off lines for the needed stock removal.



First, you need to determine which legs are long. To do this, place the project on the flattest surface available (such as the top of your table saw or workbench). Tip the piece back and forth, and mark Xs on the two long legs that remain in contact with the flat surface.



# MASTERPIECE MUSIC BOX

ONE SWEET-SOUNDING TURNING



This lathe-turned music box will strike a responsive chord with anybody who appreciates beautiful wooden objects—we guarantee it! And even with the

rich-looking veneer inlays that accent its traditional lines, you'll waltz right through this project, completing it in just a few enjoyable hours.

*Continued*





## MASTERPIECE MUSIC BOX

### TOOLS AND SUPPLIES

#### Stock

Walnut bowl-turning blank,  $2 \times 4\frac{1}{2} \times 4\frac{1}{2}$ "

Walnut stock,  $\frac{1}{4} \times 4 \times 12$ "

#### Lathe tools

3-4" faceplate with a  $4\frac{1}{2}$ "-diameter auxiliary faceplate of scrapwood

$\frac{3}{8}$ " gouge,  $\frac{1}{8}$ " parting tool

#### Lathe speeds

Roughing: 600-900 rpm

Finishing and sanding: 1,200-1,500 rpm

#### Buying guide

**Inlays, movement.** Inlay strip for side, round inlay for top, and Swiss musical movement (Brahms' "Lullaby"), item no. WD892, \$29.95 ppd. in U.S. Constantine's, 2050 Eastchester Road, Bronx, NY 10461. Or, call 800/223-8087.

**T**race or draw the full-sized bottom pattern *below* onto a  $\frac{1}{4} \times 4 \times 12$ " piece of walnut. Back the workpiece with scrapwood, and bore a  $\frac{3}{16}$ "-deep counterbore where shown with a  $1\frac{1}{8}$ " Forstner bit or spade bit chucked into a drill press. Change to a  $\frac{3}{8}$ " brad-point bit, and drill through the center of the counterbore.

With a  $\frac{1}{4}$ " brad-point bit in the drill press, drill the center hole and six  $\frac{1}{8}$ "-deep counterbores where shown. Then, drill  $\frac{1}{8}$ " holes through the six counterbores.

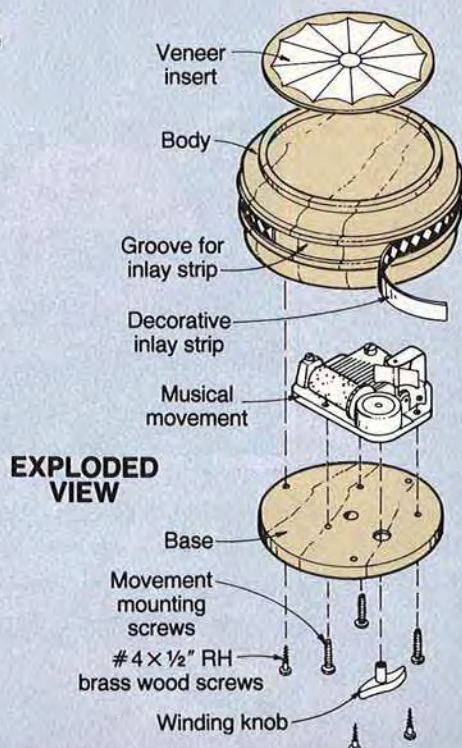
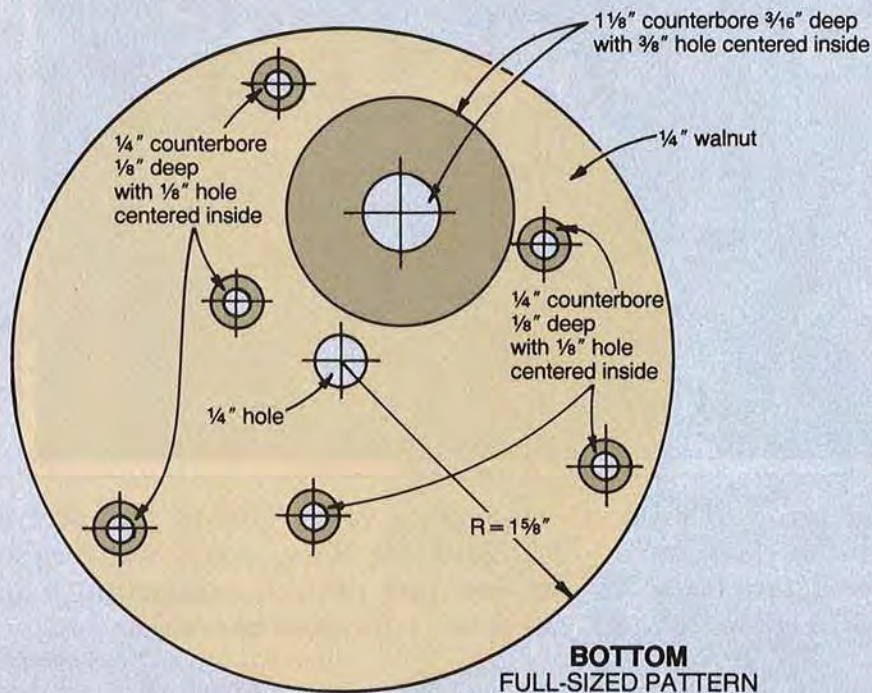
Cut out the bottom with a bandsaw or scroll-saw. Sand, and apply a clear oil finish to both sides. Mount the musical movement on the flat side with the winding stem protruding through the  $\frac{3}{8}$ " hole, and then set the bottom aside.

### Start turning on the inside

Glue a piece of scrapwood  $1\frac{1}{2} \times 4\frac{1}{2} \times 4\frac{1}{2}$ " to the face of the turning blank that will be the top of your music box. This will become your auxiliary faceplate. Clamp until dry, and then draw diagonal lines on the scrapwood faceplate.

Using the junction of the lines as a center, scribe one circle  $4\frac{1}{2}$ " in diameter and another one the same diameter as your 3-4" lathe faceplate. Bandsaw around the outside line. Then, place your lathe faceplate inside the smaller circle, and screw it to the auxiliary faceplate.

True the side of the blank with your gouge. Then, place the tool rest parallel to the face, true





the face, and locate the center on it. To do this, move a pencil point across the rotating workpiece until it marks a point, not a circle.

From the centerpoint, mark two circles, one  $2\frac{3}{8}$ " in diameter ( $1\frac{3}{16}$ " radius) and one  $3\frac{1}{4}$ " ( $1\frac{5}{8}$ " radius). With your  $\frac{3}{8}$ " gouge, turn a  $1\frac{1}{2}$ "-deep hole inside the smaller circle (see Turning the Opening drawing, below). You don't need to sand this recess. Since the music-box movement fits into it, it won't be visible.

Inside the larger circle, cut a recess  $\frac{5}{8}$ " deep with your gouge. Test-fit the bottom with the music box mounted on it, adjusting the size of the two openings, if necessary. The wall of the larger hole will show after assembly, so sand it with 100-, 150-, 220-, 320-, and 400-grit sandpaper.

Next, transfer the full-sized template to a piece of stiff cardboard, and turn the side profile. With your parting tool, cut the  $\frac{3}{8}$ "-wide groove for the inlay  $\frac{1}{8}$ " deep. Check the width against the inlay as you work.

### Form a tenon to turn the top

Part off the body at the glue joint. Then, form a tenon on the auxiliary faceplate to fit the large recess in the turning (see Turning the Top drawing, below). With the body mounted snugly on the tenon, turn the face down to achieve an overall body height of  $1\frac{3}{4}$ ".

Locate the center on the top face, and then mark a 3"-diameter circle on it for the inlay relief.

(Measure your round veneer insert to make sure of the size.) Cut the relief  $\frac{5}{32}$ " deep. The wood in the middle will be less than  $\frac{1}{8}$ " thick as you reach that depth, so make your cuts carefully. Sand the body, except for the inlay areas, with progressively finer sandpaper from 100- to 400-grit.

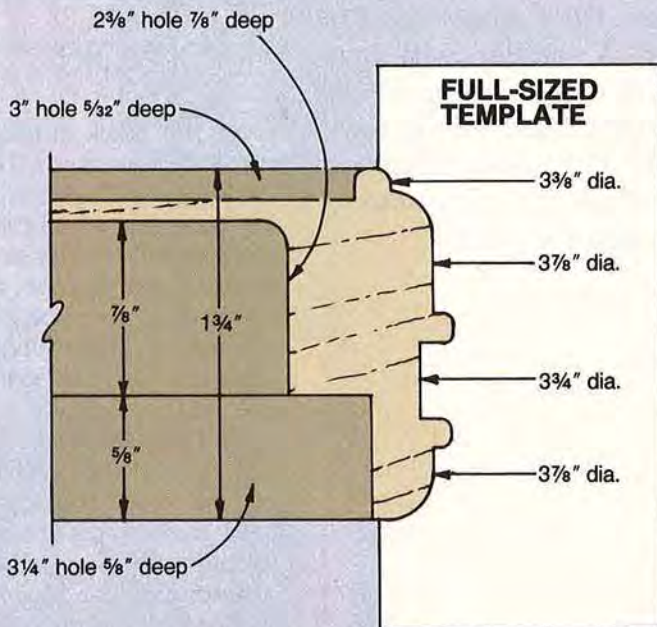
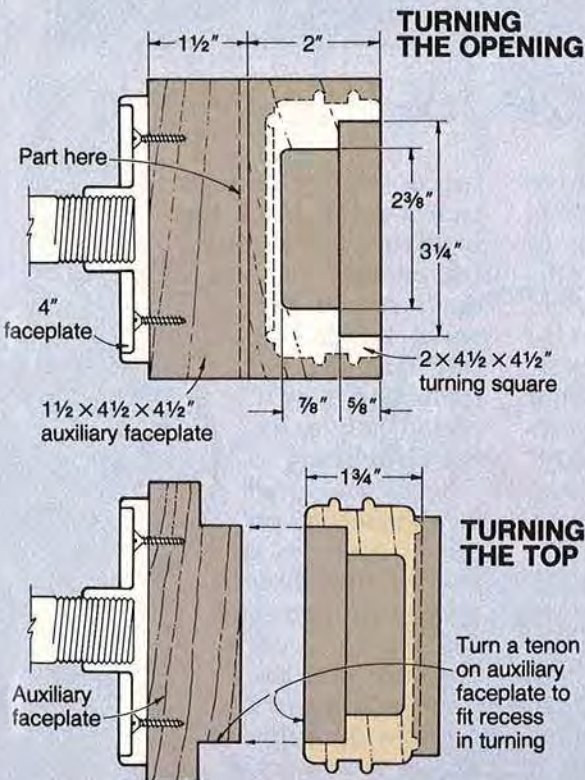
### Dress it up with veneers

Apply a thin layer of glue to the back of the inlay strip. Then, starting from one end, press it into the groove. Cut off the overlapping end with an X-acto knife. Secure the inlay with a heavy rubber band, and then wipe away excess glue.

Carefully remove the circular inlay from the carrier by cutting the paper tape with an X-acto knife. Apply glue to the wood side of the inlay, position it, and clamp by pressing a scrapwood circle against it with your lathe's tailstock.

When the glue is dry, remove the body from the lathe. Carefully remove the paper tape by moistening a small area with a damp rag and scraping the tape away. Do not wet the inlay excessively. Hand-sand the veneer inlays, and then apply a clear oil finish to the music box, inside and outside. Using the bottom piece as a template, drill  $\frac{1}{16}$ " pilot holes into the music-box body. Finally, attach the bottom with three  $\#4 \times \frac{1}{2}$ " roundhead brass wood screws. 🐿

Project Design: C. L. Gatzke  
 Photograph: John Hetherington  
 Illustrations: Kim Downing, Mike Henry






# KING OF THE CATERpillARS



When it comes to entertainment, this king-size caterpillar does double duty. A toddler will love fitting the four big pieces together. And you'll have your fun, too, cutting those pieces, woodburning, and painting.

 [Print this article](#)



## A big-piece puzzle for little people

Trace the black cutting lines from the full-sized pattern onto a  $1\frac{1}{2} \times 9\frac{1}{4} \times 10$ " piece of stock (a 10" length of clear, straight-grained  $2 \times 10$  fills the bill). Softwoods such as pine, fir, cedar, or redwood (our choice) work well.

Install a sturdy blade in your scrollsaw (a good choice: Olson's no. 411 or similar,  $.110 \times .022$ " with 15 teeth per inch), and then saw around the outside line. Next, cut the inside lines to separate the four puzzle pieces. Sand slight round-overs along all of the edges.

Assemble the pieces, and trace the red woodburning lines onto your cutout. Burn the lines about  $\frac{1}{16}$ " wide. Move the woodburning pen along the line at a steady

speed—slowly enough to etch a solid, black line into the wood, but fast enough that you don't scorch the wood beside the line. Lift the pen from the wood periodically to let the tip reheat.

Sand all surfaces smooth, removing traces of pattern lines that remain. (We also sanded away a few scorch marks.) Now, add some accents with stains or acrylic artist's colors.



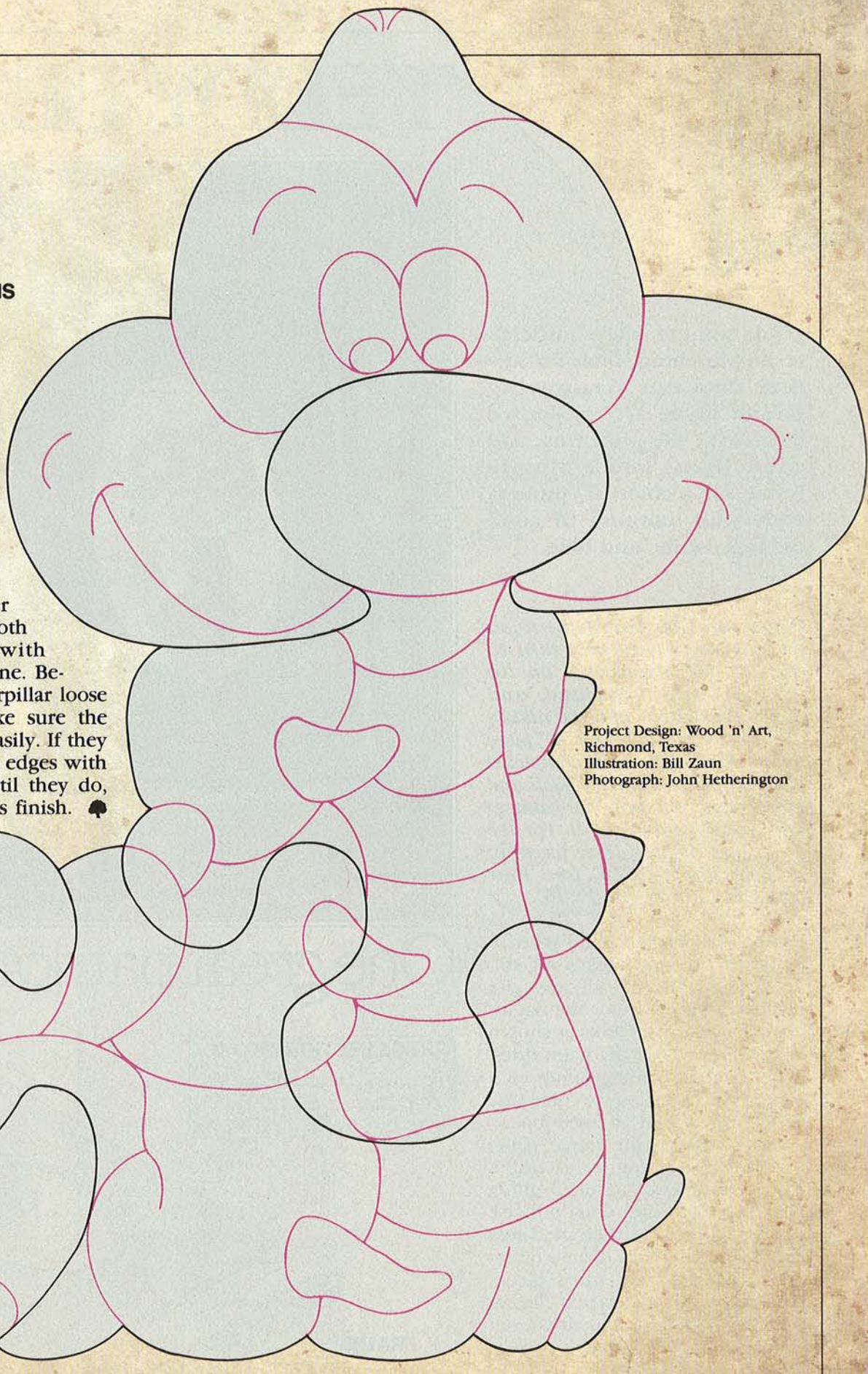
## FULL-SIZED PATTERNS

Cut along black lines

Woodburn red lines

Paint the eyes solid white and black, but apply other colors as thinned washes. After the paint dries, coat both sides and all edges with clear, gloss polyurethane. Before you turn the caterpillar loose in the playroom, make sure the pieces slide together easily. If they don't, sand the mating edges with 220-grit sandpaper until they do, and touch up the gloss finish. 🐛

Project Design: Wood 'n' Art,  
Richmond, Texas  
Illustration: Bill Zaun  
Photograph: John Hetherington






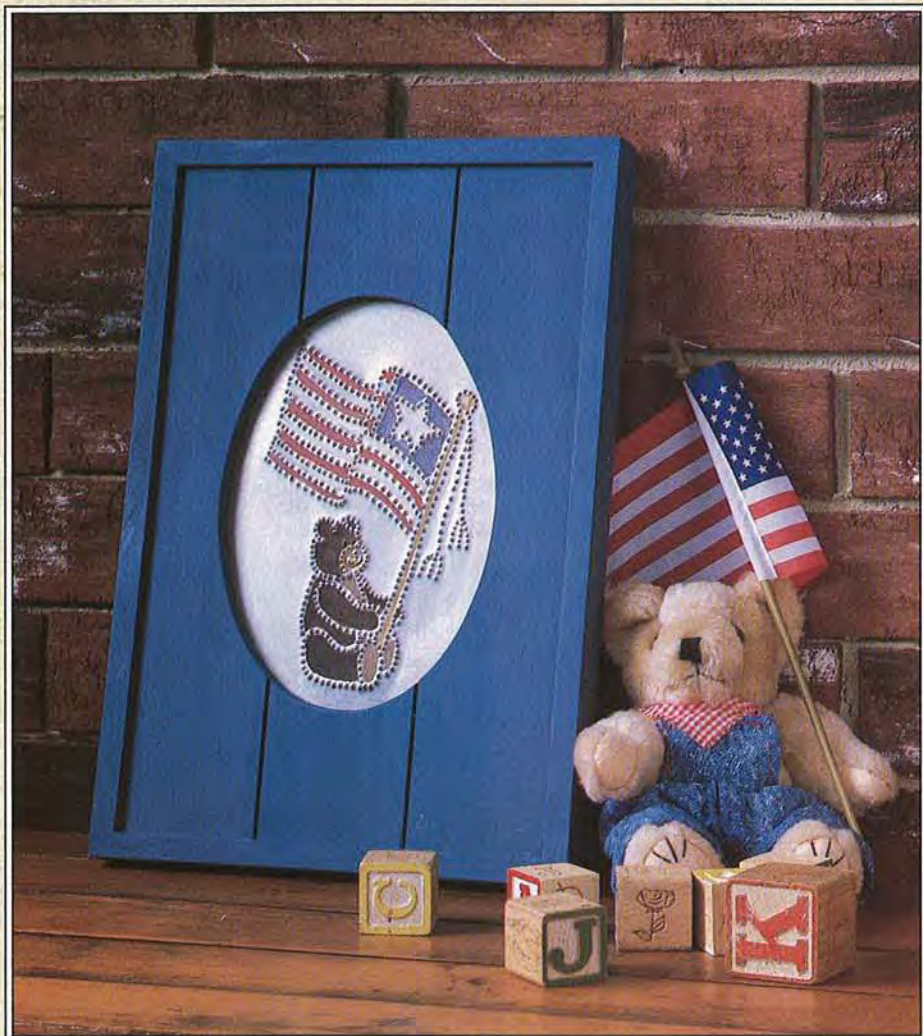


# TEDDY BEAR IN

If you want to take a quick jab at tin-punching, look no further than our flag-waving friend here. When you're done with the punching, add some paint and a simple frame for a colorful country-style wall hanging in good old red, white, and blue.

 [Print this article](#)

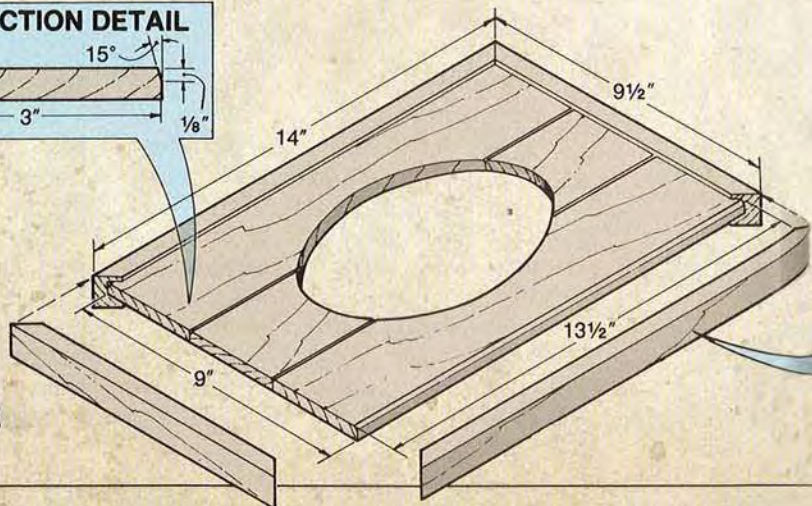
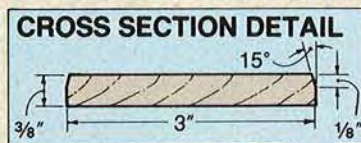
*Photocopy the bear pattern on the opposite page. Now, turn to page 42 for instructions on the tin-punching technique, and punch the pattern into the middle of the back side of an 8×10" piece of tin. When you have completed your tin piece, come on back and we'll show you how to paint it and make a frame for it. For the frame, you'll need three pieces of softwood  $\frac{3}{8}$ ×3×16" and four pieces measuring  $\frac{1}{2}$ ×1×16".*



Paint the *raised* side of the punched tin with artist's oil colors. (The pattern indicates the colors we used.) Color the flat areas enclosed by the dots as shown in the photo. After the paint dries, apply Krylon Dulling Spray or a matte-finish coating to give the teddy-bear design an aged look.

Begin making the frame panel by planing, sanding, or sawing a 15° bevel about  $\frac{1}{8}$ " deep along the front edges of three  $\frac{3}{8}$ ×3×16" boards. (See the Cross Section detail of the Frame drawing.) Edge-glide the three pieces together with the bevels facing up. When the glue has dried, cut the panel to 13½" long.

## One great patriotic plaque



**FRAME**



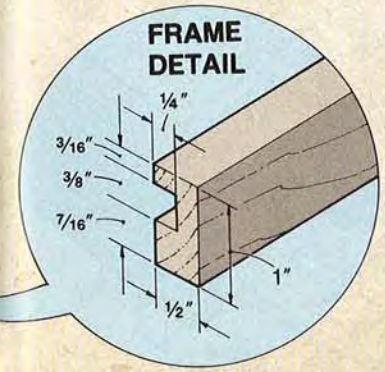
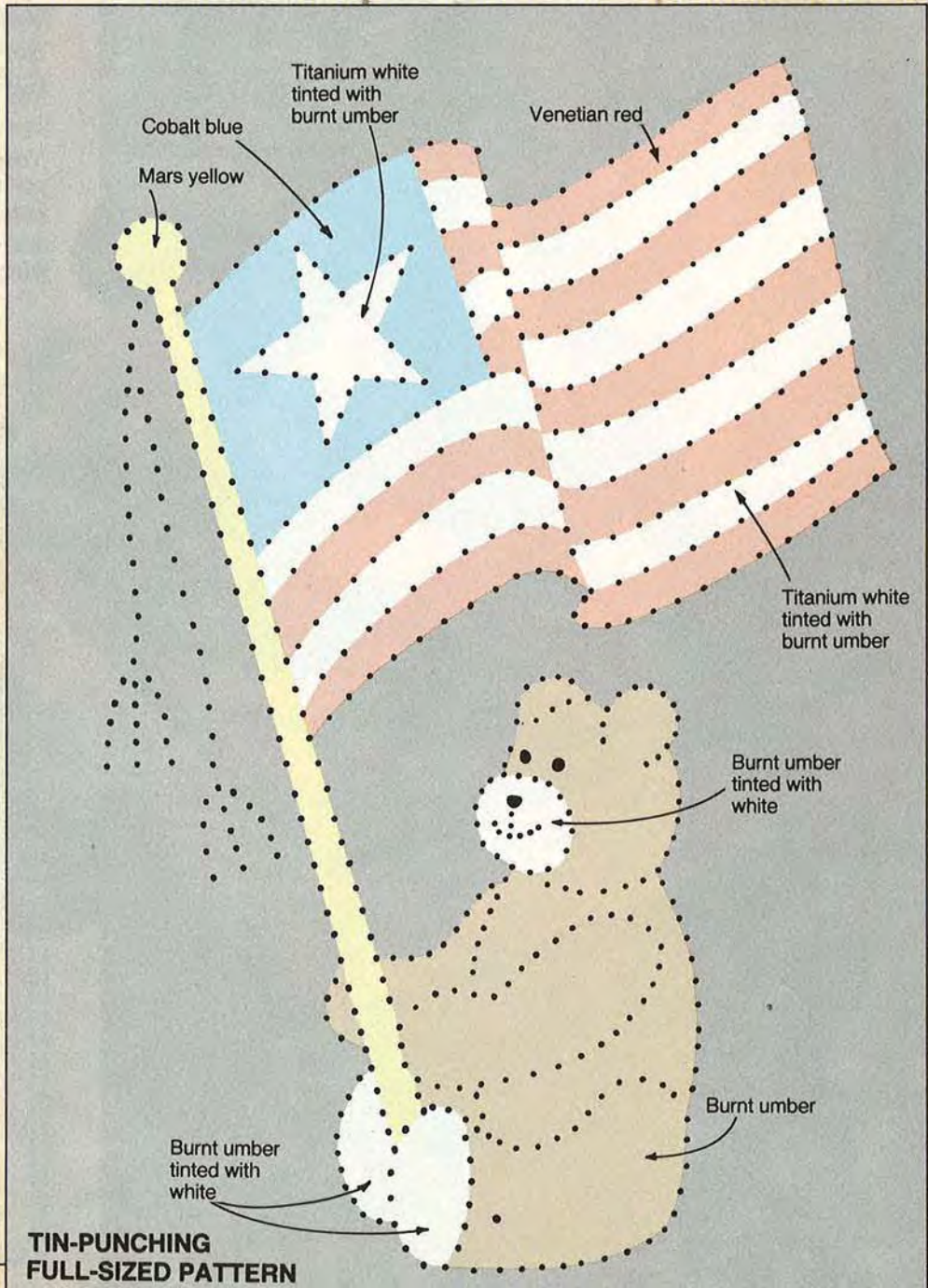
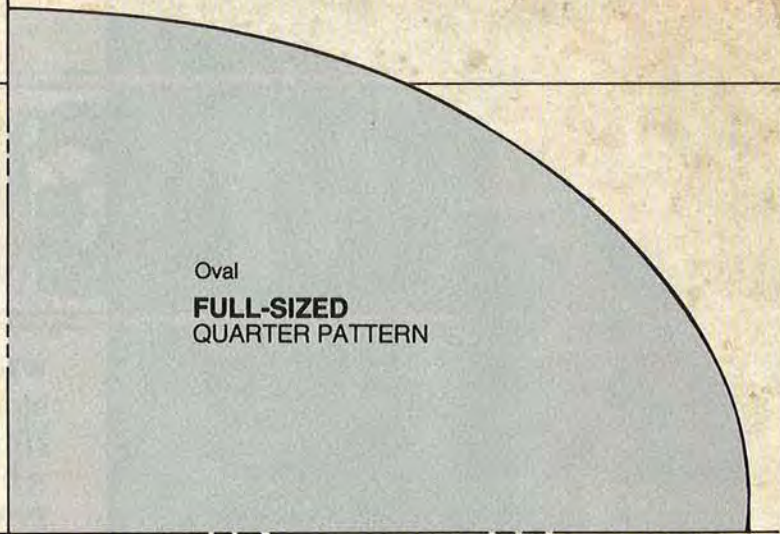
# TIN

Draw an oval pattern, using the Full-Sized Oval Quarter Pattern. Center and trace the oval onto the panel with the long axis running lengthwise. Drill a blade start hole inside the oval guideline, and cut the opening with your scrollsaw.

In each of four pieces of  $\frac{1}{2} \times 1 \times 16''$  stock, cut a  $\frac{3}{8}''$ -wide groove  $\frac{1}{4}''$  deep where shown on the Frame detail. Miter-cut the pieces to fit around the panel, shallow rim to the front.

Sand the frame, and then paint it. (We painted ours with Wedgewood blue from the DecoArt Americana line of acrylic artist's colors.) With the painted side of the tin piece up, punch six  $\frac{1}{8}''$  holes in an oval around the bear picture, making sure they don't fall inside the frame opening. Mount the punched tin on the back side of the frame with  $\#6 \times \frac{3}{8}''$  roundhead wood screws. (The bumps raised by punching the screw holes prevent the screws from poking through the panel.) Install small screw eyes and hanging wire. 🐻

Project Design: Harlequin Crafts  
 Illustrations: Mike Henry; Bill Zaun  
 Photograph: John Hetherington



**TIN-PUNCHING  
 FULL-SIZED PATTERN**



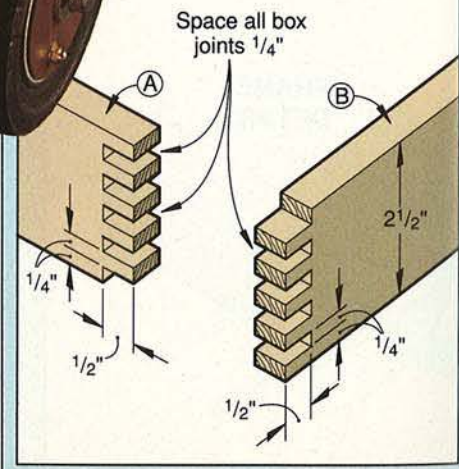
# WAGONS,

Whether hauling building blocks or giving teddy bear a ride, this handsome four-wheeler will help your youngster get the job done. And you'll appreciate the wagon for its box-jointed corners, walnut trim, and sturdy hardwood construction.

*Note: You'll need some thin stock for this project. You can either re-saw or plane thicker stock to size. See the Buying Guide on page 80 for our wagon-hardware kit.*

 [Print this article](#)

## CORNER DETAIL





# HO!

# FOR THE YOUNGSTER WHO'S ALWAYS ON THE GO

## Start with the wagon-box sides

**1** From 1/2"-thick maple, cut the box sides (A), and front and back (B) to the sizes listed in the Bill of Materials.

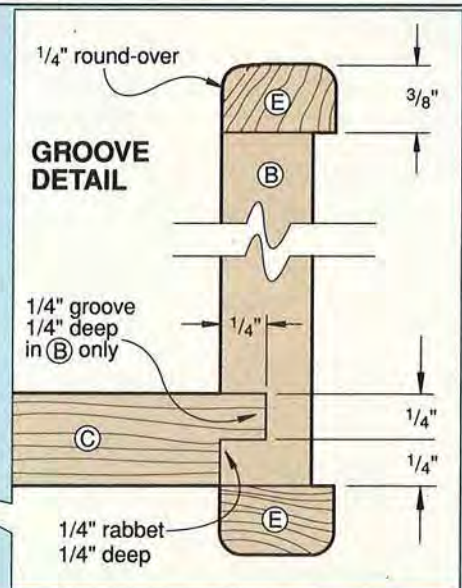
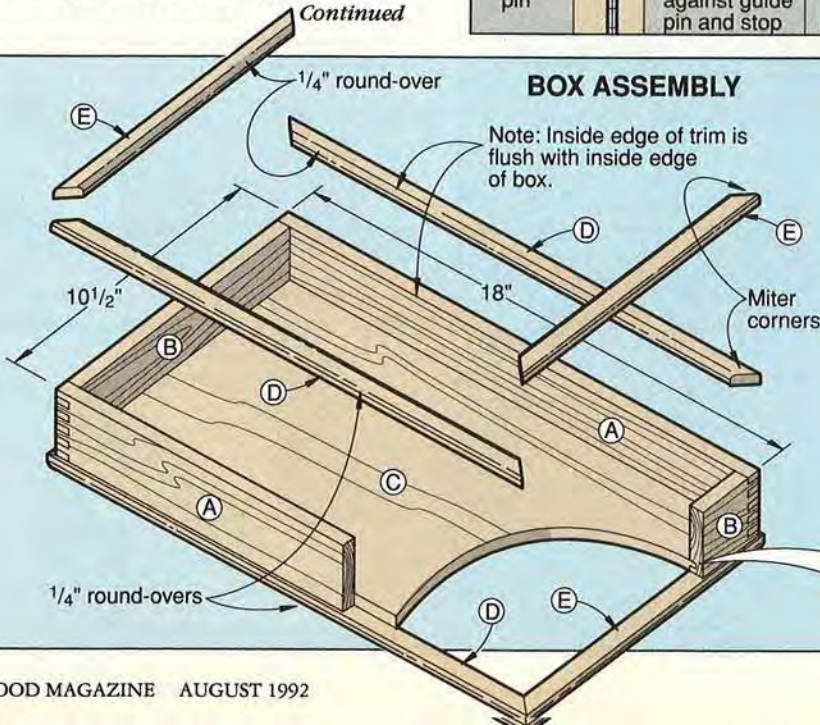
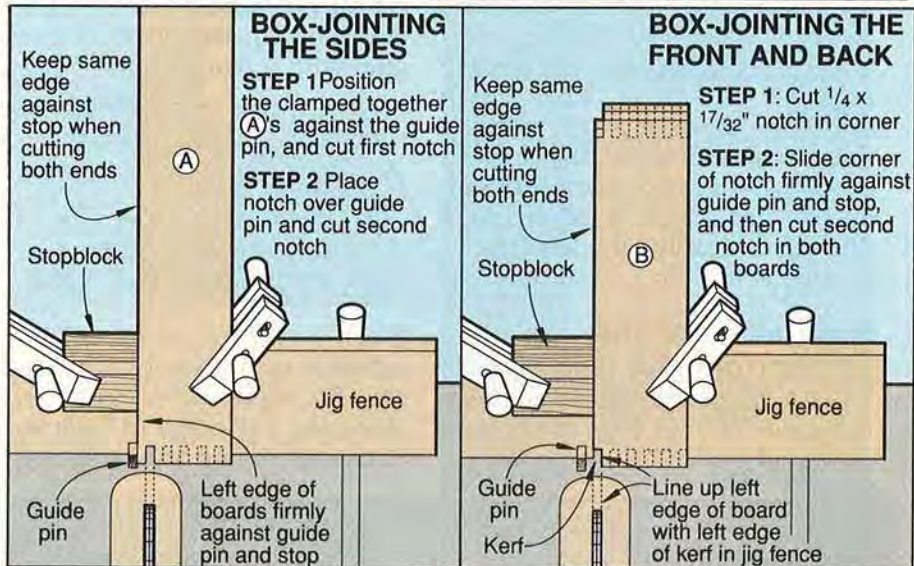
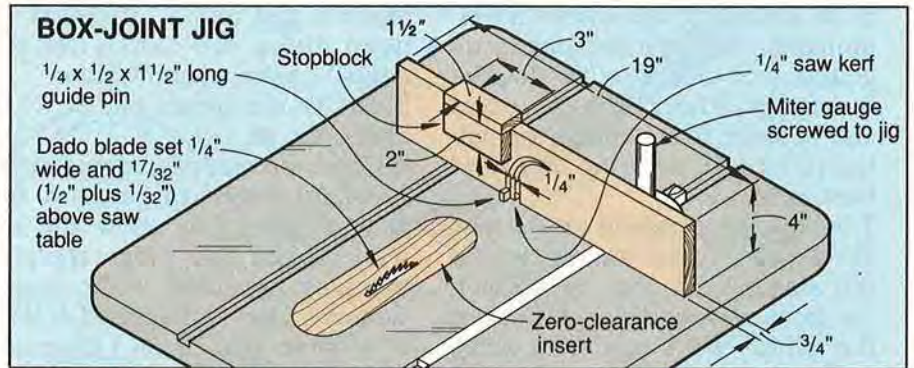
**2** To box-joint the wagon-box pieces (A, B), start by fitting your tablesaw with a zero-clearance insert where shown in the Box-Joint Jig drawing at right. (Our Delta tablesaw requires a 1/2"-thick insert; we used plywood.)

**3** Mount a 1/4" dado blade to your tablesaw (we used a stackable blade). With the blade running, raise the rotating blade through the insert and 1/2" above the surface of the saw table. Elevate the blade about 1/32" more (we found it is best to cut the fingers a bit long and sand them flush with the box sides after assembly).

**4** Construct the jig and stopblock shown on the Box-Joint Jig drawing. The stopblock helps steady the long wagon sides, front, and back when cutting the box joints.

**5** Carefully locate and cut a pair of 1/4"-wide kerfs 1/4" apart in the

*Continued*





# WAGONS, HO!

jig. For snug-fitting box joints, the kerfs and the distance between the guide pin and kerf must be exactly  $\frac{1}{4}$ ". Cut the guide pin to the size stated on the Box-Joint Jig drawing, and glue it into the kerf where shown on the drawing.

**6** To box-joint the sides (A) simultaneously, tape the pieces together face-to-face with double-faced tape. Check that the edges and ends are flush. Repeat the taping procedure with the front and back pieces (B).

**7** Follow the drawings on the previous page to cut the notches in the side pieces, and then notch the front and back pieces. (To test the setup, we box-jointed scrap  $\frac{1}{2}$ " stock before cutting the box pieces.) After notching the ends of each piece, separate the pieces, remove the tape, and sand smooth. (We used a thin, wedge-shaped piece of wood to pry apart the taped-together pieces. If necessary, use a splash of lacquer thinner to dissolve the adhesive on the tape.)

## Now, let's add the box bottom and trim pieces

**1** Cut a  $\frac{1}{4}$ " groove  $\frac{1}{4}$ " deep along the inside bottom edge of the box front and back (B) where shown

on the Box Assembly drawing and accompanying Groove detail on the previous page.

**2** Edge-join  $\frac{1}{2}$ " stock to form a  $10 \times 18$ " panel for the wagon bottom (C). Later, scrape off the excess glue, trim to size, sand smooth, and rout a  $\frac{1}{4}$ " rabbet  $\frac{1}{4}$ " deep along the ends (not the edges) of the wagon bottom.

**3** Dry-fit the pieces (A, B, C) to check the fit.

**4** Cover the mating surfaces of the box-joint fingers of pieces A and B with glue. (To allow the extended open time when applying the glue, we used white woodworker's glue and applied it with a  $\frac{1}{4}$ "-wide acid brush.) Glue and clamp the pieces (A, B, C), and check for square. Wipe off excess glue with a damp cloth.



**5** Cut two pieces of  $\frac{3}{8}$ " walnut to  $\frac{5}{8}$ " wide by 5' long for trim pieces (D, E). Rout  $\frac{1}{4}$ " round-overs along the top edges of each strip. Miter-cut the top and bottom trim

pieces (D, E) to length, and glue and clamp them to the box assembly with the inside edges flush where shown on the Box Assembly drawing and accompanying Groove detail.

## Next, add the front and rear wheel supports

**1** Cut the lazy-Susan spacer (F) to size from  $\frac{3}{8}$ " plywood. Glue and clamp it to the box bottom.

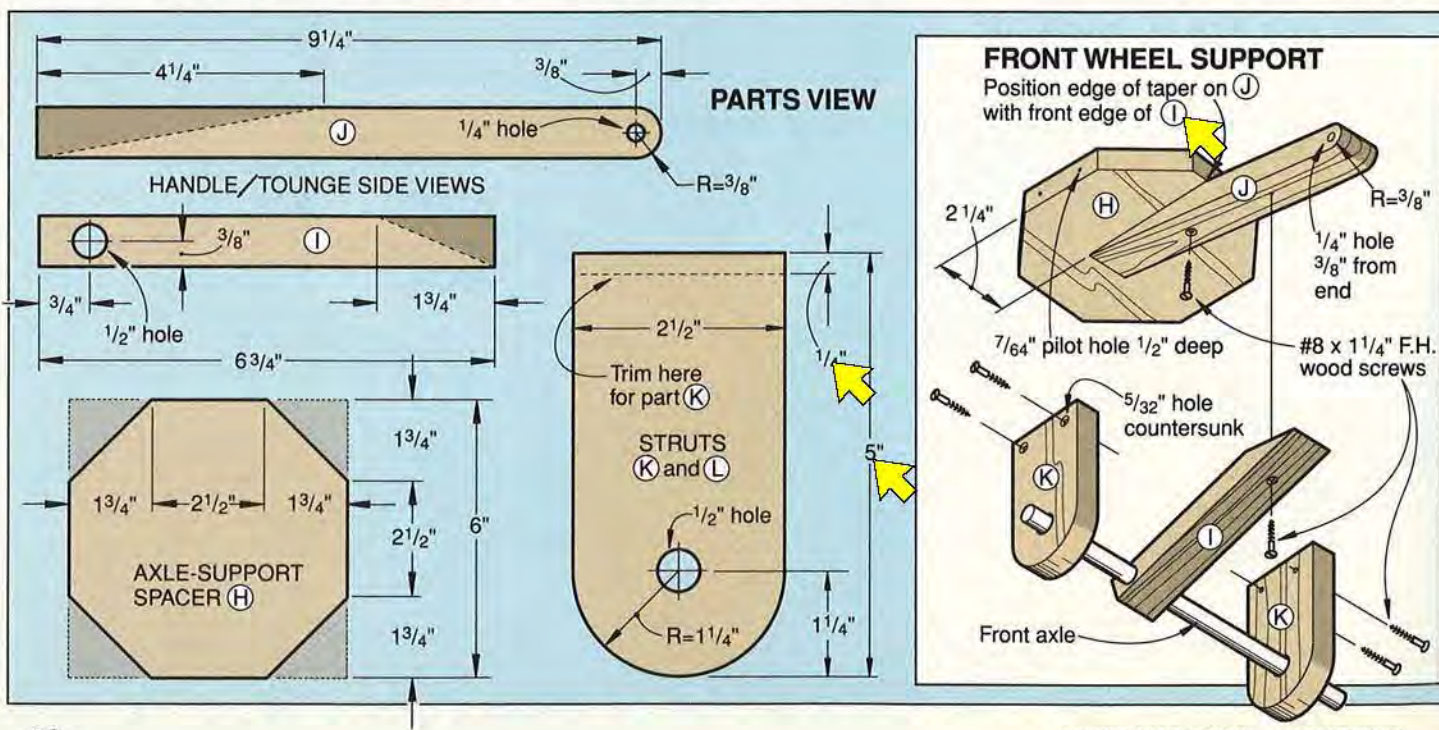
**2** Using the Parts View drawing for reference, cut the steering stopblock (G) and axle-support spacer (H) to size. Cut the under-carriage tongue parts (I, J) to the sizes listed in the Bill of Materials.

**3** Using the Parts View drawing for reference, mark the taper-cut lines on one edge of parts I and J. Bandsaw along the outside of each marked line, and then sand to the line to shape the pieces.

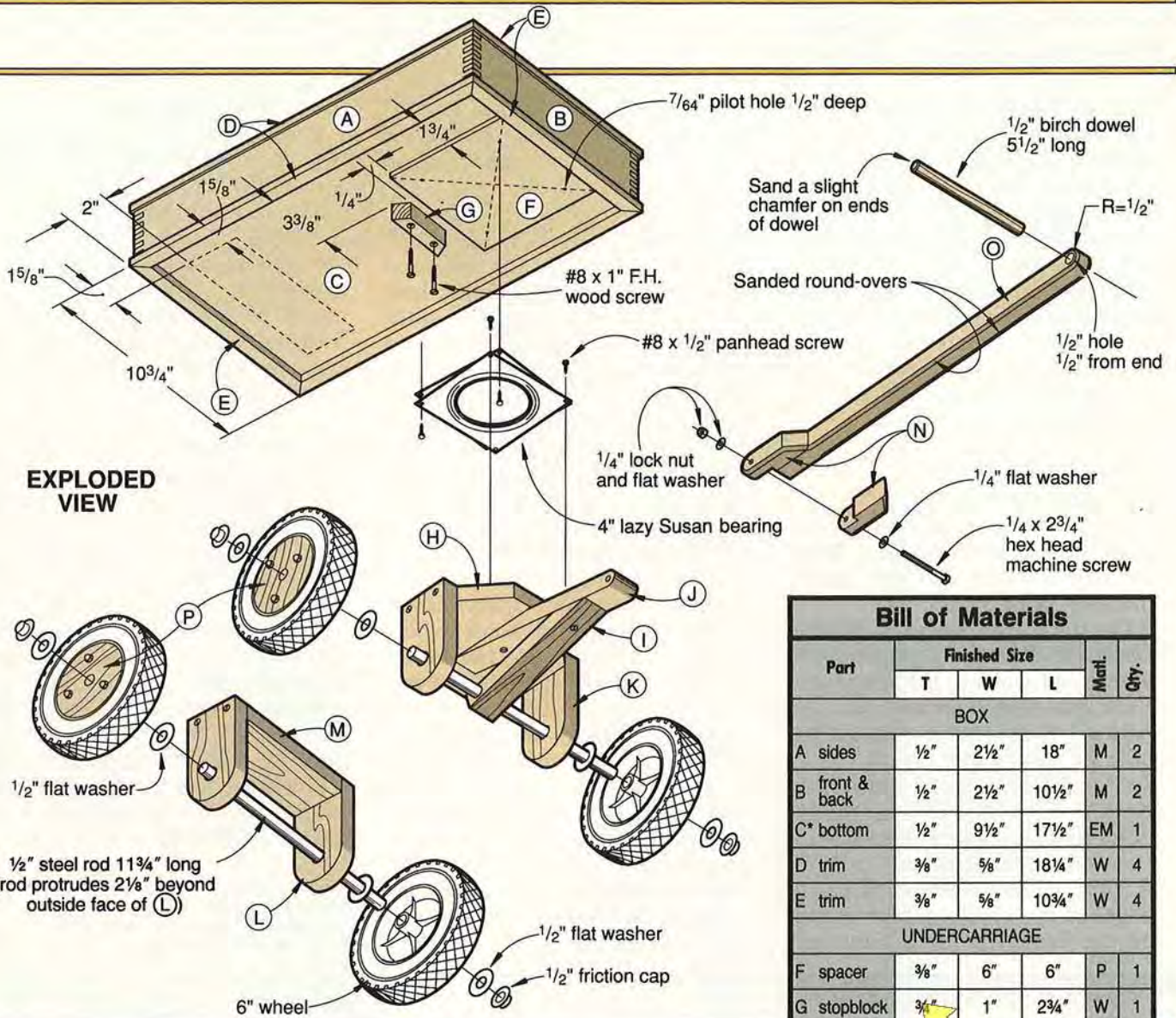
**4** Referring to the Parts View drawing, mark the outlines and hole centerpoints for the axle struts (K, L), and cut them to size. Note that part K is  $\frac{1}{4}$ " shorter in length than part L. Next, drill the axle holes where marked.

**5** Cut the rear-axle spacer (M) to size. Drill the mounting holes, and

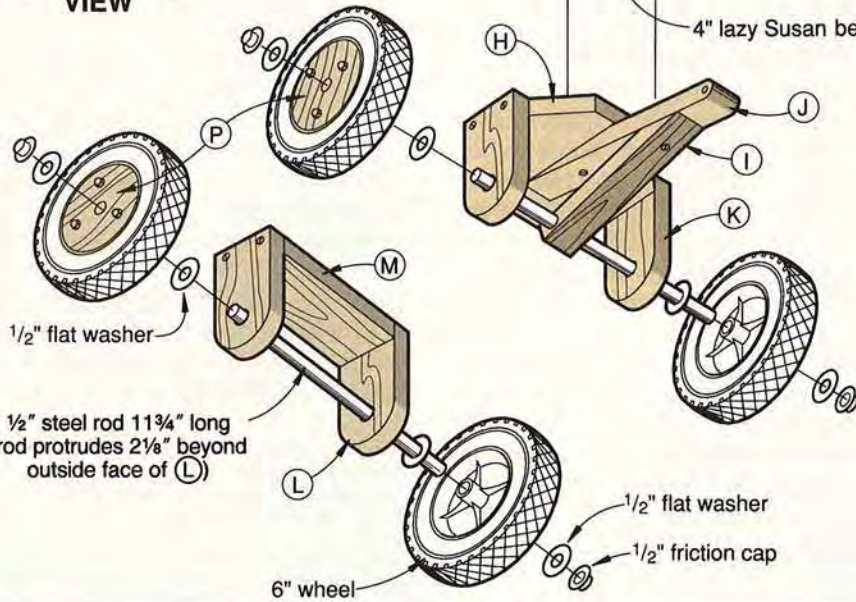
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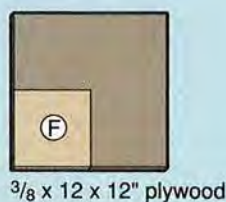
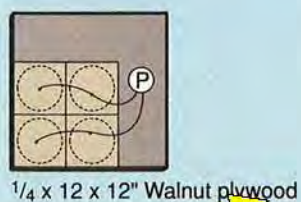
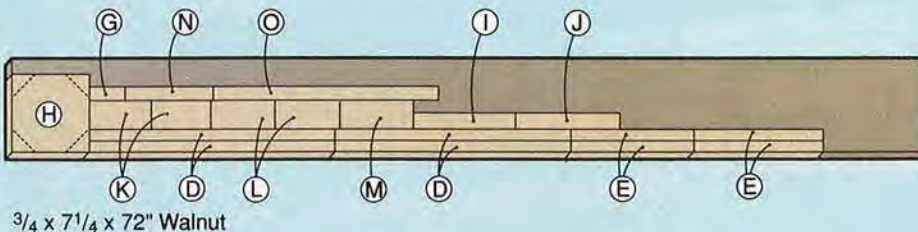
**EXPLODED VIEW**



**Bill of Materials**

Part	Finished Size			Mati.	Qty.
	T	W	L		
BOX					
A sides	1/2"	2 1/2"	18"	M	2
B front & back	1/2"	2 1/2"	10 1/2"	M	2
C* bottom	1/2"	9 1/2"	17 1/2"	EM	1
D trim	3/8"	5/8"	18 1/4"	W	4
E trim	3/8"	5/8"	10 3/4"	W	4
UNDERCARRIAGE					
F spacer	3/8"	6"	6"	P	1
G stopblock	3/4"	1"	2 3/4"	W	1
H support spacer	3/4"	6"	6"	W	1
I tongue	3/4"	1 1/2"	6 3/4"	W	1
J tongue	3/4"	1 1/2"	9 1/4"	W	1
K front struts	3/4"	2 1/2"	4 3/4"	W	2
L rear struts	3/4"	2 1/2"	5"	W	2
M spacer	3/4"	2 1/2"	6"	W	1
HANDLE AND WHEEL COVERS					
N* supports	3/4"	1"	3"	W	2
O stem	3/4"	1"	18"	W	1
P wheel covers	1/4"	3 1/2" dia.		W	4

**CUTTING DIAGRAM**



\*Initially cut parts marked with an \* oversized. Then, trim each to finished size according to the how-to instructions.

**Material Key:** M—maple, EM—edge-jointed maple, W—walnut, P—plywood

**Supplies** (other than those listed in the Buying Guide): 1/2" birch dowel 5 1/2" long, double-faced tape, #8 x 1" flathead wood screws, #8 x 1 1/4" flathead wood screws, clear finish.



# WAGONS, HO!

glue and screw the rear-axle struts (L) to the spacer (M).

**6** Drill the mounting holes and assemble the front undercarriage assembly (H, I, J, K) in the manner shown on the Front-Wheel Support drawing.

**7** Drill pilot holes, and screw the lazy-Susan bearing to the support spacer (H). Rotate the bearing slightly, and fasten the other half of the bearing to the underside of the wagon box (F).

## Add the handle for easy pulling

**1** Cut the handle supports (N) to shape, using the five steps listed on the Handle-Support Blank drawing below.

**2** Cut the handle stem (O) to size. Drill a  $\frac{1}{2}$ " hole  $\frac{1}{2}$ " from one end where shown on the Exploded View drawing. Mark and cut a  $\frac{1}{2}$ " radius on the same end as the hole for the handle dowel.

**3** Glue the handle supports to the handle, being sure to keep the  $\frac{1}{4}$ " holes in the supports aligned with each other. Sand smooth.

**4** Sand a slight round-over on all edges of the handle where shown on the Exploded View drawing.

**5** Cut a  $\frac{1}{2}$ " birch dowel to  $5\frac{1}{2}$ " long. Sand a slight chamfer on the ends, and glue it in place in the  $\frac{1}{2}$ " hole in the handle.

## Now, for the wheel covers

**1** Use a compass or the full-sized wheel-cover pattern to mark four  $3\frac{1}{2}$ " circles on  $\frac{1}{4}$ " walnut stock (we resawed thicker stock) for the wheel covers (P).

**2** Cut the wheel covers to shape, cutting just outside the marked line. Now, sand to the line to finish the shaping. (We bandsawed the covers to shape, and then used our disc sander to sand to the line to finish the shaping.)

**3** Transfer the  $\frac{1}{2}$ " and  $\frac{5}{32}$ " hole centerpoints to each wheel cover, and then drill the holes where marked. (Using double-faced tape, we adhered the wheelcovers together face-to-face with the edges flush. Then, we used spray adhesive to adhere a photocopy of the wheel-cover pattern to the top piece. Next, we drilled through all four wheel covers at one time to drill the  $\frac{1}{2}$ " and  $\frac{5}{32}$ " holes. Finally, we pried apart the pieces with a wooden wedge, and removed the tape.)

## It's almost playtime

**1** Finish-sand, and apply the finish. For indoors use, we recommend polyurethane. For use outdoors, apply spar varnish.

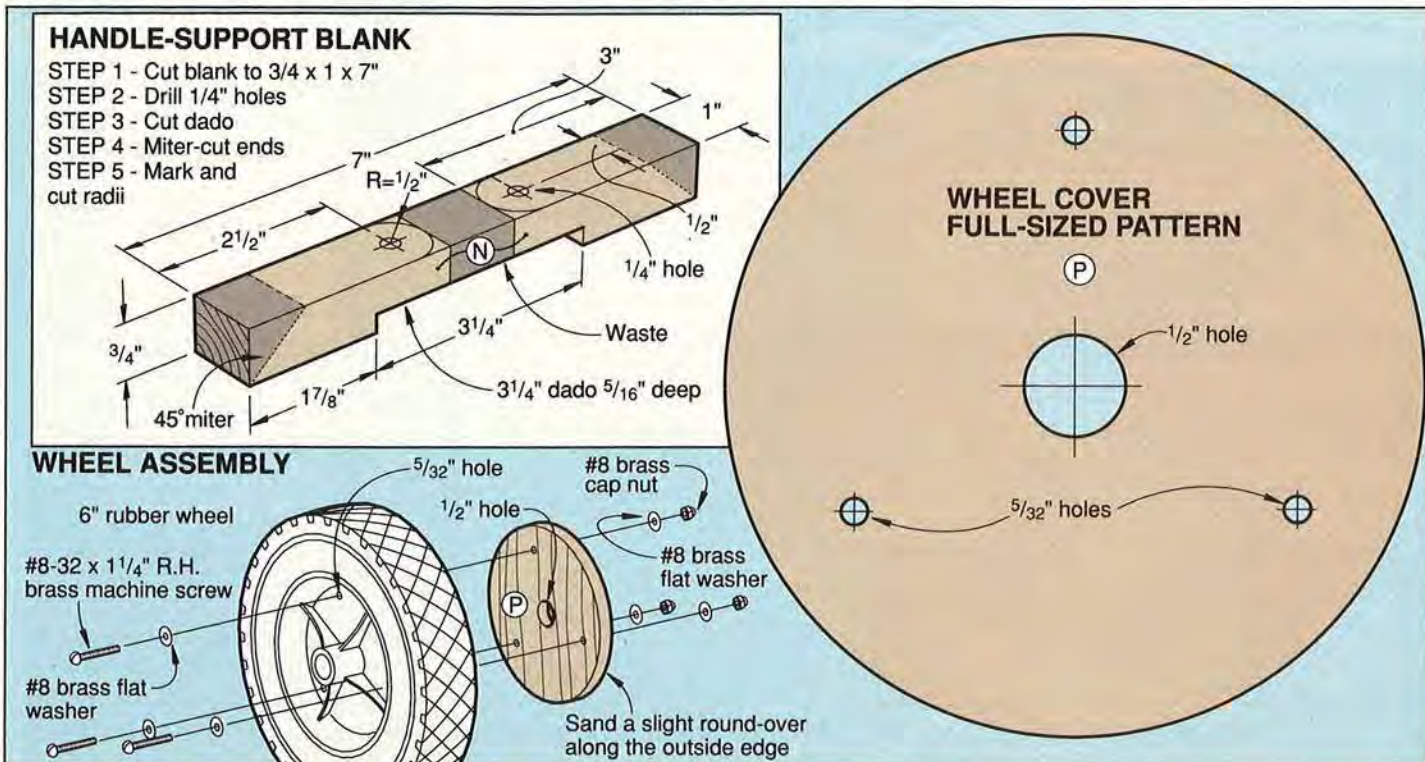
**2** Fasten the handle to tongue part (J). Fasten the wheel covers to the wheels where shown on the Wheel Assembly drawing.

**3** Using the Exploded View drawing for reference, mount the wheels to the wagon.

## Buying Guide

• **Wagon-hardware kit.** 4-6" diameter wheels; 2- $\frac{1}{2}$ " steel rods 11 $\frac{3}{4}$ " long with 4- $\frac{1}{2}$ " friction caps and 8- $\frac{1}{2}$ " flat washers; 4" lazy Susan with 8-#8 $\times\frac{1}{2}$ " pan-head wood screws;  $\frac{1}{4}\times 2\frac{3}{4}$ " hex-head machine screw with 2- $\frac{1}{4}$ " flat washers and a  $\frac{1}{4}$ " lock nut; 12-8-32 $\times 1\frac{1}{4}$ " roundhead brass machine screws with 24-#8 brass flat washers and 12-#8 brass cap nuts. Kit no. WDWG, \$29.95 ppd. Miller Hardware, 1300 Harding Road, Des Moines, IA 50314, or call 515/283-1724 to order. ♣

Produced by Marlen Kemmet  
Project Design: Scott B. Darragh  
Photographs: Hopkins Associates  
Illustrations: Kim Downing





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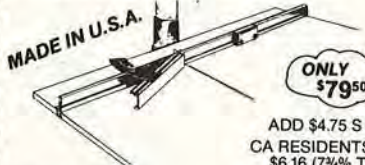
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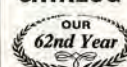
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# HAND CLAMPS

## HOW WOODWORKERS GOT A HOLD ON THEIR WORK

From top: Typical 19th-century wooden hand-screw clamp, metal-frame handscrew clamp made by Hargrave, and no. 0 quick-acting clamp manufactured by E.C. Stearns & Co.

Before the 14th and 15th centuries, woodworkers had no dependable glues to hold furniture together. Instead, they relied on other means, including firm mortise-and-tenon joinery, leather lashings, or metal bands.

With strong animal (hide) glue, craftsmen had to develop ways to hold the wood together until the adhesive dried. Yet little is known of this. English historian Joseph Moxon, in his 17th-century book *Mechanick Exercises*, only mentions a "Glew-pot." Illustrations from his day, though, do show workbenches with dog holes in their tops and legs.

Driving an assortment of pegs (dogs) around boards or parts was one way to hold wood. But as tradesmen such as joiners and shipwrights increasingly went from job to job, their need for portable holding devices increased.

### Who ever has enough clamps?

By the 18th century, cabinetmakers had a variety of wooden clamps (or cramps, as they're called in England) that they built as needed. There were bar clamps with notched wooden bars, and C-type clamps of traditional and rectangular profiles. But it was the handscrew, shown *above top*, that became the first sophisticated clamping device.

Developed during the late 1700s, the handscrew was shop-built of wood, usually beech, ma-

ple, and hickory. To thread the screws, they pushed a dowel into a screw box containing cutting blades. To cut matching jaw threads, they rotated an iron tap in drilled holes. Handscrews varied in jaw length from 4" to 22", with openings from 1¼" to 15½".

The Stanley Tool Company manufactured all-beech handscrews until 1879, but most manufacturers had replaced wood with metal by the early 19th century, as shown *above center*. The Ohio Tool Company, though, sold all-wood handscrews until 1910.

America's pre-Civil War tool industry boom provided other clamp improvements. Wooden C-type clamps were replaced by ones cast in iron and steel. Hammer's patent G-clamp of 1837 offered instantaneous adjustment in a sliding screw with a winged nut. Even faster was E.C. Stearns & Company's quick-acting clamp, shown *above bottom*. One jaw slid freely along the notched clamp body while the other jaw was a hinged lever that flipped into a locked position.

Even the dependable handscrew experienced a drastic change. The Jorgenson Patent Adjustable Handscrew of 1903 allowed a woodworker to adjust the jaws to any angle, adapting it to more gluing jobs.

Most old clamps have little cash value. But what the heck, if you find ones that still work... hey, who ever has enough clamps? 🍀

Photograph by Tim Murphy

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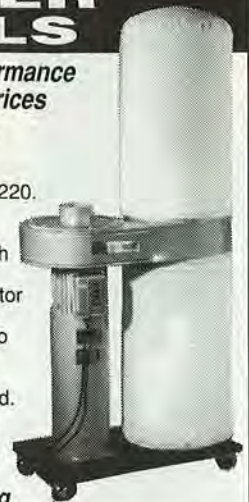
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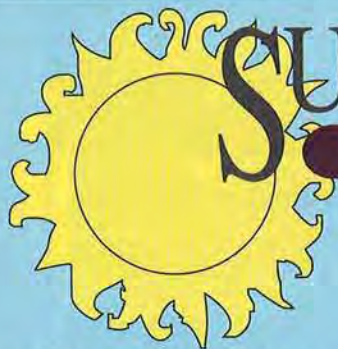
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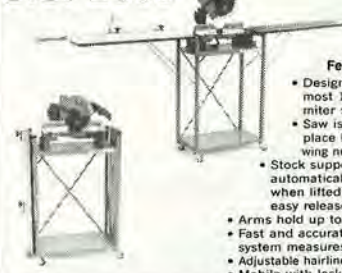
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#### East

Brookfield Craft Center  
Rt. 25, P.O. Box 122  
Brookfield, CT 06804  
203/775-4526

Peters Valley Crafts Center  
19 Kuhn Rd.  
Layton, NJ 07851  
201/948-5200

Southern Maine  
Technical College  
Fort Rd.  
South Portland, ME 04106  
207/767-9500

#### South

Appalachian Center for Crafts  
Box 430, Rt. 3  
Smithville, TN 37166  
615/597-6801

Arrowmont School  
P.O. Box 567  
Gatlinburg, TN 37738  
615/436-5860

Penland School  
Penland, NC 28765-0037  
704/765-2359

#### Midwest

Dakota Cty. Technical Institute  
1300 E. 145th St.  
Rosemont, MN 55068  
612/423-2281

Madison Area Technical College  
3550 Anderson St.  
Madison, WI 53703  
608/246-6100

U. of Wis. Stout  
Menomonie, WI 54751  
715/232-2165

Neosho Cty. Community College  
1000 S. Allen St.

Chanute, KS 66720  
316/431-2820

#### Southwest

U. of Central Okla.  
100 N. University Dr.  
Edmond, OK 73034-0185  
405/341-2980, ext. 5450

Tarleton State University  
Dept. of Industrial Technology  
P.O. Box T-489 TSU Station  
Stephenville, TX 76402  
817/968-9010

#### West

Anderson Ranch Art Center  
P.O. Box 5598  
Snowmass Village, CO 81615  
303/923-3181

College of the Redwoods  
440 Alger St.  
Fort Bragg, CA 95437  
707/961-1001

Long Beach City College  
1305 E. Pacific Coast Hwy.  
Long Beach, CA 90806  
213/599-8055

#### Canada

Conestoga College of Applied Arts  
and Technology  
Ontario Woodworking Center  
299 Doon Valley Dr.  
Kitchener, ON N2G 4M4 Canada  
519/748-5220

Holland College Creative Arts  
50 Burns Ave.  
Charlottetown, P.E.I.  
C1E 1H7 Canada  
902/566-9310

Red Deer College  
P.O. Box 5005  
Red Deer, AB T4N 5H5 Canada  
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 State \_\_\_\_\_ Zip Code \_\_\_\_\_ \$ \_\_\_\_\_ total remittance

# TOOLS ON SALE™

DIV. OF SEVEN CORNERS ACE HARDWARE, Inc. Est. 1933  
 216 West 7th Street St. Paul, MN 55102  
 1-800-328-0457 FAX (612) 224-8263

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

### DELTA BENCH TOP TOOLS

Model	Description	List	Sale
23-700	Wet/Dry Grinder	234	158
23-680	6" Bench Grinder 1/4 HP	86	75
23-880	8" Bench Grinder 1/2 HP	151	115
11-950	8" Drill Press	193	144
23-180	10" Hobby Band Saw	210	145
31-050	8" Belt Sander 2.0 amp	104	78
31-460	4" Belt's Disc Sander	198	145
31-340	NEW 1" Belt's Disc Sander	268	188
31-080	NEW 1" Belt's Disc Sander	134	94

### NEW TOOLS BY DELTA

40-560	16" 2 speed Scroll Saw	268	184
11-890	12" Bench Drill Press	278	210
11-090	32" Radial Bench Drill Press	328	249
43-355	3/4" Shaper 1-1/2 HP	964	705
43-505	1/2" Bench Router/Shaper	399	279
22-540	12" Bench Top Planer	595	388
36-220	12" Compound Miter Saw	350	238
28-180	Bench Band Saw	232	167
40-640	NEW 20" Bench Scroll Saw	466	325
23-675	NEW 6" Grinder / 3x24 Belt Sander	141	105
14-800	Hollow Chisel Mortiser	558	465
46-700	12" Wood Lathe	548	419

### DELTA STATIONARY

34-444	Table Saw complete w/1-1/2 HP motor & stand	812	615
34-445	34-444 Saw with 30" uniface	1200	810
34-446	34-444 Table Saw complete w/30" Uniface and 32-010 EMS system	1411	839
28-283	14" Band Saw w/retrocast stand and 50-274 mobile base	910	729
22-562	13" Planer with 2 HP motor, stand, and 32-011 EMS system	1436	1169
17-900	16-1/2" Floor Drill Press	441	369
40-601	18" Scroll Saw w/stand and blades	942	729
34-080	10" Miter Box	Xtra Special	198
34-761	10" Unisaw 1-1/2 HP	1715	1325
32-680	10" Radial Arm Sander	581	385
32-720	6" Motorized Joiner	488	335
50-179	3/4 HP 2 stage Dust Collector	483	335
50-181	2 HP Dust Collector	885	615
70-200	20" Floor Drill Press	1049	798
37-154	DJ15 5" Joiner with 3/4 HP motor	1420	1079
33-055	8-1/4" Sawbuck comp with legs	865	579
34-330	8-1/4" Table Saw 13 amp	343	229
34-670	10" Motorized Table Saw	511	385
32-100	Station Plate Joiner	845	275
38-040	8-1/4" Compound Miter Saw	224	165
34-915	30" Uniface	385	239
34-897	50" Delta Uniface	525	279
36-755	10" Tilt Arbor Saw	1264	895

**HTC Mobile Bases for above Machines**  
 HRD-10 fits Delta 34-444 table saw 88.50  
 HRD-10X fits Delta 34-445 table saw with fence 132.00  
 HRD-5 fits Delta 28-283 bandsaw 89.50

### AMERICAN CLAMPING CORP Bessey "K" Body Clamps

Item	Throat	Opening	Jaw Length	List	Sale
K3.512	3-1/2"	12"	5"	44.35	30.99
K3.524	3-1/2"	24"	5"	48.65	33.99
K3.531	3-1/2"	31"	5"	52.85	36.99
K3.540	3-1/2"	40"	5"	56.95	39.79
K3.550	3-1/2"	50"	5"	60.85	42.39
K3.560	3-1/2"	60"	5"	64.50	45.09

### NEW DEWALT TOOLS

DW364	7-1/4" Circ. Saw w/broke, 13 amp	245	148
DW46K12	volt cordless 3/8" Hammer Drill Kit	512	173
DW368K3	0 amp Recip. Saw w/case var. speed	254	159
DW610	1-1/2 HP 2 handle Router	250	139
DW411	1/4 sheet Palm Sander, 1.7 amp	87	54
DW705	12" Compound Miter Saw	555	339
DW704	12" Miter Saw	480	289
DW100	3/8" Drill, 4 amp, 0-2500 rpm, rev.	110	65
DW250	4.5 amp Drywall Gun, 0-4000 rpm, rev.	146	89
DW254	4.5 amp Drywall Gun, 0-2500 rpm, rev.	146	89
DW124K12	joist & stud Drill w/case, rev.	504	295
DW102	3/8" Drill, 4.5 amp, 0-1200 rpm, rev.	154	92
DW103	3/8" Drill, 5.0 amp, 0-1200 rpm, rev.	189	115
1707	8-1/2" Slide Compound Miter Saw	815	439

### SKIL SIZZLERS

3810	10" Miter Saw	263	199
3810K	3810 with 60 tooth carbide blade	229	149
77	7-1/4" Worm Drive Saw	230	144
5825	6-1/2" Worm Drive Saw	255	159
2735-04X	12 volt cordless Drill Kit	210	135
2735-04X	2735-04 with keyless chuck	235	137
1605-02	NEW Discout Joiner with case	200	119
7584	NEW 5" Random Orbit Sander	160	104
5510	5-1/2" Circular Saw	165	114
5660	NEW 8-1/4" 60° Circular Saw	225	145
5680	NEW 8-1/4" 60° Worm Saw	275	179
5625	6-1/2" Circular Saw	210	139

### New Skil Bench Top Tools

3400	10" Table Saw	250	179
3330	16" Scroll Saw	200	135
3380	8" Drill Press	200	135
3370	4" Belt's Disc Sander	200	135

Receive FREE #2210 SKIL SUPERTWIST Screwdriver with purchase of any Skil Bench Top Tool!

### AEG POWER TOOLS

VSRE500KNEW	vsp/d 5" Random Sander w/case	279	149
VSRE600KNEW	vsp/d 6" Random Sander w/case	284	155
HBSE7553	x21 variable speed Belt Sander	299	169
ABSE15512	cordless 12V Drill complete w/case/389	235	155
FSPE100B	barrel Grip variable speed Jig Saw	265	149
BSPE100K	Top Handle variable speed with case	275	159

### HITACHI TOOLS

Model	Description	List	Sale
C75B	7-1/4" Circular Saw	214	109
DTC10	3/8" 7.2 volt cordless Drill	138	78
C7BD	7-1/4" Circular Saw with brake	230	127
M12V	NEW 3 HP variable speed Router	447	225
TR12	Plunge Router 3 HP	354	169
F1000A	12" Planer's Joiner	2835	1519
C10FA	10" Deluxe Miter Saw	532	269
C21FA	NEW 12" Miter Saw	322	295
CF8B	1/2" Slide Compound Saw	899	445
FREUD LU81M0888-1/2"	carbide blade 48 tooth	68	43
C15FB	15" Miter Saw	745	375
FREUD LU85M01515"	carbide blade 108 tooth	180	105
F20A	3-1/4" Planer 3.4 amp	172	99
G125A	4-1/2" Grinder 6.9 amp	147	79
M8V	Var. speed Router 1/4" collet	278	155

### JORGENSEN ADJUSTABLE HANDSCREWS

Item#	Jaw Length	Opening Capacity	List	Sale	Box of 6
#50	4"	2"	13.80	8.35	48.59
#40	5"	2-1/2"	14.80	8.95	51.99
#30	6"	3"	15.90	9.59	55.75
#20	7"	3-1/2"	17.10	10.35	58.95
#10	8"	4-1/2"	19.00	11.95	64.95
#1	10"	6"	21.76	12.99	73.49
#2	12"	8-1/2"	24.95	14.95	83.45
#3	14"	10"	31.61	18.95	104.95
#4	16"	12"	42.30	24.95	143.95

### JORGENSEN STYLE 37 2-1/2" Throat 1/4"x3/4"

Item#	Jaw Length	List	Sale	Box of 6
3706	6"	9.86	6.49	36.55
3712	12"	10.92	6.99	39.99
3718	18"	12.00	8.25	42.99
3724	24"	13.16	8.39	47.45
3730	30"	14.70	9.55	54.75
3736	36"	16.05	10.39	57.95

### JORGENSEN STYLE 45 5" Throat 1-3/8" x 5/16"

Item	Jaw Length	List	Sale	Lot of 6
4512	12"	30.07	19.39	109.99
4518	18"	31.73	20.45	116.99
4524	24"	33.55	21.75	123.99

### PONY CLAMP FIXTURES

Model	Description	List	Sale	Lots of 12
50	3/4" Black Pipe Clamps	13.61	7.99	84.99
52	1/2" Black Pipe Clamps	11.37	6.50	69.50
56	Double 3/4" Pipe Clamps	38.50	24.45	274.00

### JORGENSEN STYLE "T" BAR CLAMPS

Model	Size	List	Sale	Lots of 6
7224	24"	31.46	18.45	107.00
7236	36"	33.77	20.19	115.45
7248	48"	37.12	22.19	126.95
7272	72"	42.71	26.79	149.95

### ELU BY BLACK & DECKER

3338	2-1/4 HP variable speed Plunge Router	427	249
3304	1 HP variable speed Plunge Router	292	164
3375	3-1/8" Uniw. planer 7.2 amp	313	199
3380	Biscuit jointer with case	322	200
4024	3 x		



LAMELLO BISCUIT JOINERS	
Model	List Sale
TOP 10 "Simply the Best".....	699 559
STANDARD 10 "Professionals Choice".....	499 399
COBRA NEW Biscuit Joiner.....	Special 299
MINICOL High quality glue applicator.....	Sale 23.40

MILWAUKEE TOOLS	
Model	List Sale
9069 1/2" Impact Wrench w/case.....	438 269
5455 7/8" Polisher 1750 rpm.....	239 132
0230-1 Drill 3.5 amp.....	203 112
0219-1 9.6 volt cordless Drill w/case.....	404 175
5925 Bell Sndr 3x24 w/bag 10 amp.....	419 238
5936 Bell Sndr 4x24 w/bag 10 amp.....	419 238
17411 Drywall Gun 0-2500rpm Smp179	99
6767-1 above Gun w/case & acc.....	229 138
6016 1/4 sheet Palm Grip Sander.....	89 55
6017 6/16 Sander with dust bag.....	97 57
6012 1/2 shi 12,000 rpm orbital.....	204 115
8975 Heat Gun 570° w/case.....	91 59
8980 8975 Heat Gun 1000°.....	air reduction, hook, deflector, & spreader nozzles 136 88

3202-1 D Handle t angle w/cas 355 rpm	198
3102-1 Plumbers t angle Drill Kit 50dpm	360198
3002-1 Elec. t angle Drill Kit 600rpm	360 198
5660 Router 1-1/2 HP 10 amp.....	325 180
5365-1 Hawk 1" Rotary Hammer.....	585 345
6378 8-1/4" Worm Drive Saw 15 amp	334 185
6256 Var. speed Jig Saw 3.8 amp.....	254 138
6460 10-1/4" Circular Saw 15 amp.....	459 274
6528 New Super Sawsall with case	299 164
6125 NEW 5" Random Orb Sander	200 119
6126 NEW 6" Random Orb Sander	205 125
0399-1 12V cdless Drill Kit complete.....	304 165
4002-1 above Drill w/keyless chuck.....	309 169
0395-1 9.6V cordless Drill w/case.....	284 158
0224-1 3/8" Drill 4.5 amp magnum.....	203 115
0234-1 1/2" Drill 4.5 A mag 0-850 rpm	223 119
0244-1 1/2" Drill 4.5 A mag 0-1000 rpm	223 122
0222-1 3/8" Drill 3.5 amp 0-1000 rpm	189 105
0228-1 3/8" Drill 3.5 amp 0-1000 rpm	183 102

0375-1 3/8" close quarter Drill.....	223 129
0379-1 1/2" close quarter Drill.....	254 145
6339-1 cordless Screwdriver 150 rpm	127 75
6540-1 6539-1 with bits & case.....	162 95
6546-1 clss Schrwdr 200 & 400 rpm	138 79
3102-1 Plumbers night angle Drill Kit	360 195
5399 1/2 D-hole Hammer Drill Kit.....	319 184
1676-1 HD Hole Hamw with case.....	459 247
6511 2 speed Sawsall with case.....	234 134
17401 Drywall Gun 0-4000 5.4 amp.....	162 93
6507 Original Sawsall with case.....	249 135
6508 Above Saw with wired cord.....	245 135
6170 14" Chop Saw 15 amp.....	489 279
6014 Orbital Sander 1/2 sheet.....	214 116
8977 variable lamp. Heat Gun.....	122 75
5397-1 3.8" var. spd Hammer Drill Kit	244 139
5371-1 1/2" var. spd Hammer Drill Kit	335 185
3107-1 1/2" var. spd t angle Drill Kit.....	370 199
6754-1 Drywall Gun 0-4000 5.4 amp.....	114 61
3300-1 1/2" var. speed t angle Drill.....	329 184
5680 Router 2 HP - 12 amp.....	355 205
6215 1/6" Chain Saw.....	309 174
0225-1 1/2" Drill w/keyless chuck magnum	223 125
6145 4-1/2" Grinder 10,000 rpm.....	162 98
6142 1/4" with case & access.....	199 129
6749-1 Drywall Gun 0-2500 5.4 amp.....	224 119
5353 Eagle 1-1/2" Rot. Hammer w/case	910 499
6365 7-1/4" Circular Saw 13 amp.....	214 120
6367 Above Saw - double insulated	209 125
6366 6365 w/case & carbide blade	224 134
6368 6365 w/case, carb. blade & case	244 125
6377 7-1/4" Worm Drive Saw.....	324 178

5397-1 3.8" var. spd Hammer Drill Kit	244 139
5371-1 1/2" var. spd Hammer Drill Kit	335 185
3107-1 1/2" var. spd t angle Drill Kit.....	370 199
6754-1 Drywall Gun 0-4000 5.4 amp.....	114 61
3300-1 1/2" var. speed t angle Drill.....	329 184
5680 Router 2 HP - 12 amp.....	355 205
6215 1/6" Chain Saw.....	309 174
0225-1 1/2" Drill w/keyless chuck magnum	223 125
6145 4-1/2" Grinder 10,000 rpm.....	162 98
6142 1/4" with case & access.....	199 129
6749-1 Drywall Gun 0-2500 5.4 amp.....	224 119
5353 Eagle 1-1/2" Rot. Hammer w/case	910 499
6365 7-1/4" Circular Saw 13 amp.....	214 120
6367 Above Saw - double insulated	209 125
6366 6365 w/case & carbide blade	224 134
6368 6365 w/case, carb. blade & case	244 125
6377 7-1/4" Worm Drive Saw.....	324 178

FREUD SAW BLADES	
Model	List Sale
LUTZM10 Gen Purp. 10".....	40 39
LUB1M10 Gen Purp. 10".....	40 39
LUB2M10 Cut-off 10".....	60 44
LUB4M11 Combo 10".....	50 40
LUB5M10 Super Cut-off 10".....	80 58
LMT7M10 Ripping 10".....	24 66
LUTZM10 Cut off 10".....	60 44
LUB7M10 Thin Kerf 10".....	24 70
LUB8M10 Thin Kerf 10".....	60 44
LUB1M08 Compd Mitr 8-1/2".....	67 45
LUB5M15 Mire Saw blade 15'.....	108 75
LUB9M10 Ultimate 10".....	80 125
LUB9M10 Ferrous metal 10".....	92 105
PS203 Gen Purpose 7-1/4" 24 tooth	30 10.85
PS303 Plywood 7-1/4" 40 tooth.....	42 14.99
SD305 6" Dado Carbide.....	215 109
SD308 8" Dado Carbide.....	229 119
F0 10 - 1-3/4" x 3/4" Bisc. 1000 Qty	42 27
F10 #10 - 2-1/8" x 3/4" Bisc. 1000 Qty	42 27
F20 #20 - 2-3/8" x 1" Bisc. 1000 Qty	42 29
FA Assorted Biscuits 1000 Qty.....	42 29
WC104 4 piece chisel set w/case 1/4".....	63 42
WC110 6 piece Chisel set w/case 1/4".....	85 54
WC115 10 pc Chisel set w/case 1/4".....	142 84
FB107 7 piece Forstner bit set 1/4".....	86 59
FB100 16 pc Forstner bit set w/case.....	331 165
94-100 5 pc Rtr bit doer system w/case	319 165
JB100 Biscuit Joiner w/case.....	333 159
FT2000 3-1/4 HP Plunge Router.....	350 189
EB100 Edge Banding Machine.....	409 229
FR12000 Wood Router Table.....	275 169
CEB2 Planer w/cs & carbide blades.....	245 135

THE NEW "TK" BLADE SERIES	
Model	List Sale
TK203 7-1/4" Framing - 24 tooth.....	31 18
TK206 7-1/4" Framing - 24 tooth.....	38 25
TK303 7-1/4" Framing - 40 tooth.....	38 23
TK306 10" Framing - 40 tooth.....	46 28
TK903 7-1/4" Combo - 30 tooth.....	33 19
TK906 10" Combo - 50 tooth.....	52 29

MAKITA TOOLS		
Model	Description	List Sale
6070DW	3/8" vspd Reverse Drill 7.2V	124 74
6091DW	K above Drill w/removable batt.	194 109
5070DW	3-3/8" Saw Kit 9.6 volt.....	250 139
6100DW	3/8" cordless Drill Kit 7.2V.....	173 97
6105DW	3/8" cordless Drill Kit 7.2V.....	96 59
DA3000DW	3/8" angle Drill 7.2 volt.....	241 136
4390DW	9.6 cordless Recip Saw Kit.....	234 129
4300DW	9.6 volt Jig Saw Kit.....	237 135
DA3900DW	3/8" angle Drill Kit 9.6 volt.....	283 155
ML900	Incandescent Flashlight 9.6V	Sale 37
5600DW	6-1/4" Circular Saw 10.8 volt.....	375 214
6101DL	3/8" Drill with flashlight 7.2 V.....	213 119
6891DW	Drywall Gun 0-1400 9.6 volt.....	245 139

6012HDW	2 spd Drill w/clutch-comp.....	236 125
6092DW	var. spd Drill Kit complete.....	257 127
6093DW	2 spd Drill w/clutch-comp.....	261 125
6093DWL	6093DW Drill Kit w/Flash Lt.....	299 169
63200T-4	9.6 volt Battery.....	47 30
63200T-4	7.2 volt Battery.....	39 28

5007NBA	7-1/4" Saw w/electric brake.....	243 129
5008NBA	8-1/4" Saw w/electric brake.....	301 163
BO4510	1/4 sheet Pad Sander.....	99 55
9900B	3" x 21" Belt Sander w/bag.....	283 149
9924DB	3" x 24" Belt Sander w/bag.....	299 159
9045N	1/2 sheet Fin. Sander w/bag.....	246 129
4301B	Orb. var. speed Jig Saw 3.5A.....	262 142
JR3000V	var. speed Recip Saw w/case.....	239 129
LS1020	10" Mitr Saw 12 amp.....	571 299
9820-2	Blade Sharpener.....	394 199
1900WB	3-3/4" Planer with case.....	221 116
1911B	4-3/8" Planer 7.5 amp.....	255 139
1100	3-1/4" Planer with case.....	234 129
9207SPC	7" Sander/Polisher var. spd.....	294 154
3601B	1-3/8 HP Router.....	261 139
BO4550	1/4 sheet Pad Sander w/bag.....	91 57
DA3000R	3/8" angle Drill var. speed.....	285 152
HP2010M	3/4" var. spd Hmr Drill w/case.....	304 167
2708W	8-1/4" Table Saw.....	519 269
2711	10" Table Saw with brake.....	868 489
1805B	6-1/8" Planer Kit with case.....	371 389
5005BA	5-1/2" Circular Saw.....	238 135
6404	3/8" Drill Rev. 0-2100 rpm 2 A	105 58
6510LVR	3/8" Drill Rev. 0-1050 rpm.....	152 83
6820V	0-4000 rpm Drywall Gun 5.2 A	160 90
6013BR	1/2" Drill Rev. 6 amp.....	263 139
5402A	1/6" Circular Saw 12 amp.....	675 345
3612BR	3 HP Plunge Router.....	347 169
9401	4" x 24" Belt Sander with bag.....	349 188
4302C	Var. speed Orbital Jig Saw.....	283 159
5077B	7-1/4" Hypoid Sander.....	260 142
LS1440	14" Mitr Saw.....	759 435
LS1030	NEW 10" Mitr Saw.....	428 229
5007NB	7-1/4" Circular Saw 13 amp.....	214 116
3612B	3 HP Plunge Router sq base.....	347 169
2012	1/2" Portable Planer.....	913 475
LS1011	10" Side Compound Saw.....	859 445
3620	1-1/4 HP Plunge Router w/cs.....	196 115
9901	3"x21" Belt Sander w/bag 6.7A	208 119
GV5000	5" Disc Sander.....	112 69
9514B	4" Grinder 4.6 amp.....	101 69
9501BZ	4" Grinder 3.5 amp.....	132 69
4200N	4-3/8" Circular Saw.....	238 135
2414	1-1/4 Cut-off Saw AC/DC.....	359 205
4320	Vspd economy Jig Saw 2.9 A	141 88
5012B	11-3/4" elec. Chain Saw 11.5A	258 146
2036N	12" Planer/6" Joiner.....	3450 1885
6302	1/2" Drill 0-550 rpm 5.2 amp.....	204 115
6013BR	1/2" Drill 550 rpm 6 amp.....	263 139
DA6300	1/2" angle Drill 300/1200 rpm	438 239
BO5000	NEW 5" Random Orb Sander	118 68

SENCO AIR NAILERS		
Model	List Sale	
SFN1	Finishing Nailer 1" - 2".....	377 275
SFN2	Finish. Nailer 1-1/2" - 2-1/2".....	571 395
SN325	Nailer 1-7/8" - 3-1/4".....	665 455
SN4	General purpose 2" - 3-1/2".....	685 468
LS2	Pinner 5/8" - 1".....	351 255
SKS	Stapler 5/8" - 1-1/2".....	351 255
LSS	Pinner 1" - 1-1/2".....	399 285

BOSTITCH AIR NAILERS		
Model	List Sale	
N805-1	Stick Nailer Super Sale.....	359 389
N80C-1	Utility Coil Nailer.....	845 409
N12B-1	Coil Roofing Nailer.....	845 439
NE6PN-2	Finishing Nailer.....	625 355
T31	Brad Nailer.....	270 162
CWC100	1 HP Pancake Compressor.....	445 295

PANASONIC CORDLESS		
Model	List Sale	
EY6205BC	NEW variable speed 12 volt Drill	w/15 minute charger & case..... 390 179
EY6200BC	NEW 2 speed 12 volt Drill D-handle	with 15 minute charger & case..... 350 179
EY6281BC	NEW variable speed 9.6 volt Drill	w/15 minute charger w/case..... 359 159
EY571B	var. speed 9.6 volt Drill Kit.....	239 135
EY571BC	EY571B w/case & extra batt.....	275 149
EY6900BC	NEW 12 volt Hammer Drill variable	speed w/15 minute charger..... 396 202
EY6207BC	NEW 12 volt 1/2" Drill w/keyless	chuck w/15 min. charger & case..... 214 128

LEIGH DOWELL JIGS	
Model	List Sale
D125BR-12	List 329.00 Sale 269.00
D125BR-24	List 399.00 Sale 325.00
LEIGH INSTRUCTION VIDEO SALE 29.00	
MMTA 24"	Mort. & Tenon attachment..... 299 175

**1992 TOOL CATALOG AVAILABLE**  
 Call Toll-Free 1-800-328-0457 in Minnesota Call (612)224-4859  
 FAX: (612)224-8283  
**CHECK • MONEY ORDER • VISA • MASTERCARD • DISCOVER**  
**SEVEN CORNERS ACE HDW. Inc.**  
 216 West 7th St. • St. Paul, MN 55102 • Est. 1933

Please see our HALF-PAGE Advertisement on page 94 of this magazine.

That Ad features: DELTA, DEWALT, SKIL, AEG, HITACHI, ELU, BLACK & DECKER, & CLAMPS!

★ Super Special ★  
 Buy either a  
 Porter Cable 330  
 1/4 sheet Sander \$59.00  
 or Porter Cable 505  
 1/2 sheet Sander \$118.00  
 and receive  
 FREE 13599 Stik-It  
 Paper Dispenser!

**TOOLS ON SALE!**  
 AMERICA'S LOWEST PRICED TOOLS  
 FREE FREIGHT TO THE  
 48 CONTINENTAL STATES ON EVERY ITEM  
 PRICES SUBJECT TO CHANGE WITHOUT NOTICE

PORTA NAILER		
Model	Description	List Sale
401	Porta Nailer complete.....	265 189
501	Face Nailer complete.....	265 189
1000	Genuine Porta Nails 1000 Qty.....	15.89
5000	Genuine Porta Nails 5000 Qty.....	71.50
10,000	Genuine Porta Nails 10,000 Qty.....	121.85

WERNER LADDERS		
Model	Description	List Sale
6204	4' Fiberglass ladder.....	179 65
6205	5' Fiberglass ladder.....	199 75
6206	6' Fiberglass ladder.....	215 80

SUMMER KIT SPECIALS		
6093DWH	Makita cds var. spd Drill Kit w/clutch & brake. Includes extra battery & holster.....	313 167
9852K	Porter Cable New 9852 Drill Kit includes: extra Porta Cable battery.....	185
9853K	Porter Cable New 9853 Drill Kit includes: extra Porta Cable battery.....	185
7334K	Porter Cable 5" Random Orbit Sander with case & 1 roll 100X & 150X discs.....	253 152
7335K	Porter Cable 5" var. spd Random Orbit Sndr w/case & 1 roll 100X & 150X discs.....	273 162
7336K	Porter Cable 6" var. spd Random Orbit Sndr w/case & 1 roll 100X & 150X discs.....	278

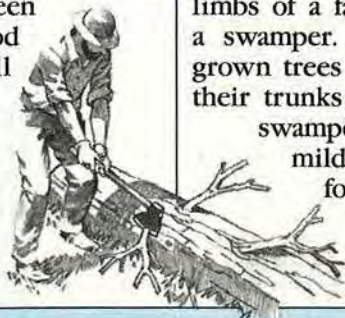




Watch for *WOOD*® magazine's 1992 Build-A-Toy Contest winners in the October issue, and the announcement of the 1993 contest coming soon. There'll be great new prizes!

## TALK ABOUT LONG LIFE

It takes 17 trees to produce a ton of paper. But it's been proven that the wood fibers in paper will last through 12 recyclings. So for every ton of paper that's recycled a dozen times, 204 trees are spared.



## OH NO! MORE LIMBS!

In turn-of-the-century logging operations around the Great Lakes, the worker that lopped off the limbs of a fallen tree was called a swamper. And because open-grown trees with limbs all along their trunks slowed him up, the swamper developed some mildly derogatory names for them, like grouse ladders, hooters, and squirrel trees.

## THE MINWAX CHALLENGE

Do you know a person, group of people, or institution whose woodworking activities improve a community and instill a sense of pride and satisfaction? If so, the Minwax Company wants to hear from you. Your nominee might win an award valued at \$10,000.

This year's initial Minwax Community Craftsman Award went to

◀ WoodWorks director Steve Dearing (standing, far right) and students show off a prize project built in Kansas City's DeLaSalle Education Center. The school's woodworking program earned Minwax's first-ever Community Craftsman Award, valued at \$10,000.

DeLaSalle Education Center of Kansas City. The self-proclaimed last-chance high school has an innovative WoodWorks Program that helps students build self-esteem and grades, as well as terrific woodworking projects. Students sell their work to the public to help offset the program's operating costs.

Nominations for the 1993 award must be received at Minwax by July 31, 1992. Write: *Minwax PR*, c/o Gilbert Whitney & Johns, 110 So. Jefferson Rd., Whippany, NJ 07981.



## A WOKABOUT SOMILL? WHAT'S THAT?

According to the International Tropical Timber Organization (ITTO) and the Rainforest Action Network (RAN), less than one percent of all tropical timber operations worldwide are managed for sustainability. But among those, one in Papua New Guinea clearly stands out.

In a letter to U.S. wood importers, Colleen Murphy-Dunning, of RAN, cites the ecologically sensitive timber operations of the country's villagers. Using portable sawmills they call *wokabout somills*, these loggers do all milling right in the forest. Then, they carry the lumber out, forgoing roads and heavy machinery.

By pinpointing trees of the desired species, these environmen-

tally conscious loggers maintain significant tree cover and protect the soil, water supply, and flora and fauna. They also follow a 25-year cutting rotation of selected trees in tracts of 2-3 acres.

England's Ecological Trading Company currently imports the wokabout wood, which consists of some attractive—if relatively unknown—species. For instance, there's kwila, a dark brown hardwood with yellow speckles, pencil cedar, and a rosewood look-alike. Highly figured slices of tree crotches and butts are also available for woodturners. For more detailed information, contact: *Max Henderson, Ulatawa Estates Pty. Ltd., P.O. Box 1342, Rabaul, Papua New Guinea.*



Illustrations: Jim Stevenson Photograph: Courtesy of the Minwax Company



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SAVES YOU MONEY!**

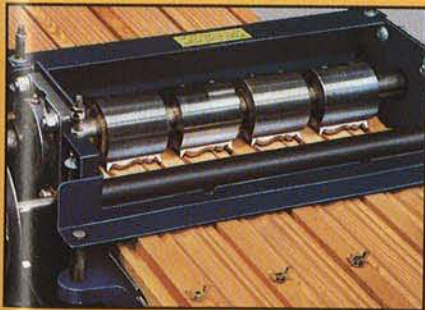
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✔ **Change to Molding, Sanding or Sawing in just minutes!** Unique “Morse-Taper” Quick Change Cutterhead guarantees fast changeover... bearings remain factory set... precisely aligned at all times.

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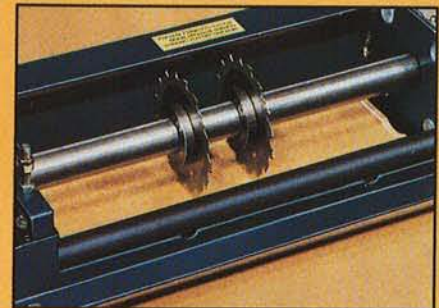
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*Editor, Workbench Magazine*

**Best Value**—“After checking them all, Woodmaster was obviously the best deal for the money. Also, I would like to acknowledge the polite and prompt service.”

*E. D. Holtz, North Carolina*



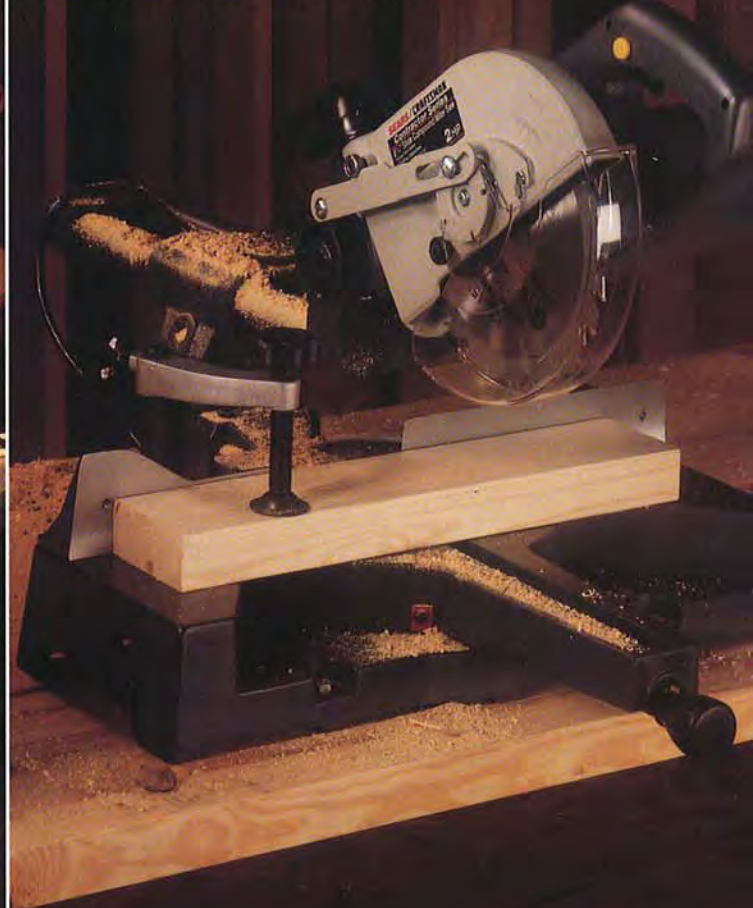
# Create a Mouse.

Two great new tools in the Craftsman Contractor Series can take you from the detail of a mouse to the structure of a house.



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And Craftsman's new 8 1/4 Slide Compound Miter Saw is also a remarkable tool. It can cleanly cut a 2" x 12" at the job site, or tackle the intricate compound angles required for crown moldings and trim work.

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