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lettersfrom

LINDA FULCHER

I had to laugh reading the Grandpa's Tool Kit article this issue: poor Grandpa had to hide his expensive tool purchases from Granny. Now I don't want any of you to tell Paul, (he might take a calculator out to my garden shed!) but I completely understand Grandpa's logic. Only someone who is immersed in any job or hobby, really knows the value of a good tool: it is priceless.

Value can be measured in many ways: how well the tool does the job, how long it lasts, and how much more satisfaction it brings to a job.

I do draw the line at Grandpa borrowing kitchen items for the shop and if he were here I would tell him so: "Now Grandpa, you wouldn't like Grandma using your shop tools in the kitchen would you? Look at how easily your perfect square would go out of whack if she used it to pry things open!"

But back to the value of a good tool. While there does need to be a balance to the budget, (so we have enough baked beans and can fix the leaking roof!) the value of a satisfying hobby, such as woodworking, cannot be measured in dollars. Encouraging our loved ones to invest in good tools is an investment in the people themselves. I believe there are few things more important than supporting our family members in pursuing a hobby.

If we give it some thought I am sure it will be obvious how valuable a hobby can be; making things gives satisfaction and provides a meaningful activity, beyond the items produced. But if products are what you want, remember that in spite of their jokes, they really are making more than sawdust in the shop. We may not want to admit it, but it also gives them a break from us. Let's face it, as wonderful as we are, our loved ones need to spend time away from us doing something constructive and they need to have time with their buddies.

So if we learn anything from granny it is to keep one eye on our kitchen items and let the other one be a little blind--which brings me back to what makes me laugh the most: Did Grandpa really think Granny didn't know?



This scroll saw piece was sent in by one of our readers, Ted Duquette. Watch for some of his work in future issues.

PAUL FULCHER

It's great to be on the woodshow circuit for the second year in a row. Sixteen shows in a row is hectic (to say the least), but I have to admit, I love it.

I think what makes it most enjoyable is re-connecting with woodworkers, and catching up on what they've been doing in their hobby.

It's inspiring to see people develop and grow.

In my travels I have re-connected with:

A carver who was taking a course last year, who is now winning competitions;

A woodworker who was buying his first table saw last year, who is now pulling out his tape measure and recording the dimensions of anything that catches his eye;

A turner who purchased his first lathe last year, who is now selling his work;

A woodworker who was looking for plans last year, who is now designing his own furniture;

A woodworking entrepreneur who was doing his business plan last year, who is now exhibiting (and selling) in the very show that first inspired him;

A wife, who didn't understand her husband's hobby last year, who is now taking him to the show and pointing out, not what she wants to have built, but what tools she needs to do the job herself.

It's funny, but most of them didn't see the incredible advancements that they had made. Partially because such growth was gradual, and they were too close to notice it.

Partially because they think about what they want to be doing, and where they want to be, rather than seeing how much and how well they are doing, and how far they have come.

That's why I thought I'd share this with you, just in case you too may be being a bit hard on yourself. So take a minute and look at where you are, what you are doing, and how that compares with this time last year. Take a break from thinking about all of the things you aren't doing, but want to be doing, and give yourself a pat on the back for what you are doing, because I also met a lot of spouses, children, and grand children who tell me you are doing great!

lettersto

Hi Paul & Linda:

I read Danny Proulx five series article on building kitchen cabinets, great articles. Now my wife wants me to build her a built-in oven cabinet, (something to do about reading too much and not producing enough).

The problem is that I searched all over for his two books, "Build your own Kitchen Cabinets" & "Building Frameless Kitchen Cabinets", but found nothing. I think these two books might give me more information on what I want to do (also I can tell my wife I'm reading to get all the facts so I don't make any mistakes). Any help locating these books would be appreciated, oops gotta go, the wife says I'm spending too much time on the computer. Bye. **Vince S., Stoney Creek**

Dear Vince,

I'll make this quick, just in case your computer time has been restricted. All Danny's books are available on his website. The address is: www.cabinetmaking.com Don't read the rest of this message, because you've got work to do, and I don't want your wife to think I'm holding you up! Good luck! (just in case you're still reading)

Paul

P.S. You'd better not be still reading, you've got books to read!

Canadian Woodworking:

I recently purchased a solid wood maple door for exterior use. I want to protect it and to keep the natural look of the maple. I applied 3 coats of MinWax Helmsman Spar

Urethane Satin finish, following the directions of using 220 sandpaper between coats. I still have a mild gloss/urethane look that I want to get rid of. Can I use my random orbital sander?

Neil

Hello Neil,

It seems you want a satin finish, and you've selected the right product. If your finish is still too "glossy" looking for your taste, then sand the final coat with a fine grit; Use 800 or 1200 grit paper. A drop of dishwashing soap with a bit of water will make sanding easier. Don't use a random orbital sander, as you run the risk of sanding through the finish. It'll take a little longer, but it's better to be safe than sorry.

Carl

Correction: In Danny's Tool Tote project last issue (October/November 2004) both the tote end panels and the groove in the tote sides should be 3/8" deep, not 3/4" deep as shown in the illustration.



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Laying Out, Measuring & Testing Tools

Grandpa's Tool Kit Part IV

This is a very charming story about grandpa's care and use of measuring instruments for wood. It takes place over a hundred years ago in an eastern Canadian fishing village: Barachois de Malbaie at the tip of the Gaspé Peninsula.

Here, the world's largest northern forest, the majestic Boreal, converges with the St. Lawrence forest from the west. The white and black spruces, trembling aspens, white birches, and jack pines of the Boreal meet the eastern white pine, yellow birch, maple, and oak invaders from the west.

At the end of each day, with this abundant supply of wood just outside his shop, Grandpa would follow a daily ritual of sharpening all the cutting tools used that day, such as plane irons, chisels, and knives.

Grandpa had so many of these tools that he had a wooden chest just to store them. Each day the tools would be wiped down with a light oily rag and put back into place in his tool chest. Additionally, every month, as woodworkers had done for centuries, he would apply a light coating of linseed oil to all wooden tools.

A major part of his woodworking involved the use of laying out (marking out), measuring, and testing tools, many of which are now unfamiliar to modern

woodworkers. Grandpa used a razor sharp striking iron, which is a combination scratch awl and marking knife. Any marking out would be done with this tool: scratch awl with the grain, and knife across the grain. The score mark would either part or sever the wood fibers, providing registration for both back saws and chisels.

Grandpa had many wooden gauges to assist in accurate laying out. He had three types: marking gauges to cut with the grain; an ancient cutting gauge made entirely out of mahogany, used to mark with the grain; and a well used beech mortise gauge with adjustable pins, set exactly to the width of a chisel for all mortise and tenon work. The fence of each gauge was set with small wooden wedges rather than the now more familiar thumb screws.

As in centuries past, Grandpa used shop-made straight edges or rules. Grandpa had a boxwood folding rule, store-bought from a general store in the distant metropolis of Chandler. Additionally technology was on his side and he proudly cherished metal 6" and 12" rules. Over his bench, as part of a large collection of story sticks (pre-determined measurements and other technical data laid out on strips of wood), Grandpa had a selection of shop-made wooden rules,

which would take him up to the four foot point. From here he would use his folding rule, especially useful for internal measurements, as well as his metal rules.

Although he had no formal education, Grandpa was a whiz at shop mathematics and geometry. He could add up and subtract measurements with speedy accuracy based more on common sense and less on science. In his box of measurement tools he had an old brass geometry set made in England, complete with protractor and compass. He even had a shop-made set of French curves in white oak, again copied from an existing set. Often if he needed to scribe an arc, he would raid Granny's kitchen, much to her disapproval, and bring back a particular tin mug or plate to give the exact radius needed.

The pride and joy of Grandpa's measuring tools were his squares: a set of rosewood inlaid brass and spring metal try squares made in England. This set consisted of three squares (12", 8" and 4"). Unbeknownst to Granny, he had spent a week's wages to acquire these important tools. Every evening he would wrap these in felt and carefully place them in a specially made box. Every month he would test all three squares for exact squareness.

There were many other squares: a set of carpenter's squares ranging from a large



Winding Sticks



Try Squares



Trammel heads



Rulers and marking gauges

rafter square to a 12" carpenter's staircase stringer square; a shop-made sliding T-bevel used to transfer angles other than 90°; a wooden mitre gauge for 45's; a set of specialized gauges for 22 1/2" and 60°; and shop-made dovetail templates made from very stable three-year-old dry maple with a one-in-eight pitch for hardwood and a one-in-six pitch for softwood.

Grandpa also had a pair of trammel points, made especially for his wooden straight edges. These were fixed to the beam using small wedges, and were used to scribe large arcs for tabletops and rounded cornices. Finally Grandpa had a set of winding sticks, crucial to testing whether a board was free of winding, and therefore true.

In the dark, wintery evenings the storms were often raging. Outside grandpa's shop the white spruces played with the savage Atlantic winds as if they had seen it all before. Grandpa payed the weather little mind. He was busy getting ready to plane and surface pine. The entire top tier of his tool chest was devoted to his wooden bench planes and consisted of long jointer and try planes, scrub and jack planes for dimensioning, and smoothing and coffin planes. The second tier housed his extensive collection of moulding planes. By the flickering light of the shop's oil lantern he selected his bench plane of choice. The fragrance of pine resin filled the shop and the pot-belly stove crackled and spit as Grandpa set to work.

In the next article we will look at the complex process of preparing wood stock by hand.

GARY DOVER
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Corner Cabinet

Design

My design for this cabinet was supported by the requirements that it serve several needs: create a comfortable viewing height for a conventional 27" TV; have an attractive open upper cabinet; and contain space for a variety of electronic components. The lower case was designed to support 4 electronic components along with storage space for VCR tapes and CD/DVDs.

The basic concept of any corner cabinet is to fit into a space that offers convenience of footprint but optimizes available functionality. In my design, I was also looking for the combination of wonderful wood tones and elements to enrich the look of the finished cabinet. The woods I selected were cherry and maple.

My construction materials were a combination of sheet stock, hard woods, and mouldings. The basic casework was made of birch and cherry plywood: the face frame, the doors, the base, and mouldings were made of solid cherry; the base also incorporated poplar as a secondary structural wood; while the cabinet boxes were made of hard maple.

Cabinet

Some key design elements in the cabinet design had to be addressed and contained within a height and width that looked visually appealing. I measured some commercial examples I saw in a variety of furniture stores, and came to my dimensions using them as a baseline, but not using those as iron clad rules for sizing. Overall the cabinet stands 80" tall and is 26" deep along its wall side, while the full wall length to the corner is 33 3/4".

My casework sides, backs, top, and bottom components were made from birch

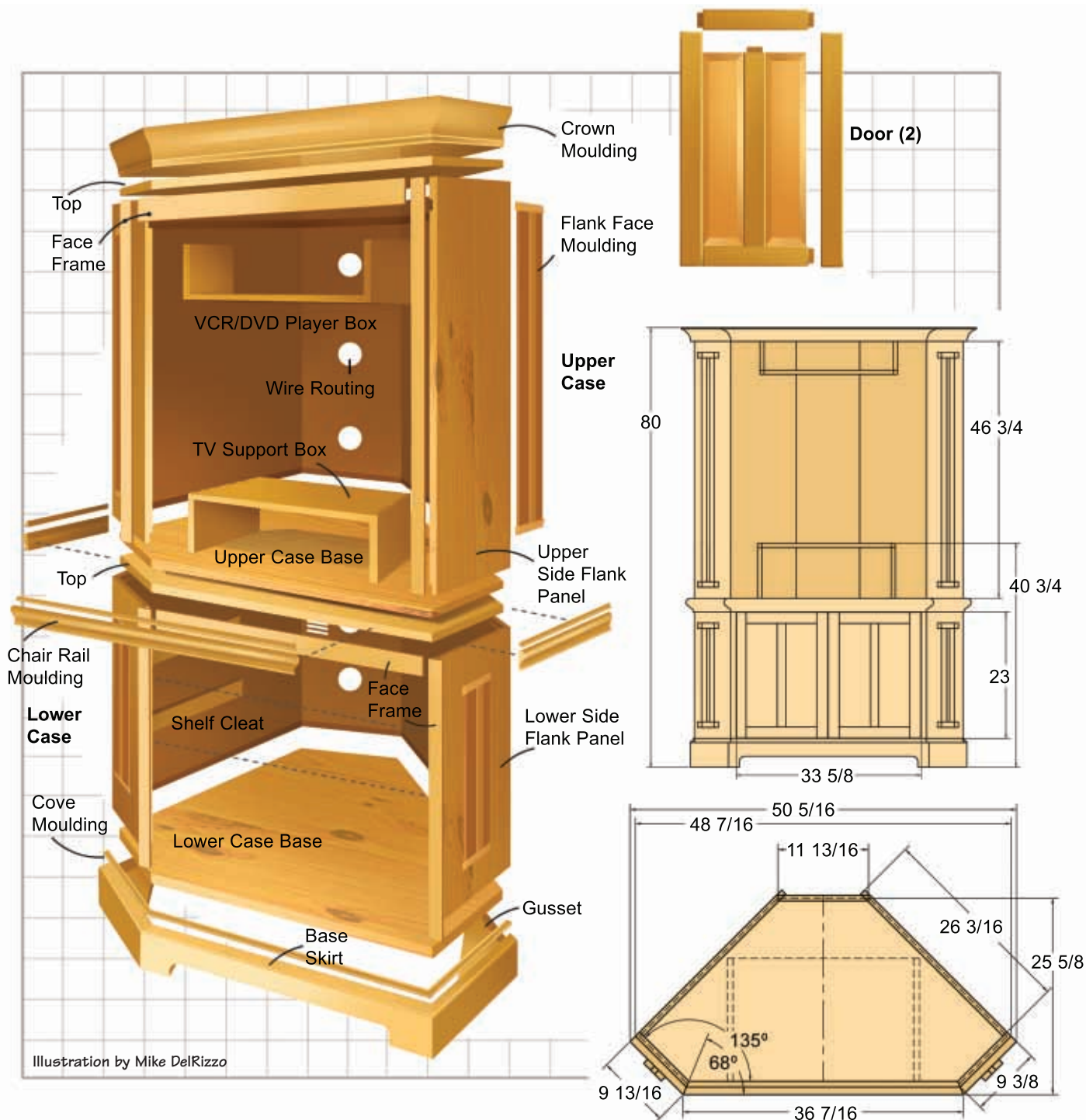
ply. These panels will mostly be facing the wall, so I saved on cherry for the face and exposed outside flank panels.

The triangular top and bottom were critical in defining the over all cabinet design; these parts defined the other case dimensions. To ensure that the 4 pieces were identical, I cut rectangular panels and established a centre datum point on each board as a reference. From that point I then laid out the drawing lines on each panel for the final triangular shape. I then rough cut them on the band saw, and using the datum point as an index, I paired the

panels for a top cabinet pair and a bottom cabinet pair. I then made an angle-sliding jig to cut the 45° angles. I used this sled and double-sided tape on the pieces to ensure exact copies of all dimensions.

The casework was constructed with an angled 45° dado near the rear of the side panels for the back panel to slide in. The tops and bottoms of the back and side panels were also dado-cut to accept the top and bottom triangular panels, glued and fixed with 1 1/2" nails all around.

The upper case and lower case were assembled using the same process, the

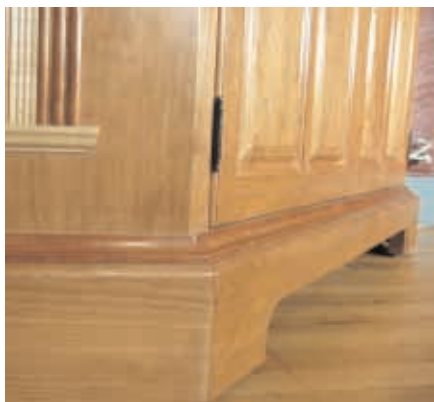




Sides and crown moulding



Chair rail moulding



Cabinet base

only difference being the obvious case height difference and the top panel configuration. The top panel on the lower case is flush to the top of the side panels, while on the upper case the top panel is dadoed in at 3 1/2" below the top of the full height of the side panels, this was done to accept the crown moulding and also to give an interior space that did not look cavernous.

I established a TV viewing height at just over 40". To complete this design feature I built two boxes for the upper cabinet, one to support the TV and allow a space underneath it for electronic components, and one hung above the TV to allow for a similar function. Both media boxes were made from solid hard maple and through-dovetailed together. The lower box is free standing while the upper box is attached to the cabinet using 1/4-20 Quick-Connect Hardware.

I used 3/4" cherry veneer plywood to make the side flank panels for the upper and lower cabinet. I used solid cherry for the rails and stiles of the face frame.

Once I had the cases assembled I attached the mouldings. Around the waist at the top of the lower case I attached a 2 7/8" wide cherry chair rail moulding. To mate with it, I made a base moulding for the upper case using an ogee router bit.

For attaching the crown moulding I used a groove and spline technique. I cut a 1/4" groove in the face frame of the upper cabinet and also a corresponding one in the crown moulding. I then used a spline and mated the crown to the case with glue and attached support blocks behind the crown to the case, with glue only. For a bit of a column look I took some cherry and maple bead mouldings and applied them to the sides of the upper and lower cabinets. I made maple crowns using cove moulding and hand cut the return angles.

Shelves were added to the base cabinet; cleats were attached to the inside walls of the lower case, and birch plywood shelves were cut to fit. The edges were banded with a veneer of 1/4" cherry.

Doors

The cabinet design required double paneled doors only for the base cabinet. This look added nice shadow details to the base but also would allow for expansion to upper bifold doors should a change of heart in future years require that doors be added to the top portion of the cabinet.

I made the doors using solid cherry: 7/8" rails and stiles with 5/8" panels. I like the feel of the heavier door and the look is great in this case, adding some visual depth between the doors and the face frame. The hinges are full insert morticeless hinges; the door pulls were matching, from the same source.

Base

The base is a combination of 1 1/2" solid cherry and poplar, with 3/4" plywood gussets at the corners offering support to the cabinets and a zone to use assembly hardware to pull it all together. The 22 1/2" front corners were assembled using double #20 biscuits and glue. The poplar sides were also attached to the cherry face pieces using #20 biscuits and glue, and the back poplar support was dadoed and glued. The opening in the cherry base was based on a 2" diameter corner (traced from a paint can).

The lower case was attached to the base using 1/4-20 Quick-Connect hardware. Once that was done, I applied the 3/4" cove moulding to the base to complete the lower assembly.

Assembly

The case comes apart in three pieces; the base, the lower cabinet, and the upper cabinet. These are all assembled to each other using 1/4-20 Quick-Connect hardware. I drilled 5 holes in the back of the cabinet with a 2" hole cutter to fit in wire grommets to allow for all wiring to run up and down the back of the cabinet but out of sight, cleaning up the look. I attached a power bar to the outside of the back panel near the base so that all components could be powered from a single point to a wall outlet. As well, I cut in two ventilation grills for the lower cabinet to help with heat relief from the electronics.

To add some feature lighting to the cabinet I installed a rope light on top of the cabinet. With the space between the top of the case and the ceiling being dark, this soft secondary indirect lighting is very pleasing on the look of the finished piece.

Finish

The TV case interior walls were finished with two coats of an antique white milk paint. I selected a light colour in this application, as I believe it lightens up the dark spaces in the cabinet and softens the look of the electronics in the cabinet.

My chosen finish was 3 coats of a hand wiped danish oil, followed by 3 coats of wipe-on poly. Each wipe-on poly coat was rubbed out with 0000 steel wool after it was dry and a final furniture wax was applied to complete the look.

The final look and feel of this corner cabinet is very satisfying to see. I know that it is treasured by it's new owner, who is a woodturner and, as a cabinetmaker, that is a wonderful reward.



JIM SHAVER
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A man with glasses and a beard, wearing a blue denim shirt, is working in a workshop. He is using a hand plane to smooth a piece of wood on a workbench. Wood shavings are visible on the workbench. The background shows shelves with various tools and materials.

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CD Cabinet

Is your living room on the formal side? Do you have a beautiful CD/DVD system but nowhere to attractively store your disks? If so, this CD storage unit might be just the solution for you: it stores all of your CD's in a practical, yet attractive cabinet.

This CD/DVD storage cabinet can be finished to match the decor in any room. It has three full extension pull-out drawers that can hold 80 disks in each: a total of 240 disks in plastic cases. That should keep your favorite music and movies close at hand for a long while.

I used 3/4" thick oak veneer plywood, but just about any sheet material will work, as long as the inside dimensions are maintained. You can use 3/4" thick MDF and paint it for your teenager's room. It might be just the thing to help them keep their disks neat and organized. This cabinet can also be used to store and organize your computer software disks. I'm sure you'll find that it's easy to build and a nice addition to any room in your home.

Route a rabbet

Cut the two side, top, and bottom panels to the sizes indicated. Route a 1/2" wide by 3/8" deep rabbet on the back inside face of each panel.

Apply edge tape

Apply wood veneer edge tape to the front edges of the four panels. Wood edge tape doesn't trim well with a knife so I use a flush trim bit in my router and sand the edges smooth after the cut.

Join bottom and top panels

Join the bottom and top panels to the sides using glue and #20 biscuits. Clamp securely until the adhesive sets.

Glue back in place

Place a little glue in the panel rabbets and set the 1/2" thick back in place. Secure



it with a few brad nails until the glue sets up. Remember, if the backboard was cut square, your cabinet carcass will be squared.

Attach base cleats

Attach the three base cleats to the bottom of the cabinet, flush with the outside edges. Use glue and 1 1/4" screws through the cleats and into the bottom board and side panel edges. Drill holes every 4" through the sides of the cleats. These holes will be used to secure the skirt boards.

Route cove profile

Route a cove profile into the top outside edge of the three skirt boards. Leave them about 1" longer than the finished sizes shown in the materials list so you can cut clean 45° mitres. The front board has a 45° mitre on each end and the sides have a mitre on the end that meets the front skirt board.

Secure the skirt boards to the cabinet using glue and 1 1/4" screws through the base cleats. Position each skirt board 1/8" above the top edge of the base cleat to hide the cleat-to-cabinet joint.

Secure top board

Use 1 1/4" screws to secure the top board to the top panel of the cabinet. It's positioned so the sides and front edge overhang the cabinet by 3/4". The top board is flush with the cabinet's back face.

Attach a 3/4" wide decorative moulding to the top board's four edges. Secure the moulding with glue and brad nails. Pick a moulding design that suits your taste or matches other furniture in the room where the cabinet will be placed.

Make pull-out trays

The pull-out trays are built with simple butt joints, glue, and screws. Don't worry about trying to hide the screw heads, as they will be covered by the side mounted full extension glides and front pull-out face. Attach the front and back boards to the sides, then slip in the bottom board and fasten with a little glue, and screws. Install the divider boards with screws through the front, back, and bottom boards.

If you want to try building fancy pull-out trays, these trays are a great place to experiment with box and dovetail joinery. However, pay attention to the overall

dimensions so the pull-outs will fit properly in the cabinet and the CD's will fit in the pull-outs.

Install plastic holders

I installed plastic holders for my compact disks. They are screwed in place and hold the CD's upright. I found these at my local stationary store, but they are available at some woodworking stores as well. Be sure to check the dimensions of the holder and your pull-outs, to verify that the compact disks will fit properly.



Rout a rabbet



Apply edge tape



Attach base cleats



Make pull-out trays

Install spacer cleats

Install the three spacer cleats, 1/2" back from the cabinet's front edge, on the hinge side of the cabinet. Space them so there will be enough room above each pull-out for CD case clearance. Note their position, because you'll need those dimensions when you drill the 35mm holes in the door for the two hidden hinges.

Install drawer slides

Install 18" full extension drawer glides following the manufacturer's instructions. Position them 1/2" back from the cabinet's front edge to provide room for the 1/2" thick pull-out faces.

Cut pull-out faces

Cut the three pull-out faces to size and round over the front edges with a 1/4" radius bit in a router. Secure the faces to the pull-outs with screws through the pull-out front board. Use 3/4" screws in countersunk holes so they'll penetrate the solid face by about 3/8". The lower edge of



Join bottom and top panels

each pull-out face is flush with the lower edge of the tray's bottom board. The top edge of the pull-out face can be used as a finger pull to open and close the trays.

Make door

The door width, using hidden hinges, is 1" wider than the interior cabinet width. The door height for this cabinet is also 1" higher than the interior height, so the door will be 16" x 25 1/2".

Cut the stiles and rails to length. Use the table saw to form a 1/4" wide x 1/2" deep groove on one edge of both stiles and rails.

Cut rail tenons

Each rail requires a tenon that's 1/4" thick and 1/2" long on both ends. Use the table saw to cut the centered tenons.

Make center panel

The center panel for the door can be a 1/4" thick sheet of veneer plywood or a solid raised panel. If you decide on a raised panel, it can be made using a panel



Glue back in place



Attach skirts to base cleats



Secure top board



Install plastic holders



Screw in three space cleats

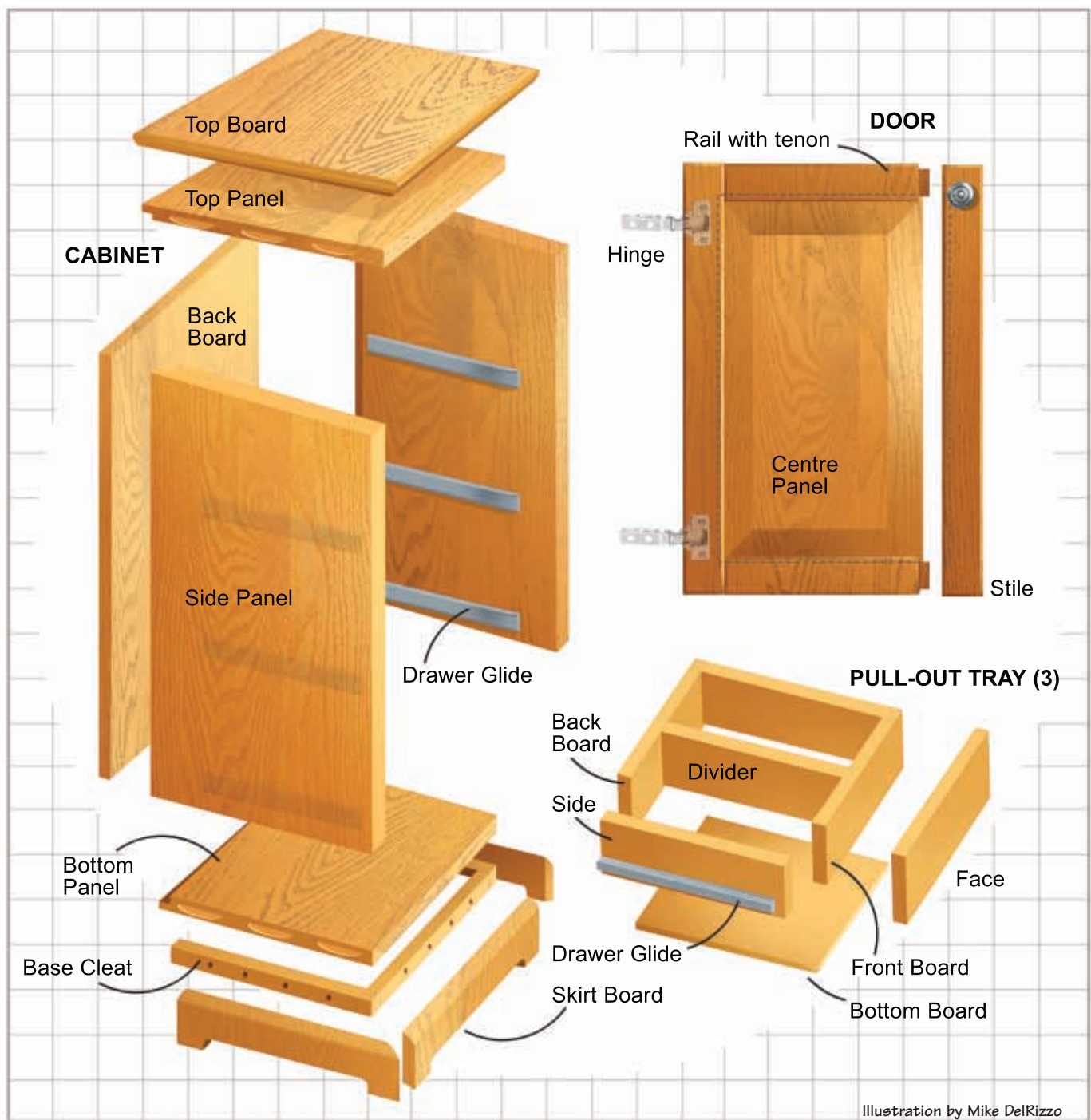


Illustration by Mike DelRizzo

raising bit on a router table, or with a table saw.

First, edge glue enough 3/4" boards to form a finished panel that will be 12 3/8" x 21 7/8".

Raise the center panel

A center panel can be raised on a table saw (see CWM Feb/Mar 04). The procedure involves clamping a straight edged board across the table saw blade. Use the saw's mitre slide to ensure the guide board is at 90° to the blade. The front edge of the guide board should be centered on the blade when it is in its lowest position beneath the table top surface.

Turn on the saw and raise the blade 1/16". Then, push each edge of the solid wood panel across the blade. Repeat these steps until the panel has been raised and the edges are about 3/16" thick. Small cuts and slow passes make the smoothest cuts.

Assemble door

Sand the center panel and assemble the door. Use small strips of foam in the grooves to prevent door rattle. Be sure the panel is free to move, as it will expand and contract with humidity changes.

Glue the tenon and groove joints only, not the panel, and clamp securely making sure the door is square. If the diagonal

measurements are the same, the door is square. Set it aside until adhesive cures.

Drill for hinges

Drill two 35mm diameter holes, 1/2" deep and 1/8" from the edge, in the door for the hidden hinges. Verify that they will clear the drawer glide spacer cleats. Install two 100° - 120° hinges on the door at 90° to the door edge. I plan on using 170° hinges but I will install the door with standard opening hinges to correctly locate the mounting plates. Once correctly installed, remove the standard hinge bodies on the door and install the wider opening 170° hinges, if desired.



Install drawer glides



Secure faces to pull-outs



Cut grooves on stiles and rails



Cut centered tenons



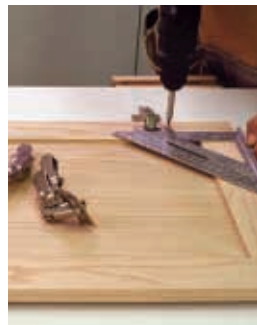
Edge glue finished panel



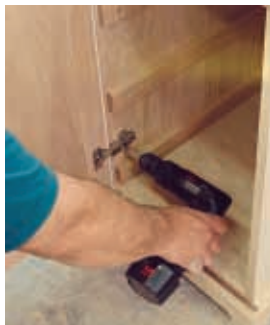
Push wood panel across blade



Glue joints and clamp



Drill holes for hinges



Position and install door

Attach hinge plates

To correctly position and install the door, attach the hinge plates to the hinge bodies. Hold the door in its normally open position, at the correct height, with a 1/8" thick spacer strip between the cabinet and door. Drive 5/8" screws through the mounting plate holes into the cabinet side to secure the door to the cabinet. Remove the 1/8" spacer strip and check the door's operation.

Finally, you can remove the hardware and apply a finish. I picked a walnut stain and applied a couple of coats of semi-gloss polyurethane to protect it. However, as previously mentioned, you can change moulding trim, the base skirt pattern, or the final finish colour, to something that better suits your requirements.



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MATERIALS LIST

OAK VENEER PLYWOOD

- 2** **3/4" x 19" x 26"**
Side panels
- 2** **3/4" x 19"W x 15"**
Top and bottom panels
- 1** **1/2" x 15 3/4" x 25 1/4"**
Back board
- 1** **3/4" x 18" x 19 3/4"**
Top board
- 3** **3/4" x 1 1/2" x 18"**
Pull-out spacer cleats

SOLID WOOD

- 1** **3/4" square x 16 1/2"**
Front base cleat
- 2** **3/4" square x 18"**
Side base cleats
- 1** **3/4" x 3" x 18"**
Front skirt board,
mitre at 45° on both ends
- 2** **3/4" x 3" x 19 3/4"**
Side skirt boards,
mitre at 45° on both ends
- 1** **8' length**
Decorative trim moulding
- 3** **1/2" x 4" x 13 1/4"**
Pull-out faces
- 2** **3/4" x 2 1/4" x 25 1/2"**
Door stiles
- 2** **3/4" x 2 1/4" x 12 1/2"**
Door rails
- 1** **3/4" x 12 3/8" x 21 7/8"**
Centre panel

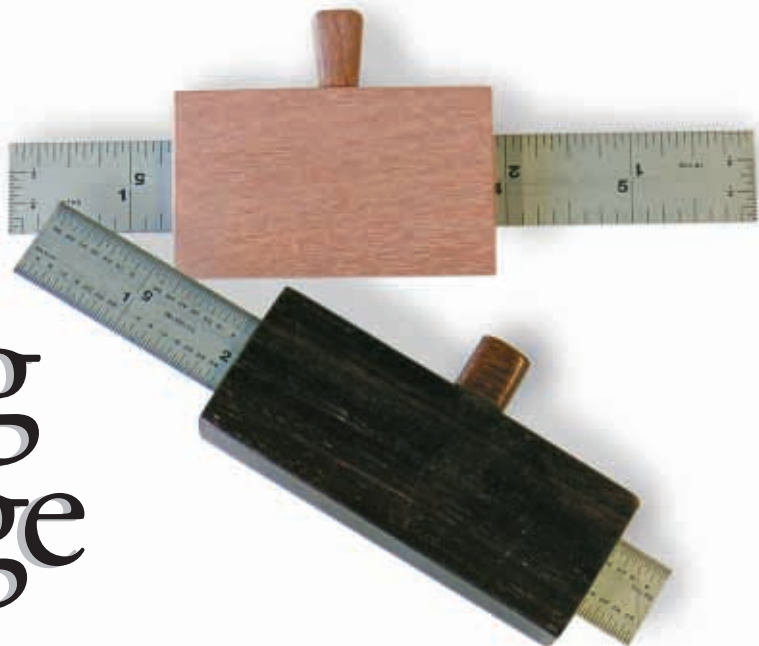
BALTIC BIRCH PLYWOOD

- 6** **1/2" x 3" x 17"**
Pull-out sides
- 6** **1/2" x 3" x 13 1/4"**
Front and back boards
- 3** **1/2" x 12 1/4" x 17"**
Bottom boards
- 3** **1/2" x 2 1/2" x 17"**
Tray dividers

HARDWARE & SUPPLIES

- 2** 107° European hidden hinges
- 1** Door Handle
- Screws
- Glue
- Brad nails
- 12 Plastic CD case holders (optional)

Measuring Gauge



I made my first rosewood gauge about a decade ago. The design is from an instructor at a woodworking course I took at the time. Since then, this gauge has become one of the most useful measuring tools in my shop; not a day goes by that I don't use it. You can make a similar one in about 2-3 hours, spread over two to three days.

Select Your stock

Select a piece of straight-grained wood about 3/4" x 1 1/2" x 14"; I used Makore, a hard (39 lbs/cu. ft.) close-grained African wood. I chose Makore simply because I had some cut-offs that I had been saving for just such a project. Cherry, maple, or beech would also have been good choices. Even though the final size of the gauge is 2 3/4" long, use long stock; it's safer to mill. The 14" stock is long enough to make 4 gauges. Use one for yourself, and the other three to give as gifts. I can't think of a woodworker who wouldn't love to receive one of these.



Stock bandsawn



Channel routed

Mill the Stock

Ensure that your stock is square and uniform in thickness. Begin by bandsawing the blank in two, so that you have two pieces approximately 3/8" thick. If you lack a bandsaw use a table saw. Next, thickness plane or joint the two blanks to around 5/16" thick.

Rout the Channel

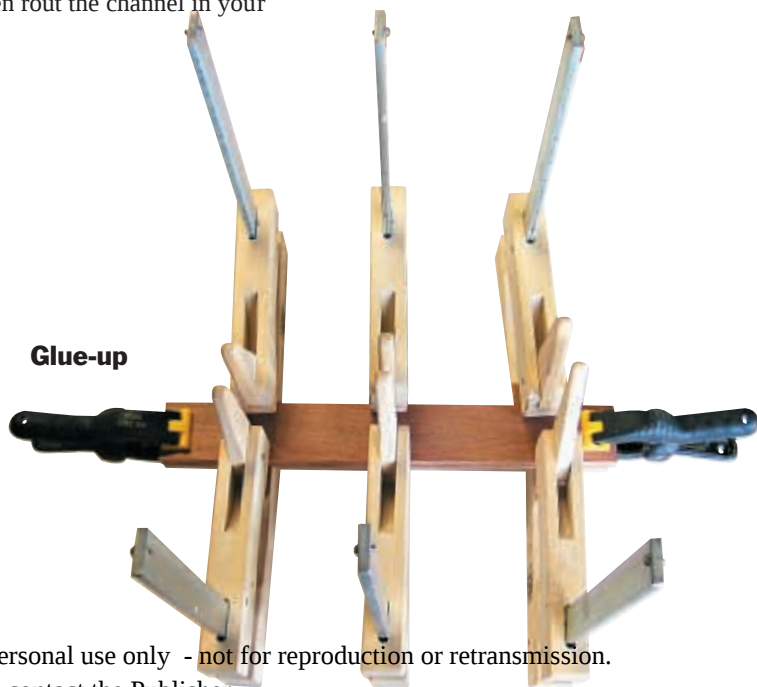
Now we'll rout a channel in one of the blanks. Before doing this ensure that you have your ruler on hand. I use the 6" Pocket Ruler from Lee Valley, as it's extremely well made and not too expensive. I mark the approximate center of the blank, install a 3/4" straight bit in my table mounted router, set the height to a hair's breadth thicker than the ruler, then cut a test channel in a piece of scrap wood. Run the ruler along the channel to see that it fits smoothly. Make any necessary adjustments, then rout the channel in your blank

Glue Up the Blanks

Now you're ready to glue up the blanks. I use white glue. Don't apply too much; you don't want glue seeping into the channel. Clamp and let the blanks set overnight.

Drill Holes and Insert the Nut

Likely you'll have to hand plane or joint the edges of the glued-up blank. Now you're ready to drill the holes for the lock nut. Again, ensure that you have the brass bolt and nut before you start drilling. I used a 10-24 1 1/2" brass bolt, which I cut in half. I used a shop grinder to round over the edges of the nut; it doesn't have to be perfectly round, you just need to knock off the sharp edges. If you're going to make four gauges, mark out four hole locations along the blank, allowing for a final gauge size of 2 3/4" to 3". If you are just making one, mark for one hole.



Glue-up

Now you can drill 3/8" holes the depth of the nuts. I find a drill press works best here, although you can use a portable drill. Next drill a hole slightly larger than the diameter of the bolt in the center of the 3/8" hole. Only drill to the depth of the channel. Mix up a small amount of epoxy, lightly coat the sides of the nut, and insert it into the 3/8" hole. Clamp and let it dry. When dry you can file or sand the nut flush with the blank. Now you can cut the body of the gauge to length. I like mine about 2 3/4" long. Ensure that you cut the ends square to the body. Lightly sand the edges of the gauge.



Drill holes for brass nut

Make a knob

You need a knob to hold the ruler from sliding in the channel. I cut a piece of wood that measures about 3/4" square. Drill a 1/2" deep hole into the end grain of the knob the same diameter as the bolt. Mix up another bit of epoxy and glue the

bolt into the hole. No need to clamp, but let it dry overnight. Then carve the knob to a pleasing shape.

That's it! You can leave the gauge 'au naturel', or apply an oil finish. You'll find this gauge fits nicely in your apron pocket, and is a lot handier to use than a hand held ruler alone or a measuring tape.

MATERIALS LIST

3/4" x 1 1/2" x 14"

6" Ruler

Lee Valley #60N47.01, \$7.50

10-24 1 1/2"

Brass bolt

2 Part Epoxy

Lepage #12, 5 min. \$5.95



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toolaccessories

Ryobi One + Battery



Until a few weeks ago I would have said that there hasn't been much real innovation coming from tool manufacturers of late; a lot of product development seems to focus either on delivering more power or on enhancing the tactile nature of tools. Important, yes, but not necessarily inventive. Ryobi is taking the lead in innovation with the recent introduction of its new "One+ System". The One+ is a simple concept; makes me wonder why no one had thought of it earlier.

If, like me, you like cordless tools, then you probably have several around the shop and home. More than likely, you have a separate battery and charger that goes with each tool. Six cordless tools; six batteries, six chargers. And have you checked out the price of replacement batteries lately? Take an Asprin before you do. And can you use your batteries interchangeably? Likely not; certainly none of mine are, even for tools from the same manufacturer. You see where I'm going with this don't you?

With their One+ System the clever folks at Ryobi have designed a battery that works in every 18 volt portable tool they've ever made - or will make. One charger, one battery, and a raft of cordless tools. Clever indeed. Decide you need a couple of more batteries, buy them in a two-pack at a fraction of what most single batteries now cost. When you're finished using a tool, remove the battery, plug in one of Ryobi's new lanyards (hanging attachment), and hang your tool in a convenient location, thereby freeing up the battery for use in another tool. By the time you read this a range of new Ryobi 18 volt tools will be on the market, including: drill/driver, hammer drill, circular saw, reciprocating saw, jig saw, rotary tool, chainsaw, and the one I've been waiting for, a nailer/stapler. Canadian pricing on these products was not available at press time, but expect significant savings. Ryobi products are available exclusively from Home Depot. Check them out at www.ryobitools.com.

-CWM



Lanyards provide easy storage

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Part V What do Clients Want?

When you consider the question of what clients want, you are likely to jump to a conclusion, like "cheap prices". That might be true in certain markets, but for finer wood crafts the market is more influenced by "good value". Value is made up of many components aside from price. In my view, a professional craftsman must cater to the needs of his or her clients, both on the practical level, and on the emotional/psychological level. Clients who pay a high dollar for finer work want value and an experience that is generally pleasing.

Here are some pointers on how you can give your clients more value for their dollar.

Be Prompt

How often have you left a message on a business voice mail or answering machine and did not receive a response for several days or even longer? How did it make you feel? In my view, answering phone calls and emails promptly is one of the most

important things you can do to come across as professional. Try to respond to enquiries within 24 hours or less whenever possible, or 48 hours at the most. An exception might be when a client leaves you a message late on a Friday afternoon. Generally, they are not expecting a response until Monday.

If you won't be available for a longer period of time, change the answering machine message or use an email auto responder to explain when you will be available. Customers appreciate being kept up to date as opposed to feeling ignored.

I can't emphasize enough how many times I have acquired a contract simply because I responded quickly and professionally, even if my price was not the lowest one on the table. In certain markets, people would rather pay a high price but know that the job will get done properly, than pay a low price for a job that barely meets their expectations. Remember that wealthier clientele believe that time is money. Time spent waiting for a woodworker who doesn't show up or respond in a timely fashion, is wasted time and money.

Be Polite and Friendly

This may seem obvious, but letting your exasperation with your personal life leak out into your business life will not be appreciated. Don't answer the phone if you're in a grouchy mood or if you just had an argument with someone. People are sensitive to the moods of others and might misinterpret your verbal cues to mean that you're not interested in the job.

Remember to say please and thank you, and to thank clients for their business. Thank them for any referrals too, as word-of-mouth is your strongest marketing tool. Maintain a good sense of

humour, but don't tell questionable jokes or use profanities in their presence, even if they do.

Be Predictable

This is part of being prompt, but clients don't want to be left guessing as to what your next move will be. When you tell a client that you're going to call tomorrow, do it! Even if you didn't get a chance to put together the information in time, just tell the client so, and promise to call again shortly.

In general, I find that being honest about problems is the easiest way out. If you give a client a firm delivery date, stick to it as far as possible. But if you have no choice but to extend the delivery date, don't call the client the night before to tell them about it. Give them a call to discuss the problem as soon as you know it exists. Explain the circumstances and offer reasonable compensation or an alternative plan that will make the client respect you. Nipping the problem in the bud is always best; you will be respected for confronting the problem head-on.

Deliver Quality

Deliver the level of quality that you promised. If you are selling inexpensive items of a lower quality, there is nothing wrong with that. But there is something wrong if you market the product as being top-of-the-line and then deliver an inferior product. You must follow through on your promises.

Remember to deal with any minor problems or complaints promptly. It's better to deal with a problem and correct it than to ignore it for weeks and then make only a half-hearted attempt at a solution.

Provide Excellent Service

Everything mentioned above pertains to good service. It's too easy to think that a superior product makes up for poor service. The client is buying not just a product, but an experience in dealing with your business. Make sure that it is a pleasurable one.

If you can, think of a few nice touches that will make a difference to your clients. For example, take a pair of clean shoes for carrying furniture through a client's home. Or you might offer to take your shoes off, although a pair of clean slip-on shoes might be safer for you if you're carrying heavy items. Sleep Country has it right with the plastic booties they wear when carrying in your new mattress.

I like to take a small cordless vacuum cleaner with me when I know I will be drilling holes in walls to install anything. There is something distasteful about a tradesperson who does the job well but then walks out and leaves a mess behind. It's like cooking a great meal for your spouse's birthday but then leaving the mess for him or her to clean up! The job isn't done until the job site is clean and organized. If you don't like the idea, then offer to give your client a small savings if they are willing to clean up the mess on their own, but be explicit about it.



Illustrations by Mike DelRizzo

Be Professional

Again, the previous points all relate to "being professional". Remember that you are presenting your business image to each person you meet, and first impressions are very critical.

For example, don't show up at a client's home in ripped jeans and a baseball cap. There is nothing wrong with wearing jeans; let's face it, you're a woodworker, not an office worker. But wear clothing that is clean and presentable whenever you are meeting with the public. Don't show up unshaven, chewing gum, and coughing up a storm, sheepishly explaining to your client that you are recovering from the flu!

Being professional also means not answering the phone in an abrupt, rude manner. You would be well advised not to answer the phone from bed, when you are barely awake.

Telephones are often the first means of contact by a client, so you need to maintain a professional tone at all times. If you're a home-based business without a separate business line, it is better to let the answering machine answer the call than to pick up the phone with two screaming kids in the background. Better yet, get a separate business line and ensure that you or another professional-sounding adult are the only people who ever answer it.

As some of you read these tips, you're going to think that they are all common sense and need no explanation. But it is amazing how

often you'll meet business people who simply don't know how to act professionally. You will always get paid more and be treated more seriously if you behave in a professional manner with your clients.

In Hendrik's next and final article in this series, he will give you his thoughts on making money in the woodworking business, and tell you how to grow your business in the long term.

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"Your blades are without question the best by miles, and I have tried them all."

Bob Jensen—Fridley, MN

"These are the finest blades I have ever owned and you should be proud of your quality product."

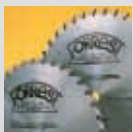
Patrick T. Hankard—South Windsor, CT

"[Forrest blades] cut true, with no vibration. I was a carpenter by trade for over 60 years and continue to be an active woodworker. So, I can say with confidence that Forrest blades are the best."

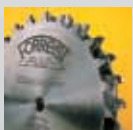
Carl Stude—Burbank, CA

The message is clear. If you're looking for quality, performance, and value, it pays to choose Forrest blades every time.

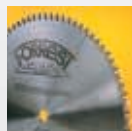
Our Most Popular Blades:



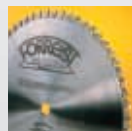
Woodworker II — This award-winning, all purpose blade is the finest of its type. It turns big jobs into easy-to-handle ones.



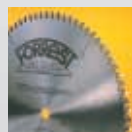
Dado-King — The world's finest multi-tooth dado set. It works effectively in all directions—with the grain or across it.



Chop Master — Produces perfect miters every time—with no bottom splinters. You get smooth edges on all types of wood.



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Duraline Hi A/T — Our best blade for birch and oak ply veneers. It also delivers a clean cut on melamine and vinyl over particle board.

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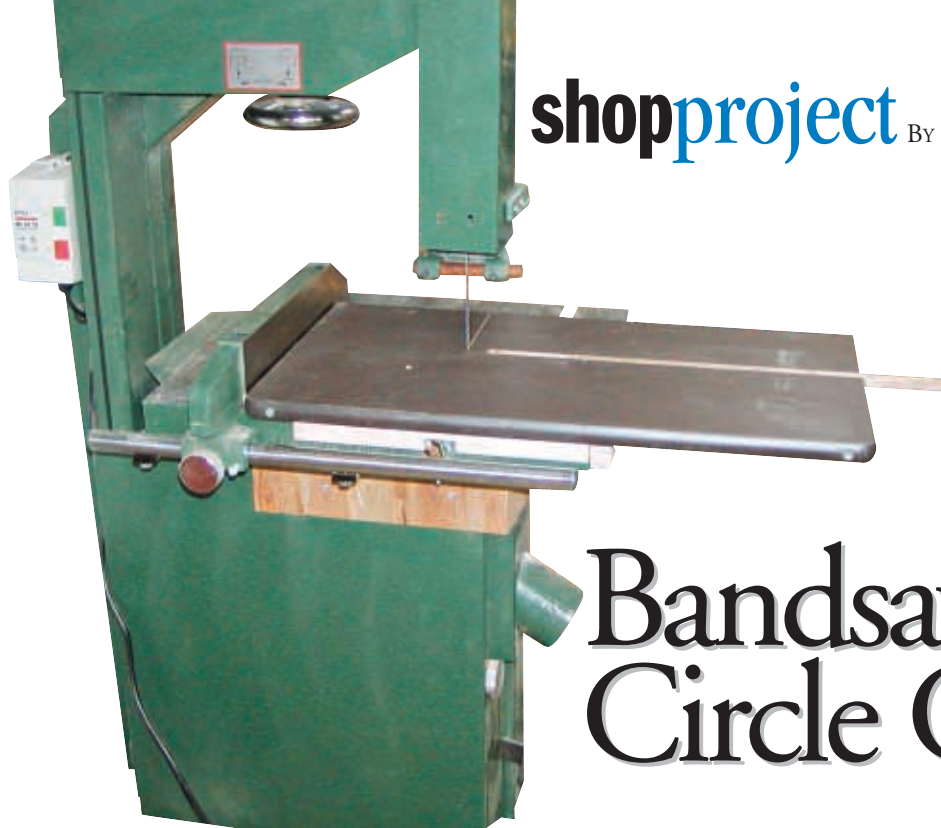
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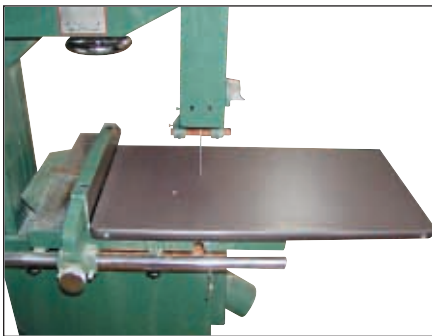
© 2005 Forrest Manufacturing

Code CW



Bandsaw Circle Cutting Jig

This jig enables you to cut perfect circles of almost any diameter with your bandsaw. The size of your circles will be limited only by the length of the arm. With this jig you will be able to cut toy wheels or table tops, efficiently and easily. With a heavier pin inserted, you will also be able to cut blanks for turning bowls or hollow vessels.



Cut the platen



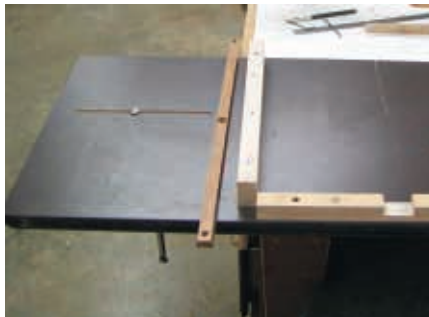
Rout the slot

Dimensions aren't important for this project, except in fitting the jig to your bandsaw. For my platen (the flat top of the jig), I used the 1" thick side of an old computer table.

Position the platen on the bandsaw table, set the fence (about 6" should be adequate), and feed the platen half way into the saw blade. Then, with the saw turned off, I clamped the platen in position, and from underneath the band saw table, used an awl to scribe the outline of the table on the bottom of the platen.

With the platen now clamped face up on my bench, and using a standard dovetail bit, I routed a 5/8" wide slot across its opening in 2 passes. Then, I routed a 1/4" wide slot in the dovetail slot to accept a carriage bolt.

Next I flipped over the platen, and screwed 2 hardwood braces in place, using the previously scribed lines as references. The notch accommodates the bandsaw table levelling pin and its "keeper" screw. Laying on the platen is a piece of scrap

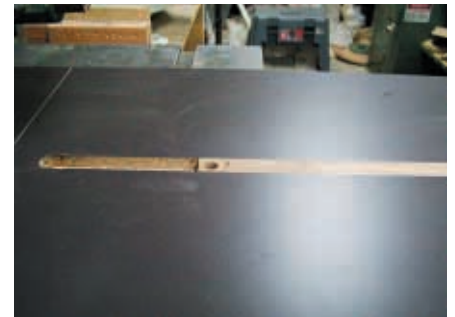


Attach the braces

walnut that was cut just slightly oversize on the tablesaw to make the sliding dovetail. A pass or two with a sanding block took off the sharp edges, and a block plane eased the fit for easy sliding. A hole in the centre of the slider is countersunk with a 5/8" Forstner bit and then drilled through with a 1/4" bit to take the carriage bolt. The bolt is fastened underneath the platen with a washer and a wing nut.

I drilled a 5/16" blind hole in one end of the walnut slider to accept a steel pin for cutting heavy, awkward, turning stock. Beside the blind hole is a removable 18 gauge 3/4" finishing nail - a real nail not a brad - cut down as a pin for small work. Pins of any size can be inserted in various locations on the end of the slider. As it is, the jig will cut circles up to 20" diameter. Flip the slide end for end, and it will cut up to 40" diameter circles. A Kwik-Klamp locks the jig securely onto the bandsaw table.

GARRETT LAMBERT
Victoria, BC



Drill the slider



FJ85 – 6 AMP Heavy Duty Variable Speed Jigsaw

- Quick-Fix blade change system provides easy tool-free blade change
- Variable speed electronics switch (500-3,000 RPM) with Lock-in constant speed feature (Maintains Speed Under Load) to reduce chipping and splintering
- 4 orbital settings
- Accepts Bosch® shank blades
- American Woodworker Magazine "Best Buy" Award

FE32 – 6 AMP, 3 1/4" Portable Planer

- Cuts up to 3 1/4" wide and 3/32" deep for fast stock removal
- Includes fence and rabbeting guide (maximum rabbeting depth = 1 inch)
- Reversible carbide knives for extended life and reduced down time
- Dial adjustment with positive detents for quick and accurate depth adjustment (1 full turn = 1/25")



JS102 – 5 AMP Adjustable Fence Biscuit Joiner

- Premium adjustable fence with positive detents at 0, 45, and 90 degrees for easy and precise adjustments
- 6 depth settings (0, 10, 20, A, B, and MAX)
- Model JS100 is the same except the front angle plate adjustment (0, 45, and 90 degree angles exclusively)
- American Woodworker Magazine "Best Buy" Award

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- Electronic variable speed control (8,000-22,000) maintains constant speed and power under load
- Includes: 1/4" collet and edge guide
- Large micro-adjustment knob simplifies setting of bit height
- American Woodworker Magazine "Best Buy" Award

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Lock Mitre

In addition to using the router to help make traditional joints you can use the router and a single bit to make unique joints that solve specific joinery issues.



The Lock Mitre is a good example. Made with a Lock Mitre bit, you can create joints in box construction that don't show end grain and are much stronger than traditional mitre joints due to the larger glue surface and the interlocking characteristics.

The Lock Mitre bit is available at most woodworking stores, and is very easy to use in a router table. However it should never be used hand-held. The bit creates two mating edges using the same set-up. It's trial and error the first time you do it, so be sure to have some scrap

stock of the same thickness as your project pieces to test the set-up. Once you have it set-up, you can rout scrap pieces to use as set-up blocks the next time you use the bit.

To set-up the bit, you need to set the height of the bit and the router fence to create matching edges.

Set the bit so that the centre of the bit's height is aligned with the centre of the work piece, flat on the router table. Set the fence so that it is

aligned with the point where the top surface of the work piece meets the router bit.

Make a test cut on two pieces, flat on the router table. Flip one piece over, and keeping them flat on the router table, fit them together. If they are flush with each other, the depth of the bit is correct. If not, adjust the bit slightly and cut new test pieces until they are flush.

Next, rout another test piece vertically, with the piece against the fence. Fit this test piece with one of the others to see how they fit. If they don't line up perfectly at the corner, adjust the fence and try again until they present a sharp edge.

With the set-up finished, rout matching joints with one piece held flat on the router table and the matching piece held against the fence.

Apply glue to the joints and clamp together until dry to get an elegant, strong, easy to make joint.



Rout one piece flat on table



Rout matching piece against fence



MICHEL THERIAULT
woodstoneproductions.com
mjtheriault@sympatico.ca

Direct Carving

The Johnson Method



Direct Carving can be defined as "the process of creating a three-dimensional image without using a pattern or a clay model for reference". This is an intimidating proposition for most carvers because of the risk of making a mistake. The Johnson Method of direct carving eliminates that risk and the accompanying fear of failure.

There is no question that the common practice of using a pattern and/or a model helps to accurately produce an image. The problem is inflexibility. What you see in the pattern or model is all you are going to get. Also, it seems that making a model uses up all your creativity and reduces the carving process to that of a human duplicator machine.

In contrast, flexibility and creativity are the main advantages of direct carving. Using the conceptually simple approach provided by the Johnson Method, you are able to modify your work, either whenever you want to, or when circumstances demand it. If you notice an attractive grain pattern, you can exploit it. If you encounter some bad wood, you can alter your image to avoid it. If you simply change your mind, you can revise your plan. If you make a mistake, you can adjust your carving and avoid a new start.

A major challenge with direct carving is to maintain proper proportions. The Johnson Method helps achieve that end throughout the carving process. Its application is based upon knowledge of anatomy regardless of the subject and, as with most challenging processes, requires practice. As an example, this article presents a sequence of pictures showing how the Johnson Method was used to sculpt a solid block of wood into one of the most demanding subjects; a human figure in an animated position.

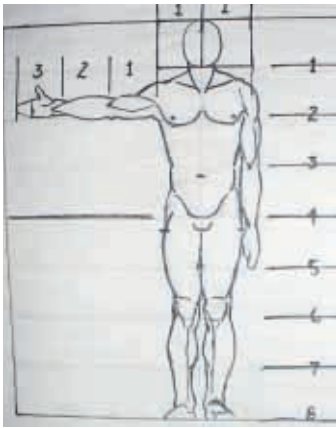
If you have been following this series of articles, you will know that, as a first step, you should ensure that your wood is held securely. (I used lag bolts through a piece of 1" plywood, which I then clamped to my workbench.) With that done, go ahead and remove the wood that is not needed. (That's easy to say, isn't it?)

As with many other art forms, carving is a process of refinement. Also, carving or sculpture is a subtractive process; that is, wood is only removed, not added. As you will see, there is a progression from broad strokes to carefully refined actions. Build a 3-dimensional wire skeleton that you can repeatedly refer to as you carve, re-establishing the key points of the sculpture each time. Ultimately, the carving process becomes a matter of "connecting the dots". You know, the shoulder bone connected to the elbow bone, connected to the wrist bone. If you encounter a problem along the way or change your mind, it is simple to bend the wire skeleton into a different position and continue carving.

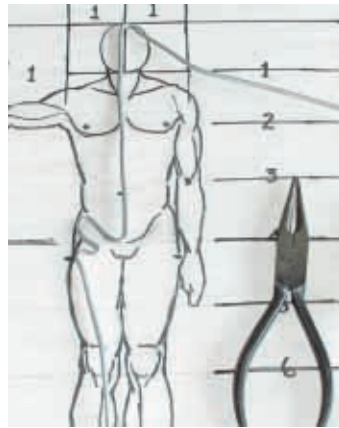
In the next article, the Johnson Method for Direct Carving will be applied to a much different and simpler project; a Decorative Canada Goose.

DAVID BRUCE JOHNSON
www.magma.ca/~davidbj

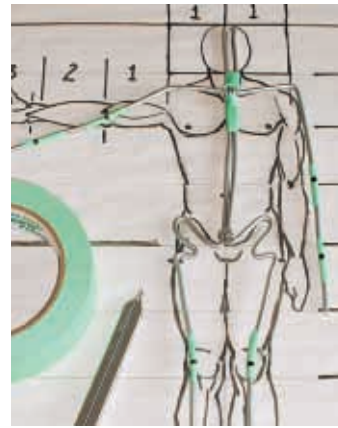




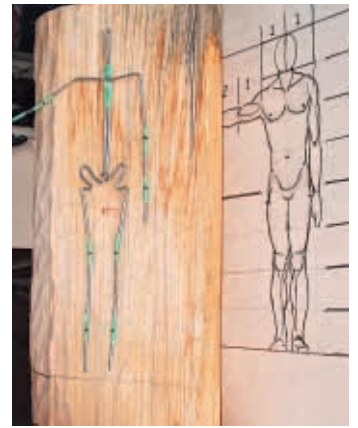
Draw static figure in proportion



Build 3-D reference with wire



Mark critical points at joints with masking tape



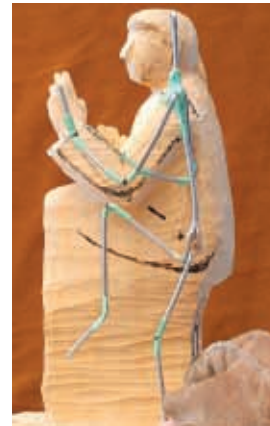
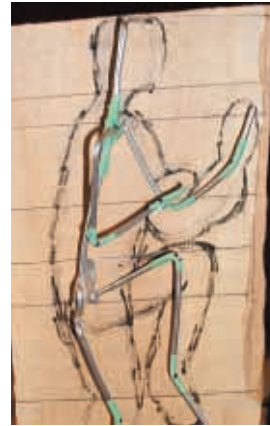
Compare wire skeleton with wood to confirm sufficient size block



Bend the wire skeleton into the desired position



Use the wire skeleton to position the figure in the wood



As you might imagine, much wood was removed between each photo



Continue carving to arrive at the finished piece

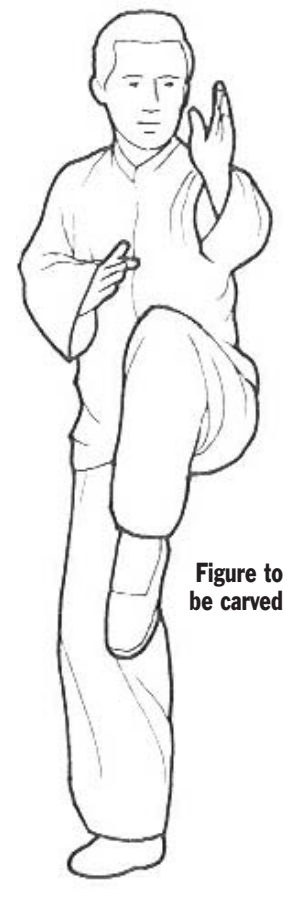


Figure to be carved

GIFT IDEAS FROM

693LRPK 1 3/4 Peak HP Router Kit

Get both a fixed and a plunge base for all routing applications: This 1-3/4 hp motor provide ample power for all but the biggest routing applications, with it's easy to use Micrometer depth adjustment on the fixed base and a long 2-1/2" plunge stroke on the plunge base it's a most for all woodworkers.

Suggested Retail: \$299.00



3700L 10" Miter Saw with TWINLASER®

Unlike a single laser system, this saw incorporates a TWINLASER® system that shows the exact line of cut on both sides of the blade, at any angle. The 3700L has a powerful 15 amp, 120 volt motor (5,000 rpm) with electric blade brake. The easy-grip horizontal handle with trigger switch helps cut wood comfortably.

Suggested Retail: \$299.00



333 5" Random-Orbital Sander

Designed to give a swirl-free finish, this random orbit sander also has a pad control feature to prevent pad spin-up when tool is lifted off work. A must for any shop!

Suggested retail: \$99.00



CFBN200A Brad Nailer and Compressor Combo Kit

All-In-One-Kit! The unit combines a 6-gallon pancake compressor with an 18 gauge 3/4" to 2" brad nailer. Includes compressor, brad nailer, carrying case, pack of 1,000 brad nails, 1/4-inch male and female quick coupler plug, oil, 25-foot hose (300 PSI).

Suggested retail: \$299.00



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1-800-463-3582

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PORTER CABLE

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MS250 10" Compound Mitre Saw

Powered by a 13 amp motor, this 10-inch compound miter saw cuts 4-by-4 and 2-by-6 lumber easily at 90 degrees. The table pivots up to 47 degrees left and right and has positive stops at 0, 22-1/2, and 45 degrees for quick and accurate angle setting. The fence is pre-drilled for easy mounting of wooden auxiliary fences to support taller workpieces. A dust bag is also included for dust collection.

Suggested Retail: \$139.00

New Delta ShopMaster Nailers

All three models have convenient features such as; tool-free adjustable exhaust, tool-free adjustable depth of drive including detents and tool-free jam release mechanism. Users will appreciate the comfortable molded rubber grip, sequential fire trigger and the fact that they have a strong yet lightweight die-cast aluminum body.

**DBS125 18 Ga. Brad Nailer & Stapler
Suggested Retail: \$129.00**

**DBN125 18 Ga. 1 1/4" Brad Nailer
Suggested Retail: \$89.00**

**DNS100 18 Ga. Narrow Crown Stapler
Suggested Retail: \$89.00**

36-390C QT-10 10" Table Saw

This quiet yet powerful feature-packed saw is powered by a 1 HP induction motor. The T-square® fence provides precision accuracy and the cast-iron mitre gauge has stops at 45° R&L and 90°. The solid cast-iron table measures 22 1/4" x 38 3/8" and even has t-slots for the mitre gauge to hold it secure beyond the front of the table when performing large cut-off operations.

Suggested Retail: \$399.00

TP400LS 12 1/2" Portable Planer with Stand

A smooth finish at a very affordable price. This 12 1/2" planer with stand offers excellent results in a simple and reliable design. With the folding adjustable infeed and outfeed tables the unit is easy to carry and store. Includes planer, knife-setting gage, wrench, stand and instruction manual.

Suggested Retail: \$319.00

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Heating

There are a few things to consider when heating a shop. To select the best heater you have to take into account such things as the size of the shop, ceiling height, and the amount of insulation. If your shop is in a garage or separate structure then there are several options to choose from. There are two main types of heating: space (convection), and radiant. The first type heats the space by heating the air, and the second heats objects in the space without heating the air first.

An infrared radiant heater is a practical choice when you wish to heat a poorly insulated space. By heating objects in the room directly, you do not have to be as concerned with losing heated air. I have installed industrial versions of these in wash bays of car dealerships and was

surprised at how effective they were in the damp, wet, cold of a west coast winter, even though the bays were open to the elements. Lee Valley sells a radiant unit that would take the chill out of a poorly sealed shop. If your shop is larger you may require two of these.



Construction heater



On your custom mahogany



Electric space heaters warm the whole room by heating the air in it. The least desirable of this type is the baseboard heater. They rely on the natural tendency of hot air to rise in order to heat the room. With equipment and material stored in a shop, space heaters tend to get buried behind things and filled with dust. This reduces their efficiency drastically, as well as making them a potential fire hazard.

A more appropriate choice for a shop would be a fan-forced heater. These use a fan to pass air over a heated element. They are far more efficient and less likely to suffer from excessive accumulation of combustible dust. They will heat a room much faster than an equivalent wattage baseboard heater. There are several versions of this type of heater.

My shop is in a separate building and is divided into two separate rooms. One side is a studio, which more closely resembles a room in my house. I chose a pair of in-wall fan forced heaters rated at 1,500 watts each. These mount between studs that are on 16" centres and can be controlled with wall-mounted or built-in thermostats.

These heat the 350 square foot space quickly and efficiently, and would not look out of place in any room in the house.

By far, the most popular way to heat a shop is the 4,800-watt construction heater. These are also the most cost effective way to heat a shop, and can be found at building supply stores for approximately seventy-five dollars. These have to be supplied by an electrical circuit wired with #10 wire, a two-pole 30-amp breaker, and the appropriate receptacle. I find the built-in thermostats on these units to be inaccurate and flimsy, and would recommend that a wall thermostat switch the receptacle supplying the heater. When used with a wall thermostat, the built-in one on the heater must be set to its highest setting and left there, or it must be bypassed.

To get an idea what it would cost to heat your space, look at your last electricity bill and divide the total dollar amount by the total KWh. This will give you the true cost per kilowatt-hour with all of the surcharges, et cetera, included. Take this number and multiply it by the KW rating

of your heater, in the case of a construction heater, 4.8KW. This will tell you how much it will cost to run that heater for one hour. With current electricity prices here in British Columbia, it costs about 25 cents an hour.

One safety precaution to keep in mind no matter what type of heating you choose is to blow the dust out of the heaters on a regular basis. What is a reasonable schedule depends on where you have the heater and how dusty your shop is. For construction heaters, the best method is to unplug it and take it outdoors and carefully blow it out with some compressed air.

In my next article in this series, I will look at some typical electrical loads and their requirements in your shop.



MICHAEL KAMPEN
aria_dog@hotmail.com

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AIRgrip™
Laser Level



Projects a laser line 270° and around corners. Adapts for tripod use and velcros to studs.

RYOBI

Kell Specialty Honing Guides



Standard guide with Japanese chisel (bottom view)

We all know how important it is to keep plane blades and chisels in tip-top condition; sharp tools make for safer, easier, more accurate, and more enjoyable woodworking. Lapping the backs of new blades and chisels, and grinding the correct bevel angle is best done with a tool like the Veritas Mk.II Sharpening System (see CWM, Vol 7, No, 4). Once you have sharpened your blade, smoothing the surface of the bevel and putting on an ultra keen cutting edge is easily accomplished with a good quality honing guide.

While you only have to re-sharpen a chisel when the cutting bevel becomes altered through successive honing, or when it gets nicked, you will find that honing should be a 'regular maintenance' item in your shop. It only takes a few minutes, and makes a big difference in the cutting quality of your tools. I always hone my tools before the start of every new project, and often several times during the project.

All the honing guides that I have seen are designed primarily for straight-edged and Western style tools. In general they do a mediocre job with skewed blades, Japanese chisels, and very narrow or short

bodied chisels. Fortunately, European Hand Tools have announced two new specialty honing guides that fill the gap. Both are made by the well known British tool maker Richard Kell. The Kell Standard Honing Guide and the Kell Skew Honing Guide are superbly manufactured from solid brass and stainless steel (for the body and guide pins), and Ertalite, a super durable low friction composite (for the rollers).

Standard Guide

This is an exceptionally useful guide for all cutting tools up to 1 1/4" wide. Unlike other honing guides that exert pressure on the top and bottom of the blade, the Standard Guide applies pressure on the sides of the tool. This is ideal for narrow chisels, like the Two Cherries 2 mm chisel shown in the photo below, which are often slightly rounded on the bottom. It was also the only guide that easily handles my Japanese chisels, which have rather short blades and an angled top. The Standard Guide is very simple and quick to use, and also exceptionally well balanced. The length of the blade projection from the end of the guide determines the bevel angle; you measure from the side of the stainless steel rod to the cutting edge of your blade. Bear in mind that you don't need to apply a lot of force when tightening the hexagonal nut, and that you should dry the stainless steel rod after use, else it may rust. I found that the replaceable Ertalite wheels didn't wear my waterstones as much as the brass wheels found on other guides. At only 1" x 3 1/2" overall, this guide fits neatly in an apron pocket. A very cool tool!

Skew Guide

Skew blades are a challenge to hone, but this guide makes easy work of it. Measuring about 5" x 2 1/2", it takes skew blades up to 2" wide and straight blades up to 2 5/8" wide. The guide won't hold chisels.

There are two locator pins that hold a Lie-Nielsen #140 (or comparable)

blade at the correct angle. You use the supplied wedge to hold the blade in place. The locator spring pin on the bottom of the guide is the location pin for the Lie-Nielsen #140 skew plane iron. The spring allows it to flatten down out of the way when putting in straight blades. Adjusting the wedge and blade can be a bit finicky; you will want to take it slow doing this. For other skew angles you may need to make a side wedge, approximately 1/4" to 1/2" thick, 2" long and 1 1/4" wide.

As with the Standard Guide, it is quite easy to set the bevel angle. Simply measure from the end of the guide to the tip of the blade.

Because the rollers are 2 1/8" apart, and most water stones are narrower, you will need some kind of outrigger board. I cut mine from melamine and put four adjustment screws underneath. It works wonderfully.

The Skew Guide sells for \$125.99, with the Standard Guide priced at \$68.99. For more information or to purchase the Skew Guide, visit: www.europeanhandtools.ca or call 1-888-222-8331. You can purchase the Standard Guide from the Rosewood Studios, www.rosewoodstudio.com or 1-866-704-7778.

-CWM



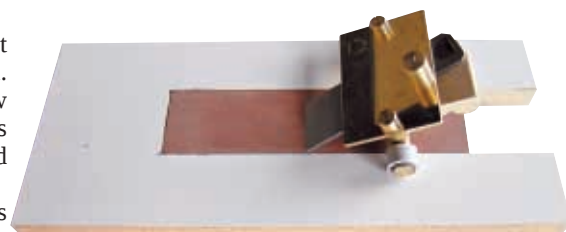
Standard guide with 1 1/4" blade (top view)



Standard guide with 2mm chisel (bottom view)



Skew guide



Guide on outrigger board

Fireplace Screen

I built this fireplace screen to dress up a false fireplace in my daughter's home. However, it can also be used to screen a real fireplace when not in use. The original screen turned out so well that I am now selling them at craft shows.

I use pine to build my screens because it is easy to cut with my scroll saw or jigsaw. Begin by planing the pine boards to 1/2" thickness. Then cut the two sides and middle panels to the lengths you will need. Cut the top curved edges with a scroll saw. The two side panel patterns are each made up of pattern A and pattern B. The centre panel pattern is made up of pattern A and pattern B.

Trace the patterns onto the appropriate panels and cut them with a jigsaw or scroll saw. I used a Canadian Tire Spin Saw and it did an excellent job.

Cut two lengths of the 3" wide piece to fit the length of the two edges of the middle panel. Glue them in place using dowels or biscuits. Sand all the pieces and cut out the edges to a smooth surface.

Screw hinges on the back side of the middle and side pieces about 5" from the bottom and 5" from the top of the longest side.

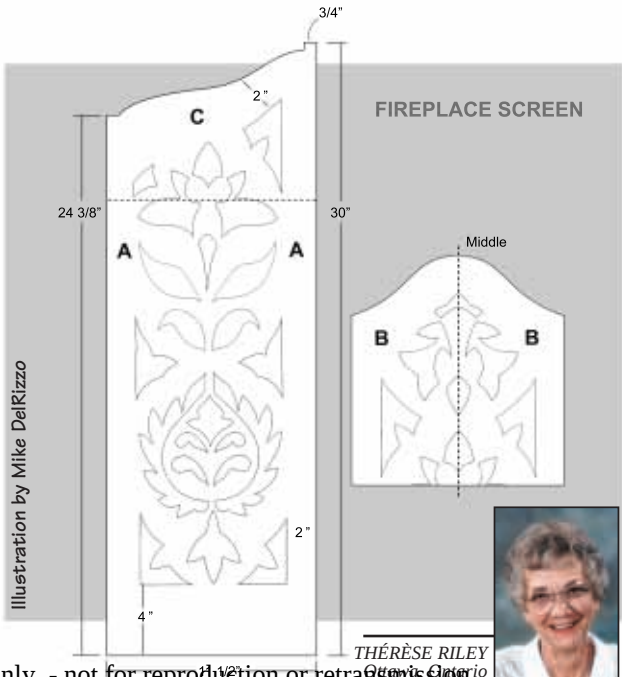
To finish the screen I apply one coat of Minwax Pre-Stain Conditioner, followed by one coat of Minwax Cherry Stain, because it gives a beautiful gold coloured finish. When dry, I apply three coats of Varathane Satin Finish, sanding lightly between the second and third coats. Once the Varathane is dry I finish off with an application of Pledge to polish the surface.

Don't forget to glue the adhesive backed pads on the bottom of each piece.



MATERIALS LIST

- | | |
|---|---|
| 1 | 1" X 12" X 8' Pine board |
| 1 | 1" X 3" X 6' Pine board |
| 4 | 2" X 2" Hinges |
| 6 | 1/2" X 1" Thick pads with adhesive back |



Pipe Clamps and Bar Clamps Irwin Industrial Tools www.irwin.com Priced from \$19.95

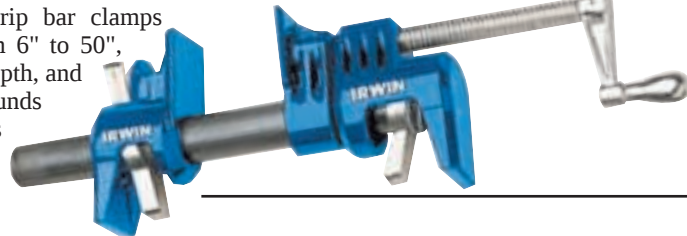
Source Home Hardware and other tool retailers

Pipe clamps are a mainstay in cabinet and furniture shops; they're relatively inexpensive, have sufficient clamping pressure for the most demanding glue-up (over 1,000 pounds of force), and their clamping distance is limited only by the length of pipe you use. Pipe is readily available from building material suppliers or plumbers. The innovative feature of the Irwin pipe clamp is its clutch system, which eliminates the need for threaded

pipe; just slip the head and tail on the pipe. These clamps come in 3/4" and 1/2" sizes, and there is about 2" of thread travel. The pads are large - 1 7/8" for the 3/4" model and 1 1/2" for the smaller. The jaws aren't square, but using a dowel between the jaw face and the board you are clamping helps alignment and distributes clamping pressure more evenly. There is some tendency for the head to move around as you tighten the clamping screw, but hey, for the money it's bearable.

The Irwin Quick-Grip bar clamps come in 6 sizes, from 6" to 50", have a 3 1/4" throat depth, and exert around 250 pounds of force, which is sufficient for a lot

of shop clamping. They're very light, have padded jaws to prevent marring your work, can be used one-handed, and have a reversible head. The upshot: these are about the most convenient clamps you can own.



Combi T2 Warren Cutlery Company www.warrencutlery.com 845-876-3444 Price: \$70.51 US

Source: Direct

If you are one of those dedicated carvers who can't tolerate idle hands when traveling, camping, or vacationing at the cottage, you might want to consider the Warren Traveller's Compact Tool Chest. The three knife blades and six gouges provide the utility for any level of carver to work on hand-held projects. One should not expect to use this set of tools for massive wood removal. However, the tools would serve effectively for detail work under any conditions.

Once honed to personal taste, the blades hold their edge quite well.

The individual knife blades are stored and protected well in separate plastic tubes. The gouges and chisels are held securely by slots within the case which is lined nicely to protect the cutting edges.

All the tools can be changed easily and are held effectively in the comfortable walnut handle although I found the tightening mechanism loosened sometimes when I was whittling. Perhaps the greatest advantage of this kit is the convenience afforded by the robust traveling case. The selection of tools can be kept readily at hand to satisfy those urges to make something that all carvers experience from time to time.

AIR-GRIP Laser Level (ELL0001) Ryobi Ltd www.ryobitools.com Price: \$59.97

Source: Home Depot

There are a number of laser levels on the market, but nothing comes close to the new AIR-GRIP from Ryobi. This neat little 8 ounce level has a vacuum in the base of the unit; turn the unit on, press it firmly against any reasonably smooth surface, and let go. No need for pins, nails or screws. And it works really well. I attached it to the wall, and it stayed there for a little over two and a half hours. If you don't need to use the vacuum feature, just

slip it on the supplied base for up to 40 hours of use. You can also mount the base on your camera tripod. Neat! The laser eye can be pointed vertical or horizontal, and reaches up to 40' with an accuracy of 1/2° at 20". The head can be rotated 360°. The AIR-GRIP only emits a single laser line. The quality of the line is very good, although I found it to be a bit wide. It also fades out at the end of the projection. I strung a rigid chalk line and sighted the laser along the line; they lined up perfectly. I don't like the on/off switch; every time I pick the unit up I end up turning it on. The switch needs to have a "lock" position. Other than this, the AIR-GRIP is a great tool. You can use it when you're hanging cabinets, shelving, pictures, or



wallpaper, laying hardwood flooring or tile, or anywhere you need a straight, accurate line. The unit comes with a case, base, strap, and push pin to attach the unit to porous surfaces, two AA batteries, and an instruction booklet.

-CWM

Chippendale

After the Shaker, Chippendale is perhaps the best known north American style. Named after Thomas Chippendale, the style was derived from English, French, and Chinese designs.

As an unknown craftsman, Thomas Chippendale was a smart businessman and recognized the importance of creating a public image to improve his business. With no known commissions at the time, Mr. Chippendale published a catalogue, "Gentleman and Cabinet-Maker's Director", in 1754.

Filled with design templates adapted from existing styles, it was a best seller as other craftsman and sellers embraced it. Intended as a catalogue that would allow customers to choose design elements and then have the furniture custom made in Thomas's workshop, its success created the first style named for a man who was not a reigning monarch.



Photos courtesy of N.A.I.T.
Advanced Woodworking and Furniture Design Program
www.nait.ca/wood

After publishing his catalogue, Chippendale's styles were widely copied. His own pieces were seldom marked, so few pieces were verifiably made by Chippendale's workshop. In fact, it is uncertain how many pieces he worked on himself. Since his styles were widely copied, there are also variations, but the general themes are usually evident. Because the style is an adaptation of previous styles, as are many other styles, the Chippendale style is often incorrectly applied broadly to 18th century furniture as a whole.

Over time, even Chippendale's designs changed. A significant influence included the architect Robert Adam, with whom he worked. One example of style changes includes legs. Early pieces focussed on cabriole legs while later pieces tended towards straight legs. Carvings were a central theme, including lion paws, scrolls, acorns, roses, dolphins, and shells.

Almost all of Chippendale's work was in mahogany. However, many other craftsman copied his style in other materials, such as cherry, walnut, and even oak. While his furniture is typically graceful and well proportioned, the design features of some pieces focus on design over functionality or comfort. Beyond the wood he used, his upholstered furniture, such as chairs, used leather, velour, plush, and even satin.

Even though Thomas Chippendale died in 1779, his style lived on, until the late 18th century. His influence, and in particular, novel catalogue concept, was a testament to the influence a single craftsman could have on furniture design.



Style: **CHIPPENDALE**

Timeline:
1754 - 1790

Key Design Elements:

- Graceful and well-proportioned
 - Cabriole legs
 - Ball and claw feet
 - Fretwork
 - Couches arched with rolled arms
 - Richly carved ornamentation
 - Architecturally detailed cornices, friezes, and columns
- Typical Wood Types:**
- Mahogany
(some makers used cherry and walnut)
 - Little if any veneer



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Christmas Tree Ornament

These decorative balls are a big hit at Christmas time and make wonderful gifts. It's a great project for both the beginner as well as the advanced turner because they can be made as simple or as complicated as you like. A simple diamond pattern is a good place for the beginner to start. The star pattern shown here is a bit more complex but the steps are the same. You can use any symmetrical pattern, so come up with some of your own.

Prepare your stock

Choose straight grained lumber with no voids or knots. Prepare a blank 3" x 3" x 9" (see Note 1). Mark and punch the center on each end and mark the corners as indicated in Drawing 1. Mount the blank between centers and prepare one end to mount in your chuck. Turn just enough to fit the chuck without removing the corners from any other part of the blank. Draw a circle in the center of the blank 1/2" smaller than the finished diameter of 2 1/2" and extend lines around the blank at each end. Your pattern should fit within this circle (see Note 2 and Drawing 2).

Remove the waste

With the blank mounted in the chuck and the tail center in place, remove the corners within the lines. First score the corners

with a skew to prevent breakage. Then, using a parting tool, part down just inside the lines until you almost meet at the centre of each flat. Remove the waste, forming a cylinder between the lines, and clean the cut up to the lines with your parting tool. Cut just until you meet the flat in the center of the blank.

Cut the profile

The rest of the work is done with a skew. Form a 'V' in the centre, and work it down until it's 3/4" deep and 5/8" wide. Then cut a 1/4" chamfer on each of the corners you just formed. Form two 'V' cuts on the chamfers you just made at approximately 45° to the face of the blank. Make these 1/2" deep and 1/4" wide. Finally, taper the remaining flat portions towards the centre. Taper from the existing outside diameter down to the diameter of the points in the centre.

At this point you should apply the finish to the profile. If you wish you can colour it. I chose to paint mine yellow.

Remove the blank

Remove the blank and rip it with a band-saw into four equal pieces. Now orient the four pieces (as shown in Drawing 3) and glue them together (see Note 3). You can

now see the complete profile of the void. Once the glue has cured, you're ready for the second turning.

Second timing

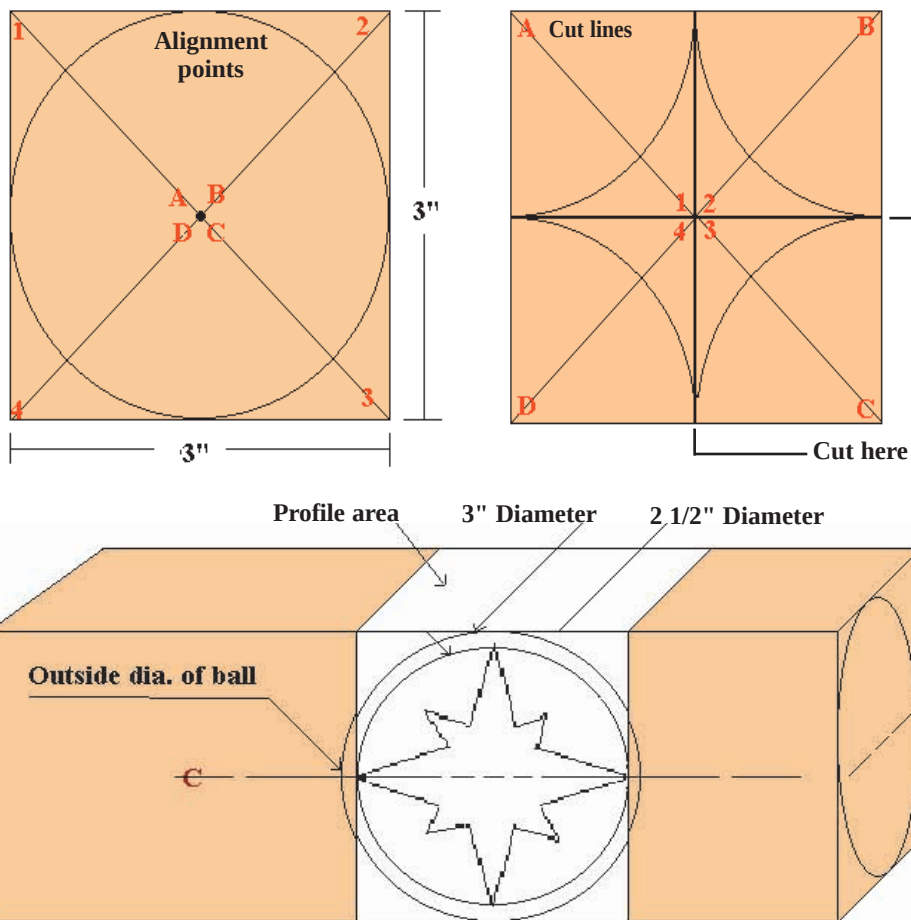
Mount the glued-up blank between centres and turn a cylinder. Square up one end and turn it to fit your chuck. With the blank mounted in a chuck and the tail centre in place, begin roughing the outside shape. Refine the ball with a skew, working from the centre out (see Note 4). Form the icicle on the tailstock end tapering down to 1/4" and complete that side of the ball before moving on. Work from the ball towards the tailstock. If any sanding is needed, do it now. Begin forming the icicle on the headstock end. Start at the ball and work towards the



headstock. Complete the headstock end of the ball before tapering the icicle too much. This is to ensure the icicle doesn't break before it's complete. Then carefully taper the icicle towards the headstock until it comes free. Finish as desired (see Note 5). I chose to use a red dye and finished with water based varathane. Finally, remove the waste, drill a pilot hole in the top and install a 1/4" brass screw eye.

Notes

1. The faces must be exactly square and the ends must also be square to the face, so take care when preparing the blank.
2. The smaller circle allows for a 1/4" wall thickness. Going slightly beyond this is alright, but not advised. At no point should the depth of cut exceed 1/4 of the outside diameter; in this case 3/4". Going beyond that will result in a weak point that may cause the ball to split in half when doing the second turning.
3. Make sure the 4 corners meet exactly in the centre.
4. Reduce the size of the ends but leave extra material on the headstock end for strength.
5. If you're using a friction polish, finish each part a you complete it.



Finished star



Score the corners



Remove the waste



Apply paint



Cut the parts



Glue the parts



Turn the form



Finish and sand

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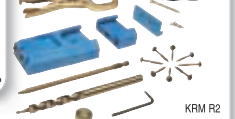
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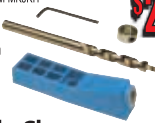


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Natural Edge Hollow Vessels



Turning a natural edge hollow is no different than turning an even rimmed hollow vessel - all the same rules apply. You use the same techniques when cutting out the inside of the bowl, but instead of having a continuous rim, you have a broken rim.

The cover of this magazine shows two examples of natural edge hollow vessels. Both were turned using maple burl. The smaller of the two is 7" wide by 8" tall and the larger is 7" by 16". They are fairly thin in proportion to their size. Hollow turning can be very similar to spindle turning in that a lot of it (not all) is started between centres.

The various methods

The outside is shaped first, and then the inside is removed. There are many methods and tools for removing the inside, however they all basically do the same thing: they scrape out the inside.

There are cutters that can cut the inside, but the more of an inward curve, the less likely you are to get a cutter into the right position. Over the years I have used different methods and tools to hollow out pieces. I use a Stewart System for certain projects. The Stewart System is a hand held tool which is very versatile. I also use the McKnaughton system, which offers even more bang for your buck. Then there are the home-made versions of arm braces

and hookers. While these systems produce good results each has its own place. One of the most effective systems now is the "captive bar" or hollowing bar. Although these have been around for quite some time they were not available to the general public. The beauty of the captive bar is: 1) you no longer have to hang onto a tool. (This may not seem relevant at first, but if you're holding on to a ten-pound tool for any length of time, you will appreciate this feature); and 2) the bigger the piece you are hollowing the more mass you need in the tool, as mass helps absorb vibration.

In this article I will introduce you to hollowing with a captive bar.



Burl with natural edge



Rough out the burl



Turn the spigot



Scrape for a smooth surface



Outside complete



Drill the centre



Turning with captive bar



The laser light



Turn the foot

Beginning the turning

I chose a piece of maple burl and started turning between centres. The burl had one side with bark on it, which becomes the natural edge. To make the tailstock centre bite the wood I drilled a 1" hole through the bark and into the wood. The tailstock centre fits nicely into this hole. This is a much safer way of mounting a piece like this. Being a true burl, there is no grain direction; the grain runs in all directions.

I started with a 3/8" bowl gouge. If the piece was orientated like a spindle piece, with the grain running from centre to centre I would have used a roughing out gouge. Once the desired shape was obtained, I made a spigot to hold the vessel. I formed the spigot with a 3/8" beading parting tool.

To obtain a smooth surface which can be sanded, I did a light scraping cut. With a sharp scraper you can remove any tool marks that might have been made with your gouge. This burl really scraped clean leaving a beautiful finish.

Drilling out the centre saves time

It's a good idea to drill out the centre, as it enables you to quickly and effectively remove a lot of material. It also provides the cutter somewhere to fall into. I mounted the piece in a Oneway Stronghold chuck to drill out the centre (you want

especially when hollowing, and these are excellent chucks). I then put a Jacobs chuck in the tailstock and drilled out the centre. The drill bit size is relative; if you are doing a big piece and the opening is large, use a large bit. With this piece I used a 1 1/2" bit.

Using the captive bar

The profile of the cutter that I use has multiple areas on which to cut. The pointed end is more aggressive and the rounder end produces a smoother cut. In using the captive bar, imagine the cutter floating on two tool rests. That, in essence, is what it is. The bar is very easy to move back and forth across the tool rest; in fact you can use just your finger to move it. The advantage of this is that once the vessel is very thin it would not take much movement of the cutter to ruin the piece. So this aspect of sensitivity gives you more control and a finer touch with the cutter.

Dealing with wall thickness

Now the big question, how do you judge wall thickness? The first way I learned was to listen. Sound can tell a lot. The pitch will get higher, and to achieve even thickness the pitch should be consistent. The higher the pitch the thinner the piece until the pitch is inaudible and then you've gone through the side. By the way, it

believe that whether you use it or not, sound should be the first way to learn hollow turning so that you understand the principles. There are also other ways of measuring, such as fingers, or lights on the end of the cutter, or thickness calipers. The most up-to-date and effective is a laser light. This laser light is held above the piece and set to the desired thickness from the cutter. The bar is then inserted into the vessel and the laser light shines on the outside of the piece. Cutting is then started and when the light falls off the piece, you are at the right thickness. What could be simpler?

Turning the foot

After the piece is hollowed out to the desired thickness all that is left to turn is the foot. I reverse the piece onto a drum chuck. However, I still use the tailstock to turn away the majority of the foot. I only remove the tailstock when I'm turning the last little pip.

This is a fairly short look at an effective method of hollow turning. One thing is certain with a captive bar: you won't get tired of holding a heavy tool. That way you'll be able to spend a lot more time doing what you love. . .turning.

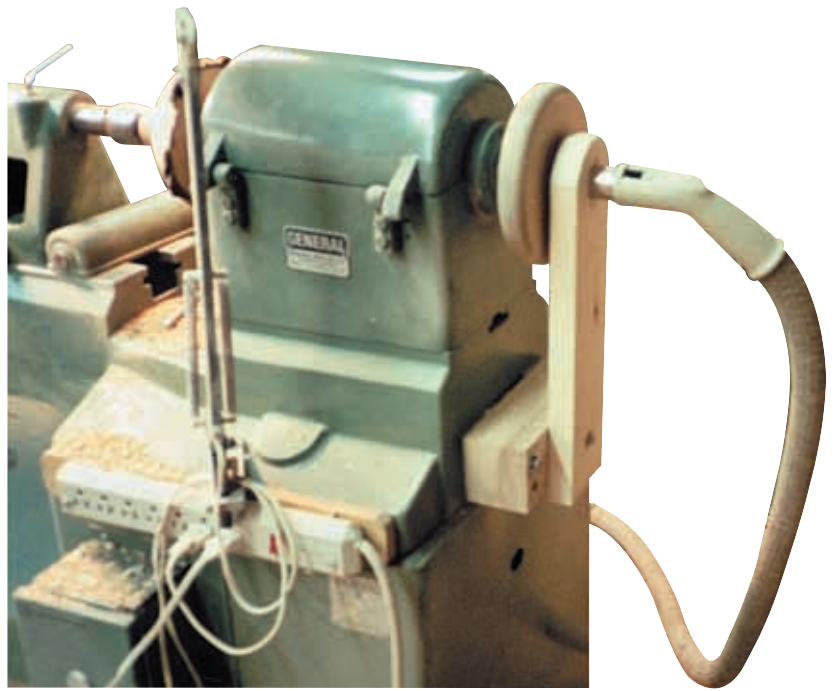


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Vacuum Chuck



Vacuum chucking is used to hold a workpiece on a lathe, so that it can be turned or sanded. Vacuum chucking is particularly suitable for finishing off natural edge bowls and salad bowls.

The system that I show here can use a vacuum cleaner, a Shop Vac, or a vacuum pump. I use an Electrolux vacuum when I need it to be very quiet, but I use a vacuum pump when I need good holding power.

My set-up is built to fit my 160-260 General lathe, but it would work on most lathes. The system consists of a round wood fixture (the housing), which fits over the handwheel, a support arm on the outboard end, and a PVC vacuum chuck with a leather sealing ring.

Start by turning a housing that will friction fit over your handwheel, (see accompanying sketch). I used a piece of 2"x6" birch to fashion mine. After you have turned the housing, cut a chuck mount on the inside and bore a hole for the vacuum nozzle to run in. This hole must be accurately bored for the hole to run true when

installed over your handwheel. My vacuum required a 1.260" hole.

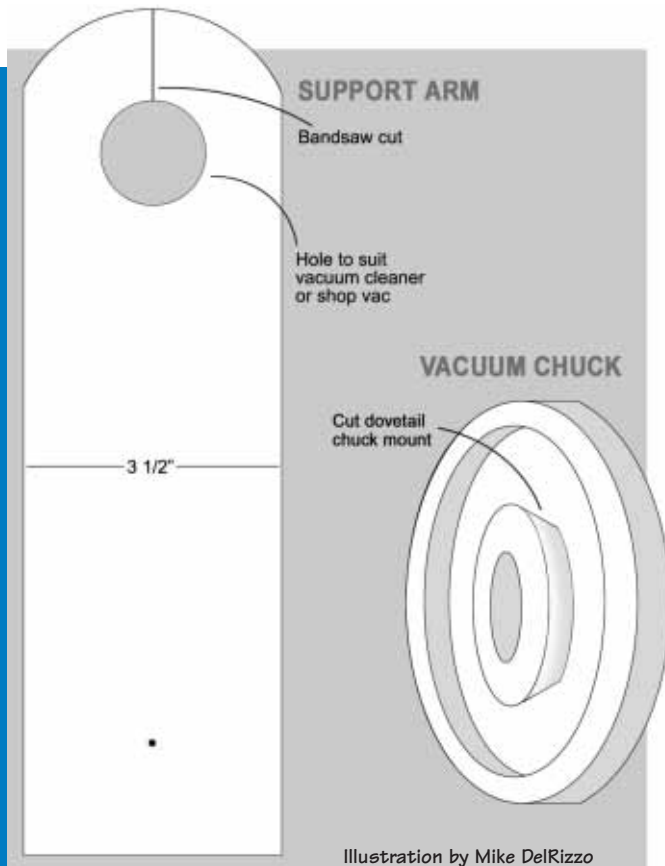
The holding fixture consists of two pieces; a 2.75" square birch block, and a support arm made from 1"x4" birch. Install a 'T' nut in the center of the birch block to hold the nozzle support arm. Install the block on the outboard end of the lathe. Be sure to position the hole in the support arm to align with the hole in the handwheel fixture.

The support arm should be about 15" long for a 12" lathe and 18" long on the 20" lathe. If you position everything correctly the support arm holds the vacuum nozzle centrally in the handwheel hole, and the clearance between the hole and the nozzle provides cooling air for the motor. This method seems crude, but it does work. A household vacuum will pull up to 3" of vacuum. A Shop Vac will pull up to 5", but are quite noisy.

To make the vacuum chuck you will need a 4" black PVC coupling, a dedicated 3" faceplate, some wood for the mounting block, and leather for the sealing ring. Fasten a piece of 2" hardwood (that you have bandsawn round) to the faceplate, and turn it to about 5 1/2" in diameter. Turn a stub tenon 1/2" long over which you install the PVC coupling and epoxy it on. Go for a tight fit. When dry, install it on the lathe, true up the face and glue on the leather seal with contact cement. Finally, drill a 1/2" hole in the block to pass the vacuum hose through. Now you are ready to try it out.



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Tel: 250.563.1860



Try Squares



From top to bottom: Engineers 4"; Starrett 13; Incra GSQR7; Bridge City AS-9; Crown 126; Nobex 400

Squares are indispensable shop tools for layout and measurement, and also invaluable for aligning shop machines. Much of wood-working involves the use of right angles; ensuring that corners meet at 90° would be difficult without a decent square.

The two styles of squares commonly used for this kind of work are **Try** and **Combination** squares. While both have a blade fixed at 90° to the handle (or stock), combination squares have an adjustable handle that also allows for measuring 45° angles. **Sliding Bevels** are a kind of square that have a moveable blade for marking off odd angles. We'll cover combination squares and bevels in upcoming articles.

Selecting a square

Try squares come in a range of sizes, with blades from 2" to 24" and longer. While some are made entirely out of wood, most are either all metal or a metal/wood combination. The blade is a crucial part of the square. Avoid squares with thin, flexible blades, those that have rounded over edges, and those with hard to read scales, and select one that feels comfortable in your hands.

It's convenient to have at least three try squares in your shop: one with a long blade for general layout and carcass work; a 6" to 8" precision square where accuracy is critical; and a 2" to 4" square for detailed work. As with most hand tools, you get what you pay for. A good quality square will not be inexpensive, but will last a lifetime if properly cared for.

Checking for accuracy

After purchasing a square check it for accuracy. Align the handle along a straight edge and draw a line along the blade. Flip the handle over along the edge, and draw another line in the same place. If the lines are parallel, keep the square, it's accurate; if the lines converge or diverge, the square isn't accurate, return it for another square or a refund. Treat your square with care: don't use it to pry the lid off a paint can; never use the handle as a hammer; and don't toss it carelessly onto your work bench.

Using a square

When using a square it's important to hold the handle tightly against the stock with the blade pressed firmly on the stock.

This ensures the square doesn't move about when using it. To mark a line use either a sharp pencil, or better yet, a marking knife, which scores the grain with a clean, crisp line. When using the square to test an inside or outside corner, or checking if the blade on your table saw or the fence on your jointer is set at 90°, hold the square firmly and sight along the blade and arm. Good lighting will make the job easier.

Nobex 400

The Nobex comes in a range of sizes. It's unique in that the blade pivots to three common angles: 90°, 45° and 135°, and folds flush into the arm. While not as precise as the other squares we looked at, it works well for general layout, and is particularly handy if you do much cabinetry. The scale is a bit hard to read in dim lighting, and it can't be re-calibrated if it gets out of square.

Crown 126

The Crown is a staple style, similar to the ones sold by Marples, Sorby, Freud and others. It has a hardened, tempered and blued steel blade with a Rosewood handle

and comes in a range of sizes. The one we tested was out of square and it can't be recalibrated. We liked the wide blade, but it lacks a scale. Reasonably priced, it makes a none too bad general layout tool where precision isn't an issue. Lee Valley carries a couple of the smaller Crown squares, contact Crown Tools directly for other models.

Bridge City AS-9

This is one suave square; at \$129 US it's the Porsche of squares. Beautiful to look at and a real pleasure to use. Surprisingly, this one was slightly out of square when it arrived, although it was easy to recalibrate with a simple hex key. The blade is made of satin chromed, hardened steel, and the scale (available either metric or imperial) is precisely aligned with both faces of the handle. The edges of the blade are square, but not sharp and the scale is easy to read, even in dim light. The handle is made of Jaura (a composite of wood and resin). One nice feature is the built-in slide stop; a handy lever that slides out and locks in place, aligning the square to your stock. The square is a tad unbalanced due to the weight of the handle. If you're looking for the ultimate in accuracy in a scaled blade, check out the AS-9.

Incra GSQR7

If the Bridge City AS-9 is a Porsche, then think of the Incra as a Corvette. Available in both a 5" and 7" version it was dead accurate. It's made by a unique manufacturing process, which cuts the body of the square out of a solid slab of hardened aluminum. The red side arms are then fixed to the body. It lacks a scale, but due to precise machining, you can use the body itself for some common measurements: the base is exactly 3/4" wide and the blade 1/4" thick and 1 1/2" wide. The edges of the square are crisp, but not sharp. A great feature is the support lip that holds the square on the edge of stock. A tapped screw hole in the blade allows you to add a fence to the blade. If you can live without a scaled blade, than this ultimately precise square is worth looking at.

Engineers

Lee Valley sells these steel bodied squares in a range of sizes. This 4 inch model was marginally out of square (under .010). There is no scale on the blade, and they can't be recalibrated. For the price you can afford to have several left conveniently around the shop. These squares fit conveniently into an apron pocket. While they are rather bland tools, they do get the job done.

Starrett 13

We were excited about testing the Starrett 13, which is also called a double square. The handle moves along the blade; you can use it to mark out on either side of the handle. It makes a good depth gauge, especially useful when setting the height of router bits or saw blades. There is also a

handy spirit level in the handle. The heft and feel of this square is great, the scale is easy to read, and the edges of the blade and handle are crisp. This is a great multi-function square that belongs in every woodworking shop. Unfortunately the model we tested was significantly out of square; one edge of the blade was concave, deflecting about .016". Several other woodworkers who own this square report that theirs is dead on accurate. So this shouldn't deter you from considering this square; it's guaranteed and a return to the dealer nets a replacement. -CWM

Sources:

Lee Valley, 800-267-8767, www.leevalley.com;
Crown Hand Tools, www.crownhandtools.ltd.uk;
Woodcraft Supply, 800-225-1153, www.woodcraft.com;
Bridge City, 800-253-3332, www.bridgcitytools.com;
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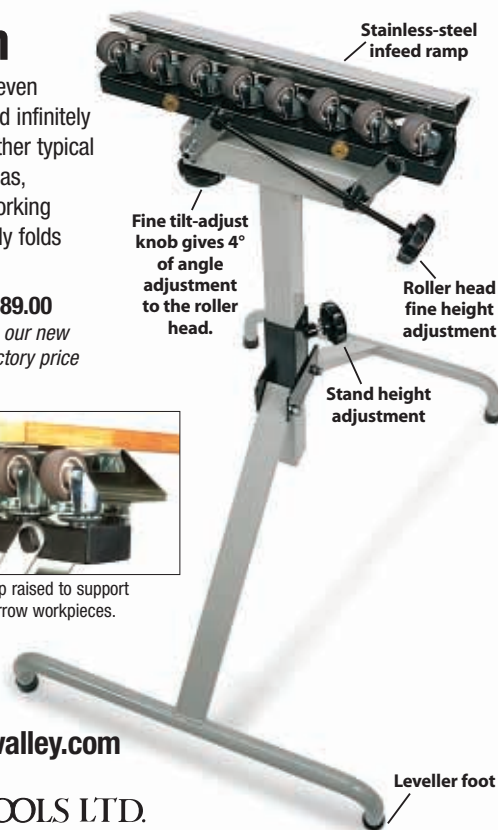
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Nobex 400	13 3/4	14 1/2	.031	1 3/4	\$35.95	Lee Valley
Crown 126	9 1/8	10 3/4	.040	2	\$27.00	Crown Hand Tools
Bridge City AS-9	7 1/2	9	.080	1 1/2	\$129.00 US	Bridge City
Incra GSQR7	5 13/16	7 1/4	.250	1 1/2	\$52.99 US	Woodcraft Supply
Engineers	4"	3 1/4	.062	3/4	\$12.95	Lee Valley
Starrett 13	4 7/8	6	.094	1 5/32	\$78.00	Acklands Grainger

Note: all measurements are in inches.

Give Me Your Heart

For woodworkers who like to give their sweetie something different, this project is for you. The object of the puzzle is to remove the heart with the hole from the rest of the puzzle.

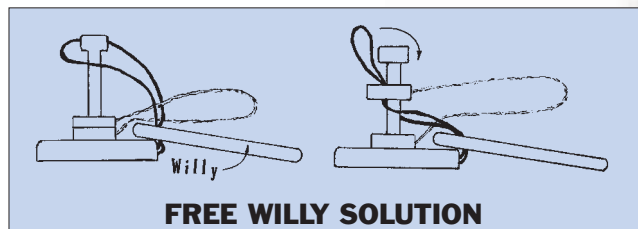
To make this puzzle begin by drilling two 3/8" holes in the beam and a 3/8" hole in one of the hearts. Then thread the rope through the holes as shown in the picture and glue and nail the end of the rope into 1/8" holes.

The solution for this puzzle will be in the next issue.



MATERIALS LIST

- | | |
|---|---------------------------|
| 1 | 1/2" x 1" x 10" beam |
| 2 | Hearts from 1/2" material |
| | 36" of 1/8" braided rope |



REA GIBSON
egibson@golden.net

Impact Drivers

While an Impact Driver may be new to you, auto mechanics, electricians, pipe fitters, and the like, have been using them for quite some time. Fortunately, a lot of the power tool manufacturers are now making these useful tools more widely available to woodworkers. Unlike a drill/driver that uses a motor and transmission to generate torque, an impact driver uses a hammer-and-anvil mechanism inside the tool housing. The result is more power; typically double the torque you get from a drill/driver. Most impact drivers deliver from 0 to 3,000 bpm (blows per minute). They are available in both corded and cordless models. Cordless models come in the same voltage range as drills (9.6 to 18 volts). One of the great things about these tools is that they are nearly one third smaller than cordless drills, making them much easier to get into tight and awkward spots. The downside is that they are louder. Impact drivers excel at driving large bolts and nuts. Typically they come with hex shaped chucks designed for standard 1/4" hex bits. You can also use hex shanked drill bits. Some models come with variable speed and electric brakes.

-CWM



Planer and Jointer Dust Hood



Jointer planer before modification

In this installment of dust collection I'll discuss the proper design of a hood for a planer or jointer that will allow trouble free collection of shavings. Generally, the only reason we hook up a dust collector to a planer or a jointer would be to keep the shop floor clean. If you are diligent about keeping the knives sharp on this equipment, then all that should be coming out are large shavings and no dust.

The jointer/planer combo that I modified is one I inherited from my father. The unit consists of a 6" jointer and a 12" planer. The planer normally discharges the shavings directly onto the board as it exits the planer. This model also has a set of

board return rollers mounted on the top, and I had to decide whether the operation of these is critical or not when I designed the hood. I also needed to take into consideration the type and width of wood that would be planed, in order to determine the volume and length of shavings. A common complaint that I get at wood shows is that the newer side discharge hoods plug up easily.

There are a few reasons why this occurs. You should never try to remove more material than recommended by the manufacturer; this can result in a heavy volume of large shavings that may plug the hood outlet opening. If the hood is supplied with a 4" outlet then you should

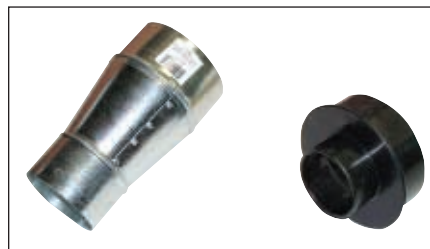
be using 4" diameter piping, hooked to an appropriately sized dust collector. Reducing a 4" opening with an adapter so that you can use a Shop-Vac further restricts the flow of shavings and can cause the hood to plug at the adapter.

If you must use an adapter, use a tapered design. If you are planing cedar, you will find that you get longer shavings than with pine, and these have a greater tendency to plug the hood outlet. Most of the companies that have side discharge hoods designed them for two reasons: to rid you of the problem of having your collection hose catch or drag on the boards as they exit the planer, and to make the return rollers usable. Keep in mind that although air can make abrupt changes in direction of flow, shavings cannot, and if they fall out of the air stream they tend to initiate plugging.

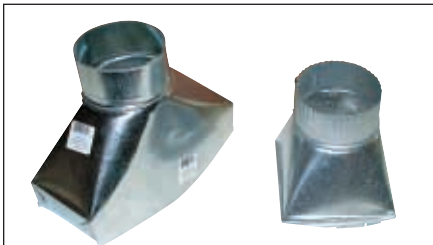
Deciding that I wanted to economize, I went to the local hardware store and picked out the following heating and ventilating fittings: a 4" x 10' X 4" universal end boot, which has a centre discharge, and a 4" side takeoff.



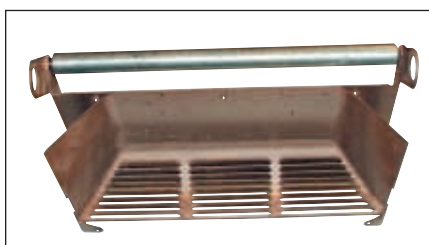
Typical side discharge hood



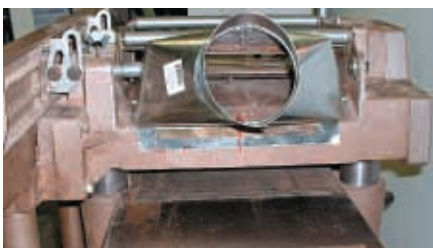
Adapters



Universal end boot and side takeoff



Factory chute



New hood



Original jointer chute



Underside view of jointer chute

I modified the end boot to pick up the shavings from the thickness planer. First let's have a closer look at the factory chute because I used it along with the end boot.

The business end of the factory chute is tapered. It's narrow at the top and wide at the bottom, but does not extend to the rear edge of the cutter head housing. I built an extension for this chute to guide the shavings into the new hood. The extension also makes it easier to add on the hood. I incorporated an opening in the side of the chute closest to the jointer as the jointer fence support post can protrude into the chute. The extension piece consists of a 4" x 14" piece of 20 gauge steel, bent to fit over top of the existing chute. Three pop rivets hold it in place, but I riveted from the inside out to ensure that there are no protrusions into the chute area that could snag and hold passing shavings.



Modified side takeoff



Side takeoff installed

I took the end boot and drilled out the four rivets that held the sides together, enabling me to shape the end boot to conform to the chute. Notice in the picture of the new hood that I used a piece of steel flat bar to fasten the lower edge of the new hood in place. The bar stock adds rigidity to the lower edge of the hood and ensures a tight seal. From the photo you can also see that I decided to angle the boot outlet up slightly, thus rendering the return rollers virtually useless. (I never used them much anyway).

The original jointer chute is basically a simple deflector. When designing a hood it is important to keep in mind that the last thing you want to do is to create another hazard. The opening under the cutter head is short and wide. My first thought was to use a top takeoff fitting but this would have oriented the outlet to the side of the jointer, placing the collection hose directly in the path of the person using the jointer. The position of the motor also blocked the easy use of the same fitting with the outlet pointed in the direction of the flow of the shavings. The use of the top takeoff would allow the hose to be directly under the jointer bed and give clear access to the user along the side of the jointer.

The modified side takeoff has heavy gauge brackets fastened to it. One side uses the same fasteners that held the factory chute, but I had to add another bracket to secure the inside of the hood. I had to drill a hole in the underneath side of the jointer bed.

The hood is fastened in place with clear access to the side of the jointer. This hood provides a second safety feature in that the cutter head is now inaccessible to little hands that are now starting to tour grandpa's workshop.

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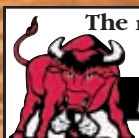


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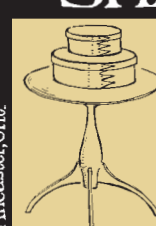
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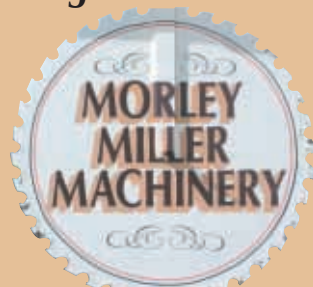
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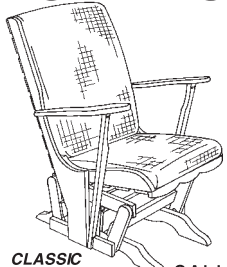
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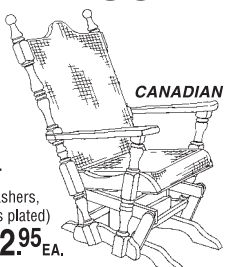
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