The Woodworker's Journal
Vol. 10, No. 3 $2.50

Pine Hutch/ Cupboard

Included in this issue: Steam-Bent Clock • Parsons Table
Contemporary Lamp • Shaker Lap Desk • Toy Crane
Shop Workstation • Victorian Whatnot Shelf

May/June 1986

TREND-LINES BEATS ANY AD THIS ISSUE!

MAKITA TOOLS

1100	3 1/4" Planer Kit	$ 169.95
1805B	6 1/8" Planer Kit	277.95
1900BW	3 1/4" Planer w/case	99.95
2030N	12 1/2" Plnr/Jntr	1445.00
2040	15 5/8" Planer	1235.00
2708W	Table Saw W/Carbide Blade	221.95
3601B	Router	119.95
3612BR	3 HP Router	185.95
4200N	4 3/8" Circular Saw	96.95
4300DW	Cordless Jig Saw	108.95
4301BV	Vr. Sp. Orbital Jig Saw	124.95
5007NB	7 1/4" Circular Saw	99.95
5008NB	8 1/4" Circ. Saw	109.95
5081DW	3 3/8" Cordless Saw	109.95
5402A	16" Circular Saw	314.95
6000R	Uni-Drill	99.95
6010DL	Cordless Drill w/charger light & case	99.95
6010DWK	Cordless Drill w/charger & case	88.95
6010SDW	3/8" Rev. Cordless Drill	49.95
6012HDW	Cordless Drill Kit 2 Sp.	108.95
6510LVR	3/8" Drill—Rev.	84.95
6710DW	Cordless Screwdrver	104.95
6800DBV	Drywall Screwdriver	89.95
9045B	Finishing Sander	99.95
9045N	Dustless Sander	99.95
9207SPB	7" Sander Polisher	139.95
9401	4" x 24" Belt Sndr	162.95
98202	Blade Sharpener	169.95
9900B	3" x 21" Belt Sndr	122.95
9924DB	3" x 24" Belt Sndr	134.95
BO4510	Finishing Sander	49.95
DA3000DW	Cordless Angle Drill	102.45
DA3000R	3/8" VSR Angle Drill	99.95
DP3720	3/8" Reversible Drill	49.95
DP4700	Drill Reversible	99.95
GV5000	Disc Sander	56.95
JR3000V	Recipro Saw	124.95
JV2000	Orbtl. Var. Jig Saw	104.50
LS1000	10" Miter Saw w/vise	229.95

AEG TOOLS

BSPE60	Orbtl. Top Handle Jig Saw	$127.95
EH82S	3 1/4" Planer	129.95
EZ501	Cordless Screwdvr	39.95
EZ502	Cordless Driver w/adj. handle	51.95
EZ505	Cordless Drill/Driver	78.95
FSP60	Orbital Jig Saw	99.95
HBSE75S	3" x 21" Belt Sndr	118.95
PC70	7 1/4" Circular Saw	93.95
RSK600	Orb. Recip. Saw	136.95
SBE401RL	3/8" Hammer Drill	52.95
SCRIIE	Electronic Drywall Driver	74.95
VS130	1/3 Sheet Orbtl. Sander	48.95
VS260	1/2 Sheet Orbtl. Sander	88.95
VSS260	1/2 Sheet Orbtl Sander w/dustbag, rubber sanding plate	118.95

JORGENSEN BAR CLAMPS

(HEAVY DUTY)

		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. 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. 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

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.

RYOBI TOOLS

AH115	12 1/2" Plnr-Jntr	$1275.00
AP125	12 1/2" Planer	995.00
AP10	10" Planer	399.95
B7075	3" x 21" Belt Sndr	$117.95
BS360NR	Hvy Dty Band Saw	1195.00
BS50N	9 1/4" Band Saw	695.00
JSE-60	Electronic Jigsaw	124.95
L-580	6 1/8" Planer	253.95
R-330	2 HP Router	139.95
R-500	3 HP Plunge Router	162.45
R2500	10" Radial Arm Saw	445.00
RA2500SP	Radial Arm Saw/Kit	525.00
TS-251UB	10" Miter Saw w/ Freud LU85M10 Blade	229.00

MILWAUKEE TOOLS

0228-1	3/8" VSR Drill	$ 93.95
0234-1	1/2" VSR Drill	113.95
0375-1	3/8" Rev. Angle Drill	117.95
1107-1	1/2" VSR D Handle	144.95
5660	1 1/2 HP Router	189.95
5680	2 HP Router	219.75
5935	4" x 24" Belt Sndr	214.90
6014	1/2 Sheet Sander	124.95
6255	Vr. Sp. Jigsaw	139.95
6287	H.D. Jigsaw	224.50
6305	6 1/4" Cordless Saw	134.95
6367	7 1/4" Circ. Saw	129.95
6507	Sawzall w/case	139.95
6539-1	Cordless Screwdriver	61.95
6543-1	1/4" Screwdriver	155.50
6749-1	Magnum Screwdriver	139.95
8975	Heat Gun w/scrapers	89.95

DELTA (ROCKWELL) POWER TOOLS

11-072	32" Radial Drill	$ 444.95
22-651	13" Planer	999.00
28-243	14" Band Saw	563.90
28-283	3/4 HP Bandsaw	745.00
31-730C	Belt and Disc Sander	1281.00
33-150	Sawbuck	529.00
33-990	10" Radial Arm Saw	474.50
34-410	10" Contractors Saw	699.00*
34-761	Unisaw	1450.00
37-220C	6" Jointer	1250.00
37-255	6" Jointer	495.00
37-315C	8" Long-Bed Jointer	1495.00
40-601	Electronic Scroll Saw	895.00
43-122	Wood Shaper	528.95
46-140	11" Lathe	433.95
46-541S	12" Lathe	1399.00

*Less $100.00 Rebate.

PORTER CABLE

100	7/8 HP Router	$ 97.95
303	6" Disc Sander	153.95
309	Laminate Trimmer	90.95
314	4 1/2" Trim Saw	124.95
320	Abrasive Planer	90.95
330	Palm Finish Sander	61.95
337	3" x 21" Belt Sander w/bag	133.95
360	3" x 24" Belt Sander w/bag	196.95
362	4" x 24" Belt Sander w/bag	206.95
505	Finishing Sander	122.95
518	3 HP Electronic Router	343.95
587	7 1/4" Circular Saw	139.95
690	1 1/2 HP Router	135.95
695	1 1/2 HP Router/ Shaper	194.95
696	Router/Shaper Table only	104.95
3151	7 1/4" Circular Saw	116.95
7548	Orb. Jig Saw	139.95
7648	Orb. Jig Saw w/barrel grip	139.95
9627	2 Sp. Tiger Saw Kit	135.95

PONY CLAMP FIXTURES

	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 & PONY CLAMPS

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.

We Honor All Freud Specials

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New! Freud Tool Sets

TFWC104	4 Pc. Chisel Sets	$19.95
TFWC106	6 Pc. Chisel Sets	31.75
TFWC110	10 Pc. Chisel Sets	52.95
TFTT108	8 Pc. Lathe Set	53.95
TFCS106	6 Pc. Carving Set	59.50
TFCS112	12 Pc. Carving Set	111.50

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1179	3/8" Var. Sp. Drill	$ 69.95
1575	3/8" VSR Scrudrill®	99.95
1703	10" Miter Saw	199.95
3051	7 1/4" Wormdriver Saw	139.95
3103	2 sp. Cut Saw kit	99.95
3105	Var. Sp. Cut Saw kit	109.95
3107	Var. Sp. Orbital Cut	129.25
3265	Laminate Trimmer	145.65
3310	1 1/2 HP Router	129.95
3370-10	3 1/4" Planer	99.95
4010	Palm Sander	49.95
4247	4 1/2" Disc Sander/ Grinder	69.95
6750	Heat Gun	59.95
9425	Compound Miter Saw	119.95

HITACHI TOOLS

CB75F	14 1/2" Band Saw	$1517.80
CJ65VA	Electronic Jigsaw	157.95
CR10V	Reciprocating Saw	123.95
C6DA	6 1/4" Circular Saw	134.95
C12Y	12" Table Saw	1307.25
DRC-10	Cordless Screwdriver	94.45
F1000A	Planer/Jointer	1338.75
F20A	3 1/4" Planer	102.85
P50	6 5/8" Planer	283.45
P100F	12" Planer	1013.25
SB-75	3" x 21" Belt Sander 2 sp. w/dust bag	134.95
SB8T	3" x 24" Belt Sander 2 sp. w/dust bag	173.25
TR-6	Laminate Trimmer	93.95
TR-8	1 HP Plunge Router	133.30
TR-12	3 HP Plunge Router	175.95

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Sold in packs of 10 only. Outlasts regular belts 2 to 1.

Size	Grit	10 Belts	50 Belts
3" x 21"	120	$.98 Ea.	.84 Ea.
	100	.98 Ea.	.84 Ea.
	80	1.00 Ea.	.86 Ea.
Assortment	60	1.05 Ea.	.92 Ea.
of 10 $12.95	50	1.07 Ea.	.94 Ea.
	40	1.10 Ea.	.96 Ea.
3" x 24"	120	1.20 Ea.	.93 Ea.
	100	1.20 Ea.	.93 Ea.
	80	1.22 Ea.	.97 Ea.
Assortment	60	1.26 Ea.	1.12 Ea.
of 10 $13.95	50	1.31 Ea.	1.15 Ea.
	40	1.34 Ea.	1.18 Ea.
4" x 24"	120	1.68 Ea.	1.46 Ea.
	100	1.68 Ea.	1.46 Ea.
	80	1.73 Ea.	1.51 Ea.
Assortment	60	1.78 Ea.	1.64 Ea.
of 10 $18.95	50	1.85 Ea.	1.70 Ea.
	40	1.89 Ea.	1.76 Ea.

SUN GOLD SANDING SHEETS

9 x 11 Aluminum Oxide C Weight

Grit	Pk of 100
150, 120, 100	$21.95
80	23.70
60	28.90
50	32.05
40	38.30

9 x 11 Non-Loading Silicon Carbide A WEIGHT

Grit	Pk of 100
400, 360, 320, 280, 240, 220, 180	
150, 120	$19.60

FREUD SAW BLADES

10"=5/8" Bore Carbide Tipped 12"=1" Bore.

No.	Size	Teeth	Use	Price
LU72M10	10"	40	General	$33.95
LU73M10	10"	60	Cut-Off	29.95
LU73M12	12"	72	Cut-Off	76.90
LU78M10	10"	80	Plastic	83.50
LU82M10	10"	60	Cut-Off	39.95
LU82M12	12"	72	Cut-Off	85.95
LU84M11	10"	50	Comb.	36.95
LU85M10	10"	80	Cut-Off	59.95
LM72M10	10"	24	Ripping	33.95
DS306	6"	Dado		89.95
DS308	8"	Dado		99.95

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

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Note: Under $35.00 add $2.50 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 June 30, 1986.

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- **For special prices ask for code WJMJ6.**

RYOBI 10" PLANER Takes on the work of the BIG planers!

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MAKITA BLADE SHARPENER

Handles long planer blades.

98202 **$169.95**

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Free Saw-Safe Pusher With Every Order

FREUD 60 TOOTH INDUSTRIAL CARBIDE CUT—OFF BLADE.

LU73M10 **$29.95**

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

TS251UB **$229.00**

The Woodworker's Journal

MAY/JUNE 1986 VOLUME 10, NUMBER 3

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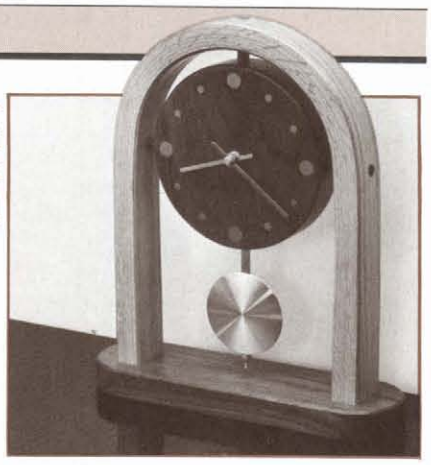
Contributions: We welcome contributions in the form of manuscripts, drawings and photographs and will be glad to consider such for possible publication. Contributors should include a stamped, self-addressed envelope of suitable size with each submission. While we cannot assume responsibility for loss or damage, all materials will be treated with care while in our possession. Payment for the use of unsolicited material will be made upon acceptance. Address all contributions to: *Editor,* **The Woodworker's Journal,** P.O. Box 1629, New Milford, CT 06776.

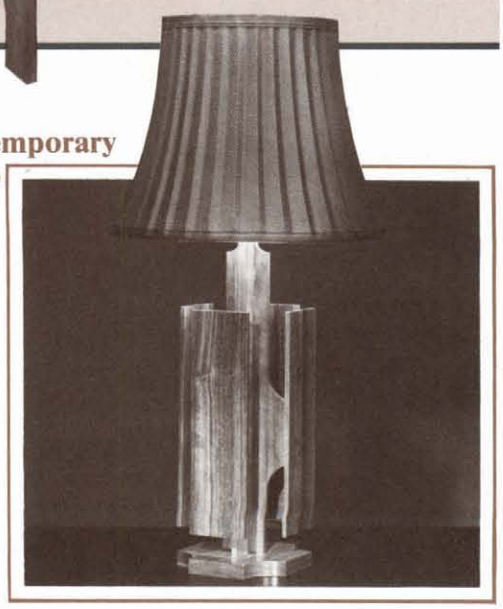
DEPARTMENTS



Steam-bent Clock 34

Early American Bench 32

PROJECTS



Contemporary Lamp 30

Shoptalk

Serendipity

As a youngster I hated to eat fish even though my mother used to tell me that it was an important "brain food". So when I flipped the flounder under the table to the dog, I did so with the sickening feeling that I was falling way behind in the race to get smart, and would probably be the class dunce by the time I reached the eighth grade. If, like me, you foolishly deprived your brain of nourishment in your early years, and are now fearful that your mental capacities have been diminished, take heart, for there is now evidence that woodworking can help restore certain mental skills.

Seriously, though, recent studies have shown that a decline in some mental skills in the elderly can often be the result of just plain disuse, rather than disease or inevitable biological breakdown, and that simple mental excercise can restore these skills. Researchers have found that deductive reasoning, which is the ability to see relationships and comprehend what is real, can start declining in the mid-sixties, but working crossword puzzles or playing word games on a regular basis can stimulate this mental process and restore it. In fact, the study revealed that just five one-hour training sessions were sufficient to restore 40% of the "decliners" to a level of skill they had enjoyed ten years earlier. Spatial orientation is another important mental process that was studied. This involves the ability to turn things around in the mind so that other views or dimensions can be perceived. This ability is necessary for comprehending road maps or following assembly instructions. One excercise recommended by the researchers for stimulating and restoring this function is . . . woodworking. That's what I call serendipity.

How to Improve Your Woodworking

Let's suppose you accepted a commission to build a fine stereo cabinet and your client agreed to pay $2,000 for it. How would you feel about your woodworking if, by some miracle, you could comprehend the fact that 215 years later your cabinet would be sold for $20 million? What a revelation it would be to realize that you had the dedication and skill to create something that would remain functional and beautiful for so long that it would become almost priceless.

It sounds like pure fantasy, but something similar happened earlier this year at Christie's Galleries in New York when an auction record was broken. The gavel fell with a selling price of $1,045,000 for a tilt-top tea table with a scalloped or piecrust top. This small table, made shortly before the Revolutionary War, sold in the 1950's for $15,000 and is considered to be one of a dozen of the finest examples of the Philadelphia Chippendale style.

Most of us are amateur woodworkers and don't expect to get rich chopping mortises or carving acanthus leaves. The Philadelphia craftsman who made the tea table probably didn't. But it's still a very nice feeling to think that there is a possibility of achieving a kind of immortality through one's work which may continue to be admired and used long after we are gone. That thought should go a long way toward helping you improve the quality of your joinery.

Jim McQuillan

WHETHER YOU PLANE FOR PAY OR PLAY, YOU NEED RYOBI.

There should be a big difference between power tools you use for high-skill projects or tools you make a living with and the tools a weekend novice needs to build a living room shelf. But too often, what you find are tools made to do all things for all people. All people, that is, except professionals and serious craftsmen. That's where Ryobi is different.

Our 3¼" planer, for example, offers features only a true craftsman can appreciate. A cog-belt drive system provides non-slip transmission of power for smooth, quiet operation with better shock absorption. A carefully positioned handle and balanced weight distribution give you control and stability. And an extra-long rear shoe assures you of easy cutting starts.

The bottom line? Quality you won't find every day in just any power tool and performance you can use every day. Look for Ryobi planers and get the tools made for more than weekends.

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Letters

The Readers' Information Exchange column in your January/February 1986 issue included my letter seeking a source for plastic stoppers for wooden banks. I have received over 50 responses to this letter. I now have not only several excellent sources for such stoppers, but some excellent alternative suggestions as well. It is obvious that your readers are the type of woodworkers who are willing to give of their time to assist others.

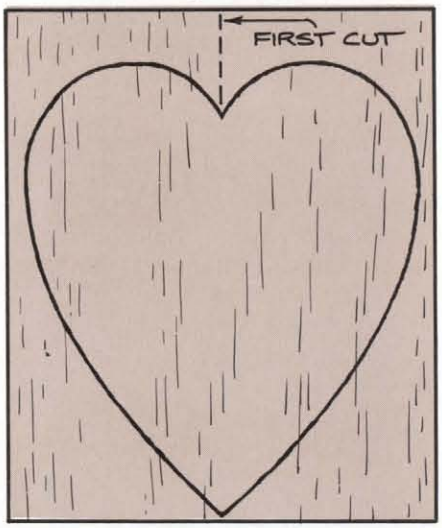
As it is impossible for me to reply individually to each of these correspondents, I hope that you can publish this letter so that I can express my gratitude.

Carl Abrams, Washington D.C.

Please advise your readers not to follow step 12 in the band saw cutting procedure for the Valentine Box project (January/February 1986, page 46). Without first making a relief cut at the top of the heart (see sketch right) to allow the waste stock to fall away, the blade will have to be backed out of the kerf. With the saw running, backing out of a kerf is extremely dangerous.

I like to carefully plan all the necessary band saw cuts in order to eliminate the "Oops — How do I get the blade out of this corner?" problem. Cutting away excess stock, relief cuts, blade size, body and hand positions are all things to be considered in the planning.

Alan R. Holtz, Long Beach, Calif.



The hinged trimming block Shop Tip on page 58 of your January/February 1986 issue has the steps backwards. The first cut should be made with the block in the up position, then flipped down for the final cut.

Wayne R. Wissler, Aurora, Colo.

Tool Review: Yea or Nay

The tool review on $\frac{3}{8}$ in. variable speed reversible drills (March/April 1986) was well done . . . clear and concise so the reader could easily choose the one best for his or her needs. Please continue with more of them. If the $12.00 per year subscription price for your magazine saves me a lot of money and/or frustration when I buy a tool, it's an investment that pays for itself.

Mark Zeglen, Heath, Ohio

Get on with another evaluation as time permits.

R.T. Smegorki, Little Rock, Ark.

I believe that a tool review will prove to be a valuable addition to your magazine. I teach high school woodworking and often purchase tools to upgrade the shop. It's difficult to test competing brands due to poor selections at retail stores or simply because of the time it takes to locate different brands and test them.

Mike Raponi, Jackpot, Nev.

Thank you for a fine comparative tool review article . . . and do more of them.

Richard Lang, Jamesville, N.Y.

I don't think too much of your tool review. The pages dedicated to the review could be better used on wood projects.

W.M. Sahlanski, Beacon, N.Y

Why devote five pages to comparing a $50 versus $160 hand drill? There are so many "ifs" to consider. For example, the woodworker who uses a drill eight hours a day, five days a week will not need the same drill as a woodworker who uses one 15 minutes a month. I think there are enough consumer guides and manufacturer's literature available, and they should provide enough information for the average woodworker to decide what tool best fits his needs and budget.

Frederick A. Head, Rochester, N.H.

If you want to do tool reviews, use a separate magazine. I don't think you will be able to treat the subjects of tool reviews and woodworking in a single magazine at a reasonable cost and do justice to both.

Carl Applegate, Indio, Calif.

The constant for many magazines seems to be a steady flow of articles designed to make me want to buy the state-of-the-art-this-month merchandise. Coincidentally, there are usually advertisements for those products tucked in nearby pages. I've discontinued my subscription to most magazines of this type.

I do not need how-to-buy articles. Before making such purchases I consult buying guides for impartial comparisons of brands. I can get information on any product when I need it without waiting until an article appears in my area of interest. Please devote the space to project plans, tips, and woodworking education — don't change to just another "variety" format.

Rick Ellis, Suffolk, Va.

The New Look

I was immediately pleased with your new format. In fact, I found your old format a bit cumbersome. The photographs are far superior in the new magazine.

Stephen Garavatti,
Salt Lake City, Utah

I like the better quality paper you are now using. I treasure each issue, and plan to keep them for a long time. The new paper will hold up much better over time.

Kenneth Warr, Trussville, Ala.

. . . it really makes the magazine.

Dave Schilmeister, Cincinnati, Ohio

(continued on next page)

Your switch to coated stock is a big improvement.

Stewart Coffin, Lincoln, Mass.

. . . new and improved is not always better. Why fix something that's not broken?

Tom Baldwin, Elgin, S.C.

I was satisfied with the old paper and size. I don't need coated paper — it just costs more. The brown mailing cover you had was a good place to make notes on the contents. The old front cover was fine. This new one sheds brown ink when a finger rubs it a little.

Dan Hill, Dixmount, Maine

Odds and Ends

In addition to the upcoming Kansas City Show on May 2-4, The Woodworking Association of North America (W.A.N.A.) will be sponsoring The San Diego Do-It-Yourself/Woodworking World Show on May 30, 31 and June 1, 1986. The show will be held at the San Diego Convention Center, San Diego, Calif. For more information, contact W.A.N.A., P.O. Box 706, Plymouth, NH 03264. (603) 536-3876.

The Eastern Oklahoma Woodcarvers Association, 2204 S. 132 E. Ave., Tulsa, OK 74134, will hold its 10th Annual Show on July 11-13, 1986 at the Kensington Galleria, 7130 South Lewis, Tulsa.

A juried exhibition and national showcase of contemporary woodworking will be held September 12-October 12 in Athens, Ohio. Entry applications are being accepted until June 15, 1986. For entry form and more information, contact: American Contemporary Works in Wood, P.O. Box 747, Athens, OH. (614) 592-4981.

Entries are being accepted until August 15, 1986 for the 1st Annual Last Chance Woodworker's Show to be held in Austin, Texas November 8-9. For application and information, contact Last Chance Productions, 2205 Matterhorn, Austin, TX 78704. (512) 441-5902.

Bowling Green State University (BGSU) and Ornamental Products Tool & Supply Co. will be co-sponsoring an "Equipment Maintenance and Repair" workshop from June 9-14, 1986 in Cleveland, Ohio. For more information, contact BGSU Office of Continuing Education at (419) 372-8181.

Country Workshops will be conducting a number of five-day workshops this summer: July 14-18, Japanese Woodworking; July 28-August 1, Scandinavian Woodenware; August 18-22, Greenwood Chairmaking; September 1-5, White Oak Basketry. For further information, contact Drew Langsner, Country Workshops, 90 Mill Creek Rd., Marshall, NC 28753. (704) 656-2280.

The American Association of Woodturners is now accepting memberships from hobbyist and professional turners, gallery owners, collectors, wood and equipment suppliers. For more information, write to the association at P.O. Box 982, San Marcos, TX 78667. WWJ

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EXCALIBUR 24

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The blade, together with the parallel arms and tensioning control, forms an articulated parallelogram. Arm movement is produced by a durable totally-enclosed 1/4 Hp variable-speed motor providing an infinite range of cutting speeds up to 1800 strokes per minute. For complete and precise control, the highly-tensioned blade is pulled (not pushed), on both the up and down stroke.

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The Excalibur II is amazingly smooth in operation. So smooth in fact, that you might want to try to stand a coin on edge on the saw table when the saw is running! This smooth operation has another bonus – no special stand is required – Excalibur II works equally well on the tail-gate of a truck, on a workbench or any table, etc. It cuts 1¾" thick stock, throat depth is 19".

Double-Parallel Link

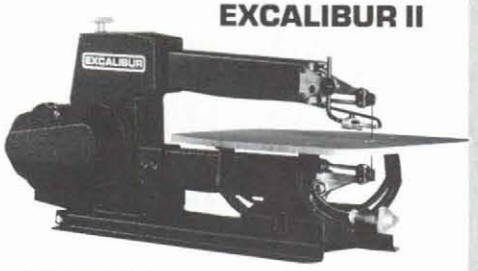
Where Excalibur II differs from any other scroll saw is in the blade holding/driving mechanism. This double-parallel link system eliminates blade flexing when in operation so there is less tendency for blade breakage. Also this allows the operator more cutting strokes per minute when using very fine blades.

Excalibur Precision Scroll Saws At-A-Glance

	Excalibur 24	Excalibur II
Throat	24"	19"
Cutting Depth Maximum	2¼"	1¾"
Length of Cutting Stroke	¾"	⅞"
Cutting Speed	6-1800*	1400 Single-800 speed 400 motor* 6-1800 variable-speed motor*
Worktable adjustment Right	20°	45°
Left	45°	45°
Worktable Width	14"	12"
Worktable Depth	24"	17¼"
Overall Length	33"	37"
Overall Width	20"	12"
Overall Height	21"	14"
Weight	110 lbs	45 lbs

*Rpm (strokes/minute)

EXCALIBUR II



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In operation, the Excalibur II excels. The table is 12" × 17¼" and tilts 45° both left and right on two wide-stance trunnions. The work hold-down foot tilts right along with the table. The Excalibur II blade tension can be safely adjusted while the saw is running to save time, and optimize cutting performance.

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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
W740	7 1/4" 13 amp circular saw	158	99
JS60	8 1/4" 13 amp circular saw	171	109
JSE60	Jig Saw-Single Speed	172	99
R150	Jig Saw-electronic v/speed	198	123
R330	1 H.P. Plunge Router	138	86
R500	2 H.P. Router	220	138
E3800	3 H.P. Router	265	163
L120U	Drywall screwdriver 0-4000	126	79
	3 5/8" Planer	142	89
BD1020R	3/8" 2-spd Cordless Drill w/free holster-Xtra special buy	148	95
TS251U	10" Mitre Box	300	169
SG1150C	4 1/2" H.D. Mini-Grinder	99	59

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		List	Sale
0224-1	3/8 drill 4.5A magnum	159	109
0234-1	1/2 drill 4.5A magnum	159	112
0244-1	1/2 drill 4.5A magnum	159	115
0222-1	3/8 drill 3.3A 0-100 rpm	146	99
0228-1	3/8 drill 3.3A 0-1000 rpm	129	92
0375-1	3/8 close quarter drill — NEW — 3.5 amp	175	118
0210-1	3/8 cordless drill — NEW — 2 speed	154	95
6539-1	cordless screwdriver — NEW — 190 RPM	84	59
1007-1	1/2" drill 4.5A D-Hdle	199	145
1107-1	1/2" drill 4.5A D-Hdle	204	145
3300-1	magnum rt angle drive kit	249	170
3102-1	Pimbrs rt angle drill kit	263	180
1676-1	HD Hole Hawg w/cse 2 sp	333	235
5395	3/8 sgle sp hammer drill kt	203	150
5397	3/8 var sp hammer drill kit	208	155
5371-1	HD mag. hammer drill 1/2"	287	207
5373	HD mag. ham. drill 3/8"	240	175
6511	2 speed Sawzall w/case	181	122
6226	port band saw 2 sp w/case	382	280
6234	TSC band saw port w/case	382	280
6405	8 1/4" circ. saw 13 amp	179	127
6460	10 1/4" " 15 amp w/case	349	245
6165	12" Chop saw 15 amp 4200 R.P.M.	285	189
6255	v/sp Jig Saw 3.8 amp	199	140
6245	sgle sp Jig Saw 3.8 amp	175	125
6012	1/3 sheet HD Orb. sander	159	110
6014	1/2 sheet HD orb. sander	169	112
5660	1 1/2 HP router 10 amp	265	175
5680	2 HP router 12 amp	314	220

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6378	8 1/4" worm saw 13A	269	148

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Item No.	Description	Diam.	Teeth	List	Sale
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5/8" Bore — Industrial Grade
CARBIDE TIPPED SAWBLADES

Item No.	Description	Diam.	Teeth	List	Sale
LU72M010	Gen-I Purp.	10"	40	68.58	34
LU81M010	Gen-I Purp.	10"	40	69.30	35
LU73M010	Cut-Off	10"	60	79.65	36
LU82M010	Cut-Off	10"	60	86.40	44
LU84M010	Combination	10"	40	70.99	36
LU84M011	Combination	10"	50	74.51	37
LU85M010	Super Cut-Off	10"	80	110.88	62
LM72M010	Ripping	10"	24	64.85	34
DS 306	6" Dado			139.00	92
DS 308	8" Dado			170.00	105
TR 100	3 blades & Dado set			399.00	255

★ MAKITA CORDLESS FESTIVAL OF VALUES ★

Model		List	Sale
4300DW	Jig Saw	158	99
5081DW	3 3/8" Saw Kit	174	95
5600DW	6 1/4" Circular Saw	224	125
9035DW	Finishing Sander	128	73
6010DWK	3/8" Cordless Drill Kit	152	88
6010SDW	3/8" Cordless Drill	84	45
8400DW	3/8" Hammer Drill	188	105
DA3000DW	3/8" Angle Drill	176	98
6010DL	3/8" Drill w/Flashlight	162	89
6012HDW	3/8" 2 spd Driver Drill w/Bat & Metal Case	178	98
DK1002	3/8" Drill w/Flursnt Lt	164	90
6710DW	Cordless Screwdrvr Kit	148	84

DELTA BENCH TOP TOOLS

Model		List	Sale
11-950	8" Bench Drill Press	124	100
28-160	10" Bench Band Saw	158	125
40-500	15" Scroll Saw	105	85
23-680	6" Grinder Bench	62	50
23-880	8" Grinder Bench	99	85

MAKITA TOOLS

		List	Sale
BO4510	Sander	79	43
9900B	3"x 21" belt sander	198	119
9924B	3"x 24" belt sander	189	130
9924DB	3"x 24" b/sand. w/bag	214	130
9035	1/3 sheet finish sander	79	48
9045B	1/2 sheet finish sander	156	90
9045N	1/4 sht fin. sand. w/bag	158	105
4200N	4 3/8 circ. saw 7.5 amp	152	93
5008NB	8 1/4 circ. saw 13 amp	178	105
5201NA	10 1/4 circ. saw 12 amp	348	215
4300BV	v/sp jig saw 3.5 amp	192	120
4301BV	orb v/sp jig saw 3.5 amp	208	125
JR3000WL	2 sp recip saw w/cse	168	120
JR3000V	vs recip saw w/case	178	120

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SPECIAL PROMOTION

LS1000	New 10" Mitre Box	348	198
792210-7A	Carbide Bld for above	45	31
9820-2	Blade Sharpener	244	159
741074-9	60 (coarse) Grdg Whl	33	23
741070-7	1000 (med) Grdg Whl	30	22
741071-5	6000 (fine) Grdg Whl	43	30
1900BW	3 1/4" planer w/case	154	192
1100HD	3 1/4" planer w/case	278	160
3608BK	3/4 hp router w/case	132	85
3601B	1 3/8 hp router	168	115
3700B	1/2 hp trimmer 28,000 rpm	124	82
BO4530	6" Round Sander	84	48
DA3000	3/8" angle drill	158	105
DP4700	1/2 v/sp w/rev" 4.8 amp	154	92
HP1030W	3/8 v.s.r. hammer drill w/case	145	98
6300LR	1/2" angle drill w/rev	229	152
84198B-2W	1/2" s sp. hammer drill w/case	238	150
GV5000	Disc Sander	79	53
6800DB	2500 rpm 3.5 amp	123	79
6800DBV	0-2500 rpm 3.5 amp	133	89
6801DB	4000 rpm 3.5 amp	123	79
6801DBV	0-4000 rpm 3.5	133	89
2030n	12" planer/jointer	2160	1475
2040	15 5/8" planer	1780	1195
1805B	6 1/8" planer kit w/case	416	265
JV1600	var. speed jig saw	145	89
JV2000	var. speed orb. jig saw	165	100
5005BA	5 1/2" circular saw 8 amp. with brake	154	98
9207SPC	7" var/speed electronic sander/polisher	209	130
9303BH	4 1/2" sander-grinder kit	146	95
4014NV	var/speed blower	128	79

DELTA

		List	Sale
34-612	9" contr. saw w/o motor	500	395
34-710	**super** 10" motorized saw	579	450
15-091	15" floor model D/press	467	375
15-090	15" bench model D/press	467	375
37-207	Saw/Jointer Combination	1018	810
37-609	6" Motorized Jointer	413	335
37-290	4" Joiner w/o motor	346	275
22-651	RC-33 — 13" Planer	1943	1450
43-122	Wood Shaper w/stand and 1 H.P. Motor	689	495
46-140	11" lathe, gap bed model w/stand w/o motor	407	335
52-493	1 hp motor for #34-612	170	130
62-144	1/2 hp motor for #37-290	136	105
62-142	1/2 hp motor for #28-243 and "46-140	121	85

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#587	7 1/4" Speedtronic	List 199	SALE 125
#315-1	7 1/4" Top Hdle	List 166	SALE 96
#368-1	8 1/4" Top Hdle	List 176	SALE 110

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Model	DRILL KITS	List	Sale
1930	3/8" rev/hi speed	165	110
1950	3/8" High Torque	165	110
5930	Reversible Hammer	179	120
1970	3/8 rev/hi torque screwdriver	179	120
1980	Rev/adj. clutch Scrudrill	179	120

BRAND NEW! SUPER SPECIALS from MILWAUKEE

		List	Sale
0214-1	3/8" c/less drive/drill	159	109
8975	H.D. heat Gun, 11.6A Low 570°F - High 1000°F	74	49
5920	belt sander 3x24 w/o bag	289	199
5925	belt sander 3x24 w/bag	309	215
5930	belt sander 4x24 w/o bag	299	209
5935	belt sander 4x24 w/bag	319	214

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Model		List	Sale
655	Drywall Driver 0-4000 Rev	115	85
367	3 1/4" Plane 6.5A	170	115
5009	Mortise & Tenon Jig	50	34
351	3" x21" Belt Sander	189	125
352	3" x21" Belt Sndr w/bag	199	135
9810	Cordless Screwdrvr kit	175	115
320	Abrasibe Plane 3A	129	91

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Model		List	Sale
100	7/7 H.P. 6.5 amp	141	98
630	1 H.P. 6.8 amp	150	100
690	1 1/2 H.P. 8 amp	194	130
691	1 1/2 H.P. D-Hdle 8 amp	218	145
536	1 1/2 H.P. Speedmatic Double Handle	300	190
537	1 1/2 H.P. Speedmatic Double Handle	315	215
520	3 H.P. Production	460	270
518	3 H.P. Micropressor 5-sp	490	345
	TRIMMERS BY PORTER-CABLE		
309	3.8 amp laminate trimmer	130	90
310	3.8 amp laminate trimmer	190	135
312	offset base laminate trim	205	140
319	tilt-base laminate trim	215	150

★ *X-TRA SPECIALS* ★

MAKITA TOOLS

		List	Sale
6010DL	C/less Drill w/flashlight-charger & case	162	90
DP3720	3/8 drill Rev. 0-1800 rpm	90	47
6510LVR	3/8 drill Rev. 0-1500 rpm	116	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	175
9401	4x24 belt Sander w/bag	248	160

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		List	Sale
696	H.D. Shaper Table	150	105
695	H.D. 1 1/2 hp Router/Shaper	278	190
399	Drywall Cut-Out Unit	100	70
736	V/Speed *Speedtronic* Band Saw	450	330
7564	1/2" X.H.D. Drill 8 amp	205	145

BOSCH TOOLS

		List	Sale
1581VS	Top Handle Jig Saw	225	126
1582VS	Barrel Grip Jig Saw	126	118
1604	1 3/4 H.P. Router	199	118
1942	Heat Gun 650°-900°	99	85
1272	3x24" Belt Sander	259	159
1272D	3x24" Belt Sander w/bag	274	169
1273	4x24" Belt Sander	274	169
1273D	4x24 Belt Sander w/bag	289	179

DELTA

		List	Sale
34-010	Motorized Mitre-Box	231	149

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852	for 1/2" Black Pipe	9.36	6.10	67.50

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Model	Jaw Length	Open Cap.	List	Sale	Box of 6
#5/0	4"	2"	11.59	7.25	39.15
#4/0	5"	2 1/2"	12.45	8.10	43.75
#3/0	6"	3"	13.36	8.50	45.95
#2/0	7"	3 1/2"	14.36	8.95	48.35
#0	8"	4 1/2"	15.97	9.95	53.75
#1	10"	6"	18.25	11.35	61.25
#2	12"	8 1/2"	20.94	13.60	72.95
#3	14"	10"	26.56	16.75	91.35
#4	16"	12"	34.55	23.75	128.25

JORGENSEN BAR CLAMPS
STYLE 37 — 2 1/2" Throat 1/4" x 3/4"

Model	Jaw Length	List	Sale	Lots of 6
3#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

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Model	WORM DRIVE SAWS	List	Sale
3050	6 1/2" 12 amp - 4600 rpm	247	169
3051	7 1/4" 13 amp - 4300 rpm	232	149
3052	8 1/4" 13 amp - 4300 rpm	247	169
	SUPER SAWCATS		
3047-09	7 1/4" w/brake - 12.5 amp	226	149
3048-09	8 1/4" w/brake - 13 amp	240	155
	BUILDERS SAW CAT		
3030	7 1/4" 13 amp - 5800 rpm	155	100
3035	8 1/4" 13 amp - 5800 rpm	175	125
3034	7 1/4" 13 amp - 5800 rpm	162	115
3033	6 1/2" 13 amp - 5800 rpm	162	115
	JIG SAWS		
3157-10	var/sp orb action d/hdl	174	115
3153-10	var/speed 4.5A 0-3100	158	105
3159-10	2/sp orb action barrel grip	178	120
	CUT SAW KITS		
3103	2 sp 6 amp-2400 strokes	163	100
3105	v/sp 6 amp-2300 strokes	170	110
3107	v/sp orb 6A 0-2300 strokes	183	119
4300	Drill Bit Sharpener	289	205
1321	1/2" drill 450 rpm 6 amp	175	115
4010	Palm Sander	80	48
4015	1/2 Sheet Finish Sander	160	105
	DRYWALL GUNS		
2034	v.s.r. 0-4000 rpm	121	79
2037	v.s.r. 0-4000 rpm	139	89

"Door Openers" from MAKITA

		List	Sale
9501B	4" Grinder Kit	119	55
2708	8 1/4" Table Saw	348	199
5007NB	7 1/4" Circ. Saw	158	94

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LIST 199 — SALE 129.95
Model 7648 Barrel Jig Saw
LIST 199 — SALE 129.95

PORTER-CABLE

		List	Sale
9548	HD v/s bayonet saw w/case	255	169
9627	2 sp. tiger saw kit 8 amp	193	130
9629	V/sp. tiger saw kit 8 amp	204	135
505	H.D. 1/2 sheet finish/sander	175	100
330	spd bloc sander 1/4 sheet sz	87	54
304	Professional 7" disc sander	169	120
305	Professional 7" polisher	169	120
7511	3/8" xtrahvy v/s drill 5.2 amp	164	115
7554	1/2" xtra hvy drill 8 amp	210	150
9652	Versa-Plane Kit	419	285
9118	Porta Plane Kit	289	190
	DRYWALL SHOOTERS		
7544	5.2 amp — 2500 rpm	158	105
7545	5.2 amp — 0-2500 rpm	158	105

AEG POWER TOOLS

Model		List	Sale
EZ 501	C/less Scrwdrvr **Brand New**	59	35
EZ 502	C/less Scrwdrvr-190 rpm	98	52
EZ 505	C/less Drill/Driver	139	79
EZ 506	C/less Electronic Dril/Drvr	159	94
EZ 581	C/less Caulk Gun var/sp	179	106
SCR1E	Drywall Screwgun 0-2000	125	74
SCR11E	Drywall Screwgun 0-4000	125	74
BE8RL	3/8" var/sp drill 3.8 amp rev	86	51
BE10RL	3/8" var/sp drill 5 amp rev	125	74
SBE401RL	3/8" Ham Drill v/sp h.d.	88	52
SE2E13RL	1/2" Ham Drill 2 sp h.d.	169	101
TC25E	Tech Driver v/sp 5 amp	150	89
PC70	7 1/4" Circular Saw 12 amp	157	93
VS130	Orb Sndr 20,000 OPM 1/3 sh	75	48
VS260	Orb Sndr 25,000 OPM 1/2 sh	156	88
VSS260	Orb Sndr 25,000 OPM w/bag	189	118
Hbse75S	Belt Sander v/sp 3" x 21"	199	118
BSPE60	Jig Saw Orb v/sp 4.6 A w/case	214	127
RSK600	Recip Orb Saw 10 amp	229	136

ROTARY HAMMERS

		List	Sale
PHE 16RL	3.8 amp 5/8" capacity in concrete	269	175
PH 210	5.2 amp 3/4" capacity in concrete	398	260
PHE 20	Same as above — except var/sp 0-750	418	270
PHD 26	*6.3 amp 1" capacity* in concrete	495	320
PH 38	7.5 amp 1 1/2" capacity in concrete	549	355

All above complete with cases

SKIL TOOLS

		List	Sale
551	5 1/2" Circ. saw 6.5A	99	73
77	7 1/4" Worm Saw	240	135
367	6 1/2" Worm Saw	239	135
825	8 1/4" Worm Saw	270	165
807	7 1/4" Skilsaw 13A-Super	153	100
808	8 1/4" Skilsaw 13A-Super	172	110
2016-02	3/8" Cordless Drill complete W/Charger, Case & 2 batteries	199	95

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 have a Ward's Powercraft band saw that is about 30 years old. Although it's in good shape, I can't use it because it no longer has the rubber strips that line the wheels. The model no. is 84TT112316A and the serial no. is 385-7543, however the first number in each one is hard to read. The 8 in the model no. could be a 3, and the 3 in the serial no. could be an 8. Can anyone help me to find the rubber strips?

Ralph Nells
11 Denton Ave.
DuBois, PA 15801

. . . would be grateful for any help in locating an operations manual and face plate for a Sears model no. 101.06242 (34 in.) wood lathe. The drive axle is $\frac{5}{8}$ in. with 16 threads per inch.

Dan Miller
120-15th Street
New Cumberland, PA 17070

. . . need parts list and manual for Sears shaper, model no. 534.09741. Will pay for copies.

Robert C. Best
318 South Howard Street
Union City, IN 47390

. . . need parts for a 9 in. Dunlap plane and a no. 5 Stanley plane bought recently at a flea market.

Jennings Warn
Rt. 1, Box 277
Monroeville, AL 36460

. . . looking for a mail-order source for marble tops for a 16 in. diameter lazy Susan.

David L. Miller
R.D. 1, Box 650-N
Annville, PA 17003

. . . can't find a source for a $\frac{5}{8}$ in. tap and die for cutting wood.

Edmund B. Carr
28114 Los Olas Dr.
Warren, MI 48093

. . . need a manual for an old Boise Crane 12 in. thickness planer. I will pay for copies.

George Hill
201 N. Jackson
Bremen, IN 46506

Sears no longer carries dado sets with a $\frac{1}{2}$ in. diameter bore. Your help in locating a source will be appreciated.

Elmer Stuhlmiller
510 2nd Ave. S.E., Box 516
Harlem, MT 59526-0516

. . . owner's manual and parts list for a Walker-Turner 6 in. jointer (serial no. 12 240).

Donald Morehouse
485 Hunt Rd. W.E.
Jamestown, NY 14701

I just reconditioned a 1961 Sears bench sander, model no. 103.22500 and will pay for a copy of the operations manual and parts list.

Frank Wright
Rt. 2, Box 494
Eutawville, SC 29048

I'm restoring an antique high chair, the type that is on wheels and folds down into a stroller. I need a cast iron wheel: one with a diameter of $3\frac{3}{4}$ in., and a rim that's $\frac{1}{2}$ in. wide. It must have eight spokes and a $\frac{1}{4}$ diameter center hole.

C. Harris, Jr.
1304 Hamilton Circle
Ottumwa, IA 52501

. . . need instruction manual for an old Sears Craftsman 6 in. jointer/planer, model no. 103.23900. I'll be happy to pay cost of copying and mailing.

Guy W. Head
3204 Hamm Road
Pearland, TX 77581

I have a Sears scroll saw, model no. 103.0407, and need a parts list and instruction manual. I'll reimburse for copying and postage.

Angelo Serva
11 Sherman Street
Wellsboro, PA 16901

. . . seeking information on how to use a Craftsman (by King-Seeley) dovetailing fixture, part no. 9-2462. It's well-made but doesn't appear to be designed for a standard router. I'll gladly reimburse costs.

Jerry Thomas
15 North Avenue
Rochester, NY 14626

Workshop Income

An Interview with Toymaker Clare Maginley

Here in the Workshop Income column, we have discussed the how, why, what, when, and where of making money with your woodworking hobby. *Most recently* we have examined the subject of craft fairs, which offer woodworkers one of the better opportunities to market their creative output.

While it is important to look at the "big picture", we felt that it would be interesting and possibly insightful to examine one particular individual's experience. Which types of fairs are best, how many fairs he attends each year, how much money he earns at one fair, which items sell the most; these and other questions would provide us with a representative profile of what a woodworker might expect from a craft fair.

For this interview we selected Clare Maginley, a toymaker whose work has regularly been featured in *The Woodworker's Journal.* A retired school principal, Mr. Maginley is the author of three books about toys. He has 30 years experience selling at craft fairs, a background which we felt made him something of an expert on the subject. As it turned out, the interview with toymaker Maginley yielded valuable firsthand information, and some good commonsense advice.

Mr. Maginley told us that he attends between six and twelve craft fairs a year, all in Connecticut. Although several of the fairs are small one-day events, he prefers the larger two-day fairs, primarily because of the setup and take down time required. He noted that, with the amount of work involved, small one-day fairs are usually not worth the effort.

Some of the fairs Mr. Maginley attends are juried, but with his well-deserved reputation, he is often invited to more fairs each year than he can possibly attend.

In selecting which fairs to participate in, Mr. Maginley says he looks most closely at things like past attendance records and average sales per exhibitor. Additionally, he tries to select fairs that are well-organized and promoted, since these are the most successful.

After exhibiting at a fair, Mr. Maginley develops a feel for the clientele and the types of toys that will appeal to them. This helps him to determine what to make if he attends the same fair again. He notes shrewdly that fairs in wealthy towns generate the best sales.

The fairs Mr. Maginley participates in usually charge a $20-$25 registration fee, and between 10 and 15 percent commission on sales. He said his average sales range from several hundred dollars a day at a small fair to between $1500 and $2000 for a good two-day fair. He does not sell wholesale.

Mr. Maginley's best sellers are small toys priced under

$10. Certain other items up to $25 can also sell well, especially if there is a particular demand for them. Most recently, he noted, 4 × 4 Bronco style off-road toys were a hot item, selling at $25 each. Large expensive toys, such as a complete train set for over $100, are the most difficult to sell.

When asked how much and what inventory to bring to any one fair, Mr. Maginley recommended that you "take as much as you can and hope for the best". Although he claims that "you never know what particular piece will sell best", as a rule Mr. Maginley maintained that "for an article to sell it must have appeal and display quality workmanship." He stressed that the public will not accept it unless it is well made.

Mr. Maginley admits that he is something of a perfectionist with his work. It took him 6 days to make 15 of the 4 × 4 Bronco toys, which sold for $25 each. He usually builds toys 15 or 20 at a time, a system that standardizes many of the operations. Keeping the number made at one time fairly low prevents the work from becoming boring or repetitive.

Mr. Maginley has been retired for 20 years, however his work is hardly a hobby. When not at fairs he usually spends 8 hours a day, seven days a week in his woodworking shop. Even with this full-time schedule, he notes he could not possibly produce any more than what is required for the 10 or so fairs he now attends yearly.

A woodworking hobby or small business is a good way to deal with the adjustments of retirement. While planning your time and adapting to your new schedule, working with wood and building anything from toys to furniture — whether for gifts, your home or for sale — provides you with

"for an article to sell it must have appeal and display quality workmanship"

a great deal of satisfaction. Your sense of pride and productivity is rewarded and, although a small woodworking business may not be a source of substantial income, there could be some supplemental spending money in it for you.

The choice of what to build and where or how to sell it is yours, but we hope Mr. Maginley's experiences and advice will help set you in a direction that best suits your time and skills.

★ ★ ★

Our thanks to Mr. Maginley for graciously answering our questions. Mr. Maginley's book, *Trains and Boats and Planes and . . .* is available from E.P. Dutton, Inc., 2 Park Ave., New York, NY 10016. Cost is $7.95 for softcover, $12.95 for hardcover.

For a listing of various fairs, you may refer to *The Crafts Report,* a national monthly newspaper for craftspeople. Their address is 700 Orange St., P.O. Box 1992, Wilmington, DE 19899.

The Crafts Report carries a listing of upcoming events broken down by states in each issue. The listing details essential facts including booth size, rental cost or other fees, application deadlines, prizes and awards (if any), expected attendance, number of exhibitors, and the address and telephone number of who to contact for more information and application forms. WWJ

Restoring Antiques

How to Flatten a Warped Board

by John W. Olson

Poke around most any antique shop for a while and you'll likely discover a few pieces of furniture that suffer from the effects of a warped board. Warp will make an apron bow, a leg bend, a top cup, and do all sorts of other things that can distort a piece, sometimes rendering it almost useless.

In many cases, however, warp can be corrected. Changes in moisture content can create enough force to warp a board, but with a little ingenuity, you can use that same force to bring it back to its original shape.

Before trying to straighten a board, it's important to completely remove the exterior finish on all surfaces, then lightly sand. Fresh, clean surfaces are a must. If at all possible, try to remove the warped board from the piece as it will enable you to do a better job getting it stripped.

The Lawn

In his book *The Furniture Doctor* (Doubleday & Company, Inc.), George Grotz relates how he cures warp by doing nothing more complicated than laying the board, concave side down, in the damp grass. This trick works best on a warm day when the sun is shining. The concave side of the board will absorb moisture from the grass, filling the relatively dry pores with water. As these pores swell, the board begins to straighten. The sun helps, too, by drying and shrinking the cells on the convex side.

If left too long, the board will bend in the opposite direction, so it must be checked frequently. When nearly straight, bring it into the shop to finish drying. Stand it on edge so both faces dry evenly. Chances are you won't get it perfect on the first attempt. After two or three tries though, you should have a board that's pretty flat.

A Moist Cloth

Another way to flatten a board is to apply a moist cloth to the concave side. This method is especially effective when it's impossible (or impractical) to remove the board from the furniture piece. I once used it to straighten a small table with a 3 in. thick butcher block top. The upper surface of the top had become markedly concave, probably because it had been finished, while the lower surface had not. Since it was unfinished, the lower surface absorbed more moisture from the air than the upper surface did. The top warped because the pores on the underside filled with moisture and swelled.

The old-timers who made the furniture we call antiques thought that the unexposed sides of boards could "breathe" if they were left unfinished. This, they thought, would prevent warping and rotting. However, as we now know, this is not the case. All surfaces should be finished in the same manner.

I stripped the table of all finish, then lightly sanded the upper surface to make certain the wood pores would be exposed. A few moist cloths were then placed on the concave surface, and in several hours the top had flattened. Once flat, the wet cloths were removed and the top rubbed with a dry cloth to soak up any remaining moisture. The next day I sanded the top and refinished the entire table, making sure that all surfaces received the same treatment.

Hot Water

There's another way to correct warp, and it involves a technique I once used to repair the walnut stock of an antique rifle. The stock had split into two pieces, and each piece had warped so that they no longer fit together.

My first challenge with this job was to get the stock stripped. At some point in its history it had apparently been finished with motor oil or else it was left lying on a greasy, oily surface somewhere. It was soaked with black oil and grease.

The grease had to be removed first and this was accomplished by soaking the stock in gasoline for about a

Before trying to straighten a board, it's important to completely remove the exterior finish on all surfaces.

week. I used gasoline because it is a very effective hydrocarbon solvent and is relatively inexpensive when compared to other available solvents. Since gasoline is highly volatile and flammable I had to use it with extreme caution. To this end I made a container from scrap 4 in. iron pipe with a removable cap on one end. I filled the pipe with gasoline, inserted the oily, warped gunstock, and left it outside in the yard. The whole container was agitated a couple of times every day and at the end of a week or so the gunstock was clean and ready to be straightened.

The gasoline was removed from the pipe, the pipe was washed out with soap and water, and I rigged up a means to

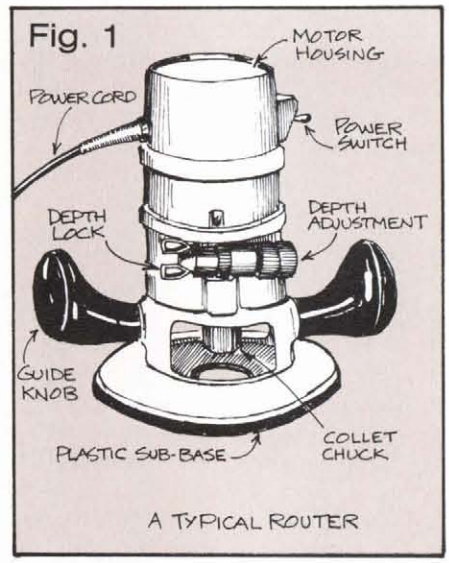
The old-timers . . . thought that the unexposed sides of boards could "breathe" if they were left unfinished.

soften the stock. The clean pipe was partially filled with water and propped vertically over a charcoal barbeque. It came to a boil in a few minutes. In about 45 minutes the gun stock softened enough to be retwisted into its original shape. While the stock was softening I made a jig (from a 2 in. board) to clamp the two pieces of the stock together in their original shape. After 24 hours the stock was cool and dry enough to be glued together.

I hope you'll keep these tricks in mind next time you have an unfriendly encounter with a warped board. They just might "straighten out" your problem. WWJ

The Beginning Woodworker

A Guide for Choosing Your First Router



The table saw is still the workhorse in most woodworking shops, but within the last couple of decades, the portable electric router has gained prominence to the point where it is considered indispensable by most woodworkers.

If you've ever had to use a table saw to cut a lot of dadoes across large unwieldy pieces of plywood, you would have immediately recognized that it's a lot easier to push a small router over the work than to manhandle the work over a table saw dado cutter. Also, if you've ever faced the problem of cutting a rabbet around the inside edge of a circular or oval picture frame, you have definitely been in router territory.

The question really is not whether a router will be of use to you, but rather what type of router you should look for if you're only buying one. To help answer this question, let's take a look at a typical router; then we can consider the advantages and disadvantages of specific designs.

Basic Router Design

Fig. 1 shows a fairly typical router. Manufacturers differ on such things as power switches, handle shapes and bit elevating mechanisms, but in general, portable routers are similar in design. The machine consists of a high-speed electric motor which sets within a cylindrical base and can be raised or lowered within that base to provide vertical adjustment (depth of cut) of the cutting bit.

Attached to the base is a circular plastic sub-base with an opening through which the bit protrudes. This sub-base usually provides support for the router by riding over the surface of the workpiece. To guide the bit, the sub-base sometimes slides along a separate guide fence. Since the bit protrudes beyond the sub-base when the router is in use, it's obvious that the router must be handled with care once the power is turned on.

A split chuck holds the cutting bit and is tightened with a large nut. This chuck is called a collet and, in most designs, it must be held with a special wrench or locking device while the nut is loosened or tightened with another wrench. Until recently, most routers designed for occasional (rather than heavy-duty) use came with collets that could only hold bits with a shank diameter of ¼ in. Since so many special purpose bits with shank diameters of up to ½ in. are now available, more manufacturers are providing routers in the intermediate power range that can take both ½ and ¼ in. collets.

All router motors revolve at very high speed, generally from 20,000 to 30,000 RPM, and it is this high speed that enables the bit to produce smooth cuts. Other machines such as the drill press and electric drill don't even begin to approach the router when it comes to cutting speed.

Choosing a Router

Too often a woodworker will buy his first router based on price or appearance and soon finds that it doesn't have sufficient power or durability to meet his requirements. On the assumption that you would like just one router to handle a wide range of work, let's try to objectively discuss the most important elements of router design and why certain design variations are better than others.

HORSEPOWER AND RPM

Regardless of price, the first factor to consider when choosing a router is its horsepower rating. High motor speeds are not necessarily indicative of high horsepower. Actually, many of the light-duty routers with low horsepower ratings of ⅝ or less revolve at very high speeds up to 30,000 RPM, while the more robust routers with horsepower ratings of 1½ or 2 have speeds of 22,000 to 25,000 RPM.

Obviously, if you force a heavy cut on a light-duty router, the motor will slow down considerably. This will not only degrade the quality of the cut but will also result in premature motor failure. Light-duty routers are fine for their intended use which is shallow cutting in softwoods and trimming of veneers and laminates. You can make deep cuts in hardwoods with a light-duty router, but you will have to do it in three or more stages, taking a light cut each time. This process is time-consuming and aggravating, and definitely does not take advantage of the router's convenience.

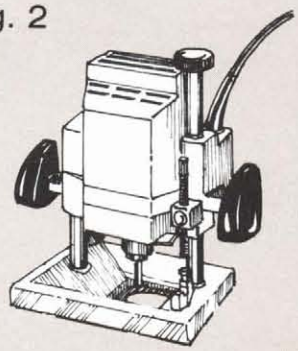
For most shop work, you should consider purchasing a router with a rating of no less than 1 HP. Better still, if your budget permits, go to 1½ HP. There are routers with horsepower ratings of 3 or more, but from a cost standpoint they provide no great advantage for amateur woodworkers, and they are heavier and more cumbersome to use.

PLUNGE ROUTERS

Plunge routers (Fig. 2) have been gaining in popularity in the past few years. These routers have a spring-loaded base which permits the motor unit to be pressed down so that the bit enters the workpiece at 90 degrees. This does away with the potential safety hazard of a projecting bit, and is a very handy feature for routing mortises, stopped grooves and other operations that require the router to accurately start its own hole.

At this writing, the price of plunge routers is still considerably higher than most standard routers, although one firm, Ryobi, is now offering a 1 horsepower model which retails for $99.95, and Black & Decker has introduced a 1½ HP model for $99.00. Perhaps the main disadvantage of the present generation of plunge routers is that the plunging mechanism is inclined to be troublesome and the routers generally suffer more breakdowns. They are also bulkier and more awkward to handle and are not as easily converted to upside-down use with a router table. Some of these design problems will undoubtedly be overcome in the near future, but at present it's our opinion that a standard router is still the best bet for the one router shop.

Fig. 2



A PLUNGE ROUTER

HANDLE AND SWITCH DESIGN

All routers have two handles or knobs, and a few also have one large "D" shaped handle (Fig. 3). Some designs have the handles located higher up the base than others, but most people prefer handles located low on the base so that their forearms can rest on the work surface. This gives better control when using the router for freehand work such as carving signs or routing large recesses.

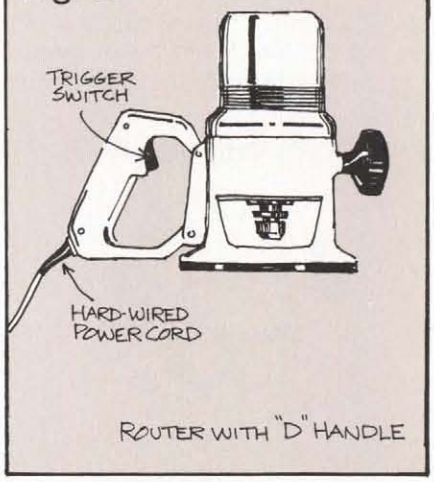
Large "D" handles provide a solid and secure feeling but they can be a problem in adapting a router for use with a router table. More important than the design of handles is whether or not they can be easily removed. Handles that are hard-wired (permanently wired from the switch to the motor) or which cannot be removed, will prove to be a disadvantage at one time or another, particularly when the router must be used in close quarters or with special jigs.

The location and design of the power switch is quite important. Sliding, toggle or "rocker" switches,

(continued on next page)

even though clearly marked "on" and "off", are not too safe as there is always the possibility that the switch could inadvertantly be in the "on" position when you plug into an outlet without first checking the switch. Worse still are switches that cannot be reached without removing your hand from a knob-type handle. Routers have a lot of initial torque or twisting force when starting up and they cannot be effectively controlled when being held by one knob. All things considered, the best switch arrangement is a spring-loaded trigger and lock button set into one of the handles.

Fig. 3



ROUTER WITH "D" HANDLE

DEPTH-OF-CUT ADJUSTMENT

Standard (non-plunging) routers employ various mechanisms which permit the cutting bit to be raised or lowered to change the depth of cut. Most have an adjusting or elevating knob which sets the depth, then the motor is locked at that setting with another knob or wingnut. The basic requirement of a good elevating system is that it can be operated smoothly in small increments, and can be easily locked without any resulting change in the elevation or centering of the bit. This is a situation where individual preference may vary, so it's best to actually handle the router and try the elevating controls. If they work and feel right to you, chances are you'll have no problems.

BIT-CHANGING CONVENIENCE

It's somewhat of a nuisance to change bits on any router and since this may have to be done often, it's nice to have a router that makes the operation as easy as possible. To loosen the collet, you've got to either lay the router on its side or stand it upside down. A few routers have domed tops or have the power cord exiting from the top, so it's impossible to set them upside down, which is the most convenient position to do the job.

A couple of domestic routers (Sears and Black & Decker) have a device to keep the motor spindle from turning while the lock nut is adjusted, so you only have to work with one small wrench in tight quarters. Others require two wrenches, and for some reason, these wrenches always seem to be too short to provide a decent grip. Perhaps the manufacturers are concerned that longer wrenches can apply too much leverage and cause damage.

Another consideration related to bit changing is the size of the opening in the sub-base through which the bit protrudes. Manufacturers differ in this respect, so check to make sure that the opening is bigger than 1¼ in. diameter to accept most of the bits you will want to use; otherwise you may have to alter the original sub-base or make auxiliary sub-bases for certain jobs.

USE WITH A ROUTER TABLE

Once you become accustomed to using your router and begin to appreciate how it can upgrade the quality of your work, you may want to try using it as a stationary shaper mounted under a router table. Used in this mode, the router can handle most work done in a normal mode plus a lot more that would be difficult or awkward to execute in a hand-held position.

A few small router tables are commercially available, but a home-built version will work as well or better. These can be simple plywood affairs that are securely clamped to your bench top (Fig. 4), or more elaborate freestanding versions that are best suited for a permanent router installation.

All routers can somehow be adapted for use with a router table, but some may require a bit more ingenuity to convert than others. Actually, the table should be designed to accommodate the router rather than the other way around. Normally, the router, with its plastic sub-base removed, is screwed to a recess on the underside of the table, or it may be fastened to a thin metal insert fitted over a hole in the table top. Which method to use depends mainly on how the sub-base is fastened to the router. In order to get a full depth of cut with most router bits, the router should be mounted so the end of the collet (which takes the bit) is as close to the work as when the router is

used in a portable mode with its subbase attached.

Some of the industrial grade routers have a a large "D" handle, and at least one import has a handle switch hardwired to the motor. This presents a mounting problem, but is not sufficient reason for rejection of an otherwise good router as the handle can be removed from the base and secured in some way under the table.

ROUTER ACCESSORIES

By itself the router can only be used in a freehand mode. Most of the time, though, the router needs some sort of guide in order to cut smooth curves, straight dadoes and the like. Router manufacturers provide various accessories to fit their particular machines, and you may want to consider them when you purchase your router. One important accessory is an edge-guide which is used to route grooves and rabbets.

Fig. 5A shows a typical edge-guide being used to rout a stopped groove near the edge of a board. Note that this guide consists of two steel rods and a fence which fits the router base and can be held at various points with thumbscrews. Edge-guides are somewhat limited in that they can only be used near the edge of a board. For example, they cannot be used when cutting a dado across the middle of a long board. These guides also make use of a fence with two points of contact that enable the router to be guided along curved edges for shaping the edge or cutting rabbets or grooves. The edge-guide may also include a trammel point so the router can be used to make circular cuts, or the trammel point may be a separate accessory (Fig. 5B). Most of these standard accessories are convenient to use and reasonably priced, while a few are awkward and/or expensive (over $25.00). None of them are an absolute necessity as various guides can easily be made in the shop.

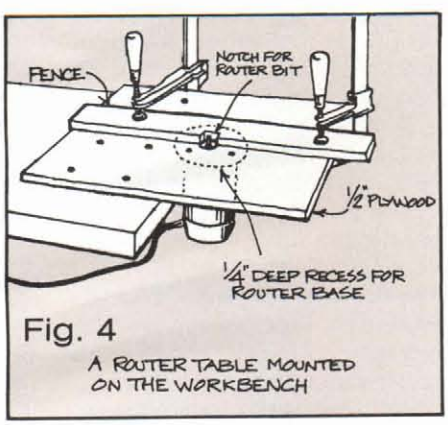
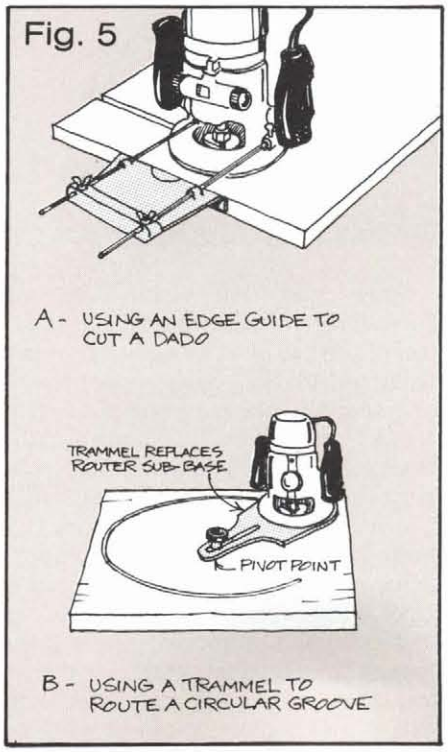


Fig. 4
A ROUTER TABLE MOUNTED ON THE WORKBENCH

In addition to the few accessories router manufacturers provide for routine operations, there are also accessories available that will enable you to rout signs, cut dovetail joints, turn spindles and bowls and do duplicate relief carving; and this is by no means a complete list of the many ingenious applications of the router. Some of these accessories are designed for particular routers and some can be used with almost any make.

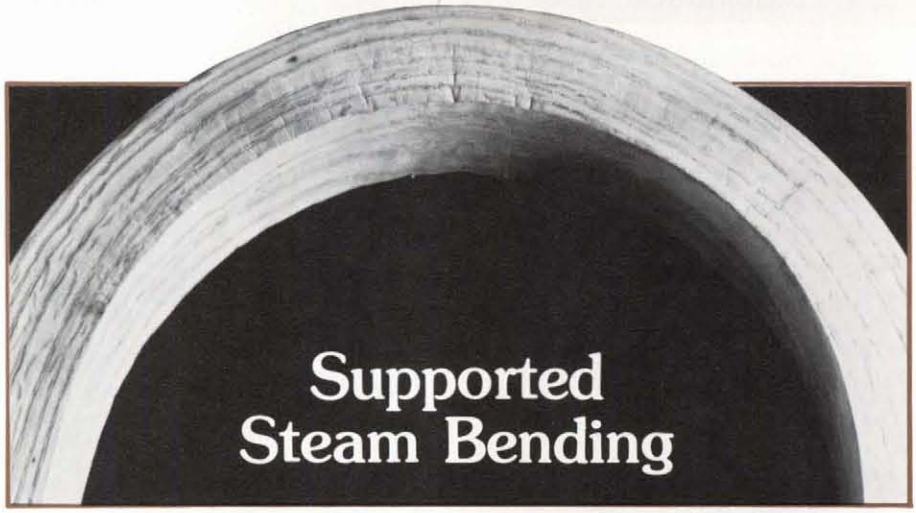


ROUTER PRICES

Getting down to the bottom line, how much can you expect to pay for a router? To get one that will handle a wide variety of jobs yet give years of good service, you'll probably have to spend over $100.00. Although a number of good routers can be found at this price level, there are a few we particularly like: the Porter Cable 690, Porter Cable 691, Makita 3601B, Bosch 1604, and Black & Decker 3310. On sale you should be able to purchase any one of these in the range of $110.00 to $140.00.

In the final analysis, any router with a rating of 1 HP or better will handle a lot of operations that would be difficult by any other method, and will enable you to greatly upgrade the quality of your work. Future articles will cover the variety of router bits available and those operations for which the router is particularly well suited. WWJ

Special Techniques



Supported Steam Bending

Without question, one of the most exciting woodworking experiences is watching supported steam bending. All our knowledge of the properties of wood dictates that it is not possible, yet here before our eyes, a seemingly inflexible board is bent with relative ease, as though it were made of rubber, around a narrow radius. We keep expecting to hear the sharp snap of wood fibers tearing free, but the bend is accomplished without incident. Hours later, when the piece is released from the bending apparatus, we have in our hands a new form, strong, dynamic, different. We hope that the photos (page 22) convey to you some of the excitement we felt.

As we noted in the first of this two-part feature (March/April 1986), you will need to construct a steam box and have an efficient method for generating steam. We used the same steam box shown in Part I, however we rented a pressurized wallpaper steamer instead of using the 5-gallon can and hot plate system. The wallpaper steamer is a more efficient generator of very "wet" steam, which has a high moisture content and helps to plasticize the wood, as opposed to "dry" steam, which may actually make wood brittle.

Why

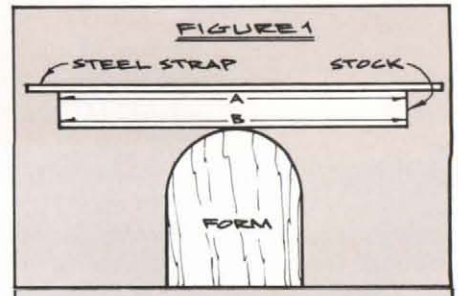
Unsupported steam bending did not require elaborate jigs or fixtures, since either the bends were gradual or, if the bends were severe, the wood was fairly thin (Shaker boxes, March/April). In any event, the wood was not subjected to great internal stress.

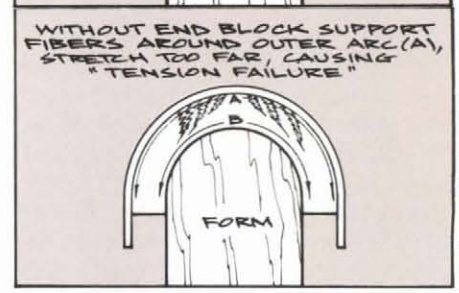
Some supported bends, such as gradual bends in thick stock, can be accomplished with a support strap and fixed end blocks. When more radical or complex bends are required of thick stock, however, an elaborate mechanical system that not only supports the bend but also both establishes and relieves end pressure is necessary. Figs. 1, 2, and 3 illustrate the importance of adjustable end blocks in a mechanical support system. The key to understanding supported steam bending is the fact that while wood that has been plasticized by steam will stretch only slightly, it can be made to compress significantly.

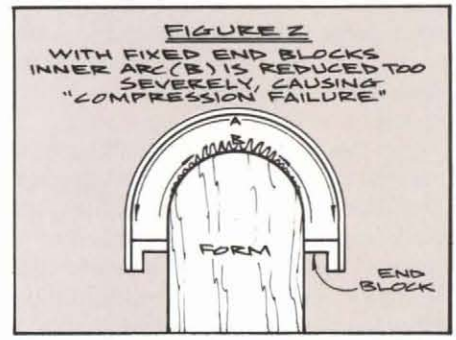
As shown in Fig. 1, without any end block pressure when a board is bent around a form, the length of the inner arc (B) remains constant, while the outer arc (A) stretches, causing the wood fibers in that area to be placed "in tension". Since the wood can only withstand a little tension, the fibers tear loose and pull apart around the outer perimeter causing "tension failure". Laminating many layers of wood is one way to circumvent this problem, but there is considerable waste in resawing and surfacing the many laminations, not to mention the fact that the glue lines then become integral to the piece and must be accepted as a visual element, whether for good or bad. A single steam-bent member, on the other hand, has a certain integrity, and makes a strong visual statement without compromise.

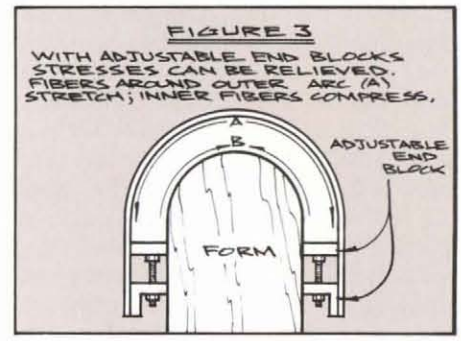
The other way to solve the tension problem is with end block pressure, as noted earlier. However, if permanently fixed end blocks are used to accomplish the bend, their static nature may force too severe a compression of the wood fibers around the inner arc (Fig. 2). This is because distance "A" remains constant, while distance "B" is substantially shortened. As a result, the fibers around the inside of the bend will ripple, and may ultimately fold over (compression failure).

While end block pressure is essential to successfully completing a supported bend, in most severe bends there must be some relieving of that pressure during the bending process. As shown in Fig. 3, backing off on the end blocks has the effect of allowing the fibers around the outer arc to stretch slightly, increasing distance "A", while the fibers around the inner arc "B" are compressed. As a rule, each steam ben-





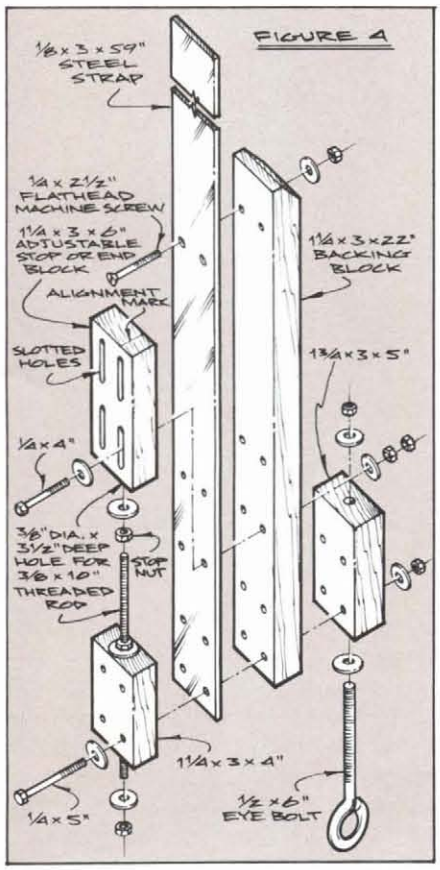




ding operation is an experimental process of finding the ideal equilibrium, where the stretched outer fibers do not tear or separate, and the compressed inner fibers do not buckle or fold to the point of failure. In any extreme bend one should expect to see the wood fibers around the inner arc ripple and distort to a degree. The trick is to relieve the end block pressure just enough to prevent compression failure.

What

While there are many different designs for steam bending jigs and devices, we had excellent success with the jig shown here, which is used to



bend the frame of the clock on page 34.

Our jig (Figs. 4 and 5) is the aptly named "crossbow" type. Two come-alongs (cost about $20 each, but can be rented) are used to pull the ends of the strap assembly around a form. You can have the ⅛ in. thick sheet metal strap made at a sheet metal shop, and the bolts, eyebolts, threaded rod, nuts, and washers are all common hardware store items. Note the slotted holes in the adjustable end blocks which permit these blocks to slide as the stop nut is adjusted. A good strong close-grained hardwood (we used maple) is recom-

(continued on next page)

mended for all the Fig. 4 wood components.

Keep in mind that the general construction — eyebolt size, the width, length, and thickness of the steel strap, etc., and the form dimensions — is tailored to the specific bend required for the clock. Typically, a supported steam bending fixture must, to some extent, be custom-made for a particular bend. While the various blocks, eye-bolts, etc. of our fixture can be used in conjunction with a longer or shorter steel strap to accomplish a different bend, always design a wide margin of safety into any jig construction. There are considerable forces at

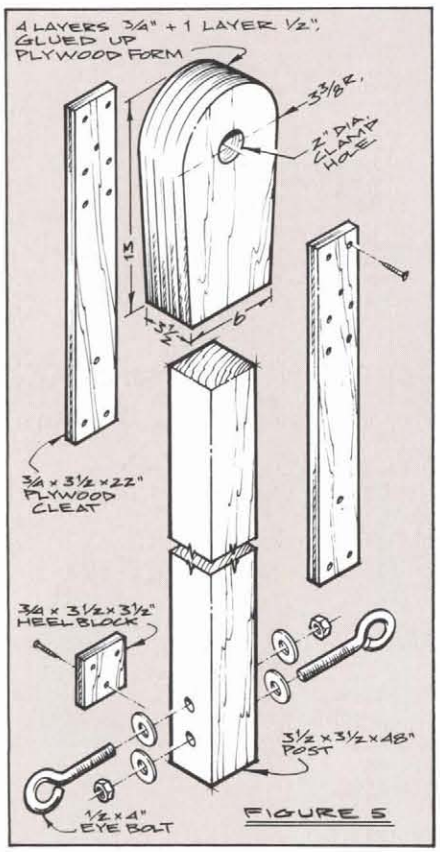
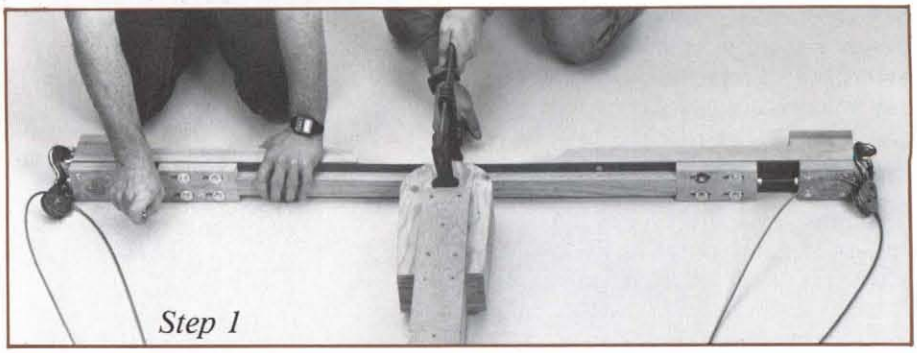


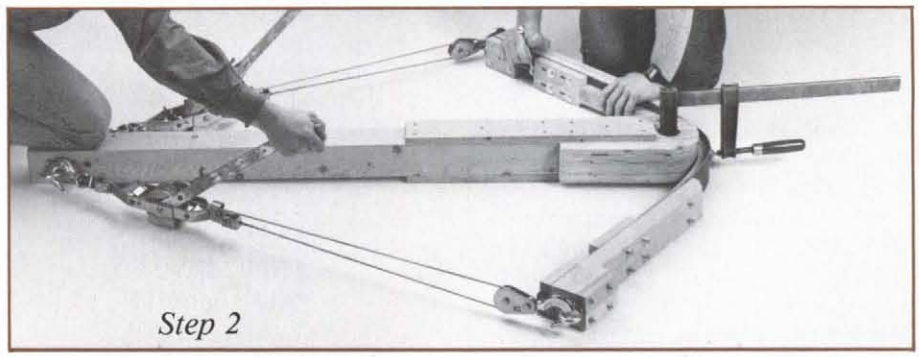
FIGURE 5

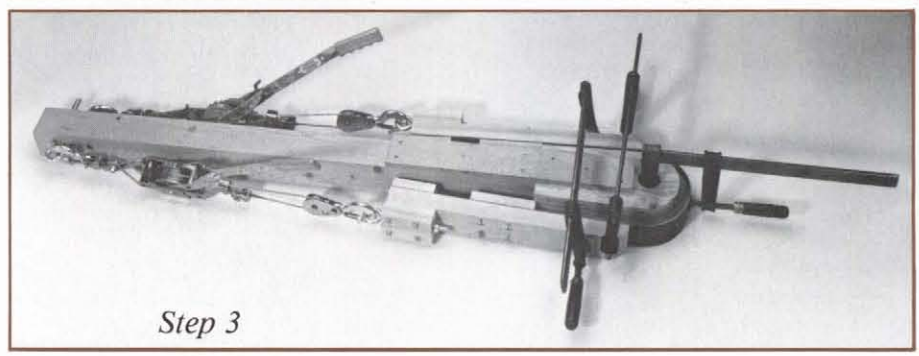
work during the bending process, and the failure of any one part could result in an accidental springback, which might cause serious injury.

The illustration of the jig (Fig. 4) shows backing blocks, which serve to alleviate the tendency of the steel strap to turn out at each end from pressure on the end blocks during the bending process. The hole in the form (Fig. 5) accepts a clamp which both anchors the center of the stock, and prevents the workpiece from being forced away from the form as the bend (and correspondingly, the tension) increases.

By its nature, steam bending is unpredictable. Different woods react differently. A certain percentage of breakage or failure should be expected, and some degree of springback will occur in every bend. To cover the possibility of failure, steam several pieces in the box at one time. That way, if the first piece fails you have at least one more chance. In order to compensate for springback in our project, the form was made slightly smaller in diameter and narrower at the bottom (Fig. 5). After springback, these adjustments gave us the desired arc and diameter. There is no formula for determining percent of springback, and finding the optimum form to accurately compensate is usually a process of trial and error.


Step 1


Step 2


Step 3

How

The March/April steam bending feature included tables of wood types, specifying their bendability and expected failure percentages. For the clock project in this issue we used red oak (one of the best woods for bending) steamed between 1 and 1½ hours. This allowed a little extra time in the steam box beyond the "inch per hour" rule of thumb.

The stock to be bent should be cut longer than needed (33 in. for the clock) so the ends can be trimmed after the bend is completed. By also allowing extra in width and thickness, you will have the opportunity to clean up the piece and remove any surface splits, checks, or other irregularities. Although we were able to accomplish the clock bend using both kiln and air-dried red oak, most experts maintain that air-dried material is less likely to suffer failure. With tighter bends the use of air-dried stock is critical, as its higher initial moisture content enables it to better accommodate severe bends.

Everything must be set up and in position when the stock is removed from the steam box. We had the jig and form laid out on the shop floor with the come-alongs adjusted so there was just enough slack to allow the piece to be inserted in the jig. We had previously marked the inside faces of

the stop blocks so the work piece could be easily centered, and two open end wrenches were handy for adjusting the nuts that control the end block pressure. The end blocks were positioned to accept the workpiece.

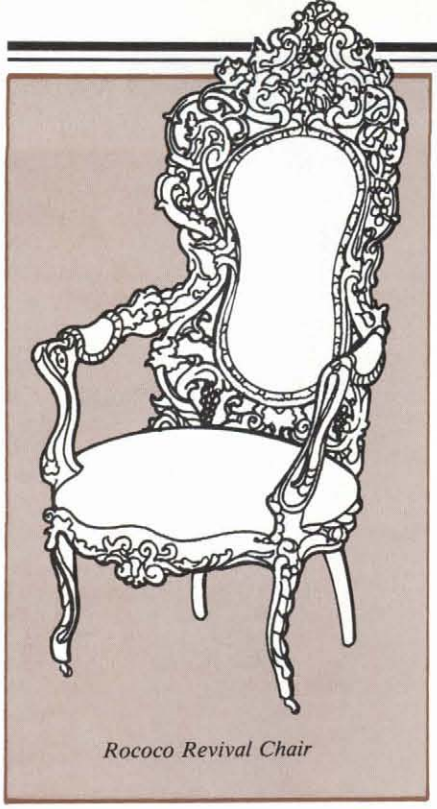
We used three people. One handled the come-alongs while the others were on each end of the jig to relieve the end block pressure. The entire bending process, from removal of the stock from the steam box to cross-clamping the completed bend, should take no more than three minutes. Time is essential since the wood begins to cool and dry out the instant it is removed from the box. We had an easy time with three people, but could have made do with two (one to work the come-alongs, the other to alternately relieve the end blocks). The more hands you have, the more quickly the job should go. Once you and your helpers are familiar with the technique and have had some practice, the entire clamp-up should be managed in under a minute. *Tip:* With severe bends it helps to preheat the metal strap.

Making the Bend

Step 1: Use gloves to remove the steamed stock, and position it in the jig. Center the workpiece on the stop blocks using the marked lines, and tighten the stop nuts to hold it firm. Check that the jig and workpiece are centered over the form, and apply a clamp across the center (Step 1 photo).

Step 2: While one person ratchets the come-alongs up, the assistants adjust the stop nuts to relieve the end pressure (Step 2 photo). The two come-alongs must be ratcheted up evenly, just as the end block pressure is relieved evenly. The stop blocks must never be slack. The stop nuts are backed off just enough to maintain a steady, uniform end pressure throughout the bending process. For the clock bend, about three turns on each stop nut were required. *Note:* Like so much else with this operation, there are no hard and fast rules for how much pressure to maintain. Trial-and-error experience is the best teacher. After a few test bends, you should have the technique down pat.

Step 3: With the bend complete, apply clamps across the form. This anchors the bend and should eliminate any gaps or irregularities between the workpiece and the form. The workpiece should remain clamped around the form for several hours. WWJ



Rococo Revival Chair

Furniture Periods and Styles

Victorian Period 1840-1910

When most people think of the Victorian style, their visions are of dark rooms crowded with ornate, elaborately carved, overstuffed furniture. While this image may be valid, the concept of a single monolithic Victorian style is not.

The American Victorian period, lasting roughly from 1840-1910, is named for Queen Victoria, monarch of the British Empire from 1838 to her death in 1901. Rather than an individual identity, the term Victorian encompasses a broad variety of distinct styles that were popular during the period. Among the more important were the Gothic, Greek, Rococo, Renaissance, Romanesque, and Elizabethan revivals, the Cottage, Eastlake, Arts and Crafts, and in the latter years, the Art Nouveau styles. There were so many different styles and design movements during the Victorian period, some critics tend to downplay the influence of the period as a whole. But, while many people might never know the difference between a Sheraton and a Hepplewhite piece, articles from the Victorian age are easily recognized and identified, even by someone with little knowledge of furniture styles. This fact alone is strong testimony as to the impact of the Victorian age.

Historians generally agree that the abundance of styles and forms in the Victorian period can be traced directly to the socio-economic phenomenon known as the Industrial Revolution. Where previously there had been only the very rich, the very poor, and a small traditional "bourgeoisie", industrialization spurred the ascent of a whole new social order — the middle class. The roots of the new middle class were in poverty, and with their newfound wealth came an infectious desire to flaunt their success. Conspicuous consumption — the acquisition of possessions to convey an image of wealth — quickly reached a fever pitch, and the middle class' thirst for reproductions of fine period furnishings was seemingly insatiable. Mechanization of the furniture industry resulted in the revival and mass production of a great variety of earlier styles to meet the demand. The designs became increasingly embellished as the manufacturers elaborated on the original styles in an effort to outdo competitors.

Late Victorian
Bow Front Dresser, c. 1900

With industrialization came a profound change not only in manufacturing, but also in the nature of the furniture production business. Where previously a single designer/craftsman would work in a small shop with perhaps a dozen skilled assistants, by 1840 the typical shop was essentially a small factory, employing between 40 and 100 men. Designs were created or developed by the owner and reproduced by mostly semi-skilled or unskilled workers operating the machines and performing the various assembly and finishing processes.

There were so many diverse styles during the Victorian era it would be impossible to describe them all here. Characteristically, however, the Victorians liked rich and elaborate carving, ornamental motifs, and all types of both applied and integrated decoration. Furniture designs often combined elements from several styles, and with the introduction of machines that could reproduce deep carving and high relief, it was not uncommon to see every available surface covered with some form of ornamentation.

With the vast body of Victorian work being essentially inexpensive reproductions, or bastardized versions thereof, it was inevitable that shortcuts in design, materials, and construction would occur. The wide use of plywoods and low-quality veneers, the substitution of inexpensive woods stained and painted to resemble exotic hardwoods, the manipulation of one material to resemble another, and generally poor construction were all problems. Herein lie the chief criticisms of Victorian furniture, that it was cheap, imitative, false, and suffered from bad design and poor workmanship. These factors, together with the public penchant for the gaudiest designs at the lowest possible price, contributed to a climate that made bad craftsmanship profitable. Still, some Victorian work exhibited high standards of quality, and many of the most dynamic designs, especially pieces by the better known craftsmen, are fast becoming some of the hottest items on the American antiques market.

The latter years of the Victorian era saw a strong reaction to the superfluous and ostentatious nature of the earlier designs. The Eastlake, Arts and Crafts, Art Nouveau, and the major 20th century design trends all serve to confirm this reaction. Our emphasis today on utilitarian, form-follows-function design is founded in the rejection of a Victorian world that history views as insincere, concerned too much with appearance and too little with substance. WWJ

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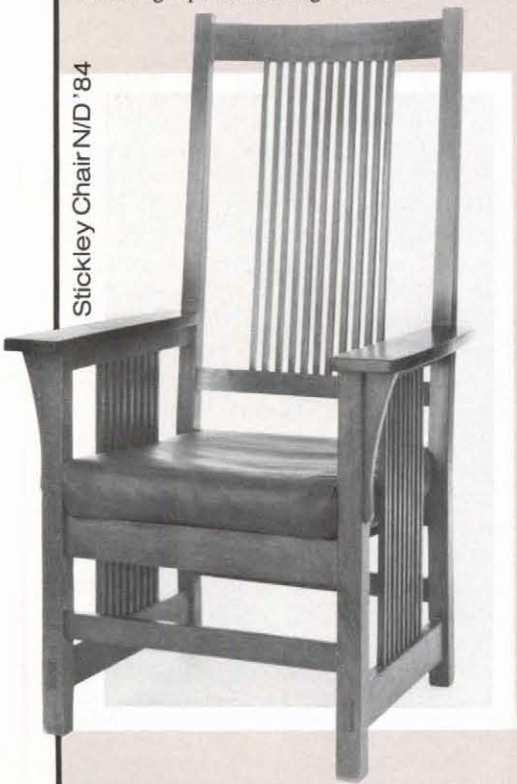

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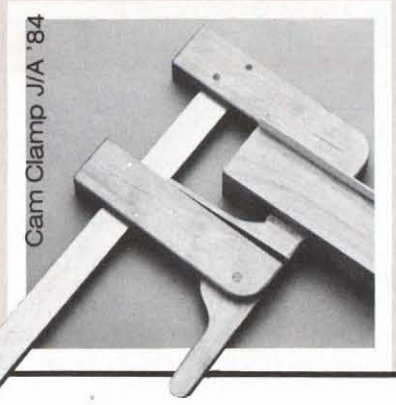

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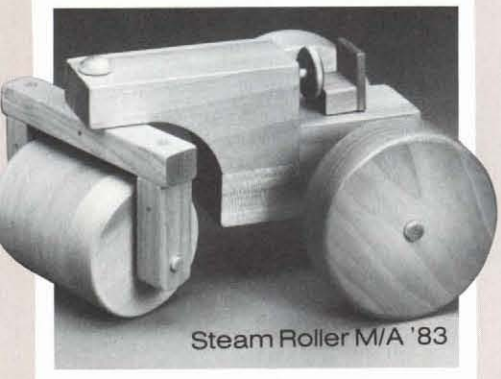

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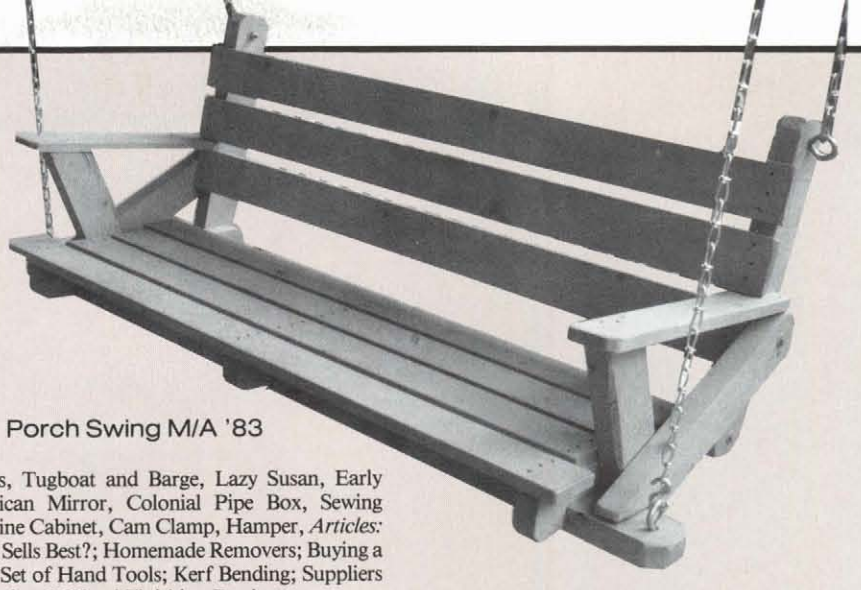

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Vol. 9 No. 3 May-June '85: Jacobean Joint Stool, Wall Cabinet with Recessed Finger Pulls, Shaker Desk, Kitchen Cart, Contemporary Wall Clock, Colonial Wall Sconce, Card Box, Towel Bar with Glass Shelf, Marble Race Toy, Cradle, Vanity Mirror, Miter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

Vol. 9 No. 4 July-Aug '85: Gate-leg Table, Computer Desk, Shaving Horse, Stamp Dispenser, Crumb Collecting Breadboard, Toy Trucks, Early American Wall Shelf, Pivot-top Game/Coffee Table, Settle Bench, Shaker Single-Drawer Cupboard, Fold-up Workbench, *Articles:* Product Liability, Part II; Caning and Wood Finishing Supplies; Spray Finishing; Table Saw Basics; Making the Rule Joint; The William and Mary Period.

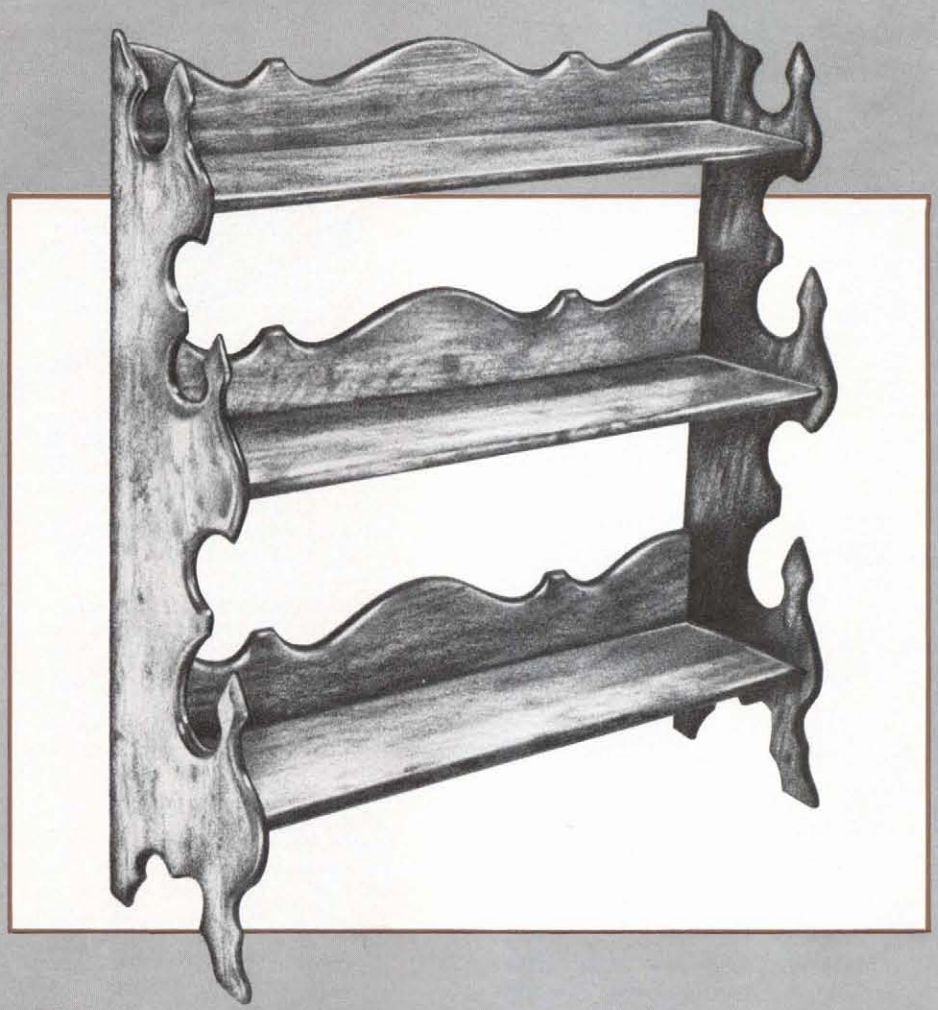
Vol. 9 No. 5 Sept-Oct '85: Colonial Schoolmaster's Desk, Contemporary Sideboard, Mahogany End Table, Victorian Hall Tree, Cutlery Wall Cabinet, Swing-out Plant Hanger, Prancing Horse Silhouette, Block Puzzle, Iron Caddy, Toy Ironing Board, Early American Water Bench, Wooden Smooth Plane, Shaker Sewing Box, *Articles:* A Craft Fair Visit; How to Use Stick Shellac; A Guide to Circular Saw Blades; Making Bent Laminations; Country Colonial Furniture.

Vol. 9 No. 6 Nov-Dec '85: Moravian Chair, Dulcimer, Oak Dining Table, Shaker Washstand, Marking Gauge, Veneered Wall Clock, 4 x 4 Off-Roader, Teddy Bear Puzzle, Duck Pull-toy, Landscape Cutting Boards, Early American Tall Clock, Pine Desk Organizer, *Articles:* Secrets of Success; Weaving a Fiber Rush Seat, Part I; Table Saw Ripping Problems and Their Solutions; 4-Piece Book Match Veneering; Pennsylvania Dutch Furniture.

Vol. 10 No. 1 Jan-Feb '86: Freestanding Shelf System, Chippendale Bachelor's Chest, Oriental Serving Tray, Country Bench, Antique Knife Tray, Tape Dispenser, Valentine Box, Toy Tow Truck & Car, Shaker Drop-leaf Table, Shop-made Bow Saw, Child's Settle Bench, Plate Shelves, *Articles:* On Getting Paid for Your Work; Weaving a Fiber Rush Seat, Part II; Table Saw Crosscutting: Techniques & Tips; Router-Lathe Fluting: A Shop-made Approach; Chippendale Furniture.

Vol. 10 No. 2 Mar-Apr '86: Zebrawood Veneered End Table, Shaker Oval Box, Microwave Cart, Pin-Hole Puzzle, Tumbling Monkey Toy, Early American Wall Box, Kicking Donkey Whirligig, Shaker Side Table, Wooden Mallets, Federal Period Washstand, Connecticut Shelf Clock, *Articles:* A General Guide to Craft Fairs; Why Wood Warps; Cutting Tapers, Wedges and Other Irregular Shapes with the Table Saw; Unsupported or Hand Steam Bending; ⅜ in. Variable Speed Reversible Drills; Federal Period; Hardware Suppliers.

Victorian Whatnot Shelf



Shelving units like this one, complete with intricate scrollwork, were popular at the turn of the century. Most often it is hung on a wall, but since the lower end of the sides form four feet, it can also stand on the floor or even a tabletop. Walnut, cherry, or mahogany were commonly used, and sometimes pine. If a piece was made from pine, however, it was often painted and gilded.

The two sides (A) are made first. To get the ½ in. thick stock you'll need to thickness plane ¾ in. material. If you don't have a thickness planer, check with your local lumberyard or millwork shop as they often have one, and generally will do the job for a minimum charge.

If you can't get 8 in. wide stock, you'll need to edge-glue a couple of boards in order to obtain the needed width. When edge-gluing, always allow a little extra stock for both the length and width dimensions. Apply a thin coat of glue to both mating edges before applying pressure with three or four pipe clamps. Set aside to dry thoroughly.

Once dry, remove the clamps, then use the table or radial-arm saw to trim each side to 8 in. wide and 28 in. long. Lay out and mark the location of the three dovetail slots to be cut on the inside of each side. Equip the router with a ½ in. dovetail bit and clamp an edge guide (made from a piece of ½ or ¾ in. thick stock ripped to about 2 in. wide) to the stock. With the router bit set to a ¼ in. depth, cut a 7 in. slot for the lower shelf (B), a 6 in. long slot for the center shelf (C), and a 5 in. long slot for the upper shelf (D).

The three notches along the inside back edge of each side are cut to accept the tenons on the ends of parts E and F. These notches are best cut with a router and a ⅜ in. ball-bearing guided rabbet bit. Set the bit to make a ¼ in. deep cut. Once all cuts are made you'll need to square the upper end of each one with a chisel.

Next, transfer the grid pattern (shown in the side view) to the stock. Use a band or saber saw to cut out, staying just outside the marked line. Once cut, use a file and then sandpaper to smooth the edge *exactly to the line.*

The lower, center, and upper shelves (parts B, C, and D) can be made next. Cut each one to overall length and width, then equip the router table with the ½ in. dovetail bit. Cut the dovetail as shown. To help support the stock as it's passed (on end) over the router bit, it's a good idea to add a plywood auxiliary fence that's at least 8 in. high. The ¼ in. by ½ in. rabbet along the back edge of each shelf can also be cut on the router table. Use a straight bit to make this cut. The ½ in. deep notch (see exploded view) at each front corner is cut with a dovetail saw.

Now make the wide and narrow backs (parts E and F). Cut to length and width before using the table saw and dado-head cutter to cut the ⅛ in. shoulder on the front face of each end (see tenon detail). Following this, transfer the grid pattern shown in the front view, then cut out and sand smooth. Use a dovetail saw to cut the ¼ in. by ¼ in. notch at the upper corners of each back.

Final sand all parts in preparation for final assembly. Dry assemble to make sure each joint fits well.

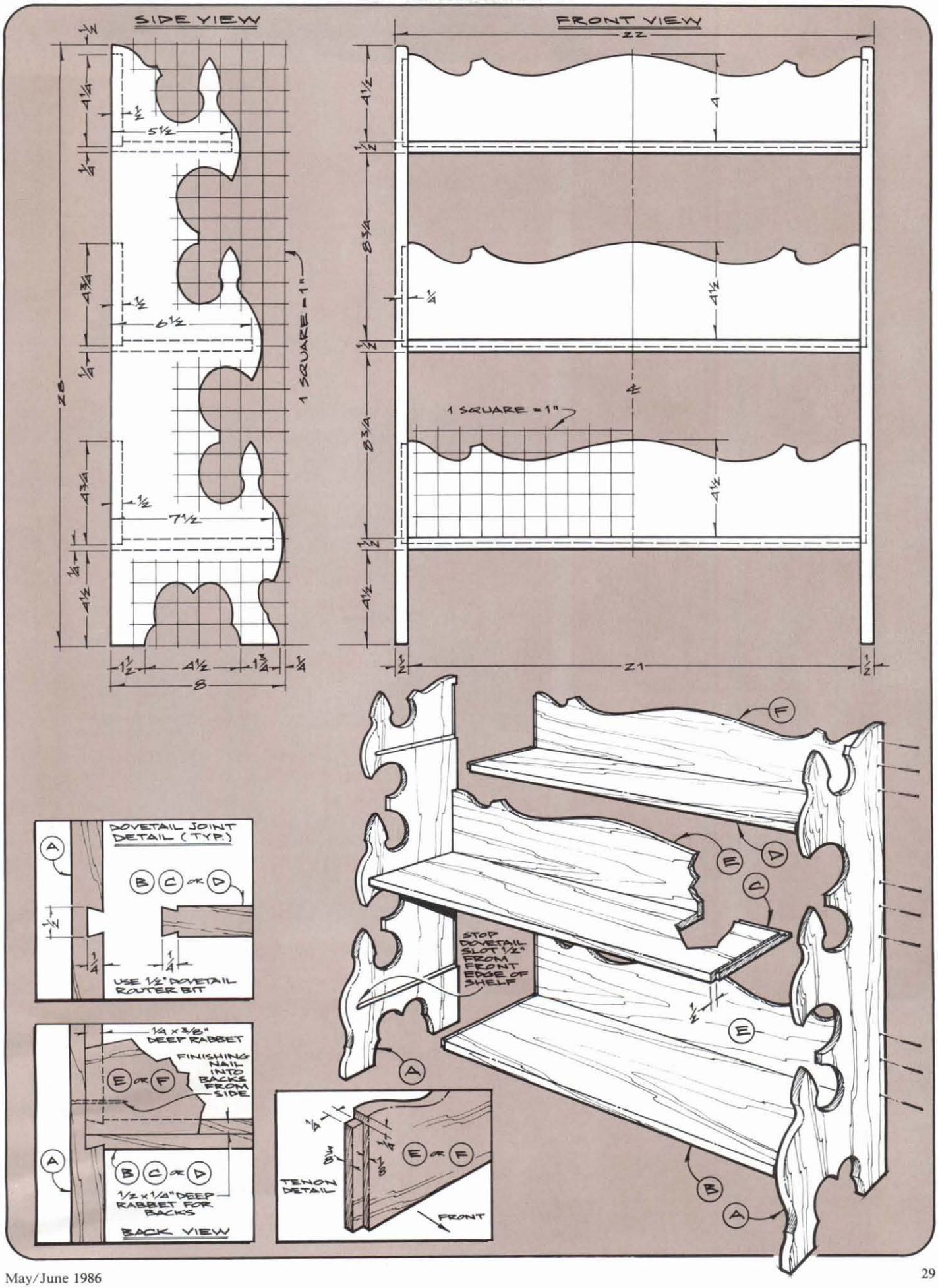
To assemble, apply a coat of glue to the front half of each dovetail groove in parts A, and to the back half of each dovetail cut in parts B, C, and D. Do one shelf at a time. Slide the shelf in until it is flush with the back edge of parts A. Add glue to the rabbet in the back of each shelf and to the tenons on each end of parts E and F. Install the backs *using countersunk* finishing nails driven in from the ends. Use clamps to apply pressure to the rabbet that joins the backs to the shelves. Check for squareness before setting aside to dry.

When dry, fill the countersunk finishing nail holes, then final sand. Much Victorian furniture was varnished, although a penetrating oil would also make a good-looking final finish.

WWJ

Bill of Materials
(all dimensions actual)

Part	Description	Size	No. Req'd.
A	Side	½ × 8 × 28	2
B	Lower Shelf	½ × 7½ × 21½	1
C	Center Shelf	½ × 6½ × 21½	1
D	Upper Shelf	½ × 5½ × 21½	1
E	Wide Back	½ × 4¾ × 21½	2
F	Narrow Back	½ × 4¼ × 21½	1


SIDE VIEW
FRONT VIEW
1 SQUARE = 1"
1 SQUARE = 1"
DOVETAIL JOINT DETAIL (TYP.)
USE 1/2" DOVETAIL ROUTER BIT
1/4 x 3/8" DEEP RABBET
FINISHING NAIL INTO BACKS FROM SIDE
1/2 x 1/4" DEEP RABBET FOR BACKS
BACK VIEW
TENON DETAIL
FRONT
STOP DOVETAIL SLOT 1/2" FROM FRONT EDGE OF SHELF

Contemporary Lamp

This striking contemporary lamp is crafted in walnut, and features "floating" padauk panels. The illusion of the floating panels lends this project a distinctly sculptural appearance.

Begin by making the four padauk panels (A). Next, cut four ¼ in. thick by 2½ by 16 in. walnut blanks from which you will make the panel supports (B). Referring to the cross-sectional view, lay out the part B profile on one of the blanks; bandsaw or jigsaw to shape, and then use the completed part B as a template to make the remaining three panel support pieces.

Next, make the walnut spine (C) as shown in the step-by-step spine detail. This method of resawing and coving the two spine halves, and then gluing them up around the threaded lamp pipe (E) is the only practical way to fashion the spine. Even if you were to have an extra long drill bit with a full 16 in. capacity, it is near impossible to get a straight and true bore over such a distance. Be sure to locate the threaded pipe so that it extends ⅜ in. out the bottom of the spine. *Note:* The overall length of both the pipe and the brass sleeve (F) can be extended or shortened, depending on the shade you select for the lamp.

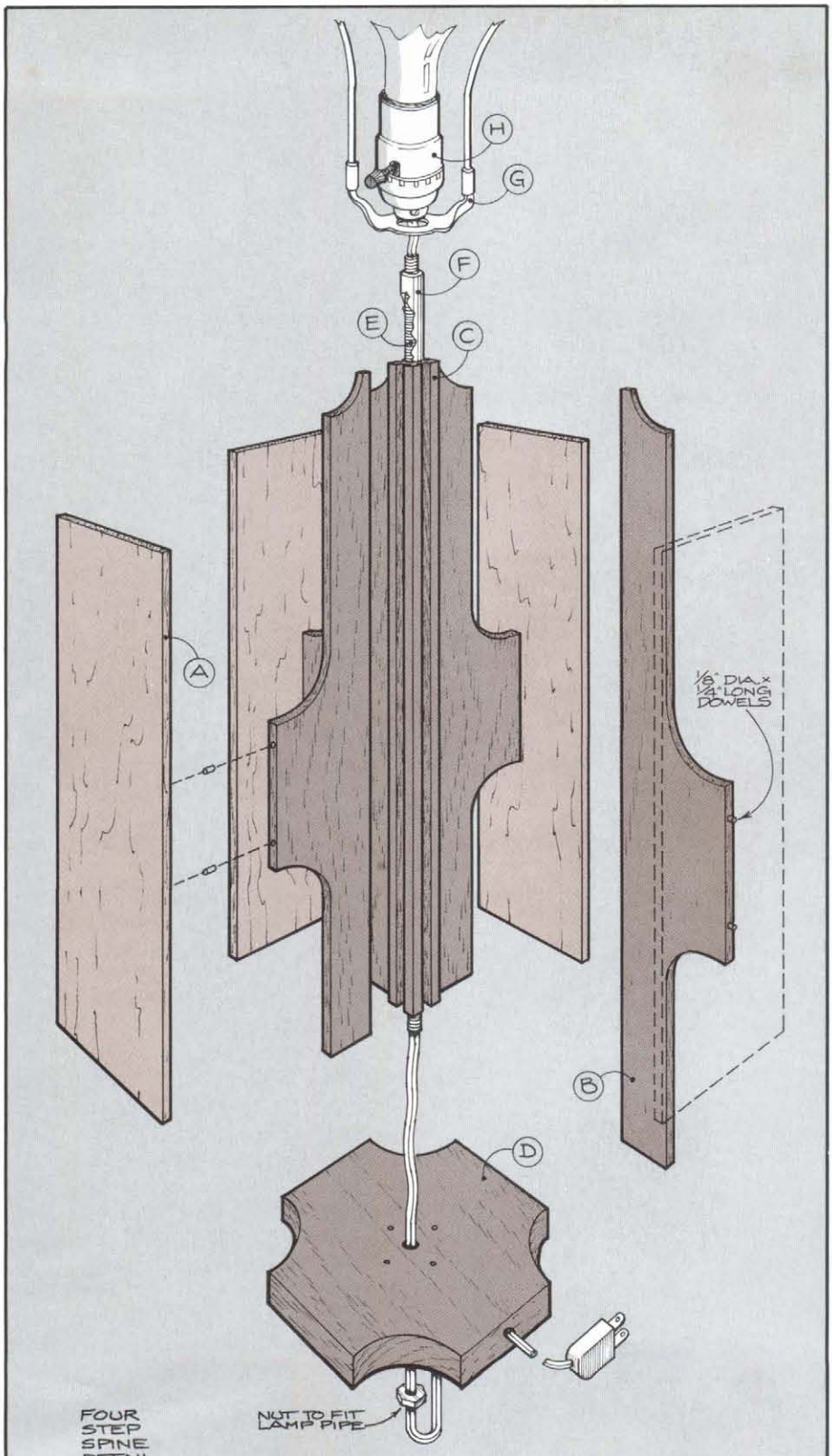
Now make the base (D). After shaping the 1½ in. radius corners, use a 2 in. diameter Forstner bit to counterbore the bottom ½ in. deep. Drill a ⅜ in. diameter hole through the base center to accept the threaded lamp pipe, and a 5/16 in. hole in from the side for the cord. Mount the spine assembly to the base with a nut, as illustrated.

Drill parts A and B to accept ⅛ in. diameter by ¼ in. long dowel pins. These pins serve to locate and hold the panels in place. Glue the panel supports into the spine, and the panels to the panel supports. As shown in the bottom view, we also anchored parts B with small screws inserted up through the base.

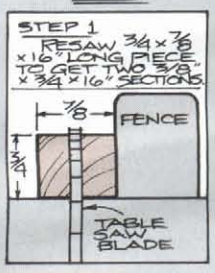
We fine sanded our lamp with 220 grit wet-or-dry, then sprayed on two coats of Deft finish. The threaded lamp pipe (E), harp (G), and socket (H) are available at most hardware and department stores, or they can be ordered from Meisel Hardware Specialties, P.O. Box 258, Mound, MN 55364. WWJ

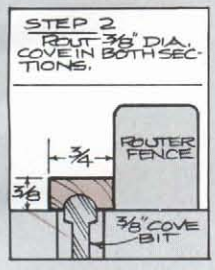
Bill of Materials
(all dimensions actual)

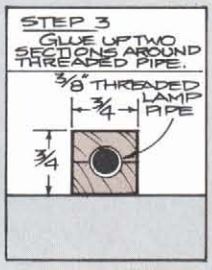
Part	Description	Size	No. Req'd.
A	Floating Panel	¼ × 3 × 11¼	4
B	Panel Support	¼ × 2½ × 16	4
C	Spine	see step-by-step instructions	1
D	Base	¾ × 6 × 6	1
E	Threaded Lamp Pipe	⅜ diam. × 18 in. long	1
F	Brass Sleeve	½ diam. × 1¼ tube	1
G	Harp	10 in. high	1
H	Socket	standard lamp socket	1

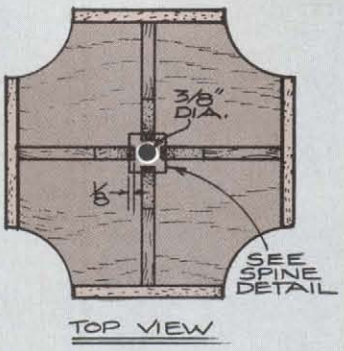


FOUR STEP SPINE DETAIL

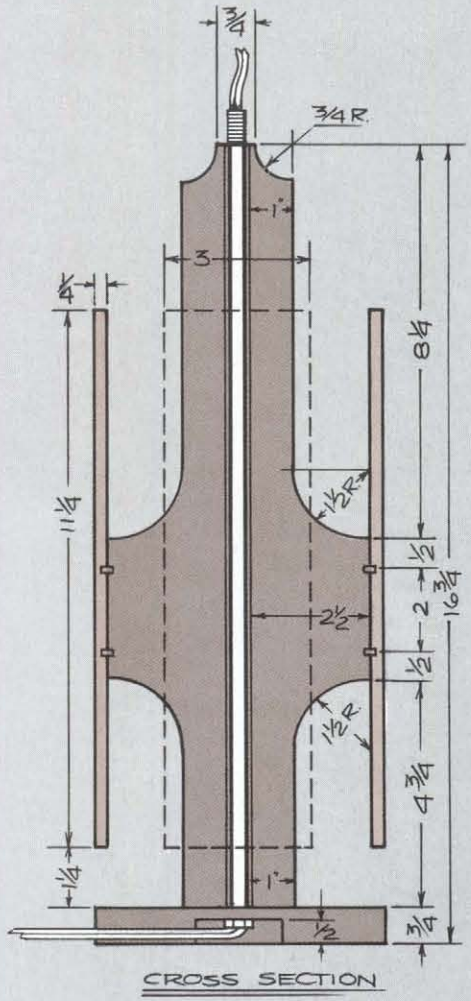




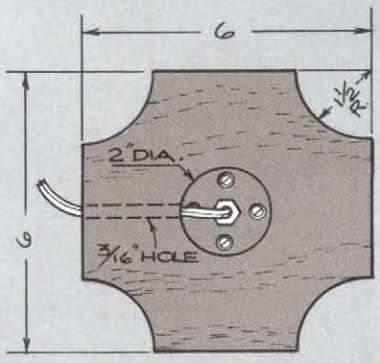




TOP VIEW



CROSS SECTION



BOTTOM VIEW

Early American Bench

Small benches like this, made of pine, were found in many Early American homes, probably because they were lightweight and could be moved from the supper table to an out of the way wall with a minimum of effort. In the winter, it might be found next to the hearth, arranged so that it was perpendicular to the wall. Here, a couple could sit facing the warm fire while the backboards shielded them from the chilling drafts that regularly meandered through those old houses.

We used clear pine for ours, although a few small sound knots are acceptable.

To make the two sides (A) you'll need to edge-glue two or three 1⅛ in. thick (five-quarter stock) pine boards. It's best to cut the boards so that the glued-up stock will be slightly wider and longer than necessary. Use two or three waxed alignment cleats (see Shop Tip, September/October 1985 issue, page 62) to keep the boards aligned as clamp pressure is applied. When dry, remove the clamps and trim the stock to 16 in. wide and 34½ in. long.

The ¾ in. by ¾ in. rabbet along the back edge is best cut using the table saw equipped with a dado head cutter, although it can also be made by making repeated passes with the regular saw blade.

To cut the 1⅛ in. wide by ⅜ in. deep stopped dado we used a router equipped with a ⅜ in. diameter straight bit. As a guide for the router, a fence is clamped to the side. A straight piece of ¾ in. thick by 1½ in. wide pine serves well as a fence. Locate the fence so that the first cut will establish the lower edge of the dado at a point 15⅜ in. from the bottom. Make the first pass with the router bit set to make a ⅛ in. deep cut, starting the cut from the back of part A and stopping it at a point ¾ in. from the front edge. To complete the cut, make two more passes, the second with the bit set to a ¼ in. depth and the third with the bit set to a ⅜ in. depth. Next, move the fence and repeat the process to widen the groove to ¾ in. Finally, make one more fence adjustment and one more series of ⅛ in. deep cuts to complete the 1⅛ in. wide dado. Use a chisel to square the corners at the point the dado is stopped.

Bill of Materials
(all dimensions actual)

Part	Description	Size	No. Req'd.
A	Side	1⅛ × 16 × 34½	2
B	Stretcher	¾ × 3 × 48	1
C	Seat	1⅛ × 16 × 46½	1
D	Backboard	¾ × 10¼ × 47¼	4

Referring to the side view, transfer the grid pattern profile to the side, then cut out with a band or saber saw. Also lay out, mark, and cut out the 4 in. radius at the bottom as shown. Sand the edges, finishing with 220 grit.

Next, cut the stretcher (B) to overall length and width, then lay out and mark the dovetails on each end. Use a fine-tooth backsaw or a dovetail saw to cut out. Now, using the stretcher dovetails as templates, trace the profile on the front edge of the sides. Note that the top edge of the stretcher is located 15⅜ in. from the bottom of the side. Cut out with a back or dovetail saw and a sharp chisel.

You'll need to edge-glue 1⅛ in. thick stock to get enough width for the seat (C). Trim to length and width before cutting the ⅜ in. deep by 1⅛ in. long notch on each front corner.

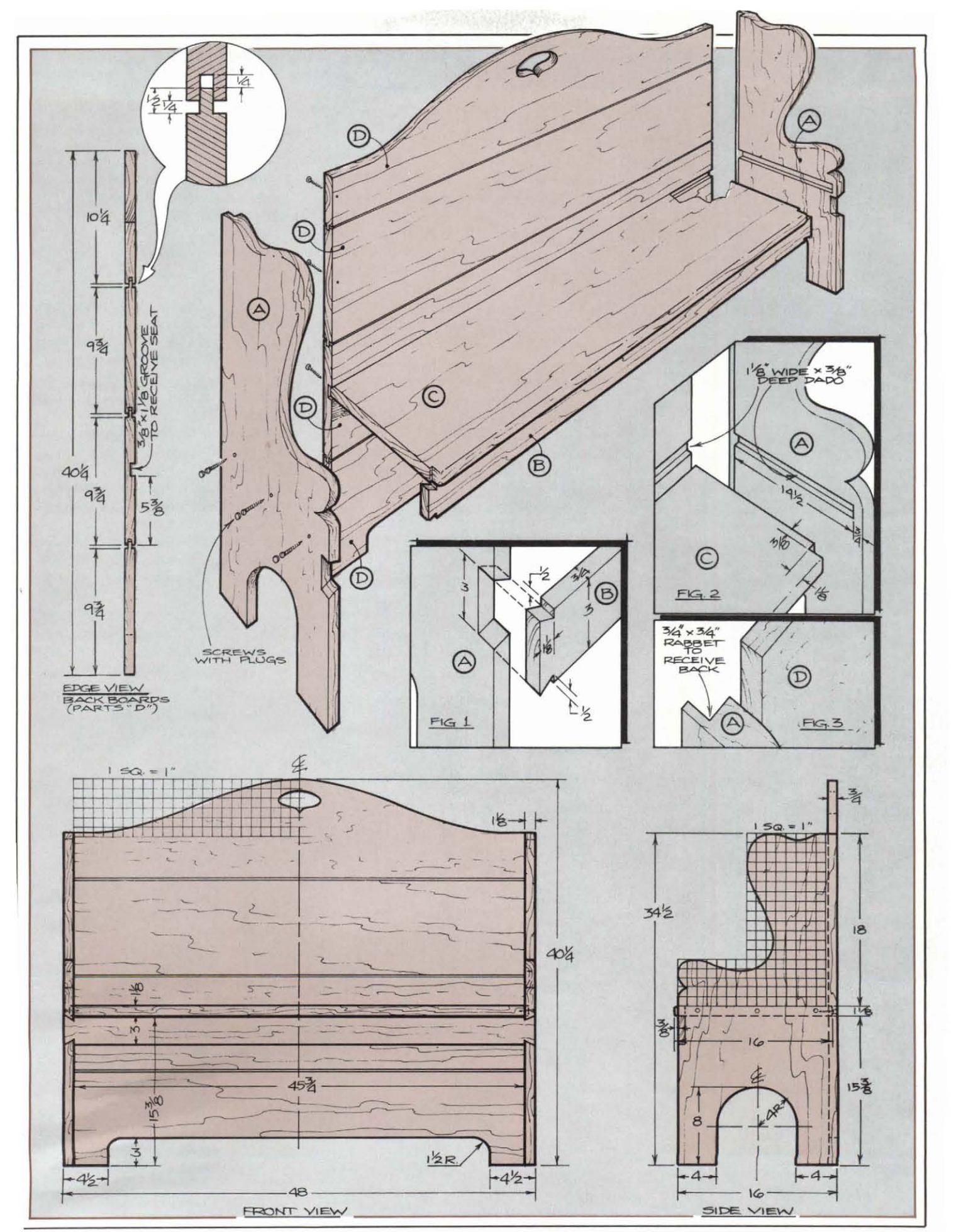
The four backboards (D) are made from 1 by 12 stock (which measures ¾ in. thick by 11¼ in. wide) ripped to 10¼ in. wide. We used a router table to cut the tongue and groove on each board, although this joint can also be cut using the dado head on the table saw. Also, at this time, cut the dado groove to accept the seat. Note that this groove is cut only on the second board from the bottom.

Transfer the grid pattern profile (shown in the front view) to the upper backboard, and cut out with a saber or band saw. Lay out the 1½ in. radius on the bottom backboard and cut out in the same manner.

Sand all parts, then assemble the sides, stretcher, and seat. Use glue on all joints. As shown, use countersunk flathead wood screws with plugs to join the sides to the seat. Three or four clamps will provide adequate pressure at the glue joint between the seat and the stretcher.

Next, the grooved backboard is glued and screwed (use four or five screws) to the seat. The remaining backboards can now be added, each one joined to the rabbeted back edge of the sides with a single screw at the centerpoint (measured across the width). As shown in the edge view, allow ¼ in. between each board. The single screw in each board allows for expansion and contraction with changes in humidity.

Final sand all parts, then stain. We used two coats of Minwax's Early American Wood Finish. When dry, two coats of their Antique Oil Finish were added to complete the project.

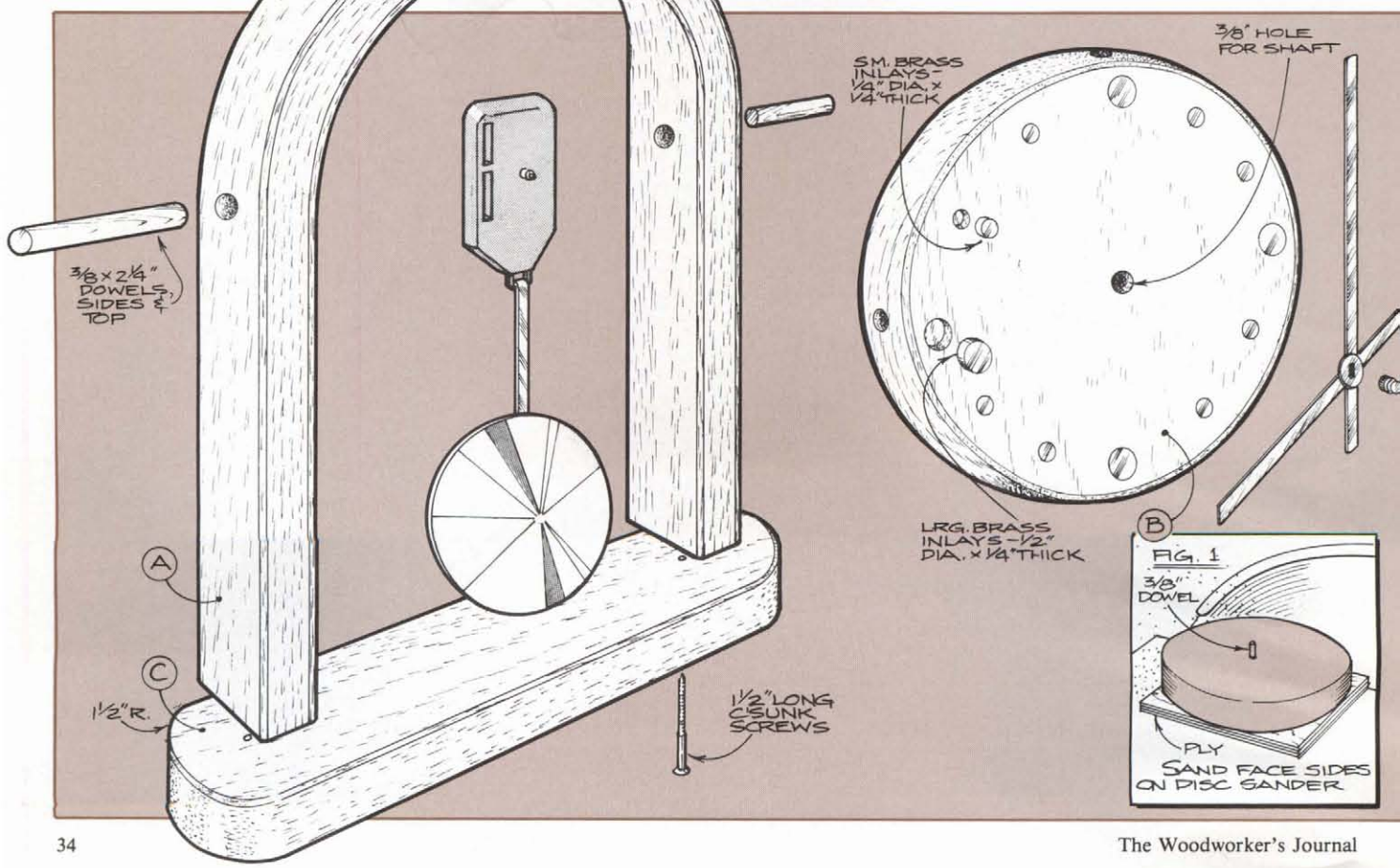

1/4
1/2
1 1/4
10 1/4
9 3/4
3/8" x 1/8" GROOVE TO RECEIVE SEAT
40 1/4
9 3/4
5 3/8
9 3/4
EDGE VIEW
BACK BOARDS
(PARTS "D")
SCREWS WITH PLUGS
A
B
C
D
1/8" WIDE x 3/8" DEEP DADO
14 1/2
3/16
1/8
FIG. 2
3/4" x 3/4" RABBET TO RECEIVE BACK
FIG. 3
3
1/2
3/4
1/8
FIG. 1
1 SQ. = 1"
1/8
40 1/4
3/16
3
45 3/4
15 3/8
3
1 1/2 R.
4 1/2
48
FRONT VIEW
3/4
34 1/2
18
1 1/8
3/8
16
15 3/8
8
4R
4
16
SIDE VIEW

Steam-Bent Clock

This contemporary clock features a *unique steam-bent* frame that makes the design a real eye-catcher. It can be made either as a wall-hung clock (no base) or as a mantle clock (with base). We chose red oak for the frame, primarily because it is one of the better bending woods, and walnut for the face and base to provide an attractive contrast with the oak.

A good place to start is with the frame (A). Refer to the Special Techniques article (pages 20-23) for instructions on how to steam bend the frame. Since the stock to be steamed and bent must allow some extra length, width, and thickness, we started with a 33 in. length of oak measuring a little more than 1 in. thick by 1½ in. wide. After you successfully complete the bend, trim the ends of the frame to establish a frame height of 12 in. Then clean up and final sand the inner and outer sides and edges to reduce the oak frame stock to the final 1 in. thick by 1½ in. wide dimension. Chamfer both the edges and ends of the frame if you are making the wall-hung clock. For the mantle version leave the ends square (no chamfer) where they meet the base. *Note:* When the oak is removed from the form, you will notice that the wood has blackened where the oak contacted the steel. This discoloration is caused by a chemical reaction between the metal and wood, and will easily sand out.

Next make the clock face (B), which has a 6 in. diameter and is 1¼ in. thick. We turned our face on the lathe, however a good alternative is to scribe the 6 in. circle with a compass, and then cut out the face with the



band saw (stay outside the line). To remove the band saw marks, first drill a ⅜ in. hole through the face center for the movement shaft, then construct a simple sanding jig using a ⅜ in. dowel mounted in a ¾ in. thick plywood base. This jig is clamped to the disk sander (see Fig. 1) and the face is rotated against the disc. Mortise the back of the face to accept the movement and to accommodate the swing of the pendulum (see back view clock face).

The four large hour disks are cut from ½ in. diameter brass rod, and the eight smaller hour marks are cut from ¼ in. brass rod. Lay out the brass hour disk locations, as shown, and mortise for them using ¼ in. and ½ in. Forstner bits, respectively. Forstner bits are available from: Trendlines, 375 Beacham St., Chelsea, MA 02150, telephone: (800) 343-3248. The depth of these mortises is slightly less than the thickness of the brass, so that after the disks have been epoxied into place, they can be sanded flush with the face. The brass is available from metal supply stores.

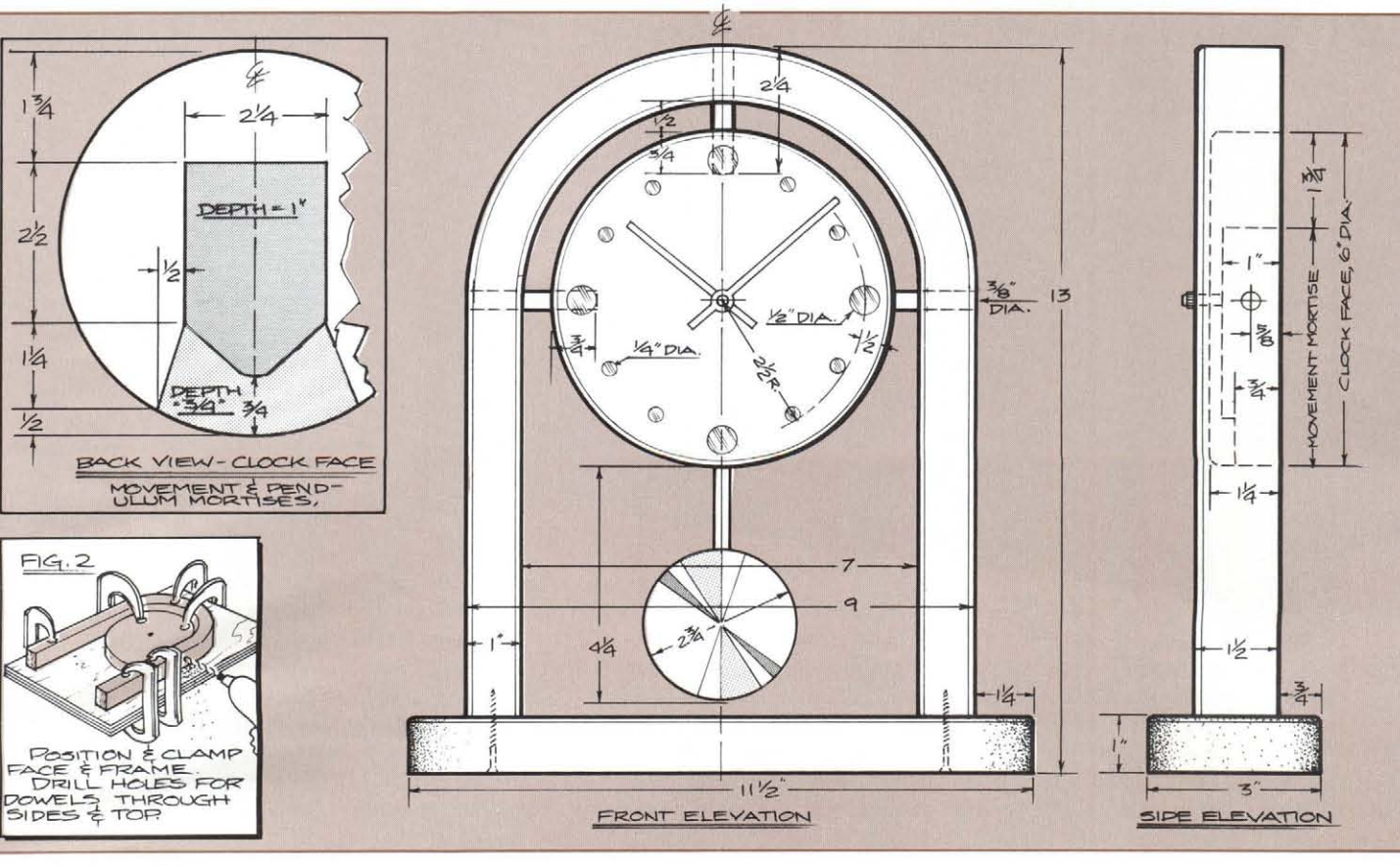
The face is mounted to the frame with three walnut dowels. As shown in the side elevation, the face and frame are flush at the back, which insets the front of the clock face ¼ in. relative to the frame front. Cut from ⅜ in. dowel stock, the mounting dowels should each be about 2½ in. long (excess length is trimmed after assembly). You can turn the dowels on a lathe, or ⅜ in. walnut dowel stock is available from: Constantine's, 2050 Eastchester Road, Bronx, NY 10461. Order part no. WDW5, (a 36 in. length). Cost $1.35.

To drill the dowel holes and mount the face to the frame, clamp the face and frame as shown in Fig. 2, then use a ⅜ in. drill bit to bore through the frame and about ¾ in. into the face edge. Glue the three dowels in place, then trim the excess dowel length and sand flush.

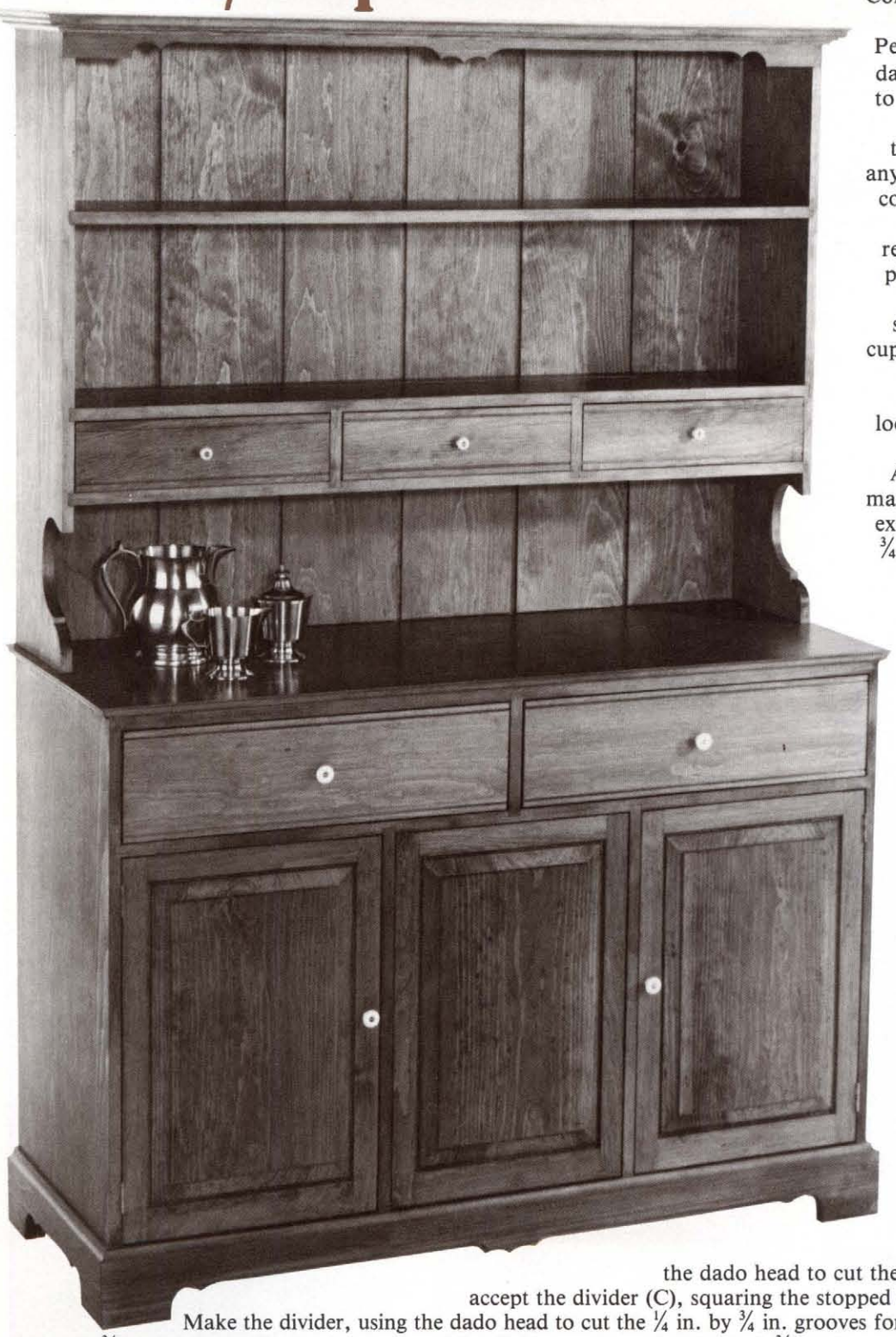
Should you choose to add the base (C), make it as shown from 1 in. thick walnut. Round the ends and chamfer the top edge. The base is mounted to the frame with counterbored 1½ in. wood screws.

We finished our clock with Deft. The quartz movement is available from: Mason & Sullivan, 586 Higgins Crowell Road, West Yarmouth, Cape Cod, MA 02673. Order part no. 3643X, cost is $10.95. The hands (order part no. 4780X, cost is $.70) and the pendulum arm (arm and bob are included with movement) must be clipped to length. WWJ

With the base, this clock is ideal for mantle or shelf.



Pine Hutch/Cupboard



Over the years we have had many requests for hutch/cupboard plans. Rather than copying an existing piece, we opted to examine many different cabinets and then develop our own design. Although there is a strong Colonial flavor to the finished cabinet, it also has elements of the Pennsylvania Dutch and Chippendale styles. Ornamentation is kept to a minimum, and the clean lines have resulted in an appearance that will look good in just about any dining room, from Colonial to contemporary. For versatility and to further meet our readers' requirements, we've designed this piece so that you have the option of making only the base, which stands alone well as a handsome cupboard. Our cabinet was built in pine, however one woodworker who saw it noted that it might look better in a hardwood such as cherry or a figured maple.

As you will note from the bill of materials, almost the entire cabinet except the drawers is crafted from ¾ in. thick material. If you'd like to avoid the edge-gluing that is required to obtain the stock width necessary for the wider parts, you may wish to consider buying glued up ¾ in. pine. Sold in 24 in. widths, it is available at many building supply retailers.

Start with the base unit. Cut the sides (A), then use the dado head to make the ⅜ in. deep by ¾ in. wide grooves that accept the bottom (B) and the shelves (L). Square the stopped end of the shelf groove with a chisel, and use the dado head to cut the ⅜ in. by ¾ in. rabbet across the top end, and the ¼ in. by ½ in. rabbet along the back edge of the sides. Notch the sides as shown in the side view to provide a reveal for the base molding, and cut the ⅜ in. by ¾ in. by 1½ in. notches for the lower stretchers (G and H). Make the bottom, notching it to accept the spacers (I). Use the dado head to cut the ¼ in. by ¾ in. groove that will accept the divider (C), squaring the stopped end of the groove with a chisel.

Make the divider, using the dado head to cut the ¼ in. by ¾ in. grooves for the shelves. Next, cut the ½ in. deep by 7¾ in. long notch in the front edge of the divider as shown in Fig. 1. A ¾ in. deep notch along the back edge accepts the correspondingly notched back lower stretcher (H), and a ¾ in. by 1½ in. notch at the top back edge accepts part E. The back upper stretcher (E) is simply cut to length and width; it has no notches. The front upper stretcher (D) and front lower stretcher (G) are notched in the same manner as one another to accept the divider (C) and the face piece (K). These notches in parts D and G are actually mirror images of each other. The back lower stretcher (H) has a ¾ in. by ¾ in. notch cut to mate with the identically notched divider. Fig. 1 should help you to visualize the joinery for all these parts and for the face piece (K), which can be made next. Also notch G as shown in the exploded view to accept part I.

Now make the spacers (I) which serve to separate the cupboard doors. Note that the ends of parts I have ⅜ in. by ¾ in. notches to fit the similarly notched bottom (B) and front lower stretcher (G). A ¾ in. by ¾ in. notch is cut at the center point of parts I to accept the shelves (L), which can now be cut to length and width. Also make the short cleats (F) and long cleats (J).

Now fashion the front and side base moldings (M and N). You will need about 8 feet of ¾ in. by 4½ in. wide stock. First, use either the molding head cutter in the table saw, or a bearing guided ½ in. cove cutter in the router to apply the ½ in. cove, as shown in the molding detail. Next, after rough cutting to length, miter the front ends of parts N and both ends of part M. Finally, lay out the grids (see side and front view) on parts M and N, band saw or jig saw the illustrated profiles, and sand smooth.

Cut the top (O) to 19⅝ in. by 49¼ in., and use either the table saw molding head cutter or router to apply the ¼ in. Roman ogee (see molding detail) to the front and side edges. The back (P) is a 30½ in. by 47½ in. section of ¼ in. plywood. The drawer guides (Q) can be made when you make the drawers.

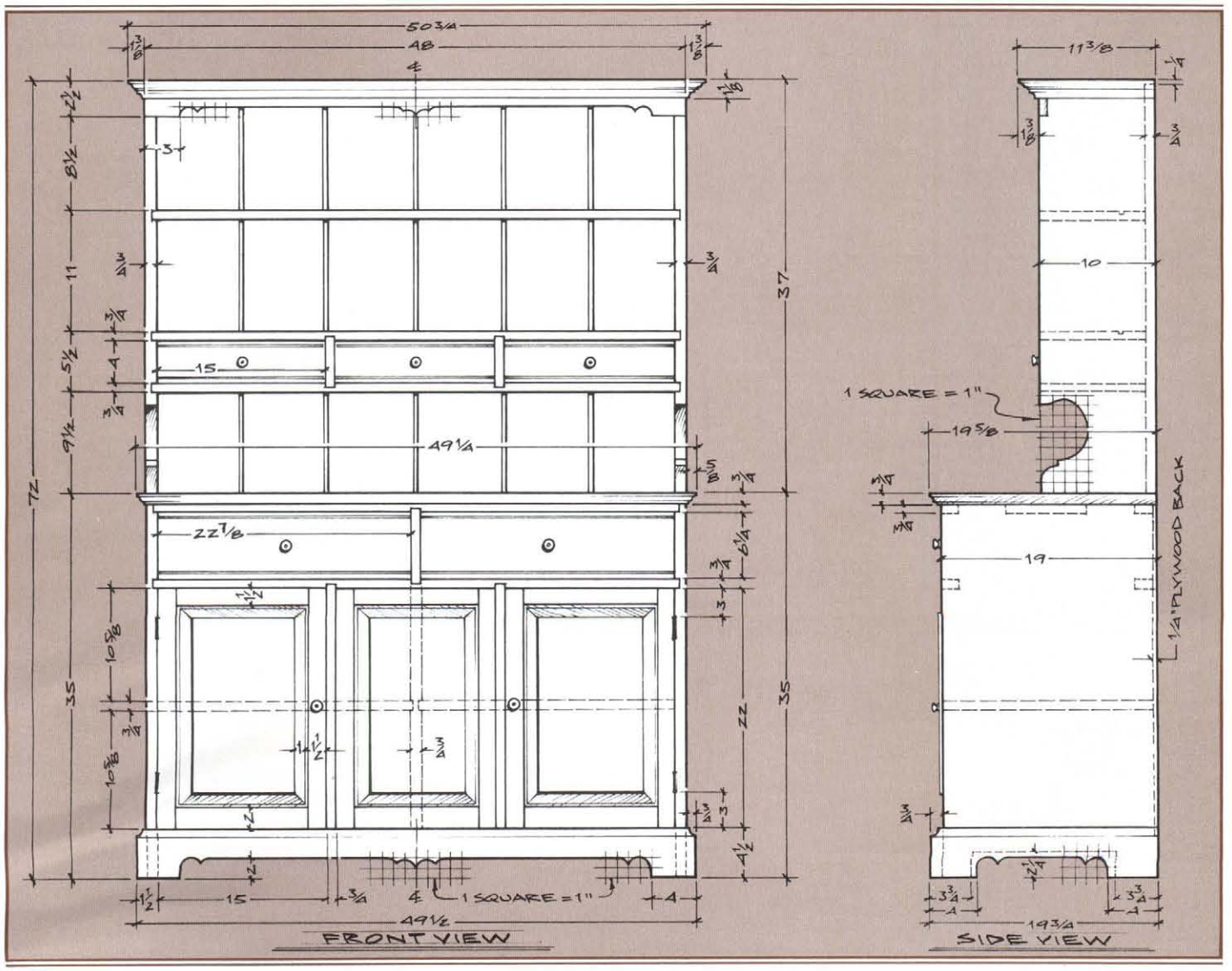
Now assemble the base unit carcase, using glue and/or screws throughout. Note that all visible exterior screws should be countersunk. The side base molding is not glued, but mounted with screws inserted through slotted holes in the sides as illustrated in the exploded view. This will allow the sides to expand and contract in relation to

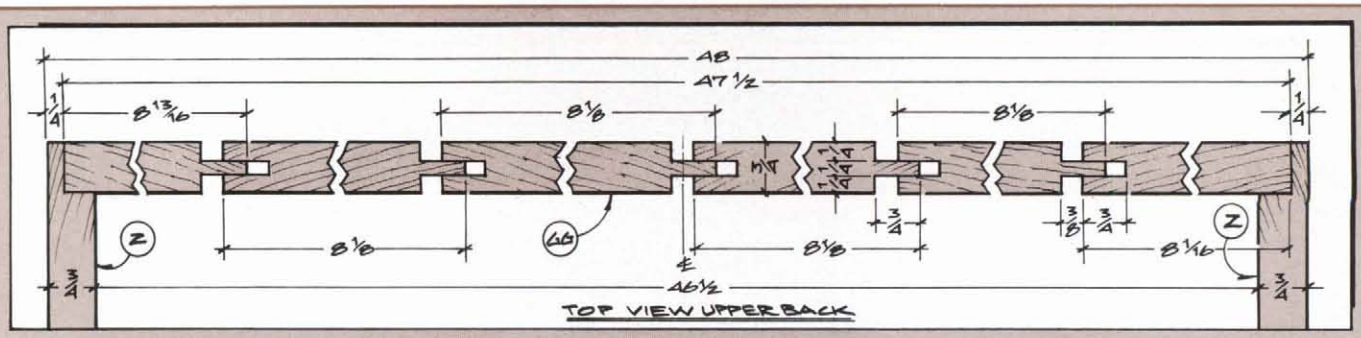
(continued on page 40)

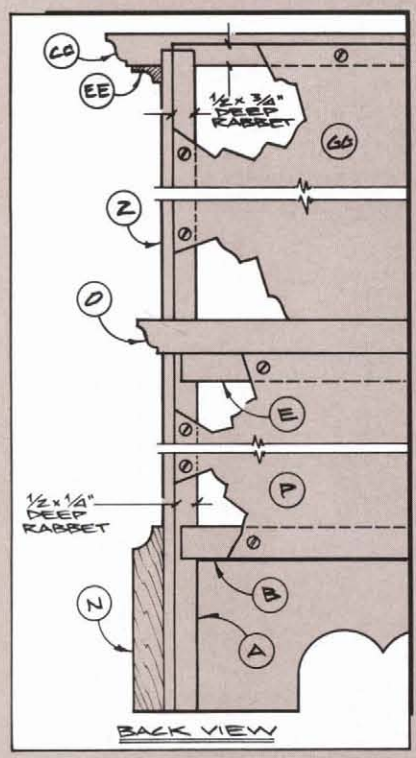
Bill of Materials
(all dimensions actual)

Part	Description	Size	No. Req'd.
	Base Unit		
A	Side	¾ × 19 × 34¼	2
B	Bottom	¾ × 18¾ × 47¼	1
C	Divider	¾ × 18 × 30	1
D	Front Upper Stretcher	¾ × 1½ × 47¼	1
E	Back Upper Stretcher	¾ × 1½ × 47¼	1
F	Short Cleat	¾ × 1½ × 7	2
G	Front Lower Stretcher	¾ × 1½ × 47¼	1
H	Back Lower Stretcher	¾ × 1½ × 47¼	1
I	Spacer	¾ × 1½ × 22¾	2
J	Long Cleat	¾ × ¾ × 10⅝	4
K	Face Piece	¾ × 1¼ × 7	1
L	Shelf	¾ × 18 × 23½	2
M	Base Molding, Front	¾ × 4½ × 49½	1
N	Base Molding, Side	¾ × 4½ × 19¾	2
O	Top	¾ × 19⅝ × 49¼	1
P	Back	¼ × 47½ × 30½	1
Q	Drawer Guide	¼ × ¾ × 17	4
	Doors		
R	Stile	¾ × 1½ × 22	6
S	Top Rail	¾ × 1½ × 12¾*	3
T	Bottom Rail	¾ × 2 × 12¾*	3
U	Panel	¾ × 12⅜ × 19⅛	3
	Base Drawers		
V	Front & Back	½ × 6 × 22⅞	4
W	Side	½ × 6 × 18	4
X	Bottom	¼ × 17½ × 22⅜	2
Y	Face	½ × 6¼ × 22⅞	2
	Hutch Unit		
Z	Side	¾ × 10 × 36⅝	2
AA	Lower Shelf	¾ × 9¼ × 47¼	2
BB	Upper Shelf	¾ × 9¼ × 47¼	1
CC	Top	¾ × 11⅜ × 50¾	1
DD	Fascia	¾ × 1¾ × 48	1
EE	Molding	⅜ × ¾ (see molding detail)	As Req'd.
FF	Divider	¾ × 9¼ × 43¼	2
GG	Back	¾ × 36¾ tongue & groove boards	6
HH	Drawer Guide	¼ × ¾ × 7½	6
	Hutch Drawers		
II	Front & Back	½ × 3¾ × 15	6
JJ	Side	½ × 3¾ × 8½	6
KK	Bottom	¼ × 8 × 14½	3
LL	Face	½ × 4 × 15	3
	Hardware		
MM	Hutch Knob	¾ in. diameter porcelain	3
NN	Base Knob	1 in. diameter porcelain	4
OO	Hinge	½ × 1¾ in. butt type	2 pair
PP	Bullet Catch	⅜ × 7/18**	2
QQ	Strap	1 × 3 in. steel	2

*Includes tenons.
**Available from: Constantine's, 2050 Eastchester Road, Bronx, NY 10461. Order part no. 75B11A; package of 10 costs $2.55.




TOP VIEW UPPER BACK


1/2 x 3/4" DEEP RABBET
1/2 x 1/4" DEEP RABBET
BACK VIEW

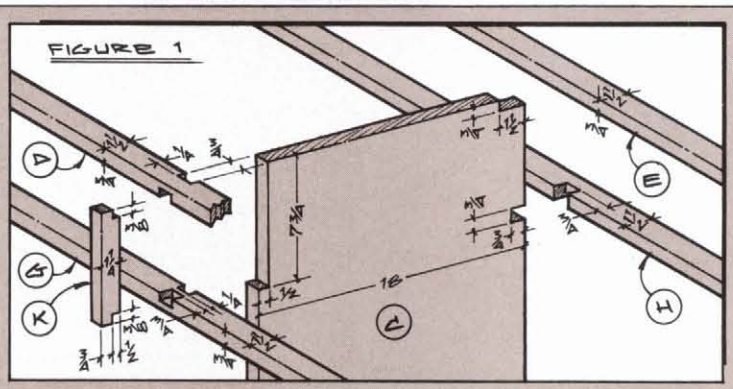
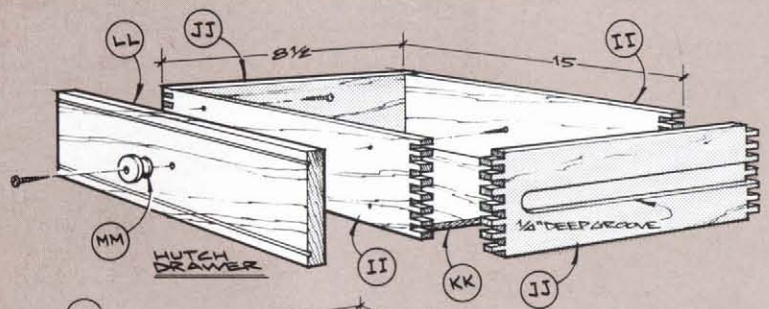
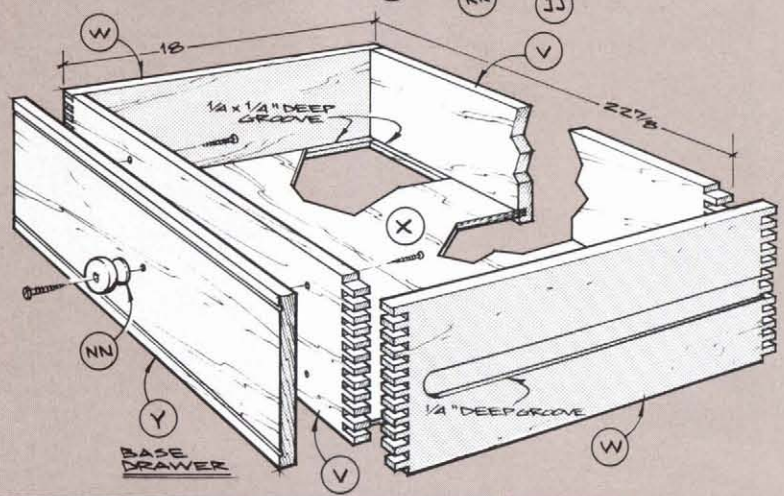
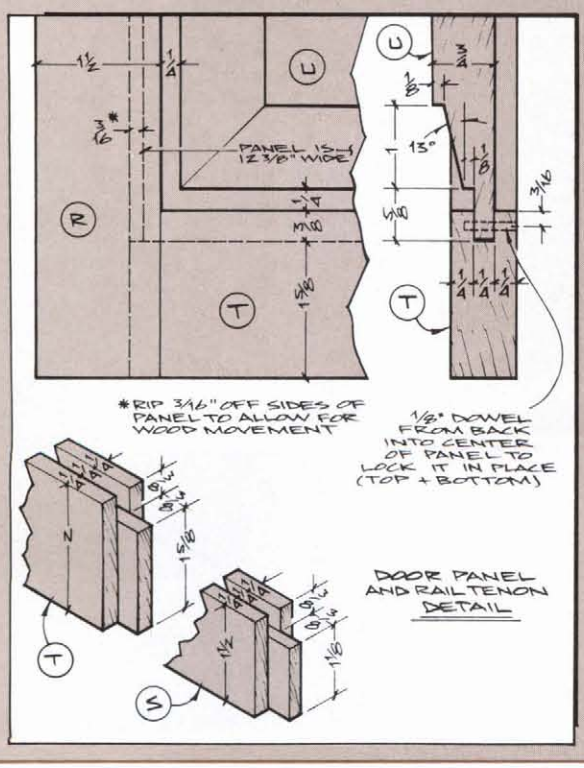
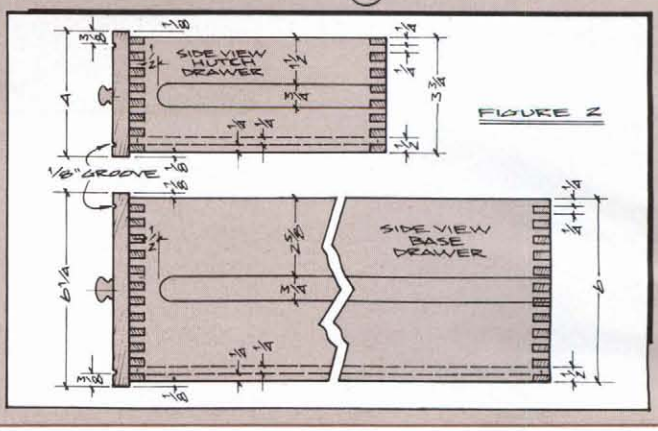


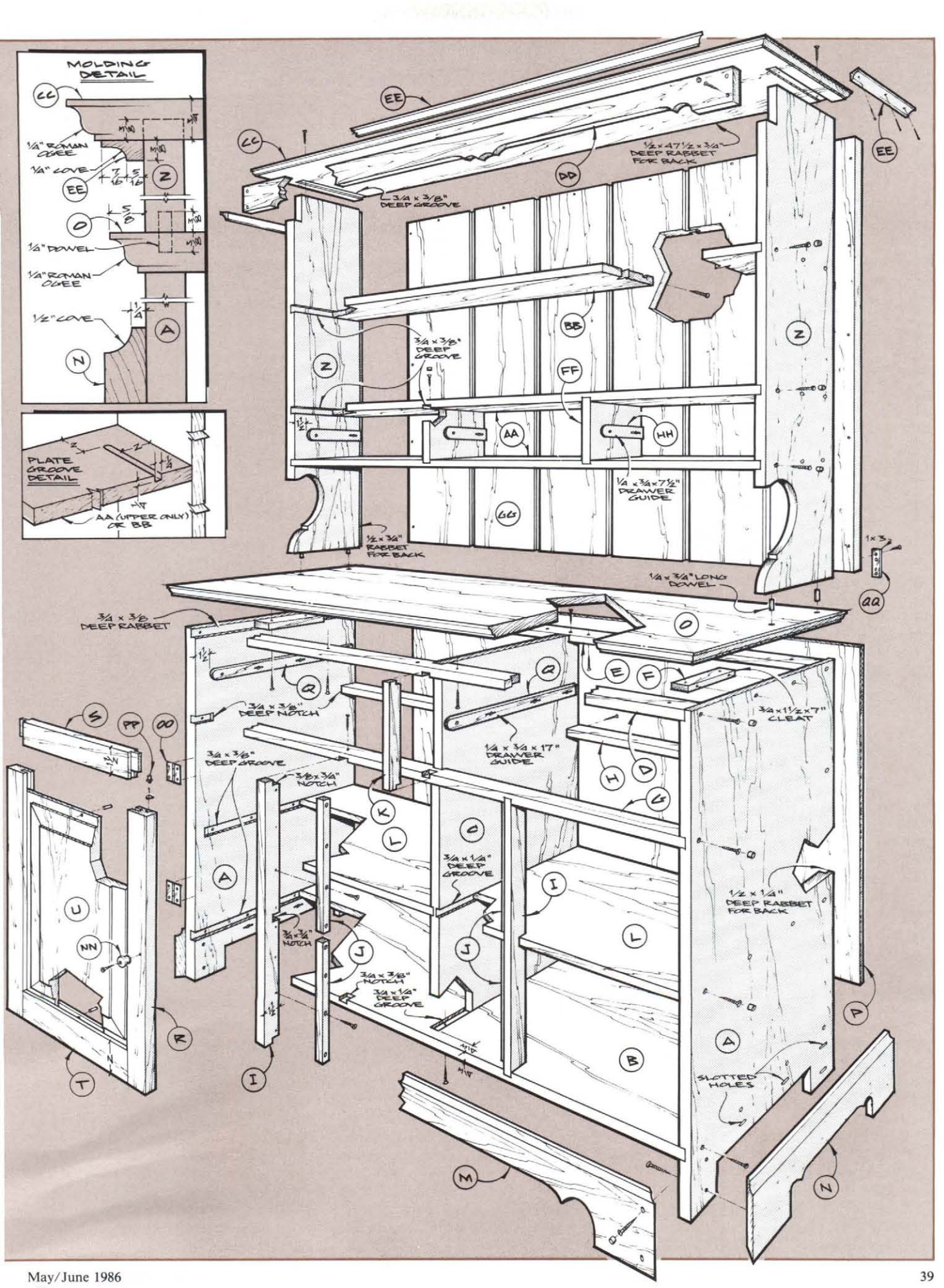
FIGURE 1


HUTCH DRAWER
1/4" DEEP GROOVE


1/4 x 1/4" DEEP GROOVE
1/4" DEEP GROOVE
BASE DRAWER


PANEL IS 12 3/8" WIDE
*RIP 3/16" OFF SIDES OF PANEL TO ALLOW FOR WOOD MOVEMENT
1/8" DOWEL FROM BACK INTO CENTER OF PANEL TO LOCK IT IN PLACE (TOP + BOTTOM)
DOOR PANEL AND RAIL TENON DETAIL


SIDE VIEW HUTCH DRAWER
1/8" GROOVE
SIDE VIEW BASE DRAWER
FIGURE N


MOLDING DETAIL
CC
1/4" ROMAN OGEE
1/4" COVE
EE
Z
O
1/2" DOWEL
1/4" ROMAN OGEE
1/2" COVE
A
N
PLATE GROOVE DETAIL
AA (UPPER ONLY) OR BB
EE
CC
DD
1/2 x 47 1/2 x 3/4" DEEP RABBET FOR BACK
3/4 x 3/8" DEEP GROOVE
BB
Z
3/4 x 3/8" DEEP GROOVE
FF
AA
HH
1/4 x 3/4 x 7 1/2" DRAWER GUIDE
GG
1/2 x 3/4" RABBET FOR BACK
1x3
1/4 x 3/4" LONG DOWEL
QQ
3/4 x 3/8" DEEP RABBET
O
Q
Q
E
F
3/4 x 3/8" DEEP NOTCH
3/4 x 1 1/2 x 7" CLEAT
S
PP
OO
3/4 x 3/8" DEEP GROOVE
3/8 x 3/4" NOTCH
1/4 x 3/4 x 17" DRAWER GUIDE
H
D
G
K
L
O
3/4 x 1/4" DEEP GROOVE
I
1/2 x 1/4" DEEP RABBET FOR BACK
A
U
NN
J
J
L
3/4 x 3/4" NOTCH
3/4 x 3/8" NOTCH
3/4 x 1/4" DEEP GROOVE
P
R
A
B
SLOTTED HOLES
T
I
M
N

the side base molding. The top is screwed in place up through parts D and E, and through the short cleats (F) which are screwed into the sides. Take special care with the joinery of parts D, G, I and K, since these parts must be mated accurately to achieve the flush look across the front. Allow any glue squeeze-out to dry before scraping off. A dry test-fitting of all parts is strongly recommended before final assembly, however small irregularities in fit can be sanded off afterward.

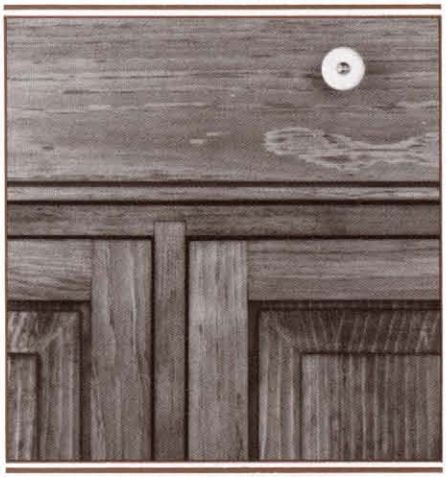
Next make the three doors. The two outside doors are working, while the center door is fixed permanently. Tenon the rails (S and T) as shown in the door panel and rail tenon detail. Note that the top rail is 1½ in. wide, while the bottom rail is 2 in. wide. Use the dado head to cut the ¼ in. wide by ⅜ in. deep grooves that run the length of both the rails and the stiles (R). As shown in the exploded view, the ends of these grooves in the stiles serve as the mortises to accept the rail tenons.

The raised panels (U) can either be cut on the table saw or with a shaper or router, using a panel raising bit. If you use the table saw, raise the blade to 1⅝ in. and set it at 13 degrees to establish the raised profile. Since the stock will be passed through on edge, a fence extension is strongly recommended. Next, use the dado head to cut the ⅝ in. wide step at the edge. Clean the top of the raised edge to square it, and remove any "hair". As you will note from the door panel detail, the 12⅜ in. wide by 19⅛ in. long panels are sized to allow 3/16 in. on either side and 1/16 in. on either end for expansion. Fix the panels at the center point, both top and bottom, with ⅛ in. dowel pins to equalize movement. Do not glue the panels in place. Also, do not mount the doors yet.

The base drawers, consisting of parts, V, W, X, and Y can be made next. Cut the box or finger joints (see Fig. 2 for finger joint layout), and then cut the ¼ in. by ¼ in. groove in the ½ in. thick front, back and sides that will accept the ¼ in. thick plywood drawer bottom. Assemble the drawer carcase around the bottom, using glue throughout. When dry, use the router and a straight bit to cut the ¼ in. deep by ¾ in. wide by 17 in. long grooves in the sides to accept the drawer guides (Q). Cut the drawer faces (Y) to length and width from ½ in. stock, and use the router equipped with a ⅛ in. veining bit to cut the ⅛ in. detail (Fig. 2).

Drill several oversize holes through the drawer front, and temporarily screw the faces in place. As shown in Fig. 2, position the face so there is a ⅛ in. lip at both top and bottom. The oversized holes will accommodate some adjustment of the drawer faces to fit the openings *after* the drawers are mounted.

At this time, make the drawer guides (Q). The guides must be positioned so that they both support the drawers (so the drawers ride level and do not contact any of the stretchers) and act as stops, so the drawers do not hit the plywood back (P). We have dimensioned the drawers to leave about ¼ in. space between the drawers and the plywood back. Position and mount the drawer guides, fixing their front ends, but using slotted holes to permit expansion in the center divider toward the back. This construction will help to keep the drawer faces flush with the



front of the cabinet as the carcase responds to seasonal changes in humidity. The drawer faces can be permanently mounted after they have been adjusted to "center" in the drawer openings.

Now you can mount the raised panel doors, which we had left off earlier to facilitate mounting the drawers. The fixed center door is simply glued to parts J, a good long grain-to-long grain glue joint. If you prefer, the center door can be functional and hinged to part I, in which case you may dispense with parts J. The two outside doors are mounted with ½ in. by 1¾ in. butt hinges (OO). Don't forget to install the bullet catches (PP) and the one inch diameter porcelain knobs (NN), available at most hardware stores.

The base cupboard is now complete. If you've decided to make the hutch unit, start with the sides (Z). After cutting to length and width, cut the grooves for the shelves (AA and BB). Notch the top end ¾ in. by 2⅛ in. to accommodate the fascia (DD) and the top (CC), and cut the ½ in. by ¾ in. rabbets along the back edge to accept the back (GG). Transfer the side grid (see side elevation), cut out with the band or jig saw, and sand smooth. Cut the shelves to length and width, groove the two lower shelves as shown to accept the dividers (FF), and use the router with a ¼ in. straight bit to make the plate groove in shelf BB and the uppermost of shelves AA (see plate groove detail).

Lay out the grid pattern for the fascia (DD) as shown in the front elevation, then cut out and smooth the profile. Make the top (CC), cutting the ⅜ in. by ¾ in. by 9¼ in. grooves to accept the sides first, and the ½ in. by ¾ in. by 47½ in. long rabbet to accept the back next. Finally, apply the same ¼ in. Roman ogee to the hutch top that you used on the base top.

The back (GG) is a series of tongue and groove ¾ in. boards. As shown in the back layout, we have sized these boards so that, from the frontal view, each appears equal. Assemble the hutch carcase, consisting of parts Z, AA, BB, CC, DD, FF, and GG. Use glue and/or countersunk and plugged screws as illustrated. Now cut about 6 feet of the ¼ in. cove molding (EE) shown in the molding detail. Miter the ends, glue the fascia section of EE in place, and apply the side sections with finishing nails, set and filled.

The hutch drawers, (consisting of parts II, JJ, KK, and LL) are made and assembled exactly as were the base unit drawers (see Fig. 2 for dimensions and box joint layout). Only the size is different. The mounting procedure for the assembled drawers and the drawer guides (HH) is also identical to the process we outlined earlier. Note that the hutch drawer knobs are ¾ in. diameter porcelain.

The hutch unit is mounted to the base unit with four ¼ in. diameter by ¾ in. long dowels (see exploded view). The purpose of these dowels is to locate the hutch and keep it from sliding around. Do *not* glue the dowels. The hutch can thus be easily disassembled for moving. We recommend two steel straps (QQ), screwed in place as shown to prevent the hutch from tipping over.

After final sanding we stained the hutch/cupboard with Minwax Early American Wood Finish (No. 230), then finished it with Deft. Two coats (sprayed on) provide a nice soft satin sheen to this project.

Glue blocks and levelers can be added to the base, if necessary. WWJ

Canada Goose Basket

Small wooden baskets seem to be popular lately, especially those in the shapes of various kinds of animals. This one, in the profile of a Canada goose, is shown used as a bread server, but it also can be used to display a dried flower arrangement, or to hold paper napkins, or simply as a place to store odds and ends.

We used clear pine for ours, although a few small knots are acceptable. To make the sides (A), you'll need two pieces of stock, each measuring 9½ in. wide by 10 in. long. If you don't have access to a thickness planer and you can't get ½ in. thick stock locally, your best bet is to hand plane ¾ in. material.

Next, transfer the full-size pattern shown on page 43 to the stock. Note that the grain runs diagonally to give the board maximum strength after it is cut out. Had we run the grain horizontally, short grain across the neck of the goose would have presented a potential weak point — one that might have broken if the basket were dropped.

After transferring the pattern, use a band or saber saw to cut out the profile. As you make the cut, stay slightly on the waste side of the line; then after the cut is complete, sand the stock exactly to the line. Start with 80 grit sandpaper, then follow with 100 and 150. Next, bore the ⅜ in. diameter by ¼ in. deep hole for the handle in each side as shown.

The twelve slats (B) are cut next. You'll need to resaw thicker stock to get the ¼ in. thickness, so in Fig. 1 we've shown how to do it. Start with a piece of ¾ in. thick stock that measures 2¼ in. wide by 40 in. long. Raise the table saw blade to a height of 1 in., then locate the rip fence to establish a ¼ in. wide cut. Using a push stick to keep hands clear of the fence, make the first cut (Step 1). Flip the stock and repeat the cut on the other edge (Step 2). Following this, take the stock to the band saw and make the last cut to separate the stock (Step 3). The lip that remains is removed with a hand plane. Now, using the table saw, the stock can be ripped to 1 in. before crosscutting to 6 in. lengths.

The slats are joined to the sides with glue and ½ in. by no. 4 flathead wood screws, each one countersunk ⅛ in., then covered with wood filler and sanded smooth. The handle (C) is also glued in place at this time.

To paint the project you'll need black, brown, and white enamel paints. A small container (about two fluid ounces) of each will be more than enough. Using the brown, begin by painting the inside and edge surfaces of each side, then do the slats and the handle. We found that a primer coat was not necessary, so the paint was applied directly to the pine.

The goose is painted as shown in the full size pattern. Use a narrow brush and work carefully. Some of the colors (light brown, medium brown, and grey) require mixing. The mixing ratios are given in the pattern. Allow to dry thoroughly after painting. WWJ

(continued on next page)

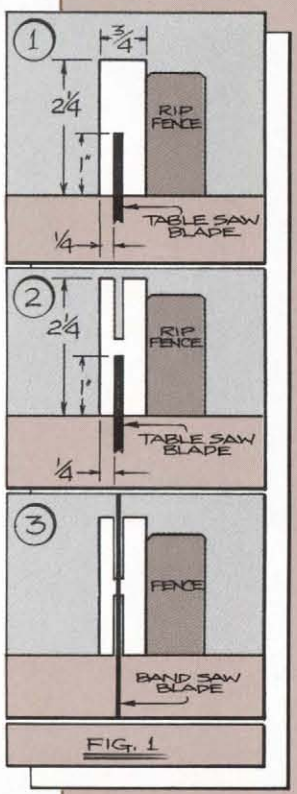
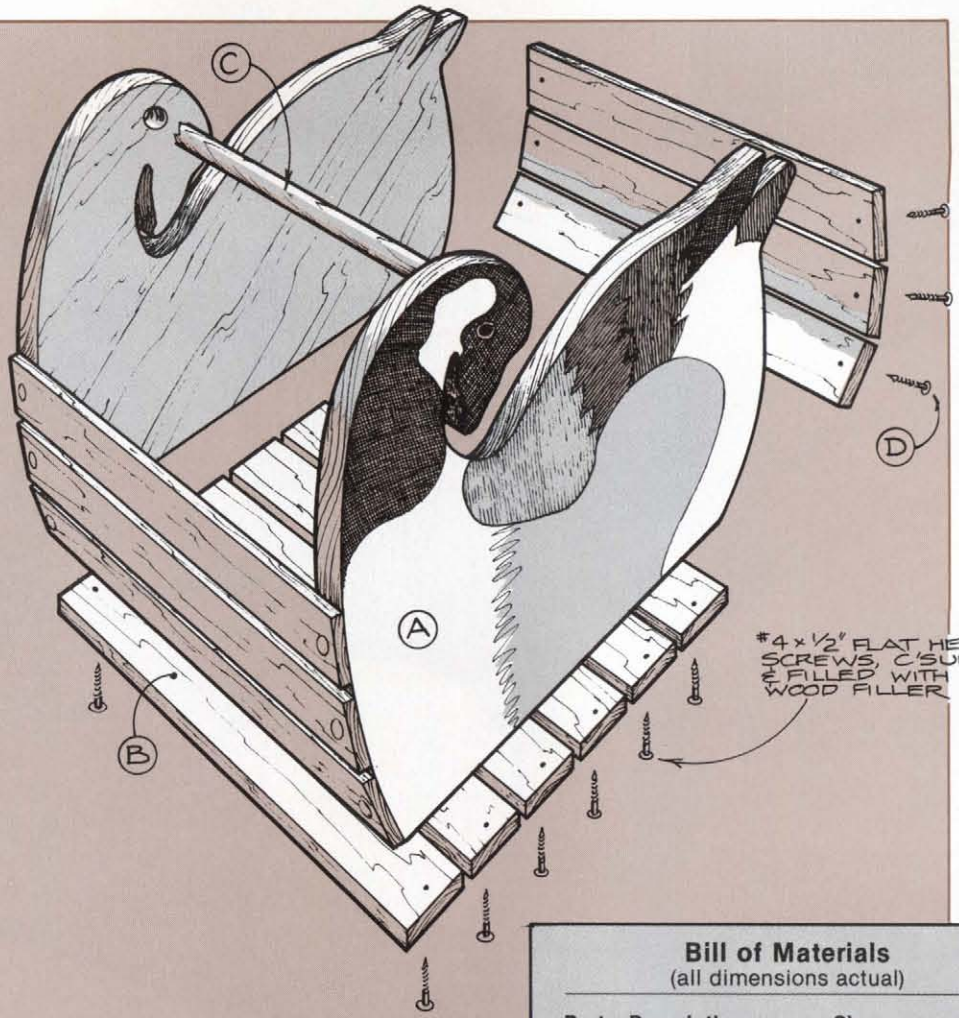
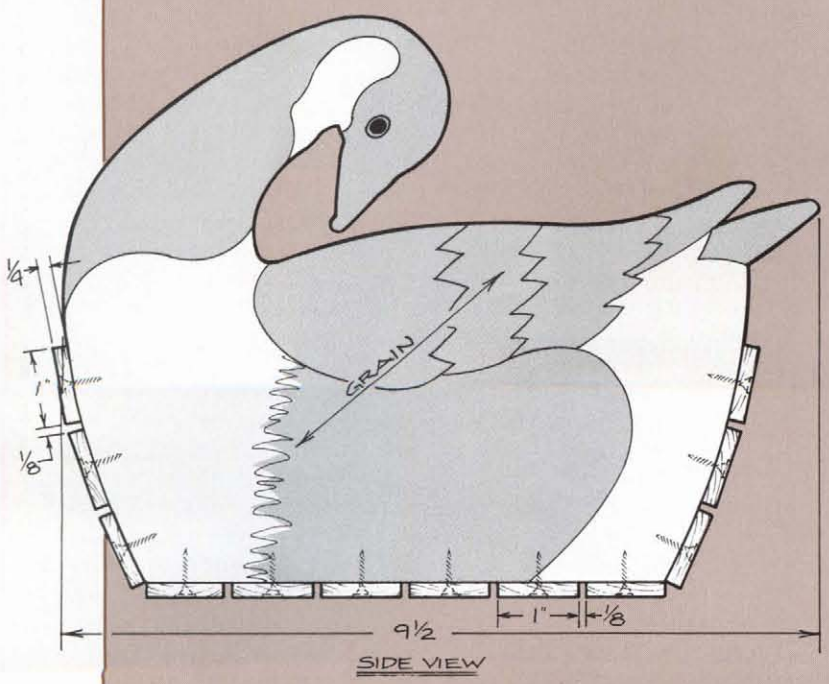


FIG. 1

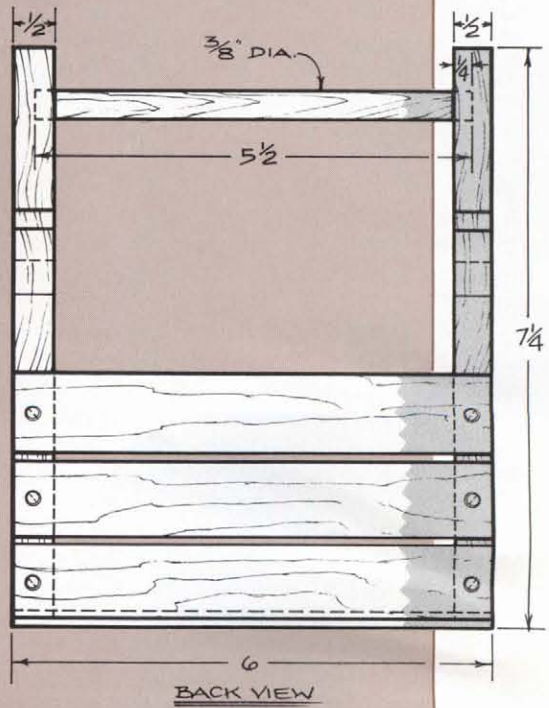


Bill of Materials
(all dimensions actual)

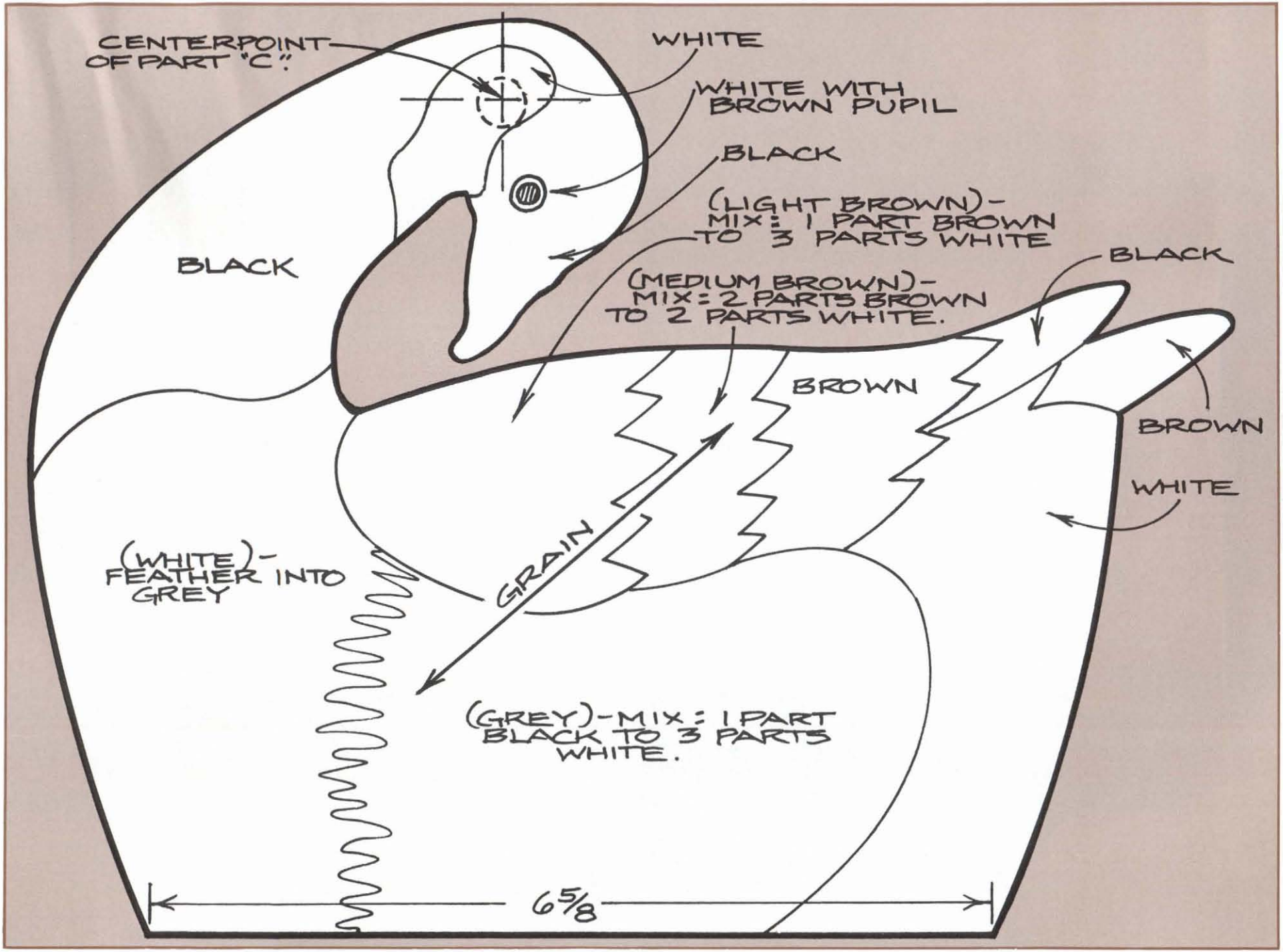
Part	Description	Size	No. Req'd.
A	Side	1/2 × 9 1/2 × 10	2
B	Slat	1/4 × 1 × 6	12
C	Handle	3/8 dia. × 5 1/2 long	1
D	Flat Head Screws	1/2 × no. 4	24



SIDE VIEW

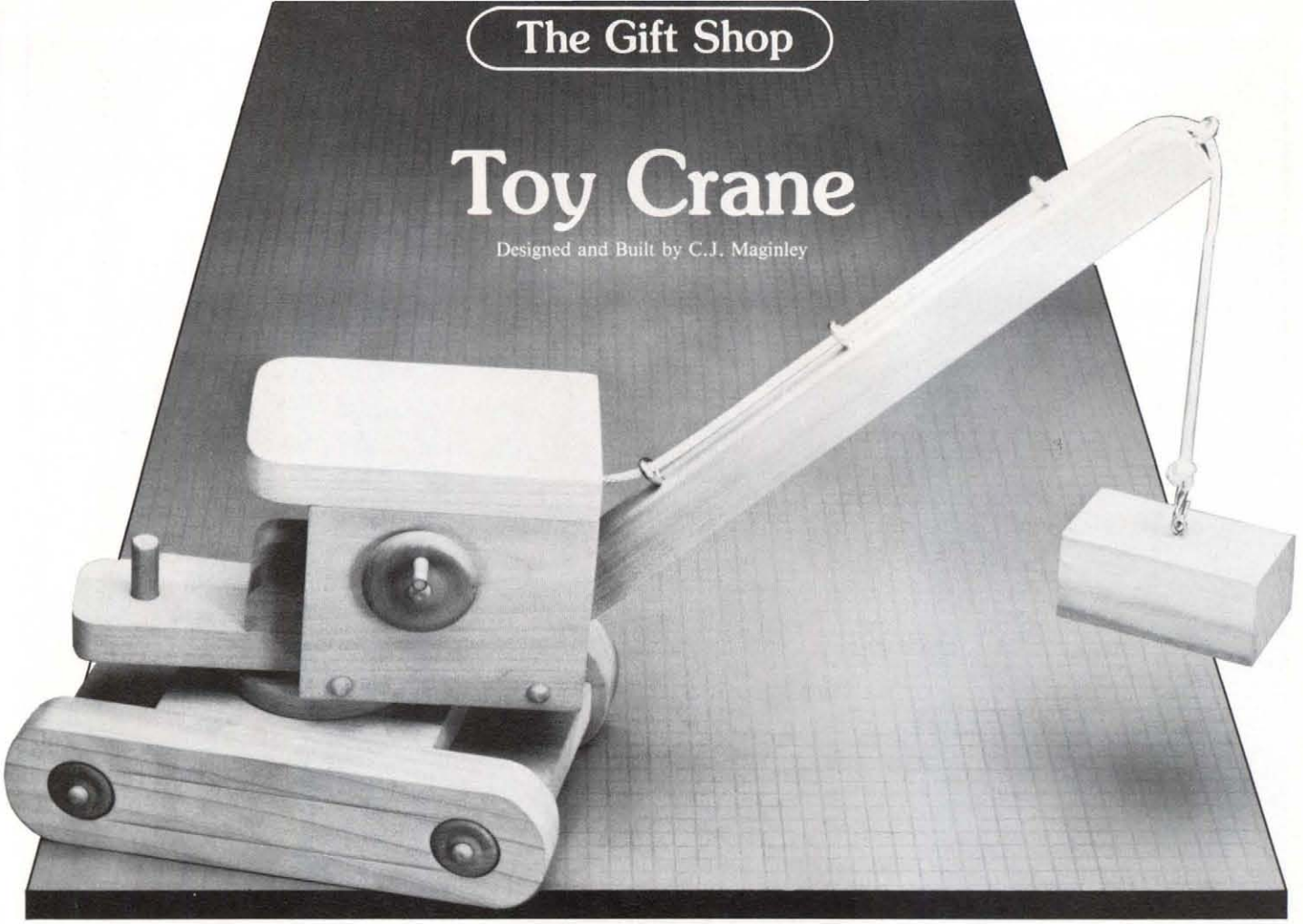


BACK VIEW


CENTERPOINT OF PART "C".
WHITE
WHITE WITH BROWN PUPIL
BLACK
(LIGHT BROWN)- MIX: 1 PART BROWN TO 3 PARTS WHITE
BLACK
(MEDIUM BROWN)- MIX: 2 PARTS BROWN TO 2 PARTS WHITE.
BLACK
BROWN
BROWN
WHITE
(WHITE)- FEATHER INTO GREY
GRAIN
(GREY)- MIX: 1 PART BLACK TO 3 PARTS WHITE.
6 5/8

Toy Crane

Designed and Built by C.J. Maginley



With a cab that swivels 360 degrees and a crank that raises or lowers the "cable", this sturdy wooden toy should prove to be lots of fun for backyard contractors. Maple, a hard and durable wood, is a good choice of stock.

The two tracks (A) can be made first. Cut to length and width, then use a 1¼ in. diameter drill bit to bore a 5/16 in. deep by 1¼ in. hole on each end. The 1/16 in. deep groove is cut with a router equipped with an edge-guide and a ⅛ in. diameter straight bit. Once the groove is cut, use a compass to scribe the 1⅛ in. radius on each end before cutting out with a band or saber saw.

The two cleats (B), the undercarriage (C) and the plate (D) can now be cut to length and width from ¾ in. thick stock. To make the disc (E), hand plane stock to ½ in. thick, then use a circle cutter on the drill press to cut the 3½ in. diameter. Or, if you don't have a circle cutter, scribe the 3½ in. diameter with a compass and cut it out with a band or saber saw.

Parts A, B, C, D, and E, can now be assembled. Use glue and clamp firmly. First join parts C, D, and E; when dry, add parts A and B.

Next cut the base (F), supports (H), sides (J), roof (K), and boom (I) from ¾ in. stock. Add a ½ in. radius to the upper front and back corners of parts H and to the back corners of parts F and K. Bore the ½ in. diameter by ½ in. deep hole (in part F) for part L as shown. Also bore a ⅝ in. diameter hole (in parts J) for part M. Two ¼ in. diameter by ⅜ in. deep "stop" holes are bored above and below the ⅝ in. hole. These holes allow the crank (O) to be locked in place. Assemble parts F, H, and I, again using glue and clamps. When dry, add parts J and K.

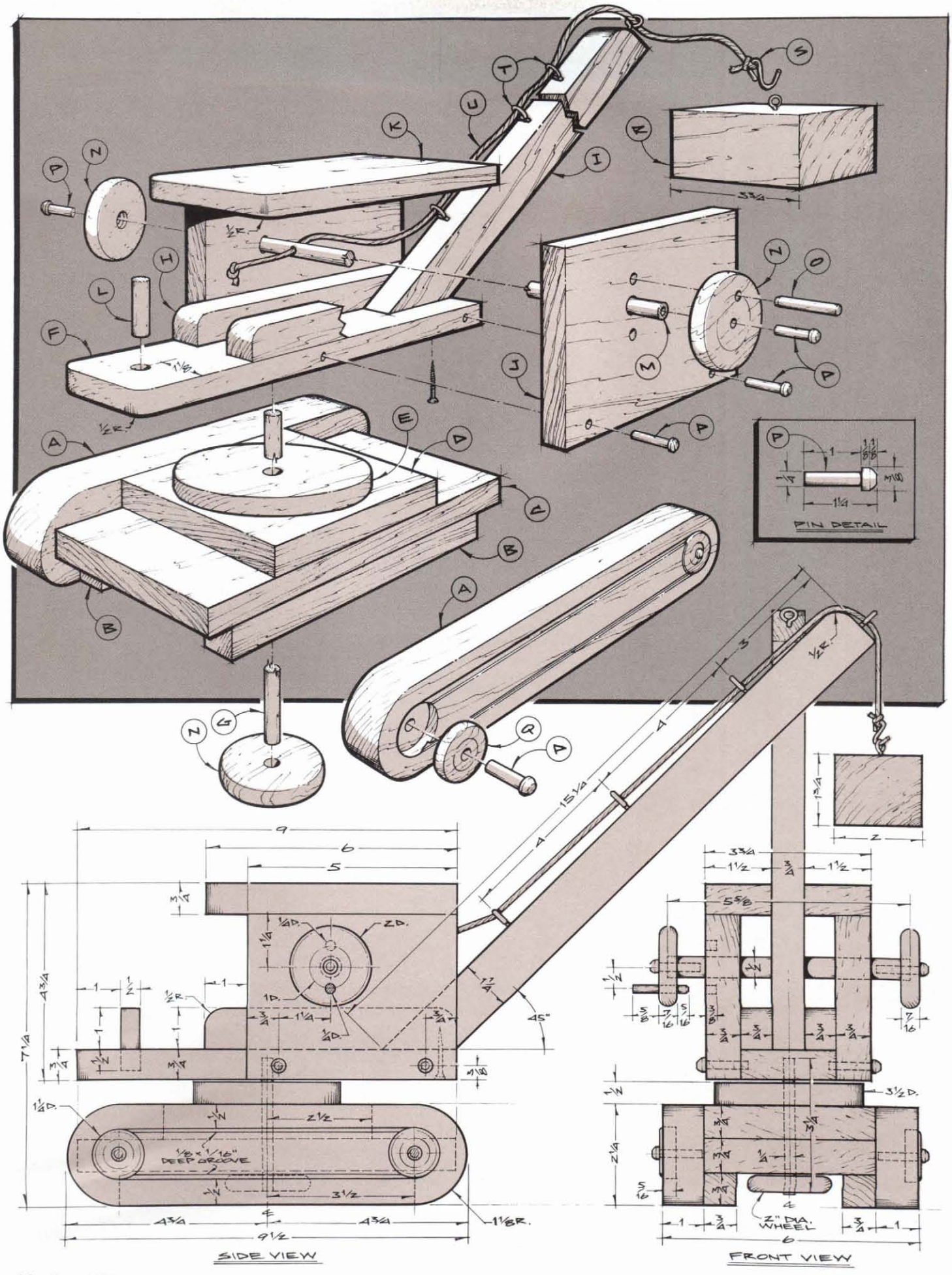
Bill of Materials
(all dimensions actual)

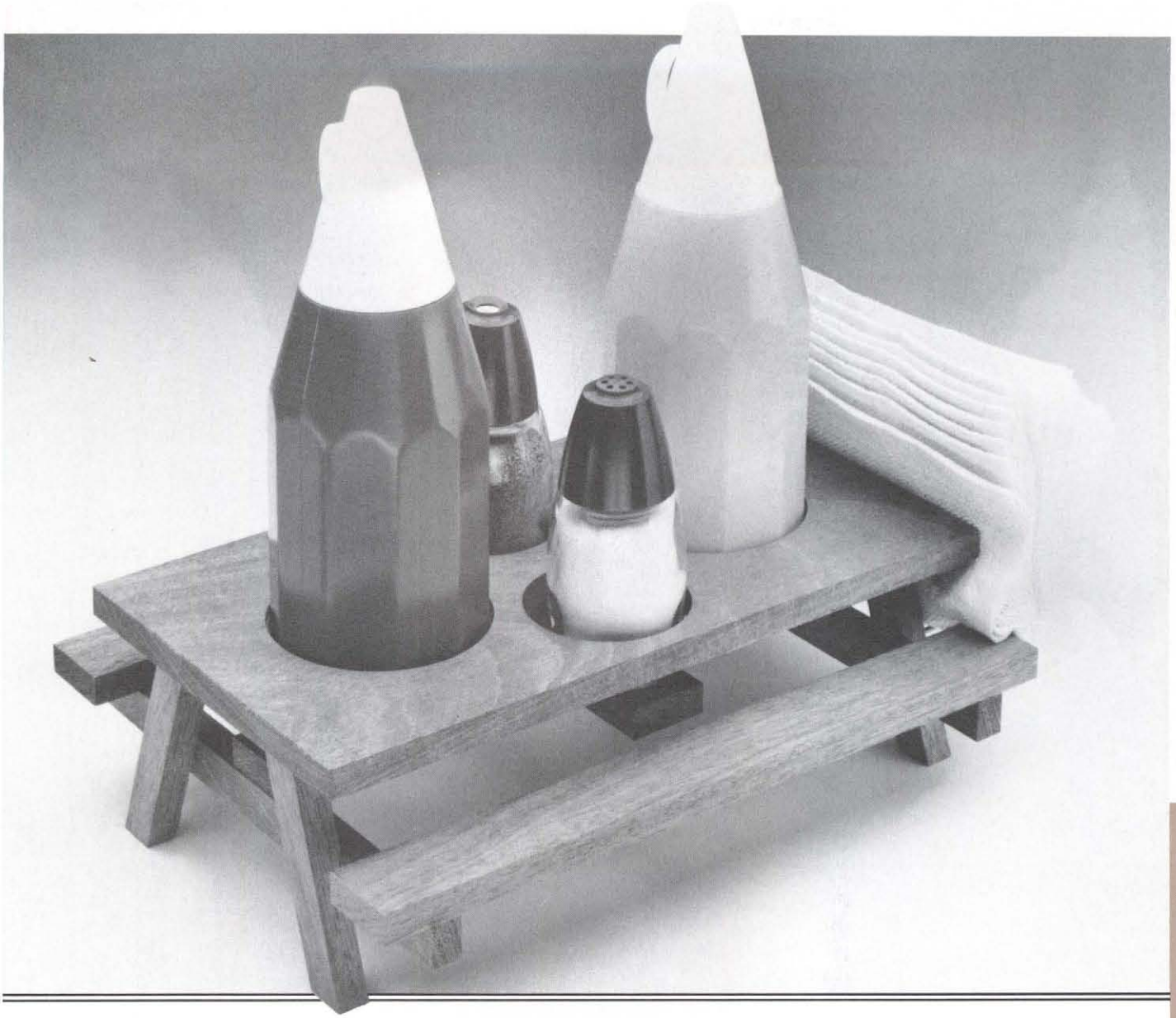
Part	Description	Size	No. Req'd.
A	Track	1 × 2¼ × 9½	2
B	Cleat	¾ × ¾ × 7	2
C	Undercarriage	¾ × 4 × 9	1
D	Plate	¾ × 4 × 5	1
E	Disc	3½ dia. × ½ thick	1
F	Base	¾ × 2¼ × 9	1
G	Pivot Rod	¼ dia. × 3¼ long	1
H	Supports	¾ × 1 × 6	2
I	Boom	¾ × 1¼ × 15¼	1
J	Side	¾ × 4 × 5	2
K	Roof	¾ × 3¾ × 6	1
L	Handle	½ dia. × 1½ long	1
M	Shaft	½ dia. × 5⅝ long	1
N	Pivot Rod/ Shaft Wheel	2 dia. × 7/16 thick	3
O	Crank	¼ dia. × 1⅜ long	1
P	Pin	see detail	10
Q	Track Wheel	1¼ dia. × 5/16 thick	4
R	Block	1¾ × 2 × 3¾	1
S	"S" Hook	1 in. long	1
T	Screw Eye	⅝ in.	5
U	Cable	⅛ dia. × 40 long	1

The 2 in. diameter shaft wheel (N), the 1¼ in. diameter track wheel (Q), and the pins (P) can be turned on the lathe or ordered from The Toymaker Supply Co., 2907 Lake Forest Road, Box 5459, Tahoe City, CA 95730.

The track wheels are glued to parts A, and further secured with a pin (P) glued into each one. The remaining parts are assembled as shown. Part G is glued into part F. When dry it is inserted through parts E, D, and C, then part N is glued to the end to secure the cab in place. The cab must be free to pivot, so keep glue squeeze-out to a minimum.

Final sand to smooth all surfaces and remove any sharp edges. If a final finish is used, make sure it is a non-toxic one. Perhaps the safest finish is none at all. WWJ


PIN DETAIL
SIDE VIEW
FRONT VIEW
1/8" x 1/16" DEEP GROOVE
2" DIA. WHEEL



Condiment Holder

Although we designed this condiment holder with outdoor barbecues in mind, it can be handy on the kitchen table as well. The holder conveniently has a place for catsup and mustard squeeze bottles, salt and pepper shakers, and napkins. We have dimensioned the squeeze bottle and shaker holes for standard size containers, however you may wish to customize these holes to your own bottles and shakers.

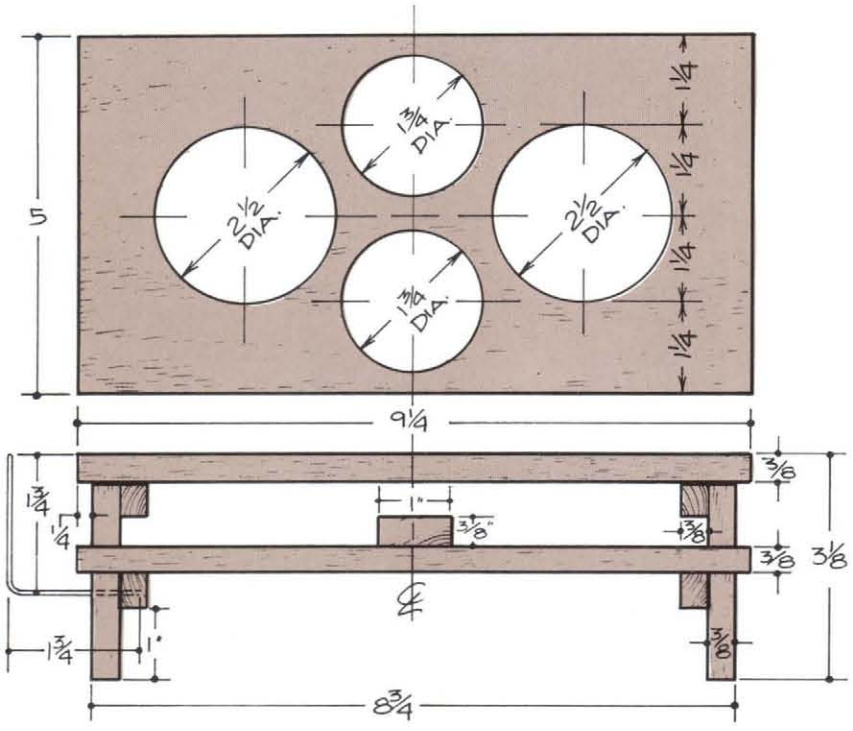
All the stock for the condiment holder is ⅜ in. thick. Although we used mahogany, any wood, including pine, will serve as well. Start by cutting the legs (A) and braces (B). Both the ends of the legs and the ends of the braces must be cut off at 70 degrees, as shown. Next, cut parts C, D, E, and F to size. After cutting the top (G) to length and width, use hole saws to cut out the shaker and bottle holes.

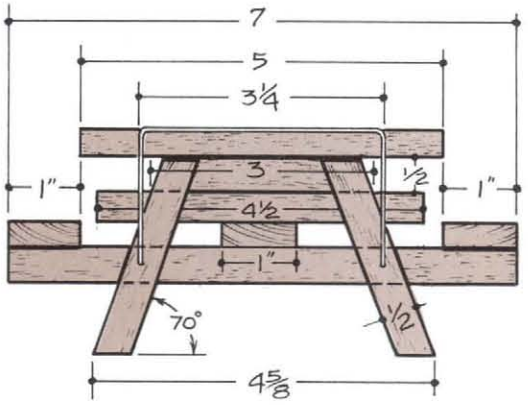
Glue and assemble the table as shown. Take care when applying the glue since any glue squeeze-out will cause the effected area to appear lighter after a stain or finish is applied. This is because glue prevents the stain or finish from being absorbed by the wood. Spring type clamps, available at most hardware stores, are especially handy for the kind of small clamping work required in this project.

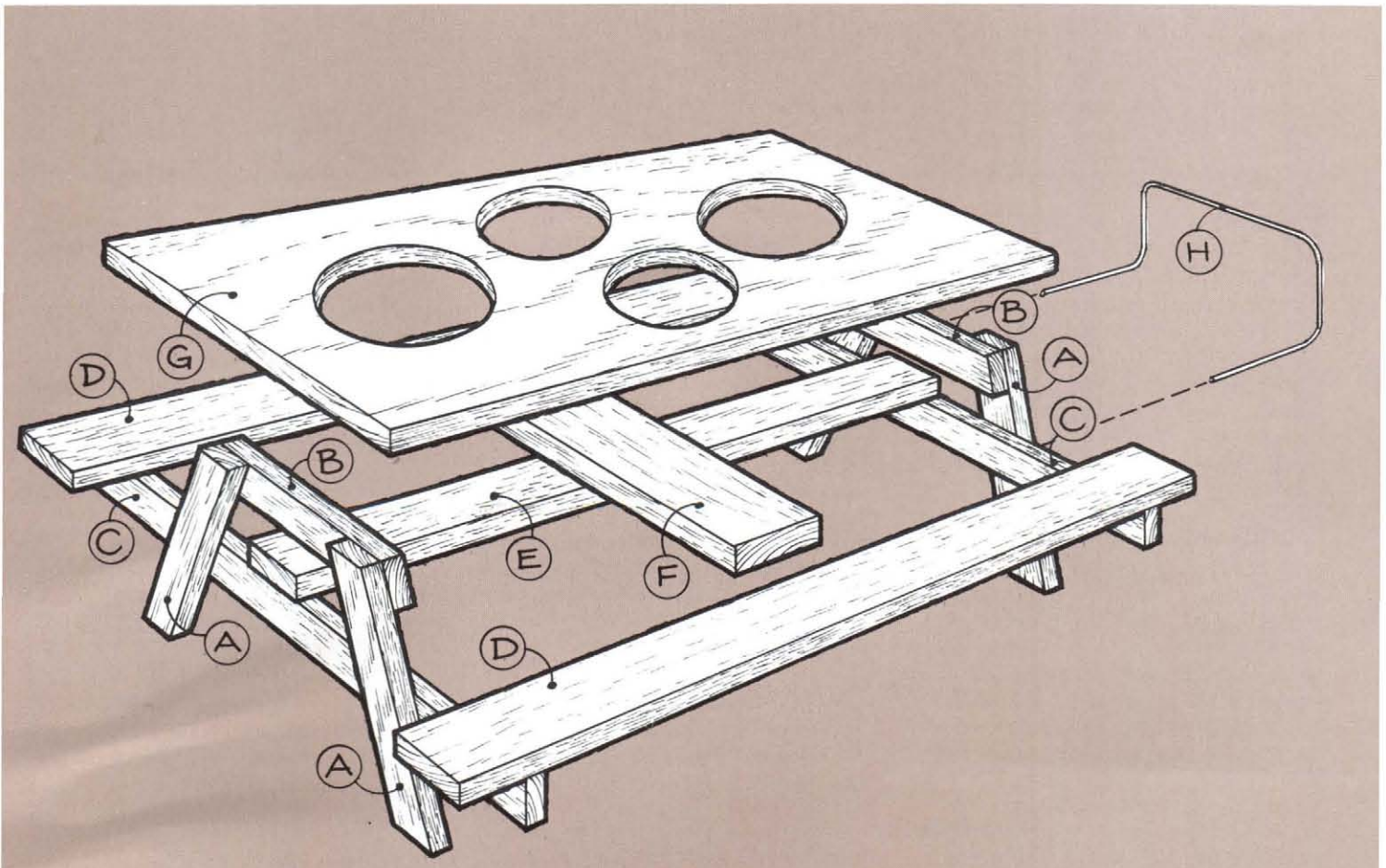
The napkin holder (H) is simply a section of wire coat hanger, bent as indicated. Drill two holes for the wire, and epoxy the ends in place. Our holder was final sanded and finished with penetrating oil. If you use a light-colored wood, redwood stain will give the piece an outdoorsy look. WWJ

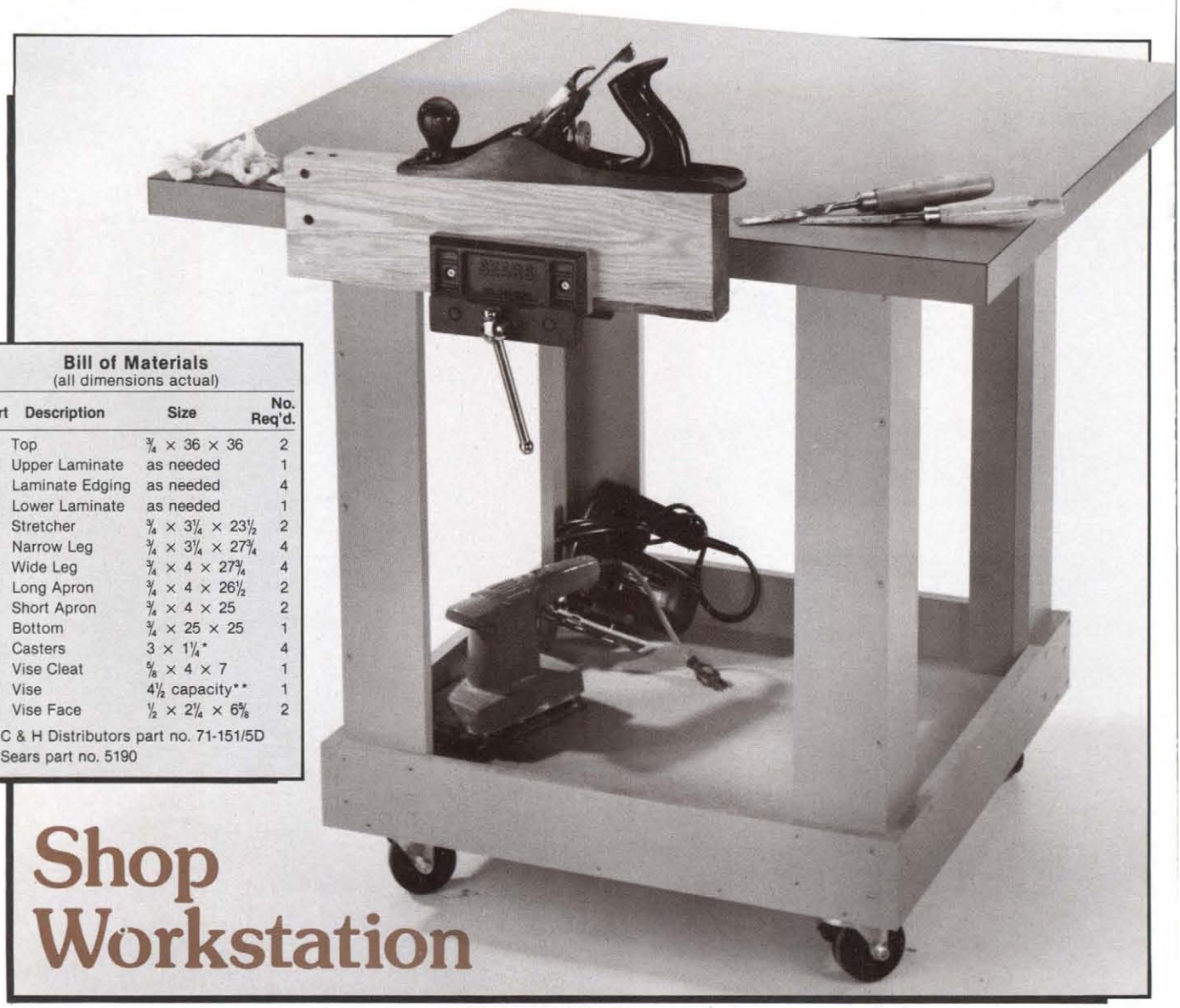
Bill of Materials
(all dimensions actual)

Part	Description	Size	No. Req'd.
A	Leg	3/8 × 1/2 × 3	4
B	Brace	3/8 × 1/2 × 3	2
C	Rail	3/8 × 1/2 × 7	2
D	Seat	3/8 × 1 × 9 1/4	2
E	Stretcher	3/8 × 1 × 8	1
F	Shaker Support	3/8 × 1 × 4 1/2	1
G	Top	3/8 × 5 × 9 1/4	1
H	Napkin Holder	coat hanger wire	1









Bill of Materials
(all dimensions actual)

Part	Description	Size	No. Req'd.
A	Top	¾ × 36 × 36	2
B	Upper Laminate	as needed	1
C	Laminate Edging	as needed	4
D	Lower Laminate	as needed	1
E	Stretcher	¾ × 3¼ × 23½	2
F	Narrow Leg	¾ × 3¼ × 27¾	4
G	Wide Leg	¾ × 4 × 27¾	4
H	Long Apron	¾ × 4 × 26½	2
I	Short Apron	¾ × 4 × 25	2
J	Bottom	¾ × 25 × 25	1
K	Casters	3 × 1¼*	4
L	Vise Cleat	⅝ × 4 × 7	1
M	Vise	4½ capacity**	1
N	Vise Face	½ × 2¼ × 6⅝	2

*C & H Distributors part no. 71-151/5D
**Sears part no. 5190

Shop Workstation

While it's not a substitute for a sturdy workbench, a compact workstation like this will be welcomed when you need some extra bench area in the shop. With four casters it easily rolls out from the wall, so you can work completely around the bench — a feature we find helpful for many projects. Also, since glue won't stick to the plastic laminate top, it makes an ideal glue-up table. The casters have a brake, allowing the workstation to be locked in place. A light-duty vise is not mandatory, but we find it often comes in handy.

The top (A) can be made first. Cut two pieces of ¾ in. thick particleboard to 36¼ in. square, then apply a thin coat of white or yellow glue to each of the mating surfaces. Clamps can be used to apply pressure at the edges while several 1¼ by no. 8 flathead wood screws are driven to apply pressure at the center. Be sure to countersink the screw *heads just below the* surface. Allow the top to dry before using the table saw to trim it to 36 in. square.

Apply the lower laminate (D) first. Cut it about ¼ in. oversized all around, then glue it in place with contact cement. A router with a laminate trimming bit is used to trim the edge of the laminate flush with the top. Next, following the same procedure, apply the laminate edging (C). The upper laminate (B) is added last.

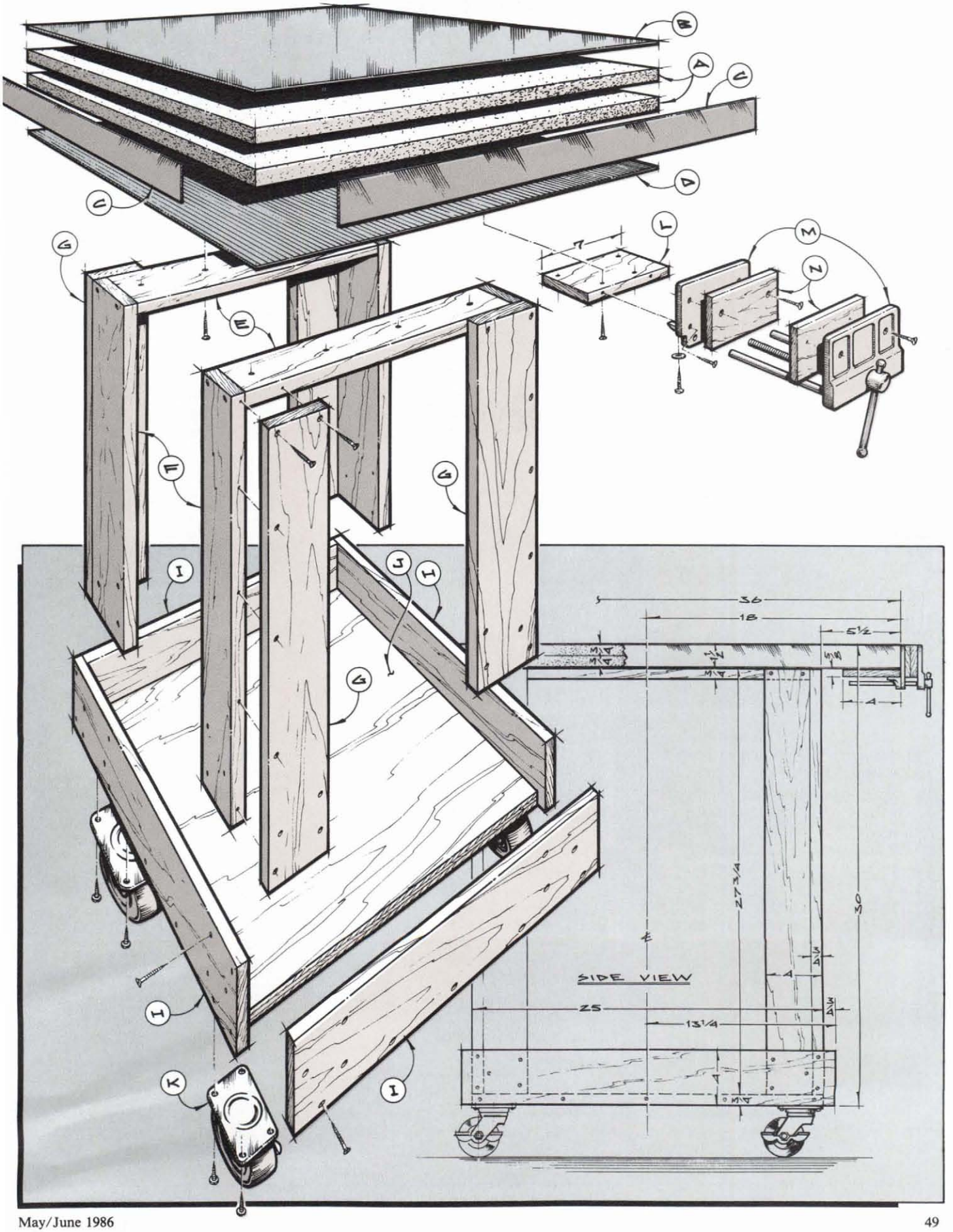
The two stretchers (E), four narrow legs (F), and four wide legs (G) can now be cut to size from ¾ in. thick stock. Using glue and flathead wood screws, the parts are assembled as shown in the exploded view.

Next, cut the bottom (J) to 25 in. square from ¾ in. thick plywood stock. The two long aprons (H) and the two short aprons (I) can now be cut to size, then glued and screwed to the bottom as shown.

Join the leg assemblies (parts E, F, and G) to the base assembly (parts H, I, and J) with glue and wood screws. Check for squareness as the parts are assembled.

The casters we used have a brake, a feature we find useful with our workstation. If not available locally, they can be ordered from C & H Distributors, Inc., 400 South Fifth Street, P.O. Box 04499, Milwaukee, WI 53204. Order part no. 71-151/5D. The current price is $10.00 each, not including shipping.

The vise (M) was ordered from Sears (their part no. 5190, current price $24.99). To keep the top edge of the vise flush with the work surface, the vise cleat (L) was added as shown. Two coats of paint were applied to the leg and base assemblies; then the laminated top was attached to the leg assemblies using four wood screws driven through each stretcher and into the underside of the top. The addition of a pair of vise faces (N) completes the project. WWJ


B
A
D
C
A
L
M
N
G
E
F
G
I
J
I
G
I
K
I
36
18
5½
3¼
1½
⅝
4
27¾
30
SIDE VIEW
25
13¼
4
¾

Parsons Table

The term "Parsons table" refers to the simple, clean, unadorned table design that originated during the 1930's at the renowned Parsons School of Design in New York City. The tables, which can be built from various materials and in many sizes, are both versatile and elegant. Our table, crafted in white oak and featuring an olive ash burl veneer top, is very much in the classic Parsons style.

First, cut the leg (A) and rail (B) stock. Then construct a simple tenon cutting jig from particleboard and 1¾ in. square hardwood for cutting the rail tenons (see tenon detail). The jig must be made so the rail ends will just touch the table saw surface when positioned in the jig. The rails must be securely clamped to the jig for safety, and the table saw blade height setting should be at about 1¼ in. Use three sets of cuts to establish the two tenons (step 1). Next, set the table saw blade at 45 degrees, and crosscut to a depth of ⅜ in., as shown in step 2. Finally, reset the table saw blade at 90 degrees, raise it to about 1⅜ in., and crosscut to remove the waste (see step 3). Take care with this cut to insure that *only* the waste is removed.

Miter the leg ends at 45 degrees, and chisel the mortises to accept the rail tenons. Glue and clamp the two leg/rail assemblies, and let dry.

Now lay up the face and reverse veneers (D and E) on both sides of the plywood top (C). While the face veneer should be chosen for visual impact, any veneer will do on the reverse side. If you start with the top and the veneers slightly oversize, then the laid-up assembly can be conveniently trimmed to its final dimensions on the table saw. *Note:* A 3 in. wide painter's trim roller is handy for spreading glue on large surfaces.

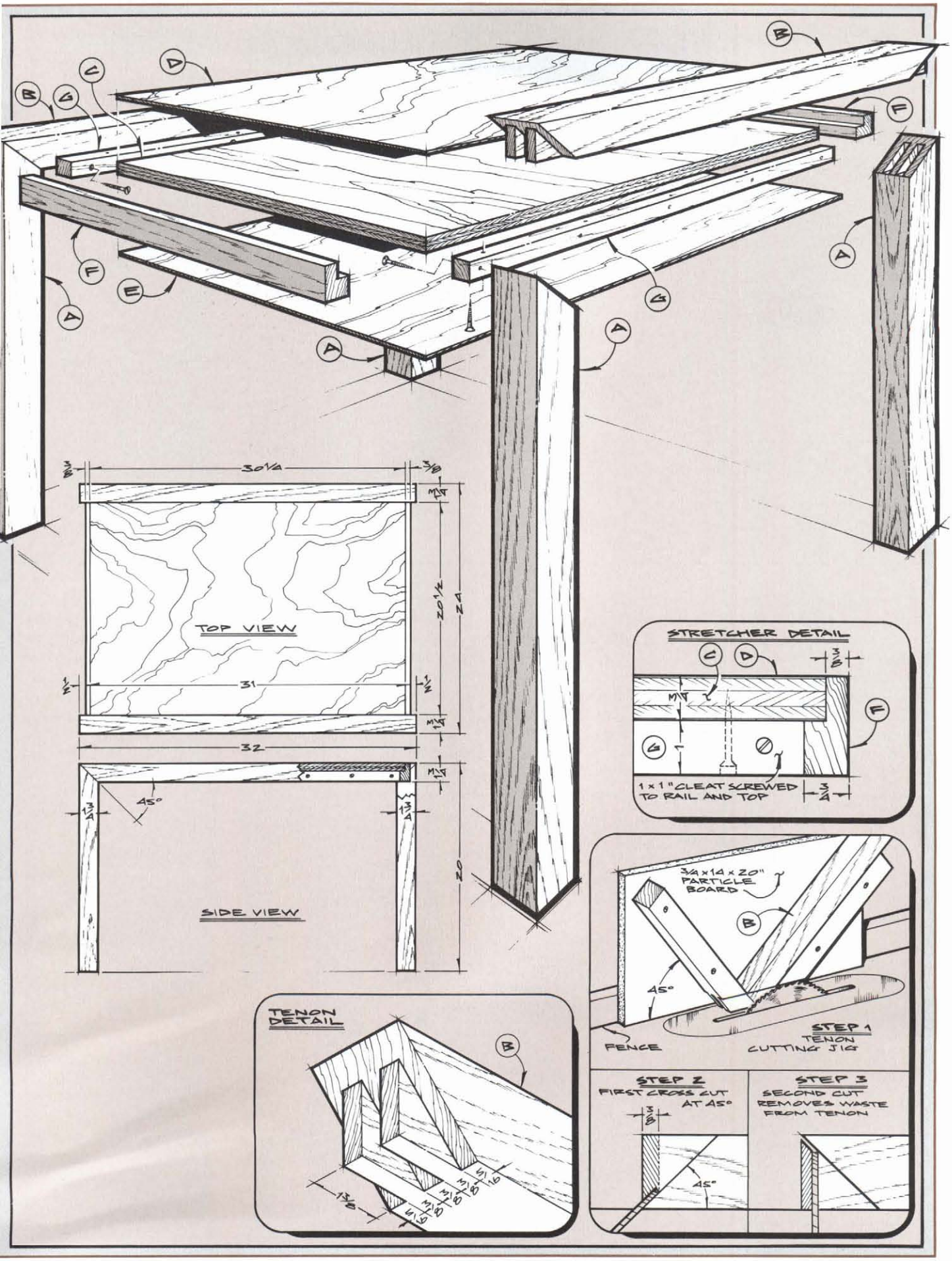
Cut and rabbet the stretchers (F) and glue them to either side of the top (see stretcher detail). These stretchers should be the same material as the legs and rails. The top/stretcher assembly can now be mounted to the leg/rail assemblies with the two cleats (G). Use both glue and countersunk screws for maximum strength.

Final sand with 220 grit paper, and finish with two coats of lacquer. WWJ

Bill of Materials
(all dimensions actual)

Part	Description	Size	No. Req'd.
A	Leg	1¾ × 1¾ × 20	4
B	Rail	1¾ × 1¾ × 32	2
C	Top	¾ × 20½ × 30¼	1
D	Face Veneer	as needed*	1
E	Reverse Veneer	as needed*	1
F	Stretcher	¾ × 1¾ × 20½	2
G	Cleat	1 × 1 × 29½	2

*Many veneers, including olive ash burl, are available from: Constantine, 2050 Eastchester Road, Bronx, NY 10461.


B
D
C
B
G
F
E
A
A
A
G
A
30¼
3/8
M
20½
24
TOP VIEW
31
1½
32
45°
1¾
1¾
20
SIDE VIEW
STRETCHER DETAIL
C
D
3/4
M
F
G
1
1 x 1" CLEAT SCREWED TO RAIL AND TOP
3/4
3/4 x 14 x 20" PARTICLE BOARD
B
45°
FENCE
STEP 1
TENON CUTTING JIG
STEP 2
FIRST CROSS CUT AT 45°
3/8
45°
STEP 3
SECOND CUT REMOVES WASTE FROM TENON
TENON DETAIL
B
1 5/16
1 5/16
1 5/16
1 5/16

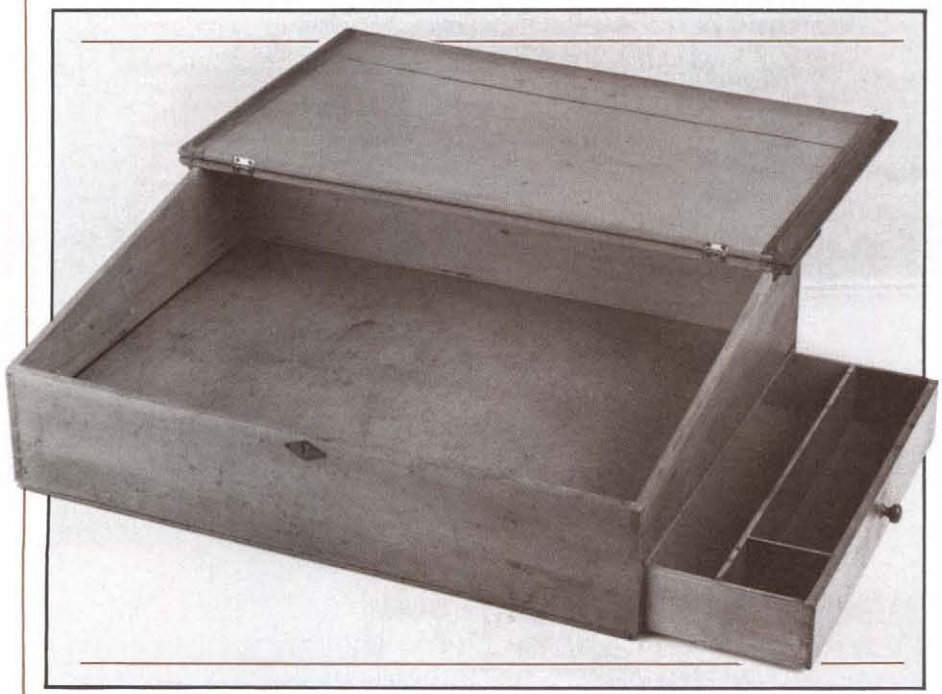
Shaker Lap Desk

This fine lap desk continues our presentation of authentic designs from the museum collection at Hancock Shaker Village in Hancock, Massachusetts. The entire piece is crafted of pine.

Like much of the best Shaker work, the lap desk features extraordinarily light construction and utilizes very thin stock. This was in keeping with the Shaker belief that the design of furniture should be predicated on a kind of "minimalist" philosophy. Very simply, this philosophy maintained that any parts or members in an article of furniture should be only as thick or heavy as they need to be, and no more. The result was furniture that was very light in weight and almost delicate in appearance. The fact that it has survived intact for so many years is a strong testament to the durability of Shaker work, the light weight and delicate appearance notwithstanding.

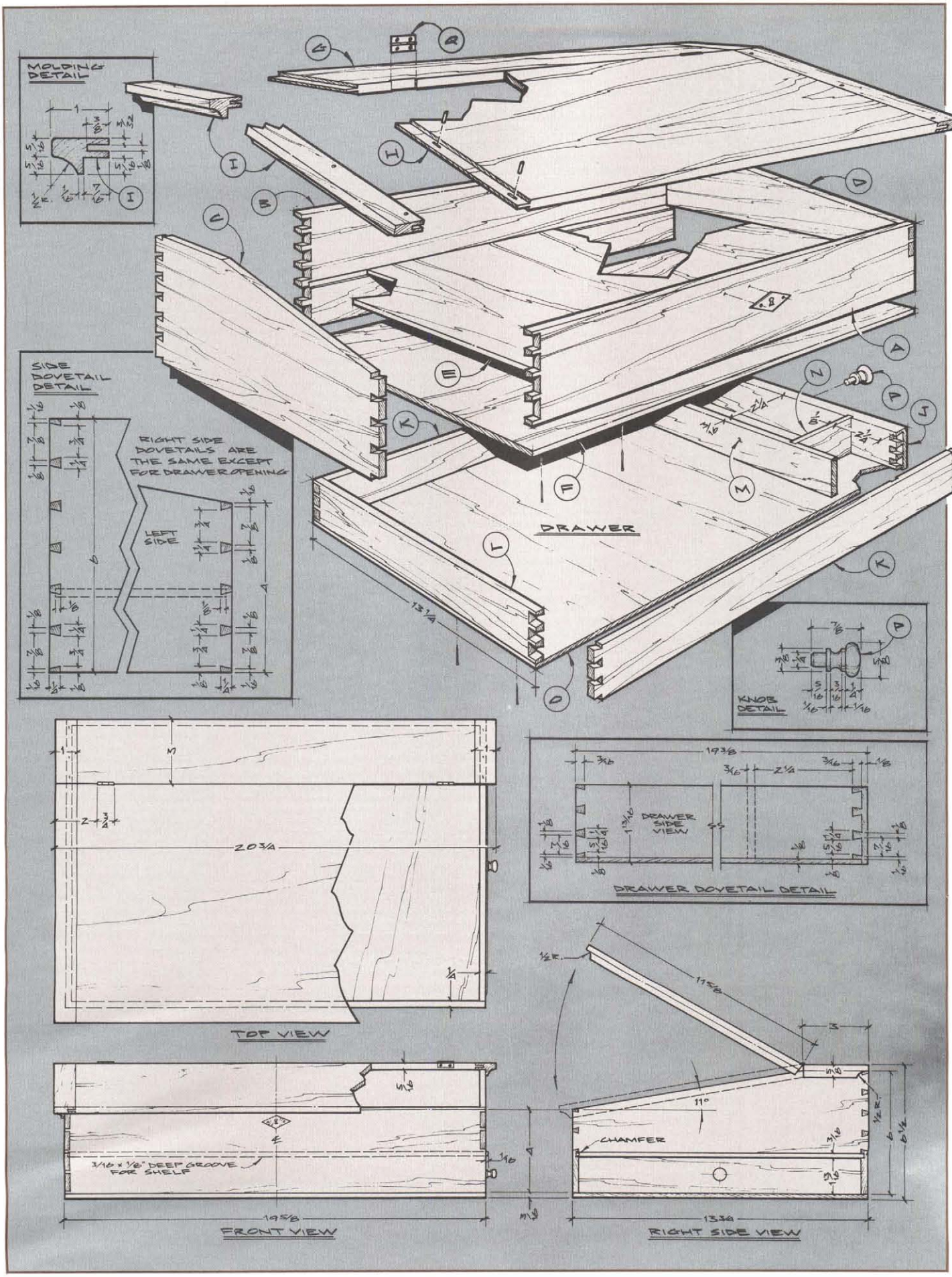
To make this lap desk an authenic reproduction, you will need to thickness plane stock to four separate dimensions: 1/8, 3/16, 1/4, and 5/16 in. thick. Make the lap desk carcase, consisting of parts A, B, C, D, E, and F first. Both sides are cut

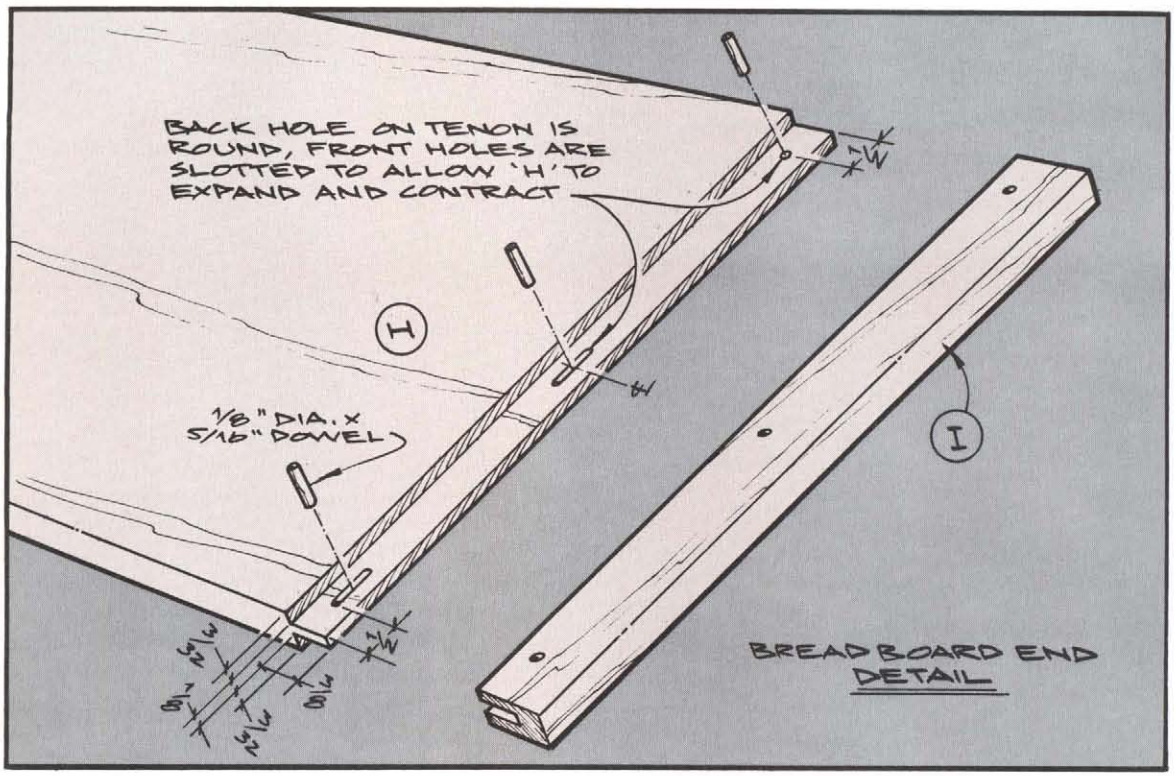
(continued on page 54)



Bill of Materials
(all dimensions actual)

Part	Description	Size	No. Req'd.
A	Front	1/4 × 4 1/16 × 19 5/8	1
B	Back	1/4 × 6 × 19 5/8	1
C	Left Side	1/4 × 6 × 13 3/4	1
D	Right Side	1/4 × 4 × 13 3/4	1
E	Shelf	3/16 × 19 9/16 × 13 1/2	1
F	Bottom	3/16 × 13 3/4 × 19 5/8	1
G	Top	5/16 × 3 × 19 1/2	1
H	Lid	5/16 × 11 5/8 × 19 1/2	1
I	Breadboard End Molding	see detail	as needed
J	Drawer Front	5/16 × 1 13/16 × 13 1/4	1
K	Drawer Side	3/16 × 1 11/16 × 19 1/4	2
L	Drawer Back	3/16 × 1 11/16 × 13 1/4	1
M	Divider (long)	3/16 × 1 11/16 × 13	1
N	Divider (short)	1/8 × 1 11/16 × 2 3/8	1
O	Drawer Bottom	1/8 × 19 1/4 × 13 1/4	1
P	Drawer Knob	see detail	1
Q	Hinges	5/8 × 3/4 long	1 pair


MOLDING DETAIL
SIDE DOVETAIL DETAIL
RIGHT SIDE DOVETAILS ARE THE SAME EXCEPT FOR DRAWER OPENING
DRAWER
13 1/4
KNOB DETAIL
DRAWER DOVETAIL DETAIL
DRAWER SIDE VIEW
19 3/8
20 3/4
TOP VIEW
3/16 x 3/8" DEEP GROOVE FOR SHELF
19 5/8
FRONT VIEW
CHAMFER
11°
11 5/8
13 3/8
RIGHT SIDE VIEW



at an 11 degree slope starting 3 in. from the back. Note that the right side extends down to the shelf. Cut a $\frac{1}{8}$ in. deep by $\frac{3}{16}$ in. wide groove in the front, back and left side to accept this shelf. As you can see from the exploded view, the shelf has its grain aligned to permit expansion. Refer to the appropriate dovetail details, lay out and cut the carcase dovetails and pins, and glue and assemble the sides, front, and back. Slide the shelf into place, but glue only the edge that contacts the left side. Add the bottom (F), which is fixed in place with small brads. Note that both the front upper edge and the lid (which will be made next) upper edge are cut at 11 degrees to accommodate the 11-degree slope of the lid.

Next, make the top (G) and lid (H), both of which have $\frac{3}{8}$ in. long by $\frac{1}{8}$ in. thick tongues on either end. Also fashion about 30 in. of the breadboard end molding (I) (see molding detail) into which the parts G and H tongues will fit. As you will note from the right side view, the $\frac{1}{2}$ in. radius that runs the length of all the breadboard end pieces is also applied to the front ends of the two breadboard end pieces on the lid, and the back ends of those two sections on the top. The breadboard end molding can be simply glued to the top, but must be fastened to the lid, as shown, with slotted holes and pins. Note that the lid is fixed by the uppermost pin, with the slotted holes permitting either expansion or contraction (see breadboard end detail). Glue the top assembly (G and I) to the sides, and mount the lid with a pair of $\frac{5}{8} \times \frac{3}{4}$ in. long hinges (Q).

Next, make the drawer. As you did with the desk, start by making the carcase (parts J, K, and L). Lay out and cut the dovetails as shown in the drawer dovetail detail. When making the sides, note that in each one you must cut a $\frac{3}{16}$ in. wide by $\frac{1}{16}$ in. deep dado to accept the long divider (M). Both part M and the drawer front must also be notched to accept the $\frac{1}{8}$ in. thick short divider (N). Glue, assemble and clamp the drawer. Lastly, apply the drawer bottom (O), which can be glued into the rabbet cut into the drawer front, but must be bradded into the drawer sides.

At this point, a word about wood movement is in order. As we have pointed out with several of the previous Shaker projects, wood movement was not as much a problem in the age before central heating and home insulation. Now, of course, the difference in indoor humidity between winter and summer can be considerable, and the wood will expand or contract in response to it. Therefore, we incorporate into our designs the allowance for expansion and contraction. This is not to suggest that the Shakers were not aware of wood movement, but that they simply did not need to design for it.

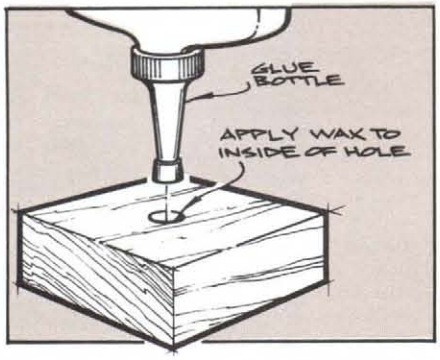
In the lap desk, there are several inherent problems with respect to wood movement, specifically in the bottom (F), lid (H), and drawer bottom (O). The slotted holes in the lid permit expansion or contraction within the groove in the breadboard ends (I), however since there will be no true "fixed point" in which to mount a lock catch, we have eliminated the lock entirely. If you'd like to have a lock, you should consider a simple frame-and-panel or edged plywood construction for the lid. Since our overriding concern when presenting a museum piece is authenticity, however, we have opted to retain the original Shaker method of applying both the desk and drawer bottoms with brads, which should accommodate a little wood movement. If you prefer a more modern, rigid construction, substitute plywood for the drawer bottom and edged plywood for the desk bottom.

Final sand with 220 grit paper, and finish the lap desk by hand-rubbing in two coats of Watco oil.

The knob (P) can be turned on the lathe. Refer to the knob detail for the necessary dimensions. If you prefer to buy a knob ready-made, Shaker knobs are available from: Shaker Workshops, P.O. Box 1028, Concord, MA 01742. Order part no. W331; cost is $2.45 ppd. for ten knobs which have a $\frac{3}{4}$ in. diameter and a $\frac{3}{8}$ in. long tenon. The additional $\frac{1}{8}$ in. diameter will in no way effect the knob's appearance or function, although the $\frac{3}{8}$ in. long tenon must be shortened to $\frac{5}{16}$ in. WWJ

Shop Tips

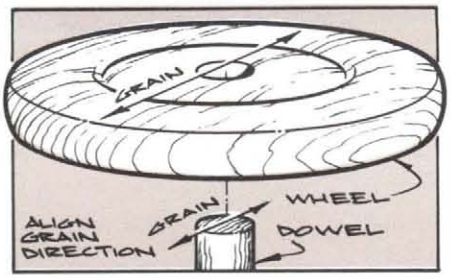
Once a plastic glue bottle gets about three-quarters empty, it seems like it must be held upside-down forever before the glue reaches the nozzle. To



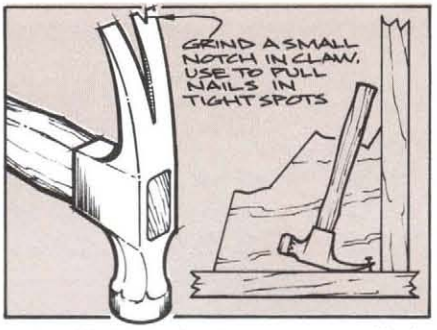
save time and frustration, I simply drill a hole (the size of the nozzle cap) in a 2 by 4 and store the bottle upside down.

Dustin P. Davis, Frostburg, Md.

Many toy cars and trucks incorporate wooden wheels, with dowel stock used for the axles. To get maximum glue strength from this joint,

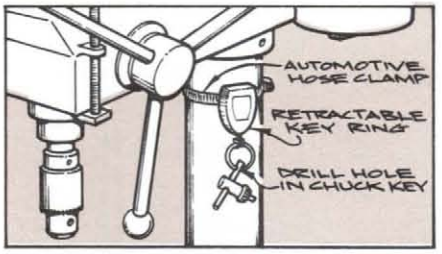


always make sure the face grain of the wheel runs in the same direction as the end grain of the dowel. This provides the greatest long grain-to-long grain alignment, and the strongest joint.



It will be easier to remove nails in tight places if you grind a small V-notch in one claw of your hammer.

Keep your drill press chuck key within easy reach by attaching a key caddy as shown. A hose clamp through the caddy's belt clip will hold it securely to the post. Attach the key to the



caddy with a rubber chuck key holder or bore a small hole in the handle.

Joseph Benetti, Webster City, Iowa

When adjusting the table saw rip fence, many woodworkers find that a machinist's 6 in. or 12 in. steel rule provides maximum accuracy. Because the rule is small, it is easy to misplace, especially in a busy workshop. I've found that a magnet epoxied to the side of my table saw provides a convenient place to keep mine — and it's always close at hand when needed.

Dustin P. Davis, Frostburg, Md.

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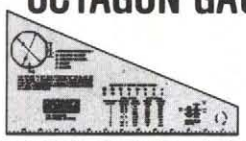

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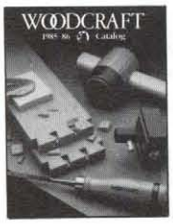

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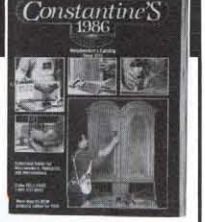

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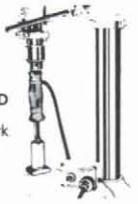

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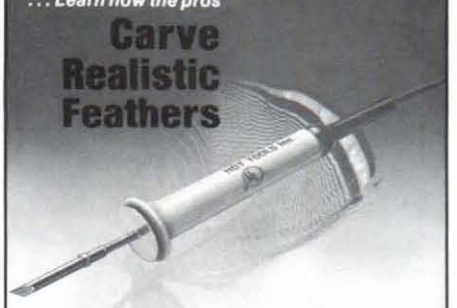

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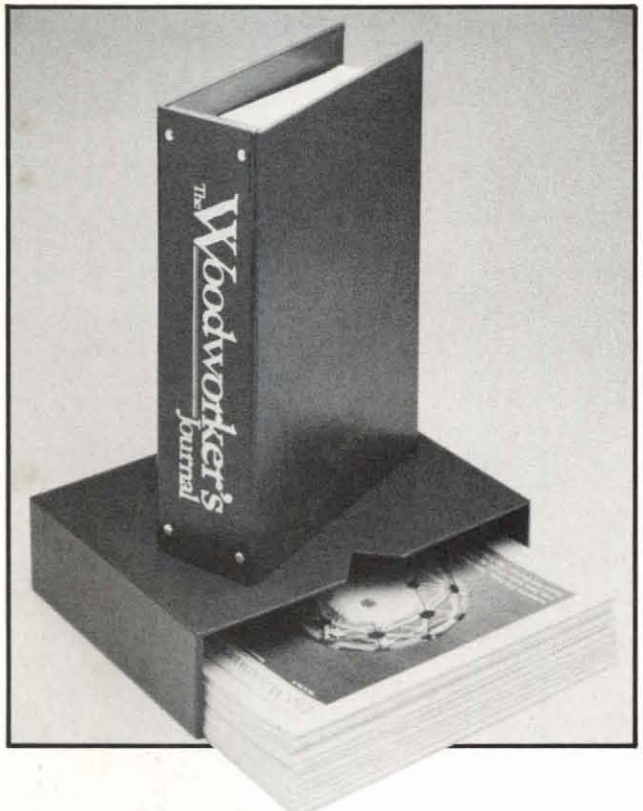

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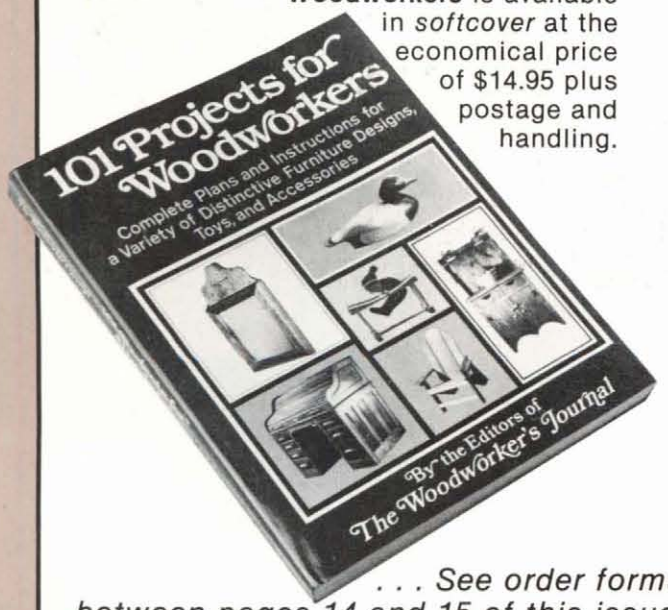
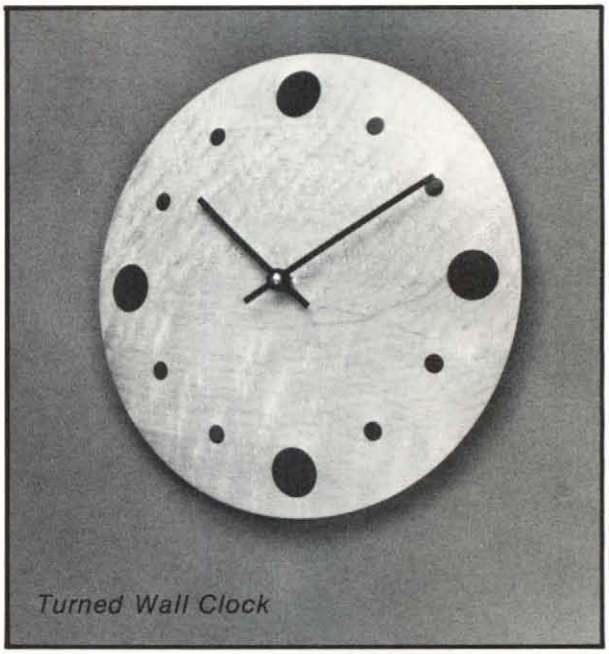


. . . See order forms between pages 14 and 15 of this issue.

Next issue . . .

Here are a couple of the projects we've lined up for the July/August 1986 issue of

The Woodworker's Journal



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