

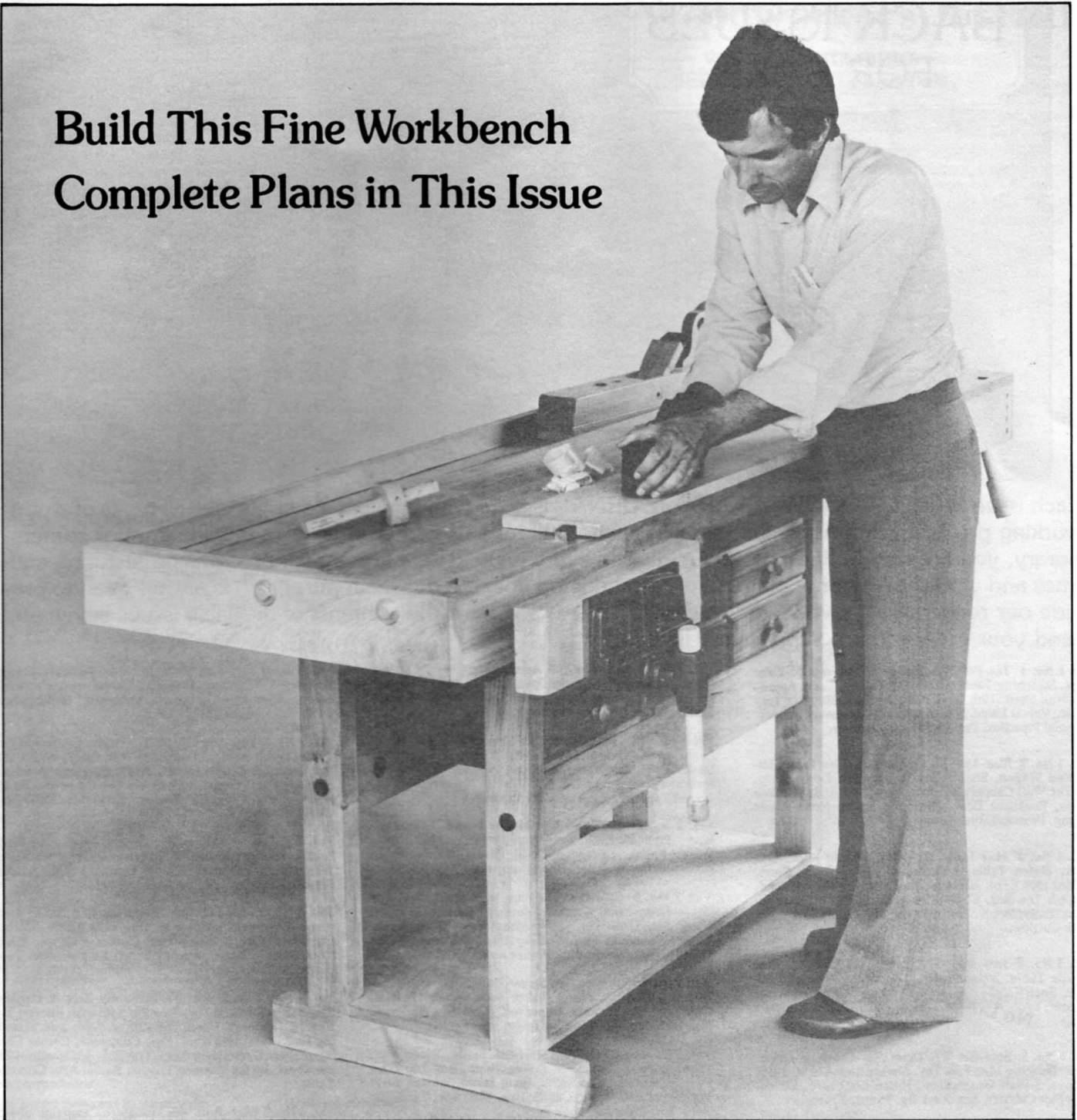
The Woodworker's Journal

Vol. 4, No. 5

Sept./Oct. 1980

32 Pages — \$2.25

**Build This Fine Workbench
Complete Plans in This Issue**



In This Issue:
Cobbler's Workbench Coffee Table
19th Cent. Cherry Table

Child's Booster Seat
Pine Schoolhouse Desk
5 Great Gifts To Make

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Each issue of THE WOODWORKER'S JOURNAL is filled with fully detailed plans for all types of wood-working projects, from a roll-top desk to simple pull toys. Whether your taste is traditional or contemporary, you are sure to find interesting ideas in every issue. There are regular columns on restoring antiques and workshop income plus useful jigs and shop tips, but our main purpose has always been to provide our readers with a variety of PROJECT PLANS. Check the contents of available issues below and send your order today...supplies are limited.

Vol. 1 No. 1 Jan-Feb '77: Shaker Woodbox, Old-Time Toys, Bunching Table, Glass Top Tables, Early American Wall Shelf, 19th Cent. Steeple Clock, Butler's Tray Table, Velvet Lined Treasure Case, Louvered Hamper, Colonial Pipe Box, Picture Framing Primer.

Vol. 1 No. 2 Mar-Apr '77: Contemp. Coffee Table, Little Red Wagon, Shaker Bench, Fife-Rail Table Lamp, Shaker Wall Cabinet, Picture Frame, 3 Handy Kitchen Items, Bookcase Desk, Butcher's Table, Home-Made Clamp, Practical Bird Houses.

Vol. 1 No. 3 May-June '77: Colonial Plate Rack, 17th Cent. Hutch Table, Adirondack Lawn Chair, Picnic Table, 18th Cent. Blanket Chest, Shaker Candlestand, English Tea Box, Child's Swan Rocker, 3 Projects for Scrap Ends, Small Shaker Table, Toy Train, Table Saw Cove Cutting.

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Vol. 1 No. 6 Nov-Dec '77: Firewood Box, Valet Stand, Miniature Victorian Sleigh, 6 Holiday Gifts, Wine Rack, Pencil-Post Bed, Shaker Settee, Shelving System, Swinging Cradle, Ox Yoke.

Vol. 2 No. 1 Jan-Feb '78: Edge Sander, Colonial Dry Sink, Gossip Bench, Bookcase Night Table, Shaker Portable Chest, Victorian Washstand & Mirror, Vanity Mirror, Rustic Wall Plaque, Aquarium Stand.

Vol. 2 No. 2 Mar-Apr '78: Apothecary Chest, Cutting Cabriole Legs, Pine Chair, Colonial Wall Shelf, 3 Lathe Projects, Balancing Toy, Shaker Set of Steps, Walnut Serving Tray, Queen Anne Stool.

Vol. 2 No. 3 May-June '78: Shaker Lantern Table Lamp, Aeolian Harp, Two Cutting Boards, Pine Trestle Desk, Early American Bookcase, Novelty Windspeed Indicator, Notes on a Louis XV Table, Nursery Mobile, Round Tapering Jig, Tudor Birdhouse.

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Vol. 3 No. 2 Mar-Apr '79: Wood Weathervanes, Cranberry Scoop Magazine Rack, Roll-Top Desk Part II, Table Saw Jigs, Music Stand, Corner Shelves, Pine Blanket Chest, Shaker Style Bed, Magic Money Printer

Vol. 3 No. 3 May-June '79: Cherry Dressing Mirror, Medicine Cabinet, Patio Settee, Pine Dry Sink, Spanish Chest, Fishing Rod Rack, Small Utility Table, Hidden Maze Toy, Child's Wall Rack.

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Vol. 4 No. 2 Mar-Apr '80: Firewood Rack & Carrier, Red Baron Triplane Toy, Pine Pie Safe with Pierced Tin Panels, Contemp. Glass Top Coffee Table and Matching End Table, 19th Cent. Pine Commode, Corner Cupboard Part II, Butcher Block Toy Box, Mahogany Corner Shelf, Jig for Wooden Trivets, Radial Arm Crosscut Table.

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Vol. 4 No. 4 July-Aug '80: Magazine Rack, Gothic Oak Stool, Whale Cribbage Board, Doll Cradle, Nut & Bolt Toy, Basketweave Planters, Easy Wall Clock, Router Bit Box, Pine Cellarette, Lap Chessboard, Pine Wall Box.

Vol. I, No. 1 through Vol. IV, No. 4 are newsprint issues for \$1.50 each. From Vol. IV, No. 5 on, they are magazines for \$2.25 each. CT residents only please add 7½% sales tax.



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Associate Publisher
Margaret E. McQuillan

Managing Editor
Thomas G. Begnal

Contributing Editors
Donald F. Kinnaman
Paul Levine
John W. Olson

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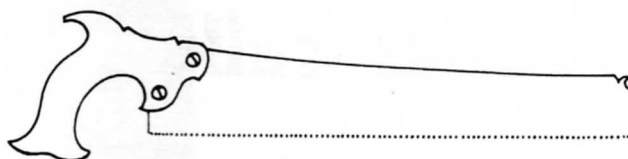
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We welcome contributions in the form of manuscripts, drawings and photographs and will be glad to consider such for possible publication. Contributors should include a stamped, self-addressed envelope of suitable size with each submission. While we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



The Woodworker's Journal

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SEPTEMBER/OCTOBER 1980

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Shoptalk

The New Look

Here, after nearly four years of newsprint publishing, is our new magazine. As you can see, the editorial content is just about the same as it's been in the past, but in a more compact format.

Getting this act together took considerably more time than we expected...so it may reach some of you a few days later than usual. I apologize for this delay, and hope that you will be pleased with our new look.

The Workbench

The cabinetmaker's workbench featured in this issue is one of our more ambitious projects and one that quite appropriately launches the new magazine. This is the kind of bench that every serious woodworker dreams of owning and passing on to succeeding generations. Commercially produced benches are pretty expensive items and this one, if it were available, would probably retail for about \$900.00.

Working off and on over a period of one month, Roger Schroeder built the bench shown in the photos and clearly demonstrated that he is a first class craftsman. The workmanship is superb. In fact, the bench is so beautiful we still haven't decided whether to actually use it in our shop or just keep it on display in the office.

Roger bought all lumber and hardware for the project and spent about \$320.00. He feels that, if some scrap stock is used for drawer frames and other parts, the bench can be

built for under \$300.00...which should bring it within the reach of most of our readers.

As with all major projects, this one may appear somewhat overwhelming at first but when analyzed and broken down into its sub-assemblies and taken one step at a time, it's really not that difficult an undertaking.

Let Your Fingers Do the Walking

We regularly receive a number of letters from readers who want to manufacture wooden items for sale. Most of them inquire as to where they can get hardware and cabinet lumber wholesale. While we know of many wholesale suppliers, it's not often that we can match up a supplier with a particular reader's area.

Shipping lumber costs money and it is certainly not in the best interest of a small cabinet shop in New Mexico to order a large shipment of hardwood F.O.B. from Pennsylvania. At the risk of sounding facetious, we usually advise the reader to first check the yellow pages of the telephone directory of his or her town, or if it's a small town, to check the directory of the nearest large city. Almost always, hardware and lumber wholesalers will be listed. That's the first and most obvious place to start looking. If the particular wholesaler you call cannot supply a specific item, they can usually direct you to another source close to home.

In order to gain wholesale prices, it may or may not be necessary for you to invest a few bucks in having business letterheads printed and you'll probably have to apply to the state for a tax number in order to purchase raw materials without having to pay state sales tax.

Jim Mc Quillan

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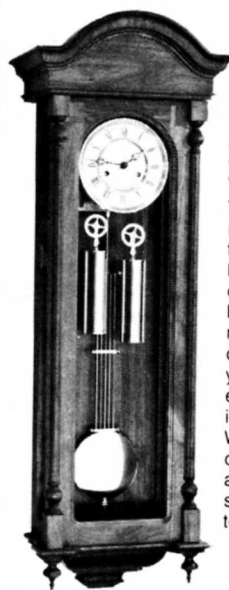
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Letters

I have been receiving *The Woodworker's Journal* for about 6 months and have been enjoying it a great deal. The designs in "The Gift Shop" pages are simply great. The frog design (May/June 1980) really took my eye, so much that I would like to build about 16 of them to sell at the next crafts show. May I do this legally without the permission of *The Woodworker's Journal*? If not, may I have your permission for the project? E. Loeffel, Pleasant Valley, N.Y.

We've had this question come up several times recently and the confusion is probably related to our copyright. The copyright we have applies to the project drawings and write-ups, and only serves to protect them from being reproduced by others and sold as plans.

From our plans, you can make and sell as many of the projects as you like, and our permission is not needed. In fact, one of the primary reasons we offer "The Gift Shop" section is to provide projects for those readers who wish to make a little extra money from their woodworking hobby. So best of luck at your show, and we hope you sell all 16 of those little wooden frogs.

I received my first copy (July/August 1980) of your publication and decided to make the pine wall clock shown on pages 10 and 11. In looking over the instructions and drawings I noticed several errors. The 10" x 10" (part D) needs a 7" square opening, not 8 1/2" as stated in the write-up. Also, the drawing on page 11 shows chamfers on the sides of part D. This is not correct as the chamfers should be located on the sides of part B. Finally, the bottom of part A is shown to have a 1 1/4" radius, when in fact it has more nearly a 2 1/4" radius. M.H. Baugh, Washington, N.C.

Mr. Baugh is correct on all three points. Although we make every effort to provide plans that are clear, complete, and accurate, we occasionally do make mistakes, so it's appreciated when readers take the time to write and tell us about plans that contain errors. This enables us to print a correction in the following issue.

Can you tell me where I can get some brass candle sockets? S. Hayward, Dysart, IA.

The Woodworker's Store, 21801 Industrial Blvd., Rogers, MN 55374 sells a brass plated candle holder that can be recess or surface mounted. Also, Woodcraft Supply Corp., 313



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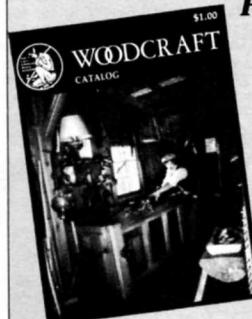
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Letters (cont'd)

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I'm building the Aeolian harp project (May/June 1978) and have a question. In what order are the strings fitted? Are they three sets of four strings each, or four alternating sets such as G, B, E, G, B, etc., or possibly some other order? B.A. Gustin, Jr., Briarcliff Manor, N.Y.

There's not much information available on these harps and there may be other ways of stringing them, but we strung ours in three sets of four strings each - G on one side, B in the middle, E on the other side - and the harp works very well.

As a manufacturer of a sharpening jig for chisels and plane irons, I noted with interest The Beginning Woodworker column in your July/August 1980 issue. In the discussion of sharpening with 5" and 6" high speed grinders, you state, "these high speed grinders are prone to quickly overheat and burn the cutter edge even with frequent quenching in water."

I should like to make it clear that our product, properly used, will sharpen plane irons and chisels on a high speed grinder without overheating and burning the cutting edge. Our jig makes it easy to locate and hold the tool in place, therefore only very light hand pressure is required to contact the cutting edge against the wheel. Since only light pressure is needed, the cutting edge is not subject to the usual overheating problems often associated with high-speed grinders. R. Insalaco, Rima Mfg. Co., Quaker Hill, CT.

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I would like to know where I can buy the felt that comes in a roll 3/4" wide. It's often used in gun cabinets for barrel and butt rests. It has a backing on it that peels off, exposing an adhesive surface that will stick to the wood. E. McBane, Wellsville, OH.

Albert Constantine and Son, Inc., 2050 Eastchester Rd., Bronx, N.Y. 10461, sells pressure sensitive felt with a peel-off backing. No glue is needed. However, it comes in 27" widths so you'll have to cut to size as required. Current price per yard is \$3.95 plus shipping.

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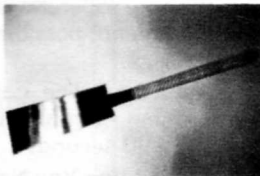
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Workshop Income

by Paul Levine

If you're like many woodworkers, you probably feel it's a lot easier to make a product than to sell it, especially when it means selling it to a retail store. "I'm okay working in my

they're a little special to you, so having them dismissed with a polite "not interested" can be very disappointing.

But one point should be remembered. You'll never have a product that every single gift shop is going to want, no matter how good it is. Nobody likes to be turned down, but it is very much a part of selling. Professional industrial salesmen often make 20 calls before they make a sale. But they have perseverance, and so must you. If your first effort is a flop, don't give up. You may have to call on 5, 10, or more shops to get that magical first order. But keep trying. If you have a worthwhile product, that's made well and priced right, it will eventually sell.

Some woodworking businessmen are very selective in determining the shops they plan to sell to. By carefully choosing, they feel they can get more customers with fewer calls. How do you choose a store? Go inside and look carefully. Do they already have items the same as, or similar to, what you intend to sell them? Many stores do not wish to duplicate their stock. Are their price lines way above or below what your goods would sell for? The store has an image. Customers come in expecting to find certain price goods, and when they don't find what they expect they don't buy.

Are your wares timely? If you produce a seasonal item, like Christmas wreaths, you won't be able to sell them after their season. Remember also that stores need the goods before their peak demand, so don't wait until just before Christmas.

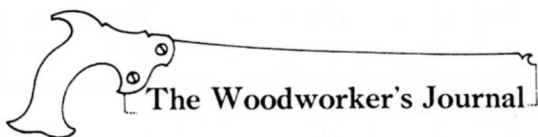
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Workshop Income

by Paul Levine

If you're like many woodworkers, you probably feel it's a lot easier to make a product than to sell it, especially when it means selling it to a retail store. "I'm okay working in my shop," you say, "but I'm no salesman." You know your products are good, and can be made at an attractive price, yet thoughts of having to peddle them to retailers just doesn't appeal to you.

Some woodworkers choose to delegate the job of selling to a friend, wife, or professional salesman. For the average craftsman, this is a mistake. When a shop owner starts to ask questions about the product and the seller has no answers ready, usually no sale is made. For the professional, the quantities involved are usually too small to be meaningful and your wares will be passed over before they are shown.

You are the one with the love and enthusiasm for wood. You are the one with the pride for, and knowledge of, the product. These good feelings and pure energy will be picked up by the buyer. They will sell the product, and only you have them.

Remember you are selling a handcrafted item, not a mass produced one. People won't expect you to come in with a slick salespitch. Just be yourself, and be honest, and your feelings will come through for you.

Perhaps you once tried selling but were unsuccessful. After that you gave up. Many woodworkers do. After all, you probably put hours of work into your products, and

they're a little special to you, so having them dismissed with a polite "not interested" can be very disappointing.

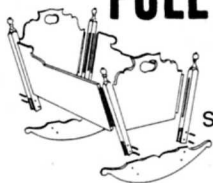
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Restoring Antiques

by John W. Olson

The 19th century clipper ships brought many items from the Orient and one of the most popular was a low, round, carved table. A very few were made from camphorwood and I had the pleasure of restoring and refinishing one of these tables. It was about 20" high and 24" in diameter and of a most interesting construction and decoration. The four legs were cut in a flat "S" curve whose upper part curved outward from just below the rails to a greater degree than the reversed inward curve which descended to the foot. Each leg was about 3½" wide at the top and fell straight for 6", the width of the rails, before curving outward. Below the rails each leg tapered gently to 1½" at the foot. A fanciful flowering carved vine climbed each leg and then entwined itself along the rails, carved so as to pierce the rails. The rails and each leg composed one quadrant of the base. This was topped by a round cover inlaid with nacre and carrying an ogee molding around the periphery. Apparently the carving had been done after assembly as it ran unbroken from one piece to the other.

A clever system of pinned mortise and tenon joints held the table together. No glue had been used. Each end of the rails carried a tenon that reached not quite halfway into a through mortise cut in the upper end of each leg. The tenons were then pinned by whittled wooden pegs which protruded slightly on the back side. This wasn't apparent on the outside of the rails as the blind hole only partially penetrated the far side of the mortise.

Considering its age and probable history, the table was in remarkably good shape. In a few places, some pieces of

carving were missing, but for the most part it suffered only a few dents and scratches. Surprisingly, the top was in almost perfect condition. The joints presented the most difficult problem. All of them were loose, victims of the dry air that goes hand in hand with most 20th century heating systems. Exposed to dry air, the wood dried and shrank, resulting in loosened joints. Before repairing the dents and scratches, I first had to work on the joints.

Since the original had been built without using any glue, I felt the joints could best be repaired by disassembling the table, then refitting the parts and rejoining with epoxy adhesive. It turned out to be comparatively simple. Disassembly only required that the pins be carefully drilled out. A little refitting was necessary to make the legs fit tight against the rails. The missing pieces of carving were replaced by fitting in small blocks of teak, then carving them to match the general motif. The loose joints were reassembled using wood-bonding epoxy adhesive. Epoxy has excellent gap filling properties, making it a good choice for loose fitting joints such as this. (Editor's Note: John Olson lists several good epoxy adhesives in his May/June 1980 column). A new set of pins were prepared and glued in place.

Next, the original finish (an alcohol based varnish) was stripped. A wet rag and hot iron steamed out all but the worst dents. Those that couldn't be steamed out were filled with wood putty. The entire table was then given a thorough sanding to remove any scratches and smooth the wood putty filler. The approximate appearance of the original finish was reproduced by applying several coats of black lacquer. The nacre on top was in good shape and was sealed before application of the lacquer with a clear polyurethane varnish finish. A rub down with 0000 steel wool and application of a carnauba based furniture wax left a muted glowing surface, completing the restoration.

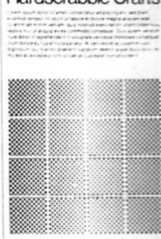
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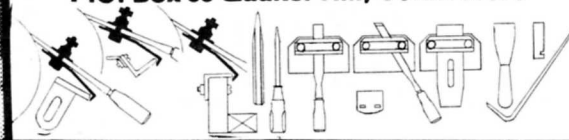
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The Beginning Woodworker

Cutting wood with a sharp edged handtool is a communion between woodworker and material. As practiced hands guide the tool, the character and resistance of the wood is subtly gauged; minute adjustments of angle and pressure are made and the tool is an extension, not only of the hands, but of that computer storage bank of the brain which is the sum of experience.

Perhaps even more than the bench plane, the wood chisel is a tool that is such an extension of ourselves. Though relatively simple in concept, it demands much from us. If properly sharpened and used, it will do what it has done successfully for thousands of years. If mishandled, it will ruin the work and/or the hands.

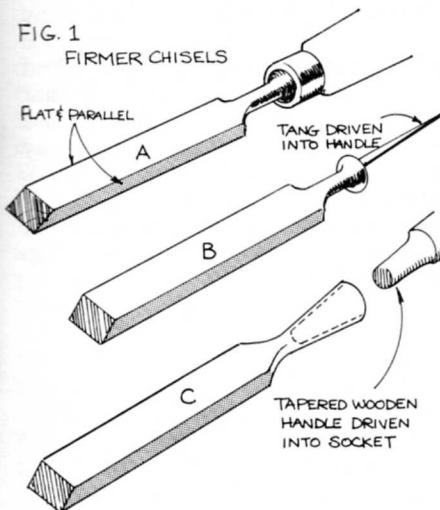
A discussion of wood chisels must necessarily be prefaced by the warning that of all woodworking tools, chisels and their cousins the gouges are the ones most likely to inflict serious injury. Whenever using these tools, the workpiece should be held fast with vise, benchhooks, clamps or other devices. Keep both hands behind the chisel and always cut away from the body.

Types of Chisels

Literally hundreds of chisel shapes have been developed over the centuries and many styles remain in use. Some of the latest woodworking tool catalogs devote several pages to chisels and the novice may become a bit overwhelmed by the problem of which types to choose for most work.

A chisel is a handtool with a straight cutting edge. Gouges are related to chisels but have curved cutting edges which places them closer to the carving tools.

FIG. 1
FIRMER CHISELS



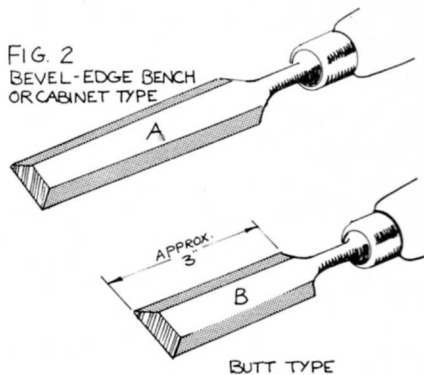
Chisels cut with a combination of a fine cutting edge and a wedge-shaped cross-section. The angle of this wedge depends on the properties of the wood being cut but, as we shall see later,

this angle is generally a compromise. For practical purposes we can divide all chisels into three major groups: firmer, paring and mortise.

Firmer chisels are the general workhorses of the family. They have fairly thick blades, ground flat with parallel sides which help in aligning the tool for square cuts (Fig. 1A). These chisels, for rough work, are driven with a mallet. Blades are either formed into a tang which is embedded in a wood (Fig. 1B), or plastic handle or the blades end in a socket into which a wood handle is driven (Fig. 1C). Socket chisels enable the wood handle to absorb the compression load of mallet blows. A steel ring around the top of the handle prevents splitting or mushrooming. Blade widths range from 1/4 to 1 1/2 inches.

Another type of chisel in the firmer group are referred to as *bevel*, *bevel-edge*, *bench* or *cabinet* chisels (Fig. 2A). This chisel is the type most commonly in use today. Because the top face of both sides of the blade is beveled, this chisel provides better clearance in close corners, particularly in dovetail slots. Since the blade in section is considerably thinner than that of the straight-sided firmer chisels, bevel chisels are not the best choice for heavy work.

FIG. 2
BEVEL-EDGE BENCH OR CABINET TYPE



Bevel chisels usually come with tangs mounted in plastic or wood handles though socketed types are also made. Butt chisels are bevel chisels with a short blade; usually 3 inches in length (Fig. 2B). Some workers prefer the shorter length for most work.

Paring chisels, as the name implies, are used for finishing when it is necessary to make thin slicing cuts to bring sides and ends of a mortise to final flatness (Fig. 3A). These chisels have long, thin blades ranging from 7 to 10 inches and the blades are usually bevel-edged rather than flat. These chisels are meant to be driven by hand rather than with a mallet.

The *offset handled paring chisel* is a variant that can prove very useful at times (Fig. 3B). These are used in sit-

uations where the handle of a straight chisel may restrict hand movement. The offset handle permits the blade to lay flat on the work without the knuckles touching.

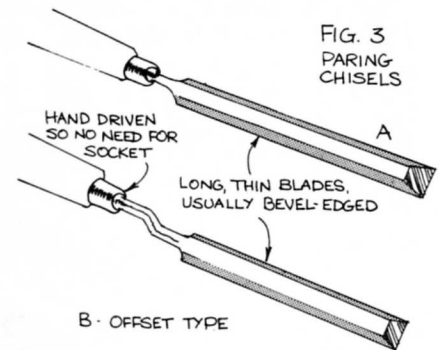


FIG. 3
PARING CHISELS

Mortise chisels have long, extra thick blades and are usually socketed to withstand heavy mallet blows (Fig. 4A). The traditional use of the mortise chisel was in chopping and levering out waste chips when cutting mortises. Since most workers remove waste by drilling first, the mortise chisel can be considered mainly for heavy work.

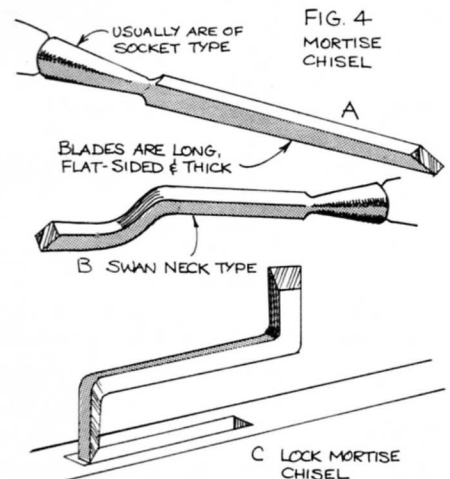


FIG. 4
MORTISE CHISEL

An interesting and useful variation of the mortising chisel is the *swan neck* (Fig. 4B). This style is handy for paring the bottom of deep mortises. The swan neck bend in the blade provides leverage against the sides of the mortise.

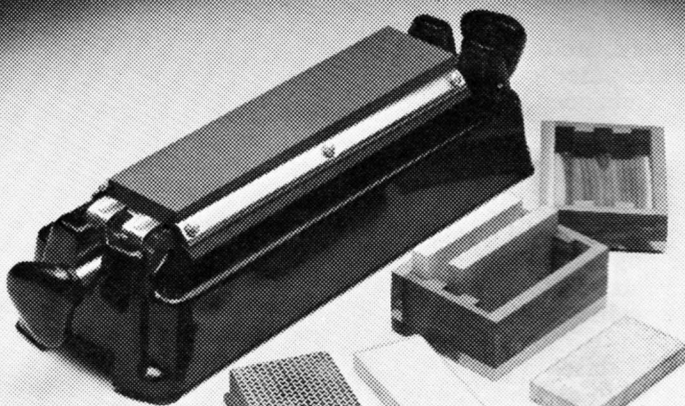
One other special type is the *lock mortise chisel* (Fig. 4C). This has two blade widths at right angles to each other and is used for cutting the deep narrow mortises required for drawer locks. Since most contemporary chests of drawers do not employ separate drawer locks, this chisel is not often seen but it is a handy tool to have.

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Beginning Woodworker (cont'd)

bevel firmer chisels in sizes of 1/4", 1/2", 3/4" and 1". With metal capped plastic handles, these chisels can be used for fairly rough mallet work as well as for final paring. If power equipment is lacking and dadoes, rabbets, etc. will be cut by hand, a few heavy flat firmer chisels with socketed wood handles in sizes 1/4", 1/2" and 3/4" will prove handy. Bevel edge firmer chisels in sizes 3/8" and 5/8" are nice to have for one stroke cutting of dovetails. Later on, you can add a couple of paring chisels for fine work in sizes as needed.

Handling Chisels

In order to use a chisel successfully, the grain of the workpiece must be considered. If a chisel is used against the grain, splits can occur and control of the chisel will be difficult. It helps to think of the grain as a stacked bundle of separate tubes. It then can be seen that a cut against the way they are laid will lift and separate them. Cuts in the direction in which they lay will cut them cleanly without lifting them (Fig. 5A & B). This is cutting with the grain or "downhill." The direction of the grain usually can be determined by examining the stock and certainly by making a careful exploratory cut.

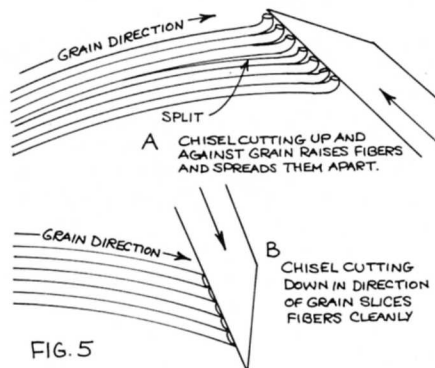


FIG. 5

Chisel cuts should be directed away from the marked line and into the waste area. When cutting to a marked line, it is important to remember that the cutting bevel acts as a wedge and forces the blade in at an angle away from the direction of cut (Fig. 6A). Therefore always cut away a recess within the waste area, then pare the remaining waste down to the line (Fig. 6B).

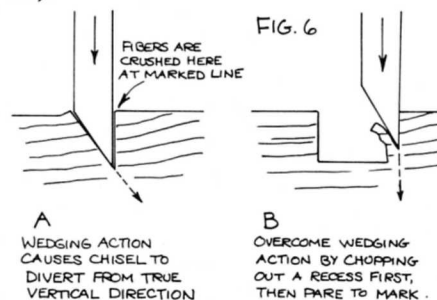


FIG. 6

In order to remove a lot of wood, use the chisel bevel down. For heavy going

Beginning Woodworker (cont'd)

use the mallet and as you near the line, reverse the chisel and pare away remaining waste with the flat side of the blade against the work.

To avoid splintering corners when cutting horizontally across the grain, cut from each edge to the center and slightly upward so that the waste wood at the center is removed last (Fig. 7). Make finishing cut with the flat side of the chisel down, also working from each edge toward the center.

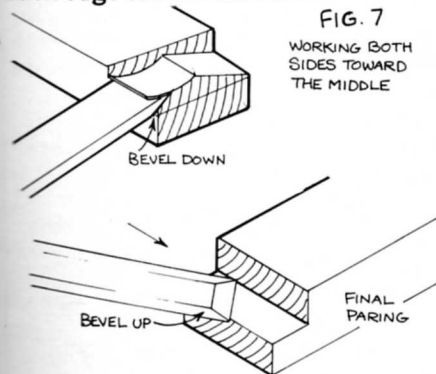


FIG. 7
WORKING BOTH
SIDES TOWARD
THE MIDDLE

In most operations, and particularly when cutting across the grain, the chisel will cut more easily and leave a smoother surface when the cutting edge is held at a slight skew to the direction of the cut. This is shown in Fig. 8A & B.

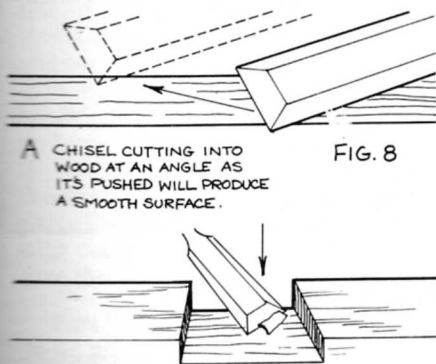


FIG. 8

— B — A SKEWED CUT ACROSS THE GRAIN
WORKING FROM SIDES TOWARD MIDDLE.

In situations where one must cut directly across the grain as when cleaning the bottom of a dado, it is difficult to achieve a good surface as the chisel cannot be angled. In most cases though, the surface quality of a dado bottom is not critical.

Whenever possible, and particularly when cutting dados or rabbets across grain, the sides or shoulder should be sawed first. The chisel is then used to remove the waste. When cutting mortises, many workers use a drill bit of a diameter slightly less than the mortise width to drill a series of holes, thus removing most of the waste before picking up the chisel.

Good chisel work cannot be accomplished in haste. Do not hurry the job and resist the temptation to take thick cuts. The chisel may dig in and split off a piece which will ruin the work. As in all other phases of woodworking, a

methodical and deliberate approach always pays off.

Most chisels come from the manufacturer with a cutting bevel of 22 to 25 degrees. As mentioned earlier, the angle of the cutting wedge is, at best, a compromise between achieving a fine cutting edge and one that will stand up to tough work without crumbling.

For bevel-edge firmer chisels used for most cabinet work including final paring, a bevel of 25 degrees is best. Heavy-duty firmer chisels will keep their keen edges longer for tough chopping jobs if the bevel is ground to 30 degrees.

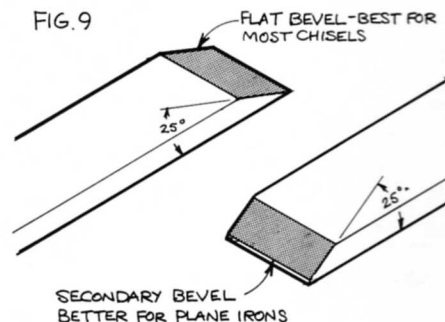


FIG. 9

Honing a chisel to achieve a good flat bevel of 25 or 30 degrees is not easy unless you do it constantly. Many novices (and old-timers too) end up

with a secondary bevel of about 5 degrees (Fig. 9). While a secondary bevel is often put on plane irons, I think that one long bevel on a chisel works best. If you do not have the opportunity to hone chisels often enough to do it accurately by hand, an inexpensive honing guide is a good investment (Fig. 10A).

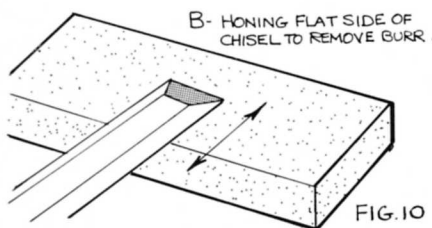
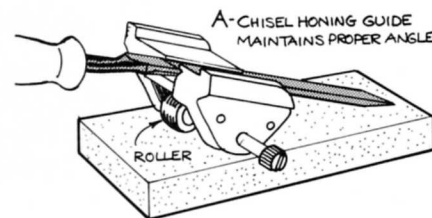


FIG. 10

When honing, do the bevel side first, then turn the blade over and while holding it flat on the stone, rub it back and forth a few times to remove the slight burr that will have formed.

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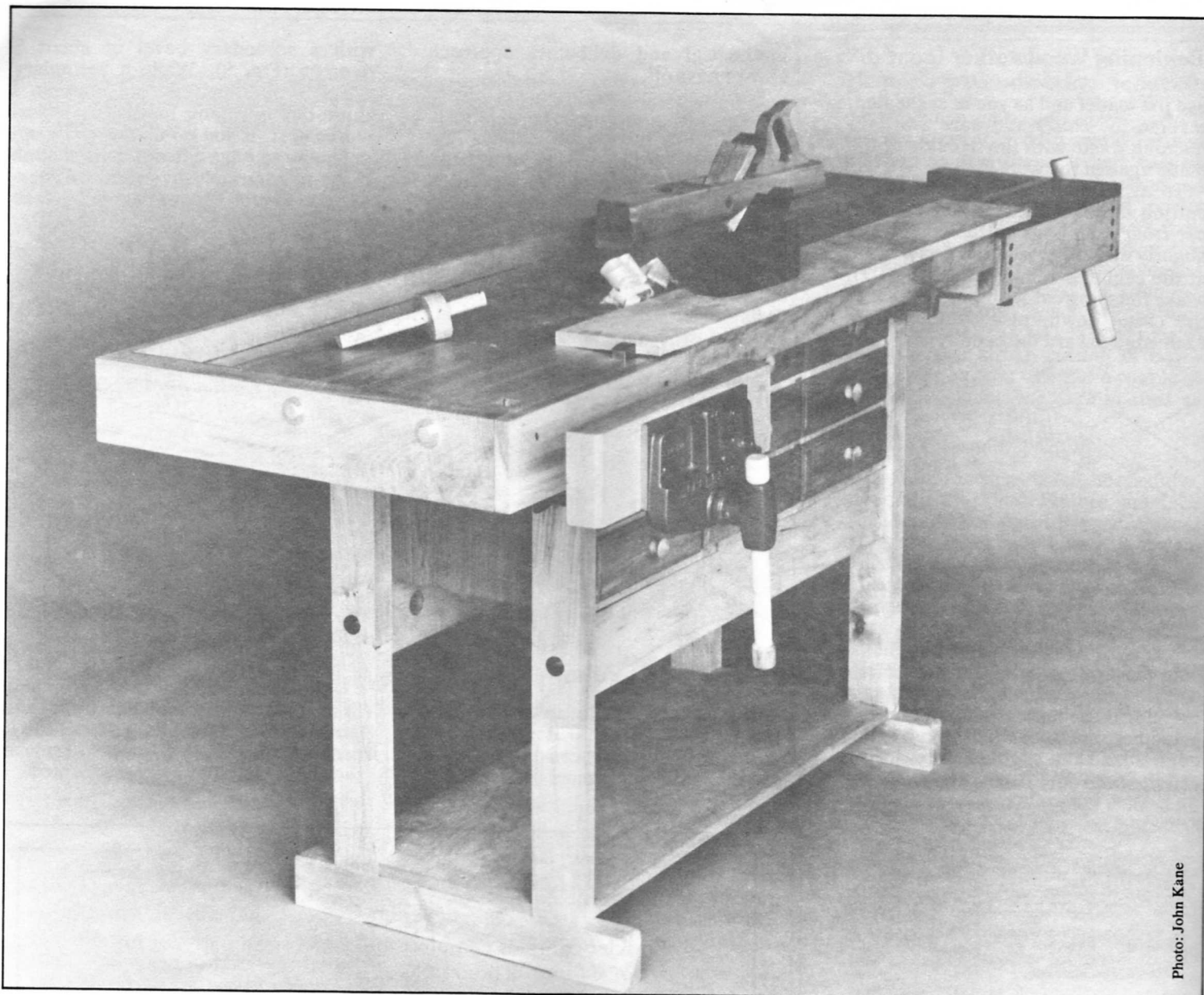


Photo: John Kane

Cabinetmaker's Workbench

by Roger E. Schroeder

This fine European-style workbench is made of maple throughout and capable of holding a board 80 inches long between bench dogs. Well designed with plenty of drawer space, it can be made for under \$300, a big savings compared to imported benches.

Before the workbench is begun, I strongly advise buying the hardware. I know of at least one woodworker who found out too late that the plans he worked from didn't allow for a proper fit of available bench dogs. These, as well as a bench screw for the end vise, can be purchased from Woodcraft Supply Corp., 313 Montvale Ave., Woburn, MA 01888. The Ulmia bench dogs are stock numbered 16A71-0 and the German bench screw is numbered 01H41-AW. These can be ordered by phone at 1-800-225-1153 with a credit card. The front vise is a Sears model, catalog number 5195.

The base should be made first. Cut parts A, B, and C to size. The top corners of the feet, parts B, can be rounded with a router, and a sanding drum on a drill press or radial arm saw will take out some of the underneath of parts B to allow the bench to rest on four points. The 2-inch long tenons of the legs were made with a dado blade attached to a radial arm saw. The mortises in the feet and cleats (C) should be carefully marked out with a pencil and done with

very sharp chisels. A router can also do the job. Parts A, B, and C can now be glued and clamped. For extra strength I used 1/4-inch dowels to pin the tenons inside the mortises. This assures that there will be no separation over the years.

The stretchers (D) are now cut to size. Inch-long tenons are put on their ends as shown in the detail, and mortises are made in the legs. A very tight fit is not necessary since the legs and stretchers are held together with 1/2-inch by 5 inch carriage bolts. A 1 1/2-inch diameter by 1 3/4-inch deep hole on the inside of the stretchers will have to be made (see Fig. 1). This is where the nut is inserted. Since most spade bits have long points, I drilled part way into the stretcher with the bit and continued the hole with a 1/4-inch router bit. Now assemble the legs and stretchers and start the hole for the bolt with a 1/2-inch drill bit. Remove the stretcher, clamp a doweling jig to the top of tenon where the hole was started and continue drilling until the 1 1/2-inch hole is reached.

Before reassembling the base, the plywood shelf should be made since its dimensions will not allow it to be put into place after the stretchers are bolted to the legs. A 3/4-inch box-end wrench will tighten the hex nuts.

The top can now be started. It comprises 9 pieces of 8/4 maple cut at least 2 1/2 inches wide to allow for planing to a

finish thickness of $2\frac{3}{4}$ ", and glued face to face with splines of $\frac{1}{4}$ -inch by 1-inch wide plywood.

I would inquire at local lumber yards or woodworking shops for the availability of a thickness planer. I found a lumber yard that had one and was charged two dollars for the milling of the glued-up top. This easily saved a day's labor. If this is done, the bench top pieces should be cut to $2\frac{3}{4}$ inches and the bench dog holes that hold the heads of the dogs will have to be made deeper.

Before gluing up, certain operations will have to be done on the front and rear pieces of the top. On the rear piece, cut a dado $\frac{3}{8}$ by $\frac{3}{8}$ inches to accept the tool trough bottom (Fig. 5). This can be done on a table saw. On the front piece, the channels for the bench dog can be made using a dado blade. The enlarged tops of the channels can be started with a dovetail or backsaw and finished with chisels.

To avoid having to cut out a rectangular piece for the end vise, I cut pieces 1, 2 and 3 to size and ripped a section out of piece 4 (Fig. 4). I made sure, when joining pieces 2, 3 and 4 that the plywood splines did not show at the tail vise end by using blind splines. The dados for the splines can be made on a table saw. Since pieces 1 and 2 cannot be joined with a spline, I used five $\frac{3}{4}$ -inch dowel pins spaced to avoid the bench dog holes.

The top, after being squared off, can be positioned on the base. I used pairs of $\frac{3}{4}$ -inch dowels on the tops of the cleats and then 5-inch by $\frac{1}{2}$ -inch lag bolts for positioning and securing.

Referring to Fig. 7, cut part H to size with the appropriate notches and then part P. Align the two pieces where the hole will be drilled for the German bench screw. The holes should be slightly oversized so the screw threads will not bind. Clamp the two pieces together and use a spade bit to bore through them. Attach the bench screw nut to the inside of part H which can now be attached to the top with $\frac{1}{2}$ x 4-inch lag bolts. Run the screw through part P and H and screw the collar to the outside of P.

Part S can be cut to size. This is a critical part that may need some trimming so that there is no binding on the underside of the top. Next comes the end screw top, part N (Fig. 4). The bench dog holes can be made later. Using countersunk $1\frac{1}{4}$ -inch wood screws, part N can be joined to parts P and S. The tail vise side, part O (Fig. 1), also held with countersunk $1\frac{1}{4}$ -inch wood screws, can be put on to give the vise rigidity.

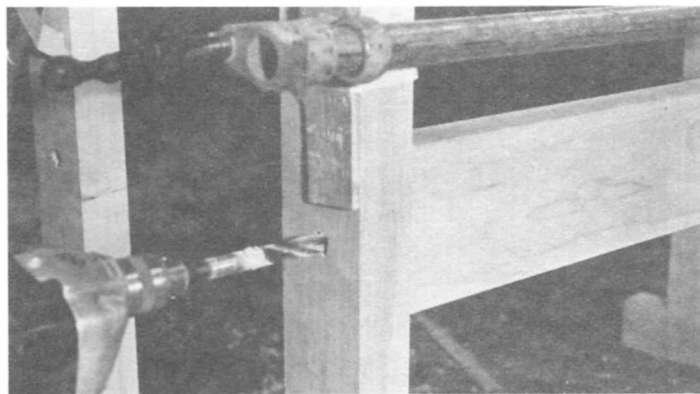
Part V, the spacer block, shown in Figs. 6 and 8, will have to be made and secured to the underside of the bench with $\frac{3}{8}$ x 3 inch lag bolts and washers.

The end vise guides, parts T and U, should be made and attached with $\frac{3}{8}$ x 3 inch lag bolts. Slightly oversized holes for the lag bolts will help to align them should there be binding when the bench screw is turned. Binding may also occur where part N moves over part H and where part S contacts the bench.

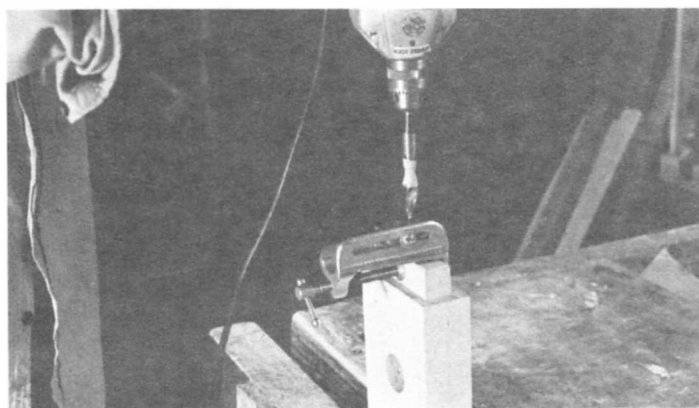
N can now be removed and the bench dog holes set in with chisels. Once these are made, part W is made (Fig. 5). This gives the added thickness to part N to equal the thickness of the bench top. After N is reattached to parts P and H, part W is held underneath it and the outlines for the channels made. The channels can be done with a dado blade and chisels will set in the lip that holds the bench dog head. Part W can be attached to the underside of N with countersunk 2-inch wood screws and glue.

At this point remove the tail vise assembly, clamp and glue all pieces together, and cover all countersunk screws with $\frac{1}{2}$ -inch wood plugs which are sanded flush.

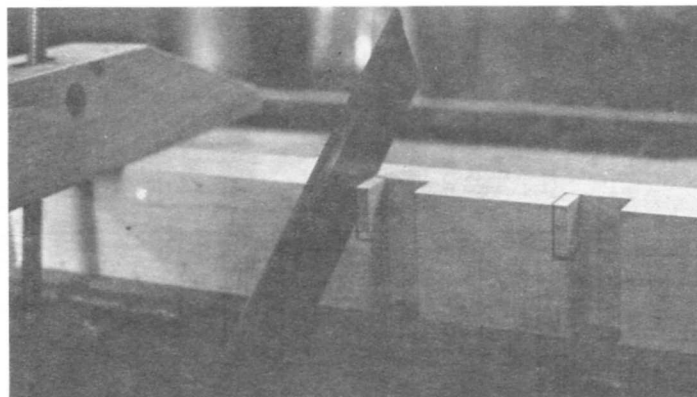
Attach the other bench top end, part G, with $\frac{1}{2}$ -inch by 4 inch lag bolts. Part J (Fig. 6), the trough bottom, can be made and set into place in the dado made in piece 9. After this, part I is cut to size, also with a dado $\frac{3}{8}$ inches deep and wide. This will be held to parts G and H with countersunk $1\frac{1}{4}$ wood screws which will be plugged with $\frac{1}{2}$ -inch wood



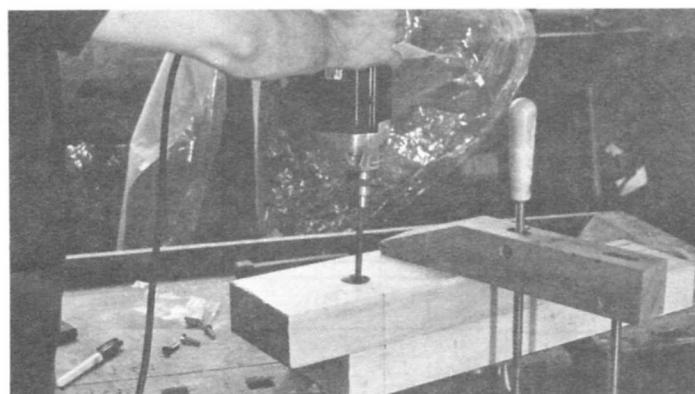
Leg and stretcher are clamped together and the bolt hole is drilled through the leg and just far enough into the stretcher tenon to locate center.



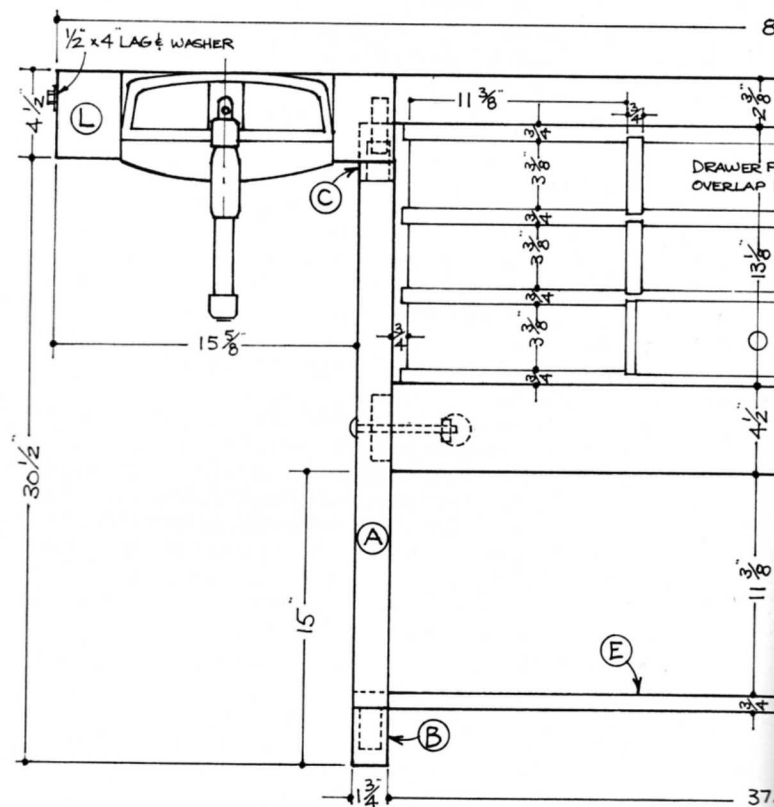
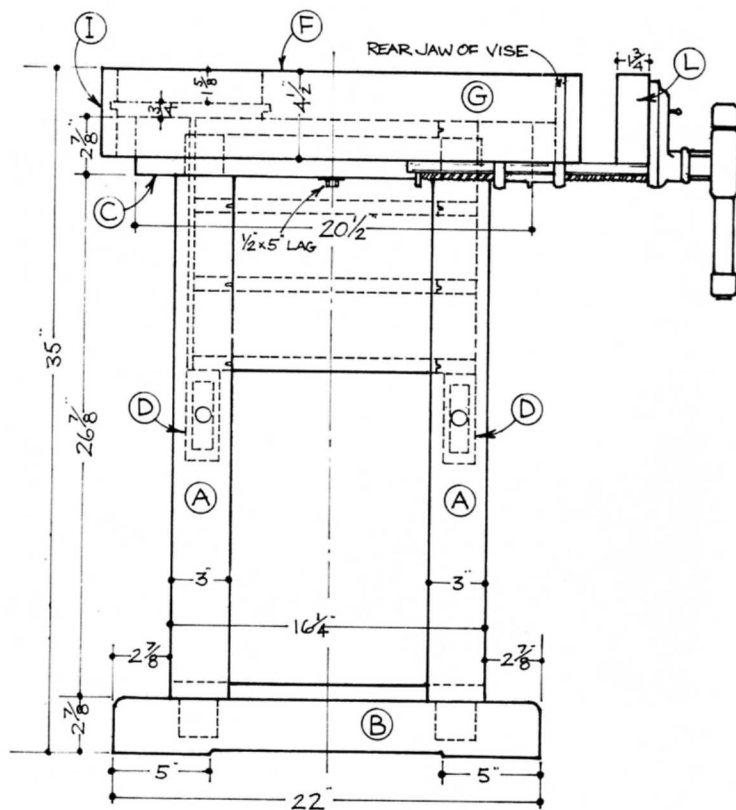
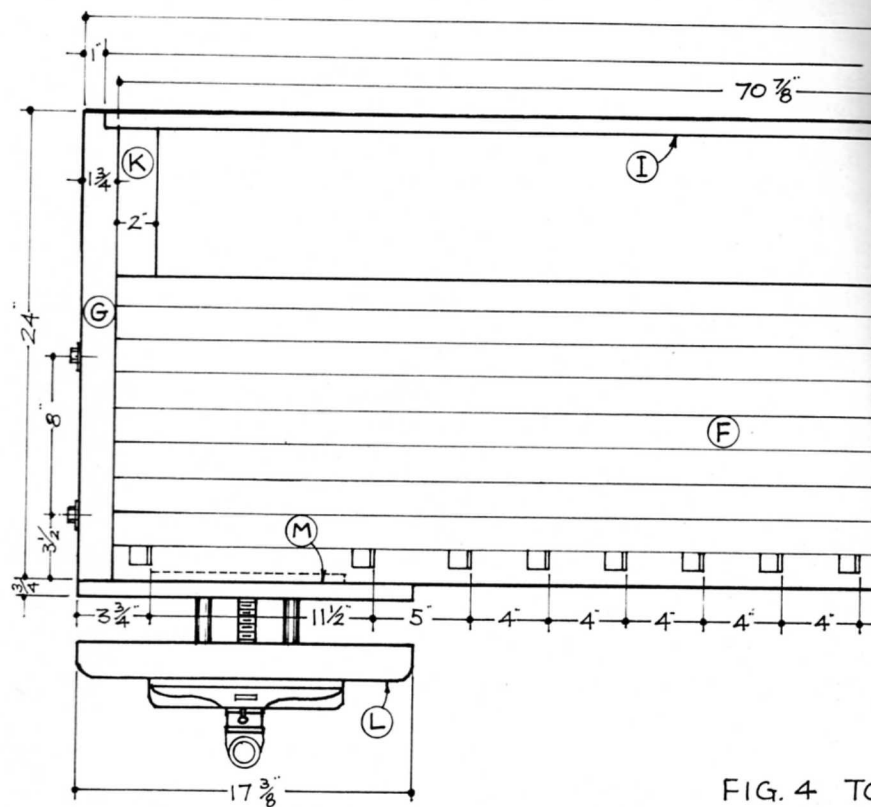
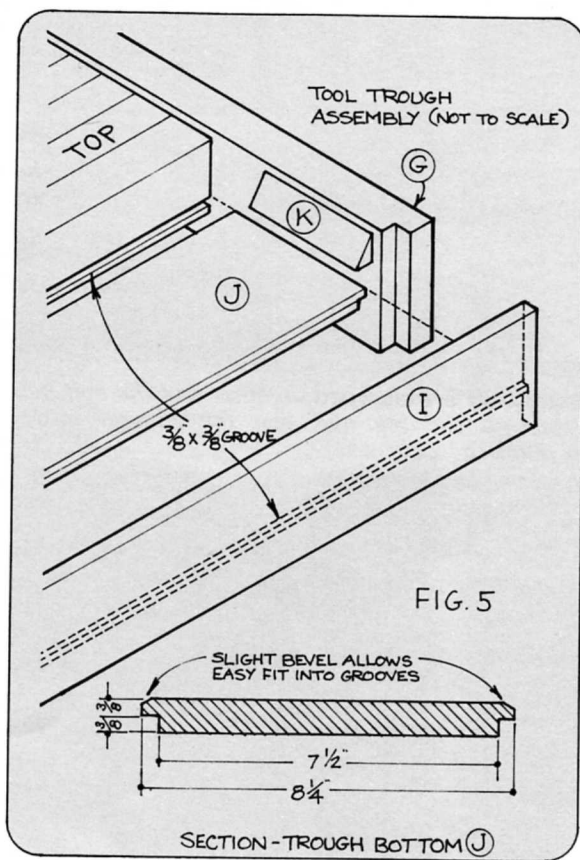
A doweling jig is used to continue drilling bolt hole in stretcher to intersect with the circular recess for the carriage bolt nut.



A dovetail saw is used to start the cut which will form the ledge of the bench dog hole. Waste is then removed with a chisel.



Parts P and H are clamped together and bored through for the tail vise screw.



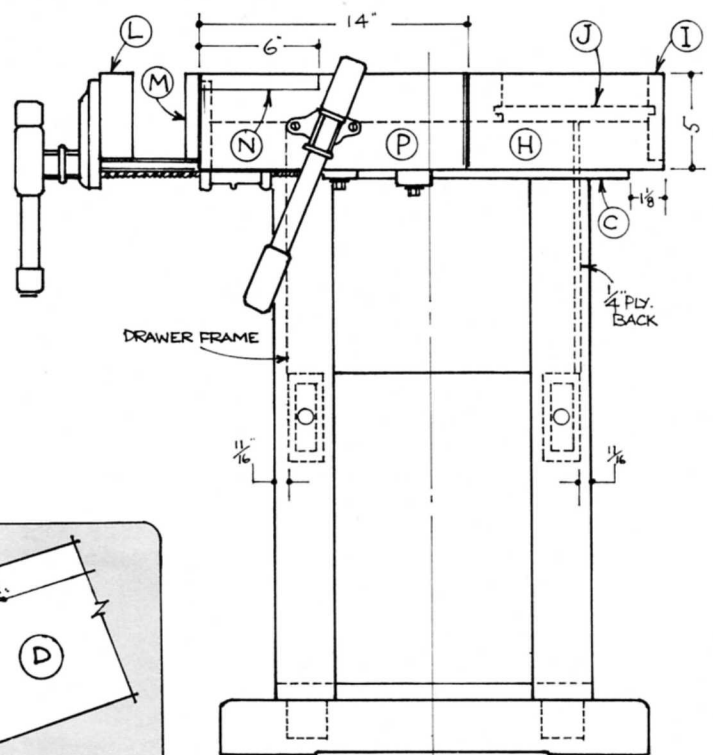
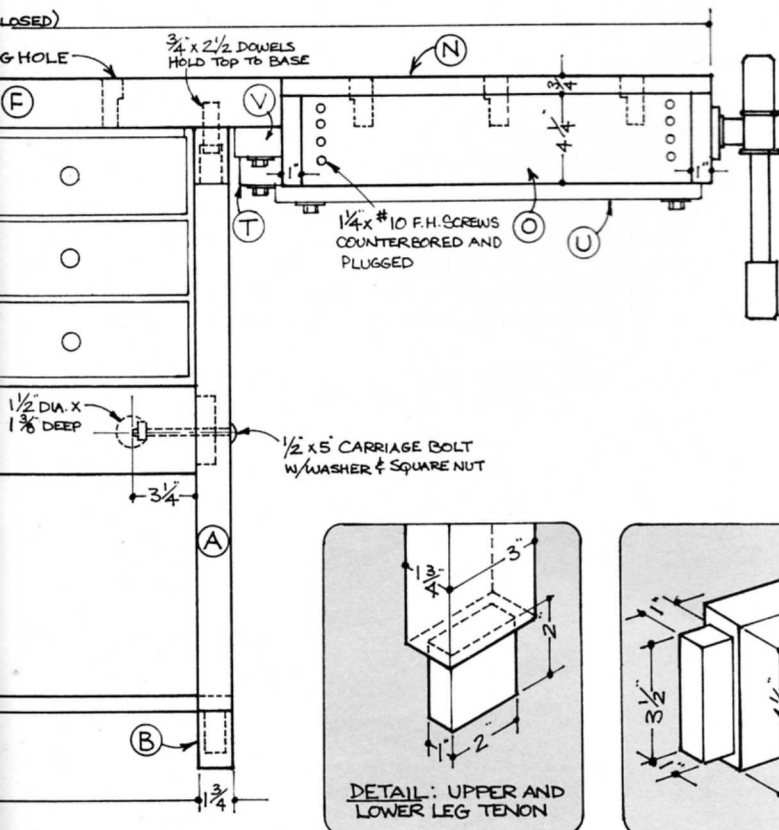
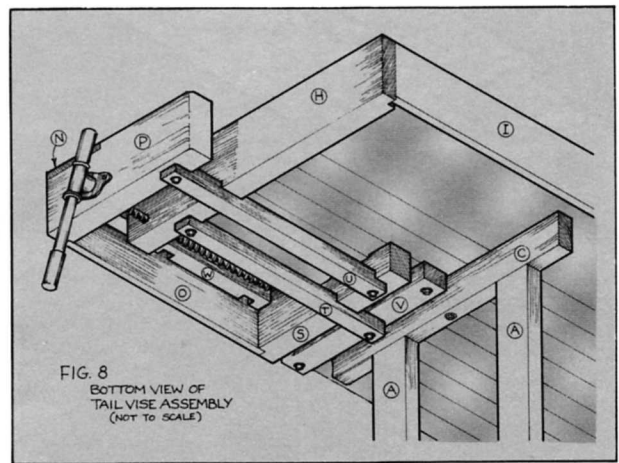
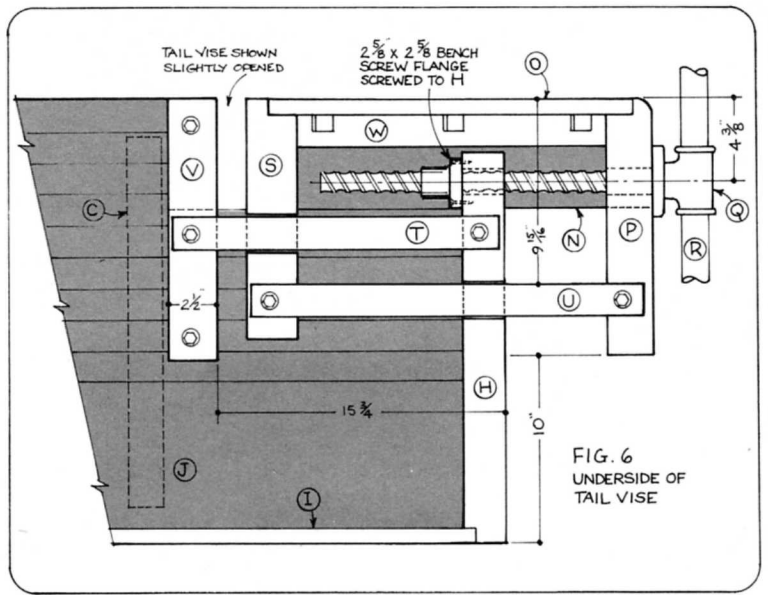
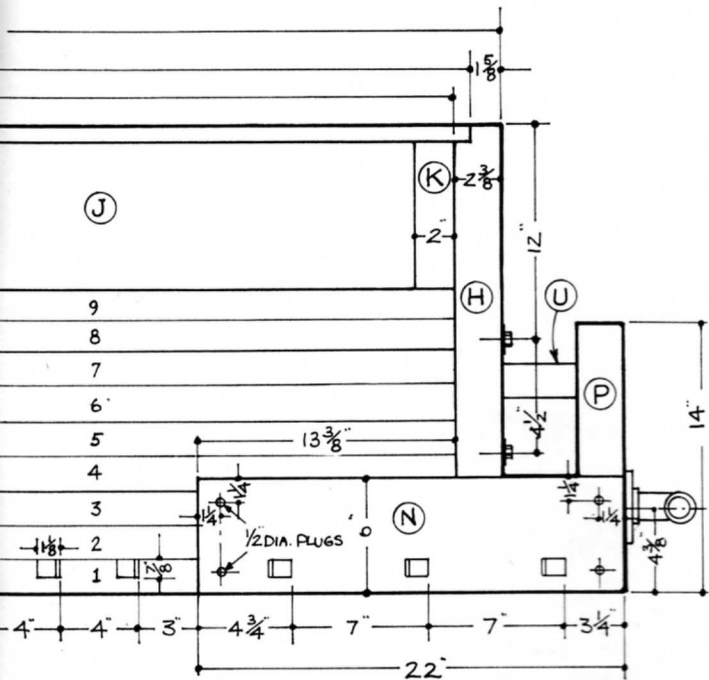
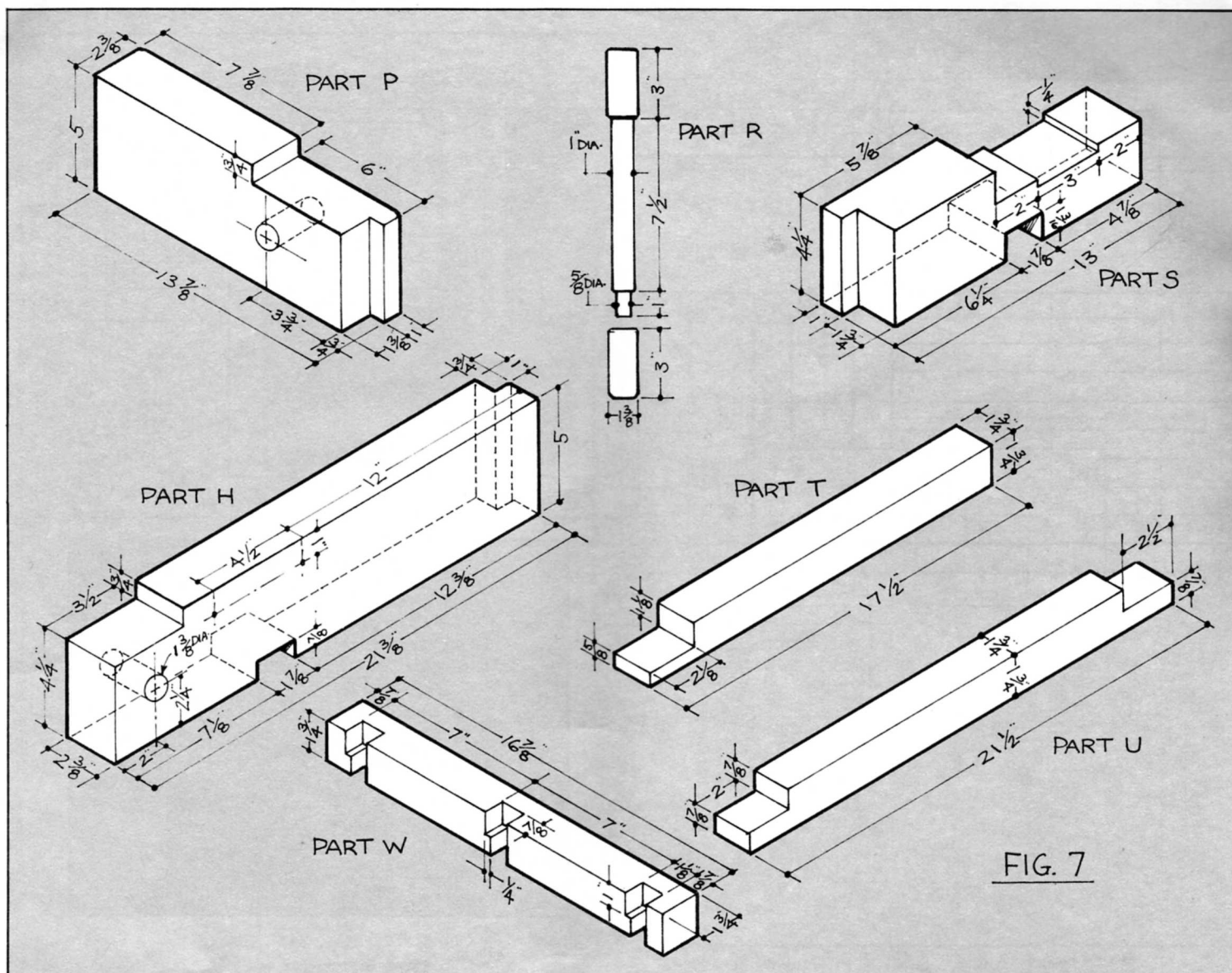


FIG. 3 RIGHT END ELEVATION



dowels.

The front vise is mortised into the front of the bench top. This can be done with a router or chisels. Care should be used since the vise top is mortised only $\frac{3}{8}$ inch from the bench top. Since use of the vise will tend to separate pieces 1 and 2 of the top over the years, I used 3-inch wood screws to hold the inside face of the Sears bench vise to the top edge. The inside face of the vise will be covered by a board, part M, and the outside face of the vise will have an 8/4 board, part L.

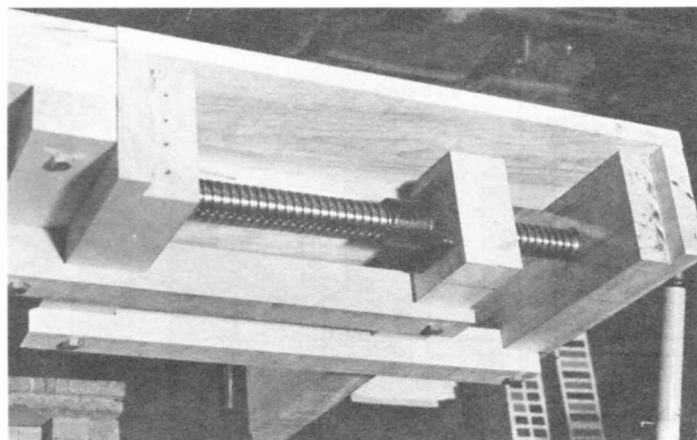
Next comes the chest of drawers. The frame and nine drawers can be made from common pine or scrap lumber and plywood. This chest is made of maple throughout with the exception of the drawer fronts, which are birch, and the chest sides, which are $\frac{3}{4}$ -inch solid stock. The construction of the frame comprises two sides, front and rear rails, side and drawer divider rails, and drawer dividers. The front and rear rails have $\frac{1}{4}$ -inch wide by $\frac{3}{8}$ -inch deep dadoes cut their entire lengths. All other rails have $\frac{1}{4}$ -inch by $\frac{3}{8}$ -inch tenons.

Make the sides first from solid stock, making sure the grooves for the side rails are evenly spaced so that the drawers can be made of equal size. Cut all rails to size, taking care with the dadoes in the divider rails. The side and rails can be glued and clamped and the drawer dividers slipped in later.

The drawers for the chest are made to overlap the rails, though flush drawers can also be made to save time. I do find, however, that the overlapping drawers are less likely to stick in warm weather and especially if your bench will be in a basement. The sides and backs of the drawers are made

of $\frac{1}{2}$ -inch stock and the fronts are 1-inch stock while the drawer bottoms are $\frac{1}{4}$ -inch plywood or masonite. This chest has a $\frac{1}{4}$ -inch plywood back, though it's certainly an option.

Note that there are no screws, bolts or brackets that hold the chest to the bench. Yet a tight fit will assure the bench's rigidity over the years. One way to make a tight fit is to make the chest frame $\frac{1}{16}$ inch longer than the stretchers. The bolts can then be loosened and retightened when the



A view of the front of the tail vise with side O & filler block W removed. Note bench screw flange secured to the inboard side of part H.

The final touches can now be done. The trough ends, parts K, are ripped at a 45 degree angle and cut to size. Blind nailing will hold them to the bench ends.

The bench screw handle comprises two pieces held together with a 5/8-inch mortise and tenon. This can be turned from a leftover scrap of 8/4 maple.

Don't forget to round off the outside edges of the tail vise and front vise with a $\frac{3}{8}$ -inch router bit.

At this point it's worthwhile to note that the top (F) is not glued to the base, thereby making it easier to disassemble and move. Part F simply fits on four dowels, two in each cleat (C), and is secured with one 1/2" x 5" lag screw at the center of each part C.

A belt sander and cabinet scraper will smooth the bench top. I would apply several coats of linseed oil. After this dries, apply several coats of tung oil and a coat of wax. A yearly coat of tung oil on the top of the bench will assure a smooth working surface.

Editor's Note: Several workbench parts are specified as $\frac{3}{4}$ " thick. This is purchased as 1" nominal (4/4) stock that may actually measure between $\frac{3}{4}$ " and $\frac{13}{16}$ " thickness. If the 1" nominal stock you purchase measures more than $\frac{3}{4}$ ", it will be necessary to revise all affected dimensions accordingly. The other alternative is to plane the stock down to $\frac{3}{4}$ " thickness.

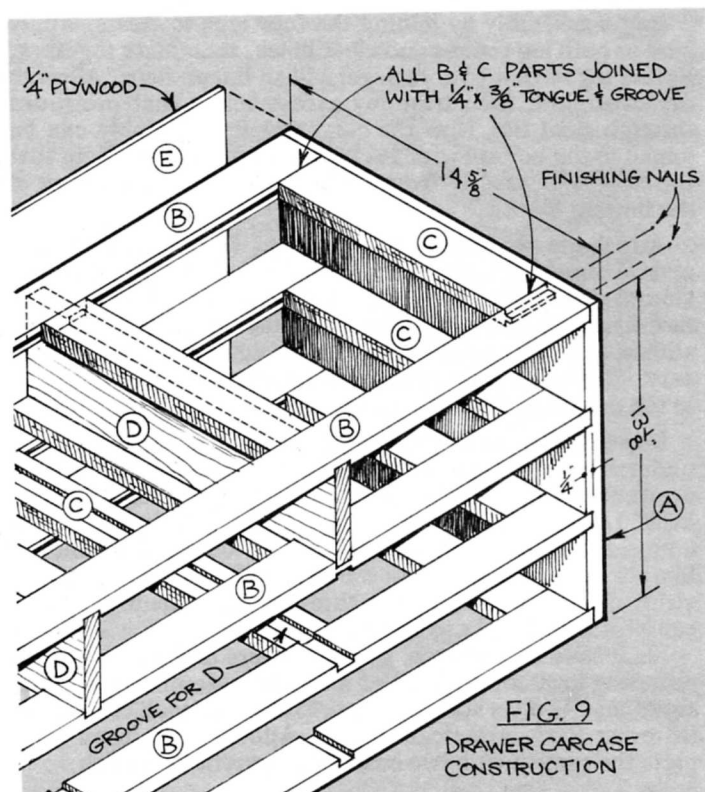
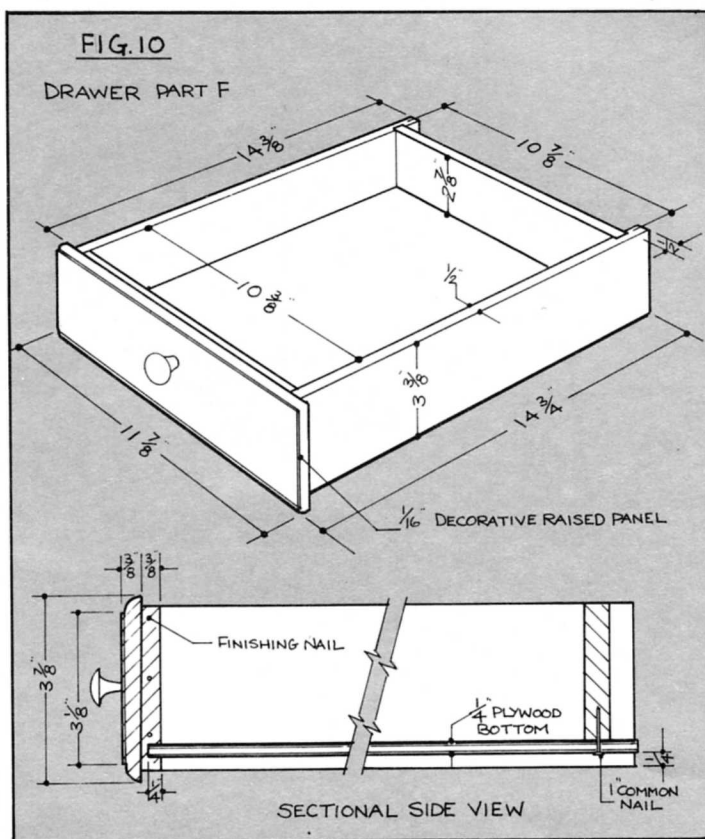
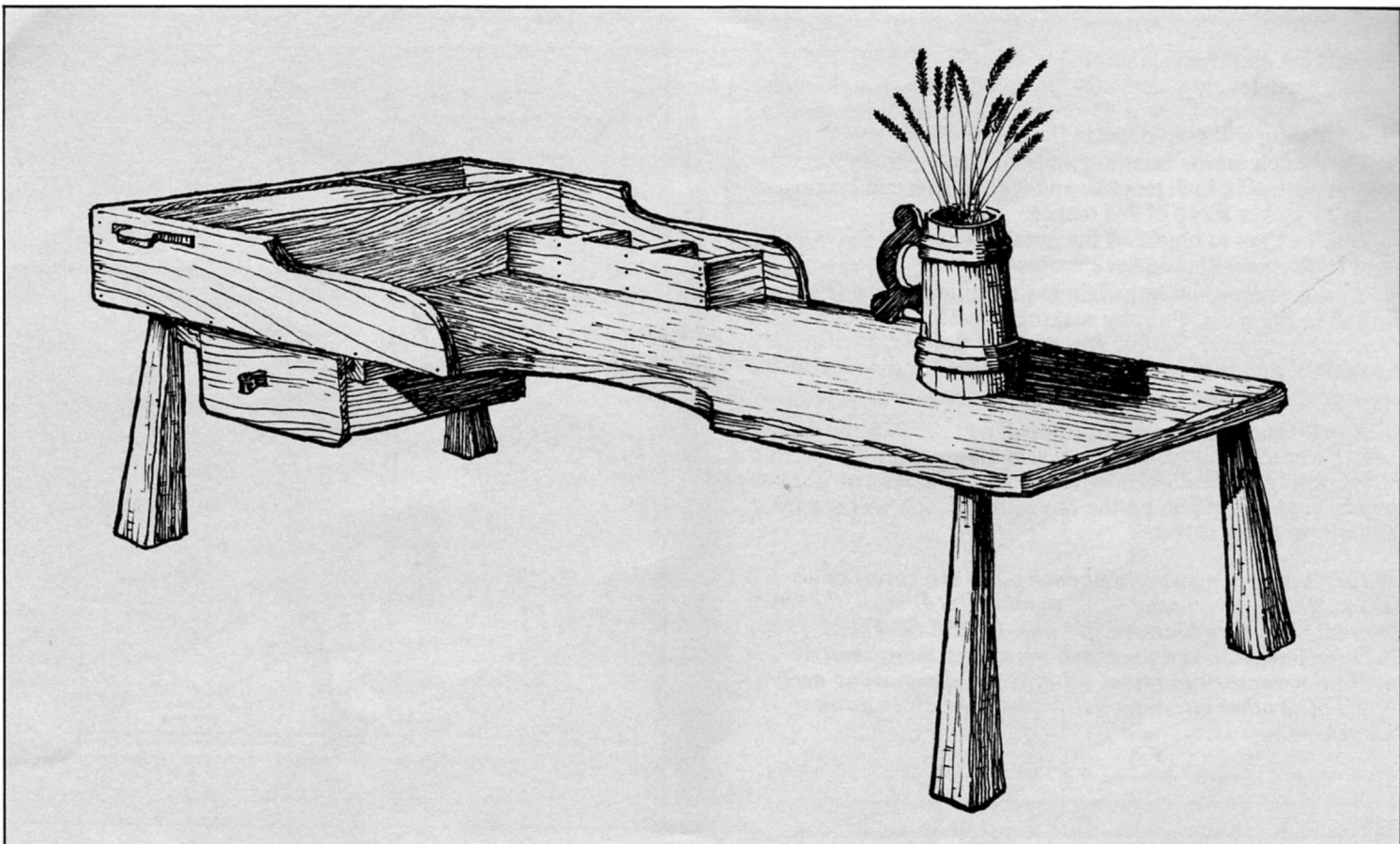


FIG. 9
DRAWER CARCASE
CONSTRUCTION



Bill of Materials (All Dims. Actual)			
Part	Description	Size	No. Req'd
A	Leg	1 3/4 x 3 x 30 3/8 (Includes tenons)	4
B	Foot	1 3/4 x 2 1/4 x 22	2
C	Cleat	1 3/4 x 2 1/4 x 20 1/2	2
D	Stretcher	1 5/8 x 4 1/2 x 39 1/8 (Includes tenons)	2
E	Shelf	3/4 x 16 1/4 x 40 3/8	1
F	Top	2 3/8 x 15 3/4 x 70 7/8	1
G	Left End	1 3/4 x 4 1/2 x 24	1
H	Right End	(See Detail)	1
I	Trough Back	3/4 x 4 1/2 x 72 3/8	1
J	Trough Bottom	3/4 x 8 1/4 x 70 7/8	1
K	Trough Ends	1 5/8 x 2 x 7 1/2	2
L	Outside Vice Face	1 3/4 x 4 1/2 x 17 3/8	1
M	Inside Vice Face	3/4 x 4 1/2 x 17 3/8	1
N	Tail Vise Top	3/4 x 6 x 22	1
O	Tail Vise Side	7/8 x 4 1/4 x 20	1
P	Tail Vise Face	(See Detail)	1
Q	Bench Screw	Woodcraft 01H41-AW	1
R	Bench Screw Handle	(See Detail)	1
S	Tail Vise Back	(See Detail)	1
T	Tail Vise Support	(See Detail)	1
U	Tail Vise Bracket	(See Detail)	1
V	Tail Vise Cleat	1 1/2 x 2 1/2 x 14	1
W	Filler Block	(See Detail)	1
Drawer Carcase			
A	Side	3/4 x 14 3/8 x 13 1/4	2
B	Front & Rear Rails	3/4 x 2 x 36 1/8	8
C	Side & Drawer Rails	3/4 x 2 x 11 1/8 (Includes tenons)	16
D	Drawer Dividers	3/4 x 3 3/8 x 14 1/8	6
E	Carcase Back (Optional)	1/4 x 37 1/8 x 13 1/4	1
F	Drawer	(See Detail)	9



Cobbler's Bench Coffee Table

If Early American is your favorite furniture style, you may want to consider this for your next project. It's a fine example of an old time cobbler's bench, with overall dimensions that make it ideal for use as a modern day coffee table.

Start construction with the bottom piece. You probably won't find a board that's 18" wide, therefore it will be necessary to edge-glue two or more narrow boards to get the needed width. Glue and clamp firmly, allowing to dry overnight, then trim to finish size of $5/4$ ($1\frac{1}{8}$ " actual) x 18 x 42. Lay out the curve as shown on the grid pattern, then cut out with a jig saw.

The four legs are $15\frac{1}{8}$ " long and square tapered. They measure 2" at the base, narrowing down to $1\frac{1}{4}$ " at the top. The tenon is about $1\frac{3}{16}$ " long. To make the leg, cut a piece of 2" square stock a bit longer than necessary. Use a lathe to turn the $\frac{3}{4}$ " dia. tenon. Allow extra length on the tenon for later trimming. If you don't have a lathe, the tenon can also be hand made with rasp. Trim to final length and bevel the leg bottom so it sits flat on the floor, then use a sharp plane to cut the tapers.

After cutting the two cleats to size ($5/4$ x 3 x 16) make the splayed leg drilling jig, following the three-step direction. A $\frac{3}{4}$ " bit is used to bore the vertical hole through the squared block. Align the jig so that the center of the drill bit will start $1\frac{1}{2}$ " in from the edge of the cleat (see drawing). Also align the jig so that its centerline is at 45 degrees to the cleat edges. When properly aligned, clamp in place and drill tenon holes with $\frac{3}{4}$ " bit. Repeat procedure for other three holes.

The two sides are made from $\frac{3}{4}$ " x 5" x 16" stock. Refer to the grid pattern to cut the curve. Also a $\frac{1}{2}$ " x $3\frac{1}{2}$ " slot is cut in one of the sides. The slot starts $\frac{1}{2}$ " from the edge and $\frac{1}{4}$ " from the top.

The back and main divider can be made next. The back measures $\frac{3}{4}$ x 5 x 18, while the main divider measures $\frac{3}{4}$ x $3\frac{1}{2}$ x 18. Note that each has a $\frac{1}{4}$ " x $\frac{1}{2}$ " x 12" long stopped

dado located $\frac{1}{4}$ " down from the top edge. The slide itself is cut $\frac{1}{2}$ x $3\frac{1}{2}$ x 12. Next, make the $\frac{1}{2}$ x $3\frac{1}{2}$ x 3 slide box divider and the 2" high small dividers.

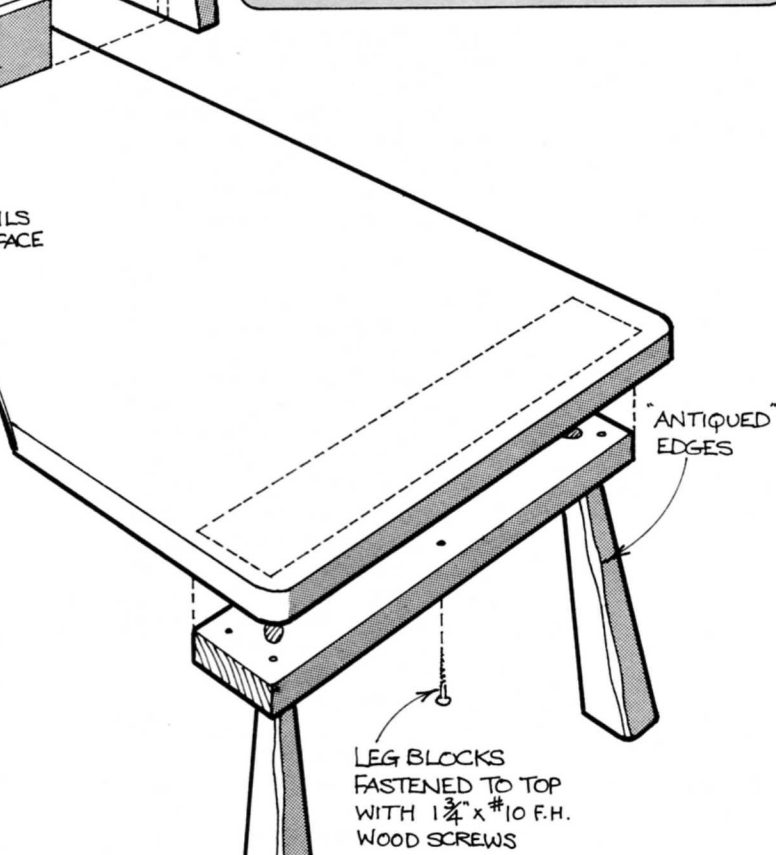
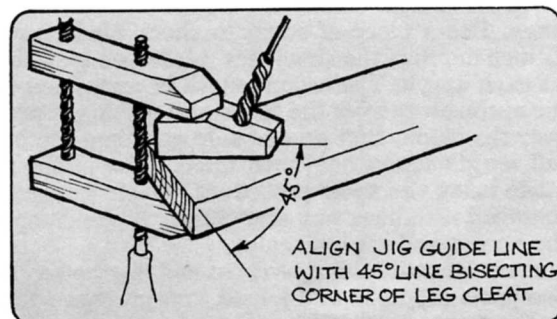
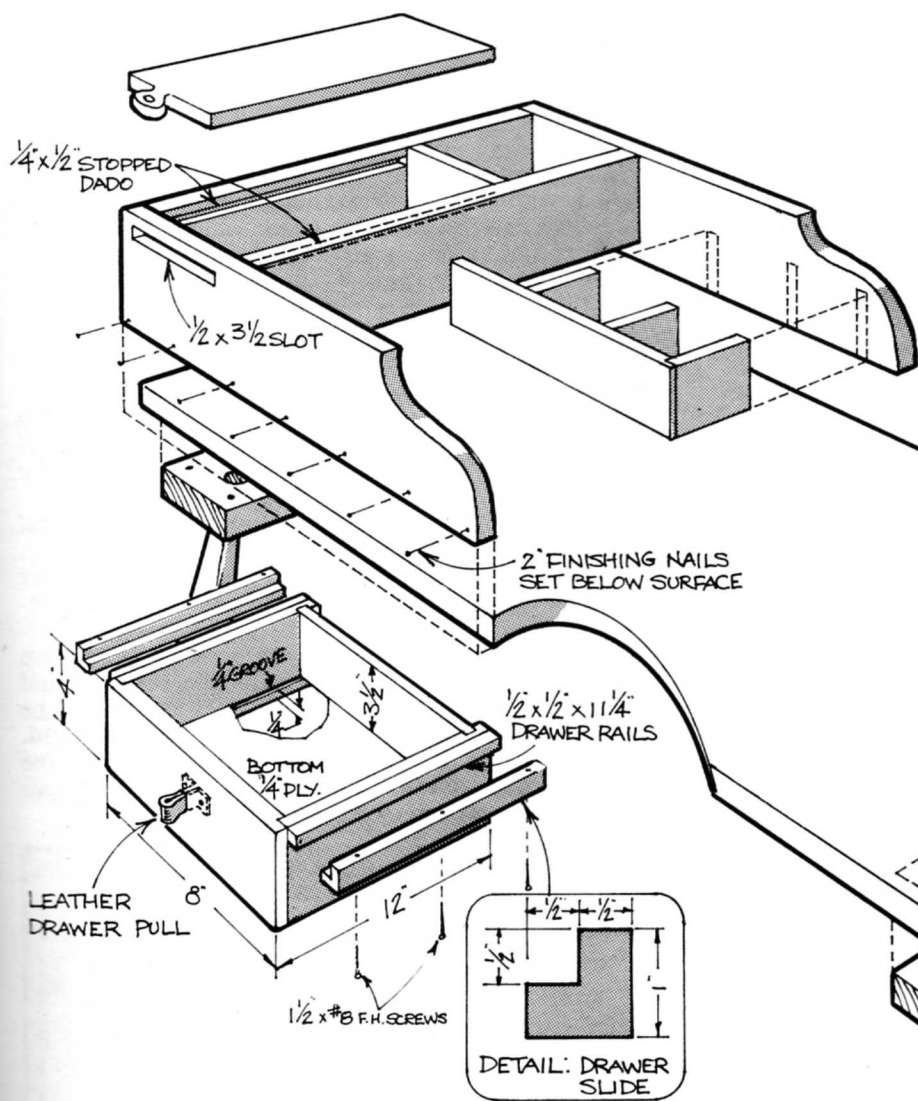
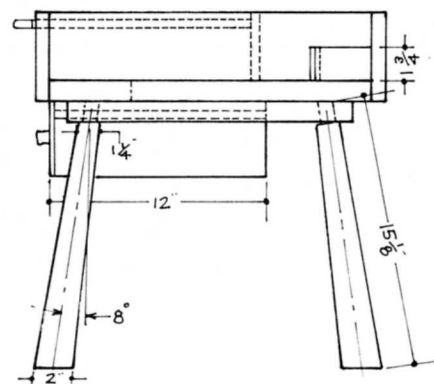
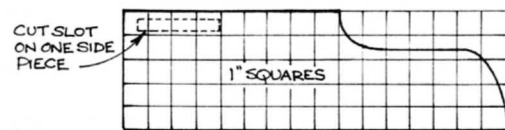
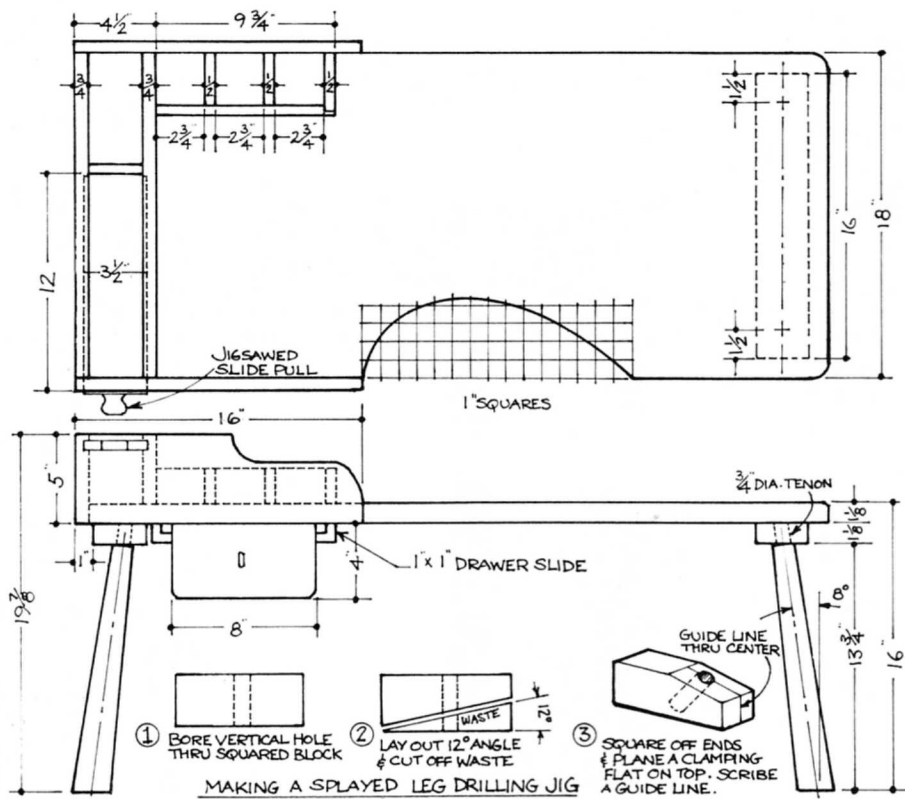
Before assembly, give all parts a thorough sanding, making sure to remove all planer marks. Clean up any saw marks on the curved cuts. Use a spokeshave or drawknife to give an "antiqued" edge to the four legs.

Begin assembly by joining the four legs to cleats. Apply glue to both leg tenons and cleat holes, then mate together. Rotate leg so that bottom bevel will sit flat on floor. Allow to dry overnight, then trim any excess tenon that protrudes through cleat top. Now the cleat and leg assembly can be joined to the bottom with $1\frac{3}{4}$ " x #10 wood screws. Note that the cleat is located 1" from the back, front and side edge of the bottom piece.

Attach the two sides and the back to the bottom with glue and 2" finishing nails set below the surface. Be sure the slotted side is in front. Next, add the main divider and slide box divider, again using glue and finishing nails. Check the sliding top for a good fit, and make adjustments as necessary. The small dividers can now be glued in place as shown in the drawing.

Make two drawer slides (see detail) and attach to the underside of the bottom with $1\frac{1}{2}$ " x #8 wood screws. The drawer itself has a $\frac{3}{4}$ " x 4 x 8 front, with $\frac{1}{2}$ " thick sides and back. The bottom is $\frac{1}{4}$ " plywood. The leather drawer pull is a nice detail, quite appropriate for the bench of a cobbler. Simply cut a narrow slot in the drawer front, then loop a 1" strip of leather and insert through the opening. Use a couple of small tacks to secure it in place.

Final sand all surfaces, giving corners and edges a good rounding to simulate years of wear. Be sure to remove glue smudges. Apply a stain that reproduces the look of old pine (Minwax Early American is one). Allow to dry, then complete the project with two coats of polyurethane varnish.



19th Century Cherry Table

by Thomas A. Gardner

The photo shows a cherry table of about 1850 vintage. Nicely proportioned, with its elegant turned legs, this piece is of a style sometimes referred to as "Country" furniture. The workmanship indicates that it was made by a skilled craftsman.

The top consists of one wide cherry board which, as is usually the case, has a long shrinkage crack previously repaired. The drawer bottom is typically of one piece of wood beveled at the edges to fit into grooves in sides and front. The nicely executed legs show slight marks of the turning tools and plane marks are present on the inner surfaces of the aprons. The drawer is dovetailed at all four corners and these joints were beautifully fitted.

While the table is entirely of cherry wood, other hardwoods may be substituted for reproduction. The second choice would be mahogany. As for structural details, dowel joints can be substituted for the apron and rail tenons and lap joints used instead of drawer dovetails.

The legs are turned from 2 inch stock to finish at 1 1/4 inches square at the tops. Most turning dimensions are shown in the leg detail. When turning is completed, this writer prefers to apply a sealer before removing the turning from the lathe. This protects the surface from damage and prevents flue marks that are hard to remove.

Next, cut side and back aprons A and E to rough length, including tenons at each end. While 3/4 inch stock is called for, 3/4 inch material may be substituted but other adjustments will have to be made.

All six double tenons can be cut with the same saw settings. Use a piece of scrap to check blade height for the 1/4 inch depth of the shoulders. Make two long shoulder cuts on each apron. The tenon length is completed by drawing the apron away from the fence and making repeated passes over the blade, first on one side and then the other until a full length tenon has been made. The upper shoulder is made using the same procedure. Waste between tenons is removed with back saw and chisel. When completed, sand the aprons and apply a sealer.

Parts D1 and D2 are next cut and tenoned as shown. The two parts are alike and joined to front legs with shoulders facing down.

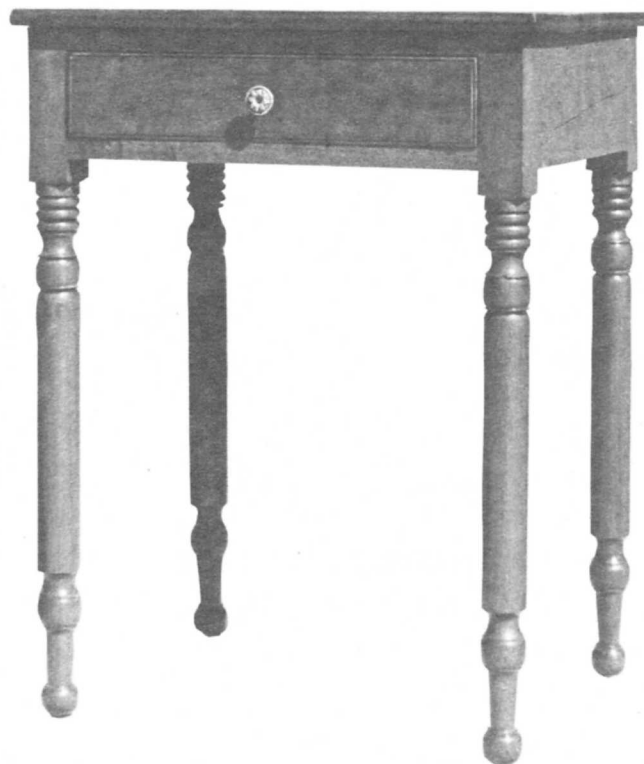
The next step is the fitting of the aprons and drawer rails to the legs. To prevent errors, mark each surface of the legs with corresponding marks on the aprons and rails. Use a mortise gauge to lay out mortises; remember that the aprons should be flush with the outside surface of the legs. This departs from the usual practice of having the aprons inset slightly. Mortises can be cut with a router, or by drilling holes the entire length of the mortise and finishing with a chisel.

Before making the top and drawer, the carcass should be completely finished and assembled. First, fit all parts together temporarily to check joints for fit and squareness. As a safety factor when gluing, use the following method. Glue back legs to their apron and front legs to drawer rails, without clamping. Do not set aside to dry, but immediately fit the front legs and aprons to the back legs *without glue*. Clamp and check for squareness. If square, the unglued parts are separated and glue is applied. Clamp and again check for squareness. This procedure prevents any leg from twisting out of alignment under clamping pressure. Excess glue is easily removed from the previously sealed surfaces.

Cutting and fitting of drawer guides (B) and runners (C) is a simple job. Guides are glued and nailed to the aprons. The runners are then glued and nailed to the guides.

Construction of the drawer is next. The drawer front is of 3/4 inch stock while the sides and back are of 3/4 inch hardwood. One suggestion in fitting dovetails...slightly bevel the sides of the pins and they will slide into place easier.

Cut grooves on the sides and the back of the drawer front to hold the drawer bottom. This groove should be started 1/4 inch up from the bottom edges and sized for an easy fit of



the 1/4 inch plywood bottom.

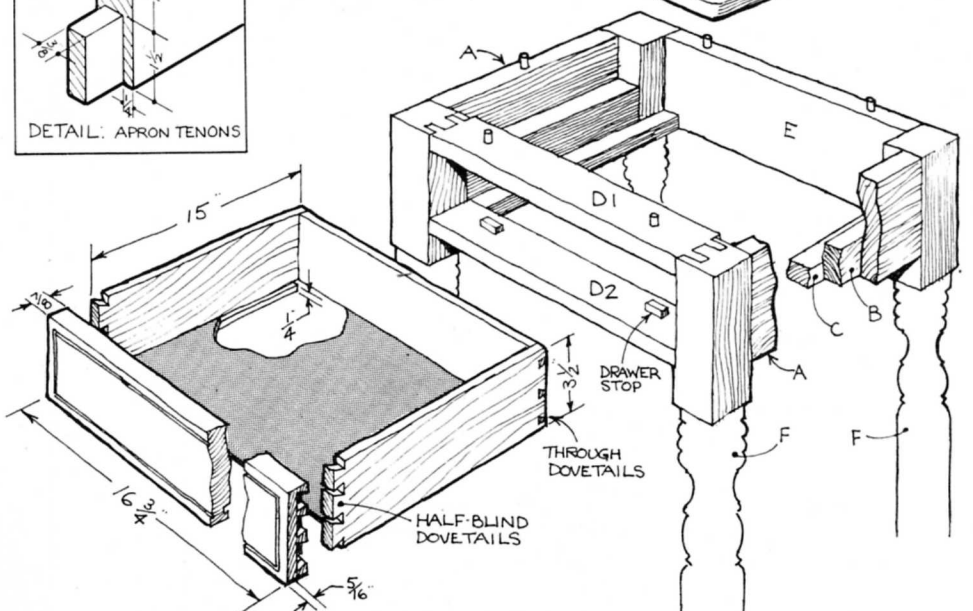
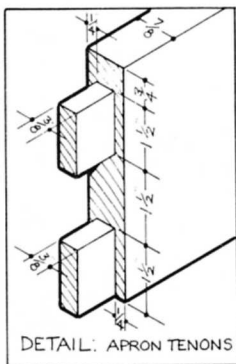
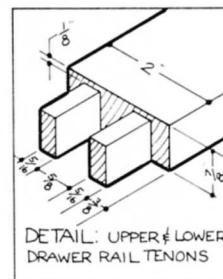
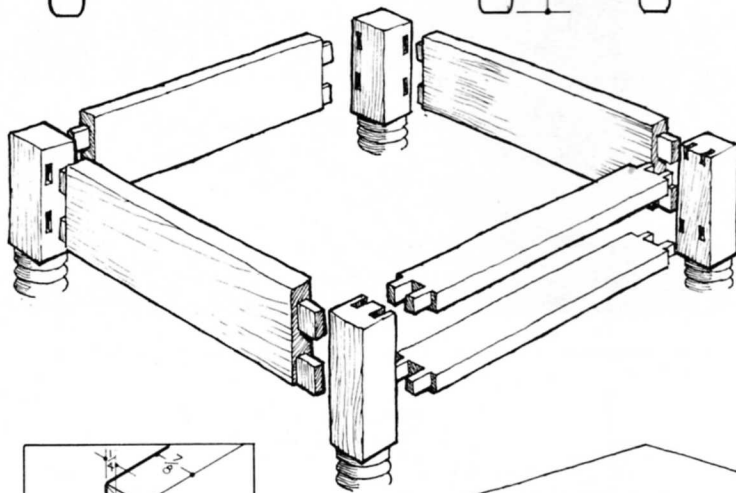
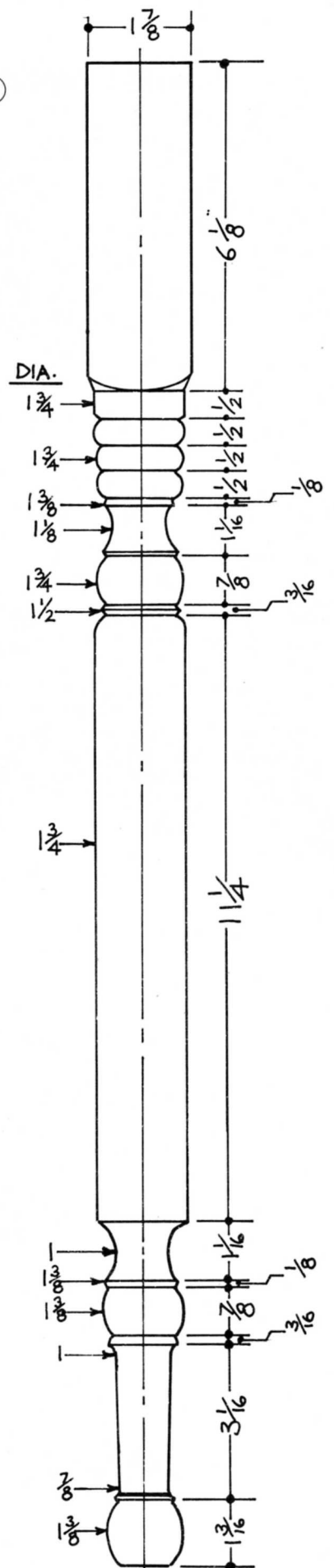
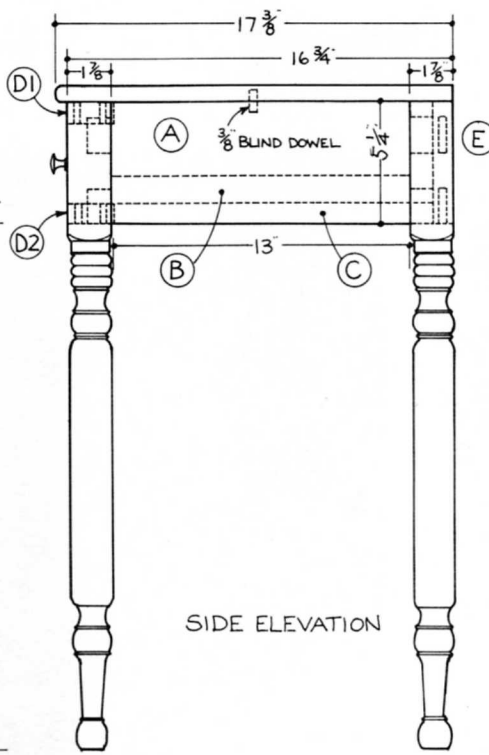
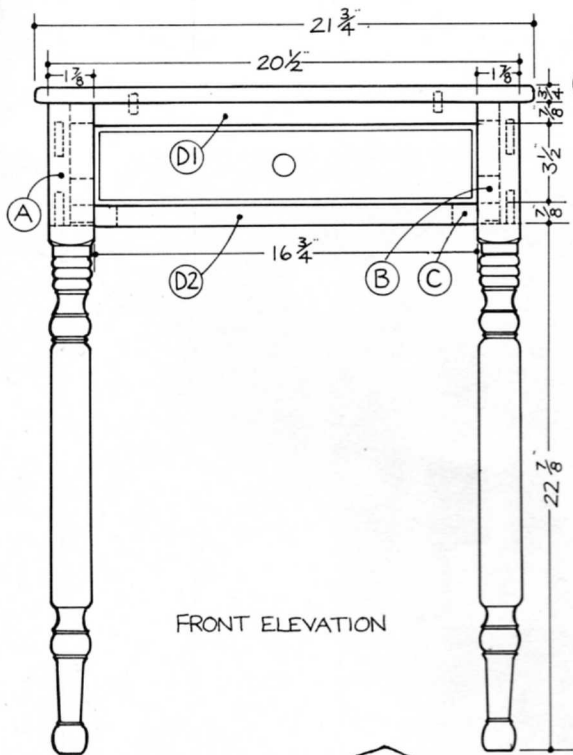
Before assembling the drawer, cut the false beading on the front. This can be done with a mortising gauge or inlay router. Glue and assemble all parts, checking for squareness and flatness. The drawer bottom should slide easily into place. Secure it with a few nails up into the drawer back. The original drawer pull is of brass but a 1 inch dia. turned cherry pull would be fine.

Several pieces are jointed and edge glued to make up the top. After drying, cut to finish size and round the front and side edges. Attach to the carcass with six 3/8 inch blind dowels, using a Fortsner bit to drill the sockets in the underside of the top. Glue dowels to both aprons and top.

With the construction completed, thoroughly sand first with 100, then 180 or 150 and finally with 220 grit paper. Then rub down with steel wool. Most antiques were either shellacked or varnished. This piece calls for a varnish finish.

For many woodworkers, there is no better varnish than the polyurethanes. They are water and alcohol resistant and very durable. The first coat acts as a sealer and should be thoroughly sanded with 220 or 340 grit, then steel wool. Follow with one or two coats of satin varnish (two for the top.) Lightly sand between coats with #600 wet or dry paper and 4/0 steel wool. Finish with a coat of hard wax.

Bill of Materials (All Dimensions Actual)			
Part	Description	Size	No.
A	Side Apron	3/4 x 5 1/4 x 15 (Incl. 1" long tenons)	2
B	Drawer Guide	1 x 2 x 13	2
C	Runner	3/4 x 1 x 13 3/4	2
D1,D2	Upper & Lower Rails	3/4 x 2 x 18 3/4 (Incl. 1" long tenons)	2
E	Back Apron	3/4 x 5 1/4 x 18 3/4 (Incl. 1" long tenons)	1
F	Leg	See Detail	4
G	Top	3/4 x 17 3/4 x 21 3/4	1
H	Drawer	See Detail	1



The Gift Shop

Kitchen Utensils

This assortment of wooden utensils can be a useful addition to any kitchen. To keep them handy, we've included a hanger rack that holds all items except the French rolling pin.

The oven rack push-pull makes it easy to push-in or pull-out a hot oven rack. Make from a piece of maple, $\frac{1}{4}$ " thick x 1" wide x 18" long. A $\frac{3}{8}$ " dia. hole in the handle permits it to hang on the rack.

To make the tenderizer, use a table saw to start the grooves, then file to the shape shown. Note that there are two sets of grooves, each one at right angles to the other.

The French rolling pin is a straight forward turning job. Start with $1\frac{3}{4}$ " square maple and turn to dimensions shown. Use the spaghetti fork to pull a hefty load of spaghetti from the pot. Make from $\frac{3}{8}$ " thick maple, cutting to shape shown. Then, add ten dowel pins and hanger hole. The stirring paddle is also made from $\frac{3}{8}$ " maple stock.

After sanding, salad bowl finish (available from Woodcraft Supply Corp., 313 Montvale Ave., Woburn, MA 01801) can be applied as directed. This finish is approved by the U.S. Food and Drug Administration for use on products that come in contact with food.

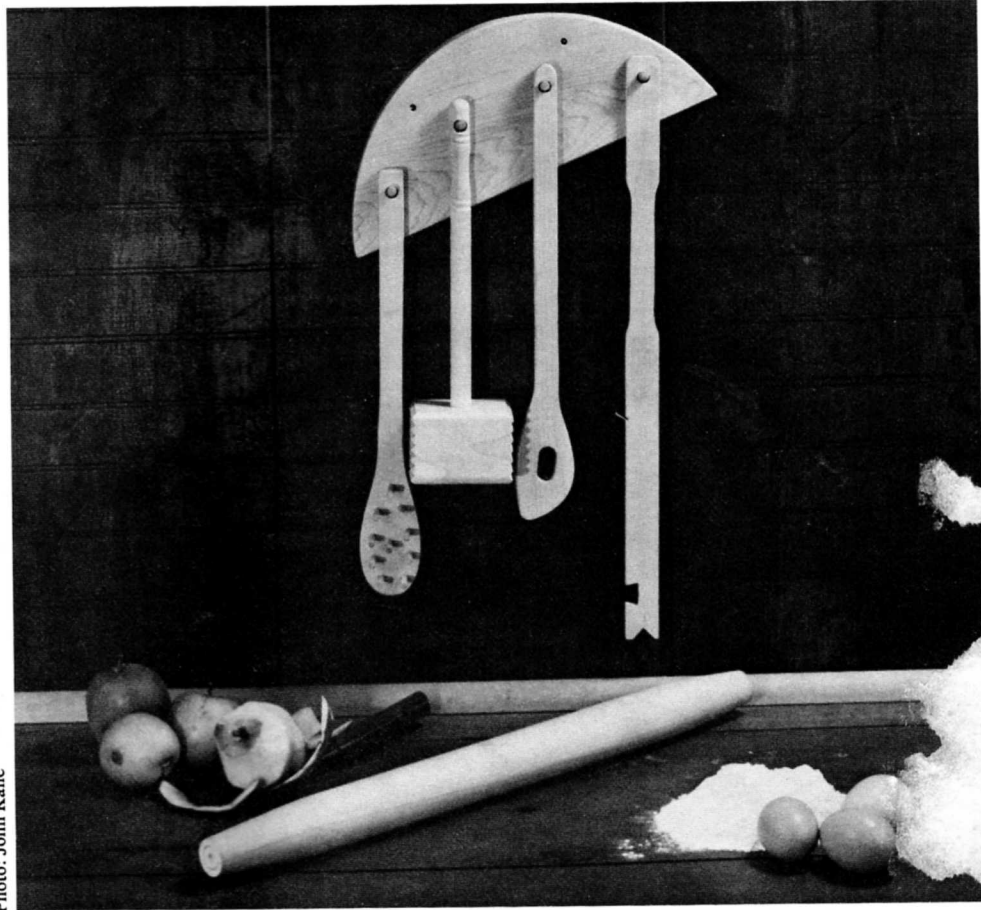
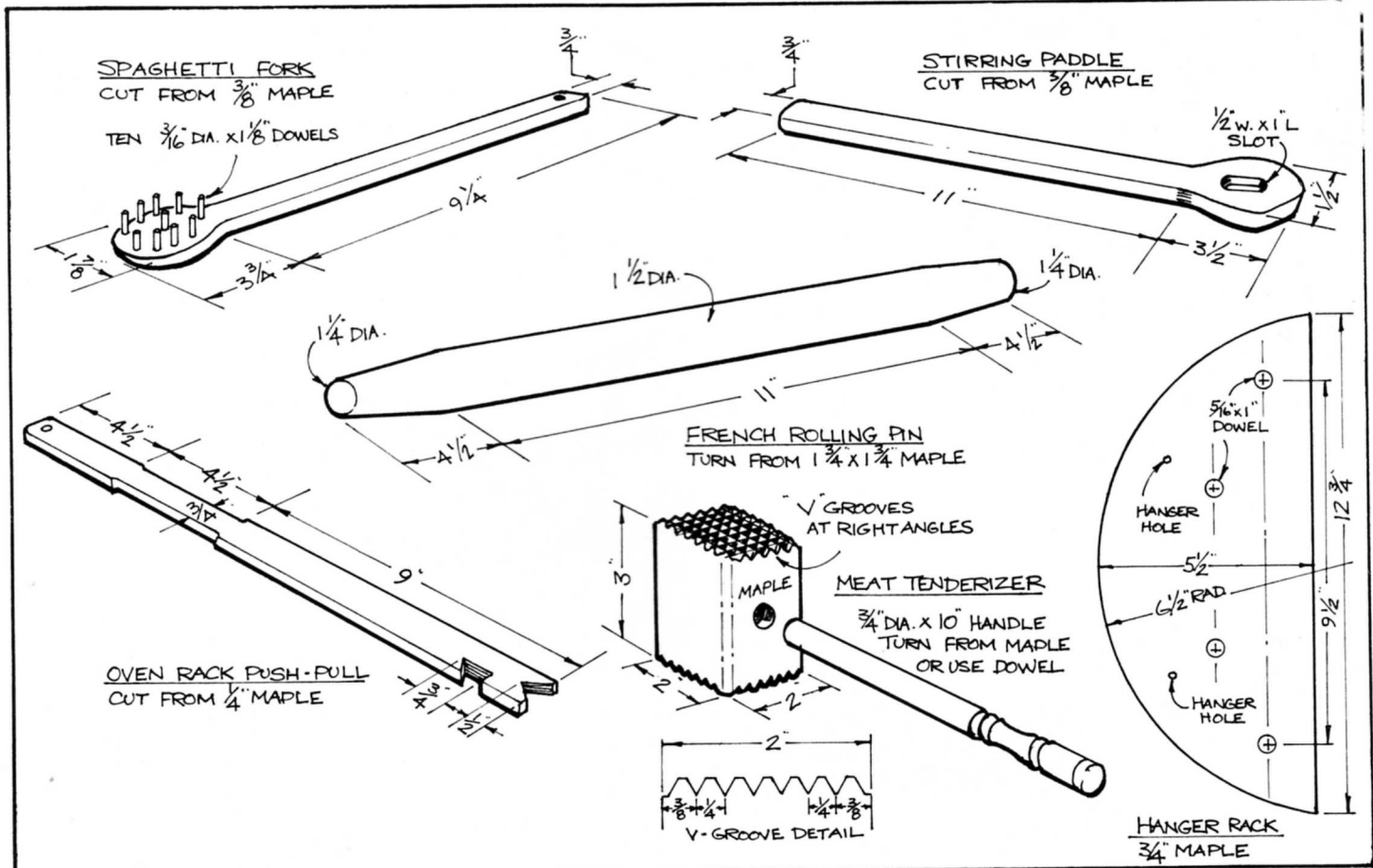


Photo: John Kane



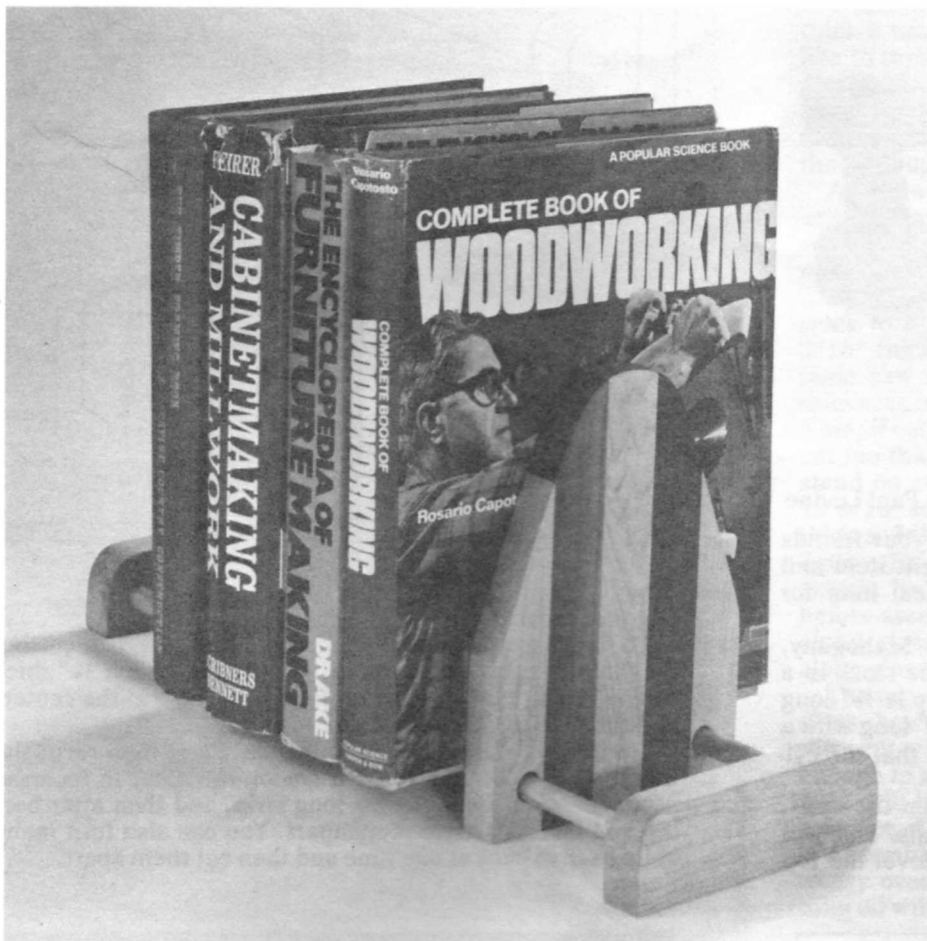


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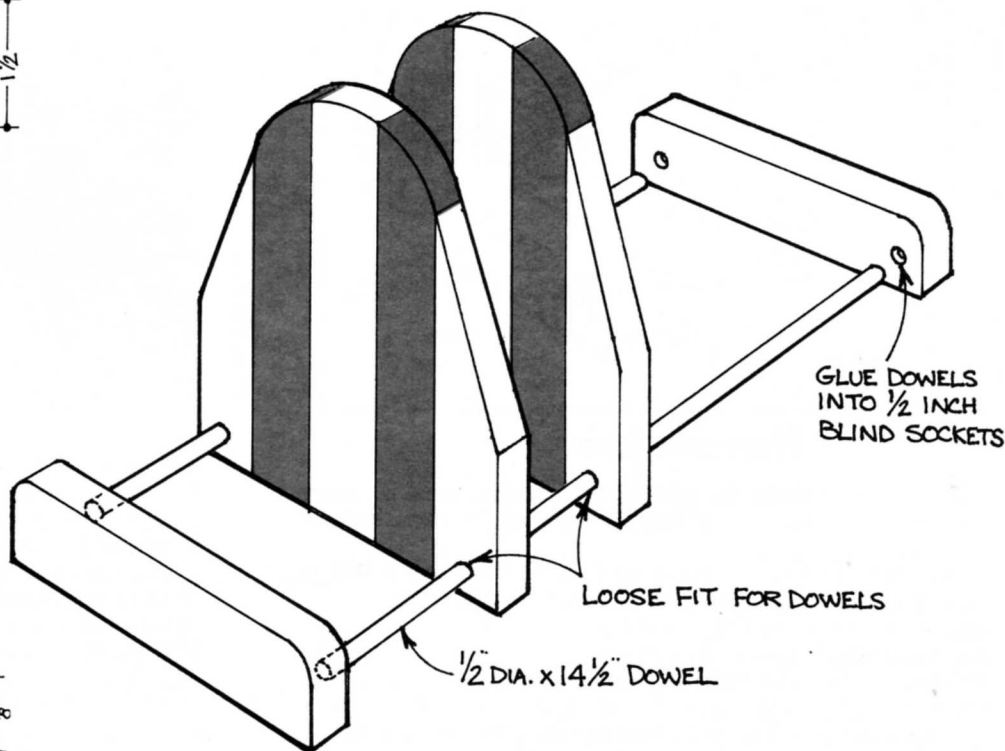
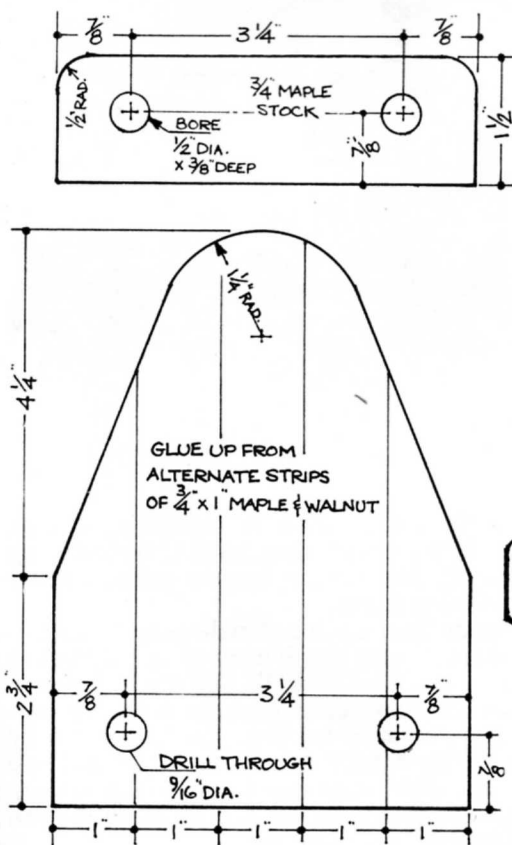
Laminated Bookrack by Harvey E. Helm

The dark richness of walnut in contrast with the light color of maple results in the interesting look of this contemporary styled book rack. It's sturdy, easy to adjust, and will hold just about any size book.

Start by cutting 3 pieces of maple and 2 pieces of walnut to $\frac{3}{4}$ " thick x 1" wide x $14\frac{1}{4}$ " long. Edge glue these 5 pieces, alternating the maple and walnut as shown in the drawing. Make sure the grain runs in the same direction for all pieces. After allowing to dry overnight, a good sharp plane will do a nice job removing glue and smoothing the surface. Any slight planer marks can be removed with a cabinet scraper. The board can then be cut into two 7 inch long pieces.

Referring to the drawing, lay out the $4\frac{1}{4}$ " long taper as shown. Cut out waste stock with a band or saber saw. For a good clean look, this piece must have edges that are completely free of scratches or sawblade marks. Make sure the edges are given a complete sanding, starting with coarse grade paper, then working along to medium and fine grades. It may take a little more time, but the effort will be well worth it.

After cutting the $\frac{3}{4}$ " x $1\frac{1}{2}$ " x 5" ends, bore $\frac{1}{2}$ " dia. x $\frac{1}{2}$ " deep holes for the dowel stock. Apply a $\frac{1}{2}$ " radius to both upper corners, then sand all surfaces thoroughly. Assemble parts as shown, then complete the project with two coats of tung oil finish.



The Gift Shop (cont'd)

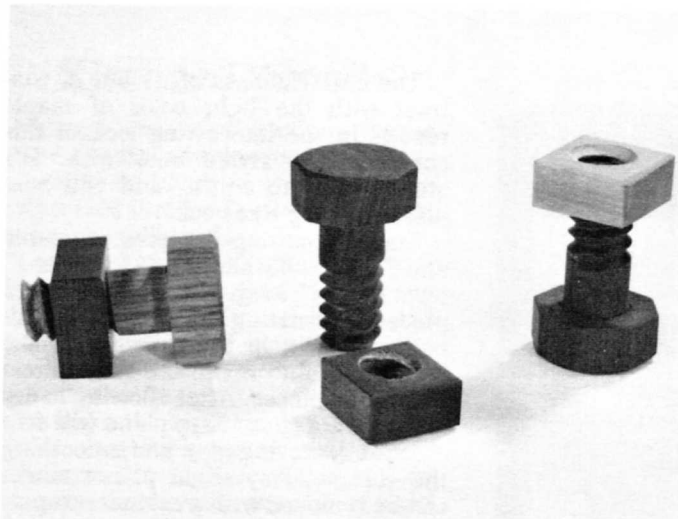


Photo: John Kane

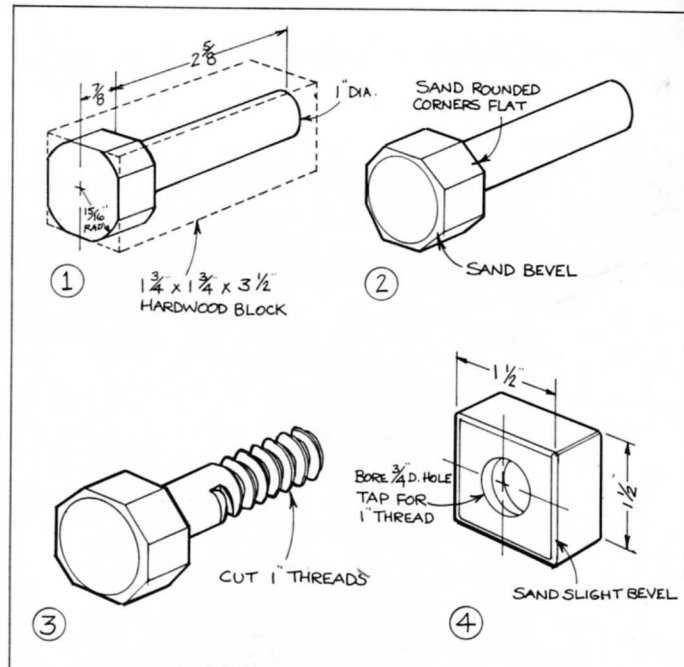
Nuts & Bolts

by Paul Levine

Put a few of these on the coffee table and your friends won't be able to put them down. It's a good gift item and small enough to be made from scrap...an ideal item for wholesale production.

Start with $1\frac{3}{4}$ " stock at least $3\frac{1}{2}$ " long. Mahogany, maple and walnut are good choices. Mount the stock in a lathe and turn a stepped cylinder. The first step is $\frac{7}{8}$ " long with a diameter of $1\frac{1}{8}$ ". The second step is $2\frac{5}{8}$ " long with a diameter of 1". On the first step you will find that the cylinder is flat on four sides.

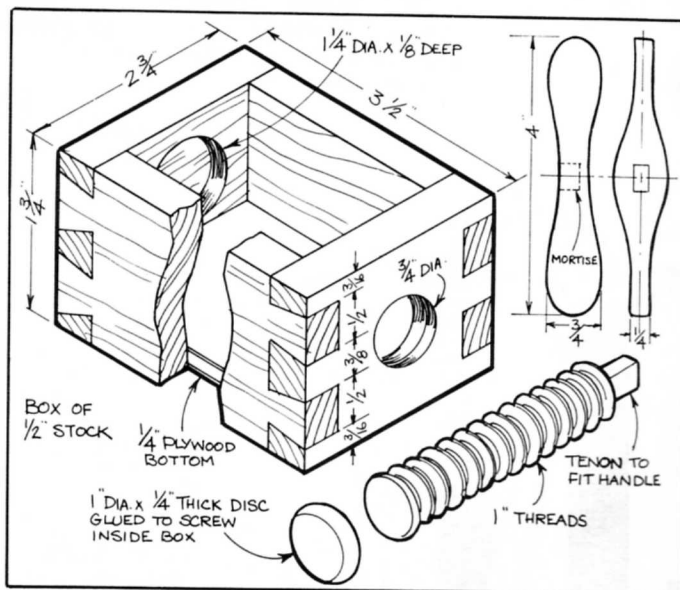
After removing the piece from the lathe, trim the ends, and connect the flats by sanding away the rounds. This will form an octagon when looking from the top. Bevel the top



edges of the octagon.

To finish the bolt use a 1" thread cutting device, cutting the threads as far up as you can. For the nut cut a $\frac{3}{4}$ " thick by $1\frac{1}{2}$ " square piece of scrap. Bore a $\frac{3}{4}$ " hole in the center, and thread with the female thread cutter.

Let the nut and bolt sit for a few days and then recut the threads - it will operate much smoother. Also, to increase production, cut the nuts in a long strip, and then after boring and threading, cut them apart. You can also turn many bolts back to back at one time and then cut them apart.



Nutcracker

Here's an intriguing gadget that cracks nuts in short order while neatly collecting the pieces in the plywood bottom.

The box is under a great deal of strain when a nut is cracked, so use hardwood and be sure to include dovetails as shown. To accent the dovetails we used mahogany for ends and maple for sides. The ends and sides are cut from $\frac{1}{2}$ " stock, then dovetails are fashioned as shown. Before permanently joining dovetails with glue, drill a $1\frac{1}{4}$ " dia. x $\frac{1}{8}$ " deep recess in one end. Also tap the other end for the 1" threaded rod.

To make the threaded rod, first turn a 5" length of maple

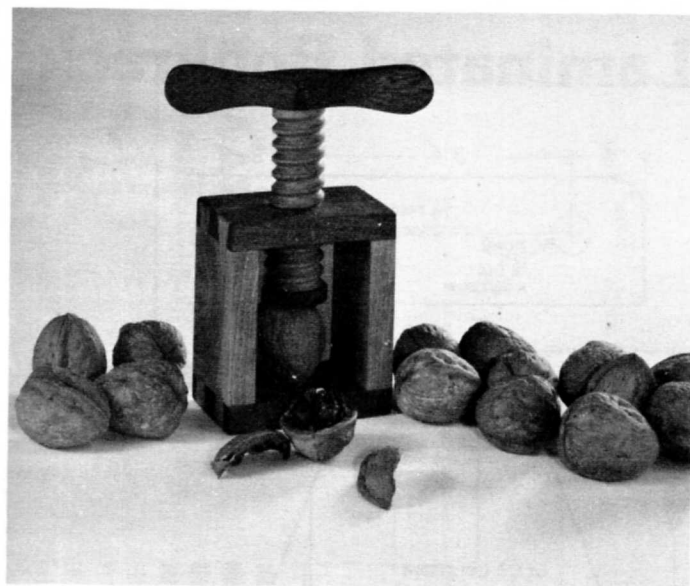


Photo: John Kane

to 1" dia., then band or back saw a $\frac{1}{2}$ " square x $\frac{3}{4}$ " long tenon on one end. With the threadbox, cut a 1" thread along the remaining length. The rod can now be cut to a finish length of $3\frac{1}{2}$ ", including tenon.

The handle is made from a piece of mahogany $\frac{3}{4}$ x 1 x 4. Cut the stock to shape, noting that it narrows to $\frac{1}{2}$ " thick at the middle when viewed from the side, and that it flares to 1" thick at the middle when viewed from the top. After cutting a $\frac{1}{2}$ " square x $\frac{3}{4}$ " deep mortise, the handle can be sanded and glued to the threaded rod. Thread the rod into box then glue 1" dia. x $\frac{1}{4}$ " thick disc to the end as shown. Finally a $\frac{1}{4}$ " plywood bottom is cut and glued inside the box, flush with edges of ends and sides.

The Gift Shop (cont'd)

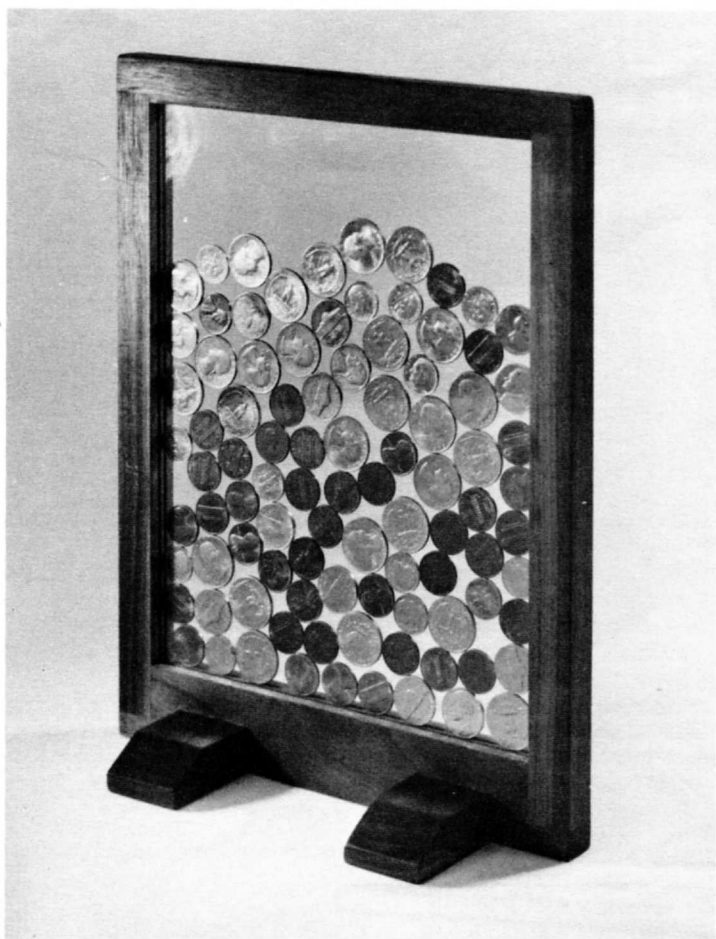


Photo: John Kane

While this may not be the safest bank to put money in, we think it has to rate as one of the most stylish. Actually, we like to think of it as a novelty item - a sort of storage and display station for your pocket change. It's designed to hold about \$20.00 in quarters, although it also accepts pennies, nickels, and dimes. To remove your savings, simply turn the bank upside down and coins easily fall out the top slot.

A hardwood is the best choice for this project, and we selected walnut. The bank requires very little stock, so some of your scrap pieces may provide more than enough material.

Begin by resawing a piece of $\frac{3}{4}$ " thick by $10 \frac{5}{16}$ " long stock to a thickness of $\frac{3}{16}$ ". This will result in a piece $\frac{3}{16}$ " thick x $\frac{3}{4}$ " wide x $10 \frac{5}{16}$ " long. Now, set up the table saw to cut this piece to a thickness of $\frac{3}{32}$ ". This thickness is important, so try to cut it as accurately as possible. If cut too thin, the coins won't fit between the glass; if cut too thick, coins may slide over each other, rather than stand on edge. Using this technique, cut a total of 2 pcs $10 \frac{5}{16}$ " long, and one piece $8 \frac{5}{16}$ " long. These $\frac{3}{32}$ " thick x $\frac{3}{16}$ " wide spacers can now be epoxied between 2 pcs. of $8 \frac{5}{16}$ " x $10 \frac{5}{16}$ " window glass as shown in the sketch. Be sure to thoroughly clean the inside of the glass before assembly. The two $11 \frac{5}{16}$ " long spacers are glued along glass sides, and the $8 \frac{5}{16}$ " long spacer is glued along glass bottom.

The top, bottom and two sides can now be cut to dimensions shown, and a $\frac{3}{16}$ " deep groove cut lengthwise along the center of all four pieces. Make the groove just wide enough to accept the two panes of window glass. Now, use a $\frac{3}{32}$ " drill bit (or $\frac{1}{8}$ ") and cut a series of holes forming the coin slot. A small file will clean up any rough spots.

Assemble all parts with glue, clamping firmly, and allow to dry overnight. After a thorough sanding, two coats of tung oil will complete the project.

Walnut Bank

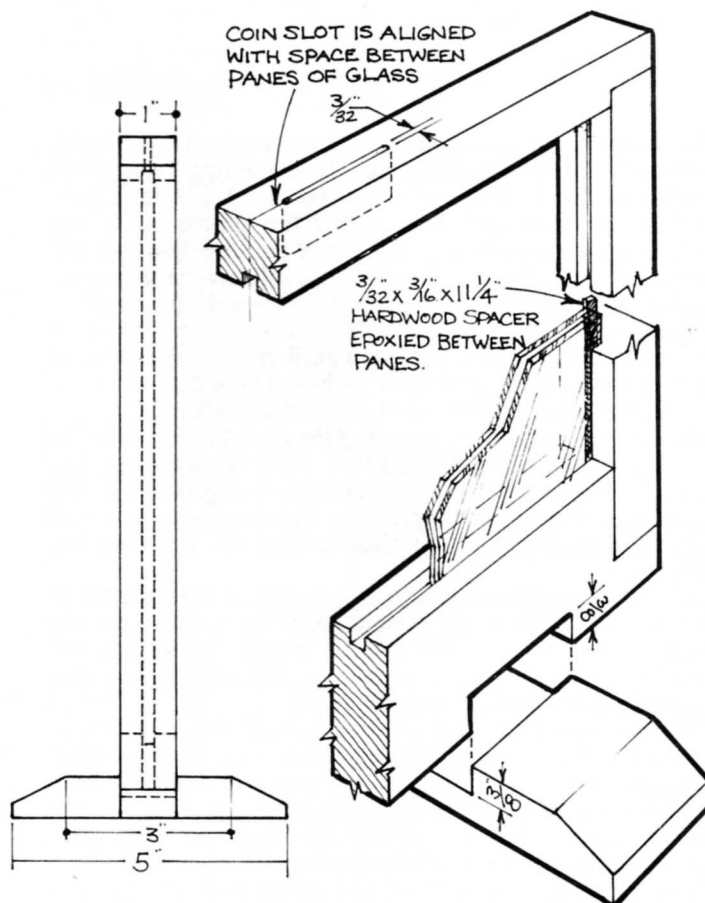
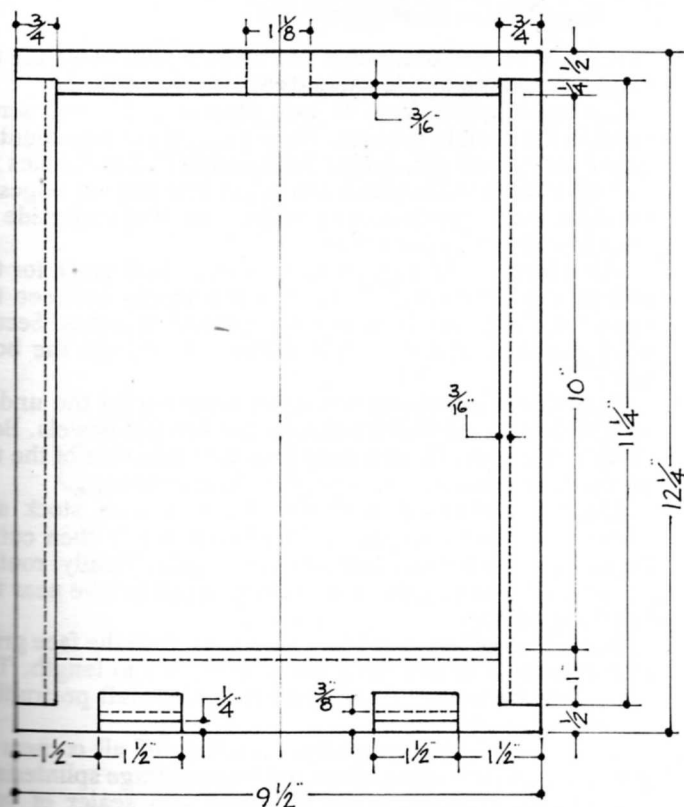




Photo: John Kane

Pine Schoolhouse Desk

This small pine desk-bench unit was inspired by the old-fashioned schoolhouse desks now commanding high prices at antique shops. Built of easily obtained $5/4$ inch pine ($1\frac{1}{4}$ " actual thickness) along with a few pieces of $3/4$ inch stock, it's proportioned for children of about 8-11 years and provides a convenient surface for both schoolwork and play. It's also an attractive piece of furniture for a child's room.

Start by jointing and edge-gluing three lengths of $5/4$ x 8 inch stock for the desk top. Clamp until dry and then trim to finish dimensions of 20 x $26\frac{1}{4}$ inches. Plane and sand the slab flat and round off the front and end top edges.

The shaped uprights supporting the desk and seat are cut from $5/4$ x 10 inch and $5/4$ x 8 inch stock respectively. Lay out a 1 inch grid pattern on cardboard of approximate size and enlarge one half of the profiles. Cut along your penciled profile and use this half-template to trace the shape on the workpieces.

Before cutting the curves, lay out and cut the rabbet at the top ends of the large upright. Also lay out and cut the dadoes to hold the book shelf and foot rest. These cuts can be easily done with a tablesaw and dado head or by making repeated passes over an ordinary blade.

The feet, which are also of $5/4$ inch stock are next shaped as shown in Fig. 1, and dadoed to receive the seat and desk uprights. The book shelf and foot rest are next cut from $3/4$ inch stock. These are both cut to $9\frac{1}{4}$ x $22\frac{1}{2}$ inches; however the foot rest is partially cut away along the front edge for a more decorative appearance.

Sand all parts well and glue and clamp feet, shelves and uprights together, maintaining squareness while counter-

boring for $1/2$ inch dia. plugs and drilling pilot holes for the screws fastening feet to uprights as shown in Fig. 3.

Cut top brackets from $3/4$ inch pine and glue and screw them to the upright rabbets. These screws are also counter-bored for $1/2$ inch dia. plugs. Also, locate and drill holes for $3/8$ inch blind dowels which are glued into the top edges of brackets and corresponding sockets in the underside of desk top which is added later.

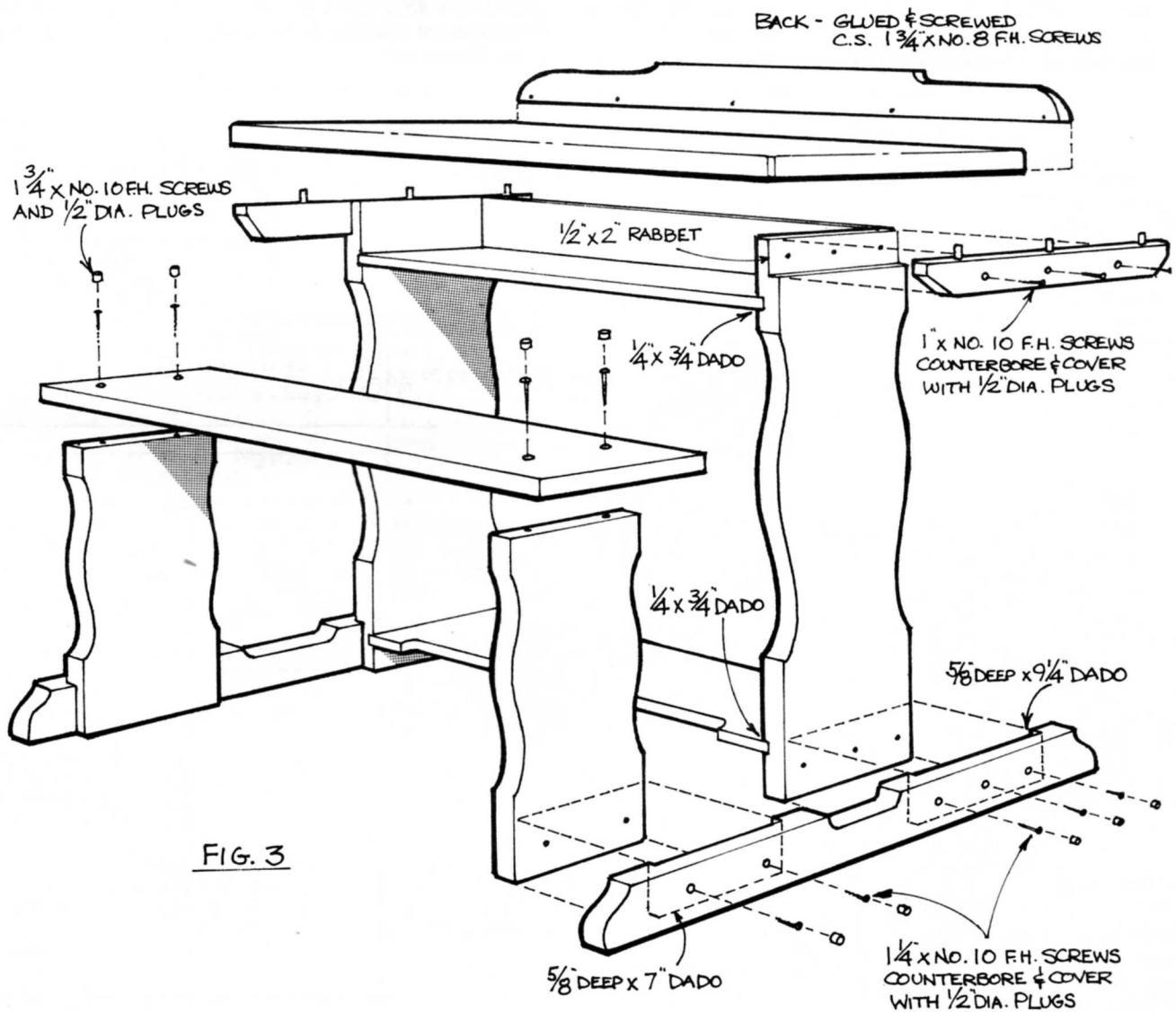
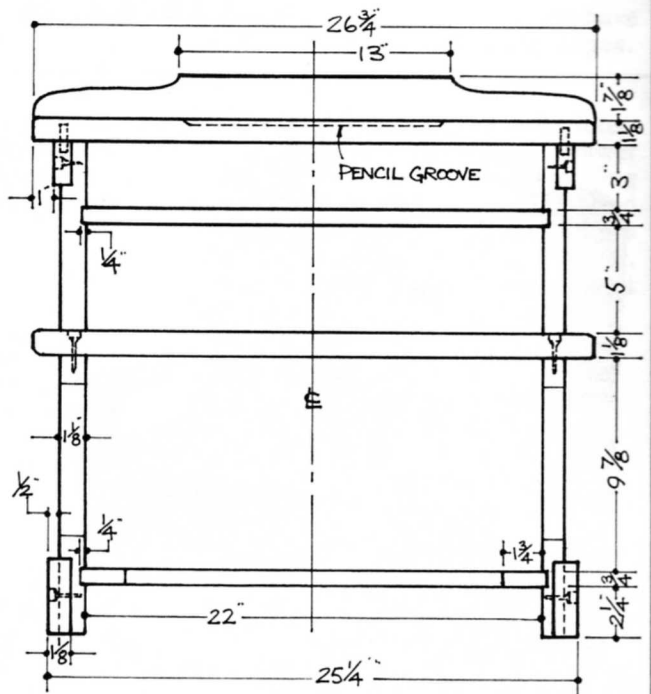
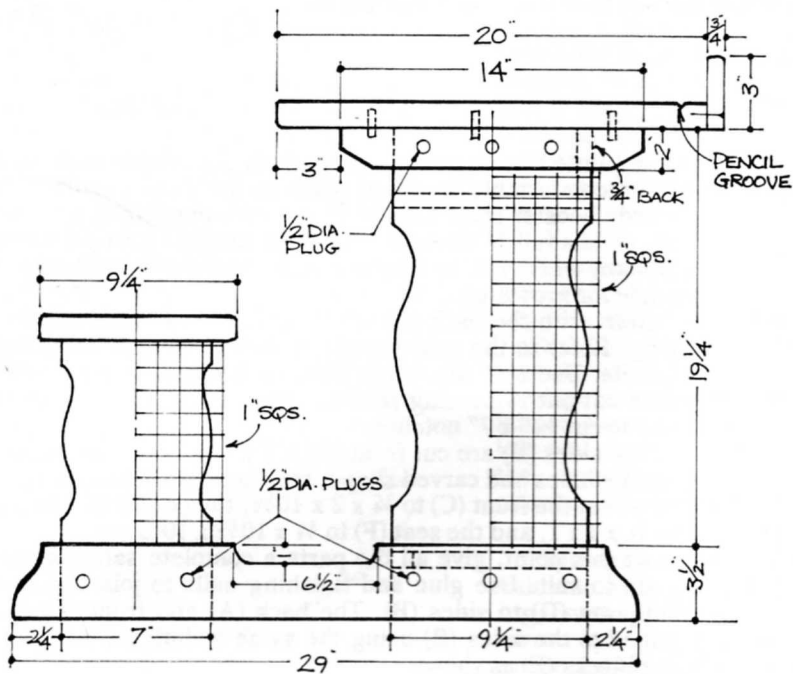
Cut a back board slightly long from $3/4$ inch stock for the rear of the book shelf. Trim so it fits snugly between the uprights, flush with back and top edge of uprights. Secure with glue and finishing nails driven up through the book shelf.

Turn the assembly upside down centered on the underside of the top and locate holes for the bracket dowels. Bore these holes about $3/4$ inch deep into the underside of the top and after coating dowels with glue, fasten the top.

The top backboard is shaped from $3/4$ inch stock and fastened as shown in Fig. 3. The bench top is then cut to finish size, sanded and screwed to uprights. Finally, rout or gouge a 12 inch long by $1/4$ inch deep pencil groove near the back edge of top.

Use a plug cutter to cut $3/4$ " long plugs from the face grain of pine scraps or use birch dowel stock cut to length. The plugs may be trimmed and sanded flush or left protruding slightly and rounded off.

Go over the piece carefully, rounding off all corners to give it an antique appearance and to discourage splintering. After finish sanding, apply the stain and sealer of your choice.



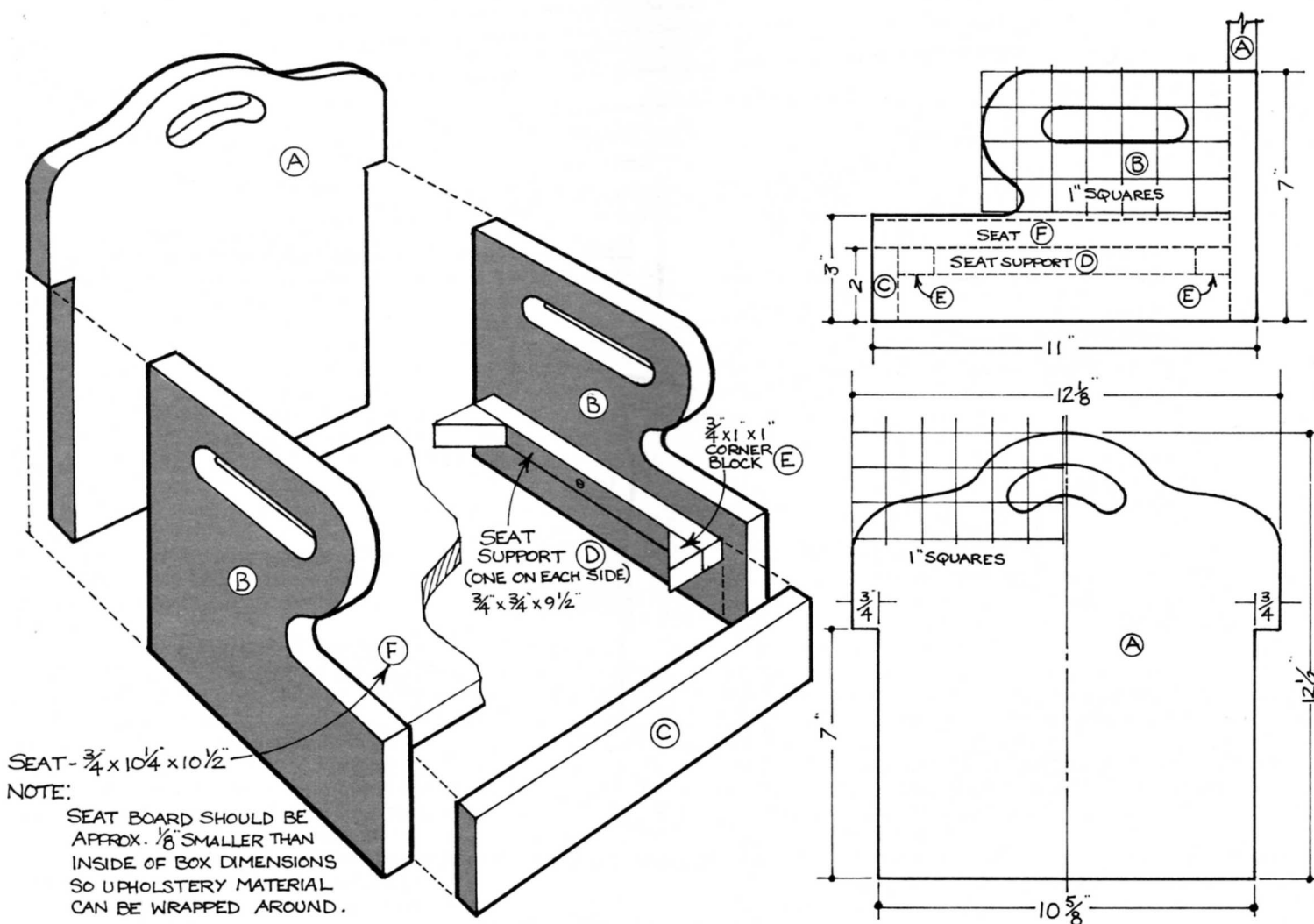
A black and white photograph of a small, rustic wooden chair. The chair has a high, curved backrest with a large, oval-shaped cutout at the top. It features armrests on both sides, each with a smaller, similar cutout. The seat is upholstered in a dark, textured material, possibly fabric or leather, and is set within a wooden frame. The wood appears to be a light-colored, possibly pine or spruce, with visible grain and some weathering. The chair is positioned against a plain, light background.

If a little boy or girl you know finds the telephone book a bit uncomfortable to sit on when at the dinner table, this sturdy booster chair may be just what's needed. It elevates the child a full 3" above normal chair height - a considerable amount when you're a little person in a world of furniture made for grown-ups.

The sides (B) are cut from $\frac{3}{4}$ " x 7 x 11 stock. Layout side handle holes and carved shape, then cut out with saber saw. Now, cut the front (C) to $\frac{3}{4}$ x 2 x $10\frac{5}{8}$, the corner blocks (E) to $\frac{3}{4}$ x 1 x 1, and the seat (F) to $\frac{3}{4}$ x $10\frac{1}{8}$ x $10\frac{1}{2}$.

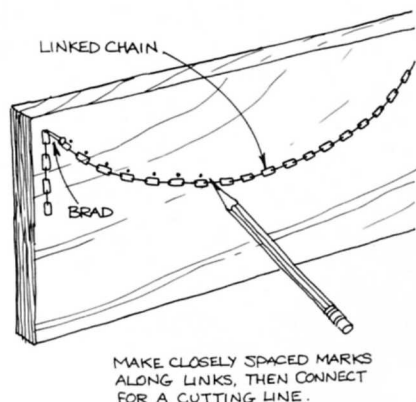
Cut 1" thick foam rubber to fit (F). Next, cut a piece of fabric so that it overlaps all sides of the seat by about 3". Wrap fabric over foam rubber and under seat, then fix in place with small tacks or staples. Now attach seat to chair with 1½ x #8 screws driven up through (D) and into (F). Two coats of varnish (first remove seat) will complete the project.

Photo: John Kane



Shop-Tips

A length of light linked chain can help make it easier to lay out large curves. With part requiring curve held in a vertical position, tack a small brad at each end of the intended curve. Hook the chain over each brad, allowing the chain to fall under its own weight to a smooth curve. Adjust chain location on brads until it produces the desired curve. Use a sharp pencil to mark a series of points along the chain, then cut to shape using points as a guide.



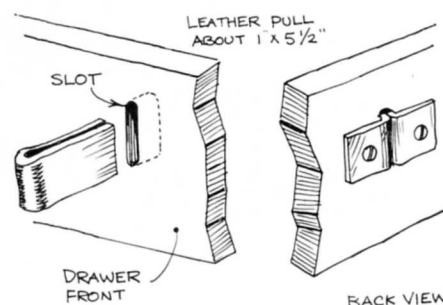
Applying stain with a rag usually results in hands and fingernails that match the color of the wood you've just stained. Next time you have to stain, slip a plastic sandwich bag on your working hand. When the job's done, the bag can be tossed out and you won't be faced with a nasty clean-up job.

When splicing veneer, once gummed veneer tape or masking tape is applied, the joint fit-up is no longer visible. Should the veneer move as the tape is put on, you won't know it until the tape is removed - and then it's too late to correct. Clear cellophane tape lets you see and inspect the fit-up as the tape is applied, allowing for adjustments if necessary.

Although a perfectly flat surface is a valuable aid, particularly for inspecting, such flat surfaces are hard to come by in most workshops. The machined top surface of a table saw is good, but many times the saw blade cut-out or miter gauge slots get in the way. If you're in need of just such a surface, consider a piece of 1/4" plate glass. It's reasonably economical, can be cut to most any size, and is about as flat a surface as most woodworkers re-

quire. When ordering, be sure to have the glass shop remove all sharp edges.

Narrow strips of leather make interesting and rather unusual drawer pulls. Make the drawer slot by drilling repeated holes with a suitably sized drill bit, then clean out waste with a small file. The leather is doubled over, inserted through the slot and secured from the back with small screws.



The Woodworker's Journal pays 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 re-draw all sketches so they need only be clear and complete.

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Woodworkers Notes