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Issue #35

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Cover photo by Ray Pilon

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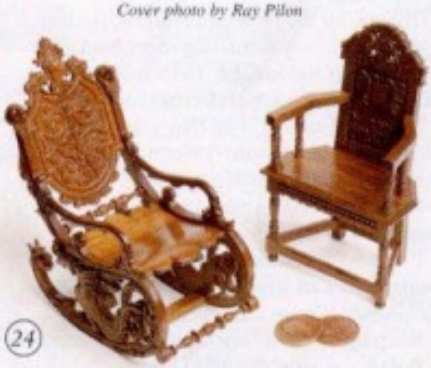
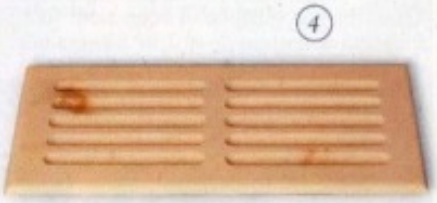




Linda Fulcher

I like to talk with our kids about their classes at school. I am pretty excited to learn that our son, David, will be making a Muskoka chair in Construction and Technology.

I have to admit that I still think of this class as "shop".

So many of the classes my children are taking bear no resemblance in name to the classes I took, with the exception of geography, history and English.

No matter what they call it though, I do know it is going to be thrill to see David bring his chair home. He has yet to go through all the stages to build the chair.

In the meantime he has it all planned out. Well, I don't know if he has the building of the chair planned out yet (plans, materials, building steps, tools) but he does know where it is going.

He has an image of himself sitting in his chair on the lower deck with a cool drink in his hand. David likes the lower deck. It is under the shade of a big maple tree and is very much in the middle of our yard. It is a great place to relax.

I am sure that the feeling this image David has of himself sitting back on the deck, will inspire him as he starts into the work of building his chair.

The neat thing is that by the time summer holidays arrive, this will all reverse. David will be relaxing on the deck remembering and recounting the actual building of the chair.

I am looking forward to hearing about it and, knowing David, he will invite me to sit back in the chair while he tells me all about it.

Paul Fulcher

I got into a bit of trouble for my last editorial.

In that editorial, I said that we were receiving a plethora of photos from woodworkers across Canada. I said that there wasn't enough room in the magazine to do justice to all of these beautiful pictures, so I would include photos of readers work in each of our free monthly eNewsletters.

I thought it the perfect solution.

Many readers who don't have computers or internet did not. To those people I apologise. I didn't mean to dangle the works of other woodworkers in front of you, telling you of something that could not be had. Rather, I meant: "if you have a computer, here is a great resource for you."

My reasoning was simply that if I did not publish them in the eNewsletter, they would not be published. Other woodworkers wouldn't be able to benefit from them.

On the positive side, I was told by one woodworker (without a computer) that the free eNewsletter offer was just enough to make him decide to purchase a computer. He said that if the eNewsletter was anywhere near as good as the magazine, it would be a good investment.

Other woodworkers (without computers) told me that they have asked a friend or family member (who has a computer) to print the eNewsletter off for them. That way, they can benefit from the eNewsletter, even if they don't have a computer.

Now *that's* the perfect solution.

You can sign up for your free eNewsletter subscription at: **www.CanadianWoodworking.com**

Solution re: Give Me Your Heart Puzzle (CWM Dec/Jan 05)

Grasp the loop that comes through the centre hole and force it through the bottom hole. When a good size loop is through the bottom hole, push the heart on the end of the cord through this loop. This will release the heart with the hole when the cord is pulled back through the holes.

lettersto

Canadian Woodworking

I have two different sharpening stones on my work bench. My question is how do I tell the difference between an oil stone or a waterstone.

Russ L., P.Q.

Russ:

A waterstone is softer, lighter and less dense than an oilstone of equivalent size. Pick the soft stone, put it in a container with water, and you should see a lot of bubbles forming, as the water penetrates the stone. That's the waterstone.

CWM

Dear Paul

Thanks for the Newsletter and Magazine. I thoroughly enjoy reading them both. The current e-Newsletter listed a reference to Iceberg Radio **www.icebergradio.com**

Seems a little strange that a woodworking magazine would reference a radio station, albeit an Internet station.

However, it turns out to be another good reason to subscribe.

I went to the Iceberg Radio site, registered and already have a long list of favorites.

Keep up the good work and keep warm.

Bob K., warm, sunny Florida

Bob:

Thanks for your kind words. Like you, I also thought it a bit odd when Carl first suggested including that in the eNewsletter. And, like you, I also have a very long list of favourites!

Paul

Dear Paul

Just a word to let you know that the web site for The Quebec Wood Fest Show **www.fetedubois.ca** is now bilingual. Exhibitors and public alike will now be able to get all the show information in both languages.

Marylene
info@fetedubois.ca

Marylene

Merci. Je dirai nos annonceurs et nos lecteurs au sujet de ces bonnes nouvelles.

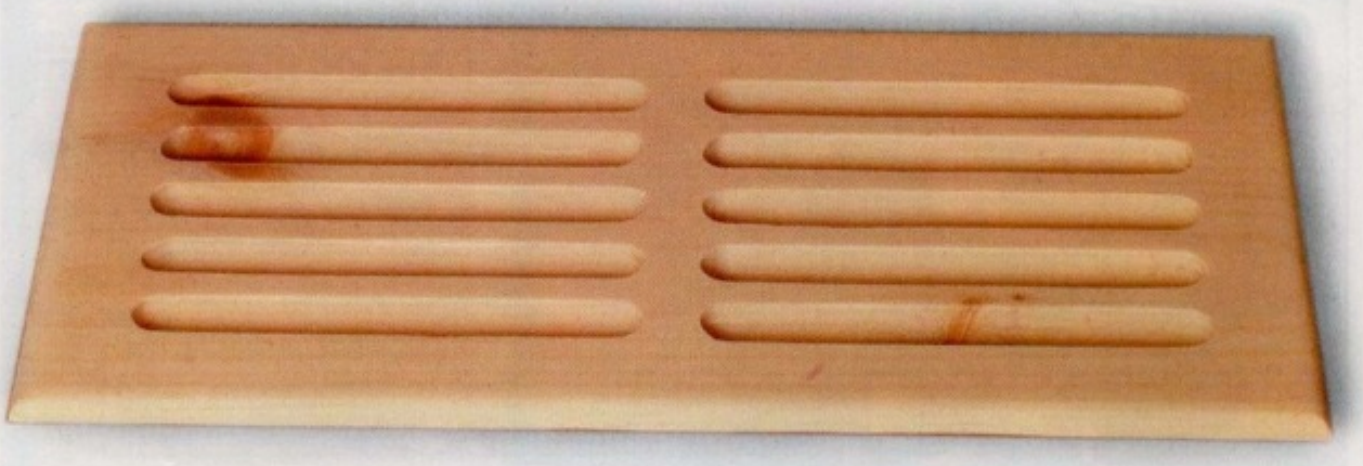
Paul

(Publisher's note: Please excuse my French. Rather than rely on my rather rusty

continued on page 39

homeproject BY MICHAEL THERIAULT

Wooden Floor Vents



Making your own wooden floor vents is an easy way to add the beauty and warmth of wood to the rooms in your house.

Try replacing the plastic or painted metal vents in your home with these attractive wooden ones, and see what a big difference a little wooden accent can add to your rooms.

If you have wooden floors, these vents will fit right in, whether made from the same wood as the floor or with a contrasting wood. This vent is designed to fit a standard vent hole. Measure yours and adjust the measurements as required. It's easy to make the vents using a simple template. Try one, and soon you will have all of your floor vents replaced with beautiful wooden ones.

This vent is for an existing 4" x 10" vent hole. The wooden vent itself is 5 1/4" x 11 1/4", providing an overlap all around for the lip to add strength and to account for any irregularities in the existing hole.

Making the Vent Template

A template is required to cut even, accurate vent holes. The template is designed for use with a router equipped with a 3/16" template guide and a 1/4" plunge bit. The template is designed to cut the three vent holes first, then you reposition it to cut the last two holes. This allows the wood between the openings in the template to be wide enough so that they won't flex while routing.

Cut out the template and the set-up pieces, cutting the set-up pieces about 1/8" under the stated length to make assembly easier. Locate the 1/2" holes on the template using the illustration as a guide. Carefully draw a straight line between the edges of the holes to outline the template openings. Drill the 1/2" holes using a forstner bit for a smooth, clean hole.

Cut out the template openings with a scrollsaw, ensuring the hole is straight and even. Use a file to clean up the hole as required. It is important that this is done accurately, as any imperfections will be reflected in your finished vents.

Glue the set-up pieces (A) and (B) as indicated on the illustration. For accurate location of the set-up pieces, first cut a vent blank to size, and use the blank to position the set-up pieces. Note that the set-up piece (C) is not glued in place.

Routing the Vent

Position the vent blank on the template between the set-up pieces. Add set-up piece (C) and make sure it stays in place. Use double sided tape if required. This accurately locates the blank for routing the vent holes.

Flip the assembly over and position it on a scrap board that will allow you to rout completely through the vent blank and not damage your workbench. Place a scrap piece the same thickness as the vent blank under each end of the template. Then clamp the assembly to your workbench at the ends, ensuring the clamps won't get in the way of the router.

Install a 3/16" template guide and a 1/4" bit in your plunge router. Rout the three vent holes, stepping through the material 1/4" deeper each pass until you have routed through the blank. This will protect the vent from the dry air coming from your furnace.

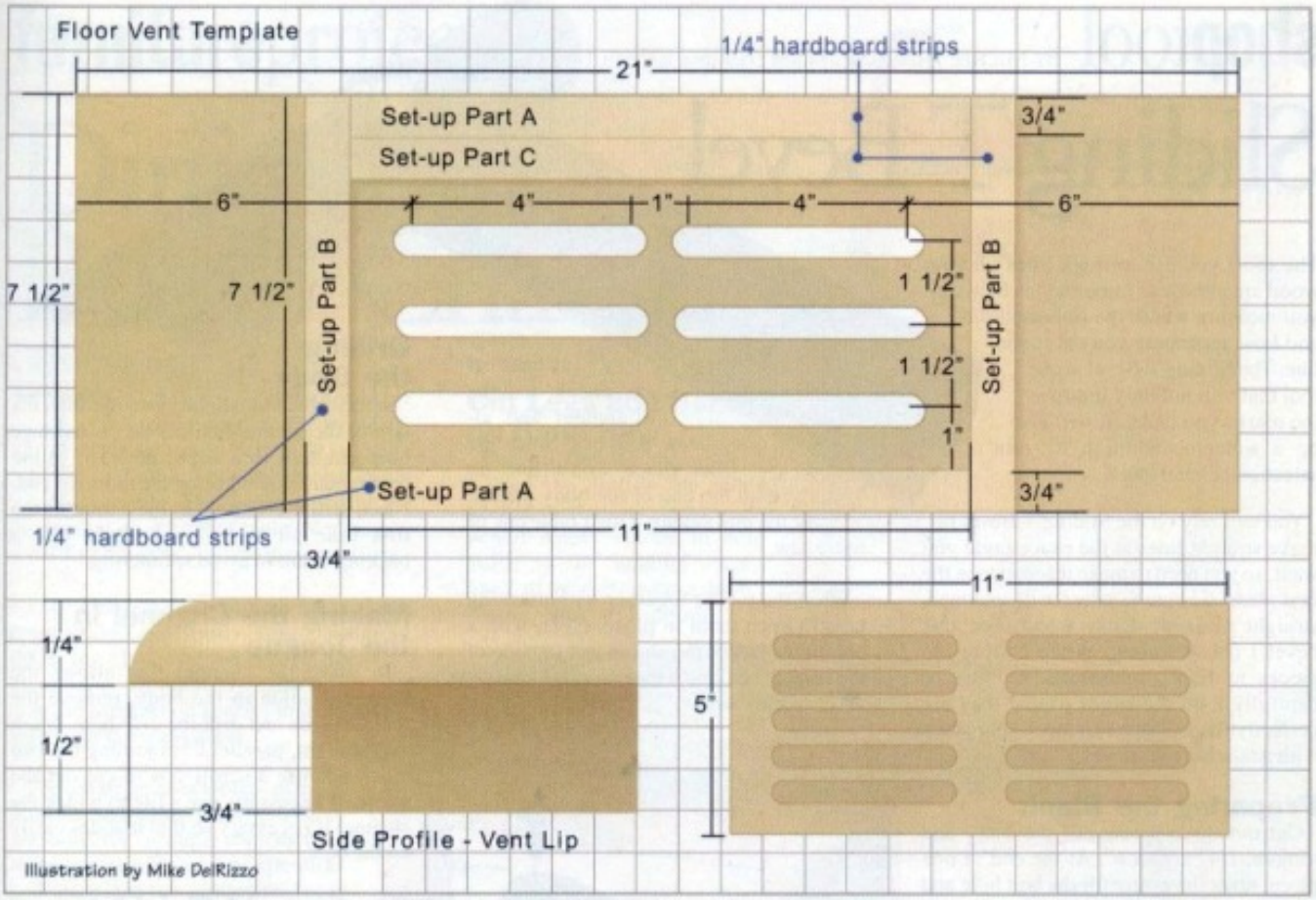
Remove set-up piece (C), slide the vent blank to fill the open space, and replace the set-up piece (C) on the other side.

Finish routing the two additional vent holes as above. Do not rout the 3rd vent hole closest to the set-up piece (C). Now you can remove the blank from the template.

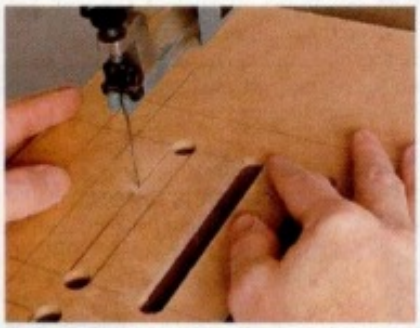
MATERIALS LIST

1 Template	1/4" x 7 1/2" x 21"
2 Setup Piece A	1/4" x 3/4" x 11 1/4"
2 Setup Piece B	1/4" x 3/4" x 7 1/2"
1 Setup Piece C	1/4" x 3/4" x 7 1/2"
As required Vent Blank	3/4" x 5 1/4" x 11 1/4"

For template use hardboard; for vent blank use a hardwood of your choice.



Glue set-up pieces (A) and (B) as indicated on the illustration.



Cut out template with scroll saw

Position vent blank in template

Rout vent holes using template and template guides

Rout dado all around edge of vent

When the holes are finished, install a 1/4" roundover bit in your router and rout the top edges around the vent. You can use a different router bit profile if you like.

To make the dado that allows the vent to sit in the vent hole with enough overlap to cover any gaps, set up your router table with a 3/4" straight bit protruding 1/2" above the table with the fence set for a 1/4" deep cut. Rout all four edges of the template. Move the fence farther away to reveal an additional 1/4" of the bit and rout all edges again. Finish by moving the fence so that the total depth of the dado is 3/4" and rout all edges one last time.

Sand the vent with progressively finer sandpaper, finishing at 220 grit. Apply several coats of polyurethane, making sure you coat the insides of the vent holes. This will protect the vent from the dry air that will go through it.

MICHEL THERIAULT
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shoptool By Michel Theriault

Sliding T-Bevel

The tools you use to mark lines on your wood are almost as important as how well you measure where the line should be and how accurately you cut to that line. The Sliding T-Bevel is one tool that will not only improve the marks you make, it will also be a welcome addition to your selection of hand tools.

You will rely on the Sliding T-Bevel to make straight lines at the exact angle you want, so you need to make it accurate in the first place. Be sure to select well seasoned, straight grained, dense wood. For this bevel I chose walnut. When cutting the pieces to final dimensions, be sure to carefully joint the edges so that they are perfectly flat and square. Check your stock with a reliable try square.

Preparing the Blank

Cut out three pieces for the body and tongue, 1/4" x 1" x 6". At the end of one piece, mark the centre for the bolt hole and use a compass or circle template to mark out a 1" diameter.

Cut the filler piece off the tongue at a 45° angle and carefully glue it between the other two pieces. Put the tongue in place to align the filler piece accurately. Clamp the pieces together, check the alignment and allow it to dry. Since the filler piece won't line up with the end of the body pieces, cut the end square with a tablesaw or mitre saw.

Wrap the pieces together with masking tape to keep them in place. Next, with a band saw, radius the end to just outside of the mark. Then finish the radius by sanding down to the mark.

MATERIALS LIST

Qty	Item	Size
2	Body	1/4" x 1" x 6"
1	Tongue	1/4" x 1" x 6"
1	Wingnut	1/4" 24 thread
1	Carriage bolt	1/4" x 1" 24 thread
1	Washer	1/4" ID

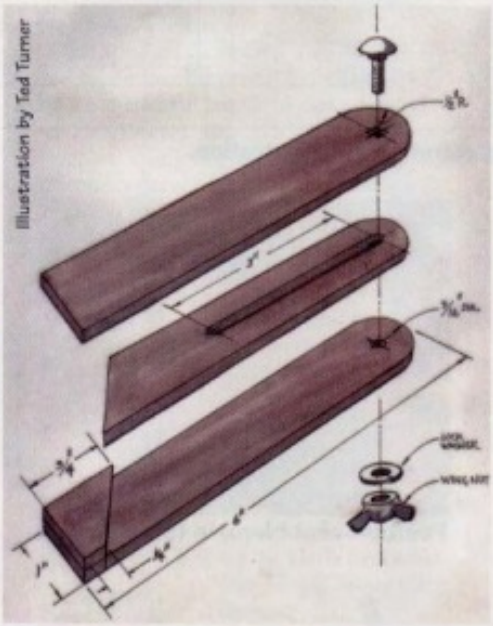

Illustration by Ted Turner

Drilling the Body

Select a drill bit slightly smaller than the size of the square shoulder on the carriage bolt and drill to a depth of 3/16" at the centre mark you made on the radiused end. Next, drill a 1/4" hole in the centre of the first hole all the way through. Use a backing board to avoid splintering.

Making the Channel in the Tongue

To make the channel that allows the tongue to slide in the body, remove the tongue piece and drill the 1/4" hole. Mark two straight, parallel lines joining the two holes and use a scroll saw to cut out the waste. If necessary, use a file to widen the channel if necessary so that it slides easily on the bolt.

Sanding and Finishing

Sand with 220 grit sandpaper and finish with any drying oil, such as Tung oil. Try to keep the oil from getting between the body sides, and keep the finish very light on the tongue, otherwise it may bind and be difficult to slide.

Final Assembly

Put the tongue back in the body of the Sliding T-Bevel, insert the bolt so the square shoulder fits in the hole you drilled for it, and add a washer and wingnut to the other end.

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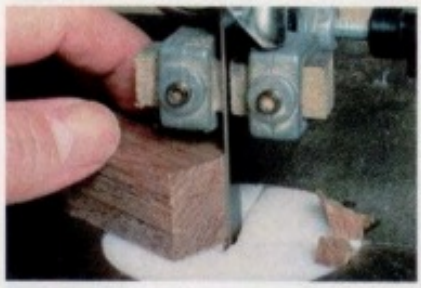


Radius the blank

Drill hole for bolt head

Cut channel in tongue

BY DANNY PROULX AND LUC ROUSSEAU

Dining Room Chairs

This project is the second of three dining room projects. Last issue we built a large double pedestal dining room table. This issue we build the chairs that go with that table. Next issue, we'll do a hutch to tie everything together.

This chair was designed to be both comfortable and sturdy. Like the dining table, my choice of red oak for the chairs is a personal preference; you can use a wood species that suits your taste and décor.

The chair is assembled using mortise and tenon joinery. There are, however, a couple construction steps that require a lot of attention and some skill (i.e. cutting the back leg assemblies and forming the mortises). Just don't rush through the project; it's really not all that complicated if you take it one step at a time. I didn't show a materials list for this project because you can use a lot of cut-offs in your shop for chair construction.

In addition to construction details for the chair frame, I will be showing you how to upholster the seat using a flat panel, 2" thick foam, and fabric. Of course final finishing, with oil based polyurethane (to match the dining table) should be completed before the upholstery phase.

Create a Template

Create a template using 1/4" hardboard or plywood for the twelve leg/back assemblies. Follow the dimensions shown in the illustration. The critical reference for these assemblies is shown by the framing square placement. The surface of each leg that rests on the floor must be a 90° to the face where a chair rail will be connected.

Cut Legs and Back on Band Saw

Cut all the leg/backs (A) on a band saw. Follow the outside profile of the line, leaving the pencil marks visible to help guide in the sanding stage. Sand all the parts using a drum sander and a random orbital palm sander. The twelve leg/backs can be cut from four boards that are 1 1/4" x 5 1/4" x 96".

Keep Flat Face Straight During Cutting

The lower edge of the chair side rail (E) will be 14 1/2" above the floor. The 1/2" thick mortise for that chair rail tenon begins 1/8" above that mark. The 3/4" deep mortise should be 1 7/8" long and centered on the leg/back edge to accept the side rail tenon. Carefully cut these mortises in each leg/back using a dedicated mortiser, mortising attachment on your drill press, or by hand. Each mortise is at 90° to the leg/back flat face. I support one end with a block to keep the flat face running straight as I move the parts during the cutting steps. If your mortiser has a traveling side-to-side carriage, you'll only have to set the flat surface level once.

Use Template to Locate Inside Mortise (Top and Centre)

The two upper and lower back rails (B) will be joined to the leg/backs (A) using mortise and tenon joinery. The mortises need to be accurately located. To accomplish this, place a mark 2" down

from the top and 1/4" in from the front edge of your leg/back template. The next reference mark is placed 3/8" from the front edge and 14 1/4" above the bottom edge of each leg/back. Draw a straight line between the two points. That line represents the angle on the front face of both rails (B). Trace the outline of each rail with a block of wood 1" x 2 3/4". The upper and lower points (previously marked) position the front bottom corner of the lower rail and top front corner of the upper rail. The front face of each rail should be aligned on the line that you marked between the two reference points. Next, draw an inner rectangle inside each back rail outline that's 1/4" inside all the lines. That rectangle represents the mortise outline, which should be 1/2" x 2 1/4". Cut out the mortise outline on your template and mark each leg/back. All these mortises are cut 3/4" deep. Mark each pair of legs 1L, 1R, 2L, 2R and so on to identify the parts, as you will be forming a right and left side as you drill the mortises.

Cut Tenons With Stacked Dado Blade

At this point cut the twelve back rails to size, and machine the tenons on each end. The rails (B) are 16 1/2" long, which includes a 3/4" tenon on both ends. The tenons should be 1/2" x 2 3/4", centered on each rail end. They can be cut with a stacked dado blade that's set 1/4" above the table surface.

Fit Back Slats Onto Top and Bottom Back Rails

There are three back slats (C) which fit into the top and bottom back rails (B) for each chair. The slats require a 1/2" x 3/4" tenon that's 1 1/4" wide on each end. The three slats are equally divided across the rails with a 2 5/8" space between them. The rails (B) need three mortises, centered on each rail, to receive the slat tenons.

Be sure to verify your measurements before cutting the slats to length. The distance between my (B) rails is 17 1/4", which means my slats must be 18 3/4", because of the 3/4" tenon on each end.

However, slight positioning differences of the leg/back mortises or cutting of the leg/backs may change your slat rail length. That's fine, as your chairs will probably be slightly different, but you must custom fit any part that spans two fixed points.

Mortise Leg/Backs for Chair Rungs

The final mortise in the leg/backs is required for the chair rungs (G). It's located in the center of the front edge of each leg and is 3 1/4" above the bottom as shown. This mortise is 1/2" x 3/4".

Round Over Front Top Edge of Upper Rails

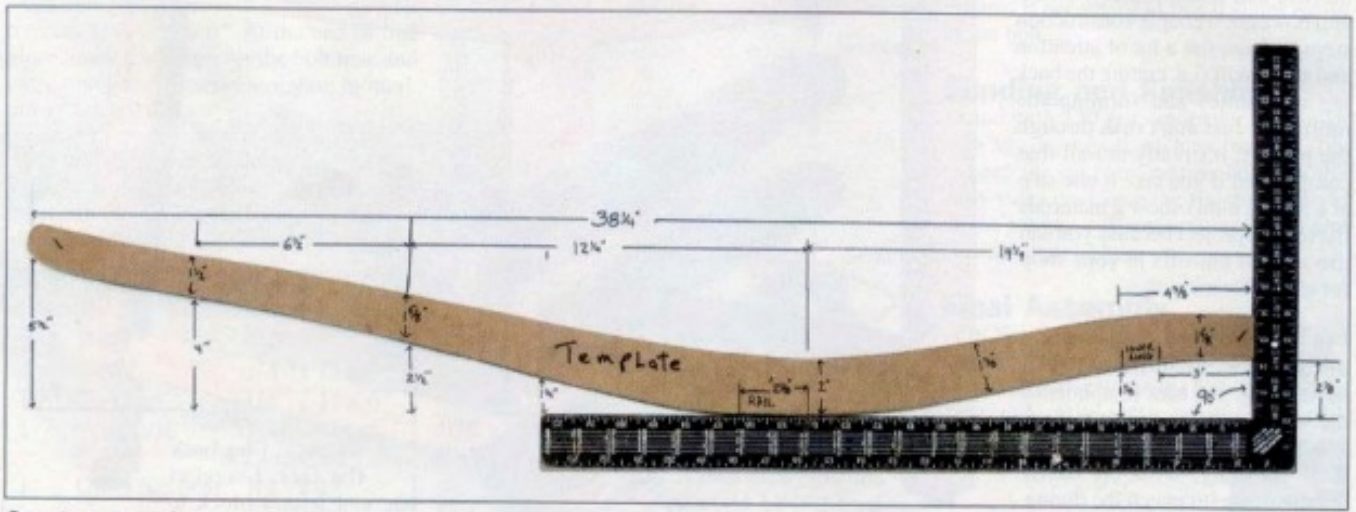
Before beginning the round over process, finish sand all the chair parts that have been cut to this point. The first task will be to cut a 3/4" radius, using a 3/4" radius round over bit in your router table, on the front top edge of six upper rails (B).

Round Over All Chair Parts

All of the chair parts, including the ones not yet cut, (i.e. front legs, rungs, stretchers, and rails), should be rounded over on all the edges using a 1/4" radius router bit. This easing of corners will remove the sharp edges, and "soften" the appearance of your chairs.

Assemble Leg/Backs on Back Rails with Slats Between Rails

Assemble the leg/backs (A) on the back



Create a template

Cut legs and back on band saw

Cut mortise 90° to flat face

Use the template to locate the inside mortise (top and centre).

rails (B) with the slats (C) in between the rails. Use glue on all mortise and tenon joints and check that the assembly is square. Clamp and set aside until the adhesive cures.

Cut and Mark Mortises

The front legs (D) are made using 1 5/8" square stock. They each require three mortises. Cut and mark the mortises carefully, because you will be creating a right and left leg.

Cut Offset Tenon with Dado Blade

The side rails (E) are 3/4" thick material with an overall length, including tenons, of 15 3/4". Note this blind mortise and tenon joint requires an offset tenon on the front end of the side rail. The cheek cuts are 1/8" deep to center the tenon, but the end cuts are different. You may also have to cut a small corner off the tenon that fits into the leg/back assembly to clear the back rail tenon.

Dry Fit Offset Tenon

The front rails (F) are cut to a total length of 15 3/4", which includes the 3/4" tenon on each end. Both ends require an offset tenon. The cheek cuts are 1/8" deep to form a 1/2" tenon. The end cuts are 1/8" and 1" deep to create the offset to fit the front legs. Dry fit all the parts. Your mortise and tenon joinery should fit snug but not too tight or too loose. Too tight and all the glue will be removed as the tenon is inserted. Too loose and the gap will not allow the adhesive to bind the parts. After assembly, verify the rung and stretcher dimensions, in case your leg/back is formed differently than mine.

Angle Fit Rung Tenons

The two rungs (G) for each chair require a little extra machine work on the tenons to achieve the angled fit on the leg/back end. I needed a 10° mitre on one end of my rungs but I suggest you verify the angle required for your chair because, as I mentioned, there will be slight differences depending on the cut and forming of the leg/backs. Set the mitre slide on your table saw at 10° to mitre one end of each rung. Then cut them to the required 17 3/4" length, measured from the long point of the mitre. Your table saw mitre slide should be set at 80° to make a 1/8" cheek cut that's 3/4". The opposite cheek cut is made with the mitre slide set to 110°.

Cut Square Tenon on Band Saw

The two end cuts, which will form a 1/2" square tenon, are completed on a band saw. Use your mitre slide and fence to first cut the ends to make a 1/2" square tenon. Then, use the band saw mitre slide, set to the 80° and 110° positions, in combination with your fence to trim the waste. The opposite end of this rung requires a 1/2" square tenon, centered on the end, to fit the front leg mortise. Also, all the rungs need a 1/2" square mortise that's 1/2" deep in the center of the rung, at the center point of their length, for the stretcher boards.

Secure Stretchers Between Chair Rungs

The stretchers (H) run between the two lower chair rungs and are secured in two mortises that are 1/2" square and 1/2" deep. The stretchers require a 1/2" square by 1/2" long tenon on each end. Round over all the visible chair parts with a 1/4" radius router bit and assemble the chairs with glue. Notice that the stretchers are installed flat with the wide face up.

Glue and Screw Corner Blocks

The front two mitred corner blocks (J) are attached with glue and screws.

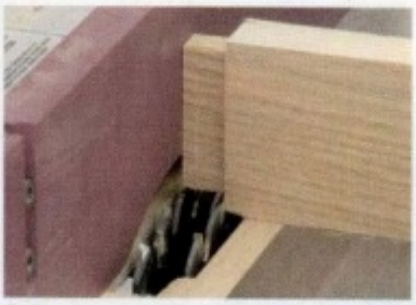
The two back corner blocks (K) are cut with a 45° mitre on one side, and a compound 45°/10° mitre on the back, to fit the slanted lower back rail. Use 1 1/4" screws and glue to attach these blocks.

Notch Seat Back

The seat platforms (L) are made using 1/2" plywood. The back end requires two notches to fit between the leg/back boards. Once they've been cut to size, round over all the corners so they won't damage your fabric.

Cut Foam

Cut a piece of 2" foam that is 1/2" greater than the length and width of the seat board. The foam will extend past all seat board edges by 1/4". The foam can be cut with a utility knife and glued to the seat board with spray adhesive.



Cut tenons with stacked dado blade

Fit back slats onto top and bottom back rails

Round over front top edge of upper rails

Assemble leg/backs on back rails with slats between rails

Cut and mark mortises

Dry fit offset tenons

Attach Fabric

Cut your fabric 25" square. Center the seat on the material and attach the front and back with a staple in the center. Next secure both sides of the material with a staple at the center point. Pull the material so it's snug but not stretched.

Pull the four corners tight and temporarily staple them to the underside of the seat board.

Start at the center of each edge and pull the fabric tight as you staple and work towards each corner. Be sure the fabric is tight but not stretched. Complete all four edges making sure the pattern (if your fabric has a pattern) is straight and the material is snug. The staples should be 1" apart.

Remove the temporary corner staples. Bring the side edge of your material, at each corner, tight and flat on the seat board. Staple this piece in place. Form the front edge of the material over the side material forming a pleat. Anchor the material well with staples. Repeat this step at each corner.

Add Upholstery Piping

As a final touch, an upholstery piping can be added to fill the gap between the seat and the chair. Staple the piping to the bottom of the seat on the front and two sides. After finishing the chairs, secure the upholstered seats to the frame using 1 1/4" screws through the corner blocks.

Now, all you have to do is sit and relax on your new dining room chairs - you deserve it!

In the next issue, we show you how to build the final piece for this series, a dining room buffet and hutch. It's a little larger than the normal pieces found in furniture stores so you can store all your fine dishes and serving ware. And, as with last issue's dining table, the hutch can be sized to suit your needs.

CUT LIST FOR 6 CHAIRS

A 12 leg\backs
1 1/4" x 2" x 38 1/4"

B 12 upper and lower back rails
1" x 2 3/4" x 16 1/2"

C 18 back slats
3/4" x 1 1/2" 18 3/4"

D 12 front legs
1 5/8" x 1 5/8" x 16 3/8"

E 12 side rails
3/4" x 2 1/8" x 15 3/4"

F 6 front rails
3/4" x 2 1/8" x 15 3/4"

G 12 lower rungs
3/4" x 1 1/4" x 17 3/4"

H 6 stretchers
3/4" x 1 1/4" x 16 1/2"

J 12 front corner blocks
3/4" x 2 1/4" x 6"

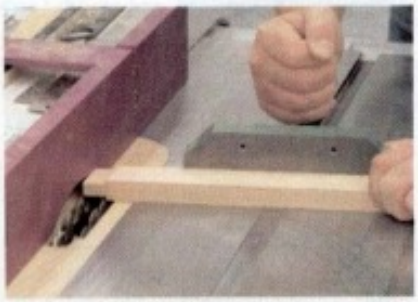
K 12 back corner blocks
3/4" x 2 1/4" x 5 1/2"

L 6 seat boards
1/2" x 17" x 17 3/4" plywood

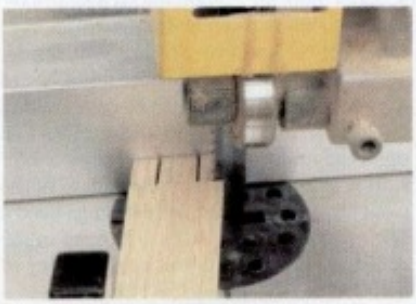
Foam
6 pieces 2" x 17 1/2" x 18 1/4"

Fabric
2 1/2 yards x 54" wide

All solid wood unless noted
All measurements include the tenon lengths when they are required



Angle fit rung tenons



Cut square tenons on band saw

Secure stretchers between chair rungs

Glue and screw back corner blocks

Notch seat back

Cut foam larger than seat board

Start at center of each edge and pull fabric as tight as you staple

Fold front edge of material over side

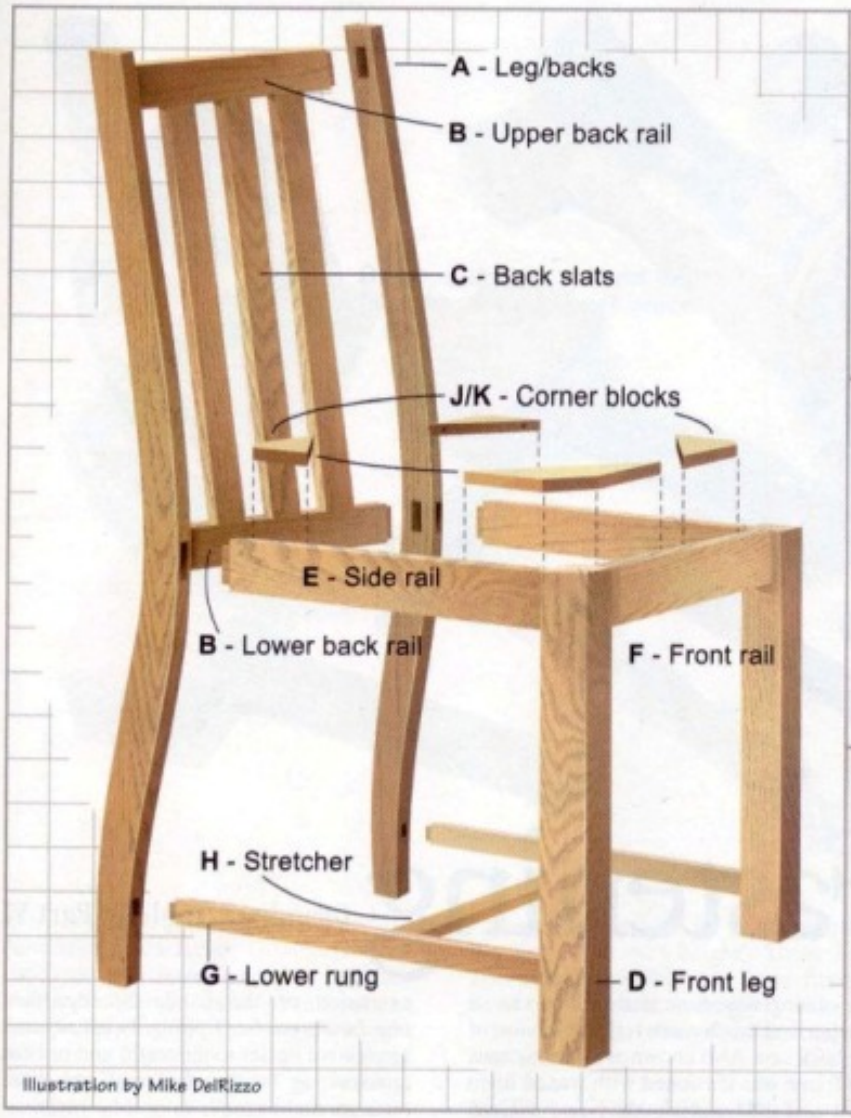
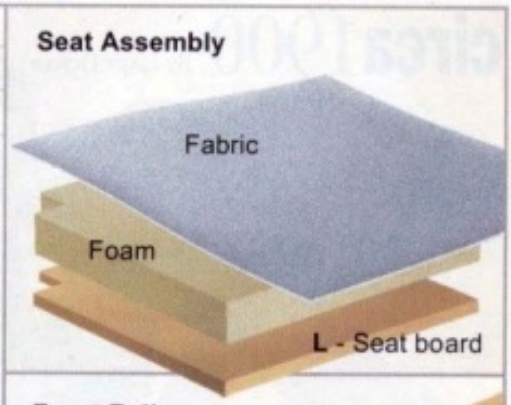
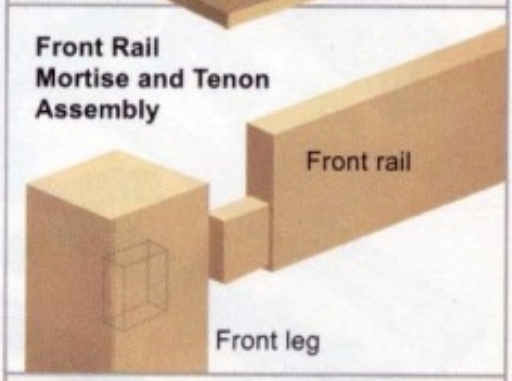
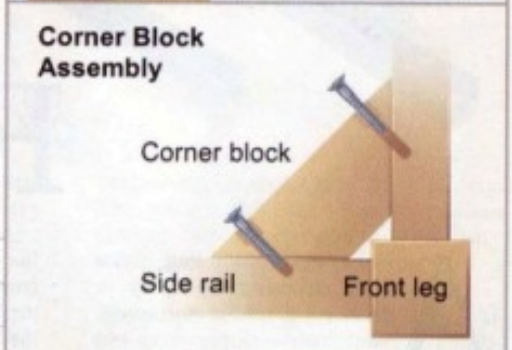


Illustration by Mike DelRizzo







All legs clamped for final sanding

Tip

Clamp Before Sanding

Clamp the leg/backs in groups of 3-4 pieces for the initial sanding. Then, when all the pieces have been sanded, clamp all of them together for the final sanding and shaping. This technique will guarantee that all the pieces will be identical.

DANNY PROULX

LUC ROUSSEAU
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Fastening

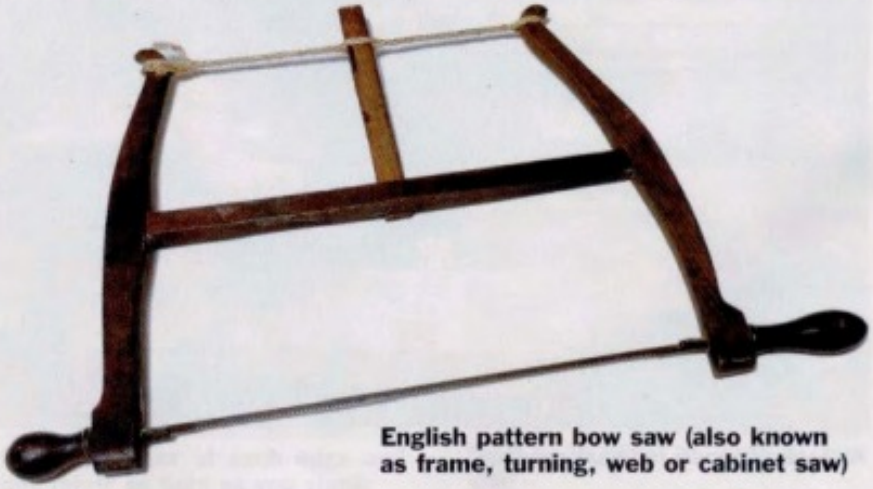
Grandpa's Tool Kit Part VI

As I open my wood shop with a hot, steaming cup of tea in hand, I grab for my apron, hung on a single, very old hand-wrought rose head nail. This nostalgic keepsake from Grandpa's house, built in 1870, is the first thing I see every morning in my shop.

Prior to the advent of machine cut nails in the mid 19th century, each nail had to be forged individually by a blacksmith. Wrought iron nails were therefore expensive and scarce. All throughout North America there were stories of early pioneers burning down their houses to recycle nails for their new, upwardly mobile residences. So prevalent was this practice in the 18th century that the early New England colonies passed laws requiring a magistrate's order before early homesteaders were allowed to torch their starter homes. But allow me to take a short detour. To pick up where we left off in Part V, we should have a quick look at bench saws.

Grandpa had many bench saws for ripping and crosscutting boards. Much of his sawing was done with a bow saw, a smaller and much more refined version of the buck saw. Also known as a turning saw, the frame was tensioned with waxed linen cord and had a mahogany and walnut toggle. The handles were shaped from curly maple while the crossbeam was made from well-seasoned spruce to lighten the tool. For those who have worked with this remarkable tool, it becomes an extension of the hand. Grandpa had one bow saw for ripping (with a more aggressive rip set to the teeth) and one for crosscutting (with a finer set and more teeth per inch).

No woodworker, however traditional, turns his back on technology, if it can save time and offer increased efficiency. Grandpa was no exception. He was proud



English pattern bow saw (also known as frame, turning, web or cabinet saw)

Brace, auger bits, hand drill (also known as wheel brace)

of his beautiful, gleaming, very expensive American made Henry Disston & Sons handsaws, purchased one year in South Portland, Maine, as a result of an unexpected windfall. One very dark night as Grandpa disembarked from his fishing boat at Barachois wharf, a lurking, ominous group of Yankee adventurers approached him and asked if he was interested in a sudden fishing trip to a tiny cove off the coast of Maine. They also had a small cargo: a dozen barrels of undisclosed contents, and he would be paid well for this hasty sea journey. After three Hail Marys, one Our Father, and the words: "pickled herrings" muttered ten times under his breath, Grandpa made his decision, and yet another story passed into family lore.

These handsaws were state-of-the art; the handles alone were works of art. Grandpa had a 6 point (teeth per inch) rip, two crosscut saws at 8 and 10 points, and two different sizes of back saw: a 12 point tenon saw and a 15 point dovetail saw with open handle. He was so proud of these handsaws that he had a toolbox devoted to their maintenance. In that box were shop-made saw vices to hold blades for sharpening and an assortment of mill files equipped with fences for jointing (filing the teeth to an even height). There were also tapered saw files for hand filing a bevel on each tooth, and a pliers and anvil set (to re-bend each tooth to the original angle or set).

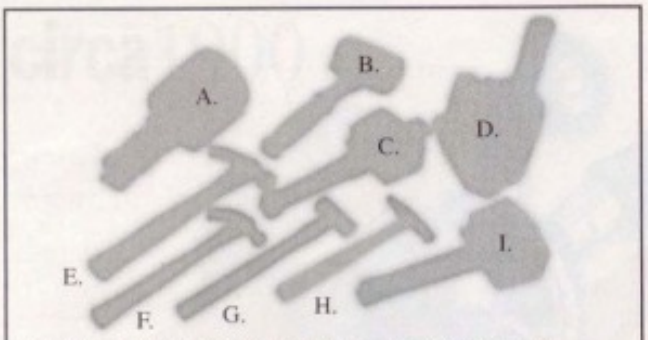
Nails and Wooden Pegs

Grandpa's woodworking skills were a vestige of the ancient medieval trade of carpenter-joiner. Nails and wooden pegs

were part of this long tradition. The trade of cabinetmaker was a much later evolution to meet the requirement to produce fine furniture for the emerging bourgeoisie of the 18th century. Town-based cabinetmakers frowned on the use of hammers and nails and relied almost exclusively on glue and intricate joinery. This was a world apart for early Canadian country woodworkers who were very proud of their carpenter-joiner roots.

Modern woodworkers sometimes take certain things for granted. For example, nails and screws are now plentiful and inexpensive. The strength of PVA white glue is greater than the strength of the wood itself. It was, however, a different story for the woodworkers of Grandpa's generation. They could not rely on hide glue, which would eventually break down over time. Machine produced screws were prohibitively expensive and difficult to find. Early in our pioneer past, door hinges and latches were often made entirely of wood because iron was so scarce.

At the end of the 19th century Grandpa enjoyed a few technological benefits. From the general store in the village he could purchase strap hinges, mortise rim locks, and machine-cut rose head and L-head nails in bulk. Although some hardware came with slotted screws, strap hinges, for example, used nails bent or "clenched" at the back of the door rail or brace. Old nails and spikes were always straightened and used again.



A. carver's mallet, B. chair maker's mallet, C. carpenter's mallet, D. trunnel mallet (birch burl), E. claw hammer, F. cabinet maker's 7 oz claw hammer, G. barrel hammer H. tack hammer, I. carpenter's mallet

Grandpa preferred to use wooden pegs and, like his ancestors, could make an entire piece of furniture without a single iron fixture. The proverbial square peg in a round hole required a carefully whittled peg with a tapered shank and a squared head. For mortise and tenon joinery, a very precise hole or socket would be drilled through the post or stile into the interlocking tenon. The length of the peg would match the depth of the socket and would be driven home with a wooden mallet so that the square head would tightly grip the sides.

Wooden Mallets and Hammers

Grandpa had many wooden mallets, each weighted for a specific purpose. For timber framing he had a trunnel (tree nail) mallet made from a birch burl. He had a huge "commander" mallet for knocking large, heavy beams into place. At his work bench he used the more common carpenter's mallet for chiseling work, a chairmaker's mallet for assembly, a cylindrical carver's mallet and a smaller striking mallet for setting wooden planes and driving small trunnels and pegs. All were shop-made, shaped and weighted for Grandpa's large hands. He would apply a coat of linseed oil every month, primarily to harden the wood fibres and to prevent splitting. Under no circumstance would Grandpa ever use a claw hammer to strike a chisel, nor would he drive a spike with a mallet.

For the latter purpose Grandpa had a good selection of hammers. In those days the framing hammer had not been invented and the general-purpose claw hammer, a relatively new innovation in Grandpa's day, was the tool of choice for carpentry. For furniture making and finish carpentry a much lighter 7 ounce claw hammer was used. When driving smaller, more delicate brads, the Warrington cross-peen hammer would be chosen because the narrow head could get into tight places.

Screwdrivers, Braces and Bits

Screwdrivers were far less important than they are today. Almost certainly the screw, one of the greatest single mechanical invention ever devised by man, has been around since the time of Archimedes. In rural Canada it was next to impossible for woodworkers to buy screws in bulk. Each screw had a very crude machined thread and Grandpa usually had to cut the slot with a hack saw. Apart from hardware for structural purposes, screws were seldom even considered.

The humble brace and bit was a mainstream woodworking tool for these early Canadians. The modern hand drill started out as the bow or pump drill of the ancient Egyptians, essentially a metal shaft with a cutting head, twisted into the wood, back and forth by means of a primitive bow. Grandpa had three fairly modern braces of differing sizes. In his workshop he had a whole shelf just devoted to drill bits. He had both spiral auger bits and spoon bits, all of which had to be sharpened and maintained on a regular basis. Hanging up on the main roof truss beam in his shop was a full set of timber framing augers (essentially a much larger version of the modern cork screw, used for house construction). At the diminutive end of the drill scale, Grandpa had a set of hole-starting gimlets, scratch awls, nail punches, and reamer awls. These early woodworkers marked-out and drilled every single pilot hole and countersink with extreme precision.

Furniture, for our early Canadian forefathers, was much more than interior decoration. Their locally made furniture often defined their cultural roots, organized their daily lives, and helped to plot their futures in a harshly majestic land where house and hearth provided shelter and sustenance for body and soul.

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Entry Door

The front door of your house is one of the first things that visitors see when they come to your home. Therefore, a beautiful set of hand made doors can have a significant visual impact to the "first impression" visitors have of your home. This quartersawn white oak front door is easy to make and is sure to improve the look of your home.

A door like this can be constructed in a number of different ways, many of them requiring heavy duty commercial tooling, and power feeders for precision milling. However, the construction method I describe here does not. This method greatly facilitates and speeds up the process, so that even if you don't have a lot of experience, you can still make a great looking door.

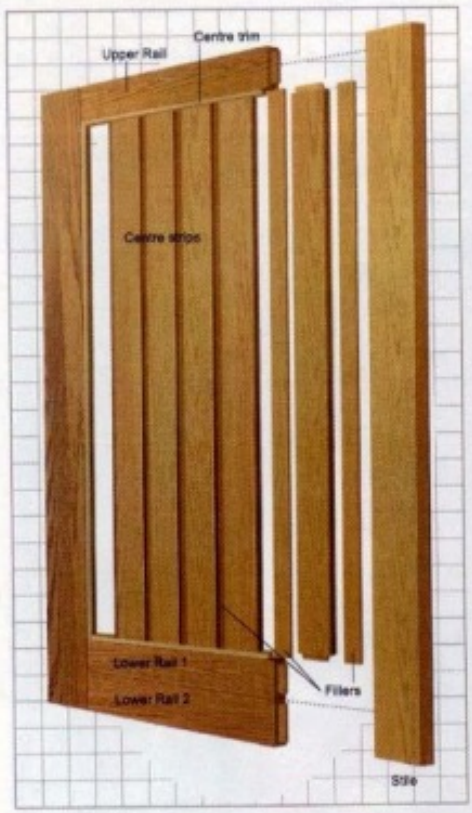
When building a door the most important tool is your jointer. Although it's an easy task to face joint, handling the long stiles can be a cumbersome task, so some additional care needs to be taken when you joint these pieces. It's crucial that the rails be straight and flat in order to eliminate warpage of the door frame.

You can build the door with all solid wood or you can use a lamination of 1/2" plywood and 1/8" shop sawn hardwood veneer. The laminated technique has a couple of great advantages over the solid door version. It will be much more warp-free and more likely to retain its shape over the years. During the construction though, a dead-flat surface is absolutely essential for lamination glue-up. Also, since you'll be using shop sawn veneer, you can virtually use any wood you like. You will not have to use 8/8 (or 2") lumber and dress it down to 7/8 (1 3/4") thickness. The laminated version also eliminates the machining of 2" deep mortises and tenons, yet allows very tight fitting 5" to 6" deep mortise and tenons (with no machining at all). The only downside of the laminated version is that it takes longer to build. Available time versus available tools seems like the equation here, so suit it to your own condition. For these doors I used the laminated technique.

Cutting the Plywood

First, choose good quality 1/2" plywood. It needs to be flat with no tension in it at all. Follow the cutting diagram for the plywood. Please note the dimensions of this door are a standard 36" x 80" x 1 3/4". You can alter the measurements to suit your need.

Begin by ripping the upper and lower rails (UR1, UR2, LR1 and LR2). Then cut the center rails and finally the stiles (S). The cut-off pieces in the diagram, marked (F) are not scraps! Put them aside; they will be used as fillers on both sides of the centre rails (CR).



Cutting Parts to Size

All parts need to be cut with stops to ensure that their sizes are identical. A cut-off box is the perfect aid to accomplish this, unless you have a sliding compound mitre saw or radial arm saw. You may find it easier to clamp the stiles together when cutting them.

Gluing Tips

I use a painter's 4" trim roller for applying glue. Apply the glue in a uniform pattern, as you would when painting a wall. This method creates minimal glue squeeze-out.

You can use an outdoor glue like LePage's Outdoor Glue or Franklin's Titebond III, or you can use a polyurethane glue. Personally, I like Titebond III's longer open time (especially for this project). It also rolls on easily with minimal mess. You can keep the glue roller in a ZipLock bag. I've been keeping mine for the last six months in four or five different bags. The roller does not deteriorate and the glue doesn't dry up.

Gluing Sequence

Apply glue to (F1) and (F2) only. First, glue down (F1) to the edge of (UR2). Then glue down (F2) to the other edge, using (CR) in between (F1) and (F2) as a spacer. You may use screws and/or nails to position all these pieces to prevent creep (as the veneer will cover the screws/nails). Once (F1) and (F2) are secured on (UR2) then position (CR) by checking with a ruler. Make sure that (CR) overhangs (UR2) 6" on each end. Once you're happy with how (F1), (CR) and (F2) are glued on (UR2), you may proceed to glue (UR1), sandwiching (F1), (CR) and (F2) in between (UR1) and (UR2).

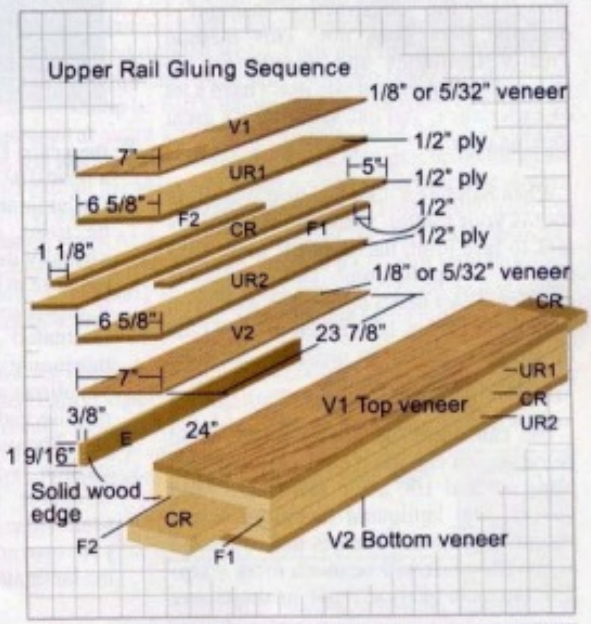
The Rails (horizontal door frame members)

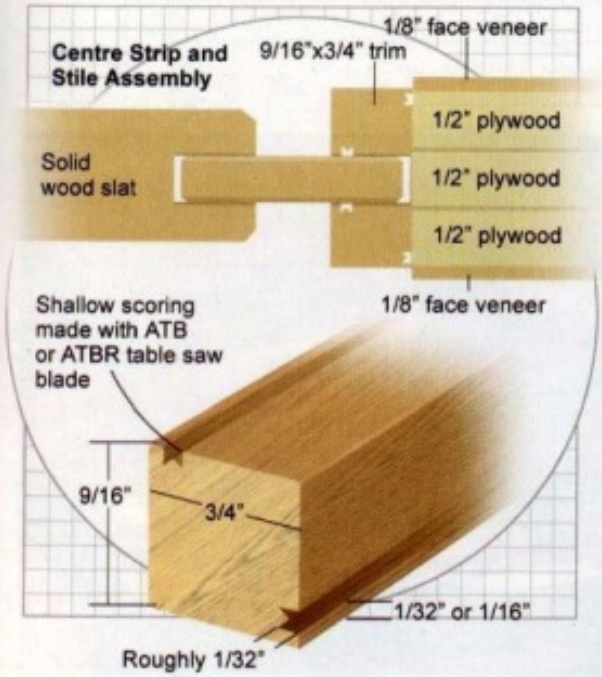
Use one of the three edges as a reference, and make your cuts either on the table saw or with a router equipped with a bottom bearing flush-trimming bit. In the case of upper or lower rails, it's wiser to use the centre piece (one of the (F) pieces) as a reference since the table saw fence or router bit bearing will ride on the longest and continuous edge.

Repeat the same process for the lower rail. Once both rails are laminated and trimmed, glue piece (E) to the outer edge of each rail (on the top edge of the upper rail and on the lower edge of the bottom rail). You may also screw and plug these solid wood pieces. Make sure you drill countersunk pilot holes first. Note that these pieces are oversize (1 9/16") and they need to be trimmed with a bottom bearing flush trimming bit. Once they are trimmed, glue your shop sawn veneers (1/8" thick) on both sides, together or one at a time. In case the plywood you have is undersized, increase your veneer thickness to 5/32" or thicker as required. The goal here is to reach exactly 1 3/4" thickness. After the veneers have been glued, trim the edges and it'll be ready for the last step, creating the shoulders. An oversize mitre slot slider is the perfect jig to cut the shoulders. Simply butt the end of the tenons to the fence and trim cut the shoulders on your table saw. Make sure you don't cut into the 'built-in' tenons.

The Stiles (vertical door frame members)

The stiles are more straightforward. Cut two of the six (S) pieces together down to 66 7/8", making sure that the ends are perfectly square. These two 66 7/8" pieces will make the centre layer of the left and right stiles by being sandwiched between the 80 7/8" outer (S) pieces of plywood. You can use the cut offs on the end of the stiles, leaving them a little oversize; they will be trimmed once the frame is glued together. Glue the plywood layers, then the 3/8" edging and finally the 1/8" veneers the same way the rails are done. The 3/8" solid edging should only be glued, since they will be highly visible every time door is





opened. You can use the completed upper and lower rails to check the fit of mortise spacing and overall symmetry of the pieces that make up the left & right stiles. That way, there won't be any surprises when it all comes together.

On the stiles, don't use the centre plywood piece as a reference edge for trimming, because it has spaces to accept the tenons. Use the outer top or bottom layers, since they have continuous edges. Also, for both rails and stiles, laminate the plywood layers first, trim and cut them to final size, then glue 3/8" solid edging on the outer edges of each piece. After trimming them out, apply the 1/8" veneers and trim them with router.

When all four members of the door frame are done, you'll be amazed how tight those tenons slip into the mortises. No brute force is necessary, but the tight fit can create a vacuum when you want to take them out. Make sure you trial fit the pieces without using glue. You can drill some 1/8" holes into the tenon cheeks to facilitate glue distribution. I use polyurethane glue inside the mortises and put Titebond III on the tenons. This seems to create an excellent bond.

The Centre Panel

Now it's time to fill the inside of the frame to complete the door. First, you'll need to mill eight trim pieces (3/4" x 9/16"). Trim four of them to about 66" or 67" and the other four to 24". These pieces are trimmed and glued inside the frame with a 1/16" reveal using a shop made gauge for consistent results. I pin these in place with a pneumatic air nailer using 23 gauge nails, which are hardly visible.

The next step is the centre panel. I used slats milled down to 1 1/8" from 5/4 (1 1/4") stock. Their edges are grooved on the table saw with a dado 1/2" width by 5/8" deep. I milled the ends of these slots with my router, carrying the groove on all four sides. I also milled 1/2" x 2 1/4" x 66" strips, which went in between the slats (not glued, but free floating) and along the edges of the whole panel. Pay attention to the grain orientation of these pieces at the end of the slats.

Solid door option

Now you can drop the whole assembly on the glued trim, inside the doorframe. Once everything is in place, apply the same strips on the other side, applying glue carefully on the trim or inside corner.

It helps to give some very shallow scoring cuts to the glued surfaces of the trim. This prevents glue squeeze-out.

You could also use plywood panels with insulation sandwiched between them, or raised solid panels.

I used Watco medium walnut stained Danish Oil, followed by Watco Marine Teak Oil. You can recoat the door with Teak Oil whenever is necessary.

If your door is facing the afternoon sun, you might want to increase the frequency of additional coats, or simply apply outdoor varnish or some other type of finish of your choice.

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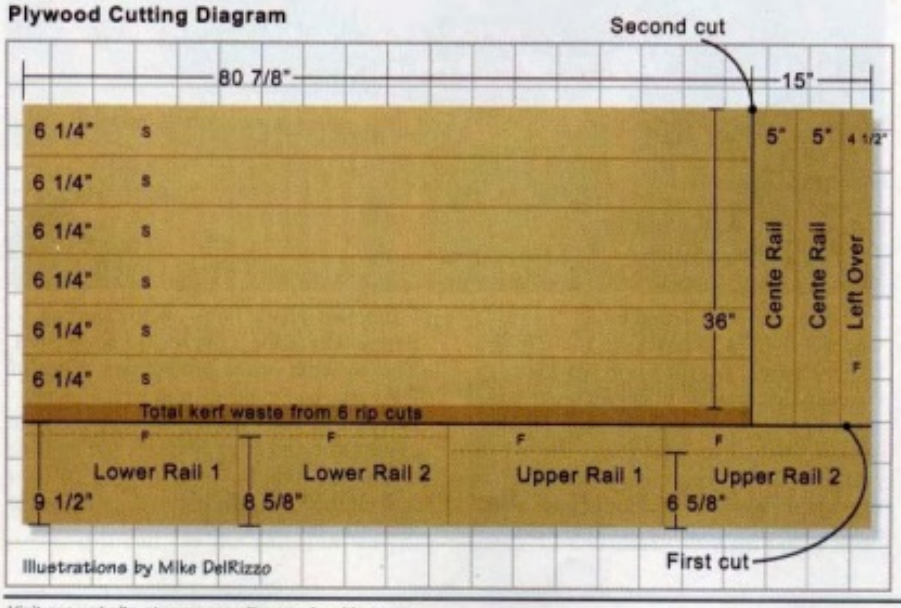
Plywood Cutting Diagram



Illustrations by Mike DelRizzo

Wood Paneled Ceiling

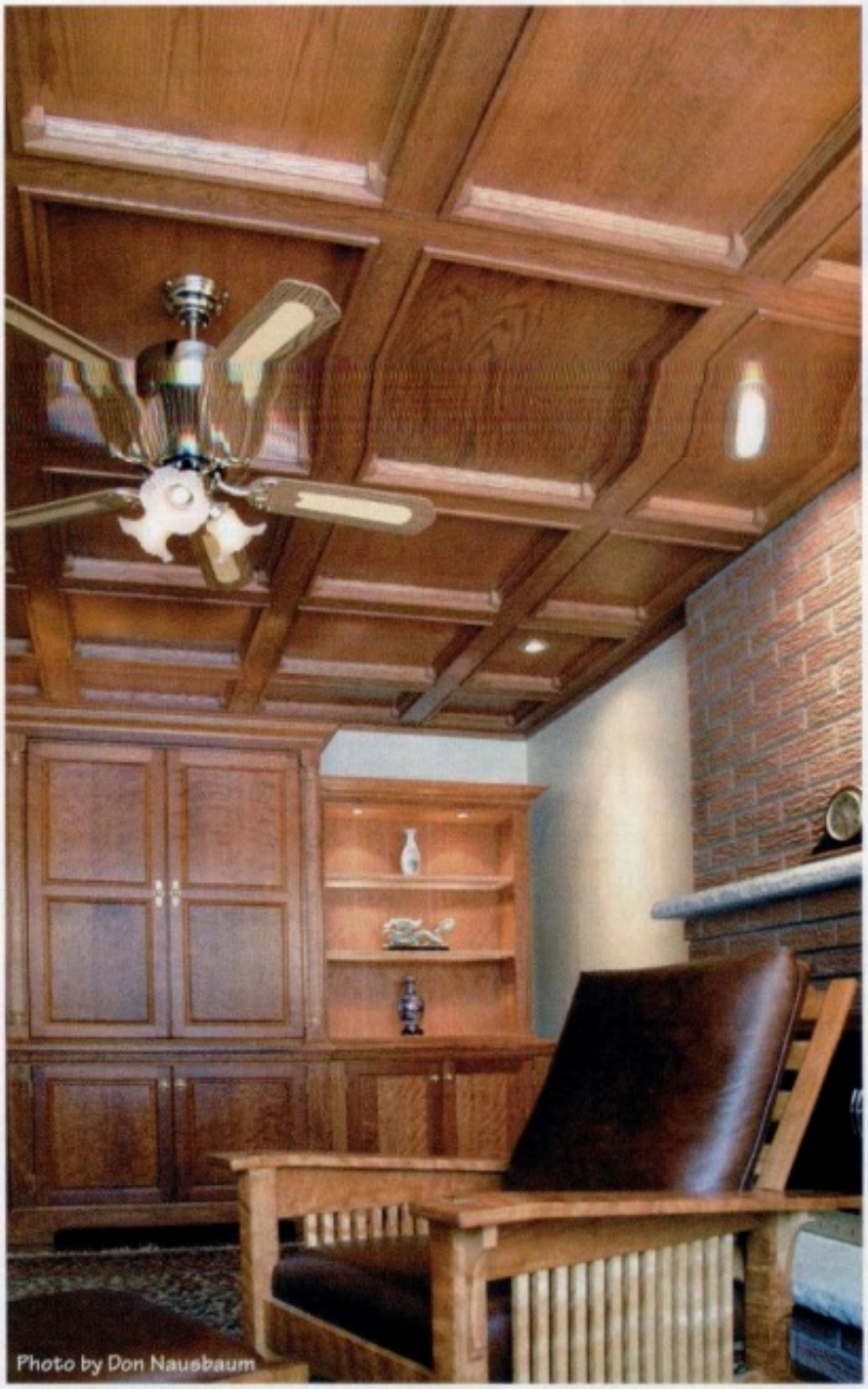


Photo by Don Nausbaum

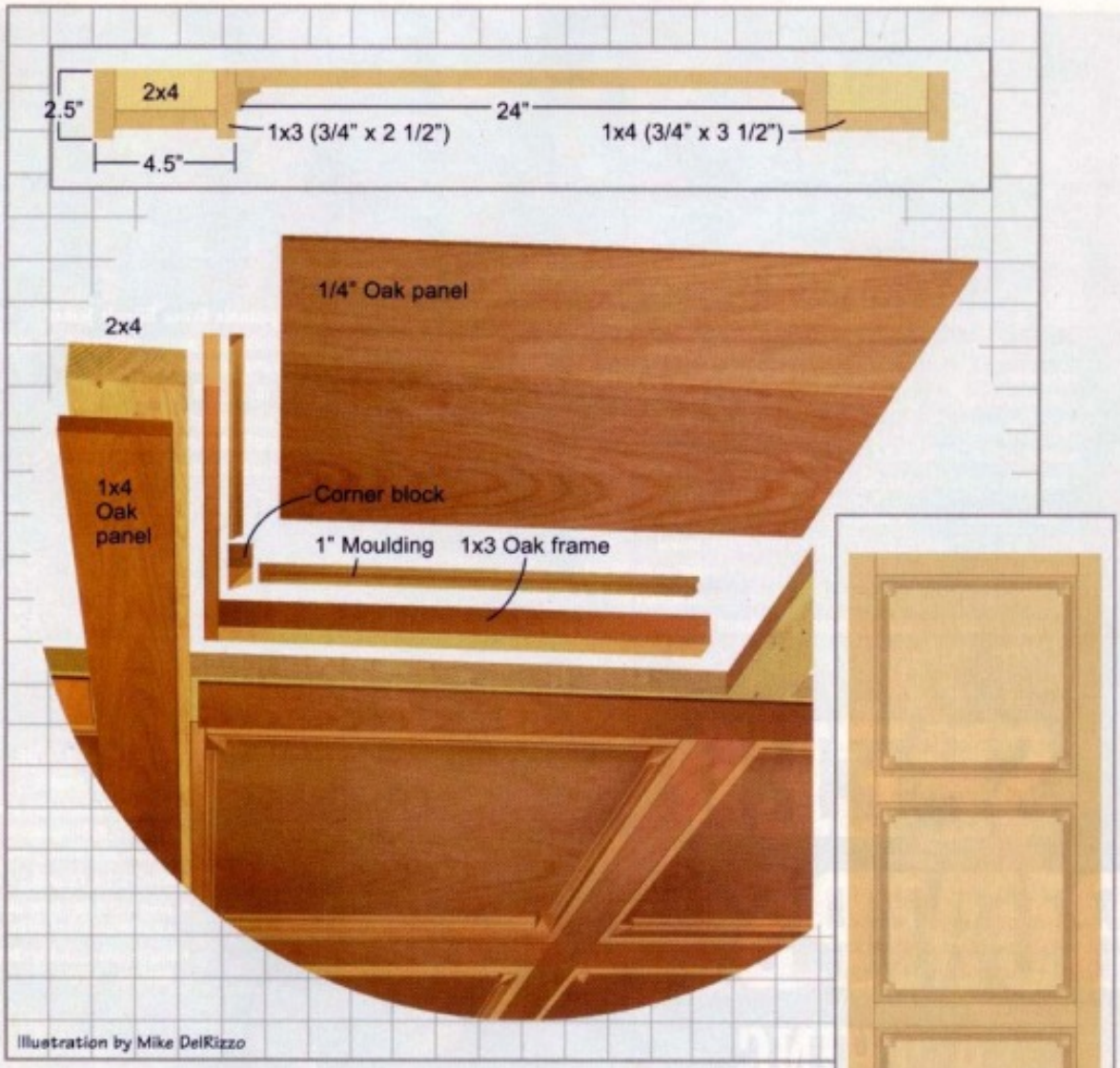
A number of years ago, on a visit to Toronto's Casa Loma (the palatial former residence of Canadian financier Sir Henry Pellatt), I was intrigued by the vast amount of woodwork in the castle; the many paneled rooms and applications especially appealed to me. Coincidentally, at that time I was looking for a simple project to enhance my family room; something with an element of warmth and style that would be both visually pleasing and unique. So, with the inspiration of Pellatt's residence, I decided to integrate wood panelling into my own castle's family-room ceiling

At the time I owned no woodworking tools. I figured that I could borrow the tools I needed (mitre saw and air nailer) and if it didn't work out, I could just hire someone to clean up my mistakes.

I decided on a series of recessed boxes, framed with small mouldings and corner blocks. Each framed box would have a full sheet panel of wood to cover the open ceiling recess. I wanted the frame moulding to extend up against the walls. To accomplish this, I first measured the room, to find centre, as everything else would be based on this centre point. When dealing with such a large surface area, proportion (such as the scaling of the box sizes) is very important.

Using a tile-layers technique to define the center of the room, I transferred the room measurements to scaled paper so that I could draw out a plan. From the plan I tried different sized squares to see what size best suited the room. I settled on 24" boxes. I was able to fit in 35 boxes: 15 full size and 20 edge boxes. The trick is to size the edge boxes so that they are of approximately the same dimensions around the edge. This is a similar method to what tilers use when putting down ceramics. Balance is important, so paying attention to detail now is most important to the final look.

I snapped chalk lines on the ceiling to define where the 2x4s would be located. The skeleton of the project is a series of 2x4s attached to the ceiling with 4" screws driven into the ceiling joists. I used the centre line and edge lines for the 2x4s to define the final box sizes. I also defined and marked the ceiling joists, to facilitate attaching the 2x4s.



Each box is essentially a portion of a 2x4 framed with 1x4 (3/4" x 3 1/2") oak and 1x3 (3/4" x 2 1/2") oak. The panels are all 1/4" oak ply with 1 1/2" x 1 1/2" x 2" corner blocks that are cut at 22 1/2° to form a point. I applied corner blocks and 1" moulding along the oak framing that covers the 2x4s.

It is important with this project to prefinish your wood prior to assembly, so labeling your drawing and the pieces is important. I used a Minwax Cherry stain.

Once the framing was up I laid out my 1x4 oak pieces and mapped a layout to face the 2x4s so as to give symmetry in the location of the butt joints. All the oak was attached with a nail gun. Working overhead can be difficult, so the nail gun was a welcomed tool.

If I were doing this again I would buy 3/4" oak plywood and rip it into 8 foot strips 3 1/2" wide. That would save on the cost of hardwood.

Once the 2x4s were all faced, it was time to frame the interior of each box with 1x3 oak. Paying attention to the configuration in the box I aligned all my cuts so that the exposed end grain would all be in the same direction, and easy to touch up later. Once that was completed I installed the oak panel, using construction adhesive. I had several sheets of oak ripped into squares and I wanted to avoid a look that would be too continuous, so I mixed the location of the panels on the ceiling but made sure the grain direction on the panels was all the same. To add detail to each box I then added in the corner blocks and installed moulding between them. When the boxes were all complete I added a final wall moulding that ran around the room to tie the ceiling to the wall. After all the assembly was completed I used coloured putty to cover the nail holes.

This ceiling was my first serious woodworking project. Now, seven years later, it still adds a warmth and feel to the room that separates it from the rest of the house.

It's a relatively easy project, but done right the results can be spectacular.

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By Michel Theriault

Butterfly Key

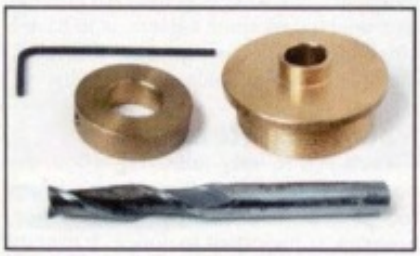
Spline key bits

Courtesy H.C. Sakman

The butterfly key joint is more decorative than structural. Although often used for tabletops, you can use it anywhere to join the edges of two boards together. The key can actually be any size and shape you want to suit your application, although the traditional butterfly key looks like a dovetail. Make it from a contrasting wood for the best effect.

What You Need

The easiest way to make a butterfly key joint is with a bandsaw and chisel, particularly for thick stock. However, if you are only looking for a decorative effect, you can use a router with an inlay template guide and a pattern to make shallow inlays. An inlay template guide set includes a bushing (with allen key), template guide, and 1/4" spiral router bit. They can be purchased as a kit or separately, and come with complete instructions for making inlays



Inlay template guide

How To Make The Joint

Since it is primarily a decorative joint, you should decide how the butterfly key size, location, and proportion will work with your project, and design it accordingly.

1. Align your boards together before gluing and draw the butterfly keys onto the boards. You can do this freehand, using a paper template, or by using a ruler to mark out a specific dimension.

2. Use a bandsaw to cut the waste out, being careful to keep the cut perpendicular to the surface of the boards.

3. Clean up the cut with a sharp chisel. Make sure the openings in each board match exactly when the boards are glued together. To do this, you can clamp the boards together before cleaning up the cut.

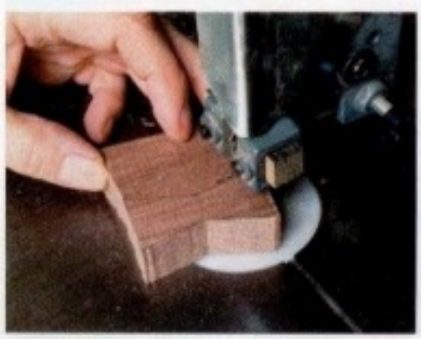
4. Position the newly cut openings over the material you want to use for your butterfly key and trace the opening with a sharp pencil or a marking knife. You could also use a template to mark the keys.

5. Cut out the butterfly key with your bandsaw. If your stock is small, use doublesided tape to attach it to a larger piece of wood for safety before cutting on the bandsaw. The final butterfly key should be slightly oversize.

6. Glue and clamp the boards together with the key glued in place flush with the surface of the boards. Sand or plane flush as required.

7. Glue and clamp the boards together with the key glued in place. Make sure the key is flush with the boards. Sand or plane flush as required.

Cut out the waste



Cut the key

If you don't want to make the butterfly key joint by hand, but want it to be more than just a decorative joint, you can use a matched set of bits like the ones shown. The 14° dovetail bit is used to make the opening in the two boards you want to join, and the matching 14° butterfly spline bit is used to cut the key.

MICHEL THERIAULT
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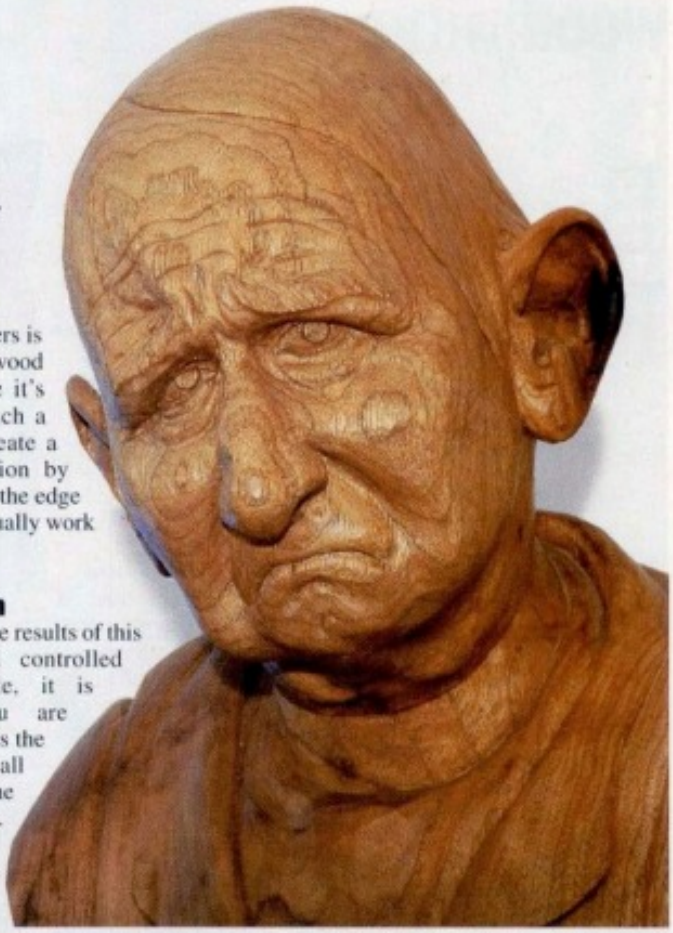
By David Bruce Johnson

Wood Grain



When carving wood, one thing is a certainty – you must deal with wood grain.

The growth rings of a tree are like several tubes that fit perfectly together and run lengthwise along the tree's trunk. Once the tree is cut, it isn't always obvious which way the grain goes. Sometimes the grain can be a real challenge, but most of the time, it provides a built-in way to enhance a carving.

It's easy to understand the challenges wood presents by considering carving across, along, and on the end of the grain.

Across the Grain

It might come as a surprise that the most effective way to remove wood is to carve across grain. When carving across grain, you are cutting the wood fibre, and you have very good control of what wood is being removed. The same can't be said when carving along the grain.

Along the Grain

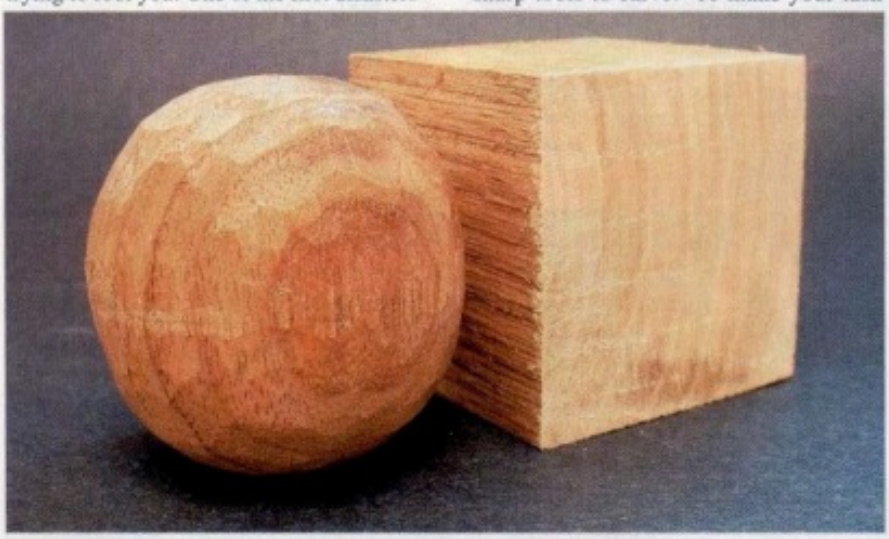
It's very tempting to remove large pieces of wood along the grain because it's so easy. Unfortunately, that's just the wood trying to fool you. One of the first disasters every carver encounters is when a huge chip of wood splits off just where it's needed. To avoid such a disaster, you can create a "cross grain" situation by beginning to carve at the edge of the wood and gradually work back.

With the Grain

When you look at the results of this more cautious and controlled approach in profile, it is apparent that you are creating a slope across the grain. That's what I call carving either "with the grain" or "downhill". The alternative is to carve "against the grain" or "uphill". Usually, the first indication you're carving against the grain is that your gouge will dig in. You will notice that you need to apply a lot of extra force.

End Grain

Just to make things more interesting, end grain is always hard and demands very sharp tools to carve. To make your task easier, you might want to try slicing the wood off. By that I mean, slide the cutting edge of the gouge sidewards while pushing it forward. In essence, you are making your gouge act like a skew gouge. An alternative, adopted by some carvers, is to have a complete set of skew gouges. For most, that isn't a viable choice economically.



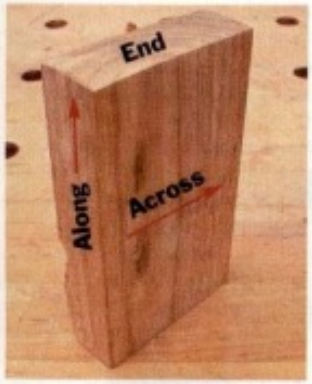
Carve cube into ball to see classic circular pattern

Recognize Resistance

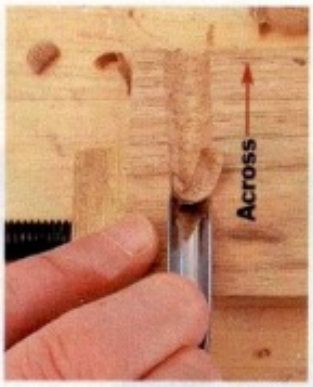
When you're busy removing wood, the need to apply extra force isn't always recognized. The change in resistance, however, is important to notice. It usually indicates that either the wood is resisting or that your gouge is becoming dull.

Control Grain Patterns

Luckily for carvers, every piece of wood has its own characteristics and peculiarities. Nevertheless, as soon as you begin to round a piece of wood, contours and patterns appear. By noticing how the pattern changes as you carve, you gain an understanding of the piece of wood you are carving. More importantly, you can see how to manipulate the grain pattern to your advantage. For example, if you are carving with the grain (downhill), the grain line



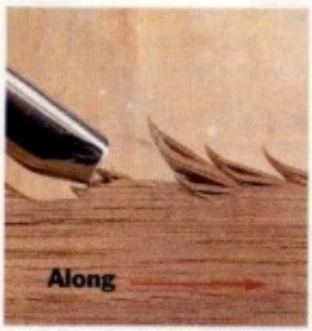
Three main directions to carve



Carving *across* grain is most effective

Wood splits *along* grain

Carve in small steps *along* grain

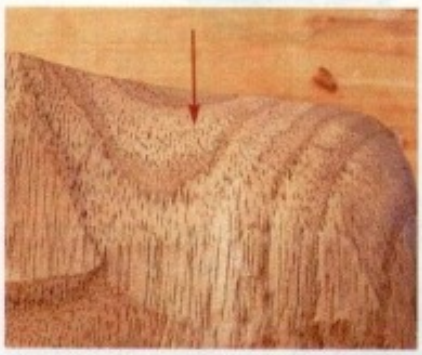


Turning *along* grain into *across* grain

Easy carving *with* grain

Digging in *against* grain

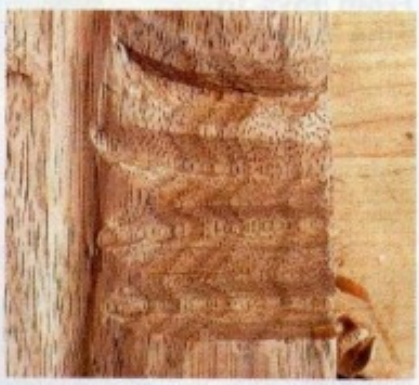
Carve *end* grain by slicing



Patterns in grain appear automatically

Grain line moves opposite to cutting direction

Y-pattern created with #5 gouge



Saw-tooth pattern created with parting tool

will move toward you; that is, opposite to the direction you are cutting.

With care, you can move the grain to create a pattern you like or to make it coincide with other features. To illustrate this, I have carved the letter 'Y' (or possibly the trunk of a tree) using a #5 round gouge. Then, I created a saw-tooth pattern with a parting tool (or V-gouge).

To further your understanding of wood grain and how you can control it in your carving, practise on any scrap of wood that has noticeable wood grain. Butternut or sumac would be good choices.

For a very clear example, carve any 2" cube of grainy wood into a ball. With that small exercise, you will see the classic circular pattern on two sides of the ball.

In the next issue, our project will be to carve a decorative owl. I will be using butternut, so an attractive pattern is guaranteed.

DAVID BRUCE JOHNSON
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By John Ottewill

Miniatures

Sometimes when I mention that I make miniature furniture I receive a blank stare, but when I add that miniature furniture is "like dollhouse furniture", those same faces light up in recognition as they remember their childhood toys.

In many ways that comparison is correct, but I also like to include an analogy from the automobile industry, which started with the Model T and has gradually progressed to our modern marvels of engineering. Similarly, the "doll furniture" of the past has become a marvellously intricate and detailed expression of fine woodworking.

From Toys to Fine Woodworking

Originally, dollhouse furnishings were children's toys, with no reference to any period or scale. Gradually the quality and detail got more and more elaborate, until it reached the hands of the specialist artisan, who skilfully produces the ultimate in terms of detail and scale. At this 'high-end' of the scale, you are mostly dealing with collectors who want a reproduction of a museum piece, or a reproduction of other antique furniture. The pieces are often displayed individually, but many collectors make a room setting of a particular period in time or style. Such collectors go to great lengths of research to ensure that all of the details are correct. Then they search out artisans to make the required pieces. Usually there is nothing available commercially that meets the collector's requirements. Fortunately, whatever has been made in full size can be created in miniature.

Scaled Down

The general scale to which miniatures are built is one inch equals one foot. There

Mandora(L) Medieval lute(R)

Back of mandora and lute

has been a tendency in later years for a smaller scale of one half inch to one foot, but this scale precludes being able to put much detail into the piece. Most collectors use the larger scale, with their main requirement being that the miniature be like the full size piece in material, with all working parts and complete with traditional joinery techniques, including dovetails and mortise and tenon joints. There are a number of books available that show all the details and measurements for the various styles and periods of furniture. Some samples are already drawn to the one inch scale, but others need to be drawn up from the dimensions given. In some cases, where no drawings are available, the collector may provide a photograph of the item. Then, if the length/depth and height are known, a scale drawing is prepared.

Where possible, the miniature piece should be constructed in the same wood as the original. However, for oak I usually use quarter-sawn basswood, as the grain structure of oak is large and doesn't lend itself to scale. Basswood, on the other hand, when stained looks just like oak. Whatever wood is used, it is necessary to select a piece in which the grain is suitable in scale.

Violin and cello

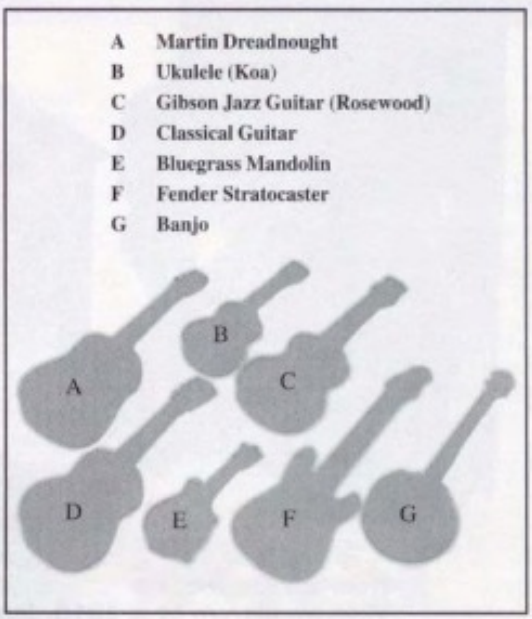
Making the Miniatures

The equipment used in making miniatures is much the same as what is used in any regular woodworking workshop. I purchase wood from a lumberyard rather than a hobby shop, and then cut it to size on a table saw using a fine blade. From here I go to the thickness sander, which enables me to produce thicknesses down to 1/16", finely sanded on both sides. I constructed my sander with a machinist friend, and it can best be described as a belt sander on its end, with an adjustable table underneath (so that the wood passes between the roller of the sander and the table). On pieces that require marquetry, I use a hand fretsaw with a 8/0 blade instead of using the scroll saw, as I find that I am able to maintain better control when cutting very small pieces.

While I use a regular drill press for most drilling and some routing operations, I use a homemade drill press/router to make mouldings and other detail pieces. The cutters I use are dental burrs, which come in a variety of shapes and sizes. With a combination of several passes, using different burrs, I can replicate the original mouldings. In other cases I make a special cutter on the lathe and then suitably temper the cutter.

For turning work I use a Unimat lathe that is similar in size to a jewellers lathe and can handle small scale work. When it is necessary to repeat pieces exactly to the same size, as with making legs, I use a

Fender Stratocaster



Sideview of Venetian rocking chair

homemade jig, fitted to the bed of the lathe. It consists of a cutter that follows the fixed guide of a pre-made pattern. When only a few repeats are needed I turn the pattern from a piece of hardwood, otherwise I cut the profile from sheet metal so as to get consistent results. When there is a need to plane the wood, I most often use a block plane in conjunction with a shooting board, which is a jig that helps you plane an edge or end of a board square using a hand plane.

Much of my work involves carving, and for that I use a variety of commercially available palm chisels. With 'micro chisels' you need to be careful as the quality of the steel is often not very good and it is difficult to keep a sharp edge. I prefer to use dental chisels that I grind to various sizes of gouges, and add a handle similar to a palm chisel. Dental steel is excellent and retains a sharp edge for a long time. As an aid in fine detail carving, I use magnifying glasses that clip on to eyeglasses.

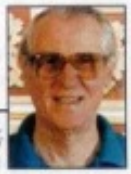
I use a lot of jigs, and make them from Plexiglas, which is a very stable material and ensures that the jigs will last a long time.

During the years I have been teaching this subject, many students show initial concern because they have had no experience in the use of tools. However, when the correct methods of using tools is explained to them, and they progress one stage at a time, those same students end up being amazed at what they can accomplish.

For more on miniature room settings, see: 'Miniature Rooms. The Thorne Rooms at the Art Institute of Chicago.' ISBN 0-89659-407-6, www.wttw.com/artbeat/thorne.html

Ken Manning is a craftsman of miniature replicas of historic and contemporary stringed instruments www.geocities.com/kenmanning_2000/index.html

John Ottewill is a teacher and craftsman of miniature museum and antique furniture.



JOHN OTTEWILL
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From left to right:
Victorian Etagere circa 1818, Jacobean Chest circa 1600,
Jacobean Caquetoire circa 1662, Venetian Rocking Chair circa 1860

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Trade Secret Furniture Restoration Kit

www.tradesecret.ca
$30.00

Source: Home Hardware, Wal-Mart, Réno Dépot

Let's face it, furniture gets scratched, scuffed and scarred. For serious surface damage you'll likely have to refinish the surface - a lot of work (or expensive if you hire someone else to do the work). Minor blemishes are easier to deal with. If you don't have a lot of re-finishing experience, then you owe it to yourself to check out Dover Finishing Products' **Trade Secret Furniture Restoration Kit**.

This kit contains a scratch remover for dark woods (like mahogany or cherry), one for light woods (such as maple or pine), a furniture polish and cleaner, and four wax sticks. The scratch removers and polish are mineral oil based products compatible with just about any finish. I found that for hairline scratches the scratch removers worked well. There was no waxy build up and it left a rather nice sheen on the surface. I tried the polish/cleaner on an old dresser that had seen better days, and was pleased with the results. It did a good job of removing a thin wax build-up along with its accumulated grime build-up. The wax sticks are blended from high grade wax, and won't shrink. You can apply the polish/cleaner or varnish, poly or lacquer over the wax without worrying about softening or bleeding colours. They worked nicely on filling thin gaps on some rather less than perfect joints that I had cut. The Trade Secret Restoration Kit is good value, particularly for someone who doesn't know a lot about re-finishing or if you simply want a quick and easy fix.

Ryobi 25 Piece Master Router Bit Set

www.ryobitools.com
$ pricing unavailable

Source: Home Depot

If you are new to woodworking, it's sometimes difficult to know what tools and accessories to purchase. Too many choices and too little money. When it comes to router bits, the choices are myriad and the cost can very quickly hit the stratosphere. The new Ryobi 25 piece Master Router Bit offers a conveniently packaged set of 1/4" shanked bits in a variety of styles, including straight, round over, rabbeting, trim, dovetail, cove, and chamfer. The bits come in a handy pine box that you can hang on the wall, and there is even storage space for extra bits. I quickly tallied the price I would have paid for similar sized bits from one supplier, and came to a whopping $450, for an average cost of $18. The US price on this set is $99.97 (Canadian pricing will be announced in July when the bits become available at Home Depot), which works out to about $5 CDN per bit. That's a significant savings. No, make that a hugh savings. These bits are not micrograin carbide, so they won't last as long as premium bits, and the shanks are all 1/4". The bits are all on the small side, for example the cutting edge on the 3/8" straight bit is only 25/32" long. But hey, I tried a number of the bits on some oak and cherry, and was quite satisfied with the results. The cuts were surprisingly clean and crisp. While I would hesitate to recommend these bits for a professional shop, they offer excellent value for the DIYer. If you are new to routing and want a basic collection of bits, this is definitely the way to go. Ryobi will also be introducing 18, 12, and 8 bit sets (the 18 piece set with 1/2" shanks).

easyproject By J. P. Rapattoni

Desk Top Organizer

I have a hard enough time keeping my own desk free of clutter. So at home, where I share my desk with my wife and daughter, I knew that I had to come up with something to help organize our messes.

This desk top organizer has turned out to be just the thing.

You can build the trays with or without a piece along the back. I stack mine against a wall, so I chose to put a back only on the top tray. I have included the instructions for the backing if that is your choice. If not, simply skip that part of the instructions and shorten the sides by 3/16" making them 8 3/4".

I used 3/8" x 1 3/4" tongue and groove oak hardwood flooring left over from a job. It turned out to be perfect for this project. The tongue and groove allows you to stack the trays fairly high without risk of them falling over. If you don't have any tongue and groove flooring handy, you can often get off-cuts (shorts) from hardwood flooring companies at a discounted price.

Cut Bottoms

First, decide how many trays you need, I chose eight. Then, from 1/8" plywood, cut the bottoms to 11 5/8" x 8 3/4". Mark an arch on one. Stack the bottoms, with the one you just marked on top, and tape them together. Stack saw them with your band saw.

Cut Slot for Bottom

Raise your table saw blade 3/16" high, and set your fence 1/4" from the blade. Cut all your stock with the groove against the fence and the good face facing up. Check to see that the bottom fits in the slot. It should slide in easily but not fall out. If the fit is too tight, run a piece of scrap through as a test piece. Move the fence slightly away from the blade and make another cut on the test piece. Repeat this until you get a proper fit. Then, run all you pieces through again.

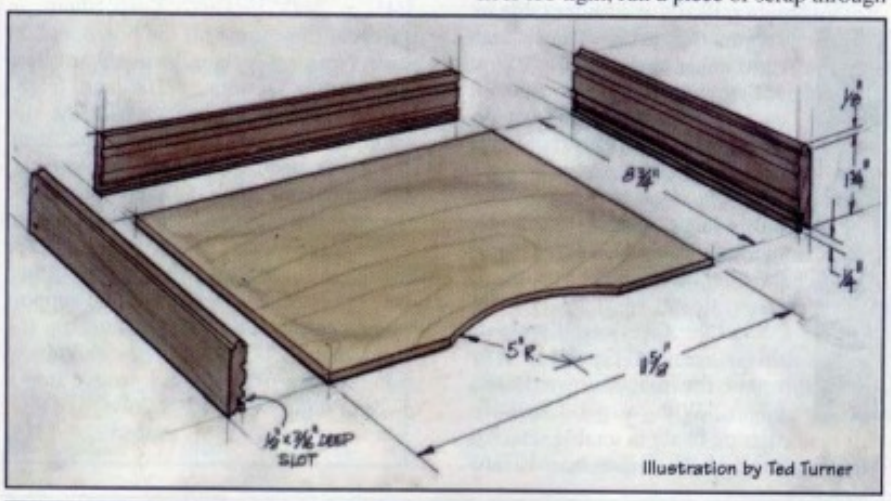

Illustration by Ted Turner

Cut Parts to Size

Cut two sides at 8 15/16" and one back at 11 1/4" for each tray. Remove the tongue and groove from each of the back pieces. Sand everything before assembly.

Assembly

Apply a small bead of glue in the slots of two of the sides, using just enough glue to ensure a good bond without any squeeze-out. Insert the bottom in the slot, lining up the front edges of the sides with the front edge of the bottom. Use masking tape around the perimeter to hold the sides in place. Glue all the sides and bottoms together. As you assemble the trays, stack them on the first one, ensuring they are standing straight and square. Once the glue has dried, glue the back pieces in place. You can secure the back in place with a single brad from each side. Finish as desired; I applied two coats of gloss varnish.

J.P. RAPATTONI
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storageproject By Michael Kampen

Walking-Stick Stand

Walking sticks and umbrellas are handy to have near your entrance, but storing them attractively is another thing. Some hang their sticks or umbrellas in their hall closet, others tuck them behind the coats in the back corner. Either way, they often aren't readily available, and when you come in wet, where do you put them then?

This stick stand offers an attractive and convenient way to store your walking sticks and umbrellas. With this stand they'll always be there when you need them, and when you're done with them, wet or not, you'll have somewhere to put them.

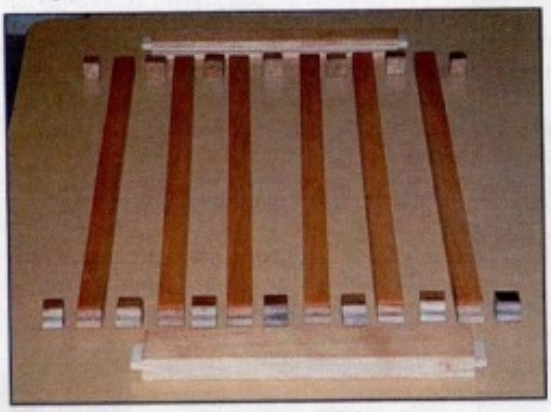
When choosing stock for this project, try to find some quarter-sawn lumber for its appearance as well as dimensional stability. The stand looks best when contrasting species of wood are used. Except for the legs and bottom trim, all of the parts are made from 3/4" stock. Because of how this project comes together it's best to mill your stock and do all of your routing with one setup. That will ensure a problem free assembly. I used penetrating oil with a natural beeswax finish on this walnut and alder version. To avoid glue related finishing problems it's best to pre-finish all pieces.

Make the Legs

Make the leg blanks from solid or glued up stock. By using quarter-sawn wood you could glue up a blank from 3/4" stock without serious grain matching problems. Mill the blanks for the four legs to 1 3/8" x 1 3/8" x 24" and set them aside until later.

Cut the Panel Parts

I use a matched set of tongue and groove cutters in a table-mounted router for all panel shaping. Cut a tongue on the ends of the front, rear and side rails. I use a router table in conjunction with a fence and right angle sled to cut a 3/8" x 1/4" tongue along both ends of each rail board. Set these aside and repeat the operation on the ends of the four picket boards. With the same bit setup, using only a fence, rout a tongue down the length of the walnut blank the filler blocks will be cut from.

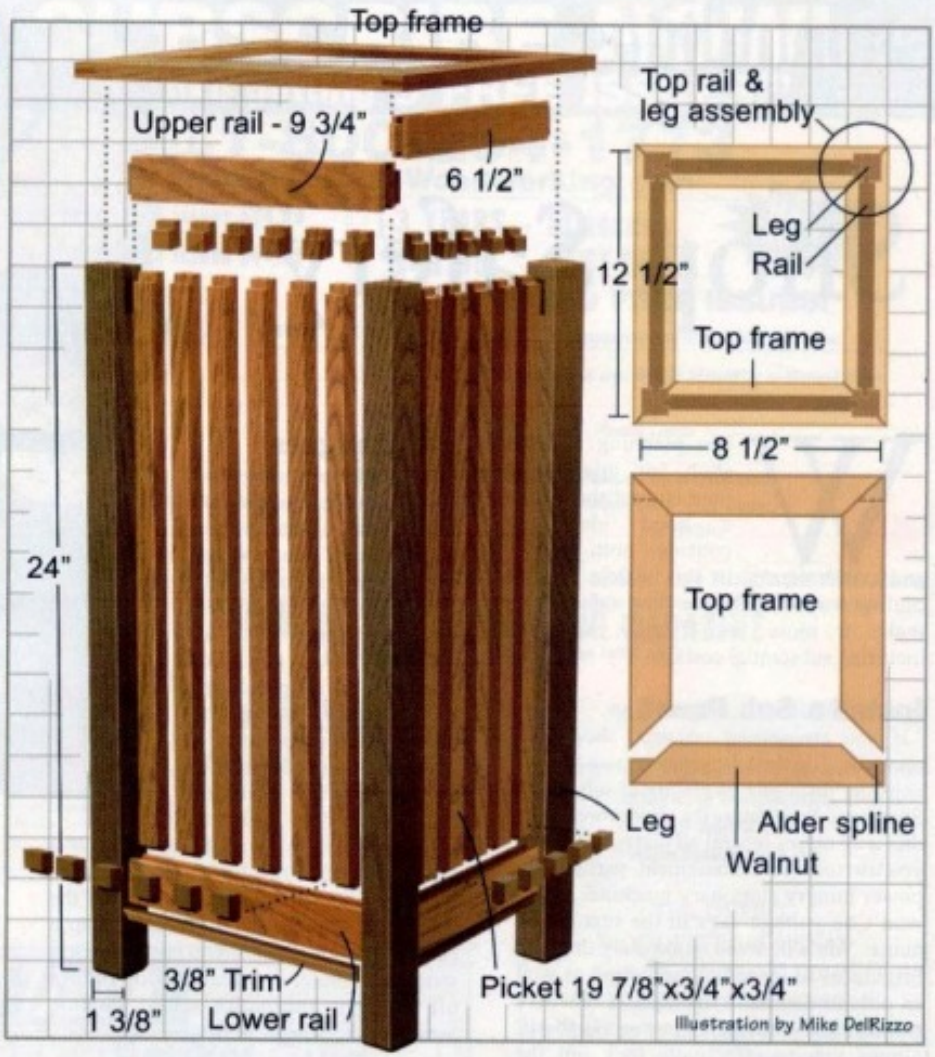


Lay out the parts before gluing Note filler block layout

Sand the faces of all parts at this stage. Be careful not to round the pieces towards the edges. With a good quality ripping blade in a table saw, rip each of the picket boards into 3/4" x 3/4" pickets. Keep them in the order they come off the board and set aside. Next, rip each of the rail boards into two smaller sections, 1 1/8" and 1 5/8" respectively. Using a fence with the slot cutter, cut a groove, 1/4" wide x 3/8" deep along the inside edges of the top and bottom rail. Keeping the same face of the piece on the table, use the same setup to return a groove on the other side, just far enough to completely form a tenon. Run a groove in some scrap to provide support when you cut the filler blocks from the long blank. I recommend making a clamping jig by routing a groove into a piece of scrap 1 1/4" x 2" x 26".

MATERIALS LIST

4	**24" x 1 3/8" x 1 3/8"** Leg (Walnut)
2	**13 1/4" x 2" x 3/4"** Top frame, front & back (Walnut)
2	**11 3/4" x 2" x 3/4"** Top frame, sides (Walnut)
2	**10 1/2" x 3 1/4" x 3/4"** Front & rear rail (Alder)
2	**9" x 3 1/4" x 3/4"** Side rails (Alder)
12	**19 7/8" x 6" x 3/4"** Front and rear pickets (Alder)
10	**19 7/8" x 5" x 3/4"** Side pickets (Alder)
2	**9 3/4" x 1 1/4" x 3/8"** Bottom trim, front & rear (Walnut)
2	**8 1/4" x 1 1/4" x 3/8"** Bottom trim, sides (Walnut)
52	**2" x 1 1/8" x 3/4"** Filler blocks (Walnut)
1	**8 7/8" x 10 3/8" x 3/4"** Bottom (Cedar)
4	**1 3/4" X 3/4" X 3/16"** Splines (Alder)
	48" x 3/4" x 3/4" Jig material (Scrap)
8	#8 x 1" Brass flat head screws



Finish sanding the pickets to remove saw marks. Use a hand plane to put a chamfer on the ends of each face to provide some extra visual detail. The actual size of the parts may have changed slightly during sanding, so test-assemble each panel first. Subtract the total width of the pickets from the length of the groove, and then divide by the number of filler blocks required for that panel. Use the scrap piece with the groove to support the walnut and cut the number of filler blocks you'll require for each panel.

Assemble the Panels

Using the clamping jig that you prepared earlier, assemble the panel without glue using one clamp on each rail and two on the panel. When I am ready for glue, I use a small 1/4" artist's brush to spread glue in the grooves. Then, I quickly assemble and clamp the panel.

The top is a mitred frame with splines glued across the outside corners for added strength. I use a jig that cuts perfect complementary angles on the ends of the walnut pieces and then glue the frame together using a band clamp. After the glue has set overnight I cut the slot for the splines and glue them in place. Sand and stain the frame before the final assembly.

Lay out and cut the mortises in the legs to receive the tenon on the panels. Place the panel on the legs and transfer the locations with a pencil. Extend the lines around the side with a Veritas saddle square. When the mortises are finished, sand the legs and use a hand plane to chamfer the bottom edges to reduce splintering. Apply the finish of your choice. Test-fit the 4 legs and 4 panels, and then glue and clamp the body of the stand.

The top frame attaches with biscuits and the base is held by the bottom trim pieces. These have a chamfer on the outside top and bottom edges and are attached to the stand with countersunk brass screws.

MICHAEL KAMPEN
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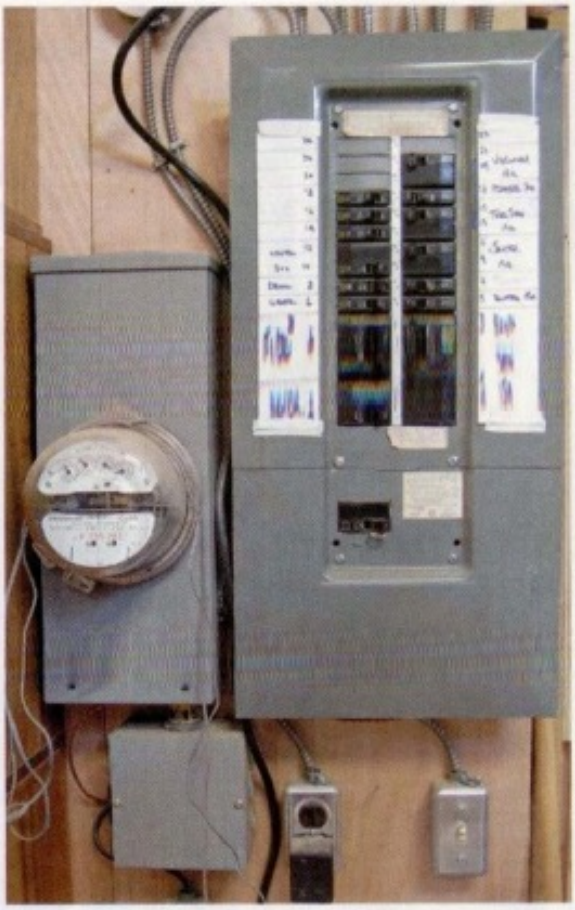
Shop Safety



When planning a new shop (or upgrading your current shop) it's a good idea to consider both safety and convenience. In this article I will outline ways to enhance shop safety and make it more user-friendly, without incurring substantial costs.

Install a Sub Panel

If you are setting up your shop in a partially finished basement, you might consider installing an electrical sub panel. Supplying the circuits for your power tools this way offers several advantages. When you use tools in the basement, particularly power hungry stationary machines, there won't be voltage sags in the rest of the house. You will avoid momentary drops in brightness of incandescent lamps, as well as potential serious damage to sensitive electronics. Another advantage is that it allows you to effectively lock out the power in your shop.

Protecting Tiny People

Children may enjoy watching you work, and might wander into the shop on their own. The easiest way to protect them from unsupervised visits to the shop is to lock the door and keep the only key. However, that's not always practical. You may wish to let children have access to the shop, but not to your power tools. While some power tools have keyed 'ON' switches that prevent children from turning them on, others do not. With a sub panel in your shop, all you have to do is place a locking door over the panel. When you leave the shop, shut off the breakers and lock the panel door. Most manufacturers offer locking door kits for their panels.If a separate panel isn't feasible, most manufacturers also offer lockout devices to fit breakers as well. Using these on the main panel would still allow access to the house circuits, but restrict your shop circuits.

The Dangers of Dust

You can deal with dust during the initial wiring of your shop. Many woodworkers have become aware of the health effects of long-term exposure and are making dust collection systems priority purchases. Some of the new high-end dust collectors come with remote starters; after-market units are also available. Since the dust collector should be on its own circuit, wire in a properly rated switch for it at a convenient location. This will allow you to control the receptacle and the dust collector from a central location. Even if you prefer to use a wireless remote, it will allow you to turn off power to the outlet before leaving, avoiding unintended start-up.

Ambient air cleaner

These principles can also be applied to a circuit supplying an ambient air cleaner. Most of these units are designed to hang from the ceiling; a ceiling outlet can be controlled from another location by a switch or timer. Using 14/3 wire between the switch and receptacle leaves you the option of switching only one side of the receptacle, leaving the other one for another power tool, shop appliance, or even the garage door opener.

A furnace is effective at distributing dust all over the house, but it can still serve to heat your shop if it is in a room that is sealed from the rest of the house. Seal the area thoroughly, including any ductwork. Install a bathroom fan in the shop ceiling and run the ducting outside the shop to another area. Construct a frame to hold a quality .1 micron furnace filter over the fan to filter out the dust. If the room has been sealed too well, you may have to provide a source of air. If you do, place another filter over this opening to prevent dust from leaving the shop. With this fan wired to a switch, or controlled with the lights, you create negative air pressure in your shop, pulling clean air in through the cracks and sending filtered air out.

Regularly blow out electrical equipment and any receptacles located behind saws and motors beyond the reach of effective dust control. I take the cover off my main electrical panel annually to check the interior and blow out dust that may have settled in there.

MICHAEL KAMPEN
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By Paul Ross

Travel Mirror

Sometimes you just need a quick look in the mirror to know everything is alright. Whether you're waiting for a doctor's appointment, a job interview, or stepping off an elevator, it's reassuring to know that there is no spinach between your teeth, or lipstick where it ought not to be.

This easy and practical project makes a great gift, and offers the assurance that only a mirror can. It's simple to make, doesn't take a long time and is always well received.

I chose exotic wood for my mirror, but you can choose virtually any wood you like, to make yours. It's an ideal project to use up some of those special small scrap pieces of wood that you've been saving.

I use a 2" beveled mirror because the bevel makes the piece look richer and more professionally made compared to a straight edge mirror. You can also add that special touch by making a fabric pouch to give with the mirror.

Getting Started

To get started you will need a 3" x 3" x 3/8" piece of your chosen wood. You will also need a 2" bevelled mirror (Tip: purchase your mirror before you begin the turning). Glue on a waste piece of wood; this is the spigot that you grab with a chuck. I have quite a few of these waste blocks, or spigots, that I keep reusing. If you use cynoacrylite glue you can remove the spigot and reuse it over and over. Once you've glued your blank to a spigot we are ready to start turning.

Truing up the Face

The first cut you should do is an outside cut to true up the piece. Make this cut with a 3/8" bowl gouge. The key here is to lead with the flute in the direction of the cut, preferably towards the headstock because that is where the mass of the lathe is, and mass absorbs vibration. "Even on this small piece?" you ask. Yes. And it is a good habit to get into.

Once you have trued the piece and cut to the desired diameter, make a facing cut across the face. Pay attention to the direction of the flute. It is pointing at about 2:00 o'clock towards the centre. As the gouge approaches the centre, lift the handle to bring the flute into the middle.

Fitting the Mirror

Now that the wood is prepared you can fit the mirror. Measure the diameter of the mirror with a pair of dividers and then move the measurement on the dividers slightly in. That gives a little less room for the mirror, so that you will have to cut outside of this to fit the mirror exactly. If your measurement is made exactly the diameter of the mirror, it is likely that you would cut a little bit big and the mirror would be loose. You can always remove wood, but adding it is impossible. Open the recess for the mirror with a parting tool. Next, remove the material within the recess by making a facing cut just as before. To fit the mirror, use a slightly modified scraper. I use a scraper which is ground on the side as well as on the front. This is important because you want a clean cut at both the side and front where the mirror sits. Scrape to the exact size of the mirror and check the fit.

Final Shaping

Now you can shape the front of the mirror. Take a light scrape with a sharp scraper. Sand and finish. In order to flip the piece and turn the bottom, it has to be separated from the spigot. I use a cynoacrylite glue as it can be separated cleanly from the wood. Place a chisel between the wood and spigot and then, with a light tap, knock off the piece.

Glue another spigot (or the same one that was just knocked off) to the front (mirror side) of the piece. Use a bowl gouge to shape the back and then lightly scrape it clean. A square end scraper can be used to clean up any tool marks and blend in the two points where the front meets the back. You can also create a recess on either side of what will be a bead with the scraper, and then form the bead with a parting tool by simply rolling the tool from left to right.

After you have sanded and finished, it's time to take the piece off the spigot. Because you can't get a chisel in between the spigot and wood, use a dead blow hammer, which will not mark the piece. Make sure you orient the grain vertically in line with the blow of the hammer. If the grain is running horizontally when you hit the piece it could break in half.

PAUL ROSS
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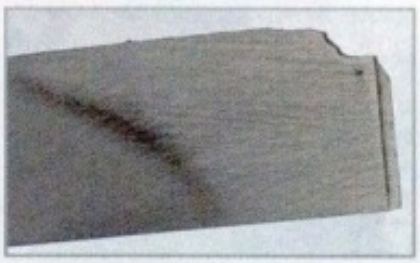
Glue a blank onto a spigot

Make a facing cut across the face

Open the recess for the mirror

Make a facing cut



Modified scraper

Scrape to the exact size of the mirror

Dry fit the mirror

Shape the front

Separate the mirror from the spigot

Blend the front and back transition

Roll a bead

Knock the finished piece off the spigot

By J. P. Rapattoni

Mounting a Blank

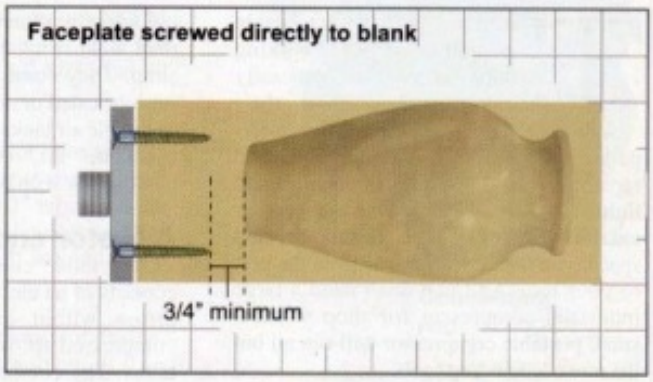
There are a number of ways to mount a turning blank on a lathe. I'll show you three of the most common. The one you choose will depend on what you're turning. I have purposely left out lathe chucks, because the instructions that come with most chucks are thorough and easy to follow.

Turning Between Centers

This technique is also called 'spindle turning'. Begin my marking and punching a small hole in the center of both ends of the blank. Remove the spur center from the lathe and line it up with the punch mark on one end. Use a wooden mallet or soft metal hammer (brass or copper) to drive the spur in until it is firmly seated in the blank. Extend the tailstock spindle about 1". Now mount the spur center with the blank and move the tailstock in place, lining up the tail center with the second punch mark. Lock the tailstock in place and adjust it to exert moderate pressure on the blank. Don't force the tailstock spindle hard against the blank. Extending the tailstock spindle as little as possible will help reduce vibration. However, some situations require the tailstock center to extend more than usual. It's good practice to check the tension on the tailstock regularly as you are turning; I check it about every couple of minutes, or any time I make an adjustment to the setup.

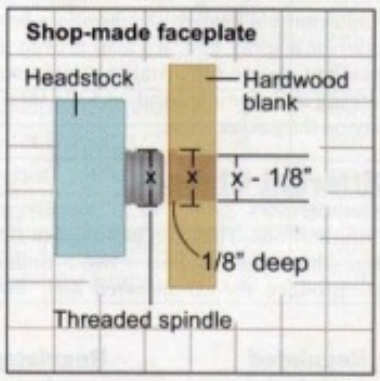
Using Faceplates

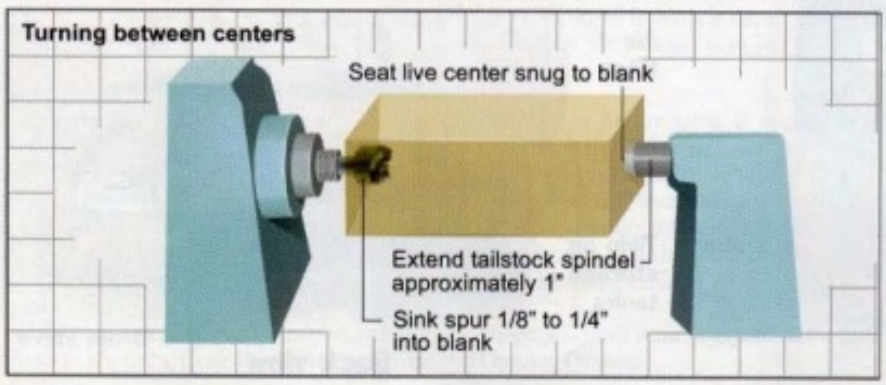
You can screw a faceplate directly to your blank if it is deep enough. Use the longest and thickest screws that will leave at least 3/4" of material between the end of the screws and the bottom of the finished piece. Alternatively, you can use a "false faceplate", a piece of scrap wood that's screwed to the faceplate with your blank glued to it. I keep several false faceplates on hand, and use hot melt glue for quick mounting of small pieces. It gives a fair bond but will not survive aggressive turning. Cyanoacrylate glue (instant glue) works extremely well on small to medium sized pieces. (approx. 6" diameter or less). It bonds quickly and holds well on long grain but can pose some problems on end grain. Epoxy is a good choice for larger pieces and for problem pieces, such as end grain. It also gives a very reliable bond in a fairly short period of time. The "paper method" gives a reliable bond. Apply wood glue to the false faceplate and to the bottom of the blank. Clamp the two together with a piece of paper between them and allow to dry overnight. Use standard writing paper, printer paper, or paper bag. Do not use heavier paper, like card stock, as it will separate too easily. Once turning is complete, a sharp blow to the false faceplate separates it from the finished piece. There will be some remaining residue that will need to be sanded off.



Shop-made Faceplates

I often use a shop made faceplate when mounting turnings up to 16" diameter. It's handy and simple to make. Start with a circular blank of dense hardwood (I use hard maple) approximately 6" diameter and 1" thick. Bore a hole in the center about 1/8" deep, the same diameter as the drive spindle on your lathe. Bore a second hole, 1/8" smaller in the center of the first hole, all the way through the blank. Place the larger hole over the spindle thread and force thread the blank on to the spindle until it's seated (a little wax helps here). True up the edge and face of the blank and use it as you would a regular faceplate.





In the next article I will cover the construction of a lathe steady rest, a useful jig that will come in handy as your turning skills progress.

J.P. RAPATTONI
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Portable Compressor

The air compressor is a valuable addition to any woodworking shop. Air tools are generally less expensive than their electric or battery counterparts, and they're more economical to repair, as well as being more compact and lightweight. If you locate the compressor outside your work area, in an enclosed space, you'll hear nary a toot from the unit or your tool. And you don't need a large industrial compressor for shop work; a small portable compressor will run all but the most demanding tools.

Over the past eight months I've been using the **Ridgid OF45150 Portable Air Compressor** in my shop and on various job sites. I'm very pleased with this unit; it has proven to be easy to use and highly dependable. Although I normally use it on an intermittent basis with a headless brad nailer or a spray gun, it's also proven an excellent choice for installing hardwood flooring and framing. And, at $398.00 it's easy on the pocket book.

Different Choices

Compressors come in a variety of configurations. They can be single or two stage (that is, having one or two cylinders that produce the compressed air). Two cylinders produce higher pressure, more than what is needed in the typical workshop. They come as air or water cooled, oil-lubricated or non-lubricated, and single or double air tanks. The Ridgid has a single cylinder, air cooled, non-lubricated compressor with twin stacked tanks.

A Motor and Compressor

Like most compressors, the Ridgid consists of an electric motor that powers a piston within a cylinder to produce compressed air, which is stored in its two tanks. The compressed air drives the air tools, while the motor automatically cycles on and off to maintain the correct air pressure in the tanks. The Ridgid compressor has an induction motor rated at 1.8 running HP (3.25 peak HP), among the highest for comparable models.

Air Power Over Horse Power

While you need a motor to run the compressor, the critical factor in determining the power of a compressor is the volume of air it delivers at a specific pressure, and not its horsepower rating. Air volume is measured in **cubic feet per minute (CFM)**. Because CFM varies with atmospheric pressure, temperature and humidity, a better measure of volume is the **standard cubic feet per minute (SCFM)**, which takes these variables into account. You'll usually see the SCFM given at 90 PSI, as most shop tools require this pressure to operate properly. A higher SCFM at any given PSI level is preferred, as air volume is what runs your tools. Obviously, the quality of the compressor pump will have an impact on the SCFM level. The Ridgid provides up to 6.2 SCFM at 90 PSI, a level that is comparable to or exceeds the rating of other models on the market.

Regulated Air

When the air in the tank reaches a pre-set limit (generally 125 PSI), a pressure switch stops the motor. The **tank pressure gauge** tells you how much pressure is in the tank. While some tools may require a lot of air pressure to operate, most of the air tools in my shop operate at the 70 to 90 PSI level. A **regulator** on the compressor enables you to match the air that comes out of the compressor (referred to as the hose pressure or the air line pressure) to the air pressure requirement of the tool you're using. Turn the regulator in one direction and it increases the outlet air pressure, turn it the other way and it decreases the outlet pressure. A **regulated outlet gauge** lets you monitor the outlet air pressure. Just in

Front view

Back view

case something goes wrong, there is a **safety valve** near the regulator that automatically opens if the pressure switch malfunctions. On the Ridgid all the gauges and valves are easily accessible and large dials are easy to read. The ratcheting regulator allows for precise pressure selection.

Oil or None

While oil lubricated units may offer somewhat more efficiency and run quieter, oil-free compressors, like the Ridgid, make better sense for the small shop, particularly for spraying finishes. They also require minimal maintenance. I use the Ridgid to clean dust off my furniture before finishing and for spraying shellac or water based finishes, so I certainly don't want oil droplets contaminating the wood or the finish.

All Tanked Up

While you do need a tank to store the compressed air before it's used, you don't need a large one, especially if you're using the compressor intermittently. What you do need is the ability to produce a constant supply of air, so having an efficient compressor and motor is more important than a large tank. The 4.5 gallon tanks on the Ridgid hold enough air to set a lot of brad nails before the compressor kicks in. Of course, for more aggressive nailing, such as when installing hardwood flooring, the compressor runs more frequently. You won't see the duty cycle posted on these smaller compressors, but expect about a 50% cycle, which means that the motor should be running no more than half the time that the compressor is being used. I have never found this to be a problem as most of the drilling, nailing, and spraying that I use my compressor for is intermittent.

Taking Care of Business

To get compressed air to your tool you connect an air hose to a **outlet coupler**. There are two outlet couplers on the Ridgid, which is a great feature. This enables me to attach both a 3/8" quick connect coupler with a 3/8" 50 foot hose, and a 1/4" coupler to a 1/4" 50 foot hose, to handle the different air tools I use. When purchasing air tools remember that the SCFM requirement for the tool shouldn't exceed the maximum SCFM your **compressor** can deliver. For the Ridgid this is a healthy 6.2 SCFM at 90 PSI.

Although my compressor spends most of the time in the shop, it moves easily to a job site. The heavy-duty 1" tubing on the Ridgid protects the critical components of the compressor on the job site and in the truck.

If you store your compressor inside, moisture shouldn't be a problem. If it is, then you can get an in-line air filter that installs between the air hose and your tool.

At the end of your work day turn your compressor off, then manually pull the safety valve to empty the tank of any remaining pressurized air. Also, open the drain valve so any water inside the tank can drain out. Every few months clean the intake filter.

For increased work productivity and efficiency in your shop, consider the benefits of a portable air compressor.

For more information on the Ridgid OF45150 compressor go to www.ridgid.com or visit your local Home Depot.

CWM

Air Requirement of Common Tools

	CFM	PSI
Air Hammer	4	90
Brad Nailer	2	30
Drill, 1/2"	4	90
Framing Nailer	4	50
High Speed Grinder	8	90
Impact Driver, 1/2"	4	90
Ratchet, 1/4"	3	90
Spray Gun	.5 - 4	20 - 40
Straight Line Sander	7	90
Upholstery Stapler	2	30

lettersto

CONTINUED FROM PAGE 2

French, I used a free on-line translator. If you ever need to do a quick translation, check it out: http://babelfish.altavista.digital.com Bonne chance!)

Hi:

I have checked through your internet site but could not find the answer I was looking for.

I have a coffee table that has a couple scratches on it, approx. 4" long. I don't know if it is real wood, I kind of think it is the photo finish type. I am wondering how I would go about fixing it. I was wondering if there is a product out there that could be poured in the scratch just to make it less noticeable. I really don't want to have to sand it and then try to refinish it because I think I will make a worse mess than just leaving it alone.

The design on the table is the type that looks like it has different wood grain going towards the middle and then there is an outer edge about 1 1/2" from the outside that goes all the way aroung the table in another type of wood grain. I also have quite a large gouge in the edge of the table.

I hope you have some suggestions for me.
Thanks, Deanna

Hi Deanna:

The length of the scratch is not as critical a factor as its width and depth. If the scratch is not very wide or deep, you can use a wax stick to fill the scratch, and then apply an oil finish over the top (the Trade Secret Furniture Restoration Kit that we review in "Shop Tested", this issue, is a good product). Wax sticks come in a lot of colors, they aren't expensive, and they are easy to apply. If the scratch is very wide and deep, (and for the deep gouge in the end of the table) you might want to consult a professional furniture restorer.

CWM

By Laura Morris

Butternut

Illustration by Mike DelRizzo

Butternut (Juglans cinerea)

Butternut is one of Canada's "nut trees," known for producing hard, edible nuts. The butternut tree is part of the walnut family and grows with other hardwoods in Southern Ontario, Quebec and New Brunswick. Although not as statuesque as other trees like the maple, it reaches a height of between 40' to 60', and normally doesn't exceed 2' in diameter.

Uses

Not surprisingly, butternut has been used as a source of nuts for oil and fabric dye. Butternut wood has been favored for cabinetry and furniture, along with interior paneling and turnery. It was widely used in churches for detailed woodwork such as intricately carved doors and alters. This is not a wood of significant commercial value, but rather a specialty wood.

Physical Properties

One of butternut's impressive qualities is its colour. The sapwood is almost white, while the heartwood has a light brown, and often pinkish colour. Its grain is coarse and generally has straight, dark grain lines that create an appealing contrast against the wood's light colour. The wood is also described as having a satiny sheen. There is no prominent odor or taste to the wood, and it is not known to have toxicity.

While working with butternut, note that the wood is soft and fairly lightweight. It has medium density with low strength, and is moderately weak when compressing the edges and bending the wood. The wood is fairly stable and one can expect minimal warping or cracking. Butternut is semi-porous and it dries slowly, but with little shrinkage.

Working Characteristics

Butternut offers the woodworker many benefits. For starters, this hardwood is suburb for carving. It works easily with hand tools and machines well. It normally doesn't leave burn marks and has little dulling effect. The material also works easily with screws, nails, and glue. However, there are some factors to keep in mind. Routing across the grain, for example, can cause the wood to tear out. Although butternut responds well to planing, it's necessary to keep your tools sharp in order to avoid tearing the soft wood. Finally, butternut polishes and finishes beautifully. Because the wood is soft, it's important to make sure you do not dent it during finishing. Overall, butternut has much to offer. Perhaps, it will be the inspiration for your next project.

Editors Note: Correction re: Issue #34 Sugar Maple is Acer saccharum and its weight is 44lbs/cubic foot.

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Clear butternut

Wormy butternut

Woodworking Characteristics

Radial shrinkage	3 %
Tangential shrinkage	6 %
Volumetric shrinkage	10 %
Weight	25 lbs/cubic foot
Crushing strength (max)	5008 lbs/square inch

 By Susie Mah

Rosewood Studio

Fine Woodworking School

Rosewood Studio is a fine woodworking school, housed in a historic mill in the small town of Almonte, Ontario. Nestled on the banks of the Mississippi River, the school is just a 20 minute drive southwest from Ottawa. It boasts machine rooms with two of each of the more common power tools, such as table saws, band saws, and jointers. There are 14 European-style workbenches and a good selection of hand tools for students to use. The school's store sells specialty hand tools, domestic and exotic hardwoods, sheet goods, and shop supplies at market prices.

Ted Brown, program director and chief instructor at Rosewood Studio, founded the school in September, 2001. He says, "I want to teach people to slow down and build truly fine furniture without cutting corners for efficiencies." He also likes "to get students to build furniture which exemplifies the beauty of the wood." Instead of the mass-manufacturing approach to furniture building where "people draw on computers and then use any old wood," Brown likens his philosophy to reverse engineering where he encourages the student to "find the plank or piece of wood and see what we can make from this."

He explains, "if you have a curve in the form of the furniture you want to make, look for a piece of wood where the grain makes that same curve. By using the imagery in the grain of the wood to visually support the form of the furniture, the woodworker will achieve harmony in the piece." Brown buys rough cut wood from all over the world and says two of his favourite woods are "Swiss pear which is a pastel pink, fine-grained and very feminine wood, and French walnut, because it has a wide range of colours from cinnamon to deep chocolate brown."

Trained as a woodworker at Algonquin College in Ontario and at the world-renowned College of the Redwoods in California under master hand-builder James Krenov, Brown says that though he respects Krenov's knowledge, he has no wish to be a clone. "There's a term, 'Krenovian', out there to label people who have studied with Krenov," says Brown. So, while the Rosewood Studio is about recognizing and using Krenov's techniques, it's also about bringing in other ideas from respected woodworkers such as Garrett Hack from Vermont and Chris Pye from England, to teach their unique skills.

Rosewood's approach is to give people an opportunity to learn fine woodworking in the form of short-term workshops. The people who take these courses can be broadly divided into two categories. One is the retiree group with the average person being a, "54-year-old man, who's always been interested in woodworking as a hobby, and now that he's approaching retirement, has the time to fulfill his interests." The other kind of student is generally in his or her thirties, looking for a second career, and are serious about making a living or partial living from building furniture. One such person is Andy Woods, of Calabogie, Ontario, who opened up his own shop to make custom furniture after taking courses at Rosewood. For the most part, students are new woodworkers, with limited or no experience. Brown recommends that people try one or two, week-long workshops, so he can assess their ability before they apply to the longer programs.

Brown's future goals for the school are "to continue to search out and bring in guest (woodworking) specialists, and to expand our inventory in the tool store." He's proud that Rosewood tests all the tools they carry. "We bring in the best tools that we can find, evaluate them, and recommend or not recommend them to our customers. There's a lot of hype or false advertising out there about tools. We stock and sell only the tools we can stand behind."

More info: www.rosewoodstudio.com

Curly maple and ebony tea cabinet by student Chris E. Photo by Ray Pilon courtesy Rosewood Studio.

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