



END
of an
ERA



Tool Collections:
1338P PRESTON



Canadian Quotes:
**DAVID
ATKINSON**

FEBRUARY/MARCH 2015
ISSUE #94

CANADIAN Woodworking & HOME IMPROVEMENT

Craft a
**CURVED
WALL
CABINET**

p.20

Build a
Hidden
Spice Rack
p.14

How to Turn a
Perfect
Sphere
p.36

Levitating
Shelf
p.30

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FEATURES

8 Tool Collections

BY ROB BROWN

In the first of many articles on tools, and the collections they come from, we take a brief look at Lee Valley's wonderful tool collection, and one of owner Rob Lee's personal favourites.

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BY STEVEN DER-GARABEDIAN

This simple, yet very functional, shelf will solve a storage problem in your home.

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BY MARK SALUSBURY

Anything less than perfectly round is unacceptable. This new turning tool will make you look like a pro in no time.

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BY MEAGHAN LISTER AND JOSH SILVER

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Cover photo by Jacques Breau

20 Craft a Curved Wall Cabinet

With its subtle curves, and beautiful details, this heirloom wall cabinet will be cherished for centuries.

BY JACQUES BREAU



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This issue introduces our new semi-regular column called "Tool Collections". I've been talking with a number of collectors about their collections and taking a close look at a specific tool of their choice. It's been a fun ride. I'm excited to share my conversations with you. To kick things off, check out the conversation I had with Rob Lee, owner of Lee Valley Tools. He goes into great detail, not only about his collection as a whole, but more importantly about his 1338P Preston shoulder plane, which was made for a *very* short period of time in 1901. Lee couldn't contain his enthusiasm and amazement about this beautiful and bewildering tool, which made for a fun conversation.

Once you get your mind back to the 21st century, be sure to read our home improvement articles. Josh Silver shares tips about how to replace corbels on older homes, and I write about a small, hidden spice rack that fits under the upper cabinets in your kitchen. And if you're planning any serious home improvement projects, Carl Duguay's article, "Top 10 Considerations When Choosing a Contractor," is a must-read.

If it's traditional woodworking projects you're after, we have a few gems to choose from. Steve Der-Garabedian shares the process he took to build a simple but stylish shelf. And the wall cabinet on our cover will offer you a great challenge. Jacques Breau takes you through the steps of crafting a great cabinet with a curved door and sides. It includes a host of interesting details that will delight the maker and the end user.

We also have our regular *Finer Details* and *Canadian Quotes* columns, and for the turners amongst us, Mark Salusbury takes a close look at a new turning tool – the perfect sphere. Last but not least is Don Wilkinson's *Woodchuckle* column, at the end of the issue. Speaking of "last" and "the end", it's with great disappointment that we announce this will be Don's last *Woodchuckle* column for us. He's spent the last 7 ½ years writing about the funny side of working wood, and we loved every painful, mistake-ridden word. According to Don, every one of his columns were 100 percent true ... if you don't mind stretching the truth quite a bit. Thanks very much for the laughs, Don – you will be missed.

Rob Brown



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Errors & Omissions Excepted

letters

Purpleheart for Cutting Boards?

In the Dec/Jan 2015 edition, (issue #93) there was an article on page 30 called the Chessboard Cheese Board. The featured project is an end-grain cutting board made out of maple and purpleheart. Purpleheart is listed as a toxic species. If ingested, the material may cause someone to get sick.

Darrell S.

Hi Darrell,

Thank you for pointing this out. Anyone making a cutting board should consider not only how the wood species will look when the project is complete, but also whether there are any health or safety considerations associated with it. Though it's rare, some people may have a negative reaction to purpleheart.

By researching the species they plan on using everyone will be better equipped to make a decision about a specific wood's safety. —Rob Brown

Subscription Draw Winners

Edna S. Abbey, SK has won a Cordless Drill and Impact Driver Kit from King Canada.



Paul S. Fenwick, ON has won a \$250 gift card from Lee Valley.



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Great Digital Articles!

Hi Carl,

After reviewing this e-copy of the new issue of *CWHI*, I have to say this e-copy is the most user-friendly of all e-magazines I receive. Bravo, spread the word. I certainly will to all the Vancouver Island Woodworker Guild members at the next meeting; it certainly is tablet-ready. Thanks again for a great magazine and the best e-magazine.

Brian McLaurin
Ladysmith BC

Coming Events

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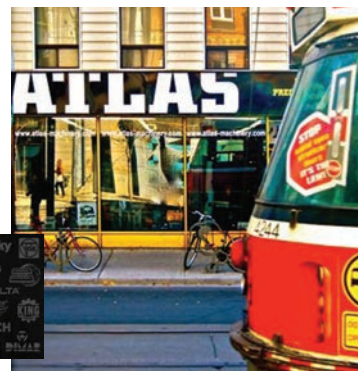
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New Rolair AB5 "Air Buddy"

ROLAIR's new AB5 "Air Buddy" is the much-anticipated follow-up to the popular JC10. This new 1/2 HP compressor is capable of delivering .7 CFM at 90 psi. The long-life induction motor features manual overload protection and the manifold includes a regulator, gauges and a 1/4" universal quick-disconnect. All of this weighs in at a modest 25 pounds.

The super-quiet and portable design of this compressor will make it a light trim/finish carpenter's best friend. Tucked safely inside the protective roll-cage, the AB5's motor-pump delivers plenty of air for finish work, while drawing only 4.6 amps. Visit www.rolair.com for more information.



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- Floor-to-table height: 34"
- Footprint: 20"L x 21 1/2"W
- Arbor: 3/4" • Arbor speed: 3850 RPM
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Best Build

Check out the **Woodworking** section of our forum for our latest "Best Build" thread – a curved railing. This month's winner, Mohammad Salavatipour, receives a **dovetail saw** from **Lee Valley**.



To find out more about this project, go to: forum.canadianwoodworking.com
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1338P Preston Shoulder Plane

Lee Valley has a wonderful collection of tools, which, for the most part, stays behind closed doors. Rob Lee, owner of Lee Valley, shares some information about the collection in general, then selects one of his personal favourites and tells us all about it.

BY ROB BROWN

Lee Valley's Tool Collection

In a simple looking warehouse, just around the corner from Lee Valley's Ottawa headquarters, lives a wonderful and varied collection of tools. Leonard Lee, founder of Lee Valley, started collecting tools shortly before he opened the store. It wasn't an official collection at that point, but it quickly grew into one as soon as the business opened in the late '70s. Now it's his son, Rob Lee, who oversees the collection, and adds to it by attending auctions whenever possible. A quick estimate by Rob is that there are more than 30,000 tools in the collection, but it's very hard to pin the exact quantity down, as many tools are purchased as a lot, kept together and counted as one item.

The collection serves a number of purposes. First and foremost, it's used

as a physical library for product development. During the development of a tool, the staff have the opportunity to measure, feel and use any tool in the collection. This allows the team to learn a great deal about the history of a specific type of tool, and gives them functional and aesthetic ideas for the tool they're going to develop. Some of the tools are very rare, while others are common, even poorly designed or manufactured, but all provide input into the process of making a new tool. The second purpose of the collection, and one you've been witness to many times if you're a Lee Valley customer, is to provide their photography studio material to shoot catalogue covers, calendars and other materials. A third purpose of the collection has yet to be realized. Currently there are few tools from the collection on public display. Lee's vision is to one

day convert much of the collection into travelling museum displays, with many of the better pieces touring their stores. The stories of the tools will help to create excitement for tools in general, but may also draw more customers into their stores. Generally speaking, tools are added to the collection for a specific purpose. That's how they get value out of the collection.

Wide scope

The scope of the collection is generally rather unfocused, but that's just how Lee likes it. "Our collection is one of the largest, most unfocused collections around," states Lee, "and there are many other collections that are far more impressive. Our collection helps deliver the context and story of tools to the customer. People don't want to just buy products, they want to buy stories.

They want to understand why a product is the way it is, and where it came from." Other collections are quite different, according to Lee. "It really depends on what type of story engages the collector most. Whether it's one manufacturer they're interested in, one type of tool, one period of time, or even one trade, each collector has a different mind-set. We're unfocused as we don't want to tell one story, we want to tell many stories, and we have the need to keep engaging a very large customer base on a regular basis."

How does Lee compare Lee Valley's collection to others? "We have some really cool pieces, but until you get out there into the collecting world most people have no idea how many unique pieces there are. There are tens of thousands, even hundreds of thousands of very unique pieces out there. We're talking centuries of production in many countries. We generally focus on North American and English tools, and rarely get into other tools."

There are about 20–30 items valued in excess of \$10,000 each in the collection. Though it's impossible to put an exact figure on it, Lee says the value of the entire collection would be well over \$100,000, but less than \$1 million.

1338P Preston Shoulder Plane

I've had the pleasure of meeting Rob Lee a number of times. He's always a gentleman, and speaks in an even,

almost quiet, tone. What surprised me right away during our recent conversation about his century-old Preston shoulder plane was how animated and impressed he was when talking about it. I guess I shouldn't have been surprised how he'd react when asked about one of his favourite tools.

Beautiful and breakable

"What makes this Preston shoulder plane particularly difficult to manufacture is the open work. It's an incredibly fragile casting. It's about 2mm thick in many parts. If this is dropped it will snap," Lee says, matter-of-factly. "What makes this really unique is the recessed, japanned field, which is only about 0.5mm deep. The field is almost flush with the edges on both sides of the plane. When you're doing sandcasting you have to place both halves of the mould, on either side of the plane, precisely, so you get the open work. Then, when you start doing the casting, you have to orient the casting so there's less than 0.5mm of positioning error front to back, and side to side. I have no idea how this plane was even made." I couldn't help but laugh at this point. To hear Lee was stumped at how a tool was made only proves how incredible this plane really is. "I don't believe that any manufacturer could cast this today, using the same methods. This was the acme of the art, for the time. When you look at how precisely the parts fit together on this plane, it's phenomenal. All contact



Great Collection – The tool collection is vast and intriguing, and informs some of the tool design decisions Lee Valley makes to this day.

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Take the Good with the Bad –

The recessed field is only 0.5mm shallower than the surrounding raised edge. A great amount of skill and care is required to manufacture this detail. The downside to this is that the plane is harder to grasp properly, and the likelihood of it being dropped is increased.

surfaces are beautifully designed, and accurately detailed. The knurl is beautiful and crowned, and was made with a purpose-made knurling tool. It's a well thought out tool that is gorgeously made, and I suspect they lost their shirts making this tool. It didn't last very long in their product lineup. Even if you tensioned the lever cap too much you could very well snap the plane."

Lee goes on to talk in more depth about some of the manufacturing techniques, which obviously impress and confound him. "Sandcasting by hand is a very skilled trade. The patternmakers had tool kits that looked like a pastry chef's tool kit. They had spatulas and so on that they could make the impression in the sand, then go work with it, smooth out any chucks that fell apart, sort of like icing a cake in reverse, as they were working with the hollow, instead of the outer surface."

Lee has only seen two of these planes. "I know they're out there, but it's such an incredibly rare piece, and I have no idea how many were made in the first place." That's usually bad news for a collector, but not for Lee, as he already



Gorgeous Details – The adjustment knob on this shoulder plane has been knurled with a purpose-made knurling tool. Preston took small details like this seriously, and had a reputation for creating beautiful looking tools.

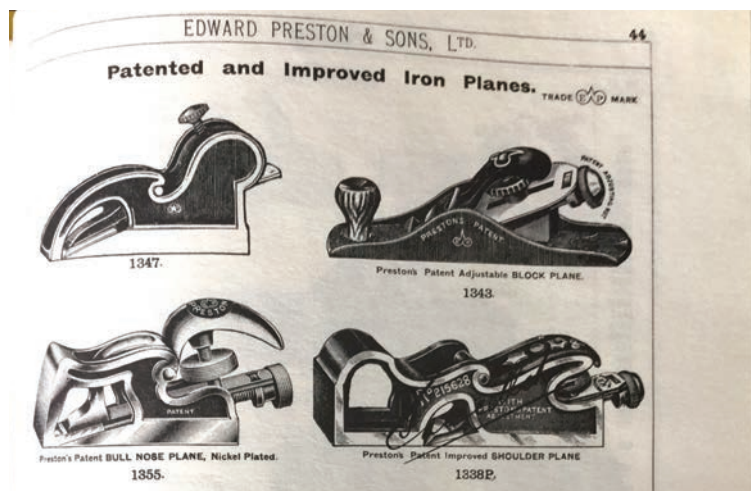
Very Short Run – The 1338P (right column, second from top) was introduced in Preston's 1901 catalogue. Strangely, the same page told readers it was discontinued, as "Cancelled" was printed overtop of the image of the plane.

owns one. "I think they produced this plane for a portion of one year. I'm sure they figured out very quickly that this was virtually impossible to produce. If you take a look into the bottom of the casting you'll see there's hollow work there, too. It's almost like a taco shell. It's incredibly fine casting. It would be a difficult tool to make out of plate steel, let alone cast it."

"What's really neat about this plane is the fact that you couldn't make it today," Lee continues. "This type of casting is a lost art. This is the product of an artist, not a manufacturing practice. It probably had a yield of about 1:10. In fact, that would have been very good. This was a premium plane that could very well have been designed and made for show at an international exhibition, just to show their capabilities."

It's not perfect

As impressed as Lee is with this plane, he admits there are pitfalls associated with producing it as Preston did. "Not having enough of a reveal between the field and the raised edge is a danger, as that's what gives the user a mechanical lock on the tool when in use. If they went to a deeper recess, your fingers hang on better. This plane will easily slip out of your hand if you're not careful. This is a case where you can admire the accuracy and the skill, but they overdid it. The last thing you want on a plane like this is a grip surface that isn't optimal."



Value

I knew my last question, about the plane's value, was going to stump him, but I had to ask. Lee's response was measured, and he admitted it's impossible to tell until he puts it up for sale – which he isn't about to do. "It's hard to know what the value of this plane would be today, without exposing it at an auction, to see what people would pay. Preston is very sought after because they are very graphic, upper-end tools. A guess on my part would be somewhere around \$3000–\$6000, but it's very hard to say. Each auction plays out very differently, and it depends on the day, and the audience." It sold for 12 pounds in 1901.

Do you know someone with a great tool collection? Is there one antique tool that fascinates you? Post your thoughts on our website, at the end of this article. Also feel free to email me any details – rbrown@canadianwoodworking.com.

ROB BROWN
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David Atkinson

...on curves, symmetry and his obsession with detail.

BY ROB BROWN



Autumn Crab Apples – Atkinson made this bed for one of his daughters as a wedding gift. The cherry frame houses marquetry panels depicting some of Atkinson's own crab apple trees. (Photo by Dean Palmer)

David Atkinson – 62 years old
www.atkinsonwoodart.com
Location and Size of Studio –
Guelph, Ontario; 420 sq. ft.
Education – Architectural Technology/
Engineering Technology

How long have you been building furniture?

About 30 years.

What sort of furniture do you specialize in?

Anything from toys to furniture to decorative things to musical instruments. My forte is decorative boxes and trays. Most of the time it's my marquetry that clients want.

Tell us a couple interesting things about your personal life

I have made wooden items for some notable people from military leaders to premiers to a member of the royal family. My work has found homes on every continent, with the exception of Antarctica. I have made a number of guitars and basses (one guitar with a marquetry-finished body and headstock). I am a performing bassist and I routinely perform with my own custom-made basses.

What are the three most important items in your shop apron?

The three most important items in close proximity to my hands would be: Paper – complete with pencil and drafting instruments (or, alternatively, a computer with suitable CAD software); my hand-built treadle-operated marquetry fret-saw; my vacuum press.

Solid wood or veneer?

Marquetry is my forte, so on one hand I'd say that veneer is the way to go for me. On the other, I wouldn't make table or chair legs, or structural components from anything other than solid wood.

Figured or straight grain?

I'm happy with either. It depends on what effect I'm trying to create.

Inherited Vintage Stanley Sweetheart or fresh-out-of-the-box Veritas?

I have a few vintage that I really only keep for sentimental reasons. However, I have collected a nice set of hand tools, from planes to chisels and knives. I have a lovely Veritas shoulder plane that I would hate to make do without.

Flowing curves or geometric shapes?

I have a penchant for the curved form and I'm unfailingly attracted to symmetry.

quotes

Due to wall and other structural considerations, my studio is not all in one piece. I have a workably large enough space for most of my work. In adjacent spaces I have a vacuum press, thickness planer and jointer. I also have a small finishing room.



The main studio is small by many standards, but very serviceable when everything is in its place.



Normally I work all day and into the evening at times. Much depends on how busy I am. I have been known to work seven days a week at times.



My favourite activity is the act of designing, both from the artistic side of things and the engineering side.



My designs tell people I'm a person who is a tad over-focused on detail, symmetry and precision. That I'm a bit nerdy when it comes to things engineering.



Being a gardener and unofficial bird watcher, many of my designs come right from my back yard. I will develop designs based on photographs I've taken.



My design process usually employs developing an idea and possibly making several drawing studies. I normally design with a CAD program where I can easily manipulate line work and scale.



Don't be afraid to explore an idea. It might work or it might not, but much can be understood from going through the process.

Tiger Meets Tiger Swallowtail – Made on speculation, this tray portrays a playful scene where two vastly differing creatures meet. (Photo by Bob McFee)



I have no preference between speculative or commission work. I'll work concurrently on both much of the time if there are related operations involved.



My favourite four woodworkers would be Michael Fortune, Stephen Haigh, Silas Kopf and Terry Johnston. Whether it's a great sense of design or wonderfully executed marquetry, all produce work nothing short of inspiring.



I would say that there are more people in Canada who want hand-crafted items compared to years past. I'm not sure if that indicates a general change in attitude or just that my work is becoming more noticed.



As with many things I do, I am self-taught in the art of marquetry. Flying by the seat of my pants is pretty much my modus operandi.



Early on I spent a lot of time just looking at the work of other marquetry artists trying to figure how they did what they did. I still do; observation is a great tool.



Don't copy me. I would find that upsetting ... But only because it's best for anyone to do it his or her own way.



I would encourage anyone interested in pursuing the art to experiment with abandon.



Of all marquetry styles, I personally prefer more contemporary work. I've never been that fond of the same old same old although that's not to criticize the more traditional forms of the art.



My treadle-operated marquetry saw is a very important tool. The reason I use this type of cutting system is to reduce stress on my hands and shoulders. The one I use now is a fourth-generation setup. I spent a lot of time designing it based on what I learned from its three predecessors.



I find that completed artworks can become quite bowed from all the assembly and veneer tape. Keeping them temporarily pressed encourages them to be more co-operative for gluing to their respective substrates.



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SLIDESHOW: Visit our website to view a slideshow about Atkinson's work.

RELATED ARTICLES: Canadian Quotes: Rob Diemert (Aug/Sept 2014)



Hidden Hinged Spice Rack

This under-cabinet spice storage rack will work wonders to organize that cluttered spice storage area in one of your kitchen cabinets. It can be customized to fit under any cabinet you have.

BY ROB BROWN

If your kitchen's spice area is even remotely similar to mine, this project should make your mouth water, just like the exotic spices we love so much. I've been fumbling with, and searching for spice jars for years, but now I actually look forward to reaching for some spice. The dimensions for this specific project are for an upper cabinet with an area underneath it 14 $\frac{7}{8}$ " wide by 11 $\frac{1}{8}$ " deep, but you can adjust it to whatever size you need.

Full-size drawing

With the spice bottles at my side, I drew the spice rack and hanging strip full-size on a piece of $\frac{1}{4}$ " plywood. There was just enough space to fit two rows of spice jars, with a bit of room to grasp the jars, so space had to be used carefully. I worked from the outside inwards when designing, as the exterior of the rack was

the only fixed dimension. I could have squeezed one more spice jar into each row, but felt it might be tough to easily grasp each jar if I did.

Assemble your ingredients

Minimal lumber is required for this project. I would also recommend you have the hardware on hand before starting. I broke out the walnut stock for the sides, front and back, and milled them to size. Mitres were cut onto their ends with my cross cut mitre sled, but a mitre saw would also do the job. I chose to use a mitre joint for the corners as it finishes cleanly, with no visible joint. The outside of my rack will be painted white, to match my kitchen cabinets.

After running rabbets to accept the bottom in the four parts, I sanded the inner surfaces. I used masking tape to join their ends together, then added a bit of glue and folded the parts together, taping the final joint tight. I immediately cut the plywood bottom to size and installed it, making sure everything was square.

Rout some grooves

I broke out material for the grooved strips wide enough to obtain both strips from one blank. The 5 1/2" wide piece I used was just wide enough for me to machine the grooves, clean up both outer edges and rip the workpiece in half. I also worked with a thicker piece than I needed, as I wasn't sure how much thickness I was going to need.

The radius of the spice jars is 7/8". I have a set of router bits from Busy Bee Tools with a 5/8" radius core box bit. It's not a perfect fit, but it's the closest I had. Alternatively, you have many options: use a smaller bit with multiple passes, remove the majority of material at some point with a dado blade and fine tune the fit with hand tools or use a round-bottom hand plane to create the groove, to name a few. As long as there's a positive fit between the groove and the spice jars all is good. With my bit chucked in the router, I set its depth to make a 1/4" deep cut.

I used a shop-made "L"-guide, clamped to the workpiece, to guide my router and bit and create the series of grooves across the workpiece. I made



Full-Sized Drawing – Designing from the outside inward, Brown draws the spice rack on plywood. This project requires the user to be able to grasp and return the spice jars easily, so spacing is important.

sure to move the router in the proper direction, in order to ensure the router's base stays firmly against the guide as I make the pass. Get this detail wrong and you'll know it.

After I made the first pass, I marked where the edge of the "L"-guide was on the workpiece, then added a series of lines across the stock at 2 1/4" intervals. I was then able to quickly run grooves across the rest of the workpiece without thinking about spacing.

With the grooves complete, I sanded the grooves to remove any milling marks. I happened to have a small drum sander, slightly smaller than the bit I routed the grooves with. I wrapped

sandpaper around it and smoothed the grooves. I then cut the strips to rough length and planed them to 3/16" thick. Finally, I cut them to final length and width.

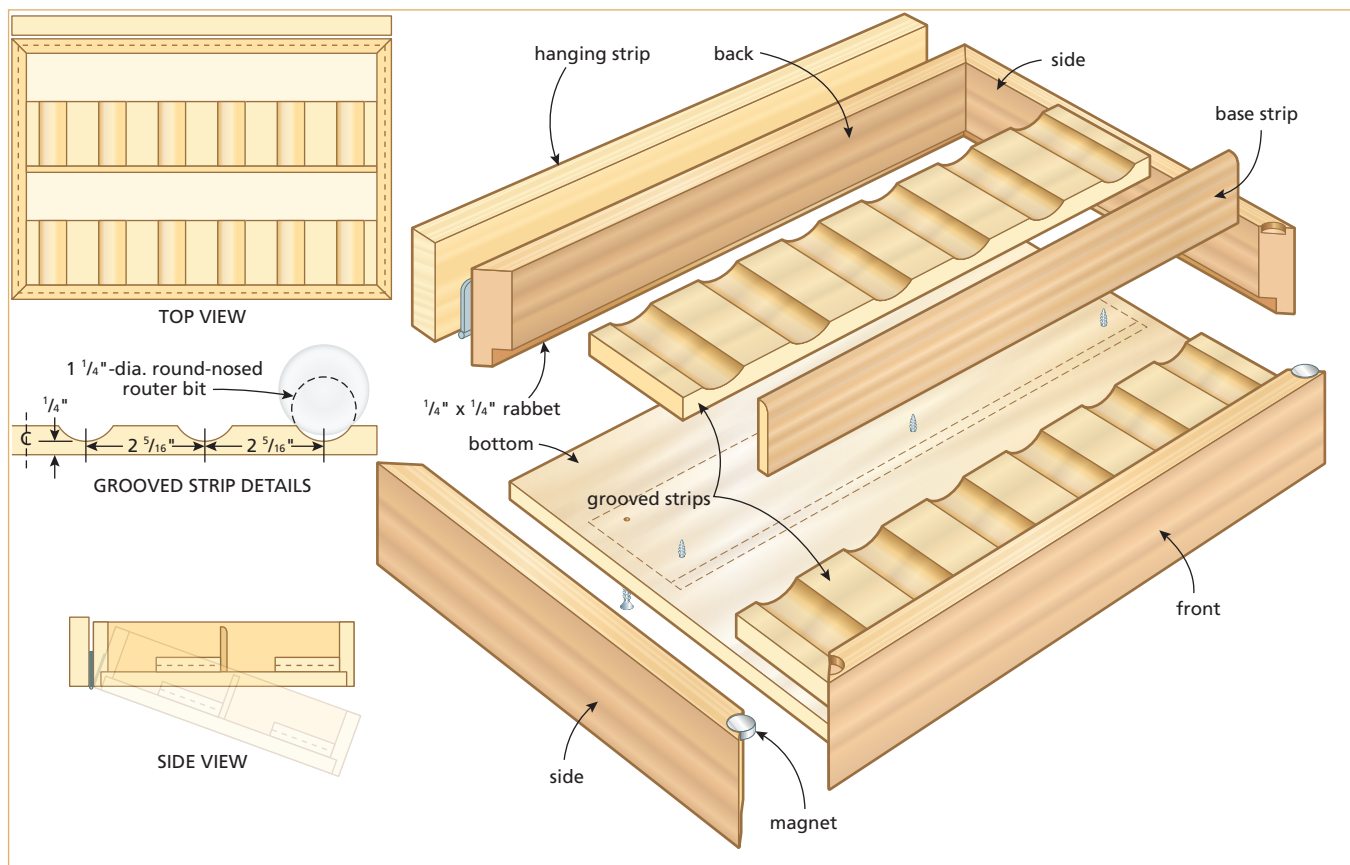
Base strip

When the rack is opened, the lower row of spice jars is held up by the front. The upper row of jars needs a base strip to keep them up. I machine it to its finished dimensions, then round its lower, front corner with a block plane. This makes grasping the lower row of spice jars slightly easier. After a quick sanding, the base strip gets glued flush with the back face of the upper groove strip.



Glue the Mitres – Brown applies a very light coat of glue to the mitred faces then rubs it in. This saturates the end-grain pores with glue, so the second coat will not sink into the wood. He also applies tape across the adjoining face of the mitre joint (left), so when the joint is folded together (right) the glue doesn't get onto the wood. Wait 20 minutes then remove the tape – the glue almost always gets removed with the tape.





Rout Grooves – With the first groove machined, Brown marks the placement of the “L”-guide for the rest of the grooves. For his specific rack, he spaced the grooves $2\frac{1}{4}$ apart, on center.



Glue Together – To attach the base strip to the upper grooved strip, apply a bit of glue and clamp the pieces together. A couple of nails, driven just proud of the base strip, will help keep the parts from moving while you apply the clamps.



Sanding, Made Easier – A small drum sander is slightly smaller in diameter than the grooves, so Brown covers it in sandpaper and smooths the grooves before separating the parts.

Install the strips and magnets

With the two groove strips in place, drill small pilot holes through the underside of the bottom panel, into the groove strips. When the spice rack is complete, small screws will hold these two parts in place.

I added two magnets to the upper edge of the sides. The



Eased Edge – The underside, front of the base strip gets its edge eased to lessen the chance of catching a finger on it when reaching for a spice jar.

mating metal plates will be added to the underside of the cabinet once I bring the rack into my kitchen to install it.

Hanging strip

Machine the hanging strip to finished size and temporarily join it to the main rack with two hinges. The hanging strip and main rack should finish flush on

Materials List

Part	Letter	Qty	T	W	L	Material
Front/Back	A	2	$\frac{9}{16}$	2 $\frac{1}{2}$	14 $\frac{3}{4}$	Walnut
Sides	B	2	$\frac{9}{16}$	2 $\frac{1}{2}$	10 $\frac{1}{8}$	Walnut
Bottom	C	1	$\frac{1}{4}$	9 $\frac{5}{8}$	14 $\frac{1}{4}$	Walnut Plywood
Grooved Strips	D	2	$\frac{9}{16}$	2 $\frac{1}{2}$	13 $\frac{5}{8}$	Walnut
Base Strip	E	1	$\frac{1}{4}$	1 $\frac{3}{4}$	13 $\frac{5}{8}$	Walnut
Hanging Strip	F	1	$\frac{3}{4}$	2 $\frac{11}{16}$	14 $\frac{3}{4}$	Maple

Hardware List

Name	Qty	Size	Details	Supplier
No Mortise Hinges	2			Misc.
Magnets	2			Lee Valley
Chain Stay	1			Misc.

their undersides, but the hanging strip should finish about $\frac{1}{16}$ " above the top edge of the main rack. With screw locations determined, remove the hinges and fasten the hanging strip to the underside of the cabinet.

Position the main section of the rack

in place under the cabinet and install a few screws. In a perfect world, your rack opens and closes with ease. If the fit isn't perfect you can either adjust the dimensions of the hanging strip, adjust its location or remove material from the back of the main section. I

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had to remove some material from one end of the hanging strip to allow the rack to open properly.

Functional details

Before removing the hanging strip and spice rack, I installed the magnets in the underside of the cabinet and tested they were strong enough to hold the full rack closed. If you aren't confident about their strength, add a few more. Better to be safe than sorry. If you want a bomb-proof solution, attach a simple latch.

Apply a finish

We recently refinished our kitchen in a nice, simple white, so I had to finish the outside of this spice rack to match. The interior was finished with clear polyurethane, adding some much-needed wood grain to this woodworkers' kitchen. I applied a few coats of poly to the inner surfaces of the box and the grooved strips with the parts apart, then let everything dry thoroughly. It was easier to finish the individual parts, rather than the entire project. With the inside complete, I primed and painted the outer edges of the spice rack and hanging strip.

Final Installation

Install the hanging strip for the final time, and fix the rack to it. The final task is to add the chain stay to stop the hinged rack from swinging too far downward, which would



Install the Hinges – Attach the rack to the hanging strip with the hinges. Now the rack can be test installed and fitted to the space, if need be.



Initial Installation – Position the hanging strip in place and screw up into the underside of the upper cabinet, and possibly through the hanging strip, into a stud. You could also try a few screws down from inside the cabinet, into the hanging strip, if you need some added insurance.

cause the spice jars to fall out of their homes. I was sure to fix the upper end of the chain above the interior area of the compartment when it's closed, so slack chain would fall into it while raising it.



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Top 10 Considerations When Hiring a Contractor

It's rewarding to do a job yourself, but some projects may require special skills that you don't have. Other projects might be too large for you to undertake on your own. In situations like this you'll want to hire a renovation contractor that you trust and can get along with.

BY CARL DUGUAY

1 Be Clear About What You Want – Begin by listing, in detail, what you want. Prioritize the list, highlighting things that are 'must haves'. If you find it difficult to visualize what you want, consult with an interior designer, who will help you sort through your ideas and come up with a realistic budget.

2 Be Clear About Who They Are – Resist the urge to hire the first contractor you meet. Interview three or four contractors. Find out how long they've been in business under the same name in your town, whether they have a trade certification, possess a business license, have a GST number and are a member of a business or trade association. Ask for client names and phone numbers, and call them. Check out the contractor with the Better Business Bureau. And listen to your intuition – did the person show up on time? Were they personable, polite and organized? Did they seem knowledgeable?

3 Make Sure They're Covered – Ensure they carry both liability insurance and property damage insurance. Ask to see a copy of the insurance certificate. Otherwise, you may be liable if an accident occurs on your property.

4 Know Who Will Do the Work – Find out whether the contractor will do all the work, use employees, or subcontract all or part of the work. Get the name of all subcontractors and enquire about their background and experience. Find out how often the contractor will be on-site, how many days per week he will be working on your project, and how many other jobs he has on the go.

5 Know When the Work Will be Done – A vague start date is as good as no start date. Make sure you get a firm start date and an expected completion date. You'll also want to know what time will they will begin work each morning, when they'll quit for the day, and whether they'll be working every day on your project.



6 Get an Itemized Bid – Each prospective contractor should provide you with an itemized list of all the work they will do, materials that will be used, and provide a fixed price rather than an estimate for the job. The bid should include a time schedule for each component of the job, and list all permits that are required. Ensure you know who will apply for the permits – you or the contractor.

7 Check for a Warranty – Ask if the contractor provides a warranty, what it covers, and for how long. Ensure the warranty is written into the bid.

8 Review The Payment Schedule – Most contractors will have a preferred payment schedule – generally some percentage up front, with subsequent payments as the work progresses. Ensure the payment schedule makes sense to you, and that payments are related to actual deliverables. You should also insist on a hold-back that will be paid upon successful completion of the project. And always make payments by cheque so you have a record of disbursements.

9 Get It In Writing – Once you select the contractor, make sure you have a signed agreement. The bid, if not signed, isn't a contract.

10 Prepare for the Mess – Messes and delays are common, particularly on large projects. Discuss with the contractor what you need to do before the project begins, what they will do to minimize any mess, and specifically what they will do to clean up the work area after the project is completed. Once the work starts, get out of the way, and let the contractor do the job.



CARL DUGUAY

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Craft a Curved Wall Cabinet

With curved sides, and scalloped, coopered panels on all exposed faces, the stunning details of this James Krenov-inspired cabinet can be enjoyed for a lifetime.

BY JACQUES BREAU

The shape of this cabinet is symmetrical and makes use of the same curve on the sides and front.

Having selected wood for the project, I proceeded to make a full-size, top-view drawing.

Bent laminations

The bending form was cut on the bandsaw from a solid piece of wood and trued up by hand, taking care to not introduce any twist into the form. I kept the off-cut to use as a

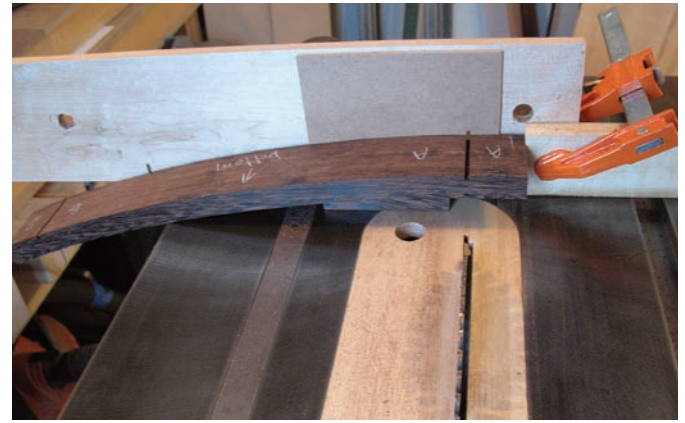
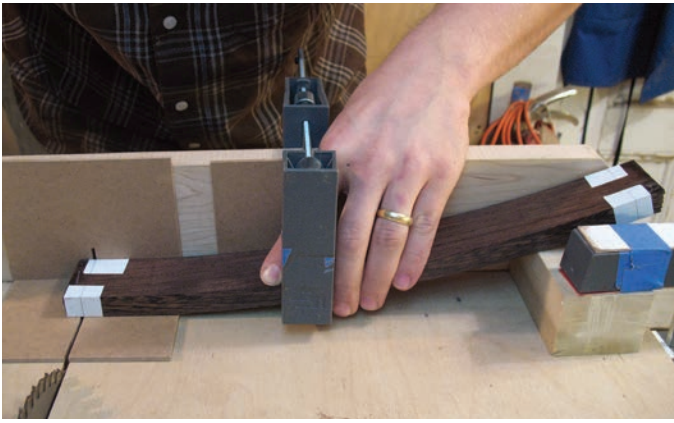
caul during clamping and as a curved fence for my router table. I laid up the curved rails for the door and sides using five 1/8" plies and epoxy.

Once the epoxy was fully cured, I removed the clamps and cleaned up the convex face of the lamination, and ensured that the face was flat and free of twist along its entire surface. I then jointed one edge, and cut the other edge parallel on the table saw. The inside face then gets checked to ensure that it is parallel to the outer face. If the form and laminations are carefully prepared, this should take no time at all.



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Curved Joinery – The joinery for the curved door and side rails are made the same way. After the workpiece is cut to length with the help of a curved caul (left), the shoulders are cut while being supported by a wood block (right).

Frame

I added a slightly unorthodox detail to the lower portion of the sides and door frame, in order to create a stronger visual. There are essentially two lower rails for these three sub-assemblies, plus a similar detail for the back panel. In each case, the lowest rail acts as the main structural member, and is joined with bridal joints. The lower-middle rail, about $\frac{1}{8}$ " above it, is fixed in place with floating tenons.

The mortises in the stiles are fairly simple, since the members are straight and square. Depending on your machinery, you could tackle the mortises on the bandsaw, the table saw, the shaper, by hand, with a horizontal boring machine, or with a router. Do the upper and lower bridal joints first, then move on to the floating tenons for the lower-middle rail.

The tenons, although on curved members, depart from square joinery

only slightly. The shoulders and cheeks are straight and square. We need to properly hold the curved parts for the cuts in order for things to work. We first need to cut all the parts to length with the ends perpendicular to the tangent of the curve. We will use this cut to reference all of the others. Make sure all the matching rails are cut at the same time.

Using the end cut as a reference, make two cradles that will hold the curved rail with the end perpendicular to the table, one for the curve facing up, one for the curve facing down. Once you have scribed your shoulder, use these cradles and a tall stop block to make the cuts. Make sure all of the cuts of the same length are done at the same time.

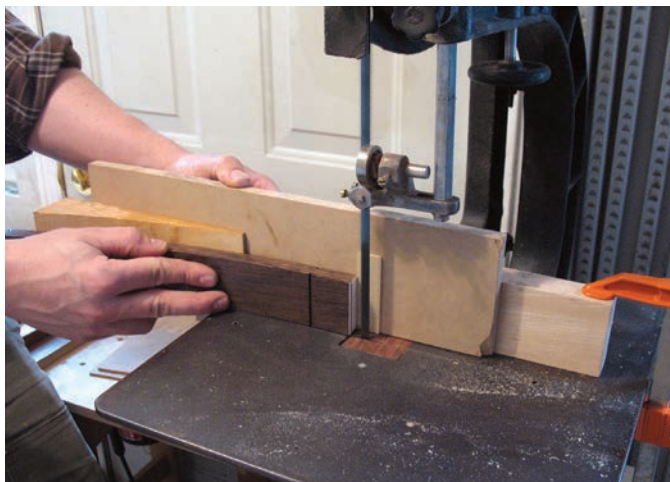
Once the shoulders are cut, proceed with cutting the cheeks. Use your favorite method for this, making sure that the cut is perpendicular to your reference

end. I used the off-cut of my bending form as a sled and cut the cheeks on the bandsaw. Proceed with fitting your joints, ensuring tight shoulders.

Top and bottom panels

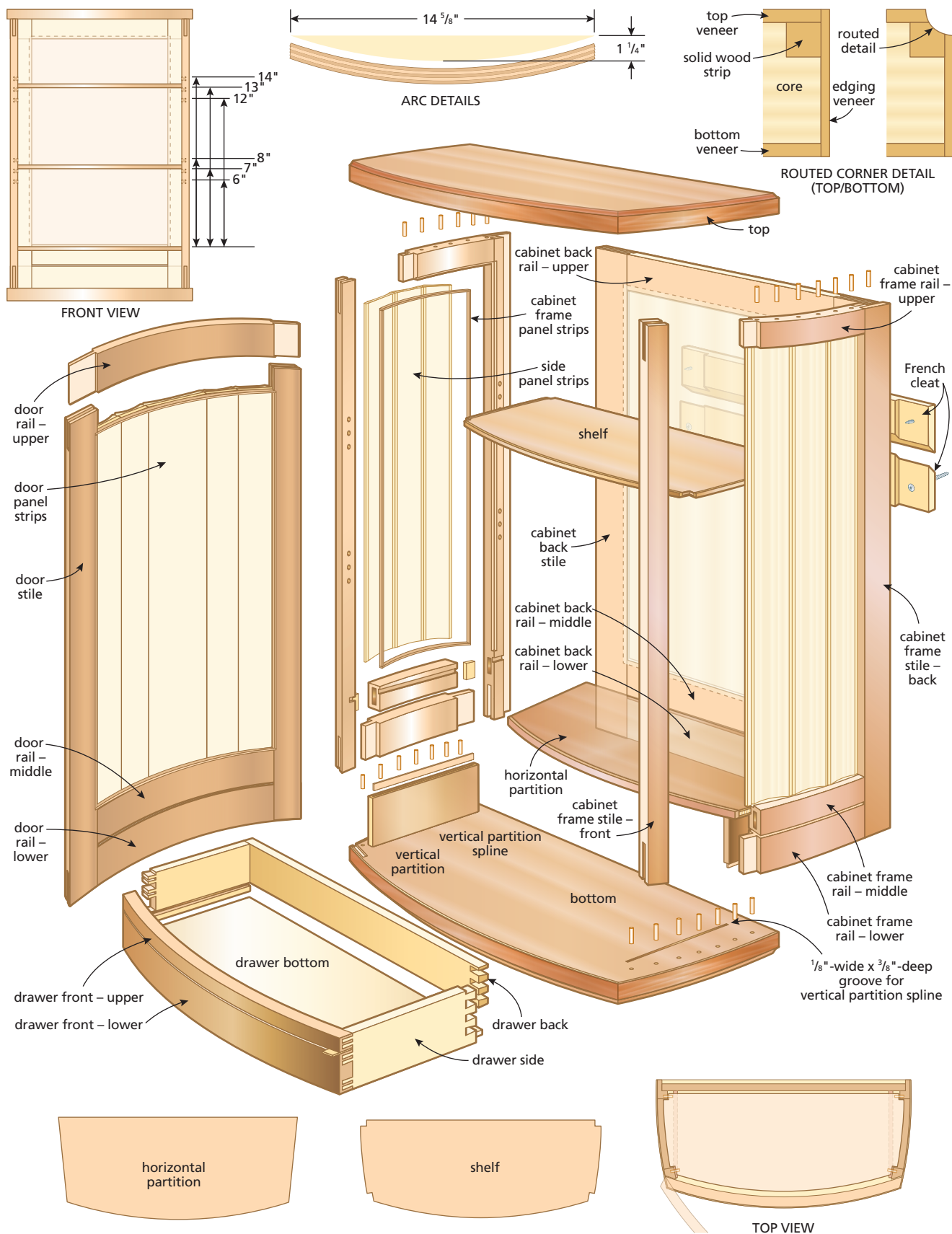
The top and bottom for this cabinet consist of shop-sawn veneer over birch plywood. I selected my plywood carefully, making sure that the sections I chose were as flat as possible. I used $\frac{5}{8}$ " plywood for the top and bottom cores, but added a layer of $\frac{1}{8}$ " thick plywood to either face of the cabinet bottom, to give it a stronger look.

Once the cores are cut to size and shape, I glue a piece of wenge to the back edge. By adding a $\frac{1}{8}$ " thick wenge to that edge of the core, before applying the face veneers, both visible surfaces will have continuous wenge grain extending all the way to the very back edge of the panel.



Tenon Cheeks – With the shoulders determined, Breau uses a curved caul and his bandsaw to cut the cheeks of the joints.

Decorative Rabbets – Because the underside of the bottom, and the upper edge of the top, will both receive decorative rabbets, Breau machines a small rabbet into the core and glues in a piece of solid wenge. Once the face and back veneers are applied, and the decorative rabbet is cut, nothing but solid wenge will be visible.





Jointing and Truing – After the veneers are cut, they need to be edge-jointed and glued together with glue and tape. When dry, the inner face of the veneer sheet is scraped smooth so it can be applied to the bottom and top cores.

To add a touch of liveliness to the piece, this cabinet is getting a relief detail around the top of the top, and the bottom of the bottom. For this, I'm going to add a 1/4" square strip of wenge into a rabbet in the plywood before gluing the veneers on, so the routed detail will reveal only wenge. Once the veneers are applied, I will relieve the corner with a straight bit that I have modified by rounding the corner to a 1/16" radius. This bit leaves a cut with a nicely rounded inner corner. A small core box bit will work as well.

Sawing veneer

To saw the veneers, I use the band-saw, jointing the face between each slice. I aim to have the veneers at 3/32". To glue up panels of veneer, I use a hand plane and a shooting board to square the glue surface. With a jointed edge on the veneer I stretch masking tape across both sides of the joint, add a bit of glue and fold the pieces together. I do my best to have all of the jointed faces facing the same direction. Once my sheets are created, and the jointed face has been scraped clean of glue and is reasonably flush, I lay the core over them to trace the shape, then cut them oversized on the bandsaw.

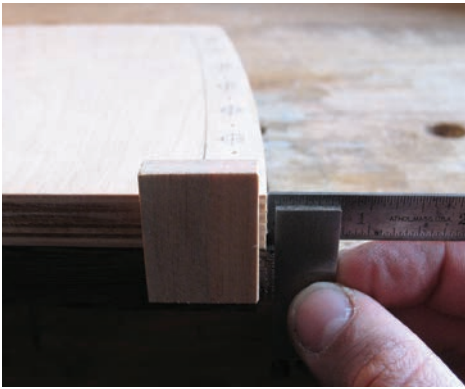
I glue the jointed faces down onto the substrate using a clamp and caul press system. A vacuum bag or mechanical press would also do the trick.

Materials List

Part	Ltr	Qty	T	W	L	
Top Core	A	1	7/8	7 3/4	15 3/4	Birch Plywood
Bottom Core	B	1	5/8	7 3/4	15 3/4	Birch Plywood
T/B Face & Back Veneer	C	4	3/32	7 3/4	15 3/4	Wenge Veneer
Top Veneer Edges - Front	D	1	1/16	7/8	15 5/8	Wenge
Bottom Veneer Edges - Front	E	1	1/16	1 1/16	15 5/8	Wenge
Top Veneer Edges - Sides	F	2	1/16	7/8	7 1/4	Wenge
Bottom Veneer Edges - Sides	G	2	1/16	1 1/16	7 1/4	Wenge
Top Veneer Edges - Back	H	1	1/8	7/8	15 3/4	Wenge
Bottom Veneer Edges - Back	I	1	1/8	1 1/16	15 3/4	Wenge
Cabinet Frame Stiles - Front	J	2	5/8	3/4	22 7/8	Wenge
Cabinet Frame Stiles - Back	K	2	5/8	1 3/16	22 7/8	Wenge
Cabinet Frame Rails - Upper	L	2	5/8	1 7/16	6 3/4	Wenge
Cabinet Frame Rails - Lower	M	2	5/8	1 7/8	6 3/4	Wenge
Cabinet Frame Rails - Middle	N	2	5/8	1 3/8	To Fit	Wenge
Side Panels	O	2	1/4	To	Fit	Spruce
Side Panel Strips	P	4	1/8	To	Fit	Wenge
Cabinet Frame Panel Strips	Q	8	1/8	To	Fit	Wenge
Horizontal Partition Core	R	1	1/8	6 3/8	15 (aprox)	MDF
Horizontal Partition						
Face & Back Veneer	S	2	3/32	6 3/8	15 (aprox)	Wenge Veneer
Horizontal Partition						
Solid Front Edge	T	1	3/32	5/16	13 3/8	Wenge
Vertical Partitions	U	2	1/4	2 3/4	6 5/8	Wenge
Door Stiles	V	2	5/8	1 7/16	22 7/8	Wenge
Door Rails - Upper	W	1	5/8	1 7/16	14 3/4	Wenge
Door Rails - Lower	X	1	5/8	1 7/8	14 3/4	Wenge
Door Rails - Middle	Y	1	5/8	1 3/8	To Fit	Wenge
Door Panel	Z	1	1/4	To	Fit	Spruce
Door Panel Strips	AA	4	1/8	To	Fit	Wenge
Cabinet Back Stiles	BB	2	7/16	1 13/16	23 1/2 (aprox)	Wenge
Cabinet Back Rail - Top	CC	1	7/16	1 11/16	15 3/16	Wenge
Cabinet Back Rail - Bottom	DD	1	7/16	1 7/8	15 3/16	Wenge
Cabinet Back Rail - Middle	EE	1	7/16	1 11/16	To Fit	Wenge
Cabinet Back Panel	FF	1	1/4	To	Fit	Spruce
Cabinet Back Panel Strips	GG	4	1/8	To	Fit	Wenge
Shelf Cores	HH	2	1/8	6 3/8	14 13/16	Birch Plywood
Shelf Face & Back Veneers	II	4	3/32	6 3/8	14 13/16	Wenge Veneer
Drawer Front - Lower	JJ	1	1/2	1 7/8	13 1/4	Wenge
Drawer Front - Upper	KK	1	1/2	3/4	13 1/4	Wenge
Drawer Sides	LL	2	3/8	2 3/4	5 1/2	Spruce
Drawer Back	MM	1	3/8	2 3/4	13 3/16	Spruce
Drawer Bottom	NN	1	1/4	To	Fit	Spruce
Finger Pull	OO	1	1/8	5/8	1 1/2	Spruce
French Cleat Cabinet	PP	1	3/8	2 13/16	To Fit	Spruce
French Cleats Wall	QQ	1	3/8	3	To Fit	Birch Plywood
Shelf Pegs	RR	8	1/8 dia.	1/8 dia.	1/2	Wenge

Hardware List

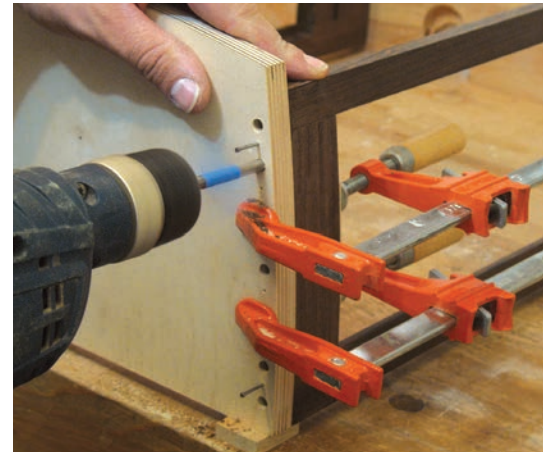
Name	Qty	Size	Details	Supplier
Knife Hinges	1	1/8 x 3/8 x 1 1/4	05H01.06	Lee Valley



Offset Dowels – Because the side frame assembly finishes $\frac{1}{8}$ " inside the top and bottom panel, the dowel jig needs to be centred accordingly. Breau offset the edge of the plywood dowel jig $\frac{1}{8}$ " from the edge when drilling the holes in the top and bottom, and places the jig flush to the edge of the sides when drilling dowel holes in the frames.



Drilling Dowel Holes – With the top and bottom panel aligned with the outer edge of the jig the dowel holes can be made. Notice the solid wood notch on the back of the jig. It references against the back of the top and bottom panels during boring.



Offset Drilling – With the frame aligned with the inner edge of the rabbet in the dowel jig, and clamped in place, dowel holes in the frame can be created. Use tape or a stop to ensure you don't drill through the frame.

Once the panels are veneered, I trim the overhanging veneer to the substrate and run them through the thickness planer to clean up the bandsawn face, and bring everything flush. I then apply the edging to the front and sides with high-quality packing tape. The sides get the edging first, in order to have an uninterrupted front face.

I like to gang parts and pattern rout them to each other to

ensure that they are identical. I do this with the top and bottom after all of the applied edges are glued on. I then set up the router with my modified bit, and relieve the outer corner using the off-cut from my bending form as a curved router fence.

Doweling

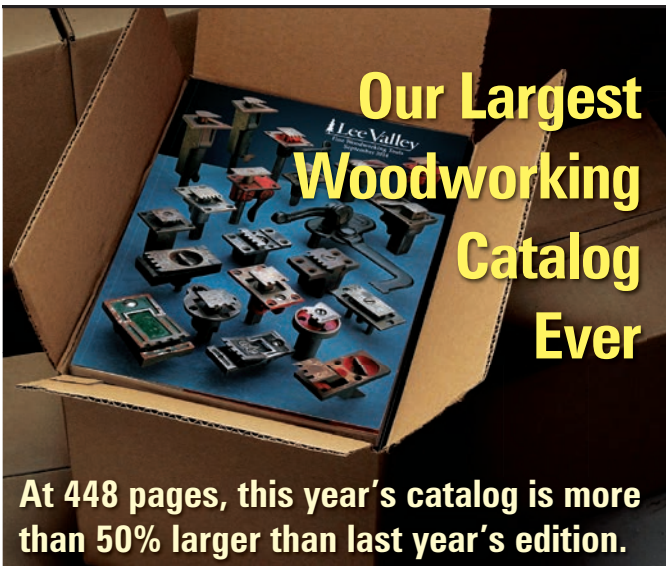
Once the main parts for the cabinet are cut to size, it's time to join them using dowels. To ensure proper alignment between the top/bottom and the sides, I make a one-piece doweling jig from $\frac{5}{8}$ " plywood. I pattern rout the plywood to the same size and shape as top/bottom. Since the side assembly is going to be inset from the outer edge of the top and bottom I cut a $\frac{1}{8}$ " deep rabbet along the outside corner of the doweling jig. I then pattern rout the entire doweling jig to this inner rabbet, making it set back from the top and bottom.

To register the jig to the parts, I glue cleats to the back of the jig. These cleats will hook over the back edge of the workpieces. I also make sure to label the jig with "top inside" and "bottom inside". Be careful to maintain this orientation when drilling for the sides.

When laying out my dowels, I typically put one in the center of the joint, one that intersects the rabbet for the back, one as close to the front as I dare, and then I fill in the middle. The rest is easy. Center the jig on the top or bottom and drill your holes on the drill press. Make sure to set your depth stop, or mark your drill bit with tape. It's an awful feeling to drill through a finish surface. Once the top and bottom holes are drilled, clamp the jig to the sides and drill them with a hand drill. To finish, lightly chamfer the edges of the holes.

Don't dry fit your cabinet with all of the dowels in place. This not only makes it hard to get the cabinet apart, it also loosens the fit of the holes a little. Use only two dowels per joint, in the holes that are second from either end.

Now that the cabinet is dry fit, you can proceed with flushing up the back of the cabinet, and marking and routing a rebate for the back panel.

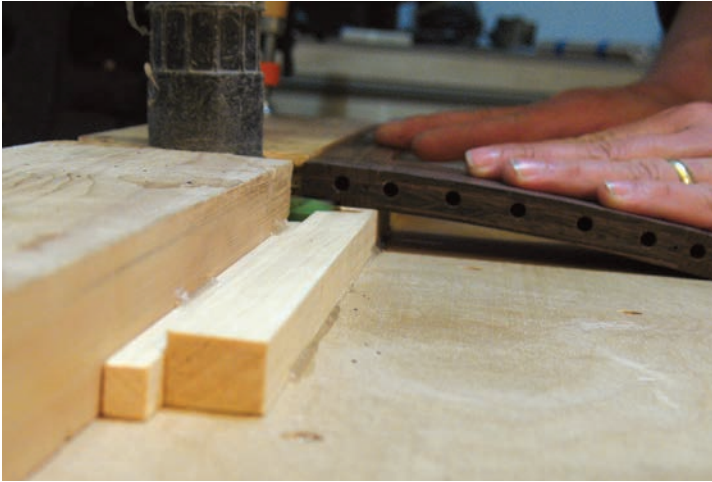


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Power First, Then Hand Tools – With the panel assembled Breau used a 45° grooving bit to establish the grooves, then fine-tuned them with a shoulder plane.



A Double-Curve – Breau used a round-bottom plane to create concave surfaces between the grooves.

Four spruce panels

I wanted to play with the idea of being both convex and concave at the same time. This came to fruition in the door and side panels, as well as with the rounded corner detail in the top and bottom. I left the back panel flat. The main form of the three curved panels are convex, coopered panels, made using basic coopering techniques. From there, I departed from the typical coopered panel. The backs of my staves have remained flat. I did this because I didn't have enough thickness to curve the inside. The outsides of the staves have been hand planed to a concave shape, and a chamfer has been added to the outside surface at the joint.

I then routed a lip along the top, bottom and the sides of the panels with my modified straight bit. To rout an even arc into the curved edge, I used a curved fence of the same radius, and positioned it slightly overlapping the bit. The curved door followed a perfect radius as the rabbet was made.

The resulting tenons are going to be set into a rabbet that is milled into the frame. The panels are then held in this rabbet, either with straight pieces on the straight edges, or strips that have been shaped to nestle into all the different facets of the panels on the curved edges. The back panel is constructed like a regular frame and panel, in that the panel is trapped in a frame, but can move with the seasons.

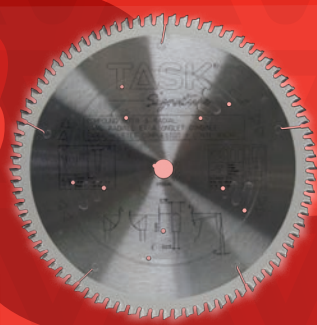
Drawer pocket

The drawer pocket is made up from one horizontal partition, and two vertical partitions. It is important to maintain a square and true pocket to ease drawer fitting.

To avoid having to fit the horizontal partition to the curved inside surface of the cabinet, I routed two dados in the sides using a router table. I simply laid the assembled side flat on the surface of my router table and routed a stopped dado that was just deep enough to run the entirety of the inner, curved face of the sides. The resulting dado was straight. Now it's a simple matter of cutting the proper angle onto the partition to match the routed dado.

The vertical partitions are held in place with splines that are routed into the

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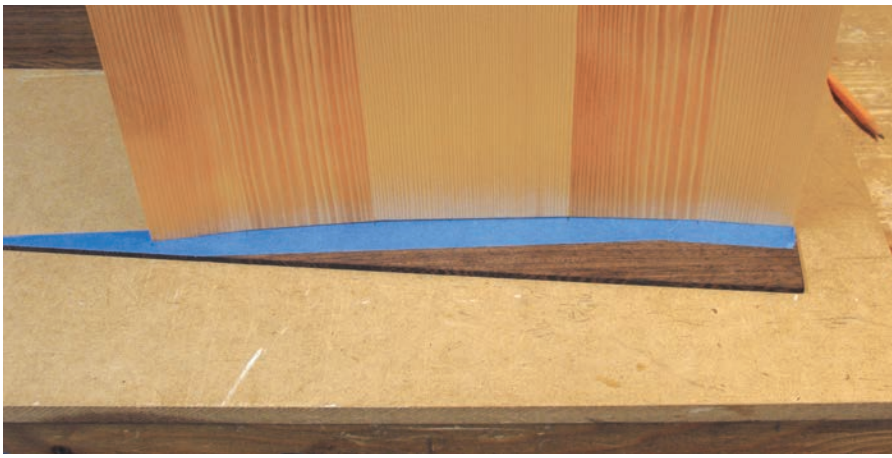
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Faceted Strips – With masking tape applied for visibility, the door and side panels can be placed on top of the strip stock, and the exact shape transferred.

bottom of the cabinet and the underside of the partition. The inside surface of the vertical partitions should finish just inside the inner corner of the cabinet's frame. It will be only slightly visible with the drawer in place.

Shelves

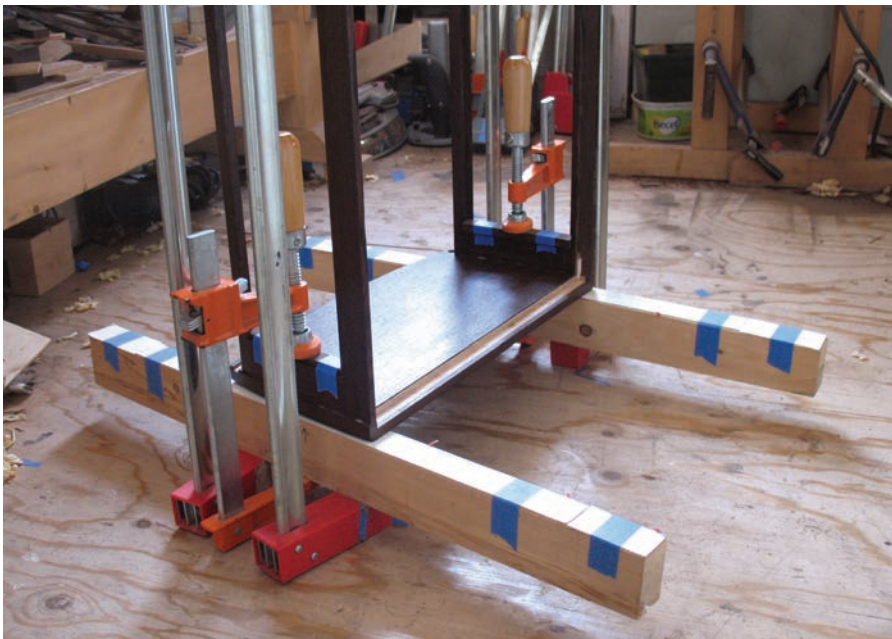
The shelves are simple veneered panels. The holes for the shelves are drilled using a long stick with a cleat on the end before glue-up. Make sure the orientation is marked to ensure the shelf doesn't rock.

Glue-up

Before gluing up the cabinet, ensure that you have made provisions for any

work that would be difficult to do once glued up. This includes cutting the back rebate, the hinge mortises and drilling for the shelf pins. Glue dowels into the sides, let them dry, and cut them to length before proceeding with the final dry run.

I pre-finish all of my parts before glue up. This entails doing all of the final surface preparation and applying the finish. I also make sure to wax the dry-fit joints to make squeeze out easy to remove. I then arrange all my cauls and clamps and get one dry run under my belt. Care must be taken to ensure the carcass remains square once the glue is applied. I check the diagonals, and adjust the clamping pressure accordingly.



Assembly – Don't jump the gun; it's much easier to apply a nice finish before assembly. Cauls assist with transferring clamping pressure, and protect the finish.

Fitting the back panel

Once the cabinet is glued together, I fit the back panel to the opening. I do this by tackling one dimension at a time, usually starting with the long dimension. I remove material incrementally and check often. It's best to put a slight bevel, towards the inside of the frame, to help achieve a tight fit at the outside of the joint.

Hanging the door

The first step in hanging the door is to fit the door tightly to the opening and check for any twist that may be present. Take out as much twist as possible now, before installing the hinges. Do this by removing material where needed, and by moving a corner of the door in or out slightly to compensate for the twist.

With the hinges fixed to the cabinet, position the door, mark the location of the hinges on the door and install the door. You will have to remove material from the top and bottom of the door for it to swing freely in the opening and finish with an even gap.

Curved drawer

The drawer front follows the same curve as the rails, top and bottom, and is created using the same bent lamination methods. Cutting dovetails in the curved front follows the same principals as cutting dovetails on a 90° joint with a few minor differences.

Start by cutting your back piece to length; it will be the length of your drawer opening, plus however much you plan on leaving the dovetails proud of the sides, plus an extra little bit for fitting. With the back cut, use it as a jig to cut the front at the proper length. Do this by laying the front on top of the back and cutting them flush on the table saw with a cross cut sled. This trick only works if the curved front isn't much longer than the back; otherwise, the curved ends would butt into the base of the cross cut sled. This will give you both the right length, and the correct angle. Transfer this angle to the front of the drawer side while cutting them to length.

Make a chopping block that sits in the curve of the drawer front while being parallel with the end of the drawer front. This will ensure that the pin sockets



Cutting Curved Drawer Parts – With the drawer back cut to size, Breau places the curved front on top of it, and cuts it to length. This technique works well, as long as the curved front isn't too long and butts into the cross cut sled's surface.

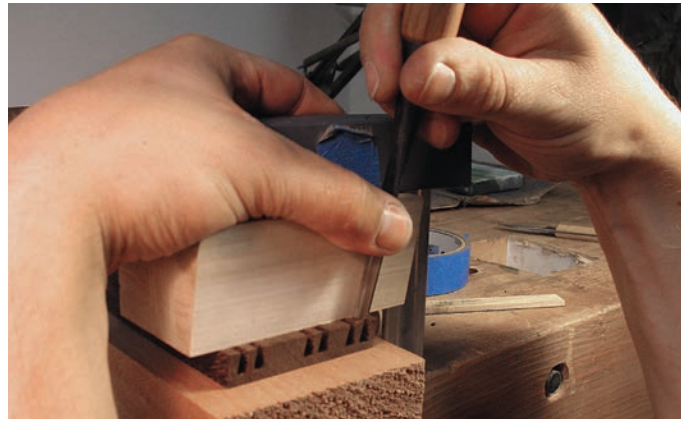
are angled correctly. Sawing and chopping happens just like it would in regular dovetails, while maintaining the proper angle. Before gluing the drawer together, make a groove for the drawer bottom to slide into. The width of the drawer back gets reduced so the bottom can slide in from the back. Use the groove as a reference.

The curved drawer front could easily be left in one piece, but I choose to rip it in two for aesthetic reasons. I then fitted a small tab in the kerf to act as a pull.

Once the drawer is glued up, fit it to the pocket, being careful not to blow out the end grain. Then, cut and fit the drawer bottom, allowing space for seasonal movement in the drawer front. I fix the bottom to the drawer back with a small screw. I also use the drawer bottom as a stop, by allowing it to protrude the required amount to bring the front of the drawer into position.

French Cleat

To hang this cabinet I made use of a French cleat. A French cleat is made of two similar pieces, both with a 45° cut on one long edge. One part is attached to the wall, with the angled edge at the top pointing down towards the baseboard. The other half is attached to the back of the cabinet, with the angle



Angle Dovetails – An angled block clamped in place is all that's needed to guide you when cutting dovetails in the curved drawer front.

pointing towards the top front of the cabinet. The two angled edges mate when the parts are brought together, pulling the cabinet towards the wall, creating a secure joint. Hanging cabinets using this method is extremely easy; simply screw the wall half of the cleat to the wall at the desired height, and drop the cabinet on top of it. The downside is that it robs some interior space from the cabinet, since the back panel needs to be set in that much more to accommodate the cleat.



JACQUES BREAU
jbreau@endgrain.ca

Working out of a basement shop, Jacques is very happy that his newborn son would sleep through a hurricane. He can't wait to have a new helper in the shop.

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The fundamental design of this box is quite simple: a solid base, with routed cavities, topped off with a pair of one-piece lids. There are many options for this basic design. Learn these simple steps, then put your imagination to work, creating a unique design.

Maple Key Seed Pod Box

BY ROB BROWN

With the main section of this box dressed to thickness, and the overall shape laid out, I drew a full-size pattern of the outer shape of the seed pod cavities on paper. I then offset the line by $\frac{5}{16}$ ", towards the outside of the pattern, creating a larger pattern than I want to finish with. This offset distance will account for the distance from the outer edge of the tracing collar to the outer edge of the router bit. Cut the paper pattern out. Position a piece of $\frac{1}{4}$ " thick template material on top of the box, overhanging the rear, straight edge of the workpiece by $\frac{1}{2}$ ". The $\frac{1}{2}$ " overlap is to ensure there's enough material left on the $\frac{1}{4}$ " template once the routing pattern has been cut out.

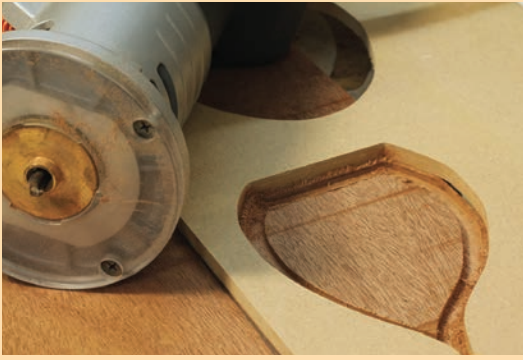
Place the paper pattern on top of the template in the exact location you want the cavity, relative to the workpiece. Make sure the short, straight end of the pattern is perpendicular to the back edge of the template. Trace the outline onto the template and cut it out, ensuring the edges are smooth.

Rout the box cavity

Position the template on the workpiece, overlapping the rear edge by $\frac{1}{2}$ ", and clamp it in place. I secured it with screws, into extra material I left on the workpiece. With a $\frac{1}{4}$ " diameter straight bit in my router, and an inlay set (Lee Valley #04J28.07) fixed in its base, I routed the shape. I used multiple passes to finish with a $\frac{3}{8}$ " deep groove. I then removed most of the waste with a $\frac{5}{8}$ " Forstner bit and chisels, but left it rough.



Outer Perimeter – With the template fixed to the base of the box, Brown uses his router and inlay set to create the perimeter of the seed pod cavity. Notice the extra collar attached to the rest of the inlay set.



Lid Shape – After removing the collar from the inlay set, Brown then uses the same template, fixed to mahogany, to create the shape of the lid.



Textured Under Surface – A gouge will create an interesting effect on the hidden portion of the lid.



Carving Carefully – The lid fits in the cavity fairly tight at this point, but Brown wanted to make sure it didn't come out while working on it. He added some masking tape to the outer edge of the lip on the lid to create more friction, then power-carved the lids to rough shape.

Rout the lids

I started with scrap wood to ensure I had the process straight, and the lids would look nice. Once I had routed its under-surface, and it fit the base nicely, I experimented with shaping its upper surface. Full of confidence, I reached for the mahogany and dressed it to 1 1/8" thick. I needed a lid that finished at 3" wide, but I used a piece much wider. I marked a straight reference line off center of the mahogany board. This line assisted me when positioning the 1/4" template on the mahogany, so the grain of the two lids aligned when the lids were complete.

With the template aligned with the reference line, and fixed in place, I removed the collar from the inlay set and routed a 1/8" deep groove in the underside of the lid. I made sure the inlay set stayed firmly against the edge of the template, or any variation would be transferred to the finished lid. I also moved the router in a clockwise direction to ensure the bit stayed against the template.

I removed the template and repositioned it on the reference line, so the second lid would mirror the first. To keep the grain running true, the straight edge of the lids should be separated by the same distance as the straight edges of the seed pods in the base of the box. In my case this distance was 3/4".

Hollow underside of lid

Before cutting out the lids I clamped

the workpiece to my bench and worked on their undersides. I used a 5/8" Forstner bit to remove some of the waste, but could easily have gone straight to the gouges. Gouges add a pleasing textured surface. I carved to about 5/16" deep, and left the outer lip at its full height – 1/8".

Shape the lids

After cutting the lids out with my scroll saw I pressed one of them into its mating cavity. The fit was not overly strong, so I added a piece of masking tape around the edge to tighten the fit of the lid. Now I could carefully power carve away most of the waste from the outer edge of each lid. I did the finished shaping with a 3/4" straight chisel, leaving smooth facets on the surface.

Smooth the cavity

I fixed a dish carving bit in my router, set the depth and removed most of the material freehand. With the workpiece clamped to my bench I was very careful to remove minimal material and to stay away from the inner sides of the cavity. A number of small gouges allowed me to smooth the transition between the sides and bottom of the cavity, then I sanded the surfaces smooth and finished all the parts.



Smooth Bottom – Rather than using hand tools to slowly remove the waste, Brown slowly used a dish carving bit and router to level the bottom of the cavity (above). The resulting surface was then fine-tuned with some gouges (below).



ROB BROWN

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MORE INFO: View the thread about how Brown completed the rest of this project on our website, in the "Canadians Building Together: Boxes" sub-forum of the "Woodworking" section.



Levitating Shelf

Whether you need a simple shelf near your bed or the front door, this fun project will serve you well.

BY STEVEN DER-GARABEDIAN

Any time I start a project that requires hardware, I like to have it on hand so any special needs can be addressed before cutting into a plank of wood. I chose the blind shelf supports from Lee Valley Tools Ltd. (00S05.21) and, as I decided to add a drawer, one of their $\frac{3}{8}$ " diameter smooth insert knobs (05E01.01). The other consideration I had before starting was to actually measure the angle of the corner, 90.5°, and make a template with the angle

and location of the one stud I needed. I chose zebrawood for the bulk of the shelf with pau amarello for the drawer front and poplar for the drawer sides, back and bottom.

Sizing It Up

I made the shelf 21 $\frac{1}{2}$ " long by 7 $\frac{1}{2}$ " deep and left a 1 $\frac{1}{4}$ " gap between the top and bottom. I wanted to make the gap narrow so as not to be a permanent place to house all sorts of items. With the stud centered 15 $\frac{1}{4}$ " from the corner, it left a 5 $\frac{1}{2}$ " cove for a small drawer. I don't like to make drawers

wider than they are deep as they tend to rack as you open or close them. The thickness of the upper and lower members, and two outer dividers, I left at $\frac{1}{2}$ ". The center I sized at $\frac{5}{8}$ " to accommodate the specifics of the hardware, a $\frac{1}{2}$ " x $\frac{7}{16}$ " stopped groove 5 $\frac{1}{4}$ " long. All three dividers are 2" long x 7 $\frac{1}{2}$ " wide, except the center divider, which needs to be shortened by $\frac{1}{8}$ " to accept the hardware mounting plate. Arranging the dividers with the same grain orientation as the top and bottom not only continued the lines of the zebrawood, but also ensured wood movement would happen in the same direction. Your choice of woods, hardware and layout will dictate some changes but the process will be the same.

Slicing In

Mill your wood, leaving a bit of extra length on the top and bottom pieces



Be Prepared – With hardware in hand Der-Garabedian made a full-size template on plywood, and marked all the necessary information on it, including the angle between the two walls.



Divide and Conquer – To create the slot in the center divider to accept the blind shelf support you can split the divider in two and run stopped dados in both pieces (above). When reassembling the two divider halves, use a properly sized locator stick to align them, and clamp the halves together (below).



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Materials List

Part	Ltr	Qty	T	W	L	Material
Top / Bottom	A	2	1/2	7 1/2	21 1/2	Zebrawood
Outer Dividers	B	2	1/2	7 1/2	2	Zebrawood
Inner Divider	C	1	5/8	7 3/8	2	Zebrawood
Drawer Front	D	1	1/2	1 1/8	To Fit	Pau Amarello
Drawer Sides	E	2	3/8	To	Fit	Poplar
Drawer Back	F	1	3/8	To	Fit	Poplar
Drawer Bottom	G	1	1/4	To	Fit	Poplar
Hardwood Pegs	H	4	1/4	1/4	2 1/4	Hardwood
Wall Bracket	I	1	1/4	1	6	Hardwood

Hardware List

Name	Qty	Size	Details	Supplier
Blind Shelf Support	1		00S05.21	Lee Valley Tools
Insert Knob	1	3/8 dia.	05E01.01	Lee Valley Tools

to allow for flushing of the ends to the dividers. The piece for the center divider should be milled a little thicker and longer. Start that piece at roughly 8" wide x 12" long x 3/4" thick. If placing the shelf against a corner, the adjacent divider will also need a stopped groove to rest against a shop made support. This is accomplished after glue-up, but before the finish is applied.

Re-saw the wood for the center divider in half and run it through the thickness planer, making each mating piece 5/16" thick. Now cut each half to the final dimensions of 7 3/8" wide by 2" long. Make the stopped groove by using a 1/2" straight bit in the router table, raising the bit with each pass until a depth of 7/32" is reached. Check the instructions to accommodate its specifics. To keep the two pieces

aligned during glue up, mill a scrap piece of hardwood to 1/2" x 7/16" and about 8" long. Apply a generous coat of wax so it doesn't become a permanent fixture in your divider. With a bit of glue and a few clamps, you wouldn't have known the assembly was split in two. The other option here is to drill a 7/16" hole 5 1/4" deep, with a longer than standard drill bit, keeping the divider absolutely vertical during the process.

With a stacked set of dado blades, cut rabbets 3/8" deep on the inside faces of the top and bottom pieces to receive the dividers. Some extra attention needs to be paid in a couple of areas. First, the center divider's width is different from the ends and must be centered on the supporting stud in your wall. Secondly, the rabbets at both ends



Drill for Pegs – While the shelf is dry-assembled, drill holes through the top and bottom, into the outer dividers, so pegs can be inserted during assembly.

will have to be a little wider, as extra length was left in the top and bottom to allow them to be flushed to the visible divider after assembly. It's not until final fitting of the shelf that you should trim the top and bottom overhang near the hidden end, so a close fit with the wall can be achieved. Run these rabbets, letting the outer dividers into the shelf about 1/8". If your rabbets aren't as clean along the bottom, use a router plane to make sure all are the same height and flat-bottomed.

Dry-clamp the assembly to check for fit and finish and make any adjustments. While the shelf is clamped together, head to the drill press and drill 1/4" through holes at the corners. Space these 1" from the front and back, and centered over the outer dividers. Dowels will be driven through these holes to not only add a decorative touch but also aid with final assembly and glue-up.

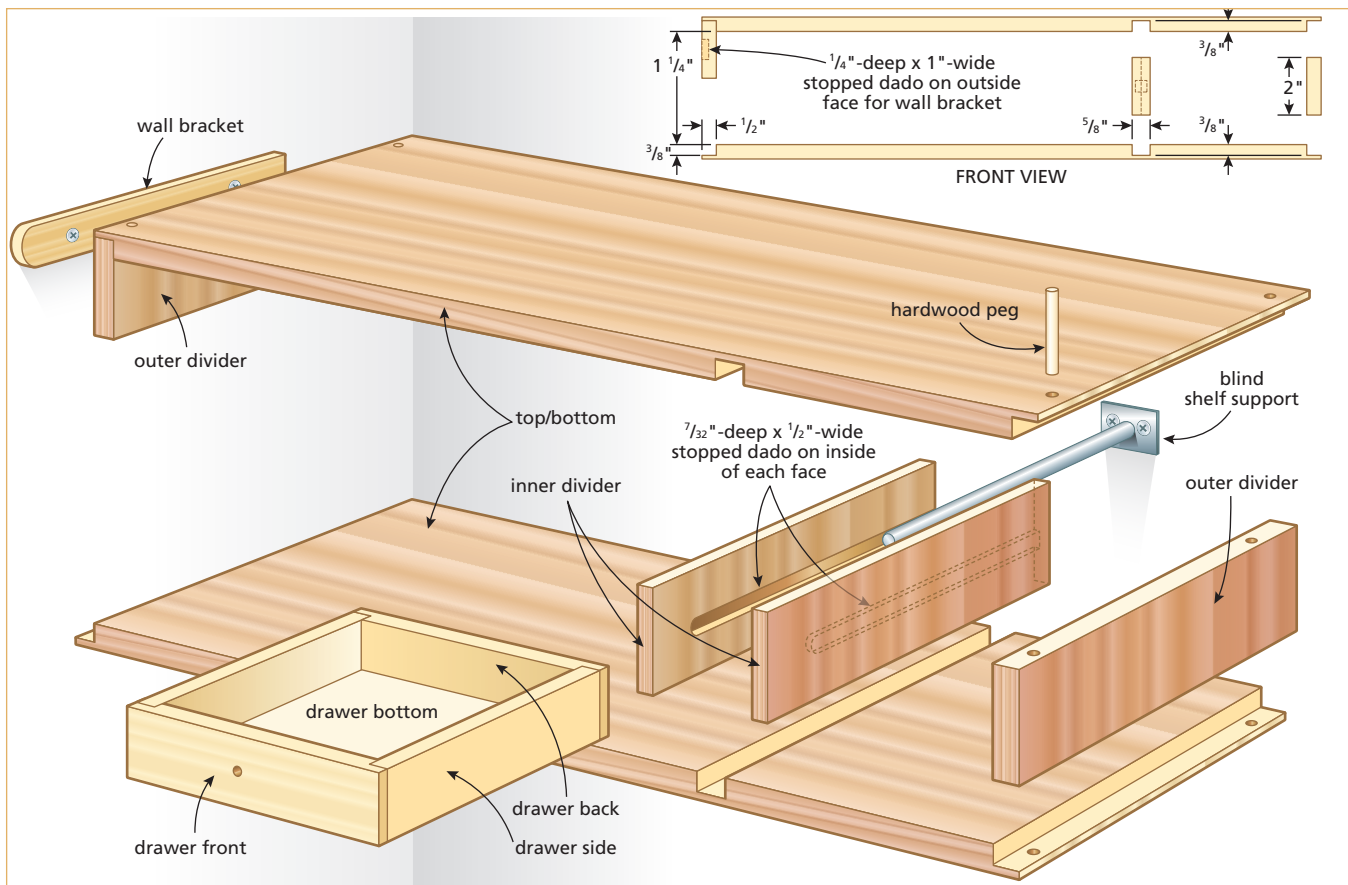
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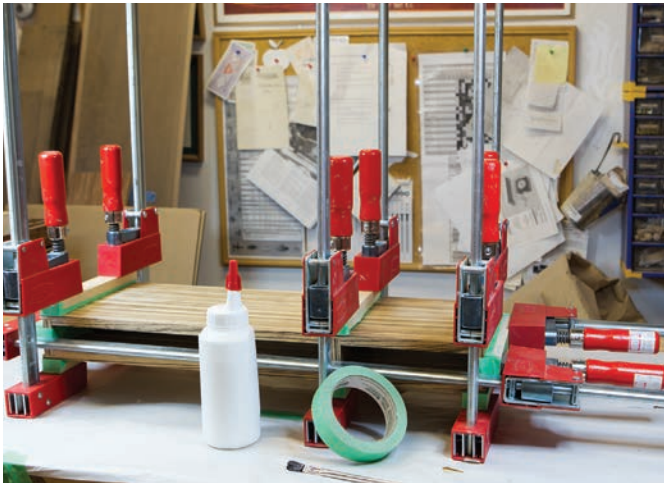


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Assembly Time – Once the inner surfaces of the shelf have a finish, bring all the parts together with glue, insert the pegs and add clamps.

Pre-Finish

Since the enclosed area is narrow apply a finish to it before assembly. Mask off areas that will need glue. The choice of finish is yours, but as this shelf will not typically have to resist moisture I chose shellac and applied seven coats, rubbing it down with 0000 steel wool between the last four layers and a fine furniture wax as a final layer of sealer and protector. If there is going to be some time between applying the finish and glue-up, apply finish to both sides, as your pieces will cup. Touch-ups on the outer surfaces can be accomplished near the end.

Remove any tape and glue the assembly together. Drive dowels through the corner holes and flush them with a saw or chisel. Clamp the assembly using as many cauls and clamps as required. Using pine cauls will allow it to deform around any protruding dowels yet still provide enough clamping pressure. Once the adhesive has dried, remove the clamps and flush the ends using a block plane. Flush the dowels completely to the top and bottom while you have your block plane out.



Flush the Pegs – A sharp block plane, or chisel, will shave the pegs flush with the top and bottom surfaces.



Final Finish – Now that the shelf is complete it needs a protective finish. Select the type of finish you apply according to how much wear you think your shelf will be subject to.



Side Cleat Groove – After the shelf is dry, a few passes on the router table will leave you with a groove to accept the side bracket.



Ready for the Shelf – Secure the side bracket to the wall at the correct height first. Next, apply double-sided tape to the back of the blind shelf support, insert it into the groove in the shelf, position the shelf properly and press the blind support onto the wall. Attach it with a few screws and enjoy.

Fit to the wall

Now is the time to trim the end that sits in the corner with the matching angle on your template. Set your table saw's mitre gauge and trim to the correct angle. When trimming, try and ensure the cut leaves the front of the divider the same width as the opposite side. Next, cut the stopped groove in the same divider using a 1" straight cutter. The groove should run about 6" long, starting from the back. Again, stop blocks, and several passes, until a depth of 1/4" is achieved. Make a supporting bracket that will fit in the groove you just created. This will be attached to the wall and the shelf slid on to it and the blind shelf hardware.

There are plenty of ways to make a drawer. Choose which works best and easiest for you, with the tools you have on hand. Size the drawer to the opening you have and add a knob or handle of your choice. Remember to allow for wood movement so that important items don't get stuck in a jammed drawer.

Final Preparations

Chamfer the inside of the enclosed area with a router bit. Use a file to square the corners. Soften the outside edges with a block plane. Polish all remaining surfaces with a smoothing plane and apply the outer finish.

To mount the shelf, attach the shop-made side bracket to the wall at the desired height. The closest screw to the corner will catch a stud but the remaining one will have to be attached with a drywall anchor. Use chamfered clearance holes in the side bracket so as to not split the wood. Attach double-sided tape to the back of the store-bought bracket and with a level on top of the shelf slide it into position. Slowly pull the shelf out, leaving the bracket attached to the wall. Mark your screw locations and mount the bracket permanently. Slide on your shelf and you're done.

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Options Galore

As with any project there are lots of options. Wood choice, overall dimensions and layout of shelves and drawers are some obvious ones. If you would rather the shelf be centered on a wall, size the unit to span at least two studs and use two supports. Pay attention to the depth of your shelf as deeper assemblies will have less weight carrying ability. If you want to make your shelf narrower than the support posts then cut them to suit your dimension. Drawers don't have to be included, and for that

matter a single solid shelf can be made without an opening. No matter what choices you make, you will have created some magic floating a shelf without any visible brackets.

Do you have an easy way of making a simple shelf? Share your ideas at the end of this article, on our website.

STEVEN
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The Perfect Sphere: A Well-Rounded Tool

Turning spheres free-hand is not easy. This jig makes the process easy and fun, and opens up a whole new world of artistic options on the lathe.

BY MARK SALUSBURY

I was given a fine gift last Christmas: a Perfect Sphere Tool. Until then, I never thought about a jig to make balls, but for the fun of it I put it through its paces, turned a few decorative balls, then explored what other possibilities it offered. This jig produces a fuss-free, accurate radius every time. It also has the benefit of

being set up for hollowing applications. A useful tool? Let's see.

Free-hand spheres are difficult

Spheres are the best way to admire wood's physical traits; face grain, side grain, end grain, porosity, figure, colour, and texture of any species are revealed in this simple form that feels nice in the hand and pleasing to the eye. Without

lots of practice, though, developing a sense for the shape and the hand-eye coordination, turning exacting spheres can be devilishly difficult, and spherical forms are unforgiving; flub it to wind up with anything other than perfectly round and it'll always be in-your-face obvious.

For the occasional turner, or one wanting to add precise multiples to their list of accomplishments, this jig shines. From 1–14" diameter, it seems it's capable of doing exactly as its name implies, though I stayed within a practical range between 2" and 6" diameter with no prior experience. The steps are novice-friendly: rough-turn a cylinder, mark each sphere's center and margins, and roughly turn a ball profile for each sphere to remove surplus material.



A Perfect Sphere – Turning a pleasing sphere free-hand is very difficult. With this jig the process is quick and painless, even enjoyable.

Now reference the sphere's center line to align and set the jig and cutter. Lastly, slowly pan the jig to shape the form. Once the sphere(s) have been shaped nearly to axis, simply cut the sphere(s) off, then using the jig, finish the shaping with each sphere held between shop-made cup-chucks to turn away the stubs and blend the surfaces. Wow, that's nice!

The finish I got right from the jigs Hunter #4 carbide cutter, which shear-cuts rather than scraping, is really satisfying. White ash, cherry, ironwood, mahogany, maple (some pretty spalted)

and black walnut all gained surfaces I could begin gently sanding at 180 grit. And the cutter lasts like crazy; using the jig extensively for over a month, the small area on the edge I've been using is now a scosh dull, so I'll simply rotate it a few degrees using the TORX wrench provided, and keep on turning. A tool I'll never have to sharpen; great value. Replacement cutters are mail order here in Canada from Woodchuckers, or from Carter Products, who manufacture the tool. I've found the Carter Products website offers excellent support and videos



The Finishing Details – Once the sphere has been cut to size, almost right down to its axis, it can be cut from the waste. It can then be positioned between two shop-made, round cups to complete the sphere. You can see the two round nibs on the upper and lower edges of this sphere, being turned away.

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Furniture Components, etc. – The potential of The Perfect Sphere is only limited to your imagination. Furniture legs, pepper mills, newel posts and many other projects can be enhanced by this jig.

demonstrating how to set up and use the jig to explore its full potential.

One sturdy tool

I also like the jig's overall build quality, and how I can tailor it to fit my lathe precisely for repeatable accuracy. Its base is solidly adjustable to center snugly in the lathe bed, and bearings and bolts are solid and well suited for strength and precision. Available robust riser posts are sized to suit almost any lathe swing capacity with an adjustable stop collar to fine-tune the cutter to exactly the lathes axis. The cutter holder and adjuster mechanism are equally up to the task, and simple to set and advance. The locking knobs seem a bit unwieldy, but their thread length can be reduced if I ever find them bothersome in use.



Many Options – Non-functional projects, like this wood baseball and stand, are quite simple to complete. (Photo by Marvin Stoltzfus)

Beyond the ball

So I turned a few balls to get the feel of the jig, then wondered what else I could put The Perfect Sphere Tool to; surely it can craft profiles to enhance other woodworking forms. It quickly became clear that I could add round profiles at any point along spindles of any practical diameter and length.

Furniture makers can now readily add ball feet and capitals or round details at any point along lone pedestals or sets of legs for stools, chairs, tables, beds, or cabinets. Perfectly

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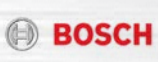
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Pierced Spheres – This project was first turned round, then piercing, carving and colouring were added. Design options are limitless. (Photo by Lee Perez)

proportioned sphere profiles can be crafted along split turned appliques for cabinetry, build-ins or as architectural details at entryways, stairways and railings. And railing and stair spindles, as well as full newel posts or merely ball caps, for square newels are possible with little set up or practice. The value of this jig to quickly enhance the creative offerings of many woodworkers is really quite amazing.

Beyond the making of balls for display or decoration, the applications for small projects are pretty extensive. Picture adding ball feet to clock cases and small cabinets, spherical

profiled details to candle sticks, ball tops to salt and pepper grinders, kitchen food prep tools and wooden utensils for home and garden.

Then there's the almost overlooked potential of hollowing wooden spheres. Images of rattles, maracas, toys, spherical boxes, Christmas ornaments, domed lids for small joined boxes, lamp bases, attractive dishes and bowls ... all great projects that can be easily crafted singly or in multiples for sale or gifting.

Artistic expression? Begin with solid or hollow spheres, singly or grouped, making statements through texturing, carving, pierce-work, colouring and more. So much potential, so little time. This is one cool tool. Oh yeah ... and it's making me a better spindle turner too!

Bonus.
What would you make with this jig? Share your design ideas at the end of this article, on our website.



MARK SALUSBURY

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Renovating



Trace the Shape – With a dark crayon and some masking tape, transfer the shape of the corbel to a large sheet of paper.



Lots of Information – It's a good idea to obtain as much information as possible from the work area while you're there. Here, Silver measures a few critical dimensions before heading back to the shop.



Good Examples – Here are two corbels, one a single layer and one a double layer. Having the mostly intact corbels in the shop while you produce the new ones is helpful.

Giving Our Past a Future: CORBELS

Sometimes it's the smaller details that are the most important. Corbels on a house are the perfect example. If yours are in need of some TLC you can follow these steps to breathe some life back into the look of your home's exterior.

BY MEAGHAN LISTER
AND JOSH SILVER

Corbels often reside at the eave of a house or on the top of columns. The location of these brackets makes them often hard to access. This often means

that they may not receive the proper paint and care to allow them to last the life of the house. When replacing a bracket on your home, it is important to ensure safety when accessing the brackets. Remember the 1/4 rule for ladder safety: for every four units up, a ladder must be out one unit, which places the

ladder on a 75° angle. This is the safe angle required by industry and occupational health and safety.

Often houses have a large number of duplicate brackets and, more often than not, if one bracket needs replacing, many, if not all, need replacing. Keep in mind, a large volume of the work in

bracket reproduction is the set-up, so there is little effort in making dozens of exactly the same bracket. The first one is the hardest.

Make a paper rubbing

Assuming the brackets are still in place, we will start by making a paper rubbing of the outermost face of the bracket. Before making the rubbing, the paper must be prepared with a perfect 90° angle. Using a framing square, mark and cut the paper. Then colour-code the paper; blue for the ceiling and red for the wall. Try to choose the bracket in the best condition for your rubbing. Avoid brackets with excess paint, protruding nails, bird droppings, or missing pieces, as these will produce inaccurate rubbings. In a few cases, you may need to use the rubbings from a few brackets to obtain an accurate outline.

Place the paper over the bracket and use the colour coding to help keep track of the bracket's orientation. Use a black crayon with its paper removed, or a charcoal lead, to make the rubbing. Painter's tape can be used to keep the paper in place while you complete the rubbing, and allows for two free hands. If the paper moves even slightly during the rubbing process, the rubbing is rendered useless. Bring along a ruler and a camera. Tape the ruler to the house as an accurate scale and take numerous reference photos.

If you are working with a three-dimensional bracket, which is made up of several layers, it is often easiest to remove the bracket, as sympathetically as possible, from the home. If

you're not removing the bracket, ensure you take note of the overall width and length of the bracket, and measure the thickness of each layer. You are now ready to head to your workshop with the information you have gathered.

Make a Jig

If you have removed the bracket from your home, once you are in the shop, dismantle the bracket as carefully as possible. Separate and clean all of the layers to ensure they are free of paint and debris. Use these layers as templates for tracing onto plywood to make a jig for each layer. If you have not removed the bracket from the house, then cut out your paper rubbing and tape or hold the paper firmly on top of a piece of ¼" plywood. Trace the shape onto the plywood. Cut out the tracing using the scroll saw, bandsaw or jigsaw. We usually use a combination of these three tools to give us the cleanest, most accurate edge. The plywood bracket will become your jig. Make a jig for each layer of your bracket, labelling each jig as you go with its location within the bracket.

It is critical that you carefully sand the edges of your jig(s) to ensure they are as accurate as possible, as the shape of the jig(s) determines the shape of all future brackets.

Select wood for your bracket

Examine the original material to try to identify the type of wood used. It is recommended that you choose wood for your replacement bracket that is as close as possible to the original material. Also, choose a piece of wood that is as clear as possible. Try to avoid all knots, splits, checks and other defects. The brackets are fairly delicate, thin and ornate and defects in the wood will result in future weather-related rot and deterioration and decrease the life of your bracket.

Cut out the bracket layers

Trace your plywood jig onto the wood. Take your time to cut out the bracket layers as accurately as possible. It may be possible to 'gang cut' pieces in order to save time.

Once all the layers are cut out, the sanding begins. This is an important and often missed step, as it is the only time that each layer can be sanded effectively to remove all cut marks. Once



Master Template – Once Silver has the tracing back in the shop, he cuts it out and transfers the shape to a piece of ¼" plywood to make the master template.

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Cut Out the Templates – Silver carefully cuts the template to shape with whichever method is most appropriate (above). He then ensures the templates are smooth, as all the corbels will follow the same shape and size (right).

the layers are glued together, it is too late to sand in the intricate corners that are produced. Most often we use sandpaper rolled up to the required diameter of the curve being sanded. If several pieces are being sanded it pays to use a 6" length of dowel to wrap the sandpaper around. This step could take hours, depending on how many layers you are making and how smooth your cuts are.

At this point we advise stacking all the same layers on top of each other in order to find and eliminate all variations. The main goal is to have all brackets identical. Identify the layer that is closest to perfect and trace this on all the other layers to eliminate deformities. Use a permanent marker and label each piece. As with the jig, label the roof side, the wall

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Laminated Layers – After the different layers of corbels have been glued-up, Silver traces the shapes onto each piece and cuts them out.



Glue Squeeze-Out – Once the layers have been assembled, be sure to remove any excess glue with a chisel or knife. Clean, crisp corners are important to ensuring the final product looks great.

side and which layer it is. We put these marks on the end grain so they are clearly visible to the carpenter but hidden from the public once mounted. Dry fit a complete set of layers to see how they fit. Compare this to your original data and alter if necessary.

Paint or stain the bracket

This bracket will be outdoors and not easily reached for the remainder of its life. You should put the highest quality finish on it that you can find. Brackets may require an artist's brush for the detailed corners so it may be easier to paint or stain before the bracket is assembled.

Assembly

Once dry, the piece can be laminated. Use a high-quality exterior wood glue. Be very careful not to over-apply the glue. If you get squeeze-out, it will be very difficult at best to clean. As with all wood projects, it is necessary to clamp the bracket while the glue dries.

Mount the bracket

Wait for a good weather day. Prepare the area on the house where the bracket will be mounted by cleaning all excess paint, dirt, etc. from the area. Use the same exterior glue to glue the bracket to the wall and ceiling. Use a 16-gauge nailer to fasten the bracket to the house until the glue dries. At this point you can add any necessary paint to complete the corbels.



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Meaghan and Josh are two of the instructors in the Heritage Retrofit Carpentry Program at Holland College, Prince Edward Island. They would like to thank Hal Forbes of Forbes Restoration (www.halforbes.com) for his expertise on this topic.



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A Home in the Woods — Part 3

BY DON WILKINSON

Way back in the August/September issue, my article was Part Two of how I built my log home. For those of you who don't often use toxic chemicals in your woodworking, you may remember that I hadn't finished telling the story by the time I ran out of space. They only give me so much room to work with here and it's never enough for all I have to say (some people think they give me far too much.) For those of you who do use toxic chemicals, you may wish to re-read the appropriate article. It was in the August/September issue. It was about building a log house. Hint: *Canadian Woodworking Magazine*. Aug/Sept ... It's probably best if you get out of the shop and don't play with sharp toys anyway.

Where was I? Oh, yes, building something or other. Give me a minute while I look it up ... Got it! When I last left you, I was trying to figure out how to lift 1100 pound logs onto my foundation and stack them into some semblance of a house. My brilliant sky-line system had failed miserably due to the perverseness of Yukon trees and I hadn't yet purchased my crane (yes, someone let me buy a crane). I clearly needed a new system if I was ever going to move my rapidly growing family out of the wall tent I had stashed them in.

Research showed me the ideal system. Research was my neighbour. It wasn't her real name but that's what we called

her because she owned some books that she had actually read. (That's why I no longer use the term, "I did some research.") My wife didn't like her.

The idea was to plant one of the logs vertically in the center of the building site and attach a heavy pulley block to the top and string a cable from a winch on my truck, through the pulley and then down to whatever log I wanted and drag it up onto the building. For some reason this system is called a Gin pole. Personally, I prefer beer, sometimes a good Scotch. My wife drinks gin but she didn't help with the house construction.

I dug an 8' deep hole in the center of the house site and then built a ramp from ground level down to the bottom of the hole. Actually, I dug the ramp the other way so I could get out of the hole. After I got out, I rolled a log to it and pushed it over the edge. Because of the angle of the ramp I had so cleverly constructed, when the log dropped into the hole it was already halfway upright. All I had to do was winch it upright and attach the pulley to the top (in retrospect, I probably should have done that before I raised a 2000 pound log one hundred feet in the air), thread the cable, brace the gin pole to some support trees with some more cable and then start construction of the support beams.

Surprisingly, all that went quite well and within a day or two I was ready to

place my first log. That didn't go quite as well. It seems that dragging a 3000 pound log across a construction site and up a ramp is somewhat difficult for one person to do. Even if he does have a winch. It didn't help that the winch-truck would much rather winch itself up the gin pole instead of a 4000 pound log. I had to lower the truck back to the ground and chain it to a tree just to keep it in place.

Eventually I managed to raise and place the four giant logs I was using for the main support beams onto the grid of foundation posts and ...

Well, it looks like once again I've run out of space to finish up and since this is the last Wood Chuckle I'll be writing, you'll just have to take a guess as to whether or not I survived and if I did, was the house ever completed.

At this time I would like to thank you both for reading my (semi-true) stories and for all the many cards and letters I've received over the past 7 ½ years. (I got four. And one of those was mean.)

And remember: Try to keep as many of your body bits away from the sharp toys as you can. You may need them later.

DON WILKINSON
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Illustration by: Mike Del Rizzo



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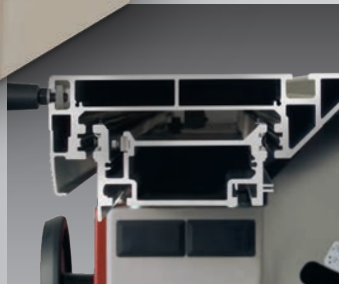
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