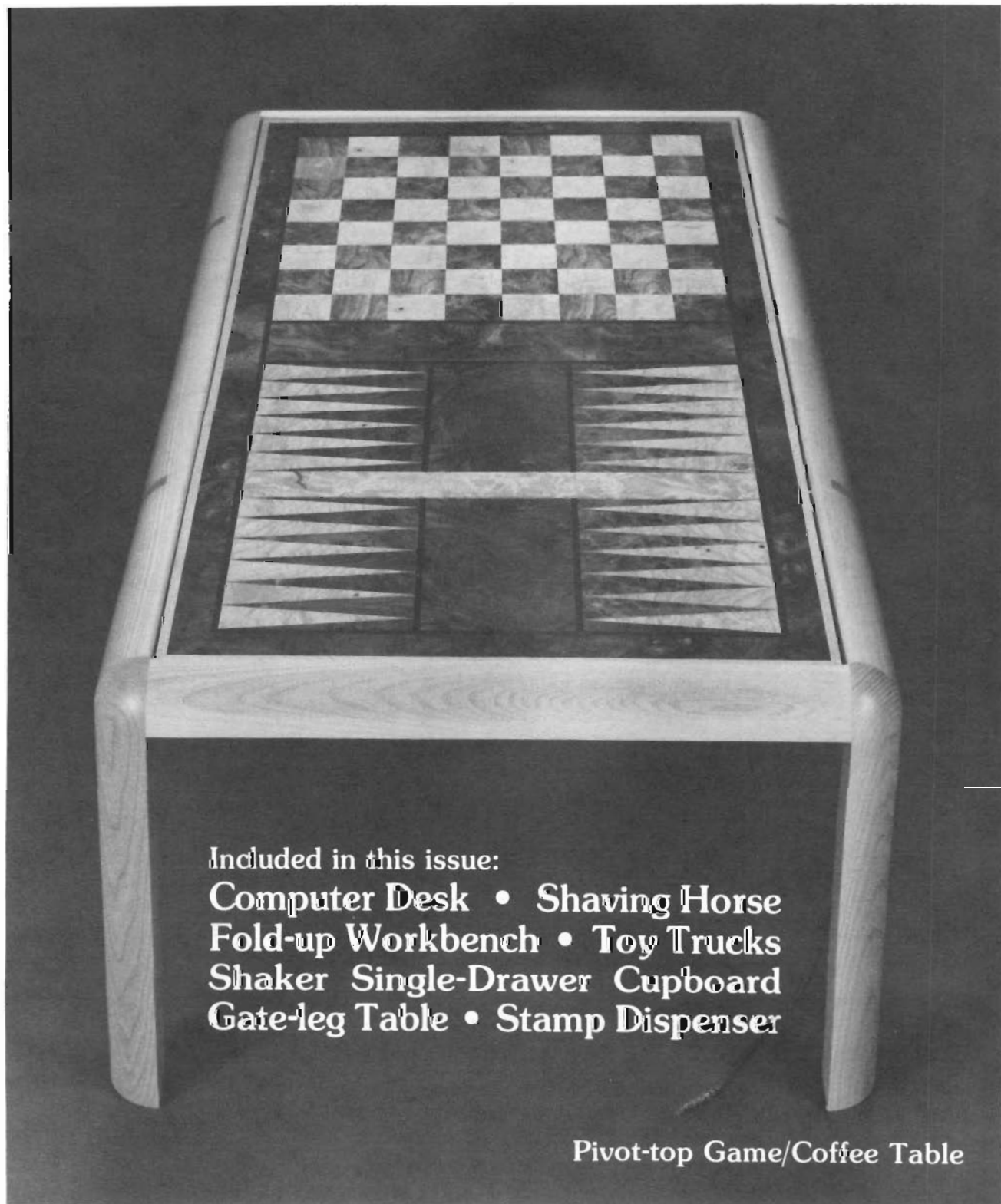


The Woodworker's Journal

Vol. 9, No. 4 \$2.50



Included in this issue:

Computer Desk • Shaving Horse
Fold-up Workbench • Toy Trucks
Shaker Single-Drawer Cupboard
Gate-leg Table • Stamp Dispenser

Pivot-top Game/Coffee Table

July/August 1985

TREND-LINES BEATS ANY AD THIS ISSUE!

Free with any order:

- 1 year (3 - 4 issues) catalog subscription
- Subscription to Woodworking Trends
- Membership in TLC with special offers
- FLITZ tool polish sample
- For special prices ask for code WJJA5

All Freud router bits on sale

New! Freud tool sets

4 Pc. Chisel Sets	19.95
6 Pc. Chisel Sets	31.75
10 Pc. Chisel Sets	52.95
8 Pc. Lathe Set	53.95
6 Pc. Carving Set	59.50
12 Pc. Carving Set	111.50

Free
Wooden
Case!

If a prepaid price for an identical product in our ad is lower, we match the price and give you a gift certificate worth \$5.00 when purchasing from our catalog. Few restrictions apply.

Minimum Order \$15.00

Freight prepaid in all U.S.A. on orders of \$35.00 or more.

Note: Under \$35.00 add \$2.00 per order. Extra charge to Alaska and Hawaii on stationary machines. Typographical errors are rare but do occur. Any error is subject to correction by Trend-Lines. This ad expires August 31, 1985. Watch for our next ad.

FREE CATALOG WITH ORDER OR BY WRITING TO POST OFFICE BOX.

SPECIAL SALE TO READERS OF THIS AD You Must Mention This Ad When Ordering

800-343-3248 USA 800-322-6100 Mass.
617-884-8882 Non-Order Calls

TREND-LINES, INC.

375C Beacham St.
P.O. Box 6447C
Chelsea, Ma.
02150

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or personal check

Open Mon. - Fri. 8:30 a.m. - 5 p.m., 9 - 5 Sat.

30 DAY MONEY BACK GUARANTEE

Examine any item in your home or shop. If it's not what you expected, return it in original condition for a full refund.

Watco Danish Oil Natural, Medium, Dark, Black, or Colors \$5.70 Qt. \$17.65 Gal

Free carbide blade with Delta Contractor's Saw, Sawbuck and Mitre Saw!

NEW MAKITA 2030N PLANER - JOINTER.

2 speed, 14,000 cuts per minute. 13 amp hi tech motor runs 7200 RPM. Planes 12 1/2" width smoothly. \$1475.00 ppd



WOOD DOWEL, BUT-TON AND PLUG KIT Six bins filled with 600 3/8" and 1/2" dowels, plugs and buttons plus a free dowel center set.



DWKIT \$19.95

SQ. RECESS SCREW KIT Six bin unit with 600 #8 woodscrews from 1" to 3", plus screwdriver and power drill bit. SCDKS \$19.95



HARIMA BLADE SHARPENER \$119.95 Blade Holder \$39.95



We honor all Freud specials

RYOBI 10" MITER SAW W/FREE FREUD LU85M10 CUT-OFF BLADE! Includes vise assembly, extensions and dust bag. \$229.95 ppd



FREUD 7 1/4" BLADE SET 3 pc. set with teflon coating. 12 tooth rip, 24 tooth general purpose, 40 tooth fine cutting. \$59.95 ppd



MAKITA TOOLS

1100	3 3/4" Planer Kit	\$199.50
1805B	6 1/8" Planer Kit	264.95
1900BW	3 1/4" Planer w/cs	94.95
2030N	12 1/2" Planer	1475.00
2040	15 5/8" Planer	1175.00
2400BW	10" Miter Saw w/bld	248.95
2401BW	10" Miter Saw w/blade	205.00
2708	Table Saw	228.95
3601B	Router	119.95
3608BK	Router w/cs	84.95
3612BR	3 HP Router	179.95
3700B	Laminate Trimmer	84.75
4200N	4 3/8" Circular Saw	94.95
4301BV	Vr. Sp. Orbital Jig Saw	128.95
5007NB	8 1/4" Circular Saw	98.75
5008NB	8 1/4" Circular Saw	109.95
5012B	12" Chain Saw	119.95
5081DW	3 3/8" Cord. Saw	108.95
5201NA	10" Circular Saw	219.00
5402A	16" Circular Saw	374.50
6000R	Uni-Drill	109.50
6010DL	Cordless Drill w/charger	99.95
6010DWK	Cordless Drill w/charger	99.95
6010SDW	3/8" Rev. Cordless Drill	48.95
6012HDW	Cord. Drill Kit 2-Sp	108.95
6510LVR	3/8" Drill-Rev	73.50
6710DW	Cord. Screwdriver	109.50
6800DBV	Drywall Screwdriver	88.95
9030	1 1/8"x21" Belt Sander	129.50
9035	Finishing Sander	48.00
9045B	Finishing Sander	99.95
9045N	Outfuss Sander	107.95
9207SPB	7" Sander Polisher	139.95
9401	4"x24" Belt Sander	165.00
9501BKT	4" Sander Grinder Kit	89.95
9900B	3"x21" Belt Sander	123.95
9924DB	3"x24" Belt Sander	139.75
BO4510	Finishing Sander	46.95
BO4530	6" Round Finish Sander	57.95
DA3000	3/8" Angle Drill	104.75
DA3000DW	Cordless Angle Drill	104.75
DK1001	Drill (6010D), Charger & Vacuum Cleaner	124.50
DP3720	3/8" Reversible Drill	59.95
DP4700	Drill Reversible	95.95
GV5000	Disc Sander	54.95
HP1030	Hammer Drill	107.50
JG1600	Jig Saw Single Sp.	97.50
JR3000V	Recipro Saw	124.95

PONY CLAMP FIXTURES

No.	Each	Pkg 6
No. 50 3/4" Pipe Clamp	7.30	6.55 ea
No. 52 1/2" Pipe Clamp	6.05	5.60 ea
No. 1215 (WEB) 15"	6.80	6.35 ea
No. 7456 Clamp Pads	2.95	2.50 ea

JORGENSEN BAR CLAMPS

No.	Each	Pkg 6
No. 7224 24"	17.30	15.70 Ea.
No. 7230 30"	18.10	16.45 Ea.
No. 7236 36"	18.70	16.95 Ea.
No. 7248 48"	20.75	18.70 Ea.
No. 7260 60"	22.65	20.55 Ea.
No. 7272 72"	24.55	22.25 Ea.

JORGENSEN CLAMPS (Med Duty)

No.	Each	Pkg 6
No. 3712 12"	5.90	5.35 Ea.
No. 3724 24"	7.30	6.60 Ea.
No. 3730 30"	8.20	7.40 Ea.
No. 3736 36"	8.85	7.95 Ea.

JORGENSEN HAND SCREWS

No.	Each	Pkg 6
No. 3/0 3"	8.45	7.60 Ea.
No. 0 4 1/2"	9.90	8.90 Ea.
No. 1 6"	11.30	10.15 Ea.
No. 2 8 1/2"	13.45	12.15 Ea.

JORGENSEN BAR CLAMPS (5" Reach)

No.	Each	Pkg 6
No. 4512 12" Open	17.45	15.70 Ea.
No. 4524 24" Open	20.85	18.85 Ea.
No. 4530 30" Open	21.90	19.65 Ea.
No. 4536 36" Open	22.90	20.60 Ea.

JORGENSEN & PONY CLAMPS

No.	Each	Pkg 6
No. 3325 3 Way Edging	5.75	5.10 Ea.
No. 1623 3" Hold Down	7.50	6.30 Ea.
No. 3202HT 2" Spring	2.15	1.90 Ea.

RYOBI TOOLS

B7075	3X21 Belt Sander	\$125.00
B7200A	4x24 Belt Sander	189.95
BD1020R	3/8" Cordless Screw driver	109.50
E3800A	Drywall Screwdriver	99.95
JSE-60	Electronic Jigsaw	149.95
L-120U	3 5/8" Planer	105.95
L1232A	1/4" Planer	139.95
LS-35	Finishing Sander	59.95
L-580	6 1/8" Planer	249.95
R-150	1 HP Plunge Router	109.95
R-330	2 HP Router	159.95
R-500	3 HP Plunge Router	189.95
S500A	3x5 1/2 Finishing Sander	46.95
TR-30	Laminate Trimmer	99.95
TS-251UB	10" Miter Saw w/Freud LU85M10 Blade	229.95

MILWAUKEE TOOLS

0228-1	3/8" VSR Drill	\$ 94.95
0234-1	1/2" VSR Drill	114.90
0375-1	3/8" Rev. Angle Drill	117.75
1107-1	1/2" VSR D Handle	144.95
5660	1 1/2 HP Router	184.50
5680	2 HP Router	219.75
5935	4"x24" Sander	214.90
6014	1/2 Sheet Sander	114.95
6255	Vr. Sp. Jigsaw	139.95
6287	H.D. Jigsaw	224.50
6305	6 1/4" Cordless Saw	169.50
6507	Sawzall w/case	124.95
6539-1	Cordless Screwdriver	63.95
6543-1	1/4" Screwdriver	149.95
6749-1	Magnum screw/driver	137.50
6750-1	H.D. Drywall Screw driver	99.95
6753-1	Drywall Screwdriver	84.75

DELTA (ROCKWELL) POWER TOOLS

11-072	32" Radial Drill	\$399.95
22-651	13" Planer	1445.00
28-243	14" Band Saw	535.00
28-283	3/4 HP Bandsaw	775.00
31-730C	Belt and Disc Sander	1350.00
33-150	Sawbuck	519.00
33-990	10" Radial Arm Saw	475.00
34-010S	Miter Saw w/carbide blade	219.95
34-410	10" Contractors Saw	93.50
37-220C	6" Jointer	1250.00
37-255	6" Jointer	495.00
37-315C	8" Long-Bed Jointer	1550.00
40-601	Electronic Scroll Saw	999.95
43-122	Wood Shaper	579.95
46-140	11" Lathe	425.00

ALL Rockwell includes motors

FREUD SAW BLADES

No.	Size	Teeth	Use	Price
CU72M10	10"	40	General	\$34.50
LU73M10	10"	60	Cut-Off	35.70
LU73M12	12"	72	Cut-Off	76.90
LU78M10	10"	80	Plastic	83.50
LU82M10	10"	60	Cut-Off	44.95
LU82M12	12"	72	Cut-Off	85.95
LU84M11	10"	50	Comb.	37.70
LU85M10	10"	80	Cut-Off	63.50
LM72M10	10"	24	Ripping	36.95
DS306	6"	Dado		94.75
DS308	8"	Dado		107.70

SUN GOLD SANDING SHEETS

No.	Grit	Pk of 100
9X11 Aluminum Oxide C Weight		\$21.95
150, 120, 100		23.70
80		28.90
60		32.05
50		38.30

9x11 Non-Loading Silicon Carbide

No.	Grit	A WEIGHT	Pack of 100
400, 360, 320, 280, 240, 220, 180, 150, 120			\$19.60

BLACK AND DECKER INDUSTRIAL TOOLS

1165	3/8" Angle Drill	\$119.50
1179	3/8" VAR. Sp. Drill	74.95
1180	3/8" VSR Holgun*	105.00
1575	3/8" VSR Scrudrill*	119.50
3051	7 1/4" Wormdriver Saw	146.95
3091	10" Miter Saw	199.95
3103	2 Sp. Cut Sawkit	109.95
3105	Var. Sp. Cut Sawkit	119.95
3107	Var. Sp. Orbital Cut	129.25
3265	Laminate Trimmer	145.65
3310	1 1/2 HP Router	145.00
3370-10	3 1/4" Planer	129.95
4010	Palm Sander	48.95
4247	4 1/2" Disc Sander/Grinder	69.95
6750	Heat Gun	69.75

HITACHI TOOLS

B600-A	14 1/2" Band Saw	\$1535.00
CJ65VA	Electronic Jig/Saw	149.95
CR10V	Reciprocating Saw	119.95
C60A	6 1/4" Circular Saw	159.95
C7SA	7 1/2" Circular Saw	69.95
C10FA	10" Miter Saw w/ vise ext.	325.00
C10FB	10" Miter Saw	194.50
C12Y	12" Table Saw	1395.00
D10VC	3/8 Rev. Drill	49.95
DR-10	Cordless Screwdriver	89.95
F1000A	Planer/Jointer	1315.00
P50	6 5/8" Planer	325.00
P100F	12" Planer	1040.00
SB-110	4x24 Belt Sander w/dust bag	199.95
SO-110A	1/2 Sheet Sander	119.95
SB-75	3x21 Belt Sander - 2 Sp w/dust bag	132.75
SB8T	3x24 Belt Sander 2-Sp w/dustbag	165.00
TR-6	Laminate Trimmer	99.95
TR-8	1 HP Plunge Router	149.90
TR-12	3 H.P. Plunge Router	173.50
W6V	Screwdriver	107.50

SUNGOLD X - WEIGHT SANDING BELTS

Size	Grit	10 Belts	50 Belts
3"x21"	120	\$ 98 ea	\$ 84 ea
Assortment of	80	1.00 ea	.86 ea
	60	1.05 ea	.92 ea
10"	12.95	50	1.07 ea
	40	1.10 ea	.96 ea
3"x24"	120	1.20 ea	.93 ea
Assortment of	80	1.22 ea	.97 ea
10"	13.95	50	1.31 ea
	40	1.34 ea	1.18 ea
4"x24"	120	1.68 ea	1.46 ea
Assortment of	80	1.73 ea	1.51 ea
10"	18.95	50	1.85 ea
	40	1.89 ea	1.76 ea

PORTER CABLE

100	7/8 HP Router	\$87.95
167	Block Plane	85.95
309	Laminate Trimmer	79.95
314	4 1/2" Trim Saw	114.95
330	Palm Finish Sander	55.95
337	3x21 Belt Sander w/bag	114.90
360	3x24 Belt Sander w/bag	179.75
362	4x24 Belt Sander w/bag	189.95
505	Finishing Sander	104.75
518	3 H.P. Electronic Router	324.80
690	1 1/2 H.P. Router	129.95
695	1 1/2 H.P. Router/ Shaper	210.50
696	Router/Shaper Table only	109.75
3151	7 1/4" Circular Saw	119.50
9627	2 Sp. Tiger Saw Kit	119.95

TITEBOND WOOD GLUE

\$5.75 Qt.	\$12.95 Gal
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The Woodworker's Journal

JULY/AUGUST 1985 VOLUME 9, NUMBER 4

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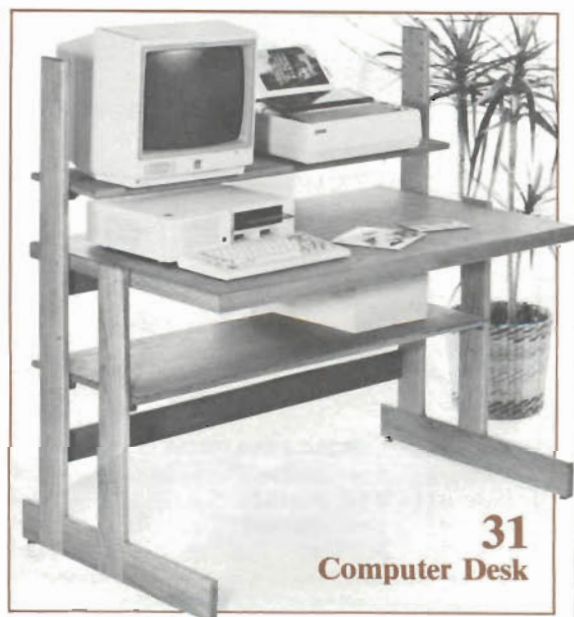
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Computer Desk**

Shoptalk

Summertime

July and August are the months when many woodworkers tend to slack off a bit and abandon the workbench for more outdoor-oriented activities. In spite of this, we haven't slacked off at *The Woodworker's Journal* and have assembled what I think is a pretty impressive collection of projects for this issue. As usual, some are quick and easy and others (like the stunning game/coffee table) are a good challenge. I hope you find more than a few projects to your liking and plenty of helpful woodworking information.

PC Buffs Take Note

I once remarked that I was so ignorant of computer technology that I thought software referred to the dustcover that you put over the computer at night. Things sure have changed in a few years. Like many others, I've come to realize that the personal computer is an extremely valuable tool for those who must deal with words or store and retrieve information.

If, like me, you've decided that personal computers are no longer something to be taken lightly, you'll find in this issue the plans for a computer desk that's handsome, easy to build, and far more practical than the dining room table. So, whether you're into analyzing financial spread sheets or trying to navigate a starship through an asteroid belt, consider building this comfortable and convenient desk. It's a

great home base for your PC and its peripheral equipment, and will help make those sessions at the keyboard more enjoyable and productive.

Adventures in Space

Are you pressed for workshop space? If so, you'll want to check out the nifty fold-up workbench on page 49. This is an easily built and surprisingly sturdy bench made to order for all those woodworkers (including myself) who are sharing work space with two cars and a lot of junk in a garage. Even if you've got plenty of shop space, this little bench will be handy for those sanding, finishing, and odd jobs that might mess up your "good" bench. We've put the prototype to immediate use in our shop and I'm sure going to build one soon for myself.

Book Sale

Over the past few years we've sold many thousands of copies of our book *101 Projects for Woodworkers* at \$22.95 plus \$1.25 snipping charge. Those readers who have been with us a while will recall that the book contains plans from the first 22 issues of *The Woodworker's Journal*. We're planning to reprint the book in a softcover format but before we do, it's necessary that we reduce our remaining inventory of hardcover books. There are only about 750 copies left, so while they last or until September 30th, 1985, you can order a copy at a close-up price of \$16.95 plus \$1.25 shipping charge. A special sale order form can be found bound into this issue and, of course, our money back guarantee still applies if you're not completely satisfied.

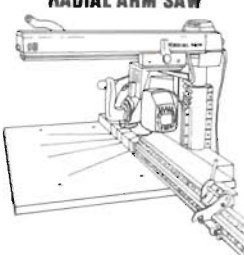
Jim McQuillan

JIGFENCE™ Bolts to Any Tool in Seconds!



Bolt Channel accepts 1/4 inch bolt heads anywhere along its length for versatile attachment.

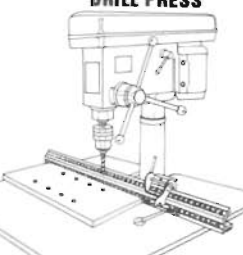
RADIAL ARM SAW



POWER MITER BOX

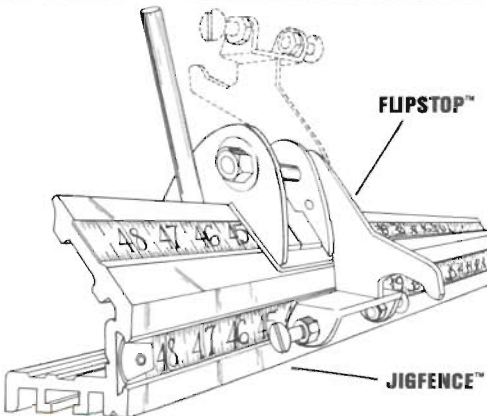


DRILL PRESS



BAND SAW





FLIPSTOP™

JIGFENCE™

WHERE CAN YOU FIND A PRECISION FENCE GAGE SYSTEM THAT'S SUITABLE FOR INDUSTRIAL USE, VERSATILE ENOUGH TO FIT A WIDE VARIETY OF TOOLS, AND PRICED RIGHT FOR THE HOME CRAFTSMAN! HERE! Now for the first time you can buy **JIGFENCE™**, a heavy tempered aluminum fence, and **FLIPSTOP™**, a precision sliding fence gage designed for easy interchangeable use on a variety of common shop tools. **JIGFENCE™** is a rigid extrusion that holds two tapes, the upper fixed tape guides the **FLIPSTOP™** fence gage, the lower adjustable tape allows you to make direct measurements without the stop mechanism. A built in channel in the bottom of the fence accepts 1/4 inch bolts (see detail above) so you can attach the fence to your tools in seconds. Complete instructions are supplied with each fence.

FLIPSTOP™ is the first dust free lever-action gage with fluorescent hairline pointer and retractable stop bar. Its made of 3/16 inch steel, tough enough for years of service—drop it on the floor, you won't hurt it! It locks in an instant with lever action, the smoothest you'll ever see, and the stop bar can be flipped out of the way when not needed. You can use multiple gages for production work to avoid re-setting measurements. Order today, we pay the freight — **MONEYBACK GUARANTEE**

MODELS AND PRICES

Model JF4	1-48" JIGFENCE™	\$25.95
Model JF44	2-48" JIGFENCE™	\$49.95
Model JF7	1-84" JIGFENCE™	\$45.95
Model FSJ	FLIPSTOP™ Fence Gage.	\$49.95

Each fence ordered is supplied with one stick on tape measure. Any 3/4 in. tape refill is suitable for lower tape groove - use one from your shop, or order a 10 ft. refill from us. \$5.95 ea

ORDERING INFORMATION

JIGFENCE™ and **FLIPSTOP™** are available at fine tool stores or by mail from:

AMERICAN DESIGN AND ENGINEERING INC.

648 Turin Ave. / So. St. Paul, MN 55075 / Phone 612-455-4243

Call days, evenings, weekends - Receive \$2 discount on phone orders. Most orders shipped in 24 hours by UPS - Freight prepaid to your door. Pay by check, C.O.D., Master Charge/Visa. Orders should arrive within 5 days - 48 states. Minnesota & Wisconsin residents add Sales Tax.

RYOBI TOOLS		List	Sale
S500A	3x5 1/2" Finish Sander	70	41
SU6200	Finishing Sand 1/2 Sheet	142	88
B7075	3x21" dustless Belt Sand	179	116
B7100	3x24" dustless Belt Sand	208	140
B7200A	4x24" dustless Belt Sand	269	165
D100VR	3/8" VSR 0-1200 rpm drill	91	49
W640	7 1/4" 13 amp circular saw	158	99
W740	8 1/4" 13 amp circular saw	171	109
J560	Jig Saw - Single Speed	172	99
J560	Jig Saw - electronic speed	198	123
R150	1 H.P. Plunge Router	138	86
R330	2 H.P. Router	220	138
R500	3 H.P. Router	265	163
E3800	Drywall screwdriver 0-4000 rpm	126	79
L120U	3 5/8" Planer	142	89
BD1820R	3/8" 2-sp Cordless drill w/ free holster Xtra special buy	148	95
TS251U	10" Mitre Box	300	185
SG1150C	4 1/2" H.D. Mini-Grinder	99	59

MILWAUKEE TOOLS		List	Sale
0224 1	3/8 drill 4.5A magnum	154	109
0234 1	1/2 drill 4.5A magnum	159	115
0244 1	1/2 drill 4.5A magnum	159	115
0222 1	3/8 drill 3.3A 0-1000 rpm	139	99
0228 1	3/8 drill 3.3A 0-1000 rpm	129	95
0375 1	3/8 cordless quarter drill	168	118
0210 1	3/8 cordless drill	154	114
6539 1	cordless speed driver	84	64
1097 1	1/2" drill 4.5A D-Hdle	199	145
1107 1	1/2" drill 4.5A D-Hdle	199	145
3300 1	magnum rt angle drive kit	239	170
3102 1	Plmbrs rt angle drill kit	253	180
1676 1	HD Hole Hwg w/ice 2 sp	323	225
5395	3/8 sgle sp hammer drill kit	203	150
5397	3/8 vsp sp hammer drill kit	208	155
5371 1	HD mag hammer drill 3/8"	287	207
5373	HD mag ham drill 3/8"	240	175
6507	TSC Sawzall w/ice	184	125
6511	2 speed Sawzall w/ice	172	123
6226	port band saw 2 sp w/ice	382	280
6234	TSC band saw port w/ice	382	280
6365	7 1/4" circ saw 13 amp	159	109
6405	8 1/4" circ saw 13 amp	179	127
6460	10 1/4" circ saw 15 amp	199	145
6377	7 1/4" HD worm saw 13 amp	235	155
6378	8 1/4" HD worm saw 13 amp	249	165
6165	12" Chop Saw 15 amp 4200 R.P.M.	267	189
6170	14" Chop Saw 15 amp 3600 R.P.M.	289	209
6255	visp Jig Saw 3.8 amp	199	140
6245	sple sp Jig Saw 3.8 amp	175	125
6287	HD visp Jig Saw w/ice 2.3	312	225
6012	1/2 sheet HD Orb sander	149	110
6014	1/2 sheet HD Orb sander	159	115
5935	4" by 24" belt sander w/ibag 10 amp	299	215
5900	3" by 24" belt sander 9.5 amp	355	255
5660	1 1/2 HP router 10 amp	256	185
5680	2 HP router 12 amp	314	220
8950	Wet/Dry 8 gal vac 6 amp	136	110

BENCH GRINDERS		List	Sale
4901	1/2 HP 2.6 amp 24"	149	110
4921	1/2 HP 4 amp 26"	169	130
4891	1/2 HP 4 amp 24"	269	195
5041	1/2 HP 8.2 amp 58"	369	270

DRYWALL SHOOTERS		List	Sale
6753 1	3.5 amp 0-4000 rpm new	115	85
6747 1	4.5 amp 2500 rpm	144	100
6750 1	4.5 amp 0-4000 rpm	144	100
6751 1	4.5 amp 4000 rpm	144	100

FREUD SAW BLADES		List	Sale
Item No.	Description	Diag.	Teeth
PS203	Gen'l Purp.	7 1/2"	24
PS303	fine cutting	7 1/2"	40

5/8" Bore — Industrial Grade CARBIDE TIPPED SAWBLADES		List	Sale
Item No.	Description	Diag.	Teeth
LU72M010	Gen'l Purp.	10"	40
LU81M010	Gen'l Purp.	10"	40
LU73M010	Cut-Off	10"	60
LU82M010	Cut-Off	10"	60
LU84M010	Combination	10"	40
LU84M011	Combination	10"	50
LU85M010	Super Cut Off	10"	60
LM72M010	Ripping	10"	24
DS 306	8" Dado		
OS 308	8" Dado		
TR 100	3 blades & Dado set		

STICK CORNER TITEBOND Wood Glue		List	Sale
Qty.	Price	5 Gal Pail	448.95
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Go Cordless with MILWAUKEE		List	Sale
#6305	8 1/4" Cordless Circular Saw 12 volt — 1 Hour Charge Cuts (80) 2x4's (Pine)	195.00	135.00

MAKITA Model 2708 — 8" Table Saw		List	Sale
8" Table Saw		\$336.00	\$199.95
Holder Set		28.00	23.95
Carbide Blade		19.00	16.95
Table Saw Stand		48.00	39.95
Buy Each Piece Separately			\$280.80
or Buy Total Package for			\$275.00
MSL 1400 — 14" Mitre Box w/ibag & blade			
List Price \$68			SALE PRICE 398

MAKITA TOOLS		List	Sale
804510	Sander	79	43
9900B	3 1/2" 21" belt sander	198	124
9924B	3 1/2" 24" belt sander	204	135
99240B	3 1/2" 24" bisand w/ibag	214	140
9035	1/2 sheet finish sander	79	48
9045B	1/2 sheet finish sander	156	100
9045N	1/2 sheet finish sander	170	110
4200N	4.38 circ saw 7.5 amp	152	95
5008NB	8 1/4" circ saw 13 amp	178	110
5201NA	10 1/4" circ saw 12 amp	348	225
5402A	16-5/16" 12 amp	468	375
4300BV	visp jig saw 3.5 amp	192	120
4301BV	orb visp jig saw 3.5 amp	208	130
2401BW	10" mitre saw	319	185
2400BW	10" mitre saw (for vice)	359	249
6010DW	2 sp recip saw w/ice	168	120
JR3000V	vs recip saw w/ice	178	125
6010DW	3/8 cordless drill w/ice	152	89
5081DW	3/8" cordless saw kit	165	109
1900BW	3 1/2" planer w/ice	154	95
1100HD	3 1/2" planer w/ice	278	165
2805B	6-1/8" planer w/ice	416	265
3608BK	1/4 hp router w/ice	132	85
3601B	1 3/8 hp router	198	120
3700B	1/2 hp trimmer	124	85
DA3000	3/8" angle drill	158	105
DP4700	1/2 visp w/ice 4.8 amp	154	96
HP1030W	3/8 v.s.r. hammer drill w/ice	145	98
6300LR	1/2" angle drill w/ice	229	152
84198B	2 1/2" sp. hammer drill w/ice	238	150

DRYWALL SHOOTERS		List	Sale
68000B	2500 rpm 3.5 amp	123	79
68000BV	0-2500 rpm 3.5 amp	133	89
68010B	4000 rpm 3.5 amp	123	79
68010BV	0-4000 rpm 3.5 amp	133	89
2030	12" planer/jointer	1980	1350
2040	15-5/8" planer	1780	1195

NEW from MAKITA		List	Sale
9207SPC	7" Electronic Sand/Polish	209	130
OK1001	drill (6010D) charger/vac	178	125
6010SDW	3/8 cordless drill, rev.	82	45
DA3000DW	3/8 angle drill, cordless 700 7.2 volt	172	105

DELTA		List	Sale
33890	12" Radial Saw featuring "Turret-Arm" Action	1280	975
33990	Deluxe 10" Radial saw	589	475
34621	9" contr. saw w/ motor	500	395
34410	10" contr. saw w/ motor	871	650
34710	super 10" motorized saw	579	450
34010	motorized mitre box 9"	231	169
15091	15" floor model Dipress	467	375
15090	15" bench model	467	375
37207	Saw/Jointer Combination	1018	810
37609	6" Motorized Jointer	413	335
37290	4" deluxe Joiner w/ motor	346	275
22651	RC-33 — 13" Planer	1943	1450
43122	Wood Shaper w/stand and 1 HP Motor	669	495
46140	11" lathe, gap bed model w/stand w/ motor	407	335
52493	1 hp motor for #34-621	170	130
62402	1 1/2 hp motor for #34-410	230	170
62144	1/2 hp motor for #37-290	136	105
62142	1/2 hp motor for #28-243 and #46-140	121	85

SKIL TOOLS		List	Sale
551	5 1/2" Circ Saw 65A	99	75
77	7 1/2" Worm Saw	240	139
367	6 1/2" Worm Saw	239	149
825	8 1/2" Worm Saw	270	185
807	7 1/2" Skilsaw 13A-Super	153	100
808	8 1/2" Skilsaw 13A-Super	172	110
201602	3/8" Cordless Drill complete W/Charger Case & 2 batteries	199	99
3104	10" Band saw 4.2 amp vs.	195	150
31028	1/4 Table saw 2hp 10amp	190	145

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#28-283 14" Band Saw		List	Sale
with Open Stand without Motor		\$594.00	\$440.00

#22-651 13" Planer		List	Sale
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from MAKITA		List	Sale
#9501-B 4" Grinder Kit		\$119.00	\$4.95
#5007 NB 7 1/2" Circular Saw		\$158.00	\$94.00

JORGENSEN HAND SCREWS		List	Sale
Model	Jaw Length	Open Cap.	Box of 6
#50	4"	2 1/2"	11.59 7.25 38.15
#40	5"	2 1/2"	12.45 8.10 43.75
#30	6"	3"	13.35 8.50 45.95
#20	7"	3 1/2"	14.35 8.95 48.35
#10	8"	4 1/2"	15.37 9.95 53.75
#1	10"	6"	18.25 11.35 61.25
#2	12"	8 1/2"	20.94 13.50 72.95
#3	14"	10"	26.56 16.75 91.35
#4	16"	12"	34.55 23.75 128.25

JORGENSEN BAR CLAMPS		List	Sale
Model	Jaw Length	List	Sale
#3706	6"	7.88	5.50 29.70
#3712	12"	8.73	5.95 32.13
#3718	18"	9.64	6.95 37.53
#3724	24"	10.54	7.35 39.69
#3730	30"	11.76	8.25 44.55
#3736	36"	12.85	8.95 48.33

STYLE 39 — 3 1/2" Throat 5/16" x 1"		List	Sale
#3906	6"	18.89	12.95 69.95
#3908	8"	19.45	13.50 72.95
#3912	12"	20.69	14.50 78.00
#3918	18"	22.55	15.85 85.50
#3924	24"	24.45	17.25 93.00
#3930	30"	26.16	18.35 99.00

STYLE 45 — 5" Throat 5/16" x 1 3/8"		List	Sale
#4506	6"	22.49	15.95 86.15
#4508	8"	23.04	16.50 89.10
#4512	12"	23.85	17.50 94.50
#4518	18"	25.16	18.95 102.35
#4524	24"	26.61	20.95 113.15
#4530	30"	28.06	21.95 118.50
#4536	36"	29.54	22.95 123.95

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X-TRA SPECIALS		List	Sale
MAKITA TOOLS		List	Sale
6010DL	Cless Drill w/flashlight charger & case	162	90
DP3720	3/8 drill Rev. 0-1800 rpm	88	50
6510LVR	3/8 drill Rev. 0-1050 rpm	114	67
6013BR	1/2" Drill Rev. 6 amp	174	100
5402A	16" Circular Saw-12 amp	468	315
2414	14" Cut Off Saw-13 amp	282	169
3612BR	3 HP Plunge Router	286	180
9401	4x24 belt Sander w/ibag	279	165

PORTER-CABLE		List	Sale
630	1 HP Router	135	95
691	1 1/2 HP Router D-handle	210	145
696	H.D. Shaper Table	150	105
695	H.D. 1 1/2 hp Router/Shaper	278	190
514	2 1/2 HP Router 12 amp	435	315
399	Drywall Cut-Out Unit	100	70
736	V-Speed Speedronic Band Saw	450	330
7564	1 1/2" X.H.D. Drill 8 amp	205	145

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Letters

In the March/April 1985 issue of *The Woodworkers Journal*, you mentioned the fact that readers could obtain owner's manuals and parts lists for old Sears power tools by addressing a letter of request to Mr. Harold Voortman, Dept. 731A/698 at Sears Tower. Your mention is appreciated as we are happy to give assistance to our customers in any way we can, however, future requests should be directed to Sears Service and Repair centers.

Our service centers maintain a listing of active parts for most of our power tools on microfiche. If a customer is seeking information about a vintage model we are better equipped to handle his/her request at the local level. In most cases, manuals and parts lists for these vintage models are not available. Readers may check for their nearest service center through the yellow pages or inquire at their local store.

Mike Mangan,
Marketing Communications,
Sears Roebuck and Company

I thought your article "Installing Machine Woven Cane" (March/April 1985 issue, page 23) was well done — at least up until the last few paragraphs. At that point we began to differ regarding the use of glue. Removing cane and spline that has been glued in place is not an easy job, even if hide glue, which is water soluble, is used.

Over the past 20 or 30 years I've had occasion to recane several hundred chairs — many of them done with machine woven material. I never use glue to keep cane or spline in place. If the spline is the right size it will hold the cane for years. Some 25 years ago I used machine woven cane, without glue, to do several of our chairs. I still have them and the cane remains snug.

Sometimes when recaning an old chair, I'll find that, at one or more points, the spline groove has worn too wide. Since the spline can't fit snugly where the groove is too wide, I'll use glue — but only at those points when the fit is sloppy.

John W. Olson, Punta Gorda, Fla.

My first whirligig (a woodchopper) was made in 1961. It was for my daughter who, at that time, was less than one year old. He chopped

faithfully for eighteen summers with only an occasional replacement of the linkage. I used 1/8 in. diameter brazing rod for a tough waterproof link. Now, 24 years and three grandchildren later, I'm back making whirligigs.

I made the Windspinner (as pictured on page 43 of your March/April 1985 issue) on the same afternoon the magazine arrived in the mail. I used some leftover cedar closet lining and it's quite handsome — and works perfectly.

Bob Wade, Bloomfield, Conn.

Editor's Note: Several readers who have made the windspinner have told us that if a standard brass fishing swivel is used, it doesn't take too long before the swivel wears and breaks. We've also learned that ball-bearing brass fishing swivels are available and that they work much better. Check your local sporting goods dealer or hardware store. One manufacturer we know of is Sampo in Barneveld, New York.

In the Volume 9, Number 2 issue of *The Woodworker's Journal* (March/April 1985) you described the construc-

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tion of one of the many variations of the six piece burr puzzle, or the "Chinese Puzzle" as it was called in the article. While the Chinese are famous for their wooden puzzles, as you noted, others in the field deserve credit for their contribution to the originality of the design and manufacture of wooden puzzles. One in particular should be mentioned. He is Stewart T. Coffin of Lincoln, Mass. Readers of your magazine will be pleased to know that I am coordinating a fascinating exhibit of all of Mr. Coffin's puzzles. The puzzles will be exhibited from October 1 through October 31, 1985 at the Worcester Public Library, Salem Square, Worcester, Massachusetts. More than 100 of the puzzles designed and made by Mr. Coffin will be on display, many of them made of rare woods. There will be duplicate models of many of the puzzles so that they can be shown assembled and apart. Books, journals, and magazine articles on the subject of puzzles from my collection will also be exhibited.

Further information on the exhibit can be obtained by calling Penny Johnson at the Worcester Public Library (617-799-1660) or myself

(617-757-2124). I thank you for bringing a notice of the exhibit to the attention of your readers.

Joseph E. Lemire, Auburn, Mass.

Odds and Ends

The twelfth annual "Vermont Weekend" woodcarvers exhibit, one of the largest woodcarving exhibits in New England, will be presented at the American Legion Hall in Morrisville, Vermont on Saturday, August 17, 1985. Carvers are invited to participate, and the public is urged to attend. For more information contact C.A. Brown, Box 268, Waterville, VT 05492 (telephone: 802-644-5039).

On Saturday, August 3rd, at the Vermont State Craft Center at Frog Hollow, Michael Scott, editor of The Crafts Report will conduct a full day seminar on various business topics of interest to craftspeople. The seminar cost is \$20.00. For more information, call or write the Vermont State Craft Center at Frog Hollow, Mill Street, Middlebury, VT 05753 (telephone: 802-388-3177).

"NCC 6", the Nebraska Crafts Council's annual show will be held at the College of St. Mary's in Omaha, Nebraska on September 8-26. To be eligible you must work in a craft related field and be a resident of Nebraska, Colorado, Wyoming, South Dakota, Iowa, Missouri, or Kansas. Cash awards will be given. For more information send a self addressed stamped envelope to: NCC, P.O. Box 1202, Kearney, NE 68847.

Woodworking: Tools of the Trade '85 — A hand and power tool exposition for amateur and professional woodworkers. Friday, September 13 — 1 to 9 p.m.; Saturday, September 14 — 10 a.m. to 6 p.m., and Sunday, September 15 — 11 a.m. to 4 p.m. Westfield Armory, 500 Rahway Avenue, Westfield, NJ. Admission — \$5. Special seminars on topics including promoting the small business, reproducing Windsor chairs, using band saws and improving dovetail joinery — \$10 each. For additional information and seminar reservations, contact Force Machinery Co., 201-688-8270 or Garrett Wade Co., Inc. 212-807-1155. W&J

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Height (from floor)	33"	33"
Cutting Capacity	8"	12"
Depth	1/2"	1/2"
Rabbeting	3/4" x 5/8"	3/4" x 5/8"
Cutter Head No. of knives	3	3
Diameter	3-1/2"	4-1/4"
Speed	5,000 RPM	5,000 RPM
Electric motor	2HP, 220V, 1PH	3HP, 220V, 1PH
Fence Length	35-1/4"	44"
Height	3-1/2"	4-1/4"
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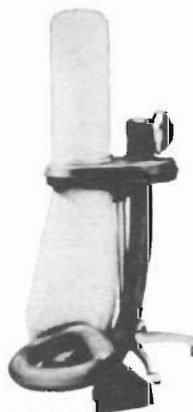
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Readers' Information Exchange

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 am seeking any information or literature pertaining to Pringle & Brodie Machinery Co., 512-514 So. Canal St., Chicago, IL.

To be specific, I have recently purchased an old production wood lathe, no. 251, and would like to know if this company is still in business, how long ago did they begin production, if there are any available catalogs, etc.

Russ Cerny
6140 Round Lake Rd.
Vermontville, MI 49096

I am just beginning to set up my woodworking shop on a very limited budget and would appreciate knowing if anyone in my area has an inexpensive used 12 or 16 in. disc sander for sale.

Earl D. Anderson
705 Mason Run
Pine Hill, NJ 08021

I am currently restoring an old iron woodworking vise of unknown make. It has a quick-action release threaded screw, but no worm-type mechanism in the housing. The screw is 1 1/4 in. diameter, and the pitch is 4 threads per in. If you have the worm-type part or parts, please write to me.

Javier Silva
1274 Coates Ave.
Los Angeles, CA 90063

I am looking for the original parts list and manual for an old Sears Craftsman 12 in. band saw, model no. 103.0103. I will reimburse any copying cost and postage.

Dennis Goodwin
2185 Woodland Ave.
Cookeville, TN 38501

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Workshop Income

Product Liability, Part II

by Leonard D. DuBoff

Editor's Note: The first part of this feature, dealing with the history of liability laws, how the law works, the limits and extent of liability, and how responsibility is determined, appeared in the May/June 1985 issue of The Woodworker's Journal, Volume 9, Number 3.

Our thanks to Madrona Publishers for permission to excerpt this article from Mr. DuBoff's book, *The Law (In Plain English) For Craftspeople*. It can be ordered from your local bookstore or by writing to: Madrona Publishers, P.O. Box 22667, Seattle, WA 98122. The cost is \$8.95, postpaid.

The second category of defects, design defects, can be further subdivided: those that are and those that are not a violation of a statute. A 1959 case contains a good example of how far a court might go in defining a design defect. A rather obese woman entered a store and sat in a chair of contemporary design that the store had for sale. The back of the chair curved elegantly into the seat, which in turn curved down and around to form the base of the chair. It was along these serpentine curves that our overweight customer slid onto the floor. The injury to her pride was aggravated by an injury to her spine. The court held that the shape of the chair was defective, and awarded her \$25,000 in damages.

In defective-design cases the courts have usually adhered to a common-sense criterion. If the product conforms to the state of the art when it was made it will usually not be held defective. The state of the art is *not* the same as industry-wide standards. Industrywide standards may be introduced

"There are two things that a seller might do to protect himself. First, he can incorporate. . . the second method of self-protection is to obtain insurance."

in evidence, but it cannot be assumed that these assure due care. This is because the law will not allow an industry to adopt sloppy practices in order to save money or time when better, more protective methods are available. The state of the art, on the other hand, is the measure of how far technology in the field has advanced, and this will determine the norm for an industry.

A design may be defective if it does not meet the standards set forth in a statute. No product should be sold for consumer use before a check has been made to see whether it is covered by a consumer-protection law. A violation of these laws may carry criminal sanctions. In some jurisdictions, consumers injured by a product have proven their case by merely proving that a statute was violated in the production or sale of the product. The manufacturer would then have the burden of establishing that the injury was not the result of the statutory violation, which would be almost impossible in cases where the law had been enacted to prevent the very type of injury complained of.

(continued on page 13)

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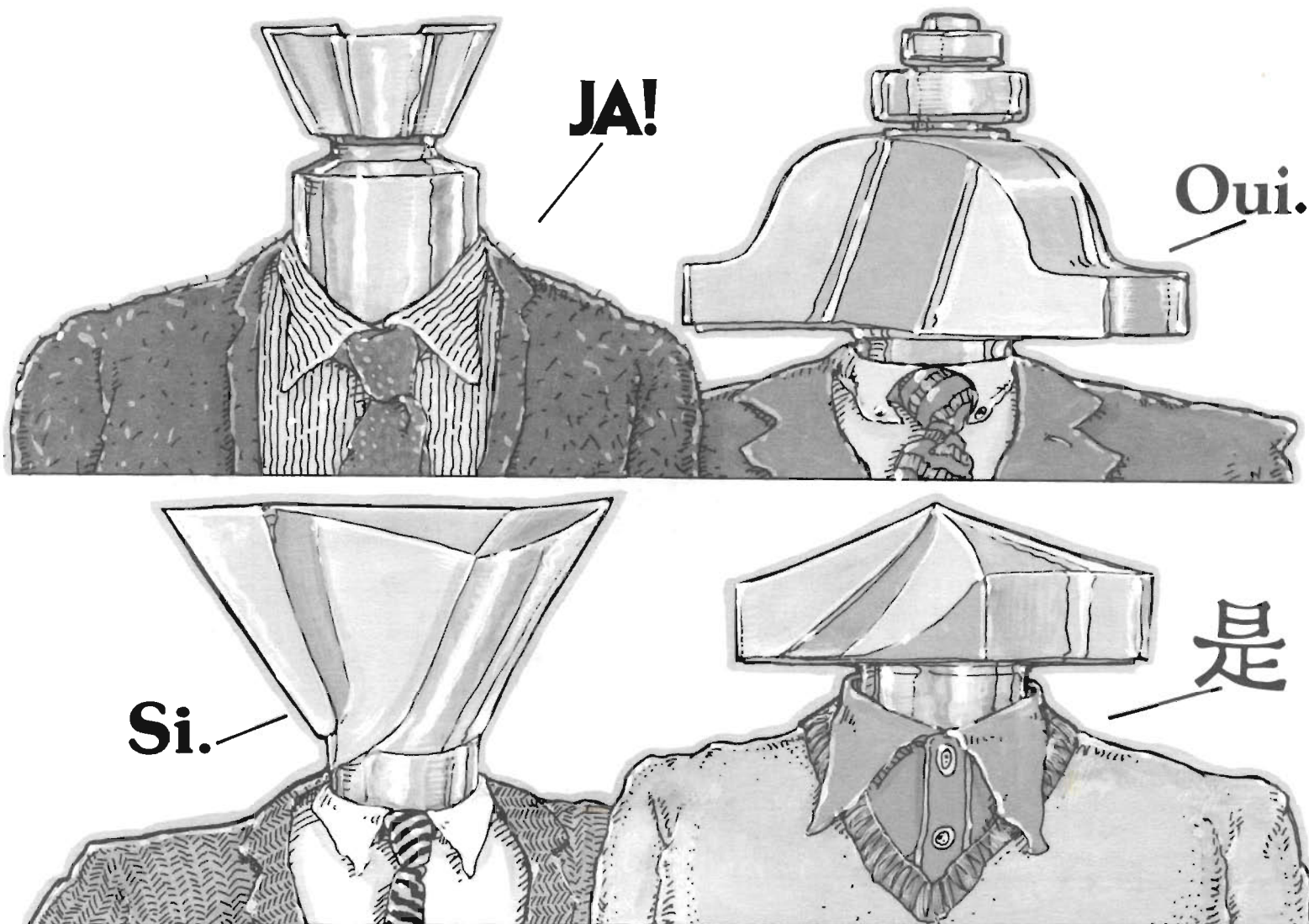
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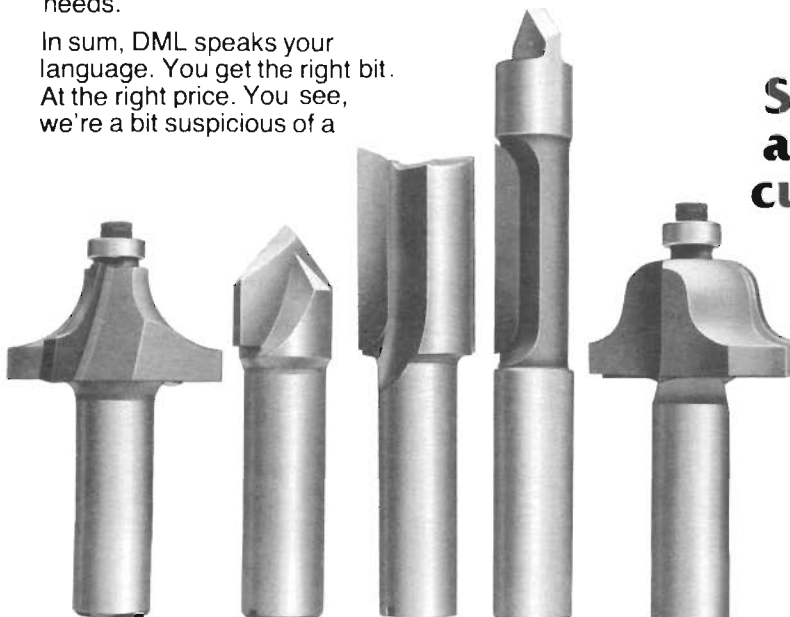
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FEDERAL LAWS

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The second statute is the Flammable Fabrics Act. This statute empowers the F.T.C. to establish appropriate standards of flammability for the fabrics used in clothing and household products, including children's toys.

Finally, there is the Consumer Product Safety Act, a statute that empowers the F.T.C. to regulate the composition, content and design of a consumer product. The F.T.C. has promulgated regulations for the use of architectural glass in doors, windows and walls and has banned the use of any surface-coating materials (paints) containing lead. This is a dynamic area, and if there's any doubt, craftsmakers should check with the F.T.C. to determine whether the materials they use in creating craft objects are subject to regulation.

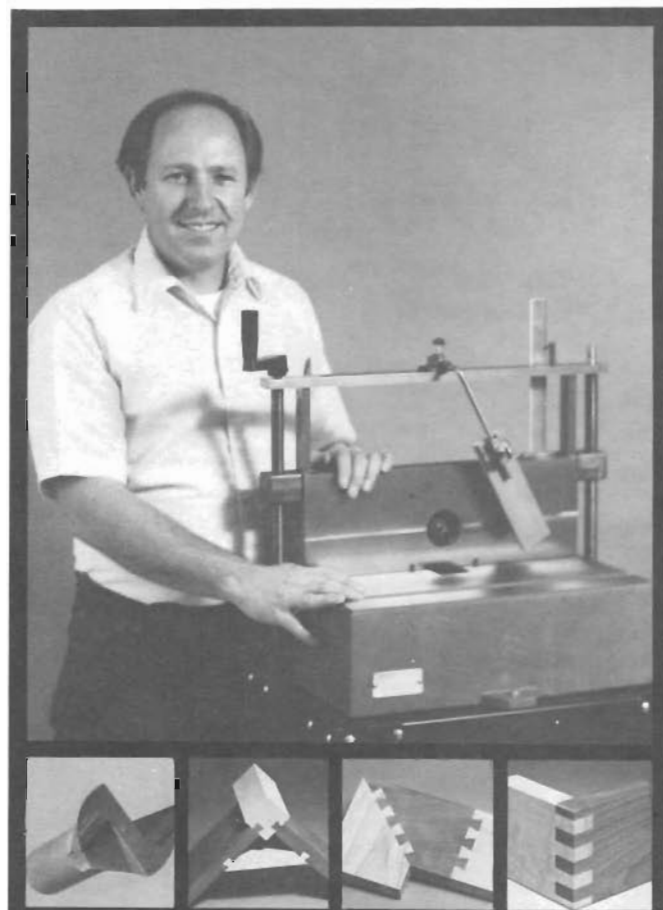
The current law of product liability has held the seller of a product liable as well as the producer. If the seller is held liable for a defective product, he may in turn seek reimbursement from the manufacturer for the amount paid in damages. That may involve another expensive suit, and, if the manufacturer is broke, the seller is out of luck. There are two things that a seller might do to protect himself. First, he can incorporate. This business method limits liability to the corporation. The second method of self-protection is to obtain insurance.

LIABILITY INSURANCE

In general, the cost of liability insurance is affordable for the small business: \$100,000 liability insurance for a person doing up to \$10,000 of business a year will cost about \$100 annually, although rates will vary from region to region. Craftspeople should consult their insurance brokers or agents to determine the rates in their own particular areas. Each craftsperson must then evaluate this cost against the risks of a law suit. You should know that the majority of these suits are settled for, or are litigated to a judgment of, over \$100,000. You can deduct the cost of this kind of insurance as a business expense for tax purposes. Given these factors, you should, if there is any reasonable expectation that a purchaser of your product could sustain personal injury from it, seriously consider obtaining product liability insurance.

The area of product liability has evolved to a point where manufacturers are being held liable for injuries caused by their defective products. The doctrines appear to have evolved with an eye to the large manufacturer of a mass-produced item, but the rules are applied with the same vigor to the craftsman creating a unique piece. It is therefore important to be aware of the potential risks involved and to take the necessary precautions.

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Cabinetmakers' Supplies

As a service to our readers, we periodically list sources of supply for various woodworking products. In this issue we've included two listings: suppliers of cane and related products, and suppliers of wood finishing products.

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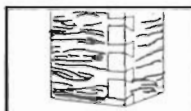
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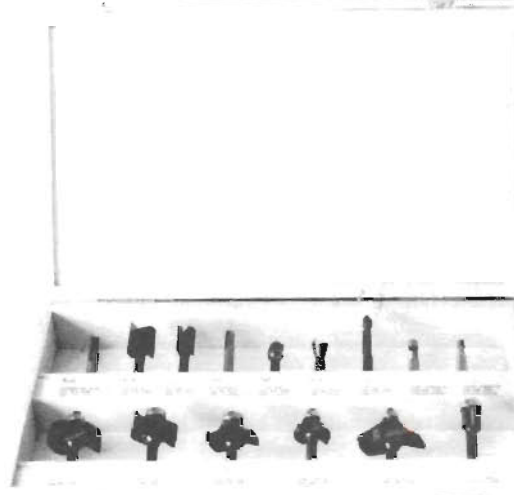
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Restoring Antiques

Spray Finishing

by John W. Olson

Asprayed-on finish, properly applied, will result in a smooth and even surface that can't be easily matched with a brush. Add to that the fact that a piece can be sprayed three to five times faster than it can be coated with a brush and you have a couple of good arguments for considering the purchase of a spray gun — particularly if you do a lot of finishing. Spraying is especially helpful if you regularly finish (or refinish) furniture that includes a lot of spindle turnings — the kind, for example, found on a Colonial Windsor chair. Using a gun, an experienced sprayer can finish three or four of these chairs while a fast brush man will do one.

There are many relatively inexpensive spray outfits on the market. They are found in two basic types: airless and compressor driven air guns. The airless types are inexpensive models suitable only for small and light work such as small furniture, toys, and models. In finishing capacity, they are comparable to the well known aerosol spray cans. There are larger airless machines that do a creditable job spraying paint and varnish, however particular attention must be paid to mixing and thinning the finishes so that the viscosity of the material is exactly right. My personal experience has been that these machines do a very good job if you want to paint a fence or house, but they don't produce a really good finish on furniture. Perhaps I haven't mastered the right application technique.

I have used compressor driven air guns for many years. I started out with a small low-cost diaphragm type air pump and a one pint bleeder type gun. The air pump has long since been traded off but the one pint gun is still my favorite for small to medium-size projects. It has been converted to a non-bleeder type gun to go with the larger compressor I now have. It still does a very creditable job. This type of gun is made by many manufacturers but an air brush would serve the same purposes. The larger one-quart size gun comes in a wide variety of types and models. However, a complete review of all of these guns isn't the purpose of this article. Suffice it to say that if you are interested, the retailers of this equipment can furnish you with more literature than can be comfortably read in a week's spare time. If you acquire one of these guns, be sure to thoroughly digest all of the descriptive and instructional material that comes with it. Pay particular attention to spray pattern adjustments and how to obtain the correct viscosity for the material to be sprayed.

Mastering the actual spray technique is a matter of patience and diligence. The first step is to make sure that your gun is clean and in good operating condition. Run a little lacquer thinner or mineral spirits through it to make sure all passages are open and operating. Follow the maker's instructions describing the testing of spray patterns and cleaning techniques. Make sure that your workplace is well ventilated and has good lighting. Do not spray indoors unless you have an enclosed, specially ventilated paint booth. Even a small amount of vaporized finish, particularly lacquer-based material, can cause a terrific explosion. In fact, less than one-half a teacup of lacquer thinner, gasoline or almost any of the volatile hydrocarbons, when vaporized and mixed with the proper amount of air, is equivalent to a stick of dynamite. A recent article in *Fine Woodworking* magazine described how a



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man in British Columbia blew up his house by pouring gasoline down the kitchen sink. Seems he had been cleaning paint brushes. The fumes found a dry trap in the basement and migrated across the basement floor to the water heater. Bang. Up went the house. We must all take proper precautions when using these materials.

As I have recommended in the past, any piece of furniture that is to be finished should be disassembled as much as possible. Remove all drawers, doors, table tops and anything else that can be removed and finished as a single unit. If possible, rig up some sort of turntable so that you can stand in the same place and rotate the work while having the light coming from behind you and reflecting at an oblique angle off the surfaces of the workpiece. I have a sturdy draftsman's steel stool with a wooden seat that I use for this purpose. A piece of $\frac{3}{4}$ in. plywood about 3 feet square with a no. 14 screw through the center of the plywood into the center of the wooden seat makes a secure sturdy turntable. When finished spraying it is easy to remove the screw and reconvert to a stool to be used at the workbench.

The viscosity of the material being sprayed, at least for my little gun, must be such that it will pour almost as easily as water. The spray should be even and full so that it lays down a full, even, wet coat that levels almost immediately but does not flow and sag on vertical and near-vertical surfaces. Care must be taken not to apply too much material or these runs and sags will be inevitable. Two thin coats will make a much better and nicer looking finish than one thick coat. For really nice work each coat must be rubbed down with very fine sandpaper, 200 grit or finer. If the material gums up and rolls into little balls while sanding you didn't allow enough time for drying. Sand very lightly and carefully so as not to go through the finish and end up with spots of bare wood. You will find these spots exceedingly hard to repair, especially if the wood has been stained. Be sure to thoroughly clean up after sanding. Dust well with a cloth moistened with alcohol or mineral spirits followed by a tack rag. Often the tack rag alone is sufficient. If the moistened rag is used, allow the surface to dry thoroughly before applying the tack rag.

The best technique for spraying flat horizontal surfaces is to begin with the edge nearest to you and spray with the grain, working from left to right. Do not swing your gun in an arc; maintain the same distance from nozzle to the surface on each pass. The distance is critical and is best determined by experience, but a beginning point is about 10 in. to 12 in. The gun should be moved along briskly; just fast enough to apply a thin, wet, even coat. Make each pass long enough to clear the edges of the work so as not to build up an excess at this point. Shut off the spray at the end of the pass, then start it again to begin a new pass. Overlap each pass about one-third to make sure of full coverage.

Perpendicular surfaces should be sprayed beginning at the top and working down following the same techniques. Slant the gun down so that the surface already covered will not be splattered by overspray. Care should be taken while spraying spindles and panels to avoid applying too much material. When spraying the edges of the relieved panels, cover the center surface first and then spray the edges with the gun slanted away from the center panel.

Keep in mind that it's important to read and understand all the information and instructions that come with your spray outfit. It will cover many points that just can't be covered in an article this short.

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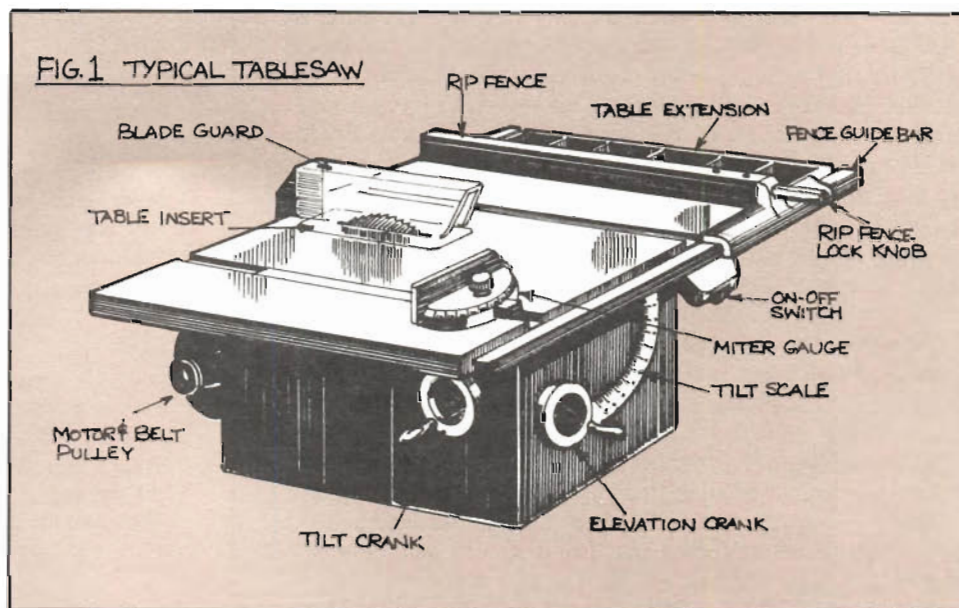
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The Beginning Woodworker

Table Saw Basics



The purchase of that first new or used table saw is a momentous event for it indicates, by the outlay of cold cash, that you've committed yourself to more than just casual woodworking. Setting up and using a table saw for the first time can be a bit nerve-wracking for the novice who has had no previous exposure to such a machine. The purpose of this article is to help you get your table saw set up and properly adjusted so that you can proceed to basic operations with maximum safety and accuracy.

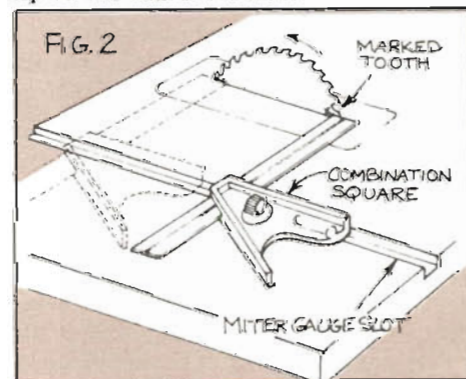
If you've got a new table saw, an owner's manual should be included. This will show you the steps necessary to assemble and adjust the machine. Do not assume that because the machine is new it will operate perfectly when assembled. It must be adjusted precisely and then double-checked.

The procedures that follow apply to all table saws regardless of size and make. Your owner's manual will give details on how to make specific mechanical adjustments. If you do not have a manual, you'll have to do a bit of checking to see which screws or bolts to loosen in order to make various adjustments discussed here. Let's take it step-by-step from the beginning.

Fig. 1 shows a typical assembled table saw with accessories. Assuming you have assembled the saw and mounted it on a stand, it is important to unplug the power cord. This is always done when

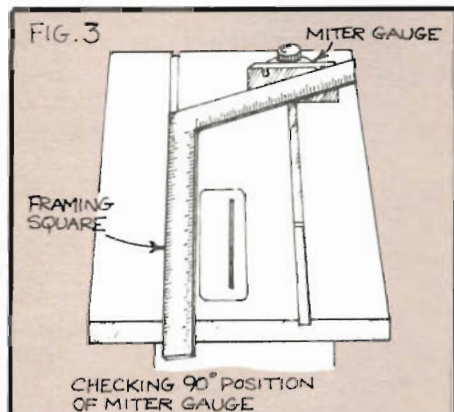
changing blades or making major adjustments.

The first check is to ascertain if the blade is parallel to the miter gauge slots or, in other words, parallel to the table itself. Raise the blade as high as it will go with the elevating crank and, using a felt tip pen, mark one of the blade teeth nearest you which is set (bent) to your left. As shown in Fig. 2, place the head of an accurate combination square in the left miter gauge slot and adjust the square so that its blade just touches the tip of the marked tooth.



Now slide the square to the rear of the blade (where it emerges from the table insert) and rotate the blade backward until the marked tooth again contacts the square. If the tooth doesn't touch the square the same amount, the saw blade is obviously out of parallel with the gauge slots. To correct this, trunnion bolts underneath the table, which hold the entire tilt mechanism to the table,

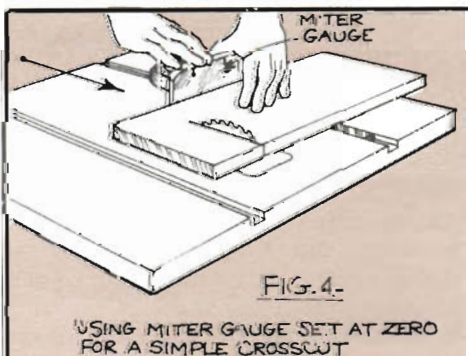
must be loosened so that either the front and rear trunnions or the table can be shifted slightly about the axis of the saw blade to bring the blade and table slots parallel. Repeat the check with the square and, if everything looks good, tighten the bolts carefully. After tightening, again check to make sure nothing shifted.



The miter gauge is checked next. We want to establish that when it is set at zero, the face of the gauge is exactly 90 degrees to the table slots and saw blade. As shown in Fig. 3, lay the long arm of a framing square against the side of a table slot. Hold the short arm flush against the face of the gauge and tighten the locking knob. The pointer on the protractor should now read exactly zero. If it doesn't, adjust it.

The proof of the setting is the cutting so let's try a simple crosscut operation to check things out. Lay an 8 or 10 in. wide length of 1 in. stock flat on the table with one squared edge against the miter gauge set in the left slot. Set your blade for zero degrees tilt, and elevate it 1 in. above the table. Make sure the blade is firmly fastened and the blade guard is in place, then turn on the motor.

While holding the board firmly against the gauge, push the gauge with the right hand, feeding the work slowly and steadily until the cut is complete, then withdraw both the work and the

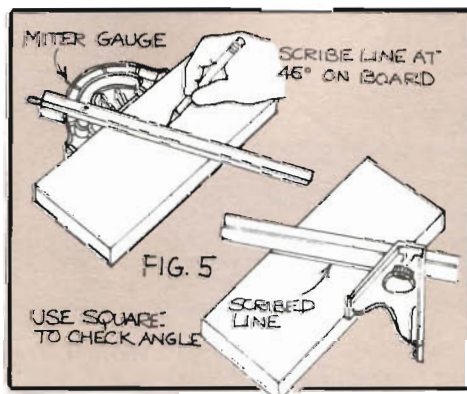


gauge to the front of the table and turn off the motor. You have just completed a basic crosscutting operation used to trim a board to length across the grain at (we hope) 90 degrees to the edges (Fig. 4).

Check the accuracy of the crosscut using a combination square. If it's not "right on the money," reset the gauge as previously described and try again. If it's still off and anything other than a perfect 90 degrees is unacceptable, go back and repeat the procedure for aligning the blade and table slot. Keep trying until you get a perfectly square cut. It's very important to get it right.

The miter gauge must also be checked for accuracy of left and right hand 45 degree settings. To do this, set the gauge for 45 degrees on either side and lock it. Hold the gauge face firmly against the edge of a wide board which is flat and has a perfectly square edge. Scribe a pencil line on the board along the gauge bar, then check this angle by aligning the blade of your trusty combination square along the line (Fig. 5). If the square blade is perfectly parallel to the scribed line, adjust the pointer to exactly 45 degrees.

If the scribed line is out of parallel with the square, adjust the gauge setting one way or the other and keep checking until you get it right, then set the pointer at 45 degrees or scribe a permanent mark on the protractor to indicate this setting. Repeat the process for the 45 degree setting on the other side of the gauge.



It's a bit difficult to cut a board across its width at a 45 degree angle as the board will have a tendency to slide across the gauge face as it's fed into the blade. In order to check our gauge setting by making an actual cut, we will have to make a simple fixture called a fence extension (Fig. 6). This is simply a 3/4 x 3 x 14 in. piece of flat stock fastened to the miter gauge fence with screws driven from the back. The extension is faced with medium grade sandpaper

(continued on next page)

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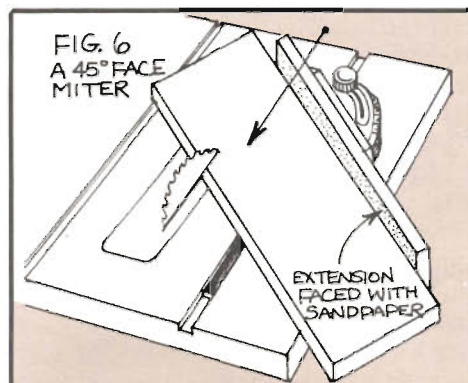
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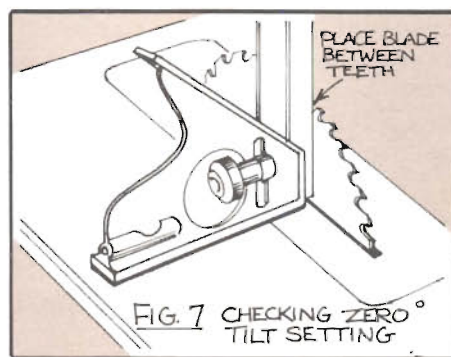
glued on. Even with this aid it's necessary to hold the work firmly and feed slowly into the blade.



Choose a 1 x 6 x 16 in. piece of pine for the test cut and make the first cut (called a face miter) as shown in Fig. 6. Check for accuracy with a combination square. It should be perfect, but if it isn't, repeat the procedure for adjusting the miter gauge.

Turn the miter gauge to the opposite 45 degree setting and make another test cut, using the right-hand table slot and again check the cut with the combination square.

Now let's check the blade tilt or squareness of the saw blade to the tabletop when the tilt scale (on the front of the machine) is set at zero. To do this raise blade to maximum height and place your square on the table so that the square blade rests against the saw blade *between two teeth* (Fig. 7). Make sure that the table insert is flush with the tabletop.

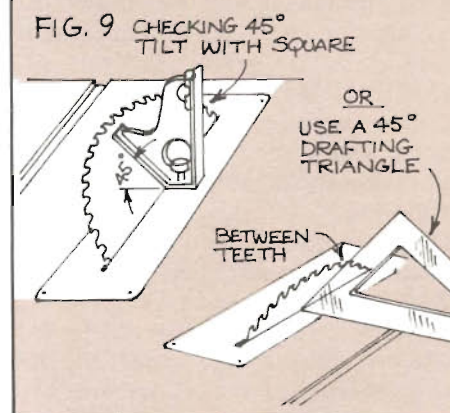
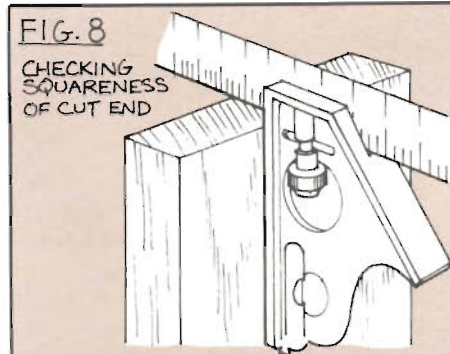


If the saw blade is evenly snug against the square, from tabletop to gullet between two teeth, lock the tilt handle and set the pointer to zero.

If the blade won't incline to an exact vertical position, there may be some kind of stop collar on the tilt screw under the table. Go to the rear of the machine and on the right end of the large tilt screw, look for a collar held by setscrews. Loosen the screws and rotate the collar to the right. Then bring the blade to vertical, lock it and rotate the collar as far left as it will go. Retighten the collar setscrews.

Crosscut a board with the miter gauge set at zero and use your square to check the squareness of the end of the board (Fig. 8).

Now check the blade for a true 45 degree incline by loosening the tilt handle and cranking the blade over to the left as far as it will go. Use your combination square (less the blade) to check the angle of the saw blade (Fig. 9). Again, the blade should rest flush against the inclined face of the square and the pointer should read 45 degrees. If necessary, reset the left-hand stop collar at the back of the machine. Crosscut a board with the blade inclined and check the accuracy of this edge miter cut.



Finally, let's turn our attention to the rip fence which, if misaligned, will cause a binding and kickback of the workpiece. The fence, when unlocked, should ride smoothly back and forth across the table. At any point on the table, it should be exactly parallel to the saw blade.

Since we now know that the saw blade is parallel to the tableslots, we can use the slots as a guide in establishing fence alignment. Set the fence spanning the right side of the table and seated on the front and rear guide bars. Slide the fence until it rests along the edge of the table slot. If it's not parallel with the slot, adjusting screws (usually on front top) are loosened, the fence aligned and the screws alternately tightened. Fence alignment should be checked frequently as some types go out of adjustment easily.

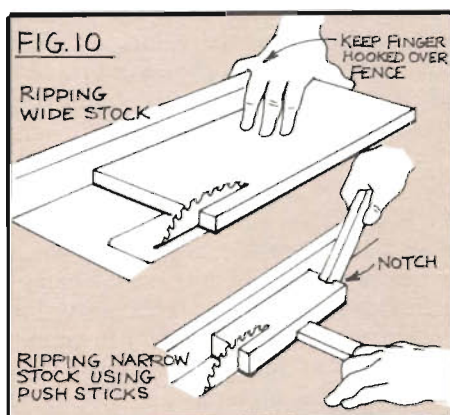
If your fence has a width-of-cut scale, set it by measuring from a right blade tooth to the fence. This scale is a rough guide at best and should not be relied on except for rough work. For critical work (and most of it is) use a good steel rule to measure the exact distance the fence should be set from a tooth on the right side of the blade.

The final operation is to make a ripping cut along the length of a board to reduce it to a specified width. For example, let's cut an 8 in. or wider board down to 6 in.

Slide the fence so it's exactly 6 in. from a blade tooth set to the right and lock the fence in that position. Place the board flat on the table and hold firmly against the fence with the right hand. Switch on the motor and use the right hand to push the piece through the blade (Fig. 10).

Continue pushing evenly until the piece is well past the rear of the blade. When it begins to tilt off the edge of the table, grasp it and lift well up and clear of the blade.

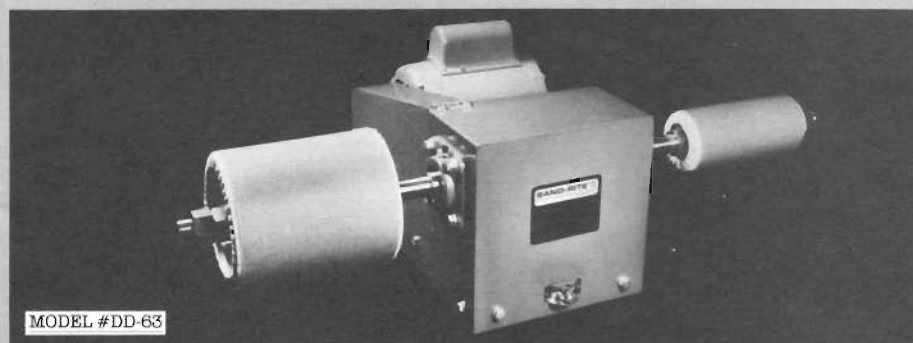
The 6 in. piece you have just cut is about as narrow a piece as you should attempt to cut by hand. Any ripping cuts made with the fence less than 6 in. from the blade should be made using a pushstick instead of your fingers.



Now that your table saw has been adjusted, plan on keeping it that way by periodically going through the checking procedures described here. If you use the machine 10 hours per week, a monthly inspection is not too frequent.

The basic crosscutting and ripping operations outlined are a small part of the very many operations of which the machine is capable. Hopefully, this article will help you to get started with some degree of confidence. *The Complete Book of Power Tools* by R.J. DeCristoforo has a 74 page section devoted entirely to the table saw and is probably one of the best reference works available for those who wish to use the table saw to its full potential.

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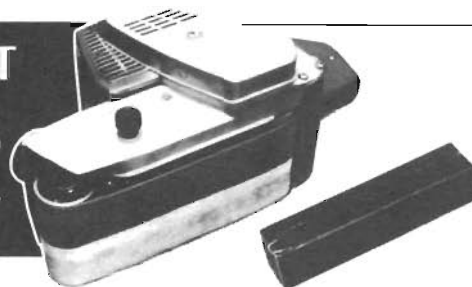
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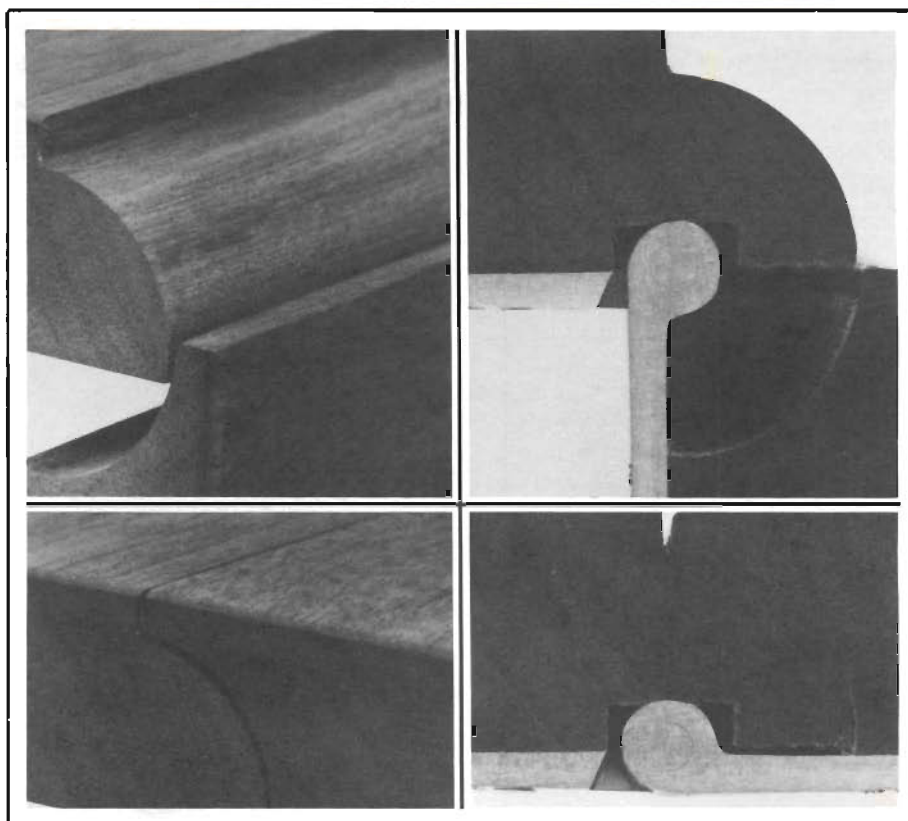
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Special Techniques

Making the Rule Joint



The rule joint is a traditional fine furniture feature used most commonly with tables having one or more drop leaves. When properly executed the joint makes for an especially attractive detail along the edges where the hinged leaves and fixed table surface meet. The design of the joint serves to effectively conceal the hinge plate whether the leaves are in the open or closed position.

The term "rule joint" is believed to have derived from the brass bound folding boxwood rules that were popular from the 1600's on. The knuckles where these rules folded closely resembled the rule joint. By the time of the William and Mary period the rule joint was quite common, as evidenced by its use on the gate leg table featured on page 28.

Although, before the era of power tools, the rule joint was fashioned by hand with molding planes and the scratch beader, the ease of modern methods has made this process impractical. Today's woodworker can accurately reproduce the rule joint using either the router or the table saw equipped with molding head cutters.

When using the router or router table to make the rule joint, you will need matching cove and round-over bits. Bearing guided bits are best since they will not burn the surface along which the bearing rides. The table saw molding head cutter is also an accurate method for making the rule joint. Most standard cutter sets include the $\frac{1}{2}$ in. cove and round-over cutters which we specify here.

No matter which technique is used,

the first and most important step is to correctly lay out the position of the joint. There are two key elements to consider: the hinge location and the coordinates of the radius. The thickness of the stock and the size of the bits or cutters can also be factored in, however for practical purposes we have assumed that the stock thickness will be in the area of $\frac{3}{4}$ to 1 in., a range which encompasses the thicknesses of most common tabletops. Although theoretically the bit or cutter is determined by the stock thickness, we have found that matching $\frac{1}{2}$ in. cove and round-over bits or cutters can be used to shape a nearly perfect rule joint in stock $\frac{3}{4}$ to 1 in. thick. As shown in Fig. 1 the only difference will be a deeper shoulder on the thicker material.

As noted earlier the key elements in making the rule joint work are the hinge

location and the position of the radius. If the hinge is to be mortised in place, to accurately lay out its location and the coordinates of the radius, you must first measure the hinge knuckle diameter. By dividing the knuckle diameter in half you can determine the center or pivot point of the hinge. As shown in Figs. 2A and B the pivot point is important because it dictates exactly where the arc of the joint must begin and end. If the entire hinge is to be mortised (Fig. 2A) then one-half the knuckle diameter is the distance up from the bottom at which the arc begins. If the hinge is to be applied flush (Fig. 2B) with only the knuckle mortised, then the arc simply starts flush at the bottom. Given the same thickness material and the same size bits or cutters, the only variation in the two joints will be the depth of the shoulder.

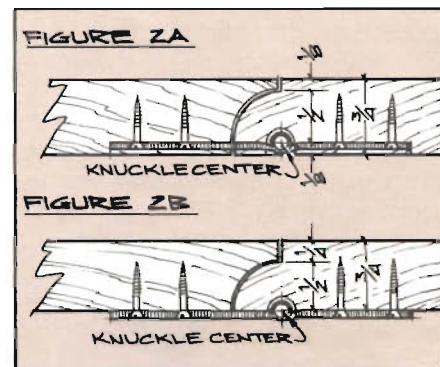
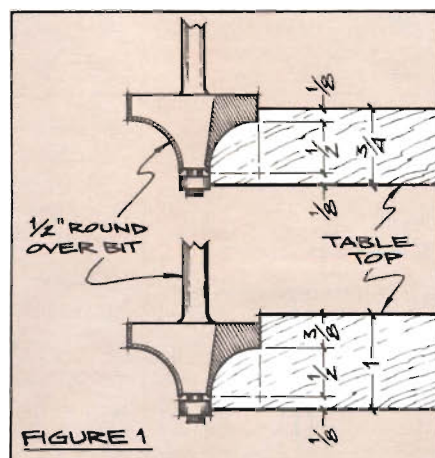
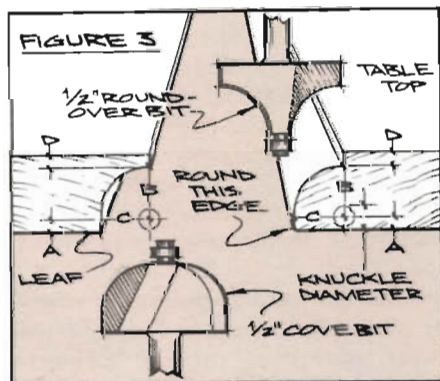


Fig. 3 shows a basic formula for locating and cutting a typical rule joint when the hinges are to be mortised in

place, as they usually are. Distance A is one-half the knuckle diameter. Distances B and C are the radii of the joint and are, of course, equal to the bit or cutter size, which we have set at a constant $\frac{1}{2}$ in. Distance D is the shoulder depth and corresponding lip thickness, which should not be less than $\frac{1}{8}$ in. The critical point to know in all this technical talk is this: for the rule joint to open and close smoothly the center or pivot point of the hinge knuckle should be located near the intersecting point of radius lines B and C. In actual practice, when mounting the hinge it helps to cheat a little and install the knuckle a hair ($\frac{1}{2}$ in.) toward the leaf side of the joint.



Most experts specify matching bits or cutters for fashioning the rule joint. However the joint works best if the round-over on the tabletop is a tad less than the corresponding cove cut on the leaves. By using the cove bit or cutter to shape a short length of scrapwood and then gluing medium grit sandpaper along the arc, you will have a perfect sanding block with which to reduce the round-over by about $\frac{1}{2}$ in. You may also wish to soften the lower edge of the tabletop (Fig. 3) to avoid tearing along this edge should the joint bind. If, in spite of all these considerations, the joint still binds or catches when mounting the hinges, position the table leaves so that a little space (about $\frac{1}{8}$ in.) remains between the leaves and top along the full length of the joint.

Because the fit of the rule joint can be so critical, and given the fact that a considerable quantity of stock could be wasted should there be a serious problem with the joint, the best way to insure success is to make a sample joint and have a test fitting. With several short lengths of stock the same thickness that you will use for the top and leaves, lay out and cut the rule joint on these test pieces. Mount the hinges exactly as you would on the finished table and check that the joint opens and closes smoothly without catching or binding. If there is a problem make the necessary adjustments before actually cutting the joint on the finished top and leaves. W.J.

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Furniture Periods and Styles

William and Mary, 1690-1725



*Highboy with
cup turnings, circa 1710*

Drawing by Michael Gellatly

The William and Mary style, named for the English king and queen who reigned jointly from 1689 to 1694, marked several important advancements in furniture design. First, a variety of new forms evolved from what had been a fairly static selection, and second, furniture forms began to display the graceful, elegant lines that were to dominate over the next two centuries.

The William and Mary period in America lasted from about 1690 through 1725. The style reflected the love for baroque design that had swept the European continent in the early 1600's, and the decorative motifs (scrolls, spirals, columns) hinted at a further refining of the classical influences that had characterized the preceding Jacobean period.

Perhaps the most important development of the William and Mary period was the emergence of the "cabinet-maker." Up to that time furniture making was divided between two separate and distinct classes of craftsmen: the turners and the joiners. Now, for the first time, a single craftsman controlled the design and construction of a piece from beginning to end. While turners and joiners had been relegated to the lower end of the social ladder, the cabinetmaker became an important and respected individual in the colonial community. It was this new social attitude, both in England and the colonies, that was to open the way for the great cabinetmakers Sheridan, Chippendale, Hepplewhite, and Duncan Phyffe to gain widespread acceptance, respect, and appeal.

Several other noteworthy influences had an impact on the William and Mary period. The quest for colonization by the great powers had brought expansion of trade. With this trade came a variety of ideas, especially from the Far East, that were to significantly alter furniture design and methods of finishing. One of these changes was the introduction of the oriental practice of lacquering. A 1688 English publication, *Treatise of Japanning and Furnishing*, offered instructions on how to imitate the oriental lacquer finish with western varnishes. The secrets of the laborious oriental technique were greatly simplified, and the process was immensely popular and widely copied in urban centers such as Boston, Philadelphia, and New York.

As cabinetmakers became more con-

cerned with elements of design and new finishes, their concepts of wood selection and use also matured. Gone was the almost exclusive use of oak typical during the Jacobean period. The beauty and attractiveness of surface woods became more important, and walnut with its fine grain became the choice. Other woods having distinctive grain patterns, such as the figured maples and fruitwoods were also popular.

In the best pieces veneers were employed to maximize surface beauty. Burl veneers, which were cut from the base of the tree near the root, were favored because of their wildly figured grain patterns.

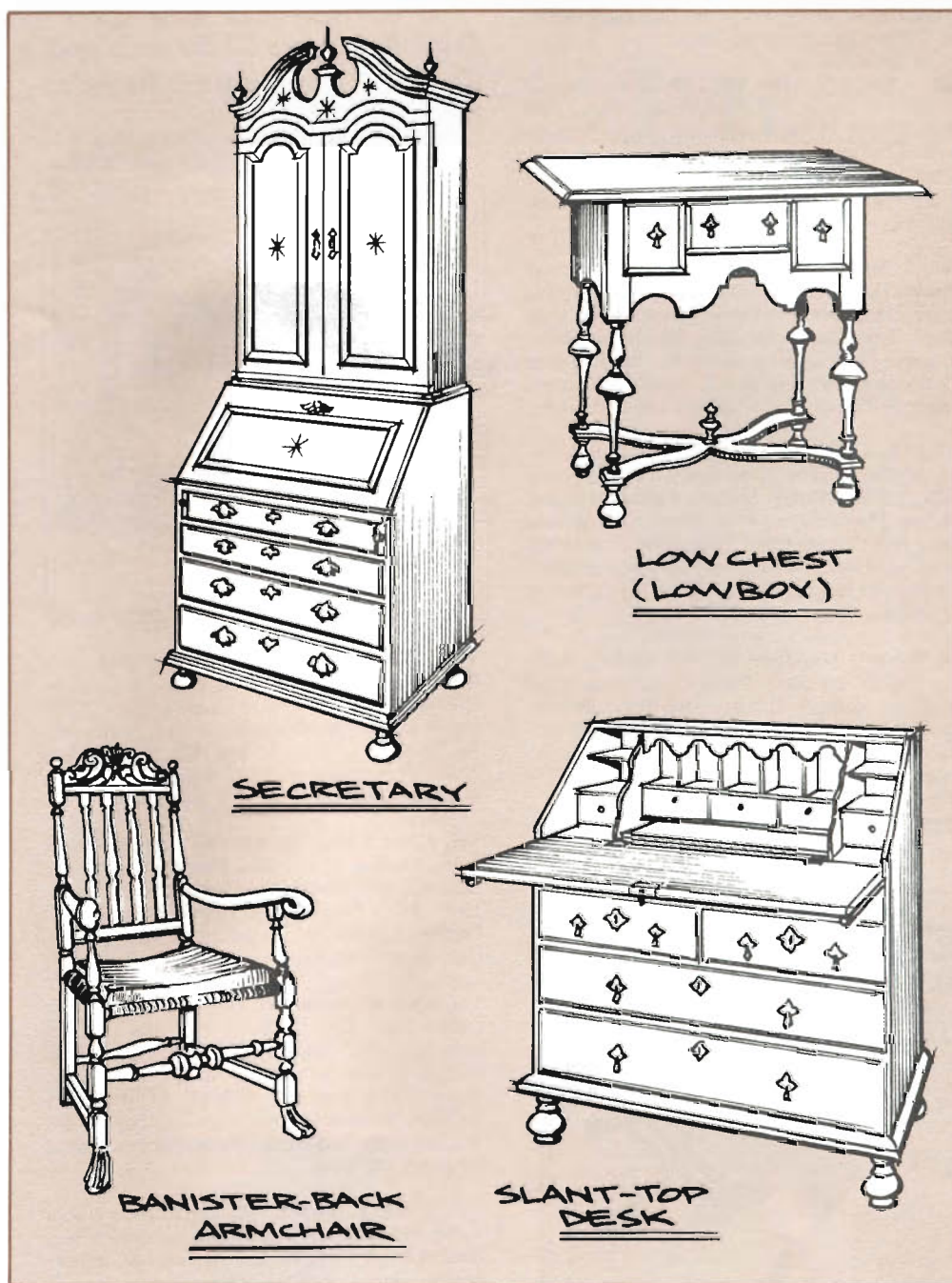
Hardware also changed, becoming decorative as well as functional. Tear-drop shaped brass pulls and scrolled escutcheon plates were typical.

As with all the Early American periods, there are two distinct styles of William and Mary furniture: that made in the cities, and the less elaborate "country" version. The country work was usually executed in maple, walnut, or cherry hardwood, with no veneer. Moldings were less elaborate and there was little or no inlay or edging. Scrollwork and turnings were less complicated, and the whole appearance of the piece was simpler. Here is a brief review of the major furniture forms.

HIGH & LOW CHESTS: The appearance of "highboys" and "lowboys" (these terms actually became popular in the 19th Century) was the most significant new development in furniture form during the period. The highboy, which was essentially a chest of drawers elevated on turned legs, served chiefly for storage. The lowboy, with the top at table height, served as a dressing table. Lowboys usually had four turned legs and two crossed stretchers, while highboys rested on six legs joined with flat, scrolled stretchers.

The turned legs of this and other furniture from the period typically displayed distinctive trumpet or cup turnings, and either ball or turnip feet. The most sophisticated high and lowboy designs featured fancy bookmatched crotch and burl veneers, figured maple stretchers, and often a secret drawer or compartment for the storage of jewelry, documents, and other valuables.

DESKS & SECRETARIES: The desk had evolved from a simple "bible box"



to an article of furniture designed specifically for writing. The slant-top desk-on-frame rested on four turned legs, with a variety of pigeonhole compartments behind the slant top. Secretaries, which were rare, featured drawers below the slant top, and paneled doors above opening to a cabinet with various shelves and compartments.

TABLES: The gate-leg table, an excellent example of which is presented in project form on page 28, was the most popular of the period. These were made in a variety of sizes from small card tables to large dining tables. Other common table types were the tavern table and the butterfly table, so named for its butterfly shaped wings supporting the

leaves. Most tables displayed some form of the distinctive turnings so characteristic of the period.

CHAIRS: The panelled wainscot chair, and the Brewster and Carver chairs of the Jacobean period became rare, although slat-back chairs with caned seats continued to be made in rural areas. Most importantly, the wing chair, with its upholstered back, seat, and flanking wings was developed. A variety of side and arm chairs were also made, most with caned seats, elaborately carved cresting rails, and turned legs and stretchers. The banister back chair was particularly popular, as were arm chairs with the arms terminating in scrolled or ram's horn motifs.

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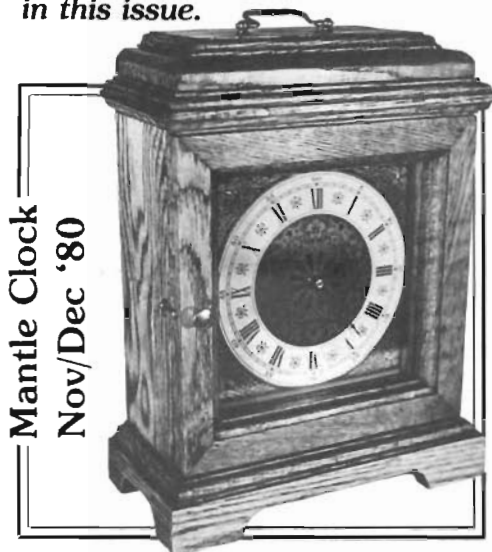


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Vol. 8 No. 2 Mar-Apr '84: Shaker Wall Clock, Compact Dry Bar, High Chair, Kitchen Canister Set, Colonial Water Bench, Stacking Desk Trays, Wooden Brooches, Toy Bulldozer, Rocking Horse, Contemporary Table, Wall Hung Telephone Cabinet, Pipe Smoker's Organizer, Clock Parts Suppliers, *Articles:* Edge-Joining Boards; More Sources of Information; More Hope for the Hopeless Cases; Makig Cabriole Legs.

Vol. 8 No. 3 May-June '84: Country Vegetable Bin, Folding Deck Chair, Shaker Pedestal Table, Wall Hung Display Cabinets, Wooden Coat Hanger, Toy Car and Trailer, Paper Towel Holder, Carved Hand-Mirror, Writing Desk, Carved Walking Stick, Laminated Clock, Oak and Glass End Table, *Articles:* How to Lay Out and Make Circular Cuts; Mail Order Selling; Stripping Old Finishes; Carving the Ball-and-Claw Foot.

Vol. 8 No. 4 July-Aug '84: Wag-on-Wall Clock, Oak Swing, Candy Dispenser, Coffee and End Tables, Tugboat and Barge, Lazy Susan, Early American Mirror, Colonial Pipe Box, Sewing Machine Cabinet, Cam Clamp, Hamper, *Articles:* What Sells Best?; Homemade Removers; Buying a Basic Set of Hand Tools; Kerf Bending; Suppliers of Caning and Wood Finishing Products.

Early American Wall Secretary Nov/Dec '83



Veneer Bracelets



Jan/Feb '84



Toy
Pumper
Firetruck Sept/Oct '83

Vol. 8 No. 5 Sept-Oct '84: Contemporary Stereo Cabinet, Shaker Woodbox, Bongo Box, Nesting Tables, Shop Trammel, Jackknife Letter Opener, Salt Shaker and Pepper Mill, Toy River Ferry and Car, Toy Top, Cookbook Holder, Hall Table, Grandfather Clock: Part I, *Articles:* Starting a Business: Part I; Applying Filler; Building a Basic Workbench; Making Specialty Moldings with the Table Saw and Scratch Beader.

Vol. 8 No. 6 Nov-Dec '84: Stickley Chair, Tool Cabinet, Shaker Sewing Stand, Lighted Display Pedestal, Teardrop Clock, Pierced Tin Cabinet, Toy Hook and Ladder Fire Truck, Busy Bee Toy, Colonial Doll House, Kitchen Organizer, Wine Server, Grandfather Clock, Part II, *Articles:* Starting a Business Part II; Applying the Final Finish; The Fundamentals of Wood; Inlays and Inserts; Gustav Stickley and American Mission Furniture.

Vol. 9 No. 1 Jan-Feb '85: Early American Step Table, Oak Barrister's Bookcase, Parquet Table, Shaker Trestle Table, Bandsawn Wooden Scoops, Toy Biplane, Book Ends, Contemporary Candle Holders, Necktie and Belt Holder, Keyed Miter Jig, Modular Coffee Table and Bar, Magazine and Book Rack, Contemporary Chest of Drawers, *Articles:* Toys and Children's Articles: An Outline of The Consumer Product Safety Commission Standards; Shellac; Truing and Squaring Lumber; The Fingerjoint Spline; Suppliers of Furniture Kits; The Shakers; Special Section: Back Issue Index.

Vol. 9 No. 2 Mar-Apr '85: Queen Anne Lowboy, Television/VCR Stand, Early American Pine Corner Cupboard, Toy Tool Set, Windspinner, Wood-chopper Whirligig, Chinese Puzzle, Cut-off Jig, Blanket Chest, Shaker Harvest Table, Blacksmith's Tool Tray, *Articles:* A Guide to Photographing Your Work; Applying Shellac and Lacquer; Sharpening Plane Blades and Chisels; Installing Machine Woven Cane; American Queen Anne, 1715-1755; General Woodworking Suppliers.

Vol. 9 No. 3 May-June '85: Jacobean Joint Stool, Wall Cabinet with Recessed Finger Pulls, Shaker Desk, Kitchen Cart, Contemporary Wall Clock, Colonial Wall Sconce, Card Box, Towel Bar with Glass Shelf, Marble Race Toy, Cradle, Vanity Mirror, Miter Clamping Jig, *Articles:* Product Liability, Part I; Restoring an Antique Mirror Frame; Coping with Wood "Movement"; Making Recessed Finger Pulls; The Jacobean Period.



Gate-leg Table

Bill of Materials (all dimensions actual)			
Part	Description	Size	No. Req'd.
A	Leg	1 3/4 x 1 3/4 x 29 1/4	4
B	Side Apron	3/4 x 4 1/4 x 31"	2
C	End Apron	3/4 x 4 1/4 x 8"	1
D	End Rail	3/4 x 1 3/4 x 7 1/2"	2
E	Cross Stretcher	1 3/4 x 1 3/4 x 6 1/2"	4
F	Side Stretcher	1 3/4 x 1 3/4 x 29 1/2"	2
G	Pivot Leg	1 3/4 x 1 3/4 x 19"	2
H	Pivot Rail	3/4 x 1 3/4 x 9 1/2"	2
I	Notched Leg	1 3/4 x 1 3/4 x 29 1/4"	2
J	Pivot Stretcher	1 3/4 x 1 3/4 x 8 1/2"	2
K	Fixed Foot	1 3/4 x 1 3/4 x 4 1/4"	2
L	Block	1 x 1 3/4 x 4 1/4"	2
M	Drawer Guide Support	3/4 x 1 x 7"	1
N	Drawer Guide	1/2 x 1/2 x 15"	1
O	Side Cleat	3/4 x 3/4 x 13"	4
P	End Cleat	3/4 x 3/4 x 6 1/2"	1
Q	Top	3/4 x 13 3/4 x 36"	1
R	Leaf	3/4 x 18 x 36"	2
S	Hinges	1 1/2 x 2 1/2"	6
T	Stop Pin	3/8" Dowel, 1 in. long	2
U	Pivot Pin	3/8" Dowel, 1 in. long	4
V	Drawer Front	3/4 x 3 x 6 1/2"	1
W	Drawer Side	3/4 x 3 x 15 1/2"	2
X	Drawer Back	3/4 x 3 x 6"	1
Y	Drawer Bottom	1/4 x 6 x 14 3/4"	1
Z	Knob	3/4 x 1 in.	1

*Includes tenons

The gate-leg table is a classic furniture design, one that is characteristic of and first became popular during the William and Mary period. Although our table is not an authentic William and Mary antique, it is a fine turn-of-the-century reproduction in the William and Mary style. The table is from the collection of The Washington Historical Museum, a fascinating museum of Early American, Colonial, and period furnishings located in the picturesque little town of Washington, Connecticut.

Distinctive turnings and well-balanced lines make this particular table one of the nicest examples of the gate-leg style we have seen. Because of the number of turnings and the need for precision if the pieces are to fit accurately together, this project should only be attempted by experienced woodworkers with strong turning skills.

To make the table, you will need twelve 36 in. long 2 in. square turning blocks for the turned parts. All the remaining parts can be fashioned from one inch stock (which typically measures 3/4 in. thick) except for the two small blocks (L) which can be made from the turning square cutoffs. Turning squares are available from a number of sources, among them Constantine's, 2050 Eastchester Rd., Bronx, NY 10461. Although our table is crafted in mahogany, either cherry, maple, or walnut would also be a good choice.

Begin by laying out the various turnings (parts A, E, F, G, I, J, and K) as shown in the turning details. You will need a single 36 in. long turning square for each of the four legs (A), the two side stretchers (F), and the two notched legs (I). The four short cross stretchers (E) are laid out and turned on a single 36 in. long turning square, and later separated. Using the same technique, one each of the two pivot legs (G), the two pivot stretchers (J), and the two fixed feet (K) are combined on the 36 in. turning squares, turned, and then separated. The one remaining turning square is an extra in case of some error in turning or perhaps a hidden defect in the wood. After all the turning is completed take care to accurately notch the legs (I) and the side stretchers (F) where they lap together.

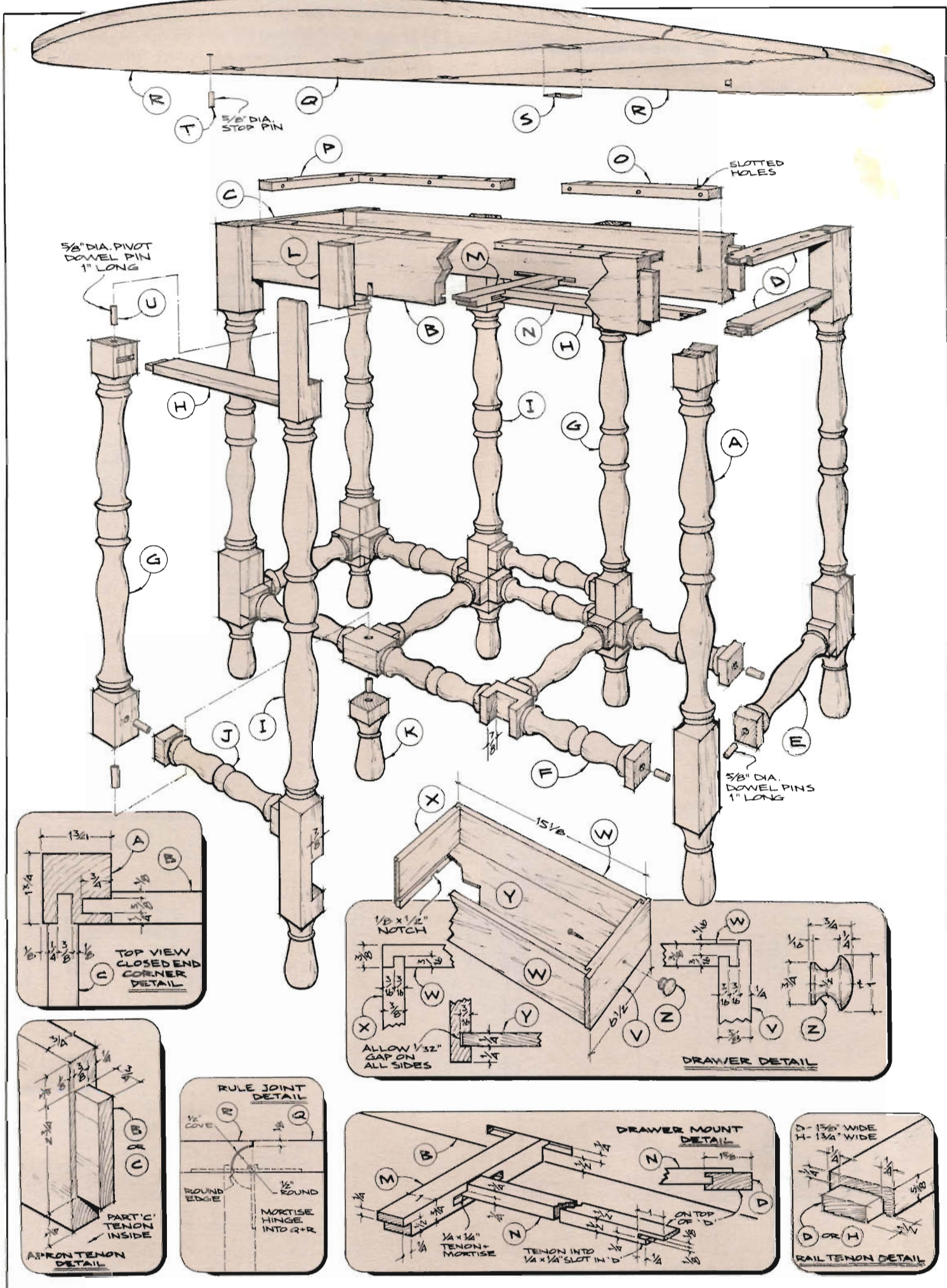
The upper apron assembly (parts B and C), end rails (D), pivot rail (H), and the drawer guide support (M) and drawer



guide (N) are all standard mortise and tenon construction. Refer to the apron and rail tenon details for the specific dimensions of these tenons and to figure the corresponding mortises in the legs. When making the upper of the two end rails (D), note that several slotted and countersunk screw holes must be added in this piece, which also serves as a cleat for mounting the top. The top and leaves are made by gluing up stock, with the leaves then rounded out with a saber saw. Refer to the Special Techniques feature beginning on page 22 for detailed instructions on how to make the rule joint shown in the rule joint detail.

Build the drawer as shown in the drawer detail. Although the drawer bottom is dimensioned full width in the Bill of Materials, size it a little under 6 in. wide to accommodate any seasonal movement in the wood. Assemble the drawer and mount the wood knob, which is turned to the illustrated profile.

The various stretchers and legs are joined as indicated with 3/8 in. diameter by 1 in. long dowel pins. In order to in-

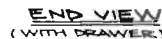


(continued on next page)

For the final assembly begin by making the two end frame and the two pivot leg assemblies. Also join the two side **stretchers** with the two remaining cross stretchers. Now join the end assemblies, the lower stretcher assembly and the side aprons to make the table frame. Note that the grooves in these side aprons, cut to accept the drawer guide support, are purposely cut oversize (long). This is done so the guide support can be angled into place after the table frame has been assembled. The drawer guide is also mounted at this

To mount the pivot leg assemblies first temporarily clamp the blocks (L) in place and drill the upper pivot pin holes. You will need to slightly tip the leg assemblies in order to mount them in the lower pivot pin holes. Glue on the blocks (L), locking in place the upper pins, and add the fixed feet (K).

The top is mounted with screws inserted up through slotted holes in the five cleats and the upper rail. Add the two leaves, using three hinges for each leaf, as shown, and glue in place the dowel pins (T), which serve as a simple stop for the pivoting leaf supports. Final sand the table and finish by hand rubbing three coats of tung oil into the wood. WJ





Computer Desk

We held back as long as we could, but the computer revolution has finally penetrated even here to *The Woodworker's Journal*. So, here it is at last — our computer desk. Although we know that many *Journal* readers own computers, it was our intention when designing this project to offer a piece that would also serve well as a regular desk for those readers who do not have a computer. We believe that the end product of our research is a handsome, versatile, functional design, whether you use it for a computer or as a traditional desk.

As shown in the photo, the desk will accommodate a keyboard, display screen, disk drive, printer, and paper. There is also ample room for a telephone, modem and other add-on devices. We made the upper and lower shelves adjustable so the desk can be tailored to the many different types and styles of personal computers, an important feature given the variety of computers that are now available. Should you choose to use this piece as a traditional desk, the adjustable shelves are great for books and papers, and the main work surface provides a nice,

large, unobstructed work area.

The computer desk is easy and inexpensive to build. Although we used oak, both for its strength and because oak veneer plywood is commonly available, almost any hardwood can be used. As shown in the plywood cutting diagram (Fig. 1), all the plywood pieces (the three shelves: parts A, B, and C; and the main shelf backing strips: parts D and E) can be cut from one half sheet of plywood. All the other parts for the desk can be cut with the table saw from standard $\frac{3}{4}$ in. stock.

(continued on next page)



Adjustable shelf support systems use cleat with pegs to hold shelf tight.

When cutting the plywood use a plywood blade to provide a smooth cut and help prevent chip-out along the edges. Next, cut all the hardwood components, parts F through P. Half-lap the feet (L) and legs (M and N) as shown in the half-lap detail (Fig. 2), and notch the back legs to accept the two stretchers (O) as shown in the stretcher detail (Fig. 3).

To assemble the table, first glue the plywood backing strips (D and E) to the underside of the main shelf (B). These pieces serve as backing for the edging, and lend rigidity to and strengthen the main shelf. Now glue the various edgings to the three shelves. Note that all these edgings are mitered at the corners.

Next, glue up the half-lapped legs and feet. Add the main shelf, which is screwed and plugged through the legs, and the two stretchers, which are glued and then screwed with angled screws.

The adjustable shelves are mounted with a simple cleat system as shown in the cleat detail (Fig. 4). Use one cleat as a template for the others and as a guide for drilling the corresponding mounting holes in the legs. The cleats are glued and screwed to the shelf undersides. Although simple dowels can be used for the mounting pegs, the large ends on our pegs are convenient to grasp, making it easy to readjust the shelves.

Apply a generous 45 degree chamfer around all edges before final sanding. Several coats of Watco penetrating oil, buffed lightly with 0000 steel wool between coats, will lend the computer desk a nice satin finish.

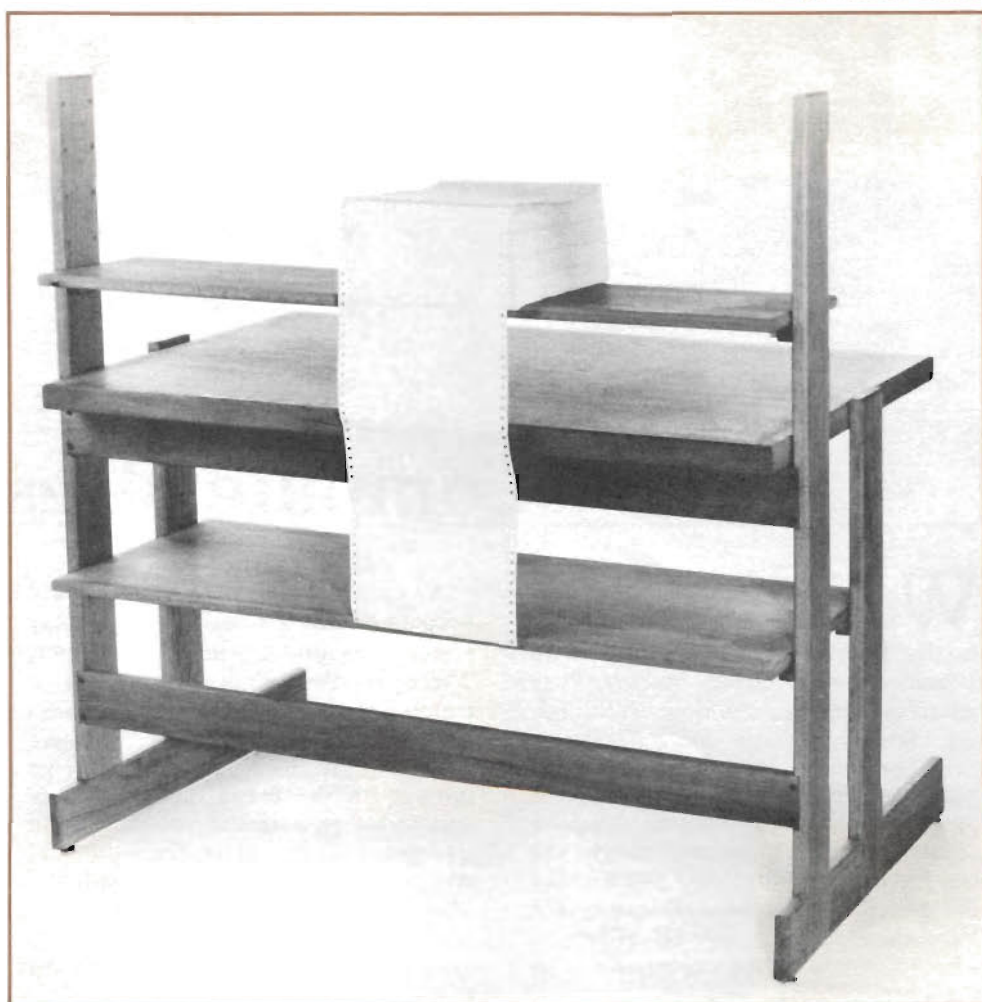
Woj

Bill of Materials (all dimensions actual)

Part	Description	Size	No. Req'd.
A	Top Shelf	$\frac{3}{4}$ x $8\frac{1}{2}$ x 41	1
B	Main Shelf	$\frac{3}{4}$ x $24\frac{1}{2}$ x $40\frac{1}{2}$	1
C	Lower Shelf	$\frac{3}{4}$ x $14\frac{1}{4}$ x 41	1
D	Main Shelf Edge Backing (sides)	$\frac{3}{4}$ x 2 x $20\frac{1}{2}$	2
E	Main Shelf Edge Backing (front & rear)	$\frac{3}{4}$ x 2 x $40\frac{1}{2}$	2
F	Top Shelf Edge (sides)	$\frac{1}{2}$ x $\frac{3}{4}$ x $9\frac{1}{2}$	2
G	Top Shelf Edge (front & rear)	$\frac{1}{2}$ x $\frac{3}{4}$ x 42	2
H	Lower Shelf Edge (sides)	$\frac{1}{2}$ x $\frac{3}{4}$ x $15\frac{1}{4}$	2
I	Lower Shelf Edge (front & rear)	$\frac{1}{2}$ x $\frac{3}{4}$ x 42	2
J	Main Shelf Edge (sides)	$\frac{3}{4}$ x $1\frac{1}{2}$ x 26	2
K	Main Shelf Edge (front & rear)	$\frac{3}{4}$ x $1\frac{1}{2}$ x 42	2
L	Feet	$\frac{3}{4}$ x $3\frac{1}{2}$ x 26	2
M	Front Leg	$\frac{3}{4}$ x $3\frac{1}{2}$ x 27	2
N	Back Leg	$\frac{3}{4}$ x $3\frac{1}{2}$ x 43	2
O	Stretchers	$\frac{3}{4}$ x 3 x 43	2
P	Shelf Cleats	$\frac{3}{4}$ x $\frac{3}{4}$ x 3	6
Q	Mounting Pegs	$\frac{1}{4}$ in. Diameter Shaft*	12

*Available from: Cherry Tree Toys, Belmont, OH 43718.
Telephone: (614) 484-1746. Order Multi-Use Peg part no. 4.
Cost is \$1.80 per dozen.

Back view shows stretchers notched into back legs and screwed.



Shaving Horse

Over the years we have had a number of requests for shaving horse plans, spawned perhaps by the renewed interest in hand methods of wood-working. The shaving horse was an important tool in pre-power tool times, and was often customized to best suit the type of work for which it would be used. Although we suspect that this particular shaving horse, which is from the Hancock Shaker Village Museum, was used by a cooper (barrel maker), it has all the common shaving horse features and should serve well for most any drawknife work.

The purpose of the shaving horse is to provide a device that both positions the workpiece at a convenient angle and anchors it tightly. The craftsman is seated on the bench end with the workpiece located squarely before him. The angled bridge positions the workpiece where the most controlled force can be safely exerted, and the drawknife is pulled forward toward the body. The craftsman's feet rest on the treadle, applying downward pressure through the arm to the head, which clamps the workpiece against the bridge. It is important that the workpiece be held securely because the drawknife tends to pull the stock forward.

The arm is designed to pivot open when foot pressure is removed, releasing the workpiece. Although we are not

absolutely certain of its purpose, we believe that the dowel pin (part I) was intended as a locking mechanism to hold the arm in a fixed position. Because this feature would only be useful in a production environment, when working on repetitive tasks with material of the same thickness, this pin and the hole for it can be eliminated.

To make the shaving horse, first cut stock for parts A through M. Any hardwood can be used. If you do not have a lathe, the turned parts (B and F) can be made square. Use standard dowel stock for the pins (parts H, I, and J) and sand or shave the slight taper on these pieces.

Next lay out the four leg locations. As shown in the splayed leg drilling detail, a guide block is needed as a jig for drilling these leg holes. Make this guide block as illustrated from a block at least 2 1/4 in. thick. Note that the block must be positioned at a 45 degree angle to achieve the even 10 degree splay in each direction.

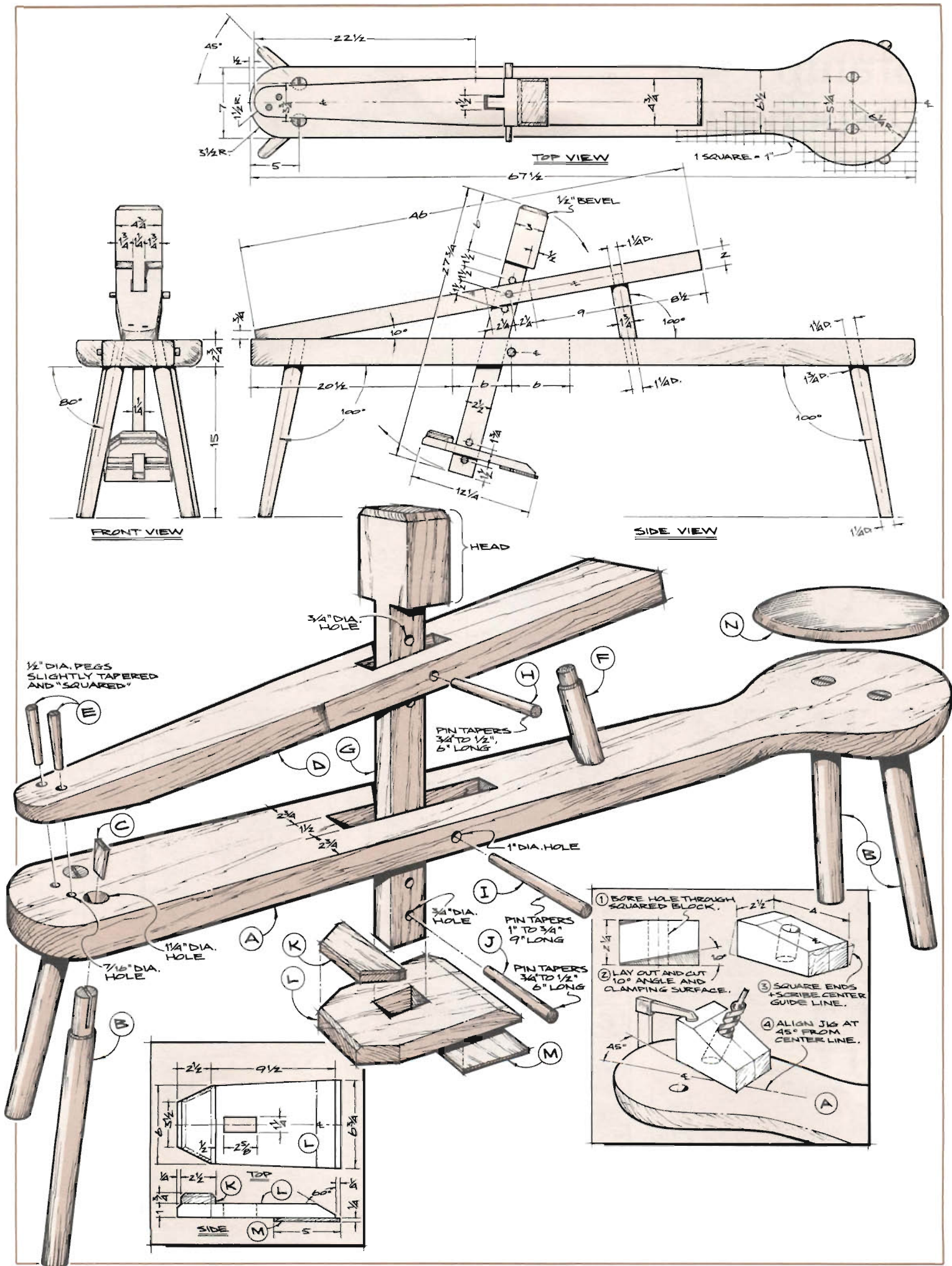
When assembling the shaving horse use the wedges (C) to lock the leg tenons. It is best to cut these wedges and the pegs (E) a little long so they may later be trimmed flush. Final sand the shaving horse and rub in several coats of Watco penetrating oil to beautify and protect the wood.

The horsehair seat in the photo was originally leather covered, no doubt a

Bill of Materials (all dimensions actual)			
Part	Description	Size	No. Req'd.
A	Bench	2 3/4 x 12 3/4 x 67 1/2	1
B	Legs	1 1/4 in. Diameter cut to fit	4
C	Wedges	as shown	4
D	Bridge	2 x 4 1/4 x 46	1
E	Pegs	1/2 in. Diameter	2
F	Riser	1 1/4 Diameter	1
G	Arm	3 x 4 3/4 x 27 1/4	1
H	Bridge Pin	3/4 in. Diameter	1
I	Bench Pin	1 in. Diameter	1
J	Treadle Pin	3/4 in. Diameter	1
K	Stop	3/4 x 2 1/2 x 6	1
L	Treadle	1 x 6 1/4 x 12	1
M	Rub Strip	1/4 x 5 x 6 1/4	1
N	Seat	Leather with horsehair padding	1

custom touch to ease the strain on some long ago woodworker's backside. Although a padded seat is by no means a necessity, a nice leather covered seat fastened with brass tacks is an attractive feature, and will make the shaving horse a good deal more comfortable to sit on.

WWS

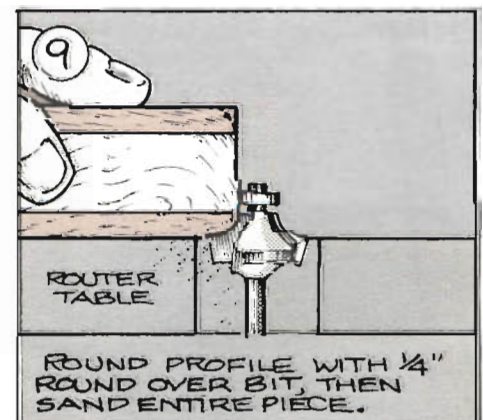
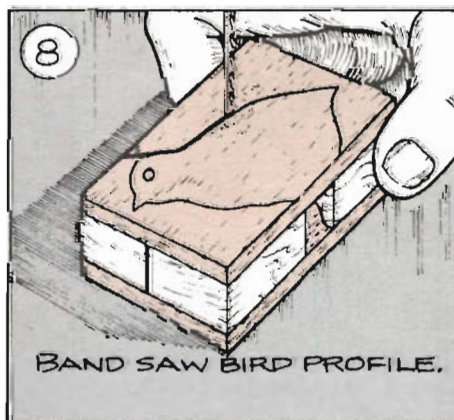
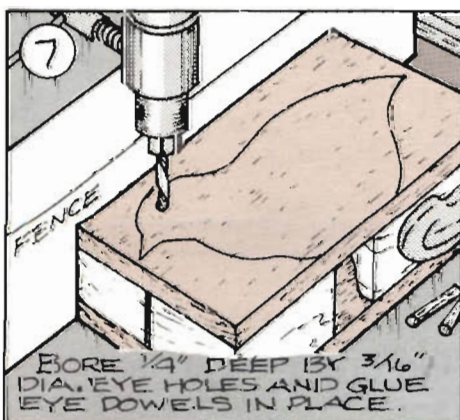
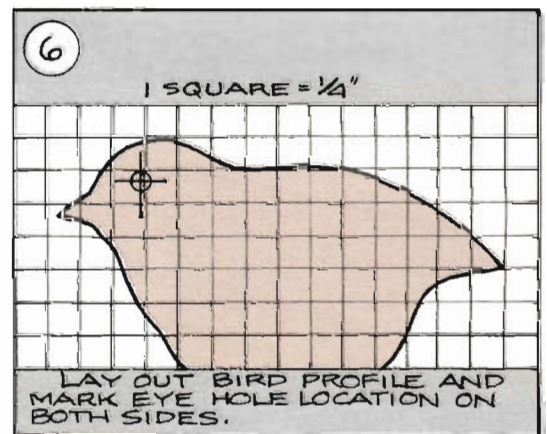
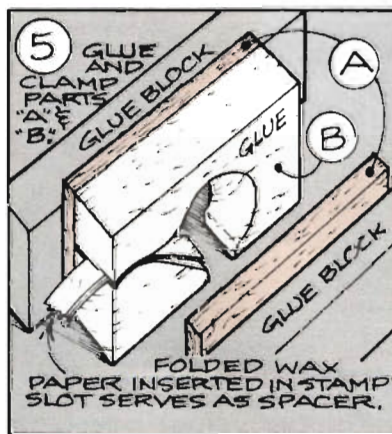
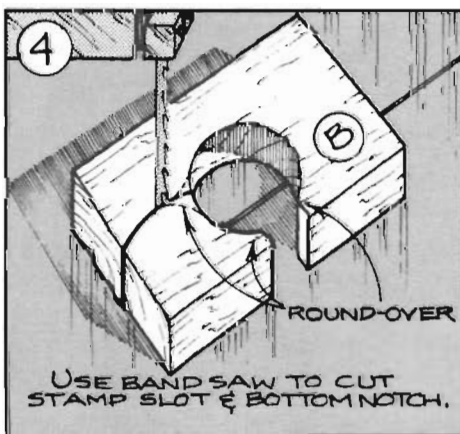
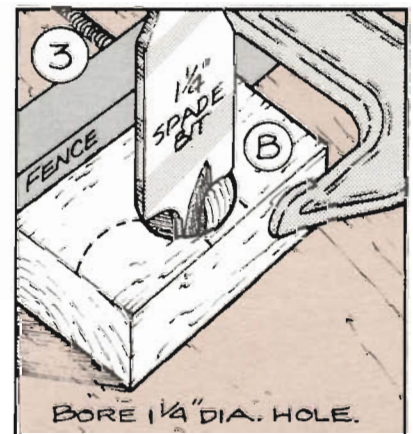
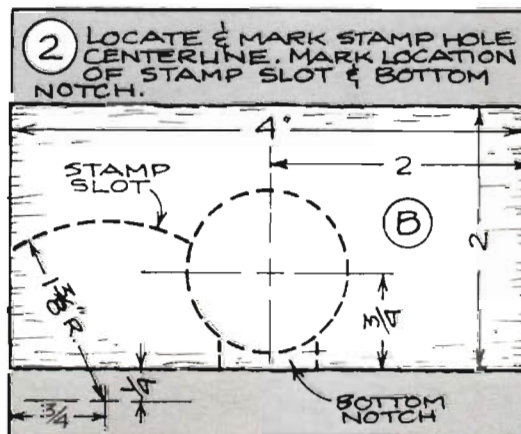
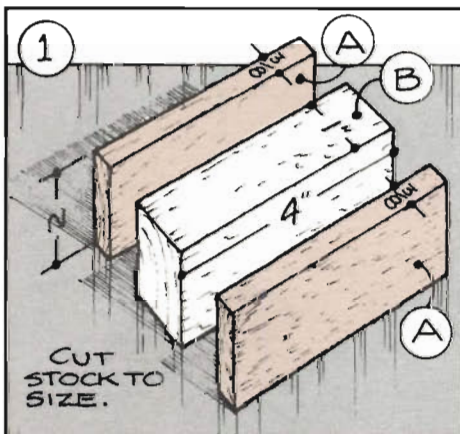
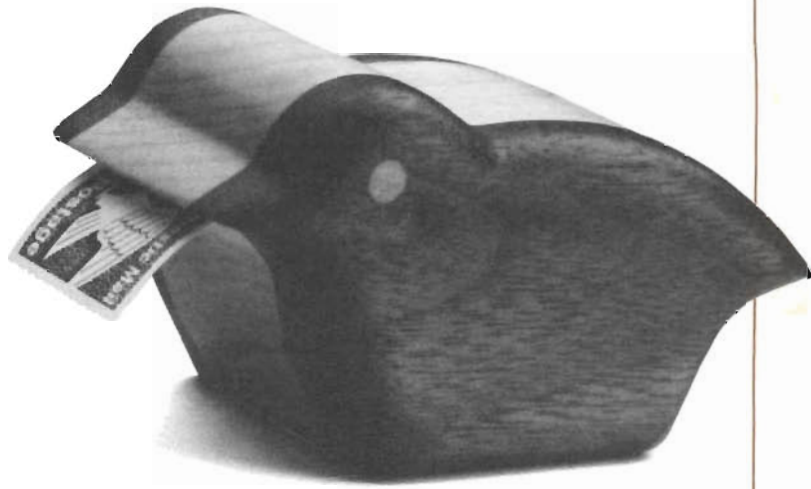


Stamp Dispenser

This little novelty item is an ideal scrap wood project. The bird holds a standard U.S. Post Office issue 100 stamp roll, with the stamps cleverly dispensed through a slot just below the beak. The bird looks best if you use contrasting woods. We suggest a dark wood such as walnut for the outer sections, and a lighter wood such as maple or ash for the center block. Short sections of birch dowel serve as the eyes.

Especially important is the layout of the stamp hole and slot. Note that the passage to the slot is rounded so the stamps do not catch as they unroll. To load the bird, first thread the stamps through the slot and then insert the roll, compressing it slightly to pass through the bottom notch.

Fine sand the bird and finish with tung oil. W&J

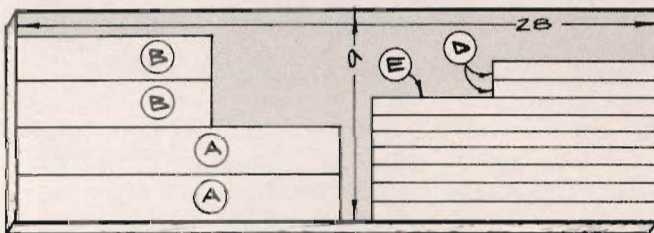


Crumb Collecting Breadboard

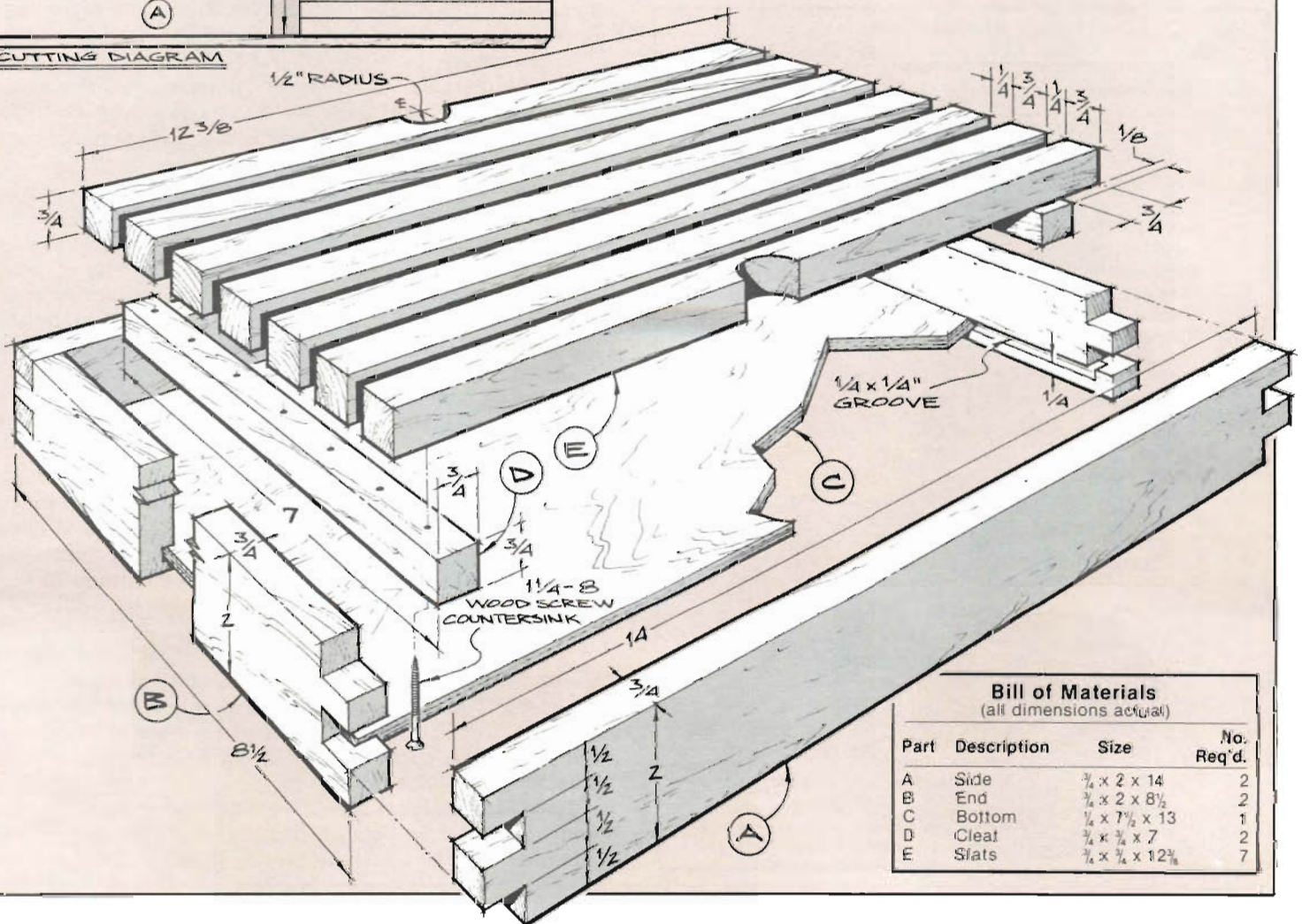
This handsome hardwood cutting board should be a useful item in the kitchen. The finger recesses in the two side slats facilitate lift out of the board section for easy cleaning. As shown in the cutting diagram all the hardwood parts of the project can be cut from a $\frac{3}{4}$ x 9 x 28 in. board. Rock maple is best because of its strength and hardness.

Begin by cutting to size parts A, B, D, and E. Using the dado head, cut the box joint ends on parts A and B. Then, using the router, cut the $\frac{1}{4}$ x $\frac{1}{4}$ in. grooves to accept the plywood bottom. Next, bore the $\frac{1}{2}$ in. radius finger holes as shown in two of the slats, and mount the slats on the cleats. Note the cleat spacing and take time to drill and countersink for each screw to prevent splitting the wood.

Now assemble the sides, ends, and bottom. Final sand all parts and rub in several coats of Behlen's Salad Bowl Finish, a non-toxic oil finish available from Wood Finishing Supply Co., 1267 Mary Drive, Macedon, NY 14502. Cost is \$5.32 per pint plus shipping. W&J

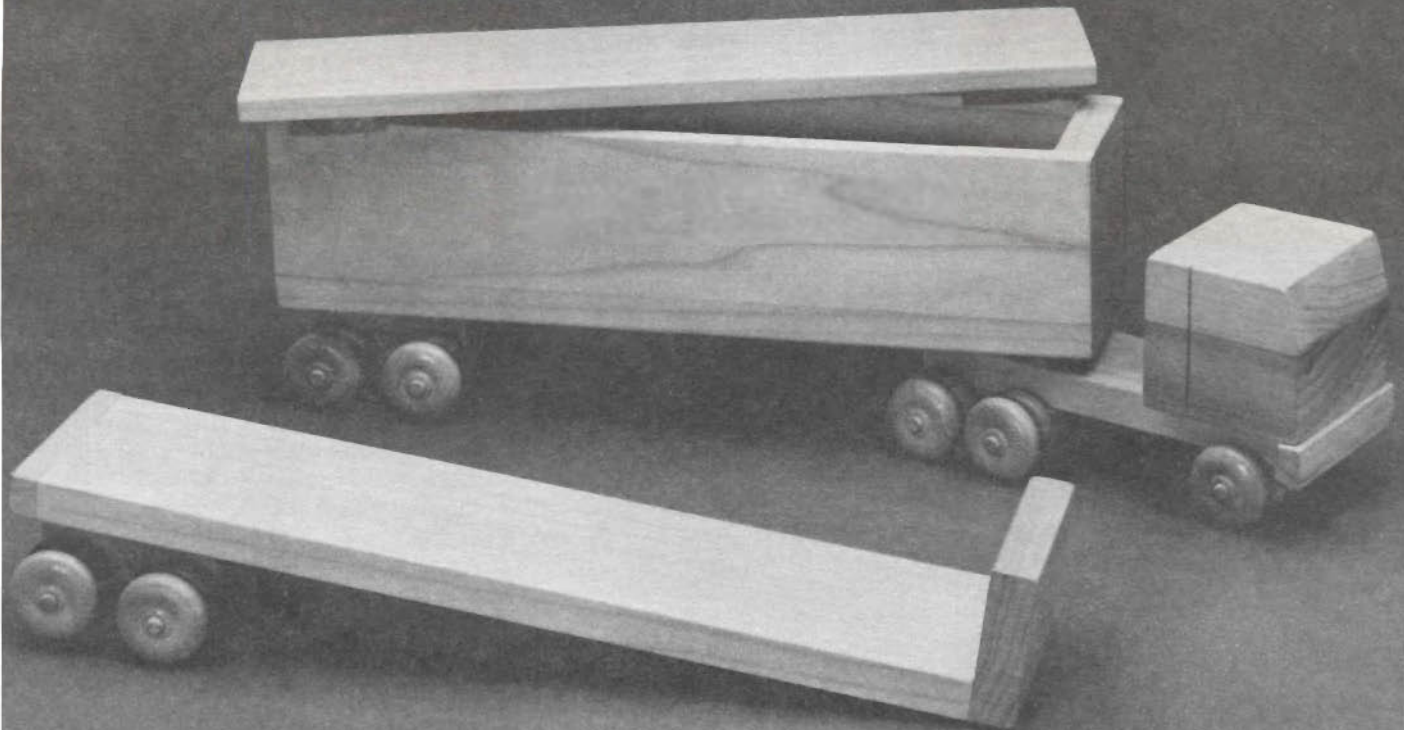


CUTTING DIAGRAM



Bill of Materials
(all dimensions actual)

Part	Description	Size	No. Req'd.
A	Side	$\frac{3}{4}$ x 2 x 14	2
B	End	$\frac{3}{4}$ x 2 x 8 1/2	2
C	Bottom	$\frac{1}{4}$ x 7 1/2 x 13	1
D	Cleat	$\frac{3}{4}$ x $\frac{3}{4}$ x 7	2
E	Slats	$\frac{3}{4}$ x $\frac{3}{4}$ x 12 3/8	7



Toy Truck

Bill of Materials (all dimensions actual)

Part	Description	Size	No. Req'd.
Cab			
A	Top	$\frac{3}{4}$ x $2\frac{1}{4}$ x 2	1
B	Body	1 x $2\frac{1}{4}$ x 2	1
C	Base	$\frac{1}{2}$ x $1\frac{1}{2}$ x 5	1
D	Bumper	$\frac{5}{16}$ x $\frac{1}{2}$ x $2\frac{3}{8}$	1
E	Rear Axle Housing	$\frac{1}{2}$ x $1\frac{3}{4}$ x $1\frac{1}{2}$	1
F	Front Axle Housing	$\frac{1}{2}$ x 1 x $1\frac{1}{2}$	1
G	Rear Axle	$\frac{3}{16}$ Diameter x 3 in. Long	2
H	Front Axle	$\frac{3}{16}$ Diameter x $2\frac{1}{4}$ in. Long	1
I	Wheel	1 in. Diameter x $\frac{1}{4}$ in. Thick*	10
Trailer			
J	End	$\frac{1}{2}$ x 2 x $1\frac{3}{4}$	2
K	Side	$\frac{1}{4}$ x 2 x 10	2
L	Bottom	$\frac{1}{2}$ x $2\frac{1}{4}$ x 10	1
M	Axle Housing	$\frac{3}{4}$ x 1 x $1\frac{1}{2}$	2
N	Axle Spacer	$\frac{1}{2}$ x $\frac{3}{4}$ x $1\frac{1}{2}$	1
O	Axle	$\frac{3}{16}$ Diameter x 3 in. Long	2
P	Wheel	1 in. Diameter x $\frac{1}{4}$ in. Thick*	8
Q	Pivot Pin	$\frac{3}{8}$ in. Diameter x $\frac{3}{4}$ in. Long	1
R	Top Spacer	$\frac{1}{4}$ x $\frac{1}{2}$ x $1\frac{1}{16}$	2
S	Top	$\frac{1}{4}$ x $2\frac{1}{4}$ x 10	1
Flatbed			
T	Bottom	$\frac{1}{2}$ x $2\frac{1}{4}$ x 10	1
U	Front	$\frac{1}{2}$ x $1\frac{3}{4}$ x $2\frac{1}{4}$	1
V	Bumper	$\frac{1}{2}$ x $\frac{3}{8}$ x $2\frac{1}{4}$	1
W	Axle Housing	$\frac{3}{4}$ x 1 x $1\frac{1}{2}$	2
X	Axle Spacer	$\frac{1}{2}$ x $\frac{3}{4}$ x $1\frac{1}{2}$	1
Y	Axle	$\frac{3}{16}$ in. Diameter x 3 in. Long	2
Z	Wheel	1 in. Diameter x $\frac{1}{4}$ in. Thick*	8
AA	Pivot Pin	$\frac{3}{8}$ in. Diameter x $\frac{3}{4}$ in. Long	1

*Available from: The Toymaker Supply Co., 2907 Lake Forest Rd., P.O. Box 5459, Tahoe City, CA 95730. Order part #1540 (package of 40 is \$3.50).

This combination cab-over, semi-trailer, and flatbed truck set is sure to delight any youngster. It is easy to make and well suited to limited production, such as for craft fairs.

Birch, cherry, or maple are ideal for this project which, like most toys, will probably be subjected to some fairly rough handling. Although the truck could also be made from pine, as a softer wood, pine is easy to dent or nick and more likely to break than a hardwood.

Starting with $\frac{1}{4}$ stock, resaw or plane down material with which to make the 1, $\frac{3}{4}$, $\frac{1}{2}$, $\frac{3}{16}$, and $\frac{1}{4}$ in. thick parts. All the parts except the wheels, axles, and pivot pins can be cut either with the table saw or by hand. Take note of grain direction however, as this can be critical to achieving maximum glue strength. As you will see in the Bill of Materials, many parts for the trailer and flatbed are exactly the same.

The kerf line in the cab is made with the band saw, but can also be done by hand using a hacksaw. When drilling through the axle housings use a drill bit that is slightly larger than the $\frac{3}{16}$ in. axle dowel stock, so the axles turn freely and do not bind. Because it is important that these axle holes are straight, if you do not have a drill press, use a drill guide. Next, drill the $\frac{3}{8}$ in. diameter pivot pin holes in the cab base and in the trailer and flatbed bottoms. These pivot pins should be glued into the trailer and flatbed bottoms so they are not lost. Two shallow $\frac{1}{4}$ in. diameter holes drilled into the cab front serve as headlights.

Assemble the cab, trailer, and flatbed. When mounting the twin tandem wheels on the axles, only the outer wheels are glued. The inner wheels on either side of the axle housings ride free. This simplifies assembly since glue squeeze-out into the axle housing hole could be a problem if both wheels on each side were glued.

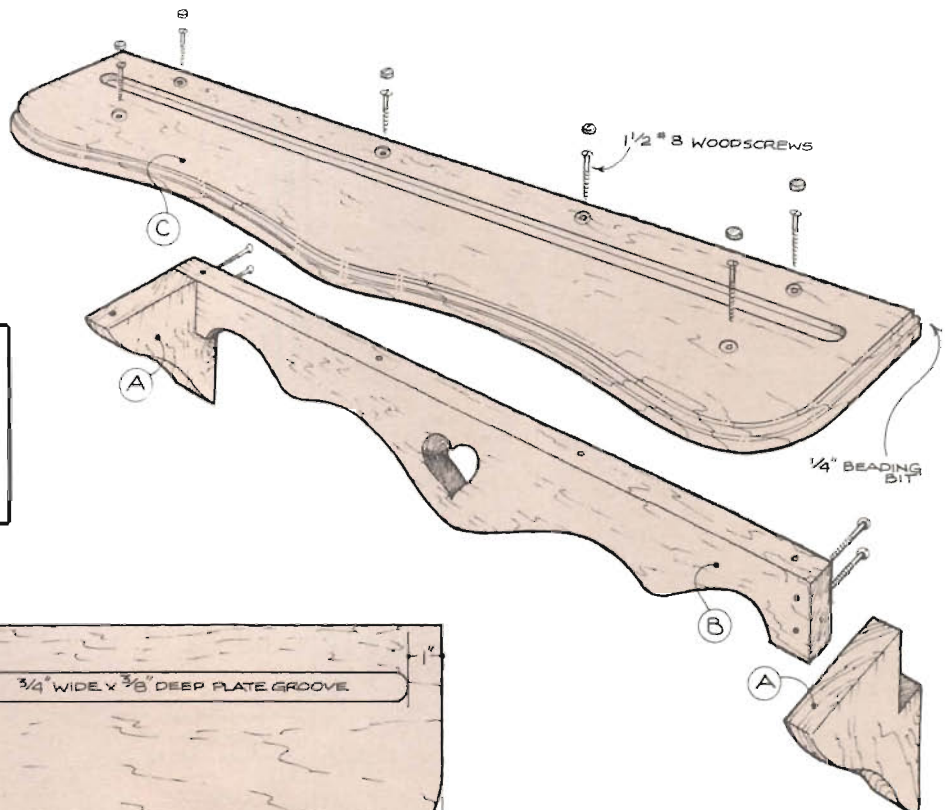
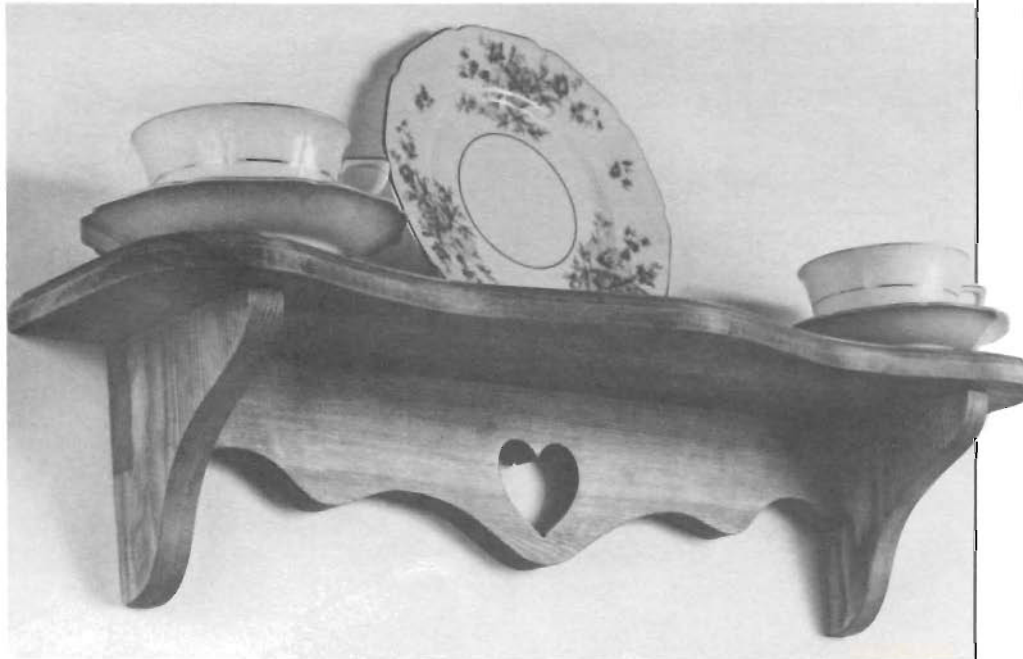
Final sand all edges carefully. We prefer to leave toys for younger children unfinished, given the propensity youngsters seem to have for placing things in their mouths.

Early American Wall Shelf

This attractive, easy-to-build wall shelf features a common Early American decorative motif, the heart cutout. The shelf can be constructed of pine, or from a hardwood such as walnut or cherry. All parts are $\frac{3}{4}$ in. thick.

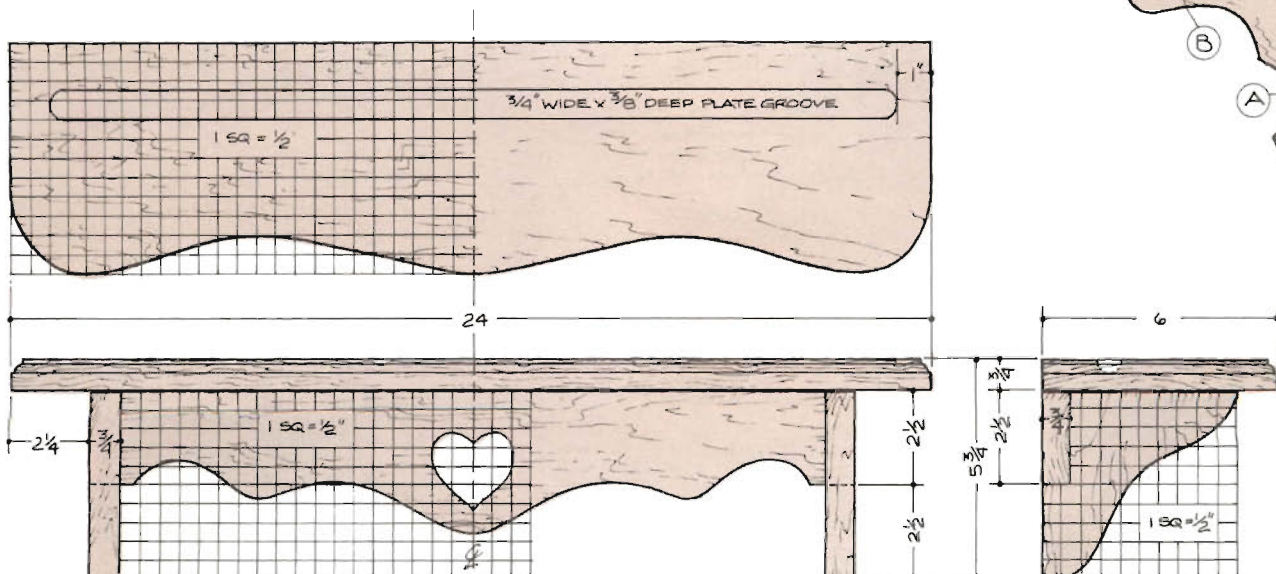
First, rough cut boards to the dimensions shown in the Bill of Materials. Then, referring to the grid patterns, lay out the profiles of the ends, back, and top. Use the band saw or saber saw to cut out these profiles, and notch the ends to accept the back. To make the heart cutout, first drill a hole through which the saber saw blade can be inserted and then carefully cut to shape. Use the router equipped with a $\frac{3}{4}$ in. core box bit to cut the $\frac{3}{8}$ in. deep plate groove in the shelf top. The molded edge along the shelf is made with a $\frac{1}{4}$ in. beading bit.

Assemble the shelf using $1\frac{1}{2}$ in. woodscrews as indicated. Note that the screws through the top are countersunk and plugged. Fine sand the shelf and finish with Deft Danish Oil Finish. 

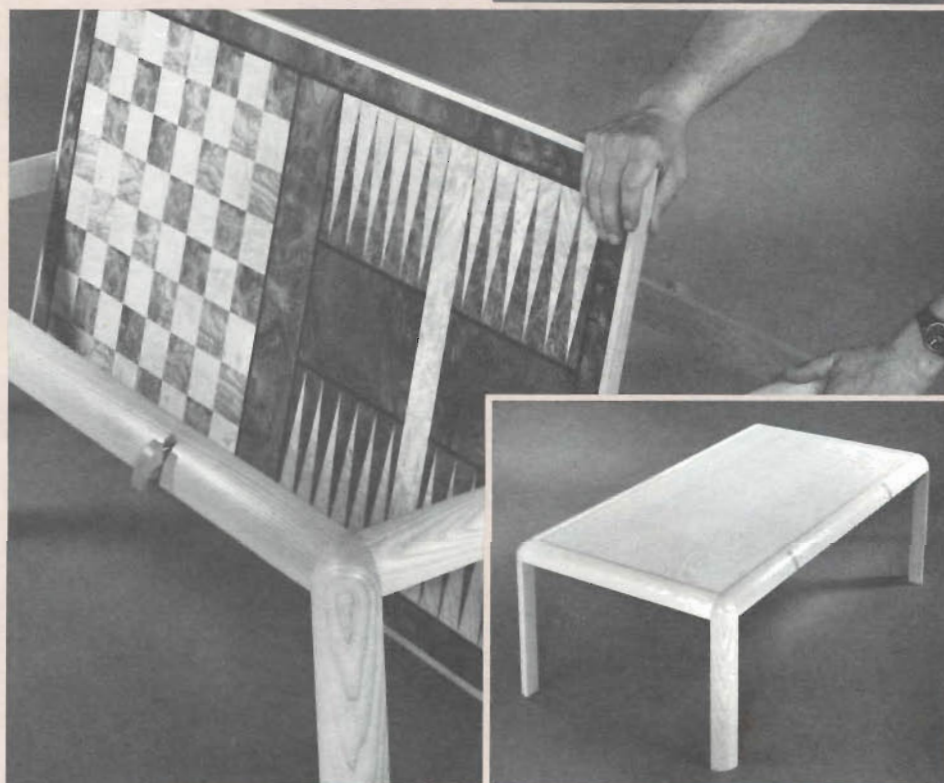


Bill of Materials (all dimensions actual)

Part	Description	Size	No. Req'd.
A	End	$\frac{3}{4}$ x 5 x 5	2
B	Back	$\frac{3}{4}$ x $3\frac{3}{4}$ x $19\frac{1}{2}$	1
C	Top	$\frac{3}{4}$ x 6 x 24	1



Pivot-top Game/Coffee Table



This contemporary game/coffee table is one of the best looking pieces we have seen in a long time. Although we can only describe them to you, the beautiful colors in the contrasting Carpathian elm and white ash burl game board faces (available from Constantine's; see Bill of Materials) are striking indeed.

The coffee table is unique in that its pivoting top actually makes it two tables in one. The opposite side of the top is a plain ash veneer, also available from Constantine's. The design of the table incorporates an interesting split-turning technique which will be explained later.

Begin by making the veneered top (parts A, B, C, D, and E). Since the game board veneer is quite wavy, it must first be flattened before using. To flatten it you'll need to make a simple press from four pieces of $\frac{3}{4}$ in. thick particle board, each piece measuring 2 feet wide and 4 feet long. A single 4 foot by 8 foot sheet of $\frac{3}{4}$ in. particle

board will provide enough material for the four pieces.

In order to provide even clamping pressure across the width of the particle board, you'll also need to make a dozen caul cleats. The caul cleats we will use here are simply 2 foot long 2 x 4's on edge, with the bottom edge shaped into a gentle curve (see Fig. 1). To scribe the curve, we found that a metal yardstick works well as it's flexible enough to bend into a smooth curve. After scribing the curve with a pencil, a band saw is used to cut it to shape.

Now, lay two of the four particle board pieces on your workbench (with the edges flush) and cover the top piece with wax paper. Note that the "good" side of the game veneer is covered with tape. In order to flatten it, you'll first need to moisten the opposite or "down" side with a mixture of glycerine (available at any drug store) and water. Mix one part glycerine and two parts water and pour the solution

into an old plastic spray bottle (see shop tip on page 51). Spray the "down" side of the veneer so that the entire surface is moistened, but not so much that it becomes soaked. Now place it on the wax paper, cover it with more wax paper and place the remaining two sheets of particle board on top.

Place caul cleats on the top and bottom of the press, opposite each other, with the curved edge against the particle board. Use a bar or pipe clamp to clamp them at each end (Fig. 2). As the clamps are tightened the curved shape of the caul cleats will flatten out enabling pressure to be applied along the entire width of the press. Use all six pairs of cleats. Install one pair at the middle, one pair at each end, then space the remaining pairs in between.

The top core (A) is made from $\frac{3}{4}$ in. thick birch plywood cut to a width of 2 feet and a length of 4 feet. Apply a heavy coat of white (not yellow) glue to both sides. One of those 3 in. wide trim rollers used to "edge" paint comes in handy as a fast and easy way to apply the glue. We don't suggest yellow glue here because it sets too fast. Since it takes a fair amount of time to complete this glue-up process, you'll want white glue which dries more slowly.

Once again, lay two of the particle board pieces on the workbench and cover with wax paper. Place the flattened game board on the wax paper, good side down, then place the plywood on top and align the edges. Now lay the ash veneer (C), good side up, on the plywood, again aligning the edges. Add more wax paper to the top, then use the caul cleats to apply clamp pressure. Apply the center cleat first and work toward each end with the remaining cleats. It's important to apply pressure to as much of the surface as is possible, so if you have any C-clamps

Bill of Materials (all dimensions actual)

Part	Description	Size	No. Req'd.
A	Top Core	$\frac{3}{4}$ x 23 x 47	1
B	Game Board Veneer	As Req'd.*	1
C	Ash Veneer	As Req'd.*	1
D	Side Edging	$\frac{3}{8}$ x $\frac{3}{4}$ x 47	2
E	End Edging	$\frac{3}{8}$ x $\frac{3}{4}$ x 23	2
F	Locking Pin Pull	$\frac{7}{8}$ x 1 $\frac{1}{2}$ x 2**	4
G	Steel Locking Pin	$\frac{1}{8}$ Dia. x 1 $\frac{1}{4}$ Long	4
H	Steel Pivot Pin	$\frac{1}{8}$ Dia. x 1 $\frac{1}{4}$ Long	2
I	Leg	2 x 2 x 18***	4
J	Side Apron	2 x 2 x 24***	4
K	End Apron	2 x 2 x 24***	2

*Available from Constantine's, 2050 Eastchester Rd., Bronx, NY 10461. Game board veneer is part #MF7, cost is \$64.45. Ash veneer is part #V.1, cost is \$.35 per square foot.

**Length and width dimensions allow for later trimming.

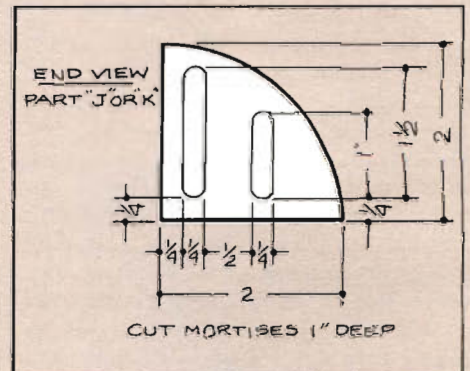
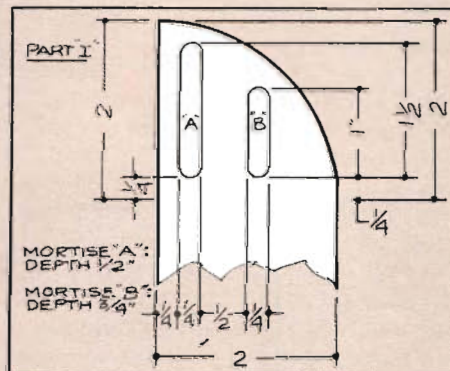
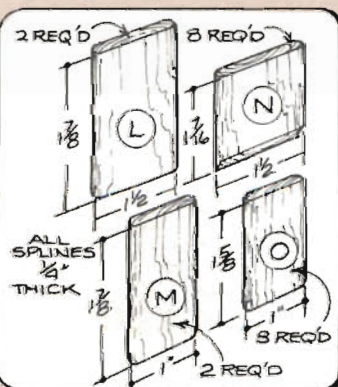
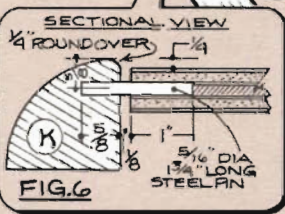
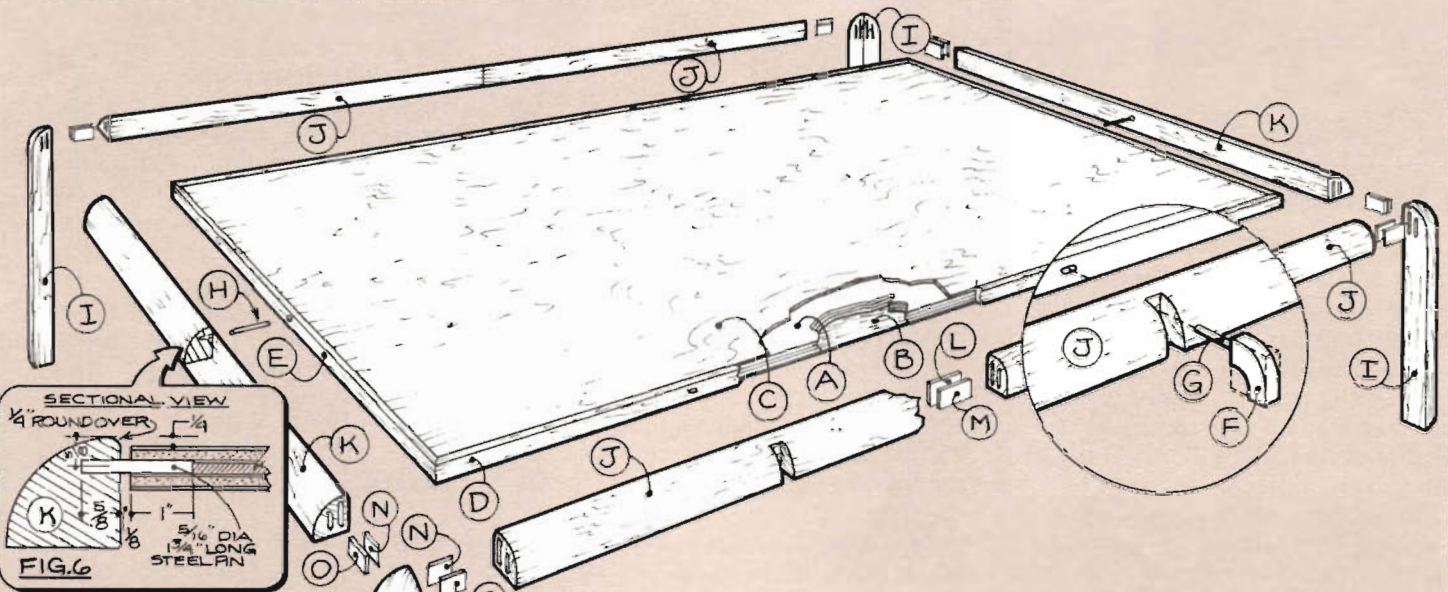
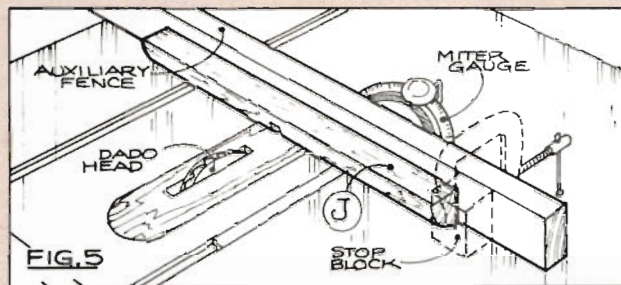
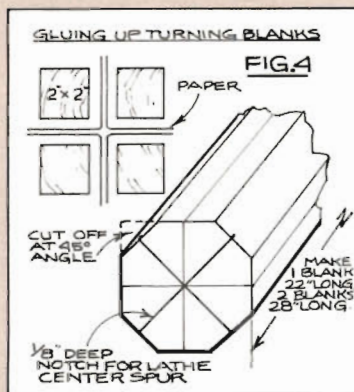
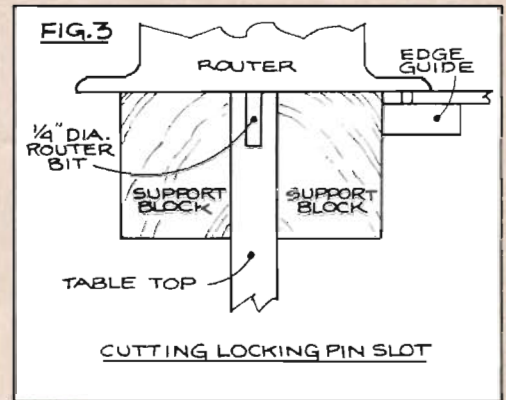
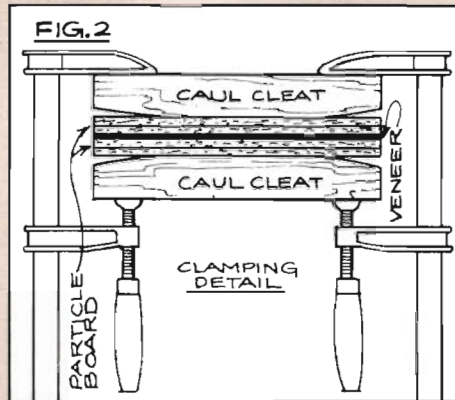
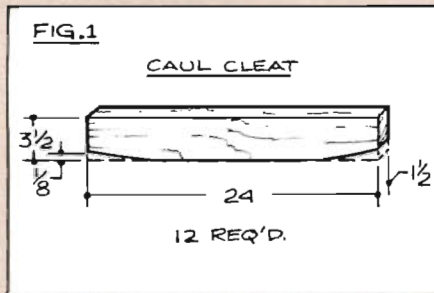
***Turned from glued-up blank — see Fig. 4.

or handscrews, put them to use between the cleats. Allow to dry at least 24 hours — even longer if possible.

Next, remove the veneered top from the press and remove the veneer tape from the game board along with any excess glue. A scraper will come in handy here; just be careful not to go through the veneer.

At this point the top is slightly longer and wider than necessary, and it must be trimmed at a point $1\frac{1}{2}$ in. from the inlay border around the perimeter of the game board (see drawing detail). Use a pencil to scribe this line along one long side, making sure the line is parallel to the inlay border, then use the band saw to cut within $\frac{1}{8}$ in. of the

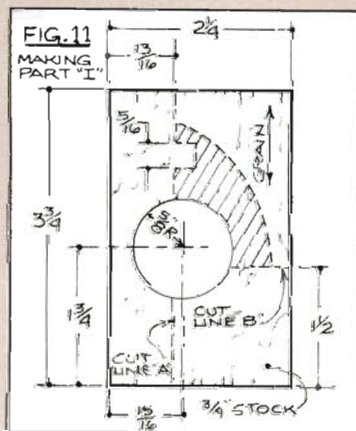
line. When cutting, use care to avoid splintering the veneer. Next, joint one edge of a 5 foot long 2 x 4 and clamp the jointed edge so that it is exactly on the line. Next, the router with a 1 in. flush trim bit can be used to cut the edge exactly to the line. Now, that you have one edge that is straight and parallel to the game board, the table



All legs and aprons are made on the

The spline mortises for the rails and legs are cut using the router table and a 1/4 in. straight bit. The mortise locations are shown in the drawing detail. As always, when using the router to make a deep cut, do it in several passes.

Final sand all legs and apron before applying Watco to the sanded surfaces.



The settle bench was a convenient article of furniture in the colonial home, doubling as both a table and bench. This bench, which can be built from either pine or hardwood, is an excellent example of traditional Colonial style craftsmanship. It includes the most desirable settle bench features: the wide pivoting table top, and the hinged seat board opening to a storage compartment below.

Except for the four turned hinge pins the entire piece can be crafted from 3/4 in. thick stock. However, unless you have access to very wide boards you will have to glue up stock to make the sides (A), the seat board (I), and top (L).

After cutting to size parts A through L, use the band saw or saber saw to shape the sides and round the corners of the cross braces and top. Dovetail the stretcher ends to the dimensions shown in the dovetail detail and notch the sides to accept these dovetailed stretchers (C). The side extensions (B) are then applied over the stretchers, locking them in place. Mount the cleats (D, E, and F) as shown, using screws inserted through slotted holes. The bottom (G) is then mounted to the cleats, also with screws through slotted holes.

Next glue in place the fixed hinge board (H). Although we have shown breadboard ends applied on the seat board (see seat top detail), the seat board can also be made without these ends. However, since the function of the

breadboard ends is to prevent cupping in the wood, if you dispense with the ends make certain that the stock you select for the seat board is even grained and not likely to warp. Mount the seat board to the hinge board with a pair of 2 1/2 in. butt hinges.

After the top has been made fasten it securely to the two cross braces (K). Because the fastening system used here must accommodate movement across the width of the top, we have chosen to use screws inserted through the top, countersunk and then plugged. A fixed center screw is inserted to equalize movement, while the outer screw holes are elongated (slotted) to accommodate this movement. The fastening detail shows a cross section of these slotted screw holes. When elongating the screw holes take care that they are indeed slotted and not merely enlarged, lest the screw shoulder have no surface to bear on.

Now use the lathe to turn the four hinge pins (M), as shown in the grid pattern detail. If you do not have a lathe these hinge pins can be rough shaped with a draw knife. Bore 1 in. holes through the cross braces and ends, mak-

ing sure that the holes are properly aligned so the hinge pins fit easily through. This is best accomplished by temporarily clamping the top in place and then boring through both pieces at once.

Finish the settle bench to your own taste. If you use a soft wood such as pine for the construction, polyurethane finish will help protect the surface. W&J

Bill of Materials
(all dimensions actual)

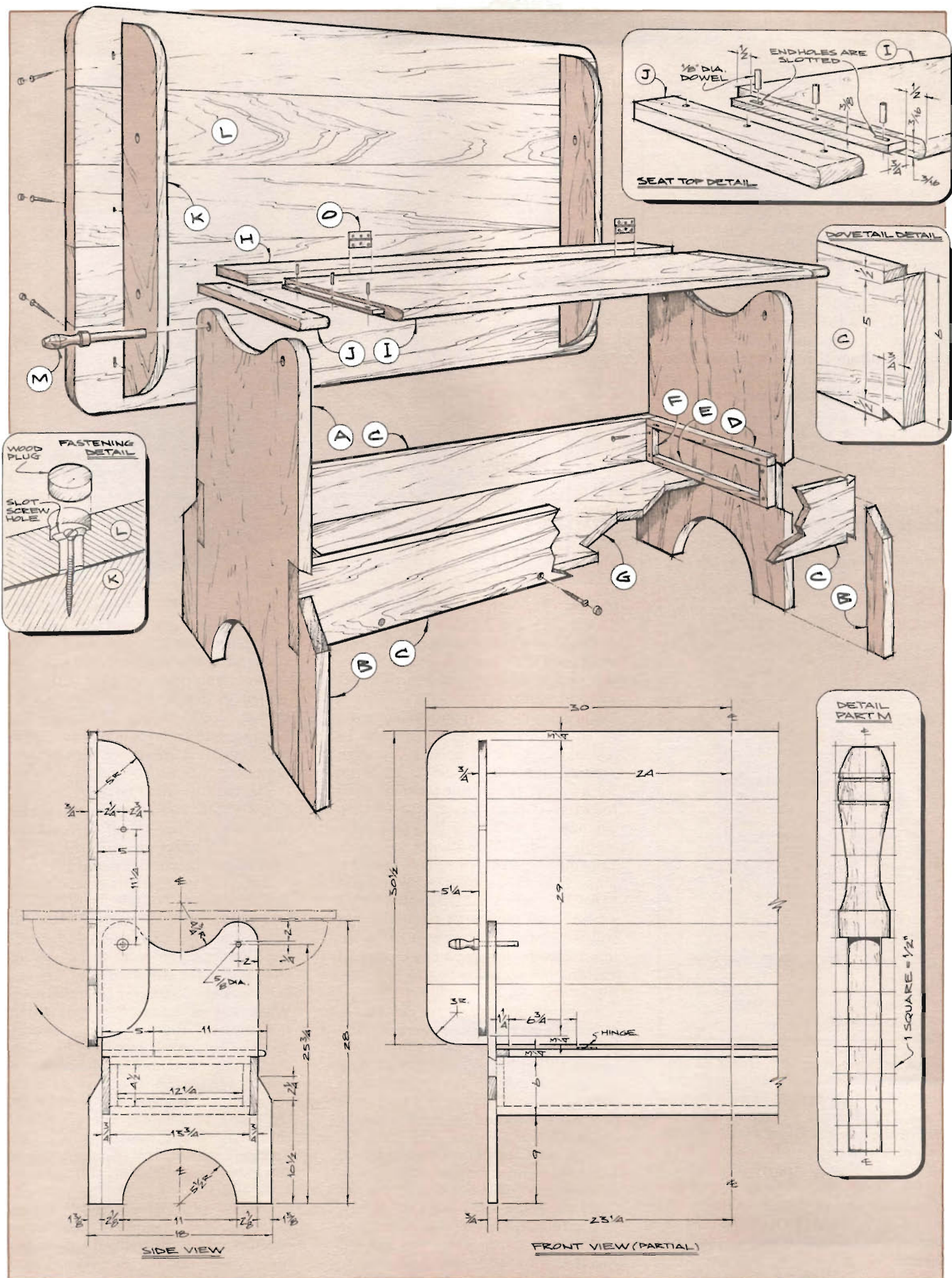
Part	Description	Size	No. Req'd.
A	Side	3/4 x 15 1/4 x 28	2
B	Side Extension	3/4 x 1 7/8 x 12 1/4	4
C	Stretcher	3/4 x 6 x 48	2
D	Upper Cleat	3/4 x 3/4 x 13 3/4	2
E	Lower Cleat	3/4 x 3/4 x 12 1/4	2
F	End Cleat	3/4 x 3/4 x 4 1/2	4
G	Bottom	3/4 x 13 3/4 x 46 1/2	1
H	Fixed Hinge Board	3/4 x 5 x 46 1/2	1
I	Seat Board	3/4 x 11 x 45 1/2*	1
J	Breadboard End	3/4 x 1 1/4 x 11	2
K	Cross Brace	3/4 x 5 x 29	2
L	Top	3/4 x 30 1/2 x 60	1
M	Hinge Pin	As Shown	4
O	Hinge	2 1/2 in. Butt Hinge	2

*includes tenon



Photo by Author

Settle Bench
By Gordon H. Bock



Made entirely from pine, this handsome storage cupboard comes from the collection at Hancock Shaker Village in Hancock Massachusetts. The large top drawer is almost three feet wide and the double panel doors below provide access to plenty of additional storage area.

The two sides (A) are made first. In order to obtain the 18 $\frac{3}{4}$ in. width it will be necessary to edge-glue two or more narrower boards. When edge-gluing, be sure to allow a little extra stock for both the width and length.

Next, lay out the location of the 1 in. wide by $\frac{1}{4}$ in. deep dados for the upper shelf (C) and the center shelf (D), and also the 1 in. wide by $\frac{1}{4}$ in. deep rabbet for the bottom (E). A router equipped with a straight bit provides the easiest way to make this cut; simply clamp a straightedge guide to the side stock, offsetting the guide an amount that will properly locate the router bit.

As shown in the exploded view, the front edge of each side has a $\frac{3}{4}$ in. deep notch that extends from the bottom to a point 8 $\frac{1}{4}$ in. from the top. To cut the notch, set the table saw rip fence at a point $\frac{3}{4}$ in. from the left side

Shaker Single-Drawer Cupboard



Bill of Materials (all dimensions actual)

Part	Description	Size	No. Req'd.
A	Side	1 x 18 $\frac{3}{4}$ x 28 $\frac{1}{2}$	2
B	Stretcher	1 x 2 $\frac{1}{2}$ x 35 $\frac{1}{2}$	1
C	Upper Shelf	1 x 18 $\frac{3}{4}$ x 35 $\frac{1}{2}$	1
D	Center Shelf	1 x 18 x 35 $\frac{1}{2}$	1
E	Bottom	1 x 18 x 35 $\frac{1}{2}$	1
F	Center Divider	$\frac{1}{2}$ x 18 x 9	1
G	Lower Divider	$\frac{1}{2}$ x 18 x 8 $\frac{1}{4}$	1
H	Cleat	1 x 1 x 13	2
I	Top	$\frac{3}{4}$ x 19 x 36 $\frac{3}{4}$	1
J	Top Front	$\frac{3}{4}$ x 1 x 38	1
K	Top End	$\frac{3}{4}$ x 1 x 20	2
L	Back	$\frac{3}{4}$ in. boards shiplapped As Req.	
M	Side Stile	$\frac{3}{4}$ x 4 x 19*	2
N	Center Stile	$\frac{3}{4}$ x 7 x 19*	1
O	Rail	$\frac{3}{4}$ x 2 x 37	1
P	Door Stile	$\frac{3}{4}$ x 2 $\frac{1}{4}$ x 18 $\frac{1}{4}$	4
Q	Door Rail	$\frac{3}{4}$ x 1 $\frac{1}{4}$ x 11*	4
R	Panel	$\frac{3}{8}$ x 7 x 15 $\frac{1}{2}$	2
S	Knob	1 in. diameter	4
T	Drawer Front	$\frac{7}{8}$ x 7 $\frac{1}{16}$ x 35 $\frac{3}{8}$	1
U	Drawer Sides	$\frac{3}{4}$ x 6 $\frac{1}{4}$ x 18 $\frac{1}{4}$	2
V	Drawer Back	$\frac{3}{4}$ x 6 $\frac{1}{8}$ x 34 $\frac{3}{4}$	1
W	Drawer Bottom	$\frac{1}{2}$ x 18 x 33 $\frac{3}{8}$	1
X	Latch	See Detail	2

*includes tenons

(when looking from the front) of the saw blade. With the front edge of the side held firmly against the rip fence, make a ripping cut starting at the bottom of the side stock and continuing to a point 8 $\frac{1}{4}$ in. from the top. Now shut off the saw and remove the stock. You'll note the ripping cut has established almost the entire length of the notch. A sharp chisel can be used to remove the remaining portion and to square the end of the notch.

The upper shelf (C), center shelf (D),

bottom (E), center divider (F), lower divider (G) and top (I) can now be made. Since all these parts require wide stock, you'll once again need to edge-glue two or more narrow boards to get enough width.

The basic carcass (consisting of parts A, B, C, D, E, F, and G) can now be assembled. Give all parts a thorough sanding, then dry assemble to check for a proper fit up. For the most part, the original piece was assembled with cut nails, a technique that was commonly used. Old-fashioned cut nails can still be purchased today. The Tremont Nail Co., Box 111, Wareham, MA 02571 sells what they call a "Fine Finish" nail (no. N-19 standard) that will work well. Order the 4d (1 $\frac{1}{2}$ in. long) size. To minimize any chance of splitting the wood it's best to first bore a pilot hole for each nail.

Using the cut nails, first join part C to F. No glue is necessary here since an end grain glue joint has little, if any, strength. Drive the nails (about four are needed) through the top surface of part C and into the top end of F. The driven nails should be flush with the top surface of part C.

Next, part D can be joined to part G using the same technique. In this case, however, the nails are driven into the dado cut in the top surface of part D.

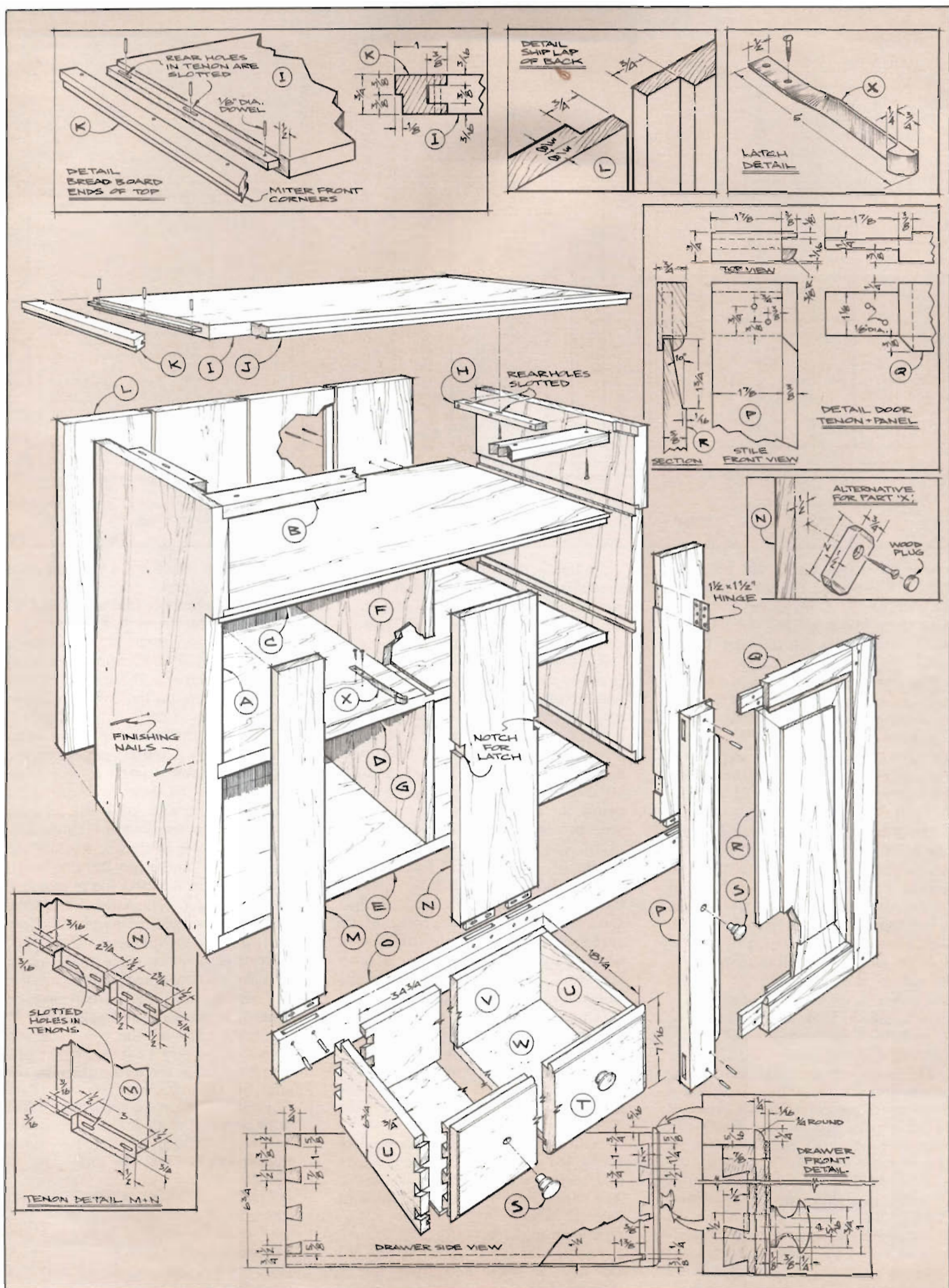
Use four light pipe or bar clamps to temporarily clamp parts CF and DG together. Now add parts A, B, and E, again using the cut nails without glue.

It's important that the chest be square, so check it at this point. If all looks satisfactory, cut the two cleats (H) to size and screw them to the sides as shown. Note the two rear holes are slotted so that when the top (I) is attached, it will be free to expand and contract with changes in humidity. The holes in part B are slotted for the same reason.

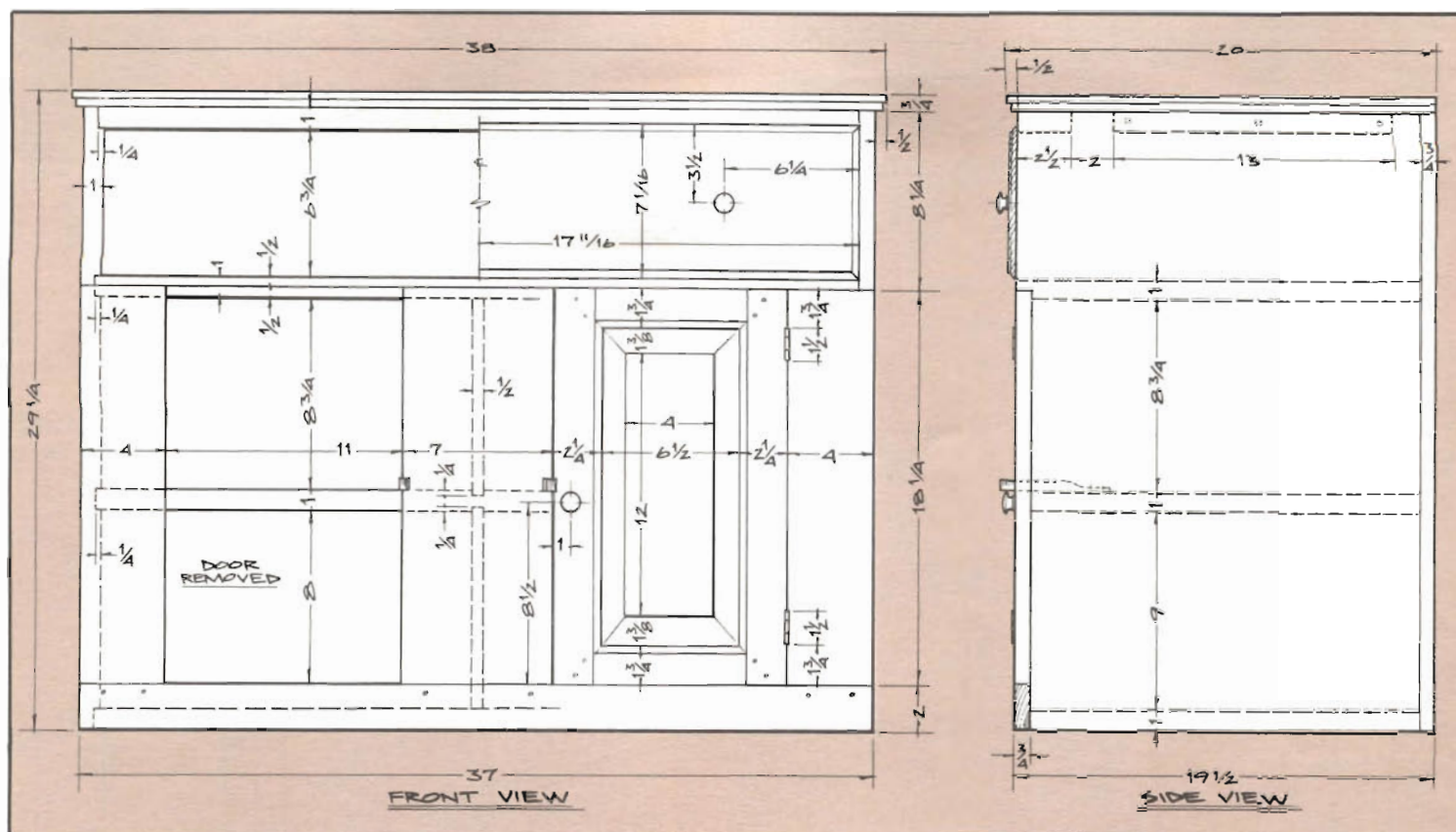
The back boards (parts L) can now be cut to size and rabbeted lengthwise as shown. A pair of cut nails spaced about 2 in. apart are driven into the back edge of parts C, D, and E.

Next, the front frame (parts M, N, and O) is made. The tenons on the bottom end of parts M and N are best cut using the table saw and dado head. Refer to the tenon detail for all dimensions. Once the tenons are cut, lay out and mark the location of the mortises. When making the mortises, you'll find that most of the waste stock can be removed by cutting a series of holes using a $\frac{1}{8}$ in. diameter drill bit. When drilling though, be sure to keep the bit square to the edge so that later, when the frame is assembled, the tenons will fit snugly in the mortises. After the holes are drilled, the remaining waste stock can be cleaned up with a sharp hand chisel.

Dry assemble parts M and N to part O using pipe clamps to hold them together. Bore the $\frac{1}{8}$ in. diameter pin holes, then remove the clamps and separate the parts. Now, use a small



(continued on next page)



round file to elongate the holes as shown. Reassemble the parts, then apply glue to the $\frac{1}{4}$ in. dowel pins and drive them in place. Only the pins are glued — not the mortise and tenon joint.

The frame can now be joined to the carcass. Apply a thin coat of glue to the mating surfaces on the front edge of parts A, E, F, and G. Don't glue to part D. Use cut nails to secure the frame in place. At the top of the frame, the nails are driven through part C into the ends of parts M and N.

The door stiles (P) and rails (Q) can now be cut to length and width. When cutting the stiles, it's best to allow at least an extra inch on each end. After the mortises are cut, this extra length can be trimmed off. Use a router with a $\frac{1}{4}$ in. piloted round-over bit to cut the bead on all rails and stiles. Note that the cutter depth should be set to establish a $\frac{1}{16}$ in. step as shown.

Next, use the table saw to cut the $\frac{1}{4}$ in. wide by $\frac{1}{8}$ in. deep groove that accepts the panel (R).

The tenon on each end of parts Q can be cut on the table saw using a dado head cutter, although repeated passes with a regular saw blade will also work. A $\frac{1}{4}$ in. diameter drill bit can be used to remove most of the waste stock. Use the bit to bore a series of holes, then clean up the remaining material with a hand chisel. Once the mortises are cut the stiles can be trimmed on each end to their exact length.

At this point, if you try to assemble a rail and stile, you'll note that they can't

close tightly until a 45 degree cutout is made on each piece. Use a sharp chisel here, and work carefully as this must be a tight joint to look good. Remove only a little material at a time.

The two panels (R) are made next. Begin by cutting each one to length and width from $\frac{1}{8}$ in. thick stock. In order to cut the raised panels on the table saw it will be necessary to make a plywood insert (the opening in a standard insert is too big). Set the saw blade to make a 10 degree cut, then lower the blade below the table. Trace the outline of your present insert on a scrap piece of plywood — $\frac{1}{4}$ in. thick for a Sears 10 in. saw, $\frac{1}{2}$ in. thick for a Delta Unisaw. With a band or saber saw, cut out the pattern slightly oversized, then sand to fit snugly in the opening. Make sure the plywood is flush with the top of the table saw. Now, using a push stick to hold down the insert, start the saw and raise the saw blade very slowly. Continue raising the blade until it is $1\frac{3}{4}$ in. above the table. The rip fence can now be adjusted so that the blade will cut a $\frac{1}{4}$ in. shoulder as shown. With the panel held firmly against the rip fence, run the panel through the blade on all four sides.

With the panels cut, the doors can be assembled. Apply glue to the mortises and tenons then assemble as shown. The panels must be free to move with changes in humidity, so be sure not to glue them in place.

The drawer (parts T, U, V, and W) can now be made and assembled as shown. Note that the bottom is made

using a $\frac{1}{2}$ in. thick solid stock beveled on all four edges.

The top assembly (parts I, J, and K) can be completed next. Use the dado head cutter to cut the tenons on each end of part I. Parts J and K are identical in profile except for the fact that part K has a $\frac{1}{4}$ in. by $\frac{1}{4}$ in. mortise to accept the tenon on each end of part I.

Note that the two rear dowel holes are slotted to allow movement of the top. Dry assemble parts K to I using pipe clamps to hold everything in place. Lay out and mark the location of the front miters and bore three $\frac{1}{4}$ in. dowel pin holes as shown. Remove the pipe clamps and separate the parts, then use a small round file to elongate the two rear holes. After cutting the miters, reassemble the parts and apply glue to the $\frac{1}{4}$ in. diameter dowel pins, then drive them in place. Remember, only the pins are glued, not the mortise and tenon joint. Part J can now be mitered at the ends and edge-glued to the front edge of the top. The top assembly can now be joined to the carcass by driving screws up through the stretcher (B) and cleats (H).

The Shakers used a special latch (see latch detail) that's not available today, so we've provided an alternative turn-button latch. One for each door is needed.

Final sand all parts finishing with 220 grit. If your cabinet is pine, you may want to apply a stain. We like Minwax's Golden Oak Wood Finish. A good quality penetrating oil makes a good final finish.

Fold-up Workbench

Designed by Brian Carlin

For many woodworkers, space — or more precisely the lack of it — is a genuine problem. Even those individuals with shops often find themselves in need of an extra work surface. Because traditional workbenches take up valuable shop area whether or not they are being used, a versatile fold-up workbench can be an especially handy item. This sensibly designed wall-mounted bench folds up flush against the wall into a space only 3½ in. deep.

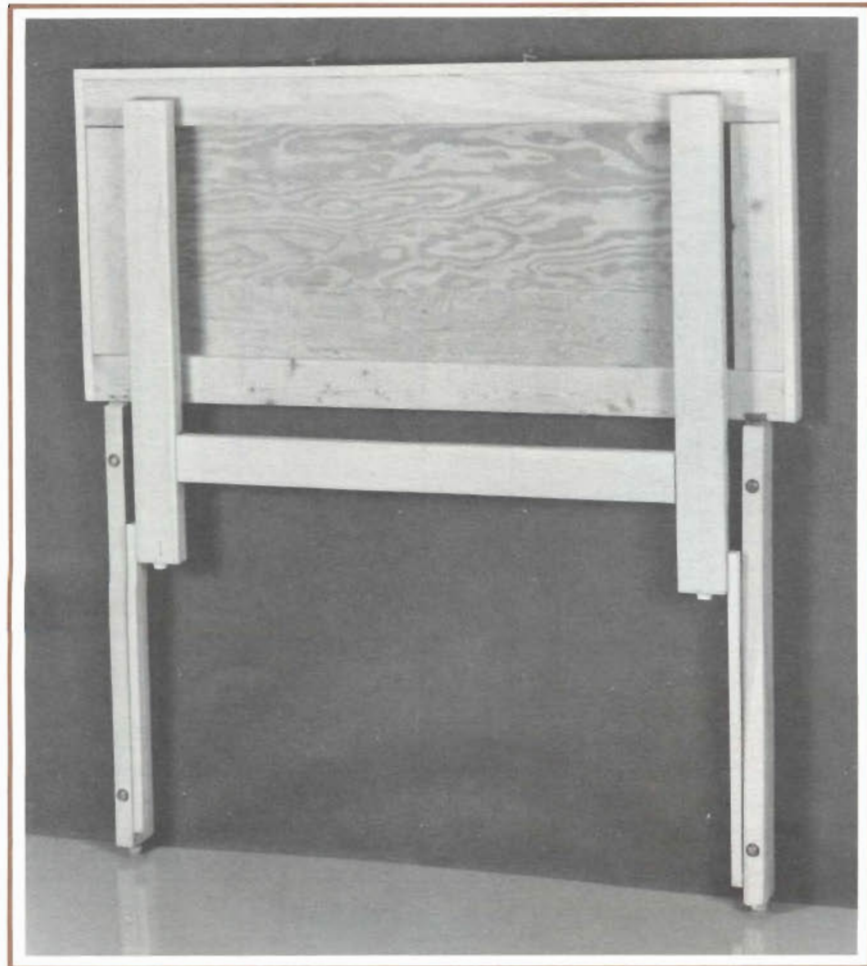
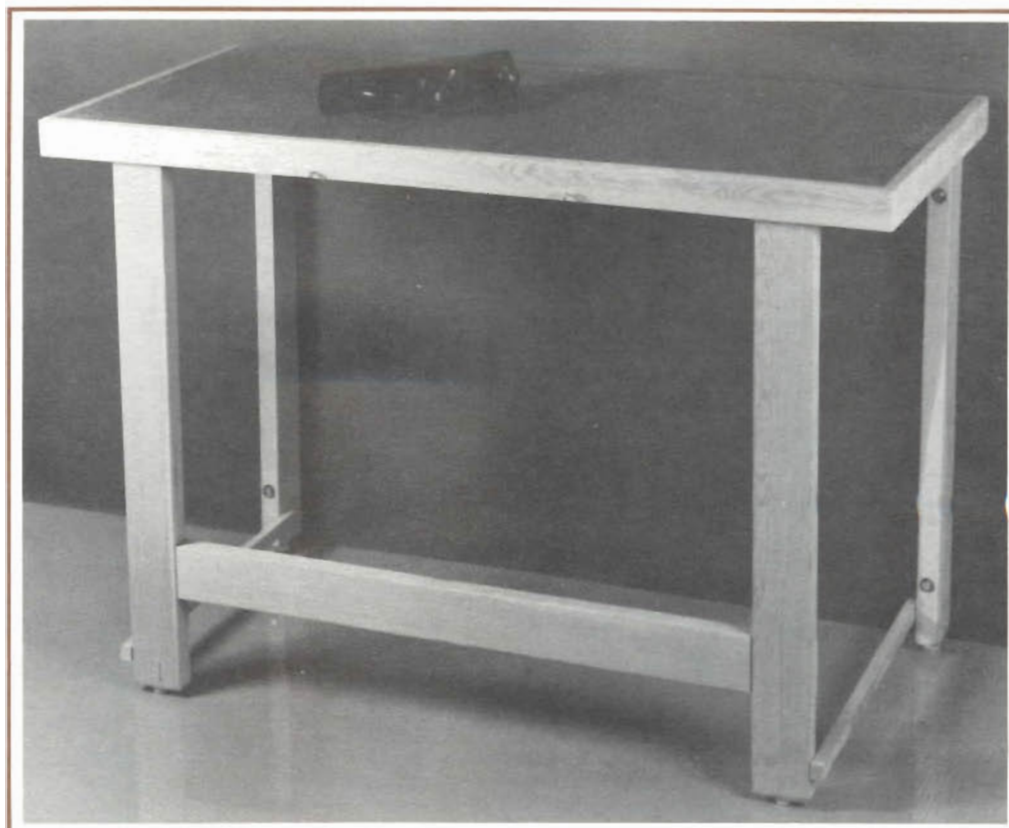
The bench is constructed of standard two-by-fours, ¾ in. thick pine or hardwood, and a hardboard (Masonite) over plywood work surface. The basic frame members (A, B, C, E, and F) can be cut from four standard eight foot long two-by-fours, and the swiveling stretchers (D) and the edging (I and J) can be cut from a 6 in. wide by 54 in.

long board. As shown, half lap parts E and F and notch the front legs (A) to accept the half-lapped stretcher (C).

Assemble the bench using glue and screws on all the lapped joints, and glue and finishing nails to apply the

edging. Both the plywood (G) and hardboard (H) are screwed but not glued down to facilitate replacement of the work surface should this be necessary. Note that the 1½ x ¾ in. hinges are notched into the back legs. Use washers at the wear points between the swiveling stretchers and the legs.

The bench is mounted by screwing through the back legs at both the top and bottom into the wall. The type of screw and anchoring system will of course depend on the wall composition. In any case, make certain that the bench is mounted securely. If desired, a woodworking vise can be added. Sears sells one (part #5190) that fits nicely. When the bench is folded (see up position view) a simple hook and eye can be used to hold it in place.



Bill of Materials

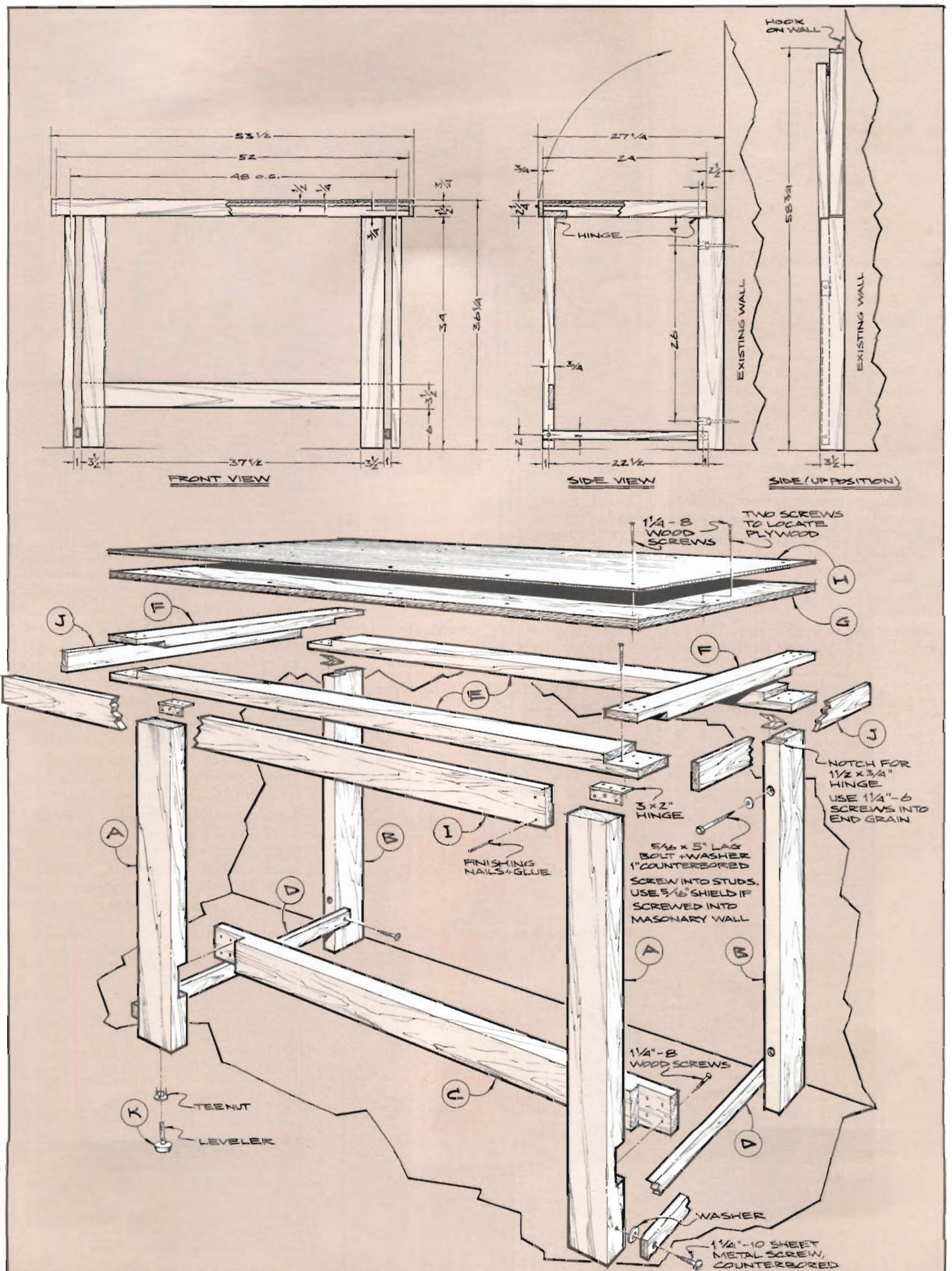
(all dimensions actual)

Part	Description	Size	No. Req'd.
A	Front Leg	1½ x 3½ x 34	2
B	Back Leg	1½ x 3½ x 34	2
C	Stretcher	1½ x 3½ x 44½	1
D	Swiveling Stretcher	1 x 1 x 24½	2
E	Frame Front & Back	1½ x 3½ x 52	2
F	Frame Ends	1½ x 3½ x 24	2
G	Bench Base	½ x 24 x 52*	1
H	Bench Surface	¼ x 24 x 52**	1
I	Front Edging	¾ x 2¼ x 53½	1
J	Side Edging	¾ x 2¼ x 24	2
K	Levelers		4

*Plywood

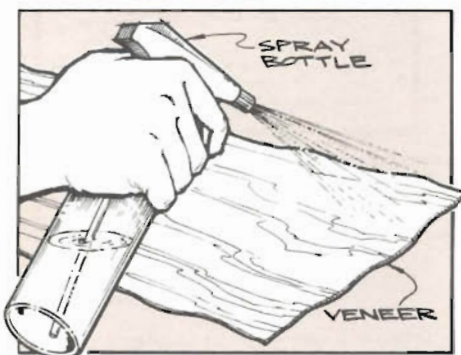
**Hardboard

(continued on next page)



Shop Tips

Wavy veneer must be moistened slightly before pressing flat. One of those spray pump plastic containers



(such as a "Windex" bottle) is ideal for applying a fine spray of water. Be sure to thoroughly clean before using.

A thin coat of paste wax applied to the top of your table saw will help stock slide smoothly.

Here is a quick way to check and see if a band or jig saw table is at 90 degrees to the blade. Make a shallow cut in a piece of at least 1 in. thick scrap stock, then turn the saw off and place the saw kerf on the back of the blade. If it lines up the table is square.

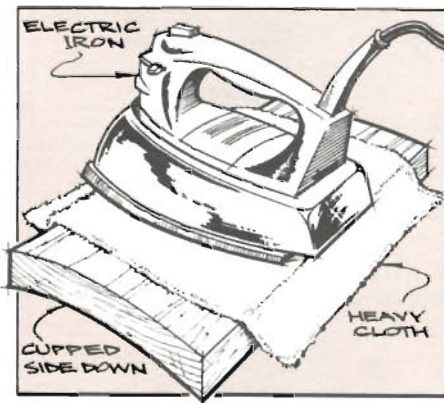
John Seidel, Atlanta, Ga.

My shop vacuum cleaner has a pleated paper filter and I find the pleats quickly fill up with dust and dirt. This not only reduces the vacuum but also makes the filter difficult to clean. I solved the problem by pulling one of my wife's old nylon stockings over the filter. It fits tightly and keeps the dirt and sawdust out of the filter. When the vacuum is turned off, the collected material falls off of the stocking to the bottom of the canister.

William A. Rolke, Ft. Lauderdale, Fla.

Here's a fast way to take the cup out of a board. With the cupped edge down, place a piece of cloth between the iron and the board. Cotton is preferred, in fact an old turkish towel

works well. Using the iron, apply heat to the high center of the board. Keep the iron slowly moving. The cloth will become scorched and the wood may darken, however any wood discoloration can usually be easily sanded out. Be sure to stop applying heat before the board is completely flat or it will start to cup the other way. And don't use any man-made cloth material as it



is likely to melt. I've found a board won't straighten if it is sealed on both sides or if nailed or glued in place.

David Teele, Exeland, Wisc.

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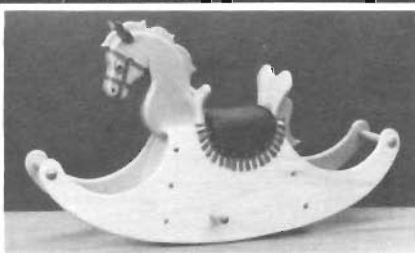
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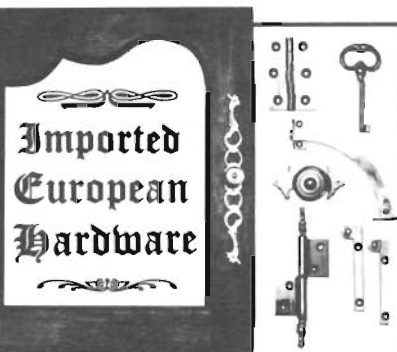
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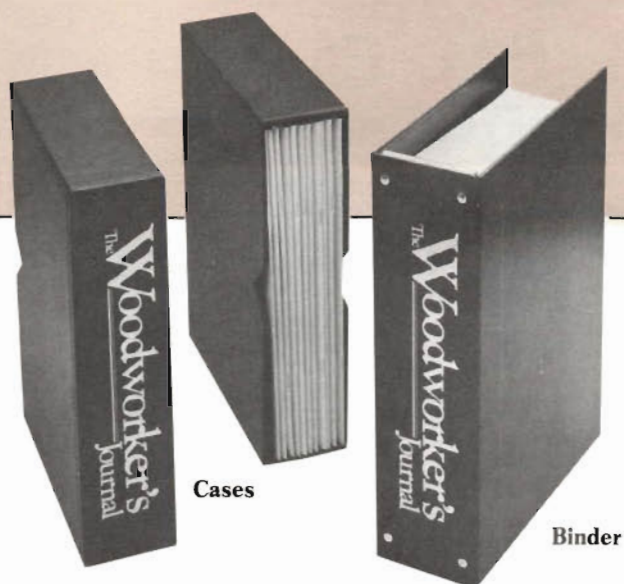
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Shaker Sewing Cabinet



18th Century Schoolmaster's Desk

. . . and much more.