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CANADIAN

Home Workshop

THE DO-IT-YOURSELF MAGAZINE

Winter 2014 \$5.95



**2014
HOT
TOOLS**
PAGE 16

4 Great PROJECTS

You can build
this weekend

FULL PLANS
FOR THIS
CLASSIC
SLED!

PAGE 22

PLUS:
Install a new
kitchen faucet
in an afternoon

PAGE 44





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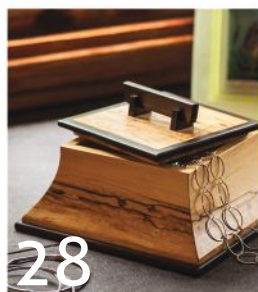
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Editor's Notebook

BY DOUGLAS THOMSON

“We love tools that actually help us build things better (or make a job safer)”

Old School, New School

Heritage projects and high-tech tools!

IN THIS ISSUE of *Canadian Home Workshop*, you'll find our annual feature on some of the new and innovative workshop tools that have caught the interest of our editors over the past year.

Like most workshopers, we love our tools here at *CHW*—a lot. But not new tools just for the sake of new tools. (We got over our tools-as-trophies stage long ago.) We love tools that actually help us build things better (or make a job safer). Not to mention that sometimes putting a new tool through its paces just makes a challenging project more fun. As you might have expected, battery technology is at the top of the “new and improved” list again this year. And these little rechargeable powerhouses have given cordless tools significantly longer run times and loads more power. (Ryobi 40-volt hedge trimmer, I'm thinking of you!). But there's also some cool and truly innovative gear, like the tool bag/speaker combo that will make you wonder: “Why didn't I think of that?”

PROJECTS TOO, OF COURSE!

We've also included full plans for four great woodworking projects in this issue. In their own unique way, each of these projects are worthy of “heritage project” status (which Steve Maxwell explains in his Toolbox column about legacy woodworking on page 14). Considering the time of year, it's also worth noting that all of these projects would make great gifts for a loved one.

The sled (page 22), designed and built by *CHW*'s longtime contributor Rick Campbell, perfectly illustrates what I mean by heritage project. Campbell has lent his accomplished craftsmanship to this classic piece, a project that I know will be a big hit with any child on your list. How do I know? My son Hunter, who is pictured on the cover of this issue, absolutely loved it! Campbell used an old toy catalogue picture for reference and created the sled from there. I think it turned out exceptionally well—and, perhaps most important, Hunter did too. I know if you take this project on, it certainly will be cherished for a long time.

Of course, the same could be said for the pagoda-shaped trinket box, the guitar stand and even the puzzle keeper. Projects like these are both beautiful and useful—and that's a recipe for something that will be loved and cherished for a long time to come. There's something very satisfying about that. 



THIS CLASSIC sled is a perfect example of a heritage project

Most recip saw blades are a joke. Funny how nobody laughs at Diablo Demo Demons.



"Freud says their bi-metal blades last 4x longer than standard blades, but I found they did way better. Where a regular blade was toast after only 5 cuts through a 1/4" diameter test spike, the bi-metal Demo Demon made 56 cuts before it was done."

Bernie Newland
Contractor

The full line of the NEW DIABLO DEMO DEMON RECIPRICATING BLADES are available in 6", 9" and 12" and are ideal for all types of recipricating saws.

Let's face it. Most recip blades can't keep up with the saws that power them. Lazy cutting speed, rapid wear and poor blade strength wastes time, effort and money. Diablo Demo Demons are different precisely because they're made by Freud – the world leader in saw blade design.

SUPERIOR METALLURGY

Metal quality is the first reason Diablo Demo Demons cut the competition to shreds. These blades are tough enough for all nail-embedded wood applications, featuring bi-metal construction that puts harder metal along the teeth fused with tougher metal in the blade body. In fact, the metal in Demo Demons is so tough they even eat right through spikes and bolts just like hacksaw blades.



INNOVATIVE TOOTH DESIGN

The Diablo Demo Demons advanced dual-tooth blade design resists breakage in nail-embedded wood by preventing nail shanks from shearing off larger teeth. Performance gets even better thanks to Freud's unique Perma-Shield coating. It makes the most of recip saw power by reducing blade friction. You can also count on rapid, skate-free plunge cuts thanks to the dual-tooth blade tips.



Swiss-made Diablo recip blades come in more than 50 configurations, including fine-tooth metal-cutting blades, abrasive blades for cast iron and plastic, plus ultra high-mileage carbide blades made with Freud's legendary TiCo high-density carbide. Diablo recip blades cut faster, last longer and cost less per cut. But no one expects you to believe a magazine ad. Results are the only thing that matters, so try Diablo and see for yourself. After all, professional recip saw performance is no laughing matter.



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Canadian Home Workshop® is published by

Cottage Life Media, a division of Blue Ant Media Partnership

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Canadian Home Workshop (ISSN 1485-8509) is published six times a year (Winter, March, April/May, Summer, September and October) by Cottage Life Media Inc.

Subscription rates: Canada \$24 for 1 year (6 issues) plus tax; U.S., add \$15 per year; foreign, add \$35 per year. Single-copy price: \$5.95. Send name, address and cheque or money order to:

**Canadian Home Workshop, P.O. Box 715
Markham, ON L3P 7V1**

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CANADIAN POSTMASTER: Return undeliverable

Canadian addresses to Canadian Home Workshop,
P.O. Box 715, Markham, ON L3P 7V1

Canada

We acknowledge the financial support of the Government of Canada through the Canada Periodical Fund (CPF) of the Department of Canadian Heritage.

canadianhomeworkshop.com

Printed in Canada

Distributed by Coast to Coast Newsstand Services Ltd.

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Publications Mail Agreement No. 41927026

GST Registration #815439914

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Tablesaw Tune-Up

I'm in the process of tuning up my cabinet saw using Hendrik Varju's tune-up articles (Summer 2010 and March 2013) as a guide.

Hendrik recommends adjusting the trunnions of the saw so that a 10" blade at full height is canted away from the right-hand mitre slot by 0.003" to 0.005" at the rear. Unfortunately, I can't figure out where to make any adjustments to the trunnions on my saw, other than the stop screws to limit travel.

From what I understand, it seems that Hendrik recommends that the back of the blade be slightly farther from the right-hand mitre slot than at the front. (I imagine this would ensure that the rear teeth of the blade would stay clear of the workpiece being cut.) If my understanding of the "cant" is correct, then wouldn't it be easier to achieve the desired result with an ever so slight twist of the tabletop so that the right-hand mitre slot would be angled away from the back of the blade by the recommended 0.003" to 0.005"? Is this, perhaps, what Hendrik meant?

Many thanks for your help!

Olaf Kraulis
via email

On a cabinet saw, the trunnions are attached to the cabinet and not the tablesaw top. So, if this is the type of saw you have, you're right simply to loosen the four bolts that hold the top to the cabinet and swivel the top instead. However, on a contractor's saw, the trunnions are attached to the underside of the saw's tabletop. There are usually four bolts (two at the front and two at the back) that secure them to each other, although I've seen six bolts as well. If this is the type of saw you have, you need to loosen these bolts instead and rotate the trunnions relative to the top. It's best to loosen all the bolts but one and just barely loosen the final bolt so that you can rotate on it. These adjustments are absolutely tiny, so take your time. —Hendrik Varju

BIG FANS

My wife and I have been getting your magazine since 1998 and we are big fans! In the past, we have been able to purchase binders to hold the issues with directories for each year. Are they still available?

Randy Torhjelm
via email

Thank you for your letter, Randy. (And, for the compliment.) Unfortunately, the high cost

of printing (and postage) has prevented us from offering this type of directory. Our best suggestion is to use our website, canadianhomeworkshop.com, as a resource to help find past articles and projects. —The Editors

MOTORCYCLE MAKER

I have been a subscriber to *Canadian Home Workshop* for several years and have taken on projects from the magazine with great success!



THE MOTORCYCLE Rocker has proven to be a popular project with *CHW* readers

I'm well down the road to building the motorcycle rocker project for a grandson who will soon be two years old. However, I've been trying to find a Canadian outlet that carries 1 3/4" maple dowel rods without success.

Also, I've found several brands of two-sided tape that can fasten the hardboard templates for routing, but they are all marked "permanent." I am concerned that using one of these could cause damage to the wood surfaces or affect staining the wood when it is being removed. What would you suggest I use?

Steve Goldwasser
Thornhill, Ont.

I used 1 3/4"-diameter dowel because I had some laying around the shop, but I've made more rockers using 1 1/4"-diameter dowel. You'll have to make an adjustment to the spacers between the forks (the dowel) and the front tire. Just measure and cut a piece of dowel to fit in between.

If you're worried about the tape leaving behind residue that would affect the staining process, you can attach the hardboard template to the side of the wood that would be attached to the frame. The tape also removes easily without leaving residue.

—Matt Filion



Strokes of Brilliance

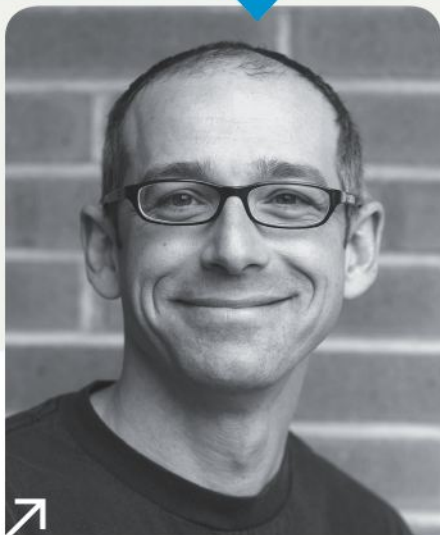
➤ There's no denying that a fresh coat of paint is the easiest way to refresh and liven up a room. In fact, it's probably harder for most people to choose just the right shade than it is to put that brush to work!



➤ PHOTOGRAPHY BY JUAN LUNA

The experts give you the right advice
for your DIY and woodworking projects

ask a pro



Michel Roy

Roy, a Prince Edward Island-born woodworker and expert renovator, now lives and works in New Westminster, B.C. He has been one of *CHW*'s primary go-to experts since submitting his first project to the magazine more than 10 years ago.

FAVOURITE TASK Putting the last lick of finish on a project

LEAST FAVOURITE Sanding a project just before applying the last lick of finish

CABINET MATERIAL

■ I'm building some built-in cabinets in my basement and I'm not sure of the best material to use. I'm guessing I could use paint-grade veneered ply, MDF or particleboard. The built-ins will be painted. Can you recommend one material over the other?

Marvin Jefferson
Georgetown, Ont.

Adding built-in cabinetry is a great way to increase utility and add value to almost any space in your home. But of course, as you are aware, the quality of the materials and the workmanship will separate a brilliant, value-adding storage solution from a lacklustre one.

I construct quite a few built-ins for

+CONTINUED ON PAGE 10

LASER FOCUS

Trim the tree with handmade wooden ornaments

BY TARA NOLAN

WHAT DO A meditating Santa and a partridge in a pear tree have in common? They are part of two lines of ornaments launched by Tradeworks Women's Workshop, a course that teaches carpentry skills to women with various employability barriers. In the months leading up to the holidays, 25 women who have already participated in the program are hired to create the decorations out of recycled, pine beetle-damaged wood. The line was designed by Toni Glick, also a past student, who now works for Tradeworks.

The ornaments are available to purchase online at tradeworks.bc.ca/store, at Rona and at certain boutiques throughout B.C.



SAWDUST WITH A SMILE

A comedienne aims to take the mystery out of the wood shop



C.C. BOYCE'S WOODWORKING

website first appeared on our radar via Kickstarter (a site that relies on the kindness of strangers to fund creative projects). The L.A.-based comedienne was looking to

create a series of informational woodworking videos with a twist. Says Boyce: "I was watching Jerry Seinfeld's web series 'Comedians in Cars Getting Coffee' and thought to myself: 'Man, how funny would it be to teach Larry David how to use a bandsaw?'" So far, Boyce has created four videos with the funds she raised. Each one features a guest comedian and goes over the basics of a certain task, such as how to use a drillpress or a tablesaw. "I've always had tools and made things out of other things," says Boyce, who hung out in her dad's basement workshop growing up. "But I started woodworking classes at El Camino College in February 2012 and haven't looked back!"

You can watch Boyce's videos on her website, few-bits.com.

—Tara Nolan



DASHING THROUGH THE SNOW

Ever gazed at a fresh snowfall and thought about taking your wood-working skills outside?

BY **SUSAN PETERS**

PAUL TERPSTRA MADE his first pair of wooden skis as a birthday gift for his wife. However, once he had the jigs set up, the 30-year-old woodworker thought, “Why not make more?”

Based in Hamilton, Ont., Terpstra is one of only a dozen people in the world who still make wooden skis. He insists his old-style skis with the leather bindings work as well as their modern cousins—at least for recreational skiers.

Retailing for \$400 to \$800, Terpstra’s cross-country and backcountry skis are sold as props for movies, film shoots and as a decor item for restaurants and cottages. Terpstra makes two types of wooden skis. He crafts traditional, solid-wood skis using a hand plane and spokeshaves, finishing with linseed oil. “I use ash, really for its properties of being flexible and it steam-bends nicely,” he explains. Steam-bending creates the curved tip, along with the rest of the ski’s camber.

Terpstra also makes laminated skis, using waterproof glue and a simple mechanical press to squeeze together wood layers in the curving shape of the ski. A hickory sole gives strength and durability when the skis go over rocks. Pine tar helps to waterproof the hickory, while a marine finish is used all over to prevent any accidental delamination of the wood. In general, the challenge is to design a ski that preserves the retro look of wooden skis while offering modern functionality.

Wooden skis are a niche industry, but they did introduce Terpstra to the world of building wooden sets for film productions—now the bulk of business for his company, Terpstra Woodworks (terpstrawoodworks.com). But the skis remain a labour of love: “Everything we do is custom. Everything is always different.”

clients, and I can tell you without any reservation that particleboard has only very limited utility in cabinetry or shelving.

Raw particleboard really is suitable only as a substrate for custom-veneered panels and, even then, medium density fibreboard (MDF) usually is a way better option. Particleboard is relatively heavy, soaks up dampness easily, doesn’t paint well and has little structural strength.

On the whole, I’d avoid particleboard for your project. That leaves you with your stated options: a choice between MDF and veneered, paint-grade plywood. I use both of these materials regularly in my work, and they each have characteristics that make them suitable for various applications. MDF paints like a dream—as long as you prime it properly and fill and seal the cut edges to prevent uneven paint absorption in these areas. I like to prime the edges of MDF with Kilz Original primer from a spray can. Apply two coats, allowing for a quick drying and light sanding in between coats. You’ll find this process does a great job of sealing up the cut MDF edges, which otherwise are prone to absorbing paint unevenly. Another alternative is to iron on some maple or birch edging tape—just as though you were edging plywood, before priming

+CONTINUED ON PAGE 12



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H Testimony



COATS OF ARMOUR

Shield a wooden deck or porch from the elements

I TOOK ADVANTAGE of a warm autumn day to stain the wooden front porch of my house. The dark brown stain had been on only a couple of years, but the daily wear and tear (and a few winters' worth of snow shovels) had taken its toll. My first thought was simply to restain with a solid stain. However, based on past experience, I knew that likely would last only a year or less before it started to show signs of wear. Then, I came across Behr's new DeckOver product, which promised much greater durability.

After picking up a gallon, I got out my brushes: a 2"-thick full brush looked perfect for the job. It's not my best brush (I save that one for fine interior work), but it's thick and able to hold a lot of paint with each dip. I used the brush to get in between the wooden slats of the decking first (a little time-consuming, but necessary for complete coverage). Then, I used a roller to cover the rest. The textured finish of the DeckOver

was very obvious when first applied; but, once the finish had dried, it was much less noticeable. This product doesn't look exactly like regular stain, but it does look good, and the semi-textured surface provides a bit of extra traction underfoot.

So far, the finish has proven to be very durable. The real test will come this spring (once the new finish has been subjected to a full winter of snow shovelling). For more info, visit behr.com.

—Sandra Cheung



and painting.

I've found that MDF can be used for constructing just about any component of a built-in, but you have to be aware of its limitations. For example, an extra-long, heavily weighted shelf (like one used for storing books, for example) will be prone to sagging over time unless it's supported midway across the span. The most durable material of the three options you mention is the veneered plywood. Plywood spans larger distances and holds shelf pins and fasteners quite well. Plywood also paints well and always is dimensionally stable. Of course, it's also considerably more costly and challenging to work with than MDF. Cross cuts in plywood are prone to leaving splintery edges, and the core voids in many of the sheets we get today can throw a wrinkle into your plans. Cut edges, of course, have to be treated with edging tape or shop-built edging. For very sturdy construction in which cost is not a big consideration, go with the plywood. To save some bucks, where long-term durability is not a great concern, MDF is much cheaper and should do the trick.

SHOP TIP

RESIZING HOLES

We recently received a question from *Canadian Home Workshop* reader Jim Ball. After Rick Campbell so handily replied, we thought we'd share it here:



QUESTION: I have a glider rocker that takes eight 1" OD bearings that I can't get anymore. I have tried a bearing supplier and several other places, and they tell me they can't get that size anymore. I can get 1¼" bearings with the other dimensions that I need. So, I want to resize the holes for the bearings to 1¼". How can I resize the holes accurately?

RICK CAMPBELL ANSWERS: Fortunately, there are a couple of quick and easy solutions to this problem. It's a good idea to practise both techniques on scrap to determine the approach that works best for you.

The first option is to plug the pockets with a 1"-diameter dowel rod that is glued in place and trimmed flush with the workpiece. After this, it's simply a matter of drilling new pockets with a 1¼"-diameter Forstner bit.

You also could fix the problem using a router and a bearing-guided, flush-trim bit. Create a template by drilling a 1¼"-diameter hole in a piece of scrap. Using a few strips of double-sided tape to hold the template in place, centre the guide hole directly over one of the undersized pockets. Now, power up the router and expand the openings by following the template with the bearing-guided, flush-trim bit.

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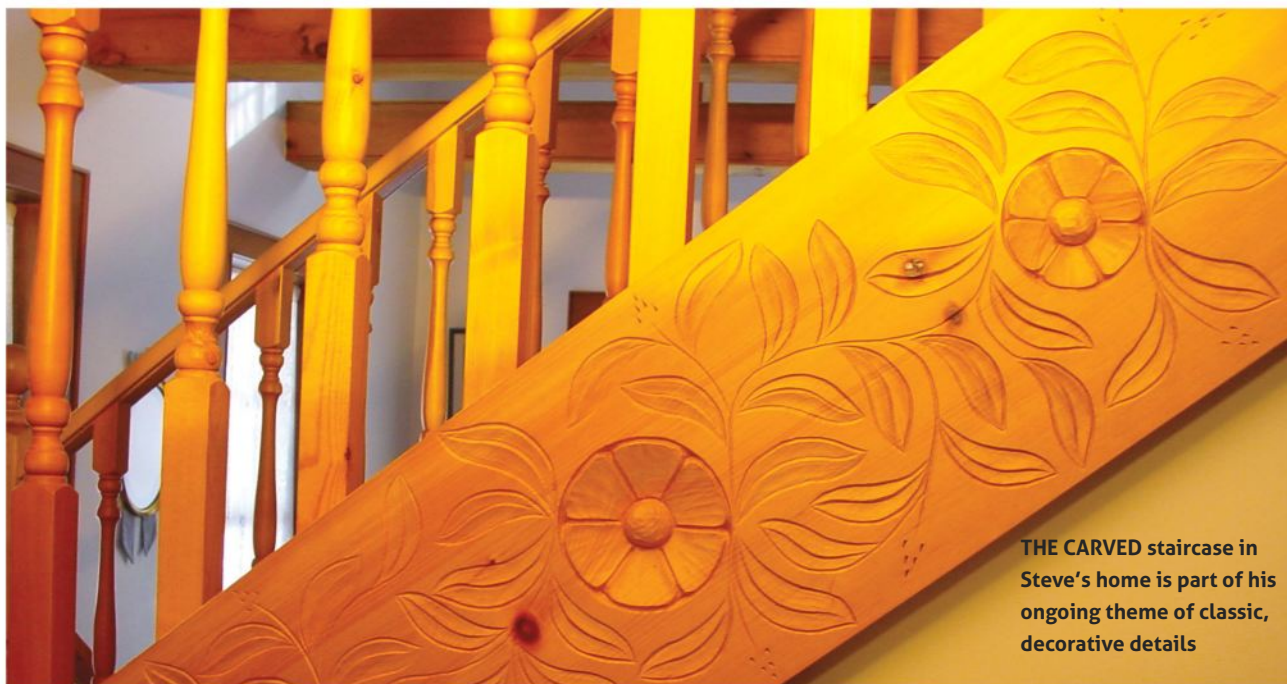
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Toolbox

BY STEVE MAXWELL

“Ideally, the best woodworking also is about launching something exceptional into history”



THE CARVED staircase in Steve's home is part of his ongoing theme of classic, decorative details

One for the Ages

Or, how I became a legacy woodworker

EVERY PROJECT, no matter how frustrating or satisfying, eventually comes to an end. Luckily for woodworkers, the end is something real, a piece of yourself that now exists in the world. Something like this has the potential to transcend the usual limits of life, a feature not particularly common to most hobbies. That's because building beautiful things isn't just about making something practical for immediate use. Ideally, the best woodworking also is about launching something exceptional into history—something that should last well beyond any woodworker's allotted days while also pointing toward something bigger. I call this approach “legacy woodworking.” Here's how to reach for the stars:

STEP 1: LEAVE YOUR MARK

Everything you make is only half

A STEEL stamp and wooden chisel handle (right) from Steve's great-grandfather, Robert Maxwell, provided the inspiration for the brand (below) that Steve has used to mark his own work since 1986



the story. The other half is you. That's why all good work should bear the mark of its maker. I first discovered this in a meaningful way as a boy, when my grandfather entrusted me with a small metal stamp once owned by his father, my great-grandfather, a cabinetmaker who came to Canada from England in 1902. All my great-grandfather's

chisels and planes bear the same small impression on the wooden handles made by a stamp: R. Maxwell. His surviving woodwork still carries this same mark too. I keep the stamp in a drawer in my workshop, and it's what first got me thinking about how I should mark projects of my own.

Just as a painter signs his canvas, anyone who cares enough to make beautiful things should leave a mark. And it's easy to do with a piece of 1/16"-diameter piano wire. That's what I used to make a couple of branding irons. Although piano wire is too stiff to work with as it comes from the store, it's easy to heat to a malleable cherry red using a propane torch.

Purchase more wire than you'll need from a hobby shop for practice, then work the red-hot metal into the shape of your initials—one branding iron for each letter—using two pairs of needlenose pliers. Leave one end of the wire long (to use as a handle) and a short end, beyond the letter, to support your hot branding iron with pliers as you press it into the wood. Permanent, elegant and unique—that's the mark you'll leave behind.

STEP 2: PURSUE OUTRAGEOUS QUALITY

Everything I build is meant to be a statement against a sad reality of our world: the prevalent idea that cheap, throwaway goods are OK robs both us and future generations of a great deal of joy. It's a shame that so much manufactured furniture delivers only short-lived, superficial beauty. This is one reason I rail against the trend—in my own, tiny way—by pursuing outrageous acts of craftsmanship.

I'd love to see more people do the same.

If you came to my house, I could show you freestanding wardrobes I've made with full frame-and-panel backs and hand-carved cabinet details that whisper "beauty." Then there are the ongoing traditional stoneworking projects I do that keep an almost-dead building

tradition alive. My clothesline post looks like a timber frame from an 18th-century barn.

It's a bit extreme, I suppose. Pursuing outrageous craftsmanship is impractical, time-consuming and expensive; but it's needed more than ever these days because the growing alternative is so shoddy.

STEP 3: PASS CRAFTSMANSHIP FORWARD

Why do you work with wood? The answer is likely to be far deeper than you realize. There's always something bigger behind everything we do. Some of us were born to be makers, and I've come to realize that the force that drives me is a deep, inner longing for a version of the world as it should be. It's a longing toward the ultimate source of beauty, peace and permanence.

The urge to make good things with my hands is one small way I can bring my corner of the world a

little closer to a place where beauty, peace and permanence reigns. My efforts won't do much good in the larger scheme of things, I know, but I'm going to do it anyway.

Twenty-two years ago, I wrote my first Toolbox column in *Canadian Home Workshop*, and it's been my privilege to share what I know with loyal readers in each of the 150+ issues since. Every column is a hands-on invitation to develop a particular skill, idea or approach—my advice on bringing a little more craftsmanship and beauty into the world. Passing on my passion and vision to others is the last, most important part of legacy woodworking. But you need to have passion to pass on. And you might be surprised that one particular song has always recharged me in this way.

Look up singer-songwriter Jason Castro, and listen to his version of "Somewhere Over the Rainbow."



STEVE PLANING lumber in his Manitoulin Island workshop (above). The carved, white pine bench (right) sits in the hand-quarried stone mudroom he built. Steve made the desk (below) in 1985



The world he sees while singing this song is the same world I hope my woodworking, my craftsmanship and even myself are worthy of being part of. How about you? ☑

2014 HOT TOOLS

DON'T BE THE LAST TO KNOW ABOUT
THE NEWEST TOOLBOX INNOVATIONS
BY JAY SOMERSET

THERE'S NEVER BEEN a better time to be a home workshopper. A big statement, perhaps. But after taking a look around at all the sophisticated yet easy-to-handle tools now on the market—tools now sold at reasonable prices—we know we're living in great times. From brushless technology to workday-lasting batteries and more, here's a roundup of what's new and cool in the world of tools.



BOSCH HEATED JACKET

\$230

BOSCHTOOLS.COM

Wind- and weather-resistant, this powered jacket offers three levels of heating for those days spent working outside or in a cold, dank basement. Powered by a 12-volt battery that offers six hours of run time (on the lowest setting), the jacket has two heat loops on the front and one on the back. A USB port on the battery connector lets you charge other portable electronics, such as your cellphone.



MILWAUKEE LED LIGHT

\$110

MILWAUKEETOOL.COM

The problem with work lights has always been one of heat. With halogen, you could cook an egg on the surface (should you get hungry). Not so with this LED floodlight from Milwaukee (Model 2361-20 M18 comes without a battery). Built with eight LEDs, this caged beauty provides 1,100 lumens and is built to withstand use and abuse. Octagonal design allows for multiple angles, so you're never left out in the dark.



MAKITA GOLD IMPACT DRIVER BITS

\$5 (2/PK)

MAKITA.CA

There's nothing worse than a worn bit. These high-quality, impact driver-grade drill bits proportion to have 10 times the life of a standard bit, thanks to what's called "Xtreme Torsion Technology," which allows the bits to flex during application. The gold coating isn't just pretty; it protects against rust and corrosion too. Available in 1" and 2" lengths.



RYOBI 18-VOLT NAIL GUN

\$200

RYOBI.COM

If you've been on the fence about purchasing a nail gun, the 18V ONE+ System (Model P854) makes a convincing case. This 18-gauge, cordless brad nailer eliminates the need for a compressor, bulky hoses or gas cartridges. This means faster setup and more flexibility. Got some trim to install? Drive up to 700 nails per charge, just enough to keep you going between coffee breaks.

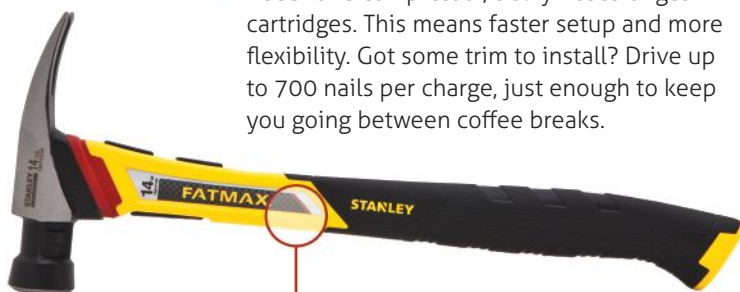


DEWALT RADAR SCANNER KIT

\$250

DEWALT.COM

This 12-volt, handheld MAX scanner lets you detect wood, ferrous and non-ferrous metal, PVC and live electric wires behind walls—without having to tear a hole in your drywall, plywood, concrete, ceramic tile or, for the fancy homeowner, marble. Includes LCD display and a tracking bar that displays the entire mapped area (almost 10 feet).



STANLEY FATMAX ANTI-VIBE HAMMERS

\$40-\$45

STANLEYTOOLS.COM

Available in 14- and 17-ounce models (FMHT51249 and FMHT51244), these incredibly absorbent hammers are constructed with a two-piece steel core that isolates vibration to the hammer's head. Both hammers feature black exposed steel under the head, which provides overstrike protection. The 17-ouncer has a checkered face to reduce slippage and includes a built-in magnetic nail starter.

2014 HOT TOOLS

GENERAL PORTABLE DUST COLLECTOR

\$400

GENERAL.CA

If every serious woodworker needs a dust collector, then you might as well have a portable one. The 1-hp, 10-030CF M1 is mounted on a steel base with one swivel caster and two wheels. The unit features a 10-inch impeller for smooth and quiet operation. Say goodbye to airborne dust. Trust us, your lungs will thank you.



GENERAL CAST-IRON ROUTER TABLE

\$400

GENERAL.CA

Ideal for workshopers with smaller shops, this heavy-duty table bolts right onto the edge of any cabinet saw, such as your tablesaw. As opposed to the standalone table (40-200C), this extension version (40-070EK) is an eighth of an inch shorter in each direction, but with a pro-sized 16" x 27" top. If you don't have the space for both a tablesaw and a dedicated router table, this is your best bet.



BENCH DOG SHELF-PIN JIG

\$20

ROCKLER.COM

Sold by Rockler, this jig is perfect for the fine-furniture maker who only occasionally needs a shelf-pin drilling jig, which lets you drill five holes at a time. This jig is full of handy features, such as a self-centring drill, an indexing pin, a slot for viewing layout lines and an easy-to-grab, rubberized handle. Of course, you also can clamp it. Small and inexpensive, this tool will prove itself indispensable.

CLC SPEAKER TOOL BAG

\$140

GOCLC.COM

Rather than toting around your tools in any old bag, get this rugged, zipper-mouthed number and enjoy some music as you work. The built-in speakers let you connect your cellphone or MP3 player for maximum sound. A clear, plastic sleeve protects your music device. It's powered by an AC adapter or four D-cell batteries. Oh, and the bag itself is cool too, with 18 inside pockets and 21 on the outside, enough to keep you organized.



KING 14" BANDSAW

\$1,400

KINGCANADA.COM

King's new 14" bandsaw has a full 12" of resawing capacity, as well as all the features you've come to expect (rack-and-pinion height adjustment, a cast-iron table that tilts by 50° to the left and by 45° to the right, as

well as two 4" dust chutes for collector hookup). The saw comes complete with blade, mitre gauge and an aluminum rip fence with resaw guide.

And, typical of King Tools, what this unit doesn't come with

is the best part—a big price tag!

At \$1,400, the

KC1502FXB is a good buy.



STANLEY RATCHETING WRENCH

\$20-\$25

STANLEYTOOLS.COM

Rather than having to reposition your wrench after every turn, the FatMax wrench, both the eight-inch FMHT72184 and the 10-inch FMHT72185, lets you ratchet back and forth in the "unlocked" position. This makes for quick work, especially in finicky spots where it's hard to get the wrench into position. Of course, you also can use this wrench in traditional, locked ways. Includes laser-marked jaw marking for fast and accurate sizing.



BOSCH DEMO HAMMER

\$380

BOSCHTOOLS.COM

Ideal for demolition in tight spaces, this 12-lb. hammer is perfect for removing wall and floor tiles, repairing joints, cutting slots in concrete and, well, demolishing everything in sight. This tool also is comfy to work with, which is why it's so good in tight spots. It has a variable-speed trigger and 12 locking positions.



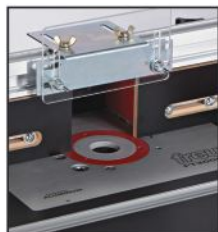
**World's best value
router table and
fence system is
Canadian.**

Freud's Canadian-designed DELUXE ROUTER TABLE SYSTEM not only does everything a really great router table should, it also comes at an exceptional price – \$450 to \$600 depending on the version. But like all good tools, this success didn't happen overnight.

In 2001 Freud asked Canada's top woodworkers to help design the best, most value-packed router table anywhere. The Deluxe Router Table springs from 12 years worth of this team's experience. So why settle for an imported table when you get quality and value right here at home?

DELUXE FEATURES

- thick, powder-coated steel legs deliver rock-solid base
- 23-1/2" x 31-1/2" heavy-duty crystal finish, laminate top with five aircraft-grade T-slots
- 1/4"-thick aluminum insert plate w/ leveling screws
- pro-grade 5"-tall extruded aluminum fence with dust port, adjustable split fence and T slots
- front-mounted power safety switch



Deluxe Fence & Plate



Deluxe Table

The DELUXE Freud Router Table System – available to order or purchase NOW at your local dealer.

freud
Precisely the best.

2014 HOT TOOLS

MILWAUKEE 18-VOLT MULTI-TOOL

\$300

MILWAUKEETOOL.COM

By definition, a multi-tool must be versatile, useful in a wide range of applications and easy to handle. And that's what Milwaukee offers here. This 18-volt, cordless wonder is ideal for everything from flooring to maintenance to electrical work and other otherwise awkward reno jobs. Tool-free blade changes make for quick work.



DEWALT GYROSCOPIC SCREWDRIVER

\$100

DEWALT.COM

We know what you're thinking—another screwdriver? But this one's different. Besides running on marathon-worthy Li-ion batteries, the MAX has several unique, pro features, including a battery gauge, adjustable clutch settings and an LED light for working in dark spaces. If you buy one more rechargeable screwdriver, make it this one.



RYOBI 40-VOLT HEDGE TRIMMER

\$190

RYOBI.COM

A cordless trimmer? Yep, and a powerful one, to boot. This 40-volt, Li-ion hedge trimmer (Model RY40610) is all about portable power in an easy-to-handle machine. The large, 24-inch, dual-action blade creates clean cuts with less vibration, making this tool easier to hold over long periods. There's also an attachment that sweeps away clippings as you work. 

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Canada**

VINTAGE SLED

Skill Level

Novice      Expert

THE Maple Leaf FLYER

Some sleds never go out of style

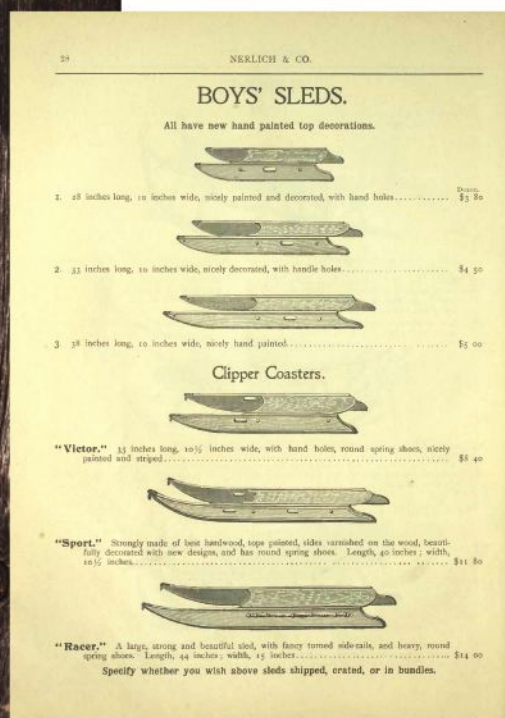
BY **RICK CAMPBELL** PHOTOGRAPHY BY **ROGER YIP**

THE INSPIRATION FOR this project came from page 28 of the 1901 Nerlich & Co. Fall/Winter catalogue. Founded in 1858, Nerlich & Co. was a popular Toronto-based wholesaler that distributed merchandise to Canadian retailers. This sled is based on the Sport model, which wholesaled for the bargain price of \$11.80 per dozen.





Besides being the perfect companion for gliding down snowy slopes, this sled makes for a classic living-room accent



A CANADIAN classic, this reproduction wooden sled works especially well on hard-packed slopes. The metal-capped runners and retro paint scheme make it a durable and eye-catching alternative to plastic sleds

In keeping with the original, I built my version of the sled from solid maple and decorated the top with a hand-painted design. I even came up with an easy way to replicate the metal shoes that protect the bottoms of the wooden runners. And, besides being the perfect companion for gliding down snowy slopes, this classic sled makes for an antique-style living-room accent.

RUNNERS UP

The first step is to create the runners, which involves a technique called “pattern” routing. As the name suggests, the process uses a pattern and a table-mounted router equipped with a bearing-guided, flush-trim bit to duplicate these irregularly shaped parts. To begin, use the grid diagram included in the plans to create a full-size cardboard pattern of the runners. Don’t forget to mark the locations of the screws that connect the runners to the crossbraces, as well as the openings for the handgrips. Cut out the pattern with a pair of scissors, then trace the outline onto a piece of ¾"-thick MDF. Now, use a jigsaw to cut out the shape and a sanding block to smooth the rough edges.

Next, cut 5½"-wide x 40½"-long blanks from ¾"-thick solid maple. Trace the outline of the pattern onto the blanks, then return to the jigsaw to cut out the profiles. Always remain ⅛" to the outside of the layout lines. Next, use strips of double-sided tape to secure the pattern temporarily to one of your runners. Install a bearing-guided flush-trim bit in your table-mounted router, then follow the contours of the template as you trim the waste from the edges of the runner. When you’re done, pry off the template and repeat the entire process to clean up the edges of the second runner.

The next task is to create the openings for the handgrips. Mark the locations using the cardboard pattern, then drill 1"-diameter holes at the ends of each grip opening

→ You Will Need

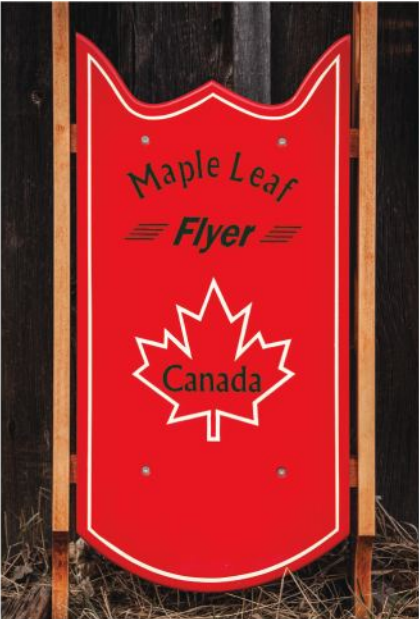
PART	MATERIAL	SIZE (T x W x L ²)	QTY.
Runners	maple	3/4" x 5 1/2" x 40 1/2"	2
Shoes	aluminum bar	1/8" x 3/4" x 48"	2
Crossbraces	maple	1 1/4" x 1 1/4" x 12 1/2"	2
Deck	maple	1/2" x 12" x 24"	1

*Length indicates grain direction

RECOMMENDED TOOLS



Tablesaw, table-mounted router, jigsaw, hammer, punch, utility knife, drillpress, bench grinder, spindle sander, drill driver



THE VINTAGE red paint scheme and detailing, along with the metal-reinforced runners, remain true to the 1901 original



using a spade bit. To avoid tearout, drill partially through from one side, then flip over the board to complete the job from the other direction. Next, take your jigsaw and make cuts to remove the material from the centre. Sand the rough edges smooth, then install a bearing-guided, ¼"-radius bit to round over the lip on both sides, which creates a more comfortable grip.

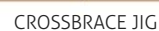
STEEL SHOES

The original sled featured steel strips on the bottoms of the runners to protect the wood from damage and to help to reduce friction in the snow. Rather than steel, I used a ¾"-wide x ⅛"-thick flat aluminum bar. I chose aluminum over steel because it’s much easier to shape and drill. Start with two 4' sections of flat bar and mark the screw holes in pencil.

(Refer to the plans to see exactly where they need to be positioned.) Now, create a small divot using a hammer and a punch to mark the centre of each screw location. The punch mark will help to prevent the bit from wandering when you drill the holes. The drillpress is your best bet for boring holes, but a handheld drill also will get the job done.

Start by using a ⅛"-diameter bit to drill holes all the way through the metal to accommodate the screws, then switch to a countersink bit to flare the entrance to the holes so that the screw heads will sit flush with the runners.

Next, round off the ends of the metal strips to remove any sharp corners. A quarter makes a perfect template to lay out these curves, and a bench grinder or hand file takes care of shaping the ends.



When this work is done, you're all set to bend the shoes while fastening them to the wood.

Begin by clamping one of the runners onto the surface of your workbench with the bottom edge $\frac{1}{2}$ " in from the front edge of the benchtop. The close proximity to the front of the workbench is necessary to provide easy access for a drill driver along the edge. Starting from the back and working progressively toward the front, attach the shoe with #6 x $\frac{5}{8}$ "-long stainless-steel flathead screws installed in predrilled holes. When you reach the front, bend the flat bar around the tip of the runner to form a gentle loop. Now, grab a pair of pliers to crimp a tab on the end that will sit flat on top of the runner. Anchor the tab to the runner with another predrilled screw.

Follow the same process to install the shoe on the other runner.

BRACE YOURSELF

Two horizontal crossbraces connect

the runners to the sides and support the deck on top. Cut the crossbraces to size from $\frac{1}{4}$ "-thick material, then sand the edges. The runners are attached to the crossbraces using weatherproof glue and a pair of stainless-steel screws at each junction. The installation process goes better if you make a jig to hold the braces in position while you attach the runners to the ends of the crossbraces. All you really need is a pair of $2\frac{1}{4}$ "-wide boards that stand on edge to support the braces at the correct height. Cut $\frac{1}{2}$ "-deep notches in the top edges to prevent parts from sliding out of position while you work. (Refer to the diagram of the jig included in the plans on page 25 for the measurements you need to make the temporary supports.)

After preparing the jig, use your cardboard pattern to locate the mounting screws' positions on the inside faces of the runners. Predrill holes in the marked locations, then counterbore to $\frac{5}{16}$ " in diameter to receive the tapered wooden plugs.

When you're done, grab the glue bottle and clamps for final assembly. With a generous coat of glue applied to the ends of the crossbraces, place these members in the jig supports and position the runners at their ends. Once all the parts are aligned, secure the entire assembly with a couple of long clamps.

Now, you can drill pilot holes in the ends of the crossbraces and permanently fasten the joints using #10 x $1\frac{1}{4}$ "-long stainless-steel screws. Leave the clamps in place until the glue fully cures. Later, glue maple plugs in place to cover the screw heads, then sand the ends flush. You can purchase maple plugs from most building stores or make your own using a commercial plug cutter in your drillpress.

HIT THE DECK

The sled deck is nothing more than a flat panel with decorative profiles on the front and rear edges. Begin by cutting the 12"-wide x 24"-long panel blank from $\frac{1}{2}$ "-thick material, then create a cardboard pattern to lay out the profiles on the ends. (The grid diagram in the plans includes all the information you need to prepare the pattern.) Transfer the pattern to the deck panel, then use a jigsaw to cut along the outside of the layout lines. A spindle sander or sandpaper wrapped around a piece of dowel will smooth the rough edges of the curved profiles.

Next, install a $\frac{3}{16}$ "-radius bit in your table-mounted router and round over the edges on both sides. Leave the side edges square. The deck is secured to the crossbraces using four #10 x 1"-long flathead stainless-steel screws installed through the top. Predrill and countersink the heads flush with the surface of the deck. No glue is used here so that the deck can be removed for finishing and refinishing.

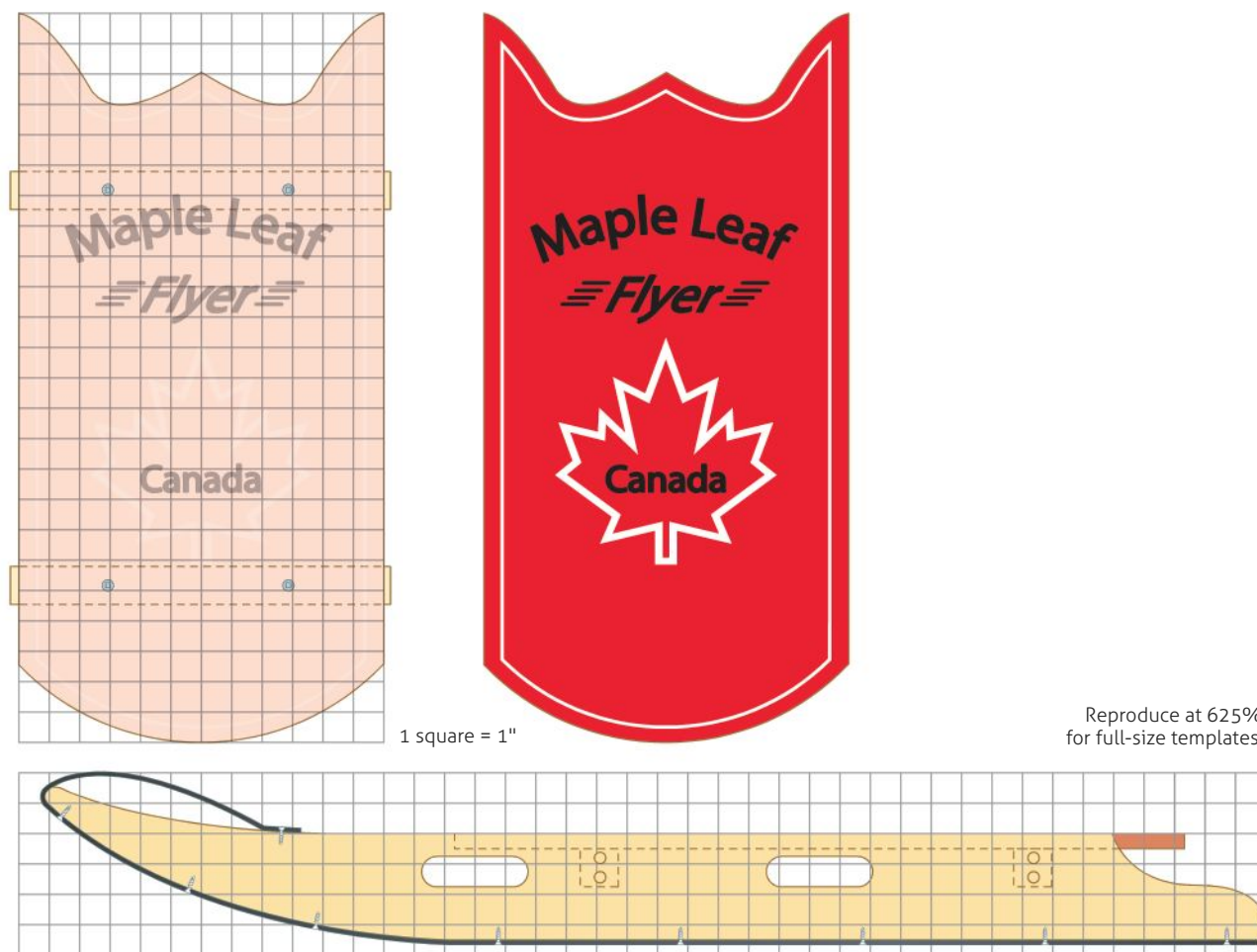
PAINTING PROCEDURES

Intricate, hand-painted designs were common on sleds made during the early 20th century.



HARDWOOD RUNNERS (left and top) offer strength and style, with handgrip cutouts that make carrying the sled easy. Aluminum strips (right) protect the wooden runners from wear and tear

→ MAPLE LEAF FLYER PLANS, CONTINUED



Reproduce at 625%
for full-size templates.

Admittedly, I'm not much of an artist, so I had to come up with an easy way to create a graphic design that required no special artistic talents to complete.

I started by preparing the surfaces of the deck for paint by sanding with 220-grit sandpaper. Next, I applied three coats of red acrylic paint with a foam brush to create a contrasting base for the design. After each coat, I sanded lightly with 600-grit paper. I chose acrylic craft paint for this project because it dries quickly and is available in an array of colours.

Next, I used narrow painter's tape to lay out the pinstripe border on the top surface of the deck. Using a small artist's brush, I applied three coats of white to fill in the taped pinstriped border. After peeling off the tape, I discovered that white

paint had seeped under the edges in a few spots. I took care of this problem by flaking away the white residue with the tip of a utility knife.

After painting the border, I used my computer and graphic-design software to lay out the lettering and the maple leaf image.

Next, I purchased a roll of adhesive-backed shelf paper and used a pair of scissors to cut out sheets that fit my inkjet printer. I printed the lettering that appears at the front on the top of the deck on one sheet of shelf paper and used another for the maple leaf image. After peeling off the backing, apply the shelf-paper sheets to the deck panel. Sneak the rolling pin out of the baking drawer and use it to press the sheets firmly into place.

Now, use a sharp utility knife carefully to cut out the letters and

design. Use the tip of your knife to help to lift the film from the graphics to be painted. Grab a brush and begin painting the letters with whatever colour you like. After three or four coats, peel off the surrounding mask to reveal your masterpiece.

THE FINISH LINE

Start the final finishing process by removing the shoes from the runners and applying a couple of coats of black outdoor paint to the surfaces of the metal. Next, protect the wooden parts with several coats of marine spar varnish. When all this work is done, reinstall the runners and reattach the deck to the crossbraces. Guide a pull rope through the loops on the fronts of the shoes, tie it in a firm knot and this bad boy is ready to glide. 🚦



Beauty IN A Box

*Learn new techniques while
creating a unique trinket box*
BY RICK CAMPBELL

WHERE'S THE BEST place to store unique, irreplaceable, valuable items? How about in an equally unique and striking trinket box, one with gently sloping sides, richly figured grain and ebony accents. This project, which was inspired by the shape of a Japanese pagoda, might seem unconventional. However, building it requires only basic, standard workshop tools, including a tablesaw with a 10" combo blade, plus a little woodworking know-how.

SIDES AND COVES

When you're building something small and decorative, materials play into the overall design in a much bigger way. That's why I took extra time to search for the perfect board. In the end, I handpicked a spalted maple plank featuring distinctive dark lines sweeping across the grain. Spalting is the striking discoloration that often occurs when fungi invade a tree. The hidden treasure you find buried in your lumber dealer's wood racks may reveal features that will give your project a unique look.

First, you need to build the box's sides. Start by planing and jointing the board to a finished thickness of 1 3/8", then cut out a blank that is 5 1/2" wide and not less than 28" long.

The tablesaw technique we are going to use to create the curved profile is called "cove cutting." It involves running a board diagonally across a spinning saw blade to form a scooped groove along the middle. By changing the angle, you can alter the width and shape of the cove profile.

Whenever you are experimenting with a new technique, practice on scrap first. For the setup, clamp two long boards to the tablesaw to form a channel that will guide the blank over the blade. The gap between the edge of the boards and the tip of the saw teeth must be the same at both the front and the back of the blade. To replicate the cove profile here, set the fence boards so they meet the blade path at a 30° angle. (Google



“When you’re building something small and decorative, materials play into the overall design in a much bigger way. That’s why I took extra time to search for the perfect board”



“cove cut calculator” and you’ll find a few nifty online utilities that will help you complete the angle calculations for future projects that may use this technique. And, if you still have questions about the setup, refer to the diagram in the plans.)

After completing the setup, lower the blade below the surface of the table and guide your blank through the channel with the tablesaw turned off. You’re checking to make sure the material travels smoothly along the path without binding or significant side-to-side movement. Now, raise the blade to $\frac{1}{16}$ " above the surface of the table and switch on the saw to make your first pass. Your feed rate should be very slow to give the blade enough time to cut cleanly along the entire length. Move the wood forward using jointer pushpads. After the first pass, flip the board by 180° and take a second run. This guarantees a symmetrical profile, even if the blade isn’t perfectly centred in the channel. Now, raise the blade in $\frac{1}{16}$ " to $\frac{1}{8}$ " increments and repeat the two-pass approach until the cove depth reaches 1". After the last run, sand the coved surface with 100-grit paper to smooth the roughness left behind by the blade.

Now, remove your temporary guides and position the fence to slice the board down the centre. Your objective is to end up with two matching pieces 2 $\frac{5}{8}$ " wide. As you make the cuts, the coved profile needs to face up.

Next, install a dado blade and cut a $\frac{1}{4}$ "-wide x $\frac{1}{4}$ "-deep dado $\frac{1}{4}$ " up from the bottom, with the thicker edge of each strip on the flat inside faces to receive the bottom panel of the box, which you’ll add later. Now, cut the sides to length with 45° mitres on the ends. Ensure the sides are exactly the same length to avoid gaps at the joints when the parts are assembled. The easiest way is to clamp a stopblock to the tablesaw’s fence.

After completing the sides, cut out the bottom panel. Finish-sand the bottom panel and interior walls

→ You Will Need

PART	MATERIAL	SIZE (T x W x L ²)	QTY.
Sides	spalted maple	1 3/8" x 2 5/8" x 6 3/4"	4
Bottom panel	spalted maple	1/4" x 4 1/2" x 4 1/2"	1
Bottom trim	ebony	1/4" x 1" x 7"	4
Lid insert	spalted maple	1/2" x 4" x 4"	1
Lid trim	ebony	1/4" x 3/8" x 4 3/4"	4
Handle supports	ebony	1/4" x 3/4" x 5/8"	2
Handle	ebony	1/4" x 3/4" x 3 3/8"	1

*Length indicates grain direction



RECOMMENDED TOOLS

Tablesaw, planer, jointer, mitre saw



INTERLOCKING JOINERY on this three-part ebony handle has an Asian look reminiscent of full-size pagodas. The dark wood provides a striking contrast to the spalted maple

of the box with 220-grit paper. Dry-fit the parts together first, then spread glue on the surfaces of the joints and assemble the sides with the bottom panel in place. You’ve probably already figured out that the curved sides will make it impossible to use conventional clamps to secure the corners while the glue dries. Instead, stretch some clear, elastic-type packing tape over the joints. The tension from this tape provides just enough pressure to form a solid bond.

To add pizzazz to the design, I made contrasting trim for the bottom of the box. The dark ebony I used typically ranges from a rich chocolate brown to midnight black. If you can’t find ebony, there are other interesting exotic and

domestic woods to choose from.

To make the trim, cut out a few 1"-wide strips from $\frac{1}{4}$ "-thick material, then cut four segments to length with 45° mitred corners. Round over the outer edges by sanding lightly. With glue applied to the joints, assemble the segments into a square frame. I used more stretchy tape here to secure the joints, plus spring clamps to keep the corner surfaces aligned while the glue dried. Later on, apply more adhesive to the underside of the box and clamp the frame in place.

TOP IT OFF

The lid for this box may look complicated, but it’s quite simple to make. Start by cutting a square panel that fits perfectly within the

→ PLANS FOR THE PAGODA BOX

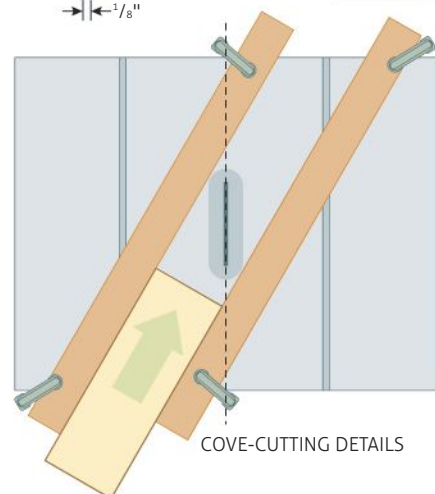
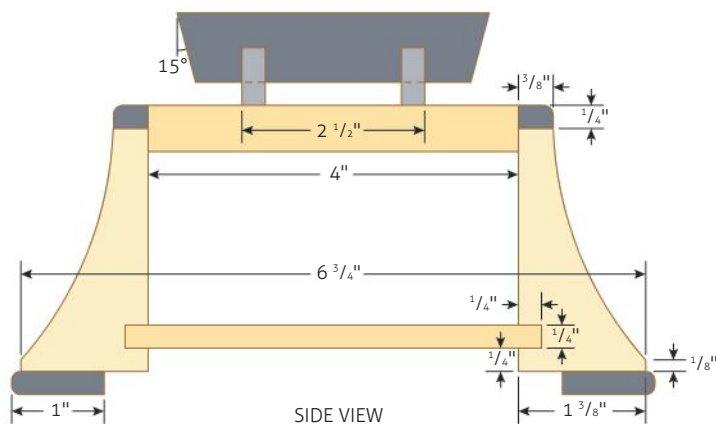
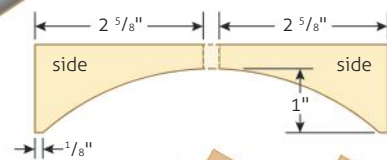
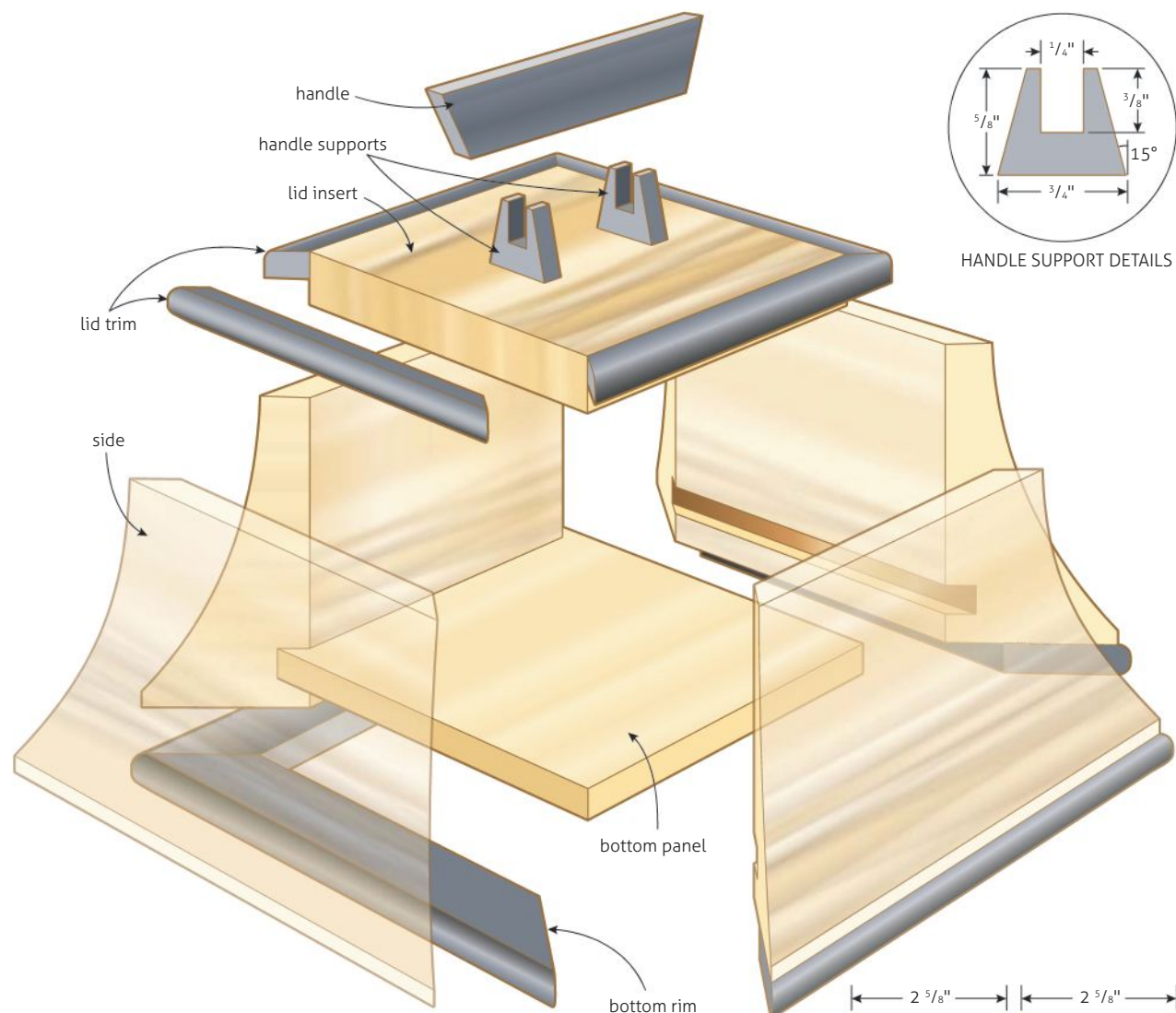


ILLUSTRATION: LEN CHURCHILL



COVE-SHAPED SPALTED maple sides, dark ebony trim and an ebony handle (above) work together to create an exotic look. Each box side is half of a cove profile cut on a tablesaw (top right). The lid (bottom right) is finely crafted, even on the inside

opening of the box. For my lid, I used more of that stunning spalted maple. Now, we're going to create a lip around the edge using the same accent wood you chose for the base. First, cut $\frac{3}{8}$ "-wide strips from $\frac{1}{4}$ "-thick material, then cut the parts to length with 45° mitres on the ends. When you do this, it's best to make the segments a little on the long side to start, then progressively trim the ends to sneak up on a perfect fit. When all the segments are ready to go, glue the parts in position around the perimeter of the lid insert. Make sure all the surfaces are flush on top before leaving the assembly to dry. After removing the clamps, sand to round over the upper edges of the lid.

HANDLE IT

The Asian-style handle for the top is made from more of the $\frac{1}{4}$ "-thick accent wood. Start by preparing a strip that is $\frac{5}{8}$ " wide and roughly 12" long. This is more than you will need, but the extra is necessary to keep your fingers well clear of the

blade when cutting these small parts to size. Study the plans and you'll see how the handle's cross member engages with the notched upright supports. Since these supports are so tiny, it's much easier to notch the top edge of the material before cutting the parts to size.

With a backerboard in position to prevent tearout, pass the strip on edge at 90° over the blade to create the $\frac{1}{4}$ "-wide x $\frac{3}{8}$ "-deep slots. When you're done, tilt the blade by 15° from square to cut the upright supports off each end. When you do this, you'll need to cut one side, then flip over the piece to form the complementary angle on the opposing end. Plan your cuts so the notches end up being perfectly centred on the top edge of the completed supports. After preparing both supports, use the same blade angle to cut the handle to length.

After a little sanding to round over the top edge of the handle slightly, you're ready to glue the handle to the notched supports.

Before the adhesive fully cures, spread some more glue on the bottom edges of the supports, then clamp the entire assembly to the top of the lid. When you do this, leave the ruler hanging on the pegboard; your eyes will do a better job of ensuring that the handle looks centred.

FINISHING UP

One of the benefits of working with beautifully figured wood is that you don't need to stain it. All that's required for this project is a few coats of wipe-on poly. Sand lightly with 400-grit paper between coats, then wet-sand with 600-grit wet/dry paper after letting the final coat cure for about a week. This procedure results in a silky smooth finish. After successfully completing your first box, try altering the dimensions and experimenting with different combinations of wood and cove profiles to produce eye-catching designs from your own imagination. 

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PUZZLE HOLDER

Skill Level

Novice     Expert



Hide & Seek

Stow away your unfinished jigsaw puzzle until next time with this ingenious holder BY WAYNE LENNOX

PHOTOGRAPHY: STACEY BRANDFORD

STORING A JIGSAW puzzle assembly in progress is a bit of a challenge.

My solution, a puzzle tote, has an inner top tray for your half-finished masterpiece that rests in a larger tray for extra pieces. Felt liners minimize movement of the pieces, and a clear plastic lid holds everything in place, allowing for display when the tote is stored vertically between puzzle sessions. • I used poplar for the outer frames and Coroplast (corrugated plastic sheets) for the upper and lower tray bases to minimize weight.



PUZZLE SESSION over, just cover your work with the Plexiglas, pop the top tray into the frame and turn the toggles to hold everything in place. We used a large children's puzzle piece to make a template for the toggles

THE UPPER TRAY

1. Cut the 1x2 pieces for the tray frame to length.
2. Rip a $\frac{7}{32}$ "-thick x $\frac{3}{4}$ "-wide strip from each of these pieces for the frame.
3. Using a straightedge and a utility knife, cut a piece of Coroplast to the size indicated in the plans. Coroplast is available at many building-supply outlets, but only in stock sizes (e.g. 2' x 4'). Sign companies also use this product. You could visit one and ask to have a piece cut to exact size.
4. Trim the frame strips to fit the perimeter of the Coroplast. Apply contact cement to both the poplar strips and the Coroplast. (Trace the outline of the strips on the sheet to minimize overapplication.) Wait

the required time, then carefully glue the materials together. Remember that you only get one chance with contact cement.

5. Sand and finish the frame; tape off the Coroplast before painting.
6. To apply the felt, use spray adhesive or wipe the surface of the tray with a damp cloth and spread polyurethane glue evenly with a spatula. One edge of the felt should be cut straight. Lay the felt into the tray, keeping this edge tight to one long side; firmly smooth out any bubbles or wrinkles. Let set for at least 10 minutes. Beginning at a corner, press the blade of a wide putty knife firmly against the inside edge of the frame and carefully cut away the excess felt with a sharp utility

knife. Work your way around the perimeter. Check again for wrinkles. Full cure takes 24 hours.

THE LOWER TRAY

1. Rip each of the four lower tray frame pieces to 1"-wide x $\frac{3}{4}$ "-thick.
2. Cut a $\frac{5}{32}$ "-wide x $\frac{1}{4}$ "-deep rabbet in each piece, as shown in the plans. Drill a $\frac{3}{8}$ "-diameter countersunk hole $\frac{3}{8}$ " deep in each end of the longer pieces, above the rabbet, then inside these, drill pilot holes for the screws. Cut four tapered plugs and leave aside. (If you don't have a plug cutter, use ready-made, tapered plugs.)
3. Cut the Coroplast base and assemble the frame around the sheet, using polyurethane glue in the rabbet and carpenter's glue for

the frame pieces. (Polyurethane glue expands as it sets, so you may get some squeeze-out.) Allow to dry on a perfectly flat surface; if the tray does not lie flat, place weights on the corners to hold them down.

4. With a Forstner bit, drill two $\frac{7}{8}$ "-diameter finger holes $\frac{7}{16}$ " deep in the short ends of the tray. The hole centre is close to the inside edges, so, to prevent the bit from drifting, clamp a piece of scrap—of about the same thickness—to the inside edge of the frame.

5. Add the dowel plugs, trimming them with a chisel or a flush-cut saw after the glue sets.

6. Sand and finish, taping off the Coroplast before painting. Apply the felt, as you did before.

THE PLEXIGLAS LID

I had a piece of Plexiglas cut to size at a glass shop. Stock sizes are often available at building-supply outlets. Cutting is simply a matter of scoring the surface and breaking along a straightedge. I smoothed the edges and corners with a metal file. Be careful not to scratch the surfaces. Carefully drill a single $\frac{7}{8}$ "-diameter finger hole in one end of the plastic.

FINISHING TOUCHES

1. Attach a small handle to one long edge of the outer tray. Any size that's comfortable will do.

2. Trace any large puzzle piece you have to make the toggles, then cut them to size from veneered plywood. Since I don't have a scroll saw, I had to use an old-fashioned coping saw. This could be a good opportunity to involve the kids: get them to cut out, sand and finish these pieces. Remember to cut with the good side of the plywood away from you.

3. Drill pilot holes in the frame of the outer tray. Screw the puzzle toggles to the frames; there should be some friction when the pieces are turned. Add a brass cup washer under each screw head, and a washer between each toggle piece and the frame, creating a thin gap, to eliminate wear. 

→ You Will Need

PART	MATERIAL	SIZE (T x W x L)	QTY.
Upper tray base	corrugated sheet plastic	5/32" x 23 1/4" x 31 1/2"	1
Lower tray base	corrugated sheet plastic	5/32" x 23 5/16" x 32 1/4"	1
Trim stock	poplar	3/4" x 1 1/2" x 10'*	1
Tray liners	felt	22" x 32"***	2
Clear cover	Plexiglas	1/8" x 21 5/8" x 29 7/8"	1
Puzzle toggles	birch-veneered ply	3/8" x 2" x 4 1/2"	4

HARDWARE

Small handle and screws	1
#6 x 1 1/2" screws	4
#8 x 1" brass screws	4
#8 brass cup washers	4
Small washers	4
3/8"-diameter tapered wooden plugs	4

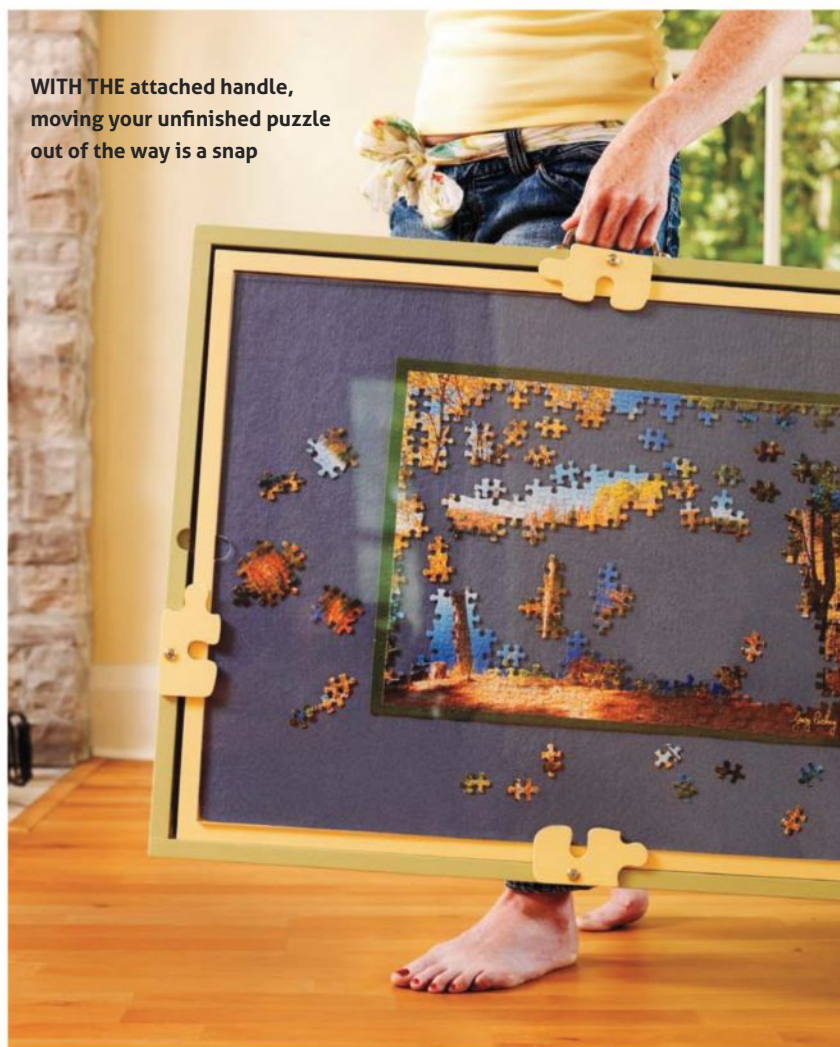
Finish of your choice (we used Benjamin Moore paints: Danse du soleil, CC-212, for the inner tray frame; and Grasslands, CC-590, for the outer frame)

* Total length required **Oversized pieces, cut to fit trays



RECOMMENDED TOOLS

tablesaw, jigsaw or scrollsaw, sander, drill, saw, file



WITH THE attached handle, moving your unfinished puzzle out of the way is a snap

→ PLANS FOR THE PUZZLE HOLDER

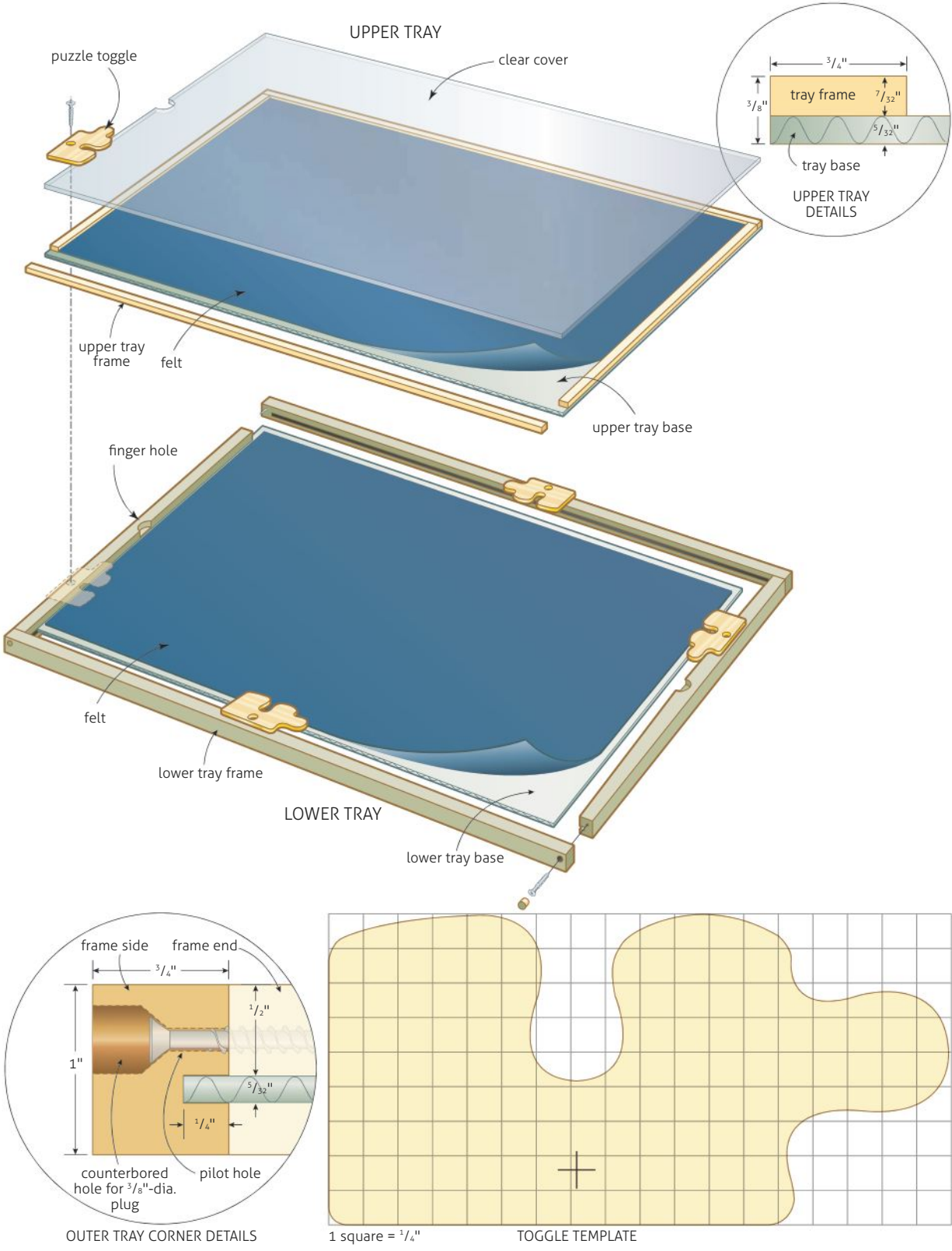


ILLUSTRATION: LEN CHURCHILL

GUITAR STAND

Skill Level

Novice      Expert

Rock On!

*Give your guitar the royal treatment—
with its own elegant stand*

BY RYAN SHERVILL

THE CONTRAST of dark and light woods, plus the flowing overall design, earns this stand a place in the fanciest of rooms

IF YOU PLAY guitar, chances are good you're as proud of the guitar itself as you are playing. This stand allows you to show off your instrument. It's fun to build, and uses curves and contrasting woods in an elegant design that is far easier to create than it looks. Simple joinery and a little router work is all it takes. • I built my stand using 1"-thick lumber, but only because that's what I had on hand. You can use whatever thickness you like, as long as it's between $\frac{3}{4}$ " and $1\frac{1}{2}$ ". The only variation to the plan you may need to make concerns the dimensions of the notch in the head of the stand that holds the guitar's neck.



“Since this stand won't see much wear and tear, I was more interested in using a finish that makes the grain stand out than delivering maximum durability.”

ELEGANT CURVES and stunning wood make this guitar stand beautiful even without the guitar. Hidden joinery and a traditional oil and wax finish highlight the design

Begin by marking a grid of 1" squares directly on your leg stock (I used African wenge) with a pencil, then follow the plans (see page 41) to draw the shape of one leg. Using a bandsaw or a jigsaw, cut this first leg, staying approximately $\frac{1}{32}$ " on the waste side of the lines, then complete the leg by sanding up to your lines. When the first leg is perfect, use it as the template to mark your remaining stock for the second leg, then repeat the rough-cutting process, again staying outside the lines.

At this point, attach the finished leg to the roughly cut one using double-sided tape, then head over to the router table. Install a bearing-guided template bit (also known as a "flush-trim" bit) and adjust the height so that the bearing rides against the finished leg only. With light cuts, rout around the perimeter of the joined parts to end up with two identical pieces. Finally, with the two legs still attached together, bore $\frac{3}{8}$ "-diameter holes through both legs using a drillpress, with holes centred from side to side on the leg, $3\frac{3}{8}$ " up from the bottom.

Now, separate the two legs and set them aside before building the dowel holes, neck, head and support pieces.

BUILD THE SUPPORTS

Select the stock that you will be using for the neck (I chose bird's-eye



maple) and draw the shape as shown in the plans. Just as with the first leg, cut out the neck with a bandsaw or jigsaw, then sand to the lines.

The headpiece is made much the same way, except for a few details. You will need to vary the length between the notches to accommodate the body depth of your particular guitar.

Cut out the headpiece using a bandsaw or jigsaw, making the rear notch slightly undersized at first. This lets you chisel the size of the front notch for a perfect fit for the guitar's neck. Next, create the notch for the guitar neck to rest in: make two marks $1\frac{1}{4}$ " in from the front edge and $1\frac{1}{4}$ " in from each side of the headpiece. Affix a $\frac{7}{8}$ " Forstner bit in your drillpress, then drill through the stock at the marked locations. Finally, use a jigsaw to cut out the waste, starting with straight cuts 1" in from each side and a straight cut across the back.

Making the support pieces is a little more complex, as they require laminating your two woods together to make the decorative tips. I started by cutting two $1\frac{1}{4}$ "-wide pieces of 1"-thick maple to $14\frac{3}{4}$ " long, plus four blocks of 1"-thick wenge to $\frac{3}{4}$ " wide x $1\frac{3}{4}$ " long. Glue the wenge blocks in place at each end of the maple pieces. (See plans for correct placement.) Once the glue has dried, mark the curves and cut them on the bandsaw before refining the workpieces with a sanding drum.

A WELL-ROUNDED LOOK

With all the pieces cut and sanded, I softened the overall appearance and eliminated sharp edges with a roundover bit at my router table.

To start, I used a $\frac{3}{8}$ "-radius, bearing-guided roundover bit on both sides of the legs, with the exception of the straight portion that will be glued to the stand's neck. I then used the same bit to round over the supports' sides.

Next, I used a $\frac{3}{16}$ "-radius bit to round over all of the neck

→ You Will Need

PART	MATERIAL	SIZE (T x W x L ²)	QTY.
Neck	bird's-eye maple	1" x 3 $\frac{3}{4}$ " x 16 $\frac{1}{2}$ "	1
Headpiece	wenge	1" x 4" x 5 $\frac{1}{2}$ "	1
Supports	bird's-eye maple/wenge	1" x 2 $\frac{3}{4}$ " x 14 $\frac{3}{4}$ "**	2
Legs	wenge	1" x 7" x 25"	2
Standoffs	bird's-eye maple	$\frac{3}{16}$ " x 1" x 2 $\frac{3}{4}$ "	2
Pads	self-adhesive cork	1 $\frac{1}{2}$ "-diameter	9

*Length indicates grain direction **Cut later to make four supports



RECOMMENDED TOOLS

Table-mounted router, drillpress, bandsaw/jigsaw, drum sander



EXTRA-WIDE SUPPORTS can accommodate a range of guitar sizes without modification. The top of the stand can be removed and customized for different guitar-neck widths

and headpiece's edges. The only exceptions: the rear notch in the headpiece and the top of the support shelf on the stand's neck.

With all pieces cut, rounded and sanded, there are only a couple more tasks before assembly: cut the support to length and drill to their adjoining ends for dowels. Wrap masking tape around the supports at the location for your

cuts (to reduce tearout), then mark and cross cut the supports at the 8" mark to make two 8"-long rear legs and two guitar supports, each about $6\frac{3}{4}$ " long. These are big enough to accept guitar bodies right up to Dreadnought size. Finally, drill centred $\frac{3}{8}$ "-diameter holes, $1\frac{1}{4}$ " deep in each cut face of the support/leg pieces to accept the dowels for joinery.

→ PLANS FOR THE GUITAR STAND

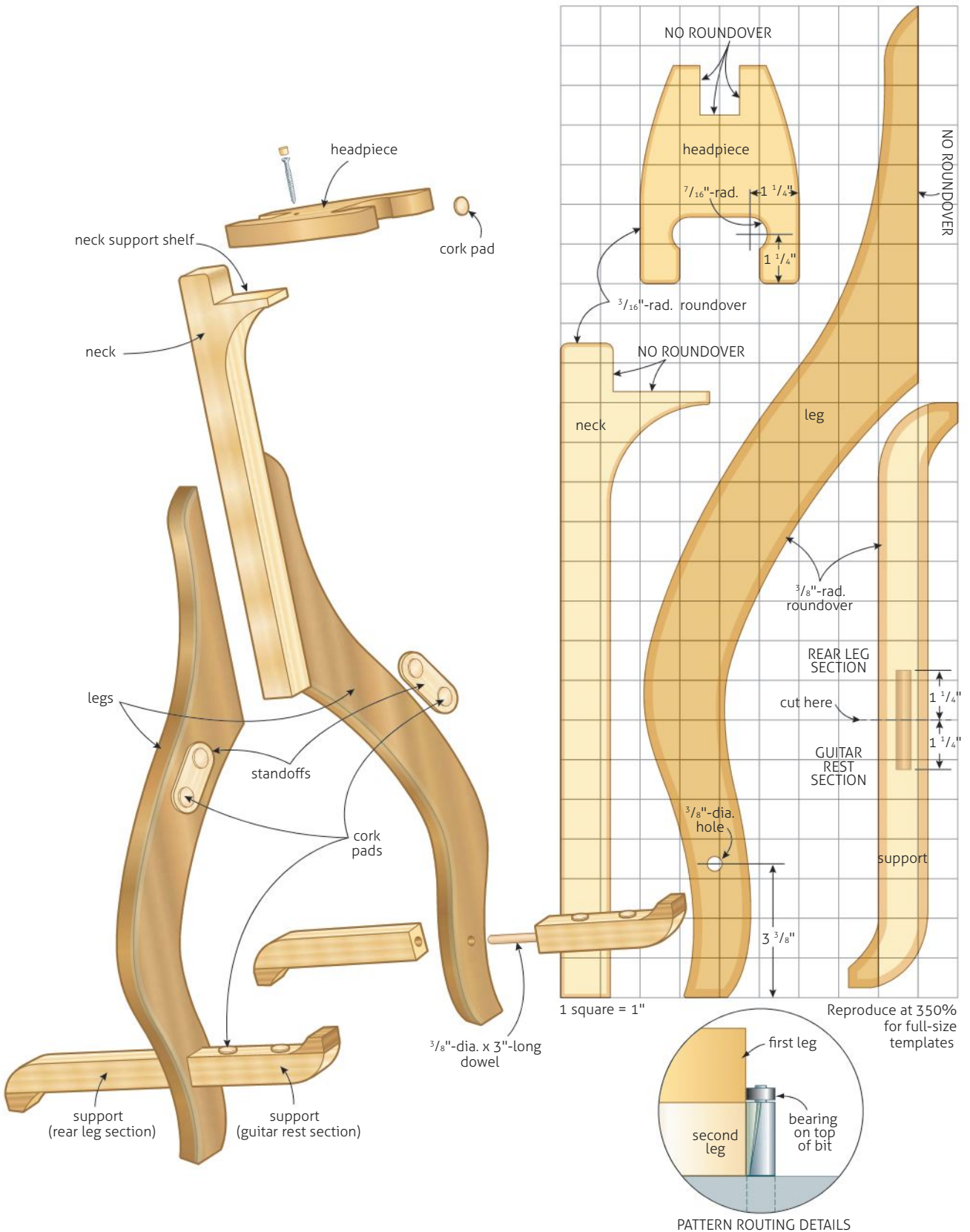


ILLUSTRATION: LEN CHURCHILL



THE CONTOURED headpiece holds the neck of a guitar securely. Remove the wooden plug and screw to change the headpiece to suit another instrument. Cork pads protect the guitar's finish



EACH SUPPORT/REAR leg section, cut from the same piece of wood, appears to continue through each leg. The dark wenge tips draw the overall design together

PUT IT ALL TOGETHER

Begin assembly by applying a bead of glue to the mating surfaces on the legs, and glue them on either side of the neck piece with dowels in place. Centre them front-to-back, ensuring the two legs are aligned, then clamp and set aside to dry.

Next, attach the supports to the legs by spreading a little glue on the centre section of 3"-long dowels, then insert the dowels into the holes in the legs, leaving 1" protruding out each side. Spread glue inside the holes in the support pieces and slide them over the dowels, butting them firmly against the faces of the legs. Ensure the supports are oriented correctly with the guitar-support and leg tips pointing straight up and down, respectively; then allow the glue to cure fully.

The headpiece can be glued to the neck as is or you can attach it with a single, hidden screw. This latter method is wiser since it allows you to change the headpiece

to suit different guitars. I drilled a $\frac{1}{8}$ "-diameter hole through the headpiece and into the shelf on the neck, followed with a $\frac{3}{8}$ "-diameter x $\frac{3}{8}$ "-deep counterbored pocket in the headpiece. Secure the headpiece with a 1"-long pan-head screw, then cover it with a tapered maple plug. I rounded the top of the plug and left it proud of the surface, in case I ever want to take it out.

The final step is to add two standoffs to prevent the guitar from rocking from side to side on its neck. These also gave me the opportunity to introduce a little more bird's-eye maple as an accent to tie the project together visually. Cut a scrap piece of bird's eye to 1" x 2 $\frac{3}{4}$ ", rounding over the ends before ripping two $\frac{3}{16}$ "-thick facepieces on the bandsaw. Sand the sharp edges to ease the corners, then glue these standoffs in place.

FINISH IT OFF

Since this stand won't see much wear and tear, I was more interested

in using a finish that makes the grain stand out than delivering maximum durability. That's why I chose a traditional tung oil and wax finish. I first applied a heavy coat of polymerized tung oil, letting it sit for 30 minutes while occasionally applying more where it had soaked in fully. After wiping off all the oil that I could, I let the stand sit overnight to cure. Repeat this process two more times over two more days, then apply paste wax and buff it off on the fourth day. I used Minwax walnut-colour paste wax. The result is a finish with a soft glow that really shows off both the colour of the wenge and the figure of the bird's-eye maple.

Finally, to protect the guitar's finish, apply $\frac{1}{2}$ "-diameter round self-adhesive cork pads wherever the guitar body contacts the stand. I used nine in all. Then, all that's left to do is to move the stand into the music room and introduce your guitar to its posh new residence. 📏

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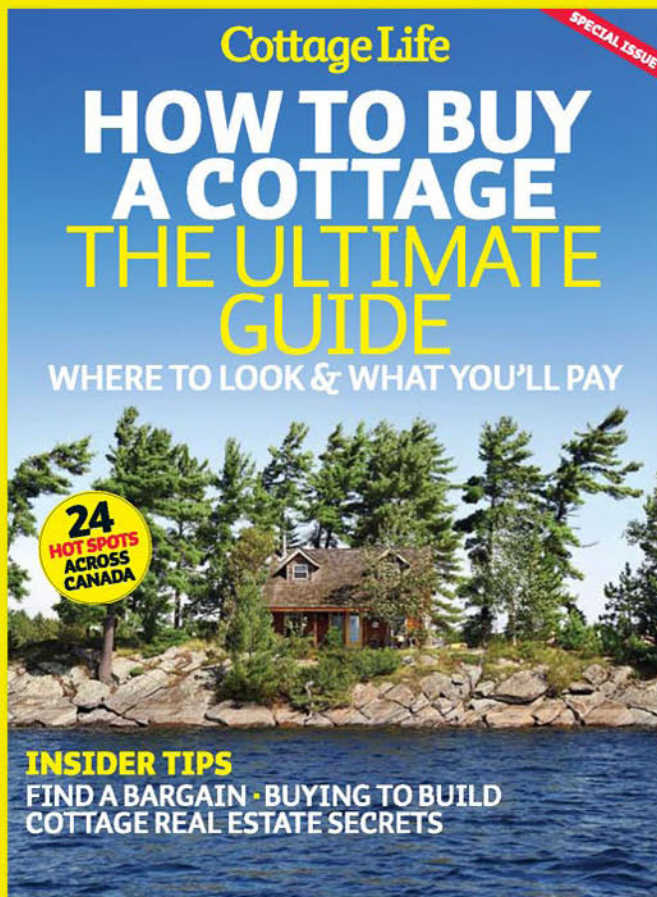
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Updated & Upgraded

Replacing your kitchen faucet is an easy DIY upgrade BY GARY RUDY

INSTALLING A SHINY new faucet is a simple kitchen upgrade that can be completed in an afternoon. The price range of faucets is wide, depending on features and finish, but look for a known name and an accompanying warranty to help to ensure peace of mind. Of course, special features and finishes also will affect the price. This model was finished in basic chrome (typically, the most economical finish) but featured a built-in retractable spray head, which was a big improvement over the builder's basic model that came with the new house.



1



2



3

STEP 1. Like most other plumbing projects, it's a good idea to shut off the water first. If you don't have under-sink shut-offs, you'll have to shut off the water at the main. It's also a good time to install under-sink shut-offs now, if you don't have them in place.

STEP 2. Begin by removing the old faucet (this one had no spray function, hence the replacement). Have a bucket and towel on hand to clean up any spills.

STEP 3. If you're installing the new faucet in a three-hole sink, you'll need to use the single-hole escutcheon (it comes with the faucet) to cover the old holes and provide support for the new single-hole faucet.



STEP 4. Guide the single-hole faucet down through the top. It's a good idea to have another set of hands to help to orient the faucet, keeping it properly aligned.



STEP 5. The faucet is secured to the countertop and sink with a layered arrangement of backing plates and a special washer.

STEP 6. The washer and backing plate are installed from below. Best give your back a stretch before contorting yourself to work under the sink.



STEP 7. Connect the water-supply lines. The faucet's braided lines are labelled to indicate which line to connect to the hot and cold supply lines.



STEP 8. Feed the braided sprayer hose through the faucet and into the area under the sink.



STEP 9. Attach the counterweight to the sprayer hose. The under-sink area has to be kept clear of snags or the sprayer won't extend and retract smoothly.



STEP 10. It's a good idea to flush water through the new plumbing before connecting the spray head. Completing this flushing process will help to eliminate small bits of debris that can clog the spray head. Once flushed, connect the faucet's retractable spray head to the hose. Now, shut off the faucet and inspect all the connections under the sink, as well as the connection to the spray head, for leaks. ☑

SHARK BITTEN



Shark Bite fittings require no solder nor even Teflon tape. They are a bit costly, somewhere around \$5 to \$8 per fitting; but, if you're not experienced with soldering fittings, they will make your work faster and eliminate potential leaks. I love to use them. The orange collar releases the lock and allows the fitting to be removed and reinstalled.

WATER HEATER

Skill Level

Novice     Expert



“Chances are, if you already have an electric model installed, your wiring and plumbing will be ready to handle a replacement”

GET INTO Hot Water

Installing an electric water heater is definitely within the DIYer's purview BY MICHEL ROY

NEED TO REPLACE your water heater? You could put in a gas-fired heater, but you'd need the help of a licensed gas fitter. Likewise, installing a high-efficiency, tankless water heater isn't exactly a DIY-level project. But putting in a standard electric water heater is. To do this, all you need is a basic grasp of plumbing and wiring. A relatively simple model with a six- to 10-year warranty will run you around \$500. But having it installed for you can more than double that price. If your local bylaws allow, do it yourself and save.



1. The first step is pulling out the old heater. Turn off the electricity breaker to the heater before beginning. Shut off the cold-water input valve or the main water supply, then drain the tank from the valve at the bottom. (A garden hose run to a lower location should do the trick.) Open a nearby hot-water faucet to let air into the system to drain the tank fully.

PHOTO TOP LEFT: ISTOCK; STEP-BY-STEP PHOTOGRAPHY: LYLE STAFFORD



2. Once the tank is drained, undo the plumbing, either by twisting off any unions or by cutting the existing pipes if your heater was sweated into place. Disconnect the wires in the heater's junction box. There should be two hot conductors and a groundwire. If your main water shut-off valve or the cold-water supply valve is not reliable, save this project for next weekend and spend this weekend repairing or replacing your main water shut-off.



3. Heaters are heavy, even when empty, so use a dolly to manoeuvre the old heater out of place. Don't forget to close the drain valve at the bottom of the tank, and watch out for dripping water if you need to pass through a finished space.



4. Heaters must be installed in a drain pan to minimize damage should a leak occur. Drain pans come with either a side or a bottom outlet. As the old heater had no pan, I installed one here. The outlet on this one drains to an unfinished crawl space below the floor. A hose clamped to the drain leads any leaked water to a drain in the crawl space.



5. After installing the new heater in the pan, reconnect the plumbing. Use either sweated or compression fittings on copper, but don't sweat (heat and join with solder) fittings right onto the tank's water input and output nipples. Plastic dielectric sleeves inside the nipples will be damaged by the heat. Instead, solder joints together as components on a bench, then thread these onto the nipples afterward.



6. Next, install a vacuum breaker valve on the cold-water input line. Build a T from fittings to install the valve onto. The bottom of the T is threaded onto the cold-water input nipple, the top leg gets the valve and the side leg is connected to the water supply. Food-safe pipe dope or Teflon tape will work to make threaded connections watertight.



7. You can use water heater-rated hoses to jump from the house plumbing to the tank. These hoses make the connections flexible and easy to disconnect the next time you want to replace the heater. When spinning on threaded connections, prevent torque damage to components or already tightened joints by using two wrenches.

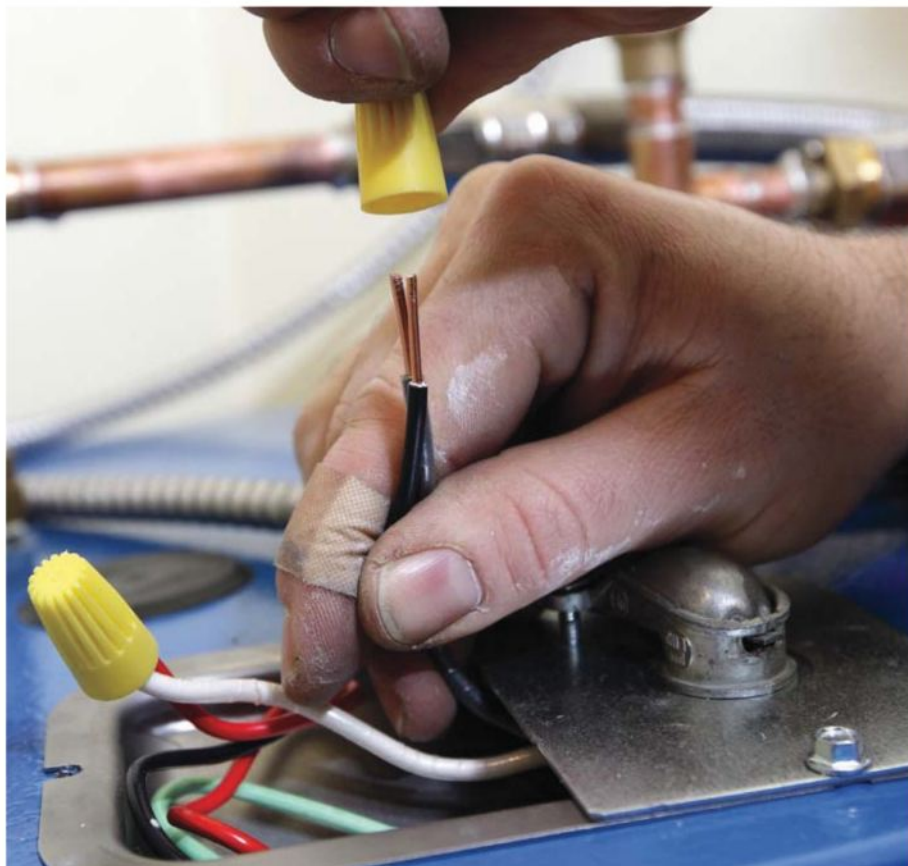


8. Some heaters come with a temperature- and pressure-relief valve pre-installed. If not, install one and attach a relief tube to the valve. In the event that pressure builds up too strongly in the heater, this valve will release it. The relief tube should direct the hot, pressurized water down into the drain pan.

SO, YOU BOUGHT A WATER HEATER...

Before purchasing your water heater, heed these rules:

- Heaters with longer warranties generally are designed for longer operating lives. Typically, they fail when the tank inside fails. When bringing a new heater home, don't lay it down on its side. Keep it upright in the box to avoid cracking the tank liner.
- Ensure your new heater will slip into the old space. Manufacturers' websites are pretty good at listing specs, including the dimensions of the units available. Chances are, if you already have an electric model installed, your wiring and plumbing will be ready to handle a replacement.
- Most heaters will be fed off a dedicated 240-volt, 30-amp, double-pole circuit. A proper installation requires three valves: a temperature- and pressure-relief valve on the heater, a cold-water shut-off valve leading to the tank and a vacuum breaker valve at a point higher than the tank itself.



9. After reconnecting the pipes, it's time to do the wiring. Use properly sized marrettes to make the connections in the heater's junction box and use an approved cable clamp to secure the cable to the box.

To fill your tank, leave a nearby hot-water faucet open, then turn the water supply back on. Air will be bled through the faucet and the tank should be full when water begins to run from the faucet. Only after the tank is full should you turn on the power to the water heater. Turning the elements on in an empty tank will damage them. Assuming all went well and the water in the heater unit turns warm, it's time to hit the showers. 

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**Paul's
Place**

BY PAUL RUSH

“My great skill is in getting things wrong. And then writing about them.”



A History of Good Intentions

Reminiscing about projects gone wrong

MANY PEOPLE HAVE great skill when it comes to building decks, erecting houses, carving wood, crafting tables. But not me. My great skill is in getting things wrong. And then writing about them.

Throughout these pages, I am the man who, lacking a car, tried to transport three sheets of drywall balanced on his bicycle. I also am the man, still carless, who was seen walking five long blocks with a specially cut sheet of $\frac{3}{4}$ " plywood balanced on his head. And, later that day, seen with another because I had mismeasured the first.

Or, you might remember the adventure in which we built an armoire that somehow grew almost as big as the room in which we intended to put it. (Yes, I cut it up into boxes. Big ones.)

I always felt my tree-felling was better than my measuring, but I recall cutting a white pine by the power line and watching in horror as the tree simply sat back on the saw and waited for the wind. (My wife got me out of that one by dashing into town and bringing back a come-along to haul the tree in the right direction.)

Speaking of boats, I am the man who commuted to his island home by paddling a battered fibreglass canoe over a narrow stretch of water. In November. The dangerous part being that the canoe, lacking thwarts, was held together in the centre by a bungee cord.

Cords have played a role in my life. I think it was when I lived on that island that the accelerator of my ancient car kept jamming at full throttle. I saved the day—so to speak—by fastening a cord around the gas pedal so I could pull it up in moments of stress.

Equally inept is the summer at a different cottage, when I tried to shore up my septic bed with 12 dump-truck loads of bush dirt. The trucks couldn't back over the tile bed, so I started moving dirt with a wheelbarrow on which I had stuck a temporary wheel that flattened under Load 1. I tried moving dirt in small pails before I gave in and hired a front-end loader.

Surely, Paul, you say, there must have been a few successes. Well, I have built some decent walls and, 14 years ago, I started carving Noah's ark animals for my grandchildren. I'm up to five.

I once installed a window that leaks only in heavy rain, and I have built any number of bookshelves. Although I must remind you of my first: I cut two sides and four shelves out of 1x8 pine; I took 16 nails and nailed it all together, then stood back and admired it.

When I put my dictionary on the top shelf, the whole structure (lacking braces) subsided into a graceful parallelogram.

I do believe it was an omen. Thanks. ▀

ILLUSTRATION: STEPHEN MACEACHERN

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