

The Woodworker's Journal

Vol. 11, No. 4 \$3.00

Apothecary Chest



Included in this issue:

**Workbench • Early American Style Bookcase
TV/VCR Cabinet • Country Basket • Desk Calendar
Vanity Mirror • Pine Trash Container • Butterfly Pull Toy**

July/August 1987

RYOBI TOOLS

Model	3x5 1/2" Finish Sander	List	Sale
5500A	3x5 1/2" Finish Sander	70	41
S06200	Finishing Sand 1/2 Sheet	142	88
87075	3x21" dustless Belt Sand	179	116
87100	3x24" dustless Belt Sand	208	140
87200A	4x24" dustless Belt Sand	269	165
0100VR	7/8" VSR 0-1200 rpm drill	91	49
W640	7 1/4" 13 amp circular saw	158	99
W740	8 1/4" 13 amp circular saw	171	109
J560	Jig Saw-Single Speed	172	99
J560J	Jig Saw-electronic vispeed	198	123
R150	1 H.P. Plunge Router	138	86
R300	2 H.P. Router	220	138
R500	3 H.P. Router	265	163
E3000	Drywall screwdriver 0-4000	126	79
L1200	3 1/4" Planer	142	89
8D1020R	3/4" 2-sp. Cordless Drill	148	95
	w/ree holster-1/4" special buy		
TS251U	10" Mite Box	300	169
S011596	4 1/2" H.D. Mini-Grinder	99	59

YOUR ATTENTION PLEASE!
All Above RYOBI TOOL Prices
Take Additional 10% Off Sale Prices

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MODEL AP-10 - 10" SURFACE PLANNER
LIST PRICE \$69.00 X-TRA SPECIAL \$39.00
LIMITED QUANTITIES

MILWAUKEE TOOLS

Model	PRICE BUSTERS	List	Sale
0224-1	1/4" drill 4.5A magnum	173	109
0234-1	1/2" drill 4.5A magnum	173	112
0244-1	3/4" drill 4.5A magnum	173	115
0222-1	1/4" drill 3.3A 0-1000 rpm	159	99
0228-1	1/4" drill 3.3A 0-1000 rpm	139	80
0270-1	1/4" close quarter drill	191	118
0315-1	1/4" cordless drill 2 spd	189	115
6539-1	cordless screwdriver 190 rpm	99	58
3102-1	Plimbs rt angle drill kit	287	175
3002-1	Electricians rt angle kit	276	170
5399	2" d-hole ham drill kit	284	165
1676-1	H.D. Hole Hawk w/cs	363	230
6511	2 sp sazsall w/cs	197	120
6405	8 1/4" circle saw	191	122
6750-1	Drywall driver 0-4000	141	85
6798-1	Tek screwdriver	173	105
6226	2 sp bandsaw w/case	416	250
6234	TSC bandsaw w/case	416	250
6507	TSC sazsall w/case	209	129
6170	14" chop saw	326	209
6012	Orbital sander 3 1/4" x 7 1/4"	173	100
6014	Orbital sander 4 1/2" x 9 1/2"	184	108
6305	6 1/4" cordless circle saw	229	134
6753-1	Drywall driver 3.5A	125	73
8977	Var temp heat gun	108	70
0214-1	1/4" v. spd. cordless drill	209	125
7327-1	1/4" v. spd. hammer drill kit	208	145
0211-1	1/4" cordless driver drill	199	120
0212-1	1/4" v. spd. cordless drill	209	125
1001-1	1/2" d-hole 600 rpm	206	125
1101-1	1/2" d-hole 500 rpm	217	135
1854-1	Super hole shooter-10A	530	350
6232	4 1/4" bandsaw w/case	452	275
6747-1	Drywall driver 0-2500	141	85
0230-1	1/4" drill 0-1700 rpm	159	100
0238-1	1/2" drill 0-650 rpm	165	105
5620	Router 1 H.P. - 8 amp	278	175
5660	Router 1 1/2 H.P. - 10 amp	289	180
5680	Router 2 H.P. - 12 amp	342	220
5455	7 1/2" polisher 1750 rpm	199	130
5535	7 1/2" polisher 2800 rpm	209	140
6215	16" chain saw	209	140
8975	Heat gun	81	55

6366	7 1/4" circular saw	178	105
6368	7 1/4" circular saw	207	125
Model 6366 includes CT blade, rip fence guide & blade wrench. Model 6368 includes all of the above plus case			

101-084 Shop Helpers
79 69

BRAND NEW
MODEL RA200 BY RYOBI
BENCH TOP RADIAL 8 1/4"
SPECIAL SALE \$225.00

FREUD SAW BLADES

1/4" Bore - Industrial Grade
CARBIDE TIPPED SAWBLADES

LU72M010	Gen'l Purp	10"	40	68.58	34
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	56
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
4300WD	Jig Saw	188 99
5081DW	3 1/4" Saw Kit	212 95
5600DW	6 1/4" Circular Saw	284 125
9035DW	Finishing Sander	168 73
60100WK	3/4" Cordless Drill Kit	174 88
60105DW	3/4" Cordless Drill	94 45
84000W	3 1/4" Hammer Drill	224 105
0A30000W	3/4" Angle Drill	218 98
60100L	3/4" Drill w/Flashlight	188 89
60120W	3/4" 2 spd Driver Drill	208 98
DK1002	3/4" Drill w/Fluorint Lit	176 90
67100W	Cordless Screwdriver Kit	176 84

LEIGH DOVETAIL JIGS

Model	List	Sale
T0514		149 125
T0514L		219 145
T1258-12		299 245
T1258-24		359 275

MAKITA TOOLS

Model	List	Sale
5007NBA	7 1/4" Saw w/Elec. Brake	186 115
5008NBA	8 1/4" Saw w/Elec. Brake	212 130
804510	Sander	92 43
99008	3" x 21" belt sander	234 119
99248	3" x 24" belt sander	222 130
99240B	3" x 24" b/sander w/bag	248 130
9035	1/4" sheet finish sander	96 48
90458	1/2" sheet finish sander	186 90
9045N	1/4" sht fin sander w/bag	190 105
4200N	4 1/4" circ. saw 7.5 amp	182 93
5201NA	10 1/4" circ. saw 12 amp	438 215
40080V	visp jig saw 3.5 amp	234 120
40181V	orb visp jig saw 3.5 amp	248 125
JR3000V	2 sp recip saw w/case	198 120
JR3000V	vs recip saw w/case	208 120
LS1000	New 10" Mite Box	396 193
72120-7A	Carbide Bld for above	49 31
9820-2	Blade Sharpener	288 159
410	Dust Collection Unit	410 269

NEW ELECTRONIC BAND SAW MODEL 2114C - 3 SPEED 1.8 H.P. LIST 1300 SALE 850

1900BW	3 1/4" planer w/case	198 92
1100HD	3 1/4" planer w/case	328 160
36088K	1/4 hp router w/case	132 85
3601B	1 1/4 hp router	218 112
3700B	1/2 hp trimmer	162 85
9501B	4" Grinder Kit	119 55
84188-2W	8 1/4" Round Sander	98 48
DA3000	1/4" angle drill	206 105
DP4700	1/2 visp wirew 4.8 amp	178 92
HP1030W	1/4 v.s.r. hammer drill w/cs	168 98
6300LR	1/2" angle drill wirew	288 152
84188-2W	2 1/2" s.p. hammer w/cs	268 150
2708W	8 1/4" Table Saw	348 199
GV5000	Disc Sander	108 53
6800DB	2500 rpm 3.5 amp	146 79
6800BV	0-2500 rpm 3.5 amp	156 89
6801DB	4000 rpm 3.5 amp	146 79
6801BV	0-4000 rpm 3.5	156 89
2030n	12" planer/jointer	2580 1475
2040	15 1/2" planer	2880 1195
1805W	6 1/4" planer kit w/case	498 265
1805W	var speed jig saw	178 89
JV2000	var speed orb. jig saw	198 100
5005BA	5 1/2" circular saw	192 98
92075PC	7 1/2" varispeed polisher	250 130
5007NB	7 1/4" Circ. Saw	158 94
9503BH	4 1/4" sander-grinder kit	166 95
4014NV	varispeed blower	168 79
DP3720	1/4 drill Rev 0-1800 rpm	99 47
6510LVR	1/4 drill Rev 0-1500 rpm	144 67
6013BR	1/2" Drill rev 6 amp	208 100
5402A	16" Circular Saw - 12 amp	542 315
3612BR	3 H.P. Plunge Router	338 175
9401	4x24 belt Sander w/bag	288 160

FREUD SAW BLADES

Univ. Bore - Professional Series

Item No.	Description	Diam.	Teeth	List	Sale
PS203	Gen'l Purp.	7 1/4"	24	27.24	17.50
PS303	Fine cutting	7 1/4"	40	32.97	20.50

FREUD CHISEL SETS

Model	List	Sale
WC104	1/4" x 1/2" x 1/4" x 1/4"	35.85 23.95
WC106	1/4" x 1/2" x 1/2" x 1/4" x 1/4"	47.85 31.95
WC110	1/4" x 1/2" x 1/2" x 1/4" x 1/4"	80.20 52.95
TT108	8 Pc. Turning Set	81.42 53.95
90-100	15 Pc. Router Bit Set	248.61 149.00
FB-100	16 Pc. Forstner Bit Set	248.00 149.00

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33-150	Saw Buck	Special Sale 499.00
22-651-RC-33	13" Planer	979.00

22-243	14" Band Saw w/rip stand, 1/2 H.P. motor	499.00
28-283F	14" Band Saw w/enclined stand & 1/2 H.P. motor	599.00

43-122	1L Duty Shaper w/stand & 1 H.P. motor	499.00
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Model	Non-Ferrous Metals, Plastics	List
35-590	8" x 48 TC&F	82.25
35-593	8" x 48 TC&F	82.30
35-600	9" x 80 TC&F	97.70
35-619	10" x 60 TC&F	94.10
35-625	10" x 60 TC&F	123.05
35-646	12" x 60 TC&F	110.85

Abrasive-Type Materials, Tile and Glued Compositions

35-615	10" x 48 TC&F	94.65
35-601	9" x 60 TC&F	96.15
35-618	10" x 60 TC&F	90.70

Plastic Laminates, Veneers, Compositions, Hard Fibers And Paper

35-592	8" x 64 ATB	131.20
35-604	9" x 64 ATB	88.00
35-623	10" 80 ATB	116.40

Veneers, Plastic Laminates And Compositions

35-605	9" x 48 ATB	74.70
35-616	10" x 60 ATB	83.65
35-647	12" x 72 ATB	119.00
35-620	10" x 72 ATB	99.00
35-621	10" x 72 TC&F	110.50
35-626	10" x 60 ATB	83.65

Compositions And Veneers

35-622	10" x 80 ATB	111.20
35-655	12" x 96 ATB	133.75

Rip Blades

35-610	10" x 10 FT	54.75
35-611	10" x 18 FT	66.60
35-640	12" x 12 FT	76.80
35-641	12" x 24 FT	78.65

Hardwoods, Softwoods, Veneered Boards, Hardboard, Coreboards

35-617	10" x 50 ATB&R	78.25
35-614	10" x 48 ATB	87.60
35-591	8" x 24 ATB	59.85
35-603	9" x 24 ATB	59.20
35-612	10" x 24 ATB	68.10
35-602	9" x 24 ATB	68.05
35-613	10" x 40 ATB	72.00

Soft And Hardwoods, And Particle Board

35-643	12" x 48 TC&F	104.10
35-645	12" x 60 TC&F	110.65
35-656	12" x 60 ATB	107.70

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No case available includes charger
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EY970B-96 batteries List 59.70 Sale 44.00
EY961B-72 batteries List 46.30 Sale 33.00
EY991B-Keyless chuck List 35.00 Sale 26.00
EY561B-7949 Holeser fits EY570B & EY561B
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Model	Jaw Length	Open	List	Sale	Box of 12
#50	4"	2"	11.23	7.15	79.00
#52	for 1/2" Black Pipe	9.36	6.10	67.50	

JORGENSEN HAND SCREWS

Model</

The Woodworker's Journal

JULY/AUGUST 1987 VOLUME 11, NUMBER 4

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Shoptalk

The Good Old Days

Ten years ago, if I wanted quality woodworking tools, they had to be ordered by mail. Now there are three large retailers specializing in woodworking tools within a 35-mile radius of this office. If you've been a woodworker for much more than ten years, you'll probably remember when machinery, tools, and special hardware were not nearly as easy to come by as they are now. And even in my most optimistic imaginings, I never envisioned national woodworking shows, seminars, or woodworking video tapes. How did it all change so fast and so much for the better?

If I had to pick a point in time when the wheels really started to turn, I'd have to say it was when Paul Roman had the vision to start *Fine Woodworking* magazine. While he was toiling to get his first issue out, 25 miles away (and blissfully unaware of his efforts), I was in a manic state preparing to launch *The Woodworker's Journal*.

It wasn't long before manufacturers and retailers began to realize that at last there were specific publications in which they could showcase their products to home woodworkers. Of course, woodworkers themselves also found a much needed forum in which to exchange their ideas . . . and so great things started to happen.

Early on, I had to decide whether or not to accept advertising, as it represented plenty of additional work and hassle, but it also promised additional revenue. More importantly, it

was an excellent way to show readers what was available "out there." We all know where to get Chevy trucks, Marlboros and Jack Daniels, so the decision was made to accept only advertising related directly to woodworking.

Thumbing through the pages of woodworking magazines that carry advertising, I'm gratified now to see the great selection of machinery, carbide cutting bits, and special tools available at competitive prices. For all of us woodworkers, the good old days are here and now.

Auction Update

A subscriber wrote in last month to question apparently conflicting reports of the antique furniture auction record we mentioned in the last issue. We reported that a Philadelphia Chippendale wing chair of 1770 vintage was sold for a mind-boggling \$2.7 million. Coincidentally, *Fine Woodworking* magazine reported the sale of a Philadelphia wing chair for \$1.1 million. To set the record straight, we contacted Danielle Virtue of Sotheby's. She explained that the present record bid of \$2.7 million was set at the January 1987 auction for a hairy paw-foot Philadelphia wing chair. A different wing chair had indeed sold for a record \$1.1 million at the October 1986 auction. Ms. Virtue added that new record bids may well be coming up if public interest in American furniture continues at its present pace.

Jim McQuillan

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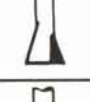
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	#02	3/8" R	3/8"	1 1/4"	9/16"	14.00
	#03	1/2" R	1/2"	1 1/2"	5/8"	15.00
	#04	1/4" R	1/4"	1"	1/2"	15.00
	#05	3/8" R	3/8"	1 1/4"	5/8"	16.00
	#06	1/2" R	1/2"	1 1/2"	3/4"	19.00
	#07	5/32" R	5/32"	1 1/4"	15/32"	18.00
	#08	1/4" R	1/4"	1 1/2"	3/4"	20.00
	#11	3/8" RABBETING	Deep 3/8"	1 1/4"	1/2"	14.00
	#09	1/8" (KERF) SLOT CUTTER		1 1/4"	1/8"	14.00
	#10	1/4" (KERF) SLOT CUTTER		1 1/4"	1/4"	14.00
	#12	45° CHAMFER	45° Angle	1 1/2"	5/8"	15.00
	#15	RAISED PANEL	20° Angle	1-5/8"	1/2"	25.00
	#35	1/4" V Groove 90°		1/4"	1/4"	8.00
	#36	3/8" V Groove 90°		3/8"	3/8"	9.00
	#37	1/2" V Groove 90°		1/2"	1/2"	11.00
	#16	3/8" Dovetail 9°		3/8"	3/8"	7.50
	#17	1/2" Dovetail 14°		1/2"	1/2"	8.50
	#18	3/4" Dovetail 14°		3/4"	7/8"	10.50
	#19	CORE BOX (ROUND NOSE) 3/8" Core Box	3/16"	3/8"	3/8"	11.00
	#20	1/2" Core Box	1/4"	1/2"	11/32"	14.00
	#21	3/4" Core Box	3/8"	3/4"	5/8"	18.00
	#22	GROOVE FORMING OGEE 1/2" Grooving Ogee		1/2"	3/8"	16.50
	#23	3/4" Grooving Ogee		3/4"	7/16"	21.00
	#24	1/4" Straight Bit		1/4"	3/4"	7.00
	#25	5/16" Straight Bit		5/16"	1"	7.00
	#26	3/8" Straight Bit		3/8"	1"	7.00
	#27	1/2" Straight Bit		1/2"	1"	7.00
	#28	3/4" Straight Bit		3/4"	1"	10.50
	#13	1/2" FLUSH TRIM		1/2"	1"	8.50
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I am Roger Campbell. Let me introduce you to a woodworking system that has been attracting crowds at woodworking shows all over the country.

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If you think it sounds too good to be true, you are not alone. At woodshows around the country, I continually hear words like these: "That is amazing..." "I must have one of those for the school where I teach woodworking..." "I have never seen set-ups that fast..."

Because it sounds too good to be true, I offer you my money-back guarantee. Try ROUTER-MATE II for thirty days. Make as many things as you want. Then, if you don't agree that it is everything you expected, return it for a full refund of your purchase price.

And, THAT'S NOT ALL. Wood crafts find ready markets at craft shows, Christmas markets, fairs, farmer's markets, shopping malls... But, having the right tools is only part of what you need to TAP THAT MARKET. You need plans.

I want to help you get started. Simply for trying ROUTER-MATE II, I will send you thirteen of my selected woodworking plans. Plans with such appeal that I call them my MAGIC DOZEN. And, even if you don't plan to sell your crafts, these make gifts that will be appreciated.

So, Try ROUTER-MATE for thirty days. If you are not entirely satisfied, return it for a full refund of your purchase price. And, keep the MAGIC DOZEN as my gift to you for trying ROUTER-MATE II.

It is made in America and shipped UPS prepaid to locations in the contiguous 48 states. Call or write for shipping charges to other locations. Takes a router with a 6" base. Router not included.

*Based on timed shop studies.

Order Form

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Easy Set Tools, Ltd., P.O. Box 1874, Rolla, MO 65401
(314) 265-3235**

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☐ I want more information. Send brochures and catalog of plans. Enclosed is \$2.00 to cover postage and handling.

Send to:

Name _____

Street _____

City _____ State _____ Zip _____

Letters

From what I have been reading, including the "Shoptalk" column in the March/April 1987 issue, there is a dearth of information on metals among woodworkers — amateur as well as professional. Magazine articles, advertisements, and even catalogs have contained misleading or even erroneous information on the metal in tools. This is especially noticeable to me because I am a consulting engineer specializing in the use of metals in machinery and in the legal aspects of this.

In regard to your "Shoptalk" article on pulleys, I doubt that you will be able to find a small steel pulley for a single 1/2 in. V-belt even at an industrial supply house. Most of the smaller sized V-belt pulleys are made of aluminum, and they are quite suitable if well made. Industrial applications usually use cast iron pulleys because they are machined to be accurate and balanced. Larger pulleys may be of aluminum, pressed sheet steel, or cast iron.

I would not use pulleys that are die cast of zinc, but the layman may not be able to differentiate between aluminum and zinc. Of course, iron and steel can be readily identified with a magnet even if they had been plated.

The best recommendation for your readers is to only buy pulleys that carry a recognized manufacturer's name in the metal. Poorly made pulleys and other equipment usually carry no manufacturer's name or carry an unfamiliar name.

Charles F. Walton
Cleveland Heights, Ohio

Your May/June 1986 issue included plans for a Shaker oval box. In the article, you mentioned that brass escutcheon pins were used rather than the more authentic copper tacks because of a lack of availability. After some searching on my own, I was able to locate a source that sells both number 1 and number 2 copper tacks. Unfortunately, their minimum order is one

pound of tacks, and that will run approximately \$20.00. The tacks can be ordered from: W.W. Croft, P.O. Box 365, Jaffrey, NH 03452.

Rob Hurd, Annapolis, Md.

Your January/February 1987 issue featured a "Special Techniques" article entitled "Combination Hand/Router Dovetailing." I recently used the technique to make a walnut jewelry box and found it to be an excellent procedure for cutting the dovetails.

Robert Joyce, Boston, Mass.

Thanks, but credit for the procedure should be given to Patrick Spielman who first detailed it in his book Router Handbook. If you own a router, or plan to get one, this book is a good one to have. It can be ordered from Sterling Publishing Co., Two Park Avenue, New York, NY 10016. The current price is \$9.95, softcover.

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- Use standard 5" blades
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I look forward to every issue of *The Woodworker's Journal* and, in the three years that I have been a subscriber, have yet to receive a disappointing issue. Most of my gift list for last Christmas came from the "Journal." I'm into the smaller projects, especially Colonial and folk art, which fit our decor and my wife's antiquing hobby. I've turned out about a dozen Chicken Door Stops from the March/April 1987 issue and everyone loves them.

Although I never intend to get into large furniture projects (I admire those who do and I still read over the plans) I'll keep my subscription to your magazine in force. We casual builders can buy a lot of 1 x 10 pine shelving at sales, so plans for 3/4 in. thick stock really make a hit with us. When the fish aren't biting or the snow is too deep at my cabin, your one-to-three hour projects will help fill the days. Keep up the good work and don't ever lose sight of the fact that there are a

bunch of us out there like myself — so keep the small projects coming.

Wayne A. Baker, Kent, Wash.

Editor's Note: Our Alabama readers will be interested to learn of the Alabama Woodworkers Guild. For more information write to Leonard Sanders at P.O. Box 506, Helena, AL 35080.

The Arizona Association of Fine Woodworkers meets on a regular basis, and guests are welcome to attend one general meeting without charge or obligation. For information write to them at P.O. Box 44264, Phoenix, AZ 85064.

I'm in the process of building the Desk with Tambour Top project (September/October 1986), but am unable to find the brass drawer knobs. Can you provide a source?

Frank Novak, Monticello, Ark.

You can get solid brass knobs from

the Garrett Wade Co., 161 Avenue of the Americas, New York, NY 10013. For the 1/2 in. dia., order p/n A39.02; for the 3/4 in. dia., order p/n A39.04; and for the 1 in. dia., order p/n A39.05. Prices are 95¢, \$1.40, and \$1.95 each respectively.

Our local junior college woodworking shop has multispur wood boring bits from 1/4 in. to 3 in. diameter, but I have been unable to find out where they were purchased. Can you provide a source of supply?

Bill G. Bullock, DuQuoin, Ill.

The Frog Tool Co., 700 West Jackson Boulevard, Chicago, IL 60606 sells multispur bits in the following diameters: 1/2 in., 5/8 in., 3/4 in., 7/8 in., 1 in., 1 1/16 in., 1 1/4 in., 1 1/2 in., 1 3/4 in., 2 in., 2 1/2 in., 3 in., 25 mm, 26 mm, 30 mm, and 35 mm. All sizes have a shank diameter of 1/2 in., but some sizes are available with a 3/8 in. shank. Write to them for current prices.

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- ☐ 3" x 21" — 15.25/doz.
- ☐ 3" x 23 1/4" — 15.70/doz.
- ☐ 3" x 24" — 15.75/doz.
- ☐ 3" x 27" — 16.25/doz.
- ☐ 4" x 21 3/4" — 17.75/doz.
- ☐ 4" x 24" — 18.25/doz.
- ☐ 4" x 36" — 21.95/doz.
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|---|-----------------------------------|
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| 180-A ☐ \$11/pk. | ☐ \$19/pk. |
| 220-A ☐ 11/pk. | ☐ 19/pk. |
| 280-A ☐ 11/pk. | ☐ 19/pk. |
| 320-A ☐ 11/pk. | ☐ 19/pk. |
| 400-A ☐ 11/pk. | ☐ 19/pk. |

Wet or Dry S/C Paper

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| 320-A ☐ 15/pk. | ☐ 25/pk. |
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Cabinetmakers' Supplies

As a service to our readers, we periodically list sources for various woodworking products. In this issue, we are listing companies that sell hardwood lumber in large and small quantities via mail order. This is by no means a complete listing, and we hope to include additional companies in future issues.

Hardwood Suppliers

American Woodcrafters
905 S. Roosevelt Ave.
Piqua, OH 45356
Domestic, imported

Austin Hardwoods
2119 Goodrich
Austin, TX 78704
Domestic, imported

Berea Hardwoods Co.
125 Jacqueline Dr.
Berea, OH 44017
Domestic, imported

Maurice L. Condon
250 Ferris Ave.
White Plains, NY 10603
Domestic, imported

Craftwoods
109 21 York Road
Hunt Valley, MD 21030
Domestic, imported

Croy-Marietta Hardwoods, Inc.
121 Pike St., Box 643
Marietta, OH 45750
Domestic

Dimension Hardwoods, Inc.
113 Canal St.
P.O. Box 3
Shelton, CT 06484
Domestic

Education Lumber Co.
P.O. Box 5373
Asheville, NC 28813
Domestic, imported

General Woodcraft
531 Broad Street
New London, CT 06320
Domestic, imported

Kountry Kraft Hardwoods
R.R. #1
Lake City, IA 51449
Domestic

Leonard Lumber Company
P.O. Box 1628
Wallingford, CT 06492
Domestic, imported

McFeely Hardwoods & Lumber
43 Cabell St., P.O. Box 3
Lynchburg, VA 24505
Domestic, imported

Sterling Hardwoods, Inc.
412 Pine St.
Burlington, VT 05401
Domestic, imported

Wood World
1719 Chestnut
Glenview, IL 60025
Domestic, imported

Woodworker's Dream
P.O. Box 329
Nazareth, PA 18064
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Readers' Information Exchange

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

I need a supplier for a drill bit extender with 1/2 in. shank bits. *W.A. Funk*

P.O. Box 2843, Dillon, CO 80435

I need a source of supply for a pattern for a wooden train called "Timberline Railroad Co." *James E. Stitt*

32 Oregon, Danville, IL 61832

Can someone tell me where to find porch swing hardware? *Ord C. Gener*

RD #1 Box 1076, Fredonia, PA 16124

I am in need of working plans for the roll-top desk described on page 513 of "The Practical Woodworker" edited by Bernard E. Jones. *Vernon Blackador*

Rt. 3 Box 230, Lithia, FL 33547

I'm in great need of a supplier of parts for a Sears band saw, model no. 102.01121. Presently I need the tires for the wheels and the blade selection for the saw. *Rev. William Porter*

RD 1 Box 128F, Stoneboro, PA 16153

I bought an old wood lathe made by the Hendey Machine Co., Wolcottville, Conn. I hope someone can tell me something about the machine. I also need a manual and parts list for an Oliver No. 167.

Col. Marvin M. Dountz

4281 Fredericksburg Columbus, OH 43228

I'm in need of a source for the hardware used on the sliding doors in the old style lawyer's bookcase. *Ron L. Herridge*

6806 S. Locust Ct. Englewood, CO 80112

Owner's Manuals & Parts Lists

Sears, Roebuck (not Craftsman) jigsaw Model No. 103.0407, with 18 in. throat; Stanley router, model .03, with 1 hp motor #91258 and base type 82902

Donald R. Munger
620 Terrace Lake Dr., Columbus, IN 47201

Craftsman wood lathe, 9 in. swing x 36 in. bed, Model No. 103.23180; Craftsman jigsaw 9 in. arm, Model No. 113.20720; Craftsman belt/disc sander, Model No. 103.0803

S.J. Chant
RD #2 Box 232, Wyalusing, PA 18853

Rockwell (Delta Power Tool Div.) Homecraft

4 in. jointer

James Smith
166 Fiske Ave., Cumberland, RI 02864.

Craftsman jig saw, Model No. 103.23151

Ray Rosenbloom
P.O. Box 849, Pocono Pines, PA 18350

Craftsman wood lathe, Model No. 101.06260

Robert Atkinson
420 South Main St., Port Byron, IL 61275

Stanley H313 dovetail kit.

William C. Miller
225 Phoenetia Dr., St. Augustine, FL 32086

Craftsman 6 in. planer, Model No. 103.1801

John H. Dougherty
1413 Hilltop Rd., Pottstown, PA 19464

Walker-Turner lathe with variable speed control

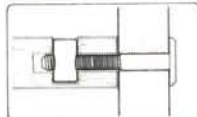
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TYPE	SIZE L-MM	SIZE L-IN.	PKG. 12	PKG. 25	PKG. 100
JCB	1/4-20x30MM	1.18	\$0.90	1.45	4.38
JCB	1/4-20x40MM	1.57	1.04	1.73	5.72
JCB	1/4-20x50MM	1.97	1.15	1.95	6.62
JCB	1/4-20x60MM	2.36	1.27	2.22	7.58
JCB	1/4-20x70MM	2.76	1.38	2.45	8.50
JCB	1/4-20x80MM	3.15	1.49	2.67	9.36
JCB	1/4-20x90MM	3.55	2.11	3.96	14.56
JCB	1/4-20x100MM	3.94	2.23	4.22	15.58
JCB	1/4-20x110MM	4.33	2.96	5.72	21.50
JCB	1/4-20x120MM	4.72	3.12	6.07	22.97



JOINT CONNECTOR SCREW WITH DIE CAST, 4mm HEX DRIVE HEAD

TYPE	SIZE L-MM	SIZE L-IN.	PKG. 12	PKG. 25	PKG. 100
JCS	1/4x30MM	1.18	1.26	2.19	7.47
JCS	1/4x40MM	1.57	1.26	2.19	7.47
JCS	1/4x50MM	1.97	1.11	1.88	6.21
JCS	1/4x60MM	2.36	1.65	3.01	10.75
JCS	1/4x70MM	2.76	1.21	2.08	7.01



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SQFH	8x3/4	1.05	9.63
SQFH	8x1	1.08	9.88
SQFH	8x1 1/2	1.33	12.03
SQFH	8x2	1.62	14.65
SQFH	8x2 1/2	1.96	17.83
SQFH	8x3	2.21	20.10
SQFH	8x4	3.76	34.20
SQFH	10x1	1.24	11.22
SQFH	10x1 1/2	1.74	15.75
SQFH	10x2	2.08	18.84
SQFH	10x2 1/2	2.40	21.90
SQFH	10x3	2.80	25.50
SQFH	10x4	4.18	38.08
SQFH	10x5 1/4	10.34	94.08
SQFH	12x1	1.81	16.51
SQFH	12x1 1/2	2.10	19.06
SQFH	12x2	2.48	22.62
SQFH	12x2 1/2	2.90	27.00



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T-NUT	1/4-20x9/16	3 PRONG	96	2.70
T-NUT	1/4-20x5/16	3 PRONG	86	2.15
T-NUT	1/4-20x7/16	4 PRONG	87	2.18
T-NUT	3/8-16x7/16	4 PRONG	140	4.30



BUGLE HEAD DRYWALL SCREWS

SIZE	PKG. 10	PKG. 100
BHDW 6x1	7.71	PER M
BHDW 6x1 1/4	8.89	PER M
BHDW 6x1 1/2	12.83	PER M
BHDW 6x2	14.90	PER M



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SIZE	PKG. 10	PKG. 100	PKG. 500
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1/4-20	2.42	8.80	37.00
5/16-18	3.20	12.00	48.00
3/8-16	3.20	12.00	48.00

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INSIDE THREAD	PKG. 25	PKG. 100	PKG. 500
8-32	1.48	5.12	22.40
10-24	1.48	5.12	22.40
1/4-20	1.72	6.08	26.60
5/16-18	2.60	9.60	42.00
3/8-16	2.60	9.60	42.00

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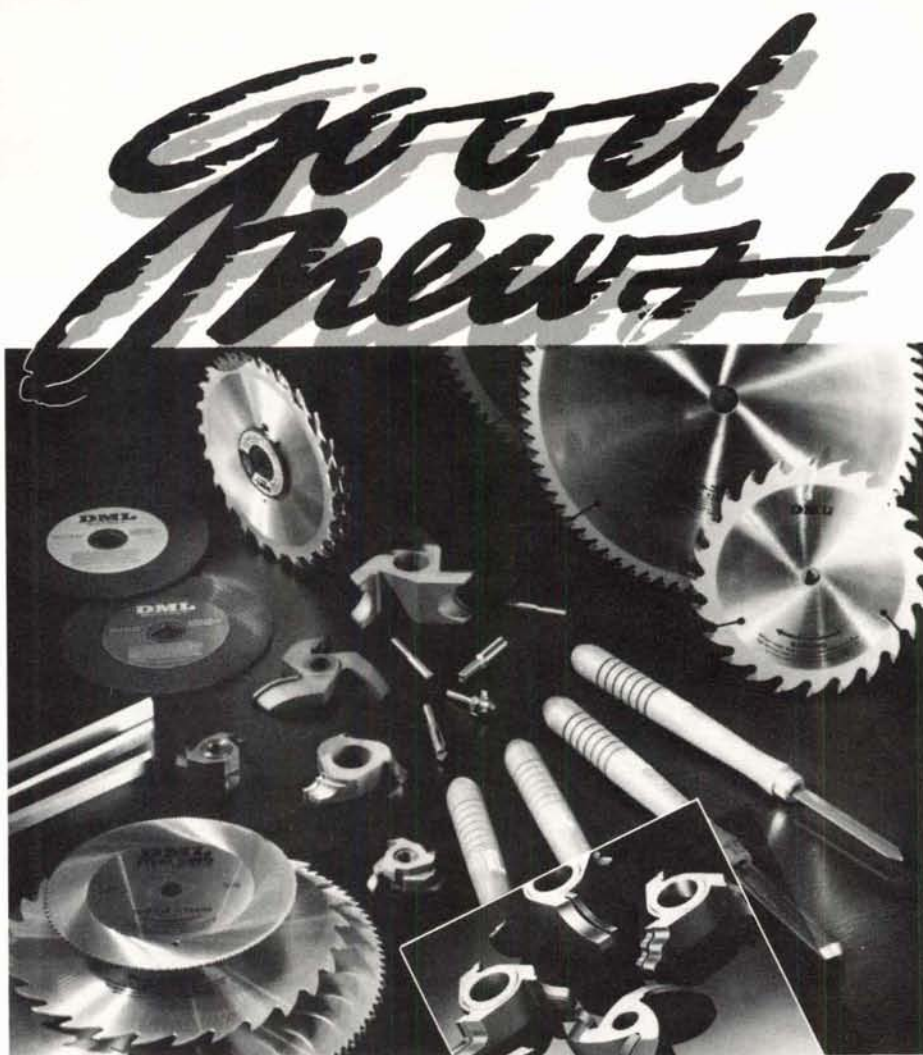
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Events

We will be glad to list as many events of interest to woodworkers as space permits. Listings are free and may include shows, fairs, competitions, workshops and demonstrations. The issue closing date is the 1st of the 2nd month preceding the cover date (7/1 for September/October; 9/1 for November/December). Please address announcements to the Events Department.

New England:

The Guilford Handcraft Center's 30th Annual Exposition, featuring the work of 120 craftpeople, will be held July 16-18 on the Green in Guilford, CT. For more info, call (203) 453-5947.

The Brookfield Craft Center's summer schedule includes: Spray Finishing Workshop, July 11; Woodturning/Design, Color and Texture, August 1; Shaker Oval Boxes, August 10-13; Furniture from the Lathe, August 15-16. For a complete schedule, contact the Center at P.O. Box 122, Brookfield, CT 06804; phone (203) 775-4526.

Middle Atlantic:

The Woodcarving Show sponsored by the Cook Forest Sawmill Center for the Arts will be held July 11-12. The Center's carving classes include: Carving in Relief, July 6-10; Carving in the Round, July 13-17; Bird Carving, August 3-7. For information, contact the Center at Box 6, Cooksburg, PA 16217; phone (814) 927-6655.

The Olde Mill Cabinet Shoppe will sponsor a demonstration of the Beall Router Machine and Wood Threader, July 11; Master Chairmaker, Michael Dunbar, will demonstrate the building of a Sackback Windsor chair, August 22-23. For information, contact: The Olde Mill Cabinet Shoppe, RD 3 Box 547A, York, PA 17402; phone (717) 755-8884.

The Chautauqua Crafts Alliance will hold its annual Crafts Festival, July 3-5 and August 7-9, at the Bestor Plaza, Chautauqua Institute, Chautauqua, NY.

West North Central:

The 4th Annual Villa Maria Woodcarving Workshop will be held August 9-15. Classes include: Relief Carving, Animal Carving, and Western Caricatures. For information, write to P.O. Box 37051, Minneapolis, MN 55437.

West South Central:

The Eastern Oklahoma Woodcarvers Association will be holding its 11th Annual National Show at the Kensington Galleria in Tulsa, July 10-12.

July/August 1987

East North Central:

Free woodworking demonstrations for current club presidents on traditional use of hand tools will be held on July 18 and August 22 at Richards' Cabinetry & Mill Co., 410 W. Harrison St., Lewisburg, OH. Write or call (513) 962-4788 for reservations.

East South Central:

The Tennessee Woodworking Show will be held September 4-6 at the Nashville Convention Center.

South Atlantic:

The Augusta Heritage Arts Workshop's summer schedule includes classes in making Shaker Oval Boxes, July 12-17; Guitar Construction, July 12-17; Folk Carving and Whittling, August 2-7; Wooden Toolmaking, August 9-14. For information, write: Augusta Heritage Center, Box CN, Davis & Elkins College, Elkins, WV 26241-3996, or phone (304) 636-1903.

Country Workshops will be conducting classes in: Ladderback Chairmaking, July 27-31; Windsor Chairmaking, August 9-14; White Oak Basketry, August 24-28. For info, contact: Country Workshops, 90 Mill Creek Rd., Marshall, NC 28753; phone (704) 656-2280.

Mountain:

The Art of Crafts festival will be held at the Denver Art Museum, July 16-19. The 4th annual sale and juried exhibition will feature works of more than 80 of the nation's top artisans. For more information, call (303) 575-3073.

Pacific:

The Oregon School of Arts and Crafts' summer schedule includes: a Day with Sam Maloof, featuring slides and demonstrations of furniture making techniques, July 11; Wood Sculpture Workshop, July 18-19; a class in making Adirondack Chairs on Tuesdays from July 21 - August 18. For more information, contact the School at 8245 SW Barnes Rd., Portland, OR 97225; phone (503) 297-5544.

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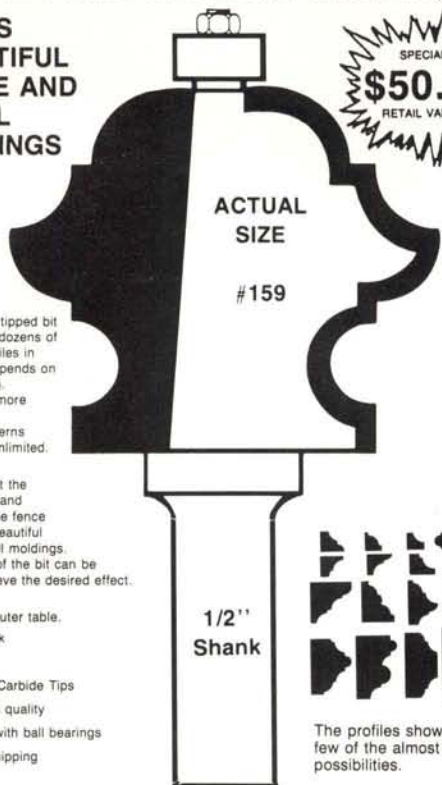
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Finishing

Shellac

Where It Comes From

As consumers, we are sometimes so far removed from the product source as to have only vague confirmation of its origins. In researching the source of shellac, the traditional wood finish that was the heart and soul of furniture finishing for two centuries, we discovered that even the experts can disagree about the finer points. While it is an accepted fact that shellac is derived from the deposits exuded by an insect common to India, three different sources identified the creature as *Laccifer Lacca*, *Coccus Lacca*, and *Tachardia Lacca*. Still another called it the *Lac Bug*, which will suit us fine. Whatever the bug's Latin name, shellac was, until the advent of modern synthetics, the best known and most highly regarded of the various varnish resins.

How It Is Made

Shellac is sold either in dry form as flakes, or in a liquid form, where the flakes have been dissolved in an ethyl alcohol that has been treated so as to not be consumable — commonly called denatured alcohol or methylated spirits (alcohol denatured with methanol). The shellac flakes are formed by melting down and refining the deposits of the lac bug, then flattening them into thin sheets that are cooled until hard, after which they are crushed into the flakes that are the shellac.

Actually, there are a great many different grades of shellac, based primarily on the purity or stage of refinement. The crudest form of shellac, the so called *stick-lac*, is the short broken-up twigs encrusted with the dead bugs and their secretions. The dead bugs and secretions scraped from the twigs are known as *bug-lac*. The secretions separated out from the carcasses are known as *seed-lac*. To further process it, the seed-lac is placed in long cotton bags that are heated and then twisted to force the melted liquid shellac through the cloth. The liquid cools into sheets that when broken up form shellac flakes, while stray drops of liquid that fall to the ground and harden are called *button-lac*. The lower grades of shellac (stick-lac, bug-lac, seed-lac, button-lac, and garnet — a more refined button-lac) contain impurities and must be strained through several layers of fine cheesecloth after they have been dissolved in alcohol, and prior to being used. The higher grades of shellac are refined to remove waxes, impurities, and rosins, and include orange shellac, beta shellac, super blonde, and white shellac.

What It's Used For

Shellac in its dry form is sold by the pound. The lower grades, primarily button-lac, are used mainly in antique furniture repair and restoration, or where it is necessary to match the dark or brown look of an antique shellaced piece. Of the higher grades, orange shellac is popular as a sealer over oily, resinous woods, to seal pine knots that would otherwise bleed through a paint or finish, and as a finish for

antique reproduction work. Beta, super blonde and white shellacs are used primarily over new woods, or where a clear finish that will impart minimal color to the wood is desired. *Note:* While orange and super blonde shellacs are available in either dry or liquid form, white shellac is generally sold only as a liquid, due to the exceptionally short shelf life of the pure refined shellac crystals.

How It Is Mixed

The ratio of shellac to the denatured alcohol solvent in which it is dissolved is called the *cut*. Very simply, the cut refers to the number of pounds of shellac flakes dissolved in one gallon of solvent. A one-pound cut is one pound of shellac dissolved in a gallon of solvent, a two-pound cut is two pounds dissolved in a gallon, etc. Most liquid shellacs are sold as either 3-, 4-, or 5-pound cuts. The shellac may then be thinned as needed by the user with denatured alcohol. The chart below will help you to reduce liquid shellac purchased in 4- and 5-pound cuts. For smaller quantities, reduce the amounts used, but keep the ratios the same. Be sure to reduce only with denatured alcohol.

To Reduce	To	Add Denatured Alcohol	To	Ratio
5 lb. cut	3 lb. cut	$\frac{3}{4}$ pt.	1 qt. shellac	1.31 parts to 3 parts
5 lb. cut	2 lb. cut	1 qt.	1 qt.	1 part to 1 part
5 lb. cut	1 lb. cut	$\frac{3}{2}$ gal.	1 qt.	2.66 parts to 1 part
4 lb. cut	3 lb. cut	$\frac{1}{2}$ pt.	1 qt.	1 part to 4 parts
4 lb. cut	2 lb. cut	$\frac{3}{4}$ qt.	1 qt.	3 parts to 4 parts
4 lb. cut	1 lb. cut	2 qt.	1 qt.	2 parts to 1 part

Application

Shellac is most commonly used in 3-, 2-, and 1-pound cuts. A 1-to-2-pound cut would be used for sealing, and on knots in pine that would otherwise bleed through a finish. As a finish, shellac is most commonly used in a 2-to-3-pound cut. Whether it is brushed, sprayed or wiped (all three applications are fine for shellac), remember that multiple thin coats are always superior to one thick coat.

Brushing: When brushing shellac, use only a natural bristle brush, work quickly, and brush with the grain. Don't worry about air bubbles since they are not usually a problem. Dust need not be a concern since the shellac dries so quickly. Start with a 1-pound cut to seal the wood, sand lightly when dry (at least 3 hours) and then apply subsequent coats. As with the initial coat, sand with 320 or finer sandpaper between coats, and allow 4-6 hours dry time for second, third, and further coats.

Spraying: When spraying shellac, use low air pressure (25-35 pounds), and a syphon-feed gun. Be sure that your compressor is capable of maintaining constant air pressure, or you will have problems. Keep the spray gun moving in an even sweeping arc, maintaining the same distance (about 8 in.) at all times. Trigger the spray gun after your arm has started to transcribe the arc, or there will be drips, runs and sags at the start point of each sweep. Since spraying can be

(continued on next page)

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Finishing Continued

tricky and conditions variable depending on the cut, the spray gun, and the air pressure, it's best to gain some experience by practicing your technique on a piece of scrap-wood before committing your project stock. Follow the earlier noted sequence of dry time and sanding between coats, and be sure to keep the individual coats thin for best results.

French Polishing: The technique of French polishing, a very old hand method of rubbing in the shellac using a cloth wad called a *rubber*, is complicated enough to warrant a thorough review, and will be covered in a future "Finishing" article.

After the Finish: Whatever method of application you select, after the finish has dried, shellac may be buffed, rubbed out, or waxed as needed. A paste wax is recommended for applications where the shellac is liable to be subjected to spills.

Advantages and Disadvantages

It is no secret among woodworkers that what was once considered the premier finish for wood has now fallen to a point where it is rarely used in any field other than antique restoration or reproduction work. Part of the reason for this is the fact that shellac has two rather significant drawbacks: its susceptibility to damage from water and alcohol, and its relatively short shelf life. Additionally, shellac is not resistant to high heat, which will cause it to melt.

In order to gain a broader perspective of shellac, both good and bad, we contacted Patrick J. Devine, National Sales Manager for H. Behlens Brothers, Inc., a leading manufacturer of shellac and finishing products. Mr. Devine, who lectures on shellac and French polishing, and is a recognized authority on the subject, had some interesting points to make.

Mr. Devine noted that the reason shellac "fell out of vogue in the 1950's" was primarily because "other finishes were held as ideal," and not necessarily because shellac was bad. Shellac suffered from an assumption of inferiority based not on fact, but on the basis of the public's perception that "new is better." Mr. Devine pointed out that "up through the 1950's, shellac was the best finish — bar none — for floors. Shellac, when it dries, is an extremely durable, abrasive resistant finish. It is also flexible and will accommodate expansion and contraction in wood better than polyurethane." He went on to explain that "of all the finishes, shellac yellows less over age than varnishes and even polyurethanes and lacquers." Mr. Devine stated flatly that "there is no other finish that can produce the same amount of gloss, and at the same time display the natural appearance of the wood." Mr. Devine said that he uses shellac widely, including on the hardwood floors of his home.

Among the primary advantages of shellac, Mr. Devine listed reparability, versatility, and its chemical structure. "Shellac can be sprayed, brushed, or padded (French polished), and is infinitely repairable." In a process related to French polishing, called *spiriting off*, a little balled pad moistened slightly with denatured alcohol is rubbed quickly over the damaged area in a pendulum motion to repair defects. In the application process, Mr. Devine noted, "The

multiple layers of shellac melt into a single layer, chemically bonded together," as opposed to polyurethane where a much weaker bond is formed, "since successive layers are bonded only mechanically to the layer below."

In addressing the two major disadvantages of shellac, Mr. Devine started by explaining its sensitivity to alcohol and water. "Alcohol destroys the finish because alcohol dissolves shellac," he said. As for the white haze caused by water left on a shellaced finish, Mr. Devine explained, "Some of the particles of the denatured alcohol solvent that is used to dissolve the shellac remain in the finish. All alcohol absorbs moisture; therefore when water is spilled on a shellac finish, some is absorbed into the finish resulting in a cloudy spot or ring." It was this telltale ring on a shellac finish that made coaters imperative with furniture of old.

However, Mr. Devine reminds us that shellac's susceptibility to damage from alcohol and water should be balanced by the fact that the damage is easily repaired. He also notes that "a good coat of paste wax on a shellac finish will vastly improve resistance to water and alcohol."

The second drawback of shellac, primarily in the liquid state, is its short shelf life, which is also caused by the denatured alcohol that is used to dissolve the shellac. Mr. Devine explains, "The alcohol will absorb moisture from the atmosphere." The absorption will not be physically apparent, however, until the product is used. "You can tell a product has passed its useful shelf life when it does not dry or 'cure' thoroughly. For example, a finger imprint will slightly indent the finish," Mr. Devine pointed out.

Mr. Devine cautions against purchasing drugstore denatured alcohol since "you don't know what the moisture content will be." Additionally, he advises against storing denatured alcohol or shellac in a metal can, or using a metal cap, since "alcohol, shellac, and metal react chemically together, causing among other problems, discoloration."

Mr. Devine stresses proper storage and careful use of shellac. "It doesn't take long for the alcohol in shellac to absorb moisture, and on a humid day a cap left off the container, even for a short time, could allow enough moisture to be absorbed to ruin it." He advises that shellac be stored in a glass jar that can be filled to the top, and stored in a dark area. The dry shellac buttons or flakes have no alcohol content, and therefore have a far longer shelf life than the premixed liquids.

Mr. Devine acknowledges that "while shellac can't match the chemical resistance of a modern synthetic varnish or polyurethane, by the same token many of these modern products cannot be easily stripped, refinished or repaired." "And," he added, "varnishes and polyurethanes cannot match shellac's ability to display the natural beauty of the wood."

As an interesting sidelight, Mr. Devine noted that even if shellac is not the popular finish that it once was, as an organic, in some forms it can be good enough to eat. Vitamin pills and candy with hard shells, such as the ever popular M & M's are actually coated with a thin layer of shellac to seal them.

Next issue, we'll detail the old and respected technique of rubbing shellac — French polishing.

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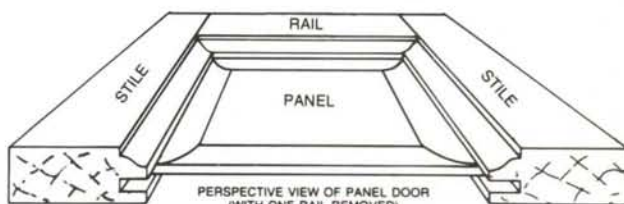
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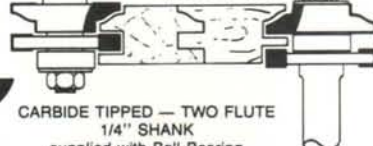
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In The Shop



The Hand Plane

In this age of high-tech, it's easy to look past the basics and concentrate on what's new and exciting. Still, no matter how far woodworking tool technology advances, it's unlikely that it will ever evolve to the point where basic, traditional hand tools lose importance.

As woodworkers starting out, most of us had precious few power tools. A jointer and a thickness planer may be tools we sure could have used, but in the beginning, who has the money to spend on them?

One of the most important tools in woodworking is the hand plane. Familiarity and expertise with a variety of planes is vital to thicknessing, jointing edges, planing end grain, and cutting bevels and chamfers. While the plane is not particularly difficult to master, like most tools, it requires hands-on experience to gain confidence.

Types of Planes

The smaller block plane is usually about 6-7 in. long, and is designed for one-hand operation where necessary. Large planes designed to be worked with two hands are the most commonly used, and they share a similar construction. The function of these planes

is usually determined by their length. As for nomenclature, a smooth plane is a plane between 9 and 10 in. long, a jack plane is 14 or 15 in. long, a fore plane is 18 in. long, and a jointer plane is typically either 22 or 24 in. long. Smoothing planes are used for general shop work and final finishing, jack planes are used to plane wood to thickness, and fore and jointing planes are used for truing uneven surfaces and jointing edges.

How They Work

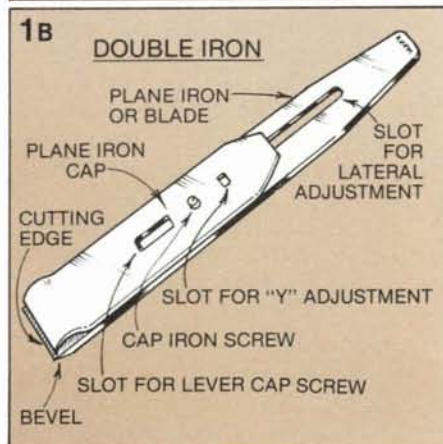
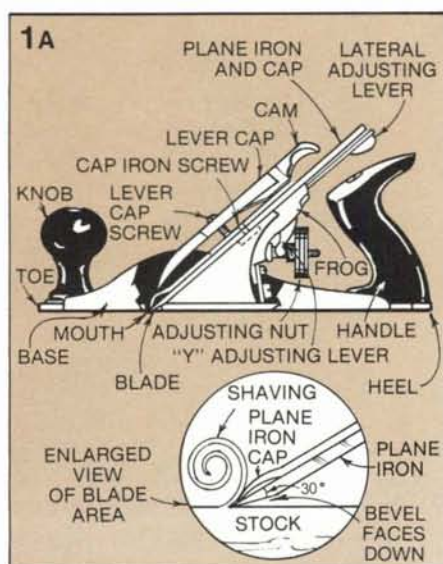
Fig. 1 shows a cutaway view of the typical smooth plane, identifying the major component parts. The purpose of the various parts is fairly well described by their names, but a brief review will better explain their function. In the broadest sense, the construction of the typical plane is designed to securely anchor a blade or iron at a specific predetermined angle in the plane body. Note that the bevel on the cutting edge of the iron faces down, as opposed to the much smaller block plane (Fig. 2) where the angle of the iron is much lower, and the beveled side faces up.

The primary parts and their functions are as follows. The plane iron cap (in the block plane, the lever cap also

serves as the plane iron cap) helps to reinforce the rigidity of the plane iron. Most importantly, the humped bottom end of the plane iron cap serves to curl and break the wood shavings, which directs them up and out of the plane body and helps prevent splitting of the wood ahead of the cut. Fig. 1B shows the typical arrangement of the plane iron and the plane iron cap, which together are called a "double plane iron." As shown in the Fig. 1A detail, the bevel angle of the plane iron is established at about 30 degrees. The plane iron cap is secured to the plane iron with a screw called a cap iron screw. When setting up the plane, make certain that there is no space between the cap iron and the blade in which the chips might jam. If the end of the cap iron is not perfectly even, or if chips become wedged, then use an oilstone to true the end of the cap iron where it contacts the blade.

The double iron is held in place by the lever cap. The lever cap screw fastens the double iron to the body of the plane, while the cam is then employed to further tension the double iron. The adjusting nut of the plane engages the "Y" adjusting lever, which in turn engages the double iron through the adjustment slot, and thereby regulates the height of the cutting edge and the depth of cut. The lateral adjusting lever engages the double iron through the lateral adjustment slot in the plane iron, and regulates side-to-side adjustment or the levelness of the cutting edge relative to the bottom of the plane. This lateral adjustment is important for a number of reasons, not the least of which is that it enables one to recess one side of the blade for functions such as flushing an applied solid stock edge glued up around a laminated surface, or any other purpose where one wants to cut only a portion of the plane's full width.

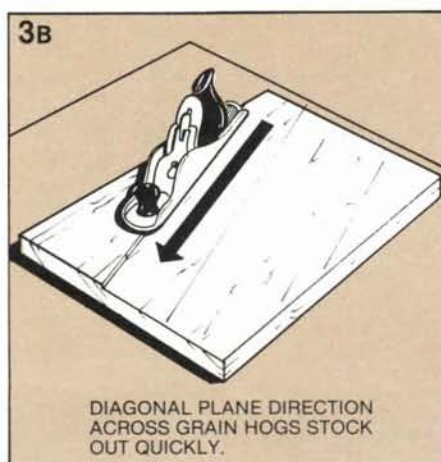
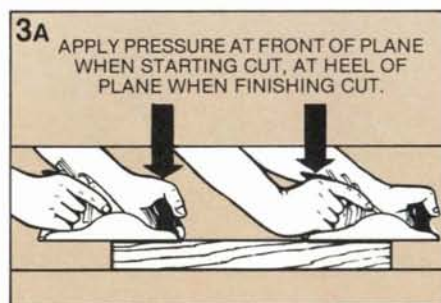
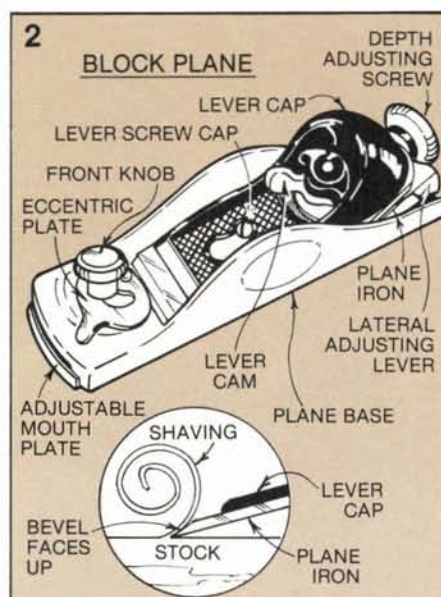
In the block plane (Fig. 2), the low blade angle and the fact that the bevel faces up serve to provide a chisel-like action, which is especially effective in planing end grain. Note also that many block planes feature an adjustable mouth plate. In softwoods you may use a fairly wide mouth opening, while for hardwoods a narrow mouth setting will yield the best results.



Common Functions

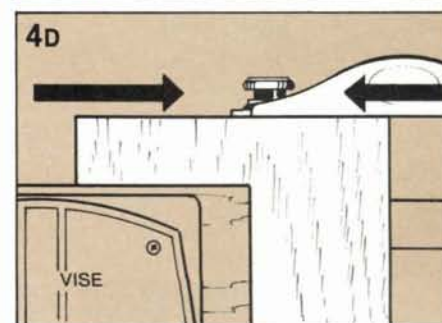
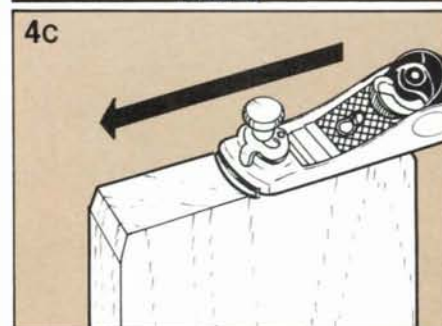
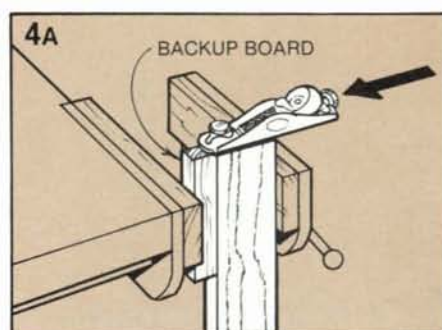
When smoothing stock, the plane will cut most cleanly if it is worked with the grain (Fig. 3A). The plane should be held level at all times, and the motion of the stroke should be even throughout the cut (in other words, don't pause). It helps to use your whole upper body, rather than attempting to direct the cut with only your hands and arms. As shown, apply pressure at the front or knob of the plane to start the cut, and at the back or heel of the plane as you finish the cut and come off the board. This procedure serves to dig the plane iron edge into the stock at the start of the cut, and prevents tipping off the board at both beginning and end, which would round these points.

With wild, wavy, gnarly, or difficult grain, or to remove large amounts of stock quickly, plane diagonally across the grain as shown in Fig. 3B. For final surfacing, gradually reduce the depth



of cut and plane with the grain. Keep in mind that with difficult or uneven grain, very light cuts will result in less chipping or tearing out.

To plane end grain, we prefer to back the stock up as shown in Fig. 4A. This eliminates the splitting or chipping off tendency of stock at the far edge of boards that are being end-grain planed (Fig. 4B). Though you may also chamfer the edge (Fig. 4C) or plane in



from both directions (Fig. 4D), we have found that backing the stock up provides the most consistent results.

Of course, the key to good results with the plane is a razor sharp, properly angled bevel. The sharpening of hand tools is a fundamental skill that every woodworker must master early on. Therefore, next issue we'll look into the procedure we use to get a nearly perfect edge on plane irons everytime.

Woodworking Basics



Veneer, Part II

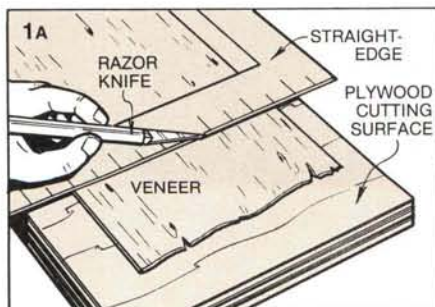
Last issue, we presented an introduction to veneer. We examined the how and why of using veneer, detailed the various methods of slicing the veneer, and explained how veneer is prepared for application. After the sheets of veneer have been flattened, and any splits or defects repaired, the veneer is "project ready."

With simple veneering, the sheets of veneer are now applied directly to the substrate or "ground." If no sheets of veneer need be joined to cover surfaces, the veneer is simply cut to size so when applied it overlaps the substrate edges about $\frac{1}{4}$ - $\frac{1}{2}$ in. all around. The veneer is then trimmed flush after the adhesive has dried. We'll cover the methods of application in depth later in this article. First, we should consider how the veneer sheets are cut to size, and how they are joined when larger surfaces or special effects (book-matches, butts, etc.) are involved.

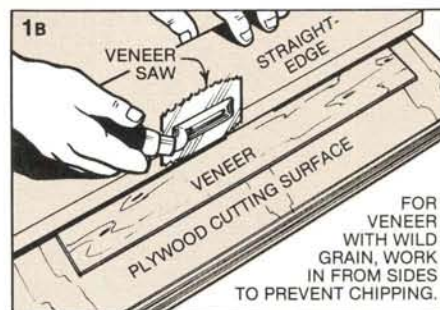
How To Cut Veneer

Two tools are used to cut veneer, the razor knife, also known by its trade name X-Acto, and the veneer saw. The

razor knife is a fast, effective way to make cross-grain cuts, and is the only way to make curved cuts, since the veneer saw is only capable of straight cuts. However, since the tendency of the knife blade is to follow the direction of the grain, particular care must be taken to hold the knife to the line. Use a straightedge as a guide where possible, as shown in Fig. 1A. When



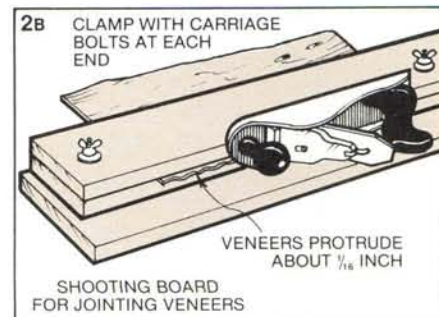
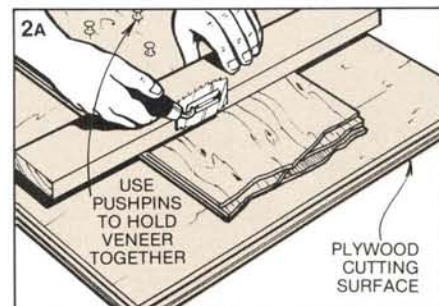
you have straight cuts to make *with* the grain in straight grained veneers, or any straight cut in a burl or wavy grained veneer, the veneer saw is a necessity. Use a straightedge as a guide, and work in from the edges (Fig.

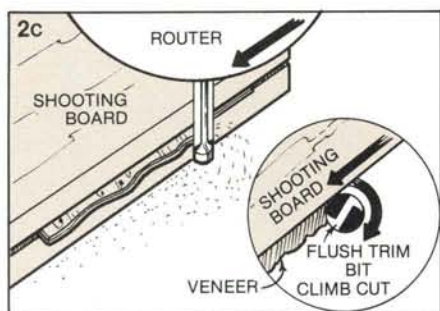


1B) to eliminate any chance of chip or tear-out at the veneer edges.

Jointing The Veneer

When a veneer joint must be employed to create either a wider veneer surface or a match (book, slip, butt, etc.), it is vital that this joint be as near to invisible and as tight as possible. Stack the veneers as shown in Fig. 2A and first use the straightedge and veneer saw to trim an even amount off all the sheets. Push pins can be used to anchor multiple sheets as shown to prevent slippage. Now mount the stacked veneer in a "shooting board" to final joint the edges. While the old method of jointing was to use a plane (Fig. 2B), if you have a router and a flush trimming bit, we have found that using the set up shown in Fig. 2C, and making a "climb-cut" as illustrated produces a near perfect jointed edge with no chipping or tear-out.





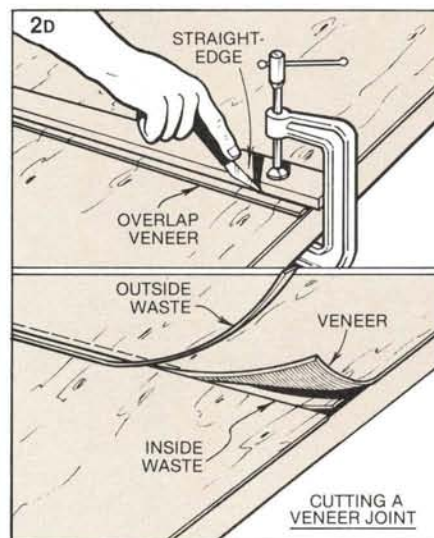
A climb-cut, in router terminology, refers to a cut that is made when the router is guided *with* the bit rotation, rather than *against* the bit rotation. In most router operations, the router is guided so that the cutting action of the bit tends to force the router back, while simultaneously holding it tight against a fence or bearing guide. In operations where a substantial amount of stock is being removed, the cutting action of the bit and the applied force of the operator combine to make the router controllable.

Were a climb-cut to be employed in conventional router operations, the router would be difficult if not impossible to control, since the cutting action of the bit tends to pull the router along, while simultaneously throwing it out and away from the work. However, in an operation such as this, where only a very small amount of stock is being removed, the climb-cut is preferred since the action of the router bit cutting *into* the edge is much less likely to result in tearing or chipping out. In a conventional cut, the bit is cutting away from the edge, and tends to chip out or tear delicate or thin material such as veneer.

Another acceptable use of the climb-cut is in final dressing a molded edge. The first cut, against the bit rotation, is used to remove the bulk of the stock, after which a climb-cut is employed to give the finished edge a smooth surface, free of chipping and tear-out. Caution: In any climb-cut, the operator must be certain that he has a firm grip on the router, to insure that it does not catch and "run" along the edge. A slow, firm, direct, measured pace in advancing the router through out the climb-cut will provide the best and safest results.

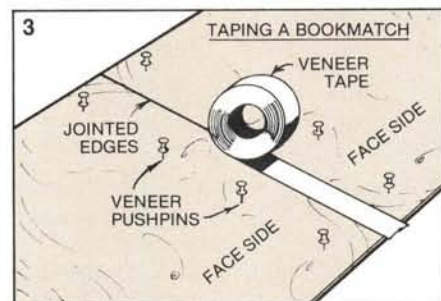
An alternate method for creating a tight joint when veneering large sur-

faces, and where matches (book, butt, etc.) are *not* featured, is to overlap the veneer slightly, clamp a straightedge in place, and cut through the overlapped veneers as shown in Fig. 2D. Remove the waste and proceed to tape the veneer sheets in the usual manner.



Taping The Veneer

The jointed edges of the veneer must now be butted tightly together and taped to create a single veneer surface. While clear cellophane tape may be fine for temporarily anchoring small cracks in the edges of veneer, we strongly recommend that you use traditional moistened gum veneer tape for any butt joinery. Be sure to buy a roll of genuine veneer tape, rather than use the wrapping-type generic gum tape. The veneer tape is made specially thin, and will not distort the veneer when it is in a press. Pushpins or veneer pins can be used to anchor the veneer while you apply the tape (Fig. 3). Remember, the tape is applied to the *face* or front side of the veneer. Later, it is removed with a cabinet scraper.



(continued on next page)

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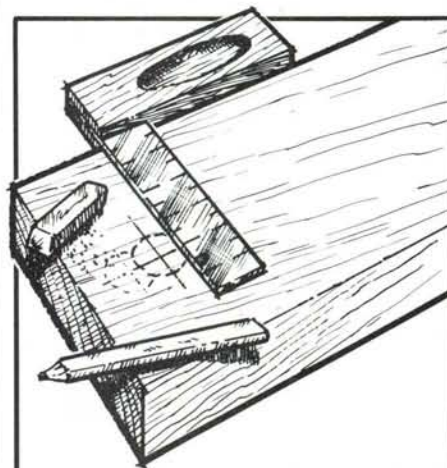
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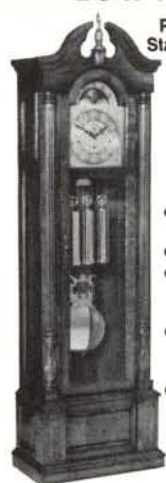
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Woodworking Basics Continued

Applying The Veneer

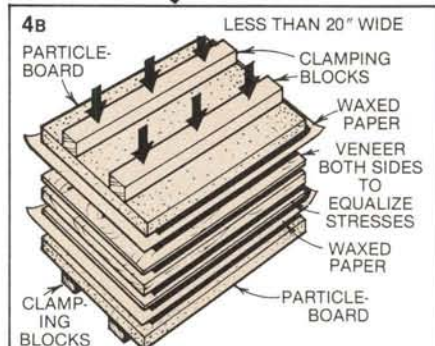
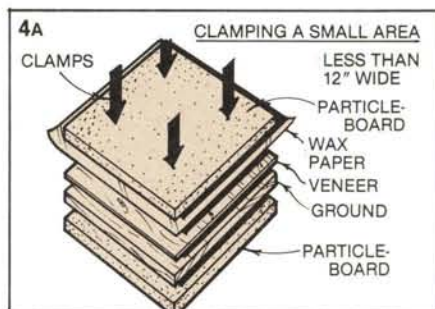
The best glues to use in veneering are the polyvinyl resins (Elmer's White Glue), aliphatic emulsions (Titebond, Elmer's Carpenters Glue), and plastic resins (Weldwood, Cascamite). The plastic resins are superior to white or yellow glue by virtue of their excellent water resistant qualities, and the longer work time they afford. Yellow glues dry the fastest of the three, providing the least work time, and should therefore be used only on very small veneered areas. With each of these three types of glues, clamp pressure will be required. We have divided the subject of clamping into three sizes, small, medium, and large, to accommodate different applications. Basically, the clamping system required will depend on the size of the area that must be clamped.

No matter what the size of the veneered surface, the application of the glue will be similar. Always spread a generous coating of glue over the entire surface of the ground *only*. Do not apply glue to the veneer since it will immediately respond by curling, rippling, etc. We use a paint roller to spread a nice even layer on larger surfaces, although a paintbrush will suffice for smaller areas. The particleboard or plywood clamping surfaces that will face the veneer must be protected with a sheet of wax paper between them and the veneer. This is because some glue will always soak or be forced through the veneer or out the edges, and without a layer of wax paper as protection, the clamping surfaces will adhere to the veneer face. An alternative to the wax paper is to use melamine-faced particleboard, which glue will not adhere to.

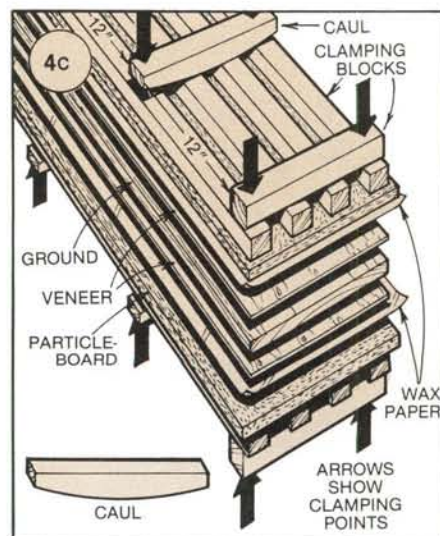
The purpose of clamping is to evenly distribute a maximum amount of pressure over the entire veneered surface. With small areas of less than 12 in. wide (Fig. 4A), a few clamps applied directly to the particleboard sandwich around the veneered surface should suffice. Locate the clamps so they are evenly spaced, and apply the same amount of tightening force to each.

With medium-sized surfaces (less than 20 in. wide), again use the particleboard sandwich, but add two or

more cleats to help distribute pressure toward the center (Fig. 4B). One



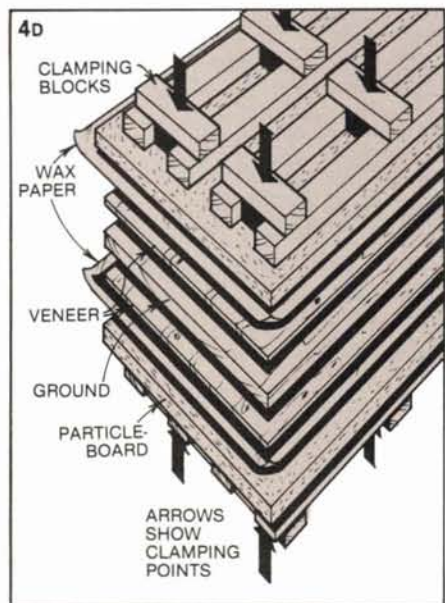
technique to help apply pressure at the center when deep throat clamps are not available is to utilize cauls, which are simply cleats that have been tapered slightly. This way initial pressure is developed at the center, and then is gradually transferred to the sides as the clamps are tightened and the cauls flatten out (Fig. 4C).



This theory of applying pressure at the center first is critical to veneering since sufficient glue must be applied so that it covers *completely*. There should

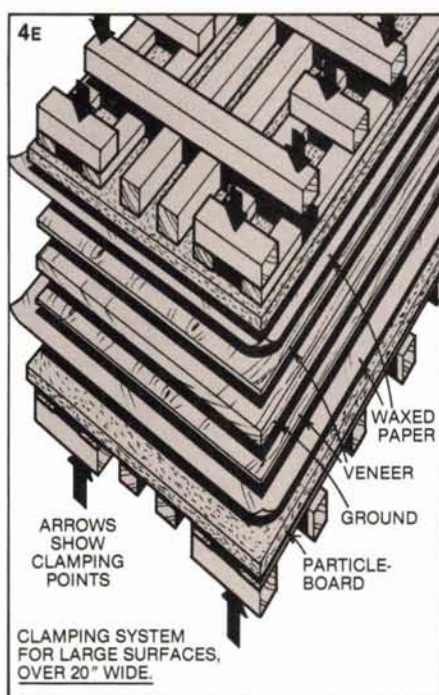
always be some excess glue squeezing out the edges, which insures that the coverage is complete. By applying pressure first at the center and then working toward the edges, this excess glue is forced out. Conversely, when pressure is applied only at the perimeter, or at the perimeter first, this excess glue is forced into a pocket or pockets at the center, where it can result in the veneer rippling or bubbling as the glue dries.

In a word, the key to successful veneering is *clamps*. You never seem to have enough, or the right kind, especially with large surfaces such as tabletops. Even with sufficient clamps, however, the challenge with large surfaces (anything over 20 in. wide) is to get adequate pressure at the center. One method to help distribute pressure toward the center is to utilize short cross-clamped pieces, as shown in Fig. 4D. With this cross-clamping method,



you can apply sufficient even pressure on a surface of any length and up to 3 ft. wide. For material over 3 ft. wide, the best method for clamping veneer is a veneer press, but that is a subject we'll have to cover later. As an alternate to a veneer press, for widths up to 4 ft., however, you may want to try the clamping system we show in Fig. 4E, which will provide adequate center clamping pressure using only ordinary clamps.

Whatever adhesive you select, be



sure to always allow sufficient dry time before removing the clamps. Dry time is especially important with veneering since the use of wide clamping surfaces permits very little if any air exchange to the actual veneered surface. If the instructions say to allow four hours, let the work remain in the clamps overnight, just to be sure. Remember, with large surfaces, you will need to veneer both sides to properly equalize stresses on the substrate.

Tips: Our choice here at *The Woodworker's Journal* is usually plastic resin glue. We prefer it because of moisture resistance, work time, and sandability. Unlike the white or yellow glues, which tend to clog sandpaper, the plastic resin glues sand out very cleanly. Of course, veneer can only be sanded lightly, or you will sand directly through it and ruin the piece. When veneering over plywoods, where possible orient the grain of the veneer at right angles to the grain of the plywood. When veneering over solid or glued-up boards, always orient the veneer grain *with* the wood grain, so the veneer will expand and contract with the solid stock. When veneering with an open-grained wood, or over a porous surface such as particle board, be sure to use sufficient glue, since a good percentage of the adhesive will be absorbed.

Wj



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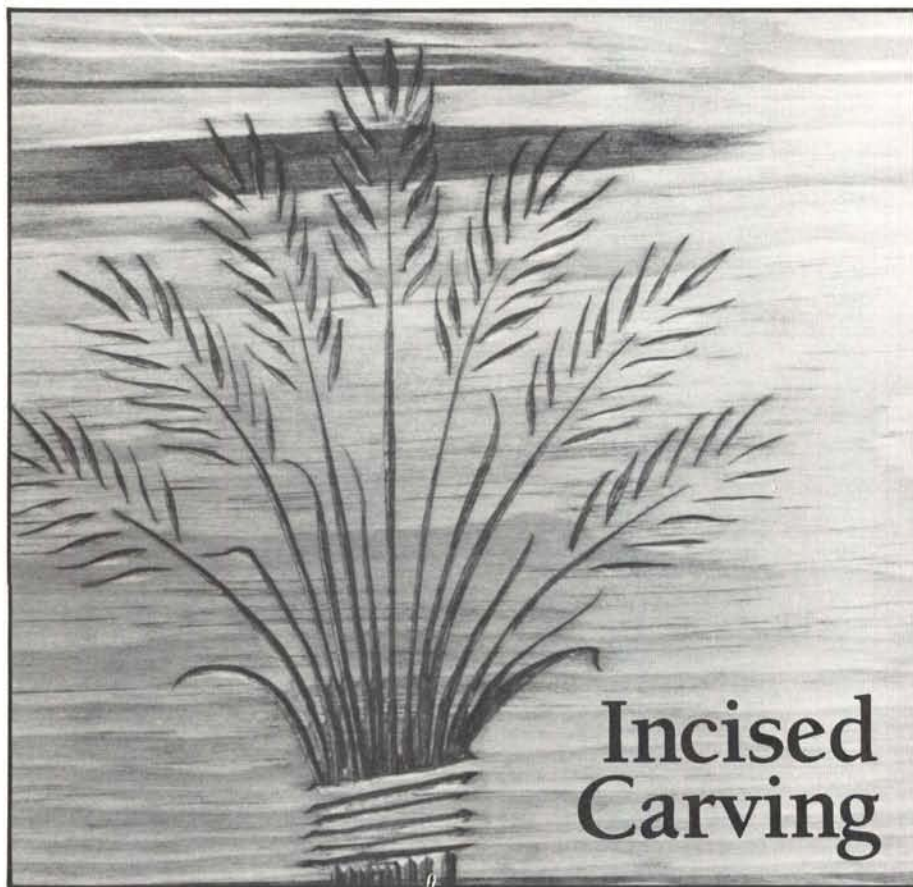
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Special Techniques



Incised Carving

Carving is one of the most popular forms of woodworking, requiring only a minimal investment in tools. Of the many forms of carving, from simple whittling up through sculptural carving on a large scale, two of the easiest and most rewarding forms are incised and chip carving.

Unlike whittling or sculptural carving, incised and chip carving are decorative forms, whose purpose is mainly to beautify functional objects. At this point one might ask, "Is there any difference between chip and incised carving?"

To answer this question, and to gain further insight into the subjects of chip and incised carving, we interviewed master woodcarver Rick Butz, author of the book *How To Carve Wood* and host of the soon-to-be-released, 13-part Public Broadcasting Service (PBS) series *Woodcarving*. Mr. Butz maintained that while they are closely related, incised carving and chip carving can be differentiated by the fact that incised carving relates more to free-form or representational wood

block carving, while chip carving in the traditional sense pertains exclusively to decoration with geometric patterns, rosettes, or repetitive designs comprised of triangular chips. Free-form or pictorial chip carving, such as the wheat carving featured on page 31 and the tulip carving appearing on the Vegetable Bin in the May/June 1987 issue of *The Woodworker's Journal*, are most properly classified as incised carving. Incised lettering is a related — though more specialized — technique.

In this feature, we will concentrate on incised carving by following easy step-by-step instructions to create our wheat carving. Next issue, we'll take an in-depth look at traditional chip carving.

The Tools

While we've seen many kits that contain 8 - 10 or more specialized tools, Rick Butz notes that incised carving requires only two knives: a skew, and a straight-edged knife. Although the V-gouge can also be used to outline or silhouette a shape, Butz cautions that the V-gouge must be expertly sharpen-

ed to be effective. This is because in a typical cut diagonally across the grain, one edge of the V will be cutting with the grain, while the other edge will be cutting against the grain. Whatever tool you select, remember that sharp cutting edges are the key to crisp, clean, attractive cuts. Use a fine oilstone to establish the tool's edge, then employ a leather strop to smooth the edge, removing any burrs. You will need to "tune up" the knife's edge regularly while you work to maintain an optimum cutting edge.

The Stock

Most carvers universally agree that the best wood for carving is basswood, which Rick Butz calls "a most forgiving wood." When working with pine, Butz points out that air-dried pine is superior to kiln-dried. "Rapid kiln drying forces out moisture, which together with heat, shrinks the wood cells and makes them brittle." Air-dried stock by contrast, is softer, less dense, and more forgiving. While most any wood — hard or soft — can be carved, the soft woods will be easiest to work and will yield the best results, especially for beginners.

The Technique

Step 1.

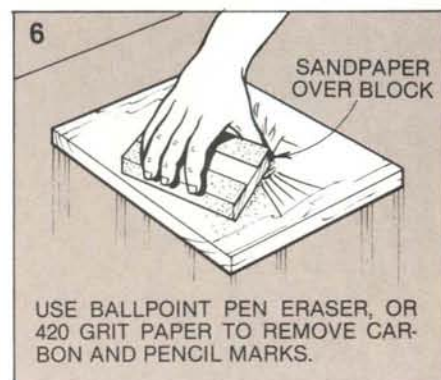
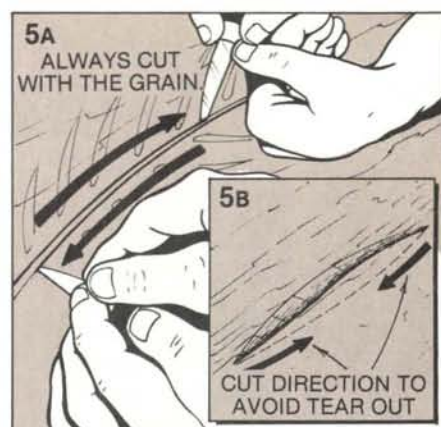
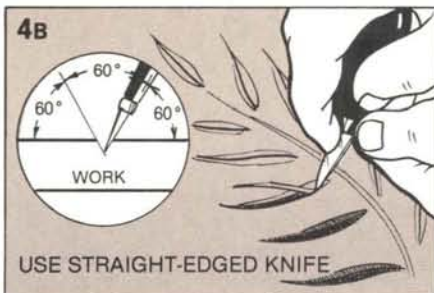
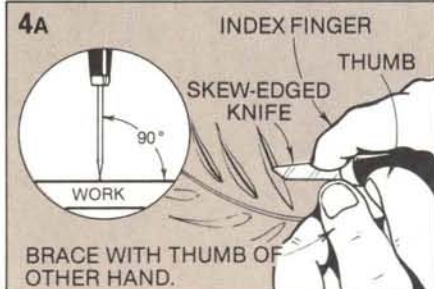
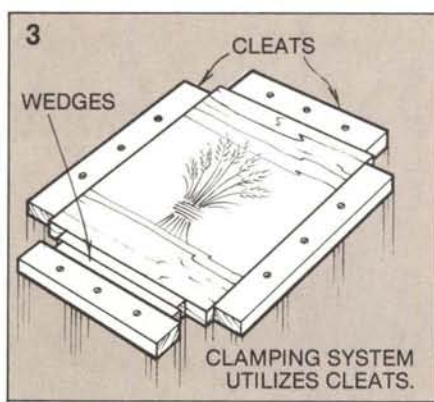
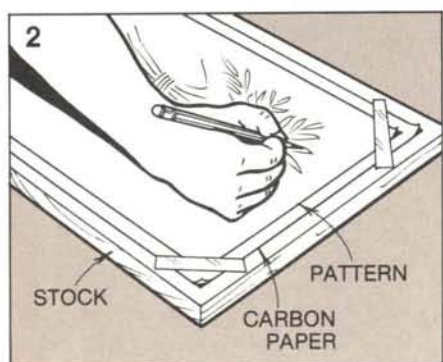
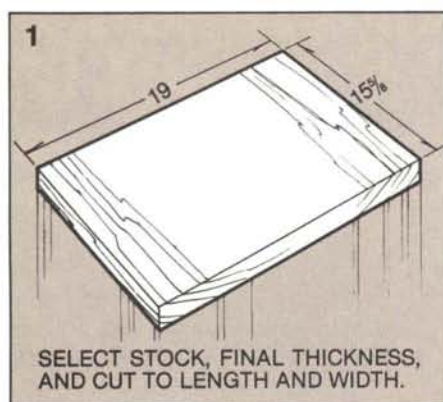
Start by selecting stock that has no funny grain, knots or other defects in the immediate carving area. The stock should be final dressed and sanded now, since any but the lightest sanding after the carving is incised will round the sharp edges and soften the crisp look, detracting from the carving's appearance (Fig. 1).

Step 2.

Lay out the carving profile on paper, then transfer with carbon paper to the stock. As shown in Fig. 2, the pattern and carbon paper can be taped directly to the stock. Do not press too hard with the pencil, or you will transfer too much carbon, which will be difficult to remove. With freehand designs that you create yourself, you may wish instead to lay out the design directly on the stock.

Step 3.

It is important to anchor the work securely. The best method is a simple cleat and wedging system, as shown. Avoid the use of clamps, which will get



in the way, and if possible, locate the work on a surface where you will have access to all four sides (Fig. 3).

Step 4.

Where a uniform vein is required, you can utilize the V-gouge if it is properly sharpened. Our experience showed, however, that with the wheat carving, the basic skew and straight-edged knives were far more effective and easier to use. The most reliable method of carving is to start with the skew blade knife, and make a straight cut as shown down the center of each incised area, working on one section at a time (Fig. 4A). The depth of cut with the skew, which should be held as shown at a 90-degree angle, will be $\frac{1}{4}$ to $\frac{1}{2}$ in. at most. Gauge and taper the depth to zero as you approach the end of cuts on pointed profiles, such as with the wheat grains. Next, using the straight-edge knife held as shown, make the two angled outside cuts that establish the V. As illustrated in Fig. 4B, these angled cuts are generally made at about 60 degrees. Note the correct position of the hands for these cuts, and the fact that two hands are necessary to properly control and guide the knife. With long cuts, use

your arms and upper body to guide the knife, rather than attempting to control it with only your hands and wrists (Fig. 5A).

When making cuts for those wheat grains that are aligned with the grain, it is necessary to work in from both ends as shown in Fig. 5B, in order to avoid tearing or chipping of the wood.

One of the best things about incised carving is the ease with which even the novice can master the technique well enough for consistent results. If you've never tried incised carving before, trace a section of the wheat pattern onto a scrap piece of pine, and experiment for an hour or two with making the various cuts as illustrated. When you feel confident and happy with the results, lay out and execute the full wheat carving. *Note:* While air-dried pine is a superior stock for carving, for this project we would stay with kiln-dried material, to minimize movement

problems across what is a very wide glued up surface.

After the carving is complete, and before a final finish is applied, the pencil or carbon lines remaining must be removed. They can be erased (use an ink eraser for the carbon) or you can *lightly* final sand to remove them. To final sand, use a sanding block with 420 grit paper as shown in Fig. 6.

The Finish

The best finish for incised carved surfaces is either a penetrating oil or a sprayed finish. We do not recommend a brushed finish such as polyurethane, since brushing tends to fill the incised areas, flattening the surface out. Homemade finishes of beeswax and turpentine also produce excellent results over carved surfaces, darkening the incised sections just enough to highlight the decorative effect.

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



TV/VCR Cabinet

For most families in contemporary America, the television is an important entertainment center. And today, more often than not, along with the television set there is the obligatory video cassette recorder (VCR) unit. In many homes, other electronic equipment, such as a compact disc (CD) player or a stereo receiver, shares cabinet space with the television set and VCR. Our research showed, however, that few mobile TV/VCR stands include sufficient space for additional equipment or adequate storage space for VCR tapes. While not as large as a full-size wall unit, nor as small as the typical TV/VCR stand, this unit combines good mobility with excellent equipment and tape storage capacity. The two shelves are fully adjustable as shown, which is an advantage in adapting to different sizes and types of equipment. The four ball casters on the base allow the entire unit to be easily moved, and the oversize lazy susan

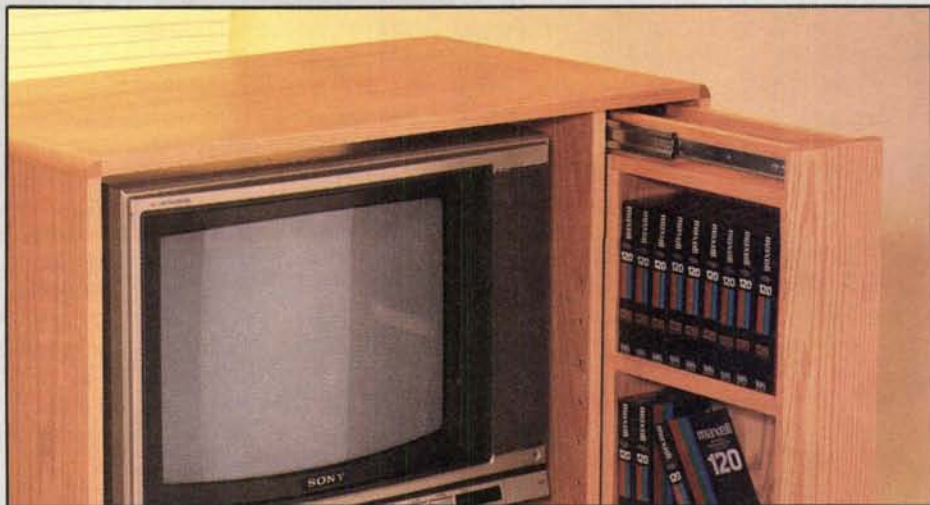
bearing connecting the cabinet and base is a unique feature that permits the cabinet to be swiveled a full 360 degrees in any direction. The unit will accommodate any 19-inch television set, and many larger models with up to 25-inch screens. Depending on the

model, a small section of the picture tube enclosure may stand proud of the cabinet back, although this is common for most TV/VCR stands and cabinets.

This project is not particularly difficult to build, however precision work is vital. The most important elements in the construction are accurate measurements and clean, even cuts. Start by cutting all the $\frac{3}{4}$ in. thick plywood parts to exact length and width. These parts will include the case parts (A, B, C, D, and E), the drawer parts (M, N, O, P, and R), and the base parts (H, I, and J). All these parts can be obtained from one and a half sheets of $4 \times 8 \times \frac{3}{4}$ in. thick hardwood plywood, good both sides (see cutting diagram). It is important that the plywood be good both sides since so many of the parts are visible on both surfaces. Follow the layout in the cutting diagram closely to insure that all parts have the grain direction properly oriented.

While we selected an oak hardwood plywood, and then used oak hardwood for the various solid stock parts, any hardwood plywood, such as walnut, maple, mahogany, or cherry — either in combination with a matching hardwood, or contrasting with some other hardwood — is acceptable. We chose oak primarily because it is widely available at most lumberyards, and is reasonably priced (about \$65 a sheet).

After cutting all the plywood parts to size, apply the $\frac{1}{8}$ in. thick solid stock edge banding (F) to all appropriate edges. Trim the edge banding flush, and then apply a $\frac{3}{4}$ in. square end banding (G) to the ends of parts A and B, and a $\frac{3}{4}$ in. square pull banding (S) to one edge of part R. Note that there



are splines joining the sides and end banding, but not the top or bottom and end banding. This is because the splines serve only to index the sides to the previously end banded top during the cabinet assembly, and are not important from a strength standpoint. Splines were not necessary to mount parts G to the top and bottom since waxed clamp blocks are employed instead. The clamp blocks are positioned on both ends of the top and bottom panels, and C-clamps are then used to anchor these waxed blocks, which serve to flush the edges of the end molding with the top and bottom panels. Bar clamps are utilized for the clamping pressure across the length of

these panels.

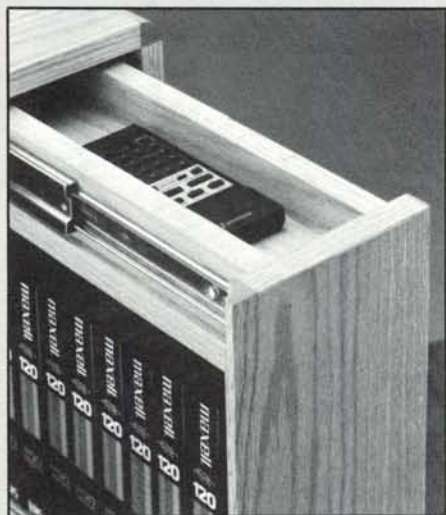
While the $\frac{3}{4}$ in. square corner end banding on parts A and B is rounded only after final assembly of the cabinet, the $\frac{3}{4}$ in. square pull banding on part R can have the $\frac{1}{2}$ in. radius cove finger pull recess established as soon as the work is out of clamps.

Next, rout the spline grooves in parts C and D. Then rout the corresponding grooves in parts A and B (for the divider spline) and in the $\frac{3}{4}$ in. square corner end banding (for the side splines). Note that the divider section, and therefore the grooves for the divider section splines, must reflect the fact that the divider is stepped back $\frac{3}{4}$ in. from the front edge of the cabinet.

Rabbet the right side and the divider $\frac{1}{4}$ in. by $\frac{3}{8}$ in., as shown, to accept the plywood cabinet back (U).

Next, lay out and drill the holes in the divider and the left side that will accept the shelf pin sleeves (BB). The spacing for these holes is shown in the side section AA. Cut the sleeves to length, epoxy them into the holes, sand flush, and then use a countersink to apply a slight chamfer to the sleeve's inside perimeter (see shelf support detail). Also at this time, lay out the pilot hole locations for the screws that will mount the drawer slides, as shown in the side section AA. It is important to drill these pilot holes now, since ac-

(continued on next page)



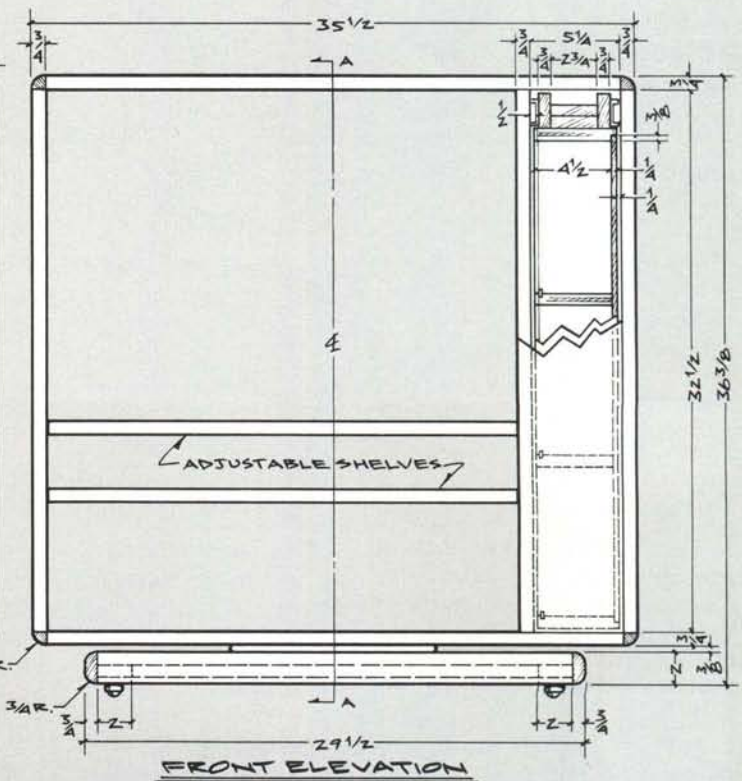
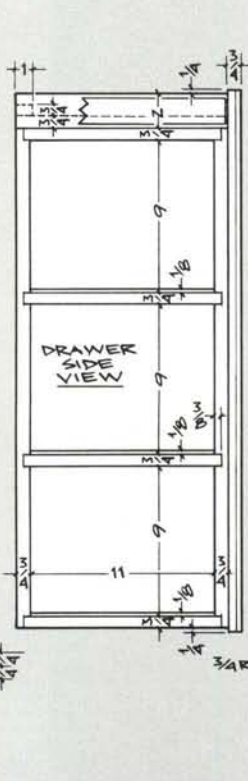
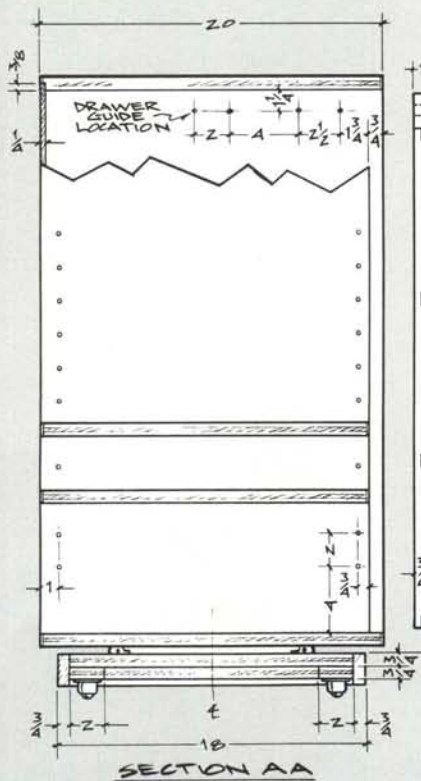
Bill of Materials (all dimensions actual)							
Part	Description	Size	No. Req'd.	Part	Description	Size	No. Req'd.
A	Top	$\frac{3}{4} \times 19\frac{1}{4} \times 34$	1	T	Drawer Back	$\frac{1}{4} \times 11\frac{1}{4} \times 29\frac{1}{4}$	1
B	Bottom	$\frac{3}{4} \times 19\frac{1}{4} \times 34$	1	U	Cabinet Back	$\frac{1}{4} \times 6 \times 33\frac{1}{4}$	1
C	Side	$\frac{3}{4} \times 19\frac{1}{4} \times 32\frac{1}{2}$	2	V	Mount Assembly Bottom	$\frac{3}{4} \times 2\frac{1}{4} \times 12\frac{1}{2}$	1
D	Divider	$\frac{3}{4} \times 19 \times 32\frac{1}{2}$	1	W	Mount Assembly Side	$\frac{3}{4} \times 2 \times 12\frac{1}{2}$	2
E	Shelf	$\frac{3}{4} \times 19 \times 27\frac{1}{2}$	2	X	Mount Assembly Spacer	$\frac{3}{4} \times 1 \times 2\frac{1}{2}$	1
F	Edge Banding	$\frac{1}{8} \times \frac{3}{4}$ stock	as needed	Y	Drawer Guide Block	$\frac{1}{2} \times \frac{3}{4} \times 3$	1
G	End Banding (corner)	$\frac{3}{4} \times \frac{3}{4} \times 20$	4	Z	Drawer Slide	Accuride® Full-extension*	1 pair
H	Base Top	$\frac{3}{4} \times 16\frac{1}{2} \times 28$	1	AA	Lazy Susan Bearing	12 in. dia.*	1
I	Front/Back Cleat	$\frac{3}{4} \times 2 \times 24$	2	BB	Shelf Pin Sleeve	$\frac{1}{4}$ in. O.D. $\times$ $\frac{1}{2}$ in. long brass tube**	44
J	Side Cleat	$\frac{3}{4} \times 2 \times 16\frac{1}{2}$	2				
K	Base Front/Back	$\frac{3}{4} \times 2 \times 28$	2	CC	Shelf Pin	$\frac{3}{16}$ in. dia. $\times$ 1 in. long brass rod**	44
L	Base Side	$\frac{3}{4} \times 2 \times 18$	2				
M	Drawer End	$\frac{3}{4} \times 4\frac{1}{2} \times 30$	2	DD	Ball Caster	1 in. dia.*	4
N	Drawer Top	$\frac{3}{4} \times 4\frac{1}{2} \times 11\frac{1}{4}$	1				
O	Drawer Bottom	$\frac{3}{4} \times 4\frac{1}{2} \times 11\frac{1}{4}$	1				
P	Drawer Shelf	$\frac{3}{4} \times 4\frac{1}{2} \times 11\frac{1}{4}$	2				
Q	Tape Stop	$\frac{1}{4} \times \frac{1}{2} \times 11$	3				
R	Drawer Face	$\frac{3}{4} \times 5\frac{1}{8} \times 32\frac{1}{4}$	1				
S	Pull Banding	$\frac{3}{4} \times \frac{3}{4} \times 32\frac{1}{2}$	1				

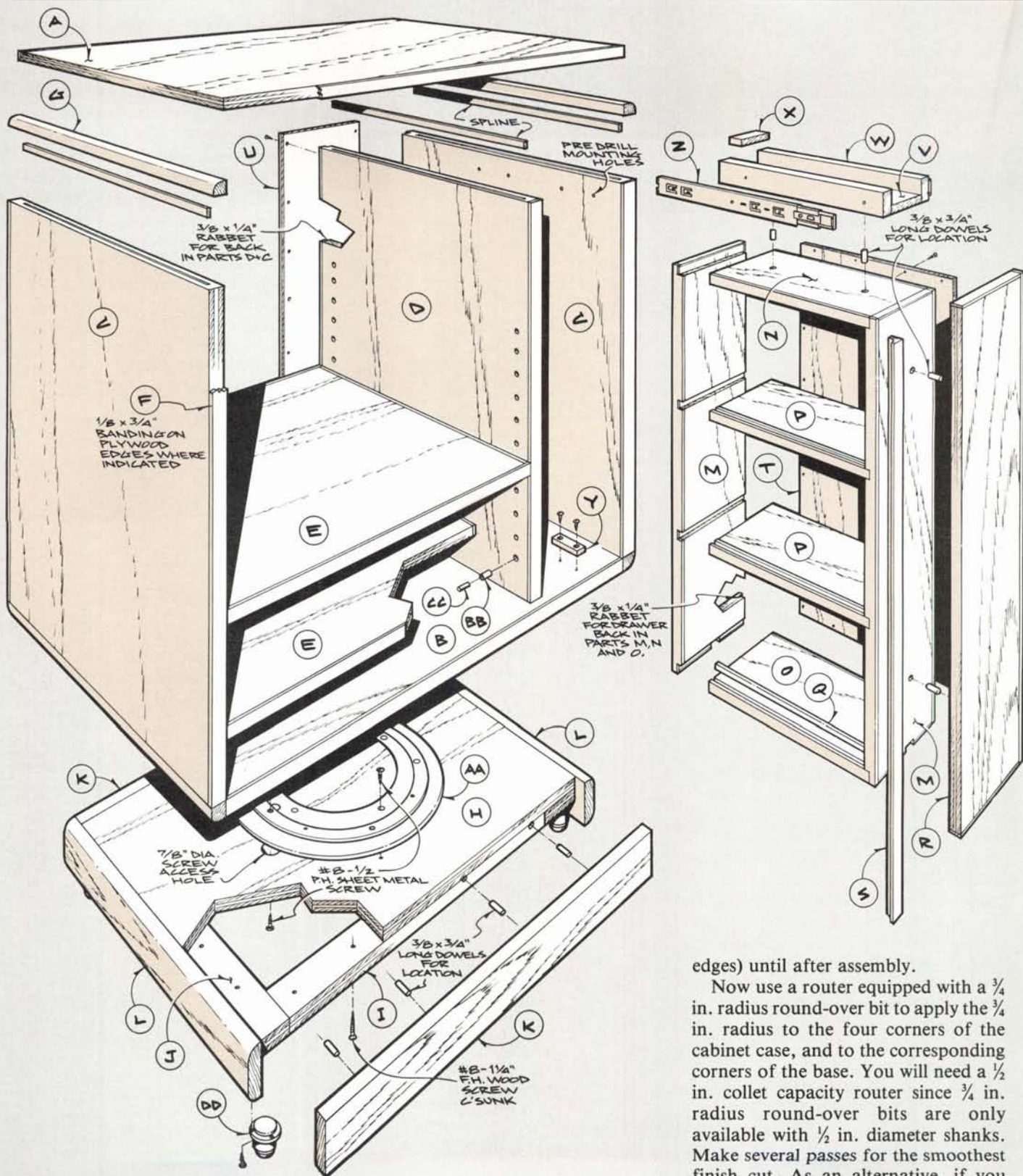
*These parts available from: The Woodworkers' Store, 21801 Industrial Blvd., Rogers, MN 55374. Accuride® slides are part no. D7510, \$14.65/pr.; 12 in. dia. lazy susan bearing is part no. 4004, \$5.95; 1 in. dia. ball caster is part no. C3106, \$13.50/four.

**These parts available from: Allcraft Tool & Supply Co., Inc., 100 Frank Rd., Hicksville, NY 11801. $\frac{1}{4}$ in. O.D. brass tube is \$90/ft. (you need 2 ft.); $\frac{3}{16}$ in. dia. brass rod is \$80/ft. (you need 4 ft.).

*These parts available from: The Woodworkers' Store, 21801 Industrial Blvd., Rogers, MN 55374. Accuride® slides are part no. D7510, \$14.65/pr.; 12 in. dia. lazy susan bearing is part no. 4004, \$5.95; 1 in. dia. ball caster is part no. C3106, \$13.50/four.

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cess for a drill will be difficult after assembly.

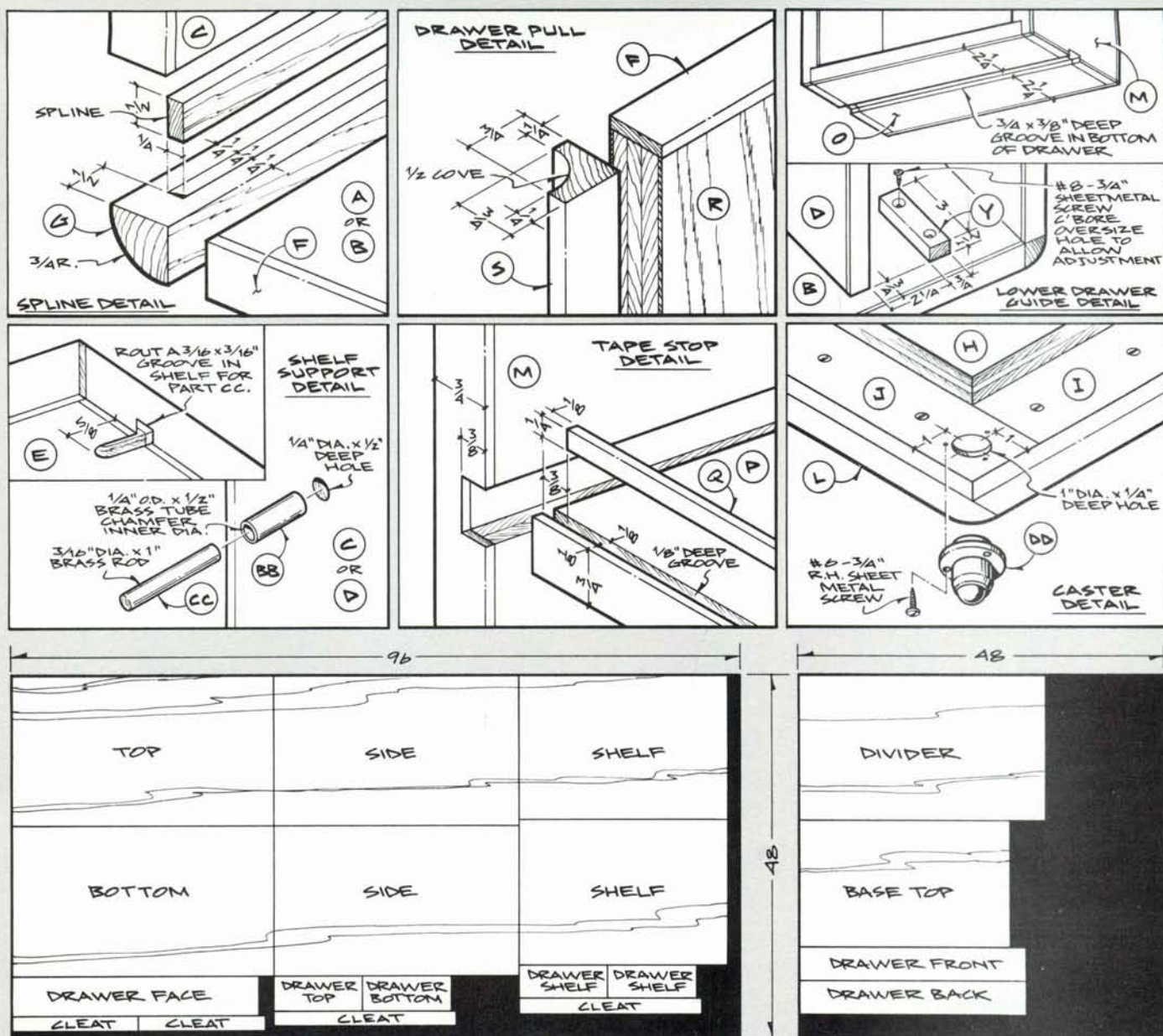
Now final sand all inside surfaces. This is an important step at this time, because of the limited access after assembly. After cutting the $\frac{1}{4}$ in. by $\frac{1}{2}$ in. splines to size (see spline detail), assemble the cabinet case.

Next, assemble the base. As il-

lustrated, the base consists of solid $\frac{3}{4}$ in. stock (parts K, L) glued up around the base top (H), with cleats (I, J) for additional strength and as a mount for the casters (DD). The dowels are not for strength, but serve instead to index the solid stock to the plywood during clamping. The $\frac{3}{4}$ in. radius is not applied to the base sides (top and bottom

edges) until after assembly.

Now use a router equipped with a $\frac{3}{4}$ in. radius round-over bit to apply the $\frac{3}{4}$ in. radius to the four corners of the cabinet case, and to the corresponding corners of the base. You will need a $\frac{1}{2}$ in. collet capacity router since $\frac{3}{4}$ in. radius round-over bits are only available with $\frac{1}{2}$ in. diameter shanks. Make several passes for the smoothest finish cut. As an alternative, if you don't have a $\frac{1}{2}$ in. collet router, you may establish the round-overs using a hand plane and sanding block. Pencil the $\frac{3}{4}$ in. radius on both ends, and rough plane to the line. Then use a section of $\frac{3}{4}$ in. cove molding with sandpaper to final sand to the $\frac{3}{4}$ in. radius round-over. Sand the cove first (use a short section of $\frac{3}{4}$ in. radius quarter-



CUTTING DIAGRAM

round wrapped with sandpaper) to increase the cove radius as needed to compensate for the thickness of the sandpaper.

Now cut the various rabbets and dadoes in the drawer parts, sand the inside surfaces, and assemble the drawer (parts M, N, O, and P). Note that a tape stop strip (Q) is glued into parts P and O (see tape stop detail). Mount the plywood drawer back (T), and then cut the $\frac{3}{8}$ in. deep by $\frac{3}{4}$ in. wide groove in the drawer bottom, as shown in the drawer bottom detail. Now mount the corresponding drawer guide block (Y) in the cabinet bottom (see detail for location). This guide block rides in the drawer bottom groove, and thereby keeps the drawer from bumping the case sides as it is opened and closed.

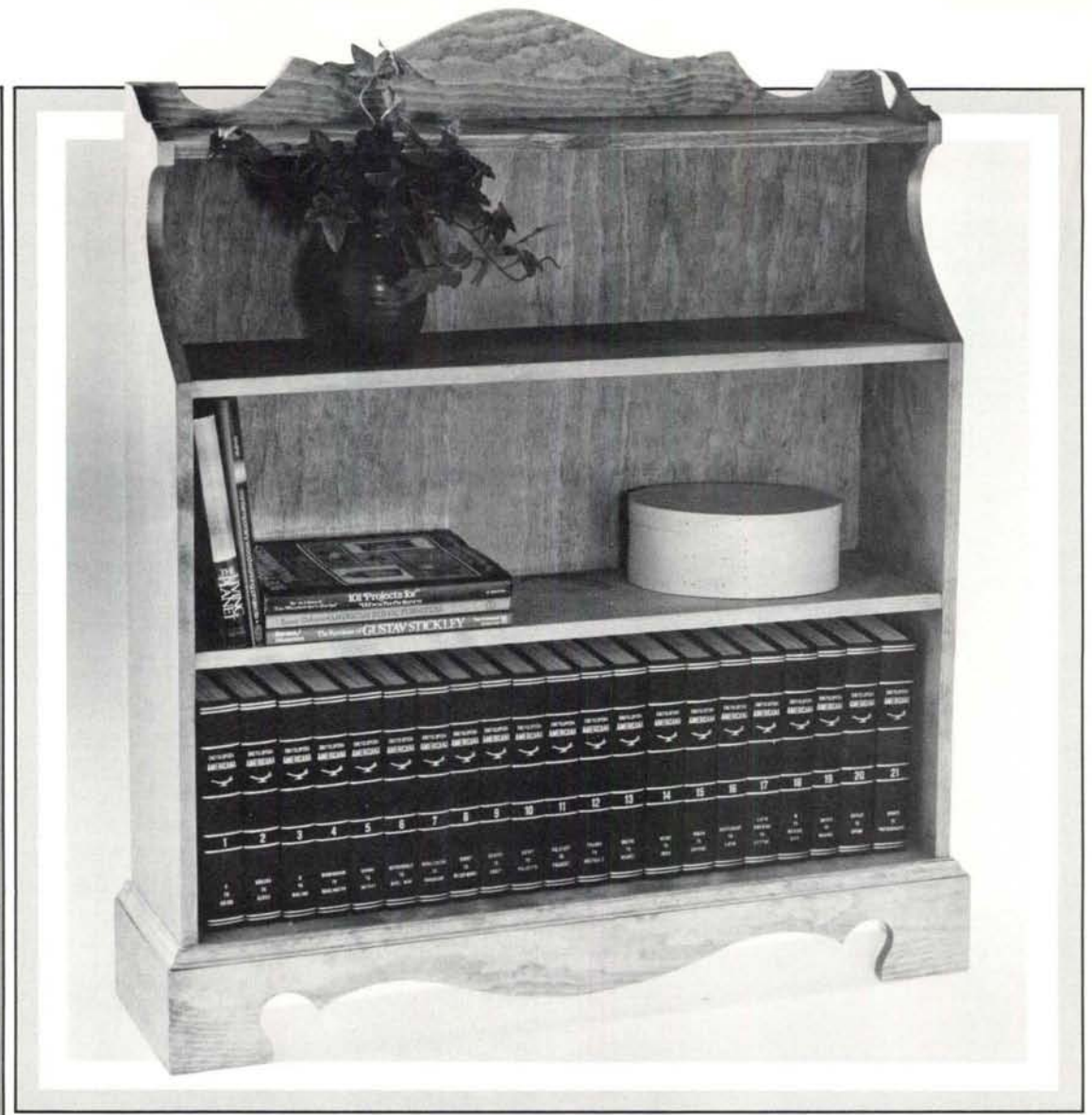
Construct the drawer slide mounting assembly (parts V, W, and X) and then glue to the drawer top using dowels to index, as shown. Now attach the drawer slides (Z) and "hang" the drawer. The holes in the drawer slides are purposely made oversize to permit fine-tuning and adjustment. If the drawer binds, chances are the slides are not parallel, and will require adjustment. Once the drawer is mounted, fit and mount the drawer face.

Route the shelves as shown in the shelf support detail so they will fit over the brass shelf pins, effectively anchoring them in place.

The lazy susan bearing (AA) is mounted by first screwing the lower plate of the bearing to the base. An access hole drilled through the base will

allow a screwdriver to reach the screws that will be used to fasten the upper plate of the lazy susan bearing to the cabinet bottom. Location of this access hole will depend on the brand of lazy susan bearing you purchase. We strongly recommend a 12 in. diameter bearing for stability. The 12 in. model specified has a 1,000-pound rating, which should be more than adequate. The casters (DD), which are mounted as shown in the caster detail, complete the base assembly.

Final sanding and finishing of the component assemblies (cabinet, base, and drawer) are completed before these parts are mounted. We used only Tung oil, applying three generous coats, rubbed out with 0000 steel wool between applications. W&J



Early American Pine Bookcase

This classic Early American style bookcase will be a handsome addition to most any room. While we used pine for a traditional look, cherry, maple or walnut would also be excellent choices.

Where possible we try to present project designs that can be constructed from commonly available board stock with a minimum of waste. In the case of this bookcase, all the parts except for the plywood back are obtained from $\frac{3}{4}$ in. thick common pine boards. The two sides (A) and the bottom shelf (B) are cut from a single $\frac{3}{4}$ in. by 9 $\frac{1}{4}$ in. by 10 ft. long board (1 $\times$ 10 $\times$ 10), the two middle shelves (C) are cut from a $\frac{3}{4}$ in. by 9 $\frac{1}{4}$ in. by 6 ft. long board (1 $\times$ 10 $\times$ 6), the top shelf and top (D and E) are cut from a $\frac{3}{4}$ in. by 7 $\frac{1}{4}$ in. by 6 ft. long board (1 $\times$ 8 $\times$ 6), and the

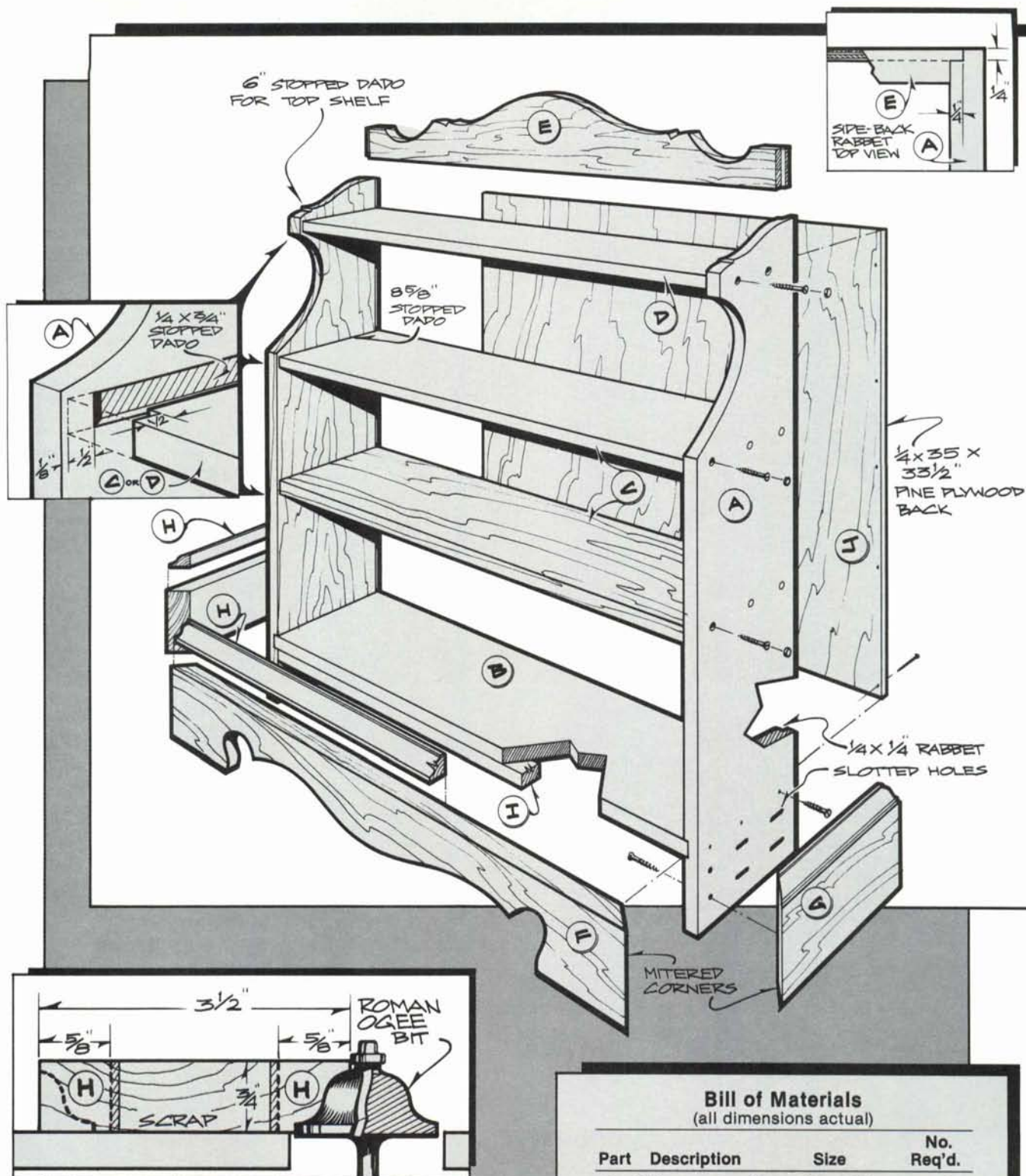
base parts (F and G) are cut from a $\frac{3}{4}$ in. by 5 $\frac{1}{2}$ in. by 6 ft. long board (1 $\times$ 6 $\times$ 6). A $\frac{3}{4}$ in. by 3 $\frac{1}{2}$ in. by 4 ft. long board (1 $\times$ 4 $\times$ 4) will provide sufficient stock for the base molding (H) and cleat (I). The router equipped with a $\frac{1}{4}$ in. radius Roman ogee bit can be used to create the base molding, but if you don't have the necessary ogee profile bit, a similar $\frac{3}{4}$ in. molding can be purchased at your local lumberyard.

The two-step illustration indicates the procedure for cutting the ogee molding. Start by mounting the ogee bit in the router table, setting the bit height as shown so the ball bearing guide will gauge off the stock. Now take the 3 $\frac{1}{2}$ in. wide (1 $\times$ 4) pine board and establish the ogee on either side. One side will provide the front section of ogee molding, while the other side

will provide the two side sections. As with all router cuts where you are removing a substantial amount of stock, you will need to make the cut in several passes. If you attempt to establish the full depth in a single pass, the router will bog down and the cut will be rough. Additionally, you will probably burn or ruin the bit.

Next, move the stock to the table saw, set the fence for a $\frac{3}{8}$ in. distance, and pass the stock through using a push stick. Use an extra wide push stick, and bear tight against the fence. The saw blade will cut through the end of the push stick. Note that the blade height is about $\frac{1}{2}$ in.

The stopped dados in the sides to accept parts C and D, the through dado to accept part B, and the rabbet along the back inside edge of the sides



Bill of Materials

(all dimensions actual)

Part	Description	Size	No. Req'd.
A	Side	3/4 x 9 1/4 x 40 3/4	2
B	Bottom Shelf	3/4 x 9 1/4 x 35	1
C	Middle Shelf	3/4 x 8 7/8 x 35	2
D	Top Shelf	3/4 x 6 1/4 x 35	1
E	Top	3/4 x 5 x 35	1
F	Base Front	3/4 x 4 1/2 x 37 1/2	1
G	Base Side	3/4 x 4 1/2 x 10	2
H	Base Molding	5/8 x 3/4 Roman Ogee	5 ft.
I	Cleat	3/4 x 1 x 34 1/2	1
J	Back	1/4 x 35 x 33 1/2	1

to accept the top (E) and back (J) are all cut *before* the side profile is laid out and cut.

We made a simple jig (see illustration) to guide the router for these stopped dados. The jig is made oversize so it will accomplish the dado cuts needed for this project, and so that it may also be used for any project that requires stopped dados up to 12 in. long. Note that the distance the fence is positioned from the dado slot will depend on the size of your router. Mark an index line to denote the end of the stopped dados. As noted on the exploded view, the stopped dado for the top shelf is 6 in. long, while the stopped dados for the middle shelves are 8 $\frac{3}{8}$ in. long. Both these lengths are from the back edge of the shelf, before the rabbet for the back is cut.

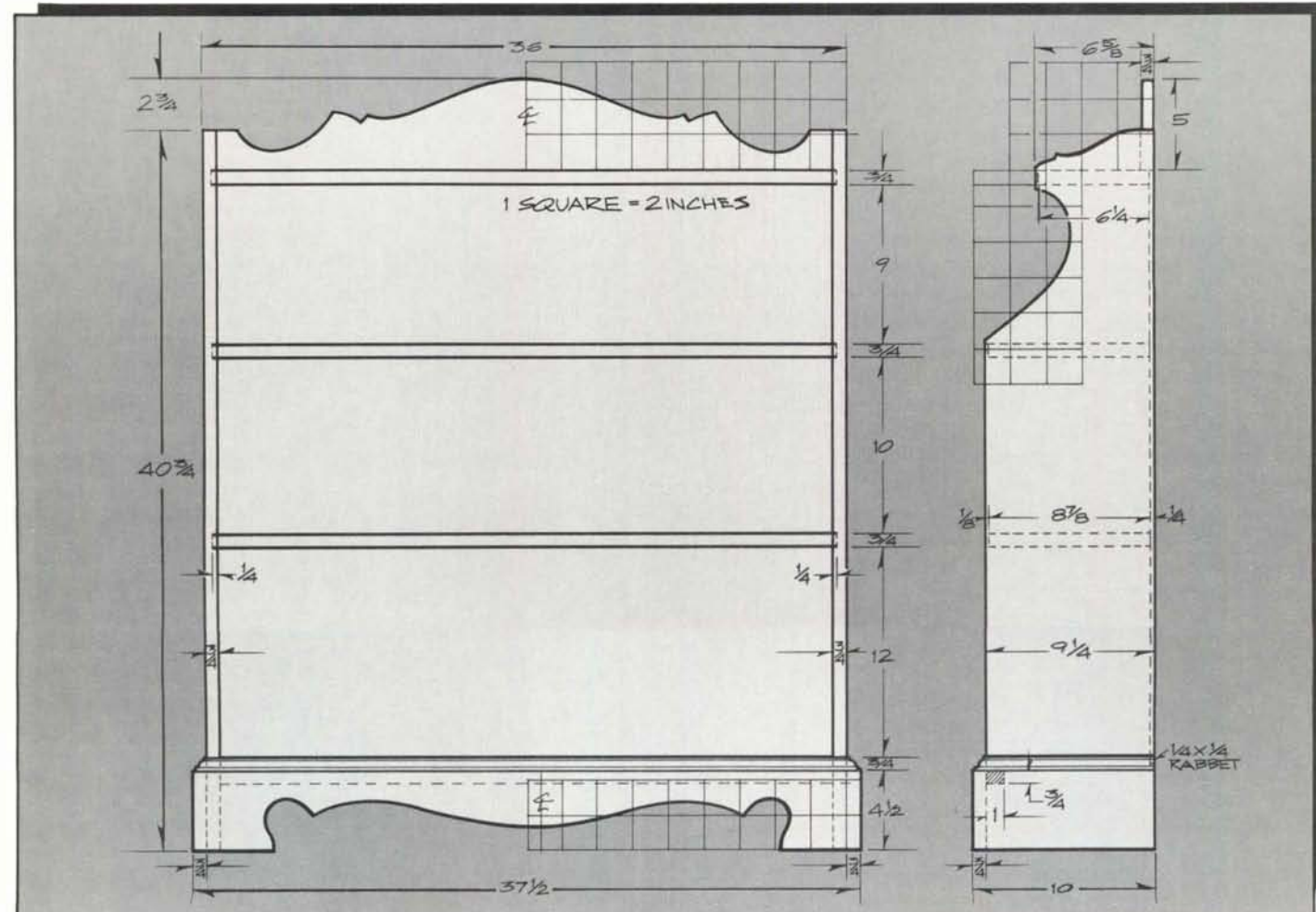
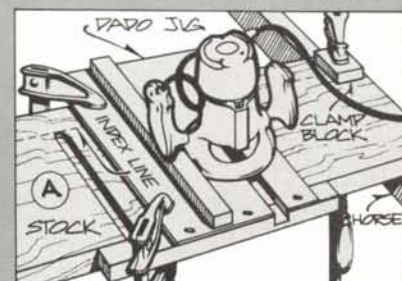
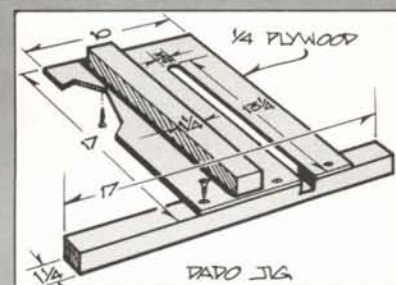
Notch the shelves as shown in the detail to fit the stopped side dados (note that shelves C and D are inset $\frac{1}{8}$ in. from the front edge of the sides). Rabbet the ends of the top, and now lay out the profiles of the top and sides as shown in the grid patterns, before cutting out with either a saber or band saw. Next, assemble parts A, B, C, D, and E. Cut the $\frac{1}{4}$ in. thick plywood

back (J) to fit, and use countersunk and plugged screws as illustrated to lock everything together. If the plywood back is cut accurately, it will serve to square up the bookcase during assembly.

Next, apply the cleat (I) which serves to back up the base front. The base front (F) and base sides (G) should be mitered and test-fitted before the base profile is laid out and cut. Note that slotted holes are drilled through the sides to allow for movement across the grain. While the base front is glued in place, the base sides are glued at the miter, but screwed through the sides as shown. The slotted holes will allow the sides to expand and contract with seasonal changes in humidity.

Cut and fit the base molding (H) before final sanding and finishing. Use glue and finishing nails to join the front section of base molding. For the two side sections, however, only use finishing nails so that the sides can expand and contract. Our favorite stains for pine are Minwax Colonial Maple and Fruitwood, both of which produce an excellent tone on pine. If you use a hardwood, use only a good penetrating oil.

Wvj



Pine Trash Container

Even with all the best furniture and an attractive decor, there's usually one aspect of the typical home's accessories that is neglected. Yes, the lowly trash container or wastebasket! While this container may not set the interior design world on its ear, it certainly does dress up and effectively conceals the 13-gallon wastebasket hidden within.

The design of the trash container is simple and straightforward, and whether it is used for garbage in the kitchen, or as a wastebasket in the bathroom, office or playroom, the function is the same. As illustrated in the front view, the front, back and sides of the container are slightly lower than the top edge of the Rubbermaid wastebasket inside. This design enables the inner frame to compress a polypropylene liner (garbage bag) against the edge of the wastebasket, preventing the situation that commonly plagues trash containers and wastebaskets — the dreaded liner collapse. Without getting too technical, we can assure you that the system works well.

You will want to start this project by gluing up stock for the front and back (A and B), the sides (C) and the lid (K). Three-quarter inch thick boards glued up 19 in. wide by 76 in. long will provide sufficient stock. After cutting these parts to length and width, incise the wheat carving on the front. The best way to lay out the wheat design is to use the full-size pattern provided, insert a layer of carbon paper between the pattern and the wood, and then trace the pattern onto the stock. The wheat carving can then be executed as described in the Special Techniques feature on page 22. Be sure to note the grain direction of parts A-C, and lay out and cut as shown.

Use the table saw to establish the ¼

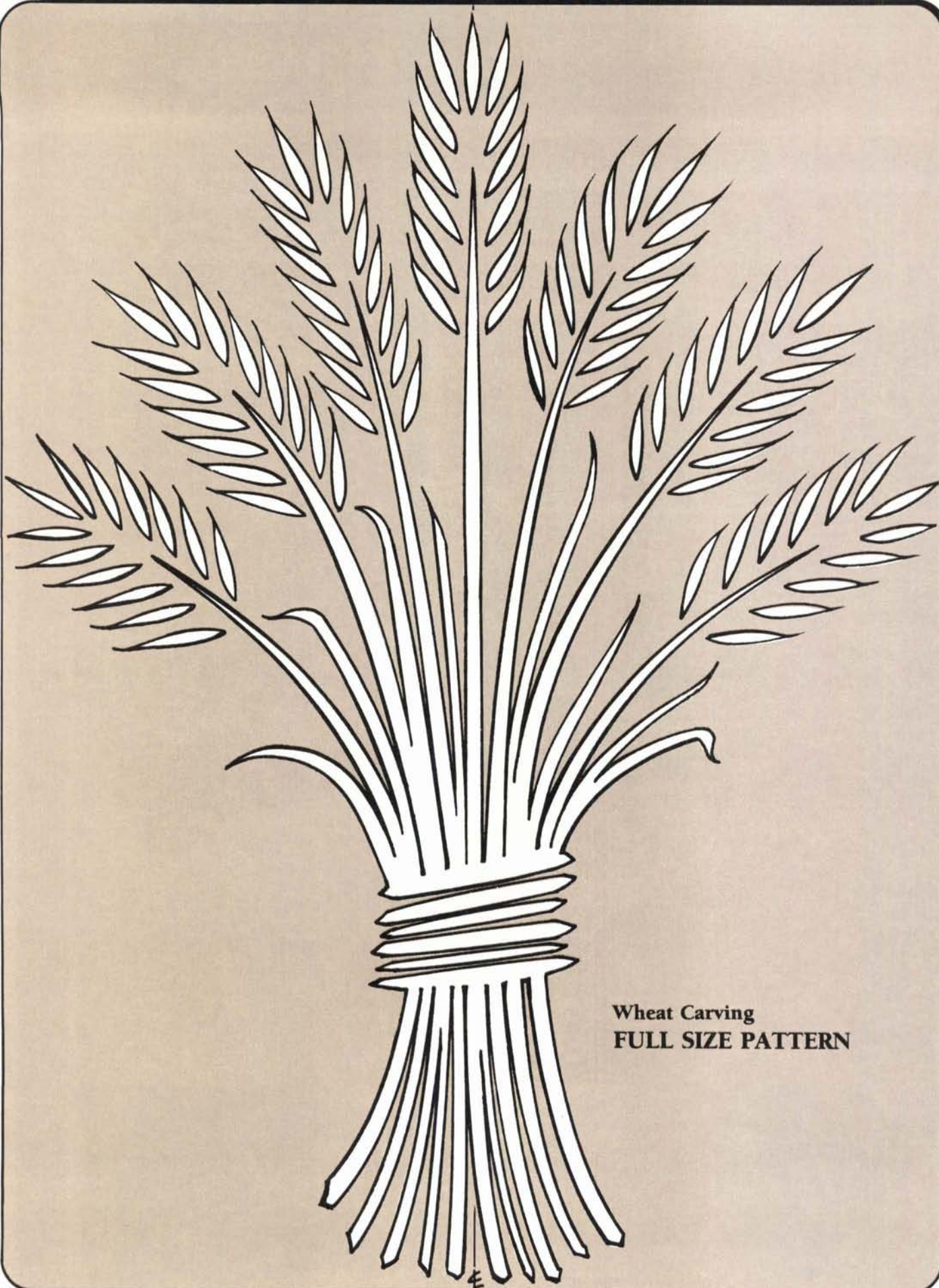


in. deep by ½ in. wide dado in parts A, B, and C, and to rabbet the front and back to accept the sides. Drill two ¾ in. diameter holes 3¼ in. on center, and then saber saw out the area between the holes to make the hand cutouts in the sides. Then cut the ½ in. thick plywood bottom (D) to size, glue and assemble the front, back, and sides around the bottom, and screw and plug as indicated. Cut the base parts (E and F) to length and width, rabbet the base front/back, and saber or band saw the 1 in. radius profile in these parts, before assembling with screws and plugs around the container box.

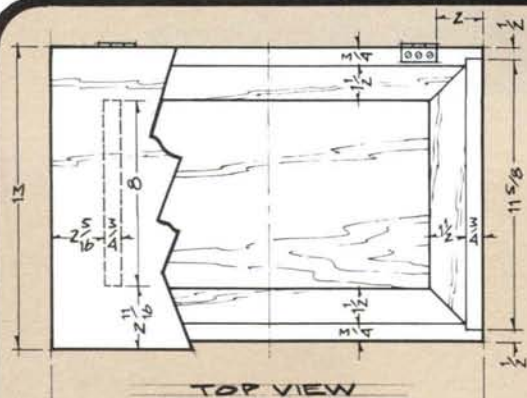
The top frame construction (parts I

and J) is identical to the base. After assembling the top frame, cut and fit, and then glue and screw in place the mitered inner frame, consisting of parts G and H. Parts E, F, G, H, I, and J can all be obtained by crosscutting and ripping a single ¾ in. by 7¼ in. by 8-foot long (1 × 8 × 8) board. Next, apply a ⅝ in. radius round-over and a ⅝ in. radius cove detail to the upper and lower front edges of the lid (K). Then reinforce the lid against cupping with several ¾ in. by ¾ in. by 8 in. cleats (L), before mounting the lid to the top frame with a pair of hinges (M).

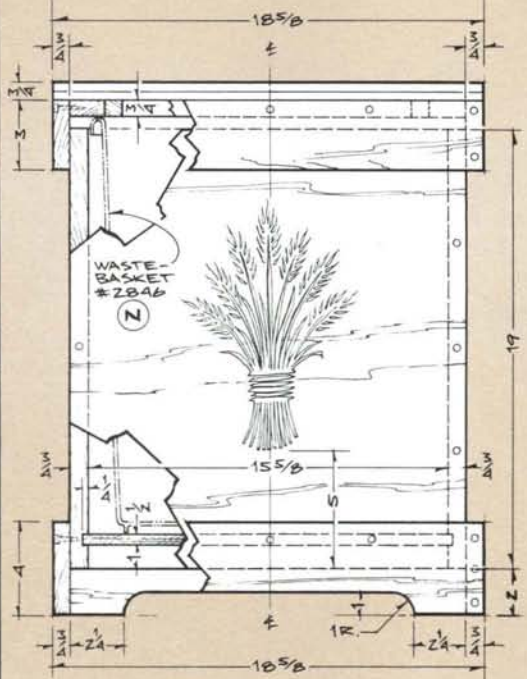
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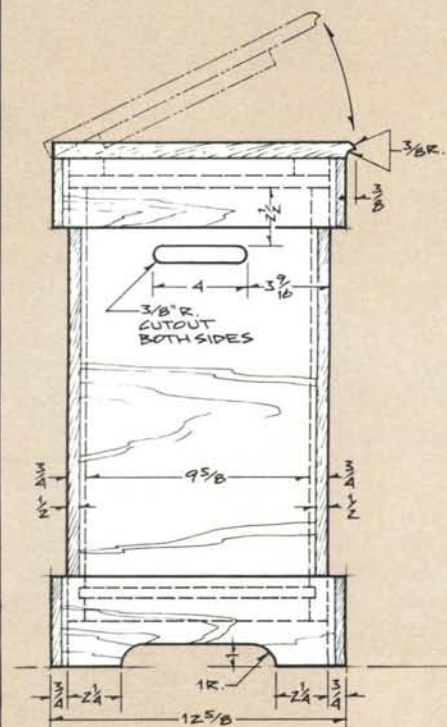
**Wheat Carving
FULL SIZE PATTERN**



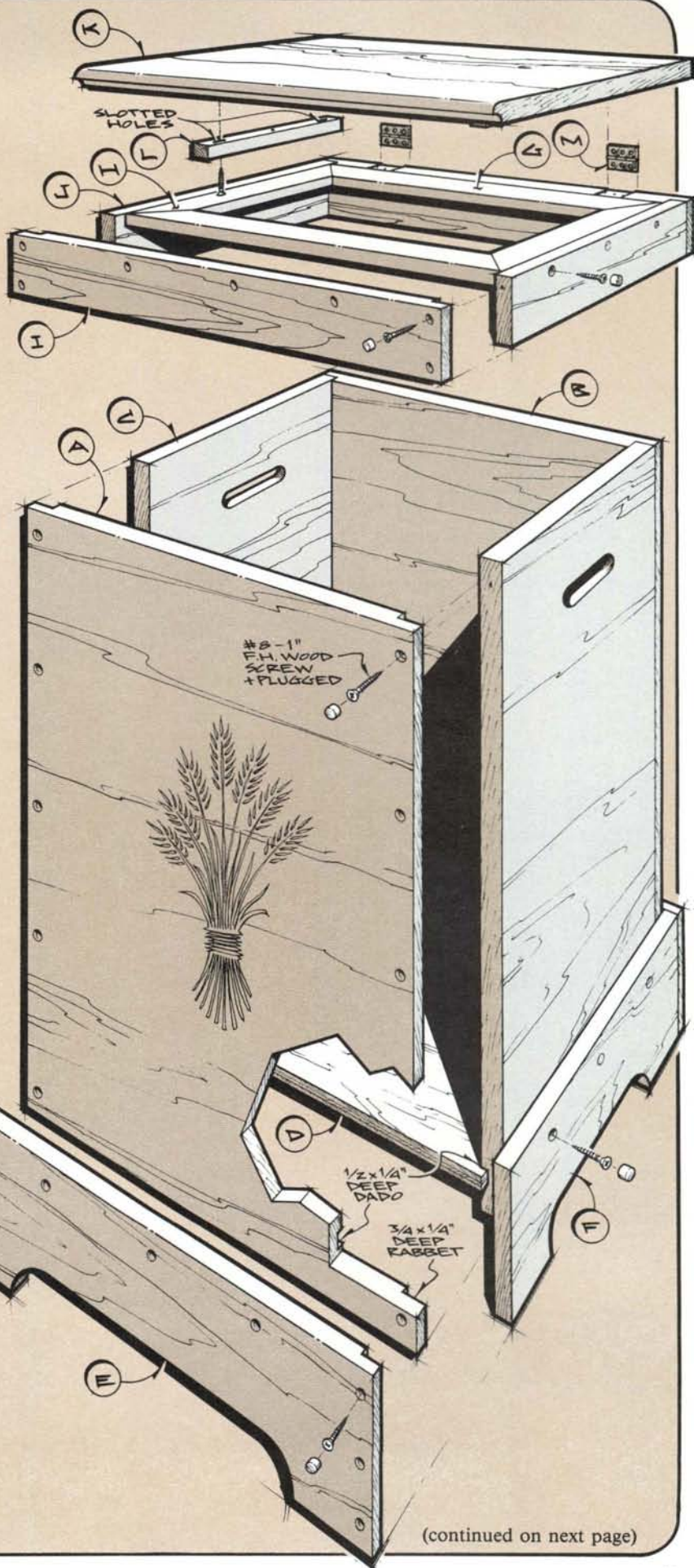
TOP VIEW



FRONT VIEW



LEFT SIDE VIEW

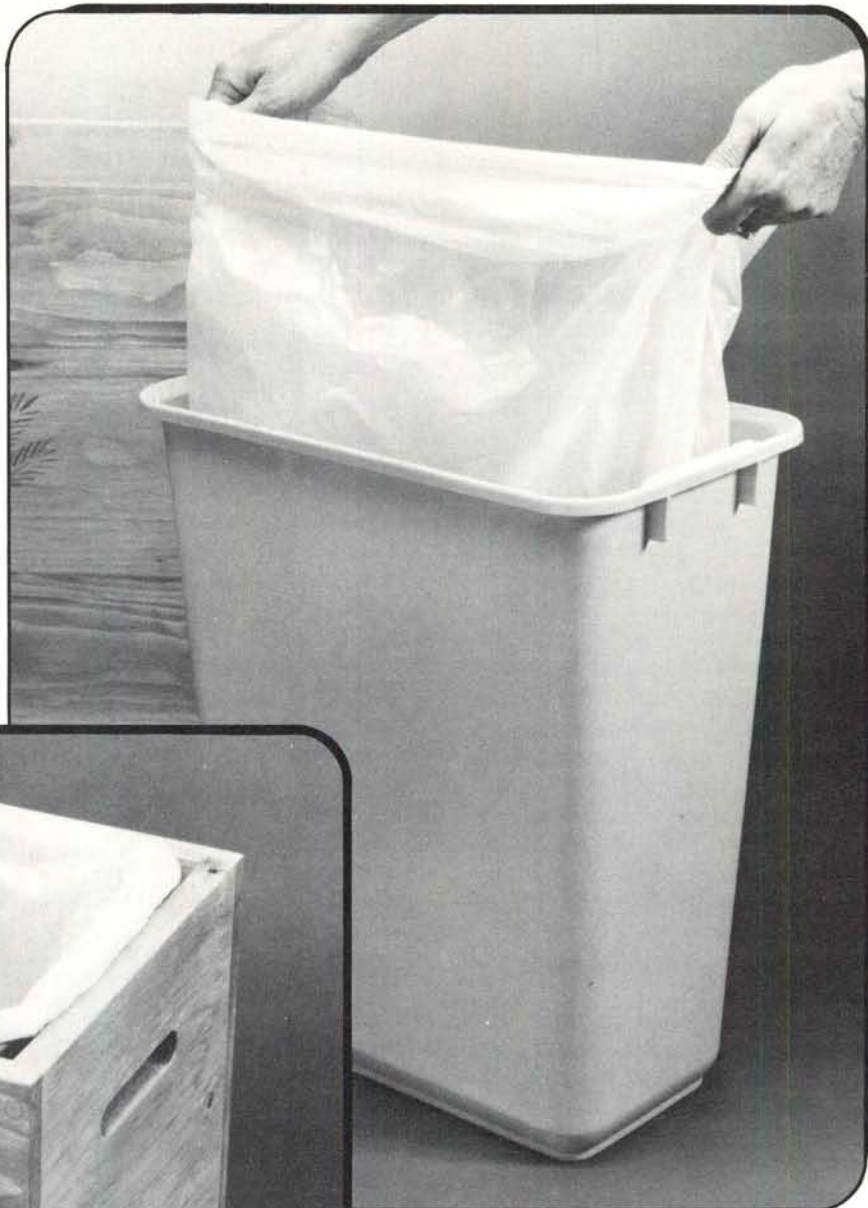


(continued on next page)

Bill of Materials
(all dimensions actual)

Part	Description	Size	No. Req'd.
A	Front	$\frac{3}{4} \times 19 \times 17\frac{1}{8}$	1
B	Back	$\frac{3}{4} \times 19 \times 17\frac{1}{8}$	1
C	Side	$\frac{3}{4} \times 19 \times 10\frac{1}{8}$	2
D	Bottom	$\frac{1}{2} \times 10\frac{1}{8} \times 16\frac{1}{8}$	1
E	Base		
	Front/Back	$\frac{3}{4} \times 4 \times 18\frac{5}{8}$	2
F	Base Side	$\frac{3}{4} \times 4 \times 11\frac{5}{8}$	2
G	Inner Frame		
	Front/Back	$\frac{3}{4} \times 1\frac{1}{2} \times 17\frac{1}{8}$	2
H	Inner Frame		
	Side	$\frac{3}{4} \times 1\frac{1}{2} \times 11\frac{1}{8}$	2
I	Frame		
	Front/Back	$\frac{3}{4} \times 3 \times 18\frac{5}{8}$	2
J	Frame Side	$\frac{3}{4} \times 3 \times 11\frac{5}{8}$	2
K	Lid	$\frac{3}{4} \times 13 \times 18\frac{5}{8}$	1
L	Cleat	$\frac{3}{4} \times \frac{3}{4} \times 8$	2
M	Hinge	$1\frac{1}{2} \times 2$	1 pair
N	Wastebasket	Rubbermaid no. 2846 (13 gal.)*	1

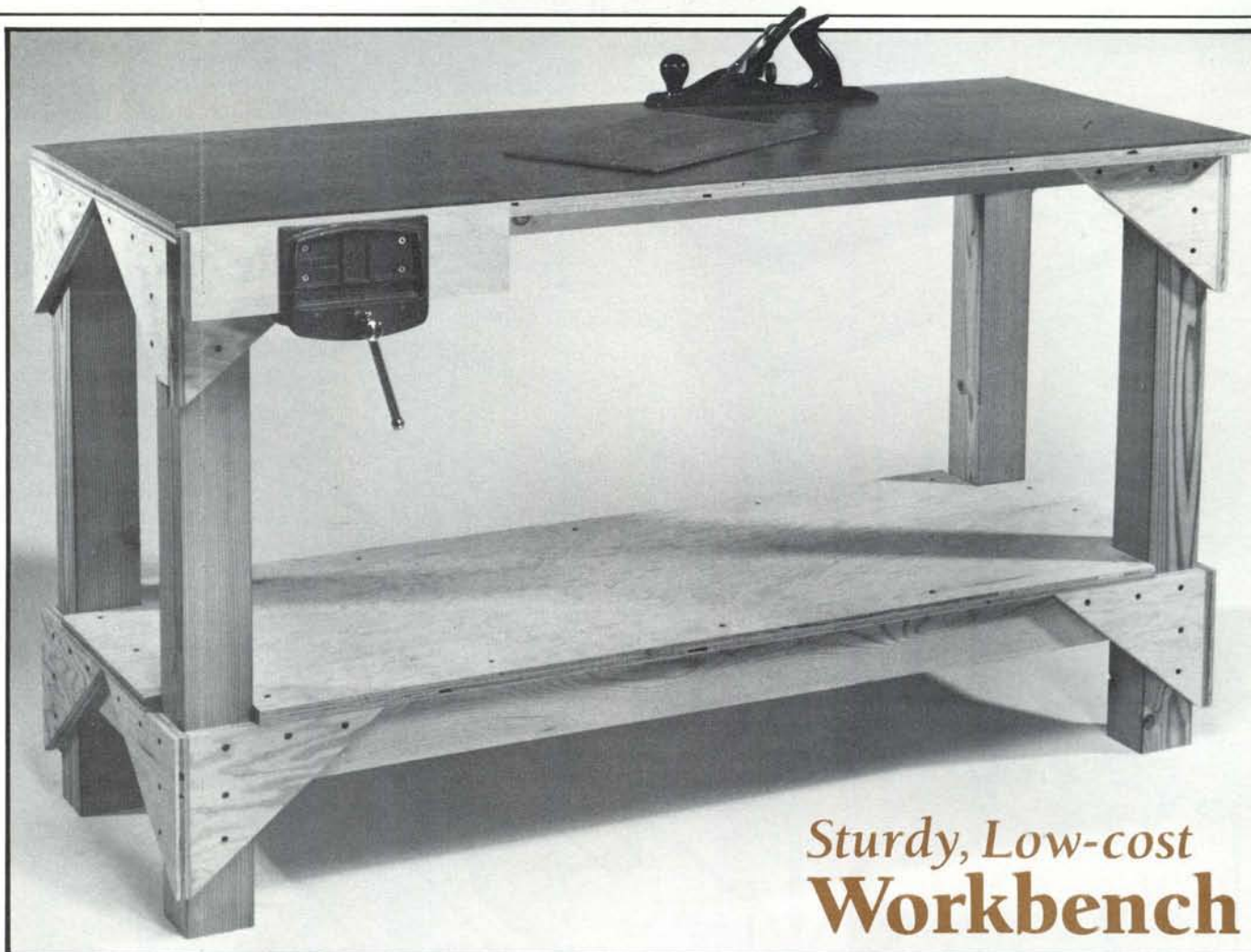
*The no. 2846 Rubbermaid wastebasket is a common size, and is available at most hardware and large department stores (housewares dept.). Cost is about \$6.50.



To insert the wastebasket with its plastic liner, simply remove the entire top frame/lid assembly and drop the wastebasket in place. Make certain that the plastic bag liner is folded down over the lip of the wastebasket, so the container top will serve to effectively lock it in place.

After final sanding, we finished our container with Minwax Provincial Pine Stain, followed by four coats of a good quality furniture wax.

Editor's Note: While we considered a variety of designs for this project, our final decision was based on the ease with which a plastic wastebasket could be removed and hosed clean if necessary. Experience has taught us that plastic garbage and trash bags, no matter how many mils thick, somehow inevitably tear, puncture, and leak. The addition of the wastebasket will serve to effectively protect the wood from moisture, leaks and stains. W&J



Sturdy, Low-cost Workbench

If nothing else, a good workbench must be sturdy. While it's nice to have one with lots of drawers for storage, or with a tool well or a fancy vise, if it isn't rock solid you'll forever be aggravated every time you use it. Just try to saw or plane on a rickety bench and we think you'll quickly agree. With sixteen gussets providing reinforcement, this workbench is as sturdy as any you'll find, regardless of price. Not only that, we've simplified the design to make it easy to build, and the construction materials are common lumberyard items that won't cost you an arm and a leg.

We also like the large (10 square foot) top which creates plenty of work area. Note that the top is made up of $\frac{3}{4}$ in. plywood covered with $\frac{1}{4}$ in. thick hardboard. Since the hardboard is secured to the plywood with countersunk flathead woodscrews, it can be easily removed and replaced should the hardboard become worn or damaged.

To make the project you'll need two 6-foot lengths of 4×4 stock (for the legs), two 8-foot lengths and one 10-foot length of 2×4 stock (for the

rails, stretchers, and filler block), one 4×8 sheet of $\frac{3}{4}$ in. thick plywood (for the top, shelf, and gussets), one 4×8 sheet of $\frac{1}{4}$ in. thick hardboard (for the work surface), and two pieces of $\frac{3}{4}$ in. thick by 4 in. wide by $15\frac{1}{2}$ in. long maple for the vise faces. The total cost for all materials (not counting the vise) shouldn't run any more than about \$60.00.

Begin by making the four legs (A), keeping in mind that 4×4 stock actually measures $3\frac{1}{2}$ in. square. If you have one, a radial-arm saw can be used here as it is ideal for cross-cutting long or heavy stock. For $3\frac{1}{2}$ in. thick stock, though, you'll need to make two cuts. Cut halfway through on the first pass, then flip the stock and make a second pass to complete the cut. Make the second cut with care so that it lines up with the first one. A portable circular saw (Skilsaw) can also be used here, but as with the radial-arm saw, you'll need to make two cuts and make sure they line up.

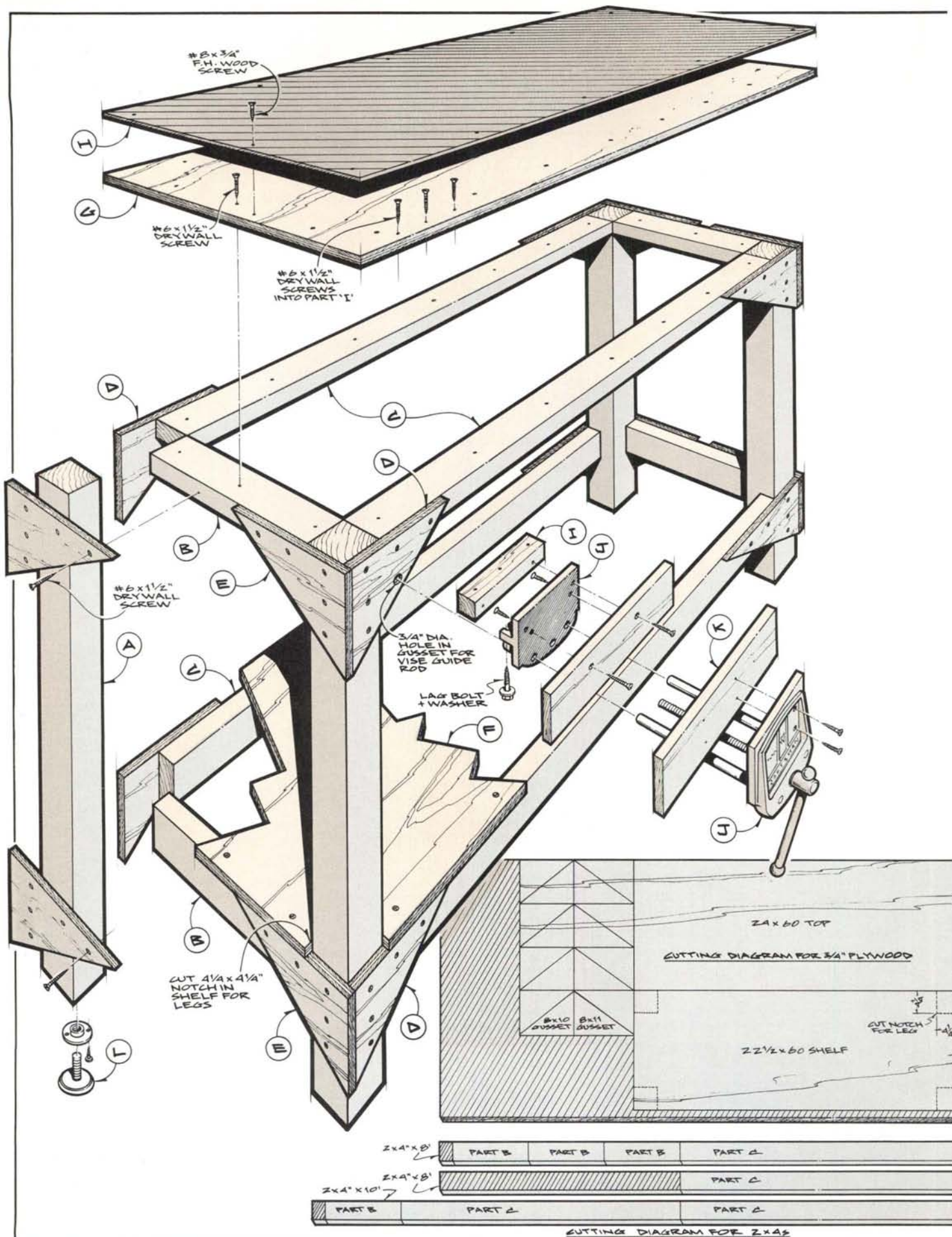
Next, cut the four rails (B) and four stretchers (C) from the 2×4 stock (see cutting diagram). Remember that $2 \times$

4's will actually measure $1\frac{1}{2}$ in. by $3\frac{1}{2}$ in. Cut to the lengths shown in the bill of materials, making sure that the ends are square.

From the 4×8 foot sheet of plywood (see cutting diagram), use the portable circular saw to cut the long and short gussets (D and E), the shelf (F), and the top (G). As shown in the cutting diagram, all 90-degree angles must be cut accurately, so use care here. The notches cut in each corner of the shelf are made using a saber saw.

Begin assembly by joining the short gussets (D) to the legs. Start at the top of one leg and clamp the short gusset so that its top edge is flush with the top edge of the leg, while the vertical edge of the gusset is flush with the vertical edge of the leg. A considerable number of screws are needed to assemble the bench, so to save time we used $1\frac{1}{2} \times$ no. 6 drywall screws and drove them using an electric hand drill fitted with a Phillips head tip. As shown in the exploded view, three screws are used to join each gusset. Since the plywood and legs are made from softwood, the

(continued on next page)



screws can be assembled without having to prebore any holes — just drive them in with the electric drill. Also, it is not necessary to use any glue as the screws provide plenty of strength.

Using this technique, join all four of the short gussets at the top end of each leg. Follow the same procedure to add the short gussets on the lower end of each leg, but first use a square to scribe a reference line across the leg at a point $10\frac{1}{4}$ in. from the bottom. The reference line will serve as a guide when lining up the top edge of the gusset. Once all short gussets have been assembled, the eight long gussets can be added in the same manner. Note (see exploded view) that the long gussets overlap the ends of the short gussets.

Next, assemble the rails (B). Working one at a time, butt a rail against a leg, then align the top surface of the rail so that it is flush with the top edge of the gusset. Use a clamp to hold the rail in place. Check for squareness and, if all looks okay, drive the two screws. Continue until all the rails are assem-

bled to the four legs, then add the four stretchers to complete the frame. Remember, since the gussets provide all the joint strength, the rails and stretchers only need to butt against the legs. No glue or additional reinforcement is necessary.

Install the shelf (F) and secure it to the lower rails and stretchers with $1\frac{1}{2}$ in. $\times$ no. 6 drywall screws. Following this, place the top (G) on the frame so that its front edge overhangs the front edge of the rails by $2\frac{1}{4}$ in., then once again use the $1\frac{1}{2}$ in. $\times$ no. 6 drywall screws to anchor it in place. The work surface (H) can now be added using $\frac{3}{4}$ in. $\times$ no. 8 flathead wood screws. You'll need to countersink the hardboard screws so that they sit just below the surface. Be sure to stagger the flathead screws so they don't hit the dry wall screws below them.

We used a 7 in. capacity Sears Craftsman vise (part no. 5191) which lists in their current Power and Hand Tool mail-order catalog for \$37.99, shipping not included. At our local Sears store, however, we paid \$49.99

(not including tax) for the same vise and were told that catalog prices may vary from retail store prices.

Glue and screw the filler block (I) to the underside of the top and to the face of the short gusset, as shown in the side view. Then bore a $\frac{3}{4}$ in. diameter hole in the gusset, as shown, to accept the vise guide rod. A pair of lag bolts and washers (supplied with the vise) are used to secure the vise (J) to the underside of part I, while two flathead wood screws driven from the inside vise face provide additional strength.

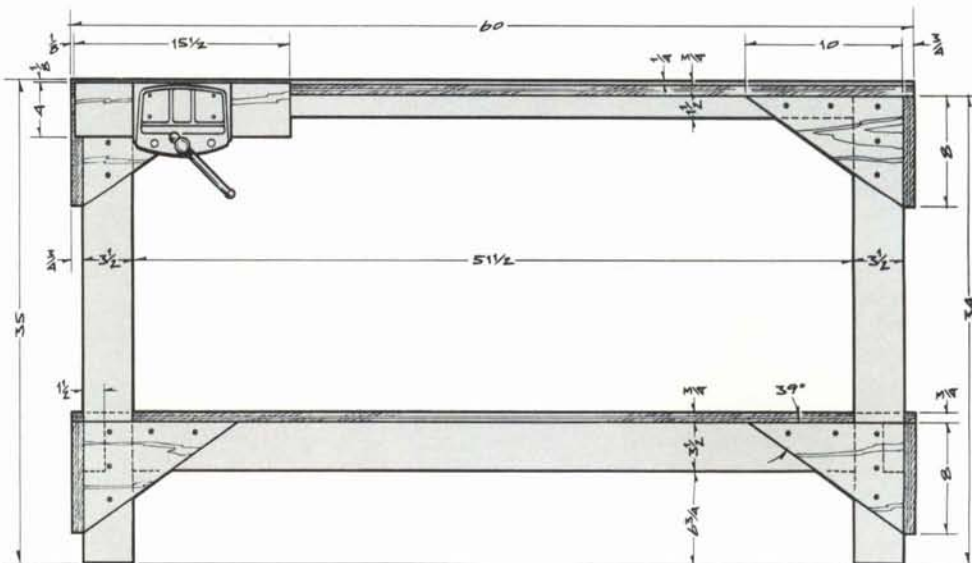
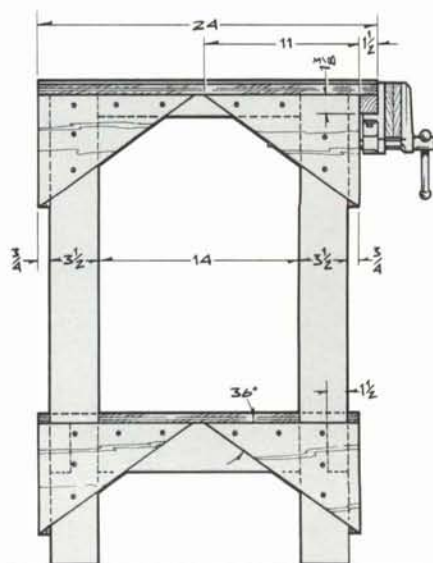
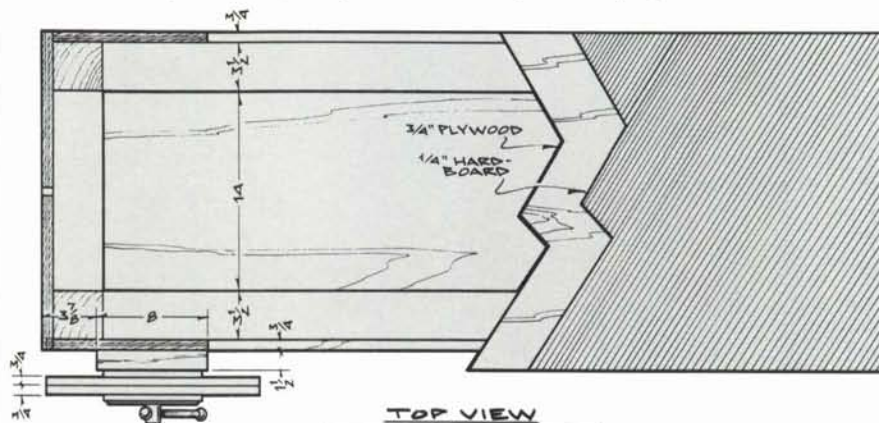
Levelers (L) can be added if your floor is uneven. Most hardware stores carry them, but if not available locally they can be ordered from Woodworker's Supply of New Mexico, 5604 Alameda Place N.E., Albuquerque, NM 87113. They have a heavy-duty leveler that sells for \$1.95 each.

Use a sharp plane or a file to break any sharp corners. A couple of coats of polyurethane varnish will provide a durable final finish. The addition of the two maple vise faces (K) will complete the project. Wvj

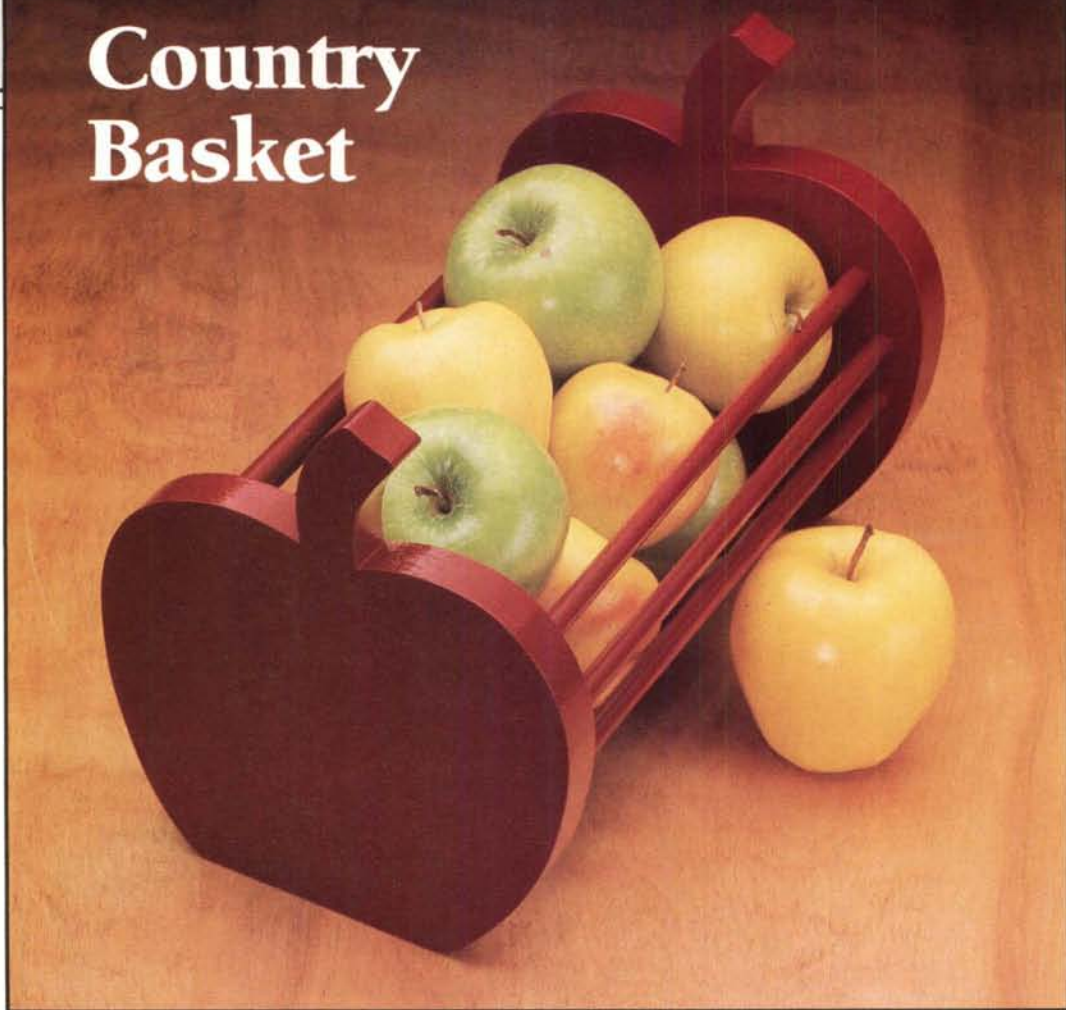
Bill of Materials

(all dimensions actual)

Part	Description	Size	No. Req'd.
A	Leg	$3\frac{1}{2} \times 3\frac{1}{2} \times 34$	4
B	Rail	$1\frac{1}{2} \times 3\frac{1}{2} \times 14$	4
C	Stretcher	$1\frac{1}{2} \times 3\frac{1}{2} \times 51\frac{1}{2}$	4
D	Short Gusset	$\frac{3}{4} \times 8 \times 10$	8
E	Long Gusset	$\frac{3}{4} \times 8 \times 11$	8
F	Shelf	$\frac{3}{4} \times 22\frac{1}{2} \times 60$	1
G	Top	$\frac{3}{4} \times 24 \times 60$	1
H	Work Surface	$\frac{1}{4} \times 24 \times 60$	1
I	Filler Block	$1\frac{1}{8} \times 1\frac{1}{2} \times 8$	1
J	Vise	Sears p/n 5191	1
K	Face	$\frac{3}{4} \times 4 \times 15\frac{1}{2}$	2
L	Leveler		4



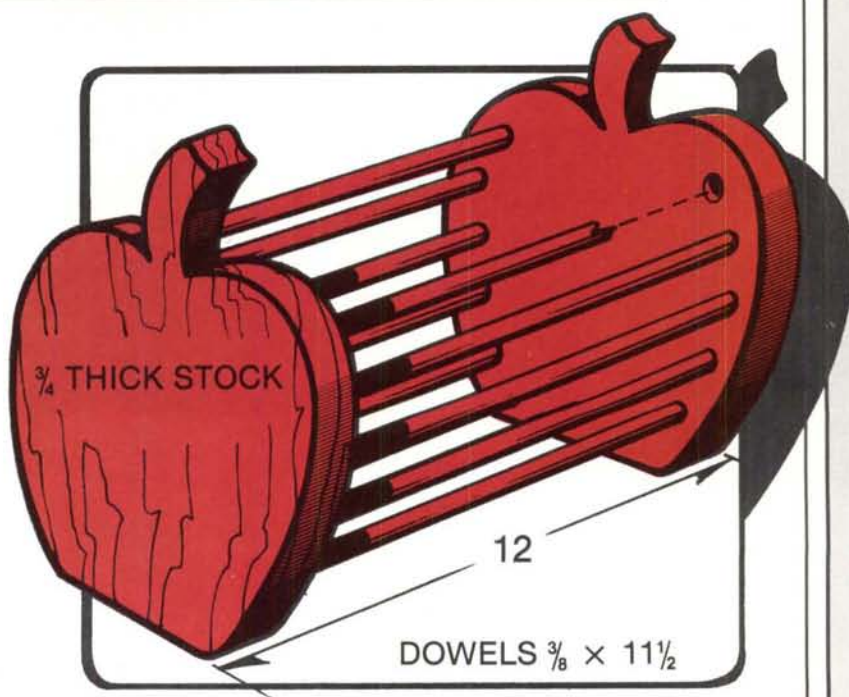
Country Basket

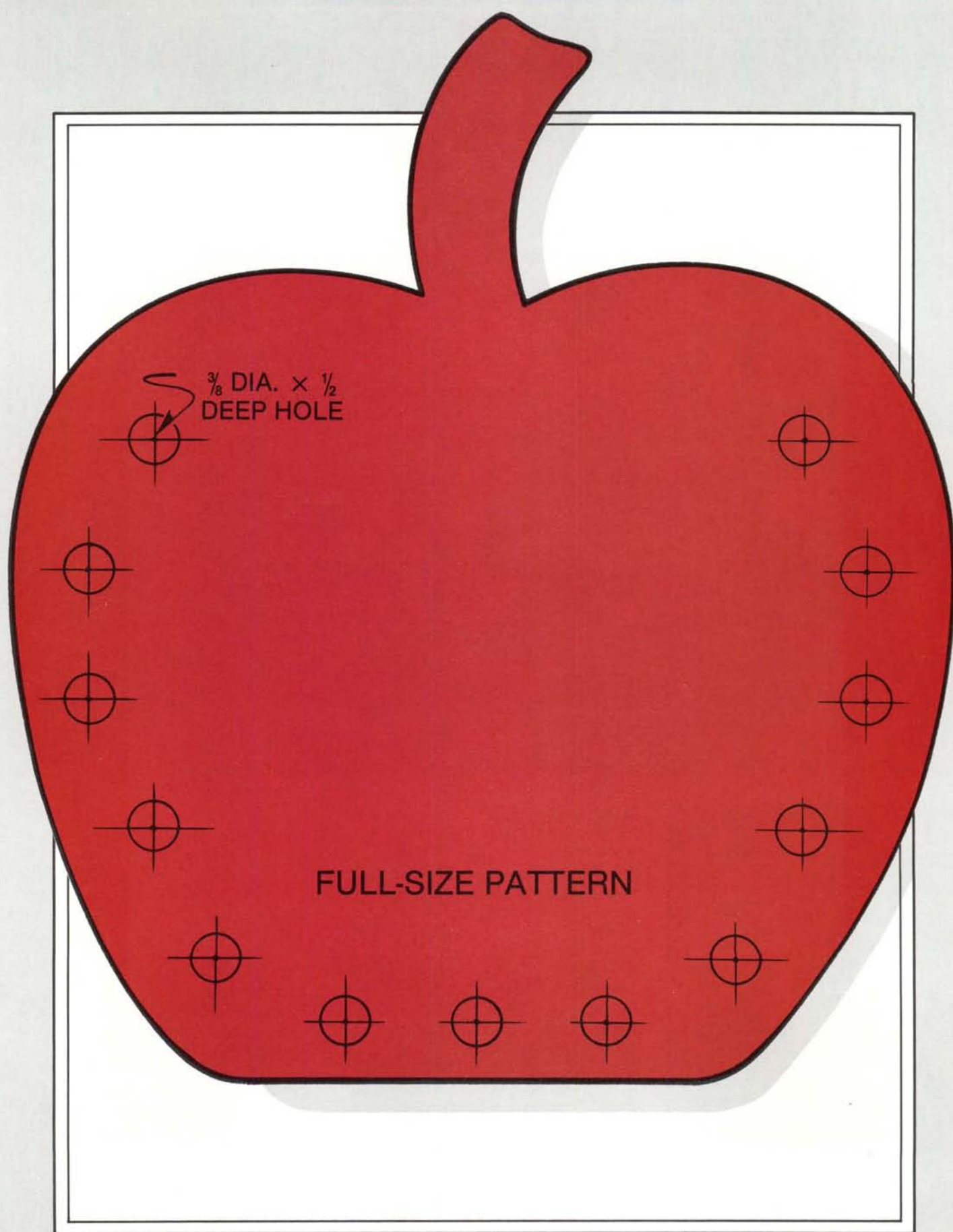


A small basket like this is ideal for serving bread, rolls, or fresh fruit. It's also useful when you want to display a favorite flower arrangement.

To make the apple ends, you'll need an 18 in. length of 1 × 8 common pine (which actually will measure $\frac{3}{4}$ in. thick by $7\frac{1}{4}$ in. wide). Transfer the full-size apple profile to the stock and mark the center points of the $\frac{3}{8}$ in. diameter dowel holes. Use a band saw or saber saw to cut out the profile, then sand the entire edge smooth. Now, using this cutout as a template, trace the second apple profile. Once again, mark the center points of the dowel holes before cutting out the profile and sanding the edges smooth.

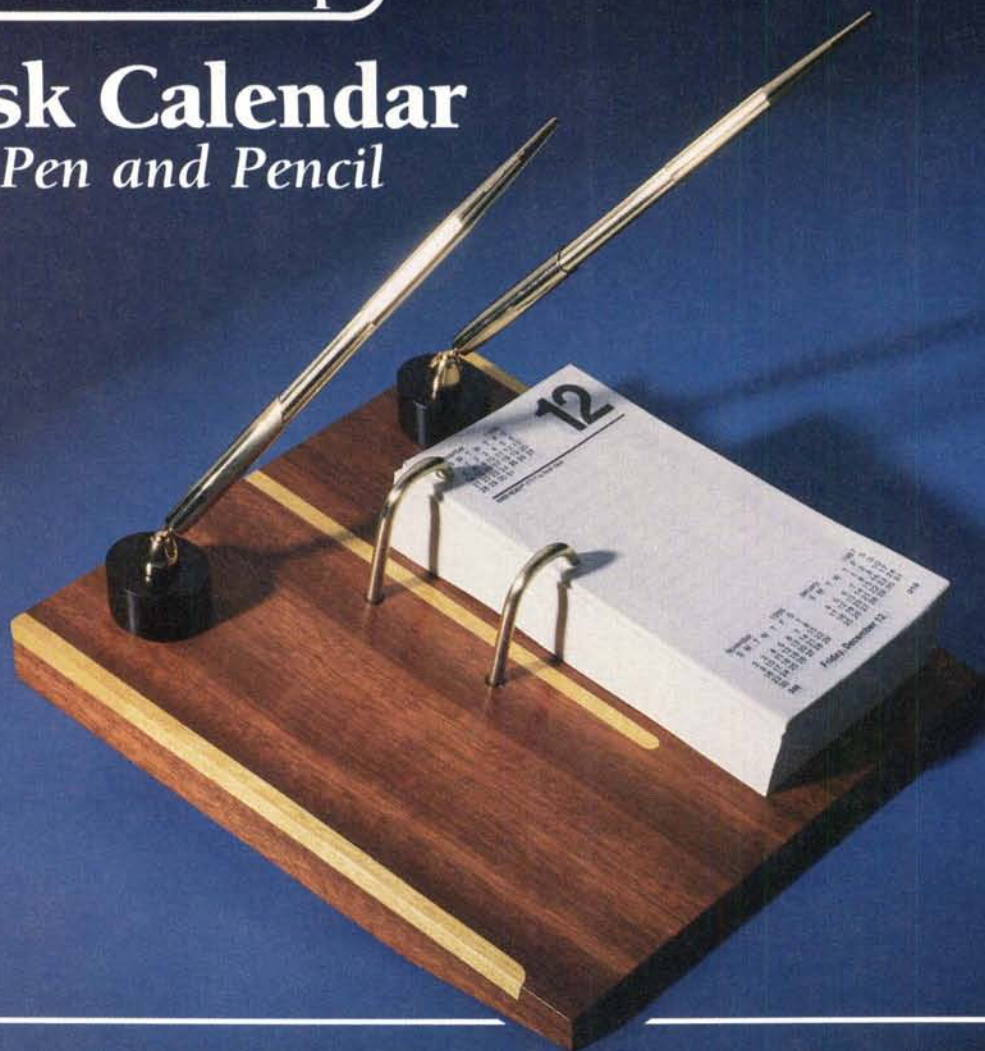
Next, bore the $\frac{3}{8}$ in. diameter by $\frac{1}{2}$ in. deep dowel holes in each end, then cut the dowels to length and glue in place. When dry, paint the entire basket with red enamel, as we did, or you could paint the apple red and the stem green.





The Gift Shop

Desk Calendar with Pen and Pencil



We used some of the so-called exotic woods for this piece — bloodwood for the base, with satinwood inlays, and ebony cylinders. Of course, other wood combinations will also work well. One that immediately comes to mind is a walnut base with maple inlays and cylinders. These woods, and many others, can be ordered from Berea Hardwoods Co., 125 Jacqueline Drive, Berea, OH 44017.

The pen, pencil, and funnels were ordered from Klockit, P.O. Box 629, Lake Geneva, WI 53147. If not available locally, the $\frac{3}{16}$ in. brass rod can be ordered from Allcraft Tool and Supply Co., 100 Frank Road, Hicksville, NY 11801.

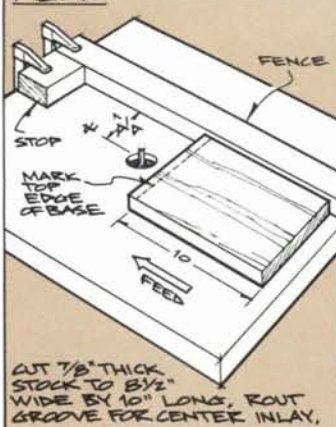
Details of the construction are shown in Figs. 1 through 8.

Figure 1A: Cut $\frac{7}{8}$ in. thick stock to a width of $8\frac{1}{2}$ in. and a length of 10 in.

Equip the router table with a $\frac{1}{4}$ in. diameter straight bit and a stopblock as shown. At a point about $\frac{1}{2}$ in. from one end of the stock, scribe a line and label it "top edge." Locate the stopblock so that the router bit will cut a groove that is $6\frac{5}{8}$ in. long when measured from the scribed line. The $\frac{1}{4}$ in. groove depth is made in two passes, each pass removing $\frac{1}{8}$ in. stock.

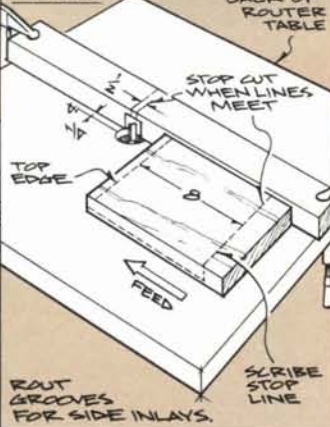
Figure 1B: Equip the router table with a $\frac{1}{2}$ in. diameter straight bit. You'll need to notch the wooden fence so that only $\frac{1}{4}$ in. of the router bit diameter is exposed when viewed from the end of the fence. Scribe a pair of lines on the top edge of the fence — one line indicating the location of the front edge of the router bit, the second line indicating the back edge. Carry the lines down the front of the fence as shown. At a point 8 (continued on page 42)

FIG. 1A



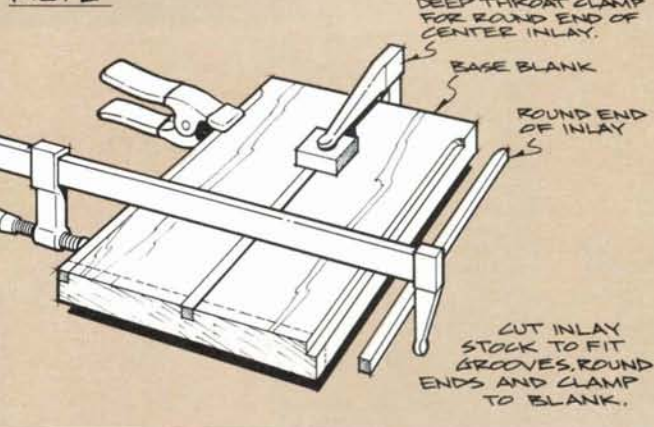
CUT $\frac{1}{8}$ " THICK STOCK TO $8\frac{1}{2}$ " WIDE BY 10" LONG, ROUT GROOVE FOR CENTER INLAY.

FIG. 1B



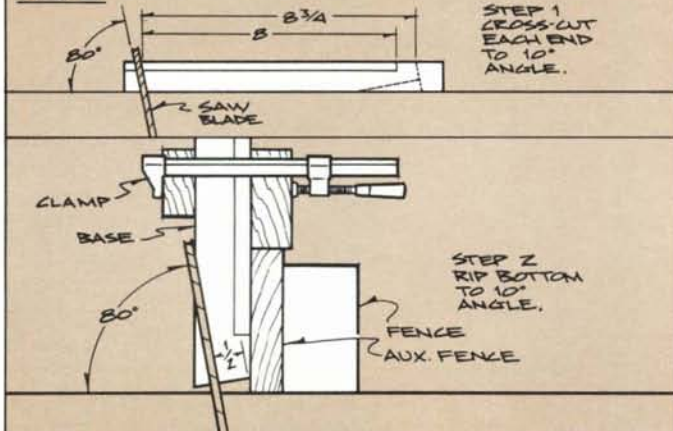
ROUT GROOVES FOR SIDE INLAIS.

FIG. 2



CUT INLAY STOCK TO FIT GROOVES, ROUND ENDS AND CLAMP TO BLANK.

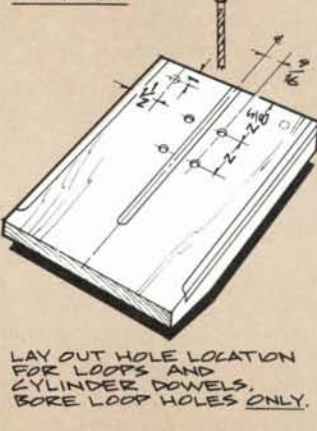
FIG. 3



STEP 1
CROSS-CUT
EACH END
TO 10°
ANGLE.

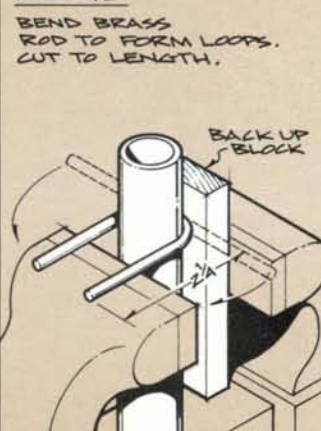
STEP 2
RIP BOTTOM
TO 10°
ANGLE.

FIG. 4A



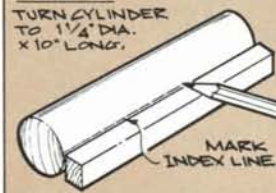
LAY OUT HOLE LOCATION FOR LOOPS AND CYLINDER DOWELS, BORE LOOP HOLES ONLY.

FIG. 4B



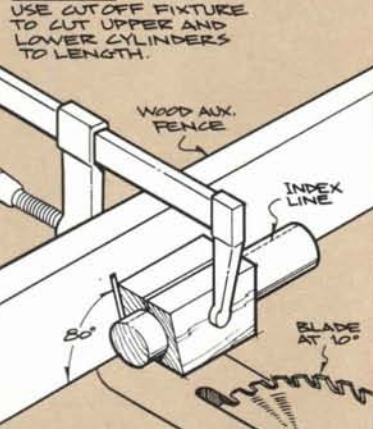
BEND BRASS ROD TO FORM LOOPS, CUT TO LENGTH.

FIG. 5A



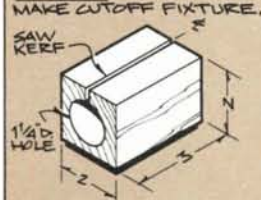
TURN CYLINDER TO $1\frac{1}{4}$ " DIA. X 10" LONG.

FIG. 5C



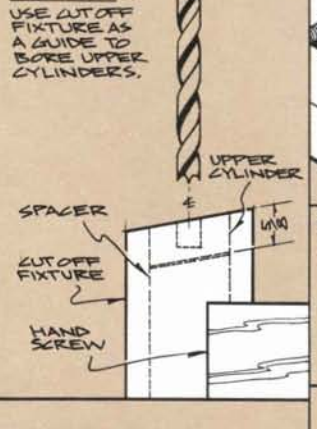
USE CUTOFF FIXTURE TO CUT UPPER AND LOWER CYLINDERS TO LENGTH.

FIG. 5B



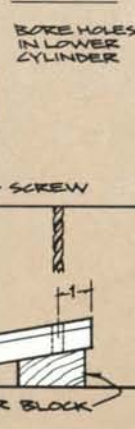
MAKE CUTOFF FIXTURE.

FIG. 6A



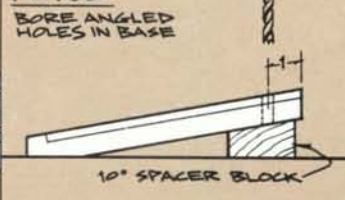
USE CUTOFF FIXTURE AS A GUIDE TO BORE UPPER CYLINDERS.

FIG. 6B



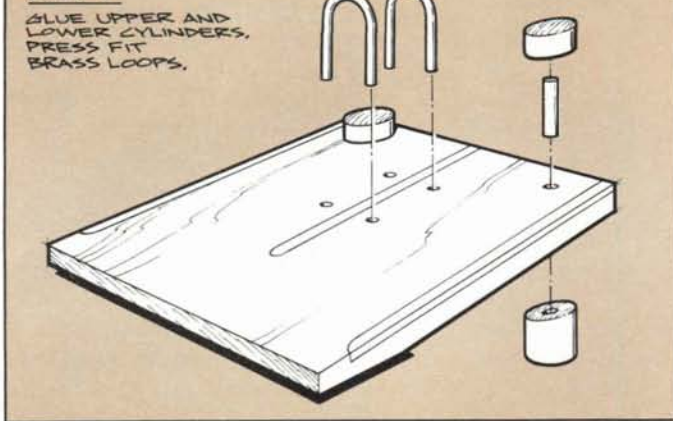
BORE HOLES IN LOWER CYLINDER

FIG. 6C



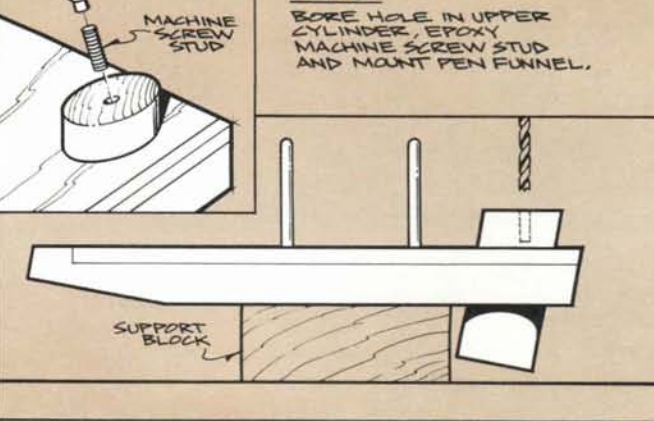
BORE ANGLED HOLES IN BASE

FIG. 7

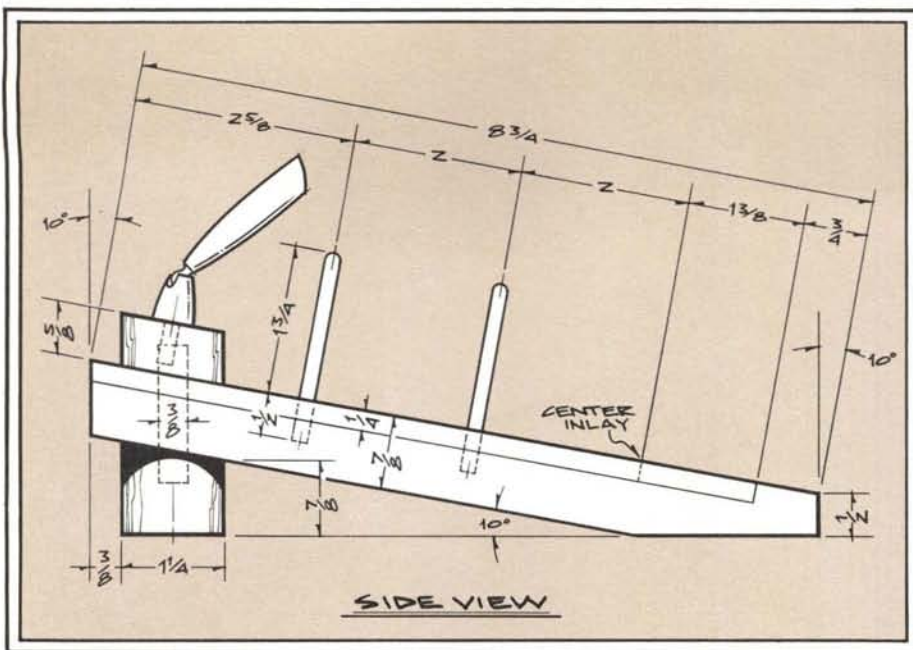


GLUE UPPER AND LOWER CYLINDERS, PRESS FIT BRASS LOOPS.

FIG. 8



BORE HOLE IN UPPER CYLINDER, EPOXY MACHINE SCREW STUD AND MOUNT PEN FUNNEL.



in. from the line marked "top edge," scribe a line across the stock to represent the stop line. Make the first side inlay cut as shown, feeding the stock from right to left and stopping the cut when the stop line meets the line on the fence that represents the front edge of the bit.

To make the second side inlay cut, turn the fence in the opposite direction so that the fence front now faces the back of the router table. As with the earlier cut, locate the fence so that only 1/4 in. of the bit is exposed. Now, working from the back of the router table so that you face the front of the fence, feed the stock in a right-to-left direction to make the second inlay cut. This time, though, stop the cut when the stop line meets the line on the fence that represents the back edge of the router bit.

Figure 2: Cut the inlay stock to 1/4 in. thick by 3/8 in. wide. The 3/8 in. width allows a little extra material to protrude above the top surface which can be planed flush after gluing. Round the inlay ends to match the router bit radius (a disc sander is handy here), then add white or yellow glue and clamp as shown. When dry, use a hand plane to smooth the inlays flush with the stock.

Figure 3 (Step 1): With the table saw blade set to 10 degrees, use the miter gauge to crosscut the stock to the dimensions shown. To minimize splintering, use a fine-tooth crosscut or plywood blade.

Figure 3 (Step 2): The bottom back edge of the base stock can now be ripped to a 10-degree angle. To provide adequate support for the stock, though, you'll first need to clamp an auxiliary wooden fence to the regular fence. We used a piece of straight stock measuring

3/4 in. thick by 3 in. wide by 24 in. long. Next, a couple of 12 in. long support blocks are clamped across the stock (parallel to the bottom edge). Locate the support blocks so that the bottom of the stock will be just slightly above the table when the blocks rest on the fence.

Figure 4A: Lay out the center line location of the four 3/16 in. diameter by 1/2 in. deep holes for the brass loops. Once the holes are bored, use a countersink bit to apply a slight chamfer to each one. Also lay out the center line location of the cylinder dowel holes, but do not bore them yet.

Figure 4B: Using a vise, a backup block, and a 1/2 in. pipe (which has an outside diameter of 7/8 in.), form the two loops by bending 3/16 in. diameter brass rod as shown. Start with about a 6 in. length for each loop, then use a hacksaw to cut to a length (after bending) of 2 1/4 in. as shown.

Figure 5A: Turn a 10 in. long ebony blank to a diameter of 1 1/4 in. A lengthwise index line will be important later on. To mark it, butt the cylinder up to a piece of flat scrap stock and use a pencil to scribe the line.

Figure 5B: Make a cutoff fixture by boring a 1 1/4 in. diameter hole through a block measuring 2 in. square by 3 in. long. Once bored, use a backsaw to cut a saw kerf as shown.

Figure 5C: You'll need to follow a six-step procedure to cut the upper and lower cylinders to length. The six steps are:

1: Insert the cylinder in the cutoff fixture and clamp the fixture and cylinder to the miter gauge. Note that as the clamp pressure is applied to the fixture, the saw kerf closes up, effectively clamping the

cylinder to the fixture.

2: With the saw blade set at 90 degrees, square one end of the cylinder. Next, remove the clamp, reverse the cylinder, and square the other end.

3: Clamp a wooden auxiliary fence to the miter gauge, then glue (we used hot glue to save time) the cutoff fixture to the auxiliary fence. Set the saw blade to a 10-degree angle, then adjust the auxiliary fence so that the blade will trim the end of the cutoff fixture to the 80-degree angle shown.

4: Insert the cylinder into the fixture with the index line aligned with the saw kerf.

5: The two lower cylinders are cut first. To establish the length, measure 7/8 in. along the index line, then add the thickness of the saw kerf. Allow this dimension to extend beyond the end of the cutoff fixture and clamp in place as shown. Feed the fixture into the saw blade to cut off the first lower cylinder. Next, remove the clamp, reverse the cylinder end for end, and repeat the procedure to get the second cylinder.

6: To cut the two upper cylinders, measure 3/8 in. along the index line, add the saw kerf thickness, then clamp in place and cut off.

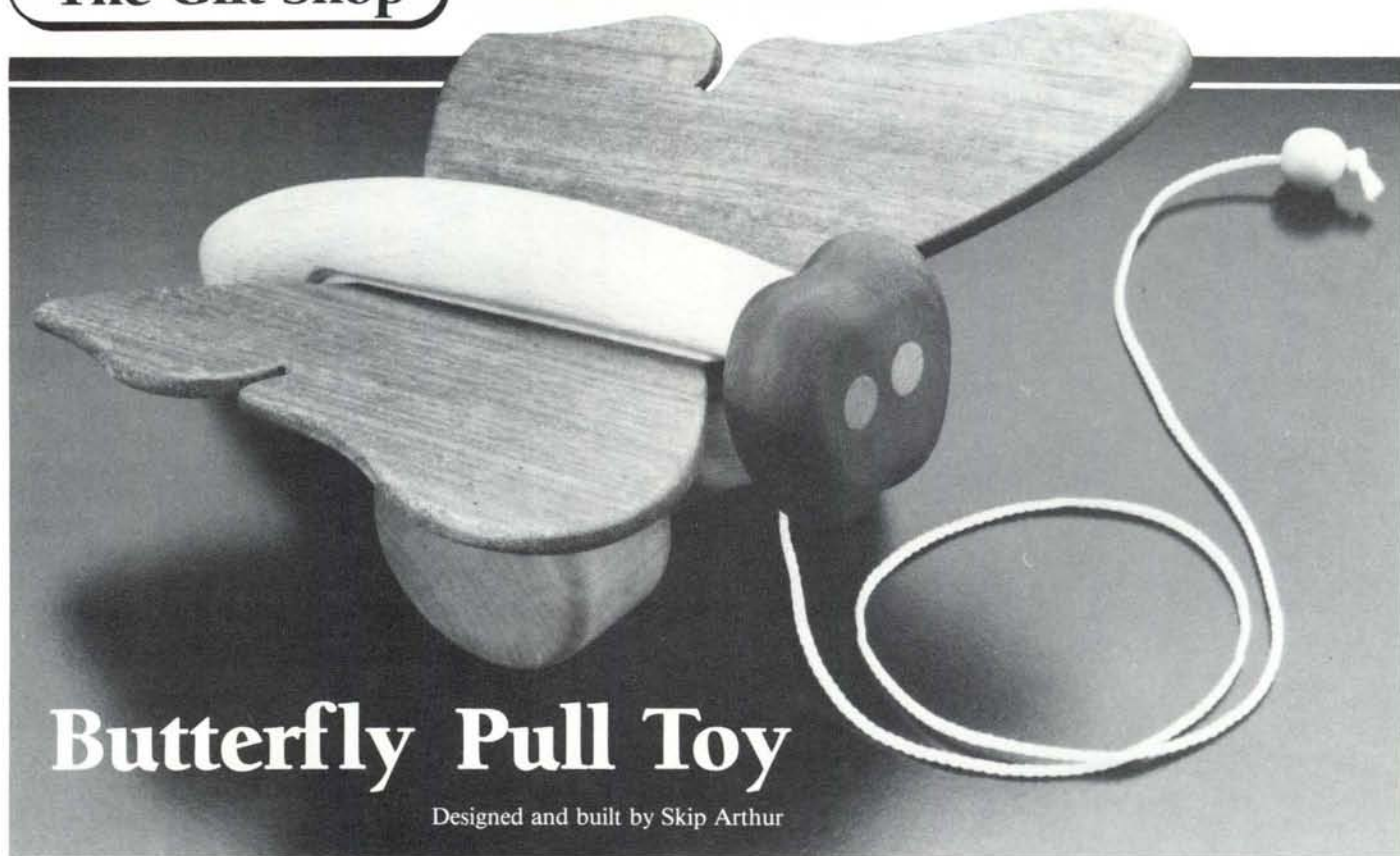
Figure 6A: In order to bore a 3/8 in. diameter by 3/8 in. deep hole in each upper cylinder, you'll once again need the cutoff fixture. Clamp the fixture, on end, to the drill press, then use the remaining cylinder stock as a spacer. Align the index line on the upper cylinder with the saw kerf of the cutoff fixture, then bore the hole.

Figure 6B: Use a handscrew to hold the lower cylinders in place while boring a 3/8 in. diameter by 3/8 in. deep hole.

Figure 6C: Use the table saw to cut an 8 - 10 in. long spacer block at 10 degrees as shown. Referring to the previously located (see Figure 4a) cylinder dowel hole center lines, bore the 3/8 in. diameter holes through the base as shown.

Figure 7: Assemble the upper and lower cylinders to the base with 3/8 in. diameter by 1 1/2 in. long dowels. Use glue and clamp firmly. The brass loops are simply press-fitted in place; no glue is used.

Figure 8: Use a thick support block to raise and level the base, then bore a 3/16 in. diameter by 1/2 in. deep hole in the center of each of the upper cylinders. Hacksaw the head off a no. 6-32 machine screw so that you have a 1 3/8 in. long stud. Epoxy the stud in place and, when dry, assemble the pen and pencil funnels. We used two coats of penetrating oil as a final finish. WJ



Butterfly Pull Toy

Designed and built by Skip Arthur

Of all the wooden pull toys we have seen, this butterfly is certainly one of the most unique. When it is constructed as shown in the photo with contrasting woods such as mahogany and maple, it is handsome enough to display.

The operation of the butterfly's wings is quite simple. The wings rest on the wheels, which are identically offset on the axle. As the butterfly is pulled along, and the offset wheels turn, the butterfly's body rises and falls while the wings "flap." The faster it is pulled along, the quicker the motion of the wings and body.

Start with the body (A). Cut a block measuring $1\frac{1}{4}$ in. by $2\frac{1}{2}$ in. by $6\frac{1}{4}$ in. long, then referring to the full-size pattern, lay out the body profile and mark the centerpoint of the axle hole. Refer to the appropriate detail for the wing hole position, and mark the centerpoints of these holes. Now, drill out the axle hole, and drill the wing holes to a 5 in. depth, using the setup shown in Fig. 1. Note that the wing holes are $\frac{1}{16}$ in. diameter, while the axle hole is $\frac{3}{8}$ in. diameter. Next, move the body block to the router table (Fig. 2), position the fence, as shown, $\frac{3}{4}$ in. from the centerpoint of a V-groove bit, and establish the clearance that will permit the wings movement. The height of the V-groove bit is set at $\frac{1}{8}$ in. Finally, move to the band saw (Fig. 3) and cut out the profile of the body. A rasp and sandpaper are then used to shape and final sand the rounded body edges.

Now, cut out the wings (B), wheels (C), and head (E), referring to their full-size profiles, and trace outlines (use carbon paper) directly onto the stock. Note that the wheels are cut from $1\frac{3}{8}$ in. thick stock, while the head is cut from $\frac{3}{4}$ in. thick stock, and the wings are $\frac{3}{16}$ in. thick material. Round the edges of these parts to approximate their appearance in the photo. The $\frac{3}{8}$ in. diameter by $\frac{1}{2}$ in. deep offset axle hole in the wheels is also drilled at this time.

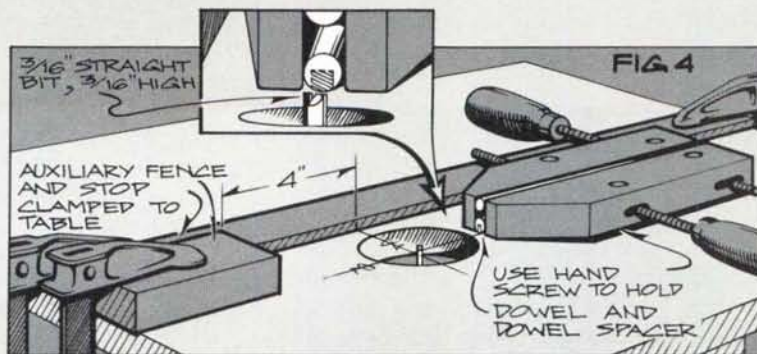
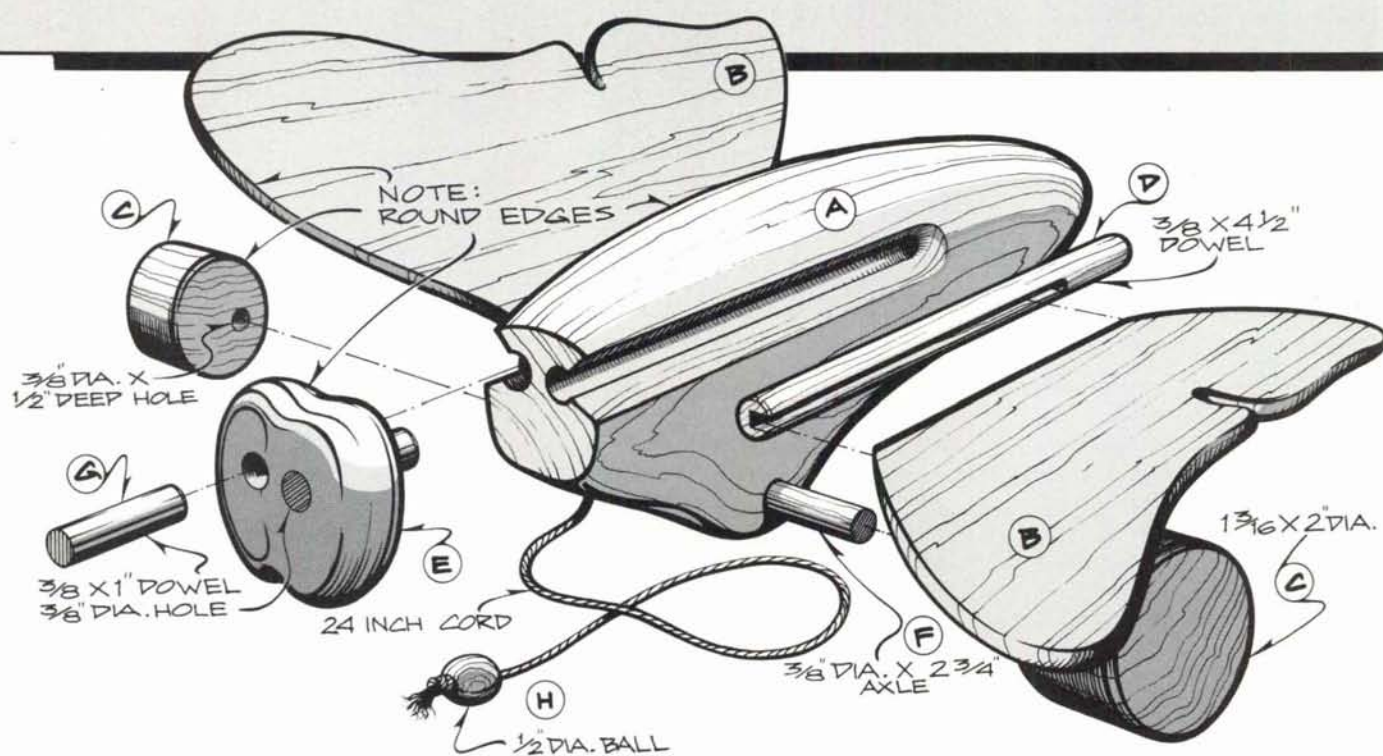
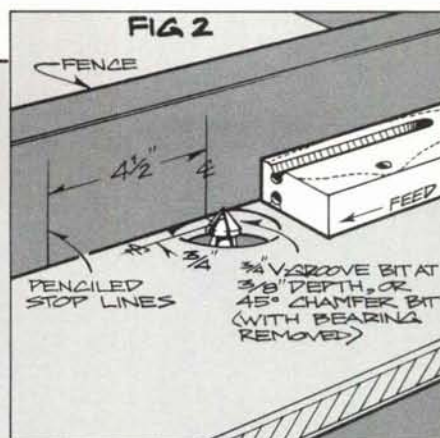
The wings are glued into a corresponding stopped slot cut into two dowel lengths, as shown in the exploded view. The best way to accomplish this is to mount a $\frac{3}{16}$ in. diameter straight bit in the router table, set it for $\frac{3}{16}$ in. height (depth of cut) and then use a clamp, as illustrated in Fig. 4, to hold the $\frac{3}{8}$ in. diameter by $4\frac{1}{2}$ in. long dowels (D). Note that we used a hand-screw clamp, a low fence (to clear the clamp handles), and a stopblock to insure proper length of the 4 in. long slot cut into the dowels. The distance that the fence is set from the centerpoint of the bit will be $\frac{3}{16}$ in. plus the width of the clamp jaw. Eyeball the bit to the center of the dowel just to be certain that the fence setting is accurate.

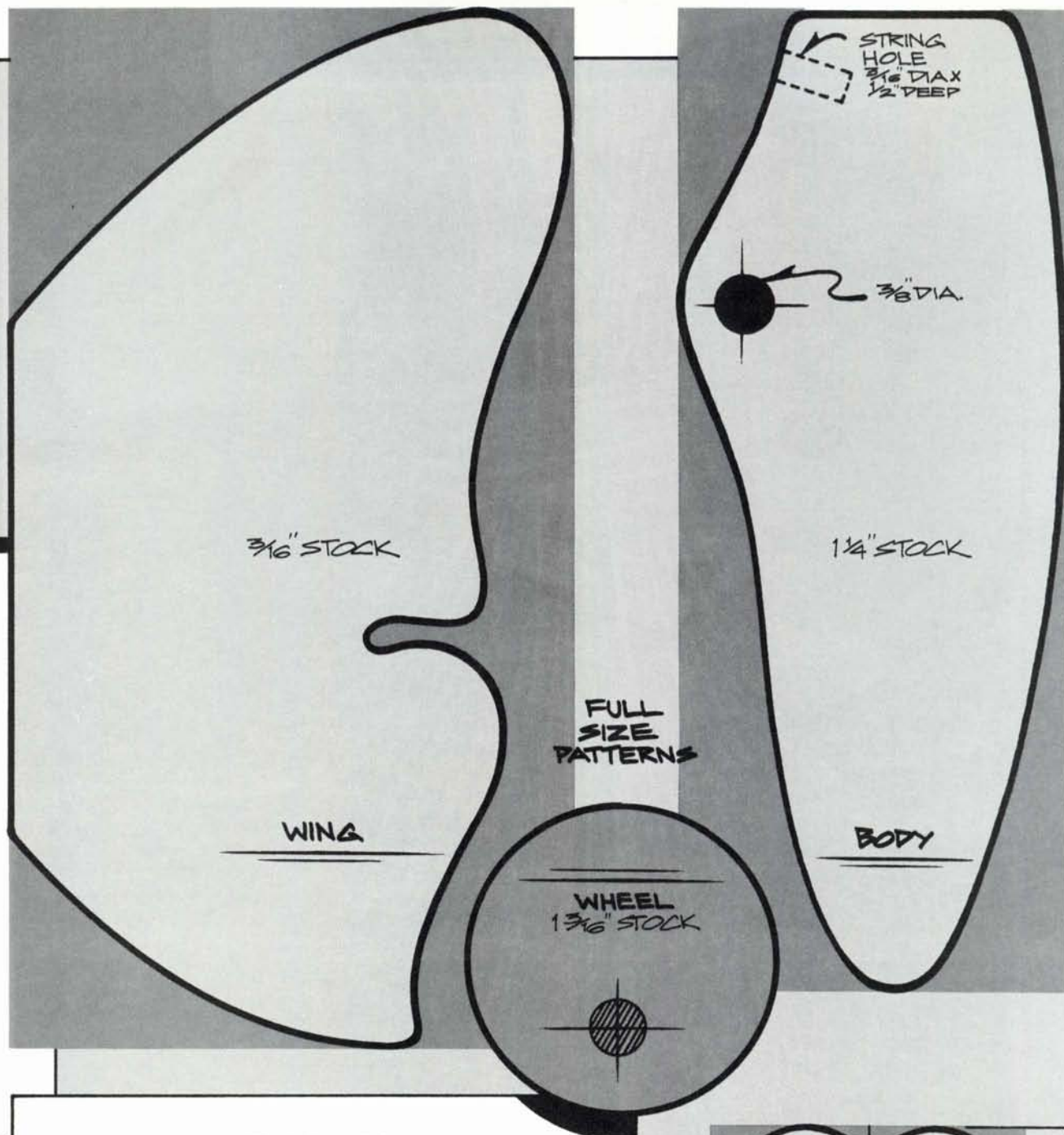
To assemble the butterfly, first glue the wings into the dowel slots, then insert the dowels into the body. The oversize dowel holes in the body should permit the easy pivot of the wings. Insert the short eye dowels (G) into the head, then glue the head to the body. The wheels are mounted onto either end of the axle (F). Be sure that the wheels are aligned evenly on the offset axle, or neither the wheels nor the axle will turn. Finally, drill a $\frac{3}{16}$ in. by $\frac{1}{2}$ in. deep hole in the body for the pull cord, which is glued in place. A $\frac{1}{2}$ in. diameter wooden ball (H) is secured to the cord with a simple knot. Given the propensity toddlers have for chewing, if you're making the butterfly as a toy, a non-toxic salad bowl finish (we use Behlen's) is best.

Notes: We suggest a dry assembly of the butterfly before final glue-up to test proper operation. When drilling the axle hole through the body, make the hole slightly oversize, so the axle will not bind. A coat of paraffin wax on the center section of the axle and on the underside of the wings where the wheels rub will serve to lubricate these potential friction and wear points.

(continued on next page)

W&J

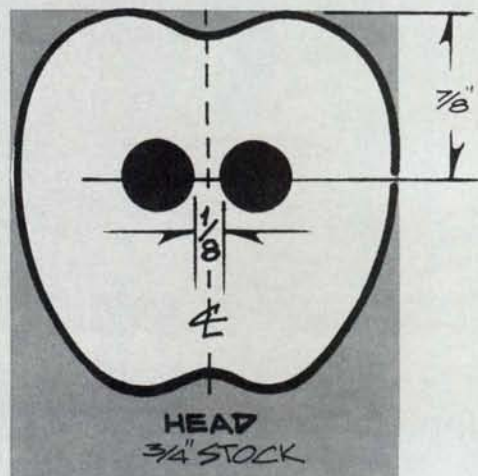


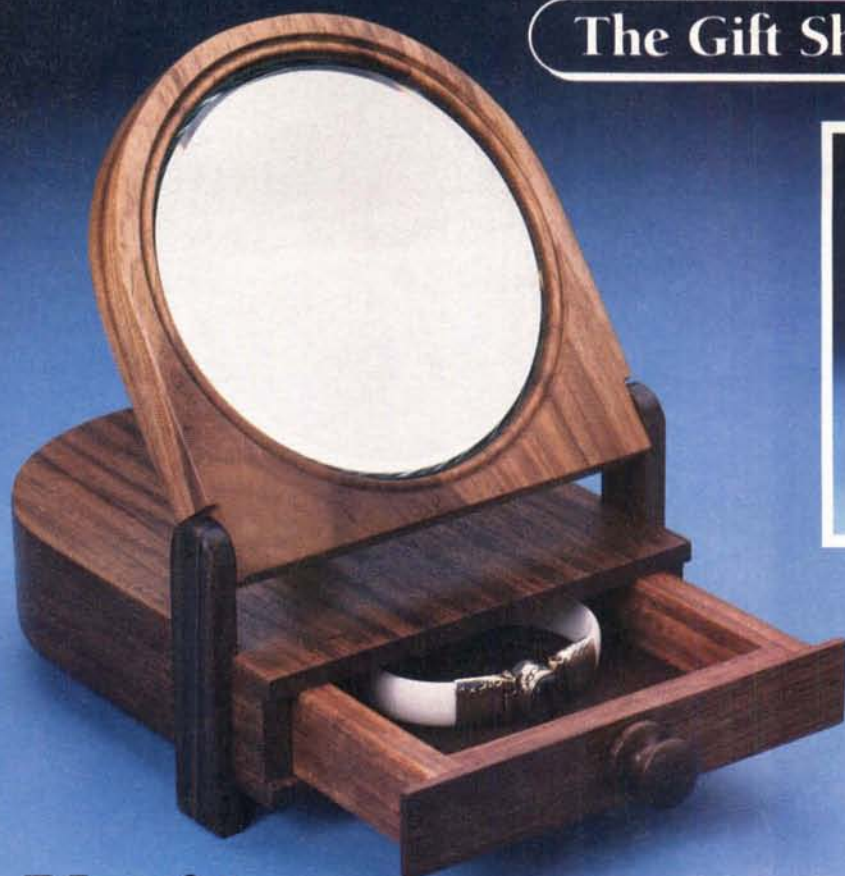


Bill of Materials
(all dimensions actual)

Part	Description	Size	No. Req'd.
A	Body	1 1/4 x 2 1/2 x 6 1/4 *	1
B	Wing	3/16 in. stock *	2
C	Wheel	2 in. dia. x 1 3/16 in. thick *	2
D	Wing Dowel	3/8 in. dia. x 4 1/2 in. long	2
E	Head	3/4 in. stock *	1
F	Axle	3/8 in. dia. x 2 3/4 in. long	1
G	Eye Dowel	3/8 in. dia. x 1 in. long	2
H	Pull Ball	1/2 in. dia.	1

*See full size pattern.





Vanity Mirror

with Drawer

Designed and built by Robert Leung

Bill of Materials (all dimensions actual)

Part	Description	Size	No. Req'd.
A	Body	as shown	1
B	Body	as shown	1
C	Body	as shown	1
D	Drawer	as shown	1
E	Drawer Front	$\frac{1}{2} \times 1 \times 6$	1
F	Knob	see Step 10	1
G	Drawer Bottom	as shown	1
H	Felt	as shown	1
I	Support Arm	$\frac{1}{2} \times \frac{1}{2} \times 2\frac{7}{8}$	1
J	Arm Mount	$\frac{7}{8} \times \frac{7}{8} \times \frac{1}{4}$	1
K	Mirror Frame	$\frac{3}{4} \times 6 \times 6$	1
L	Mirror	$\frac{1}{4}$ thick $\times$ 5 in. dia. beveled edge**	1
M	Leg	$\frac{5}{16} \times \frac{3}{4} \times 3\frac{1}{2}$	2
N	Foot	$\frac{3}{8} \times \frac{3}{4}$	1

*Arm mount height as needed to level mirror.

**Available from: Floral Glass & Mirror Co.,
895 Motor Parkway, Hauppauge, NY
11788. Telephone: (800) 647-7672.

This vanity mirror, by well-known California woodworker Robert Leung, combines some basic turning work with a simple band saw box technique to create an attractive and functional dresser top vanity. Mr. Leung uses a variety of exotic woods in his work, including rosewood and andamon padauk, to lend the pieces a special look. Any hardwoods will suffice, of course, but keep in mind that a selection of interesting woods that contrast well with each other can dramatically improve the visual impact of the project. Birdseye maple with walnut accents or ash with padauk accents are but two of the combinations that work best. If you can't find them locally, a mail-order source for exotic woods is the Berea Hardwoods Co., 125 Jacqueline Drive, Berea, OH 44017.

The best place to start this project is with the body of the vanity. Take note that while our step-by-step technique shows this particular project, you can utilize the same basic technique to design any number of different band saw boxes. Create your own shapes, and make multiple stacked drawer boxes by starting out with thicker stock and including a band sawn spacer section between each drawer.

As shown in our step-by-step, we started with $1\frac{1}{4}$ in. thick stock. After band sawing and sanding, this should produce a finished drawer unit about $1\frac{1}{2}$ in. thick. We recommend that you use a narrow blade ($\frac{1}{4}$ in. or less) in the band saw to establish the various cuts with a minimum of waste. The index line scribed in Step 1 is important since it will insure that the grain matches up perfectly when the sections (A, B, and C) are reassembled in Step 6. If done right, the glue lines between the sections should be all but invisible. The $\frac{1}{8}$ in. diameter by $\frac{3}{4}$ in. long dowels shown in Step 10 could be substituted with $\frac{1}{8}$ in. brass rod, and a store-bought brass or wood $\frac{3}{8}$ in. diameter knob could be used instead of the turned knob (F) shown, if you don't have access to a lathe. The $\frac{1}{4}$ in. by $\frac{1}{4}$ in. rabbet cut in Step 11 is made with Sears' rabbeting bit no. GT25581, using their arbor set no. GT25601.

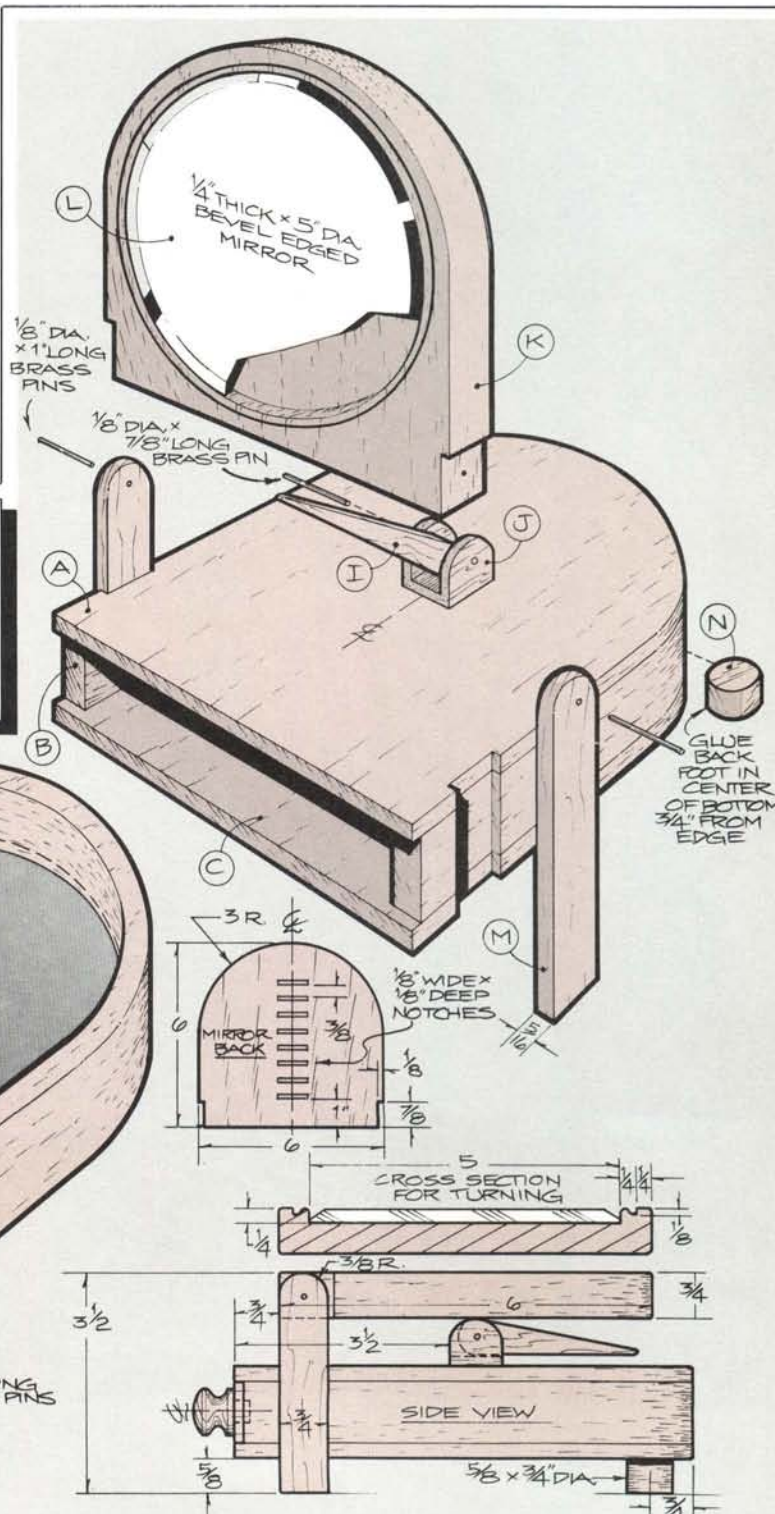
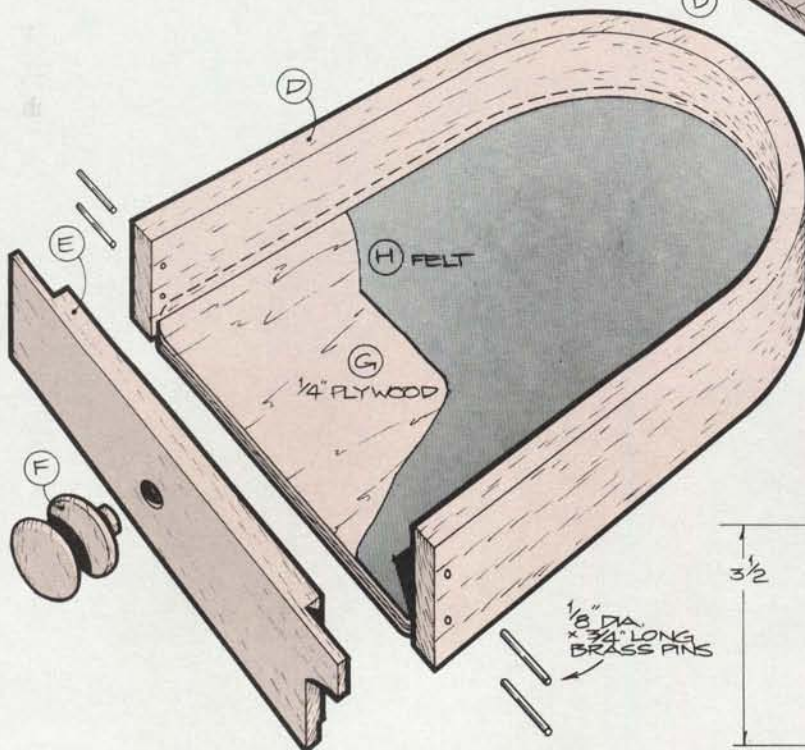
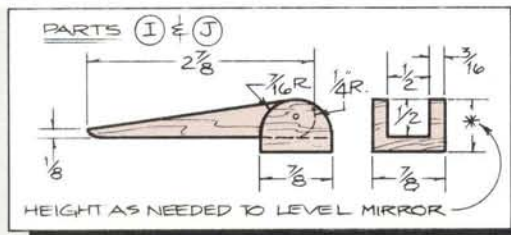
The Woodworker's Journal

In Step 12, the felt (H) is glued onto the plywood bottom (G), then trimmed flush with the edge before the bottom is glued in place. Take care not to use too much glue when securing the felt, lest it soak through and mat the fibers down.

The mirror frame (K) can be turned on the lathe, or you may use the router and a template to cut the mirror recess and to profile an edge detail. To turn the mirror frame, start with $\frac{3}{4}$ in. by 6 in. by 6 in. stock, and use a faceplate mounting in the lathe to turn the $\frac{1}{4}$ in. deep mirror recess and edge detail (see cross section). The faceplate mounting requires that the workpiece be glued to an identically sized piece of scrapwood, with a layer of brown Kraft paper in between. This assembly is then screwed to the faceplate. An X scribed across the scrap piece will serve as a guide to center the work on the faceplate. When the turning is complete, carefully separate the scrap stock from the mirror frame stock using a mallet and chisel. The dado head can now be utilized to establish the $\frac{1}{8}$ in. by $\frac{1}{8}$ in. leg notches on either side, before the top profile is band sawed and disk sanded smooth. You can also use the router and a template to rout the mirror recess, although for the edge detail a simple round-over using a conventional router bit will eliminate the need to hand grind a bit to match the illustrated edge detail. Don't forget to chisel the notches in the mirror frame back before mounting the mirror glass. The 5 in. diameter bevel-edged mirror glass we used was purchased from a mail-order source (see bill of materials). Be sure to use special mirror adhesive, called mirror mastic, which can either be ordered from the

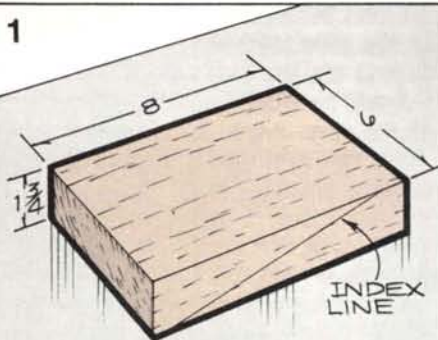
same mail-order source as the mirror, or obtained from your local glass shop. Do not use just any glue or epoxy, since the chemicals present in some adhesives can dissolve the silver on the mirror back. Final sand before mounting the mirror, as sandpaper will scratch the glass surface.

The mirror support arm (I), the arm mount (J), the legs (M), and the foot (N) should be made from the same wood as the knob (F). Make all the parts except the arm mount, then assemble the mirror. Now make the arm mount so that it will serve to hold the mirror level when the mirror is folded flat in the closed position (see side view). Note that $\frac{1}{8}$ in. diameter brass pins serve as pivots for the mirror and the support arm. We finished the vanity with several coats of Tung oil. 



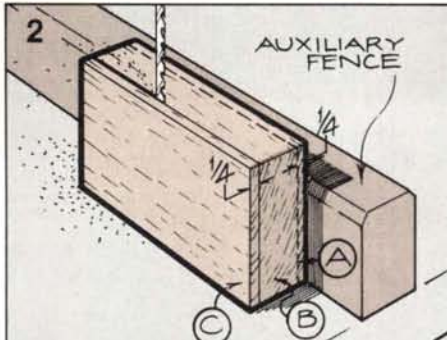
MAKING THE DRAWER

1



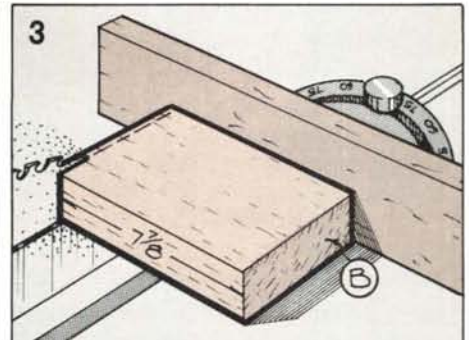
CUT $1\frac{1}{4}$ " THICK STOCK TO 6" WIDE BY 8" LONG. SCRIBE INDEX LINE TO ASSIST REASSEMBLY IN STEP #6.

2



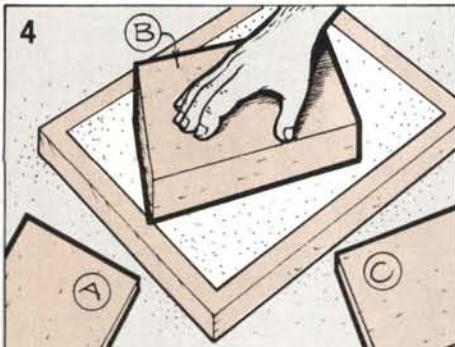
USE BAND SAW TO RIP $\frac{1}{4}$ " THICKNESS FROM EACH SIDE OF STOCK. LABEL PARTS A, B, AND C AS SHOWN.

3



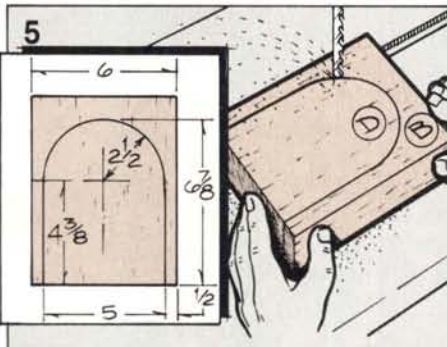
USE TABLE SAW TO CROSS CUT PART B TO A LENGTH OF $7\frac{7}{8}$ ".

4



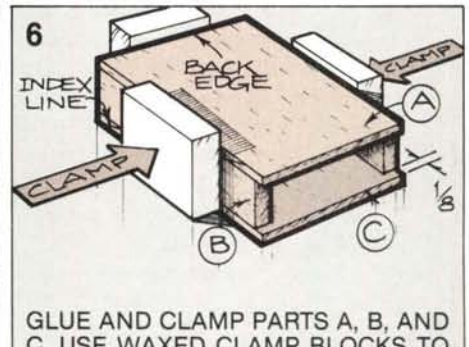
USE SANDING BOARD TO SAND TOP AND BOTTOM BAND SAWN SURFACE OF A, B, & C.

5



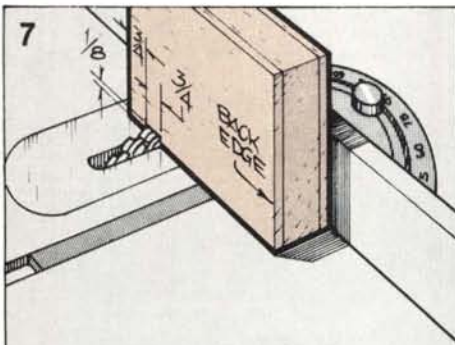
LAY OUT $2\frac{1}{2}$ " RADIUS ON PART B. LABEL AND CUT OUT PART D.

6



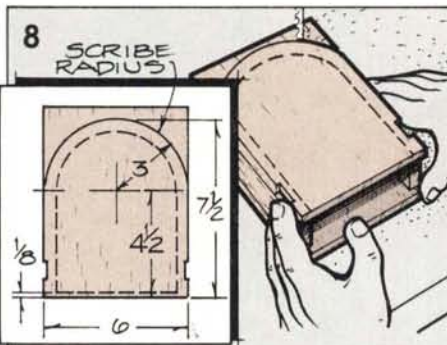
GLUE AND CLAMP PARTS A, B, AND C. USE WAXED CLAMP BLOCKS TO KEEP SIDES AND BACK EDGES FLUSH. LINE UP PARTS USING INDEX LINE.

7



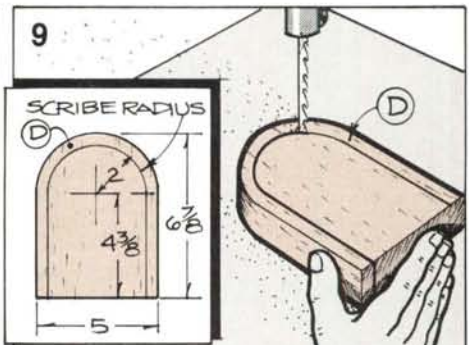
USE DADO HEAD CUTTER TO CUT NOTCHES FOR LEGS.

8



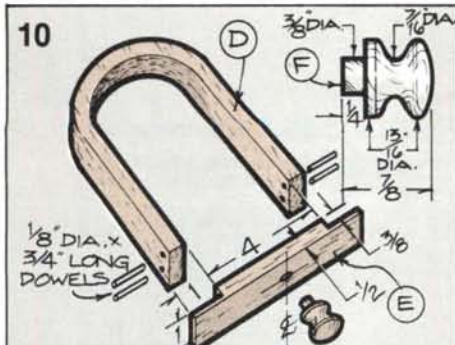
USE A COMPASS TO SCRIBE 3" RADIUS. CUT OUT WITH BAND SAW. SAND SMOOTH ON DISC SANDER.

9



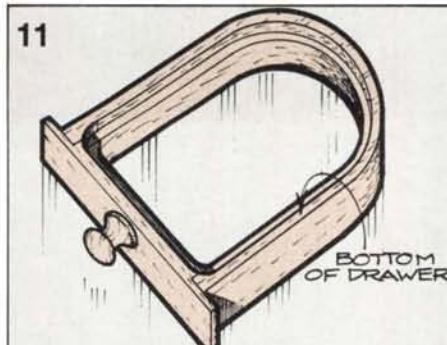
LAY OUT & SCRIBE INNER RADIUS ON PART D. CUT OUT WITH BAND SAW.

10



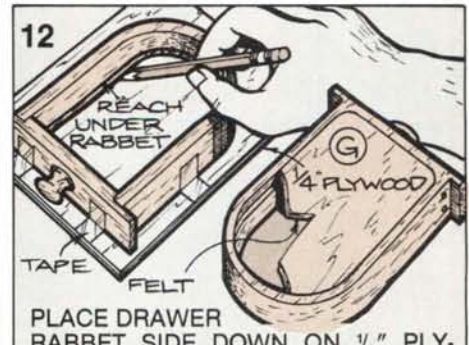
MAKE DRAWER FRONT (E) AND ASSEMBLE TO D. SAND ON SANDING BOARD. TURN KNOB (F).

11



USING A ROUTER TABLE, ROUT $\frac{1}{4}$ " $\times$ $\frac{1}{4}$ " RABBET ALL AROUND UNDER-SIDE OF DRAWER.

12



PLACE DRAWER RABBET SIDE DOWN ON $\frac{1}{4}$ " PLYWOOD & TRACE BOTTOM PROFILE. CUT OUT BOTTOM, GLUE ON FELT, & GLUE INTO RABBET.



Apothecary Chest

This clever adaptation of a traditional Early American apothecary chest is certain to complement any home with a Colonial or country style interior decor. The beauty of the chest is that it is far more functional than the old apothecary chests with only small sized drawers. While this design imitates the multiple "box" drawer look, the middle and lower drawers are in fact oversize and accommodate larger items. As shown in the exploded view, the two middle drawers, and the single full-width lower drawer retain the old box drawer look through the use of inlayed false divider strips. We constructed our chest from pine, the material most accessible to local craftsmen of old.

As we often do with easy pine projects, we have designed this piece so that it can be constructed from commonly available $\frac{3}{4}$ in. thick pine boards, requiring no edge-gluing. The sides (A), top (B), case dividers (C), and drawer dividers (H) can all be cut from 1×12 stock, which measures $\frac{3}{4}$ in.

thick by $11\frac{1}{4}$ in. wide dressed. You will need a $1 \times 12 \times 10$ ft. long board for the four case divider parts, and a $1 \times 12 \times 9$ ft. long board for the drawer dividers, two sides and top. The back (D) is cut from $\frac{1}{4}$ in. thick plywood or hardboard. The base front (F) and base sides (G) are cut from a $1 \times 6 \times 5$ ft. long board, with the waste being used for the filler (E). A $1 \times 8 \times 7$ ft. long board can be crosscut into all the drawer fronts. Note that although we show $\frac{1}{2}$ in. stock being used for the various drawer side and back parts, if you can't obtain $\frac{1}{2}$ in. thick material you might consider utilizing $\frac{3}{4}$ in. thick stock for the drawer case parts instead. Refer to the cutting diagram for the layout of all the $\frac{3}{4}$ in. thick parts.

After cutting the sides, top, and case dividers to length and width, use the table saw equipped with a dado head to cut the $\frac{1}{4}$ in. deep by $\frac{3}{4}$ in. wide dados in the sides for the three lower case dividers, and to rabbet the top end of the sides $\frac{1}{4}$ in. deep by $\frac{3}{4}$ in. wide to accept the uppermost case divider.

(continued on next page)

Next, use the dado head and an auxiliary fence to establish the $\frac{1}{4}$ in. by $\frac{1}{4}$ in. rabbet along the inside back edges of the sides to accept the plywood back. Lastly, cut the $2\frac{1}{2}$ in. radius reveal in the bottom end of the sides.

Now, you must cut the stopped dados in the three uppermost case dividers to accept the drawer dividers. The most effective way to cut these $\frac{1}{4}$ in. by $\frac{1}{4}$ in. by 10 in. long stopped dados is to use the jig shown in the instructions for making the Early American style bookcase (page 28). Using a $\frac{1}{4}$ in. diameter straight cutter, each stopped dado can be cut in a single pass, although using two passes and removing $\frac{1}{8}$ in. of stock at a time will result in less wear on both the router and the bit. As is also shown with the bookcase, a chisel is used to square the ends of these grooves. Note that there are three drawer dividers to separate the four top drawers, and a single divider to separate the two middle drawers.

After ripping the drawer divider stock to a $10\frac{3}{4}$ in. width, and crosscutting the four dividers to their $6\frac{1}{2}$ in. length, notch the upper and lower front edges $\frac{1}{4}$ in. by $\frac{3}{4}$ in. as shown. Now, assemble the case using glue, countersunk screws, and plugs. A dry test assembly is recommended to insure an accurate fit of the parts before you final assemble, however. The $\frac{1}{4}$ in. by 21 in. by 28 in. back (D) will serve to help square up the case if it is cut accurately.

When the case has dried, cut and fit the base front and sides. To make the base parts, first rip the stock to establish the 4 in. width. Then use a $\frac{1}{4}$ in. radius round-over bit to radius one edge of the stock, and lastly cut the miters to establish the base front and the base sides. Now transfer the profile to the base front using the illustrated grid pattern, lay out the 2 in. radius reveal on the base sides, and cut these parts out using either the band saw or saber saw.

Cut the filler strip (E) to size, and glue and screw it in place before securely gluing and screwing the base front in position. Note that the base front is screwed through the filler strip (see exploded view). Before the base sides are applied, you will need to drill several slotted holes, as illustrated, in the sides. These slotted holes, which are made by drilling side-by-side holes and cleaning out between with a rattail file, will allow the sides to expand and contract relative to the base sides, which are in a cross-grain orientation. Use glue on the base front and sides at the miters. Add the top to complete the case assembly. The top is glued in place (a good long grain-to-long grain glue surface). The dowel pins shown in the exploded view are only for the purpose of properly locating the top.

While we suggest a drawer construction as shown in the exploded view, you will probably want to use the method you prefer or are most familiar with. Keep in mind that the dimensions provided in the bill of materials are for the various drawer parts using our method of construction. Note carefully that all dimensions given are calculated from "point to point." In practice, of course, the drawers must be sized slightly smaller, to fit properly. For example, with the smallest drawers, the measurement of the drawer front (I) will probably be about $5\frac{1}{16}$ in. by $6\frac{1}{4}$ in., or $\frac{1}{16}$ in. less in width and length than the bill of materials specifications. Experienced woodworkers recognize that drawers are sized to fit the available opening, whatever that opening might be. The bill of materials dimensions are therefore only a rough guideline to help in calculating material required.

The false drawer front dividers are established by using the dado head to cross-cut a slot as shown to accept an inlay strip (U). Note that the two middle drawer faces each have one inlay strip, while the bottom drawer face has three. We

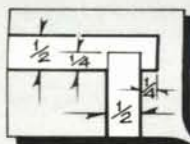
recommend making these strips slightly thicker than necessary, and then planing and sanding them flush with the drawer faces after they have been glued in place. These operations must be completed before the drawers are assembled.

A light stain, such as Minwax's Colonial Maple, followed by an application of penetrating oil, completes the project. The porcelain drawer knobs (V), which are available at most hardware stores, lend the piece just the right accent. *W&J*

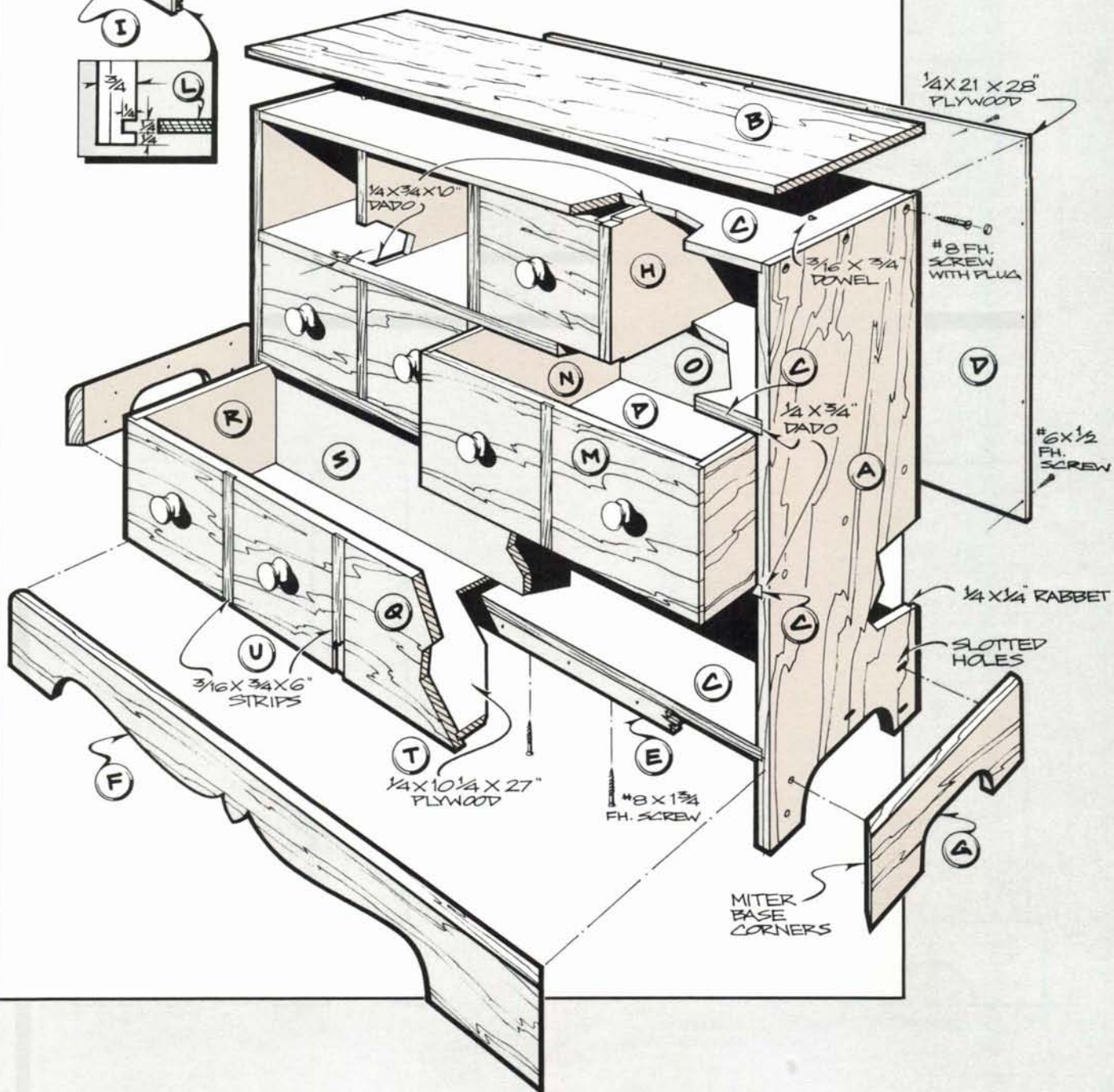
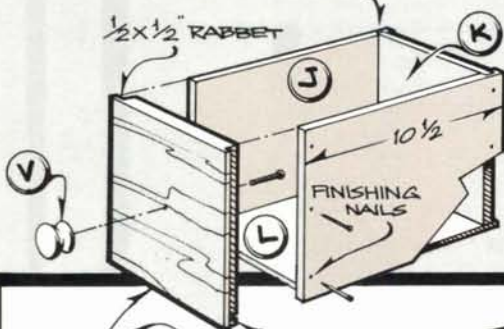


Bill of Materials (all dimensions actual)

Part	Description	Size	No. Req'd.
Case			
A	Side	$\frac{3}{4}$ x 11 x 25	2
B	Top	$\frac{3}{4}$ x $11\frac{1}{4}$ x 30	1
C	Case Divider	$\frac{3}{4}$ x $10\frac{3}{4}$ x 28	4
D	Back	$\frac{1}{4}$ x 21 x 28	1
E	Filler	$\frac{3}{4}$ x $1\frac{1}{4}$ x $27\frac{1}{2}$	1
F	Base Front	$\frac{3}{4}$ x 4 x $30\frac{1}{2}$	1
G	Base Side	$\frac{3}{4}$ x 4 x $11\frac{3}{4}$	2
H	Drawer Divider	$\frac{3}{4}$ x $10\frac{3}{4}$ x $6\frac{1}{2}$	4
Small Drawer			
I	Front	$\frac{3}{4}$ x 6 x $6\frac{5}{16}$	4
J	Side	$\frac{1}{2}$ x 6 x $10\frac{1}{2}$	8
K	Back	$\frac{1}{2}$ x $5\frac{1}{2}$ x $5\frac{1}{16}$	4
L	Bottom	$\frac{1}{4}$ x $5\frac{3}{16}$ x $10\frac{1}{4}$	4
Medium Drawer			
M	Front	$\frac{3}{4}$ x 6 x $13\frac{3}{8}$	2
N	Side	$\frac{1}{2}$ x 6 x $10\frac{1}{2}$	4
O	Back	$\frac{1}{2}$ x $5\frac{1}{2}$ x $12\frac{3}{8}$	2
P	Bottom	$\frac{1}{4}$ x $10\frac{1}{4}$ x $12\frac{3}{8}$	2
Large Drawer			
Q	Front	$\frac{3}{4}$ x 6 x $27\frac{1}{2}$	1
R	Side	$\frac{1}{2}$ x 6 x $10\frac{1}{2}$	2
S	Back	$\frac{1}{2}$ x $5\frac{1}{2}$ x 27	1
T	Bottom	$\frac{1}{4}$ x $10\frac{1}{4}$ x 27	1
U	Inlay Strip	$\frac{3}{16}$ x $\frac{3}{4}$ x 6	5
V	Knob	1 in. dia. porcelain	12

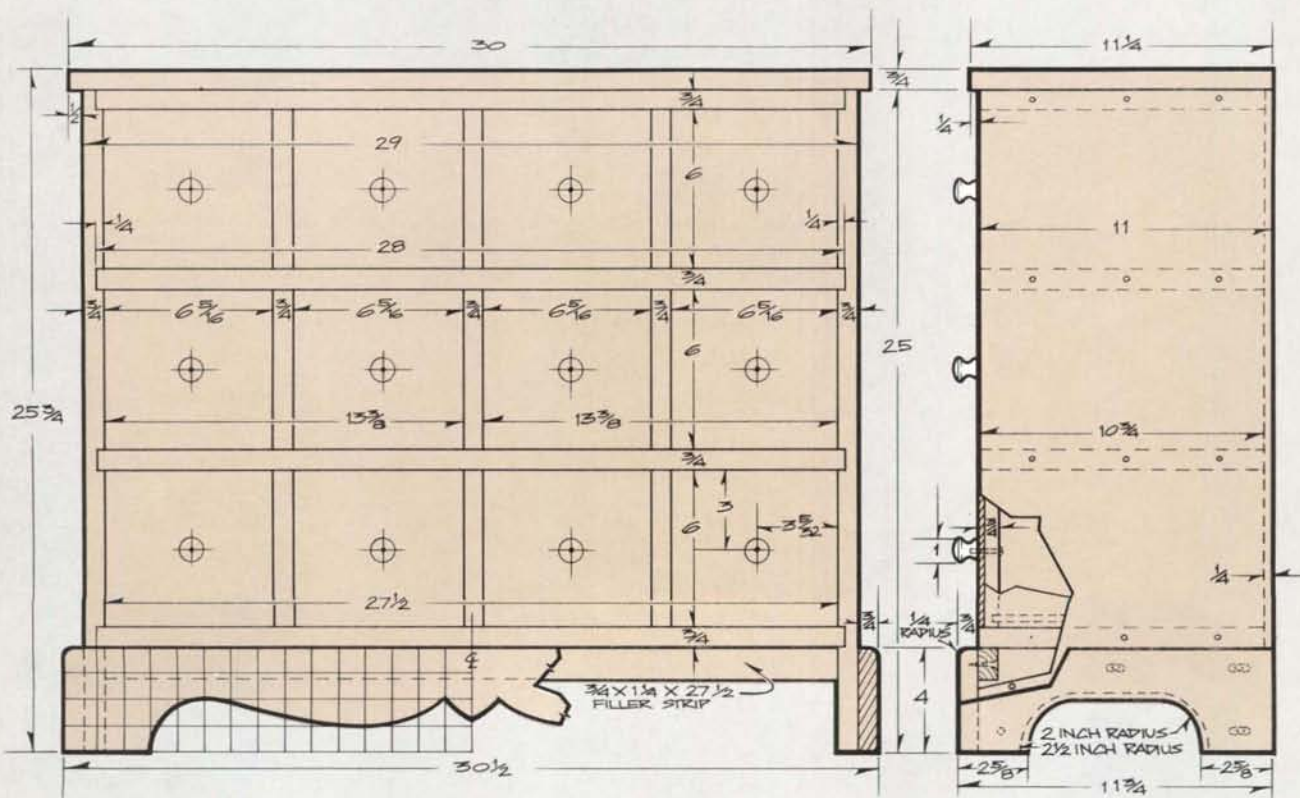
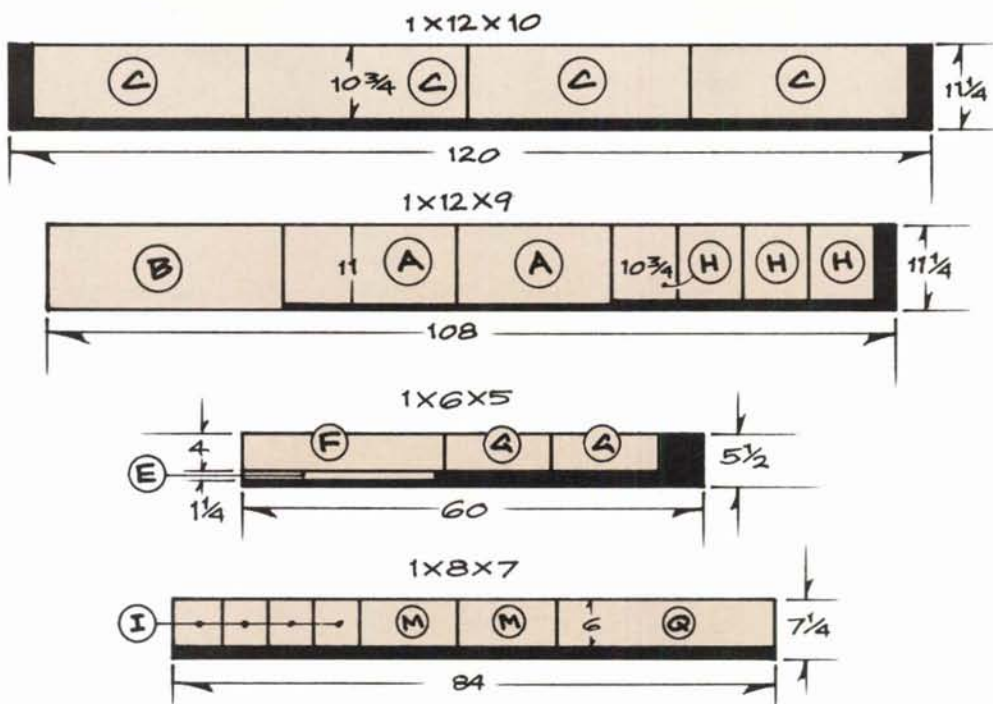


1/2 x 1/2" RABBET



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CUTTING DIAGRAM FOR CASE PARTS AND DRAWER FRONTS

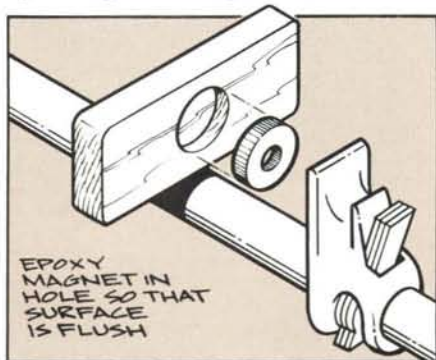


Shop Tips

When your stick of belt/disk sander cleaner gets too small to hold safely, simply glue what remains to a new stick using plastic laminate contact cement.

Anthony Palita, Brookhaven, Penn.

Wooden clamp blocks are often used to prevent the clamp jaws from damaging a workpiece. It often seems, however, that three hands are needed in order to hold the blocks while tightening the clamps. I've solved the



problem by making magnetic blocks. The inexpensive magnets are sold at most electronic stores such as Radio Shack. Simply bore a hole to accept the magnet (make sure the stock is thick enough; you don't want the magnet to be exposed on both sides) and glue it in place with epoxy.

Marvin J. Ahr, Berwyn, Ill.

Clamps tend to get in the way when I use a vibrating sander to sand small boards. To avoid this problem, I place a section of rug on my workbench, then the stock is put on the rug. The stock stays in place without the use of a single clamp.

W.H. Masterson, Moneta, Va.

I've adapted the traditional bench hook design to make a handy jig for planing boards. The jig hooks over the end of a workbench while a stop, which protrudes $\frac{3}{16}$ in. above the jig

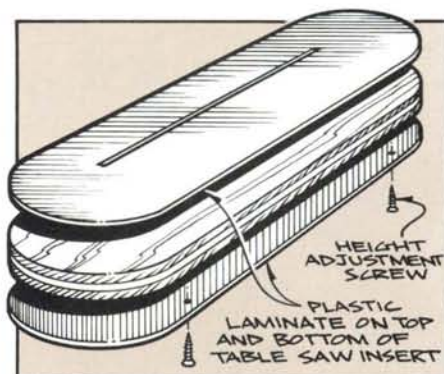


base, is glued into a dado. No metal fasteners are used, so there is no danger of damaging the plane iron.

Jacob Schulzinger, Houston, Tex.

If you make your own plywood table saw inserts, it's a good idea to apply plastic laminate (Formica) to the

top and bottom surfaces. It helps keep the plywood flat while providing a smooth surface for stock to slide on.



It's also useful to add four small screws in the bottom to allow height adjustment.

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

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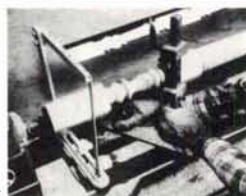
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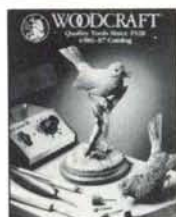
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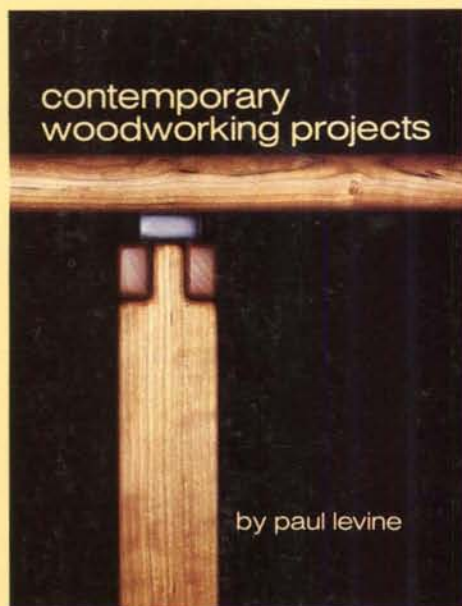
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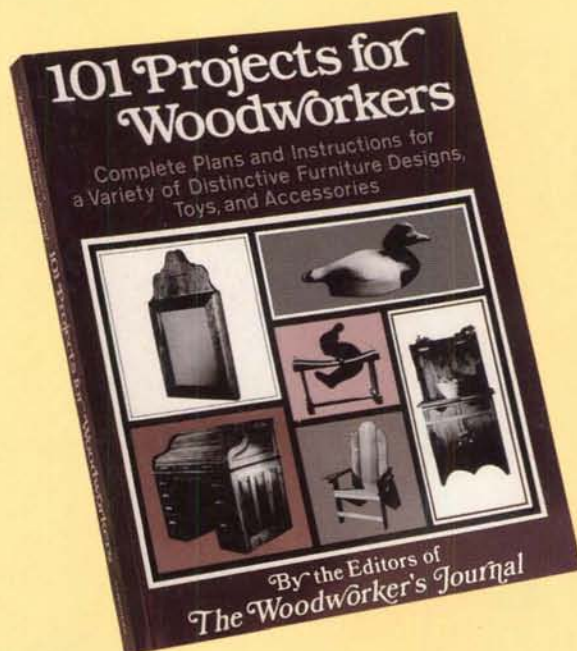
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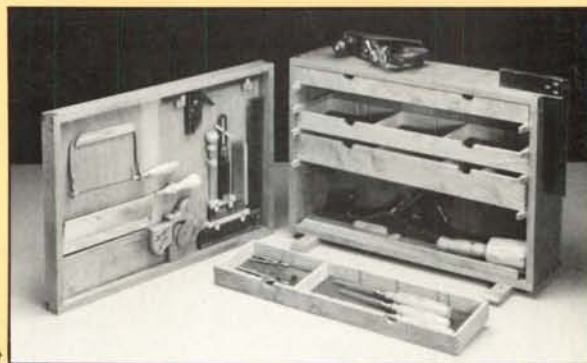
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Here are a few of the projects we've lined up for the September/October 1987 issue of

The Woodworker's Journal

. . . and more

Snail Pull Toy



Tool Cabinet