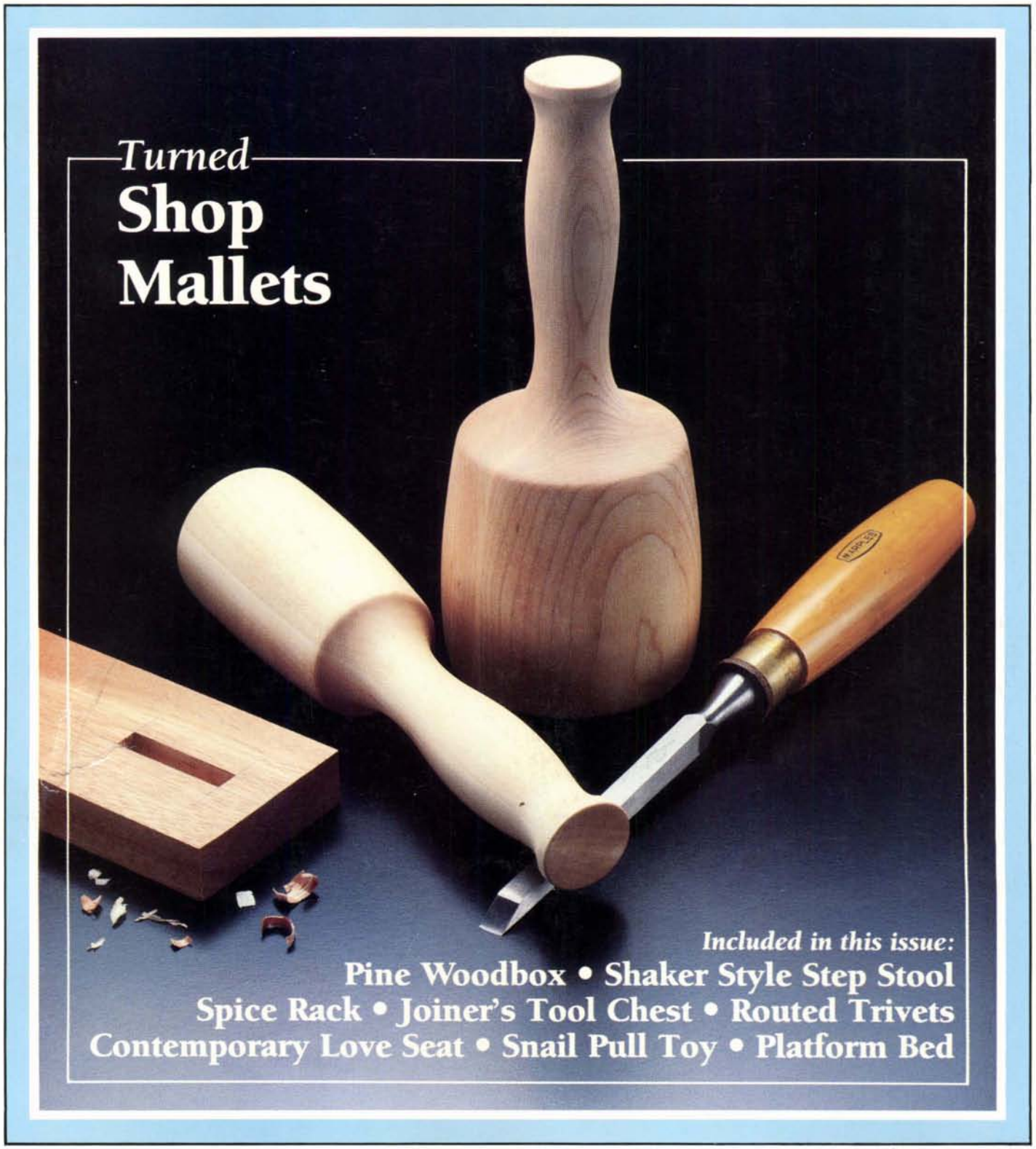
The Woodworker's Journal
Vol. 11, No. 5 $3.00




September/October 1987

## RYOBI TOOLS

| | | List | Sale |
|---|---|---|---|
| S500A | 3x5½ Finish Sander | 70 | 36 |
| SU6200 | Finishing Sand. ½ Sheet | 142 | 99 |
| B7075 | 3x21" dustless Belt Sand. | 179 | 116 |
| B7100 | 3x24" dustless Belt Sand. | 208 | 140 |
| B7200A | 4x24" dustless Belt Sand. | 269 | 165 |
| TS380 | 14" Mitre Box | 629 | 385 |
| W640 | 7¼" 13 amp circular saw | 158 | 99 |
| W740 | 8¼" 13 amp circular saw | 171 | 125 |
| JS60 | Jig Saw-Single Speed | 172 | 99 |
| JSE60 | Jig Saw-electronic w/speed | 198 | 123 |
| R150 | 1 H.P. Plunge Router | 138 | 99 |
| R331 | 2 H.P. Router | 220 | 159 |
| R500 | 3 H.P. Route | 265 | 163 |
| E3800 | Drywall screwdriver 0-4000 | 126 | 79 |
| L120U | 3¼" Planer | 142 | 99 |
| B01629ARK | ⅜" 2-spd. Cordless Drill w/free holster-Xtra special buy | 148 | 95 |
| TS251U | 10" Mitre Box | 300 | 179 |
| SG1000 | 4½" H.D. Mini-Grinder | 99 | 59 |

### YOUR ATTENTION PLEASE!

All Above RYOBI TOOL Prices
Take Additional **10% OFF Sale Prices**

### NEW FROM RYOBI

MODEL AP-10 — 10" SURFACE PLANER
**LIST PRICE 699.00 X-TRA SPECIAL 339.00**
LIMITED QUANTITIES

## MILWAUKEE TOOLS

| PRICE BUSTERS | | List | Sale |
|---|---|---|---|
| 0224-1 | ⅜ drill 4.5A magnum | 179 | 109 |
| 0234-1 | ½ drill 4.5A magnum | 179 | 112 |
| 0244-1 | ½ drill 4.5A magnum | 179 | 115 |
| 0222-1 | ⅜ drill 3.3A 0-1000 rpm | 165 | 99 |
| 0228-1 | ⅜ drill 3.3A 0-1000 rpm | 145 | 80 |
| 0375-1 | ⅜ close quarter drill | 195 | 118 |
| 0210-1 | ⅜ cordless drill 2 spd. | 195 | 115 |
| 6539-1 | cordless screwdriver 190 rpm | 103 | 58 |
| 3102-1 | Plmbrs rt angle drill kit | 295 | 175 |
| 3002-1 | Electricians rt angle kit | 290 | 170 |
| 5399 | ½" D-hdle ham drill kit | 284 | 165 |
| 1676-1 | H.D. Hole Hawg w/cs | 375 | 230 |
| 6511 | 2 sp sazsall w/cs | 207 | 118 |
| 6405 | 8¼ circle saw | 199 | 122 |
| 6750-1 | Drywall driver 0-4000 | 141 | 85 |
| 6798-1 | Tek screwdriver | 173 | 105 |
| 6226 | 2 sp bandsaw w/case | 416 | 250 |
| 6234 | TSC bandsaw w/case | 416 | 250 |
| 6507 | TSC sazsall w/case | 219 | 129 |
| 6170 | 14" chop saw | 349 | 209 |
| 6012 | Orbital sander 3⅛" x 7⅜" | 179 | 100 |
| 6014 | Orbital sander 4½" x 9¼" | 189 | 108 |
| 6305 | 6¼" cordless circle saw | 239 | 134 |
| 6753-1 | Drywall driver 3.5A | 125 | 73 |
| 8977 | Var. temp heat gun | 108 | 70 |
| 0214-1 | ⅜" v. spd. cordless drill | 209 | 125 |
| 5397-1 | ⅜" v. spd. hammer drill kit | 227 | 145 |
| 0211-1 | ⅜" cordless driver drill | 205 | 120 |
| 0212-1 | ⅜" v. spd. cordless drill | 229 | 125 |
| 5371-1 | ½" v. spd. Hammer Drill Kit | 313 | 199 |
| 3107-1 | ½" v. spd. Rt. Angle Drill Kit | 305 | 189 |
| 1854-1 | Super hole shooter-10A | 530 | 350 |
| 6232 | 4¾" bandsaw w/case | 452 | 275 |
| 6747-1 | Drywall driver-0-2500 | 141 | 85 |
| 0230-1 | ⅜"drill 0-1700 rpm | 165 | 100 |
| 3300-1 | ½" v spd. Magnum Rt. Angle Kit | 279 | 180 |
| 5620 | Router 1 H.P. — 8 amp | 289 | 175 |
| 5660 | Router 1½ H.P. — 10 amp | 299 | 180 |
| 5680 | Router 2 H.P. — 12 amp | 350 | 220 |
| 5455 | 7/9" polisher 1750 rpm | 199 | 130 |
| 5535 | 7"polisher 2800 rpm | 209 | 140 |
| 6215 | 16" chain saw | 229 | 140 |
| 8975 | Heat gun | 81 | 55 |

| | | | |
|---|---|---|---|
| 6366 | 7¼" circular saw | 187 | 105 |
| 6368 | 7¼" circular saw | 216 | 125 |

Model 6366 includes C.T. blade, rip fence, guide & blade wrench; Model 6368 includes all of the above plus case

**BRAND NEW**
**MODEL RA200 BY RYOBI**
**BENCH TOP RADIAL 8¼"**
**SPECIAL SALE 225.00**

**X-TRA SPECIAL FREUD MODEL LU73M010**
**60 TOOTH ATB BLADE 10"**
**LIST 79 — SALE 27**
**5 FOR 119**

### FREUD SAW BLADES

**⅝" Bore — Industrial Grade**
**CARBIDE TIPPED SAWBLADES**

| Item No | Description | Diam. | Teeth | List | Sale |
|---|---|---|---|---|---|
| LU72M010 | Gen'l Purp. | 10" | 40 | 58.58 | 34 |
| LU82M010 | Cut-Off | 10" | 60 | 86.40 | 44 |
| LU84M011 | Combination | 10" | 50 | 74.51 | 37 |
| LU85M010 | Super Cut-Off | 10" | 80 | 110.88 | 62 |
| LM72M010 | Ripping | 10" | 24 | 64.85 | 34 |
| DS 306 | 6" Dado | | | 139.00 | 92 |
| DS 308 | 8" Dado | | | 170.00 | 105 |
| PS203 | Gen'l Purp. | 7¼" | 24 | 27 | 17.50 |
| PS303 | Plywood | 7¼" | 40 | 33 | 20.50 |

## MAKITA CORDLESS

| Model | | List | Sale |
|---|---|---|---|
| 6002DWK | ⅜"Drill Kit 2 Spd. Rev. 7.2 v. | 178 | 91 |
| 6070DW | ⅜" Var. Spd. Rev. 7.2v | 108 | 57 |
| 6071DWK | ⅜"Var. Spd. Rev. w/removable batt. | 180 | 102 |
| 4300WD | Jig Saw | 188 | 99 |
| 5081DW | 3⅜" Saw Kit | 212 | 95 |
| 5600DW | 6¼" Circular Saw | 284 | 125 |
| 9035DW | Finishing Sander | 168 | 73 |
| 6010DWK | ⅜" Cordless Drill Kit | 174 | 88 |
| 6010SDW | ⅜" Cordless Drill | 94 | 45 |
| 8400DW | ⅜" Hammer Drill | 224 | 105 |
| DA3000W | ⅜" Angle Drill | 218 | 98 |
| 6010DL | ⅜" Drill w/Flashlight | 188 | 89 |
| 6012HDW | ⅜" 2 spd Driver Drill w/Bat & Metal Case | 208 | 94 |
| DK1002 | ⅜"Drill w/Flursnt Lt. | 176 | 90 |
| 6710DW | Cordless Screwdvr Kit | 176 | 84 |

| Model | MAKITA BATTERIES | List | Sale |
|---|---|---|---|
| 7.2 Volt | | 40 | 27 |
| 9.6 Volt | | 44 | 29 |
| 10.8 Volt | | 99 | 66 |

## MAKITA TOOLS

| Model | | List | Sale |
|---|---|---|---|
| 5007NBA | 7¼" Saw w/Elec. Brake | 185 | 114 |
| 5008NBA | 8¼" Saw w/Elec. Brake | 212 | 130 |
| B04510 | Sander | 92 | 43 |
| 9900B | 3" x 21" belt sander | 234 | 119 |
| 9924B | 3" x 24" belt sander | 222 | 130 |
| 9924DB | 3" x 24" b/sand. w/bag | 248 | 130 |
| 9035 | ⅓ sheet finish sander | 96 | 48 |
| 9045B | ½ sheet finish sander | 186 | 90 |
| 9045N | ¼ sht fin. sand. w/bag | 190 | 105 |
| 4200N | 4⅜ circ. saw 7.5 amp | 182 | 93 |
| 5201NA | 10¼ circ. saw 12 amp | 438 | 215 |
| 4300BV | v/sp jig saw 3.5 amp | 234 | 117 |
| 4301BV | orb v/sp jig saw 3.5 amp | 248 | 125 |
| JR3000WL | 2 sp recip saw-w/case | 198 | 120 |
| JR3000V | vs recip saw w/case | 208 | 110 |
| LS1000 | New 10" Mitre Box | 396 | 198 |
| 9820-2 | Blade Sharpener | 288 | 159 |
| 410 | Dust Collection Unit | 410 | 269 |
| 3705 | Offset Trimmer | 218 | 115 |
| 1900BW | 3¼" planer w/case | 198 | 93 |
| 1100HD | 3¼" planer w/case | 328 | 160 |
| 9207SPC | 7" Sander-Polisher | 250 | 140 |
| 3601B | 1⅜ hp router | 218 | 115 |
| 3700B | ½ hp trimmer | 162 | 82 |
| 9501B | 4" Grinder Kit | 119 | 55 |
| B04530 | 6" Round Sander | 98 | 48 |
| DA3000R | ⅜" angle drill | 212 | 129 |
| DP4700 | ½ v/sp w/rev 4.8 amp | 178 | 92 |
| HP1030W | ½ v.s.r. hammer drill w/cs | 168 | 98 |
| 6300LR | ½" angle drill w/rev | 288 | 152 |
| 8419B8-ZW | ½" s.sp. hammer w/cs | 268 | 150 |
| 2708W | 8¼" Table Saw | 348 | 196 |
| GV5000 | Disc Sander | 108 | 53 |
| 6800DB | 2500 rpm 3.5 amp | 146 | 79 |
| 6800DBV | 0-2500 rpm 3.5 amp | 156 | 89 |
| 6801DB | 4000 rpm 3.5 amp | 146 | 79 |
| 6801DBV | 0-4000 rpm 3.5 | 156 | 89 |
| 2030n | 12" planer/jointer | 2580 | 1475 |
| 2040 | 15⅞" planer | 2180 | 1195 |
| 1805B | 6¼" planer kit w/case | 498 | 265 |
| JV1500 | var. speed jig saw | 178 | 89 |
| JV2000 | var. speed orb. jig saw | 198 | 100 |
| 5005BA | 5½" circular saw | 192 | 98 |
| 5007NB | 7¼" Circ. Saw | 158 | 94 |
| 9503BH | 4½" sander-grinder kit | 166 | 95 |
| 4014NV | var/speed blower | 168 | 79 |
| DP3720 | ⅜ drill Rev. 0-1800 rpm | 99 | 47 |
| 6510LVR | ⅜ drill Rev. 0-1500 rpm | 144 | 65 |
| 6013BR | ½" Drill rev. 6 amp | 208 | 100 |
| 5402A | 16" Circular Saw - 12 amp | 542 | 315 |
| 3612BR | 3 HP Plunge Router | 338 | 172 |
| 9401 | 4x24 belt Sander w/bag | 288 | 160 |

### SKIL SIZZLERS

| Model | | List | Sale |
|---|---|---|---|
| 5510 | (551) 5½" Circ. Saw | 130 | 83 |
| 5625 | (552) 6½" Circ. Saw | 164 | 108 |
| 5650 | (553) 7¼"Circ. Saw | 164 | 108 |
| 5665 | (554) 8¼" Circ. Saw | 185 | 118 |
| 5750 | (807) 7¼" Circ. Drop Foot | 175 | 115 |
| 5765 | (808) 8¼" Circ. Drop Foot | 204 | 130 |
| 5790 | (810) 10¼" Circ. Drop Foot | 350 | 225 |
| 5825 | (367) 6½" Worm Saw | 252 | 135 |
| 5865 | (825) 8¼" Worm Saw | 277 | 149 |
| 3810 | 10" Mitre Saw | 349 | 169 |
| 7565 | Palm Sander | 69 | 37 |

**SKIL BRAND NEW MODEL 2735-04**
⅜" 12 Volt Professional Cordless 2-Speed Drill, X-Tra Special Complete With Charger, 2 Battery Packs and Case
**LIST 210 SALE 119**

**••• X-TRA SPECIAL •••**
WORLD FAMOUS #77
7¼" WORM SAW
**LIST 254 SALE 129**

**1987 TOOL CATALOG AVAILABLE**
Call Toll-Free 1-800-328-0457 — In Minnesota Call (612) 224-4859
4 WAYS TO BUY: CHECK — MONEY ORDER — VISA — MASTERCARD
**SEVEN CORNERS ACE HDW. Inc.**
216 West 7th St. • St. Paul, MN 55102 • *Est. 1933*

### DELTA STATIONARY TOOL SELL-A-THON

34-410 Saw Complete w/1½ H.P. motor & stand
679.00

33-150 Saw Buck
Special Sale 499.00

22-651-RC-33 13" Planer
979.00

22-243 S 14" Band Saw w/open stand, ½ H.P. motor
499.00

28-283F 14" Band Saw w/enclosed stand & ¾ H.P. motor
599.00

43-122 Lt. Duty Shaper w/stand & 1 H.P. motor
499.00

HITACHI 15" MITRE SAW #C15FB
LIST 630 - SALE 389
15" C.T. BLADE - SALE 125

**DELTA**
**#34-080**
10" MITRE
BOX
XTRA SPECIAL
179.00
LIST 279.00

**TOOLS ON SALE™**
AMERICA'S LOWEST PRICED TOOLS
★ *PLUS — FREE FREIGHT* ★
ON EVERY ITEM

### PIRANHA By Black & Decker
**CARBIDE TOOTH SAW BLADE**

- Advanced saw blade technology. Exclusive design out-performs regular carbide blades.
- An excellent all-purpose blade.

| Model# | Diameter | #Teeth | List | Sale |
|---|---|---|---|---|
| 73-756 | 6-1/2 | 36 | 26.90 | 14.80 |
| 73-717 | 7-1/4 | 18 | 11.72 | 6.45 |
| 73-737 | 7-1/4 | 24 | 14.92 | 8.20 |
| 73-757 | 7-1/4 | 40 | 27.40 | 15.10 |
| 73-758 | 8 | 40 | 39.90 | 21.95 |
| 73-759 | 8-1/4 | 40 | 40.66 | 22.35 |
| 73-739 | 9 | 30 | 29.52 | 16.25 |
| 73-769 | 9 | 60 | 64.40 | 35.40 |
| 73-740 | 10 | 32 | 30.98 | 17.00 |
| 73-770 | 10 | 60 | 64.90 | 35.75 |

### *REMINGTON FASTENER SYSTEM*

| Model | | List | Sale |
|---|---|---|---|
| 476 | Power Hammer (for do-it-yourselfer) | 35 | 26 |
| 480 | Power Driver — lowest priced trigger actuated comp w/case | 159 | 110 |
| 482 | Multi Driver — top of the line complete w/case | 329 | 235 |
| Model | | Per 100/Box | |
| 15549 | Penetration Control Discs ⅞" dia. | | 3.00 |
| | POWER LOADS | | |
| 29278 | Gray - Light Duty | | 4.25 |
| 29280 | Brown - Medium Duty | | 4.25 |
| 29282 | Green - Heavy Duty | | 4.25 |
| 29284 | Yellow - Extra Heavy Duty | | 4.25 |
| | STANDARD PIN | | |
| 58047 | SP75 (¾") | | 3.85 |
| 58048 | SP100 (1") | | 4.40 |
| 58049 | SP125 (1-¼") | | 5.35 |
| 58050 | SP150 (1-½") | | 5.85 |
| 58051 | SP200 (2") | | 7.35 |
| 58052 | SP250 (2-½") | | 8.35 |

### SENCO AIR POWERED NAILERS

| | | List | Sale |
|---|---|---|---|
| SFN1 | Finishing to 1¾" | 349 | 269 |
| SFN2 | Finishing to 2½" | 529 | 398 |
| SN2 | Sheathing - Siding, etc. | 525 | 395 |
| M2 | All Purpose | 440 | 330 |
| SN4 | Const. Framing, etc. | 635 | 485 |
| LS2 | Moulding & Trim | 325 | 259 |
| LS4 | Moulding & Trim | 330 | 265 |

**THE NEXT STEP IN CORDLESS**
**PROFESSIONAL POWER TOOLS FROM PANASONIC**

Model EY570B features keyless chuck ⅜" 9.6 volt 2 speed — 350 low - 1000 high highest torque - 143 in lbs. 5 position clutch 1 hour charger complete w/case - battery - charger
**List Price 209.00 Special Sale 139.00**

Model EY561B features Jacobs keyed chuck ⅜" 7.2 volt 2 speed — 300 low - 880 high torque in low - 104 in lbs. 5 position clutch. 1 hour charger complete w/case - battery - charger
**List Price 179.00 Special Sale 119.00**

Model EY551B features Jacobs keyed chuck ⅜" 7.2 volt one speed - 460 rpm torque - 48 in lbs. weight 2 lbs. 1 hour charge
No case available includes charger
**List Price 119.00 Special Sale 79.00**

EY970B-9.6 batteries **List 59.70 Sale 44.00**
EY961B-7.2 batteries **List 46.30 Sale 33.00**
EY991B-Keyless chuck **List 35.00 Sale 26.00**
EY561B 7949 Holster (fits EY570B & EY561B)
**List 10.20 Sale 8.00**

### ★NEW LOW PRICES★
### PONY CLAMP FIXTURES
### — JORGENSON —

| Model | | List | Sale | Lots of 12 |
|---|---|---|---|---|
| #50 | for ¾" Black Pipe | 11.23 | 7.15 | 79.00 |
| #52 | for ½" Black Pipe | 9.36 | 6.10 | 67.50 |

### ••MAKITA NEW TOOLS••

| Model | | List | Sale |
|---|---|---|---|
| 6092DW | Cordless Driver Drill Kit 2 Spd.-var. spd. rev. w/o clutch complete w/case | 208 | 106 |
| 6093DW | Cordless Driver Drill Kit 2 Spd.-var. spd. rev. and 6 stage torque setting complete w/case | 224 | 119 |
| 6891DW | Cordless Drywall Screwdriver Kit 0-1400 R.P.M.-Lt. weight - 2.9# complete w/case | 204 | 109 |
| 3620 | 1¼ H.P. Plunge Router 7.8 amp-24,000 R.P.M. complete w/case | 166 | 89 |
| 4302C | Electronic Jig Saw orbital, var. spd. 6 amp | 256 | 139 |
| 5077B | 7¼" Hypoid Saw (similar to worm drive) 13 amp-4,300 R.P.M. | 250 | 133 |

### *Who Has The Saws That Cut It Across The Board?*
### *BLACK & DECKER of course!!!*

| Model | WORM DRIVE SAWS | List | Sale |
|---|---|---|---|
| 3050 | 6½" 12 amp - 4600 rpm | 247 | 169 |
| 3051 | 7¼" 13 amp - 4300 rpm | 232 | 135 |
| 3052 | 8¼" 13 amp - 4300 rpm | 247 | 169 |
| | **BUILDERS SAW CAT** | | |
| 3030 | 7¼" 13 amp - 5800 rpm | 155 | 100 |
| 3035 | 8¼" 13 amp - 5800 rpm | 175 | 125 |
| 3034 | 7¼" 13 amp - 5800 rpm | 162 | 110 |
| 3033 | 6½" 13 amp - 5800 rpm | 162 | 115 |
| | **BLACK & DECKER CORDLESS** | | |
| 1920 | ⅜" Rev. H.S. Drill Kit | 174 | 99 |
| 1921 | ⅜" Rev. H.S. Drill | 135 | 84 |
| 1930 | ⅜"Rev. H.S. Drill Kit w/cs | 181 | 103 |
| 1940 | ⅜" Rev. High-torque Drill Kit | 174 | 99 |
| 1941 | ⅜" Rev. High-torque Drill | 135 | 85 |
| 1950 | ⅜" Rev. High-torque Drill Kit w/cs | 181 | 105 |
| 1970 | ⅜" Rev. High-torque Scrudrill w/cs | 188 | 117 |
| 1975 | ⅜" Rev. High-torque Scrudrill | 162 | 105 |
| 1980 | ⅜" Rev. Adj. Clutch Scrudrill Kit | 184 | 100 |
| 1985 | ⅜" Rev. Adj. Clutch Scrudrill | 158 | 98 |
| 2901 | ⅜" Rev. H.S. Clutch Scrudrill | 192 | 118 |
| 2931 | ⅜" Rev. High-torque Clutch Screwdriver | 192 | 118 |
| 5930 | ⅜" Hammer Drill Kit | 199 | 124 |
| 5921 | ⅜" Hammer Drill | 169 | 110 |

NOTE: IF YOU PURCHASE A #1940 - #1950 OR #1980 B & D CORDLESS RECEIVE A
★ **$5.00** SPIFF CHECK FROM US. ★

### BOSCH TOOLS

| | | List | Sale |
|---|---|---|---|
| 1581VS | Top Handle Jig Saw | 225 | 129 |
| 1582VS | Barrel Grip Jig Saw | 126 | 119 |
| 1942 | Heat Gun 650°-900° | 99 | 69 |
| 1272 | 3x24" Belt Sander | 259 | 159 |
| 1272D | 3x24" Belt Sander w/bag | 274 | 169 |
| 1273 | 4x24" Belt Sander | 274 | 169 |
| 1273D | 4x24" Belt Sander w/bag | 289 | 179 |
| 11212 | Bulldog ¾" SDS Rotary Hammer | 329 | 175 |
| 1920VSKR | Var/Sp Cordless 2 Spd. | 169 | 79 |
| 1199VSRK | ⅜" hammer drill v.s. | 190 | 109 |
| 1198VSR | ½" hammer drill - 2 sp v.s. | 199 | 119 |

### PORTER CABLE TOOLS

| Model | | List | Sale |
|---|---|---|---|
| 630 | 1 H.P. Router — 6.8 AMP | 150 | 93 |
| 690 | 1½ H.P. Router — 8 AMP | 194 | 114 |
| 691 | 1½ H.P. Router D-Hdle. | 218 | 129 |
| 536 | 1½ H.P. Speedmatic Router | 300 | 184 |
| 518 | 3 H.P. Router 5 Speed | 490 | 323 |
| 520 | 3 H.P. Router 15 AMP | 460 | 298 |
| 309 | Trimmer 3.8 AMP | 130 | 84 |
| 310 | Trimmer 3 AMP | 190 | 124 |
| 312 | Trimmer Offset Base | 205 | 133 |
| 319 | Trimmer — Tilt Base | 215 | 138 |
| 695 | H.D. 1½ H.P. Router/Shaper | 278 | 190 |
| 696 | H.D. Shaper Table | 149 | 104 |
| 351 | 3 x 21 Belt Sander w/o Bag | 189 | 125 |
| 352 | 3 x 21 Belt Sander w/Bag | 199 | 115 |
| 360 | 3 x 24 Belt Sander w/Bag | 280 | 185 |
| 361 | 3 x 24 Belt Sander w/o Bag | 260 | 175 |
| 362 | 4 x 24 Belt Sander w/Bag | 295 | 198 |
| 363 | 4 x 24 Belt Sander w/o Bag | 280 | 185 |
| 587 | 7¼ Speedtronic 14.5 AMP Saw | 199 | 125 |
| 315-1 | 7¼ Top Hdle. 13 AMP | 166 | 96 |
| 617 | 7¼ Push Hdle. 13 AMP | 166 | 96 |
| 346-1 | 6½" Top Hdle. 12 AMP | 161 | 100 |
| 368-1 | 8¼" Top Hdle. 13 AMP | 176 | 110 |
| 314 | 4½" Trimsaw 4.5 AMP | 180 | 109 |
| 548 | X-H Duty Bayonet Saw | 235 | 155 |
| 9548 | X-H Duty Saw w/case | 255 | 169 |
| 9629 | Recip Saw v/sp 8 AMP | 204 | 133 |
| 9627 | Recip Saw 2 Speed 8 AMP | 193 | 124 |
| 666 | ⅜" H.D. v/sp Drill | Isu | 115 |
| 620 | ⅜" H.D. 4 AMP 1000 R.P.M. | 124 | 85 |
| 621 | ⅜" H.D. v/sp 0-1000 R.P.M. | 130 | 78 |
| 320 | Abrasive Plane | 129 | 89 |
| 126 | Porta-Plane — 7 AMP | 265 | 179 |
| 9118 | Porta-Plane Kit | 299 | 186 |
| 653 | Versa-Plane — 10 AMP | 399 | 265 |
| 9652 | Versa-Plane Kit | 419 | 275 |
| 7545 | V.S. Drywall Gun H.D. | 163 | 110 |
| 505 | ½ sht pad sander | 180 | 100 |
| 7511 | ⅜" v. sp. drill 5.2 amp | 164 | 102 |
| 7514 | ½" v. sp. 0-750 H.D. drill | 169 | 104 |
| 666 | ⅜" H.D. v/sp. T hdle 4A | 165 | 110 |
| 303 | Paint remover | 220 | 145 |
| 304 | 7" disc sander 4000 rpm | 175 | 110 |
| 305 | 7" disc polisher 2000 rpm | 175 | 110 |
| 367 | 3¼" plane 6.5 amp | 187 | 120 |
| 537 | 1½ HP router d hdle | 315 | 189 |

### X TRA SPECIAL BY PORTER CABLE

| | | List | Sale |
|---|---|---|---|
| 9118 | Porta Plane Kit | 299 | 185 |
| 7548 | Top Handle Jig Saw | 199 | 119 |
| 7648 | Barrel Grip Jig Saw | 199 | 119 |
| 330 | Bloc Sander ¼ Sheet | 90 | 52 |

**BUY ANY 7¼" CIRCULAR SAW IN THIS AD AND RECEIVE ONE 7¼" — 24 TOOTH SANDVIK GENUINE TUNGSTEN CARBIDE CONTRACTORS SAW BLADE — A $6.95 VALUE COMPLETELY FREE OF CHARGE.**

# The Woodworker's Journal

SEPTEMBER/OCTOBER 1987 VOLUME 11, NUMBER 5


## CONTENTS

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## DEPARTMENTS



**50 Spice Rack**

**32 Pine Woodbox**

## PROJECTS



**56 Shaker Style Step Stool**

# Shoptalk

### He Who Has The Most Toys

Another Autumn season is upon us and the cooler weather and diminishing daylight seem to trigger an increase in woodworking activity across the nation. And as sure as the swamp maples will soon turn scarlet, woodworking tool catalogs will begin to show up in my mailbox.

These "wish books" are always great fun to browse through, but as a reformed toolaholic, I've learned a stiff measure of self-discipline is needed, especially when all I have to do is dial a toll-free number and tell the nice lady what I want. Unfortunately, I also have to tell her my credit card number.

Look at all those beautiful brass and rosewood goodies! Do I really need that gem-like little try square, or how about that set of giant Forstner bits? They might come in handy and my grandchildren might appreciate them someday . . . maybe.

There was a time when I couldn't stop buying tools and I became more of an accumulator than a user. Oddly enough, although my tool collection grew, the quality and quantity of my woodworking didn't seem to change much. I found that I continued to reach for certain favorite tools, and a lot of the other stuff just sat around looking good and taking up valuable shop space. Then I saw a bumper sticker that read "He who has the most toys wins," and I began to wonder whether I was "winning" and if so, what was the prize. For me, it was time to get back to basics.

Having the right tool for the job is important, but there are often several ways to do the job and the way you *prefer* to work is the best. If you enjoy the physical process of working wood, you may prefer to bullnose an edge with a hand plane, cabinet file and sandpaper, but if that seems tedious and you're more interested in getting the job done, you'll run that bullnose in one pass with a router.

The great appeal of woodworking is that it can be done in ways which are suited to your personality, ability, goals and pocketbook. In the final analysis, if you can relax and enjoy woodworking and in the process produce something of which you are proud, you are indeed a successful woodworker — even if your entire tool collection fits in a tote box. He who has the most toys does not necessarily have the most fun.

### Hot Off The Press

We've just launched another book! *Projects For Woodworkers, Volume I* is a collection of favorite projects from our out-of-print September/October 1980 through November/December 1981 issues. The new softcover book provides complete instructions and illustrations for 75 projects, including our popular Cabinetmaker's Workbench. Ordering details can be found on page 11.

*Jim McQuillan*

# Letters

I noticed that you added an advertisement index to your latest issue (July/August 1987, page 57). It may seem like a small detail to some readers, but I consider it a valuable contribution. As there is a considerable price difference between suppliers, I can really appreciate the ease with which I can "price shop" without having to thumb through the entire magazine.

David Miller, Annville, Penn.

You featured a Vienna Regulator Clock project in the May/June 1987 issue. The upper door rail (part W) is shown to have a radius of $4\frac{5}{16}$ in., but that radius won't work if the door glass (part AA) is $34\frac{1}{16}$ in. long as shown in the bill of materials.

Michael Mugent, Westbury, N.Y.

*The door glass dimension in the bill of materials is incorrect. The glass, which is ordered from the Mason and Sullivan Co., measures $34\frac{1}{16}$ in. long.*

Much has been written about the decline of American industry. The hypothesis is that excessive costs prevent American industry from competing in the home and world market. As a woodworker, one begins to wonder if such is the case.

I have found a drastic decline in the quality of screws and wire nails during the past half dozen years. Going back to productivity, you are probably aware that the manufacture of these items is probably the most automated of any product in general trade. Human intervention is needed only to feed coils of wire into the machines and to remove cartons from the end of the line.

I purchase my supplies at the local hardware store. Slotted flat head and Phillips wood screws are packaged in Mexico from pieces made in China, Korea, Taiwan, Japan and Hong Kong. Why cannot U.S. manufacturers compete with products moved over half the globe before landing on the local shelf? It seems to me that the U.S. manufacturers have read the press reports and quietly given the business away.

If the foreign-made products were superior to domestic products that would answer the question. But such is not the case. Twenty-five percent of each box of slotted head screws do not have the slot fully opened, thereby preventing the insertion of a screwdriver blade. The Phillips heads are no better, besides being so soft that it is impossible to drive the screws fully home.

Wire nails and brads, U.S. made, also show a lack of consistent quality. Fifty percent of the latest box have upset tips and nails lacking heads. So much for U.S. manufacturer quality control.

J.F. Koenen, Mt. Prospect, Ill.

*Editor's Note: Our thanks to Gerald Cromer of Cayce, South Carolina for informing us that readers seeking*

*either parts lists or parts for old Walker-Turner tools stand an excellent chance of finding what they need by writing or calling Robert Archer, the "Discontinued Product Specialist" at Delta Machinery Co. Delta Machinery recently purchased Rockwell Tools, which had purchased Walker-Turner some years earlier. We telephoned Mr. Archer and he reported that in most instances he is able to provide parts lists for old Walker-Turner tools (no charge), and that in about 60 percent of the cases he is able to supply a replacement part (price on request). Mr. Archer added that the parts lists and the parts cover tools manufactured as far back as the 1930's.*

*Write: Robert Archer, Discontinued Product Specialist, Delta Machinery Co., 4290 East Raines Road, Memphis, TN 38118. Telephone: (901) 363-2843.*

The Middle Georgia Woodworkers Association meets on the second Tuesday of each month. For more information contact, Mr. Neil Mumford, 1060 Mimosa Drive, Macon, GA 31204-4312 (telephone: 912-745-8366).

I have been enjoying the latest issue of *The Woodworker's Journal,* particularly the Finishing column (page 13) on shellac. The first paragraph explained where it comes from, but I thought you might be interested to learn a little bit about the origin of the name shellac.

When I was sitting in on industrial education classes at Bowling Green State University in Ohio, Professor E.C. Powell made it quite plain to us that the name of the product comes from the shells of the lac beetle — thus: Shellac (a somewhat compound word). The word lac comes to us from the Hindu word *lakh* meaning one hundred thousand, denoting myriads of insects that swarm on the trees and suck the sap. The favored tree for these voracious insects is the genus *Ficus* which grows as an ornamental here in the southwest and is commonly known as the decorative "figless" fig tree.

The article stated that shellac has been popular for the past 200 years, but history tells us that shellac, along with veneered plywood, lacquer and similar finishes, had its origin in the Ming Dynasty of China and in Ancient Egypt. Mummy cases were decorated with a "lac" base paint.

Donald F. Kinnaman, Phoenix, Ariz.

I just wanted to let you know that three days after my request for a manual for an old jigsaw appeared in the "Readers' Information Exchange," I received three letters and two copies of the manual.

Woodworkers in general and your readers, in particular, are obviously a very caring group of people. Thanks for all your help.

Ray Rosenbloom
Pocono Pines, Penn.

# Events

*We will be glad to list as many events of interest to woodworkers as space permits. Listings are free and may include shows, fairs, competitions, workshops and demonstrations. The issue closing date is the 1st of the 2nd month preceding the cover date (9/1 for November/December; 11/1 for January/February). Please address announcements to the Events Department.*

**New England:**

Woodworking World — The New England Show, Oct. 23-25, Eastern States Exposition Center, Springfield, Mass.

The Brookfield Craft Center's Fall classes include: Woodworking Techniques; Making Children's Furniture; Hand Joinery; Veneer Inlaying; Solid Woodworking; Production Woodworking in the Small Shop. For info, contact the Brookfield Craft Center, P.O. Box 122, Brookfield, CT 06804. (203) 775-4526.

**Middle Atlantic:**

The Olde Mill Cabinet Shoppe presents: Inca Stationary Power Tool demonstration, Sept. 19; Sign Making by Chip Carving, Oct. 3; Hollow Wall Turning with David Ellsworth, Oct. 17. For more information, write to The Olde Mill Cabinet Shoppe, RD #3 Box 547-A, York, PA 17402; (717) 755-8884.

The Pittsburgh Tri-State Woodworking Show, Oct. 23-25, Pittsburgh Convention & Expo Center, South Hall, Pittsburgh, Penn.

**East North Central:**

The 46th Madison Chautauqua of the Arts, Sept. 26-27, Madison, Indiana. For info: (812) 265-5080.

The Michigan Woodworkers' Guild is holding its 7th Annual Exhibition Oct. 21-25 at the Somerset Mall, Troy, Mich.

Woodworking World — The Chicago Area Show, Oct. 9-11, The Metro Center, Rockford, Ill.

The Metro-Detroit Woodworking Show, Oct. 30 - Nov. 1, Michigan Fairgrounds, Community Arts Building, Detroit, Mich.

The Greater Cincinnati Woodworking Show, Sept. 11-13, Cincinnati Convention Center, Cincinnati, Ohio.

The Illinois Woodworking Teachers' Association will meet Nov. 6, 8:00 a.m., Circus Room, University Union, Illinois State University. All interested welcome to attend.

**West North Central:**

The Midwest Woodworkers Association 5th Annual Show and Sale, Nov. 7, National Guard Armory, Columbia, Missouri. For info or to reserve space, contact Gary Straub or Danny Roberts at P.O. Box 7093, Columbia, MO 65201.

The Twin Cities Woodworking Show, Oct. 16-18, Minneapolis Auditorium, Lower Exhibit Hall, Minneapolis, Minn.

**South Atlantic:**

Included in the Penland School Fall schedule is a two-week session in woodworking with Dan Rodriguez, Sept. 14-25; Woodworking Techniques, conducted by Randy Shull, Sept. 8 - Oct. 9. For info, contact The Penland School, Penland, NC 28765-0037. (704) 765-2359.

Woodworking World — The Carolina Show, Oct. 30 - Nov. 1, Charlotte Civic Center, Charlotte, North Carolina.

The Creative Arts Guild of Dalton, Georgia will hold its 24th Annual Festival of Arts and Crafts, Sept. 26 - 27, 520 West Waugh Street, Dalton, Georgia.

**East South Central:**

The Tennessee Woodworking Show, Sept. 4-6, Nashville Convention Center, West Hall, Nashville, Tenn.

**West South Central:**

"Turned Wood Objects" exhibition and sale, Sept. 19-26, Gallery B, The Market Place, 11121 N. Rodney Parham, Little Rock, Arkansas.

**Mountain:**

The National Working with Wood Show, Oct. 16-18, Centinal Hall, Mesa, Ariz.

**Pacific:**

The San Diego Woodworking Show, Sept. 25-27, Del Mar Fairgrounds, Crosby Hall, Del Mar, Calif.

The San Joaquin Fine Woodworkers Association presents a weekend workshop in Design and Woodworking Techniques, conducted by Art Carpenter, Nov. 6-8, Fresno, Calif. For info, contact Mark Webster, 670 N. 8th St., Porterville, CA 93257; (209) 781-4074.

# Readers' Information Exchange

*Looking for an owner's manual for an old band saw? Need a bearing for a hand-me-down table saw? Can't find a source of supply for an odd piece of hardware? Maybe our readers can help. Send along your request and we'll try to list it here — and hopefully one of our readers will have an answer for you. Due to space limitations, we will be unable to list all requests, but we will include as many as we can.*

I need a table saw extension and an owner's manual/parts list for a Sears 10 in. table saw, model no. 113.27520. I also need a manual for a Sears 6 in. jointer, model no. 103.23900.

*Bob Soderberg*
*5419 45½ Ave. N.*
*Robbinsdale, MN 55422*

Does anyone know the address of a company who supplies "Merit Abrasive Discs"? These 1½" diameter discs are equipped with a drive that clips onto the ⅛ in. diameter shaft arbor.

*Jay D. Johnson*
*4551 E. Farmdale Circle, Mesa, AZ 85206*

I have a Comet Cub 8" radial arm saw, model no. UBB (serial no. RE3160), manufactured by the now out-of-business Consolidated Machinery & Supply Co. of Los Angeles, Calif. I need to replace its thin corded drive belt that measures ⅞ × 9" around. The part no. was 1471. I'd also be interested in a power take-off accessory for this unit. The saw has served me well for over 32 years; I'd hate to lose it.

*Raymond J. Krenik*
*343 Cates St., San Diego, CA 92114*

I want to build a Jenny Lind single bed for my granddaughter, but I haven't been able to find a pattern. Can anyone tell me where I can find one?

*Fred G. Tanner*
*726 1st Street S.E., Hartley, IA 51346*

I need a ripfence for a Homecraft table saw, serial no. 0-3199, made by the Delta Mfg. Division of Rockwell Manufacturing. The table is 15 × 17⅞".

*Jack Pettigrew*
*Box 158A, Hartsburg, MO 65039*

I need to purchase parts for a B-24 band saw manufactured by Du-Er Tools, Minneapolis, Minn.

*J.F. Rogers, Jr.*
*4795 Millbranch Rd., Memphis, TN 38116*

## Owner's Manuals & Parts Lists

Craftsman 10" table saw,
model no. 113.27521 . . . . . *S.J. Chant*
*RD #2 Box 232 Wyalusing, PA 18853*

Craftsman jigsaw,
model no. 113.20721 . . . . *Calvin Buckelew*
*3217 Glenwyck Circle,*
*Pascagoula, MS 39567*

Craftsman jigsaw,
model no. 103.23150 . . . . *Devore O. Burch*
*Rt. 8 Box 477, Fort Worth, TX 76108*

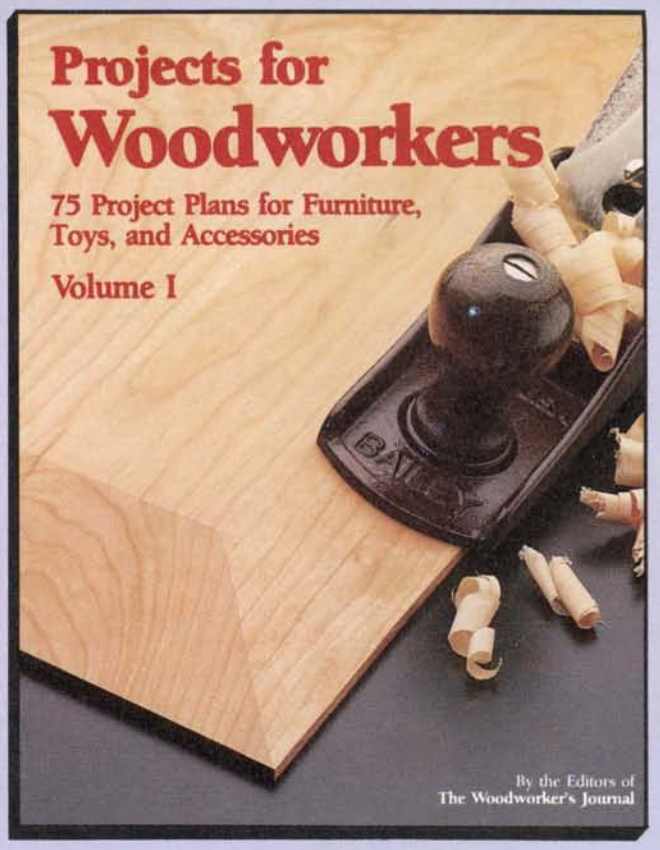
Belsaw 12 in. surface planer
model no. 905 . . . . . *Frank Foster*
*45 E. Allen St., Fairhaven, MA 02719*

Sears Craftsman 24" scroll saw,
model no. 103.23390 . . . . . *Ron Holladay*
*2359 Jardin, Oxnard, CA 93030*

1940's Delta 24" scroll saw . *James E. Mann*
*Rt. 1 West Main Road Box 232,*
*Ripley, NY 14775*

Yates American wood lathe,
model no. 170 . . . . . *H.L. Patterson*
*Box 171, Harrisburg, OH 43126*

# A NEW BOOK FROM The Woodworker's Journal

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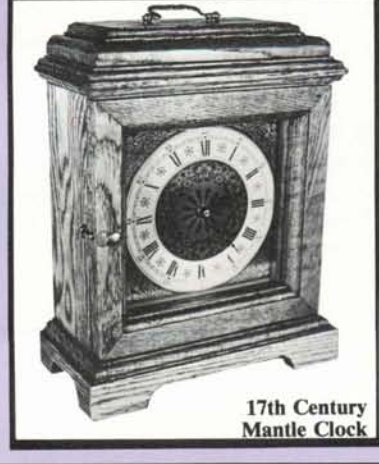
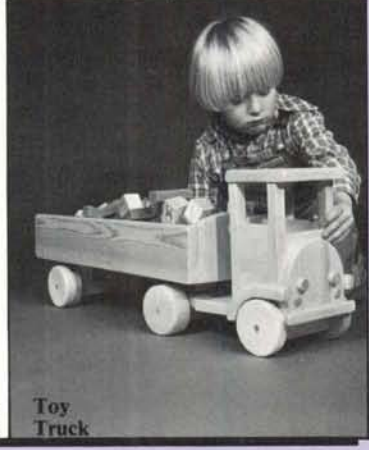

17th Century Mantle Clock


Toy Truck

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# Finishing

## French Polishing Made Easy

By Patrick Devine

*French polishing, as traditionally defined, is the application of multiple thin coats of shellac with a balled wool and linen pad to build up a deep lustrous finish. As the layers melt one into the other they bond chemically to become one single coat.*

*The following article details a shortcut to French polishing that relies on the brushed application of a heavy sealer coat, which is then polished to achieve identical results. The technique employed is similar in most ways to traditional French polishing, but requires less time and considerably less effort.*

For years the French polishing process was a secret closely guarded by craftsmen. Only an expert finisher would attempt using the technique, and formulas were handed down from father to son. Even today there is the perception that French polishing is an art, to be tried only by a master craftsman. If the truth be told, however, the real secret that the old-time craftsmen were jealously guarding is the fact that French polishing can be a relatively simple procedure when the proper methodology is followed and some experience has been gained.

Of course, there is a good deal more to the process than simply brushing on a finish such as polyurethane, but with a proper step-by-step understanding of the technique and a little practice, most anyone can produce a superior high-gloss French polished finish.

### The Technique

*Step 1 — Surface Preparation:* Begin by sanding with the grain using 120-grit paper. After this initial sanding, sponge the surface sparingly with water to raise the grain. Then use 120-grit sandpaper (at a slight angle to the grain) to level the raised grain, and let the surface dry. Next, using 280- on up to 400-grit sandpaper, sand the wood until you have a perfectly smooth surface ready to be finished.

*Step 2 — Stain & Filler:* At this point, if desired, stain and fill the wood. In traditional French polishing, paste wood fillers are not used, even on open pore woods such as ash and oak that usually require filling. As a shortcut to the traditional method of filling, however, you may decide to use a paste wood filler. Follow the directions on the can carefully for both staining and filling, and be sure to use only water-based stains. It is important that both stains and fillers have

adequate time to dry, since French polishing over any surface that is not 100 percent dry could cause a reaction with the shellac. I recommend the use of a paste wood filler, since by using the technique I describe here, you will save several hours and end up with the same results as those produced using the traditional method. After filling, once again sand with 400-grit paper to reestablish a perfectly smooth surface. *Note:* The traditional method of filling requires that you prepare a pad similar to the "rubber" or "tampon" used for the actual French polishing (see Step 4). Fill the pad with a 1-pound cut of shellac and rub over the wood surface in a quick figure eight or circular motion, gradually sprinkling fine pumice on the surface while you work. Add thinned shellac to the back of the pad, and continue to work the pumice. Eventually the pumice will grind off and mix with sufficient wood dust to fill all pores, matching very nicely with the natural color of the wood. In traditional French polishing, after allowing the filler to dry overnight, a fresh tampon is used to apply successive layers of one-to-two pound cut shellac. Use a few drops of mineral oil sprinkled on the wood surface to lubricate the pad while you work. Allow each coat to dry thoroughly before applying the next coat. While purists of old commonly applied more than a dozen coats of shellac in order to build up the finish they desired, after three or four coats you should see a fine high gloss surface develop. Later, you will "spirit off" to bring the finish up to its maximum gloss (see Step 6).

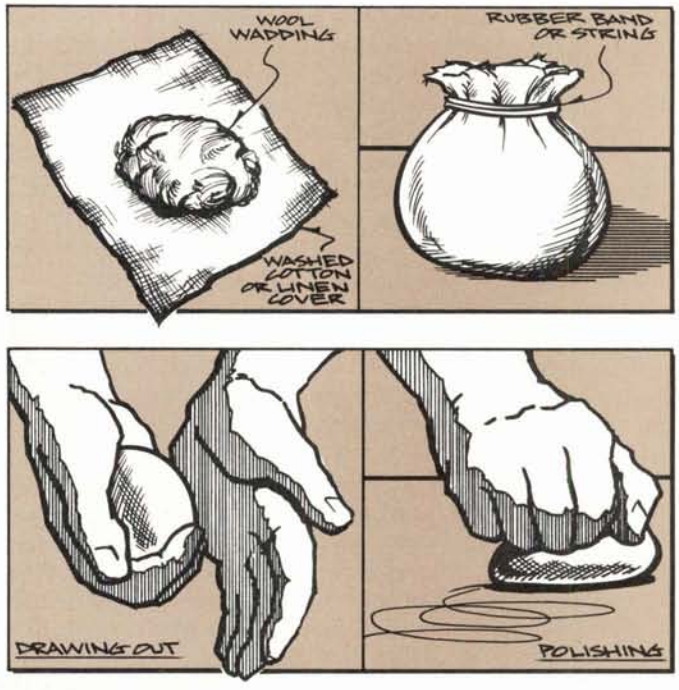
*Step 3 — Sealing the Wood:* While traditional French polishing advocates recommend multiple applications of shellac with substantial dry time between each coat to effectively seal the surface, a much faster method is to simply brush on a sealer coat of 1-pound cut. After allowing to dry thoroughly, sand smooth with 400-grit sandpaper. This sealer coat will lock the color or stain into the wood and prevent it from bleeding through the French polish.

*Step 4 — Preparing the "Rubber" or "Tampon":* The shellac and denatured alcohol French polish mixture is applied with a device called a rubber or tampon, which consists of wadded up lamb's wool or wool yarn wrapped in a close weave absorbent cotton or linen cloth. To prepare the tampon, first soak the inner wool wad in a 2-pound cut of shellac for 20 minutes. Then squeeze most of the shellac back into the jar until the wad is slightly moist and sticky, but not dripping wet. Now, using the cotton or linen cloth, wrap the wool wad into an irregular ball shape (slightly pointed at one end), and secure it with a rubber band (see illustration). Next, take the tampon as shown and repeatedly tap it into the palm of your hand until the cloth wrapper becomes tacky and pulls on your palm. The tampon is now ready for use. *Note:* The cotton or linen cloth must be old or washed and never new, since new fabric will not have the porosity that is required to allow the shellac to work out through the weave.

*Step 5 — French Polishing:* Start by sprinkling a trace of extra fine pumice polishing abrasive or jewelers' rouge on the sealed surface. Now take the tampon, as prepared in Step 4, and apply a drop of cream furniture polish to the outer linen

(continued on next page)

## Finishing
Continued




cloth as a lubricant for the pad. Begin French polishing, using a steady figure eight motion. Work on one area of the surface at a time, but be sure that the entire surface, including the edges, receives the same attention. As you work, it will be necessary to occasionally add a few drops of denatured alcohol to the outer linen cover to draw out the shellac inside. When the pad has been drained of the shellac/denatured alcohol cut, you will need to open the linen cover and recharge the wad with more shellac. At no time, though, should you ever add shellac to the exterior of the linen. After each reloading of the wad or after each application of denatured alcohol to the linen cover to draw the shellac out, it is necessary to repeat the process of tapping the tampon into the palm of your hand until it becomes tacky.

After 10-15 minutes of French polishing, occasionally adding lubricant and extra fine abrasive, you should begin to see a mirror-like surface appearing. Be sure that you are working in a well-lighted room, since adequate light is vital if you are to properly see and judge the results. Continue to French polish for an additional 10-15 minutes to build up a high gloss, recharging and preparing the tampon as before if necessary.

Now, rewrap the wadding with a clean outer linen, prepare the tampon as before and continue French polishing, only this time use an extra-extra fine polishing abrasive. After another 10-15 minutes, you should have an absolutely smooth, clean surface. As before, work on one area at a time until the high gloss look is achieved. If you should find that ridges are building as you work, you have fallen victim to the most common problem plaguing novice French polishers — a too wet tampon.

If ridges have developed, let the surface harden for about an hour; then, using a *very* dry tampon charged with

1-pound cut, rework it and finally spirit off. *Note:* The figure eight or circular motion used in French polishing must be accomplished as quickly as possible. Never pause or stop on the work.

*Step 6 — Spiriting off:* After allowing the last coat 24 hours to dry, you will be ready for the final step, spiriting off. The purpose of spiriting off is to remove any swirl marks or lubricating oil that might be left on the surface. Additionally, spiriting off will produce a dramatic increase in the gloss. Prepare a fresh tampon as before using *only* denatured alcohol, and work in straight strokes with the grain until the tampon is almost dry. Take great care when spiriting off that the tampon is not dripping, since too much alcohol will simply dissolve the finish you have worked on up to this point.

After spiriting off, let the surface dry for several hours, then lay down a coat of cream furniture polish and buff with the grain. Allow the surface to dry overnight, then protect the French polished look by applying a thin coat of paste wax which will help prevent damage from water and moisture.

The wadding and linen cover of the tampon can be cleaned with denatured alcohol, allowed to dry, and stored for future use.

*Editor's Note:* In researching the subject of French polishing, we discovered that no two experts seem to agree on the technique. Each individual appears to have developed his own version, although in the final analysis all of the techniques quite naturally claim to produce similar results. Some advise using special French polishing mixtures, while others recommend ordinary shellac. Depending on the desired color and effect, just about all the grades of shellac can be used in French polishing.

Some craftsmen recommend polishing no more than 10-15 minutes for each coat, with a two-hour dry time between coats, while others maintain that a 12-hour dry time for each successive coat is vital. Some use mineral oil as a lubricant for the rubber, while others swear by vegetable oil. As an added step, the real purists include a technique where a "pounce bag" is used to apply a fine dusting of pumice, which is then rubbed out with oil, much in the manner one compounds an automotive finish. After the finish has been rubbed out perfectly flat, the surface is wiped clean, and finally a thinned coat of shellac is rubbed in and allowed to dry before spiriting off.

The experts generally agree that while French polishing is a most forgiving technique, novices must overcome the urge to use a too-wet tampon if they are to obtain satisfactory results. Of course, there is no substitute for practice, which in a technique such as this, is absolutely essential to gain a feel for and ultimately a mastery of the process.

While Mr. Devine's technique may seem a radical departure from the lengthy process of traditional French polishing, he maintains that the results are identical. Purists will no doubt argue this point.

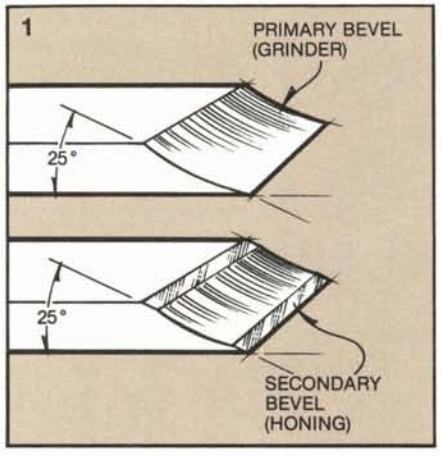
We offer this technique as a viable alternative for those who may have wanted to try French polishing, but were discouraged by the complexity, time involved, and the mystique of the traditional methods. WWJ

# Plane Iron Sharpening

The timeless statement, "There is no substitute for a sharp tool," is certainly true in the case of plane irons. And, as with most any hand tool that requires a keen edge, there can be a world of difference when it comes to the use of a tool that has been properly sharpened and that same tool improperly sharpened. Rather than a further digression on the subject of sharpening, however, it is the intent of this article to provide you with a practical step-by-step technique for obtaining the best and most consistent results when sharpening plane irons.

### Grinding

The first step in sharpening a plane iron is to grind (or regrind) the cutter to the desired angle. On both bench and block planes this angle is between 25-30 degrees. On bench planes the bevel faces down, while on block planes the bevel faces up. Regrinding the cutter is required on an edge that is damaged or where the bevel has become overly rounded or the angle has been changed. Typically, regrinding is also required after long use and many honings where the hollow grind has nearly been flattened out. Regrinding is not usually needed on a new plane iron, which should come from the factory pre-ground to the proper bevel angle and therefore only needs honing to establish the secondary bevel before use.



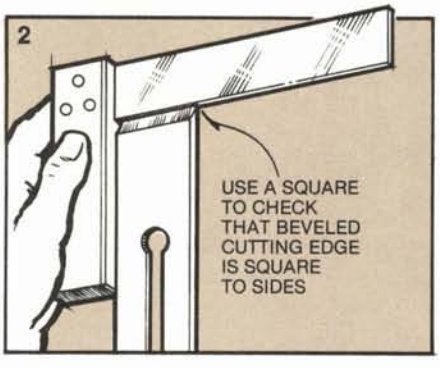
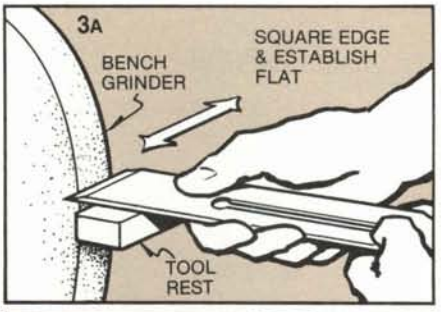
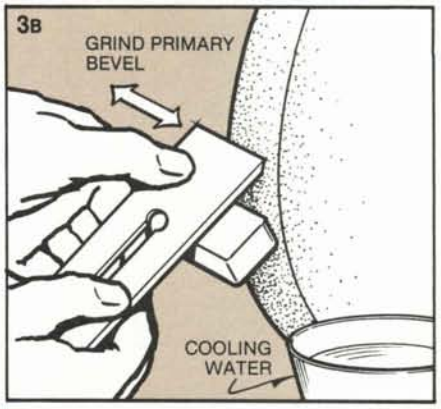
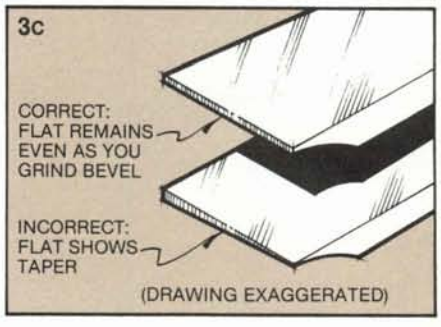




Fig. 1 shows the typical plane iron with primary and secondary bevels. When a flat oil or waterstone is used for creating the primary bevel, the secondary bevel must be established at several degrees more than the primary bevel. The primary bevel would be ground to 25 degrees, while the secondary bevel would be established at between 28-30 degrees. However, when the bench grinder is used to establish the primary bevel, both the primary and secondary bevels are established on the *same* angle. You will note that because of the hollow grind produced by the grinding wheel, the secondary bevel is essentially a few degrees greater than the primary bevel in the cutting area.

We prefer this hollow ground bevel because our experience has shown that a hollow grind results in a sharper edge after honing than when a flat ground primary bevel is employed. One added advantage of the hollow ground bevel is a generous back clearance, providing relief and reducing friction. We grind both the primary and secondary bevels to 25 degrees.




We acknowledge the fact that many purists frown on using the grinder or oilstones for sharpening. In the January/February 1979 issue of *Fine Woodworking* magazine, the master George Nakashima maintained that "it takes two years to learn how to sharpen a chisel properly, and even now, after 30 years, I don't have a man in the shop who can sharpen a chisel properly. We have a power grinder, and a lot of the men use it even on a good chisel, which is absolute barbarism . . . an oilstone is no good, it has no quality, it doesn't have the feel that a good waterstone has . . ."

Mr. Nakashima is no doubt correct

(continued on next page)

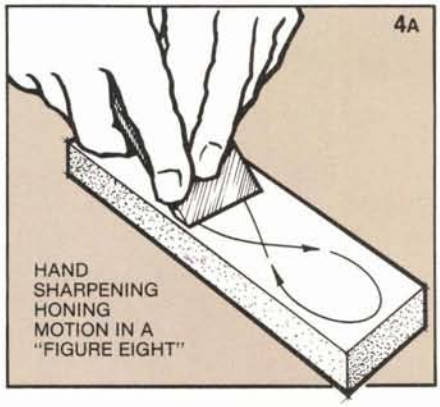
when one considers his extraordinary standards. However, for mortal men (middle level, average-experience woodworkers), the grinder is a fast, effective, and reliable method.

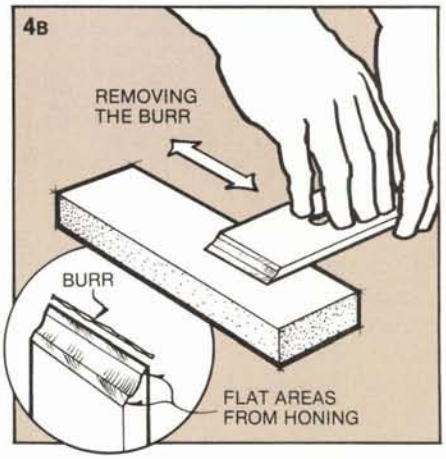
Both hand and machine sharpening methods can be accomplished admirably by the seasoned pro working freehand (without any guides). The amateur, hobbyist, or novice woodworker, though, is strongly urged to employ some sort of mechanical device or guide to position the plane iron at the correct angle to the stone or grinding wheel.

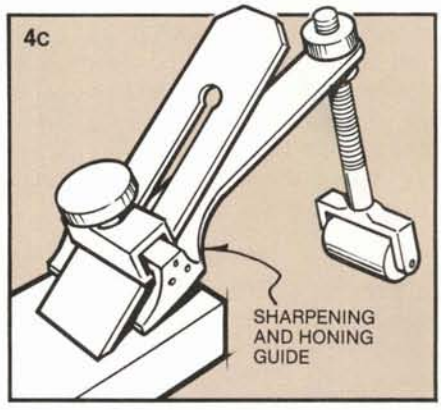
The bench grinder tool rest (Figs. 3A and 3B) will serve both to support the plane iron and to position the iron at the correct angle to the wheel. It may take some trial and error to establish the proper angle for the tool rest. Check the plane iron with a T-bevel to ascertain that the bevel angle is being ground as intended. Before starting, position a cup of water within reach to periodically quench or cool the iron as you work. Remember, if at any time you see the edge of the blade turning blue, you have destroyed the temper and that section will have to be ground out.

Start by dressing the grinding wheel square using a silicon carbide wheel grinding stick. This initial step provides a flat grinding surface while simultaneously uncovering a fresh cutting face that is less likely to build up heat.

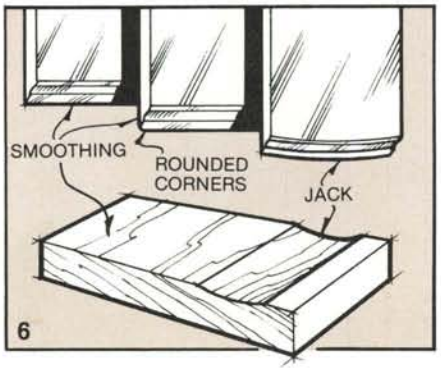
The first step in sharpening is to determine that the plane iron edge is square to the sides. This can be checked with a T-square, as shown in Fig. 2. If it is not square, begin by grinding a slight flat on the edge to square it (Fig. 3A). This really serves two purposes: squaring the plane iron, and providing a reference point so that you may judge how square your grinding is proceeding as you work the iron from side to side across the wheel (see Figs. 3B and 3C). The side-to-side grinding motion should be continuous without excessive pressure. If you pause in one spot or press too hard, you will cause the steel to overheat. While an area that has been blued and has lost its temper can be ground away, the blade will generally never be quite the same or hold as keen an edge.




As you work, periodically cool the iron in the cup of water, especially as you approach the final edge, since this is the point at which it is most likely to burn. When the edge has been ground down to the point where the flat on the end almost disappears, stop. Never go past this point since, by doing so, you will lose your reference by which to judge squareness. Once again, remember to work slowly to reduce the


chance of overheating and bluing the steel (a common beginner's error).

### Honing or Whetting

The hand method for honing requires that you employ a steady figure eight motion as shown in Fig. 4A. Start on a medium grit oil or waterstone (we like an Arkansas stone), then move on to a fine oil or waterstone like an India stone, which we prefer. Every so often, flip the plane iron over, lay it flat, and remove the hair burr as shown in Fig. 4B. Of course, you may also use one of the sharpening guides to hone the plane iron (Fig. 4C), a wise choice if you are not confident working freehand. When properly honed, the beveled edge of the plane iron should appear as shown in the Fig. 4B detail. Note that you will have created flats on *both* sides of the hollow ground bevel.

As a last step, you may wish to use a leather strop or a cloth buffing wheel to polish the honed edge. Either method will effectively remove any fine hair burrs, and by polishing the cutting surface, the sharpness and longevity of the edge is enhanced. An alternate method for removing hair burrs is to draw the plane iron across the edge of a board, as shown in Fig. 5.

While the leather strop has been the traditional method of polishing the cutting edge, the buffing wheel, charged with tripoli compound, is a much faster and equally effective device. Several passes over the wheel on both sides of the edge are all that is needed.

For the properly sharpened and maintained plane iron, honing or whetting is an occasional requirement, and regrinding is needed very infrequently. However, to maintain an optimum cutting edge, the iron should be periodically stropped or buffed while you work. Indeed, the iron can be buffed or stropped a dozen or more times before whetting is required.

There is no hard and fast rule on how frequently one needs to "tune" the edge. We generally strop or buff when we perceive a noticeable decrease in cutting ease. Some Oriental masters are rumored to have stropped after each stroke, but this is certainly excessive unless one takes more pleasure in stropping than in planing. However frequently or infrequently you prefer to tune the edge, remember the old maxim that there is no substitute for a sharp tool.

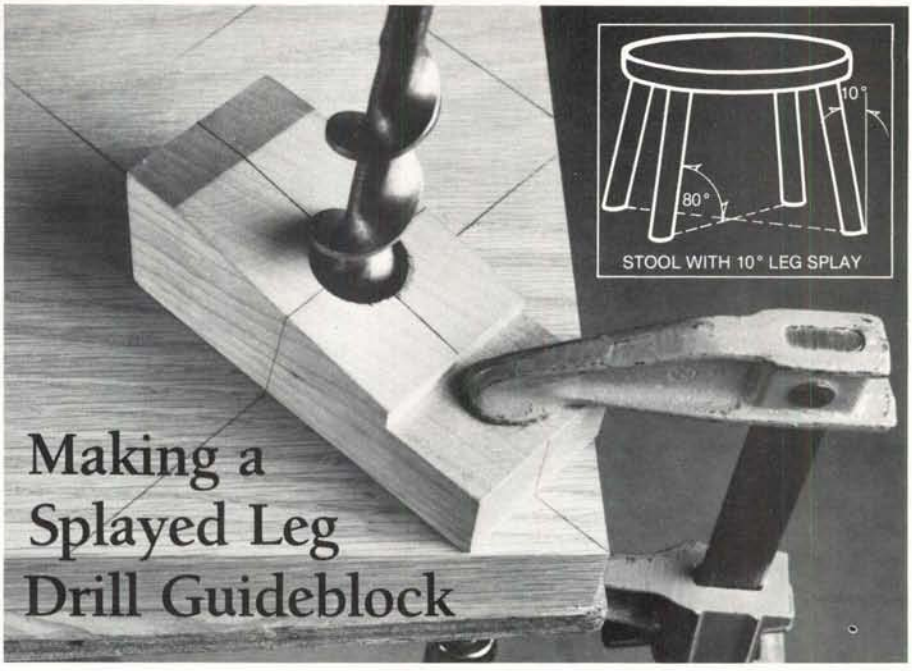
### Notes on Bevel Angle & Edge Radius

While smooth planes should be ground perfectly square, jack planes are usually given a slightly radiused or curved edge as shown in Fig. 6. The curved edge enables one to remove large amounts of stock without gouging or tearing at the blade corners. For finishing work, some craftsmen prefer to slightly round the smooth plane iron corners, as shown, also to prevent gouging.

Bevel angle can be altered, depending on the type of work you do and the wood you usually work in. If you work mainly in soft pine, consider grinding a 22- to 23-degree bevel, which will slice cleanly in pine, but tends to chip in oak. For oak and other hardwoods, a bevel angle of about 28 degrees produces the best results. For general purpose work, however, we prefer the 25-degree bevel angle.

*Editor's Note:* We use the same general technique described here to sharpen our chisels. WWJ

# Woodworking Basics




## Making a Splayed Leg Drill Guideblock

Some specialized elements of woodworking seem complicated at first glance, and woodworkers unfamiliar with them commonly tend to avoid projects that may include such challenges.

One problem often encountered is how to accurately lay out for splayed legs, and how to drill through or into a surface to accommodate them. While there are a variety of acceptable methods, we have found that the easiest and most reliable way is to construct a splayed leg drill guideblock.

First, determine the hole angle. In our example, we show a simple 4-legged stool with the legs splayed out at 10 degrees from the vertical (see inset). Since the legs are splayed at 10 degrees, we will need a guideblock with a hole drilled through at 10 degrees to guide the drill bit at the proper angle.

**Step 1.** *Determine Block Size:* As a rule of thumb, we prefer a thick drill guideblock for maximum stability. The width of the block is determined by the drill bit size, but is generally at least two times the hole diameter. The length of the guideblock may be increased as necessary if the legs are located some distance in from the surface edge and deep throat clamps would not otherwise reach the guideblock. The guideblock we show in the illustration will adequately accommodate any bit up to 1¼ in. in diameter.

**Step 2.** *Establish Splay Cut:* After cutting the block to overall length, width, and thickness, make the initial cut to establish the leg splay. Remember, the angle of this cut must be equal to the desired degree of splay. In our example, since we require a 10-degree leg splay, a 10-degree wedge is cut.

**Step 3.** *Mark Center lines:* Scribe center lines across the guideblock, continuing them all around. These lines serve both to mark the center point, and to help index the guideblock in step 6.

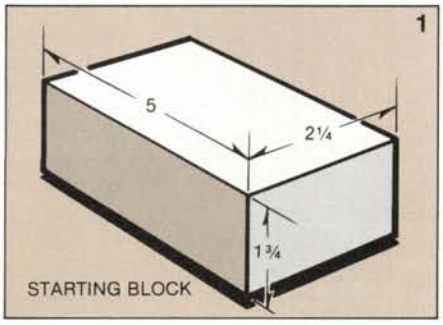
**Step 4.** *Drill Guideblock Hole:* Flip the guideblock over onto the angled face, and use the drill press to drill through the block at the center lines. Use the same diameter bit as for the hole that you intend to drill later. Note that a hand screw clamped to the drill press table (which is flat at 90 degrees to the bit) anchors the guideblock.

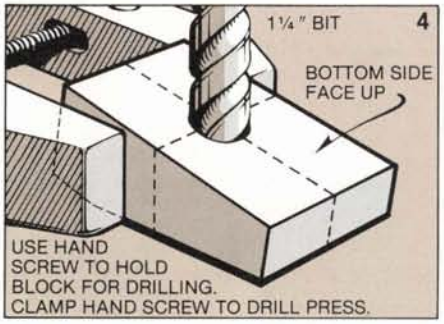
**Step 5.** *Notch Guideblock For Clamp:* Using the band saw, notch for a flat on the end of the guideblock to accept a clamp.

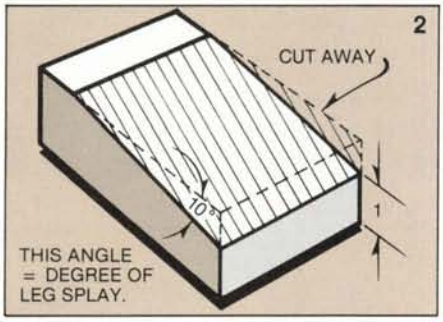
**Step 6.** *Position Block and Drill Holes:* Clamp the drill guideblock in place on the underside of the work. Figs. 7A and 7B illustrate how to lay out index lines for round and rectangular or square surfaces with four legs of equal splay. Note that in each case, the drill guideblock is faced in the

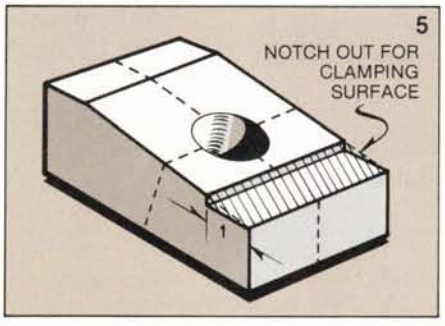
direction of the splay. As shown, the drill guideblock is aligned with the index lines to insure correct positioning before it is clamped in place and the holes are drilled.

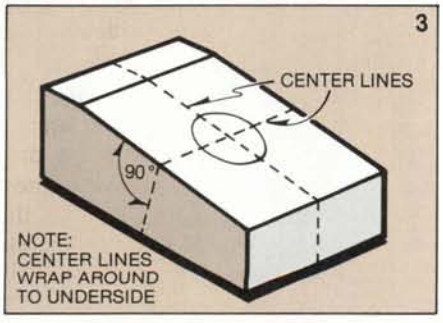
While we have only illustrated indexing for 4-leg applications, indexing for 3-leg round seat applications is similar, requiring that you simply lay out an equilateral triangle, bisect each angle, scribe your index lines and then align the guideblock along the bisecting lines. Once you have determined the correct angle of splay and made the guideblock, this general technique can be utilized for most any situation requiring that holes be drilled to accommodate splayed legs in chairs, stools, and tables. Of course, where an angled seat is involved (i.e. a seat not parallel or on the same plane with the floor), several guideblocks may have to be constructed, depending on the desired leg splay. WWJ

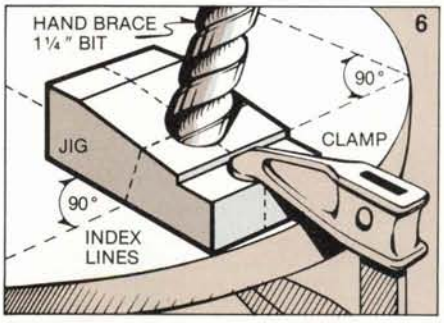


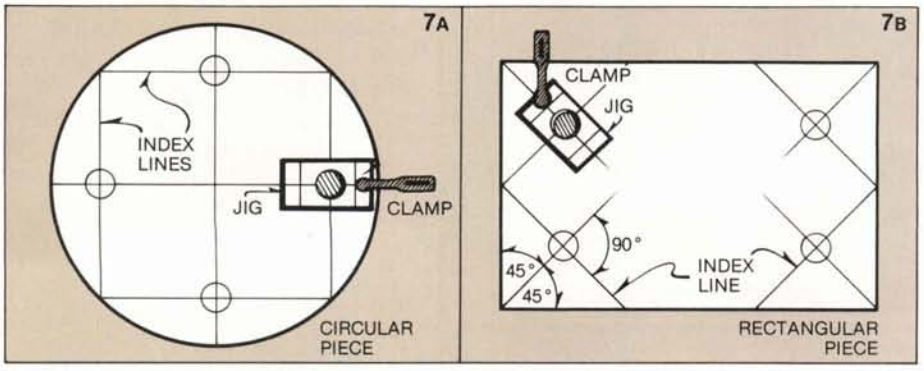



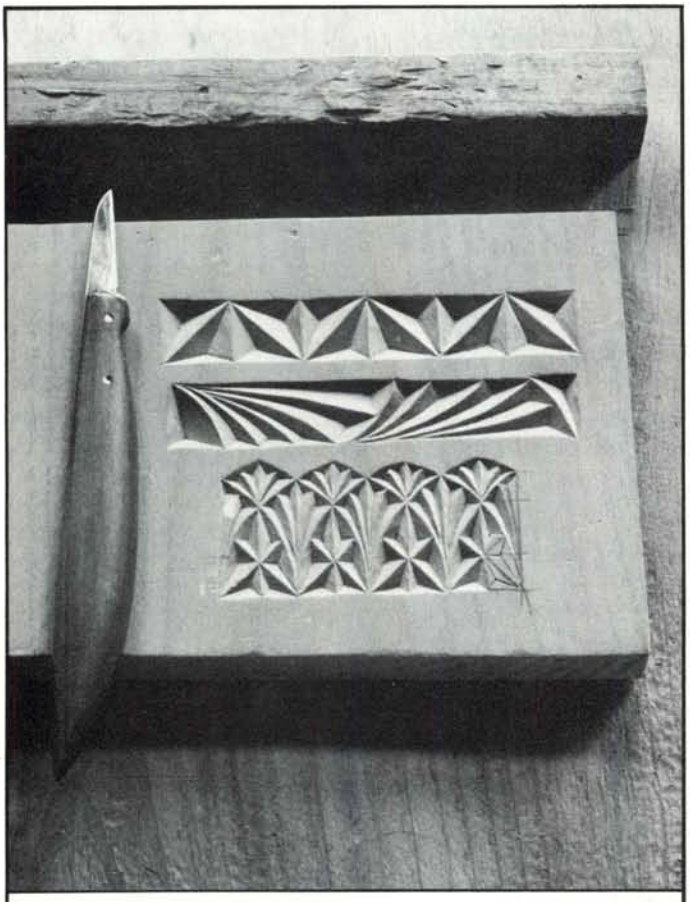



# Traditional Chip Carving

By Rick Butz



*Sechsschnitt sample board.*

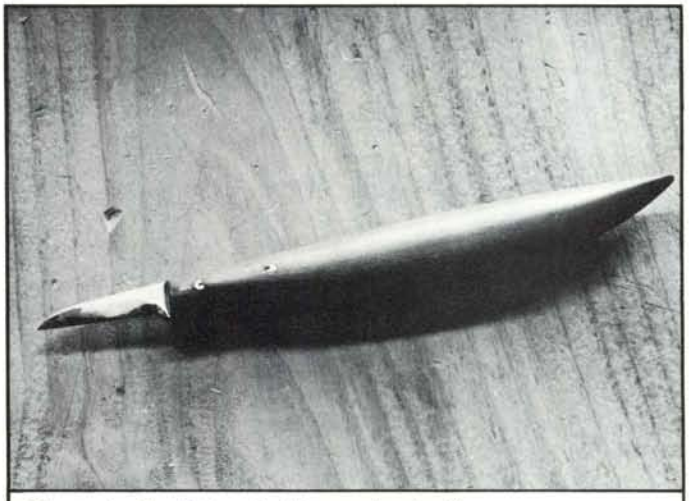


*Photo 1: Traditional chip carving knife.*

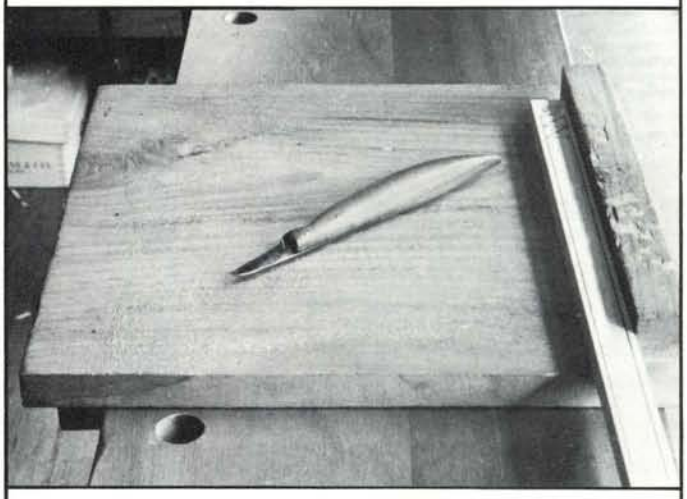


*Photo 2: Bench hook holding device.*

Chip carving is one of the oldest kinds of decorative woodcarving and one of the simplest. For hundreds of years, woodcarvers in the isolated mountain regions of Northern Europe used this style of carving to decorate their household utensils. During the long winter months they carved their folk designs on boxes, spoons, cupboards, spice racks, chairs and other items. A chip carved border detail is used to decorate the spice rack featured on page 50.

Chip carving or *kerbschnitzen* consists of a series of simple triangular cuts arranged in complex geometric patterns. These are carved out with a single knife. I find that the traditional German-style chip carving knife shown in Photo 1 is the most comfortable to use. Remember, the knife must be razor sharp to produce the nice crisp cuts.

Any soft, fine-grained wood can be used for chip carving, provided it doesn't have any knots. Basswood is ideal, but air-dried white pine or poplar can also be used.

You may find the holding device that I call a bench hook useful. This is a flat, square board with a cross piece glued to each end. The bottom piece hooks over the edge of your workbench while you brace your work against the top cross piece, as shown in Photo 2. This bench hook holds the wood securely, while enabling you to turn the work around easily in order to carve from other directions.

The basic cut for all chip carving is called *dreischnitt* which literally means "three cuts." You may want to practice some dreischnitt cuts before attempting to create the chip carved border pattern featured on the spice rack. As shown in Photos 3, 4 and 5, begin by drawing out a triangle about ¼ in. tall. Now place the point of your knife at the apex of the triangle and press down about ⅛ in. Repeat this cut for the other side of the triangle. You now have two vertical cuts deepest at the apex and sloping upwards.

Next, slice along the base of the triangle, holding the blade so the point angles down 45 degrees and meets the other cuts at the apex of the triangle. A single chip should cleanly pop out or come free.

By practicing on a piece of scrap wood, you will soon get the feeling of this dreischnitt cut. Various arrangements of this cut in different pat-

(continued on next page)

terns can be used to create a great variety of designs, many of which are suitable to decorate the spice rack.

Another chip carving cut is called the *sechsschnitt* or "six cuts." This is simply three dreischnitt cuts combined to form a single triangular cut with the three sides sloping down towards the center of the triangle. The border detail used to decorate the spice rack consists of four sechsschnitt triangles arranged to form a square, with this pattern repeated side-by-side for the length of the border.

The first step in making the border detail is to lay out and pencil in the pattern. Center a row of ½ in. squares on the wood. Then draw two diagonal lines through each square. Be careful to draw the pencil lines lightly so they can be erased easily when you're finished.

Make the first cut by placing the point of your knife in the center of each triangle formed by the diagonal lines. Press down about 3/16 in., making a vertical cut that slopes upward from the center to each corner of the triangle, as shown in Photo 7.

Next, holding the knife at about a 45-degree angle to the wood, slice a chip out of each side of the triangle. The finished sechsschnitt will have three sloping sides that meet in the center, looking something like a reverse pyramid (Photo 9). Repeat this chip carving cut for each of the four sechsschnitt triangles in each square. Then continue to the next square.

Once you get the hang of making these sechsschnitt triangles, the design possibilities are endless. They can be made in a great variety of shapes with straight or curving sides, as illustrated by the sechsschnitt sample board.

With a little practice, you'll find that chip carving is a lot of fun and not nearly as difficult as it first appears. Good luck!

*Editor's Note: Our thanks to Rick Butz for his help with this feature. Rick's book* How To Carve Wood *(published by Taunton Press) with 40 different carving projects for woodcarvers is available from: Rick Butz, P.O. Box 160, Blue Mountain Lake, NY 12812; cost is $15.50 postpaid.*

WWJ

**Cutting The Dreischnitt**

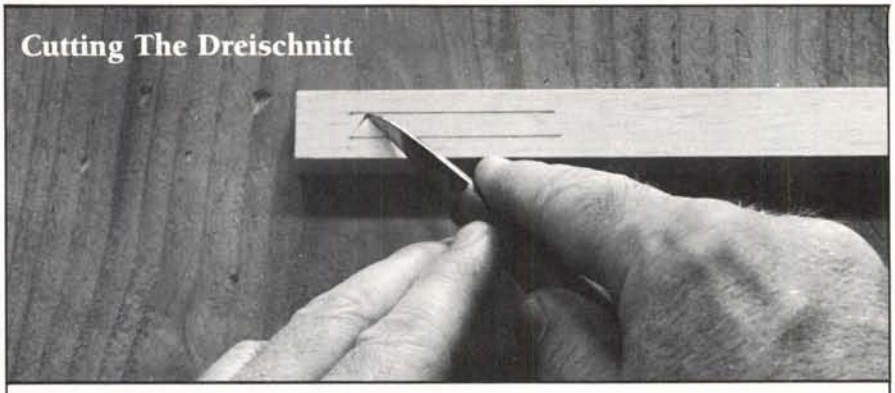


*Photo 3: Make the two vertical dreischnitt stop cuts.*

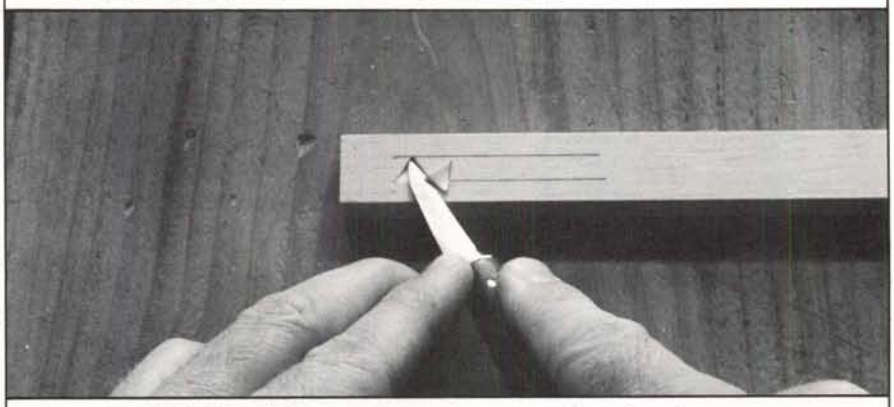


*Photo 4: Make the slicing cut at 45 degrees to free the chip.*

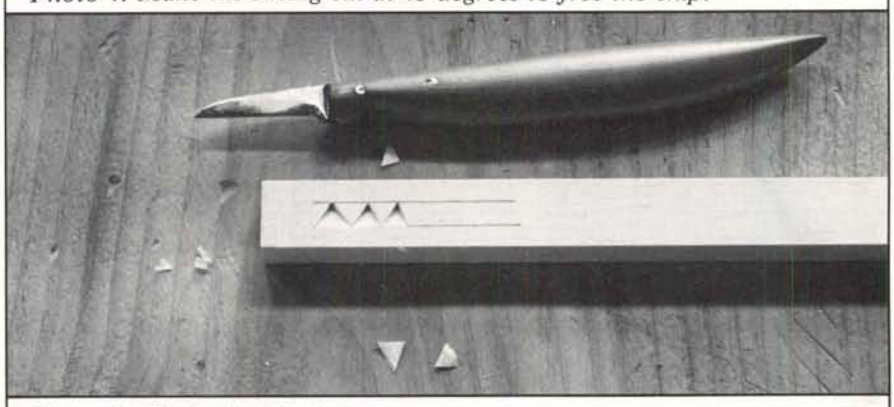


*Photo 5: Finished dreischnitt cuts.*

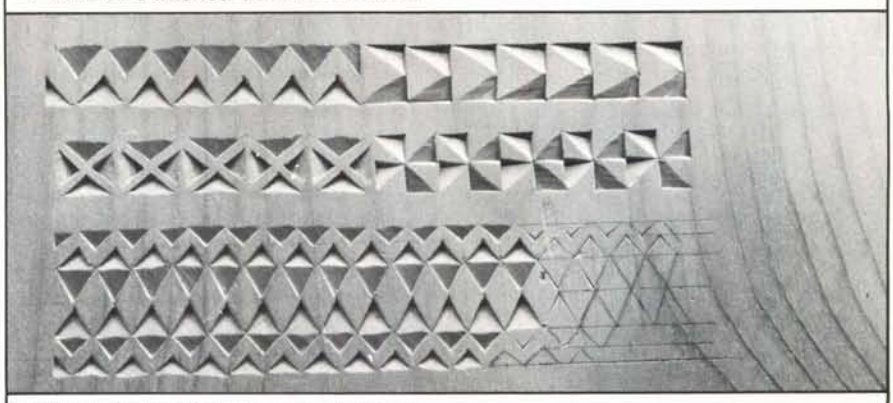


*Photo 6: Dreischnitt sample board.*

## Cutting The Sechsschnitt

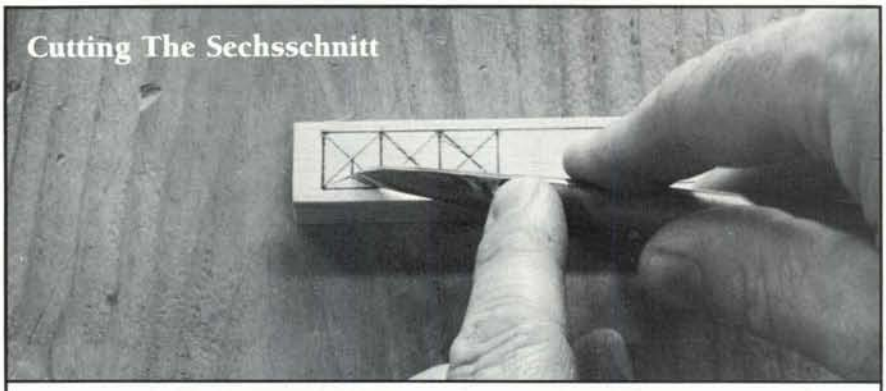


*Photo 7: Make vertical stop cuts from center of triangle to each corner.*

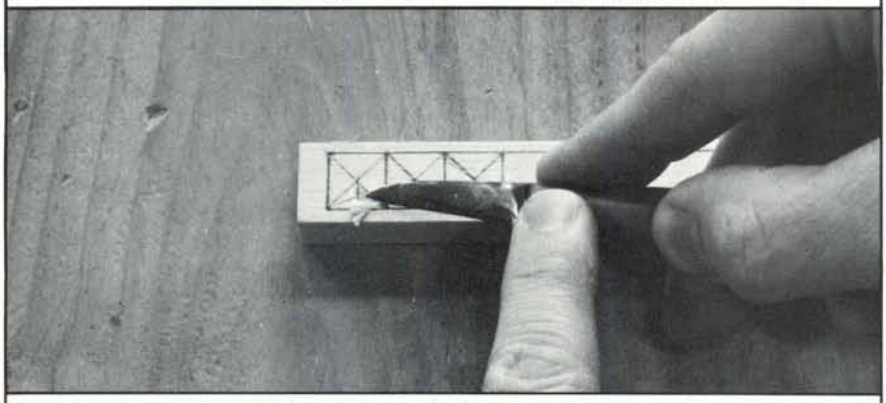


*Photo 8: Slicing out the first sechsschnitt chip.*

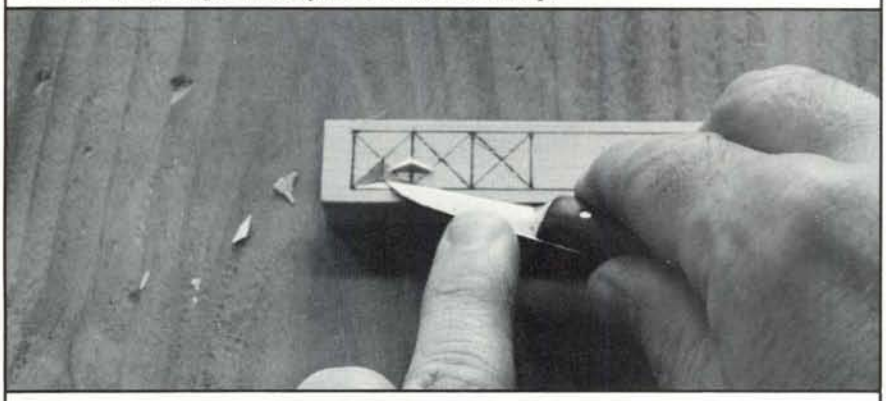


*Photo 9: Slicing out the last sechsschnitt chip.*

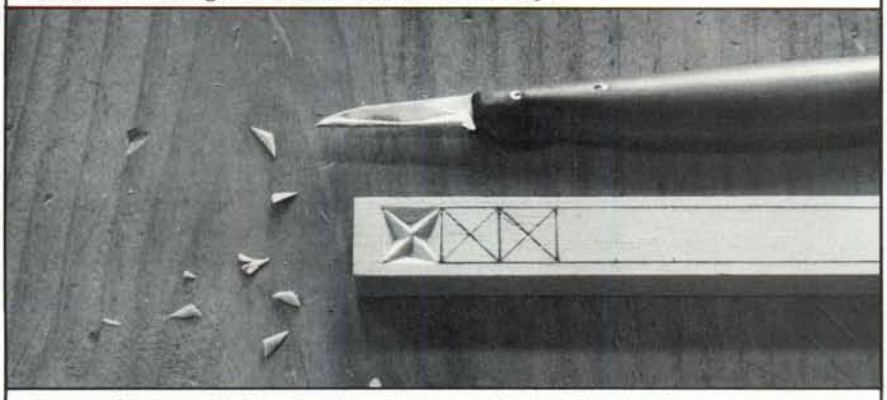


*Photo 10: The finished sechsschnitt cut for border detail.*

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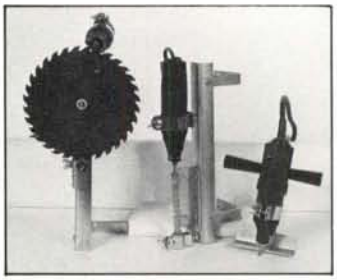

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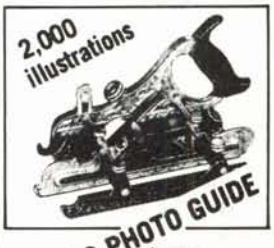


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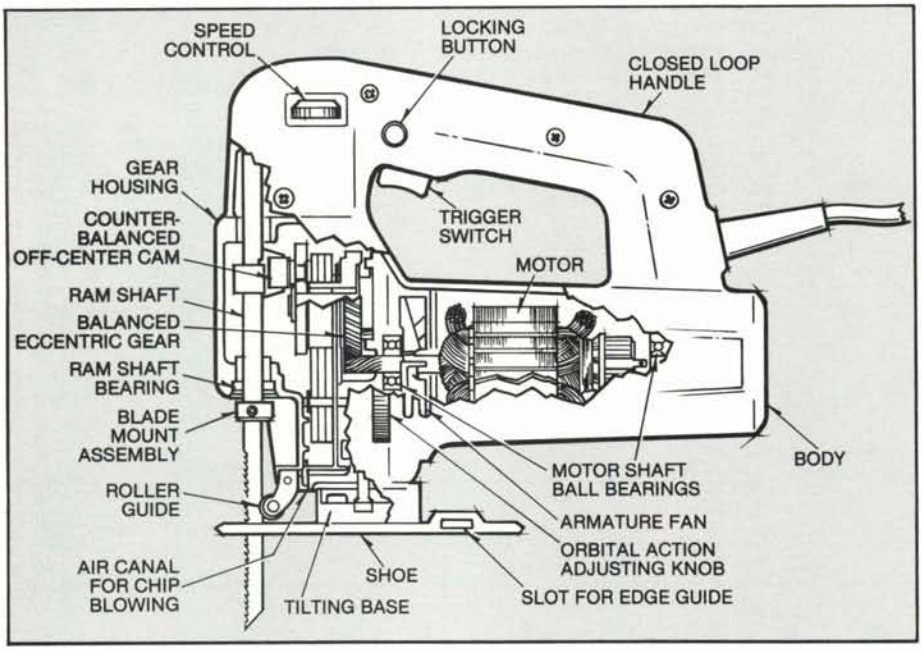
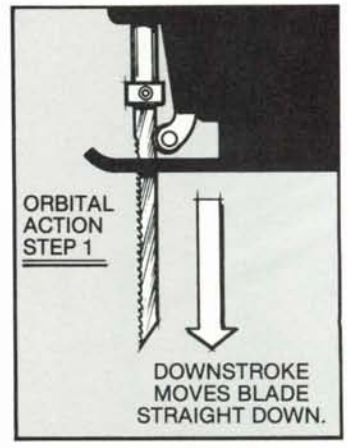
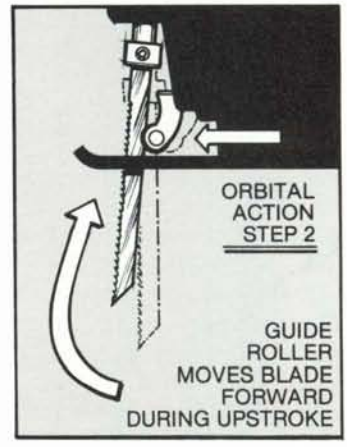



# Shop-Tested: 12 Jigsaws

When we first made the decision to feature periodic tool reviews in *The Woodworker's Journal,* the concept met with some resistance from readers who were fearful that the *Journal* might become "just another woodworking magazine." We assure you, however, that the tool reviews will be only an occasional addition to the *Journal,* not a replacement for projects or regular features.

This review will try to answer the question, Which jigsaw is best from the woodworker's point of view? Of course, this is no easy question to answer given the many different skill levels, areas of interest and requirements of our subscribers.

An additional consideration, and in many ways a most important one, is cost. Obviously, the more costly tools can generally be expected to provide superior results. The question of whether a top-of-the-line jigsaw costing $130 is worth $100 more than a base model costing $30 is something that will be highly individual, depending on the type of woodworking you do, your own personal standards and of course, your budget.

Note: while terminology can often be confusing — Are they jigsaws or are they saber saws? — we have chosen to use the term jigsaw since all the manufacturers we checked with, except Sears, refer to these tools as jigsaws.

### The Test

Conducted by associate editor, David Peters, and designer/craftsman, Phil Bacon, our test is not a laboratory comparison of torque, longevity, power, or features. Rather, we have used each of these jigsaws and are presenting our evaluation based on this use. The test included straight and curved cuts in 5/4 oak hardwood, 3/4 oak plywood, and walnut veneered medium-density fiberboard. We made the same cuts with each tool, using identical blades. The cuts included straight cuts both with and across the grain, and circle cuts of 2- and 3-in. diameters. We tested a variety of blades in each saw, using new blades each time. We carefully matched teeth-per-inch and tooth set and bevel where the same brand and type of standard-mount blades could not be used (as with the Porter Cable and Bosch tools).

Since we were all familiar with the generic $19.95 jigsaw, and given the fact that there is little if any discernable difference between the many models in the under $30 price range, we decided to concentrate on what is called the high end of the market. You can expect to purchase these saws for about 60 percent of the manufacturers suggested retail price through mail-order and tool discount sources. As always, certain manufacturers have a policy of higher mark-ups and greater discounts than others, and we encourage you to shop around for best prices and sales. The M-47 series Black and Decker (model 7548) was included because we were particularly impressed with this tool's performance given its size and the fact that, with a suggested retail price of $51.95, it is widely available on sale for under $30. Four other saws, including the two Sears and the two Skil models, were tested so we could evaluate the importance and usefulness of the scrolling feature, which interestingly enough rarely appears on "professional" grade jigsaws.

The purpose of our test is to present you with the facts as we see them, and

(continued on next page)

| Manufacturer — Model Number | Manufac. Sug. Retail $ | Amps | Weight* | Power-to-Weight Ratio | Speed (strokes per min.) | Roller Guide | Orbital Action | Special Features |
|---|---|---|---|---|---|---|---|---|
| Black & Decker — 7548 | $ 51.95 | 2.2 | 2.8 | .786 | 0-3200 | No | No | |
| Skil — 4395 | $ 61.99 | 3.2 | 4.3 | .744 | 0-3200 | No | Yes | Scroll, Auto Scroll |
| Sears — 17209 | $ 74.99 | 2.5 | 4.5 | .555 | 0-3000 | No | No | Scroll, Auto Scroll |
| Skil — 4555 | $100.00 | 3.5 | 5.8 | .609 | 0-3200 | No | No | Scroll, Auto Scroll |
| Sears — 1840 | $ 94.99 | 3.7 | 6.1 | .606 | 1300-3000 | No | No | Scroll, Auto Scroll Reversible Shoe |
| Porter Cable — 7348 | $163.00 | 4 | 6 | .666 | 0-3200 | Yes | Yes | Fixed Shoe |
| Porter Cable — 7548 | $199.50 | 4.8 | 6.5 | .738 | 500-3200 | Yes | Yes | Fixed Shoe, Triple Ball Bearing Guides |
| Black & Decker — 3157 | $201.00 | 4.5 | 6.3 | .714 | 0-3100 | Yes | Yes | Reversible Shoe |
| Milwaukee — 6256 | $217.00 | 3.8 | 5.7 | .668 | 0-3100 | Yes | No | |
| Ryobi — JSE-60 | $218.00 | 3.5 | 5.4 | .648 | 1000-2700 | Yes | Yes | Reversible Shoe |
| Hitachi — JHV-60 | $220.00 | 3.5 | 5.5 | .636 | 0-3200 | Yes | No | |
| Bosch — 1581-VS | $230.00 | 4.8 | 6 | .8 | 500-3100 | Yes | Yes | Vacuum Port |

*All these weights include the cords.

not to pit the saws against each other to determine the overall best, since such a comparison would obviously favor the more expensive models. Rather, we sought to measure the saws against a standard of what we feel woodworkers require of a jigsaw, and to establish whether those saws tested offered a good value for their price. In the end, we hoped to shed some light on the question of what comprised a good jigsaw, and to evaluate the importance of the various features offered on the different saws.

There are over 50 models of jigsaws on the market today, many from the manufacturers we included in our sampling, and others from makers such as AEG, Makita, and Metabo. The twelve saws we tested are only a small representation of what is available, with everything from barrel grip to cordless jigsaws now being manufactured and sold.

The chart that we've included lists the various jigsaws we tested, their features and specifications. The power-to-weight ratio figure (amps ÷ weight) was included on the chart because it is a general measure of a saw's performance given its weight. While factors such as a metal-alloy gear housing — as opposed to an all-plastic body — will quite naturally affect this ratio, the saw with the best power-to-weight ratio rating, the Bosch 1581-VS, did in fact have an alloy gear housing. Coincidentally, the saws that we liked the least, based on their poor performance, had the lowest power-to-weight ratios. While only an incidental measure, the power-to-weight ratio can be seen as a direct reflection of the amount of design and engineering that went into the development of a particular hand/power tool.

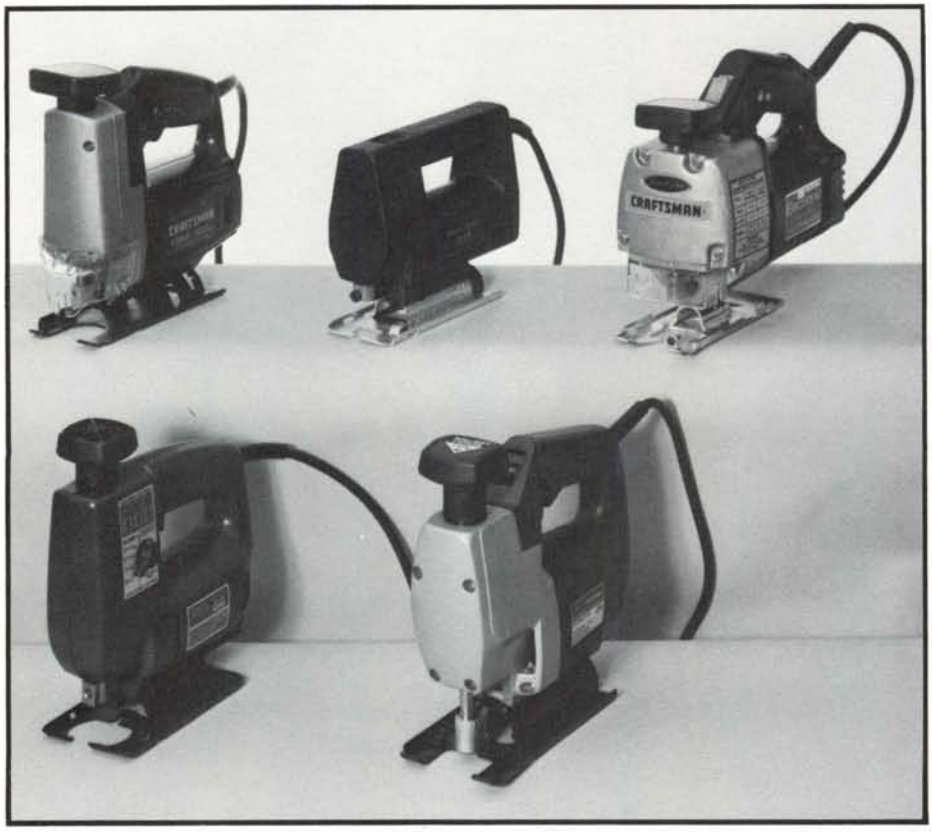
### The Results

*Black and Decker 7548:* This is an impressive tool for the money, given its light weight (2.8 lbs.) and power (2.2 amps). With a power-to-weight ratio of .786, this tool was surpassed only by the Bosch jigsaw, with a .8 power-to-weight ratio. The saw cut cleanly in all our tests and had minimal tear-out in plywood, due in part to Black and Decker's use of a rectangular bar ram-shaft, which we noted seems to provide superior side-to-side stability over the conventional round ram-shaft design. The four saws we tested that feature this bar ram-shaft design — the two Black and Decker and the two Porter Cable saws — all fared well in the various cross-cut and circle tests, showing little skew or tear-out.

*Skil 4395:* If you want versatility at a bargain price, this jigsaw is for you. At a suggested retail price only $10 higher than the Black and Decker 7548 model, this tool included both auto scroll and variable orbit capacity. Spare blades and the hex key for blade mounting are conveniently stowed in the saw body. Our only complaints were that like all the other saws we tested with scroll and/or auto scroll capacity, this feature resulted in a sacrifice of control on fine cuts, due to the increased shaft play and the resulting blade wobble (see conclusions). Also, Phil noted that the black paint on the shoe left marks on the surface being cut. With its power-to-weight ratio of .744, this saw was bested only by the Bosch 1581-VS and Black and Decker 7548 models.

*Sears 17209:* With the lowest power-to-weight ratio (by far) of .555, this saw was a real disappointment. Unlike the Skil model 4395, which has a two-position blade mount either directly *beneath* the ram-shaft or in the auto scroll mode *behind* the ram-shaft, this Sears tool's blade mounted only in the auto scroll position behind the shaft. This combined with the clear plastic guard that quickly clouded with sawdust served to make the blade difficult to sight. The saw labored a bit in heavy stock and on sharp radii, unless it was being operated on full power.

*Skil 4555:* Like the Skil 4395 saw we tested, this model also left black marks from the painted shoe. The tool we tested suffered from excessive shaft play, and with the shoe fully forward in the anti-splinter mode, sawdust continually built up around the blade, making it impossible to see the line being cut. A poorly designed shoe mount seemed to deflect the air stream as it exited the chip-blowing channel, allowing the buildup.




*Top Row, left to right: Sears 17209, Black & Decker 7548, Sears 1840. Bottom Row, left to right: Skil 4395, Skil 4555.*

*Sears 1840:* Sears advertises this saw as their top-of-the-line electronic homeowner model, and if bigger is indeed better, then this saw would be a hands-down winner. However, in hand-power tools, performance is judged by compact size, light weight and power (see conclusions). This jigsaw is *huge.* Its bulk, plus the fact that the blade, like the other Sears scrolling jigsaw tested, mounted only *behind* the ram-shaft, made sighting the blade very difficult. The saw was noisy, poorly balanced, and suffered from excessive vibration. Dave noted that while there certainly was adequate available power, it was all the operator could do to keep the tool from bouncing on the stock. Moreover, Sears' so-called electronic feature, where the saw automatically senses load and then responds by feeding back this information to monitor the speed, seemed only marginally effective.

Sears heavily advertises their "Consumer" line, although their "Professional" line is generally a far superior product at only a slightly higher price. For example, in the case of jigsaws, Sears' Commercial model 27251 is, in fact, the Black and Decker model 3157 (made for Sears by Black and Decker), which scored near the top in our test. With an advertised price of $129.99, the 27251 is a fine tool, at only about $35 more than the 1840 consumer model.

*Porter Cable 7348:* This saw was one of the best we tested, in spite of — or perhaps more accurately because of — the fact that it is a single-function tool. Like its brother, the Porter Cable 7548, this jigsaw features a fixed shoe. It has an oversize heavy shoe plate that is fixed and cannot tilt, which provides the saw with absolute 90-degree accuracy. A built-in orbital action provides increased speed of cut and ease of operation. The design of both these Porter Cable tools is pure form-follows-function, and we are happy that Porter Cable had the wisdom to forego the seemingly popular tilting shoe feature.

*Porter Cable 7548:* This saw is identical to the 7348, except for four things: increased power, multi-adjustable orbit, dial speed control *and* a triple ball-bearing roller guide system. The first three features provide the operator with a little more power and some additional control, but it is the triple ball-bearing roller guide that sets this tool apart from every other saw we tested.

Frankly, this roller guide system is incredible. It all but eliminated blade skew, even in our tight 2 in. diameter circle test, and completely eliminated tear-out, including in the cross-grain hardwood plywood test. Phil noted that this saw is "faster, more powerful, and cleaner cutting than any other," and marveled at how well it was constructed. Indeed, the results obtained with this saw were so superior to the other models tested, we became suspicious that perhaps the quality of cut had something to do with the special Porter Cable blade. Both Porter Cable and Bosch require their own brand blades, and both blade mount systems were designed to effectively lock the blade in place so it could not be thrown. To test our suspicions we filed down several new Porter Cable blades and mounted them in other saws. However, the test results left no doubt that it was the saw and not the blade that had produced those superior cuts. The Porter Cable blades mounted in other saws did nothing to eliminate or mitigate whatever problems of skew and tear-out the saws in question suffered from. At under $200 list (available on sale for $119), this saw was the best value. It is the benchmark of quality, performance and price that other manufacturers should aim for.

*Black and Decker 3157:* This tool was very near the equal of the Porter Cable, with only a slight tear-out in the plywood test. Phil noted the excellent blade visibility, while Dave reported more than adequate power, even at the lowest speed. Our only complaint was that the grip was a little too thick.

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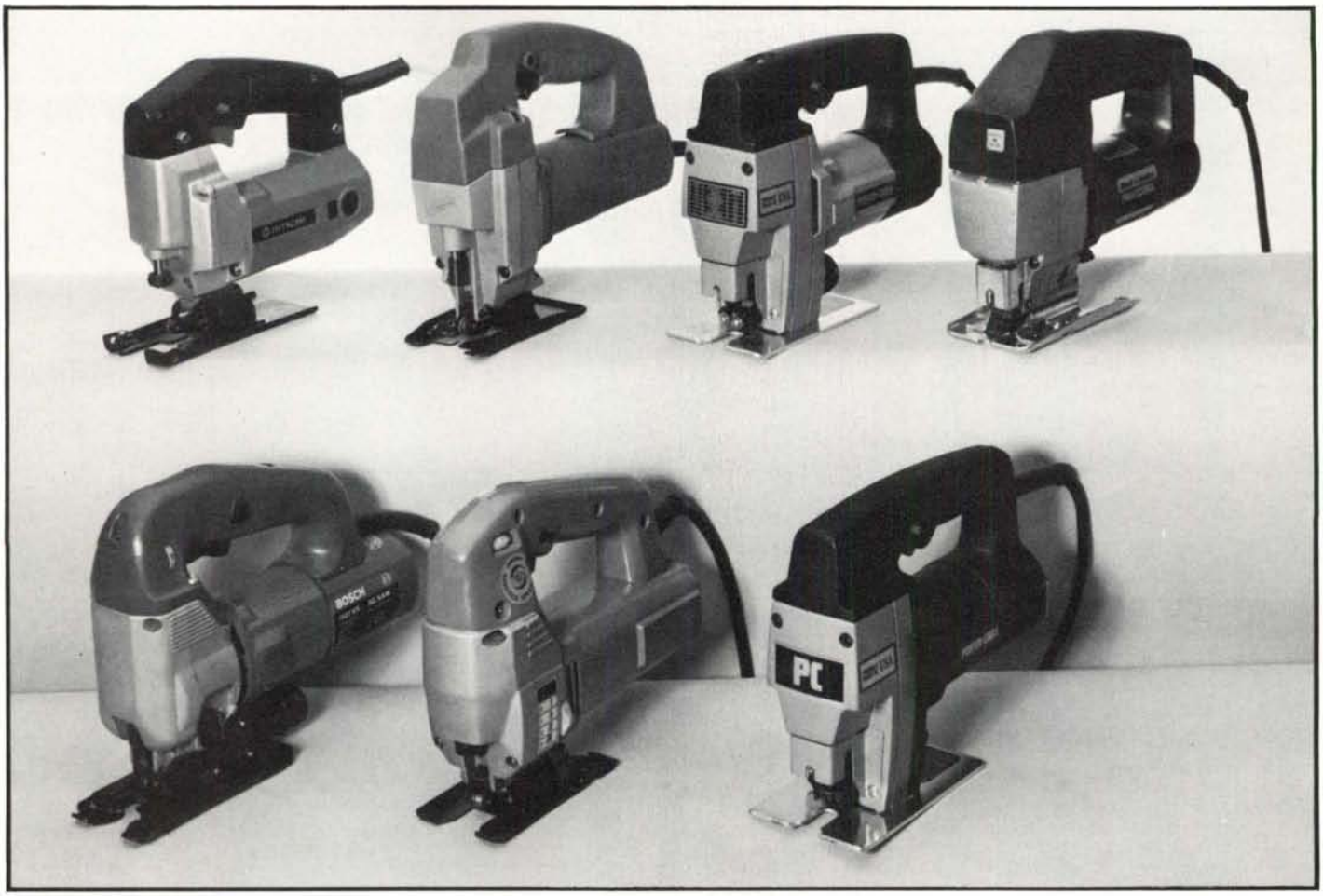



*Milwaukee 6256:* This saw proved to be a big disappointment in our test. Perhaps because other Milwaukee tools we used over the years have always been well-engineered, and given Milwaukee's reputation for longevity in even the toughest shop environment, we had high expectations. However, we found it nearly impossible to get the saw blade to track straight and follow a line in any of the curved or circle cuts. After repeatedly burning blades, we traced the problem to the base assembly, which was pivoting slightly out of square. We tightened the single slotted screw securing it, but even with maximum torque applied to the screw the base kept pivoting slightly out of square.

In spite of Milwaukee's recent re-engineering of this tool, it simply did not perform to the standard of the other saws in its class. The problem of the base not locking tight, combined with the fact that the saw did not include an orbital action, makes it difficult for us to recommend this tool. In fairness to Milwaukee, perhaps the base problem was an anomaly with the saw tested, although we could discover no obvious defect. On the plus side, we did note an easy brush access for service through a cover plate held by two screws.

*Ryobi JSE-60:* This is a solid, comfortable, well-made tool. The orbital action was very effective, and the overall design provided this saw with excellent balance, making it easy and comfortable to use. Indeed, when it came to "feel" and clear blade sighting, this jigsaw finished near the top in our test. Our only complaint was that we experienced a little more grain tear-out than we would have liked to have seen. *Note:* During the test, we realized that the blade mount screw was rubbing on the cast gear housing. While this could have been an anomaly with our particular saw, it probably contributed to the excessive tear-out. In any event, using a blade mount screw with a smaller head diameter, or a hex set screw rather than the Phillips head screw provided, would certainly eliminate the problem, and we would hope that Ryobi might investigate these options.

*Hitachi JHV-60:* Like most Hitachi tools we have seen, this saw is well-built and sensibly engineered. No other saw we tested offered the easy brush-change capability of this tool. Dave noted that this was an exceptionally smooth-running saw, with very little vibration. Our only complaints were of slightly increased tear-out compared to other saws in its class, and that a blade change required that two set screws be tightened instead of one. From a standpoint of price, we must mention that while this tool sports a list price of $220 (on sale for about $130), it does not include an orbital capacity and is a relatively expensive tool for what you get.

*Top Row, left to right: Hitachi JHV-60, Milwaukee 6256, Porter Cable 7548, Black and Decker 3157. Bottom Row, left to right: Bosch 1481-VS, Ryobi JSE-60, Porter Cable 7348.*

*Bosch 1581-VS:* This saw had the best power-to-weight ratio of any in our test, a not surprising fact given that Bosch is well known for its attention to light-weight engineering and ergonomics. A number of unusual features are included in this saw, among them a dust port to which a vacuum hose can be connected, and an unusual blade fastening system that locks the blade in place through the turn of a screwdriver that is inserted into the top end of the ram-shaft. Like the Porter Cable, Bosch uses special blades that cannot be thrown or pulled out accidently. While the blade mount system seemed somewhat unconventional, we found it fast and reliable. Phil noted that this tool had superb blade visibility, and was very comfortable to use. Overall, this jigsaw was at the top of our list in many respects, falling short of the Porter Cable 7548 only in the area of the roller guide system.

### Conclusions

As with any test where one is considering different criteria not common to all the articles being tested, clearly defined, absolute conclusions are impossible. The jigsaw that is best for you will be determined largely by your particular needs.

Our test pointed out several important facts. First, if you are using a jigsaw exclusively for woodworking, there is no better tool for you than the Porter Cable 7548. The Porter Cable engineers came to an understanding that we wholeheartedly support: Any type of pivoting shoe by its very nature compromises a jigsaw's ability to make a perfect 90-degree cut. Secondly, we found that the triple ball bearing roller guide blade support on the 7548 was unequalled by any of the other saws' single roller guides. Moreover, when we asked ourselves how many times we have had occasion to use the pivoting shoe feature on a jigsaw, we arrived at a somewhat startling conclusion. No one ever recalled having used that feature. This is not to say that a pivoting shoe is not useful in some instances; it is. A saw with a fixed shoe, however, is capable of superior accuracy for a jigsaw's main purpose — 90-degree cuts. As a second choice we recommend the Porter Cable 7348, the Bosch 1581-VS, the Black and Decker 3157, or the Ryobi JSE-60. We felt the Hitachi was a little too overpriced given its lack of orbital action. The bottom line "best buy" among the pro-level tools, when one considers both performance and price, was the Porter Cable 7548. The fact that we found this saw on sale for $119 put it at the low end price-wise, when compared to the on-sale prices of the other pro-level tools we evaluated.

We should also take notice now of the importance of the orbital feature in a jigsaw (see illustration). The orbital action causes the blade to pivot forward so the upward cutting stroke actually serves to both cut and pull the saw forward through the stock. This feature is particularly useful in long straight cuts, which as we all know can be time consuming and tedious. When using the orbital action, the lower settings (less orbit) are best for hardwoods, while the higher settings are better suited for softwoods. Once you use a saw with orbital action, we think you'll agree that this is indeed a significant advance in jigsaw design. Rather than having to struggle to force the tool along, the orbital action literally pulls the saw through the cut.

All the saws we tested with the orbital feature, except the Skil 4395, utilized a system in which the roller guide provided the orbital movement. We like this design, since it minimizes stress and wear on the ram-shaft and sleeve bearing. One other advantage of orbital action is that since the blade effectively backs off during the down stroke, sawdust falls away freely, clearing for the next cut. Even more importantly, by backing off on the down stroke, the tendency of the blade to jump out of cuts through thick stock is minimized.

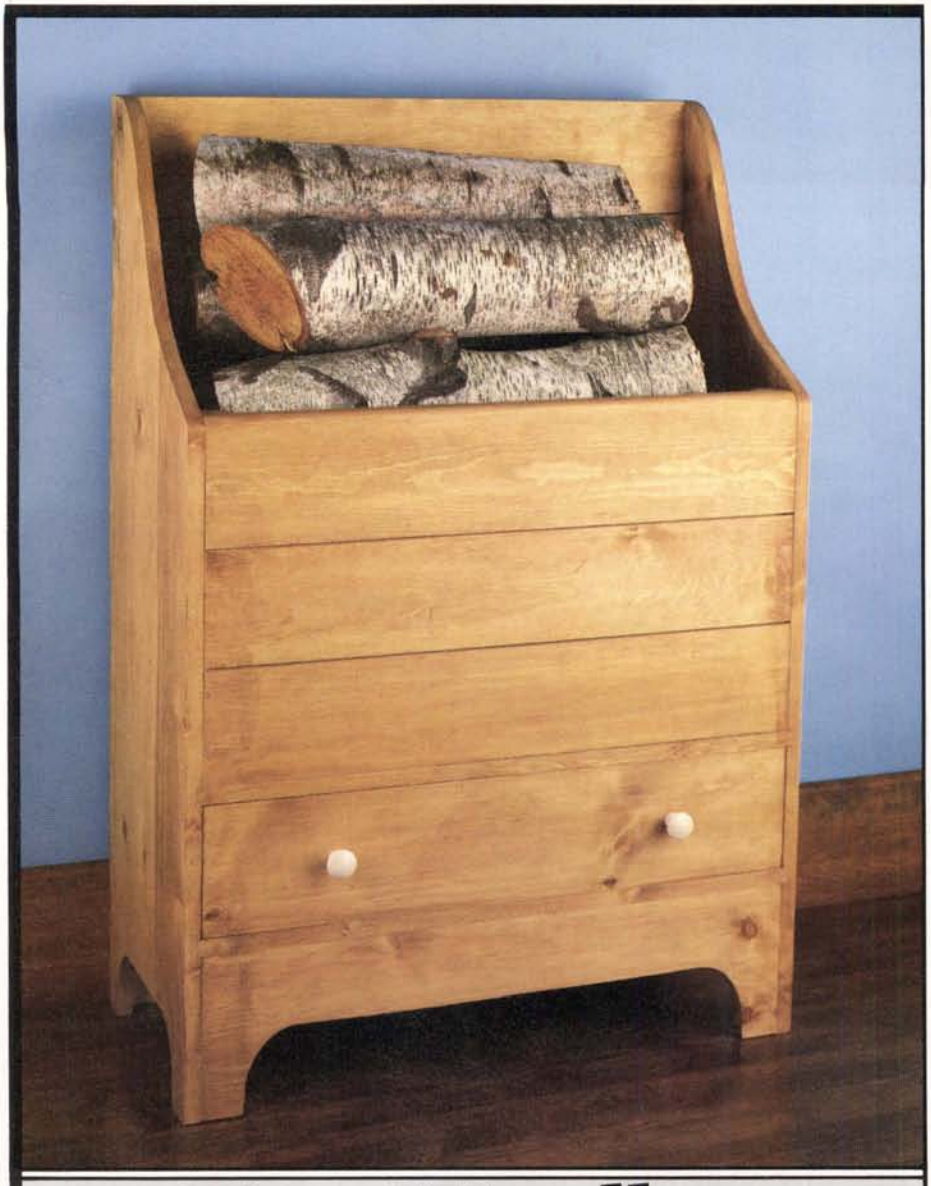
As for the scrolling feature in a jigsaw, while manufacturers report that this is a popular feature on homeowner-targeted tools, we do not advise it on a tool that is used mainly for woodworking. Very simply, a saw with a scroll capacity cannot be fitted with a roller guide system. This sacrifices accuracy. The scroll capacity (the ram-shaft pivots 360 degrees and locks in place at the four ninety-degree points) is certainly helpful in cutting out countertops and such, where the saw would otherwise not have room to maneuver around a wall or corner, but for fine woodworking we found the sacrifice of accuracy unacceptable. If you want a general purpose jigsaw with the scroll capacity, we found that the Skil 4395, which was the only saw we tested that combined both the scrolling feature and orbital action, offered the best value. In the low-end, homeowner market, the Black and Decker 7548 is a good buy, combining surprising power and accuracy in a very compact, easy-to-control tool.

In concluding our evaluation, we must reiterate the value of orbital action and a roller guide in a jigsaw. The orbital action vastly increases the effectiveness of the jigsaw, making it a tool that glides easily through cuts, rather than having to be forced. The roller guide increases accuracy and decreases blade skew and tear-out, especially on turns.

Of course, as with any tool that requires a blade or cutting edge, the tool's quality of cut and ease of operation will be a direct reflection of the sharpness of the blade. According to Black and Decker Product Manager John D. Padbury, their research indicates that "one of the biggest causes of burnout in jigsaws is dull blades."

As for a choice of blades, we strongly recommend the new generation Bi-Metal blades. The Bi-Metal blades feature an unbeatable combination of high speed steel teeth for sharpness and durability, with a high carbon back for flexibility. Bi-Metal blades virtually eliminate the old breakage problem and last up to five times as long as conventional blades. As always, for best results, be sure to select the right blade for the job at hand.

WWJ



# Pine Woodbox

With its large upper compartment, this sturdy woodbox has room for a generous supply of firewood, while the drawer comes in handy for storing kindling wood or the pile of old newspaper that's needed to start each fire. All parts are made from pine obtained at our local lumberyard.

The two sides (A) can be made first. You probably won't be able to find 14½ in. wide stock, so it will be necessary to edge-glue two or more narrower boards in order to get the needed width.

To edge-glue, first apply a thin coat of glue to each of the mating edges, then clamp firmly with several bar or pipe clamps. No need to add dowels or splines here as this joint matches long grain-to-long grain, a joint that is as strong as the wood itself. If the edges start to slide out of alignment, though, clamp a few waxed cleats (made from stock that measures about 1 in. square by 15 in. long) across the boards every foot or so. The cleats will keep the boards flush while the wax prevents the cleats from sticking. By the way, when edge-gluing, it's a good idea to allow a little extra length and width for the stock. Later, after the clamps have been removed, it can be trimmed to final length and width on the table or radial-arm saw.

Next, on what will be the inside face of one of the sides, lay out and mark the location of the two ¼ in. deep by ¾ in. wide dadoes. Place the two sides on your workbench so that the back edges butt while the top and bottom ends are flush (see detail: Routing the Dadoes). Clamp a fence across both pieces of stock, then use the router to cut the dadoes. If you use a ¾ in. diameter straight bit, you'll be able to cut the full dado width. However, don't make the ¼ in. deep cut in one pass. You'll get a smoother cut, with less strain on the motor, if it's done in two passes, each pass removing ⅛ in. of material. If you use a ⅜ in. diameter straight bit, you'll first need to make the two ⅛ in. deep cuts, then relocate the fence and repeat the procedure in order to widen the dado to ¾ in.

Now transfer the upper and lower grid patterns (see side view) to the stock. Mark the profile on just one of the sides, then use a band saw or jigsaw to make the cuts. Stay slightly on the waste side of the lines, then sand the edges smooth. The completed profile can now be used as a template to trace the contour on the remaining side.

The divider (B) and the bottom (C) can now be made. Edge-glue stock, then cut to the length and width shown in the bill of materials. Note that the bottom is 1⅛ in. narrower in width to allow for the thickness of the back (G).

Both the front (F) and the back (G) boards are made from ¾ × 6 stock, which measures 1⅛ in. thick by 5½ in. wide, and is available at just about any lumberyard or building supply center. Note that the top and bottom boards have a ½ in. × 9/16 in. rabbet cut on one edge only (see detail: Back and Front Boards), while the remaining boards have the same rabbet cut on both edges. We used the table saw and dado head to make the rabbets, but a router can also be used.

Parts A, B, C, F, and G can now be final sanded. Start with 80 grit sandpaper to quickly remove the planer marks that are almost always visible on the surface of the boards. These marks are made when the board is thickness planed at the mill, and if not sanded out, they often become glaringly obvious when a stain is applied. Follow with 100, 150, and 220 grit to complete the sanding. When sanding, though, keep in mind that you will want to maintain a snug fit at the dado joint where the sides meet the divider and bottom. If too much material is removed from the ends of the divider and bottom, the fit-up will be sloppy. A sloppy joint doesn't just look bad, it won't be as strong as a joint that's tight.

Cut the front cleat (D) and the back

cleat (E) to size (see bill of materials), then glue and clamp to the sides as shown. Before gluing, though, it's a good idea to first drive a few small brads into the cleat edge that will be glued, then clip the heads off so that about 1/16 in. is exposed. The brads will keep the cleats from sliding when clamp pressure is applied. No dowels, nails, screws or other reinforcements are necessary as this is a long grain-to-long grain joint.

Next, assemble the sides to the divider and bottom with glue and 1½ in. long by number 10 flathead wood screws. Use a ½ in. diameter drill bit to counterbore ¼ in. deep holes to accept wood plugs. It's best to cut the plugs slightly long so that they protrude just above the wood. Glue in place and, when dry, sand flush.

The back boards can now be added. Each board is screwed to the back cleats with 1½ in. long by number 10 flathead wood screws. Do not use any glue here as the back boards must be free to expand and contract with seasonal changes in humidity. Also, to allow that movement, only use two screws in each end, and space them about 1 in. either side of the board's center line. The screws do not need to be counterbored. When assembling the boards, note that (see detail: Front and Back Boards) you need to allow a 1/8 in. space between each one. Once the back is completed, the front boards can be added in the same manner.

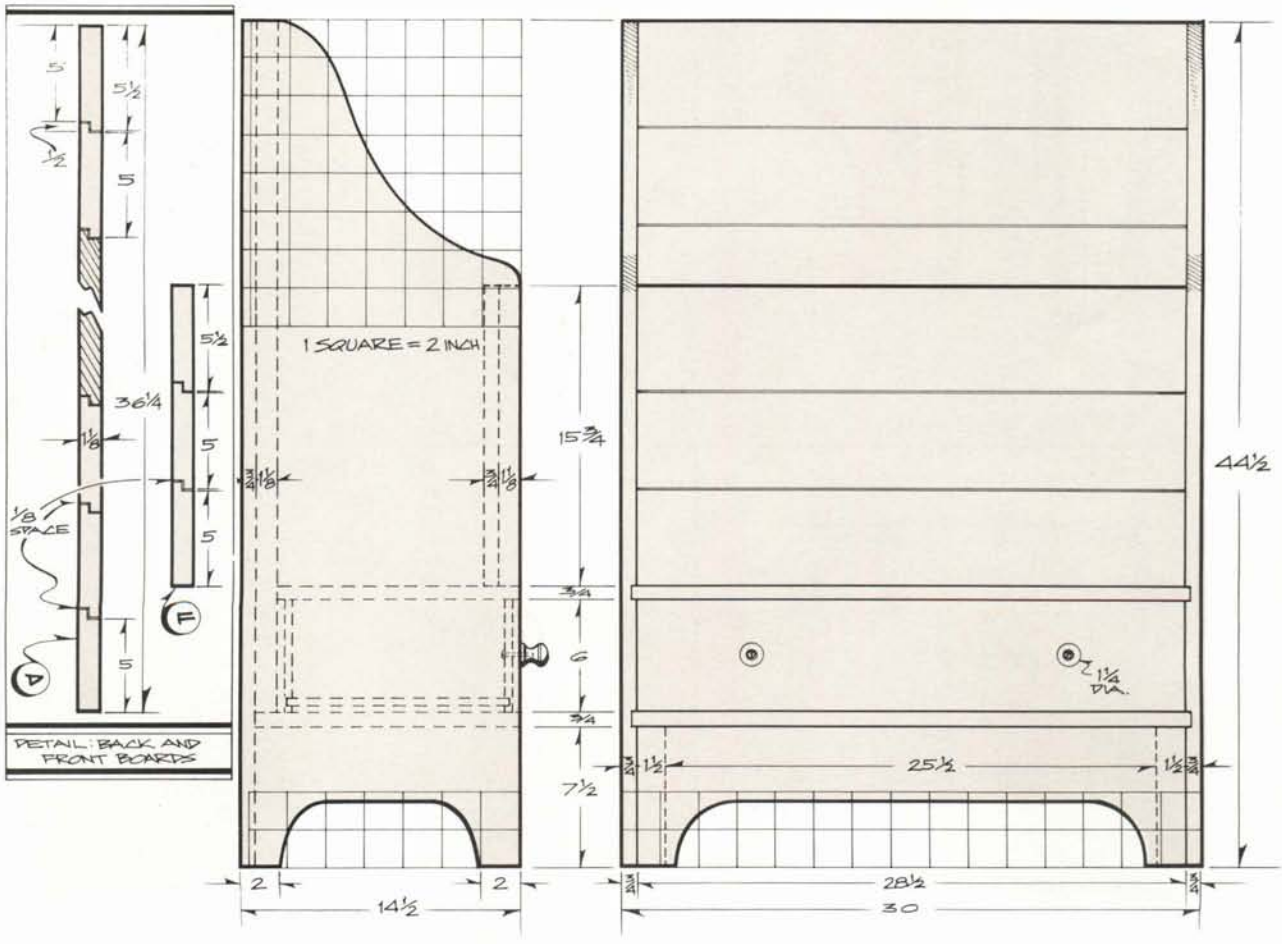
The front apron (H) can now be cut to a length and width that will exactly fit the opening in the woodbox. Referring to the grid pattern shown on the front view, transfer the grid pattern to the stock, then cut it out with a band saw or jigsaw.

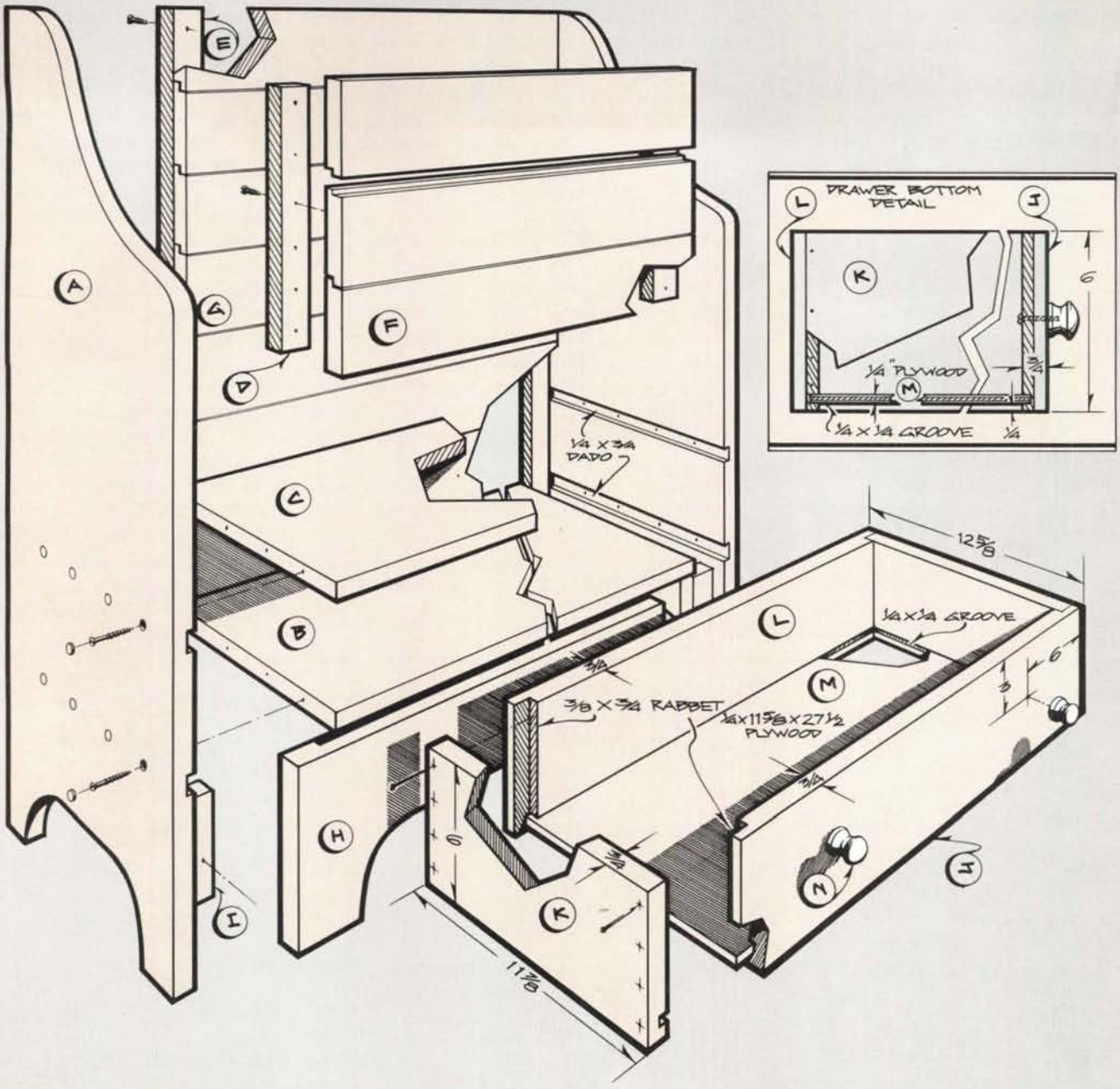
Make the front apron cleats (I) and glue them to the sides so that they are set back ¾ in. from the front edge. Once dry, assemble the front apron to the cleats by driving a pair of 1¼ in. long by number 10 flathead wood screws through the cleats and into the front apron.

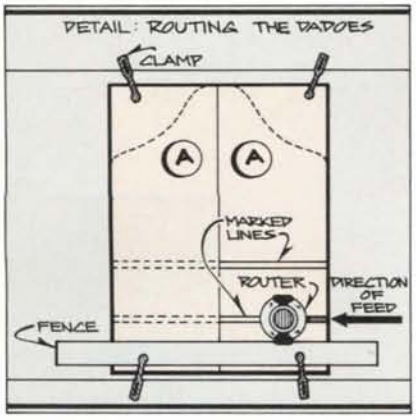
The drawer can now be made as shown. We used the table saw and dado head to cut the various rabbets and grooves, but repeated passes with a regular table saw can also do the job. Use glue and finishing nails to assemble the drawer front, back, and sides. The bottom need not be glued in place, although you may want to spot glue it in a couple of places if it tends to rattle or shift in the grooves.

Now give the entire woodbox a final sanding, taking care to round any sharp edges. Use a chisel to remove any glue that may have squeezed out of a joint. For a final finish, we applied two coats of Minwax's Colonial Maple Wood Finish. Once dry we added two coats of Watco Danish Oil. A pair of 1¼ in. diameter porcelain drawer knobs completed the project. WWJ

(continued on next page)

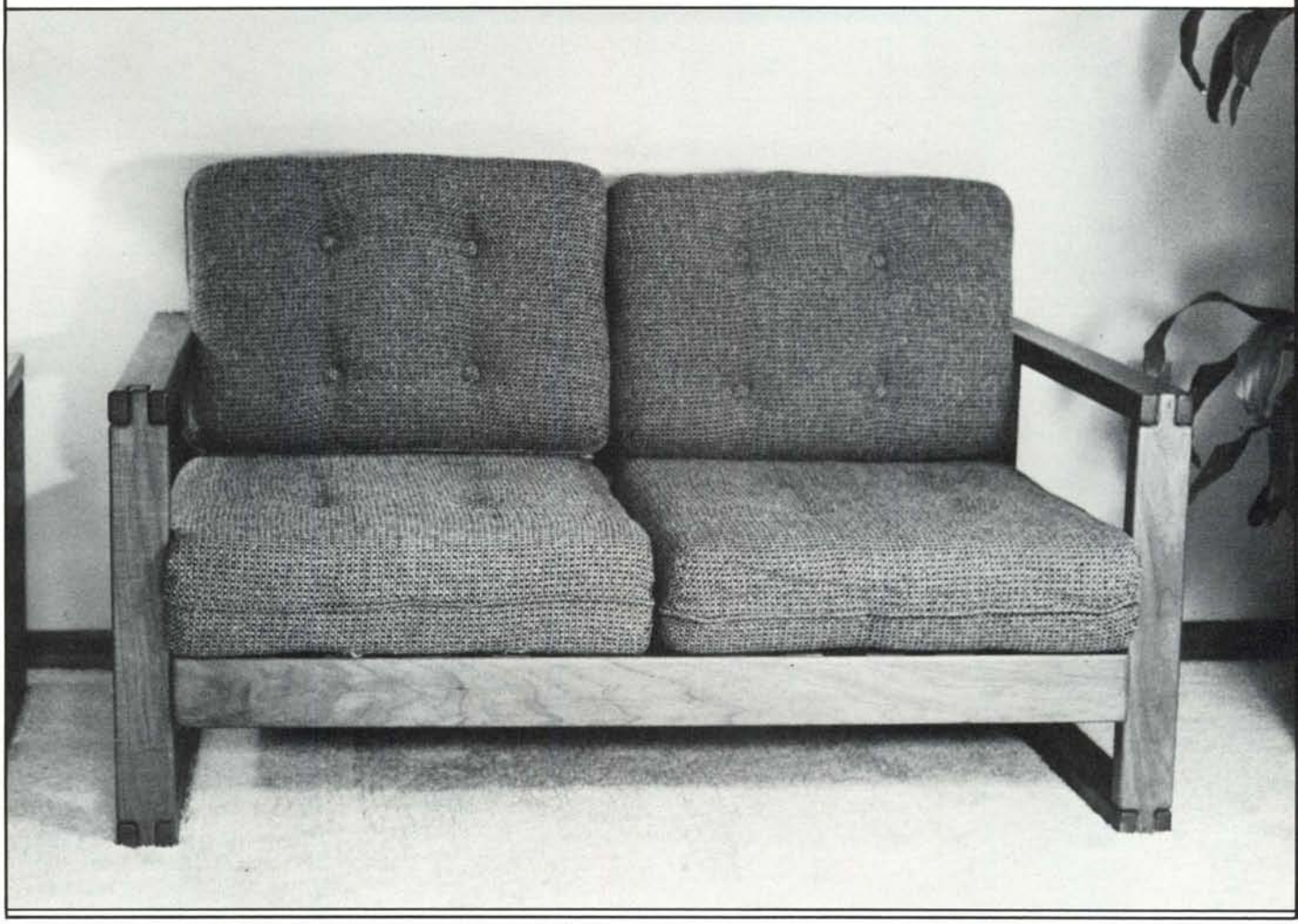





## Bill of Materials
(all dimensions actual)

| Part | Description | Size | No. Req'd. |
|---|---|---|---|
| A | Side | ¾ × 14½ × 44½ | 2 |
| B | Divider | ¾ × 13¾ × 29 | 1 |
| C | Bottom | ¾ × 12⅝ × 29 | 1 |
| D | Front Cleat | ¾ × 1½ × 15¾ | 2 |
| E | Back Cleat | ¾ × 1½ × 44½ | 2 |
| F | Front | 1⅛ × 5½ × 28½ | 3 |
| G | Back | 1⅛ × 5½ × 28½ | 7 |
| H | Front Apron | ¾ × 7½ × 28½ | 1 |
| I | Front Apron Cleat | ¾ × 1½ × 7½ | 2 |
| J | Drawer Front | ¾ × 6 × 28½ | 1 |
| K | Drawer Side | ¾ × 6 × 11⅞ | 2 |
| L | Drawer Back | ¾ × 6 × 28½ | 1 |
| M | Drawer Bottom | ¼ × 11⅝ × 27½ | 1 |
| N | Porcelain Knob | 1¼ diameter | 2 |



# Contemporary Love Seat

by Paul Levine

*Editor's Note: This project is taken from our book* Contemporary Woodworking Projects *by Paul Levine. The book features 40 projects, among them five pieces that match this love seat — a chair, ottoman, sofa table, glass-top table and a free-standing cabinet. All feature the "Knuckle Joint" detailed on page 38. More information on the book can be found on this issue's back cover.*

This piece is not difficult to build, but as with most contemporary projects, great care should be given with the joinery and finishing. I used butternut to make mine, but oak, walnut, cherry and mahogany are other woods that will also look good.

Begin by constructing the leg/rail frames made up of parts A and B. As shown in the step-by-step instructions on pages 38 and 39, the best way to accurately and consistently reproduce the knuckle joint is to use the router and template method. Take note that the full-size template we show requires that your stock be exactly 1¾ in. thick, and that you have a ⅞ in. diameter guide bushing.

The knuckle joint can also be cut by hand. After drilling through with a ½ in. diameter drill bit to establish the various ¼ in. inside corner radii, use a backsaw and chisel to clean out the waste. Test fit, adjust as needed, and then glue and assemble the legs and rails.

The seat frame, consisting of parts C and D, is constructed next. Cut the tenons on the ends of parts C and D, as shown in the seat frame detail. Mortise parts C to accept the ¾ in. by 1 in. by 1½ in. tenons on the ends of parts D. Then use the table saw with the blade set at a 20-degree tilt to cut the $^{5}/_{32}$ in. wide by $^{9}/_{16}$ in. deep kerf in parts C that will serve as the anchor slot for the webbing retainer clips (F).

After assembling the seat frame, scribe the mortise locations on the legs to accommodate the ¾ by 1¾ by 1¼ in. tenons on the ends of the seat frame front and back, and chop these mortises out.

Cut the reinforced rubber webbing

(continued on next page)

(G) into ten sections, each 30 in. long, then crimp the metal retainer clips over the ends of the webbing, and tap the clips into the kerf cut to accept them. The webbing is spaced out at 2 in. intervals, as shown in the front view. Glue up the leg/rail assemblies on each side of the seat frame, then counterbore through the front of the seat frame to accept the face piece (E), which is both glued and screwed in place. Note that all front edges of part E are quarter rounded.

Now make the back frame. Cut the tenons on the ends of the back stiles (H), back stretcher (J), and back brace (K). Dimensions for these tenons and the corresponding mortises are shown in the tenon detail. Notch the bottom end of the stiles so they lap over the seat frame, as shown in the exploded view. Note that the shoulder of this lap is cut at 20 degrees to establish the 20-degree angle of the back. Assemble the back and round the corners of the back rail (I) and the outside edges of the back stiles. Then mount the back as shown with 3 in. long flathead wood screws, countersunk and plugged.

I ordered the seat and back cushions (L and M) and the seat covers from Sears Roebuck and Company. The cushions and seat covers could be made from furniture grade foam rubber and upholstery fabric, but I prefer the convenience of the ready-made product.

Velcro strips or tie straps should be used to secure the seat cushions against movement, as they tend to slide rather easily out of place without some form of restraint.

The piece is finished with Watco Danish Oil. WWJ

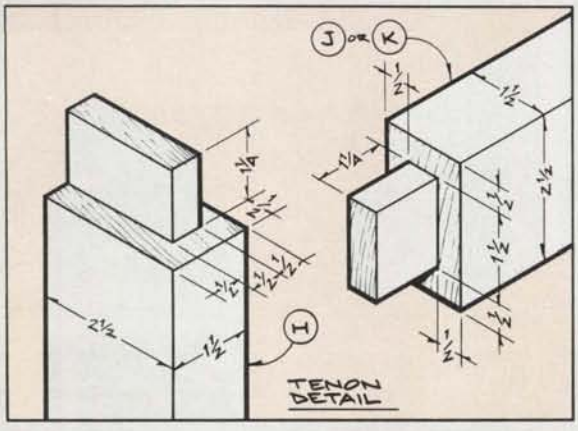
**Bill of Materials**
(all dimensions actual)

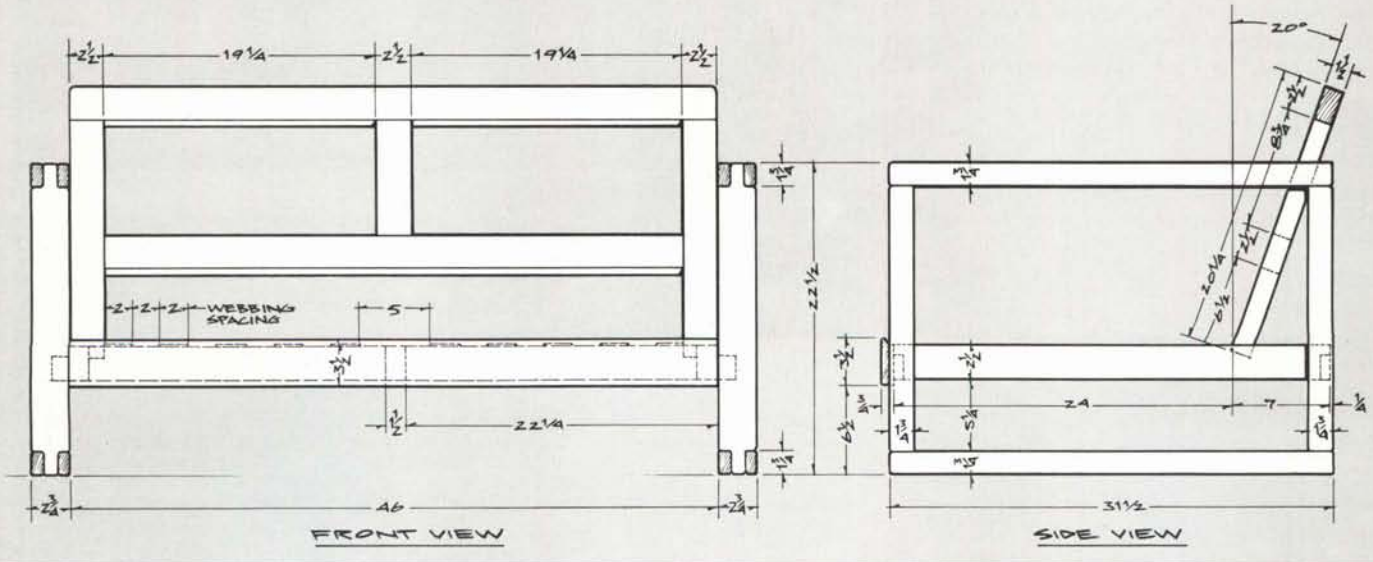
| Part | Description | Size | No. Req'd. |
|---|---|---|---|
| A | Leg | 1¾ × 2¾ × 22½ | 4 |
| B | Rail | 1¾ × 2¾ × 31½ | 4 |
| C | Seat Frame Front/Back | 1½ × 2½ × 48½* | 2 |
| D | Seat Frame Stretcher | 1½ × 2½ × 29½* | 3 |
| E | Face | ¾ × 3½ × 46 | 1 |
| F | Metal Clip | 2 in. long** | 20 |
| G | Webbing | 2 in. wide reinforced rubber** | 25 ft. |
| H | Back Stile | 1½ × 2½ × 19* | 2 |
| I | Back Rail | 1½ × 2½ × 46 | 1 |
| J | Back Stretcher | 1½ × 2½ × 43½* | 1 |
| K | Back Brace | 1½ × 2½ × 11¼* | 1 |
| L | Seat Cushion | 6 × 23 × 26*** | 2 |
| M | Back Cushion | 6 × 16 × 23*** | 2 |

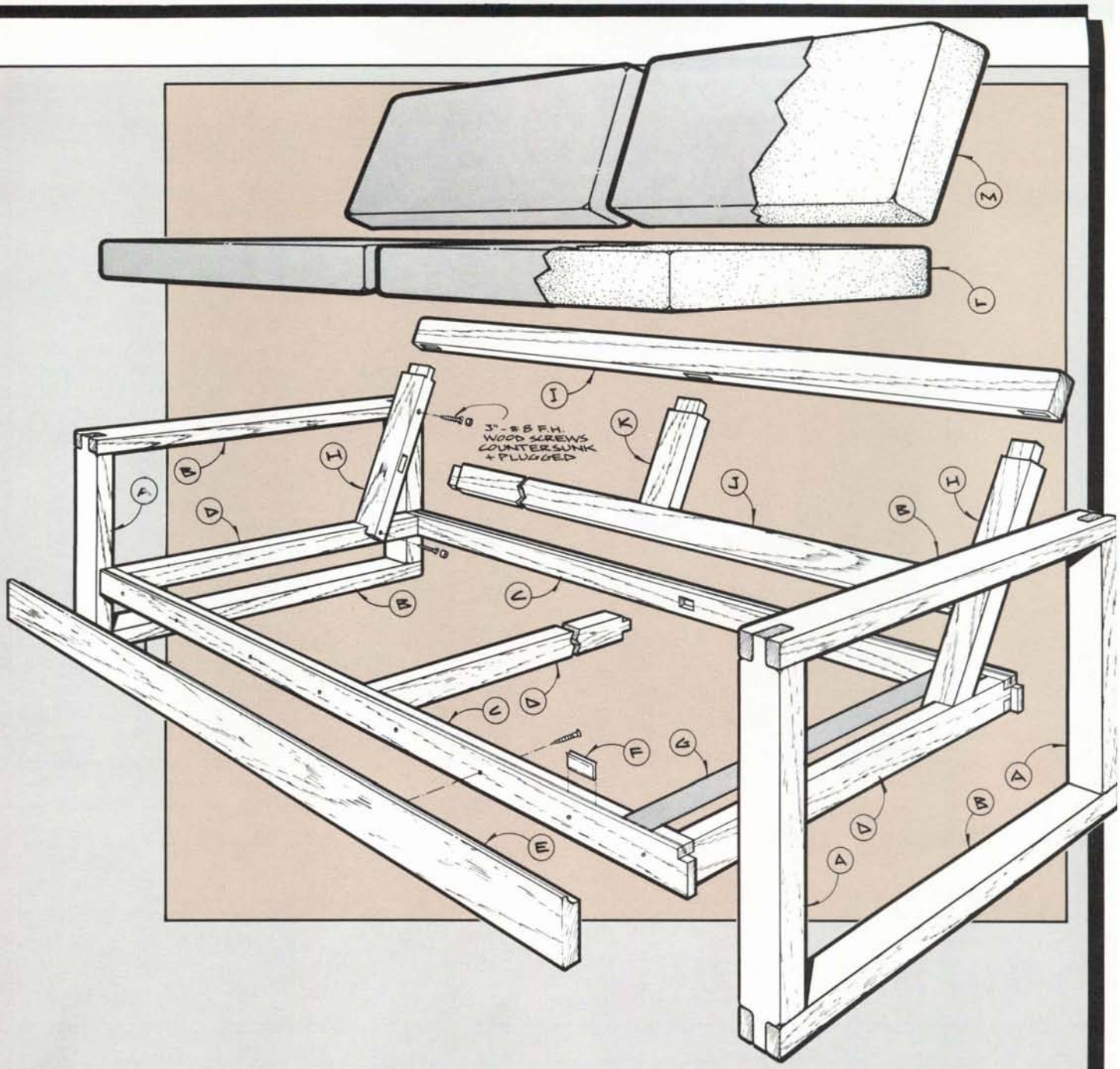
* Length includes tenons.

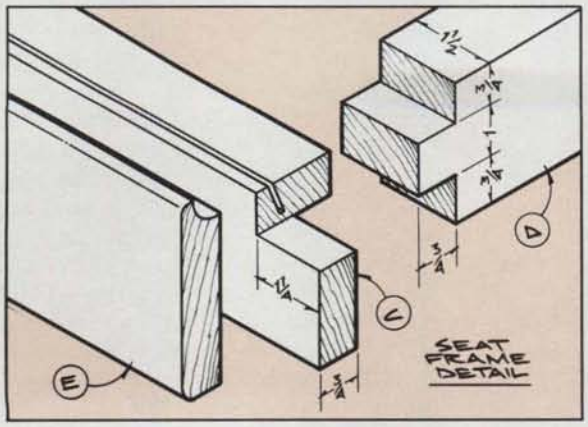
** Both metal clips and webbing are available from The Woodworkers' Store, 21801 Industrial Blvd., Rogers, MN 55374. Order part no. H1101 for the clip, and part no. H1100 for the webbing.

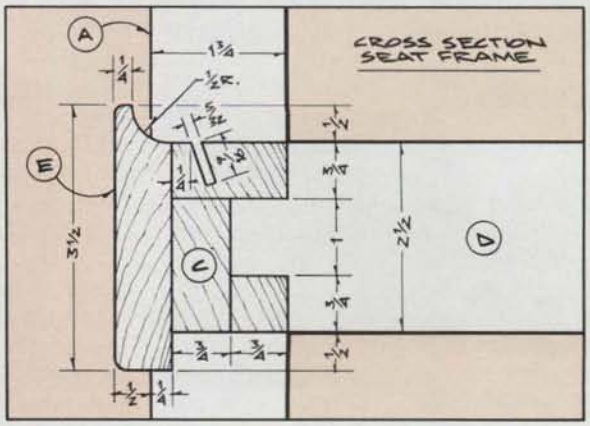
*** The seat and back cushions are available as a set from Sears Roebuck and Company. Order part no. 24G19174NH for the set. Note that two sets are required for the love seat.




M
L
J
3"-#8 F.H. WOOD SCREWS COUNTERSUNK + PLUGGED
K
H
B
A
D
C
F
G
E


1½
3¼
1
¾
¾
D
1¼
C
¾
E
SEAT FRAME DETAIL


A
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CROSS SECTION SEAT FRAME
E
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C
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¾
2½
D
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¾
½
½
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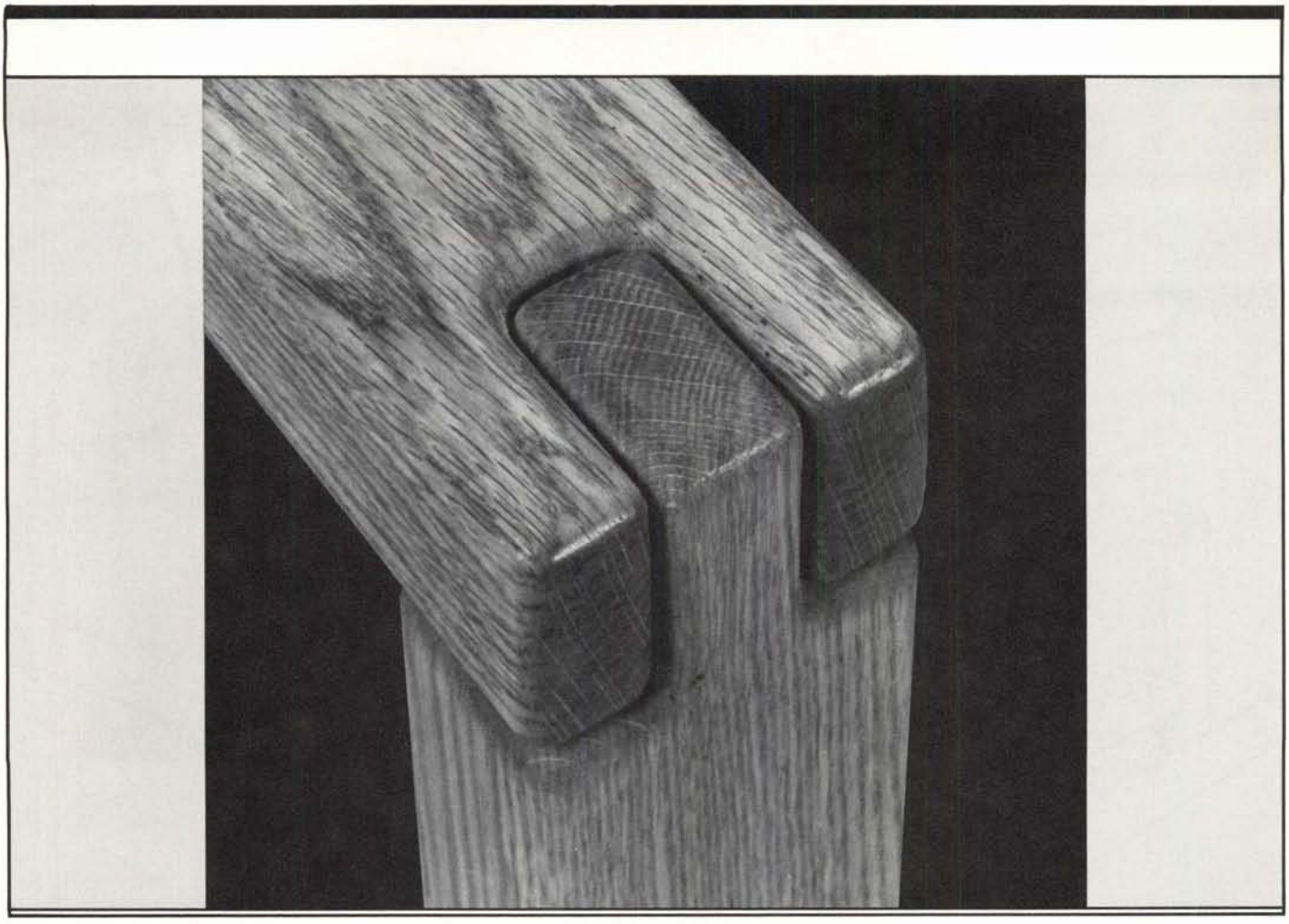


# Making the Love Seat Knuckle Joint

by Paul Levine

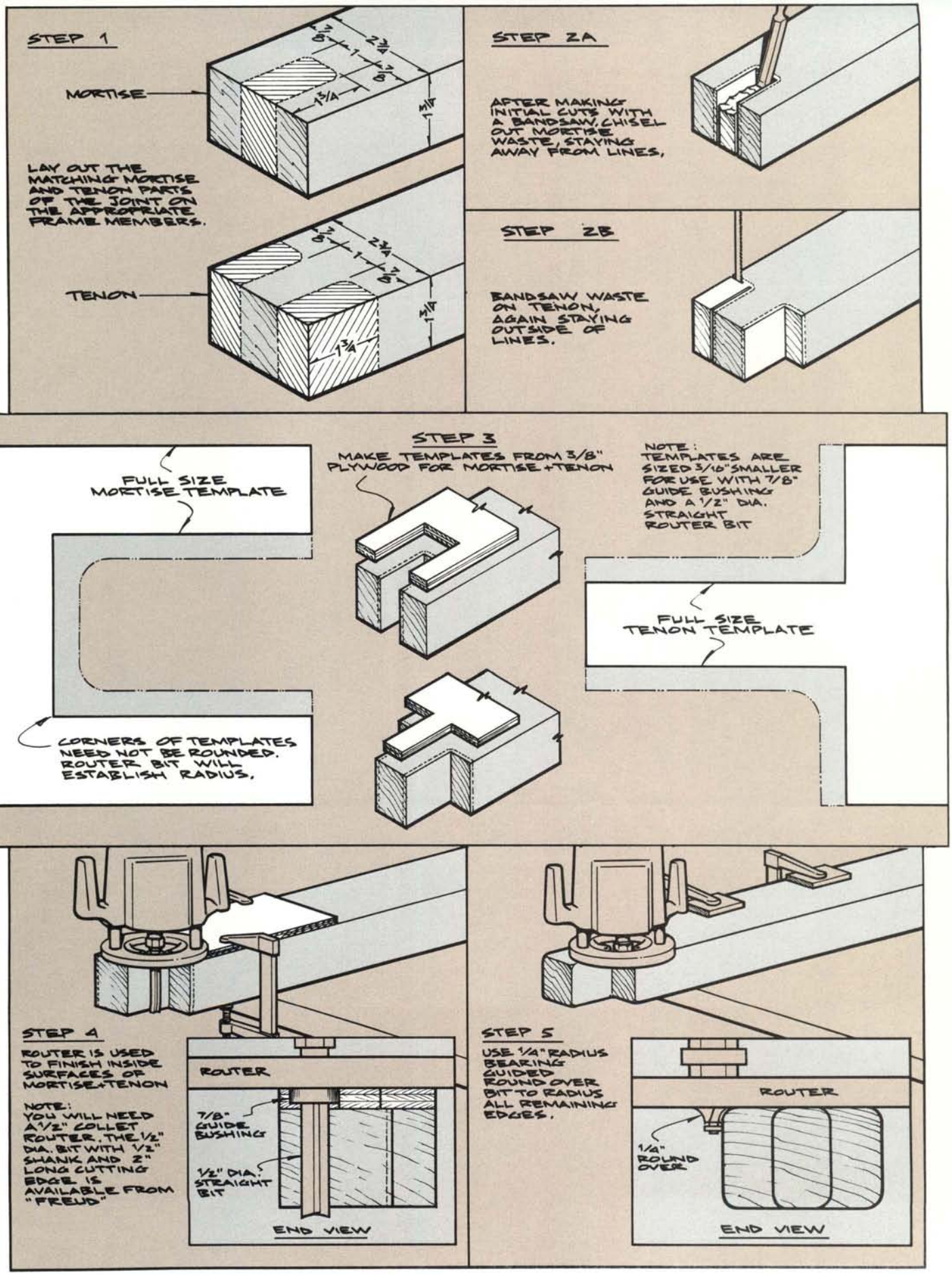
As an exposed sculpted joint, the knuckle joint detail highlights the construction and provides both beauty and strength.

In order to look right and provide the necessary strength, the mortise and tenon parts of the knuckle joint require a good tight fit. As shown in the following step-by-step instructions, I use a router with a guide bushing, templates, and a ½ in. diameter straight bit to cut the joint to size. The ½ in. diameter straight bit (made by Freud, 218 Feld Ave., High Point, NC 27264) establishes the ¼ in. radius on the inside corners, while a ¼ in. radius bearing guided round-over bit is used to apply the ¼ in. radius to all the remaining edges. After cutting out the templates, it's a good idea to make a trial joint from scrap wood to insure accuracy.

If you do not have a ½ in. collet router, an acceptable alternative to the router and template method is to use a drill and the band saw. Lay out both parts of the joint, and with a ½ in. diameter drill bit, establish the ¼ in. radius for the inside corners. The band saw can then be used to simply cut out the waste. After the ¼ in. radius has been applied to all edges, the joint can be final sized by paring with the chisel, or if the fit is sloppy, it can be packed with veneer.

Although not quite as accurate as the router and template method, I have used the drill and band saw technique for many knuckle joint projects. After a few practice runs you should find this method both quick and reliable.

I recommend a dry test assembly, at which time wax can be applied to the joint area. This will insure a proper fit and simplify cleanup of any glue squeeze-out around the knuckle joint after final assembly. Acetone is used to remove the wax. WWJ


STEP 1
MORTISE
LAY OUT THE MATCHING MORTISE AND TENON PARTS OF THE JOINT ON THE APPROPRIATE FRAME MEMBERS.
TENON
STEP 2A
AFTER MAKING INITIAL CUTS WITH A BANDSAW, CHISEL OUT MORTISE WASTE, STAYING AWAY FROM LINES.
STEP 2B
BANDSAW WASTE ON TENON, AGAIN STAYING OUTSIDE OF LINES.
STEP 3
MAKE TEMPLATES FROM 3/8" PLYWOOD FOR MORTISE + TENON
FULL SIZE MORTISE TEMPLATE
CORNERS OF TEMPLATES NEED NOT BE ROUNDED. ROUTER BIT WILL ESTABLISH RADIUS.
NOTE: TEMPLATES ARE SIZED 3/16" SMALLER FOR USE WITH 7/8" GUIDE BUSHING AND A 1/2" DIA. STRAIGHT ROUTER BIT
FULL SIZE TENON TEMPLATE
STEP 4
ROUTER IS USED TO FINISH INSIDE SURFACES OF MORTISE + TENON
NOTE: YOU WILL NEED A 1/2" COLLET ROUTER. THE 1/2" DIA. BIT WITH 1/2" SHANK AND 2" LONG CUTTING EDGE IS AVAILABLE FROM "FREUD"
ROUTER
7/8" GUIDE BUSHING
1/2" DIA. STRAIGHT BIT
END VIEW
STEP 5
USE 1/4" RADIUS BEARING GUIDED ROUND OVER BIT TO RADIUS ALL REMAINING EDGES.
ROUTER
1/4" ROUND OVER
END VIEW

# Two-drawer Platform Bed

Attractively styled and solidly constructed, this contemporary bed features a pair of large storage drawers underneath. We used solid oak for all frame parts, but other hardwoods can be used.

The headboard end (parts A, B, C, D, E, and F) provides a pair of shelves, but the construction can be simplified by putting the footboard (parts F and L) on each end. The drawer case (parts O through S), which is removable, can be installed to face either the right or the left side of the bed. Bed rail fasteners (N) are used to join the side rails (H) to the headboard and footboard.

The drawings are dimensioned for a twin bed (sometimes called a single), but simply by lengthening some of the parts it can be made into a full (sometimes called a double) or a queen-size bed. Measured between the rails, a full-size bed measures 75 in. long (same as the bed shown) by 54 in. wide, while a queen-size bed measures 80 in. long by 60 in. wide.

We located the height of the lower shelf (part B) to accommodate a thin mattress. However, if you have a thick mattress, you may want to raise the shelf height somewhat. (If the shelf is too low it will be hidden by the pillows when the bed is made.) Note, though, that you'll need to shorten its width to allow for the taper of the sides.

Begin by crosscutting stock for parts A, B, C, D, E, F, H, L, O, P, Q, R, and S to approximate length, allowing about 1 in. extra for each part. A portable circular saw comes in handy here, especially for long boards like parts H. Shorter parts can be crosscut on the table or radial-arm saw. All length dimensions are shown in the bill of materials. If you can't find 10 in. wide stock for parts A, it will first be necessary to edge join a couple of boards to get the needed width.

Next, rip each of the parts to approximate width, allowing about ¼ in. extra for each part. For long boards like part H, however, you should allow about ½ in. to account for any crook that may occur after ripping.

The joiner is now used to plane one face surface of each piece of stock. (The face is the surface measured across the width of the stock). This step is *important because* it establishes one perfectly flat surface, and you need to start with a flat surface before you can continue "dressing" the stock. A detailed discussion on jointing stock can be found in the "In The Shop" column of our May/June 1987 issue.

Once you have one flat face surface on each piece of stock, use a thickness planer to plane each board to its final thickness. First, plane all the ¾ in.

thick stock, then follow with the 1⅛ in. material. Try to make the cuts in more than one pass, with the final pass removing no more than about 1/32 in. A light cut like this results in a smooth finish that will require little sanding later on. It's important for the stock to have a consistent thickness, so each piece should be planed in an identical manner.

Next, use the jointer to plane (joint) one edge of each piece of stock. As you did with the thickness planer, make a light final cut so that you get a smooth finish.

The stock can now be ripped to final width. To get a smooth finish on the final cut, we like to set the rip fence to allow an extra 1/32 in. on the width. After ripping the stock, we then use the jointer to remove the added 1/32 in. When you make the jointer cut, keep pressure on the infeed table to insure that the cut will remain parallel to the opposite edge.

Measure and mark the cut length of each part, then use a table or radial-arm saw to crosscut the stock to its final length. If you have one, a crosscut blade is worth using here as it produces a smooth cut with a minimum of splintering. It's important that the cuts be square, so be sure to first make some trial cuts in a scrap board. Don't cut the stock until you are confident you have a square cut.

The ½ in. wide by 11/16 in. deep by 4 in. long mortises, which accept the ⅝ in. long tenons on the ends of parts F, can now be cut in parts A and L. The mortise is made 1/16 in. deeper than the tenon length to allow room for excess glue. Lay out the location of each mortise before starting. We used a router equipped with an edge-guide and a ½ in. diameter straight bit. However, don't make the 11/16 in. deep cut in one pass. You'll get a smoother cut, with less strain on the motor, if it's done in five passes, with each pass removing about ⅛ in. of material.

We used a dado-head cutter on the table saw to cut the tenons on each end of parts F (Fig. 4). A scrap block clamped to the rip fence serves as a stop to establish the ⅝ in. tenon length on all pieces. Raise the dado-head cutter to a height of ⅛ in., then use the miter gauge to pass the stock, face side down, over the cutter. Now flip the stock over and repeat the procedure on the opposite side to establish the ½ in. tenon thickness. The dado-head is then raised to a height of 1 in. and the stock is passed, on edge, over the cutter. After one edge is cut, flip the stock over and repeat the cut to create the 4 in. tenon length.

If properly cut, the tenon should fit snugly in its mating mortise. Keep in mind that the tenon dimensions are regulated by the height of the dado-head cutter. It's a good idea to make some trial cuts in scrap stock to get the tenon thickness and length just right.

**Bill of Materials**
(all dimensions actual)

| Part | Description | Size | No. Req'd. |
|---|---|---|---|
| A | Headboard Side | 1⅛ × 10 × 36 | 2 |
| B | Lower Shelf | ¾ × 9⅜ × 39¾* | 1 |
| C | Upper Shelf | ¾ × 7¼ × 39¾* | 1 |
| D | Filler | ¾ × 2 × 39 | 1 |
| E | Back | ¾ × 2½ × 39 | 1 |
| F | Head & Foot Rail | ¾ × 6 × 40¼** | 2 |
| G | Rail Cleat | ⅝ × 1½ × 39 | 2 |
| H | Side Rail | ¾ × 6 × 73¾ | 2 |
| I | Side Rail End Cleat | ⅝ × 1½ × 8⅛ | 4 |
| J | Side Rail Center Cleat | ⅝ × 1½ × 25⅜ | 4 |
| K | Support Cleat | ⅝ × ¾ × 6 | 6 |
| L | Leg | 1⅛ × 2 × 19 | 2 |
| M | Platform | ¾ × 39 × 75 | 1 |
| N | Bed Rail Fastener | 4 in. | 4 |
| O | Case Side | ¾ × 8 × 34½ | 2 |
| P | Case Divider | ¾ × 8 × 34½ | 1 |
| Q | Case Stretcher | ¾ × 2 × 55½ | 4 |
| R | Case Back | ¾ × 8 × 56 | 1 |
| S | Case Hanger | ¾ × 2¼ × 39 | 3 |
| T | Drawer Front | ¾ × 7⅛ × 28 | 1/drawer |
| U | Drawer Side | ¾ × 6¼ × 28⅜* | 2/drawer |
| V | Drawer Back | ¾ × 5¾ × 25⅛* | 1/drawer |
| W | Drawer Bottom | ¼ × 24⅞ × 27½ | 1/drawer |
| X | Drawer Slide | 28 in. | 1 pr./drawer |

*Includes dovetails
**Includes tenons

Next, referring to Fig. 5, lay out the location of the ⅝ in. wide by 4 in. long mortises in parts A, H, and L that accept the bed rail fasteners (parts N). Once again, the router with an edge-guide is used, this time with a ⅝ in. diameter straight bit. The depth of cut will depend upon the thickness of your bed rail fasteners. The depth should be such that the fastener is flush with the surface of the wood. Since the router cuts rounded corners, you'll need to square them with a chisel.

The bed rail fasteners (N) are made up of two halves — a hooked half and a slotted half. Depending upon the manufacturer, the hooked half may have a peened knob extending out the back of each hook. If your fastener has these knobs, you'll need to bore a couple of relief holes (see Fig. 5) to allow them to sit flush. Also, note that the slotted half requires a ¼ in. wide by ⅜ in. deep by 1⅜ in. long slot. We used the edge-guided router and a ¼ in. diameter bit to make those cuts. As with the earlier router cuts, we only removed about ⅛ in. of material with each pass.

If not available locally, the four bed rail fasteners can be ordered from The Woodworkers' Store, 21801 Industrial Boulevard, Rogers, MN 55374. The part number is D3904, and the current price is $6.45 for a set of four — enough for one bed. Assemble as shown in Fig. 5.

Next, the sliding dovetail joint, (which joins parts A to parts B and C) can be cut (Fig. 1). The dovetail grooves, which are cut into parts A, are made first. You'll need the router and a ½ in. dovetail bit. Also, a guide fence is required. It need only be a 14 in. length of straight stock that's clamped in place, but we found it useful to make a jig (Fig. 2) to serve as our fence. It's made from two pieces of stock joined at 90 degrees as shown. Once made it can be quickly clamped square to the stock.

Before making any cuts, you'll first need to final sand the inside surface of each part A. If you wait and sand after the grooves are cut, the shoulders of the tails will not fit perfectly flush.

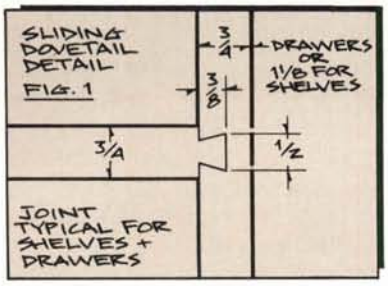
Clamp part A, groove side up, securely to your workbench, then lay out the location of the dovetail grooves for parts B and C. Equip the router with the ½ in. dovetail bit set to make a ⅜ in. deep cut. Clamp the jig to part A, locating it so that when the router is held against the jig fence, the bit will make a cut right down the center line of the dovetail groove. Since the dovetail groove is "stopped," that is, it doesn't extend all the way across the board, it's a good idea to include a stopblock in the set up.

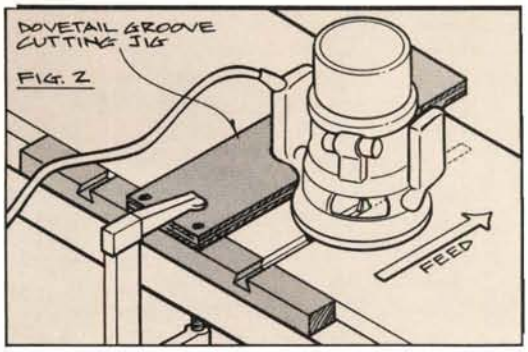
With the router held firmly against the fence, make the dovetail groove cuts, referring to Fig. 2 for the direction of feed. Run the router to the stopblock, then without shutting off the motor, back the bit out of the cut. Be sure to keep the router firmly against the fence, even when backing out the bit. Once all four dovetail grooves have been cut, the end of each stopped groove can be squared with a chisel.

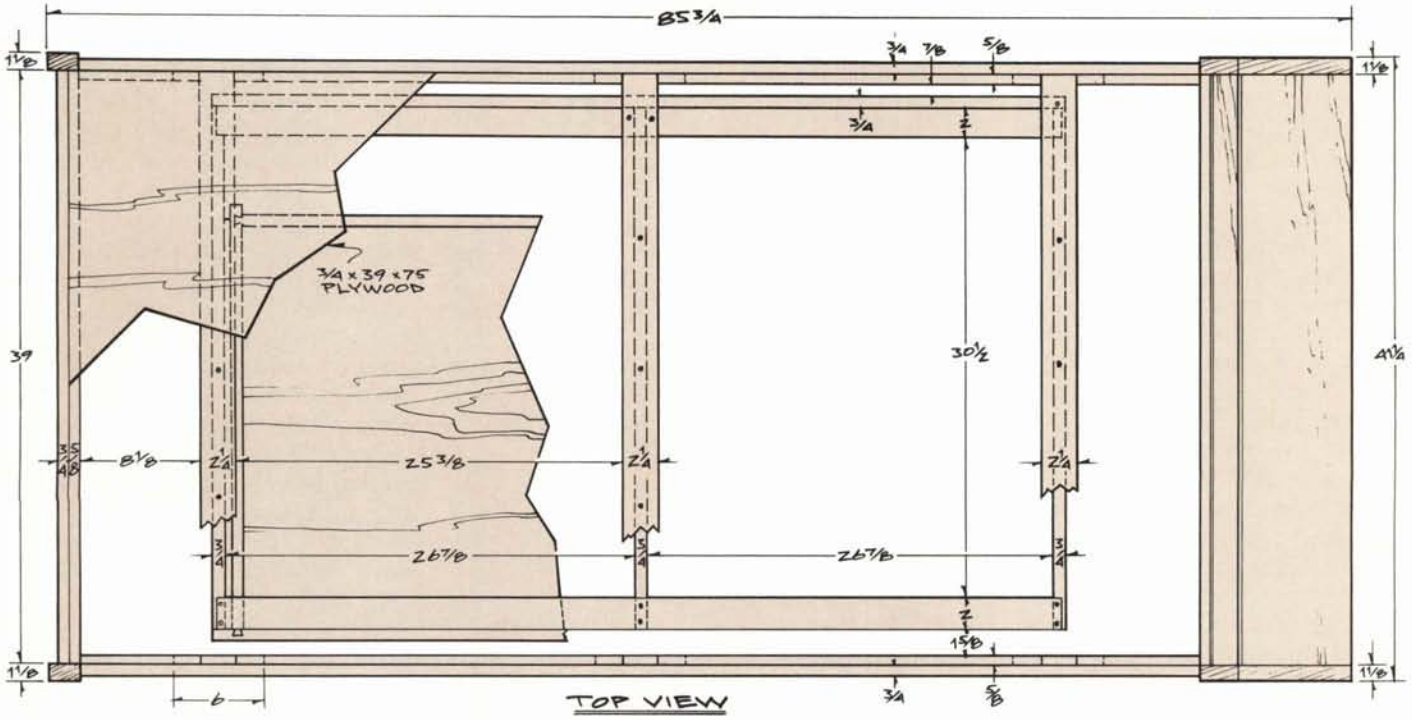
The dovetails on the ends of parts B and C can now be cut. But before going any further, and without readjusting the depth setting, use the router and dovetail bit to cut a dovetail groove into the end of a scrap piece. It will come in handy later on.

The dovetails are cut on a router table. As noted earlier, it's important that the stock thickness be the same. If

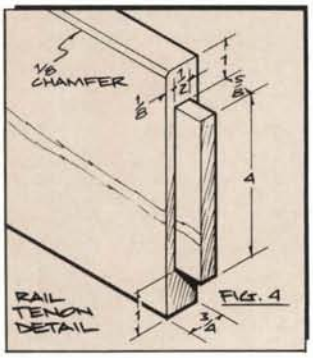
(continued on next page)

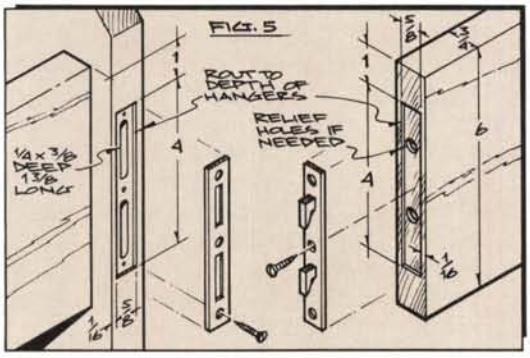



TOP VIEW

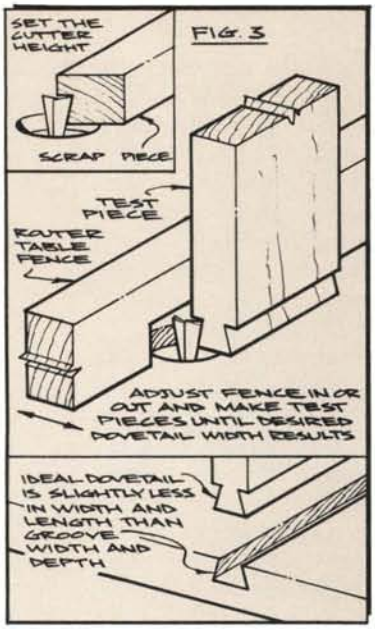


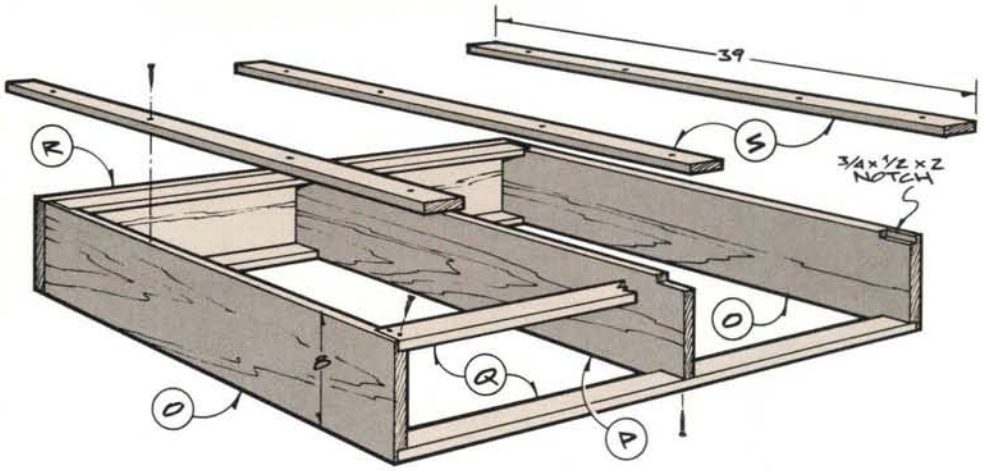



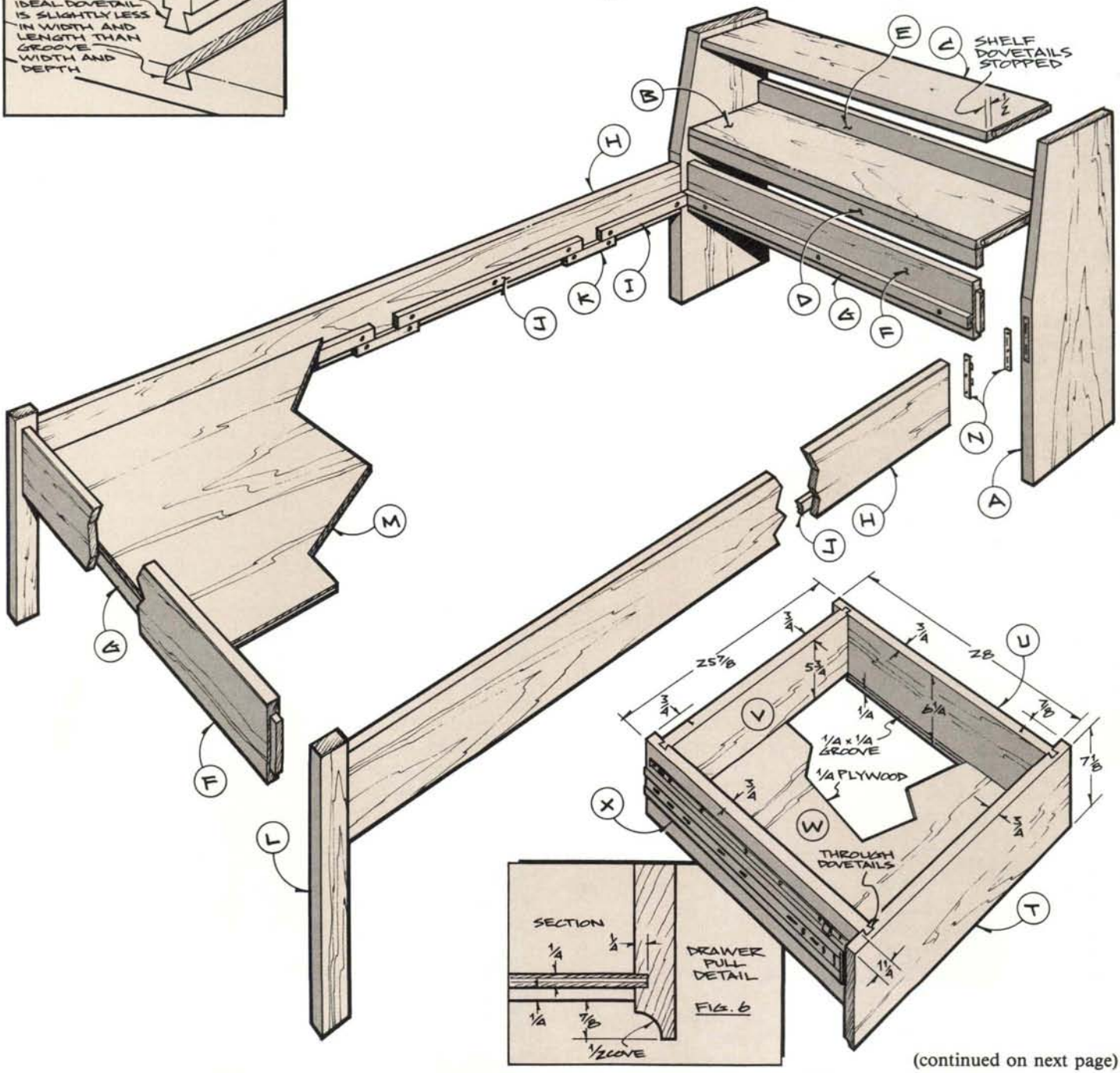




SIDE VIEW

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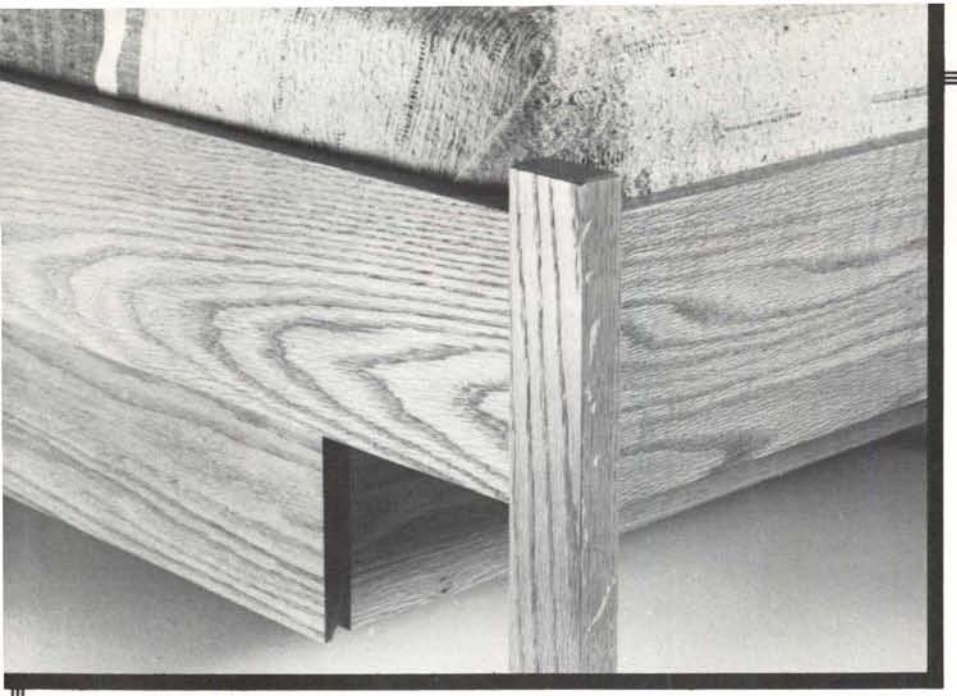


it isn't you won't get a well-fitted joint.

Set the dovetail cutter to a height equal to the depth of the dovetail groove cut in parts A. The scrap piece can be used here as shown in the Fig. 3 inset.

After setting the bit height, the fence must be positioned to establish the proper dovetail width. We've found the best way to do this is to use scrap pieces milled to the same thickness as parts B and C. As shown in Fig. 3, you'll need to make test cuts into the scrap stock until you establish the fence position that results in a well-fitted joint. Keep in mind that a joint that is too loose won't have maximum strength, while a joint that is too tight will be difficult to assemble, especially after glue is added causing the wood to swell slightly. Although not shown in Fig. 3, we clamped a 12 in. auxiliary wooden fence to our regular router table fence. The extra height made it easier to keep the stock square to the table. Once all the dovetails were cut, we used a chisel to cut a ½ in. notch (see exploded view) in each front corner to accommodate the stopped groove.

The 9-degree taper on the front of parts A can now be made. Note that it starts 7½ in. from the upper back corner and 17 in. from the top. Mark the points, then scribe the line with a straightedge. Use a band or jigsaw to cut it out, and stay slightly on the waste side of the line. A few passes with a sharp hand plane will smooth the edge and bring it exactly to the marked line.

Glue and clamp part D to part B, taking care to make sure that the front edge and the ends remain flush. Once dry, use the table saw set to a 9-degree angle to cut the bevel along the front edge as shown in the side view. Part E can now be glued and clamped to part B, again taking care to insure that the back edges and the ends remain flush. Also, at this time, the front edge of part C can be cut to a 9-degree angle.

Apply glue to the mortises in parts A and L, and the tenons on the ends of F. Clamp parts A to F and parts L to F as shown in the exploded view. Check for squareness and set aside to dry.

Parts B and C can now be assembled to parts A. Note that they must be slid in from the back. Keep in mind that even if the dovetail fits easily in the groove when dry, there is always a possibility it might bind when the glue is added and the wood swells as it takes on moisture. To minimize this potential problem, only apply glue to the front half of the dovetail groove and to the back half of the dovetail. Only assemble one shelf at a time — and work quickly to keep the swelling problem to a minimum. Also, just apply glue to the beveled surfaces of the groove and dovetails as the other surfaces of the joint present an end grain situation. End grain has little strength, so there is no need to take extra time (and create additional swelling of the wood) to apply the glue there.

The various cleats (parts I, J, and K) are now added after cutting them to the dimensions shown in the bill of materials. Use glue and wood screws to secure them to the rails.

The drawer case (parts O, P, Q, R, and S) is made next. We used a router to notch the ends of parts O, then squared the rounded corners with a chisel. Note the screws that join the ends of parts Q to parts O are driven at a slight angle. This minimizes the chance of splitting the ends of Q when the screws are added. When the case is completed, the ends of parts S will rest on parts K. Don't glue this joint though, as the case must be removable to facilitate moving the bed. It also will enable you to reverse the case, which means the drawers can be used either on the right or left side of the bed.

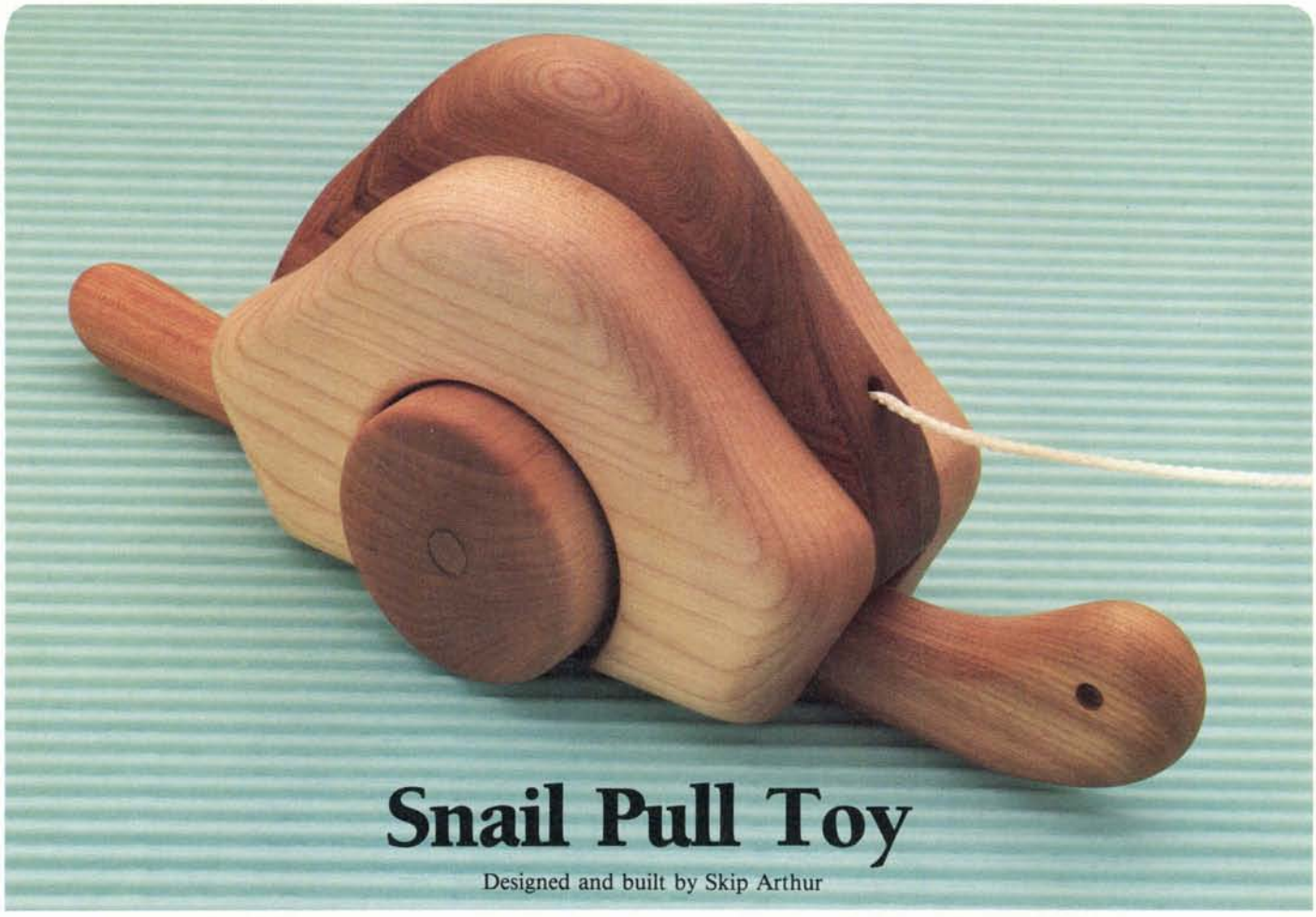
The drawer (parts T, U, V, W, and X) can now be made. We cut part T from a 60 in. long board so that the grain would run continuously from the left to right drawer front — a detail that adds interest to the piece. The ½ in. cove cut along the inside bottom edge of each part T is cut on the router table using a ½ in. radius cove bit.

The sliding dovetails are made following the same general procedure used earlier. However, because the dovetail grooves are located near the ends of parts U and T, both the grooves and the dovetails can be cut on the router table. When making the grooves, butt the end of the board against the fence, then push it through the cutter. As you make the cut, hold the stock firmly against the fence and use a push stick to keep hands away from the cutter. Since the groove is not stopped, you can run the cut completely across the width of the stock.

Once the dovetails are cut, the drawers can be assembled as shown. Check for squareness before setting aside to dry. When dry, final sand and finish. We sprayed two coats of Deft's Clear Wood Finish on all the drawer surfaces.

The drawers can now be hung in the case. The 28 in. full extension drawer slides, manufactured by Accuride, can be ordered from The Woodworkers' Store. The part number is D7575, and the current price is $26.35 per set (two sets are needed to make the two drawers). Instructions for hanging the drawer come with the slides (we centered the slides on parts O). When installed there should be a ⅛ in. gap between the bottom edge of part U and the lower part Q. This also creates a ⅛ in. gap between the top edge of part U and the upper part Q.

Next, remove the drawers and give the entire project a thorough sanding. Two coats of Deft are sprayed on as a final finish. To complete the project, cut part M to size and drop it in place on the cleats as shown. WWJ



# Snail Pull Toy

Designed and built by Skip Arthur

Pull this cute snail along and the head and tail will move back and forth, much to the delight of toddlers. The toy shown was made using cherry for the body, walnut for the inner shell, and birch for the outer shell and wheels, but any wood, even pine, can be used.

To make the body (A), cut ¾ in. thick stock to a width of 2½ in. and a length of 10 in. These dimensions allow a little extra length and width, and that extra stock will make it easier to mark and cut out the profile. Since the body is ⅝ in. thick, you'll need a hand plane to reduce the ¾ in. thick material. A plane is always easier to use if it's well sharpened, so you may want to get some tips by reading "Plane Iron Sharpening" on page 17.

Next, referring to the full-size pattern, transfer the profile of the body to the stock. Cut out with a band saw or jigsaw, staying slightly on the waste side of the marked line. To make the elongated hole, mark the location of the center points for the two 1⅛ in. diameter (9/16 in. radius) holes, then use a 1⅛ in. diameter Forstner bit to bore through at each center point. A jigsaw or file can be used to remove the small amount of waste stock that remains between the holes. With the elongated hole completed, you can now use a file and sandpaper to apply a ⅜ in. radius to the edges all around the outside of the body. Since the edges above and below the elongated hole are not visible, they don't need to be rounded. A 3/16 in. diameter by 3/16 in. deep eyehole (see full-size pattern for the location) completes work on the body.

The two outer shells (B) and the inner shell (C) are also made using the full-size patterns. As with the body, make the parts slightly wider and longer than necessary before transferring the patterns and cutting out. Note that one side of each outer shell is bored to a depth of ⅜ in. with a 2¼ in. Forstner bit, while the inner shell has a 3/16 in. diameter by ½ in. deep string hole. The outer shells have a ⅜ in. radius applied all around the outside edges. The inner shell has the same radius, but it's only applied to the exposed edge along the top.

To make each wheel (D), scribe a 2⅛ in. diameter circle with a compass, then use the band saw or jigsaw to cut it out, staying just on the waste side of the line. If you have one, a disk sander will make it easy to sand the edges smooth. A 5/16 in. diameter hole is bored at the center point of each wheel. The cam (F) can be made from 1 in. diameter dowel stock, with a 5/16 in. diameter hole bored as shown.

To assemble, refer to the full-size pattern for the location of parts B in relation to parts A and C (see dotted line), then glue the three parts together and clamp firmly. Once dry, glue part F to the dowel (E), then add parts D. Final sand, then glue the cord in as shown. No final finish is necessary.

WWJ

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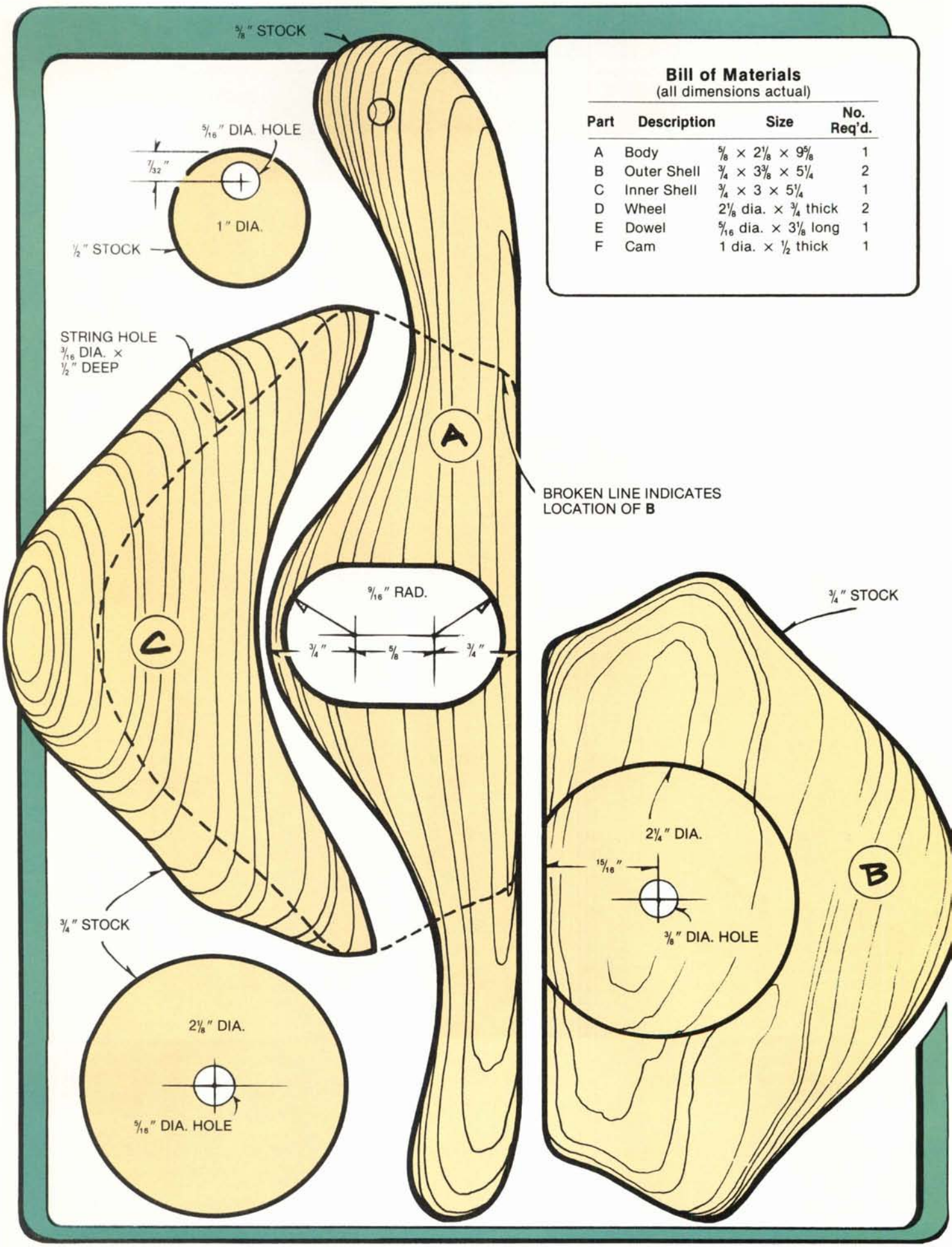
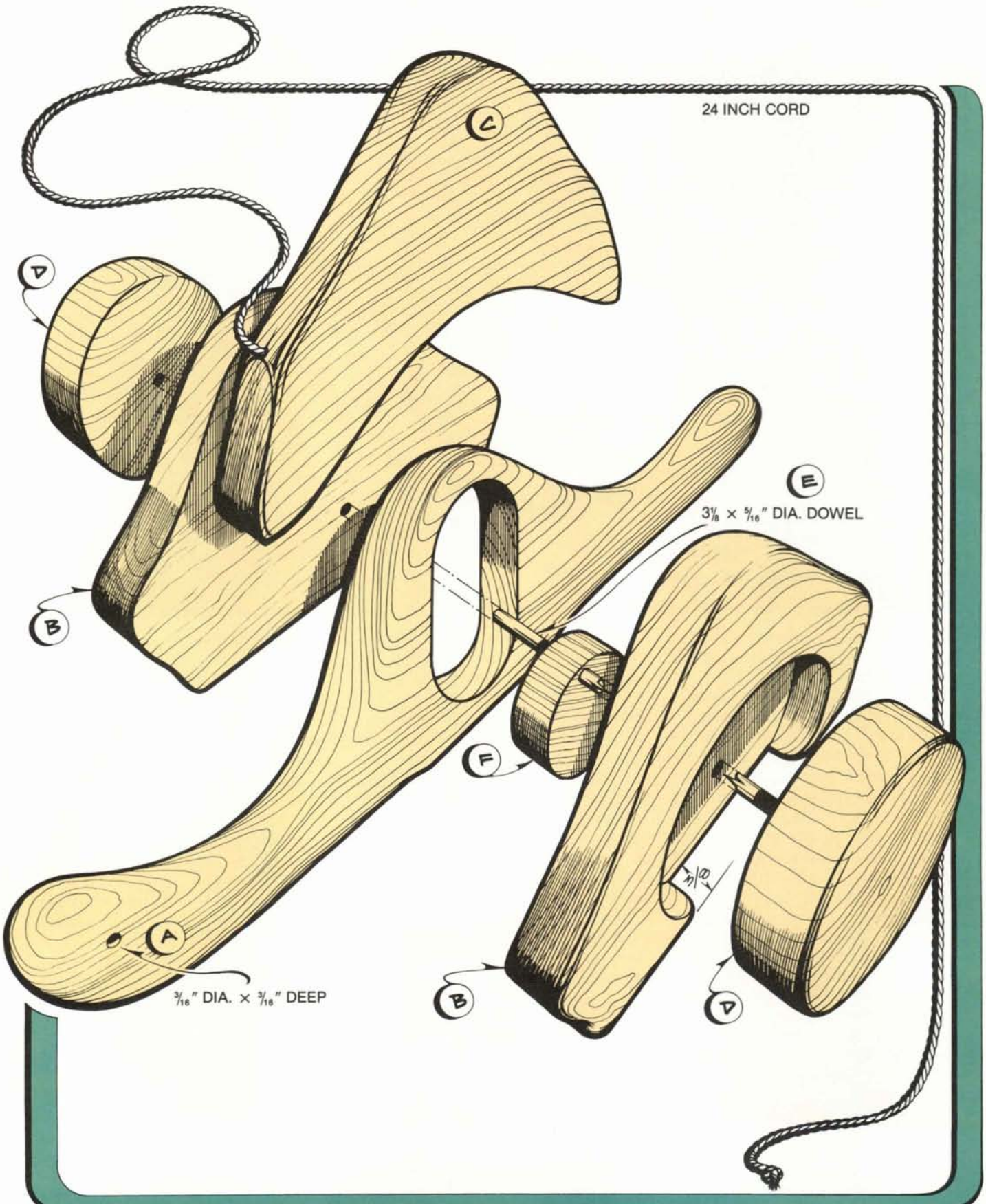
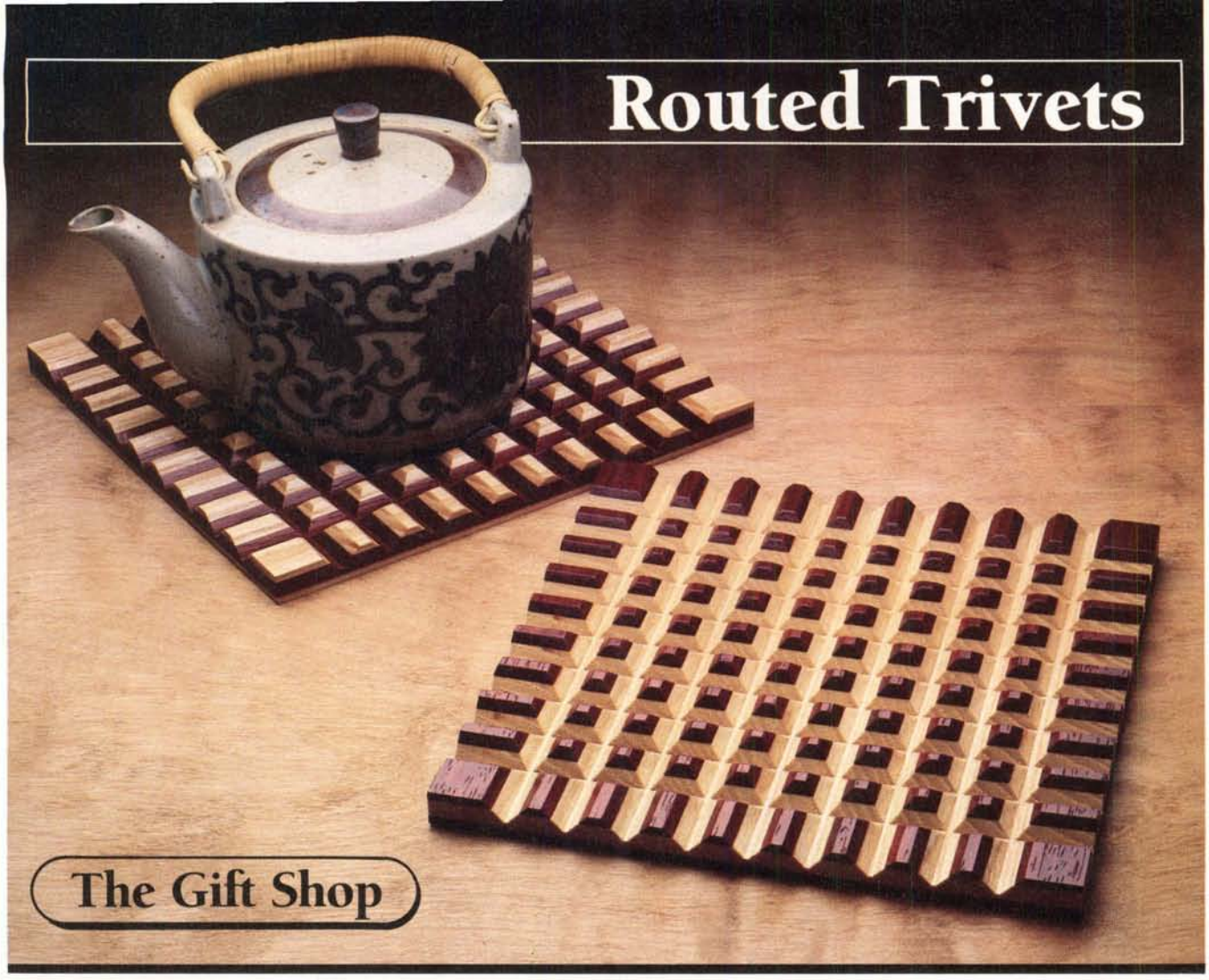



**Bill of Materials**
(all dimensions actual)

| Part | Description | Size | No. Req'd. |
|---|---|---|---|
| A | Body | 5/8 × 2 1/8 × 9 5/8 | 1 |
| B | Outer Shell | 3/4 × 3 3/8 × 5 1/4 | 2 |
| C | Inner Shell | 3/4 × 3 × 5 1/4 | 1 |
| D | Wheel | 2 1/8 dia. × 3/4 thick | 2 |
| E | Dowel | 5/16 dia. × 3 1/8 long | 1 |
| F | Cam | 1 dia. × 1/2 thick | 1 |


24 INCH CORD
C
D
E
3⅛ × 5/16" DIA. DOWEL
B
F
A
3/16" DIA. × 3/16" DEEP
B
D

# Routed Trivets



## The Gift Shop

These stunning trivets are made using an extraordinarily simple router technique.

While we sandwiched ⅛ in. padauk around ¼ in. ash for one trivet, and ⅛ in. ash around ¼ in. padauk in the other, different combinations of contrasting woods, such as walnut with oak, ash or maple, will work well.

Begin by thicknessing stock as needed with a planer or a hand plane. Note that we start with stock that is ½ in. oversize in length and width.

Now glue and clamp the laminations for the various trivets you plan to make, using a waterproof plastic resin or resorcinol glue. As shown in Step 1, the grain of the three laminations must face in the same direction. Particleboard clamping blocks will evenly distribute the clamp pressure.

Next, as shown in Step 2, square the trivets to their final 8 in. by 8 in. size on the table saw.

Step 3 illustrates the fence settings for routing the trivets. Note that the bit depth is set at ¼ in. Start with the fence located 1 in. from the center point of the first groove, and rout groove A. Rotate the piece 180 degrees to the opposite edge and rout the opposite groove A. Reset the fence to 1¾ in. from the center point of groove B, and repeat this process with the other fence settings until all the cross-grain grooves have been cut (Step 4). It is important to rout cross-grain first, since the cross-grain cuts are most liable to chip.

Now rotate the workpiece 90 degrees, and rout all the grooves with the grain. By starting with the center groove, as shown in Step 5, you need not reset the fence for the first groove. Be sure to use a pushblock in both Step 4 and Step 5, since this block serves to back up the stock as the bit exits, reducing the chance of chip-out at the edge.

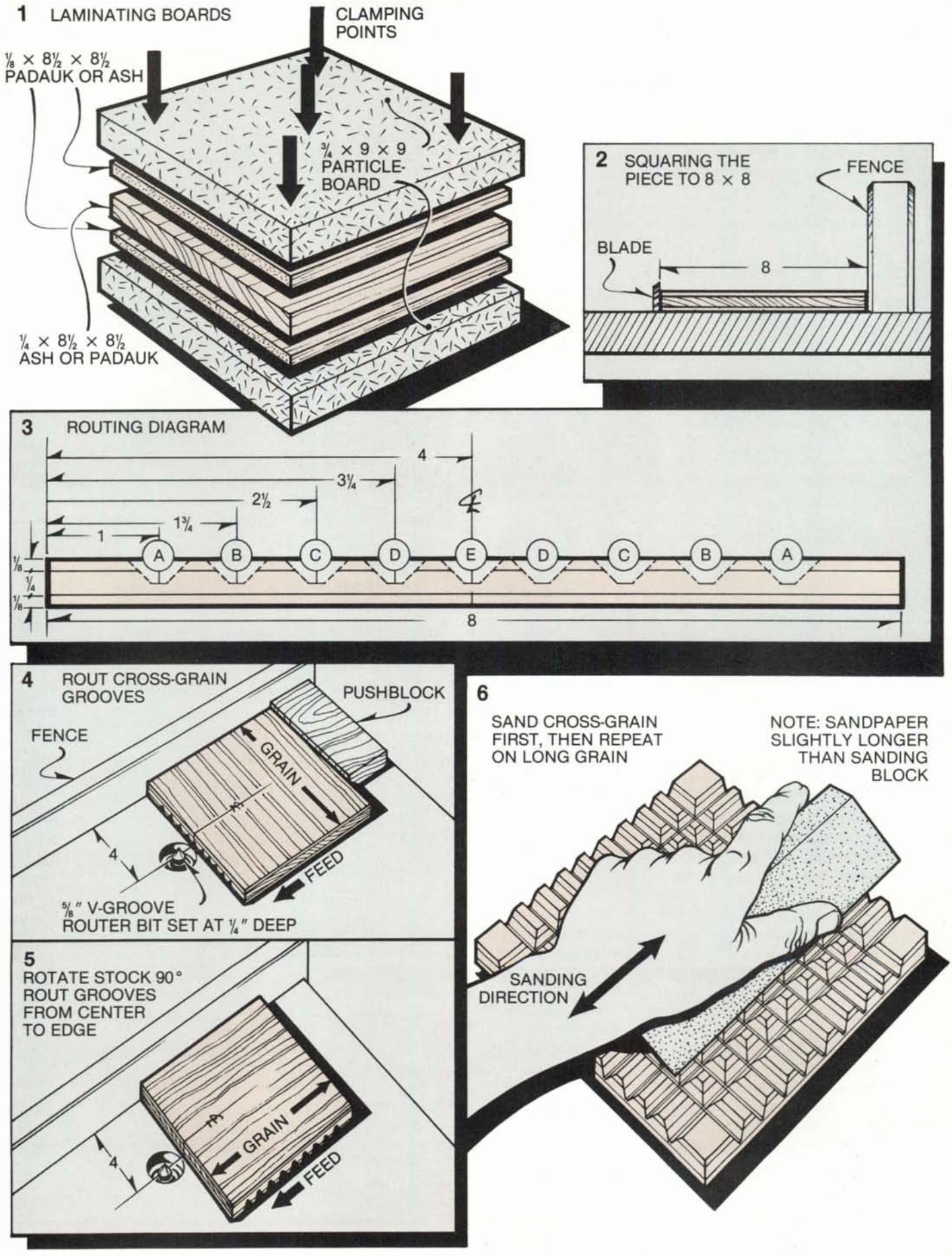
Finally, use a sanding block wrapped with a sheet of sandpaper as shown in Step 6 to sand the V-grooves. Sand cross grain first, and then long grain. Overlap the sanding block slightly with the sandpaper so corners do not catch on the workpiece.

We finished our trivets with two coats of Zip Guard aerosol spray polyurethane. The first coat should be dry to the touch before the second coat is applied.

*Note:* While just about any non-bearing-guided router bit can be used to create a trivet design, the grooves made by the V-groove or core box bits proved the easiest to sand. The point cut and end cut ogee, the point cut quarter-round, and the various veining bits also produce interesting effects. Or try routing grooves at right angles to each other on opposite sides of the trivets. With the bit depth set at slightly over half the stock thickness, the points where the grooves meet will produce a dramatic cut-through pattern.

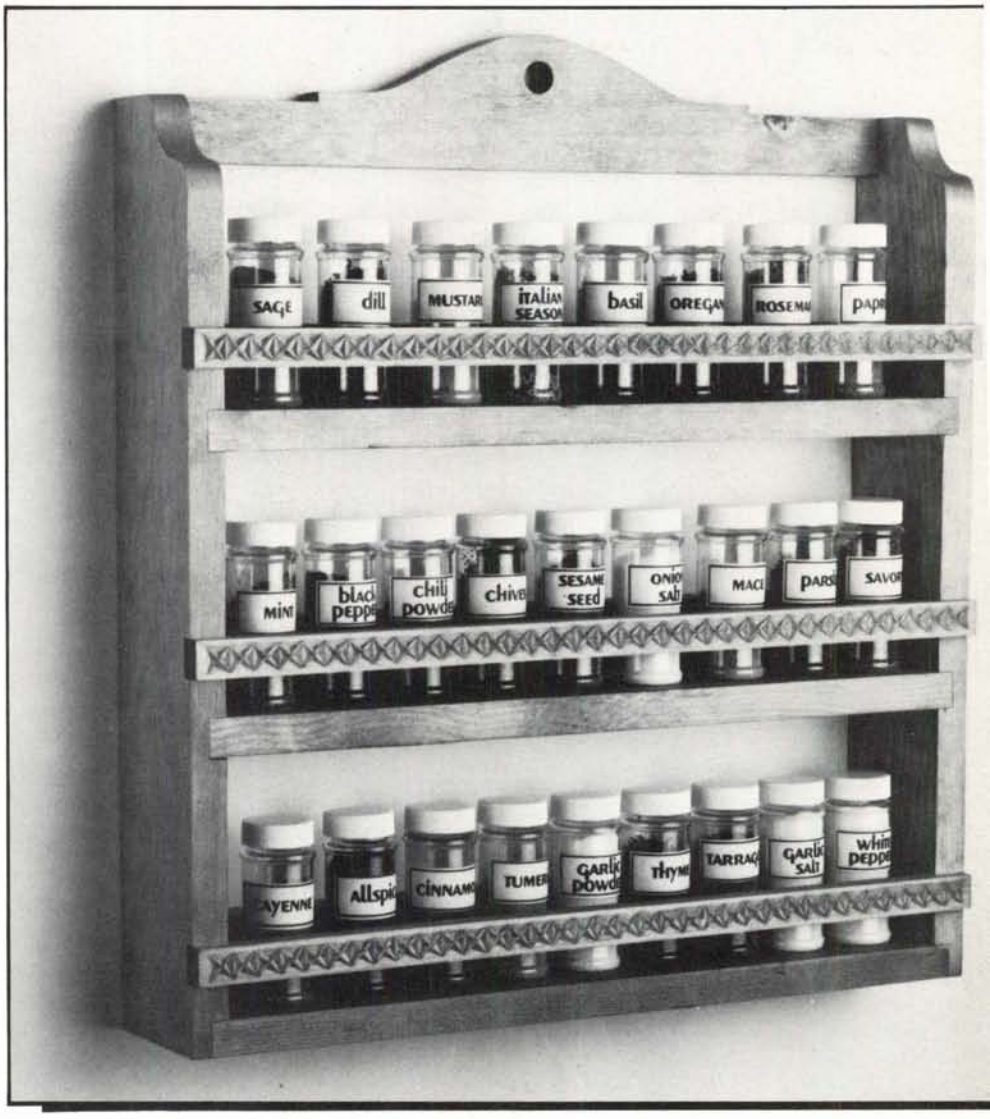
We used a ½ in. collet router, and were able to accomplish each cut in a single pass. Those with ¼ in. collet routers may need to reset the depth several times, lest they labor the router and burn the bit.

We suggest that you clamp the trivets to hold them flat immediately after they have been routed. This allows them to acclimate, and thereby prevents cupping. After they have acclimated (about 24 hours), the finish can be applied. WWJ


1 LAMINATING BOARDS
CLAMPING POINTS
1/8 × 8 1/2 × 8 1/2 PADAUK OR ASH
3/4 × 9 × 9 PARTICLE-BOARD
1/4 × 8 1/2 × 8 1/2 ASH OR PADAUK
2 SQUARING THE PIECE TO 8 × 8
FENCE
BLADE
8
3 ROUTING DIAGRAM
4
3 1/4
2 1/2
1 3/4
1
A B C D E D C B A
1/8
1/4
1/8
8
4 ROUT CROSS-GRAIN GROOVES
PUSHBLOCK
FENCE
GRAIN
FEED
4
5/8" V-GROOVE ROUTER BIT SET AT 1/4" DEEP
5 ROTATE STOCK 90° ROUT GROOVES FROM CENTER TO EDGE
GRAIN
FEED
4
6
SAND CROSS-GRAIN FIRST, THEN REPEAT ON LONG GRAIN
NOTE: SANDPAPER SLIGHTLY LONGER THAN SANDING BLOCK
SANDING DIRECTION

# Spice Rack

## *with Chip Carving*




In many ways, the best projects are the simplest. This attractive, functional spice rack is as basic as a project can be. We have chosen to highlight the piece with the addition of a traditional chip-carved border detail, but this feature could be eliminated, if you prefer.

All the parts for this project can be obtained from 1 × 4 × 8 and 1 × 6 × 3 pine boards. The hand plane is used to final thickness the ½ in. retainer strips after they have been ripped to slightly more than ½ in. thick.

Start by cutting out all the parts as shown in the cutting diagram. Use stopblocks when cutting out the shelves (B) and backs (C) to insure uniform lengths. The rabbet and dado cuts on the two sides (A) are made first. The notches to accept the retainer strips (E) are made by stacking both sides together for the passes over the dado head, assuring uniformity. Also, chisel the notches in each side to accept the top (D). While the profiles on the sides and top can be cut on the band saw or with a jigsaw, we like to use the scroll saw, which affords us precise control and ultimately produces cleaner, sharper, more accurate cuts. Bore out the ⅝ in. diameter center hole in the top as shown, and pre-drill two holes for mounting screws. These mounting screw holes are bored 16 in. on center to facilitate fastening the spice rack to most walls which employ 16 in. on-center studding.

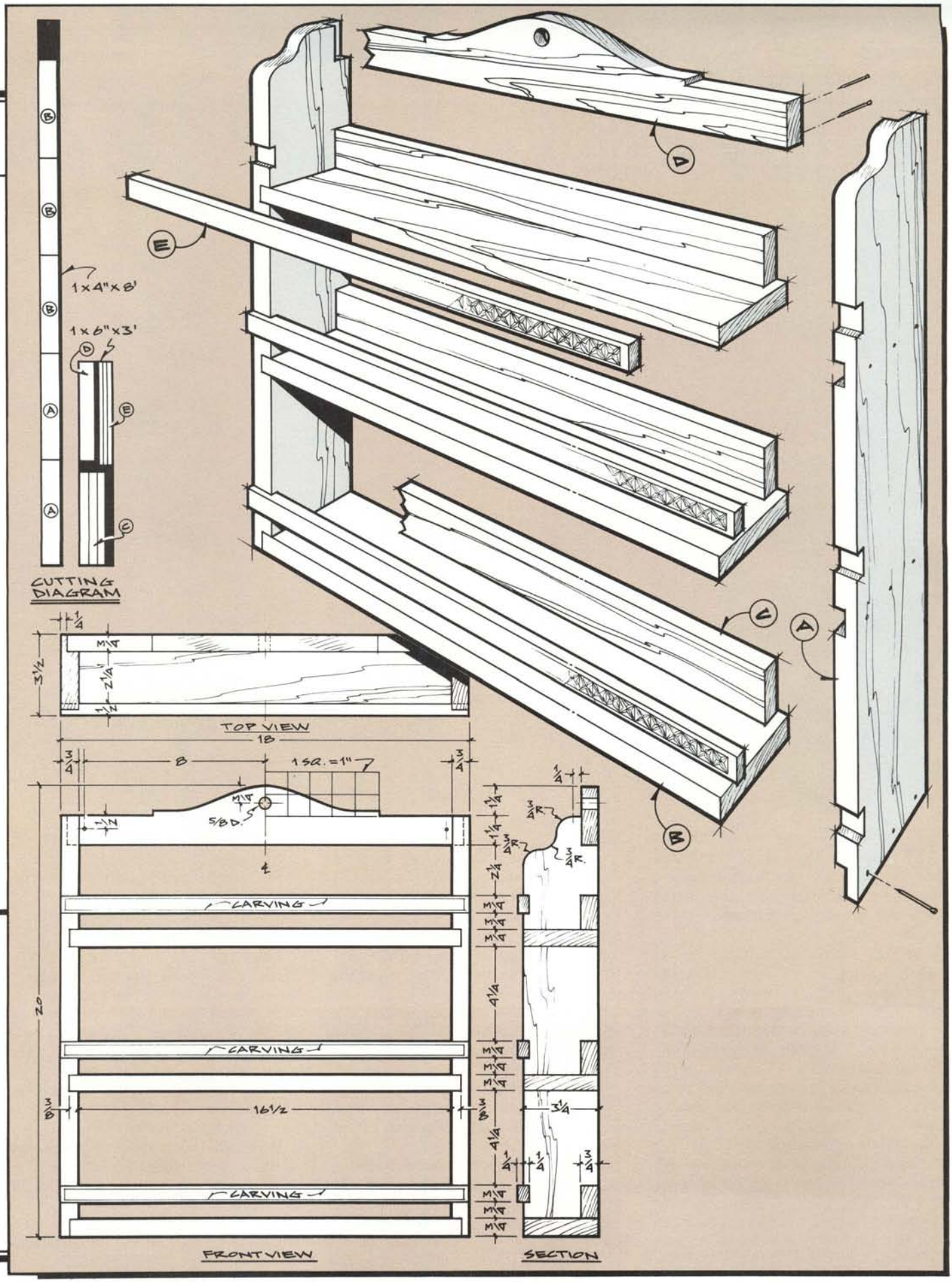
If you decide to decorate the retainer strips with a chip carving as we have, turn to page 23 for master carver Rick Butz's step-by-step instructions. While you may be hesitant to attempt this technique, we urge you to try it at least once. Chip carving is one of the simplest, easy-to-master carving techniques and anyone can produce the results shown. Cut a few extra retainer strips, and practice for about a half hour before you start on the three strips you intend to use. If you feel especially creative, you may want to design your own chip carved border detail using some of the ideas shown in the chip carving article for inspiration.

All parts should be final sanded before assembly. Glue and add finishing nails, as we show.

To finish, start with a sealer coat of Minwax Natural No. 209. Next, apply a light coat of stain (we used Minwax Golden Oak No. 210B). While you may choose to apply a protective coat of either lacquer or polyurethane finish over the stain, we chose a more rustic look and left the stain plain. WWJ

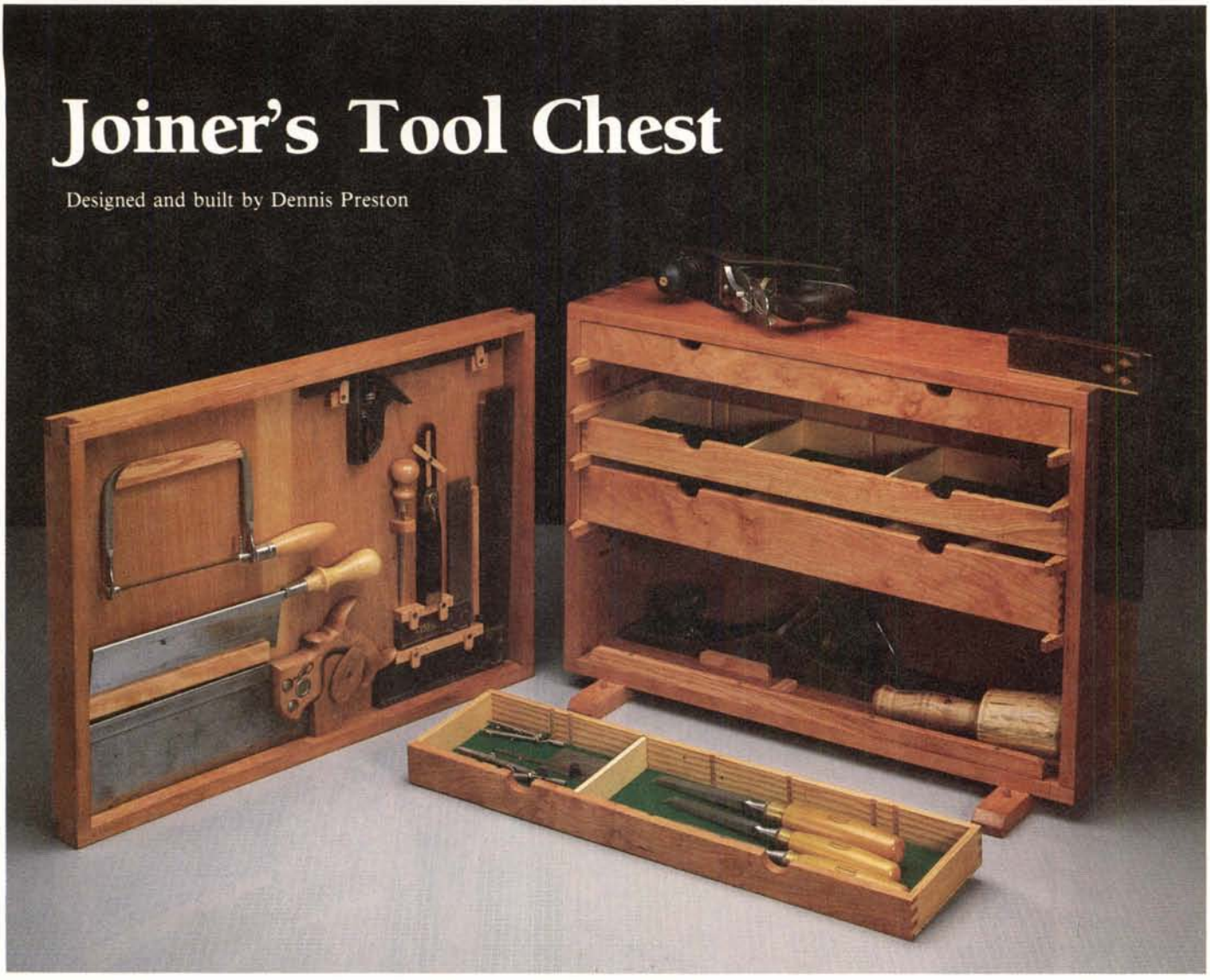
**Bill of Materials**
(all dimensions actual)

| Part | Description | Size | No. Req'd. |
|---|---|---|---|
| A | Side | ¾ × 3¼ × 18¾ | 2 |
| B | Shelf | ¾ × 3¼ × 17¼ | 3 |
| C | Back | ¾ × 1½ × 16½ | 3 |
| D | Top | ¾ × 2½ × 17½ | 1 |
| E | Retainer | ½ × ¾ × 18 | 3 |


1×4"×8'
1×6"×3'
CUTTING DIAGRAM
TOP VIEW
FRONT VIEW
SECTION
1 SQ. = 1"
CARVING
CARVING
CARVING
5/8 D.
16½
3¼
20
18
8

# Joiner's Tool Chest

Designed and built by Dennis Preston



We've seen a number of fine tool chest designs over the years, but this project is especially appealing because it combines a sensible design with one other vital element — easy construction.

As shown in the detail indicating the case box being ripped to form the chest front and chest case parts, the tool chest is essentially a large box.

Begin by laying out the top and bottom (A) and sides (B), as shown in the cutting detail, on an 8¾ in. wide by 93 in. long board. Laying out these parts in the sequence shown and cutting them from a single length of board will provide the case with an interesting visual continuity. Note that the width of the board includes an allowance for a ⅛ in. wide saw kerf. Now, crosscut the board to create the 26 in. long top and bottom parts, and the 18 in. long side parts.

While designer Dennis Preston used native Connecticut cherry for all the hardwood parts in the project, any hardwood will suffice. The ¼ in. plywood front, back, and drawer bottom parts should match the hardwood you select, and can all be obtained from a half sheet of plywood.

To lay out the dovetails, follow the procedure detailed below. Take careful note that the second dovetail pin from the front edge (and the corresponding space between the tails) is an additional ⅛ in. wide to allow for the saw kerf when the chest front is cut from the box.

Begin by laying out the dovetails on the ends of parts B, referring to the drawings for all dimensions. Ideally, the length of the tail should be equal to the thickness of part A plus about 1/32 in. Later, when the joint is assembled, the tails will stick out 1/32 in., allowing them to be sanded perfectly flush with the sides. As you lay out the dovetail locations, work accurately, and use a hard sharp pencil.

Once the tails have been laid out, mark the waste material between dovetails with an "x" to avoid confusion. Scribe the tail location not only on the face surface of the board, but also on the end grain. Secure parts B in a vise and use the fine-tooth saw to make the angled cuts. Work carefully, cutting on the waste side of the line, just grazing but not removing it.

Bring the cuts almost — but not quite — to the scribed bottom line. A coping saw can now be used to cut across the grain, removing the waste. Remove the workpiece from the vise and clamp it flat on the bench over a

scrap board, then use the chisel to dress the sides and bottom of the cutouts.

The pins on parts A can best be laid out and scribed by using the finished dovetails as a template. To do this, clamp part A end up in the vise. Lay the dovetailed parts B in their proper position on parts A and trace the dovetails with a sharp knife or pencil. Use a square to carry the scribed lines to the face of the board. As explained earlier, this distance should be equal to the thickness of B plus 1/32 in.

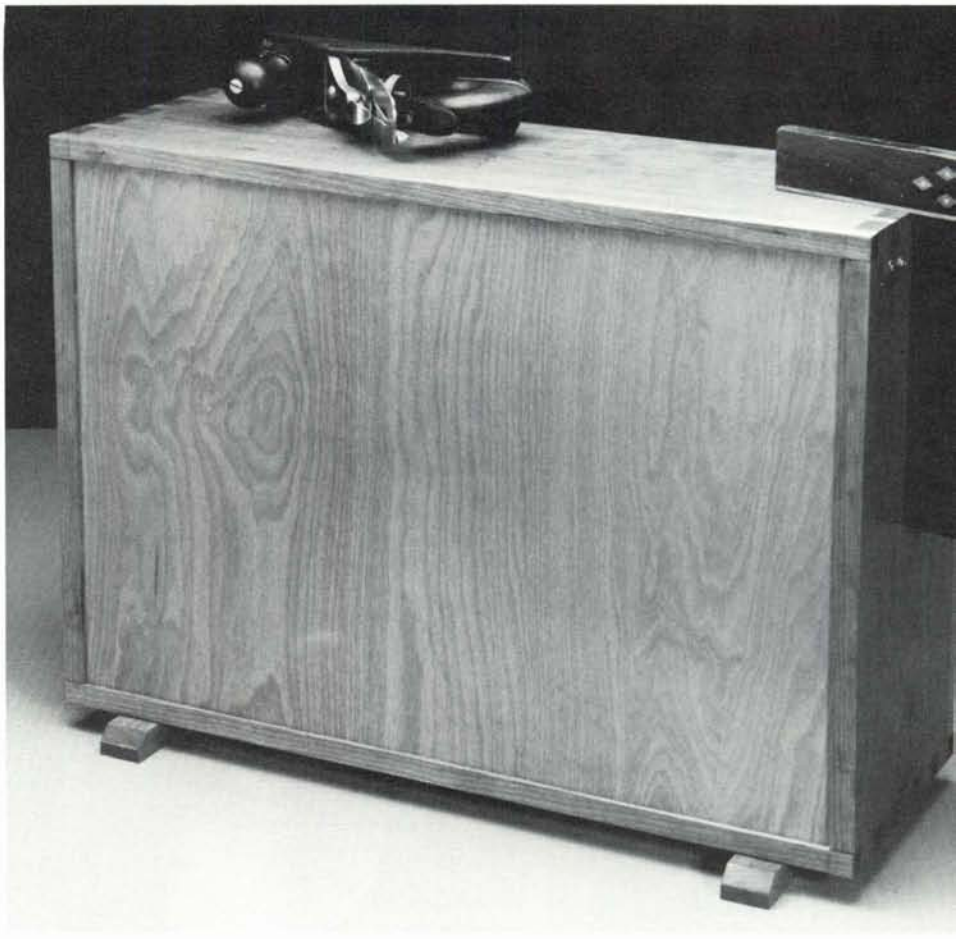
Once again, mark the waste portions with an "x," then cut out in the manner used to cut the dovetails. A well fitted joint should go together with only light tapping from a mallet and scrap block. If needed, trim further with the chisel.

As for final fit, remember that while a loose, sloppily cut dovetail is neither strong nor attractive, a dovetail that requires hammering to assemble is also unacceptable. When dry-fit, the joint should mate easily with only the slightest resistance. Any tighter than this and you will soon discover that with the application of glue, the wood will swell and the joint will be impossible to assemble.

Now use either the table saw and a dado head (set for 1/4 in. width and 1/4 in. depth), or the router table and a 1/4 in. diameter straight cutter to establish the 1/4 in. by 1/4 in. grooves in both sides for the front and back plywood panels (C). The 1/4 in. by 1/4 in. grooves in the top and bottom parts are stopped 1/2 in. from the ends, requiring that stopblocks be used on the router table. Note that the grooves are located 3/16 in. from the front and back edges respectively.

After a final test fit of the top, bottom, and sides, with the 1/4 in. thick plywood front and back in place, glue up the case, making sure to check for squareness. Allow to dry overnight. Next, with the table saw and fence set up as shown in the detail, rip the case on all four sides to create the chest lid or front. Note that 1/8 in. spacer slips in the kerf and tape across the chest keep all parts in relation when you make the final pass to sever the front. A block plane can be used to clean up the saw marks along the edges.

To make the drawers, first cut a 1/2 in. by 9 in. by 24 1/2 in. long board for the fronts (D and E), and a 3/8 in. by 8 in. by 38 in. long board for the backs



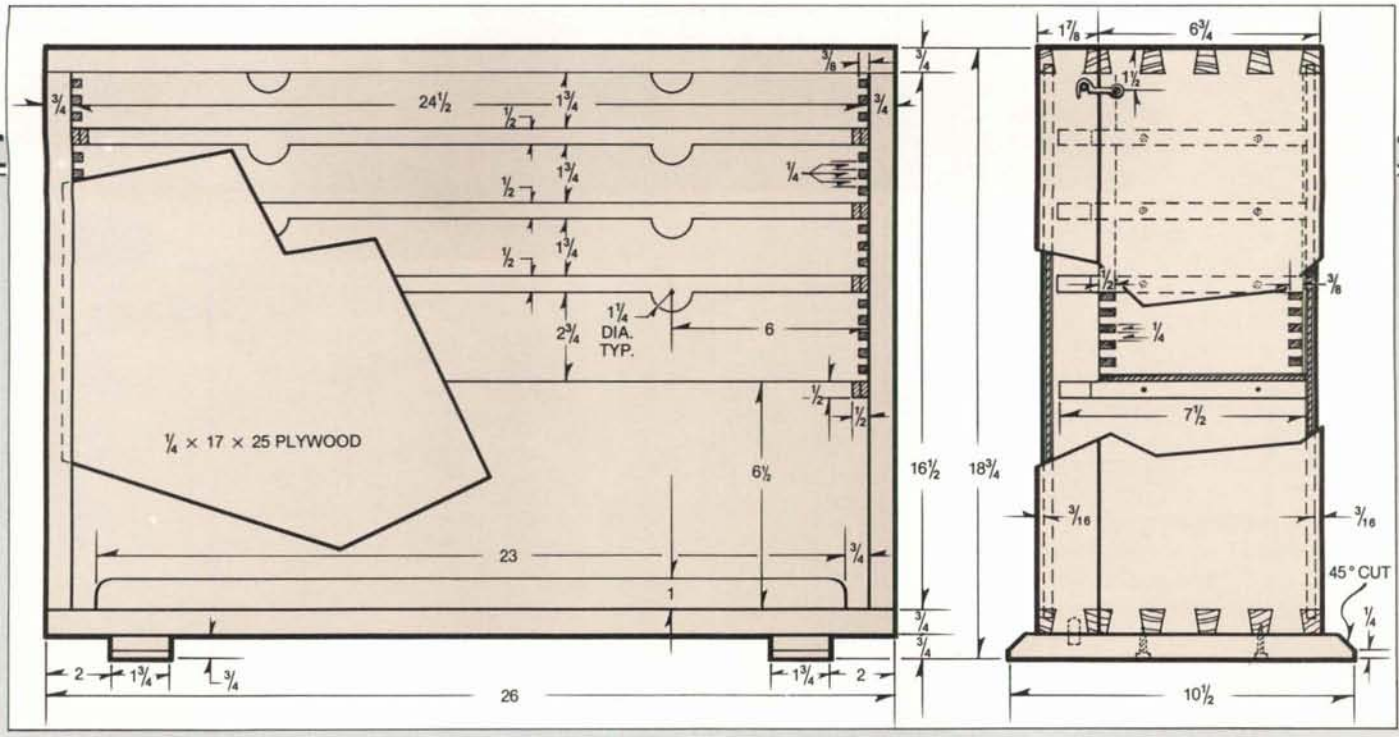
(H and I) and sides (F and G) as shown in the cutting plan. Lay out for and crosscut the drawer divider grooves in both these pieces. These grooves are located to accommodate your tool collection. After boring the 1 1/4 in. diameter holes for the finger pulls in the front stock, rip the boards to create the individual drawer front, back, and side parts. Now, cut the box joints (see front and side elevation for layout) and cut a 1/4 in. by 1/4 in. rabbet on the inside bottom edge of all the drawer fronts to accept the drawer bottoms (J). Glue up the drawer fronts, sides, backs, and bottoms. If the drawer bottoms are cut perfectly square, you can use them to square up the drawer carcases during the glue-up process.

To make the drawer runners (M), rip stock to 1/2 in. by 1/2 in. by 64 in. long. Cut into 7 1/2 in. lengths, taper one end, and drill and countersink the screw holes. Lay out the drawer locations and mount the drawer runners to the case. Also cut the retainer strip (N), round the ends as shown, drill and countersink, and screw in place. The feet (O) are cut to size, tapered, drilled, countersunk, and mounted as illustrated. You may construct wooden turnbuttons and block mounts as needed to secure various tools on the inside of the chest lid (see photo). Drawer dividers (K and L) can be added as needed to compartmentalize the drawers to suit your tool collection.

As you will note, dowel pins located in each foot mate into corresponding holes drilled into the bottom edge of the chest lid. Chamfer the dowel ends to facilitate entry. These dowels serve to index and anchor the lid to the chest. The hook latches mounted on either side of the chest secure the lid at the top. A hasp and lock set could be employed, if you prefer, for security. Should you plan to transport the chest, we suggest that thin wedges be used on the sides of each drawer to hold them tightly closed during the move.

After final sanding, the chest was finished with several coats of penetrating oil. Drawers may be lined with felt (see photo), if desired. For portability, you may want to add chest handles on either side. WWJ

(continued on next page)



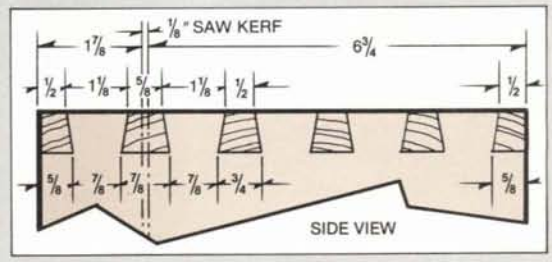

## Bill of Materials
(all dimensions actual)

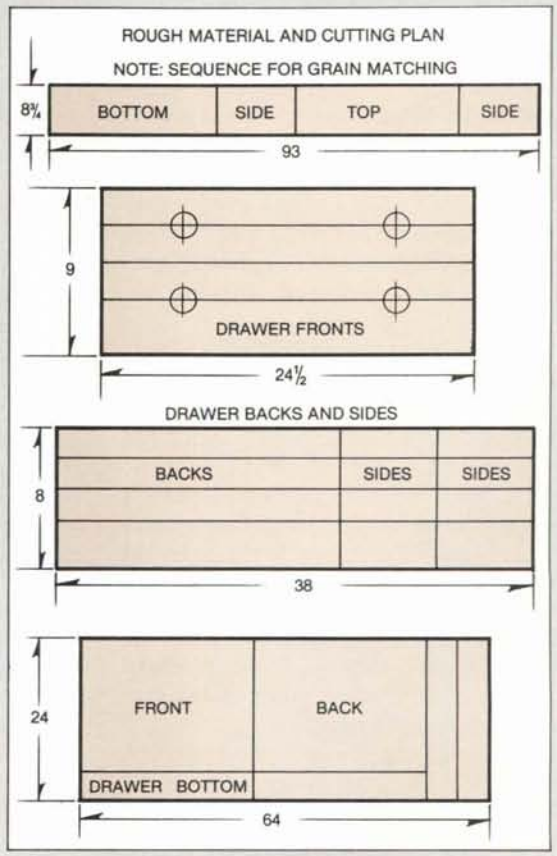
| Part | Description | Size | No. Req'd. |
|---|---|---|---|
| A | Top/Bottom | ¾ × 8¾ × 26* | 2 |
| B | Side | ¾ × 8¾ × 18* | 2 |
| C | Front/Back | ¼ × 17 × 25 | 2 |
| D | Drawer Front (sm.) | ½ × 1¾ × 24½** | 3 |
| E | Drawer Front (lg.) | ½ × 2¾ × 24½** | 1 |
| F | Drawer Side (sm.) | ⅜ × 1½ × 6¼ | 6 |
| G | Drawer Side (lg.) | ⅜ × 2½ × 6¼ | 2 |
| H | Drawer Back (sm.) | ⅜ × 1½ × 24½ | 3 |
| I | Drawer Back (lg.) | ⅜ × 2½ × 24½ | 1 |
| J | Drawer Bottom | ¼ × 6 × 24½ | 4 |
| K | Drawer Divider (sm.) | ¼ × 1½ × 5⅝ | To Suit |
| L | Drawer Divider (lg.) | ¼ × 2½ × 5⅝ | To Suit |
| M | Drawer Runner | ½ × ½ × 7½ | 8 |
| N | Retainer | ½ × 1 × 23 | 1 |
| O | Feet | ¾ × 1¾ × 10½ | 2 |
| P | Hook Latch | 1½ in. long*** | 2 |

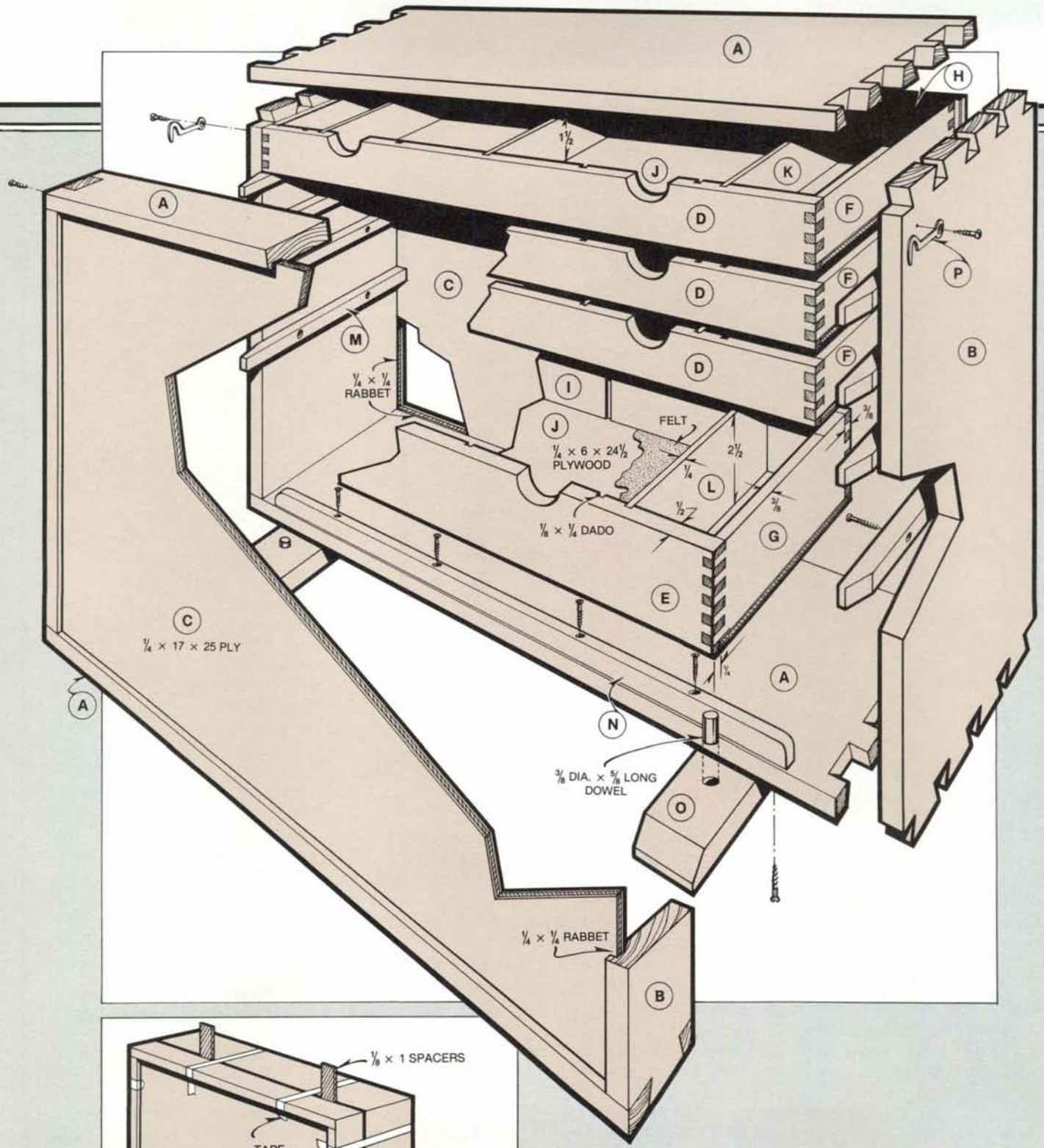
*Note that the width dimension given is for the top, bottom and sides of the chest box *before* they are ripped to create the chest case and chest front (see detail).

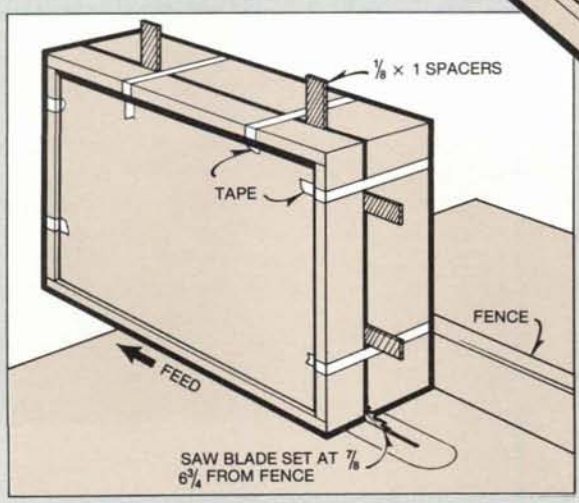
**Note that the small and large drawer fronts are ripped from a single 9 in. by 24½ in. board (see drawer front detail).

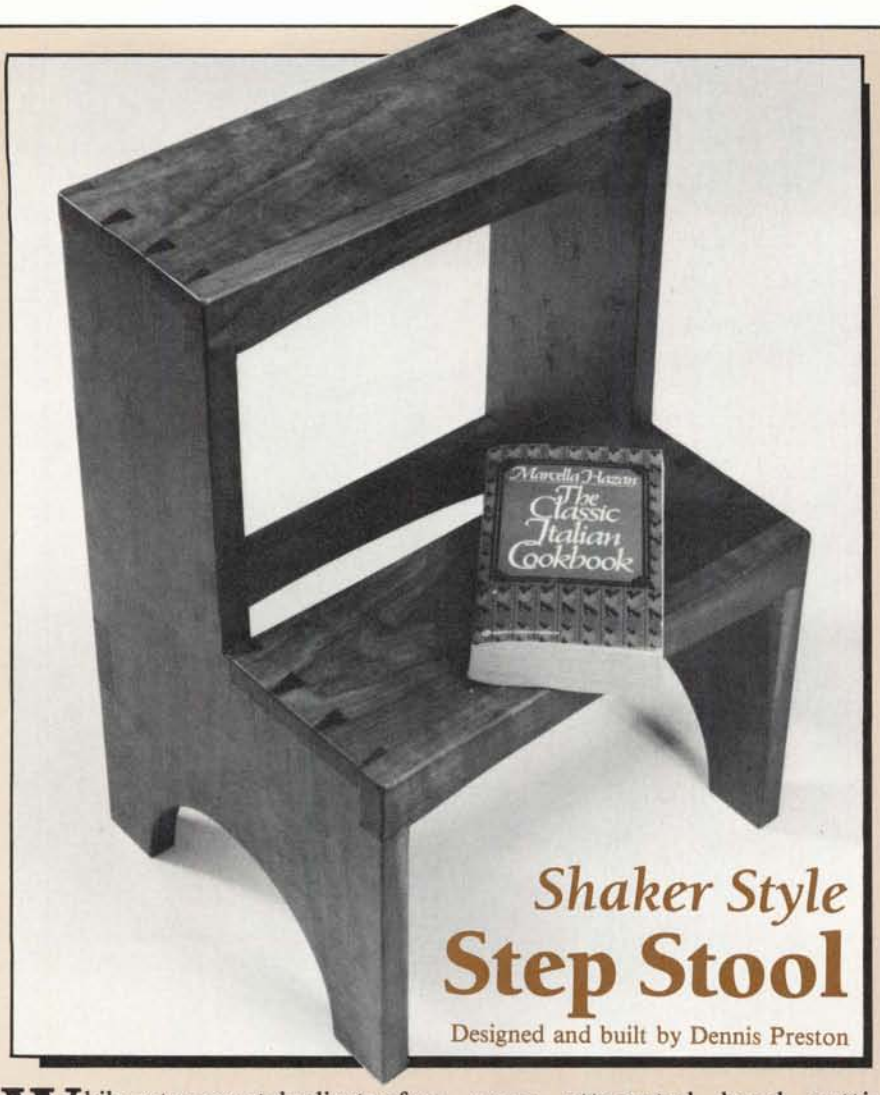
***Available from: Klockit, P.O. Box 629, Highway H North, Lake Geneva, WI 53147. Order part no. 39008, $1.25 each.




A
H
1½
J
K
D
F
A
C
M
¼ × ¼
RABBET
I
J
FELT
¼ × 6 × 24½
PLYWOOD
2½
¼
L
½
⅜
⅛ × ¼ DADO
G
E
C
¼ × 17 × 25 PLY
A
¼
A
N
⅜ DIA. × ⅝ LONG
DOWEL
O
¼ × ¼ RABBET
B
P
B


⅛ × 1 SPACERS
TAPE
FENCE
FEED
SAW BLADE SET AT ⅞
6¾ FROM FENCE




# *Shaker Style* Step Stool

Designed and built by Dennis Preston

While not an exact duplicate of an original Shaker design, Dennis Preston's interpretation is very close to their classic step stool both in appearance and construction. To soften the rectilinear appearance of the stool, Dennis has added a gentle radius to the aprons.

The stool as shown is constructed of cherry, however any hardwood or pine could also be used. For maximum strength be sure to avoid stock with any knots or defects. All parts are ¾ in. thick, making this an ideal project for those who do not have access to a thickness planer and must purchase their stock in standard dimensions, surfaced both sides. As shown in the *cutting diagram*, all the parts can easily be cut from a 1 × 12 × 64 in. long board.

Begin by cutting all stock to length and width. The lengths on the ends into which the dovetails will be cut should be about 1/32 in. oversize so the dovetails can be trimmed or sanded flush after assembly.

This project offers the novice, or the experienced *woodworker* who has never attempted hand cutting dovetails, the opportunity to practice this technique. A good dovetail saw and a sharp chisel are an absolute necessity. If you have decided to make the mallets featured on page 58, this project will be the perfect chance to put them to use.

While hand-cut dovetails are not a particularly difficult technique to master, they do require proper instruction, patience, and practice. Be sure to make a few practice dovetail joints first on some scrap stock before committing your project stock.

Begin by laying out the dovetails on the ends of parts B, referring to the drawings for all dimensions. Ideally, the length of the tail should be equal to the thickness of part A, plus about 1/32 in. Later, when the joint is assembled, the tails will stick out 1/32 in., allowing them to be sanded perfectly flush with the side. As you lay out the dovetail locations, work accurately, and use a hard sharp pencil.

Once the tails have been laid out, mark the waste material between dovetails with an "x" to avoid confusion. Scribe the tail location not only on the face surface of the board, but also on the end grain. Secure the step (B) in a vise and use a fine-tooth dovetail saw to make the angled cuts. Work carefully, cutting on the waste side of the line, just grazing but not removing it.

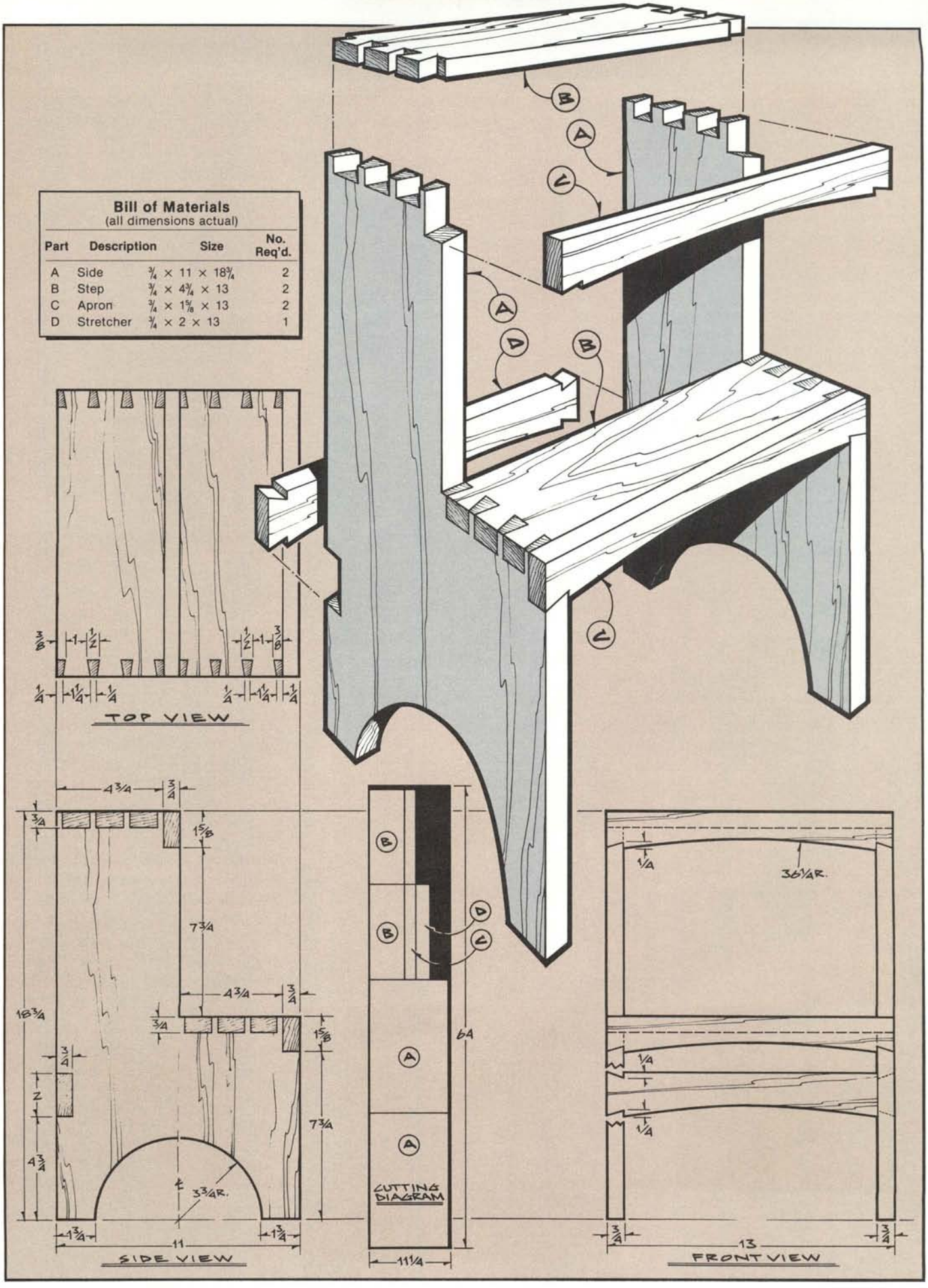
Bring the cuts almost — but not quite — to the scribed bottom line. A coping saw can now be used to cut across the grain, removing the waste. Remove the workpiece from the vise and clamp it flat on the bench over a scrap board, then use the chisel to dress the sides and bottom of the cutouts.

The pins on the sides (parts A) can best be laid out and scribed by using the finished dovetails as a template. To do this, clamp part A in the vise, end up. Lay the dovetailed steps (B) in their proper position on parts A and trace the dovetails with a sharp knife or pencil. Use a square to carry the scribed lines to the face of the board. For reasons mentioned earlier, this distance should be equal to the thickness of B plus 1/32 in.

Once again, mark the waste portions with an "x," then cut out in the manner used to cut the dovetails. A well fitted joint should go together with only light tapping from a mallet and scrap block. If needed, trim further with the chisel. When the fit is good, apply glue to all surfaces and clamp securely. Don't forget to lay out for and cut the dovetails for the aprons and stretchers.

As for final fit, remember that while a loose, sloppily cut dovetail is neither strong nor attractive, a dovetail that requires hammering to assemble is also unacceptable. When dry-fit, the dovetail joint should mate easily with only the slightest resistance. Any tighter than this and you will soon discover that with the application of glue the joint will be impossible to assemble. Although clamps are not usually required with the properly fitted through dovetail joint, you will need to use clamps when mounting the two apron parts. *Tip:* While a conventional compass is used to lay out the 3¾ in. radius on both sides, you will need a string and a pencil to scribe the 36¼ in. radius on the apron parts. Mark the center point on the aprons and scribe a line through it, then use a T-square to check that the aprons are perpendicular to the string at this center line before scribing the radius.

After final sanding, this piece was finished with several coats of a good quality penetrating oil. WWJ


Bill of Materials
(all dimensions actual)
Part Description Size No. Req'd.
A Side ¾ × 11 × 18¾ 2
B Step ¾ × 4¾ × 13 2
C Apron ¾ × 1⅝ × 13 2
D Stretcher ¾ × 2 × 13 1
TOP VIEW
SIDE VIEW
CUTTING DIAGRAM
FRONT VIEW
3¾R.
36¼R.
64
11¼
11
13

# *Turned* Shop Mallets

Mallets are essential for the woodworker. Anyone who attempts to pummel a chisel using a hammer quickly discovers the value of mallets in preserving the chisel's handle.

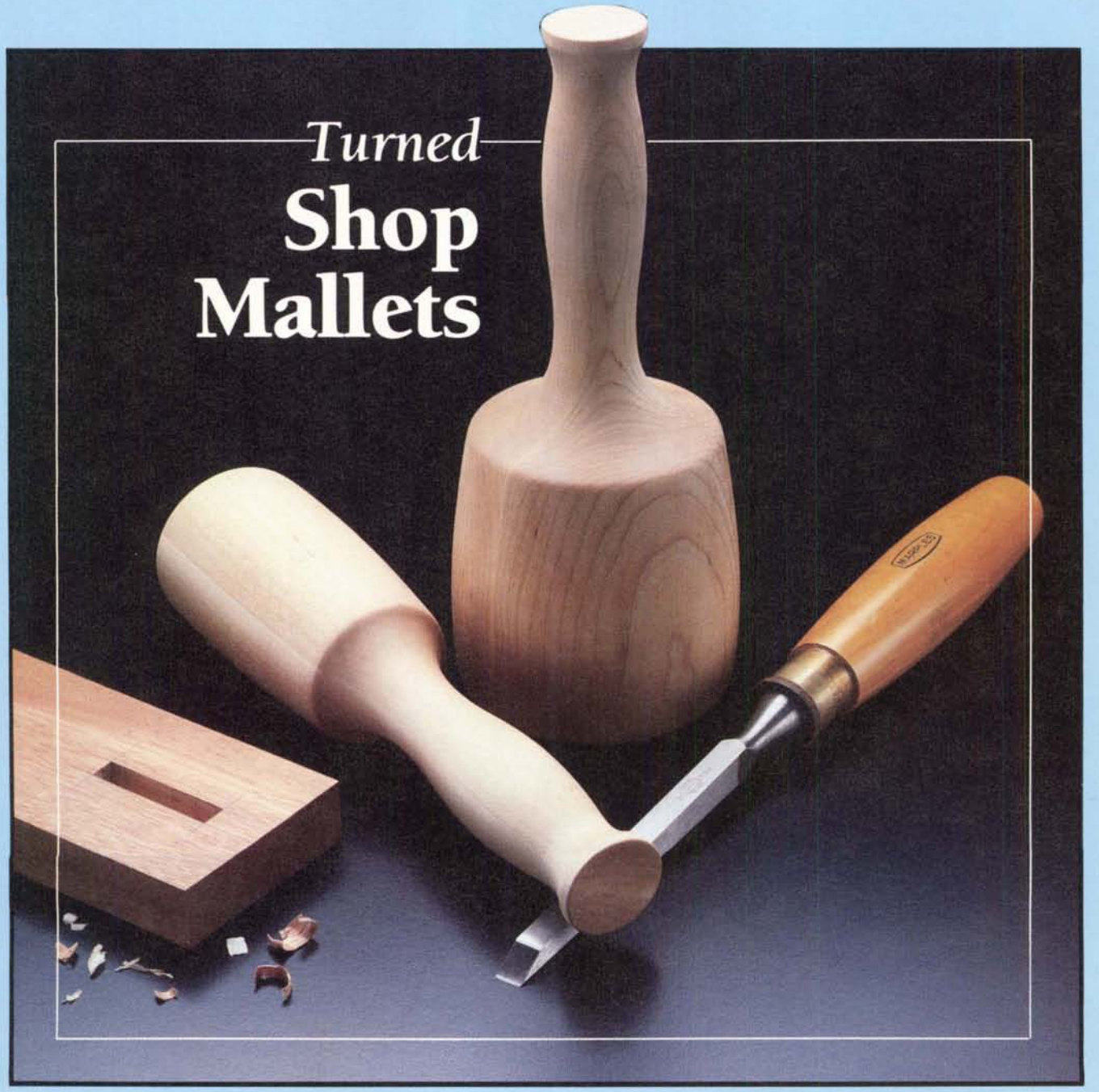
While most commercial mallets are turned from lignum vitae, we found that the yellow sapwood lignum vitae most commonly used for mallets was not available through a retail or mail-order source. This sapwood is considered scrap waste from the milling of the lignum vitae heartwood, and is used because it is relatively inexpensive. Rather than turn our mallets from the costly heartwood lignum vitae, which is typically sold by the pound, we decided instead to use rock maple. Although not as durable or resilient as lignum vitae, rock maple is certainly adequate as mallet stock.

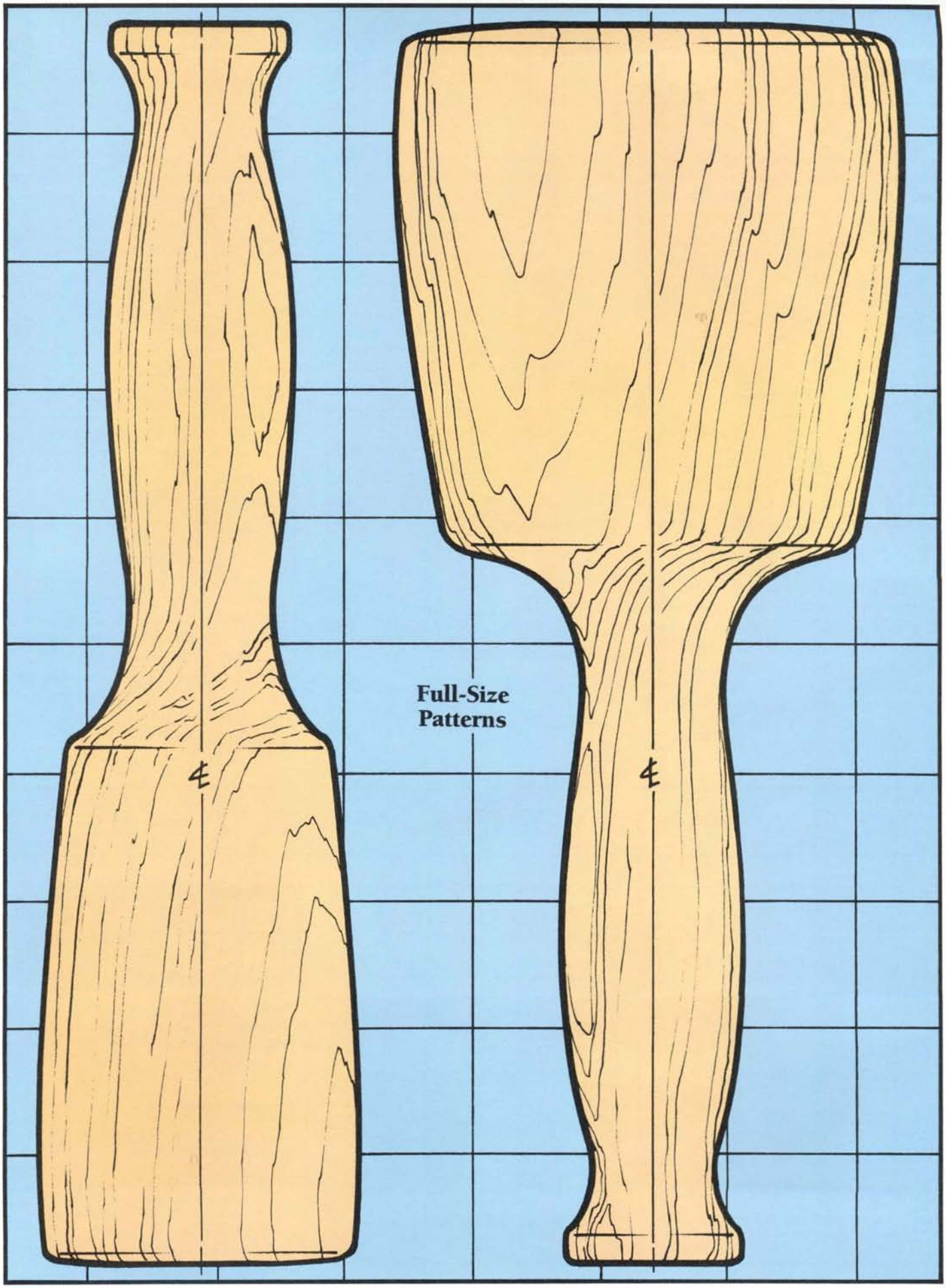
The two mallets we show here are the popular 2½ and 4 in. diameter sizes. Both mallets feature flat bottoms so they can stand on end and not roll off the workbench.

Begin by cutting two turning blanks. The turning blank for the small mallet should be slightly more than 2½ in. square, while the larger turning blank should be slightly over 4 in. square. Both blanks must be about 12 in. long to allow for mounting in the lathe. Next use the table saw, with the blade set at 45 degrees, to trim the corners off each turning blank and create an octagon.

After mounting each turning block in the lathe, turn the mallets. Start by using the gouge to rough in the profile, then use a round nose to clean up, and a parting tool on either end. Final sand the mallets while they are still mounted in the lathe.

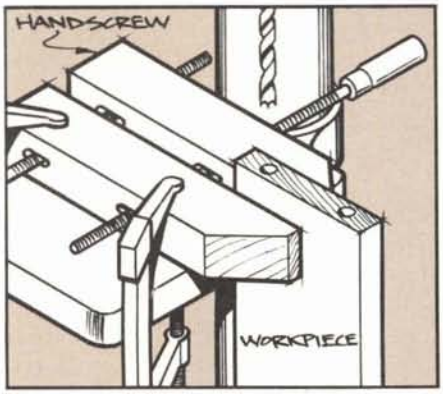
After dismounting, cut off the nubs, sand flush, and finish the mallets with several coats of Watco penetrating oil. Do not use lacquers, polyurethanes, or other surface finishes, which will only chip off through use. WWJ




Full-Size
Patterns

# Shop Tips

Drilling end holes in a long workpiece can be a challenge, however you can make the job easier if you



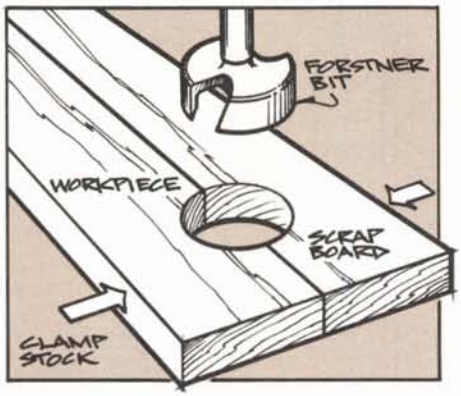

clamp a hand screw to the drill press table as shown. The hand screw acts as a clamp to hold the workpiece firmly in place.

I've used lots of things for spreading yellow glue, but none work better than a plastic picnic fork. Since the glue doesn't stick to the plastic, the fork can be used over and over again. And by breaking off all but one prong, I find it is especially good for getting a coat of glue in dowel holes.

*William Becker, Deep River, Conn.*

Before adding "breadboard" ends, cover the end grain of the tabletop boards with two coats of shellac or other sealer. This will help prevent the penetration of moisture into the boards, thus reducing the amount the top will shrink and expand.

When boring half-circles on the edge of a workpiece, clamp a scrap board against the stock as shown. It will keep




the drill bit from drifting as the hole is bored and it will prevent any splitting or tear-out. A Forstner bit works best for this kind of hole.

Here's an easy way to scribe a lengthwise line on a cylinder. Simply


butt the cylinder up to a piece of flat scrap stock and use a pencil to scribe the line.

*The Woodworker's Journal pays $25 for reader-submitted shop tips that are published. Send your ideas (including sketch if necessary) to:* ***The Woodworker's Journal,*** *P.O. Box 1629, New Milford, CT 06776, Attention: Shop Tip Editor. We redraw all sketches so they need only be clear and complete. If you would like the material returned, please include a self-addressed stamped envelope.*

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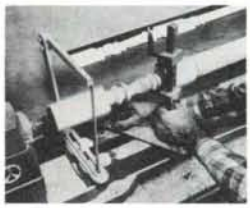

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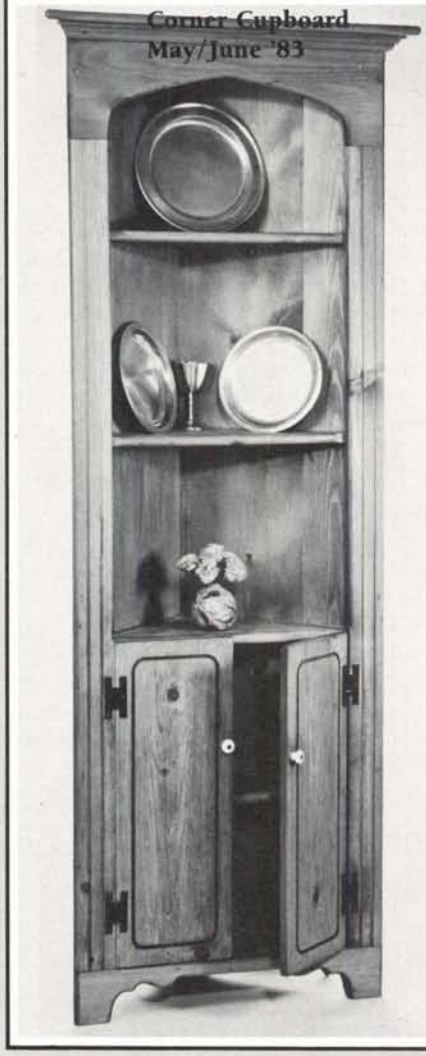


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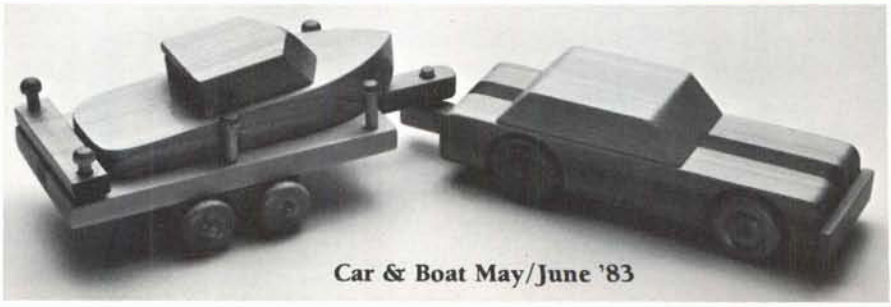

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### Vol. 11 No. 1 Jan-Feb '87

Shaker Blanket Chest, Glass-Top Dining Table, Dovetailed Stool, Jewelry Box, Door Harp, Toy Firetruck, Canada Goose Mobile, Balancing Sawyer Folk Toy, Early American Style End Table, Jointer Push Board, *Articles:* Direct Mail Promotions — Defining the Market for Your Work; Old Wood; The Mortise and Tenon, Part I; Combination Hand/Router Dovetailing; Special Section: Back Issue Index.

### Vol. 11 No. 2 Mar-Apr '87

Shaker Sewing Desk, Garden Bench and Table, Mirrored Wall Shelf, Rhombohedron Puzzle, Wood Sawyer Whirligig, Folk Art Door Stop, Kangaroo Pull Toy, Colonial Pine Wall Shelf, Contemporary Hall Table, *Articles:* How to Create a Direct Mail Promotion; Types of Finish — An Overview; The Mortise and Tenon, Part II; Making Bevel-Edged Drawer Bottoms.

### Vol. 11 No. 3 May-June '87

Display Pedestal, Kitchen Canister Set, Riding Biplane, Contemporary Serving Cart, Napkin Holder, Decorative Planter, Country Vegetable Bin, Pine Medicine Cabinet, Shop Drum Sander, Vienna Regulator Clock, *Articles:* Penetrating Oils and How to Use Them; The Jointer; Veneer, Part I; Decorative Joinery: Dovetail Key Butt-Miter; Caning and Wood Finishing Suppliers.

### Vol. 11 No. 4 July-Aug '87

TV/VCR Cabinet, Early American Style Bookcase, Pine Trash Container, Sturdy Low-cost Workbench, Country Basket, Desk Calendar with Pen & Pencil, Butterfly Pull Toy, Vanity Mirror with Drawer, Apothecary Chest, *Articles:* Shellac; The Hand Plane; Veneer, Part II; Incised Carving; Hardwoods Suppliers.

**Modular Coffee Table & Bar Jan/Feb '85**

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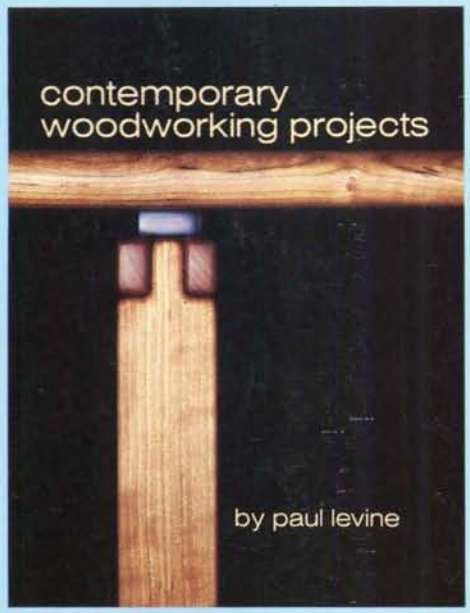
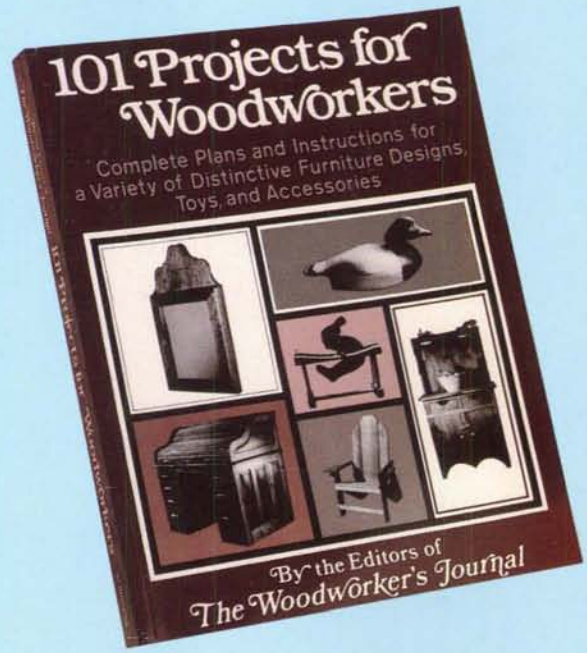



*Dresser*

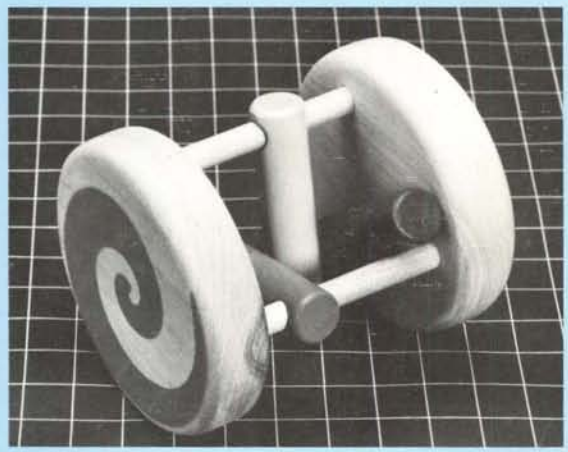
**101 Projects for Woodworkers,** now in its sixth printing, continues to be a favorite source of projects, plans and ideas for all woodworkers. From our classic rolltop desk and antique reproductions to garden furniture, home accessories and great wooden toys, **101 Projects for Woodworkers** is a "must" for the home workshop.




*The order forms for both books are bound between pages 18 & 19 of this issue.*

# *Next issue . . .*

Here are a couple of the projects we've lined up for the November/December 1987 issue of **The Woodworker's Journal**



***Rolling Toy***

***. . . and more***

***Corner Shelf***