

Canadian Woodworking

FEBRUARY/MARCH 2004
Vol. 7, No. 1

Bandsaw Jig

Turns Logs into Lumber

Raised Panel Doors

With Your Table Saw

Low Cost Storage

For Your Workshop

Cross-Cut Panel Sled

Easy Table Saw Jig

PLUS: Tool Reviews
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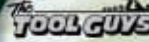
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For the near north's finest selection of wood-working machinery and accessories, make the scenic drive to beautiful Powassan Ontario. George Berg and his son Brian bring a combine 40 years experience to the woodworkers in their area. From very humble beginnings, in 1964, George saw a need for a supplier of machinery in the near north region. He began stocking and selling a few machines from his own workshop near Powassan Ontario.

They began to display at many regional and national woodworking shows across Canada and soon it became evident that a store was the next move in their expansion. They acquired the dealership for many of the finest names in the industry and Berg Woodworking Machinery was born. A 1986 trip to Taiwan gave George a view of what the future had in store. He believed that a combination of the more affordable machines together with the higher end products would best serve his customers. By 1988 the store was open and ready to serve the area woodworkers, schools and industries. George and Brian are proud to stock a large inventory of machinery, power tools and accessories to serve every type of customer from the hobbyist to the professional.



MATT'S ALL IN ONE WORKSHOP SUPPLIES

General and General International are very well represented in the Chatham - Windsor area by Matt's All in One. Matt has a beautiful new showroom sporting over 2000 sq. ft. of fine woodworking machinery and accessories. For clamps, power tools, blades and everything for the wood shop, Matt's is the place and Matt is the guy.

For more than 6 years the Chatham - Kent woodworkers have looked to Matt for his extensive knowledge of machinery and power tools. Now in his first year as proprietor of his own store, Matt brings a fresh new look and style to the woodworker. His primary focus is on every type of woodworking customer from the new hobbyists to the cabinet shop and Matt has always been the choice of the schools and factories in his area.

For a great selection of fine woodworking machinery, accessories and power tools, drop in to Matt's All in One Workshop Supplies in Chatham Ontario and enjoy a fresh new experience in shopping.

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LINDA FULCHER

The term FAS came up in one of the articles I was reading for this issue.

I am not one to let such mysteries go by, so I called Jim, the writer and sawyer. I now realize that asking a sawyer about lumber might be akin to asking an Inuit to clarify a word that refers to snow. However, the depth of Jim's knowledge and the keen interest he takes in the topic was truly inspiring.

It turns out that FAS is a grading term. No part of the log goes to waste and each part can be graded according to quality and use. Jim explained that FAS is First and Seconds. FAS is the best lumber in the log and it is set aside for trim and molding. Aha! Something I recognize. What I did not know, is that it comes from the best part of the log.

After FAS, (i.e. first and seconds, or best and second best) there is a little twist in the grading process. The wood is then graded into select. In turn the select is divided into 1, 2, 3, 4 and 5. The 1st of the select is also referred to as 'one common' or cabinet grade. The 2 is 'two common' and is used for flooring. When it comes to 'four common' and five common', we are talking about skid material.

Just as I was beginning to feel as though I was getting a grasp on the topic, Jim made it clear that this is a developing science, and also that the above grading is for hardwood only. There is a whole other system for grading softwood.

So I must encourage you to ask a sawyer yourself. After all, if I had one interesting conversation with an Inuit about snow and told you about it I am sure you would look into it thoroughly, before you set off on a trek to the far north.

I have a really strong feeling that my reporting of the grading process only touches the tip of the iceberg.



PAUL FULCHER

I enjoyed attending a number of wood shows across Canada this year. In my travels I met a lot of woodworkers, and I found that woodworkers (coast to coast) are a "just" lot.

I say this because when I asked woodworkers what woodworking they did, their reply often started with "I just...". "I just do renovations, I just make furniture, I just turn bowls, I just make what catches my fancy...".

It didn't matter if their work was award winning, or even world renowned (and believe me some of it was!). I still heard it:

"I just do bowls" or "I just carve birds", or "I just won second prize in the furniture category."

On the other hand, at one show, I met a lovely couple and asked the husband, "What type of woodworking do you do?" He proceeded to tell me that he "just did furniture and 'things', for around the house", as his wife waited less and less patiently. As he finished his reply, his wife stepped up and asked, "Aren't you going to ask me what kind of woodworking I do?"

I realized that I had all but excluded her from our conversation. I turned to her, gave her my full attention and asked, "And what kind of woodworking do you do?" She smiled and told me that she did the most important part of woodworking. She raised her head, put her shoulders back and stated loud and proud: "I'm in charge of project selection and quality control!"

And when she said it, there was no "I just.." before it. She chose the projects and made sure that they were done right. I liked how loud and proud she was in her woodworking. She got me thinking about being loud and proud, and she got me thinking about those two essential aspects of woodworking.

I hope, in this issue, that you find a project to do and that the magazine helps you to make it well.

deareditors

Canadian Woodworking:

Like many women, I came to woodworking through my husband: "Hold this..." "Get me that...". I came to love wood and am just beginning to build for myself. It's all rough yet - compost bins and potting benches - but one day I'll have a project on your cover! Molly T.
Prince George, BC

Dear Molly

I encourage and welcome your contribution to our magazine. It reminds me of that song by Dr. Hook, where he wants to get on the cover of Rolling Stone. Maybe we could show your husband holding something for you!
Paul

Dear Paul & Linda,

Thanks for the wonderful job you're doing profiling the "NEW" Toronto Wood and Woodworking Show at the International Centre, November 5, 6, 7. I would like to let your readers know that discount admission tickets are available from all of the Toronto Wood and Woodworking Show exhibitors. They are also available on our website. www.TorontoWoodworkingShow.com
John Cryderman, Cryderman Productions

Dear Canadian Woodworking:

Enclosed is my cheque for a one-year subscription. I look forward to reading your excellent magazine. However, I request that you do not send any additional unsolicited advertising of any

kind to my address. I also forbid you to give or sell my name, address and other personal information to interested individuals or corporations without my express written consent. Thank you for your cooperation. Eliminating unwanted advertising mail means more trees for woodworking.
Sincerely, (name withheld, as requested)

Dear (only you know who):

No problem. We never send unsolicited mail, and that includes email. You have entrusted us with information that is personal, and we take that trust seriously. Although you didn't mention it, we also don't phone you at home (yes, some things still are sacred).
Paul

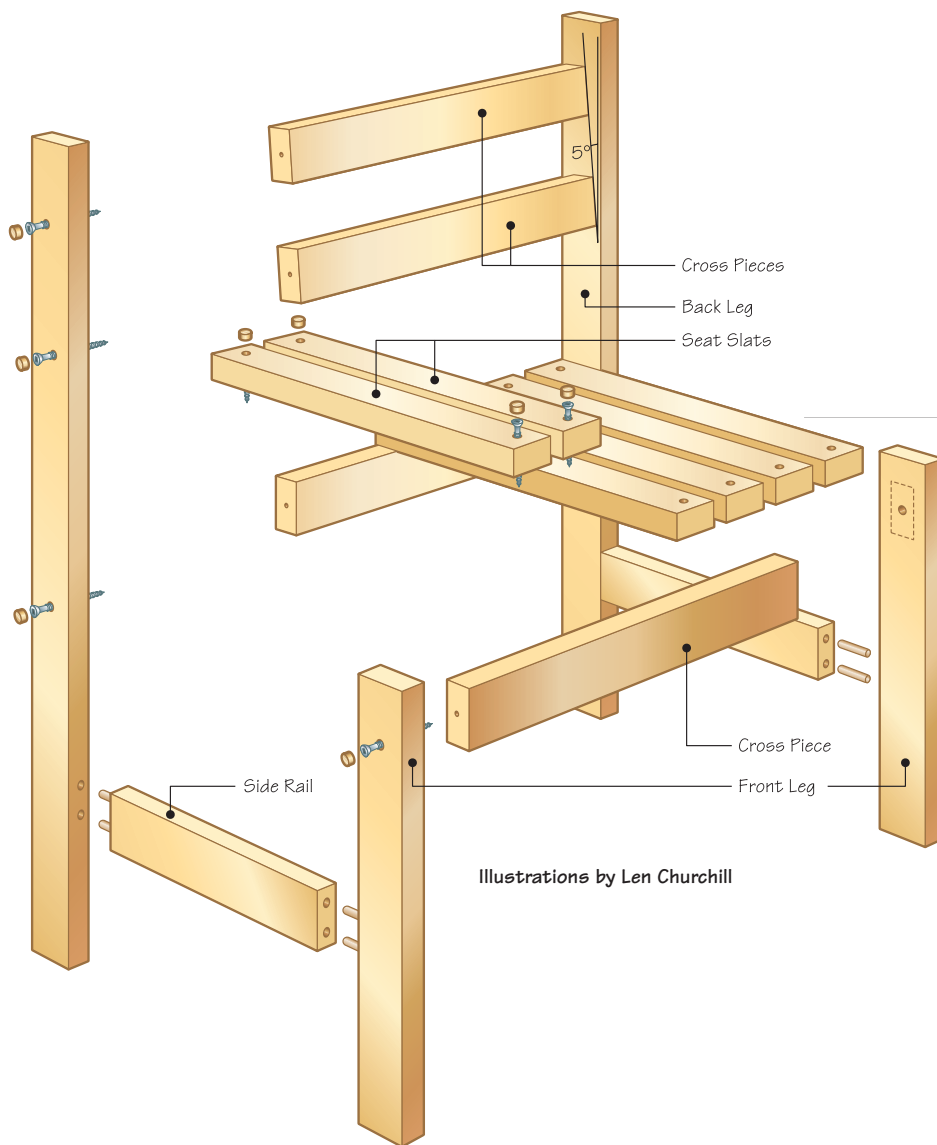
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Children's Table and Chairs

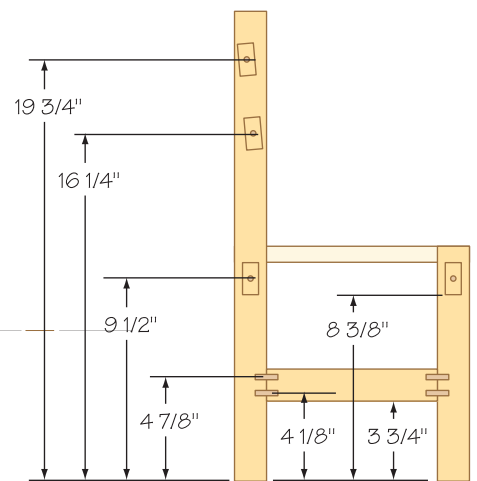
This unique table solves the problem of what to do with your children's art supplies.

Simply flip up the top and you have lots of storage space for colouring books, crayons, and everything else.





Illustrations by Len Churchill



CHAIR MATERIALS

- | | |
|---|--|
| 2 | 3/4" x 1 1/2" x 11"
Front Legs, Pine |
| 2 | 3/4" x 1 1/2" x 22"
Back Legs, Pine |
| 2 | 3/4" x 1 1/2" x 8"
Side Rails, Pine |
| 4 | 3/4" x 1 1/2" x 10 3/4"
Cross Pieces, Pine |
| 6 | 3/4" x 1 1/2" x 11"
Seat Slats, Pine |

TABLE MATERIALS

- | | |
|---|--|
| 1 | 3/4" x 19 3/4" x 35 3/4"
Table Top, Pine |
| 2 | 3/4" x 3 1/2" x 18 1/4"
Table Skirts, Pine |
| 2 | 3/4" x 3 1/2" x 32 3/4"
Table Skirts, Pine |
| 4 | 3/4" x 1 1/2" x 16"
Leg Pieces, Pine |
| 4 | 3/4" x 3/4" x 16"
Leg Pieces, Pine |
| 4 | 3/4" x 1 1/2" x 19 1/2"
Leg Pieces, Pine |
| 4 | 3/4" x 2 1/4" x 19 1/2"
Leg Pieces, Pine |
| 4 | 3/4" x 3/4" x 15"
Shelf Supports, Pine |
| 1 | 1/2" x 16 5/8" x 32 5/8"
Shelf, Plywood |

Table

Cut Leg Pieces

For the legs, cut the pieces to size according to the materials list, and smooth the edge with a sanding block or hand plane.

Assemble And Glue

Assemble and glue the leg pieces together. To ensure the correct offset between the short and long pieces, use a scrap piece of 3 1/2" board as a guide. It may be easier to glue the leg pieces together one at a time, waiting for each one to dry before adding the next.

Drill Pilot Holes

Drill countersunk pilot holes in the ends and middle of each ledge piece and screw them to the inside of the table skirt pieces so that they are flush with the bottom and centered from end to end.

Drill countersunk pilot holes in the skirt end pieces 1/2" from the ends and 1/2" from the top and bottom edges.

Apply Glue

Apply glue to the mating surfaces and screw the skirts to the leg pieces from the inside so that they are flush with the top and butting up against the leg piece.

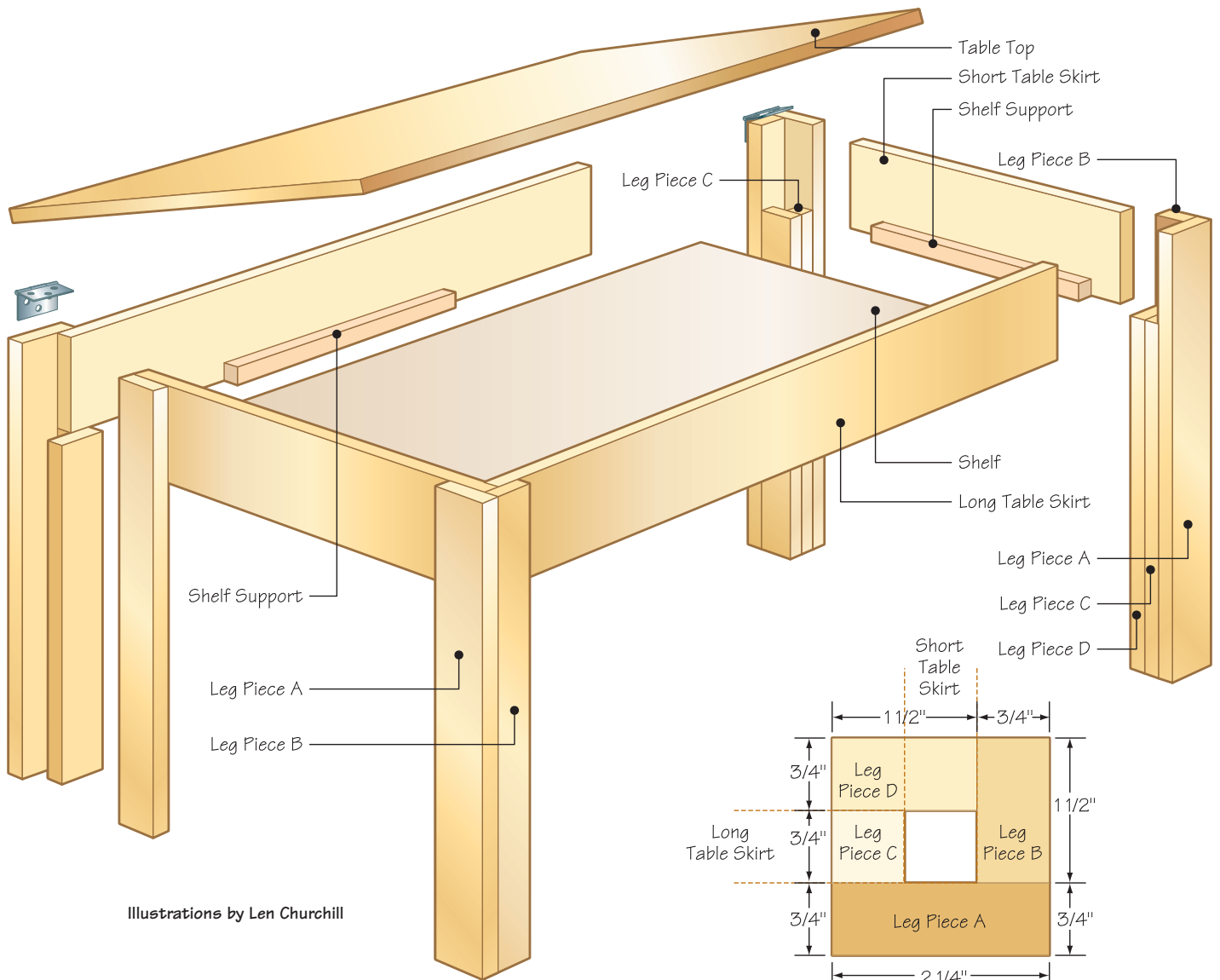
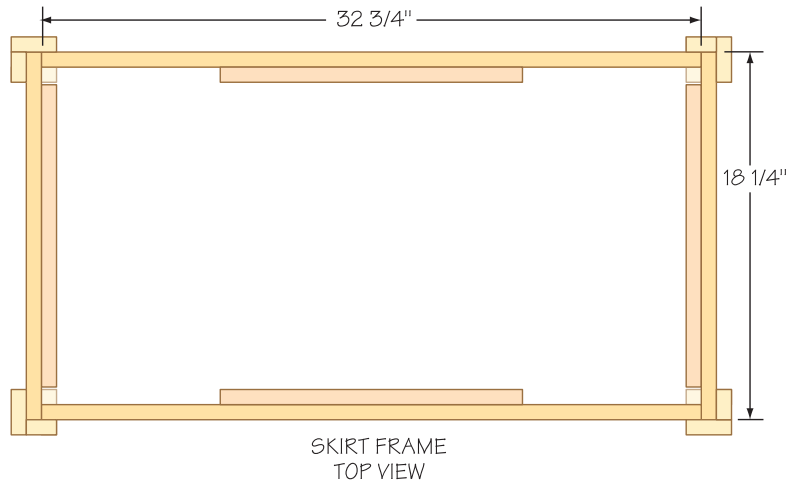
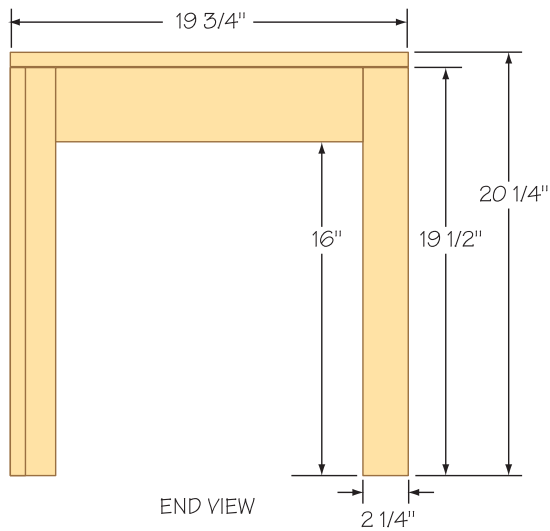
Drill Pilot Holes

Drill countersunk pilot holes in the front and back skirt pieces 3/8" from the ends and 1/2" from the top and bottom edges.

Apply Glue

Apply glue to the mating surfaces and screw the skirts to the leg pieces from the inside flush with the top and butting up against the end skirt pieces.

Insert the bottom of the table into the frame (made by the table skirts) and screw it in place from below through the ledge with one screw on each side.



Illustrations by Len Churchill

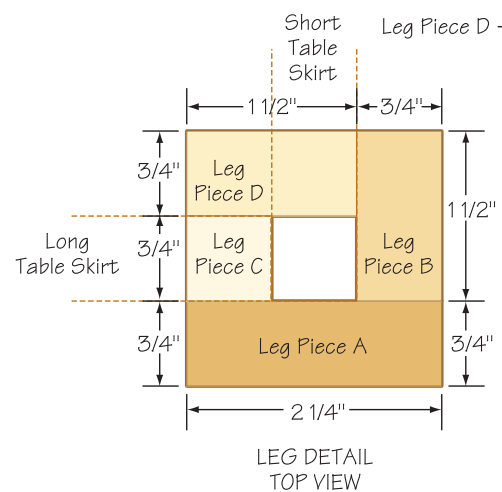




Table design provides handy storage area

Attach Hinges

Screw the hinges to the underside of the long side of the table top 2" from each end so that they line up with the legs. Place the table top onto the table and screw the hinges into legs. The width of the hinges should be less than the width of the legs.

Install Chain

Install a chain on both sides of top and skirt to keep the table top from being opened too far. If desired, use a lid closer for safety.

Option: Glue-up your own panel for the table top.

Tip: Have the 2 1/4" pieces ripped for you at your lumber supply store.

Chair

On its own or as a companion to the kids table, this chair is sturdy and easy to build.

Round Edges

Lightly round all corners and edges with a piece of folded #180 sandpaper.

Drill Dowel Holes

Drill the dowel holes in the side rails as shown.

Drill Matching Holes

Drill matching holes in the front and back legs.

Apply Glue

Apply glue to the dowels and insert them into the side rails, then apply glue to the end of the side rails and assemble the front and back legs and the side rails together to

make the chair sides. Clamp the assembly together, making sure the legs are parallel and square to the side rail.

Drill Pilot Holes

Once dry, drill counterbored pilot holes in each chair side for the cross pieces.

Glue and Screw

Apply glue and screw the two cross pieces that support seat slats.

Drill Pilot Holes

Drill one countersunk pilot hole 3/8" from each end of the seat slats.

Apply Glue

Apply glue to the mating surfaces and screw the seat slats to the cross pieces so that the slats are flush with the front and evenly spaced.

Apply glue to the mating surfaces and screw the cross pieces for the seat back in place at the angle shown.

Glue flat screw hole plugs in place.

Apply glue to the mating surfaces and screw the skirts to the leg pieces from the inside flush with the top and butting up against the end skirt pieces.

Insert the bottom of the table into the frame (made by the table skirts) and screw it in place from below through the ledge with one screw on each side.

Attach Hinges

Screw the hinges to the underside of the long side of the table top 2" from each end so that they line up with the legs. Place the table top onto the table and screw the hinges into legs. The width of the hinges should be less than the width of the legs.

Install Chain

Install a chain on both sides of top and skirt to keep the table top from being opened too far. If desired, use a lid closer for safety.

Option: Instead of using dowels for the side rails, drill deep counterbored pilot holes and screw the pieces together.

Tip: Drill 1/8" pilot holes in the center of the ends of each cross piece for easy alignment when screwing them in place.

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

Patrick T. Hankard—South Windsor, CT

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

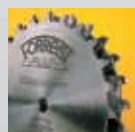
Carl Stude—Burbank, CA

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

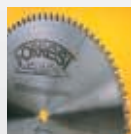
Our Most Popular Blades:



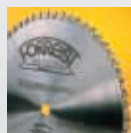
Woodworker II – This award-winning, all purpose blade is the finest of its type. It turns big jobs into easy-to-handle ones.



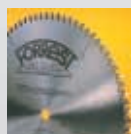
Dado-King – The world's finest multi-tooth dado set. It works effectively in all directions—with the grain or across it.



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

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Code CW

Low Cost Storage



Most woodworkers could use a little extra storage space in their basement or workshop.

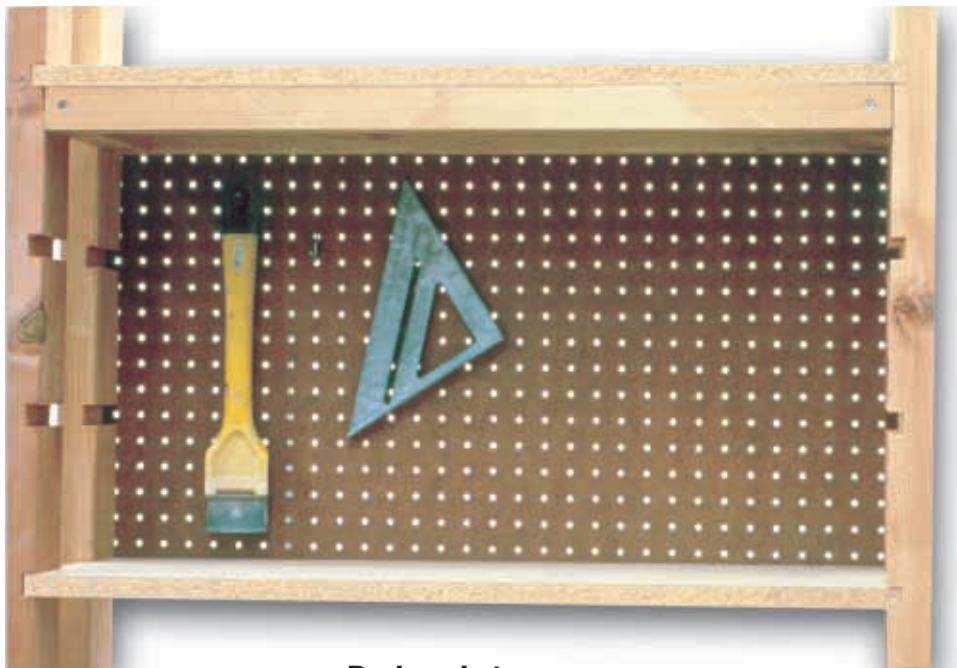
Building a standard shelving unit can be a quick solution, but it seems that as soon as the unit is built, our storage needs change.

This project is a simple solution to your changing storage needs.

From the start I want to stress: I am not providing a materials list for this project. The space that everyone has to work with is going to be unique. Therefore, determine your requirements and adjust the dimensions accordingly.

Measure the maximum height allowance in the area where you plan to keep the shelf unit. I had about 78" of free space in the basement storage room. Therefore I cut four uprights for each shelf unit (1 1/2" x 3 1/2" x 78").

Use low-cost construction grade lumber or cedar.



Pegboard storage



Cut grooves in uprights



Form a rectangle



Install shelves



Attach stretchers

Cut Grooves in Uprights

Use a radial arm saw fitted with a wobble or stacked dado blade to cut grooves for the adjustable shelf system on the inside face of each upright. If you don't have a radial arm saw you can cut the grooves with a sliding compound mitre saw, or a router, or you can cut them by hand. Cut the dados in the uprights 1/2" deep by 13/16" wide. Start the first cut 6 5/8" from the top and space the dados 5" apart.

Tip: I plan to use particleboard for the shelves (3/4" thick by 11 1/2" wide and 31" long). These sizes maximize the cutting yield from a sheet of 4' by 8' material.

I suggest you don't exceed a shelf length of 32" unless you plan to add support braces.

Heavy loads, on a shelf that has a large span can bend, or break, the shelf board.

Form A Rectangle

Cut four boards at 1 1/2" x 1 1/2" x 8 1/2" and four stretchers at 1 1/2" x 1 1/2" x 30". Join two short boards to the longer boards with glue and 3" screws in pilot holes, to form a rectangle that measures 11 1/2" deep and 30" long.

Attach Stretchers

Attach the stretcher rectangles to four uprights using 2" wood screws. One stretcher assembly is secured directly below the top dados of each upright, and the other is directly below the bottom dados.

Install Shelves

Cut two shelves at 3/4" x 11 1/2" x 31".

Install one directly above the top stretcher and the other above the bottom stretcher in their respective dados.

Secure the shelves to the stretchers with 2" wood screws. This will strengthen the shelf unit.

Cut the number of shelves needed. You can also add pegboard between two shelves to store tools and brushes. The shelf unit can be painted or left unfinished.

You'll be pleased when you complete this project - you'll have a place for all those things that need storage. You'll be even happier when your storage needs change because this unit can adjust to suit your new requirements.

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NOT ALL ROUTER BITS ARE CREATED EQUAL!

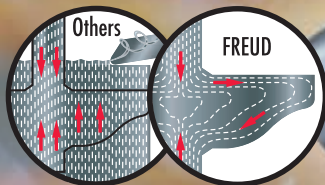
FREUD employs the most innovative, technologically advanced manufacturing operations in the world. In fact, all of FREUD's facilities are ISO9002 quality certified, acknowledging the top quality production processes. By overseeing the entire manufacturing process, from start to finish, FREUD guarantees the highest quality, most advanced products in the industry.

FREUD's newest manufacturing facility, a quarter of a million square foot plant for Router Bit manufacturing, has increased FREUD's production of Router Bits to 7000+ per day (approximately 1.7 million router bits per year!). FREUD's efficiency & innovations in production allows them to deliver Router Bits that are extremely durable, and provide an unparalleled quality of cut. But don't take our word for it; discover the world's best woodworking tools & accessories for yourself!

2+2 Shear Angles

The large wings cut upward (+), while the smaller ones cut downward (-). These opposing shear angles result in glass smooth cuts, even on cross grain!

* not on all router bits



Heat Forged Body & Shank

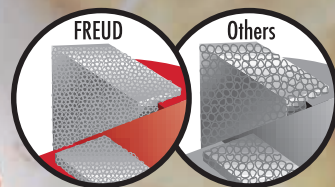
The radial grain orientation produced by forging steel is much stronger than turning the shape from a steel rod

**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

Unique to the application, this small grain carbide is extremely durable. The titanium provides resistance to chemical wear effects

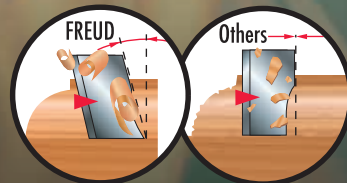


Computer Balancing

FREUD router bits are computer balanced to ensure vibration-free operation

Shear Angle

Precision calculated angles slice through wood, leaving a flawless cut that requires virtually no sanding!



Tri-Metal Brazing
The Silver-Copper-Silver brazing results in a more flexible bond, resulting in greater impact resistance

"Freud Router Bits were recommended to me by the technician where I have my bits sharpened. He said that the quality of carbide is so consistent that he normally removes only 5/1000" each sharpening, and that they can be re-sharpened numerous times. I continue to use Freud Router Bits for the consistent quality of cut and for their durability."

John Sillars
Host of T.V.'s "In The Workshop"



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Glorious and Free



Canadians as a rule don’t do a lot of flag waving. Maybe once a year on Canada Day we dust off an old flag and give it a shake.

Remembrance Day will see a bit of patriotic flag saluting, as we remember the men and women who made the ultimate sacrifice for our freedom.

It was while I was attending a Remembrance Day service that I got to thinking about how great our country is. Canada is a country that we can be proud of.

This project is my way of celebrating our

country and our flag. I took the words “GLORIOUS and FREE” from our national anthem because they sum up my feelings toward our great nation.

This is a fairly basic Intarsia project with a bit of raising and lowering. With special attention to shaping, you can make the flag look like its waving in the wind.

Select The Wood

Use the woods suggested. The flag has got to be red and white, and the suggested woods will do just that.

Transfer The Pattern

Transfer the pattern to the wood with whichever method you find best:

- trace onto the paper
- make template of pattern and trace on
- photocopy and cut and paste

Cut The Pieces

Cut as carefully as you can. The better the cutting is, the better the pieces will fit, and the less frustrating the fitting process will be. Make sure your blade is square to

the saw table and cut right on the line.

I usually use a #5 or #7 P/S blade, but lately I have been using a #3 hook tooth blade on Cedar. It leaves a smaller kerf and therefore a better fit. I used Bloodwood for the red on the flag. I found a #7 hook tooth blade cut the Bloodwood better than any blade I have used to date.

There are enough letters on the pattern to spell “Glorious and Free”. I cut them out of 1/8” Baltic Birch plywood with a #1 DT/R blade. They are glued onto the banner.

Fit The Pieces

Don’t be too fussy with the fit. As long as you are within a saw kerf or 1/16” it will not be noticeable.

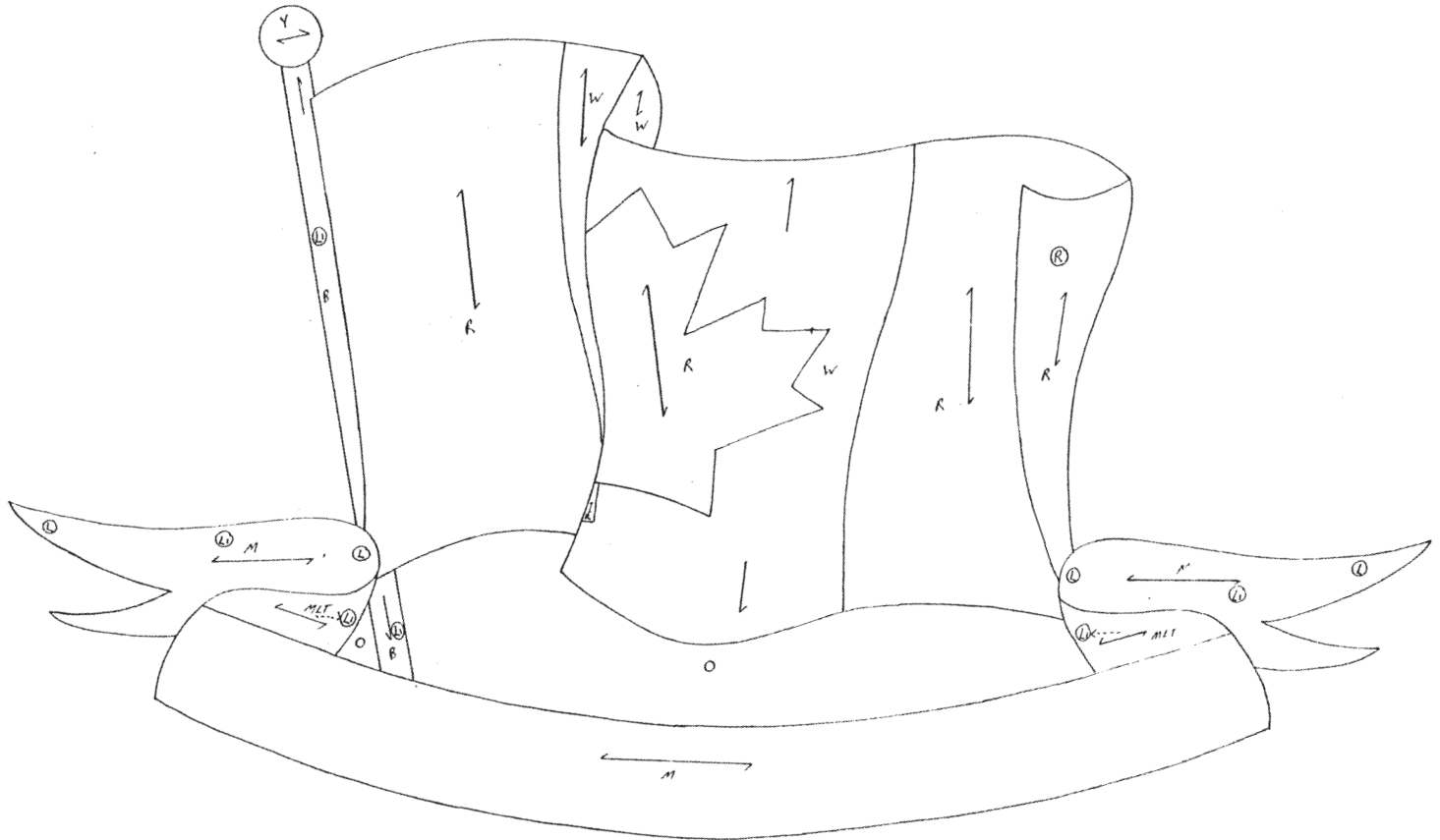
Raising, Lowering and Shaping

Only one piece is raised 1/8”. The other pieces are lowered in the shaping process. The drawing in fig.1 is of side profiles that may help show how the pieces are shaped. The pieces should flow into each other as a flag would.

MATERIALS LIST

Red	1” x 6” x 18”
White	1” x 6” x 12”
Medium	1” x 6” x 20”
MLT	1 piece 4” square
Yellow	1 piece 1” square
Black	1 piece 1” x 8”
1/4” Plywood for backing	22” x 14”

GLORIOUS and FREE



• Enlarge pattern 150% or size to preference

Note

The dotted line pointing toward the L suggests shaping down to that level (see pattern). Following that dotted line will help with the shaping.

Make sure you wear a dust mask when shaping or sanding.

Sanding

Sand the pieces smooth. I don't sand past 220 grit, mainly to reduce the amount of dust I am creating.

Assemble And Glue

Assemble the project on 1/4" plywood backing material. Trace around the project and cut out the back. Be sure to finish each piece before you glue up.

Finish

With this project its best to apply the finish to each piece before gluing up the project. To preserve the white colour of the wood its best to use a water base finish like Flecto Diamond. You can use an oil base finish on the rest of the pieces. Three coats on each piece should be adequate.

Once the finish is dried, glue the pieces onto the backing board with ordinary white, carpenter's glue.

Your flag is now ready to hang proudly on your wall. Go for it! Canada is a country to be proud of.

Side profile of flag.



GARNET HALL is an intarsia artist living in Stoughton, SK
www.sawbird.com

WOOD SELECTION

31 pieces (including the letters)

R - Red: Bloodwood or paint some pine or spruce red

Y - Yellow: Pau Amarillo

W - White: Aspen

B - Black: Black Walnut

M - Medium: Western Red Cedar

MLT - Medium Light: Western Red Cedar

O - Open

I used Aromatic Cedar for the M and MLT pieces.

R -raise 1/8" L -lower 1/8" L1 -lower 1/4"



Make Raised Panel Doors and Drawer Faces with Your Table Saw

You don't need routers or shapers to build beautiful doors. Raised panel doors and drawer faces can be made using the table saw.

Before you begin, you need to calculate the door and drawer face sizes. If you're making a double door cabinet using hidden European style hidden hinges, add 1" to the door opening width and divide by two. If you're making a cabinet with one door, the interior width plus 1" is the final door size.

For example, if the opening width, from inside stile edge to inside stile edge (or side to side in the case of frameless cabinets) is 27 1/4", then you'll need two doors that will be 14 1/8" wide (27 1/4" plus 1" divided by 2).

Remember to use the smallest interior dimension. In the case of face frame cabinets, when the stile-to-stile width is less than the side-to-side width, use the smaller dimension.

The door height can be any dimension, as long as it overlaps the upper and lower cabinet rails by at least 1/4". The drawer face is normally 1" higher and wider than the opening, so with a 5" high opening and a 27 1/4" inside width is 6" high by 28 1/4" wide.

Cut Grooves in Stiles and Rails

The stiles and rails require a 1/4" wide by 3/4" deep groove centred along the inside edge. Set the saw fence 1/4" away from the blade face that's closest to the fence and make the first pass. Then, reverse the board and make the next pass. This procedure will centre the grooves on

all rails and stiles. If there is a little material left in the middle of the groove, align the blade for a final cleaning cut after the two cuts on all the boards has been completed.

Cut Tenons

Typically, rails and stiles are 3/4" thick by 2 1/4" wide. The rails require a 1/4" thick by 3/4" long tenon centered on both ends. Use the miter gauge on your table saw to cut these tenons. It's simple to cut accurate tenons with a stacked dado blade so I'd suggest you invest in this versatile blade set for your table saw.

Glue up Boards

Glue up enough 3/4" thick boards to make the doors and drawer center panels.

Use simple edge-glued joinery, or add biscuits. Be careful of the biscuit placement so they won't be exposed when the panel is raised. Door panels are normally 1/8" less than the inside width and height of the doorframe (measured from groove bottom to the opposite groove bottom).

Clamp a Straight Edge

Clamp a straight edged hardwood board across the table saw blade. Use the miter slide to align the board 90° and across the center of the saw blade when it's fully lowered.

Cut Panels

Raise the blade 1/32" and run all four sides of each panel slowly across the blade. Repeat this step until the panel fits



snug, but doesn't bind, in the stile and rail grooves. Take it slowly and be careful because the blade is exposed.

Assemble and Glue

Assemble the door and drawer faces using glue on the tenons only. Do not glue the center panels, as they must float during expansion and contraction of the wood. Clamp the assemblies until the adhesive sets up.

Floating panels can rattle. To prevent that, use small pieces of door weather stripping (a common soft foam strip that's available in hardware stores). Put a couple of strips in each groove before inserting the panels.

The door is square when both diagonal measurements are equal. Adjustments can be made before the glue sets by lightly tapping the "long" corner-to-corner diagonal measurement, until both are equal.

Drill Hinge Holes

Drill two 35mm diameter holes in each door, 1/8" from the edge. I normally space my hinge holes 4" from the top and bottom.

There's an easy way to mount doors accurately each and every time. First, mount the hinges and the hinge plates on the door in their 35mm holes using 5/8" long screws. To get the door to cabinet spacing, place a 1/8" thick strip of wood between the door and the cabinet face frame (while holding the door in its normally "open" position). Then, hold the door in place (in its fully opened position relative to the cabinet) and put two screws in each hinge plate into the cabinet side. Remove the door and hinges from the hinge plates and finish attaching the plates to the cabinet side.

Depending on the hinge style, you may have to increase or decrease the spacer. And, as you know, the European hinge can be adjusted in three directions so you

can fine-tune the installation after fitting the door.

The only exception is the wide opening hinge (such as the 170° hinge). In that instance use a 100° to 120° hinge to mount the doors and locate the hinge plates. When the plates are mounted, exchange the normal hinge bodies for the 170's (the plate position and style is identical for both).

The simplest way to align the drawer face on the box is to select the handle you will be using and drill holes in the drawer face only. Hold the face in place and drive screws through the handle holes to temporarily secure the drawer face. Open the drawer and attach the face permanently using screws from inside the drawer box. Finally, remove the screws in the handle holes and drill through the drawer box. Install the handles after a finish has been applied.

*DANNY PROULX is a woodworking author and teacher.
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or email: danny@cabinetmaking.com*



1 Cut grooves in stiles and rails



2 Cut tenons



3 Glue up boards



4 Clamp straight edge



5 Cut panels



6 Assemble and glue



7 Drill hinge holes

Solutions to Cross-Grain Problems

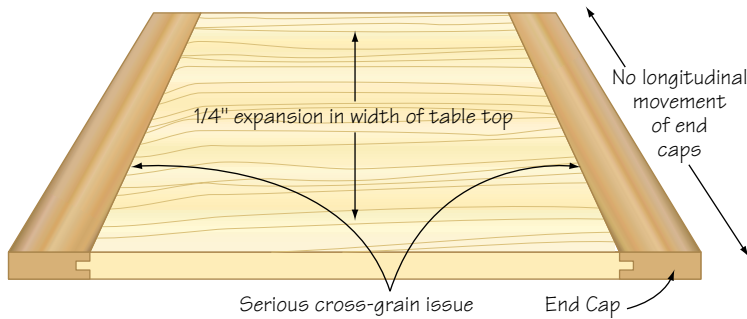


FIG. 1
TABLE TOP WITH BREADBOARD ENDS

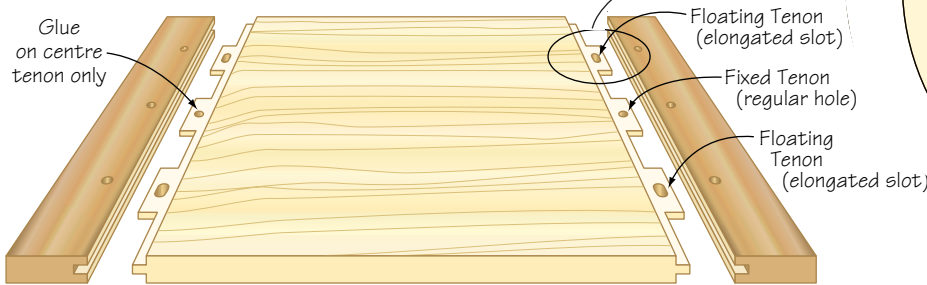


FIG. 2
INTERNAL JOINERY

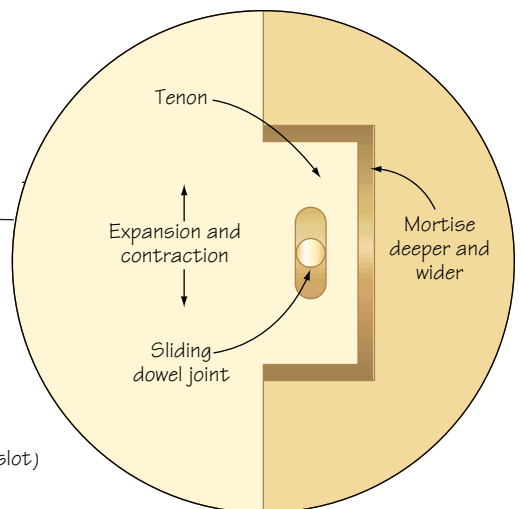


FIG. 3
FLOATING TENON

Many of you are familiar with the use of breadboard ends to finish off projects. Breadboard ends are very good at giving a project that finished look. However, it is important to understand how to construct breadboard ends properly to avoid cross grain problems. Here is a look at how to properly make breadboard ends, and a couple of examples of cross-grain solutions. Use them in your woodworking projects to give your furniture that finished look and avoid cross-grain problems.

Breadboard Ends

The primary purpose is to cap the end grain of the table top to give it a more finished look. Some people don't like the look of end grain, particularly if they don't

know how to handle it when staining. These are known as "breadboard ends", but they're also used on other assemblies, such as solid wood table tops.

Cross Grain Problems

Depending on the width of the table top (Fig.1), it could easily expand by 1/4" or more. The end caps do not expand and contract in length, because longitudinal movement is considered zero for short lengths. So here we have a classic example of "cross-grain construction" and it's inherent problems.

If the end caps are simply glued on, the centre panel will crack during periods of low relative humidity (RH). As RH increases, the centre panel will try to expand, but won't have enough strength to break the end caps parallel to the grain direction. The glue might fail instead, or

the centre panel will take on permanent compression, giving it an even higher likelihood of cracking when the RH comes back down.

To avoid problems when using breadboard ends, the ends of the centre panel are cut into three or more tenons. One huge tenon going across the whole width would weaken the end caps too much (i.e. too much material removed for the mortise). So the tenon is divided into smaller tenons, leaving a short area in between each to keep the mating surfaces stiffer across the width of the table top. Then one very shallow mortise (or dado) is cut into the end caps' edges. Several areas are cut out deeper to form three or more deeper mortises.

More Than Meets The Eye

This all looks very logical, except that

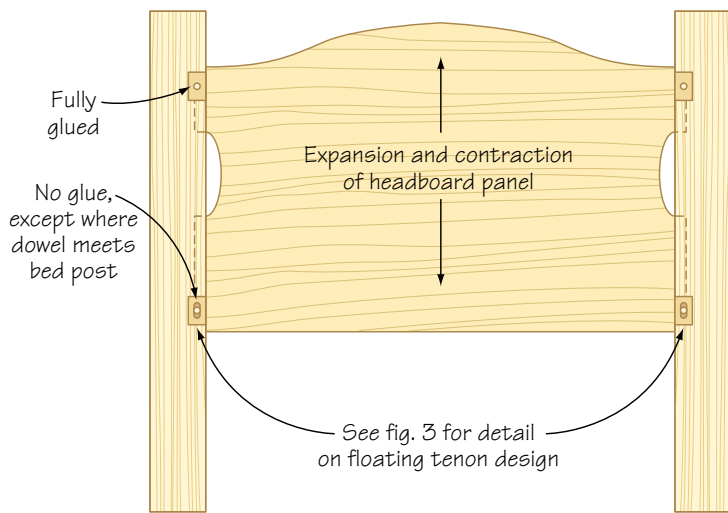


FIG. 4
SOLID PANEL HEADBOARD DESIGN

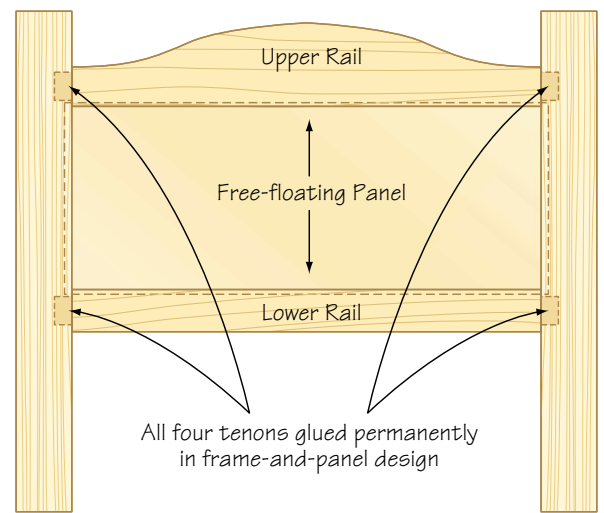


FIG. 5
FRAME-AND-PANEL HEADBOARD DESIGN

Two solutions to cross grain problems

some special considerations are necessary to allow the centre panel to float freely inside the end caps.

Allow For Expansion

Only the centre tenon should be glued into the centre mortise. Glue can't be used on the outside tenons, or it would restrict wood movement.

The outer mortises must be wider than the tenons by the maximum amount you expect the table top to expand from season to season. Leaving a bit more than you need is better than not enough. (Fig.3)

Be sure to leave extra width in the mortise of the outer tenons.

Notice that a tiny bit of room is left at the bottom of the mortise. Although this isn't technically necessary for the outer tenons (which will not be glued) it is standard practice to allow room for excess glue.

Since the outer tenons are not glued in the traditional sense, they must still be attached somehow to keep the end caps firmly in place. While the centre tenon can be pinned with a dowel (in addition to glue on the entire tenon), the outer tenons must be free to move sideways in the mortises.

The solution is to make an elongated dowel hole (or slot) in the tenon. A dowel will then go through the regular hole at the top and bottom walls of the mortise (on the end caps), and through the slot of the tenons. There must be no glue between the tenon and the mortise, nor between the tenon and the dowel.

The dowels can be glued to the end caps, but not to the tenons (except for the centre one). Easier said than done. The easiest

way is to put glue high enough on the dowel that it will not reach into the tenon slot. If the dowel fits the hole snugly, then the glue will travel up the dowel (not down) when driven in with light hammer taps.

The dowel holes drilled into the end caps can stop just shy of pushing through the opposite side. If you like the look of three or more precisely placed dowels (as a decorative accent) then have them showing on the top of the table top. They can also be done in a contrasting wood to stand out even more. But even dowels of the same species will stand out quite nicely, as their ends are composed of end grain and will appear darker than the rest of the table after finishing.

If you don't like the look, or if this is beyond your skill level, then have them going in from the bottom where they won't be seen.

Similar Situations

You may be wondering how often you'll actually need this technique if you don't plan on using breadboard ends on your next table tops, or if you're not planning on building any breadboards in the near future. Take note: this theory and technique applies to all kinds of cross-grain situations where a panel would otherwise have its movement restricted by another furniture part.

If you want a large solid wood panel fixed between two bed posts (Fig.4) (with the panel's wood grain running horizontally) then you have a "cross grain" problem. The solution is a variation of the above. You use mortise-and-tenon joinery and

sliding dowels. The upper tenon fits its mortise snugly and is glued everywhere. A dowel can also be used (called a "pinned" mortise-and-tenon joint).

The lower mortise has to be wider than the tenon. The dowel slides through a hole in the bed post and an elongated slot in the tenon. Glue is restricted to the bedpost and dowel only. There can't be any glue on the tenon or on the mortise walls.

Another solution to the cross grain problem is frame-and-panel design (Fig.5). The bed posts become stiles in a frame-and-panel set-up, allowing the panel to float in the middle. The frame and panel design is easier to achieve, but if you prefer the style of the headboard in figure 4, you can achieve this look only by using the sliding dowel technique as shown.

Conclusion

One of the most important things you can do to improve your woodworking projects is to learn more about the material you're working with. Wood is a unique building material. Learn how it moves and why. Learn to design and build so as to take into account wood's inevitable movement.

There is no single design error as serious as failing to account for such movement. No matter how beautiful, or well built a final piece may be, if it doesn't allow for wood movement, it will not stand the test of time.

*HENDRIK VARJU is a fine furniture designer/builder who provides woodworking instruction and seminars near Acton, ON. (519) 853-2027
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The Little Ripper

Bandsaw Jig Turns Logs into Lumber



Photo by Ray Pilon, Ottawa ON

Resawing lumber

Anyone who has a bandsaw has probably tried to resaw lumber. For example, if you need material that is 1/4" thick, it's more economical to resaw 3/4" stock into two boards rather than planing the thicker board into thinner stock. If you have some really nice exotic lumber you can resaw it into bookmatched boards or into veneer.

Although resawing boards is pretty easy, it's another thing to resaw logs. Logs are round, not always straight, and more awkward to handle than dimensioned stock. But, there are a lot of 'free for the asking' and 'firewood salvaged' logs around, and some of them are very nice indeed. I once had the good fortune to visit my brother-in-law while he was cutting up some firewood that included several apple logs about 8" diameter and 4' long. I beat him senseless with a stick and shamelessly stole those logs. The wood was wonderful: a bit browner than cherry, with swirls of pink and orange running through. I thought about cutting the logs on my bandsaw, but felt it would be safer and more expedient to have the local saw mill cut them for me.

If you have any logs or firewood, and thought about milling some of the nicer looking pieces into lumber, then Paul Moore (RBF Tool Co.) has come up with a device that makes short work of resawing logs (up to 6" diameter) into lumber.

The Little Ripper is a simple, easy to use sled that securely holds a log while you guide it through the bandsaw blade. The sled is made of 1/8" sheet metal, 6" wide at the base, 6" high and 14" long. It's very well machined, being less than .005" off square on the sample I tested. Two sturdy,

toothed arms (yellow in the photo) securely hold the log in place; slots in the side of the sled enable you to raise or lower the arms to accommodate variously sized logs while two knurled plastic knobs apply pressure on aluminium blocks that hold the arms in place. An aluminium bar (the runner) under the sled fits accurately into the miter slot on your bandsaw table. You can adjust the angle of the sled by means of the two adjustment screws located at each end of the runner. This enables you to adjust for blade drift. There is also a knurled knob in the center of the runner that enables you to lock the sled in place; when resawing large logs you will need to remove this knob. The sled has about 2" of lateral movement towards the saw blade.

The Little Ripper also makes an excellent guide for resawing boards. You simply turn the jig end for end and remove the clips that hold the arms in place. You can exert as much pressure as you need when resawing your boards, the Resaw Jig won't flex at all. I placed a roller stand on the out-feed side of the bandsaw, and have resawn boards up to 48" long and 12" high. You'll also want to use a roller stand for resawing logs longer than a couple of feet, especially if they are of a large diameter.

RBF Tool Co. also has a 3/8" 4tpi blade available that makes the perfect accompaniment to this jig. When properly tensioned on the saw, the blade cuts exceptionally well, with a very good surface finish.

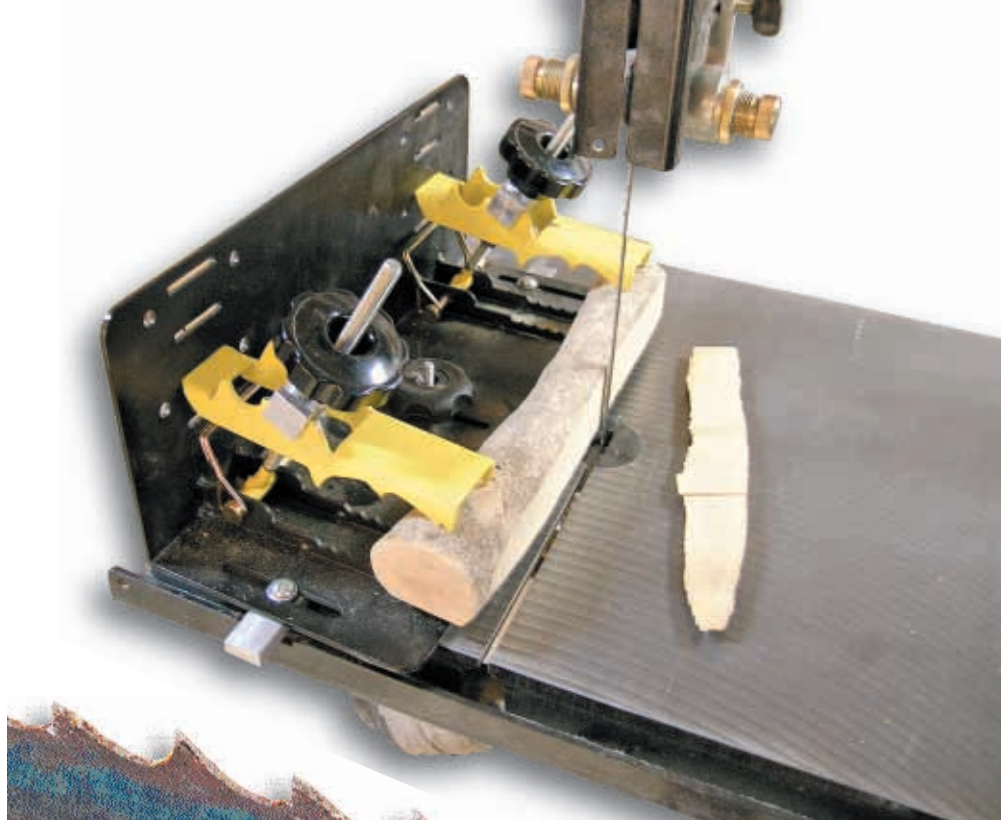
This is a well-made jig, which should last for a long time. And best of all, it's simple to use. Devilishly simple.

The Little Ripper is an essential jig for anyone wanting to mill small logs (maximum of 6" diameter). It is also an excellent fence for resawing dimensional stock.

With a retail sale price of only \$199, this handy Canadian made tool is sure to pay for itself in no time.

For more information contact RBF Tool Co. at: www.TheLittleRipper.com
1-866-443-4432

CARL DUGUAY is a writer and woodworker from Sidney, BC
(250) 888-5067 carl@finewoodworking.ca
www.finewoodworking.ca



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3/8" 4 tpi blade



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Furniture From Recycled Wood

There is almost an unlimited supply of free wood that is available for you to use in your woodworking hobby. That is, if you know where to look, and don't mind doing a little extra work. The source of wood I am talking about for the furniture I made is from shipping skids and pallets.



Oak and maple bed

I started using this supply of free wood just after my younger brother started working for a local industrial fabricator. He purchased a house with a wood stove in it, and started to bring skids from work to burn. They would be dropped off at my father's house, where he would take them apart. Whenever I needed a small piece of wood for a project, I would go and look through the pile, and take what I needed. I didn't really notice that the runners of these skids were hardwood, until some of them were already cut up and piled. He offered to let me take all the good pieces, and he would burn the rest. So far, I have taken enough wood to build quite a few projects, and still have enough to build a lot more.

Getting the wood ready to use does take a bit of work. First, make sure you remove all the nails. Then, go back over the wood and look for other metal. I have found skids (that had been put together with power nailers) will sometimes have small pieces of wire in the nail holes. This wire is used to hold all the nails together for loading into the nailer. If you miss these, you can expect to go through a few sets of jointer/planer knives. Safety glasses are a must when using this wood and, an even better idea, would be the use of a full-face shield.

I store the wood inside in such a way that it can get a bit of airflow around it. I also have an air conditioner running in the shop in the summer which helps to remove some moisture from the wood. I cut the parts to a rough size, and let them sit for a week or two, to help lower the moisture in the wood. I don't yet have a moisture meter, but I do plan on getting one.

To find a good source of free wood in your area, look for companies that work with steel, aluminum, or anything they

might import that is heavy. A good place to start would be the telephone directory. If you have a friend that works in any kind of industry, chances are they will have some skids destined for the landfill.

If you live in a small town that doesn't have any large manufacturers, don't worry, you can still get wood. Although it may not be free, it can still be very inexpensive. Just start going to yard sales and look for junky old furniture. Chances are it is made from good, reusable wood.

In the Thunder Bay area, I have noticed that this wood supply seems to be used mainly for crafts. Even if you don't use it for a complete project, it still makes good wood for hidden framework. Also, you can use it to make a lot of the smaller parts for a project.

Over the last couple of years I have made quite a few pieces of furniture out of recycled wood.

My first skid wood project was a small stand I copied from a piece my sister bought at a yard sale.

My favorite so far, has to be the small, quarter-sawn oak end table.

My largest (and most recent) project is a bed with matching nightstands, made out of Oak and Maple.

My most meaningful recovery to date is the card box I made for our wedding. It was made from a small table I found in my father's garage. The table had been used for various automotive tinkering, and was going to be tossed out. This table had been picked up at a yard sale for a couple of



Wedding card box from Dad's table

dollars and has now become a family heirloom.

There are a lot of benefits to using such recycled wood. For instance: it is free, it isn't going to a landfill site, companies don't have to pay someone to haul it away. It also means that fewer trees will be cut down.

The variety of woods you come across is truly impressive. So far, I have in my little treasure trove: Oak, Maple, Hickory, Walnut, and Cherry. If you get the chance to try using this free resource, I recommend doing so. You never know, you just may become hooked on it.

*MIKE TAYLOR from Thunder Bay ON,
enjoys working with recycled wood.
arbornut@msn.com*



Quarter-sawn oak chair



Quarter-sawn oak stool

How To Handle Your Tools

Golfers have been known to say that the more they play, the greater their chance of getting a hole-in-one. Something similar can be said of carvers (although not so optimistic) - the more you carve, the greater your chance of cutting yourself. The big difference though is that golfers are trying to get a hole-in-one whereas carvers are trying their best not to cut themselves.

In this article, I will show you a technique for using your carving tools safely and effectively.

First, you are unlikely to cut yourself if your hands (and/or other parts of your body) don't come in contact with the cutting edge of your tools. Therefore, when using a gouge, the best way to do this is to keep both hands on the gouge.

When using a gouge with two hands, each hand performs a specific function. (NOTE: The following explanation is for right-handed persons.) The left hand provides "control" and guides the cutting edge of the tool. The right hand is the "power" hand and provides whatever force is required to remove the wood shaving.

All carving should be deliberate. By using both hands in this manner, every cut can be made purposefully and under complete control.

There are many benefits to using this technique. Here are just a few. Your fingers and hands are never in front of the gouge, making it impossible to push the gouge into them. By resting your control hand on your carving or a nearby surface, it can also serve to limit the amount the gouge travels. And, you can tell when your gouge is dulling because it will require more power to remove wood.



Keep both hands on gouge



Control the cutting edge



Right hand is power hand and provides force



Full grip

Cuts are not the only hazard when carving. When using a two-handed technique with your gouges, your power hand is susceptible to a more subtle form of damage. With the widespread use of computers, the affliction known as “Carpel Tunnel Syndrome” has gained considerable notoriety. For bicycle enthusiasts, this affliction is called, “cyclists’ palsy”. The damage is caused by repeated pressure being placed upon the ulna nerve. That nerve is in the middle of the heel of your hand where there is little muscle. To help prevent this potential problem, it is wise to avoid pushing the butt of a gouge with that part of the ‘power’ hand. Instead, use any of the positions shown in these pictures and vary the position frequently as you carve.

Here’s a little exercise to practice this technique. Get a scrap board a few inches wide. With each of your straight gouges, carve a straight groove across the board. (It is best to go across the grain.) The objective is to carve a straight line, non-stop, from edge to edge. If your tools are sharp, your hands are steady, and your pressure even, you should be able to create a shaving like the one shown in this picture.

(If you made a tool holder, as described in the last article, carve a groove for each tool parallel and corresponding to each hole. This will come in handy when we talk about sharpening in a future issue.)

There is a similar two-handed technique for using a carving knife. The technique is called “carving away” because the cutting edge of the knife always slides away from the control hand. The control hand also



Thumb pad



Pencil grip

holds the wood. The power hand rocks the knife over the pivot of the thumb on the control hand.

As with the two-handed technique for gouges, the basic idea is to control the amount the knife blade moves and to keep the cutting edge away from you. A big advantage of this technique is that it takes very little effort. Learning this technique takes a little practice but, once you’ve mastered it, you will be able to carve all day without tiring your hands.

To practice this technique, get a scrap piece of wood more than 8 inches long and approximately 2 inches square. Using only your knife, carve a ring around the middle. To do so, it will be necessary for you to carve from both ends toward the center of the ring. You will find this carving action is used very often in carving, so it is an excellent exercise.



Heel pad



Thumb pivot

When carving with the two handed technique, there is the problem of holding your carving. In the next issue, I will discuss holding devices, and provide plans for making a simple, inexpensive holding device that compares with commercial alternatives.

*DAVID BRUCE JOHNSON is a carver living in Hawkestone, ON
You can view his work at <http://www.magma.ca/~davidbj>.*



Create a shaving like this one

Freeform Box



Boxes don't always have to be rectangular and hinged. In fact, some of the most visually appealing boxes are just the opposite. Their curved lines and original design add that special, unique appearance. Such one-of-a-kind boxes make ideal containers for your jewelry or other treasures.

For this project you will need a thick piece of stock. The thickness of stock will determine the height of the finished box. The maximum thickness you can use is determined by the clearance of the scroll saw that is used to cut out the center of the package.

If you have a thicker piece (either in the whole or laminated) then removal of the core will need to be done by drilling and filing the piece. You could also use a hand coping saw for this thickness.

To make this particular box, I searched through my offcut pieces until I located a piece of 2" rough walnut.

You know the kind of piece I mean, something that catches your eye and you just know that there is a special look/pattern that you want to display.



1
Cut out rough block



2
Dress rough block



3
Drill starting hole



4
Cut out interior



5
Rough cut exterior



6
Sand



7
Trace box bottom



8
Fit base into bottom



9
Glue and sand lid



11
Glue in bottom



10
Sand the glued bottom

Cut Out Rough Block

Cut the rough block out at about 8" long. I started with a 6 1/2" wide plank, so I cut it into 2 equal sized blocks (each about 8" x 3" x 2").

Dress Rough Block

With this project, given sizes are very flexible. Use a jointer to dress the two faces of one block, then sketch a random shape on the face.

The shape I developed suits my taste. You can come up with your own shape. Once you have determined the exterior shape, carefully draw the interior shape following the same shape, but making it 1/4" smaller all around. Be sure that the interior curves have a large enough radius to accommodate your smallest spindle sander. Too small a radius (or sharp inside corners) become a nightmare to sand and finish.

Drill Starting Hole

Drill a starting hole in the center section in a corner, through which to feed your scroll blade. I used a 1" bit for this.

Cut Out Interior

Tip the table of your scroll saw a few degrees (approx. 2-5°). By tipping the table, the center section becomes slightly tapered allowing it to easily slip out when you have completed the cut. Be sure that you cut in the direction that will make the wall at the bottom thicker than at the top. Use your coarsest blade.

MATERIALS LIST

- 2 8" x 3" x 2"**
Blocks, good clear Hardwood
- 80, 150, 220, 320 grit**
Sandpaper, Drums, and Belts
- 400 grit**
Waterpaper
- 1 Tack Cloths**, package
- 1 L Satin Lacquer**
Varnish or Polyurethane
- 1 Carnuaba Wax**, can
- Scroll Saw Blades, 10 tpi
- Carpenter's Glue

SUGGESTED EQUIPMENT

Power saw - to cut blocks of wood
(radial arm or table saws are the best)

Oscillating Spindle Sander/Belt Sander

Sanding Drums in a Drill Press

Scroll Saw

Finish Palm Sander

Drill with large wood bit

Bandsaw

Rough Cut Exterior

Rough cut the exterior on your bandsaw (or scroll saw). Once any wood is cut, the internal stresses tend to create warpage, twisting, and cracking. (Witness how ripping a board will often pinch the saw blade - due to stresses that have changed in the board). So, to avoid stress twists and cracks in the wood, cut the exterior over-size by an 1/8th" and set the blank aside for a few weeks to allow the wood to acclimatize to the new conditions. At the end of the settling period recut the exterior to the outline.

Sand

To start finishing the project use a spindle or drum sander to follow the shapes on the inside and out. Start with a grit of 80 to 100 and progressively work through the grades of 150, 220, and then 320. When sanding, be sure to remove all the sanding striations. (If you can see them at all at this stage they will definitely show in the finished work.) The 80 grit paper in this step will true up the interior wall that had an initial taper from the rough cut.

Trace Box Bottom

The interior and exterior shapes are now set. Use the second of the two rough blocks that you cut previously. Split this into 3 pieces (each 3/8" thick). Dress and fine sand one side of each of these pieces. Select one piece for the bottom of the box and use the shape of the piece you have made to trace the shape of the interior base onto the sanded face.

Fit Base into Box

Cut this pattern out slightly larger than the pencil mark and sand it to fit into the bottom of the box as snugly as possible.

Make Lid from Two Pieces

Repeat this process for the second 3/8" thick piece, except use the top of the box side as a pattern and trace onto the rough surface. Cut this pattern inside the line and sand for a nice sliding fit into the top.

Glue this piece to the center of the third piece, gluing sanded face to sanded face. When this assembly sets, place it onto the box top and trace around the outside. Cut this out slightly large and clamp to the side section. Sand the curves to match the outside of the box. Sand the two top and bottom faces of this assembly.

Glue in Bottom

Leave it slightly high and when the glue sets, sand the top and bottom. You may wish to sand the edge of the lid to break the sharp corner. Alternatively, use a router with a rounding bit to obtain a uniform

curve or design on the perimeter. Sand everything well. Before you apply any finish, all traces of dust need to be removed. An effective method for this is tack cloths. These are resin-impregnated cloths with a sticky surface that easily picks up all the dust, without leaving any sticky material. These are available from paint stores in small packages. When I don't have one handy I substitute a cloth dipped into shellac that has been diluted 50% with methyl hydrate, or alcohol. When rung out this, too, becomes a very good dust cloth. Depending on the desired look, you can choose to apply a stain at this point.

Finish

A gloss finish takes a lot of care. Any flaw at any stage can ruin the final product. To apply this finish you need a very clean brush. If necessary, purchase a new brush. With brushes, you get what you pay for, so pick the best brush you can afford. It can be disastrous to a gloss finish if a hair falls out of the brush as you work, or some old paint flecks break loose. Once you get a new brush, use only for clear finishes.

Apply a coat of sanding sealer to raise any hairs and grain on the wood. A light sanding with 350 grit sandpaper will clean this up. Avoid cutting through any stain. Using a bright lamp, examine the box with the light reflecting off the surface towards you. At this angle you can easily see any grain depressions or defects in the surface.

Carefully sand off any high spots. Any depressions will require another coat of sanding sealer. Repeat sanding and sealing until there are no more depressions in the grain structure. On an open pored wood like oak you may need as many as 5 coats of sanding sealer to fill the grain. A gloss finish needs a very mirror smooth base surface. Use the lamp to re-check this frequently. Do not count on the final finish to fill any voids.

Once the base is complete, apply 2 or 3 finish-coats of varnish, polyurethane, or high solids satin lacquer. Varnish and varathane can dry with small bubbles that are very hard to remove. If not removed as you go they will show badly in the finished product. Lacquer dries so quickly that this is not a major problem.

Sand between coats with 400 grit waterpaper. Be sure to keep the surfaces wet as you go. Check for flaws by looking across the surface into the lamp. After the last coat use a very light sanding. Buff it with a power polisher and use some carnauba wax to really bring up the gloss.

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Incense Holder



Incense is a quick and easy way to set a mood. With over 70 scents (including: Apple Pie, Candy Cane, Cream Soda, Peppermint, Pina Colada, and Watermelon) there is sure to be a fragrance for everyone.

A well chosen holder and scent is bound to make a thoughtful gift. It is also a great way to highlight a nice piece of wood that you may have.

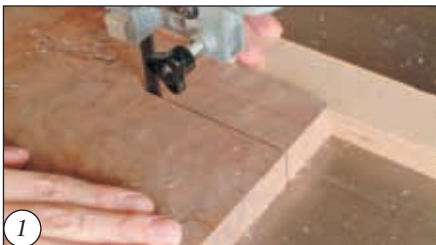
Cut Out the Blank

The first step is to cut the blank to size. This Incense Holder is 1 5/8" wide, 11" long, and 3/4" thick, but you can adjust the size slightly to make the best use of the wood you have. This project looks good when made with an exotic, but also looks good when made from a piece of scrap wood. I cut the blank from a wider board on the bandsaw and hand-planed the edge smooth. You could also cut the blank to width on the tablesaw, if you prefer.

Next, cut the blank to length. I used a miter saw, but it could have easily be done on a tablesaw.

Route the Edges

Once the blank is cut to size, rout all the edges. Both the top edges and ends are



1 Cut out blank



4 Rout edges

routed with a 1/8" roundover bit set flush with the table, to create a smooth rounded edge. With the bit set, place the blank on the router table with the top down. For safety, use a router fence or pilot pin. Start with the ends and carefully guide the blank past the bit. Next, turn the blank and route the sides.

The bottom edges are routed with the same 1/8" roundover bit, set 1/16" higher to create the subtle base. With the bit set, place the blank on the router table with the top up, and route the two ends. Finally, route the two edges.

Route the Channel

The channel, routed on the top of the blank, catches the ash as the incense burns down. To route this channel, use a 3/4" Dish Carving Bit, set 3/8" above the router table. Set the router fence 7/16" from the edge of the router bit (or 13/16" from the center of the bit) in order to enable you to take one pass that is centred on the blank.

Since the channel stops before the end of the blank, you need to make a mark on the fence that indicates where to start and stop. To do this, either make a mark or place a



2 Cut blank to length



5 Lower onto bit

piece of tape on the fence 1" from the centre of the bit on both sides.

Start the router and position the blank over the bit at the mark. Gently lower the blank onto the bit and then push the blank across the bit until the end of the blank reaches the mark. Take care to keep your fingers clear of the path of the bit. Turn off the router and lift off the blank.

Drill Hole for Incense

At one end of the channel, drill a 3/16" diameter hole at a 20° angle (approximately 1/2" deep). The hole must be centred side-to-side and parallel with the channel so that the ash from the incense stick falls into the channel.

Finishing

Sand the entire blank progressing through #120, #150, #180, and #220 grit sandpaper. Finish the blank with a drying oil finish such as Danish Oil or Tung Oil.

Now all you need to do is open a pack of your favourite incense, insert a stick into the holder, and light up. This is one woodworking project that really makes scents!

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3 Rout ends



6 Push across bit

Q

A large red oak, in my back lot, died about four years ago. As a grandfather, it scares me when the kids play near it, so I have decided to cut it down.

Most of the bark is gone and there are mushrooms growing in areas of the tree where there is a lot of rot. The base of the tree seems to be solid and is about 28" across and it is about 30' to the first big branches.

Does it have lumber in it, or has it gone too far to be of any use?

A

I'm glad that you aren't cutting down the tree just because it's dead. Dead trees serve a purpose in the forest, by providing birds and forest animals with a source of food and protection.

Whether the tree is worth milling or not, will be determined better when it's down. Rot found on the outside of red oak is usually only in the sapwood, which is not the most desirable wood anyway.

What will determine if the tree is going to yield lumber, is how much rot has made it to the center of the tree. From your description, the tree sounds to be 150 to 200 years old, which means the tree was nearing the end of its lifespan. As trees get to that age, the core of the tree is usually rotted out.

Now here comes a lot of ifs: if the tree is solid, and if you are right about the diameter and length, and if the outside rot has confined itself to the sapwood, and if it's not tapered too much - you could yield about 1,000 board feet of red oak.

Don't expect it to be all first and seconds

(FAS) material. It will be a mix of 1, 2, 3 common, select, and FAS. The percentage of each will be determined by the grade of the log.

Keep in mind that the tree died for a reason. It may have died of old age, but it may have been killed by an insect infestation. Normally I would tell you that you could just air dry it for a year. But, since we don't know why it died, you may want to kiln dry it, to kill any insects. There are no current reports of invading insects for red oak, but other species, such as ash and pine, are being infected by imported insects. Ash, for example, is being invaded by the emerald beetle.

Hopefully the tree will yield you lumber that you can then turn into something you can pass on to your grandchildren.

JIM KOUDYS is the owner/operator of Kootur Lumber in Smithville, ON. (905) 957-4217 jkootur@yahoo.com

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Triangle Puzzle

This is a put-together puzzle that is very challenging. The puzzle consists of three layers of triangles, and triangle parts.

When solved, the end grain of each triangle (of the top layer) faces the outside of the hexagon (as shown).

Cut The Pieces

Cut out the pieces as shown.

Cut out 12 "A" pieces

Cut out 3 "B" pieces

Cut out 2 "C" pieces

Cut out 7 "D" pieces

Cut out 6 "E" pieces

Cut out a piece of 1/4" plywood, in the shape of a hexagon 4 3/4" wide, for the bottom of the hexagon box and use the "E" pieces to make the box. F, G, H, and J below, are made up from the pieces A, B, C and D, above.

Glue Up

Glue the pieces together as shown in fig. 2.

Glue up 4 "F" pieces

Glue up 2 "G" pieces

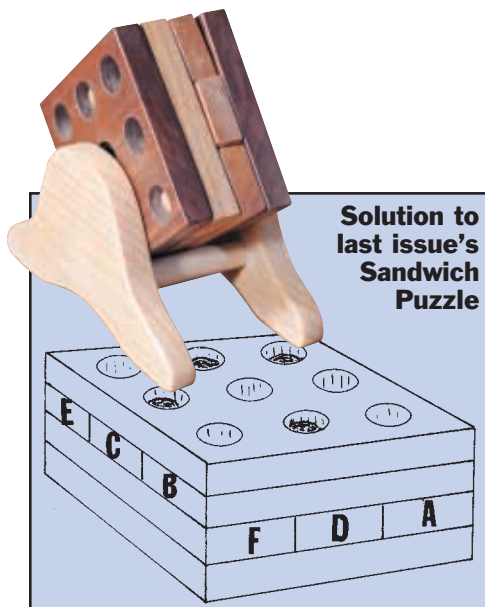
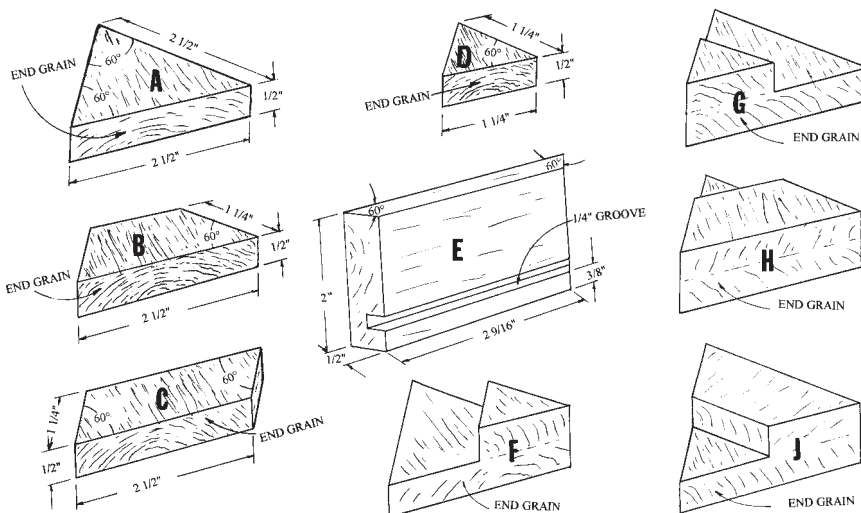
Glue up 2 "H" pieces

Glue up 1 "J" piece

Glue up sides and bottom of hexagon box.

Watch for the solution for this puzzle in the next issue!

REA GIBSON owns and operates Forest Hill Studio and is the author of The Wooden Puzzle Book. He lives in Mount Forest, ON email:egibson@golden.net



Cross Cut Panel Sled

If you own a table saw then one of the most useful jigs you could make is a cross cut panel sled.

Use a 22" x 32" piece of 5/8" melamine with a 30" x 1 1/2" x 3/4" piece of plywood for the fence. For the bottom runner use a piece of 3/4" x 3/8" Oak.

A panel sled is mainly used to cut sheet goods, but it can also be used when cutting smaller stock. With your fence on the leading edge of the sled you can handle much larger pieces of material.

When feeding the material through the saw using a panel sled, you push on the workpiece, not the sled. If you are cutting a lot of narrower stock, then make your sled with the fence on the side closest to you, and push on the sled to feed the stock through the saw.

By adding a few extras to your sled you can make it safer and more versatile. Screw a 3/4" thick x 1" high piece to the lower fence. That will allow you to clamp on a stop or to make one that tightens on with a thumbscrew (or equivalent). It also allows for multiple cuts of the same size.

A toggle clamp fastened to your fence helps to hold the workpiece.

Sometimes you will run into a project that requires many pieces cut to the same size, but at an angle. This can also be done by attaching a temporary fence to the sled.

To keep the cutoffs from just dropping after being cut, you should also make a support with a bottom runner to keep it close to the blade without moving. This makes the job much safer when crosscutting.

WALLY SCHNEEBERGER is a renovations carpenter in Calgary, AB wallygs@hotmail.com



Panel sled



Toggle clamp and stop block fastened to fence



Temp fence and cut-off support



Cutting angles with sled

Historical Overview

Understanding Furniture Styles can help you bring your woodworking to the next level by providing insight into what makes furniture look good.

Whether you design your own projects or make them from plans, recognizing the elements that make up a particular style will enable you to improve your designs, select plans that incorporate known styles, or even modify existing plans to incorporate the elements of certain styles.

Even though styles and periods are usually defined by dates, furniture styles themselves don't abruptly change. They evolve from one to another, with many overlapping characteristics. As a result, timelines should be taken as a reference only.

The distinct styles are generally determined by the physical appearance of the furniture, including design elements, joinery, and materials. These are typically influenced by economics, materials, tools, craftsmen, society, and other design trends of the day.

As an example, during the colonization of America, there was strong desire to bring their home country's styles to their new home. This, combined with the realities of limited resources, resulted in the adaptation of the style to match the ability, materials, tools, and resources of the colonial craftsman. As a result, this period is defined as "Colonial".

The well known Shaker style is actually defined by the Shaker society, guided by their beliefs. The following quote from the

Millennial Laws of 1845 gives us a glimpse into the basis of the Shaker style: "Fancy articles of any kind, or articles which are superfluously finished, trimmed or ornamented are not suitable..."

Styles were named after master cabinetmakers who combined utility with artistic style; Thomas Chippendale, George Hepplewhite, Thomas Sheraton, and Robert Adams.

The design characteristics of each style are unique, however they often blend into each other and may borrow from each other. This is particularly apparent when you look at styles from around the world in conjunction with the increasing trade and globalization of the last two centuries.

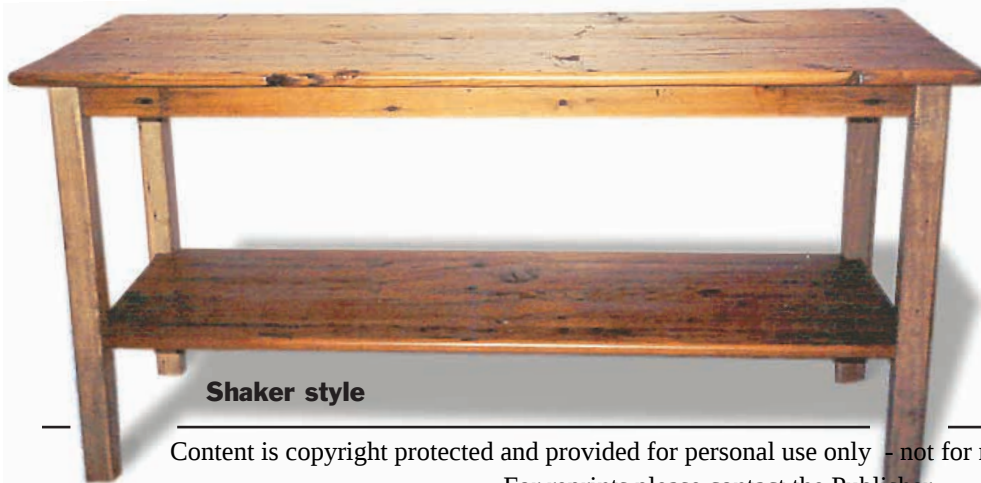
Fortunately, there are a number of commonly known styles prevalent in America that provide a wide array of design elements to suit almost everyone's taste.

This is the first in a series of articles on Furniture Styles. Watch for future issues to learn about: Colonial, Federal, Shaker, Arts and Craft, Mission, Art Deco, and Modern Furniture.

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Colonial style



Shaker style

Timelines

The dates given for styles and many periods are approximate, since they usually can't be defined by specific dates. As a result, you will often see slightly different dates identified in different references.

Here are some typical timelines:

1620 - 1780	Colonial
1780 - 1800	Federal
1820 - 1860	Shaker
1880 - 1900	Arts & Crafts
1900 - 1920	Mission
1920 - 1940	Art Deco
1949 -	Modern

Periods and Styles

Periods and styles are not the same thing. Generally, periods are defined by events, or in the case of England, sometimes by the reign of their Monarchs.

Here is an example of two American periods and their related styles:

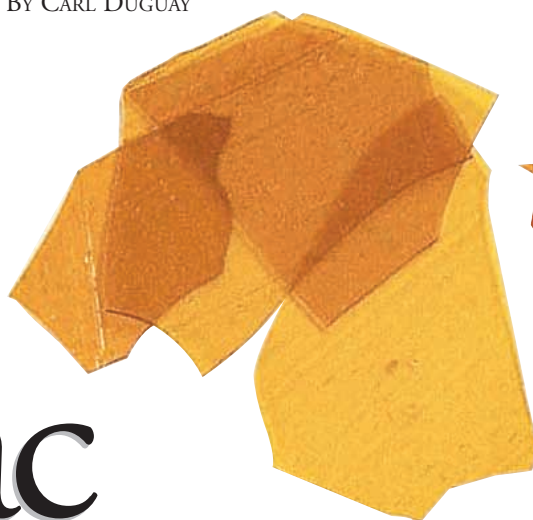
Colonial period:

Jacobean 1620 - 1720
Queen Anne 1720 - 1750
Chippendale 1750 - 1780

Federal period:

Hepplewhite 1780 - 1800
Sheraton 1790 - 1810
Classical 1810 - 1820

Shellac



Shellac flakes

Shellac is the finish that poses no problems: it's easy to apply, easy to clean up, and easy to repair. If you are looking for a smooth gloss like finish that gives an exceptionally deep lustre, then look to shellac.

Like lacquer, shellac is an evaporative film finish. It's comprised of solids (a natural resin from an insect) and a solvent (alcohol). When the solvent dries, the finish solidifies; add solvent to the dry finish and it dissolves.

Shellac as a Good Finish

Compared to other finishes, shellac is nearly foolproof. It dries so fast that you'll have little problem with dust. It doesn't stink up the shop like other finishes, and if you're careful with the solvent you use, it's easy on your health - the resulting finish is non-toxic. Because it's so easy to sand, shellac is often used as a sealer coat under other finishes to raise wood fibres. It

is also surprisingly water resistant (more so than oil finishes), and it has excellent resistance to water vapour exchange, which makes it an excellent choice for cabinet and drawer interiors.

Some Caveats

Any alcohol concentration greater than about 10% will cause shellac to dissolve, which is to be expected, given that alcohol is the solvent for shellac. Leave water sopping on shellac and it will turn white, while boiling water or alkalis like lye or ammonia will damage the finish. Also keep in mind that shellac has a lower resistance to abrasion than varnish and lacquer, so you wouldn't want to use it on a dining or coffee tabletop.

In a Dry or Liquid Form

Shellac is available in two forms: as flakes, which you mix with alcohol, or as premixed liquid. While flakes have an indefinite shelf life, in liquid form, shellac will last only about 6 months, although it will last up to 3 years in an unopened container. However, you're unlikely to find a pre-mixed container stamped with a 'mixed on' date, so it's a good idea to write the date on the container when you first open it. If you're trying shellac for the first time, or if you need only enough for a small project, then buying premixed shellac is the way to go. Liberon dewaxed shellac is available as 'Easy French Polish' in clear and amber grades, and also as ebony, button, garnet, and special pale polishes. The Easy French Polish contains 'copal', a natural resin that makes the shellac easier to brush on and slightly increases the drying time. The other Liberon polishes do not contain additives. Both come in convenient 250 ml formats.

Au Naturel or Processed

You can purchase flakes in a waxed or dewaxed form. If you buy flakes that haven't been dewaxed, the wax will settle to the bottom of the container, after being mixed with alcohol. However, you may have to let the mixture stand for a week or two, for this to happen. You'll also have to be very careful when you pour off the liquid, so that you don't disturb the wax. If you don't remove the wax, the shellac will be less water resistant, and may also interfere with the shellac's ability to bond with other finishes, such as varnish. Dewaxed shellac only costs marginally more. If you plan to mix your own shellac, it's probably a good idea to buy premium flakes from a reputable supplier, as there don't appear to be any standards on flake production.

Coloured or Bleached

In its natural state shellac contains a reddish dye that can run the gamut from a dark caramel colour, all the way to a slightly orange tint. Any flakes with colour are collectively referred to as 'orange flakes'. Manufacturers also bleach shellac to remove the colour; these flakes are referred to as 'blond, clear, or white flakes'. Be wary of buying 'seed-lac', as this is the coarsest variety, and contains a lot of impurities - bug and tree parts, dirt and the like. I keep some 'garnet' flakes on hand which I use to add



Premixed liquid shellac



ColourFX' concentrated dyes

warmth to dark wood, and 'super blond' flakes, which is the clearest shellac, and maintains the natural colour of lighter wood. You can also add an alcohol soluble dye to shellac, or you can stain over the shellac. I've had very good success using the 'ColourFX' concentrated dyes from Wood Essence. These lightfast dyes can be intermixed, and you can dissolve them in water, shellac, lacquer, or waterbased finishes. The nice thing about these dyes is that you can adjust colour intensity by varying the amount of solvent you use.

Making Your Own

Denatured alcohol is recommended as the best solvent to use, but is difficult to obtain. Alternatives are Isopropyl Alcohol (isopropanol or rubbing alcohol, the 99% pure version), Methyl Hydrate (methanol or wood alcohol), Ethyl Alcohol (ethanol or grain alcohol), or in a pinch, Mineral Spirits. Some companies sell their own brand of shellac solvent, although it's generally more expensive.

The ratio of alcohol mixed with flakes is the "cut" of shellac. A 2 pound cut, which is a good mix to use, consists of 2 pounds of shellac flakes mixed with 1 gallon of alcohol. That's quite a bit of shellac to mix, so you can proportionally reduce the mix to 4 ounces of flakes with 16 ounces of alcohol. You can buy an inexpensive scale to help you out, but you don't have to worry too much about the exact measurement.

Mixing shellac is pretty easy. Begin by crushing the flakes. Then put your flakes in a glass jar (metal will cause the shellac to darken) pour in the alcohol, stir and cover. Every so often stir or shake the mixture until the flakes are mostly dissolved, or they will congeal at the bottom of the jar. Let the mixture sit for a day or two, then gently pour the mixture through a paint strainer, into a clean jar (there may be some wax in the bottom of the jar and you want to make sure it stays there). Now you're ready to go to work. If you don't use the shellac within six months or so of mixing it, throw it out and mix a fresh batch.

Shellac as a Sealer

Because shellac dries so quickly and is easy to sand, you can use it as a sealer to stop up pores and lock the wood fibres in place. It will lock in the oil in exotic woods as well. You can also use it over stains and dyes to keep them from bleeding through. Any finish (varnish, water based, lacquer, polyurethane) can be used over shellac; just make sure to use dewaxed shellac.

Applying Shellac

You can apply shellac by pad or brush, much like you would an oil finish or you can



Cover wad, ensuring smooth bottom

apply it using a 'French polishing' technique. (I will cover French Polishing in a future issue).

You can simply squirt some shellac on a cloth and wipe the wood, or you can use a polishing pad. To make a pad, form a piece of cloth (cheesecloth, cotton, wool) into a wad about the size of an egg. Dampen the wad with alcohol, add a few squirts of shellac, then cover the wad with a piece of linen or muslin, ensuring that the bottom is smooth. The outer cloth can be replaced when it gets torn or dirty. The easiest way to apply the shellac is in a sweeping motion across the wood surface (with the grain). Use light pressure to begin, more pressure towards the end. The main thing to keep in mind is that shellac dries very quickly. Don't worry if you miss spots. Let it dry an hour or so, then sweep another coat of shellac. Lay down at least three or

four coats. You can sand lightly in between coats or after applying your last coat.

To brush shellac successfully you want to flow on thin coats. The best brush I've used for this is the 'daVinci', available from Wood Essence. The very fine, soft hairs of this brush enable you to lay down an exceptionally smooth coat, with almost no brush marks. You can thin the shellac by adding solvent; this will make it easier to lay down the shellac. Before applying the shellac 'condition' your brush by dipping it in solvent and letting the solvent run off. Next dip the brush in shellac then tap it against the side of the container to unload the excess. Begin brushing a few inches in from the edge of your surface and drag the brush lightly to the edge then brush all the way to the other edge. You can brush back once if you need to even out the shellac. Overlap your next brush stroke just a little. I find that holding the brush almost vertical works best. Let the surface dry an hour and recoat. Lay down three or four coats. Sand lightly between coats only if there are brush marks. You can finish off with wax. Use solvent or household ammonia to clean your brush, followed by soap and water.

In Canada, the sole distributor of Liberon, Color FX and daVinci is Wood Essence. 306.955.8775 www.woodessence.com

*CARL DUGUAY is a writer and woodworker from Sidney, BC
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Cherry with three coats of Liberon pre-mixed shellac



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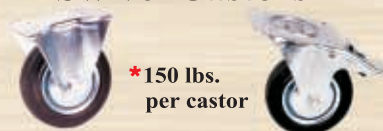
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Pen Stand

Tired of patting all those papers on your desk, looking for that pen you just set down?

Here is an attractive double pen set stand that will ensure that you always know where your pens are.

The technique used to produce this turning is called "multi-centre turning".

You can use a single piece of wood for the base, and the trumpet pens are available at most wood turning supply houses. Use a close grained hardwood for this project. It is important to lay out the wood accurately.

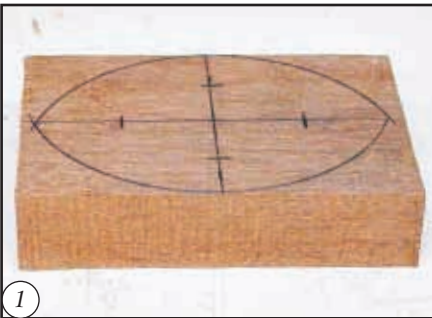
Getting Started

Start with a piece 6" x 4" by about 1" thick. Draw two centre lines at right angles to each other, and mark two points 1 3/8" each side of the centre across the length and 1" each side of the width. With a compass, draw an arc from each of the 1" points to meet the centre of the ends (Photo 1).

Cut Arcs

Bandsaw these arcs a little outside the lines drawn. Then with a 1" sawtooth drill bit, bore four holes 3/4" deep (Photo 2). This should be done using a drill press where the depth can be set.

Select one of the holes 1" off-centre and place it over the #1 jaws or small jaws of your chuck (Photo 3).



1
Draw an arc from each of the 1" points with a compass

Face Cut and Shape

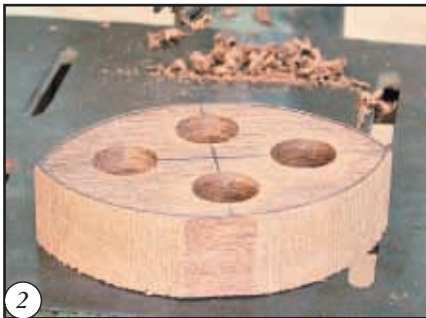
Try not to tighten (expand) too much in these holes as you could possibly split the wood. Check that the piece turns freely past the tool rest and start the lathe at a slow speed. Carefully feed a 3/8" gouge into the wood and cut a clean arc. While on this centre move the toolrest to the face, and make a facing cut across the face. You can also shape the top profile. Now move the wood to the other 1" off-centre hole and repeat the same process. These two cuts can be seen in (Photos 4 & 5).

Turn the Plinth

Now move the wood to one of the remaining holes. Turn the plinth (or base) that the trumpet of the pen is attached to. You must also find the centre of this plinth so that you can drill the hole for the screw of the trumpet. Use a 9 in 1 tool as seen in (Photo 6). Move the wood to the remaining hole, find the centre of the plinth, and then shape (Photo 7).

Scrape the Plinth

Scrape the base or flat part of the plinth so that the trumpet sits properly. Scrape the rest of the plinth (Photo 8).



2
Bore a hole 3/4" deep with a 1" sawtooth drill bit



Transfer Plinth and Sand

Transfer the diameter of the plinth using a set of dividers (Photo 9). Complete the sanding on each centre. When the turning has been completed, drill two small holes the diameter of the screws supplied with the trumpets. To complete this project glue a piece of felt cut the size of the base onto the bottom.

Use a finish of your choice. One option that works well with the multi-faced surface such as this, is a spray lacquer.

Now you have an easy (and attractive) way to ensure that your pens are always where you need them.



3
Select one of the holes 1" off-centre and place over jaws



4 Make an outside cut with a gouge



5 Move the toolrest to the face, and make a facing cut



6 Find centre of plinth and drill hole for the screw of the trumpet



7 Move wood to remaining hole, find the centre of the plinth, and shape



8 Scrape the rest of the plinth



9 Transfer the diameter of the plinth using a set of dividers

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Pivot Plus Driver/Drill

The **PD600** is a pretty neat tool from **Black & Decker**. It is both a screwdriver and a drill. That in itself is not unique, but the tool has a few more assets. The **PD600** has a three-position pivot head (to get into tight spots) and two speeds (one for screwing and one for drilling).

The head of the **PD600** allows the use of both hexagon drill, and screw driving bits, and it holds them securely. There is a convenient forward and reverse rocker switch, a button to change the angles, and

a slot on the case of the **PD600** to hold a drill bit and a screwdriver bit.

The **PD600** has two nice features: an LED light; and a 5' built-in tape measure. Very convenient.

The rechargeable six-volt battery is built-in and takes about six hours to fully charge. This is an ideal tool for the home woodworker. Keep the **PD600** plugged in and it will always be ready to go.



Cross Hair Laser Level

The **Black & Decker Cross Hair 90° Auto Laser Level** is a brand new tool and a “must have” if you plan on any home renovations (and we all know that home renovations are always looming).

The **BDL400** has some great features not usually seen in a laser unit. This one illuminates both a horizontal and a vertical line that is exactly 90°. The **BDL400** is self-leveling (plus or minus five degrees) and it has a couple of hanging options: a sharp pin (protected) to hang it on a dry-wall surface, and a keyhole attachment to nail or screw it to other materials.

The **BDL400** has a dual switch. One position allows the laser to ‘float’ and find its own level. The other is a ‘fixed’ position.

The tool comes in a soft padded case and includes the necessary battery. The **BDL400** also includes an orange ‘target’ for more visibility in bright light situations. The **Black & Decker Cross Hair** will help you with both level and plumb lines.

GRAHAM McCULLOCH is a woodworker and writer living in Halifax, NS
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graham@shortcuts.ns.ca

Brute-Tough Drill Driver

The **Bosch Tool Company** has been in business for well over a hundred years. Long enough to know what it takes to make good tools. In fact, Bosch is to power tools what Porsche is to cars: quality, performance, and power. At least that's the feeling I had after shop testing the new **18-volt Brute-Tough drill/driver**.

Features

The variable speed **Bosch model 33618** has a 1/2" chuck capacity, 16 clutch settings, a high torque range of 0-400 rpm and a high-speed range of 0-1,300 rpm. It provides an impressive 475 inch-pounds of torque, which will enable you to drive almost anything into, well, almost anything. The body of the drill is something that Arnold could have used in Terminator 3: it features unibody power train construction (the motor, gearbox, and clutch are in one contiguous unit to maximize performance), a steel reinforced collar (who hasn't dropped a tool?), dura-shield housing, extra large metal gears, carbide teeth on the chuck, and overload protection. It uses a ni-cad battery that takes 1 hour to recharge. With battery installed, the drill weighs in at 5.7 pounds. The **Brute-Tough** comes with two 2.4 amp/hour batteries, battery charger, bit holder, side handle, snap hook, instruction manual, hard shell carrying case, and no surprise, a 1-year warranty.

Impressions

A lot of drills on the market have the business end of the drill (the power train) at 90° to the handle. On the **Bosch**, the power train is tilted up about 10° from the handle. I think that this lends a lot to the excellent balance of the **Bosch**. I've a medium sized paw, and found the rubberized handle comfortable to use, even over extended periods. However, the handle is somewhat larger than on other makes I'm familiar with, so it might be a bit awkward for people with small hands.

The gear shifter, battery release tabs, variable speed trigger switch, forward/reversing switch and trigger lock, adjustable clutch, and keyless chuck all had a positive feel to them, and functioned well.

The drill does have an electric brake which stops the chuck quickly when the trigger is released, which is quite a nice feature. Equally appreciated, is the one-handed, keyless chuck - it's like having a third hand! Changing the brushes will be a snap, as they are easily accessible through two covers at the rear housing of the drill. It's nice not to have to disassemble the whole tool to do this job.

What's not to like about this drill? The bit holder that comes with the drill doesn't hold bits very well. I'm a fan of accuracy, and a bubble level on the top of the housing would have been a real bonus. Also, I'd appreciate a battery charger that turns itself off after recharging; I keep forgetting to unplug it, as the instruction manual recommends. All in all though, this is one sweet drill.

In Use

You've probably seen the commercial where the **Bosch** drill continues to operate after being dropped off a 46-foot scaffold. I didn't have a scaffold handy, but I did put the **Bosch** through a drilling marathon of sorts. The first trial, on high-speed setting, was to see how many 1/2" holes it could drill through a 3/4" ash board before the battery conked out. The **Brute-Tough** scored 76 holes. The second trial was to drill as many holes as possible with a 7/64" bit and #8 countersink into 3/4" ash, again on the high-speed setting. The **Brute-Tough** managed 596 holes. Pretty impressive.

The final trial was to see how many 1 1/2" #8 screws I could drive into two layers of 3/4" ply using the high torque setting. Unfortunately I ran out of screws (238!) before the **Bosch** ran out of juice. According to **Bosch**, they developed the



Brute-Tough line of power tools for continuous heavy use in high torque drilling applications. No kidding.

After the nonsense of drilling all those holes, I used the **Brute-Tough** in the shop over a three-week period. A good quality tool feels good in the hand, and the **Bosch** was no exception. It has great balance, lots of power, and a long lasting battery. I found the top end speed (1,300 rpm) more than adequate for drilling pilot holes; for countersinking I generally drop down around 1,000 rpm. I always switch to the torque setting to drive screws - that's when you'll appreciate a drill with a lot of torque. Especially when driving long screws into dense wood.

Whether you are a professional or amateur woodworker, I think it makes sense to look for quality, dependability, and durability. For me, the **Brute-Tough** easily meets these criteria.

There are three models of the **Brute-Tough** to choose from: **14.4V (Model 33614)**, **18V (Model 33618)**, and **24V (Model 13624)**. The 18-volt **Bosch** kit retails for around \$380. Most tool outlets carry the **Bosch** line. For more information visit www.boschtools.com.

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Reducing Router Dust



Completed hood and shield bolted in place

Reducing the dust from your router is no easy matter. The main problem with reducing dust from your router is that the router bit is spinning at around 20,000 rpm, causing any shavings to be flung at extremely high velocity from the bit.

In this article we look at routers being used free hand, and devise a method for maximizing the collection of its dust/shavings.

With the router being hand held, the only way to pick-up the shavings, is to use a pick-up hood mounted directly on the router. This hood is then hooked up with a hose to your dust collector (or vacuum cleaner). Bear in mind that the length and weight of hose present challenges to the safe operation of the router, and that the hood has to be positioned in such a way that it will not interfere with the changing of router bits.

The safest and most efficient way to fashion and attach a hood to your router is to make a new base and attach a dust hood to it.

The material I chose was some polyethylene sheeting that I had sitting around the shop. This material is easy to machine.

Lay out the base of the router on the material. As you lay out the base, make sure that you leave room for the hood to be attached. Countersink all holes that you drill through the sheet, so that the heads of all bolts are sunk below the surface. You will also want to round over all corners and edges, including the opening for the bit.

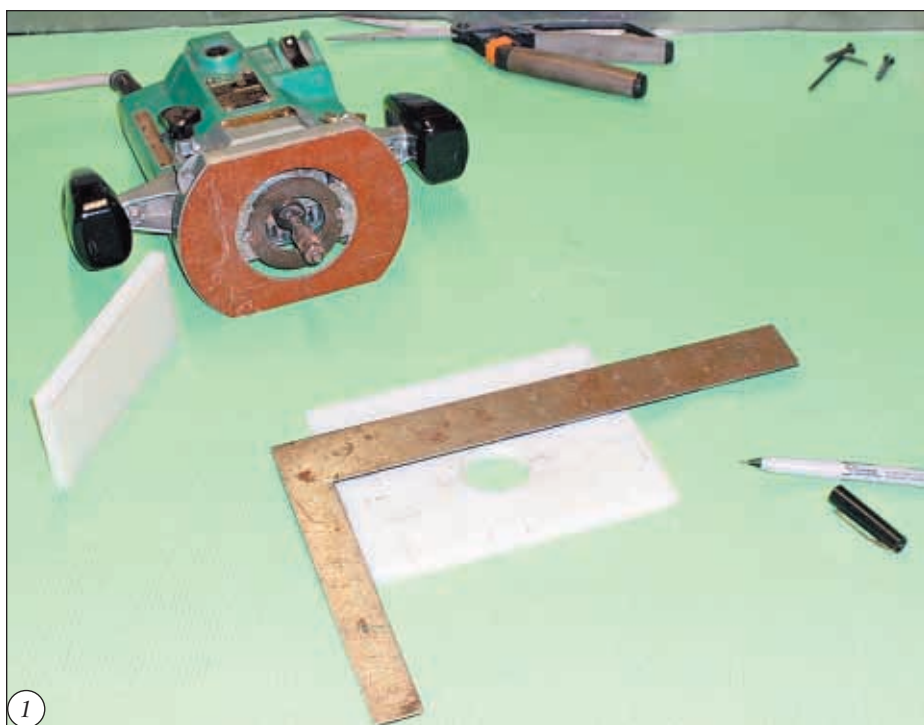
My hood is made from 20 gauge metal with an outlet of 3 inches. Look closely at the photo of the metal hood and notice that the outlet is more oval than round. It started off as a 3" diameter exhaust pipe, but I decided to form it so that it would take up less room. The photo of the metal hood

also shows the main part of the hood after its preliminary shaping (with the outlet sitting in place).

With the base attached, place the router in its furthest down position, and proceed to design the sides of the hood. Keep in mind that the regular mechanisms must still be accessible, in order for the router to work properly. I used thin plastic sheeting as a template. Determine the height and profile of the sides. Mark out the angle where the sides will meet at the back of the hood.

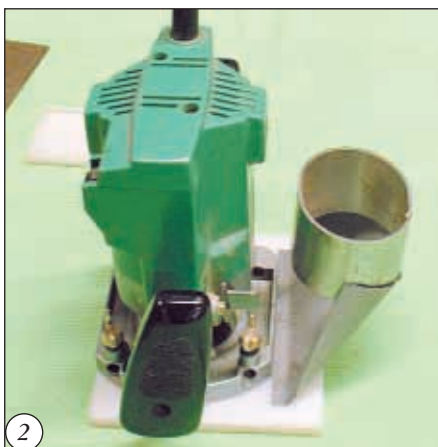
You will need to leave an extra 3/8" of material along the bottom of the side panels when you cut them out. This extra material will be folded out to form the flange that will allow you to fasten the hood to the base. As with the router base plate bolts, the heads of the hood bolts also must be countersunk into the base plate.

Spot weld the hood, and bolt into position. Look closely near the rear of the router and you will see that I placed a short



1

Make new base for router



2

Metal hood with exhaust pipe



3

Use thin plastic sheeting for template



4

Fold extra material to form flange and bolt in place



5

Welded hood with baffle

baffle inside the hood. That will help to direct the airflow from the area around the router bit.

The object of this exercise is to control shaving direction and air flow, therefore, it is also necessary to add a shield on the front of the router. The challenge here is to add the shield without hindering mandrel access. That means that the shield must be easily removable.

Apply a little silicone to the seams for sealing and you're done.

To reach my work area I installed an arm and suspended the hose from it. I found that my new set-up worked great for cuts made directly over the work piece. However, when I did edge cuts, the hood only retrieved about 80% of the dust. The limitation was because of the size of the bit opening in the base plate. To improve that performance, be sure to do the edge cuts in conjunction with a downdraft table.

CHESTER VAN NESS is a Dust Removal Consultant in Scotland, ON (519) 484-2284



6

Add shield to control shaving direction and air flow

■ continued from page 3

Canadian Woodworking:

I saw a post on rec.woodworking newsgroup about David Eisan's article on Hand Plane Restoration (Aug/Sept '03), and would like to check out your magazine. Your website looks very good.

Jeff R., IL, USA

Jeff:

That was a very popular issue. David's method of using electrolysis to remove rust proved to be very helpful to a lot of woodworkers (and restorers).

I recently met a woodworker who had seen David's restoration article in Chapters bookstore. He bought the magazine, read the article and was inspired to restore an old hand plane that he had inherited. Turns out he enjoyed the restoration process so much that he started a business buying old planes at garage sales and flea markets and fixing them up for resale. Imagine, a whole business based on a single article.

Paul

Canadian Woodworking:

To see what projects come from your country, I am ordering your magazine. I am truly interested in reading articles that would be particular to your country. Thank you very much.

Ken A., KS, USA

Ken:

I knew our Canadian readers appreciated our Canadian content, but it's really nice to know that some of our southern neighbours are interested in learning more about our country and culture. So enjoy our magazine "eh". And, if you're ever "out and about" north of the 49th, be sure to visit one of our Canadian woodworking shows.

Paul

Danny Proulx:

I am planning to construct a wooden kitchen counter top made from 1" x 10" flat-sawn butternut boards (which have been well stacked for a number of years, indoors, using stickers). The boards are well dried, but not kiln dried. I plan to dress, dowel and glue them up to make a 25" wide "L" shaped surface (with a 45 degree glued joint at the corner of the "L"). My intention is to use a high grade polyurethane finish (on both sides) and use washers with oval holes to help fasten the cupboard to the underside of the top (to allow for wood expansion/shrinkage). My problem is that I am concerned about the possibilities of wood expansion/contraction at the 45° joint. I think that the expansion forces of the two sections could cause problems where they are working against each other. Any suggestions? Also, what would be the best glue for this joinery? With thanks.

Alexander C., Ottawa, ON

Dear Alexander:

Wooden counter tops are not too common these days. That's because if food juices penetrate the wood, you will have a bacteria problem. However, if the wood is well sealed (and you avoid cutting directly on the wood) you should be fine. My main concern is with the wood's dryness. Wood must be less than 8% humidity to be considered stable. I haven't seen too many air dried pieces of lumber that low, so it's worth checking. The corner joints shouldn't open or close too much unless humidity levels change a great deal in your home. Wood expands and contracts across the grain more than with the grain, so the corner joint should be reasonably stable. If the wood is less than 8% humidity, and your home humidity doesn't vary a great deal, the

joints should experience minimal movement.

For glue, try using one of those new water-proof polyurethanes. Good luck with your project.

Danny

Paul:

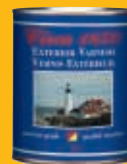
A few years ago I took a couple of woodworking courses at a community college. In addition to teaching me a lot about safety, it was an excellent opportunity to try out various woodworking machines before buying anything. At present however, all of my woodworking education comes from your web site's WOODWORKING FORUM. The questions asked there are often the same things I am trying to figure out! It is also nice being able to get all this education without trudging out in the snow. And best of all - IT'S FREE! Thanks.

Ken R. Amherstburg, ON

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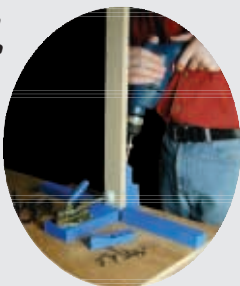


POCKET HOLE SYSTEMS

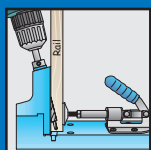
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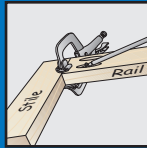


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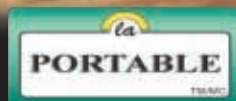
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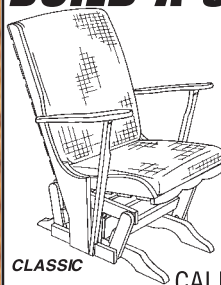
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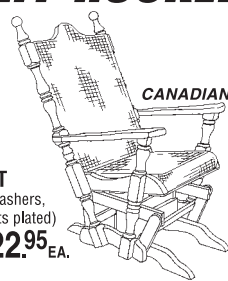
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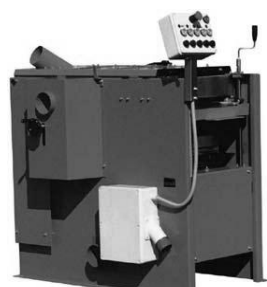
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