



Canadian Woodworking

DECEMBER/JANUARY 2006
Issue # 39

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Detailed Plans
and Design Review

Spindle Turning

Made Easy

Cutting Board

A Kitchen Classic

Contractor Style Table Saws

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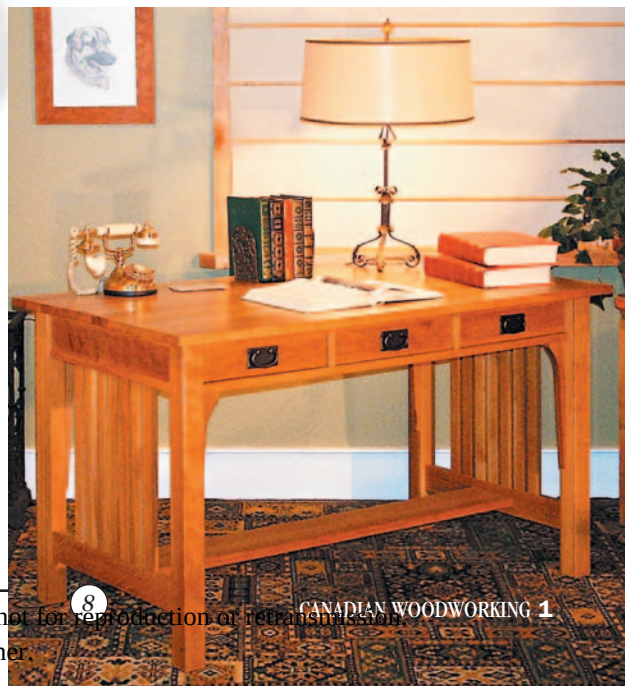
FEATURE



4 TELEPHONE TABLE

By H.C. SAKMAN

Cover photo by Ray Pilon



LINDA FULCHER

We have a few "junk drawers". They contain every loose screw, bolts, springs, odd nails, pieces of wire, and a variety of many other useful, but lost items. I like to imagine that a mechanic might be able to put together a small engine with the parts. Really, to us, these are not junk at all. However this is a drawer you don't go to with a parts list; more likely it is with an urgent need and imagination.

Let's say I am out traveling one of the many wood shows across Canada and a wheel falls off my luggage on the way into the hotel room. There I would be, in a comfortable, but "junk-drawer-less" hotel room, missing my wonderful messy drawer. The contents of the drawer aren't pretty, but I am sure that, in the jumble, I would be able to find just the right pieces to get me rolling again.

Admittedly junk drawers are not for everyone. There are some who might prefer to replace an item the minute the first knob comes loose. Not so for the junk drawer owners. They might even eventually take that item apart and salvage some very useful pieces from it. Junk drawers age like wine; the longer they sit, the fuller and richer they are.

Along these lines, it is great when we find a tool that does the job perfectly. There are times though when we have unique needs and we keep coming up against limitations in our tools. This is what happened to Phil Main and, in this issue, he tells us about a drum sander he designed to do the job he needed done. Seeing that he has an innovative way with tools, it is my guess that if I were to make a visit to Phil's shop I would find at least one drawer filled with very useful odds and ends.



PAUL FULCHER

As I write this letter to you, I am mid-way in my coast-to-coast woodshow circuit. It has been great to meet so many of our readers and find out what types of projects, reviews and techniques that you want to learn about.

Most recently, I have been getting quite a few requests for scroll saw patterns. So, in response, I've come up with a themed scroll saw series that I'm sure you will enjoy. Each pattern in this series will feature a Canadian city and it's provincial flag.

We start off with Victoria BC, and will feature a different city/province in each issue.

Check out our first pattern on page 42. On that same page I also include a sample of the next two cities in the series. See if you can guess where they are.

At the various woodshows I have also been getting a lot of positive response on both our "Woods to Know" (page 38) and our "Wood Joinery" (page 20). Woodworkers are telling me they really enjoy those series, so we will be continuing both of them for some time.

As for our projects, we will continue to offer as wide a range of projects as possible. In this issue we range from a classic cutting board (page 28) to a beautifully designed telephone table (page 4). For those that are into "design", we've even included a 'design review' on the telephone table that is featured on our cover (page 8). In that review you will see what makes that table as attractive as it is.

So now I'm off to another woodshow. If you are planning on attending any of them, please drop by and let me know what you want to see in future issues. And remember, I'm always looking for original plans and projects. So if you have made something that you are proud of, let me know.

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lettersto

Hello,

I just picked up a subscription to your magazine at the Victoria wood show, and am I ever glad that I did, you guys put out a great magazine. There are several projects that I have been looking for info on to help me get started on them, that are right there in your articles. I really like your format with info on the many different facets of woodworking such as carving, turning and sharpening to name a few. I found the column on different woodspecies very interesting, but have a question about one of them. You did an article on the cedars and mentioned the western red but not the yellow which by the way I found to be a good wood for carving due to its softness and lack of grain structure unlike its cousin the red. I look forward to many more issues in the future.

Alan Ashcroft, Comox BC

Letter to CWM

I was looking at the back issues of your eNewsletter (listed on your website), and in the 'Shop Tips' it read... "I find it more economical and convenient to buy glue in gallon containers...." Once upon a time, I was told that glue has a shelf life. Is that true?

Thank you, Carmaine Picken

Dear Carmaine

Yellow and white glue have a shelf life of about one year if stored in air tight containers. You can tell if your glue in past its prime when it becomes lumpy or stringy or if it changes odour. If you don't use a lot of glue, then it's best to buy it in smaller quantities. **CWM**

Afternoon Paul

I was standing in the store the other day with the intention of buying glue. In front of me was a shelf full of various brands

and colours, and I didn't have a clue as to whether or not I should trust this glue or that glue.

I defaulted to information that I had learned from a few US magazines some time ago and narrowed my choice(s), and elected to go with a Titebond III. But still I hesitated because there were a few Canadian brands that claimed equality for a whole lot less money. I couldn't risk it, so I grabbed the expensive stuff, stuck it in the basket and then started to really look at what's available and the pricing.

I saw Rona glue, and LePages glue, in white yellow and brown. I saw Gorilla glue and the Canadian equivalents and I realized that I'm spending a whack more money for glue that I could be (or should be), and I'm going to continue to do so.

Why? I simply can't afford to be the one that finds out a less expensive glue equates to a cheaper glue which could lead to product failure. And that's not fair to Canadian suppliers.

continued on page 19

Forrest Blades

Quality Blades for Serious Craftsmen

Dedicated woodworkers demand perfection. That's why so many of them choose Forrest saw blades.

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furnitureproject BY H.C. SAKMAN



Telephone Table

This table is essentially a small cabinet held between four legs. It makes a great place to locate your telephone, and perhaps an accent lamp. However, it provides ample storage for a lot more. It has a shallow drawer on top to store little knick-knacks, like your cell phone, MP3 player, purse, pocket change, keys and pens; a middle drawer to store a phone book or mail; and, a bottom section with door access to store larger items, or the inevitable mess of daily life. In short, this is a compact and functional table you can place anywhere you need to store those handy everyday items.

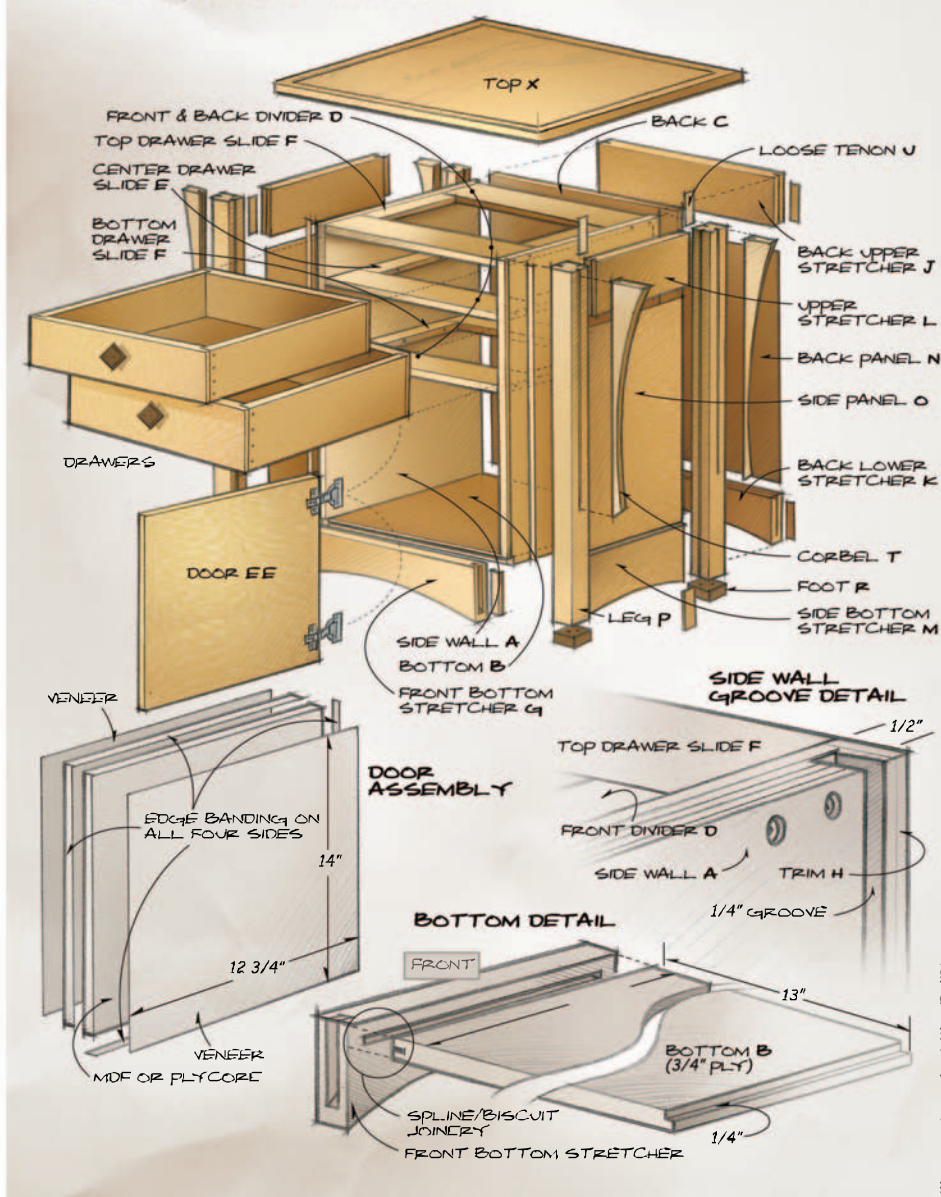
I used Baltic birch plywood, for this table, but you can use other wood combinations. Maple and cherry, or walnut and cherry are complementary woods that would work well together. Using oak would have the effect of making this piece look similar to Mission and or Arts & Crafts style furniture. You could also use cabinet grade ply or MDF in place of the Baltic birch.

There are two major steps in the construction of this table. First, you build the inner cabinet section, and then, you build the legs and the frame structure that goes around the inner cabinet.

Inner Cabinet

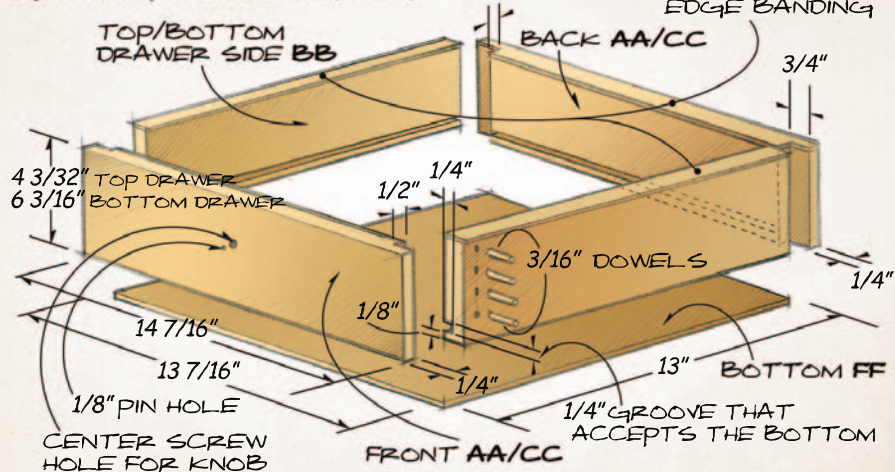
- On your table saw, cut the pieces for the sides (A) from 3/4" plywood.
- Mill two solid wood trim pieces 27" long, 7/8" wide and 1/8" or 1/4" thick. These will cover the 27" long edge of plywood side panels.
- Glue and then trim the edging flush on the sides.
- On the table saw trim the sides to 26 1/4" x 13 3/4". With the table saw or using a router, cut a 1/4" wide x 1/2" deep rabbet on the back edges of the sides. These rabbets accept the back piece (C).
- Using a fine tooth hand saw or table saw, cut 3/4" x 3/4" notches on the bottom of the sides to accept the bottom front stretcher.
- Using a router table and flush trim bit, or a bandsaw and spokeshave, cut a 28" radius curve on the base of the front bottom stretcher.
- Cut a 1/4" wide x 1/2" deep rabbet along the back edge of the bottom. This rabbet accepts the back piece (C). (See Bottom Detail Illustration).

TELEPHONE TABLE



Illustrations by Mike DeRizzo

DRAWER ASSEMBLY



- Use either biscuits or spline joinery to join the bottom to the bottom front stretcher. The top edge of the bottom front stretcher, and the top of bottom need to be level, with the bottom front stretcher protruding 3/4" on each side. Remember that the two back stretchers (D) are 1/4" away from the back edge of the sides to accommodate the back. As an option, you can use dowels or screws instead of biscuits and splines, except where joining the bottom (B) to the front bottom stretcher (G). You can reinforce the base by gluing corner blocks underneath.

- Join the front and back stretchers to the sides with dowels or screws.

- Mill the drawer slides (E and F) from solid wood, then screw them in place. You need to space these slides accurately because drawers will move on these pieces. To do this, cut out of scrap plywood, two pieces each six 12" long pieces, two each of 4 1/8", 6 1/4" and 12 1/8" by 12" long. Use these as spacers to install the drawer slides which are placed in between the stretchers (D).

- Using a 1/4" slot cutter, groove the front sides of the inner cabinet 1/4" away from the edge. In other words, set the top of the slot cutter 1/4" away from your router's base. For this I use a CMT slot cutter, part # 822.364.11B for a 1/2" shank cutter (a 1/4" shank cutter is also available). This bit gives an exact 1/2" cutting depth.

Drawers and Door

- The door (EE) is a simple piece of plywood, veneered on all four sides, with cockbeading applied around the outer edges. You could also use a frame and panel door. Feel free to experiment and put a mock-up door into the cabinet opening to see how different options may work better for your taste or design sense. You can use Blum inset European hinges (Lee Valley part #00B03.01) or butt hinges to hang the doors.

- For the drawers you can use metal drawer slides (LV # 02K30.12); if you do, you won't need to bother to use parts E and F, which are necessary for wood on wood drawer movement. If you use metal drawer sliders I suggest using 1" x 1" blocks glued with 1/4" thick cork, which can be found in most hardware and craft stores. These blocks greatly reduce the noise when the drawers are pushed shut, as well as creating a really nice feel and sound to the closing action.

- Use a 1/4" dado blade on the table saw to create the 1/8" x 1/8" rabbet for the cockbeading. Make sure you cut across the grain first with a scrap piece of backer board, and then cut with the grain. Also, dust the table saw top off for the consecutive cuts. A little bit of dust may reduce the depth of the rabbet, which is only 1/8" to begin with.

- As for the door, I used Baltic birch ply for the drawer parts. The drawer fronts (AA, CC) are veneered on all four sides, and cockbeaded. The drawer backs (AA, CC) and sides (BB, DD) are not veneered, but I did apply solid wood edge banding along the top edges.

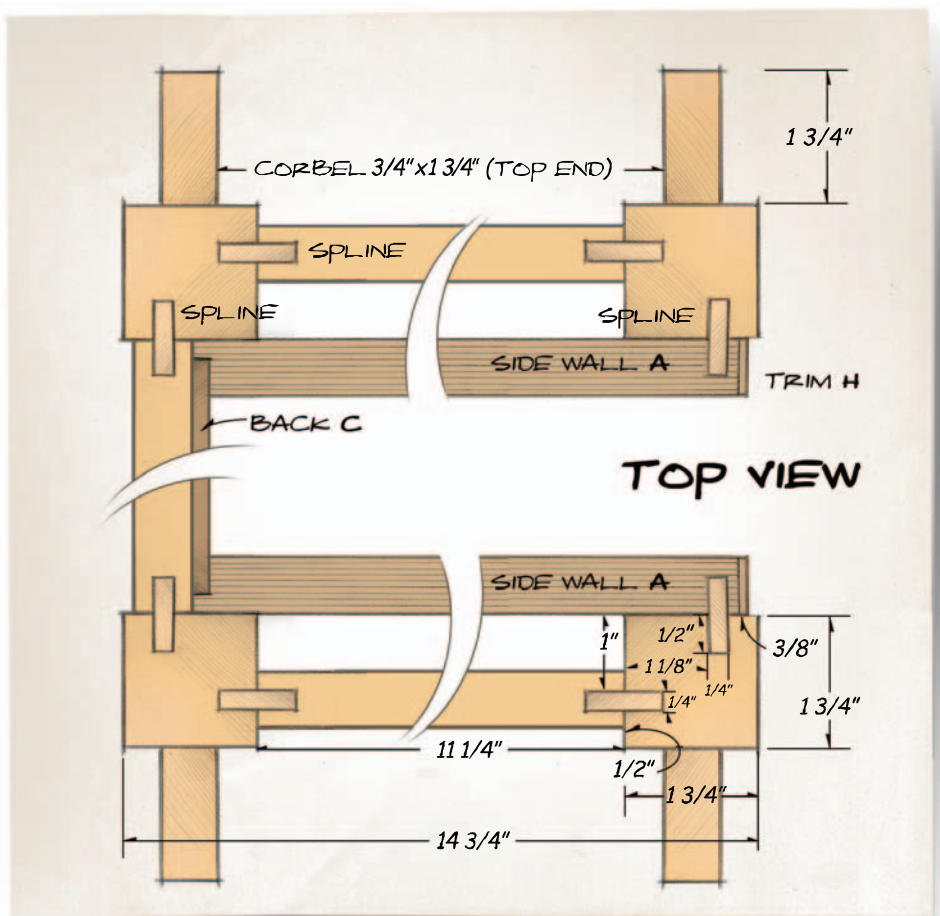
- Cut the parts for the drawers and assemble using rabbet joints, reinforced with 3/16" dowels. Slots for drawer bottoms are 1/4" deep, 1/4" wide and 1/8" away from the bottom edges of the drawer sides, front and back. I see no problem with gluing the plywood bottom to the plywood drawer sides and fronts for a very strong joint. (see *Drawer Assembly Illustration*)

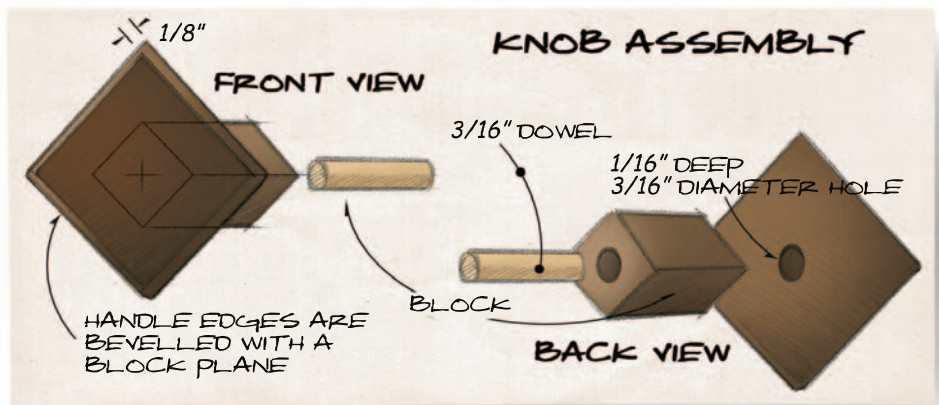
- Make (or purchase) the handles. I made ebony handles, 1/8" thick and 1 1/4" square, glued to 3/4" long, 5/8" square posts. I drilled the posts with a 3/16" bit and inserted a birch hardwood dowel into the hole to accept the screws that secure them to the drawer and door fronts. A screw is driven into the dowel, which prevents the ebony from splitting. I also inserted a 1/8" dowel near the screw to act as a pin; (this keeps the knobs from spinning. (see *Knob Assembly illustration*)

- Install the door and 2 drawers. Trim them with a handplane as necessary. Wax the bottom and top edges of the sides for ease of movement.

- Install the back (C). The back does not have to cover the back of the drawer openings. It would suffice if it only covers the back of the compartment with the door. (You may shorten the height of the back panel (N) from 22-3/8" to 13-1/8")

- The drawer part measurements provided are for a wood-on-wood movement. If you're using steel drawer slides, you need to add a runner on the internal drawer boxes.





Outer Frame and Legs

• Mill the leg stock (P) to 1 13/16" x 1 13/16" x 29 3/4", then screw 1" x 1 3/4" x 1 3/4" contrasting wood feet (R) to the bottom of the legs. Make sure to drill pilot holes to prevent possible splitting of the feet.

• Dimension the legs to the final size of 1 3/4" x 1 3/4" x 30.

• Take the screws off the feet and mark the mating legs and feet so they will be easy to re-assemble later.

• Use a slot cutter to cut grooves on the legs that will accept the panels, stretchers and inner cabinet.

• Glue and screw the feet back on the legs. The feet will create the "stopped dados".

• Cut to shape and glue the corbels (T) to the legs. I used a 1" x 1/4" slot cutter to install them.

• Prepare the stretchers (J, K, L and M). Cut slots on the ends of the stretchers to accept loose tenons, and on the top edge to accept the panel. Cut a 28" radius arch on stretchers K and M.

• Mill 12 pieces of 1/4" x 3/4" x 3 1/4" loose tenons. Glue them into the slots which are on both ends of J, K, L and M. That way, these pieces will not move when you're assembling the legs, panels and stretchers.

• Cut the back and side panels (N and O).

• Optionally, cut the inlays on the sides. I used a router to remove most of the material, and then chiseled the outer lines. The ebony diamond shaped inlays are 3/32" thick.

• Test fit the pieces to see that everything goes together smoothly. Glue the pieces together, starting with the sides, then the front and back legs, and then the panel and upper and lower stretchers.

• Glue the back stretchers and panel in between the two sides.

• Glue the inner cabinet to the outer frame and legs. Glue the splines (I) into the slots on the sides of the inner cabinet first. Use clamps to make sure they are pushed

in all the way. Make sure everything is level at the top.

Top

• The top (X) is Baltic birch plywood, veneered with 1/8" thick crotch maple veneer, inlaid with 1/8" x 1/8" ebony string and edged with 13/16" x 7/8" curly maple. You can put the inlay as cockbeading, and then apply the solid edging or apply the inlay later using your plunge router with an edge guide. Of course, you may just use solid wood as an option. You can use pocket screws to secure the top.

If you choose a solid top, then you'll need mounting blocks to allow for wood movement.



HIKMET C. SAKMAN
sakman@shaw.ca

INNER CABINET

- A 2 Side walls**
3/4" x 13 3/4" x 26 1/4", plywood
- B 1 Plywood bottom**
3/4" x 13" X 14"
- C 1 Plywood back**
1/4" x 15" X 26"
- D 5 Front and back stretchers**
1" x 3" x 14"
- E 2 Centre drawer slides**
1" x 1" x 10"
- F 4 Top & bottom drawer slides**
1" x 1" x 7 1/2"
- G 1 Front bottom stretcher, bottom arched at 28" radius**
3/4" x 4" x 16"
- H 2 Solid wood trim to cover side walls (A)**
1/8" or 1/4" x 7/8" x 27"
- I 2 Wood or ply splines to join inner cabinet to the front legs**
1/4" x 7/8" x 28"

LEGS & TOP

- J 1 Back upper stretcher**
3/4" x 4" x 16"
- K 1 Back lower stretcher**
3/4" x 4" x 16"
(bottom is arched w/r=28")
- L 2 Left & right upper stretchers**
3/4" x 4" x 11"
- M 2 Left & right lower stretchers**
3/4" x 4" x 11"
- N 1 Back panel, wood or ply**
1/4" x 16 7/8" x 22 3/8"
- O 2 Left & right side panels, wood or ply**
1/4" x 12 1/8" x 22 3/8"
- P 4 Legs**
1 3/4" x 1 3/4" x 29"
- R 4 Feet**
1 3/4" x 1 3/4" x 1"
- T 4 Corbels**
3/4" x 1 3/4" x 21"
- U 12 Loose tenons, wood or ply**
3/4" x 1 3/4" x 30 1/2"
- X 1 Top, wood or ply, veneered edge ply, with solid wood**
7/8" x 25 3/8" x 16 7/8"

DOOR AND DRAWERS

- AA 2 Baltic birch ply top drawer front & back, front is veneered 4 sides; solid trim applied to back top edge**
3/4" x 4 3/32" x 14 7/16"
- BB 2 Baltic birch ply sides - solid trim applied to top edge**
3/4" x 4 3/32" x 13"
- CC 2 Baltic birch ply bottom drawer front & back, front is veneered 4 sides; solid trim applied to back top edge**
3/4" x 6 3/16" x 14 7/16"
- DD 2 Baltic birch ply bottom drawer sides - solid trim applied to top edge**
3/4" x 6 3/16" x 13"
- EE 1 Baltic birch ply door - veneer applied to all 4 sides**
3/4" x 12 3/4" x 14"
- FF 2 Plywood drawer bottoms**
1/4" x 13 7/16" x 12 7/16"
- Ebony cockbeading**
1/8" x 1/8" x 11"

Sometimes when you are leafing through a magazine such as this one, a picture of a piece of furniture catches your attention. You realize that it is attractive but may not take the time to understand what caught your eye. A design review analyzes the piece to reveal the devices that make it attractive.

Often, a designer/maker has arrived at a design and executional style because of education, experience and cultural background. Features that are admired by the designer may have a lasting impression, which show up in a later work. The design review may re-awaken old influences or point out different ones. In this way, a design review also provides feedback to the designer/maker.

Function

In this article I will conduct a design review of H.C. Sakman's "Telephone Table", featured in this issue. While there are no design limitations, there are some simple, practical requirements. The telephone table should provide sufficient space on the top to accommodate the telephone, an open telephone book, a lamp and a note pad. There should be enough closed storage space to house a number of

telephone books, some note pads and writing instruments. We can see from the pictures that the telephone table provides the functional requirements and is most probably intended to be used in the sitting position.

Form

Since there are no design requirements, we will now look at the designer's visual choices. He has decided to design a table with a stocky or weighty appearance but at the same time, has used a number of devices to give a delicate feeling to the piece.

Background Colour

He chose a light coloured wood (quilted maple) and applied a natural finish to highlight the off-white colour. You can probably imagine how staining this cabinet dark would have affected the bulk of the appearance. By using a light colour, shadows from relief will animate this piece.

Contrast

The designer was not content with simple shadow. He has chosen to draw our attention to various aspects of the work by using a high level of contrast. Off-white to black is a very powerful contrast, but if overused, could have spoiled the piece. Our designer

has very carefully used contrast to characterize this piece. You will notice that the slender size 1/16" ebony inlay around the top, the cock bead around the edge of the doors and drawers, the feet, the diamonds on the side panels, the diamonds on the side brackets and the knobs are restrained, in relationship to the area where they are located and to the amount of off-white maple background.

The contrasting elements are not so overpowering that they challenge the fact that this is a maple cabinet. The contrasting elements are therefore a highly successful decorative effect. But where did the idea for the diamonds come from? Probably the designer was influenced by the Arts & Crafts/Mission period in general. The diamonds could also be an interpretation of the famous graphic language that we associate with C.R.

Mackintosh. His customary grouping of small, square solids will always be associated with his name.

Character

Not satisfied with the success of the contrasting decoration alone, the designer has added other language, or character element. The top has a beautiful crotch figure that draws our attention, regardless of the light source or direction. The maple edging around the top contains the silk shimmer, characteristic of tiger or fiddle-back maple. But did you notice the top overhangs both sides, more than the back and front? This immediately brings in the language of a table, instead of a cabinet. What an incredibly clever addition, given that the piece is actually a telephone table/cabinet! Beyond the literalness of the table overhang, the designer has added four, slender, concave brackets sometimes referred to as corbels. The brackets might put us in mind of Georgian bracketed tables or of the movable bracket supports for drop leaf tables. These brackets also provide another function. They modify the front silhouette of the piece. Along with the arched bottom rail, they introduce shape into an otherwise rectangular piece. These elements are also highly successful in their subtle influence on this piece of furniture.

Period Reference

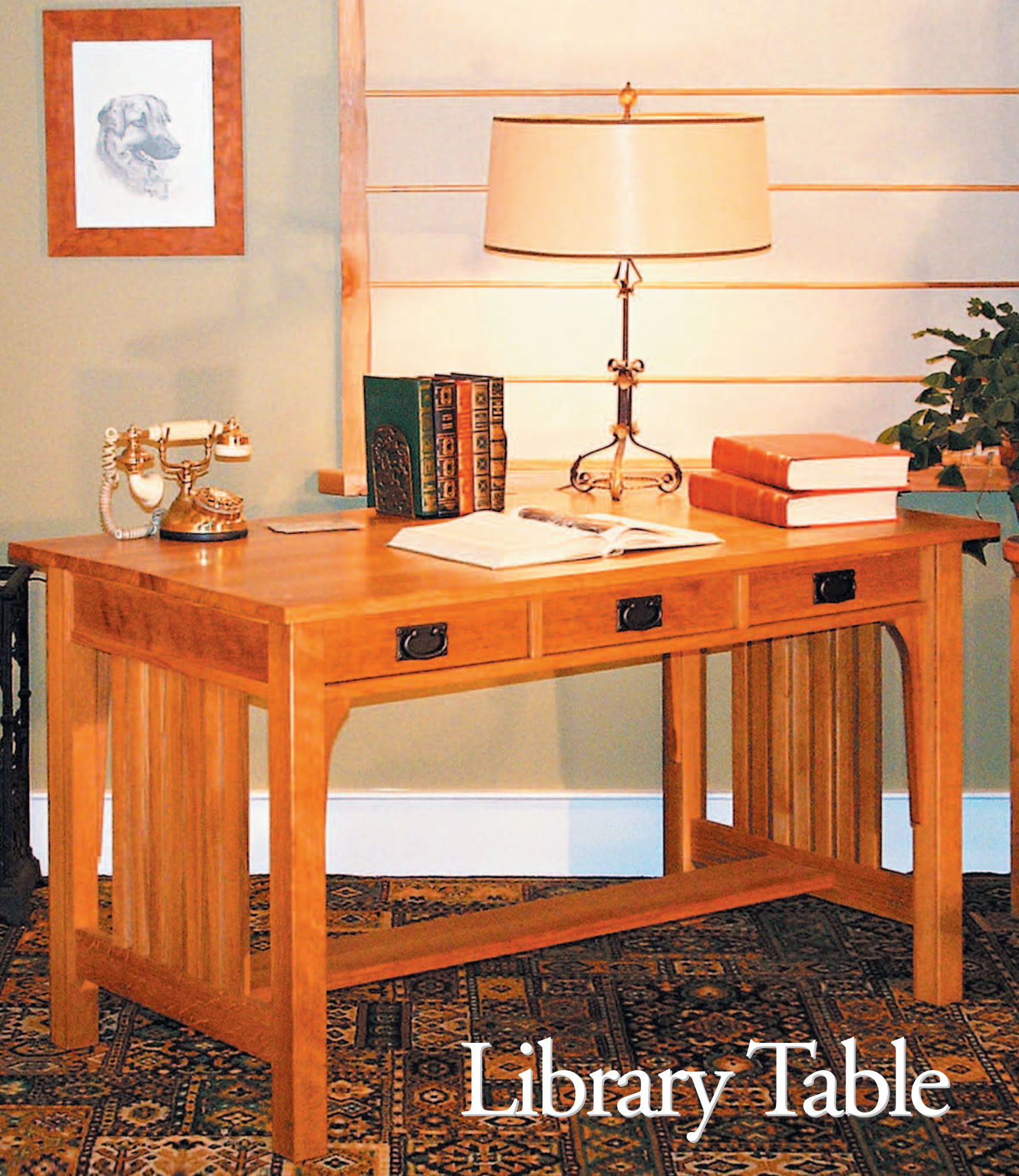
The designer chose to create a table with a traditional appearance, in that the side panels are recessed and the projecting front leg elements effectively change a potentially boxy piece into an elegant and interesting, traditional piece of furniture. I am sure you will marvel at the extent the designer went to make his own hinges and to cut both of the drawer fronts from the same piece of wood, so that the figure could continue from one drawer to the next.

Conclusion

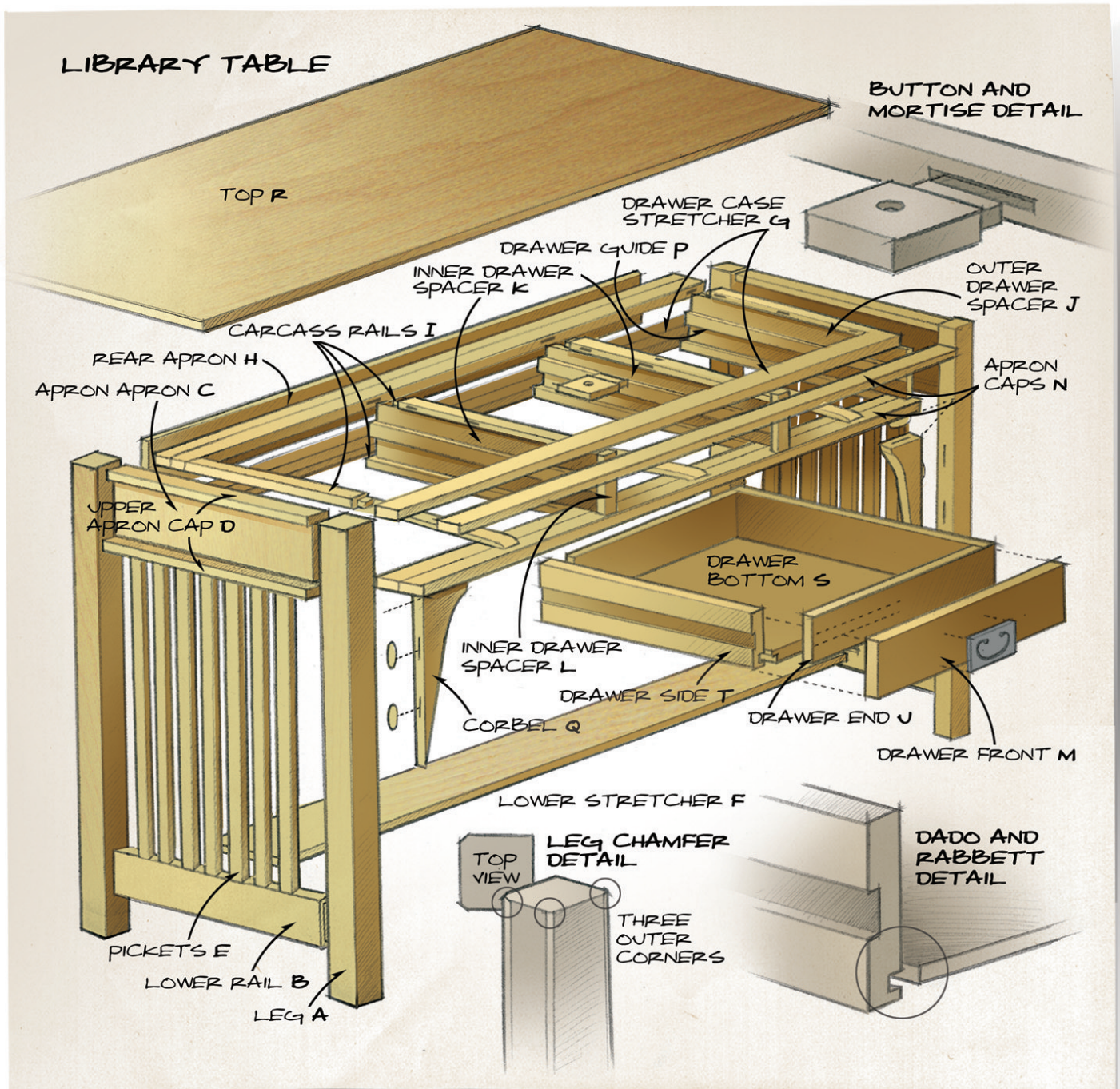
I hope that I have been able to draw your attention to the details of this piece of furniture. You can see for yourself that the meticulous design and execution of details is what makes this an attractive piece of furniture. Congratulations Mr. Sakman, you have designed and built a beautiful piece of furniture.

CLIVE B. SMITH
clive@idirect.ca





Library Table



This library table, based on a Gustav Stickley design, is made of quarter-sawn white oak. I found some white oak that had been rough cut for flooring, which meant that the pieces were all just under three and a half inches wide and a bit over one inch thick. What makes this project unique is the method used to assemble the drawer structure at the heart of this table. Building a larger project like this in a small shop is always a challenge, but by making the top first, and turning it upside down on level sawhorses, you can use it as a surface on which to build the main structure of the table.

Begin With the Top

- Select your best boards for the top. Look for consistency in colour and grain.
- Cut the boards 1/2" longer than necessary. The extra is trimmed off later.
- Mill the boards using a jointer, thickness planer and table saw, ensuring they are perfectly flat and square.
- Glue the top up in stages. Begin by gluing up narrow boards into wider planks, until they are just over one third the width of the top. When you have three larger planks glued up, run them through the thickness planer to reduce your sanding time later. With three planks prepared and finished to the final thickness of the top, test fit them in preparation for gluing.

- Prepare three sets of clamping cauls that will reach across the width of the table (I used some white oak that I was preparing for the legs).

- Run through a dry test to make sure there will be no surprises, and then glue the top up. Place pipe clamps on both sides of the top and, before tightening them, clamp the top between two of the cauls to keep all joints flush. Tighten the pipe clamps and set it aside.

Prepare the Legs

- If you have stock large enough to make the legs from one piece, then skip to the last step in this section. I had to glue mine up from thinner stock using red oak as a

MATERIALS LIST

A	4 Legs (white oak) 2 1/4" x 2 1/4" x 29 3/8"
B	2 Lower rails (white oak) 1" x 2 7/8" x 23 7/8"
C	2 Upper aprons (white oak) 1" x 3 1/4" x 23 7/8"
D	4 Upper apron caps (white oak) 3/4" x 1 1/2" x 21 9/16"
E	14 Pickets (white oak) 5/8" x 1 3/8" x 19 1/2"
F	1 Lower stretcher (white oak) 1" x 6" x 49 9/16"
G	4 Lower drawer case stretchers (red oak) 3/4" x 1 3/8" x 47 3/4"
H	1 Rear apron (white oak) 3/4" x 3 1/4" x 47"
I	8 Carcass rails (red oak) 3/4" x 1 3/8" x 21 1/16"
J	2 Outer drawer spacers (red oak) 5/8" x 3 3/4" x 21 1/2"
K	2 Inner drawer spacers (red oak) 3/4" x 3 1/4" x 22"
L	2 Inner drawer spacer ends (white oak) 3/4" x 1 1/8" x 3 1/4"
M	3 Drawer fronts (white oak) 5/8" x 3 3/16" x 15 1/32"
N	4 Apron caps (white oak) 3/4" x 1 3/8" x 47"
O	16 Buttons (red oak) 3/4" x 1 3/4" x 2 5/8"
P	9 Drawer guides (red oak) 5/8" x 3/4" x 22"
Q	4 Corbels (white oak) 3/4" x 3 1/2" x 13 1/4"
R	1 Top (white oak) 1" x 29 1/4" x 54 3/4"
S	3 Drawer bottoms (white oak) 3/4" x 13 15/16" x 22"
T	6 Drawer sides (red oak) 3/4" x 3 1/16" x 22"
U	6 Drawer ends (red oak) 3/4" x 2 3/16" x 13 3/8"

secondary wood for the core and veneering it with 5/16" white oak. Using a secondary wood, prepare a core with a cross section of 1 1/2".

- Resaw some white oak to use as veneer for the legs. Keep the pieces matched so that the two pieces from one board can go on opposite sides of the leg.

- Select the veneer for the best face grain and then glue the pieces to the surfaces that will form the sides of the legs when viewing the table from the front.

- After the glue has cured, use a flush trim bit in a router to remove the excess white oak.

- Glue the veneer on the other two faces and then trim with the router as well.

- Using a 45° chamfer bit, chamfer the outer end edges as well as the bottoms of the four legs.

Build the Ends

- Prepare blanks for all of the parts in the two ends from your rough lumber. There are 18 mortise and tenon joints in each end: pieces that are not square and true will make assembly a nightmare.

- The upper apron is made up of three pieces. This is done to maintain visual continuity from the long sides to the ends. Finish the three pieces before assembly, this will make clean-up of any excess glue a simple matter. Glue these up and set aside to cure.

- Cut a 1 1/8" long, 3/8" thick and 1" wide tenon on each end of all 14 pickets.

- Cut the matching mortises in the lower rails and the glued up apron. Center the first picket and lay out three on either side on 2" centers.

- Cut a 1 1/8" long, 3/8" thick and 2" wide tenon on each end of the lower rail.

- Cut a 1 1/8" long, 3/8" thick and 2" wide tenon on each end of the apron assembly.

- Assemble the center panel without glue to confirm the distances between the centers of the mortises in the legs. Mark them on the legs and cut the mortises.

- After fine-tuning, glue the end assemblies together and clamp them to the top that is serving as an assembly table.

The Drawer Structure

- The central element of this table is the drawer structure. It houses the drawers but also ties the two sides together using biscuits. The visible portions are white oak that have been laminated to red oak used in the center. This also allows for an assembly aid during the final stages.

- Prepare flat and square stock for all of the inner components.

- Cut a 1 1/8" long, 1" wide and 5/16" thick tenon on each end of the 8 carcass rails.

- Cut the mortises in the rails that receive the buttons that hold the top in place.

- Cut the matching mortises in the carcass stretchers for the rails.

- Assemble the two frames and set them inside the legs that have been clamped to the top.

- Prepare the two inner and two outer drawer spacers. Mill the stock for the inner drawer spacer end caps at the same time as the inner drawer spacers. Mark which edge will be the bottom as you will have to reference all dadoses from this edge for them to line up during assembly. Cut the dadoses for the drawer slides.

- To conceal the end grain on the red oak dividers, glue the end caps to the end of the inner drawer dividers. Use a biscuit, as the end grain will not allow for a strong, long-lasting joint. This also turns the through dado into a stopped dado.

- Mark out the center drawer guides and cut the dadoses for these. By cutting them in both pieces at once, they will line up perfectly later.

- The stretcher caps and the rear apron are white oak and form the backbone of the drawer structure. They are held in place with #20 biscuits. Prepare the stock for these, and cut to fit between the legs.

- Mark out and cut the biscuit slots on the four stretchers and caps. The caps are slightly shorter than the stretchers to allow for the offset in the legs. Glue these up, making sure that each end is set back by one half of this distance. This forms a notch that will help keep everything square during final assembly.

- Assemble the two frames without glue, and if everything works, glue it up. Check the diagonals to be certain everything is square.



Assemble the Drawer Structure

- With the frames in place, mark out the locations for the biscuits and cut the slots.
- Lay out and cut the biscuit slots on the rear apron and caps.
- The glue-up is quite intensive and it is best to have a second pair of hands. The best place to glue the table up is on the underside of the top. Place some waxed paper in any areas that might get glue on them. Apply your chosen finish on the frames and drawer dividers before assembly.
- One of the ends has to be removed from the top in order to allow the five parts to come together in the right order.
- Glue the upper frame to the end, then glue the rear apron to the upper frame, and then set the lower frame in place. This is a little tricky as there are biscuits facing in two directions. Once this is in place, the other end is glued to the two frames. Use the drawer

faces as aids to help maintain the proper positioning of all the parts.

- When that glue has dried, glue the outer drawer dividers in place. The two inner drawer dividers are held in place with countersunk screws. Mark out the location to ensure that the three drawers are all of equal width and install.

The Drawer Guides

Each drawer runs on three wooden guides. These are set into the dados that were cut earlier.

- Choose clear, quarter-sawn wood for your drawer glides. These must be stable to keep your drawers running smoothly from one season to the next.

Machine and Install the Guides

- Round over the front corner of the guide; this will make it easier to insert the drawers. Depending on the location of the guide, you may have to notch the opposite rear corner as well. Glue these into place.

Corbels Add Rigidity

- The corbels that join the legs to the drawer structure are not just decorative. They also add reinforcement to the corner making the table more rigid.
- Make one perfect pattern and then use a router to reproduce four more. Each corbel is held in place with two #0 biscuits and one #20. Finish the corbels before gluing them in place.

Build the Drawers

- The drawers in this table are heavy and solid. The bottom and sides are 3/4" thick in order to provide the depth for the dados that receive the wooden guides.
- Prepare the rough stock for the drawer ends, sides and bottoms. The bottom is 14" wide and must be glued up from smaller boards.
- Mark the bottom edge on the six drawer sides. It is important that this becomes the reference edge for all dados. Cut the dados for the drawer guides.
- Each side also has another dado on the inside bottom edge. This receives the edge of the bottom.
- Cut the front and back for each drawer. Cut a rabbet into each long side of the bottom as shown in the illustration. As well, cut the dado for the center drawer guide. Finish all drawer pieces before assembly.
- Assemble the drawer box using biscuits in the corners, and a single screw through the bottom of the dado into the ends. Do not glue the bottom into the dado. It must be free to expand and contract seasonally across its width. Prepare drawer fronts from white oak and carefully glue them to the front of the drawers.

Top It All Off

- While the top must be firmly attached, it has to be free to move with seasonal changes in humidity. This is accomplished but using buttons. The ones at the center of the table are locked in position, but the other ones ride in elongated mortises that allow the table to move across its width.
- Sand the top though to 220 grit and apply a coat of finish.
- Prepare 16 buttons to attach the top to the table.
- Center the top on the table, and using large cauls, clamp the top to the table. From the underside of the top, install the buttons.

The Final Stretch

Touch up any areas where the finish may be damaged or incomplete, and put on a few coats of beeswax polish. To keep the drawers running freely, I rub a coating of paraffin wax on the guides as well as in the dados on the drawers.

MICHAEL KAMPEN
aria_dog@hotmail.com



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Tooling for the Bench Top Lathe

In our Aug/Sep 05 issue we looked at the characteristics of the bench top lathe. In this issue we'll look at some basic turning tools and accessories that go with the lathe. In an upcoming article we'll take a turn at sharpening some of the tools.

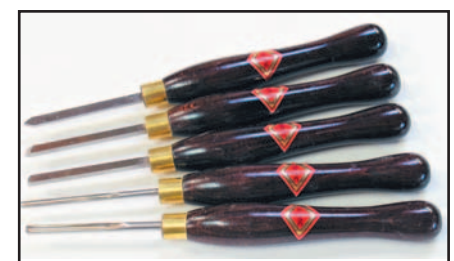
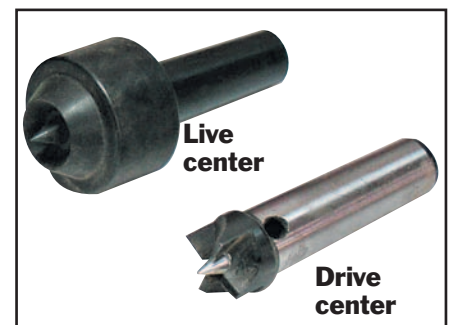
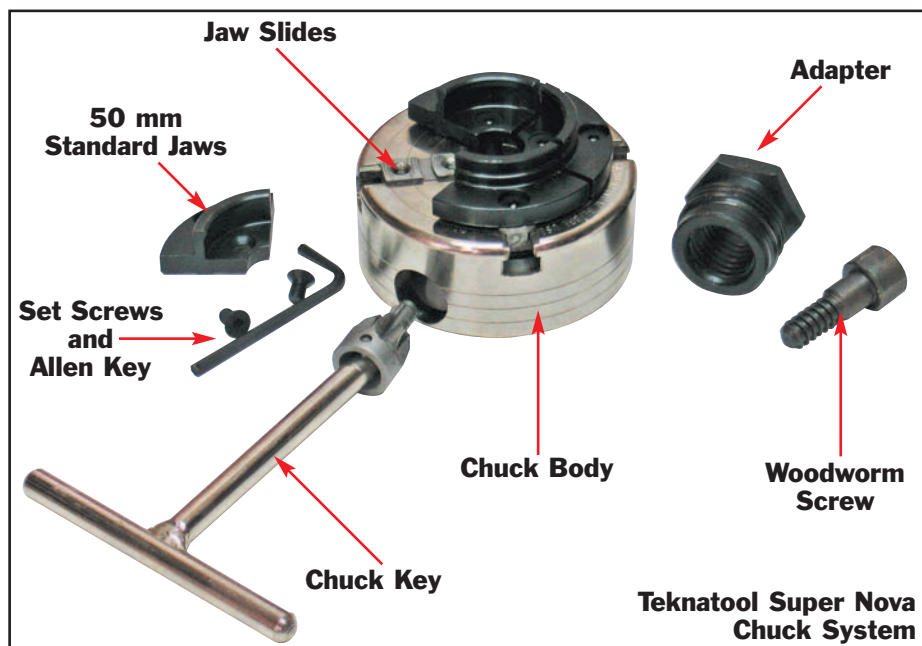
Turning Tools

Gouges, skews, scrapers and parting tools - the four course meal for turners. There are other more specialized tools, but

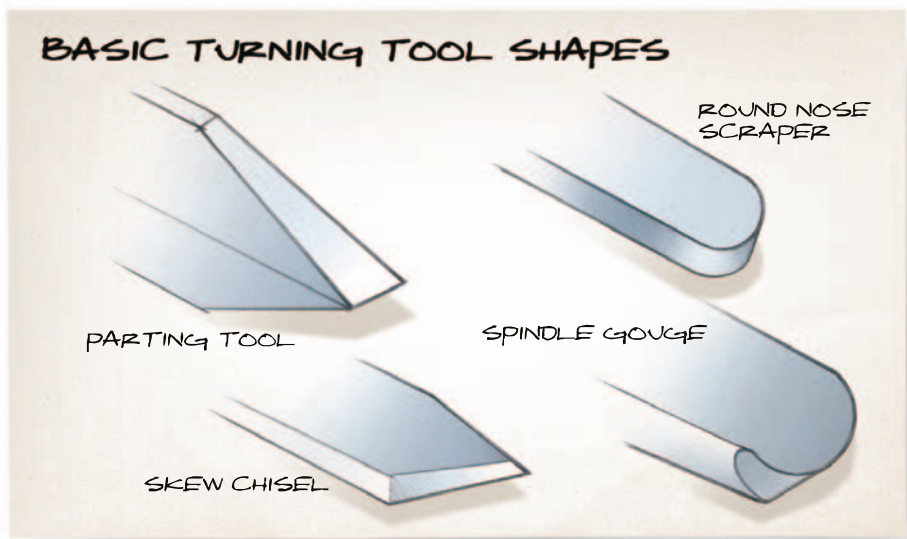
it's best to stick with a set of these basic tools until you've acquired some level of proficiency. Of course, at that point you may develop the 'turners twitch', where the acquisition of tools and accessories, and the desire to turn at every opportunity, will be irresistible.

You can purchase these four turning tools individually or as a set. I recommend a set, as it's less expensive. A good choice is the high speed steel mini turning set from Henry Taylor (Lee Valley Tools, item

#58B16.01). These are about twice the price of a set of the 'El Cheapo' brand, but they are of exceptionally good quality, have good edge holding ability, and will retain their hardness even after a lot of re-sharpening. This set consists of a 3/16" and a 1/4" spindle gouge, 1/4" round nose scraper, 1/4" skew chisel, and a 1/8" parting tool. Tools like these are much smaller than those used for turning on full-sized lathes. Overall they are about 11" long with 3 1/2" to 4" of blade, which



Basic chisel set



makes them less intimidating for novice turners, and the perfect choice if you intend to limit your turning to smaller pieces.

There are several types of gouges on the market: roughing gouges, bowl gouges, and spindle gouges. In cross section they have a curved body, while the tip can be square, curved, or finger nail shaped. The spindle gouge is the most common gouge used for small scale turning. It's a shallow version of the bowl gouge, usually ground with a 'finger nail' shape. On the bench top lathe you use this tool as a roughing gouge, and also to cut beads and coves, and for shallow hollowing.

You'll use skew chisels on spindle turnings to refine the surfaces after initial shaping with the gouge. Skews typically have double ground flat bevels and are similar to hand planes in that they remove shavings of wood from the piece that the gouge has turned round. They are also useful for tapering cuts and cutting shoulders.

Of the various configurations of scrapers, the round nose scraper is one that you will find most useful for making finishing cuts on concave surfaces, for making flowing

curves, and for cleaning up end grain.

While the parting tool derives its name from its function of parting the finished work from the stock remaining on the lathe, you can also use it to cut deep grooves, form shoulders, and round over small beads.

While a mini turning set consisting of the four tools mentioned above are more than



Faceplate with sub base and double faced tape

adequate to begin your excursion into the joys of turning, you may also wish to consider purchasing a multifunction tool such as the Sorby Spindlemaster (Island Woodcraft, item #50-7317). With this tool you can rough small pieces from square to round, make vee cuts, roll beads, cut coves and trim end grain. The nice thing about

this tool is that it's quite easy to use and it's easy to sharpen.

Basic Holding Tools

Most bench top lathes comes with a drive center and a live or revolving center. These hold stock between the headstock and tailstock for 'spindle turning' or 'turning between centers'. Of course, there are all kinds of replacement centers available. When mounting stock between centers it's a good idea to saw a 1/8" or so kerf for the prongs of the drive center to sit in. You can do this with a hand saw or the band saw.

Your lathe will probably also come with a faceplate, probably 3" or 4" in diameter. There are four holes on its face through which you insert screws to attach stock to the plate. Pretty simple, except that you end up with screw holes in the bottom of your turned piece although you can plug them, or you cut off the bit of stock that holds the screws. Fortunately, you'll likely be turning small pieces of stock on your bench top lathe, and an excellent alternative to using screws on the faceplate is to use double-faced turners tape (Lee Valley item #25U03.11), not to be confused with 'carpet tape'. The tape will securely hold stock up to 10" diameter. I've turned stock up to 4" thick using this method. Optionally, screw a sub base to your faceplate (I use 3/4" melamine) and apply the tape to the sub base. That way, you can remove the faceplate for use on another project.

Advanced Holding Devices

Once you feel comfortable turning between centers and using the faceplate, you may wish to try out one of the many chucking systems on the market. A chuck is a mechanical device with several jaws that firmly grip one side of your turning blank so that you can turn the other side. For occasional turning these are somewhat overkill, but if you do a lot of turning, a chuck is a very convenient and time saving accessory.

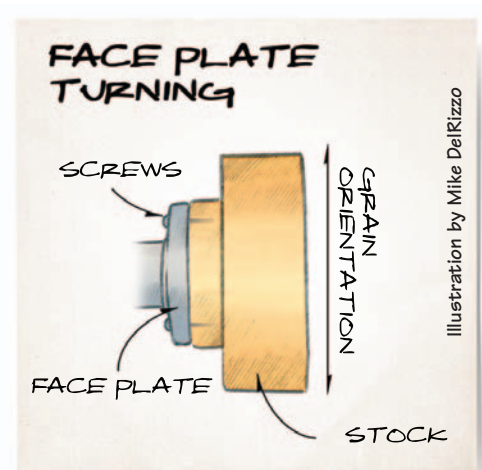
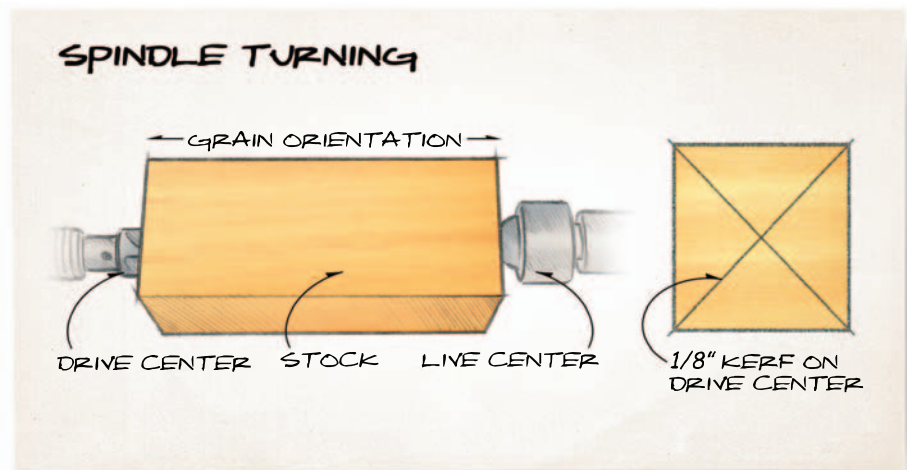
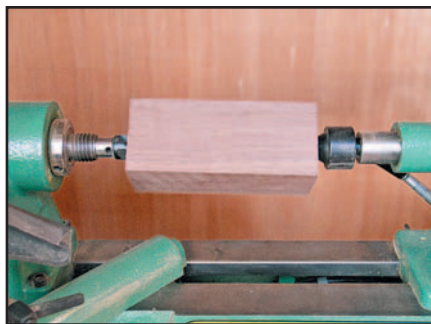


Illustration by Mike DeRizzo

The four jaw, self centering scroll chuck, such as offered by Teknatool, is the most popular and versatile type. Teknatool makes three models, of which the "Nova Midi" or "Super Nova" (Lee Valley, item #58B03.XX) are best suited for the bench top lathe. Choose the Midi if you'll be sticking with the bench top lathe; or choose the Super if you think you'll be moving up to a stationary lathe.

Chucks come with a body and a range of jaws. Again, it's a good idea to buy a chuck set. The one I use consists of the chuck body, which includes an adapter (or 'thread insert') that allows me to mount the chuck body on the inboard spindle of my General 25-100M1 Maxi Lathe; a 50mm standard jaw set; a chuck key; four jaw slides (that enable you to attach the jaws to the chuck body); and a woodworm screw (which is held in the 50mm jaws, and enables me to mount my work piece directly on the screw).

With the 50mm (2") jaws you can mount stock two ways – clamping the jaws over a tenon that you turn on one end of your stock (to hold stock up to 6" x 4"), or expanding the jaws into a recess that you turn on the stock (to hold stock up to 10" x 4"). This should be adequate for most of your turning requirements. A range of other specialized jaws are available, including standard 25mm, 100mm, and 130mm jaws (100mm and 130mm only for the Nova chuck); 75mm step jaws (only for the Nova), which have three levels of dovetail shaped jaw faces that clamp over dovetailed tenons; and cole jaw sets, which are used to hold bowls or irregularly shaped stock.



Blank mounted between centers



Blank mounted for spindle turning

Safety Devices

As a final note, a face shield (Lee Valley item #22R05.37) is a highly recommended accessory. It will protect your face from flying debris, without hindering your

breathing. You'll find the lathe to be one of the quietest machines in your shop; nonetheless, hearing protection is advised, even if you only use foam ear plugs.

CWM



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Spindles



Many of us are not that fascinated with the art of spindle turning. There doesn't seem to be as much fame and glory in it as there might be in bowl work, hollow forms, or as some people call it, "wood art." In most of the courses I teach, half the time is dedicated to spindle turning. This is because gaining proficiency in spindle turning will help you with all other types of turning. The tools and techniques of spindle turning can be, and often are, incorporated into other types of woodturning. I believe that if you are an accomplished spindle turner, all other forms of turning come more naturally, and you are an all-round better wood turner for it.

In this article I take you through the different techniques of spindle turning a table leg with a piece of kiln dried oak 3" x 3" x 24".

Cut the Pommel With a Skew

On a project like this, I begin by cutting a pommel first. The pommel is the shoulder at the transition from square to round. If this is executed properly there will be no chipping of the corners and no sanding will be required. In most cases of spindle turning, when the

cuts are done properly, very little (if any) sanding is required. A pommel can be done with a few different tools, however the best and most effective is a skew.

The toe, or long point of the skew, is the part that does the cut and it is simply lifted into the wood. To do this, the handle of the skew must be down below the rest. Tip the skew slightly to the left and lift the handle so that the toe falls into the wood. Then drop the handle, tip the skew slightly to the right, and lift the handle so that the toe falls into the wood.

Don't take heavy cuts; it is always better to take lighter, cleaner cuts. Also, you have to feel the wood, as at this stage there is nothing to see. Don't tip the tool too far to the left or the right or the tool will dig in.

Round the Stock With a Roughing Gouge

Now that the pommel is in place, the rest of the turning process can be dealt with. First, I make the remaining section round with a roughing out gouge. A roughing out gouge can be used in many ways, and you can utilize the cutting edge in most positions.



Cut pommel



Round stock with gouge



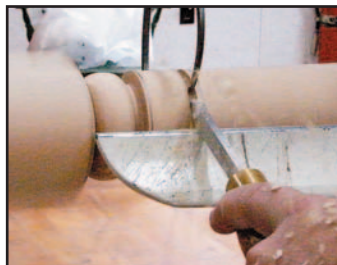
Turn beads with spindle gouge



Cutting a bead with a skew



Turn beads with parting tool



Set diameters with parting tool



Turn coves with spindle gouge



Use skew for end cuts

When the piece is square, and there is a lot of resistance from the wood, I present very little metal from the gouge. That means I introduce the middle of the gouge, first rubbing the bevel to feel the wood, and then lifting the cutting edge into the cut. As soon as it starts to cut, I stop lifting and travel from side-to-side. Once the corners, or resistance, are gone, I can present more metal by rolling the gouge on either side and moving in the direction away from the flute. I can also produce a shearing cut by slightly angling the gouge to the left or right.

Turn the Beads With Spindle Gouge, Skew or Parting Tool

One way to roll a bead is with a spindle gouge. Start to one side of the intended bead with the handle down. Rub the bevel, lift the tool until it starts to cut, and as soon as it cuts, roll the tool as you lift the handle. Repeat the same process on the opposite side. Keep repeating this left and right until a perfectly shaped bead appears. Like anything worth doing, it takes practice. I used a 3/8" spindle gouge to turn some of the beads on this leg. You can also roll a bead with a skew. Done correctly there will be no need for sanding.

You could also use a 3/8" wide parting tool to roll a bead. All I do with that tool is change from using it as a parting tool by angling it on to make it into a skew.

Set Diameters With the Parting Tool

Another valuable tool in the spindle kit is the parting tool. I use it with calipers to set a diameter. As I've said, most of the tools can do most cuts, but the difference is that some of them do certain cuts better than others. The parting tool creates cuts with superb results, including V-cuts, planing cuts, pummels, and beads.

Cut Coves With the Spindle Gouge

The other major shape is the cove. Although other tools will cut a cove, the best tool for this is a spindle gouge. This is the exact reverse process of cutting a bead. Start in the middle of the cove with the handle up and the flute on its side. At this point, when the tool is engaged to the wood, the bevel is not rubbing. What happens? It could skate, and if it does it will always skate opposite the flute. It is here where the cut has to be established. In other words, take your time introducing the tool to the wood. Once the cut is established the tool can be rolled and the handle dropped in unison, stopping at the bottom or middle of the cove. The cut is then repeated on the other side. Just keep repeating this process until the desired cove is cut. It is somewhat like scooping out the wood. I used a 1/2" spindle gouge to turn the coves on this leg.

Use a Skew for End and V-Cuts

To turn an end cut, which is just half a pommel, use a skew chisel. Make a smooth planing cut using the heel or short end of the skew. The tool rest is positioned a little below center, almost where the skew is on top of the wood. This cut gives an extremely smooth cut and should be practiced.

To make it simple, a v-cut is the same process as the pommel, but it's done in round stock. Here again, use the skew chisel.

As you practice your spindle turning you'll learn a variety of new ways to use the spindle turning chisels.

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November 2003, Issue 152

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Basic Techniques

Turning can be very rewarding, but for the beginner, it can also be very frustrating. While you won't get any better if you don't practice, it is inevitable that practicing poor technique will inevitably lead to frustration. I can't make you a better turner, but I can try to point you in the right direction with some basic techniques. Practice these techniques regularly using scrap wood. If I've been away from the lathe for a while, I'll often do a few practice pieces before getting into a project.

Stance

Set-up and posture are two areas often overlooked by the novice. Stand in front of your lathe with your arms at your side and bend your elbow to 90°. The center of your lathe should be even with your elbow. You can make slight adjustments from there. I prefer about an inch above center point. Position yourself in front of the work in a loose stance with your feet shoulder-width apart. Hold your chisel with the handle in one hand and your arm tucked tight to your side. This hand controls the chisel. Position your other hand on the front of the tool rest and grasp the shank of the chisel. This hand guides the cut as it progresses. Don't push the chisel away from you as you cut. Instead, move your body with the cut as it progresses. This may require moving your feet on some cuts. Naturally, not all cuts can be made in this manner but it's a very good habit to form for most cuts.

First Cuts

For your first cuts, set your toolrest 1/8" to 1/4" away from the work, and even with the center of the lathe axis. Always turn the piece by hand to ensure that the rest is clear of the work before turning on the lathe. Start the lathe at low speeds for unbalanced blanks and medium speed for better balanced ones. Increase the speed as the blank comes more into balance. Speed is determined by the size of the work. Larger work requires slower starting speeds; you also use a slower speed for finishing. A 10" bowl, for example, will require slower speeds throughout the turning, while you can increase the speed for a

6" bowl as the turning progresses. Begin turning a small spindle at medium speeds and progress to the highest speeds.

Roughing the Blank

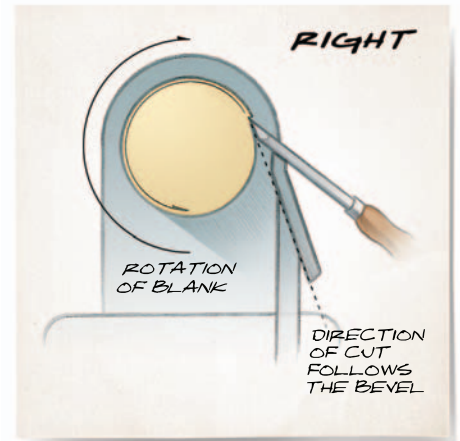
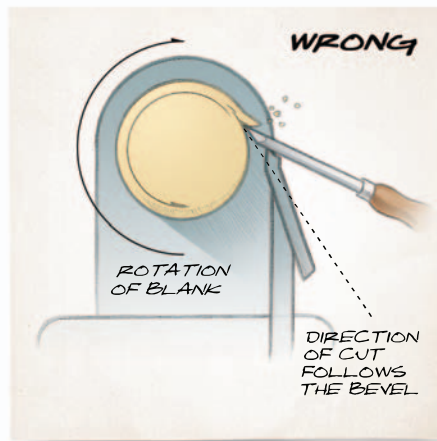
Typically you will rough the blank as the first step. Hold the roughing gouge 90° to the lathe axis, (as described above) with the flute pointing up and the handle low. Raise the handle slowly until the gouge makes contact with the work. The first point of contact should be at the bevel of the gouge. Continue raising the handle until it starts to cut. The higher you raise the handle, the deeper the cut will be. Remove most of the waste using just the center of the gouge flute, as that is the strongest point of the tool. Once you have removed the large points from the work you can begin using the sides of the gouge. Swing the handle around slightly to one side and turn the flute to approximately 10:00 on the clock. This will present the long edge on the side of the flute to the work. Approach the work in the same manner - handle low, rubbing the bevel and raising until it begins to cut. You can cut in both directions by mirroring the chisel position on the back cut. If it's more comfortable for you, you could simply cut in just one direction. You can achieve a very smooth cut by presenting the long edge of the gouge to the work. Remove as much waste as you can with the roughing gouge, then move on to your smaller gouges.

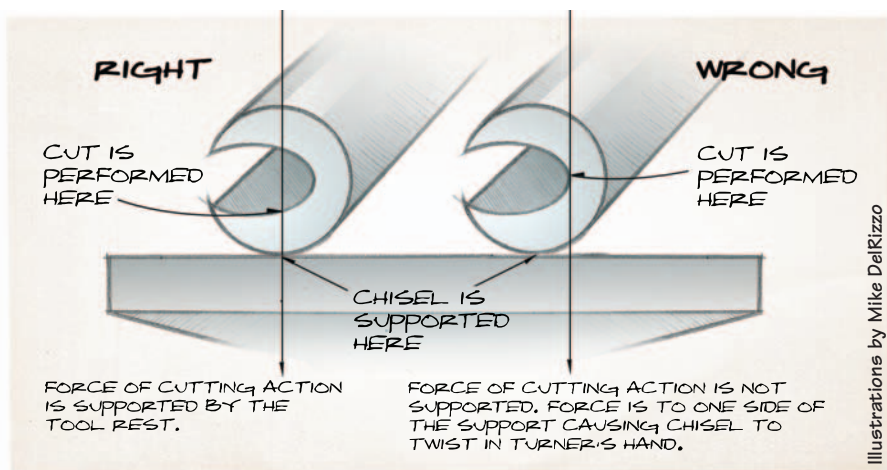
Rub the Bevel

Always rub the bevel when using a gouge or a skew. The bevel of the tool does two things. First, it directs the cut. If the bevel is pointing toward the center of the work piece, that's where the chisel is going to go. It will try to follow the bevel straight into the center of the work. That's how you get those nasty catches. If you imagine a line extending from the bevel, passing through the outside 1/16" of the work, that's the path the chisel will follow. This produces a 1/16" deep cut. The bevel rubbing behind the cut prevents the chisel from going deeper into the work. No more catches. Secondly, the bevel supports the grain behind the cut so there is less tear-out. As the edge of the tool cuts, the bevel holds the fibers in place behind the cut (much like the mouth of a hand-plane holds the fibers down to prevent tearing the grain). It is this action that determines the height of the toolrest. The toolrest should be set so you can cut in this manner and have the chisel handle in a comfortable position. With the toolrest too low, the handle is too low to be comfortable. It's the same when the toolrest is too high.

The Scraper

All rules have exceptions and in this case it's the scraper. The scraper is used at 90° angles (and greater) to the work, with the toolrest slightly below center. You don't rub the bevel on a scraper. Just scrape the work, as the name implies. There are a





multitude of scrapers on the market. From a plain square edged scraper to specialty scrapers made for hollowing large vessels. All are used in the same manner.

Supporting the Cut

Always position your tool so the cut is supported by the toolrest. When you make a cut, only one part of the cutting edge is doing the work. Imagine a line from that point, straight down the tool to the handle. The tool should be resting on the tool rest directly below the point where that imaginary line crosses the toolrest. If the tool is supported by the toolrest to one side of that line, the resistance of the cutting action will try to twist the tool out of your hand. This leads to poor control, poor cuts, and fatigue. Following these guidelines will produce cleaner cuts and reduce fatigue on the turner. A proper cut doesn't require a "death grip" on the tool. You should be quite relaxed when doing most of your turning. Practicing these basic techniques will lead to more enjoyment from your lathe.

J.P. RAPATTONI
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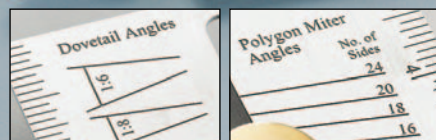
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continued from page 2

So...a request. Can you please organize a full and complete "scientific" testing of wood glues that are available in Canada. I don't mean the next edition of "shop tested", I mean a proper "tool test" sort of analysis. I know you don't normally do tool tests...but I think this may be different (consumable product) and if, through testing, you prove that "our" glues are just as good as "their" glues, I guarantee you'll change my buying habits. Thoughts?

Rob

Rob

Great suggestion. Judging from the number of glue questions that we're receiving (and that are being posted on our website's WOODWORKING FORUM) there are a lot of unanswered questions concerning glues. Thanks for taking the time to contact me with your suggestion. Watch upcoming issues for a comprehensive and comparative glue review.

Paul

Corrections:

In issue #38 (Oct/Nov 05) on page 16 Ship's Wheel turning article the Salad Bowl Finish was not made of oil and bee's wax as stated and it is only food safe when cured. It cannot be used immediately as it has to dry. It is ideal for salad bowls, fruit bowls and cutting boards. The author would not recommend it for kitchen cupboards or children's toys.

Also, in issue #38 (Oct/Nov 05) on page 37 of the Bench Grinder Upgrade, the prices for the parts needed for the upgrade were not accurate. For correct prices on Oneway Wheels and the Oneway Wolverine Grinding jig please contact: oneway.ca

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Finger Joint

The finger joint is a router joint that not only adds strength to glued-up boards, it can extend your scraps by joining them together end to end for use in a hidden area. This is the method used to make inexpensive pine moulding that is meant to be painted.

You can see the finger joints along the length of the moulding where smaller pieces were joined. The finger joint excels at this type of joint.

What You Need

This type of joint is typically made with a table mounted router bit. You can use an adjustable bit like the one used here, or a fixed bit.

The advantage of the adjustable bit as the wide range of stock thicknesses you can use it with. There are 5 finger cutters and a wide end cutter. For 3/4" thick stock, you only need one of the fingers and the wider end cutter.

Keep in mind that because of the way the joint interlocks, you will lose about



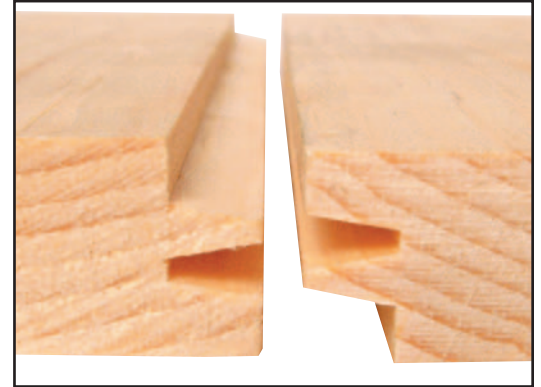
Finger joint bit

3/8" or so width or length for each joint, depending on the bit.

How to Make the Joint

Mount your finger joint bit on a router table with the fence in line with the bearing. This gives you the best support for your stock and improves safety, particularly when routing end pieces.

Set up the bit by eye and take a test cut on two scrap boards. Flip one board over and assemble the joint. If the surfaces don't line up, raise or lower the bit and take another test cut. Continue to adjust until



you have a flush joint. Put aside your final test pieces to use as a set-up-piece the next time you use the bit.

For joining boards edge-to-edge, simply run the boards through the bit, flipping every second board over to make the matching cut. Be sure to use a push stick and keep the board tight against the table and fence.

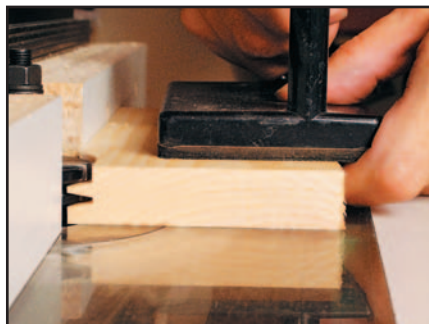
For joining boards end-to-end, use a square push stick to keep the pieces stable as you feed them through the router bit. As with edge joined pieces, flip every second board over to make the matching cut.



MICHEL THERIAULT
woodstoneproductions.com
mjtheriault@sympatico.ca



Adjusting the bit for 3/4" stock



Routing edge grain



Routing end grain

NOT ALL ROUTER BITS ARE CREATED EQUAL!

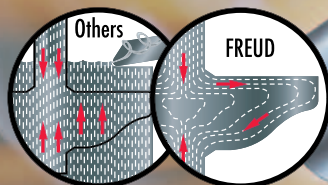
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* not on all router bits



Heat Forged Body & Shank

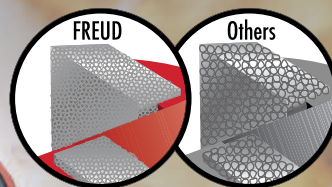
The radial grain orientation produced by forging steel is much stronger than turning the shape from a steel rod

Non-Stick
Perma-SHIELD™
Coating

Perma-SHIELD™ coating reduces friction and heat buildup, helps prevent the adhesion of resins, and protects the cutter from corrosion

MicroGrain Carbide with Titanium

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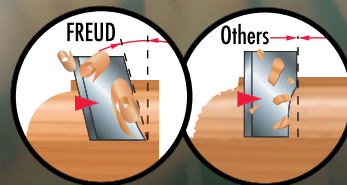


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Stains



A stain is a liquid substance that, when applied to wood penetrates the surface, imparting a rich colour. The two most common types of stains are pigments (which cover the wood), and dyes (which penetrate the wood). Today, many manufacturers combine both pigments and dyes into a single blended stain.

Pigments

Pigments are fine insoluble particles of inert chemical compounds, which can be natural (like iron oxides) or synthetic. A carrier (mineral spirits, lacquer thinner, or water) serves to spread the pigment over the wood, and a binder (such as varnish or lacquer) acts as an adhesive to glue the pigment to the surface of the wood. Because pigment particles are heavier than

the binder, they settle to the bottom of a can – which is why you have to stir these stains before using them. That big glob at the bottom of the can is a sure indicator that the can contains a pigment stain.

Pigment particles lodge in the pores and scratches on a wood surface, exaggerating grain differences. A pigment stain on oak tends to colour the early wood

Left photo: one coat, right photo two coats



Clockwise from top left: Minwax Water Based 'American Walnut'; Minwax Wood Stain 'English Chestnut'; Minwax Gel Stain 'Aged Oak'; Minwax PolyShades 'Antique Walnut'

pores more darkly than the denser latewood. However, on maple, the stain would be much less pronounced because the pores are so small.

Dyes

While pigments cover the surface of wood, much like paint, dyes are absorbed into the fibrous structure of wood. Dyes can also be natural or synthetic. Like pigments they require a carrier, but they don't use a binder. This is because dye particles, which are about 1/1000th the size of pigment particles, are dissolved in the carrier, while pigment particles are suspended in the carrier. Because dye particles are dispersed uniformly throughout the stain they don't have to be stirred. Like pigments, dyes can be dissolved in water, alcohol, petroleum distillates like naphtha, and in glycol ethers for non-grain raising (NGR) dyes. While natural dyes are prone to fading, modern synthetic dyes are quite fade resistant (when used indoors). The nice thing about dyes is that you can apply one colour directly on top another colour. You can purchase dyes as powders or pre-mixed in a solvent.

Chemical Stains

Sometimes you'll read about people using various chemicals to colour wood. These include potassium dichromate, ammonium hydroxide and sodium hydroxide. Most of these chemicals are both poisonous and caustic, so we recommend that you avoid them. There are so many pigment and dye stain colours available today that you'll certainly find the right one for your project.

Minwax Stains

I've been using Minwax stains for several years with great success. They come in several formats (water based, oil based, gel, and blended with a polyurethane finish. One of the things I particularly like is that they are available in a wide range of colours, and I find that the same colours are consistent from can to can.

While the **Minwax Water Based Wood Stain** is easy to use, I find that it dries too fast for anything but the smallest projects. It also raises the grain on many woods because the water penetrates the wood and raises the tiny fibers. I dampen the wood and then lightly sand it before applying the stain. One of the main benefits of this stain is that it is compatible under any finish.

Minwax's Wood Stain is an oil based pigment stain. This is the one I use most

regularly on flat, horizontal surfaces. It dries more slowly than water based stain, giving me more time to apply it, particularly on large surfaces like table tops. I find that it adds more depth to the wood.

Neither of the two stains already mentioned work well on vertical work, or for work with a lot of detail. For this I use **Minwax Gel Stain**. This is a great product that doesn't run, and seems to dry a bit slower than the Wood Stain. It's especially good for use on carvings and turnings. And, it's very easy to use – basically you rag it on, and rag it off.

Minwax PolyShades is a unique product, a pigment stain pre-mixed with polyurethane. The benefit of this product is that you do the staining and finishing together – an ideal proposition where time is of the essence. Of course you could still lay a couple of coats of polyurethane on top of this stain/finish for added durability.

Staining Tips

Staining wood is not difficult, just a bit messy sometimes. You can apply most stains with a brush or rag. It's important to note that different woods take stain differently. In fact, even one species of wood will take a stain differently depending on such factors as how the board was cut, the wood grain, and the relative density of the wood. Woods like pine, poplar, alder, and birch are notorious for blotching. For blotch prone wood I apply a thinned coat of shellac before I apply the stain. I also apply shellac on the end grain, which has a tendency to absorb stain like a sponge and darken much more than the surface.

It's a good idea to do a trial run on scrap pieces before you begin staining your project. You can experiment by diluting the stain with its solvent (typically mineral spirits) or laying on two or three coats of stain (allowing each coat to dry in between, of course).

You really want to stir the contents of the can thoroughly before applying the stain. It's important that all the pigment is dispersed in the liquid as opposed to sitting on the bottom of the can.

Generally, if a wood is very hard and dense, you should sand to a coarser grit than if the wood is soft and porous. If you sand maple to 220 grit it will absorb very little stain; better to sand the maple to 150 grit. However with oak I tend to sand to a higher grit, often 320.

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Drum Sander

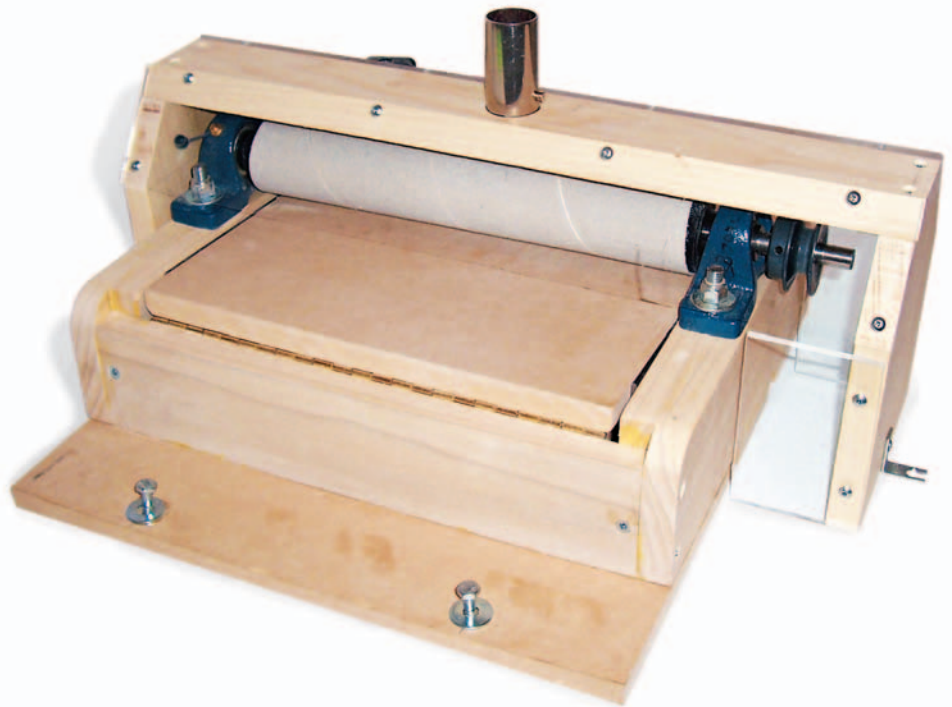
I build model ships, and prefer to use thin pieces of exotic wood to add colour, rather than painting the ships. While I could mill the wood I need, I did not own a thickness sander, and had to sand all the parts by hand. I found that a commercial sander would be much too expensive, would take up a great deal of shop space and would be difficult to use for the shorter and thinner pieces needed to build models. I chose to build a sander to fit my needs. It is small and light, I can bolt it to the top of a workbench, and the motor can be interchanged with other machines. A dust hood collects most of the dust when attached to a vacuum cleaner, and serves as a shield around the moving parts of the machine.

The Frame

- The frame is built in a U shape, and consists of two arms (A) and a cross piece (B).
- Cut the parts for the arms: two pieces of 3/4" x 3 1/2" poplar that are 11 1/4" long and two that are 12" long.
- Laminate each 11 1/4" piece and a 12" piece so that you have a rabbet at one end to accept the cross piece (B).
- Cut the cross piece 2 3/4" x 13 3/4".
- Glue and screw the cross piece into the



Adjustable bolt and thickness gauge



- Position the pillow blocks (F) so that they sit on top of the frame arms about 7" from the cross piece. Mark the location for 3/8" x 5" carriage bolts to attach the pillow blocks to the frame. Use a drill press to keep these holes perpendicular and centered.
- Set these parts aside for the moment, as you will mount the pillow blocks after the frame is completed.

The Moveable Plate

- Cut the moveable plate (C) from 5/8" MDF or plywood.
- Attach an 11 1/2" length of 1 1/4" piano hinge (D) to one of the sides of the plate using #8 - 5/8" pan head screws.
- Cut three lengths of 3/4" angle iron (E), two pieces 10" and one 8 1/2".
- Drill holes on one side of the angle iron to accommodate #8 x 5/8" pan head screws.
- Chamfer the two bottom edges of the plate that will be in contact with the angle



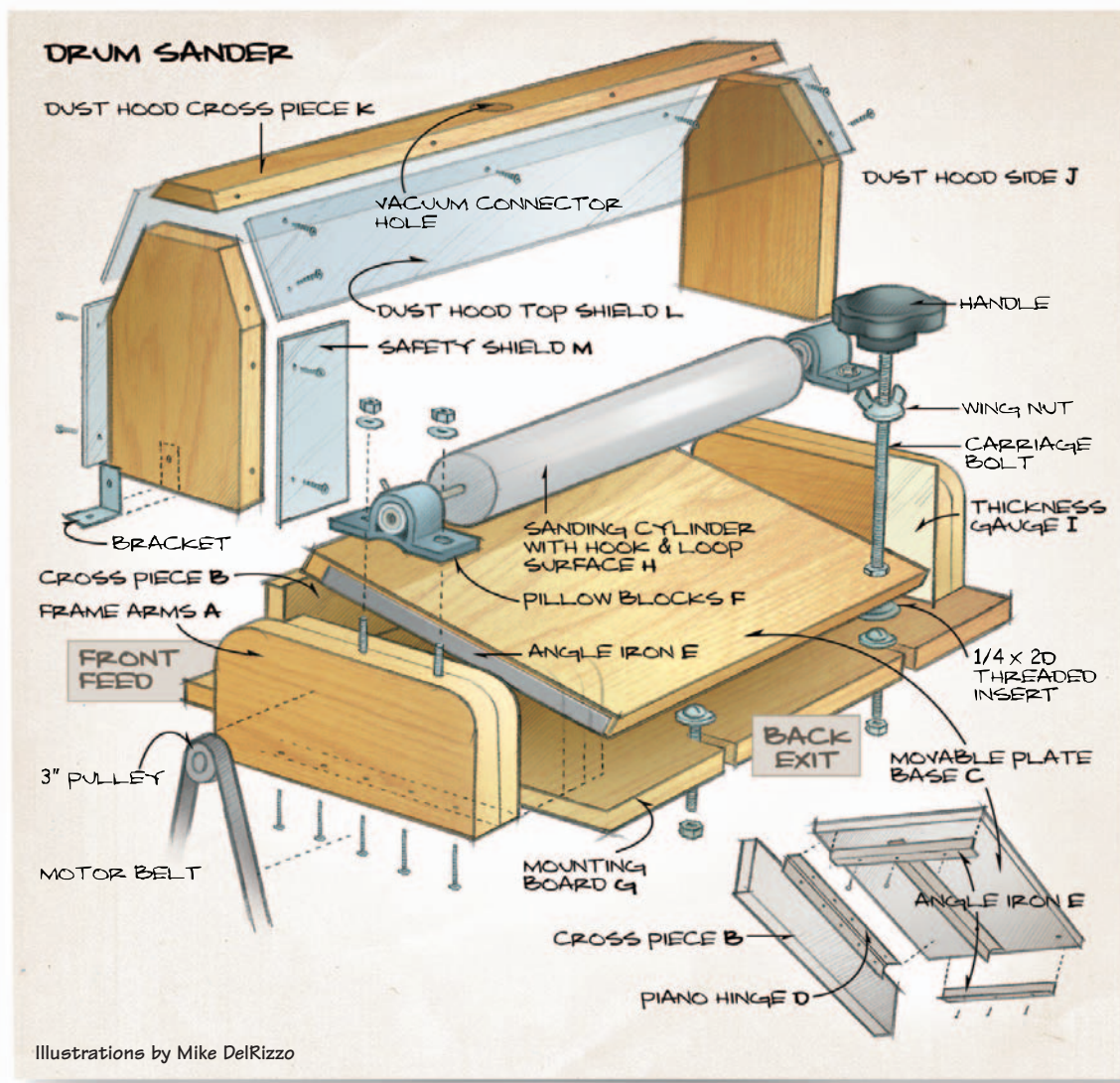
Completed sander from exit end

into the face of the plate, not into the edges.

- Screw the 8 1/2" angle iron to the other side of the plate, flush with the piano hinge.
- Screw the other 10" piece of angle iron so that it runs across the plate, about 6" from the piano hinge.

Assembling the Adjustable Bolt

- On the left corner of the moveable plate, in front of the 8 1/2" angle iron, and about 1" from the end of the plate, drill a 5/16" hole.
- Install a 1/4" x 20 threaded insert into the hole.
- Screw a 1/4" x 5" carriage bolt through the insert from the bottom of the moveable plate so that you have a couple of inches of thread showing on the top side.
- Add a washer, a wing nut and a plastic handle to the end of the bolt.
- Screw the plastic handle down on the bolt far enough so that the threads show well above the handle.
- Peen the end of the bolt with a hammer.
- Twist the handle back over the peened end of the bolt – this will ensure that the handle does not come off. For added insurance you can add a few drops of cyanoacrylate (CA) glue on the threads. It is important that this handle will lock onto the carriage bolt and turn the entire assembly.
- Center the moveable plate in between the arms of the frame and attach it to the piano hinge using #8 x 5/8" screws. Ensure that the bottom of the plate (the side with the angle iron) faces down.



Illustrations by Mike DelRizzo

- Make sure that the plate moves freely up and down between the frame sides.

The Mounting Board

- Cut the mounting board (G) from 5/8" MDF or plywood.
- Drill two bolt holes in each end of the mounting board, about 1" from the end.
- Epoxy two 7/16" washers over the holes. The 1 1/2" machine bolts will extend through these holes to fasten the sander to your workbench.
- Cut slots into the washers and the mounting board to enable the sander to slide into place.

Attaching the Frame to the Mounting Board

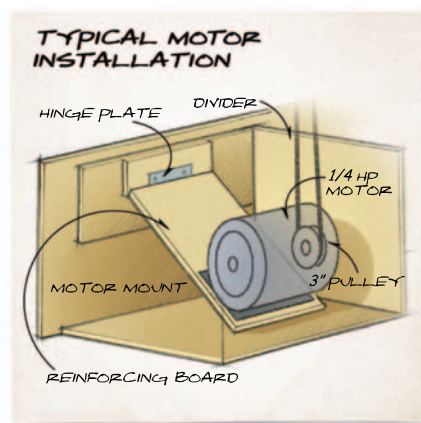
- Place the frame on the mounting board, 3" in from the end of the board with the mounting holes. There should be about 1" of the board showing at the other end.
- Glue the frame to the board, and then turn over and secure it with #8 - 2 1/4" flat head wood screws. You can use masking tape around the frame to facilitate glue cleanup.

Attaching the Pillow Blocks

- Position the sanding cylinder (H) on the pillow blocks (F) so that the long axle of the cylinder will be on the side where you are going to have the belt drive. Attach the pillow blocks to the frame arms (A), with 3/8" x 5" carriage bolts.
- Secure the pulley on the longer axle in line with the pulley on the motor. I have found that the sander works more efficiently when you slow it down by using a

3" pulley on the cylinder and a 1 1/2" pulley on the motor.

- Make sure that you use either lock nuts or lock washers on the bolts that secure pillow blocks so that they will not vibrate loose. If you ever need to sand thicker wood, it will be easy to raise this part of the assembly by putting shims under the pillow blocks.
- Be certain to file flat spots on the axles and tighten all the set screws to secure this very important piece in place.



Attaching the Sander to Your Workbench

- Mount a motor under your work table, and cut out an access hole for the V-belt. I used a 1/4HP motor that I also use for other shop machines.
- Align the motor and the sander, and mark the location of the four holes at the ends of the mounting board.
- Install four 1/4" x 20 inserts into the top of the workbench and attach the sander securely to the bench top. Attach the V-belt to the motor under the workbench.

Safety Notes

When you first begin to use the sander do not attempt to sand off too much wood at a time. As with any power tool, the operator must be ever alert to prevent accidents from happening. Always push the wood through the sander while standing at the side. Under no circumstances should you stand at the end to push material into the sander. If you take your hand off the wood for a split second, the wood may be propelled from the machine with a dangerous force.

Operating the Sander

- Wrap a length of hook and loop sandpaper around the sanding cylinder.
- Before turning the sander on, ensure that the motor is turning in a clockwise direction.
- Stand at the side and turn the sander on.
- Feed wood through the sander slowly, pushing the wood from the feed end until you can pull the piece the rest of the way from the opposite end of the sander. You

will have to practise this so that you can do a complete length in one smooth motion. It is important that you do not stop pushing at any point or you will sand grooves in the wood surface. The minimum length you can sand using the dimensions in this article is about 14". This means that the piece you are sanding will extend slightly over the end of the moveable plate while you are pushing it from the front.

Building the Thickness Gauge

- The first wood that you need to sand will be for the thickness gauge (I).
- Cut a piece of hardwood somewhat thicker than 1/8" and at least 1" wide and 14" long.
- Sand the piece to 1/8" thick.
- Cut off a piece about 4" long.
- Rubber cement unlined paper to the front of the gauge and attach it to the inside of the frame (A) in the space that is between the moveable plate and the side.
- Sand a piece of wood to the largest thickness you think you will need; then,

after each pass through the sander, check the thickness of the wood with a micrometer. When you are satisfied that you are close enough to the thickness that you regularly use, follow the edge of the moveable plate and draw a line on the gauge exactly in line with the edge of the plate.

- Continue doing this in 1/16" increments until you have marked most of the thicknesses that you will need.

Dust Collector Hood

If you used your sander to mill the wood for the gauge, you know how much dust is created. The dust hood enables you to collect the dust, and provides a safety shield around the belt drive.

- Obtain a suitable connector for your vacuum hose. I obtained a used wand section from a Hoover repair depot. Note: If you are using a connector larger than 1 1/4", you will have to make the cross-piece and the tops of the dust hood end pieces somewhat wider than specified in this project.

- Cut the two dust hood sides (J) and the dust hood cross piece (K).

- Cut a bevelled angle on the top of the sides, 5 1/2" from the base and 1 1/4" from the side.

- Cut the edges of the cross piece to match the angle on the sides.

- Drill a hole in the center of the cross-piece to accommodate the vacuum fitting, and secure the fitting with a small screw.

- Screw the cross piece on to the ends.

- Cut two pieces of 3/16" (4.5mm) Plexiglas (L) 3 1/2" x 20", and screw them in place on the front and back of the dust hood with #8 - 3/4" pan head screws. You can replace the Plexiglas with 1/4" wood, but you will not be able to see the sanding cylinder as you work.

- Attach the dust hood to your work table using 1" right angle brackets. Make sure that there are no screws protruding on the underside of the hood that will catch the sandpaper when the machine is in use.

- Cut two pieces of Plexiglas (M) approximately 3" x 4 1/2" and screw them to the dust collector sides so that the belt and pulley will be covered when the machine is in use.

Congratulations! You now have a drum sander that will give you many hours of productive use.

Pillow blocks, sanding cylinders, related hardware available at:

Stockroom Supply
www.stockroomsupply.com
1-877-287-5017



PHIL MAIN
pmain@golden.net

MATERIALS LIST

- A 2 Frame arms made from 4 pieces**
2 - 3/4" x 3 1/2" x 12"
2 - 3/4" x 3 1/2" x 11 1/4"
- B 1 Cross piece**
3/4" x 2 3/4" x 13 3/4" poplar
- C 1 Movable plate base**
5/8" x 11 3/4" x 11 3/4" mdf or ply
- D 1 Piano hinge**
1 1/4" x 11 1/2"
- E 2 Angle iron**
3/4" x 10"
1 Angle iron
3/4" x 8 1/2"
- F 2 Heavy duty pillow blocks**
- G 1 Mounting board**
5/8" x 15 1/4" x 16" mdf or ply
- H 1 Sanding cylinder with hook & loop surface**
- I 1 Thickness gauge**
3/16" x 1" x 14" hardwood
- J 2 Dust hood sides**
3/4" x 5 1/2" x 7" poplar
- K 1 Dust hood cross piece**
3/4" x 3" x 20"
- L 2 Dust hood top shields**
3/16" x 3 1/2" x 20" plexiglas
- M 2 Safety shields**
3/16" x 3" x 4 1/2" plexiglas

HARDWARE LIST

- 10 Flat head wood screws**
#8 x 1 1/4"
- 8 Flat head wood screws**
#8 x 1 1/2"
- 10 Flat head wood screws**
#8 x 2 1/4"
- 24 Pan head screws**
#8 x 5/8"
- 5 Threaded inserts**
1/4" x 20
- 1 Carriage bolt**
1/4" x 5"
- 6 Flat washers**
5/16"
- 1 Wing nut**
1/4" x 20
- 1 Plastic threaded handle**
1/4" x 20
- 4 Carriage bolts**
3/8" x 5"
- 4 Flat washers**
7/16"
- 4 Hex nuts with nylon insert**
3/8"
- 2 1" Right angle brackets**
- 6 Machine bolts**
1/4" x 1 1/2" x 20
- 1 Sanding cylinder with hook & loop surface**
1 1/2" x 12"
- 1 1/2" and 3" pulleys**
Assorted grades of 3" hook and loop sandpaper

Laminate Trimmers

Laminate trimmers (also called trim or palm routers) are the mighty mouse of the router kingdom. While they excel at trimming laminates and veneers, you'll find that they are suitable for a surprising amount of routing work. I use mine for cutting hinge mortises, for inlay and pattern work, cutting butterfly keys, trimming edge banding, cutting narrow rabbets and dadoses, in fact, where ever I need a high degree of accuracy and precision for light routing.

What makes laminate trimmers so great is their convenience, versatility, and light weight. They are so light that you can use one for an extended period of time without fatigue. They are very easy to manoeuvre and their small base is ideal for getting into tight spots. You'll also find that they are a lot quieter than their larger cousins.

Essentially, laminate trimmers are fixed based routers designed to be used single-handed. All have 1/4" collets, and no-load speeds of between 20,000 and 30,000 RMP. Motors vary from 3 1/2 to 6 amps, and weights vary from 3 to 4 pounds.

Various models offer a range of accessories that will be relevant to you depending upon the type of work you do.

The Ridgid R2400

I've been using the Ridgid R2400 in my shop for the past 6 months. It's a very capable trimmer that has some nice features. The R2400's variable speed permanent magnet 6 amp motor runs between 20,000 and 30,000 RPM, which I like, as not all bits need to be driven at top speed. Soft start is a real plus. It generates less mechanical stress on the router and delivers improved power. Advanced circuitry senses the motor load and adjusts power to maintain bit speed. The generous 12 foot power cord, with a light on the plug (so you know when it's juiced up), is plain smart design. So is the Velcro strip that makes for a tidy job of storing the power cord. The recessed, toggle style power switch is conveniently located on the top of the unit (as is the variable speed

dial). If you have smaller hands you'll really like the light weight and excellent balance of this trimmer.

The R2400 employs a thumb operated geared roller and plastic lock-nut to effect height adjustments. While it works well, I would have preferred a precision micro adjustment system. Trying to move the head up or down 1/64" with your thumb is a bit of a hit and miss affair. The motor housing travels approximately 1 5/8" along the sleeve, which isn't too bad. In order to remove the housing from the sleeve (which you have to do each time you change cutters) you have to squeeze the lock-nut. I find that a bit of a nuisance. As with most trimmers, it takes 2 wrenches to change bits. A wrench-less bit change system would be nicer.

The bit clearance hole on the clear base is 1 1/8" diameter – a tad on the small side. I replaced the base with a piece of lexan, and gained an extra 1/4" in diameter, allowing me to use some of my wider profile bits. However, if you use this router exclusively for trim work, it's a moot point.

The R2400 comes with both edge and bearing guides that mount on a pair of steel bars that you thread into the base of the unit. Both of these work very well. Lastly, replacing brushes (likely a once in a lifetime experience) is easily accomplished via the externally located brush cap.

For the finish carpenter, DIYer or part-time woodworker, the R2400 is an excellent buy. In fact, if you're new to



woodworking I would highly recommend it as a first time router. Once you get proficient with it, you can move on to a mid-sized router. Ladies, you'll like the good balance, light weight and relatively low noise on this router. For dedicated or professional furniture makers the only point of contention might be the lack of a precision micro adjustment system. The 3 year warranty is a real bonus. And at \$119, with case, guides and a 1/4" flush trim bit, this is a very affordable unit. This is a very affordable unit. Available from Home Depot. For more information, www.ridgid.com

- CWM

Laminate Trimmers and Accessories also available at:

Busy Bee Tools

www.BusyBeeTools.com 1-800-461-2879

Global Tools and Equipment

www.GlobalTools.com 1-800-265-3335

House of Tools

www.HouseOfTools.com 1-800-661-3987

King

www.KingCanada.com 1-800-361-4482

KMS Tools and Equipment

www.kmsTools.com 1-800-567-8979

Morley Miller Machinery

www.MorleyMillerMachinery.com
519-448-1361

Tegs Tool and Machinery

www.TegsTools.com 905-545-5585



Cutting Board

This cutting board, with the end grain showing on top, harkens back to the old style butcher block.

Having the end grain exposed makes for a much more durable cutting surface. To create a contrasting design element, I used both maple and cherry for the board. If you can't find cherry you can use red oak or any other contrasting hardwood. However, avoid using softwoods such as pine or fir. I have also included a groove around the edge for easy lifting.

The cutting board is made from slices of glued-up boards that are re-oriented, then glued together again.

The first step is to cut the strips of wood. From the maple board, rip four 1 1/2" pieces and one 3/4" piece. From the cherry board, rip three 1 1/2" pieces.

Lay out the strips ensuring that the 3/4" piece of maple is on one end, and the other pieces are laid out as shown in the accompanying photo. This will create the mosaic pattern for the board.

Apply a generous amount of waterproof wood glue (such as Titebond III) to the mating edges, smoothing the glue to ensure it covers the entire surface. Clamp the strips together, making sure they lay flat and that the top surface is flush along

the entire glued-up board. This is important to reduce the amount of surface planing you have to do in order to create a smooth surface.

After half an hour, scrape off any dried up glue, but don't remove the clamps. Let the glued up board cure overnight.

Run the assembled board through a thickness planer, taking off only 1/32" at a time until you have a smooth surface. Repeat for the other side. Don't take off any more than required. (Note: if you don't have access to a thickness planer you can use a belt sander or a jack plane).

Trim one end of the assembled board square on your table saw. Set the rip fence 1 1/2" from the blade and use it as a guide

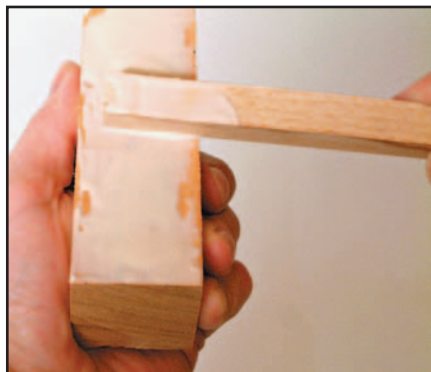
to cross-cut the board into 1 1/2" wide strips. Use a push-stick and blade guard for safety. Discard the last piece, which will be less than 1 1/2" wide.

With the strips cut, you can now assemble them into the cutting board. Flip every second strip end-for-end to alternate the joints and create the pattern with the cherry strips. Once the strips have been positioned, apply glue to the matching surfaces. Clamp the strips together, making sure they are flush on the sides and on the top surface. Use a clamp every 4" to 6".

Again, remove dried up glue after half an hour, then let the block dry overnight. Trim the ends on the table saw or with a hand plane. No matter how carefully you glue the strips together they will be slightly uneven. Smooth the top and bottom surface of the cutting board with a random orbital sander or belt sander. Start with #50 grit to take care of the most uneven parts,



Lay out strips with sawn edges facing up



Apply glue liberally and smooth over to avoid gaps



Position, glue, and clamp flush



then work your way through #80 and #120, finishing with #150 sandpaper. Brush dust off the surfaces between grits.

To make the finger groove around the cutting board, set up a 3/4" bullnose bit on your router table so that it extends 1/4" from the top of the table and position the fence so the bit is exactly centered on the width of your cutting board. Carefully rout around all four edges of the cutting board to form the finger grip.

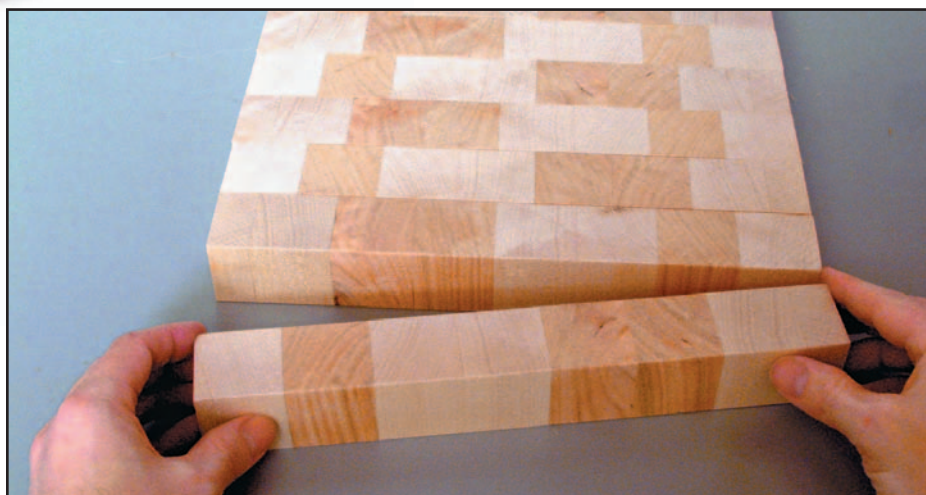
Sand the edges of the cutting board, knocking off the sharp edge on the top and bottom.

Cut each of the four corners at 45°, 3/4" in from the end, in order to eliminate the sharp corners. Sand the cut ends smooth.

Be sure to use a food friendly finish. I recommend you apply a liberal coating of vegetable or mineral oil to all surfaces of the cutting board and allow it to soak in for several hours. Wipe clean. Repeat periodically to maintain protection.



MICHEL THERIAULT
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Re-position cut strips to create pattern



For easy lifting, rout groove



Glue and clamp flush

MATERIALS LIST

- 4 Maple strips
1 1/2" x 1 1/2" x 21"
- 1 Maple strip
3/4" x 1 1/2" x 21"
- 3 Cherry strips
1 1/2" x 1 1/2" x 21"

SUPPLIES

Waterproof wood glue
Vegetable or mineral oil
Sandpaper (50, 80, 120, 150 grits)

TOOLS & EQUIPMENT

Table saw
Thickness planer, belt sander or jack plane
Random orbital sander
Router (preferably table mounted)
Clamps, with 16" clamping capability
3/4" Bullnose router bit



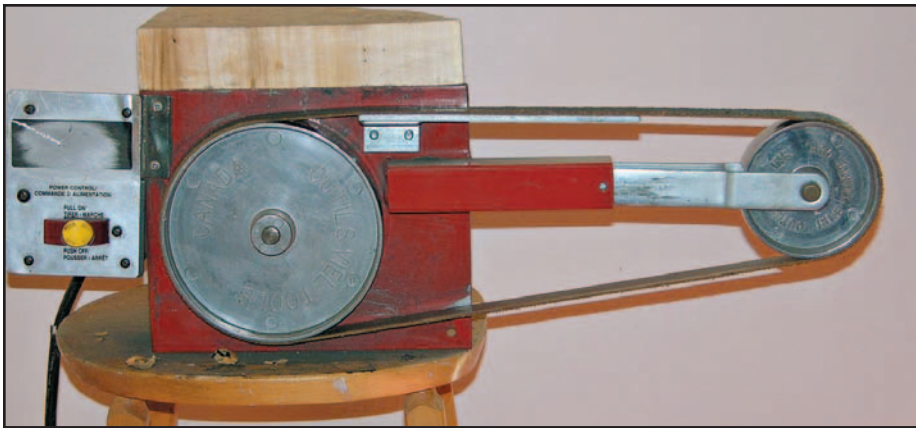
Sharpening for Carvers

Without a doubt, "sharpening" is a skill that many carvers (and other craftsmen who work with wood) pursue endlessly with varying degrees of success. Until a carver finds "the method", hours of extra hard labour and frustration are inevitable. Ultimately, many people simply stop carving because their tools just don't work.

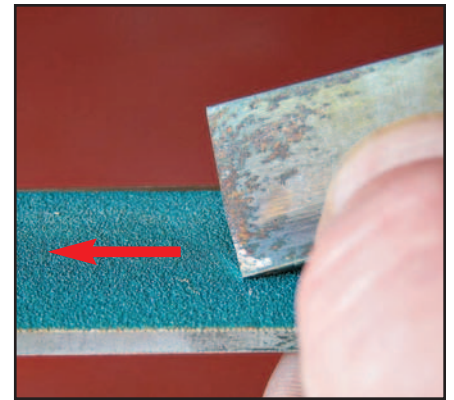
After years of practice and experimentation, I have found a technique that is simple and effective. Moreover, it is based on logic. This is the theory: a **flat bevel** is essential to creating and retaining a sharp cutting edge. If a tool is sharpened with any rounded surface (ie. a wheel), no matter how great the radius, some hollow grind will result. The cutting edge will be very sharp initially. However, subsequent honing, intended to retain its sharpness, will actually blunt the edge.

By establishing a flat bevel, all subsequent honing will repeatedly refine the cutting edge without any blunting. I have found that a belt-sander with a suitable selection of belts works beautifully.

"Sharpening" is a process that actually involves three steps: **grinding, sharpening and honing**. Grinding shapes the surface of the tool. Sharpening removes major imperfections from the cutting surface. Honing establishes the final and desired cutting edge.



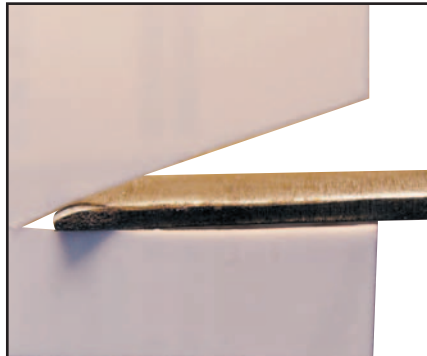
Modified 1 inch belt sander



When grinding ensure the belt rotates away from cutting edge



Begin by establishing a new cutting edge



A plastic guide helps you to see when you have obtained a 15° bevel



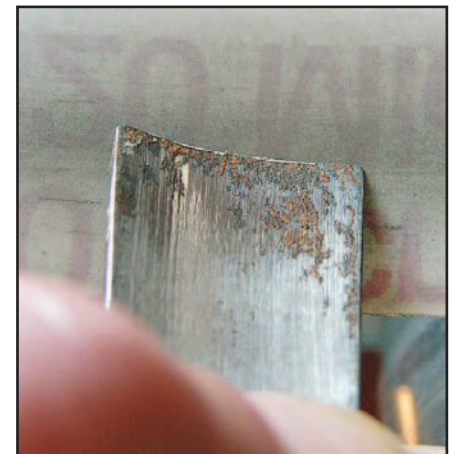
When grinding ensure you retain a straight edge



Grinding is complete when tinfoil burr appears



Remove burr in wood block



Sharpen in "soft" area of 20 micron belt



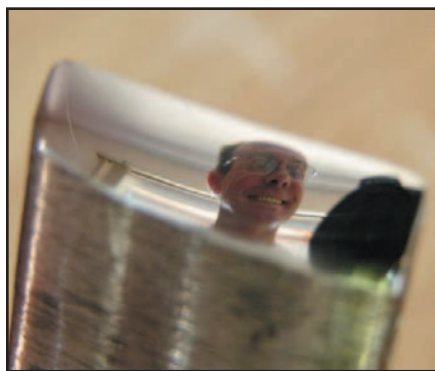
Sharpening creates a finer cutting edge



Apply lots of pressure for honing



The surface of a sharpened gouge



Honing creates a highly reflective surface

Grinding a Shape

For many, the first action is the hardest. To see what you are doing, you must first blunt the cutting edge of the tool. Do this by pressing the tool vertically onto the belt sander. By doing so, a reflective surface is created. I sharpen my tools at an angle of approximately 15° and make a guide from a plastic margarine bucket lid.

Now that there is a visible edge, the goal is to grind it away at the desired angle until the flat, reflective surface disappears. I do this grinding freehand; however, it would be much more consistent to make a bracket upon which you could rest the tool and ensure a precise angle. When grinding, ensure that the belt is always moving **away** from the cutting edge.

For grinding, I use a 120 grit belt and apply very light pressure because this belt is quite aggressive. As soon as the reflective surface has disappeared, a burr that looks like a thin line of tin foil will be created (notice the grooves made by the 120 grit belt). To remove the burr on the cutting edge, thrust the gouge

HOLLOW GRIND



HONING WILL BLUNT TIP

FLAT BEVEL



HONING WILL RETAIN SHAPE

Illustration by Mike DelRizzo

vertically into a block of wood and rock the tool to-and-fro. When the end of the gouge no longer reflects light and the desired cutting angle has been established, the grinding step is complete. Remember: the goal is to remove the reflective surface – this requires careful and patient effort, flat tip while retaining the straight edge of the gouge - this requires care and patience.

Sharpening the Tool

The "sharpening" step refines the shape created with grinding, and establishes a finer cutting edge. I use a 20 micron belt for this purpose. In my belt-sander, there is an area between the flat surface and the pulley wheel where the sanding belt is unsupported. This is the area I use for sharpening. I hold the gouge perpendicular to the belt. Using light pressure, the coarse grooves made by the 120 grit grinding belt are removed and a much smoother surface is achieved.

Honing the Cutting Edge

With a flat bevel and a well-prepared surface, an exceptionally sharp cutting

edge can now be established by honing. I use a leather belt thoroughly coated with green chromium oxide (jeweler's rouge). For honing, you can use as much pressure as you like because the leather belt carries heat away and the tool will not overheat. The belt should be turning **away** from the cutting edge. The result is a highly reflective surface and a keen cutting edge. As a final step, I polish the inside of the gouge using a cloth wheel coated in chromium oxide.

A Final Word

You may have heard the expression "One is cut more often with a dull tool than with a sharp one!" This is true because a dull tool requires extra force to cut. Sharp tools will reduce your effort significantly, will give much greater control, will result in a better carved-surface, and will enable you to make the precise cuts you desire.



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Contractor Style Table Saws

A "contractor" saw is generally a 10" table saw with an open stand and outboard motor. The motor hangs out the back and drives the arbor with a belt. It is called a "contractor" saw because it can be loaded into a truck for on-site work, although this is a bit of an exaggeration. While a contractor saw is lighter than a full-sized cabinet saw, it can still weigh upwards of 300 pounds. It would take three strong contractors to lift it out of a truck!

Why a Contractor Saw?

If you're serious about woodworking, a table-top portable saw will frustrate you very quickly. They are great machines for portability, but the small table size, under-powered motors, poor quality fences and other accessories leave much to be desired.

On the other end of the scale is a full-sized cabinet saw. These are typically large saws, weighing in at around 600 pounds. Most have 3 HP motors and some even 5 HP. But a cabinet saw is beyond the budget of many hobbyists and is certainly not essential. A good quality contractor saw will do anything a cabinet saw can do, except for ripping 3" thick maple boards all day long.

These days many manufacturers are making what they call "hybrid" saws. These saws fit somewhere in between the contractor saw and the larger cabinet saw.

You get some of the benefits of a cabinet saw, and retain many of the advantages of a contractor saw.

Typically, hybrid saws offer an enclosed base to help improve dust collection. This can be a full enclosure as found on a cabinet saw or a shorter cabinet on legs. The extra weight of hybrid saws lowers vibration, and offers more choice in drive mechanisms, including single and multiple v-belts and serpentine belts. You'll find that some hybrid saws have cabinet-mounted trunnions while others offer table-mounted trunnions. Some even offer sliding tables as an option to improve cross cutting capability. We can expect to see more of these kinds of saws on the market with an ever increasing array of options.

Features to Look For:

Table Top and Wings

A quality contractor saw has a cast iron table top, about 27" deep by 20" wide – about 40" wide including "wings" on

either side. Cast iron wings are great to have, but stamped steel wings are still workable. Avoid wings with holes through them (like a honey-comb structure), as small parts easily fall through them. The openings also give you places to get your fingers caught, especially when moving your fence back and forth.

Most contractor saws also have T-style mitre slots. A washer connected to the underside of the mitre gauge engages in the T-slot, making it impossible for the mitre gauge to fall off the table when you pull the head off the front of the saw. A table saw without a T-slot style can be a nuisance to use.

Also, look for a table saw with a thick table insert. Some are made with such a thin steel plate that it is impossible to make your own zero-clearance inserts using plywood or plastic composites. Zero-clearance inserts are commercially available for some of the more common brands, such as Delta and General International.

Once you start cutting larger sheet goods, or cross-cutting longer boards, you'll want to consider an extension table as well. It should be on the right of the saw if you are right handed – the left if you are left handed.

Stand

Most contractor saws have an open stand. The sawdust falls through the bottom onto the floor and also collects inside the stand around the edges. Occasional vacuuming inside the stand helps. Open stands make it hard to collect sawdust with a dust collector, although plans for boxing in the base are available in woodworking books and on the Internet. There are also table saw "boots" available, which block off the back of the saw and collect the dust in a bag below.

Motor

Motors are a controversial issue these days. While North American made motors were once more common, most brands are now using off-shore motors. Not that an off-shore motor can't be of decent quality, but most users agree that you are better off with a high quality, known brand. I would choose a saw with a North American-made motor, given the choice.

Be aware that it is common these days for equipment manufacturers to overstate the horsepower of motors. Some brands have been known to call their contractor saw a 2 HP model, when the actual HP is barely half that! Horsepower can be measured in different ways and there are no accepted norms for how it is stated on the motor plate. Amperage, however, must be correctly stated. If you multiply the amperage of the motor by the voltage you are running it on (120 or 240 volts), the result is wattage. And 746 watts equals 1 HP. So a motor drawing 12.9 amps at 120 volts, gives a wattage of 1,548. Divide that by 746 watts and we get 2.1 HP. That number will actually be less because motors don't run at 100% efficiency. If the efficiency rating is 75%, then we get an actual HP of about 1.6. So when comparing motors, buy the motor that draws 13 amps instead of 10, and make sure you're also comparing apples with apples in terms of efficiency ratings. If you can't get that information from the manufacturer, then stick to brand name North American motors and feel more confident about it.

The overstating of real working horsepower is a huge problem in the industry. It is not just related to table saws, but also routers, bandsaws, shop vacs and just about anything else with an electric motor in it.

Blade Guard

One of the most common stories I hear is that people throw away their blade guards as soon as they buy their table saw. The next most common story I hear is that they

have cut off some fingers while ripping on their table saw without a blade guard!

The blade guard is an essential part of every table saw. The clear guard protects your hands from accidentally touching the blade and deflects sawdust towards the table instead of into your face. The anti-kickback fingers are to prevent a board from being shot at you should a kickback be in progress. Do not count on them to save you, as they only work some of the time.

The most important safety component of a blade guard is the splitter, which is the piece of metal running into the saw table directly behind the blade. Correctly positioned, it will actually prevent kickback from occurring in the first place. Learn to properly set up your splitter and you can count on increased safety and more enjoyment in using your table saw. If you decide to replace the stock blade guard with another system such as a riving knife or metal pin, first understand how these replacements work and realize that some of the other benefits of the manufacturer's blade guard will be missing.

Fence System

Fence systems have gotten so much better over the past decade. It surprises me to see the effective after-market fence systems now available at relatively reasonable prices. Still, if you choose the right saw you should receive a very good fence system as part of the package. Look for a single rail system that runs smoothly, locks down tightly and has a needle-thin cursor and easy-to-read scale. In my opinion, simpler is better when it comes to a user friendly fence.

Right Tilt vs. Left Tilt

We could argue all day long about whether a left tilt or right tilt table saw is preferable, and there is no shortage of reading material on the subject. You should buy whichever one you are most comfortable with. You will learn to work around the differences and risks in either case. For what it's worth, I use a right tilt table saw in my workshop. And I believe a right-handed woodworker should rip to the right of the blade, crosscut to the right of the blade and use a right-tilt saw. But then, that's just one woodworker's opinion.

My regular machinery supplier, which is one of the largest dealers in Ontario, says that only about 5% of their table saw sales are left tilt. Shocking, really, when you read all the hype about how left tilt saws are better and safer.

Safety First

Whichever contractor saw you decide to buy in the end, just remember one thing. Safety always comes first. Look for the best saw you can afford and focus your attention on safety features first. Then look at power, convenience and other factors.

Contractor Saws, Blades and Accessories Available at:

Busy Bee Tools

www.BusyBeeTools.com
1-800-461-2879

Elite Tools

www.elitetools.com 418-830-0124

General

www.General.ca 1-888-949-1161

Global Tools and Equipment

www.GlobalTools.com 1-800-265-3335

House of Tools

www.HouseOfTools.com
1-800-661-3987

King

www.KingCanada.com 1-800-361-4482

KMS Tools and Equipment

www.kmsTools.com 1-800-567-8979

Lee Valley

www.LeeValley.com 1-800-683-8170

Mark's Machinery

www.MarksMach.com 613-831-8047

Morley Miller Machinery

www.MorleyMillerMachinery.com
519-448-1361

Mule Cabinet

www.mulecab.com 1-877-684-7366

SawsAndTools.com

www.SawsAndTools.com 416-251-8131

The Saw Shop

www.thesawshop.com 1-877-778-5585

Tegs Tool and Machinery

www.TegsTools.com 905-545-5585

Viel Tools Inc.

800-463-1380



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RYOBI

DELTA

CRAFTEX (Busy Bee)

Model No.	BT3100	36-680	B2397
Price	\$399.00	\$599.00	\$645.00
Warranty	2 Years	2 Years	2 Years
Base Style	Sheet Metal, Open	Sheet Metal, Open	Sheet Metal, Open
Arbor	5/8" Right Tilt	5/8" Right Tilt	5/8" Left Tilt
Arbor Tilt Type	Manual Slide	Hand Wheel, Worm Gear	Hand Wheel, Worm Gear
Drive	Triple V-Belt	V-Belt	Belt Drive, Outboard
Power	15 Amp	1 1/2 HP	2 HP
Motor	120v	120 / 240v	220v Single Phase
Motor Speed	4,800 RPM	3,000 RPM	3,400 RPM
Motor Position	Inboard	Outboard	Outboard
On/Off Switch	Flip with Safety Key	Paddle Style, Up Front	Safety, Up Front
Table Material/Size	7 1/4" x 22 1/4" / Powder Coated Aluminum	54" x 27" / Cast Iron	27" x 40" / Cast Iron Precision Ground
Extension(s)	Left and Right, Sliding	Left and Right, plus 2 wings	Cast Iron, Open Grid
Depth of Cut	3 9/16" at 90°, 2 1/2" at 45°	3 3/8" at 90°, 2 1/8" at 45°	3 3/8" at 90°, 2 1/2" at 45°
Rip Capacity	30" to Right, 31" to Left	50" to Right, 13 1/2" to Left	30" Right Only
Mitre Gauge	Integrated Oversize Sliding with Front Extension	Deluxe with Positive Stops	Precision Aluminum 'T' Slot with Positive Stops
Rip Fence	Triple Axis, Self Aligning 'T' Type	Delta 50" 'T' Square System	Align-A-Rip 'T' Type, Lever Lock with Optical Cursor
Blade Guard	Clear with Anti-Kickback Pawls	See-Through with 'Stay Up' Feature	See-Through with Anti-Kickback Pawls
Sawdust Collection	None	None	None
Weight	107 lbs / 48.5 kg	234 lbs / 106 kg	267 lbs / 120 kg



KING CANADA

Model No.	KC-10GC/KRF-1025
Price	\$699.00
Warranty	1 Year
Base Style	Sheet Metal, Open
Arbor	5/8" Right Tilt
Arbor Tilt Type	Hand Wheel, Worm Gear
Drive	V-Belt
Power	2 HP, 18 Amps
Motor	110v / 220v, Dual Capacitor, Pre Wired for 220v
Motor Speed	4,500 RPM
Motor Position	Outboard
On/Off Switch	Front Mounted Pin Locking
Table Material/Size	40" x 27" Including Extensions / Cast Iron
Extension(s)	2 - Cast Iron
Depth of Cut	3 1/2" at 90°, 2 1/8" at 45°
Rip Capacity	30" to Right, 12" to Left
Mitre Gauge	"T" Slot with Positive Stops
Rip Fence	Tru-Rip, "T" Type Fence
Blade Guard	See-through with Anti-Kickback Pawls
Sawdust Collection	4"
Weight	275 lbs / 125 kg

RIDGID

Model No.	TS3650 (Hybrid)
Price	\$799.00
Warranty	3 Year Service Warranty, 90 Day Return
Base Style	Sheet Metal, Open with Herc-U-Lift Mobility System
Arbor	5/8" Right Tilt, Cast Iron
Arbor Tilt Type	Manual Slide
Drive	Poly-V Belt
Power	1 1/2 HP
Motor	120v / 240v 13 / 6.5 Amps Pre-wired for 120v
Motor Speed	3,450 RPM
Motor Position	Outboard
On/Off Switch	Totally Enclosed Fan Cooled
Table Material/Size	Paddle Type, Safety 20" x 27" / Cast Iron
Extension(s)	2, 12" x 27" with Clamping Surface
Depth of Cut	3 3/8" at 90°, 2 1/4" at 45°
Rip Capacity	36" to Right, 12" to Left
Mitre Gauge	"T" Slot with Positive Stops
Rip Fence	Self-Aligning 'T' Type with Micro Adjust
Blade Guard	Clear Plastic with Anti-Kickback Pawls
Sawdust Collection	2 1/2" With a Blade Shroud
Weight	287 lbs / 130 kg

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Model No.	CWD 16-300+30530
Price	\$799.00
Warranty	Limited Life Time
Base Style	Sheet Metal, Open
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Arbor Tilt Type	Hand Wheel, Worm Gear
Drive	V-Belt
Power	2 HP, 15 / 7.5 Amps
Motor	115v / 230v Pre-wired for 115v
Motor Speed	3,450 RPM
Motor Position	Outboard
On/Off Switch	Up Front Push Button, Rail Mounted
Table Material/Size	27" x 40 1/2" Cast Iron
Extension(s)	2, Cast Iron
Depth of Cut	3 1/8" at 90°, 2 1/8" at 45°
Rip Capacity	30" to Right, 10" to Left
Mitre Gauge	"T" Slot with Positive Stops
Rip Fence	30" Align-A-Rip "T" Type Cam Lock
Blade Guard	See-Through with Anti-Kickback Pawls
Sawdust Collection	4" with Collection Hood
Weight	280 lbs / 127 kg



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Arbor	5/8" Left or Right Tilt
Arbor Tilt Type	Large Hand Wheels, Worm Gear
Drive	V-Belt
Power	15 / 7.5 Amp
Motor	115v/230v Pre-Wired for 115v
Motor Speed	4,200 RPM
Motor Position	Outboard
On/Off Switch	Push Button, Large Paddle
Table Material/Size	27" x 40 1/2" / Cast Iron
Extension(s)	2, Included, Part of table top
Depth of Cut	3" at 90°, 2 1/8" at 45°
Rip Capacity	30" or 52" to Right, 12" to Left
Mitre Gauge	"T" Slot with Positive Stops and Adjustable Bearings
Rip Fence	30" or 52" Rails Biesemeyer Type with Locking Lever
Blade Guard	See-through with Anti-Kickback Pawls
Sawdust Collection	4"
Weight	300-320 lbs / 136-145 kg

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Price	\$1,699.00
Warranty	3 Years
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Arbor	5/8" Left Tilt
Arbor Tilt Type	Hand Wheel, Worm Gear
Drive	V-Belt
Power	1 3/4 HP, TEFC
Motor	110v
Motor Speed	3,000 RPM
Motor Position	Inboard
On/Off Switch	Large Paddle
Table Material/Size	30" x 27" / Cast Iron
Extension(s)	2, 10" x 27"
Depth of Cut	3 1/8" at 90°, 2 1/8" at 45°
Rip Capacity	30" to Right, 16" to Left
Mitre Gauge	"T" Slot with Positive Stops
Rip Fence	Extruded Aluminum
Blade Guard	See-through with Anti-Kickback Pawls
Sawdust Collection	2 1/2"
Weight	254 lbs / 115.25 kg

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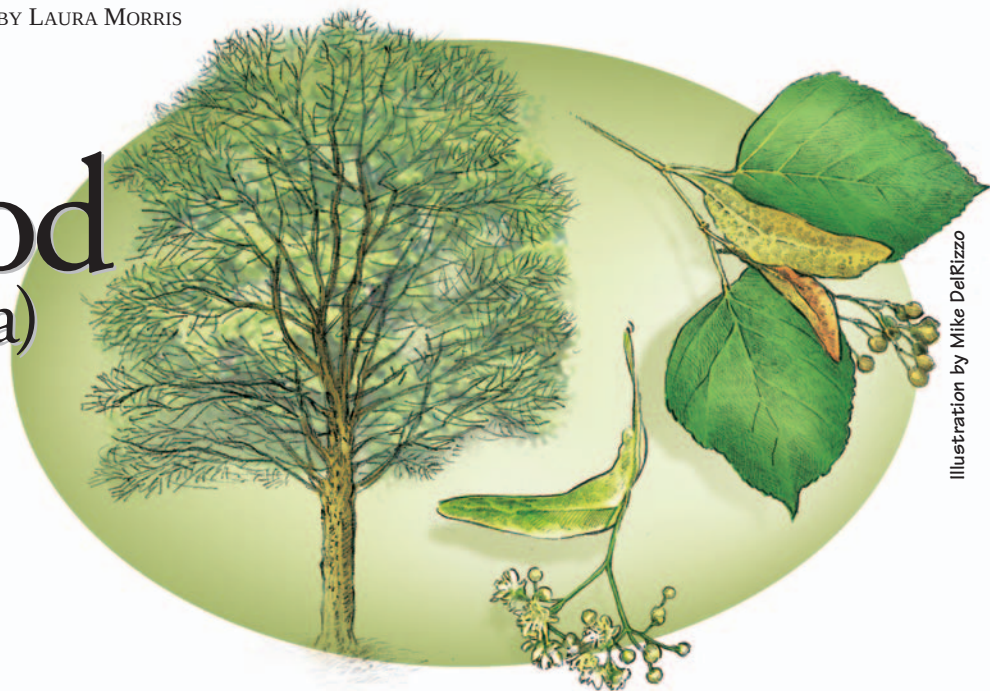


Illustration by Mike DelRizzo

Basswood, also known as American linden or lime, is part of the Tiliaceae family and is found in Asia and Europe, as well as North America. There are about 20 species of *Tilia*, but only one grows in Canada.

In Canada, you will find basswood growing from Manitoba to New Brunswick. It thrives in deep, rich soil, and is most commonly seen throughout the Great Lakes and Saint Lawrence River area. Basswood grows more quickly than others trees and can reach a height of 70 feet or more. The width of the tree is usually between 2' and 2 1/2' in diameter. Overall, basswood is a fairly large species and a valued commercial hardwood.

Uses

Basswood is renowned for being a top-notch carving wood. It's also made into many items including toys, model ships, picture frames, musical instruments, shutters, handles, mouldings and trim work. In addition, basswood is a premium choice for boxes, cutting boards and food storage containers, since the wood has no natural scent or odour. Aboriginal peoples used the fibrous bark to make rope and fabric. Woodworkers will find that it makes an excellent choice for templates and as a secondary wood in furniture, where light weight is a consideration. Additionally, it makes an excellent substrate for veneering.

Physical Properties

Basswood is the softest and lightest of our hardwoods. It has low strength and poor steam bending qualities. The wood also has low resistance to shock and decay. It dries rather quickly with some tendency

to distort. However, once dried, it is dimensionally stable. Just keep in mind that the wood undergoes a fairly significant amount of shrinkage when drying. The actual colour of the sapwood is a creamy white. The heartwood is more of a light, reddish brown and sometimes has darker lines or streaks. Its texture is uniform and fine, while the grain tends to be straight and doesn't have a distinct grain pattern.



Basswood

Working Characteristics

Woodworkers using hand tools or machines will find that basswood cuts with very minimal resistance. However, it is a good idea to use sharp tools, since the wood causes some dulling. When it comes to nails, screws and glue, basswood is agreeable. The wood also gives you a smooth finish with medium luster. It's an excellent wood to paint, particularly with latex paint. Staining can be more of a challenge, because the light coloured wood has a tendency to cause blotches. So, if you are planning to stain, experts recommend using a wood conditioner first. Basswood is priced at around \$4 per board foot.

LAURA MORRIS
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Working characteristics

Radial shrinkage	5%
Tangential shrinkage	9%
Volumetric shrinkage	17%
Weight (lbs/cu ft)	22
Crushing strength max (lbs/sq in)	361

Pens for Canadian Peacekeepers

By JIM SHAVER

I have long respected our men and women in the Canadian Armed Forces. In some ways it's not Canadian to be loud and patriotic, but I have often thought there must be a way for us to make them feel recognized. I began this project in late 2004 to do just that. My intention was to make a pen, wrap it in a personalized letter, and send it to peacekeepers overseas - a Thank You from home. It seemed to me to be a good way to recognize these great men and women, as their families are often the only ones that know the sacrifices they make. So, I began the project, sending one pen to one person at a time. I use the proceeds from my craft sales, and continue to do so today, buying kits and turning pens in my shop.

To make the project happen I aligned myself with a wonderful lady in the Armed Forces, Shirley Penny. She helps to coordinate the

flow of pens to a variety of theaters of operations. It was not long after the first set of pens went out that emails started coming back. I quickly realized that as great a gift the pen might be, the true gift was the letter. Their responses were so sincere and personal. These men and women who wear the maple leaf in their heart and on their sleeve



every day are truly happy and proud to be doing what they are doing. Their words encouraged me to continue, and I started a web site to help promote the project.

Now some 136 pens later the project has seen pens go to places like Sierra Leone, Egypt, Afghanistan, Haiti and the Sudan. Through the web site other Canadian and American wood turners have also become involved. You can visit the web site at: www.pensforcanadianpeacekeepers.com. If you would like to be a part of this initiative, please contact me: jim@pensforcanadianpeacekeepers.com

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Building Confidence with Hand Tools

Have you ever associated using hand tools with gaining confidence? If you haven't, I would like to suggest to anyone thinking of taking up woodworking seriously, that they consider the confidence issue.

Most newcomers lack confidence in their ability because they have little or no experience. This condition was common to us all! The first experience of woodworking is therefore the most important. Much the same as the idea that you only have one opportunity to make a first impression, primary experience leaves an indelible mark.

The beauty of using hand tools at the beginning is that they slow down the process. The slower the process is at the beginning, the greater the opportunity for observing and learning. Remember, you will be learning as much about yourself, as the tools and the wood.

Woodworking fundamentals are deceptively simple, but if you do not follow them, the results will be disastrous. You cannot construct a successful piece of furniture with crooked pieces of wood. If crooked wood cannot be used, how do we know it's crooked? This aspect needs to be clearly understood because it affects all the steps that follow, especially because woodworking is largely a preparation of pieces, which will be assembled into a project. The primary geometry consists of understanding a flat and a square relationship between pieces.

The best exercise to understand this is to start by trying to make a piece of wood flat and square. I suggest that you start by planing a piece of wood flat, using a hand plane. The best plane to use is a jack plane. This first piece of wood might be a 1" x 3" x 14" piece of rough pine. I suggest pine because it is easy to plane. The piece of pine could be laid flat on the bench top and restrained by two bench dogs.

Alternately, the piece of wood could be held flat in a long bench vise.

Assuming you have mastered the task of sharpening, setting and adjusting the plane blade, you are now ready to start planing the flat surface. After a few strokes, you will notice that a smooth clean surface is appearing. But how will you know if the surface is flat? If you are using a plane that is longer than the piece of wood, you can use the long edge of the plane as a straight edge.

By holding the wood up to the light and positioning the plane across, along and diagonal from corner to corner, you will be able to see your progress. At first, it will seem almost impossible to make the surface flat in all directions. The most illusive condition to remove is twist in the surface you created! When you hold the plane across, it shows light through the center portion, but when you try the opposite diagonal, it shows a high point in the

middle. Through trial and error, you will gradually master the use of the plane and will even be able to plane where the wood needs to be removed. You will learn how to adjust the plane knife, your stance and your grip in order to get the controlled results. If you started with a 1" piece, it may well end up being 1/2" thick by the time you can see no light anywhere between the edge of the plane and the wood surface. At this point, you have achieved not only an understanding of how to use the tool but also the geometry of a flat surface. When I first tried this exercise, I was amazed how long it took before the plane learned to make the wood flat!

Although this sounds like an incredibly simple aspect of woodworking, it is the most profound. A flat surface presents the opportunity to plane one edge so that it is 90° or square to the face. You will use a set square to show you whether the edge is square with the face.

One flat face and one square edge is the basis for all of the other stages of preparation, which will culminate in the assembly of the project.

The next requirement is the thickness of your piece of wood. Working from the flat face, a marking gauge set at the desired thickness is used to scratch the thickness on all four edges of our trial piece of wood.

Back to the bench or vise: you are now planing the second flat surface parallel to the first one. This is more difficult than the first task, as you are now trying to plane the surface flat, but also end up with the correct thickness. Remember that without an even thickness, the first flat surface cannot be parallel to the second flat surface.



Four passes with Veritas Bevel Up Smoother Plane

If the surfaces are not parallel, you will have trouble later when joining and assembling the pieces.

After you have successfully planed the piece to an even thickness, repeat the process with the remaining edge. You have now planed four surfaces - 2 faces and 2 edges. You should be very proud, when you reach this stage, no matter how many pieces of wood were discarded in the process!

You have learned the primary relationship between parallel and flat surfaces. You have convinced yourself that you are capable of bringing this piece of rough wood to a useful, component level. You now understand what the conditions of twist, cup and bow are in a piece of wood. Whether your piece of wood is going to be a leg, drawer side, back, front rail, style, panel or framing member, the same basic rules apply.

How have you increased your woodworking confidence? Firstly, you have mastered a simple hand tool (the plane), which has given you the ability to take a piece of rough wood and transform it into a component part of your project. You have also learned to appreciate the geometry of this first piece and how these rules apply to all of the pieces. During this process of preparing a simple piece of wood, you have learned to have confidence in your newly acquired ability.

You now have a measure of the time, effort and concentration that is required to proceed to the next level. The next challenge is gaining the skill to join the pieces together.



CLIVE B. SMITH
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Jointing edges with Veritas Fore Plane



Checking for square with Veritas Fore Plane

Victoria



If you're a scroll saw fan, then you'll love our new 'Provincial Capitals' series. Beginning in this issue of Canadian Woodworking we will be bringing you unique scroll saw patterns - sky lines of each of the provincial capitals. We start with Victoria, which was designated the 2005 Cultural Capital of Canada. This view overlooks the Chateau Victoria in the heart of the city. These scroll saw patterns were designed exclusively for Canadian Woodworking by Marcus Cutler, a new contributor to the magazine. If you can't get to work on your pattern now - don't worry, they will be available for download from our web site. Get those saws out folks, and be sure to send us photos of your projects.

Each pattern in this series will feature a Canadian city and its provincial flag. Here is a sample of the next two cities in the series. See if you can guess where they are.



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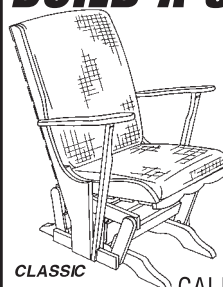
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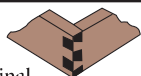
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