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ESSENTIAL HAND TOOLS
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35th ANNIVERSARY
CANADIAN Home workshop

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OCTOBER 2012 $5.95

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CANADIAN Home workshop

CONTENTS

OCTOBER 2012

FEATURES

For more projects, tips & techniques, visit us at
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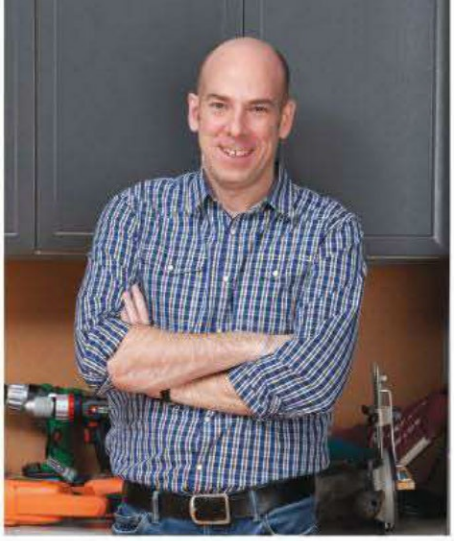
DEPARTMENTS

Shop Talk New tool reviews, time-saving tips, expert how-to advice and workshop news

COVER PHOTOGRAPHY: JUAN LUNA



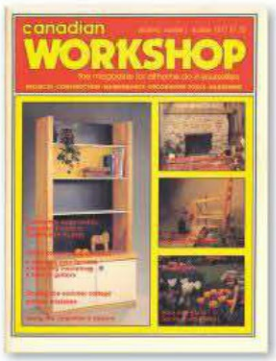
Editor's Notebook

BY **DOUGLAS THOMSON**

> It's not just your shop that has evolved in the past 35 years: how-to advice is more accessible than ever too

We've Come a **Long Way**

Your workshop is better equipped and more efficient than ever



Volume 1, Issue 1. 1977

As we put this issue of *Canadian Home Workshop* together, I was reminded of how much the world of doing-it-yourself has changed since the first issue of the magazine was printed in 1977.

Most workshoppers today have access to a wide array of high-powered tools (both corded and cordless) and modern building materials that are cheaper, safer and easier to use than ever before.

BETTER TOOLS AND MODERN MATERIALS

Not only are tools better engineered, they're also considerably cheaper. After all, it wasn't that long ago that professionals were the only ones who could justify the investment in the highest-quality tools. Tablesaws, reciprocating saws and rotary hammers just weren't available at your local big-box hardware store 35 years ago. (In fact, back then, there was no such thing as a big-box hardware store). If you wanted pro-grade tools, you shopped where the pros shopped—probably at some hard-to-find store that was in an industrial area and was most likely staffed by someone who made it obvious that they really wanted to deal only with pros.

A big part of this change is simply the pace of innovation, but manufacturers also have been forced to adapt because consumer access has made the tool business ultra-competitive.

The selection of building materials that are available to the do-it-yourselfer are better than ever too. Materials such as MDF, SIPs, spray foam, pressure-treated and indoor "blue" wood, and water-based finishes—it's a long list. For the most part, these materials are easier to use and offer vastly superior performance compared with what was available to us back in 1977.

IT'S A GREAT TIME TO BE A HOME WORKSHOPPER

And speaking of great things…check out the anniversary tool chest project featured on the cover of this issue. This iconic cabinet was built by our longtime contributor, Gary Walchuk, to commemorate the 35th anniversary of *Canadian Home Workshop*—and it's a spectacular accomplishment. We've included full plans and how-to instructions from Walchuk to help you build your own. Feeling lucky? Complete the ballot on page 29 for your chance to win the cabinet, plus $1,000 to spend on tools!

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CANADIAN
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OCTOBER 2012 VOLUME 36, NUMBER 1

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Subscription inquiries
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Toronto (905) 946-0406
Email: subscriptions@canadianhomeworkshop.com

Editorial office
54 St. Patrick St., Toronto, ON M5T 1V1
Telephone: (416) 599-2000; Fax: (416) 599-0500
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How Do You Create Endless Cabinet Door Making Possibilities?

Profile Shown:
Round Over
(#99-760)

Patented design allows for multiple rail & stile project combinations

With Freud's New Premier Adjustable Rail & Stile System

Now with Freud's new, patented Premier Adjustable Rail and Stile router bit system, you are able to build any style of cabinet door in a wide range of door thicknesses and sizes! This extremely easy-to-use **solution gives you unlimited creative** freedom, and solves the long-standing limitations of existing frame and panel door construction.

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Four profiles are available; **Round Over** (#99-760), **Ogee** (#99-761), **Round Over Bead** (#99-763), and **Bevel** (#99-764).

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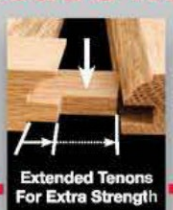

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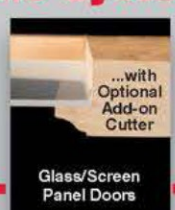

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Cover to **Cover**

MY HUSBAND AND I have subscribed to your magazine for a while now. We have done many home improvements, furniture projects and small woodworking projects over the years. We have enjoyed your magazine, but I have to say that the September issue has been my favourite thus far. Although my husband generally reads every article top to bottom, being a busy mom of five children limits my reading time considerably. However, I did make the time to read absolutely everything in this issue. It has such a great combination of articles, projects and tool talk! It's very balanced! Keep up the great work!

Amanda Pasma
Beachville, Ont.

LUCKY KIDS!

I very much enjoyed reading about the "kids' cave" in the Summer 2012 issue, so much so that I built one for my two grandchildren.

My construction is slightly different. I used 2x4 framing, bevel siding and a shingle roof. The size was increased by 2' wider to 6' x 8', helping to stabilize the structure as swings were added. A sandbox also was incorporated. But as you can see, the concept changed very little. The kids love it.

I have long been a subscriber to your magazine and will continue to appreciate the great enjoyment and valuable information it brings. No doubt, it's the best magazine on the market.

Garry Newton
Midland, Ont.

GO FIGURE

This is regarding the report on Sara Robinson's spalted wood products ("Force of Nature," Summer 2012). I have been making small projects of spalted maple for a few years.

Spalted maple appears in branches that fall from my century-old sugar maple trees. (I cut down no live wood.) It appears as beautiful, random streaks of various colours. I cut the dead branches with an axe or chain saw, and then bandsaw the figured pieces into 1½"-thick slabs. They must be dried for the better part of a year or they will warp. Then, I resaw them, finishing up on the tablesaw for a smoother surface.

The tissue box covers (above) are trimmed with black cherry obtained from a wood-recycling outlet. Their finish is three coats of Varathane.

The gavel head is made from spalted maple, and the handle and the sacrificial base are made from white ash. The finish is rubbed and dried tung oil.

Charles Hooker
Orangeville, Ont.

Online Poll

canadianhomeworkshop.com

Which of these iconic woodworking projects have you built?

47% Workbench
22% Rocking horse
16% Blanket box
9% Toolbox
6% Harvest table

Social Time

What our readers are up to!

@CHWMag: Would you ever consider installing a touch-activated faucet?
@huhboy I have, I did and it's awesome. I'm also a public health inspector by profession, so it's really no surprise I did. #fancyfaucet

@CHWMag: Anyone out there inspired to build some new outdoor projects after all this amazing weather we've been having?
@joejoe1950 I am planning an arbour made from cedar :-)

Lawrence Winterburn, via Facebook: Busy busy—working on a design for a 12' obelisk for roses... looks like the Eiffel Tower.

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Old School

This drill may look old, but it's actually a decade younger than *Canadian Home Workshop* (which turns the big 3-5 this issue). Everything about this Black and Decker 7204 is nostalgic, right down to its olive green shell. And, for many of our readers, the tool sitting on your workbench the day you received your first issue of *CHW* probably looked a lot like this classic.

PHOTOGRAPHY BY JUAN LUNA

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

askapro

Steve Maxwell

Who better to be our top pro for the 35th anniversary issue of *Canadian Home Workshop* than our very own technical editor. Since 1990, Steve Maxwell has been helping to fill our pages with the best advice and knowledge on woodworking and home improvement. He also writes a regular column in the *Toronto Star*, contributes how-to articles to magazines across North America and is co-author of *The Complete Root Cellar Book*, along with Jennifer MacKenzie.

FAVOURITE TASK Building with stone
LEAST FAVOURITE TASK Sanding

QUESTION FOR STEVE MAXWELL

How should I insulate the unfinished basement of my house? The walls are covered in fibreglass batts encased in plastic and held in place with steel bands nailed to the concrete.

Ken Middleton
Wasaga Beach, Ont.

Ask five pros this question and you'll probably get 10 answers. That's because there are a few different ways to succeed and many more ways that aren't the best options. Substandard energy performance and poor indoor air quality

+CONTINUED ON PAGE 14

PHOTO: ROGER YIP; MORRIS CHAIR: BERT KLASSEN

Testimony

Stick-to-it-iveness

Painter's tape that promises crisp, clean edges

FROGTAPE
A time-saving paint tool that's worth the price tag

Price: $8 to $13

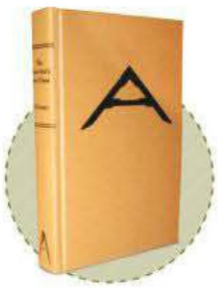
I'M NOT USUALLY one to buy the latest gimmicky home-improvement products. But I have to admit to being seduced by FrogTape recently. FrogTape is more expensive than other low-tack tapes, but its promise to deliver crisp, bleed-free edges made me think it was worth a try. And it was.

FrogTape is treated with a reactive gelling agent that essentially solidifies when it touches latex paint. After masking out almost an entire roll, I had about 1½" of cumulative paint bleeds, mostly in tight areas where tape contact wasn't perfect. It worked very well, and saved a lot of touch-up time, making it worth the extra cost.

FrogTape comes in a variety of widths and has a handy plastic case for keeping the edges dust-free. For more information, visit **frogtape.com**.

—Michel Roy

Reviewed



SUBVERSION AND SAWDUST

Writer advocates a revolution in the shop

DON'T LET THE "anarchist" in *The Anarchist's Tool Chest* (Lost Art, leevalley.com, $35) throw you. Christopher Schwarz of *Popular Woodworking* is not writing about Molotov cocktail-chucking woodworkers. The "anarchist" is meant to evoke ideas of independence, resisting material excess and finding fulfilment through real work.

Schwarz's book mixes his philosophy of woodworking and instruction on how to build a tool chest. He also charts his journey from cluttered shop to a more pleasant one that has only the necessary implements. His discussion about which tools he kept and which he discarded will help anyone planning a workspace.

Schwarz's tone is lively and opinionated. He writes that most sliding bevel squares "suck eggs." Later, he writes: "So many woodworkers are such cheap wieners that they end up buying tools from discounters that have no track record." But he's so well informed that all his ideas are worth exploring. His book is a good instruction manual and a manifesto for the subversive art of woodworking. **—Matthew Pioro**

An Anti-Establishment Woodworker

While William Morris, creator of the Morris chair, did not identify himself as an anarchist, he did work alongside many of them (as well as socialists and communists) in the U.K.'s Socialist League from roughly 1885 to 1890.

Ditch the Tape

Improve accuracy by leaving the tape measure on your tool belt

BY **MATTHEW PIORO**

RELYING TOO HEAVILY on a tape measure can actually make your projects more inaccurate. Go ahead. Mark 1" with a tape and pencil. Do it again. And again. It doesn't matter how steady your hand is; there will be a slight variation among the marks. Throughout the building process of a project, the influence of these little inaccuracies grow and grow. To stay ahead of this inaccuracy creep, the best practice is to grab physical representations of dimensions. If you are going to be inaccurate, at least be consistent. Here are some tools that will help:

MARKING GAUGE The tool for making mortise-and-tenon joinery. Set the tenon length on the gauge and mark it on all the necessary workpieces. Next, mark the depth of the shoulders; and then, the cheeks. As long as you are steady with the backsaw, all your tenons will be the same.

COMBINATION SQUARE The combination square can almost sit in for a marking gauge. Set the square to repeat a particular length and mark off from the end of the ruler. Or, set the square to gauge the depth of a mortise. If you insert, say, 1" of ruler into a mortise and the adjustable straightedge sits flush with the workpiece end, you have your depth.

CHISEL Need a 3/4"-wide mortise? Easy. Grab a 3/4"-wide chisel. Done.

STORY STICK When you want consistent spacing between fence boards, make a story stick, a piece of board that is as long as the width of the gap you need. Actually, cut two—one for spacing the fence board at the top stringer and one at the bottom. Get a friend to hold the story sticks against an affixed board while you attach the next one.

YOUR TRUCK This trick comes to us from our technical editor, Steve Maxwell. When you are cutting long lengths of 2x4, you can set your mitre saw and stand the right distance from your truck, using your vehicle as a stop block. Use this technique only if your truck is a true work vehicle; otherwise, you might scratch your trophy.

FOLDING RULER A proper folding ruler has a slide-out rule in its first leaf. Within a box, fold out just enough leaves and slide out the rule, for a physical representation of that dimension.

Testimony

Graded on a Curve

ONE OF THE more difficult things about clamping up a deep case piece is trying to get adequate clamping pressure in the middle of a wide joint. While I've used straight, wooden cauls for years (sometimes, with a few business cards strategically placed in the middle to increase the clamping pressure), I recently tested curved cauls made by Bowclamp. They really work! Check them out at **bowclamp.com**. **—Hendrik Varju**

happen more often than they should because standard basement-finishing practices aren't all that good.

What you have is the builder's attempt to meet the building code—and it's worse than nothing: any water that gets inside the encapsulated fibreglass is going to cause problems. Blame deficient building codes as you trash all that fibreglass.

Next, forget any kind of fibre-based insulation or stud-frame wall. This arrangement is unnecessarily complicated and vulnerable to mould growth. Instead, insulate with one of the basement systems that combine sheets of extruded polystyrene foam with some sort of wallboard-anchoring system. There are several systems available, including one from Owens Corning and my current favourite from Canadian-based Barricade. They're made of waferboard that's factory-bonded to 2"-thick sheets of foam, providing a wood-based interior surface that accepts drywall screws anywhere.

Be sure to use some kind of sealed, closed-cell foam to insulate the area where the ends of floor joists meet exterior walls. These spaces are typically stuffed with fibreglass and prone to mould growth on the outside face.

—Steve Maxwell

+CONTINUED ON PAGE 15

TAPE MEASURE: MALERAPASO/ISTOCK; BOWCLAMP: LEE VALLEY

TILE REMOVAL

What is the easiest way to remove old floor tiles and provide a solid bed for the new ones?

Suzanne Farago
Morin-Heights, Que.

The substrate will determine your plan of attack. If your tiles are attached to an old-fashioned mortar bed, there may be tarpaper below it and it all may come up easily after working your way to the bottom. If the tiles are adhered with thinset directly to cementboard that was screwed to a wooden subfloor, then try to pry the cementboard off the subfloor.

Cut up the old flooring into more manageable pieces—along the grout lines, down to the level you want to remove. Don't create a cloud of silica-laden dust—use a handheld, water-cooled diamond tile saw or a reciprocating saw held at a shallow angle. Other tools you need are sledgehammers (a long-handled sledge and a short-handled club hammer) and prybars (the longer, the better for more leverage). Wear safety glasses and a face shield.

Michel Roy is a pro contractor.

MAIL
ASK A PRO, *Canadian Home Workshop*,
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ATCA PHOTOS: MARGOT PENGELLY

Tool Time Capsule

A passionate group of collectors aim to educate about old tools

IT MAY BE called the Atlantic Tool Collectors' Association, but you don't need to live in the Maritimes to belong to this group of vintage-tool enthusiasts. Formed in 1994, this registered non-profit is 85 members strong, with some living in the U.S. and other parts of Canada. The group seeks to educate people about the history and preservation of antique tools and their usage. Two annual meetings in Nova Scotia provide an opportunity for members to showcase their collections, swap and sell tools, and watch professional demonstrations. The rest of the year, the group attends various shows and keep in touch via four newsletters compiled by members Barb and Art Keeble with input from various members.

Each of the Atlantic provinces has a unique heritage, resulting in different types of tools that were left behind by various tradesmen who settled the land. These include hand tools imported during the Industrial Revolution (and earlier) and locally made specimens. Part of the annual meeting includes trying to identify some of these mysterious "whatsits."

Most of all, these collectors hope to inspire a new generation to keep the Maritimes' tool history alive. Visit **tallships.ca/atlantictoolcollectors** for more information.

—Tara Nolan

It's time to play...

...Tool or Klingon Weapon?

SOME TOOLS LOOK nasty, like weapons created by a fictitious warrior race from another planet. Test your skills of tool identification below:

a) A tire-chain hook, wire twist and prybar (among others) make the Trucker's Friend a handy multitool for big-rig drivers. But you might want to avoid making said trucker angry.

b) The bat'leth is also known as the "sword of honour" and is regarded as the most popular Klingon weapon.

c) The Stanley FUBAR demolition bar has a chisel, prying end and two nail pullers. It'll mess up old walls real bad.

Answers: 1. c); 2. a); 3. b)

He Knows Best

Bryan Baeumler on renos, demos and the *DeGrassi* series

BY **MATTHEW PIORO**

fig. 1

fig. 2

fig. 3

ON BRYAN BAEUMLER'S show, *Leave It to Bryan*, the star contractor spent a season not giving homeowners the renovations they wanted but the renos they needed.

"Most homeowners know what they need, but they are focused on what they want," Baeumler says. "For example, Dad wants a man cave, but the kitchen is from the '40s, he has six kids that need to eat and Mom spends hours a day in that room."

The reno psychiatrist is back for a second season of *Leave It to Bryan*. I caught up with Baeumler at a house he was renovating on DeGrassi Street in Toronto to ask him a few questions.

Matthew Pioro: What is the worst job you had to fix this season?

Bryan Baeumler: We had to rebrick the entire back of a house so it wouldn't collapse. A "handyman" cut out a doorway in a brick wall without putting up the proper support. At some point, the wall would have buckled. But you couldn't see the damage because it was covered with board and batten.

MP: Other than big fixes, what is the average cost of the renos you do on the show?

BB: Between $20,000 and $40,000.

MP: Have you ever had to undo work? Or had one of your renovation decisions overturned?

BB: No. Because the people we're building for usually have multiple projects to do. I think getting one project off of that list is a relief. We get a little pushback, but homeowners know in the back of their minds what's needed.

MP: What can homeowners do to help a contractor?

BB: They should get out of the way: clear out belongings and make it easy for the contractor to work. I've been asked to finish half a basement, then move everything over and then finish the last half. And, they shouldn't micromanage the work. Check in, for sure. There's monitoring progress, but then there's sitting on someone's shoulder. It's about finding a healthy balance and about communication.

MP: OK. Time to fill in the blanks. As a client, you can be cheap, but don't be...

BB: ...cheap with me.

MP: You can be demanding, but don't be...

BB: ...rude.

MP: What trade or skill do you wish you could do better?

BB: Hanging wallpaper (*fig. 1*). I make creases in the paper and I get glue all over me. It's one thing I'm not very graceful at, no matter how much editing we do.

MP: What was your alternative career choice?

BB: There was a time I wanted to be a marine biologist because of Flipper (*fig. 2*). But, really, I could have have been a heavy-equipment operator. Right now, I have an excavator and a bucket loader in my backyard, so I'm in heaven. I dug a trench last night after dinner. Every scoop, you never know what you're going to find. It's like having a giant sandbox. *[He pulls up a picture of the excavator and bucket loader on his smartphone.]*

MP: OK. That's very cool. Now, we're on DeGrassi Street, so I have to ask: what was your favourite character from the *DeGrassi* series?

BB: Snake (*fig. 3*). That's the only one I can remember.

MP: This issue marks *CHW*'s 35th anniversary. In 1977, you were three years old. What handy work were you doing at the time?

BB: Learning demolition skills. I spent the next 10 or 12 years honing those skills.

The second season of Leave It to Bryan *is on HGTV Thursdays at 10 p.m.*

WALLPAPER: ISTOCK

No one thinks about attic insulation, until you're reminded why you should.

In winter, you can easily spot a poorly insulated attic by a snowless roof. It usually means escaping heat and expensive utility bills.

To increase your home comfort and save energy year-round, start by reducing heat loss through your attic, the most cost-effective place to add insulation. And the easiest way to top up your attic insulation is with **new Roxul RockFill® loose-fill insulation.** It's easy to apply over existing insulation, and no blowing machinery required.

So when it's time to insulate, choose Roxul RockFill Attic Insulation.

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Toolbox
BY **STEVE MAXWELL**

> One thing I know for sure is that I'll never run out of topics. Woodworking is too full of fascinating challenges for that ever to happen

The **Best** of **Toolbox**

Practical woodworking information for more than 20 years

TOOLBOX ADDRESSES common challenges, such as sanding wood, milling lumber (left) and sharpening tools

I'VE SPENT ALMOST half my life writing Toolbox columns for every issue of *Canadian Home Workshop* since 1992, and although I've enjoyed creating every one of them, a handful of topics are special. They cover the most important ideas I'm asked about whenever enthusiastic woodworkers come to me for advice on how to develop their skills. After writing more than 175 Toolbox columns so far, the essentials you'll find here are some of the most important.

MASTER YOUR SHARPENING SKILLS

I'll always be grateful that *Canadian Workshop* magazine gave me my start as a writer. (The *Canadian Home Workshop* name wouldn't come for another six years.) My first article appeared four years before I began writing my Toolbox column; it taught a method for quickly sharpening chisels, plane irons and carving tools using a buffing wheel. I've since covered the topic again several times in Toolbox because it's so valuable. Instead of rubbing tools back and forth on an abrasive stone by hand, the process involves holding tools steady against a spinning felt wheel that's charged with a fine abrasive. It takes only about 60 seconds to transform a dull but properly ground tool into an astonishingly sharp implement. Done correctly, the edge is so keen, it's scary. Quickly creating cutting edges that are sharper than razor blades is still a fundamental skill for doing the best work with wood. And the buffing wheel lets it happen in minimal time.

SLOW DOWN WHEN SANDING WOOD

Woodworking success is about doing the right things, in the right order, in the right way. That's why successful projects are nothing more than the total of a series of smaller successes that build upon each other. Sanding is a perfect example of this. Starting with coarse sandpaper, then using progressively finer grits, seems obvious enough in theory but is often done poorly. Over the years, I've devoted several Toolbox columns to the sanding method I find works well. Start with a 100- or 120-grit abrasive in a belt sander, then move to 120-grit in a half-sheet sander. A quarter-sheet finishing sander with a 180-grit abrasive gets you almost all the way, with a final hand-sanding in the direction of the grain using 220-grit paper.

TWEAK YOUR TOOLS

Every successful woodworker needs to be part mechanic. This is not just true today, with our workshops being filled with power tools, either. Mechanical skills always have been an important part of woodworking. Just try coaxing an antique wooden plough plane to cut properly, and you'll see what I mean. All this is why I've devoted many Toolbox columns to tool adjustment over the years. What are the most important ones? There are five: get your jointer fence square to the bed; set the 90° angle stop on your tablesaw so it's accurate; tweak your mitre gauge or cross-cut sled so it cuts absolutely square; wax the bed of your thickness planer; adjust your chopsaw so it cuts 90° in both mitre and bevel directions.

INVEST FOR THE LONG TERM

Choosing woodworking tools and gear is something I've often covered in Toolbox, and the process is a lot like hitting someone with a snowball as they're running. Unless you aim

PHOTO: ROBERT MAXWELL

way ahead, you'll always miss. Your equipment and tool needs as a woodworker are always moving forward too, especially if you're a beginner. That's why you should always buy better than you think you need. Much better. I've never regretted the great (and sometimes costly) tools I've invested in. My only tool regrets have come when my snowball fell way behind the results I was aiming at. You need to buy for the ultimate woodworker you want to become, not the woodworker you are now. Also—and this is crucial—always let actual needs guide your tool investments. Struggle for a while with a process or situation, then use the insights you gain to invest in gear that actually meets the needs you face.

BEWARE OF ENTHUSIASM

If it weren't for enthusiasm, none of us would haul ourselves off the couch and make good things happen in the workshop. That's why enthusiasm is essential. But enthusiasm also has a downside: it can get the better of you in subtle ways, especially when things aren't going well in the shop.

Let's say you run out of the ideal size of wood screws. Don't let your enthusiasm to complete the project tempt you to make do with what you have on hand. The same advice applies when the glue bottle runs out, a board splits annoyingly or you realize that you have to change the design for a project that's partially built. While enthusiasm is useful, don't let it be your guiding principle. The pursuit of quality is much more important. Learn to stop, back up, wait and then, move forward.

I plan to keep writing Toolbox columns as long as there are people who want to learn to make good things happen with wood. One thing is for sure: I'll never run out of topics. Woodworking is too full of fascinating challenges for that ever to happen.

***Steve Maxwell** is a woodworking expert and CHW's technical editor.*


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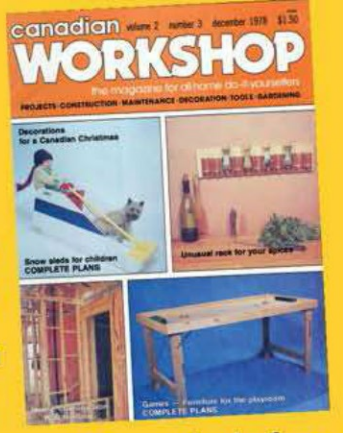

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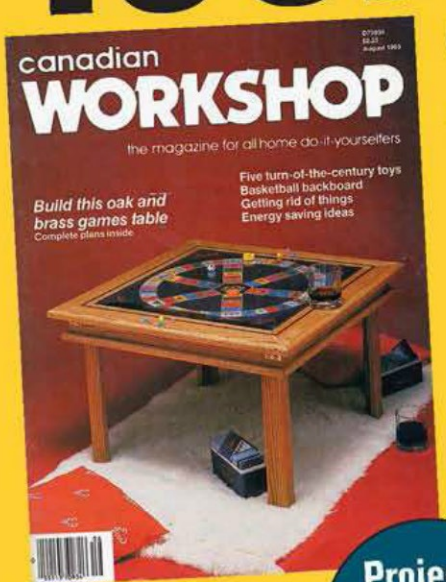

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A favourite CHW *builder gives an anniversary gift* BY **GARY WALCHUK**

LIKE MOST WOODWORKERS, I enjoy a challenge in the shop. The hard work is all worthwhile when you see your efforts come together for the final result: a great project you can be proud of. • I was challenged to come up with a design for a tool cabinet to commemorate the 35th anniversary of *Canadian Home Workshop* magazine. Take on the challenge of building this tool cabinet yourself and you'll be proud of the results too.

This project is a great combination of traditional looks and modern methods. The overall appearance of wood grain, design and colour may be considered old school, but the use of biscuit and router joinery, plywood and full-extension metal slides make for a more modern, updated project.

PHOTOGRAPHY: JUAN LUNA; TOOLS PROVIDED BY LEE VALLEY

"Because this project is my gift to *CHW* readers, I now have to build a tool cabinet for myself!"

GREAT TOOLS deserve great storage. Quartersawn white oak and a tasteful design provide elegant protection

WIN THIS TOOL CHEST

We have the most loyal readers in Canada. As a special thank you, we are giving you the chance to win this Gary Walchuk project. See details on pg 29

TAKE YOUR TIME

WHEN YOU DECIDE to start building a project like this one, don't just grab some wood and power up your tablesaw. You need to do some thinking and planning before making sawdust. Success takes care.

This project is an exercise in accurate cutting and the best workmanship you can possibly muster. That said, it's also a perfect project to allow the wood itself to be the star. Many hours were spent planing stock, then sorting through all the boards to get just the right piece in just the right place. If you simply cut and glue at random, the results won't be nearly as nice.

I took the time to plan every move on this project, even the last one: the finish. I spent at least half a day mixing various magic formulations to get the perfect stain colour and effect. I finally got it with two coats of Old Masters Early American wiping stain and a few coats of semi-gloss Minwax polyurethane on top. It's an easy finish to use, but it gave me that warm, heritage look I was after.

If you are really up for a challenge, use these plans as a starting point to make your own custom tool cabinet. You can add your own compartments to make room for favourite tools, or add dividers to the drawers to stay extra-organized.

You Will Need

PART	MATERIAL	SIZE (T x W x L*)	QTY.
Side stiles	white oak	3/4" x 3 1/2" x 21"	4
Bottom rails	white oak	3/4" x 4" x 11 3/4"	2
Top rails	white oak	3/4" x 3" x 11 3/4"	2
Centre supports	white oak	3/4" x 2" x 14 1/4"	2
Panels	white oak	3/8" x 5 1/8" x 14 1/8"	4
Long stretcher frame rails	red oak	3/4" x 2" x 32 1/2"	4
Short stretcher frame stiles	red oak	3/4" x 3" x 12 3/4"	6
Front stiles	white oak	3/4" x 2" x 21"	2
Centre support	plywood	3/4" x 7 1/2" x 16 1/8"	1
Slide support front edge	white oak	3/4" x 3/4" x 7 1/2"	1
Front edging	white oak	3/4" x 3/4" x 30"	2
Top	white oak	3/4" x 19" x 36 1/2"	1
Side slide supports	plywood	3/4" x 16 3/4" x 17"	2
Spacers	red oak	1/2" x 1 1/2" x 17"	4
Base front	white oak	3/4" x 2 1/2" x 32 1/2"	1
Back	plywood	1/2" x 20" x 32 1/2"	1
Drawer faces	white oak	5/8" x 2 7/16" x 14 15/16"	6
	white oak	5/8" x 2 11/16" x 29 7/8"	1
	white oak	5/8" x 2 15/16" x 29 7/8"	1
	white oak	5/8" x 3 11/16" x 29 7/8"	1
Drawer boxes (outer dimensions)		13 5/8" (w) x 16" (l) x 2 1/4" (h)	6
		29" x 16" x 2 1/2"	1
		29" x 16" x 2 3/4"	1
		29" x 16" x 3 1/2"	1
Drawer slides	(Lee Valley #02K42.16)		9 pairs
Drawer knobs	(Lee Valley #02W14.23)		12

*Length indicates grain direction

RECOMMENDED TOOLS

Planer, tablesaw, table-mounted router, biscuit joiner, drill driver, bandsaw

SIDE STEP

I used quartersawn oak for this project, since the ray-fleck grain pattern looks so good. Any kind of hardwood will deliver solid results, but quartersawn oak is king in my book. Once you have your boards chosen, planed down to ¾"-thick, and ready for the tablesaw, begin cutting individual parts following the materials list and plans.

Start with the two side assemblies. Cut side stiles, bottom and top rails, centre supports and panels to the exact sizes listed. Lay these parts on a flat surface as they will appear when the assemblies are complete.

Mount a ¼"-diameter straight bit into a table-mounted router, then mill panel dados along the inside edges of the stiles, stopping ¾" from the bottom ends. The inner edges of the rails also need panel dados, as well as both edges of the centre supports. Make all these dados just a touch deeper than ⅜".

Change the router bit to a ¾"-diameter or larger straight bit, then set the bit height and fence to cut ⅜"-long x ¼"-thick tenons at the ends of all rails and the centre supports. The tenons on the bottom rail each need a ¼"-deep shoulder cut along their bottom edges.

There is one last router setup needed, and this time it's for the panels. Rout a ⅛"-deep x ⅜"-wide rabbet all along the perimeter of the back faces of all four panels. The

➔ PLANS FOR TOOL CABINET

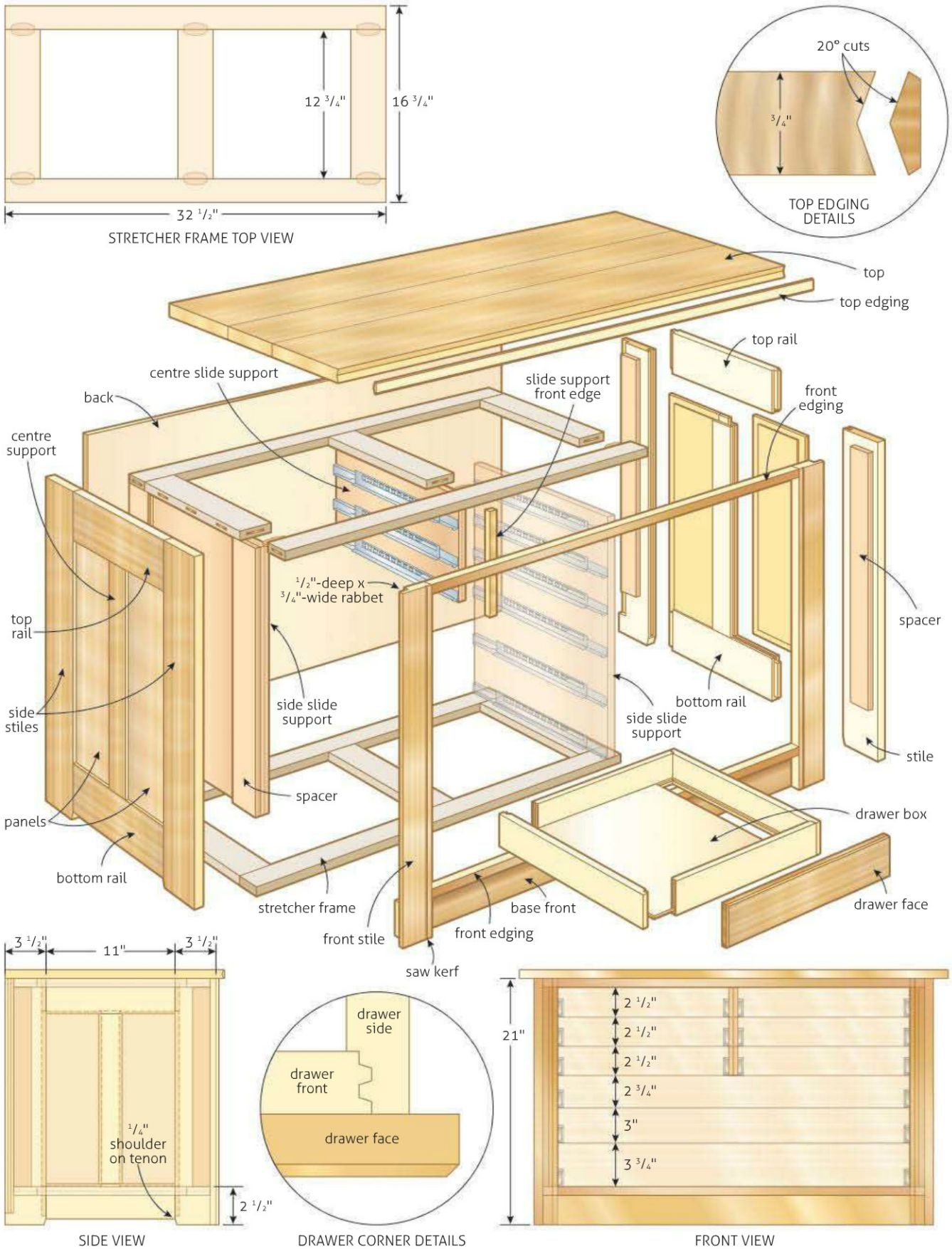

ILLUSTRATION: LEN CHURCHILL

goal is to achieve ¼"-thick panel edges that fit into frame dados, overcoming the fact that the panels are ⅜" thick. The fit between panels and dados should be smooth—neither too tight nor too loose.

Dry-fit the stiles, rails and panels that form the sides, just to be completely sure everything fits together. The overall size of each assembled side should be 18" wide, 21" high, with the bottom edge of the bottom rail ½" up from the bottom ends of the stiles. When you have a perfect fit, begin assembly by gluing and clamping the tenon ends of the centre support to the dados in the top and bottom rails. Be sure the centre supports are centred and clamped truly square before setting the subassemblies aside to dry.

Next, apply glue to the tenons of the rails and to the dados of the stiles—but only where the tenons meet and join to the dados. The panels must not be glued; they are contained within the dados and are free-floating. Slide the panels in place, then join the stiles to the rails and clamp until the glue has dried. When the glue is firm, cut the bottom inside corners of the stiles to 20° angles to form the foot pattern.

Complete the sides by removing the excess glue, then sand the frameworks flat and smooth.

SPAN THE SIDES

Create the body of the cabinet by joining the two sides to the two stretcher frames. To make these frames, cut long and short stretcher frame parts from hardwood, using #20 biscuits to join them, as shown in the plans. Each frame should measure 16¾" x 32½", with a 3"-wide short stretcher piece centred within the frame. Use glue and clamps to bring all stretcher frame parts together, then check that everything is flat and square before setting them aside to dry.

The stretcher frames are joined to the inside surface of the sides with five #20 biscuits per joint. The top frame is flush with the top edge of the sides, while the bottom frame is 1¾" up from the bottom ends of the sides. There should be slightly more than 17" between both stretcher frames when you're done. Note that the front edges of the stretcher frames are ½" in from the front edges of the sides, with ¾" between from the back edges of the sides to the back edges of the frames. Cut slots for biscuit joinery, but do not glue and clamp yet. Just dry-fit and test for accuracy at this point.

Cut the cabinet's front stiles to size, including a ⅛"-deep tablesaw kerf into the front face of each one, ⅜" in from the inside edges. This is just a little visual detail for show. Next, rout a ¾"-wide x ½"-deep rabbet along the rear outer faces of the stiles to fit onto the front edges of the sides. Glue and clamp the stiles to the sides, then give a final sanding to the wood. Rout a 3/32" chamfer along the outside perimeter of the front stiles, with the exception of the top edges—leave those square.

Next is the critical step of assembling the main body of the cabinet. Do this by applying glue, biscuits and plenty of clamps to secure the stretcher frames to the sides. Immediately after clamping each joint, drill a counterbored hole for a 2½" screw through the sides of the outer surface, to strengthen

builder's tip

When assembling the cabinet, join one end of each stretcher frame to one side first, clamp square until the glue dried, then apply the opposite side a few hours later

CLAMP CLOSED

CLAMPS DO MORE than just hold pieces of wood together while you wait for the glue to dry. Proper clamping means applying the right amount of pressure, in just the right way, over a range of spans, corners and joints. Last time I counted, I had eight different kinds of clamps in my shop, including pipe clamps, wooden handscrews, spring clamps, C-clamps, Quick-Grips, F-clamps, strap clamps and mitre clips. Each clamp is suited for different jobs. Pipe clamps are best for large applications, including side-to-side connections such as connecting the legs and skirt of a table. Smaller clamps like C-clamps, Quick-Grips and spring clamps are better for smaller projects or for holding down a jig. **—Steve Maxwell**

GARY CAREFULLY sets up his Bessey-style clamps on the side planes

THE CARCASS of the cabinet is held together with F-clamps as the glue dries

PHOTOS: GARY WALCHUK

each joint at the corners. That's four screws per side. Cut plugs to match your wood, then glue them into the counterbored holes before paring them flush. These screws add extra strength to each joint, since I don't like to rely on glue and biscuits alone in this application.

The centre slide support is a vertical partition that supports the drawer slides on the inner ends of the top six drawers only. Use ¾"-thick plywood for the body of the slide support, with a 3/4"-strip of solid wood added to the front edge for good looks. The overall size of the slide support should be 7½" x 16⅞". Centre the top edge of this support on the underside of the top stretcher frame and secure it with four or five screws driven down from above. The back edge of the slide support should be flush with the back edge of the stretcher frame.

Cut the front edging for the stretcher frames to size now. Chamfer the bottom front edge of the top piece of edging, and the top and bottom front edges of the bottom piece of edging. Glue and clamp these strips so they cap the front edges of the stretcher frames. The outer surface of the top edging should now be ⅝" proud of the centre slide support's front edge.

CABINET CONSTRUCT

Cut the base front to size, then glue and clamp its top edge to the underside of the bottom stretcher, along the front. The ends of the base front should be butted directly to the back faces of the front stiles. This almost completes the basic cabinet.

Now, you need to cut the drawer faces to the sizes listed. Unlike the other solid-wood parts, these are ⅝" thick. The seemingly odd drawer face length and width dimensions in the materials list actually make sense, since they allow a 1/16" gap all around each drawer face. Sand the drawer faces smooth and chamfer all along the front edges of each one.

THIS SIDE UP!

LAMINATE ENOUGH WOOD to create the cabinet top so it's a full 19" wide. Plane the stock flat and straight, then use biscuits, glue and clamps to join the boards.

There is a little trickery you can apply to make the front edge of the top more visually pleasing. The unique characteristic of quartersawn white oak is the eye-catching, ray-fleck surface figure. Trouble is, when this great grain is oriented on the top, the front edge looks kind of dull. To add some figure to the prominent front edge, I used a tablesaw to rip a 20° V-shape out of the edge. Then, I used a bandsaw to rip a strip to replace this section with a V-shaped piece of wood that has lots of figure. Glue and clamp this strip to the front edge, scrape away excess glue, then chamfer all the edges of the completed top. Since the joint lines exist near the top and bottom corners, they can't be seen.

Mount the cabinet top to the stretcher frame, using a few small spots of glue and 1 1/4"-long screws driven up through the underside of the stretcher frame. The cabinet top should be flush with the cabinet back, sit 3/4" proud of the cabinet at the front and overhang each side by 1 1/4".

CREATE A visible quartersawn edge-grain along the front edge of the top

FROM ALL angles, this project is gorgeous! The materials, proportions and style all come together for a classy place to store your tools

A BIT ABOUT BOXES

The drawer box sizes listed are the final outer dimensions required. I used 5/8"-thick maple for all the sides and 1/4"-thick Baltic birch plywood for the box bottoms. The corner joinery was made with an awesome drawer lock router bit that I really like, and the drawer bottoms fit into a 1/4" dado along each side, 3/16" up from the bottom edges.

MILLED WITH a router, this drawer box joint is intricate and interlocking

Check that the chamfering of the edges is complete and the cabinet and drawer faces are perfectly sanded. And now, you can finally begin your chosen finishing process. While you wait for the stain and urethane to dry, it's a good time to build the drawers.

SOME ASSEMBLY REQUIRED

With the cabinet and drawer faces finished and the drawer boxes complete, it's time to bring the project together. Cut the side slide supports from ¾"-thick plywood and the spacers from any hardwood you have around. The side slide supports form the perfect surface to mount the cabinet portions of the metal slides I used.

First, tack a spacer along the front and rear edges of the outer face of each support, making the front and rear edges of the supports 1¼" thick. Slide the side supports in place from the cabinet back assemblies, noting that the spacers will be hidden between the side and the side supports. You've done everything right when the edges of the side supports are flush with the inside edges of the front stiles. The back edges of these supports are also flush with the back edges of the stretcher frames. Secure the supports to the inside of the sides with 1¾"-long screws.

Spot-glue and clamp the drawer faces to their corresponding drawer box fronts. To make it easy, the bottom edge of each drawer face is flush with the box bottom edge, and the face extends 7/16" beyond the box side that's nearest the front stile. This should result in the top edge of the drawer face being 3/16" above the top edge of the drawer box.

Begin mounting the metal drawer slides on the cabinet first. Locate the top two drawers so that the bottom edges of their slides are 2½" from the top of the opening. Attach the drawer portion of each slide to the box sides and test it. The bottom edges of the slides, the drawer box and the drawer face should all be in line, 2½" from the top of the cabinet opening. The front ends of the slides need to be 5/8" in from the front surface of the stiles. The slides that fasten to the centre slide support should be flush with its front edge.

builder's tip

The screws that come with most knobs (including the ones I used here) won't be long enough to pass through both the drawer faces and drawer boxes. Use screws that put at least 3/8" of threads into the knobs you're using, after they pass through whatever thickness you make the drawer box and the 5/8" thickness of the drawer faces

USE FULL-EXTENSION slides for the drawers (top) and screws for the back panel (left)

When everything checks out, continue with a second level of drawers, 2½" below the top drawers. Add another 2½" space for the third level, then a 2¾" space for the first full-width drawer. The next drawer needs a 3" space and, finally, a 3¾" space for the bottom drawer. Adjust all the slides to get perfect spacing between the drawer faces.

Cut the back panel to size, securing it to the rear edges of the stretcher frames and all slide supports with small screws. Attach the drawer knobs of choice, and your top-notch tool cabinet is done!

For many of the projects in my woodworking past, I find there comes a time when the project is completed that I take a step back and realize I have some regrets. I often wish I'd have done a part differently here or there, or wish I had finished the wood in another way. But not so here. I like the size, proportion, colour and function. I wouldn't change a thing. And because this is my gift to the readers of *CHW*, I just may have to build a tool cabinet for myself next!

WIN THIS TOOL CHEST

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Enter now and you could **WIN** this $2,000 hand-crafted anniversary tool chest and $1,000 in tools from Lee Valley to fill it up!

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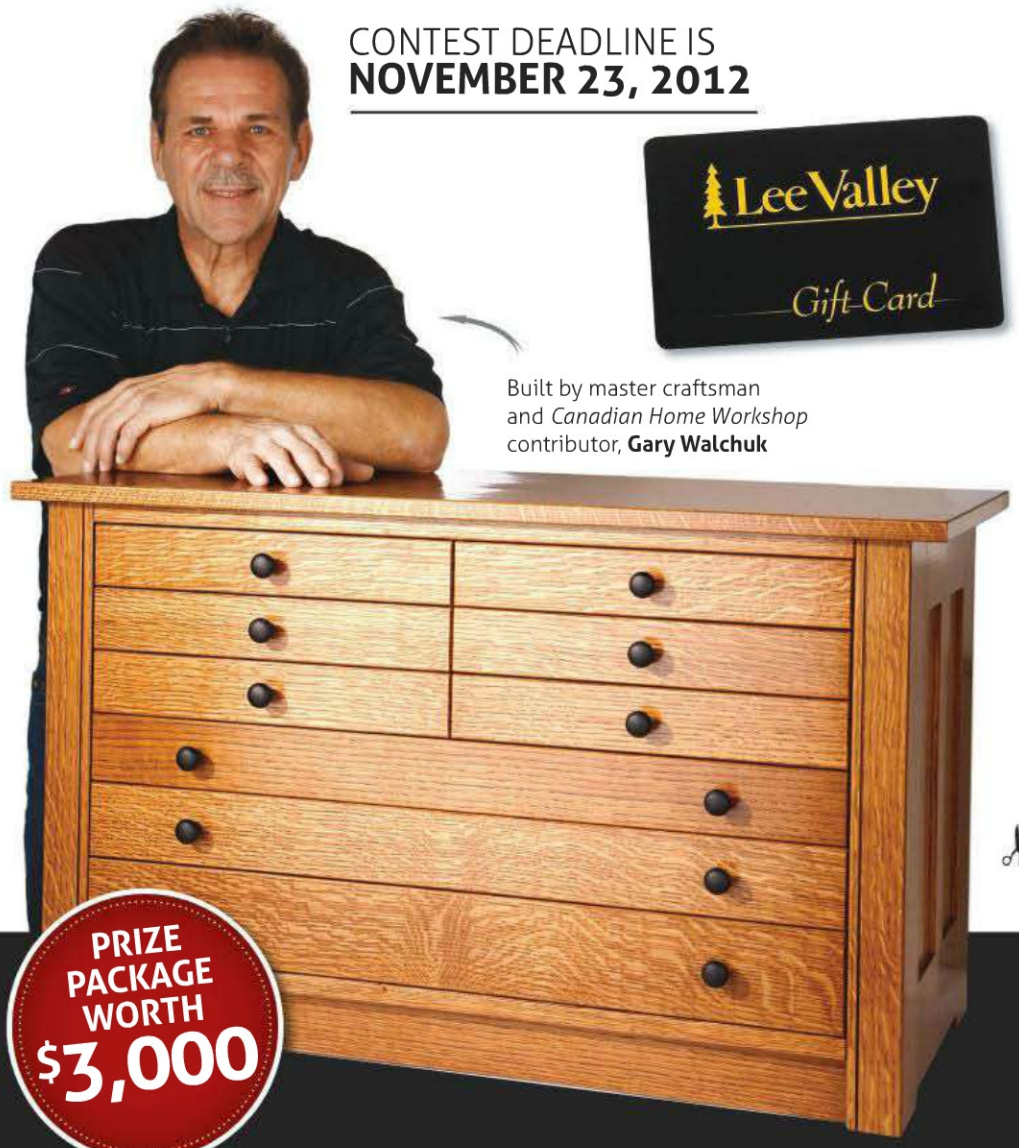

Built by master craftsman and *Canadian Home Workshop* contributor, **Gary Walchuk**

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TOOL CHEST GIVEAWAY

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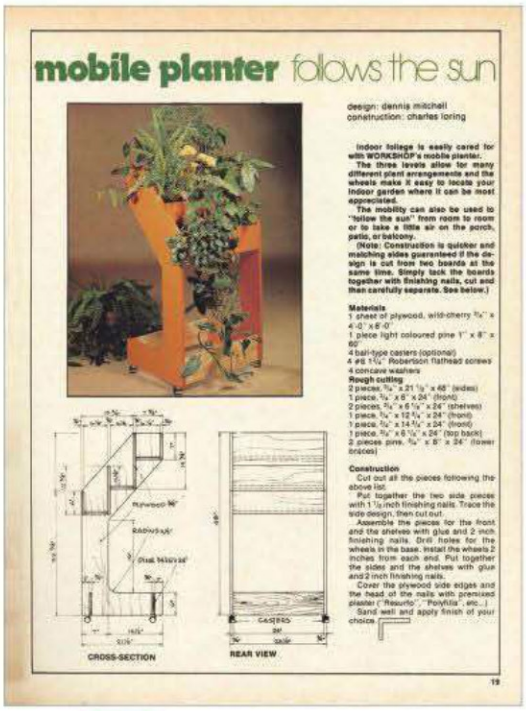
CONTEST RULES

1. The winner will be selected by random draw after the contest closes.
2. Entries must be received by Cottage Life Media no later than November 23, 2012. Each entry must be submitted with a completed entry form. No responsibility will be taken for entries lost, misdirected or delayed in the mail.
3. The winner will be notified by telephone during the week of November 26, 2012. No other entries will be acknowledged or returned.
4. By winning and acquiring a prize, the winner agrees to the use of his or her photograph or likeness, comments, name and city of residence, without compensation, in all publicity campaigns related to the contest.
5. Employees of Cottage Life Media, sponsors of this contest and their immediate families are ineligible. Open to Canadian residents except those in Quebec. Entrants must have reached the age of majority.
6. All inquires must be made in writing. No telephone calls, please.

TOP 10 PROJECTS OF ALL TIME

The best from 1977 to the present


mobile planter follows the sun

design: dennis mitchell
construction: charles loring

Indoor foliage is easily cared for with WORKSHOP's mobile planter.

The three levels allow for many different plant arrangements and the wheels make it easy to locate your indoor garden where it can be most appreciated.

The mobility can also be used to "follow the sun" from room to room or to take a little air on the porch, patio, or balcony.

(Note: Construction is quicker and matching sides guaranteed if the design is cut from two boards at the same time. Simply tack the boards together with finishing nails, cut and then carefully separate. See below.)

Materials
1 sheet of plywood, wild-cherry ¾" x 4'-0" x 8'-0"
1 piece light coloured pine 1" x 8" x 80"
4 ball-type casters (optional)
4 #8 1½" Robertson flathead screws
4 concave washers

Rough cutting
2 pieces, ¾" x 21 ½" x 48" (sides)
1 piece, ¾" x 8" x 24" (front)
2 pieces, ¾" x 6 ¼" x 24" (shelves)
1 piece, ¾" x 12 ¾" x 24" (front)
1 piece, ¾" x 14 ¾" x 24" (front)
1 piece, ¾" x 8 ¼" x 24" (top back)
2 pieces pine, ¾" x 8" x 24" (lower braces)

Construction
Cut out all the pieces following the above list.

Put together the two side pieces with 1 ½ inch finishing nails. Trace the side design, then cut out.

Assemble the pieces for the front and the shelves with glue and 2 inch finishing nails. Drill holes for the wheels in the base. Install the wheels 2 inches from each end. Put together the sides and the shelves with glue and 2 inch finishing nails.

Cover the plywood side edges and the head of the nails with premixed plaster ("Resurfo", "Polyfilla", etc...)

Sand well and apply finish of your choice.

CROSS-SECTION
REAR VIEW

How does one pick the best projects out of hundreds of choices? (And we have run hundreds.) How does one distil 35 years of craftsmanship into 10 items? Well, it's not easy—and, you can argue, it's not fair. But here are the best. Like all good lists, we hope this one sparks some debate. Is there a project whose omission is simply criminal? If so, let us know by mail, email or social media. Let's discuss...right up to the 40th anniversary.

» October 1977

MOBILE PLANTER

Dennis Mitchell & Charles Loring

A project from our first issue. Look at those lines. Look at that photo. So '70s, that project practically has a butterfly collar.

» September 1998

MISSION BED

Gary Walchuk

This is a classic bed inspired by the work of William Morris. If you haven't mastered mortise-and-tenon joinery, you will have by the end of this project.

» July 1992

BAT HOUSE

Steve Maxwell

There definitely has been strong interest in this bat house project since it ran. It seems folks are trying to help out the poor flying mammals, which are under siege by white-nose syndrome.


PROJECT

BED OF YOUR DREAMS

William Morris furniture combines hearty strength with elegant refinement. This Morris-inspired bed has it all BY GARY WALCHUK

Getting Down to Business

» February 2000

MARBLE RACE

Glenn McBride

A classic Amish toy that's still fun for kids, even those with modern, plugged-in sensibilities.

Do you have a favourite *CHW* project that you've built? **Post a photo of it on our website** at **canadianhomeworkshop.com/you-made-it**

» March 2006

CRAFTSMAN'S BENCH

Gary Walchuk

Every craftsman needs a bench. This maple model is stunning with its cherry and jatoba accents. A work of art.

» October 2007

DINING TABLE

Hendrik Varju

A solid and formal table that would elevate the look of any dining room.

» September 2005

MISSION SIDEBOARD

Michel Roy

For *CHW* readers who love the ray-fleck quartersawn oak of Mission furniture—and there are many of you—this sideboard is a perennial favourite.

» February 2008

VALET STAND

Ryan Shervill

That chair in your bedroom shouldn't be a dumping ground for clothes. This suit valet keeps everything nice and neat and ready to go.

» September 2008

ECO-FRIENDLY DESK

Steve Maxwell

For this project, the wood was sourced locally, the desk was built with hand tools and the design will last for generations. It's the greenest project we've ever run.

» Winter 2011

JEWELRY BOX

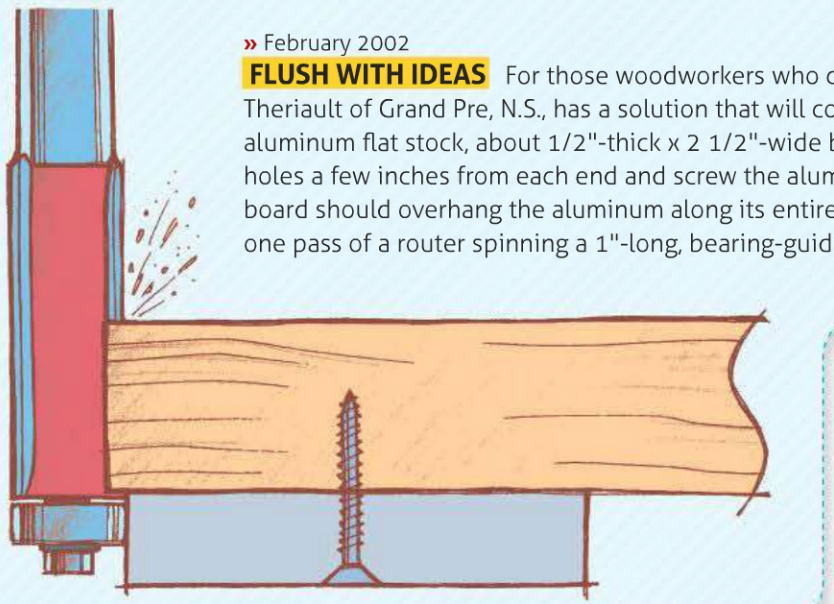
Rick Campbell

This issue of *CHW* came out a few weeks before the year's Canadian Home Workshop Show. But by the time the show had arrived, quite a large number of readers had already built this jewelry box.

To get all these project plans, go to **canadianhomeworkshop.com/topprojects35**

Top 10 **Shop Tips**

FOR THE PAST decade, we've brought you tips from the most important workshops around: our readers'. Save time, money and a whole lot of hassle by revisiting our favourite Shop Tips.



» February 2002

FLUSH WITH IDEAS For those woodworkers who can't justify buying a jointer, Gregory Theriault of Grand Pre, N.S., has a solution that will cost you less than $50. Buy a piece of aluminum flat stock, about 1/2"-thick x 2 1/2"-wide by as long as you need. Drill some holes a few inches from each end and screw the aluminum to the board. The edge of the board should overhang the aluminum along its entire length. Joint a saw-ripped edge with one pass of a router spinning a 1"-long, bearing-guided, flush-trim bit.

» April 2002

KNOCK 'EM DOWN FASTENERS

Whether it's for furniture you may need to take apart for storage or simply a need to assemble some 2x4s together temporarily, Chuck Winslow of Ashcroft, B.C., designed some knockdown fasteners. Drill a hole about 2" from the end of a piece of wood using a 35mm bit, then drill a 1/4" hole through the end of the wood to meet up with the 35mm hole and, finally, drill a corresponding hole in the piece of wood to be attached. Now, cut a length of 1" steel pipe slightly shorter than the thickness of the wood and drill a 1/4" hole centred in its side. To assemble the joint, slip the length of pipe into the 35mm hole, insert a bolt, then thread on a nut and tighten.

» Summer 2005

MILK CARTON MAGIC

Skip the mess left behind when you drill into plaster to put up pictures, hooks or shelves. John Couto of Lorraine, Que., suggests using an empty box, such as a milk carton. Cut off the bottom and secure it a few inches below the spot you plan to drill using painter's masking tape (to protect your wall's surface). When you drill, the plaster residue falls in the box instead of all over the floor.

» Winter 2006

ALL ROLLED UP

Wipe-on poly is a favourite finish for many workshoppers. To keep hands clean and provide a "smooth as silk" finish, Charles Mak in Calgary runs to his home office for a little help. First, he folds a soft, clean cloth in a couple of layers, then holds it together with a 3" bulldog clip. Then, he pours a small amount of the finish into a dish, dips the cloth brush as if it were a regular foam brush, then applies an even coat of wipe-on poly while holding the handle of the clip. You also can fold and clip the cloth into different shapes to suit the job.

» April 2007

HIDDEN GEM

After discovering that the local hardware store didn't stock hidden deck fasteners, Warren Chernoff of Castlegar, B.C., made a homemade version. He ripped a 3"-wide strip of pressure-treated 1/2"-thick plywood and screwed it to the top of the joists, keeping one end flush and letting the other side overhang. Then, he screwed the deck boards, up from the bottom, to this plywood. This provides a great deck with no visible sign of mechanical fasteners.

» October 2007

HIP TO BE SQUARE

When Ross Dokis of Hanmer, Ont., found the average T-square wasn't

ILLUSTRATION: STEPHEN HUTCHINGS

» September 2009

A FLAWLESS FILL Find it hard to decide whether to fill trim before finishing (which requires a lot of sanding) or to fill after finishing (which brings the risk of scratching the finish)? The solution that Steve Trutenko of Calgary came up with is simple: place some green painter's tape over a piece of trim that has been finished, then attach it using a brad nailer. Before removing the green tape, smear filler into the small holes in the green tape that the brad created. Remove the green tape carefully—no sanding or touch-up required.

large enough for some jobs, such as cutting drywall or large sheets of plywood, he made his own out of a piece of 3/4" x 4" pine. Rip the board to 2" wide, then cut the vertical piece to 40" high and the horizontal section to 30" long. Screw the two pieces together. Your large T-square is ready for the shop!

» November 2009

STORE IT RIGHT

All workshoppers know you shouldn't store a plane resting its sole on a surface. Barry Homer of Pierrefonds, Que., shared his method for storing planes: he hangs his planes by their knobs and keeps their irons off the wall with well-placed springs.

» Winter 2011

THE RIGHT ANGLE

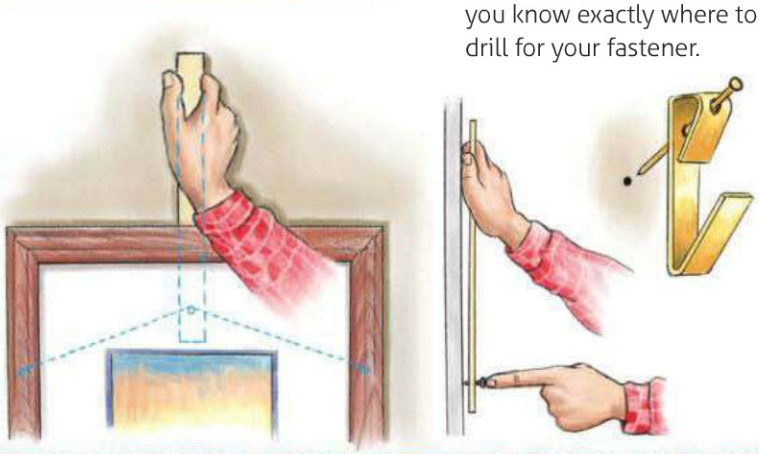
This classic tip comes from "1001 Tips for Woodworkers," by Percy Blandford.

One way to remove most of the glue in one pass is to use a drinking straw, which can get into the angle and scoop out the glue without spreading it.

» March 2011

ARTFUL ACHIEVEMENT

Tired of the tedious task of hanging picture frames, Robert Paradis of Orleans, Ont., got creative with a drywall screw and paint stir stick. Attach the drywall screw to the end of the paint stir stick, then hang your frame from the screw. Find the perfect place for the art, take off the frame and press on the fastener. Now, you know exactly where to drill for your fastener.



10 WORKSHOP MAXIMS

1. No, duct tape will not fix everything.
2. It's a Robertson, not a "Square" and a Phillips, not a "Star."
3. Lefty loosey, righty tighty (except for gas fittings and left-side pedals).
4. Measure twice, cut once.
5. Unplug it before you change the blade.
6. Read the instructions (or, at least, look at the pictures).
7. When backing up a trailer, turn your steering wheel in the direction opposite to where you want the trailer to go.
8. If it feels like what you're doing is dangerous, it probably is. So, stop doing it.
9. If you don't know, don't be too proud to ask. You'll save yourself a lot of headaches.
10. Never do half a job. Clear your conscience; get it done.

ILLUSTRATIONS: PAUL PERREAULT; HANDSAW: PAMELA MOORE/ISTOCK; 10 WORKSHOP MAXIMS ORIGINALLY PUBLISHED IN MARCH 2011

10 Essential HAND TOOLS

The instruments every woodworker should have

BY **STEVE MAXWELL**
PHOTOGRAPHY BY **ROGER YIP**

POWER TOOLS CAN take you only so far in woodworking, so your understanding of hand tools is key if you aim to do good work. The trouble is, the usefulness of power tools has overshadowed hand tools to the point at which good ones are hard to pick out from the crowd. Many manufacturers also have lowered the bar on hand-tool quality, so you really need to know the difference between good and bad gear before you buy. There are 10 hand tools that I've come to consider essential during my first 30 years of figuring out how to make good things happen with wood.

SMOOTHING PLANE
Ideal for general-purpose smoothing and fitting. Needs TLC to work well

BLOCK PLANE
The ultimate tweaking tool; small enough to use with one hand, large enough to remove serious wood

BENCH CHISEL
Joinery, fitting and fine details are what this tool does best

TAPE MEASURE
A tough, rigid blade works best. Choose longer lengths for outdoor projects, shorter ones for bench work

METAL ENGINEER'S SQUARE
The ultimate 90° truth. Use it to adjust machines and check lumber edges


WOODEN MALLET
Ideal for propelling chisels of all kinds
COMBINATION SQUARE
Useful for checking edges, and especially as a marking gauge
CABINET SCRAPERS
More aggressive than sandpaper and creates smoother results
MECHANICAL PENCIL
More control and a better point than wooden pencils
INTERCHANGEABLE SCREWDRIVER
One tool handles all screws. Best models allow fast bit changes

SMOOTHING PLANE

The "jack of all planes," this 9 1/2"-long tool is the one I turn to most often. Run-of-the-mill hardware-store models will probably disappoint you, so find an old one in good condition or a new, high-end model. My favourite was owned by my grandfather, a Stanley Bailey No. 4, probably made in the 1930s. More than any other woodworking tool—power or hand-operated—planes require fine-tuning to perform properly.

BLOCK PLANE

Fine adjustments to wooden project parts are what a block plane delivers. Typically used with one hand, it's often used to slice end-grain, but it's just as useful for edge-grain work too. My favourite block plane, by far, is the Veritas DX60.

TAPE MEASURE

These are everywhere, but most aren't as comfortable to hold and use as they could be. I use three sizes in my work: a 12' model that fits in my workshop apron, a 16' tape for general use with lumber and construction and a 30' tape when the 16' tape won't do. Stanley FatMax tapes with blade armour are the best right now, in my book. They can extend for 13' without buckling.

MECHANICAL PENCIL

You can live your whole woodworking life using regular wooden pencils, but a mechanical pencil is better. You get bigger, stronger lead, and good models come with an accurate sharpener you can use on the fly without having to walk to a bench-mounted sharpener. Keep an assortment of lead hardnesses on hand, depending on the kind of marking you're doing.

MALLET

The round type wasn't always my favourite, but it is now because any side of the head works equally well. You just grab the tool and strike. My 32-oz. lignum vitae mallet has been with me since the early 1990s, and I turn to it when I need to deliver heavy blows. Since then, I've added a lighter weight, 20-oz., urethane-wrapped, hard-maple mallet for finer work. The rubber urethane around the head cushions shock, so it's easier on the wooden handles of smaller chisels, and is quieter and more pleasant to use.

CABINET SCRAPERS

These thin pieces of high-carbon steel create a smoother, crisper surface than abrasives do. Most useful with hardwoods, a good scraper creates curls of wood shavings, not dust. Before using a scraper, get a burnishing guide to make sharpening easier. A scraper holder is valuable too, since it protects your thumbs from heat—a scraper gets surprisingly hot during use.

COMBINATION SQUARE

A 12"-long model is perfect for two common workshop tasks: an excellent, medium-size 90° reference tool in situations in which ultimate accuracy isn't required, and as a superb marking tool. Adjust and lock the combination square's blade for the distance required, hold the body of the tool against an edge, then slide it along the wood with a pencil held against the end of the blade.

BENCH CHISELS

A set of five, including widths of ¼", ⅜", ½", ¾" and 1" wide, is good for starters. But beware: not all chisel steel is created equal. Some steels are substantially more difficult to sharpen than others, while some hold a razor's edge longer than others during use. Bench chisels are enjoying something of a resurgence in popularity these days, with several big brands coming out with new offerings. Lee Valley's bevel-edge chisels offer a good combination of great steel and at a reasonable price.

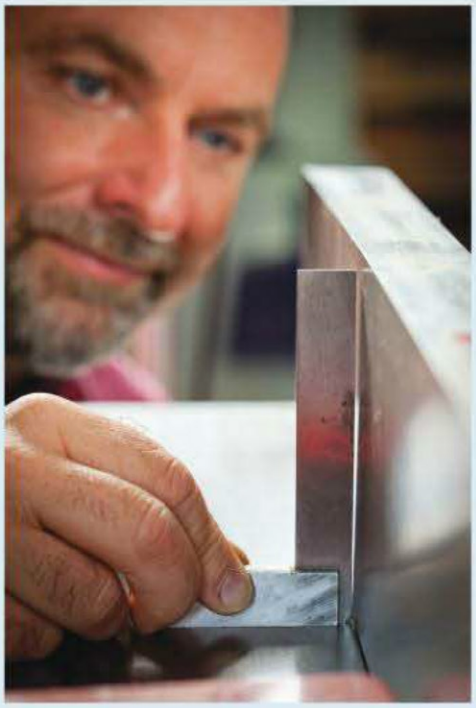
INTERCHANGEABLE SCREWDRIVER

Robertson, Phillips and slot are the three main screw-head designs, and each of these comes in two or three common sizes. This arrangement adds up to a lot of screwdrivers to store and use, which is why I like the idea of interchangeable screwdrivers. The trouble is, however, most interchangeables are cumbersome to use and don't work as well as regular screwdrivers. Picquic is different. It's a Canadian-made design that I use for 90 per cent of the screw-driving work I do. Extra-long bits friction-fit into holes in the handle with no need to fumble with a cap. The bits are made from industrial-quality steel and even hold up great in an impact driver.

No matter how effective power tools get, good hand tools will always have an irreplaceable role in fine woodworking. In fact, hand tools are enjoying a resurgence in popularity and quality these days, and that's something that I never thought would happen.

ENGINEER'S SQUARE

This tool is the ultimate representation of 90° in my shop. Small yet unequalled for machine setup, the square I use is accurate to within 0.001" over the length of its blade. I have two 4" squares: one stays in my apron, and the other is stuck to a rare-earth magnet on my jointer, which also is right next to the tablesaw and easy to grab for setting up machines.



A POWER-TOOL BOOST TO HAND TOOLS

ALTHOUGH A BUFFING wheel is not a hand tool, it empowers chisels, planes and knives by making it easy to sharpen them remarkably quickly and astonishingly well. I never use my whetstones anymore, and I've given my buffing wheel an honorary membership in my personal hand-tool hall of fame. In less than a minute, the spinning rim of the hard, felt wheel transforms a not too sharp bench chisel, plane iron or carving chisel into something that's substantially keener than a new razor blade. You can make your own buffing setup or put a hard, felt wheel on an ordinary bench grinder. Charge the rim of the spinning wheel with a green, waxy abrasive rated for high-carbon steel, and always hold the tip of the tool in the direction of the wheel's rotation while buffing.

That was Then, **This is Now...**

THERE'S NO QUESTION that tools have evolved a lot in the 35 years since *Canadian Home Workshop*'s first issue. The average workshopper of today has access to a broader array of tools that are more powerful and easier to use (and safer) than ever before. In fact, they're likely to be a lot better than the average pro would have had 35 years ago.

That's also true of building materials. Engineering wonders such as structural insulated panels, insulated concrete forms, spray foam and composite roofing are widely available and easy to use. And, for the most part, these materials are vastly superior to the ones we were using a few decades ago.

Sounds like it's not such a bad time to be a workshopper.

THEN	NOW
Pickup truck meant for the farm	**Souped-up toolbox on wheels**
Estwing steel hammer	Stiletto titanium hammer
Fibreglass batts	Spray foam
19-lb. corded Skil saw	Cordless lithium-ion circular saw
Tape measure	Laser measurer
White, brown or clear silicone	Paintable latex caulking
Cement, sand, gravel	Ready-mix post-hole fill
Canvas work gloves	Contoured ballistic nylon gloves
Blue or green work pants	Pants with built-in knee pads
Wooden toolbox	Rolling structural foam toolbox
Corded incandescent trouble light	**Cordless LED work light**
Drain snake and shovel	Drain scope with TV screen
Prybar and sledgehammer	Reciprocating saw
Six screwdrivers	Picquic multi-bit screwdriver
Paint store Hardware store Lumber yard	**Big-box building centre**
Wise old handyman friend	The Internet
Cedar	Pressure-treated SPF
Corded drill	18-volt drill/impact driver/ hammer drill combo tool
Varnish	Wipe-on, water-based polyurethane
Propane, copper pipe and solder	Shark Bite tool-free fittings
Oil-based paint	Latex paint
Napkin sketch	Cellphone camera
Trip to the hospital	Saw Stop tablesaw
Hammer and nail set	Cordless finish nailer
Duct tape	**Duct tape**
Bob Vila	YouTube

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TABLE AND CHAIRS

Skill Level

Novice Expert

Play Time

Kids will love to play at this fun and fanciful table-and-chairs set BY **RICK CAMPBELL**

> My friend Abby is a bright and imaginative young lady who loves to host tea parties for her playmates. This whimsical project will help make her next get-together a memorable event

BUILDING THIS CHARMING table-and-chairs set for a special toddler in your life is as easy as A, B, C or 1, 2, 3. All you really need is a few basic power tools, some sheets of plywood and a weekend in the shop to get the job done. The brightly coloured table and matching chairs are designed to resemble giant toy blocks, and the table base features a large, enclosed storage compartment for games, crafts and toys. I chose Baltic birch plywood for the construction because it has more veneer plies than an equivalent thickness of standard, furniture-grade plywood. The increased density results in a much stronger product with fewer unsightly gaps between layers. If you're new to Baltic birch plywood, you may be surprised to learn that the sheets are 5' square—rather than the 4' x 8' dimensions associated with most veneer-core products. If you plan your cuts carefully, you can get all the parts for the entire set from one sheet of ¾"-thick ply, two sheets ½"-thick and a single sheet of ¼"-thick material.

PHOTOGRAPHY: FELIX WEDGWOOD

CRAFTS, COLOURING and even snack time will never be the same again with this table-and-chairs set

SEATING ARRANGEMENTS

Begin construction by making the chairs. The first step is to cut out enough sides and backs from ½"-thick plywood to make a complete set of four seats. This work goes quickly if you make all of the cuts that require the same setup before adjusting the tablesaw fence to move onto the subsequent steps.

Next, install a dado blade in your tablesaw and prepare ¼"-deep x ½"-wide rabbets on the vertical edges of the back panels. These rabbets help align the corners during the final assembly and add strength to the joints by increasing the surface area for glue to adhere to. After this, adjust the fence to mill ¼"-deep x ½"-wide dados to capture the seat panels. These dados are located on the inside faces of the side and back panels, starting 4" from the top. When you cut the seat panels to size, don't rely exclusively on the materials list for dimensions. You will achieve a more precise fit if you temporarily assemble the surrounding panels with clamps and measure the openings for yourself.

After cutting out the seats, there's still one more detail to take care of before proceeding with the final assembly: rounding over the sharp corners on the front top edges of the sides to make the design safer for young toddlers.

Prepare a cardboard template to lay out the 1½"-radius curve, then transfer this profile to the parts. Cut along the outside of the pencil lines with a bandsaw or jigsaw, then smooth the rough edges with a sanding block.

With this task out of the way,

STORE ALL of your craft supplies in the table's base

You Will Need

FOR EACH CHAIR	MATERIAL	SIZE (T x W x L*)	QTY.
Sides	plywood	1/2" x 13 1/2" x 14"	2
Back	plywood	1/2" x 13 1/2" x 14"	1
Seat	plywood	1/2" x 13 1/2" x 13"	1
Vertical trim strips	plywood	1/4" x 2" x 14"	6
Horizontal trim strips	plywood	1/4" x 2" x 10"	6
Letter/number blanks	plywood	1/4" x 8" x 8"	3
FOR THE TABLE			
Sides	plywood	3/4" x 15 5/8" x 17"	2
Back	plywood	3/4" x 16 1/2" x 17"	1
Door	plywood	3/4" x 17" x 17"	1
Top/bottom/shelf	plywood	3/4" x 15 5/8" x 15 3/4"	3
Wide vertical trim strips	plywood	1/4" x 2" x 17"	6
Narrow vertical trim strips	plywood	1/4" x 1 1/4" x 17"	2
Horizontal trim strips	plywood	1/4" x 2" x 13"	8
Letter/number blanks	plywood	1/4" x 9" x 9"	4
Base/top frame segments	plywood	3/4" x 2" x 15 1/2"	8
Tabletop	plywood	1/2" x 38" x 38"	1

*Length indicates grain direction

RECOMMENDED TOOLS

Tablesaw, bandsaw or jigsaw, sanding block, random-orbit sander, scrollsaw, hand-held router, cordless drill

HARDWARE SHOPPING LIST	PART #	SIZE	QTY.
Plated steel piano hinge		1 1/2"-wide x 17"-long	1
Beaded door pull	Lee Valley #00G1480		1
Roller catch	Home Depot #773199870661		1
Machine screws		1/4"-20 x 1" flat-head	4
Flanged insert nuts	Lee Valley #00N10.13		4

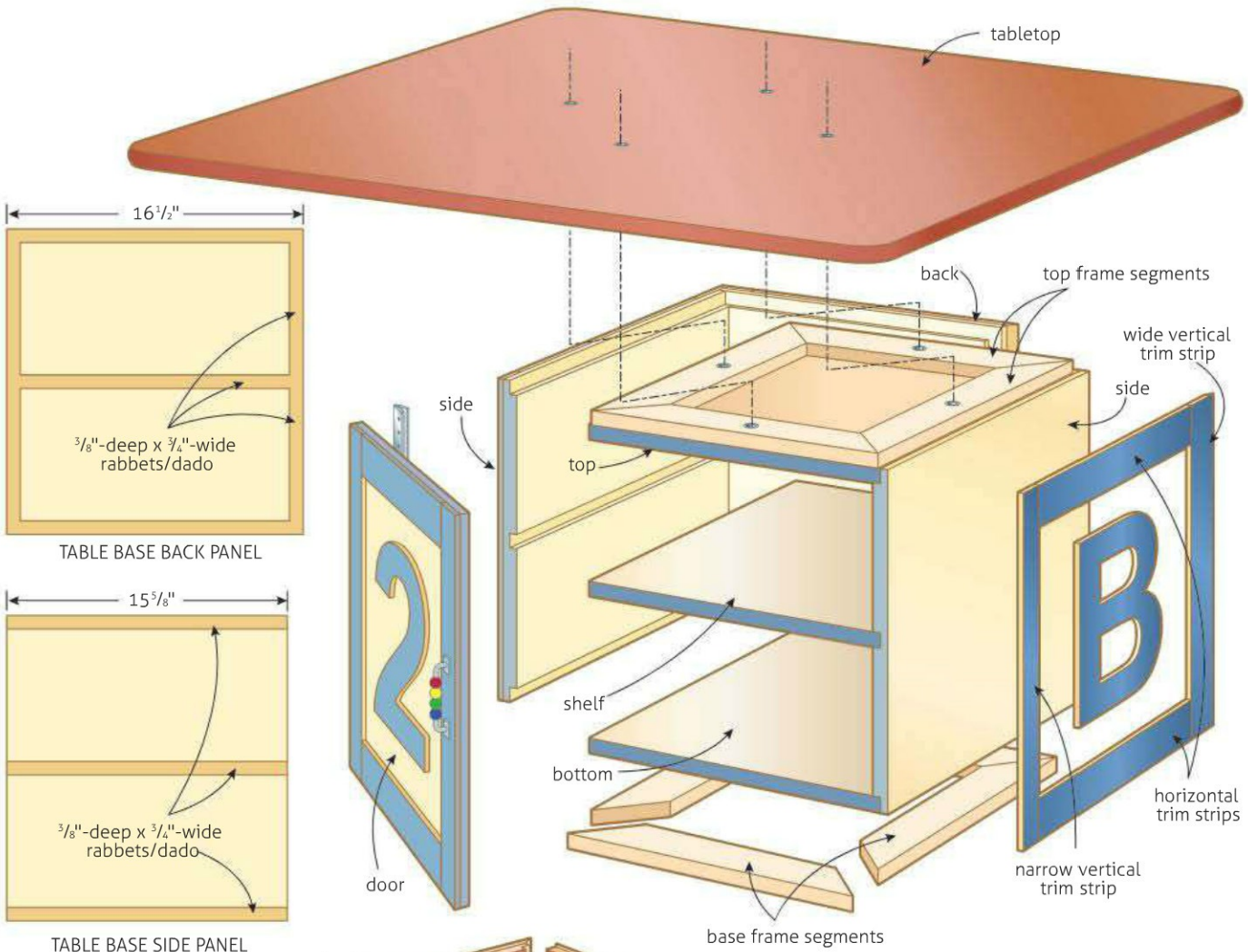
permanently assemble the chair with glue and clamps. Have a damp rag at the ready to wipe away any adhesive that squeezes out from the joints. After the glue is dry and the clamps are removed, slap an 80-grit disc onto your random-orbit sander and use a rocking motion to round over the front edges of the seat panels. Removing sharp corners will make the seat edge more comfortable under a child's legs and will reduce the possibility of splinters.

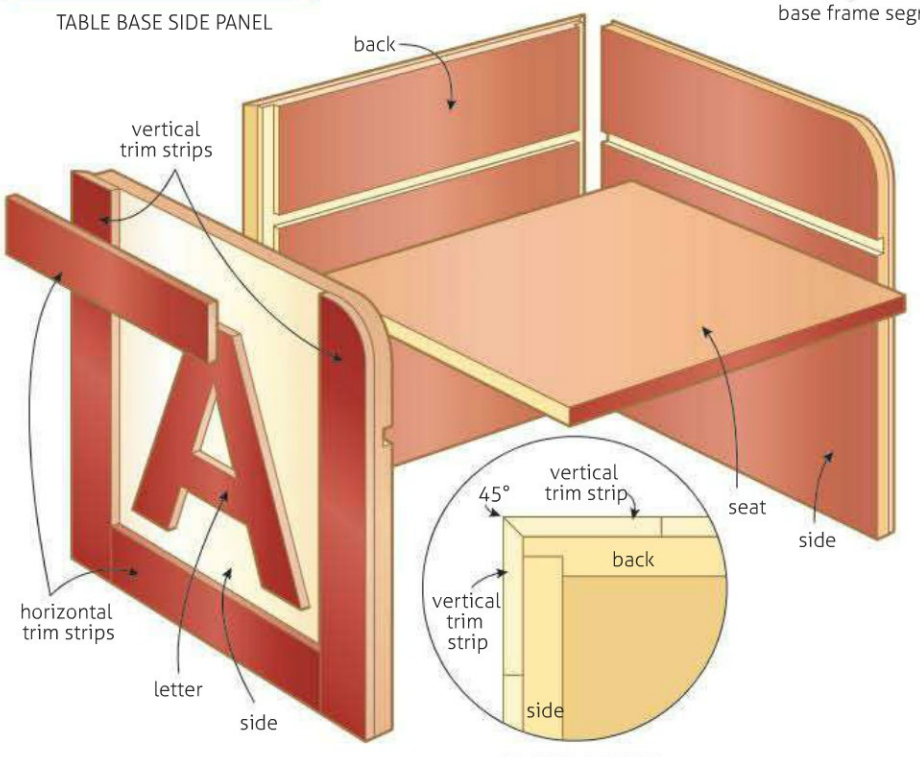
FRAME IT

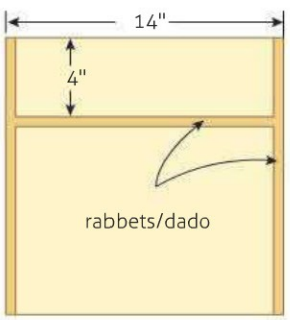
The chairs need details to transform them from plain boxes into oversized building blocks. The first step is to cut out a pile of long strips from a sheet of ¼"-thick plywood. These will be the horizontal and vertical trim strips. Set the fence to make them all 2" wide and orient the grain direction to run along the length of the strips. Now, take a few of these strips and cut them into 14" lengths to make the vertical pieces for the frames. You will need a total of 24 vertical segments to complete all four chairs. If you take a look at the plans, you will see mitred edges

THIS PROJECT was designed using simple materials, tools and techniques. All you need is some plywood, glue and a few screws to bring the whole project together. The applied letter and number details, plus a careful paint job, bring this set to life

➔ PLANS FOR TABLE-AND-CHAIR PLAY SET







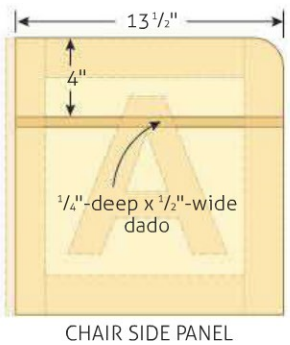


ILLUSTRATION: LEN CHURCHILL

TO CLAMP OR NOT TO CLAMP

WHEN INSTALLING THE frame and trim details on your chairs, you need to find a way to hold the pieces in place while the glue dries. Spring clamps work well to hold the pieces in place wherever you have an accessible edge, but a different strategy is required for areas in the back corners that can't be reached by the jaws of traditional clamps. Here, the solution is to stretch strips of packing tape over the joints. The tension from the tape will be enough to keep the corners aligned and the trim pressed firmly against the flat surfaces of the panels.

where the frames meet at the back corners. All you need to do here is to tilt the saw blade to 45° and position the fence to remove just enough material to bevel the edges.

The vertical trim at the front also requires a little work before it can be installed. The top front corners need to be rounded to match the curve of the side panels. Use the corners of the panels as patterns to trace the profiles directly onto the frame blanks, then cut along the outside of the layout lines. Don't worry about sanding the rough edges for now—you can take care of this detail after the trim is glued in place. As a matter of fact, why not grab the glue bottle now and install these parts? While you're at it, you can also mount the vertical trim in the rear corners.

After installing the vertical trim, cut out and mount horizontal pieces that will span the gaps at the top and bottom of the frames. When the glue is dry, use a sanding block to smooth the rough edges that remain on the rounded corners at the front. While you're in sanding mode, use a little elbow grease to level any raised edges on the flat sections of the trim as well.

LETTERS AND NUMBERS

Now, turn your attention to the letters and numbers that fill the chair frames. It's time to leave the workshop and head into the office. Using a computer, print out some 8"-tall characters to use as patterns. Most word-processing programs offer a wide variety of fancy fonts to choose from, but you're looking for a style with uncomplicated lines that will be easy to cut out and sand. I chose a basic block font, called Arial, that fits well with the project's motif.

When you have the patterns in hand, return to the shop and cut out a dozen 8"-square blanks from the remainder of your ¼"-thick plywood sheet. Apply a light coat of spray adhesive on the back of the paper only, not on the plywood. Let the adhesive dry for a few minutes, then stick a sheet onto each wooden blank.

I usually prefer to use the bandsaw whenever I need to cut out objects with an irregular shape. But because the looped bandsaw blade can't access sections of the letters that are completely surrounded by wood, the only viable options are a scrollsaw or a coping saw. Both tools have blades that can be detached and threaded through pilot holes to cut out areas in the centre of a workpiece. If you install a fine blade, not only will the cuts be smooth but you also will be able to turn on a dime. Regardless of the saw you choose, take your time and follow the outlines carefully.

When you're done, use a sanding block to smooth out any rough edges on flat sections and outside curves. Sandpaper wrapped around a dowel works well on rounded areas of the interior curves. After peeling off the patterns, take a moment to admire your handiwork. You'll mount the characters on the chair boxes later, after the painting is done.

A TABLE FOR FOUR

With somewhere to sit, your toddlers now need somewhere to pull up those chairs to. Start with the table's base by cutting out panels for the sides and back from ¾"-thick plywood. Just like the chairs, the base needs rabbets for the corner joints. This time, the rabbets need to be ⅜" deep x ¾" wide and they are required on all four edges of the back panel and on the top and bottom edges of the side panels. You also need to mill a ⅜"-deep x ¾"-wide dado halfway down on the interior faces of the sides and back to support a shelf.

Remember how you dry-fit the chairs to measure the opening for the seats? Use the same technique to determine the precise dimensions required for the top, bottom and shelf. If everything is going according to plan, the measurements for all three parts should be exactly the same. Once

STRETCHED TAPE: MATT FILION

you have the dimensions worked out, head over to the tablesaw and cut out the parts.

Now, you have everything you need to assemble the base with glue and clamps. When you're done, cut out the door panel to fit the front of the base. The measurements given in the materials list allow for the ¼"-thick trim that will eventually be added to the sides of the cabinet. Later on, we will mount the door with a section of piano hinge; but for now, leave it unattached.

Follow the same process as before to frame the cabinet sides and door. All the trim pieces are 2" wide except for the narrow vertical trim strips that fasten to the sides, which are only 1¼" wide to compensate for the door thickness. After installing the frames, it's onto the raised characters to fill the panels. This time, the blanks need to be 9" square. The corresponding patterns are 9" tall. Other than these minor details, the process for cutting out the letters and numbers is exactly the same as before.

Spacer frames are attached to the top and bottom of the table's base to provide added clearance for the door. Cut the frame segments to size with 45° mitred corners on the ends, and assemble the joints with glue and web clamps. Temporarily mount the frames on the base with #8 x 1¼"-long wood screws (but no glue). You know you have them positioned correctly when the frames are flush with the edge of the base at the front and centred from side to side.

The tabletop is the easiest part of this project to make. Just cut a 38"-square panel from your remaining supply of ½"-thick plywood and round all four corners by cutting 1½"-radius curves. Round over the top and bottom edges using a handheld router spinning a ¼"-radius, bearing-guided bit.

I decided to attach the top to the base with a combination of recessed machine screws and flanged insert nuts. This arrangement makes it convenient to remove the top if the table needs to be relocated or stored away for the next generation of toddlers. The only tricky part is getting the screw holes in the top lined up perfectly with the flanged insert nuts underneath. Begin by removing the spacer frame from the top of the base, then drill a ¼"-diameter pilot hole in the centre of each frame segment. Now, position the frame in the centre of the tabletop and use it as a drilling guide to locate the corresponding ¼"-diameter holes for the machine screws. When this is done, pick up the frame and expand the pilot holes for the threaded inserts using a ⅜"-diameter bit. Reattach the frame to the base and install the flanged insert nuts in the pilot holes. After using a countersink bit to recess the screw heads in the tabletop, mount the top on the base with four 1"-long machine screws.

FINISHING TOUCHES

Finish your project however you'd like. (To learn how I did it, see "A Paint & Poly Party" below.)

You probably already know that most wood adhesives won't bond to surfaces covered with polyurethane, so you may be wondering how we're going to fasten the letters and numbers to the sides of the cabinet and chairs now that these areas have been finished. The solution to this dilemma is double-sided automotive tape. This tape is designed to achieve a super-strong bond with all types of prefinished surfaces. Completely cover the backs of the characters with strips of tape and trim off the excess from the edges using a sharp utility knife.

When you apply the tape, avoid overlapping its edges because this may create ridges that prevent the characters from laying flat. After peeling off the tape's backing, simply press the letters and numbers onto the panels. Make sure the characters are lined up perfectly the first time because it will be very difficult to remove them for a second try.

After this, attach the door with a section of piano hinge, install a roller catch to keep it securely closed and mount a door handle of your choosing. I selected a handle with a beaded design for my project. It just happened to match the theme and colour scheme perfectly. After reattaching the spacer frames and tabletop, this project is all ready for the kids to enjoy. Break out the cookies and milk to celebrate the completion of another successful project.

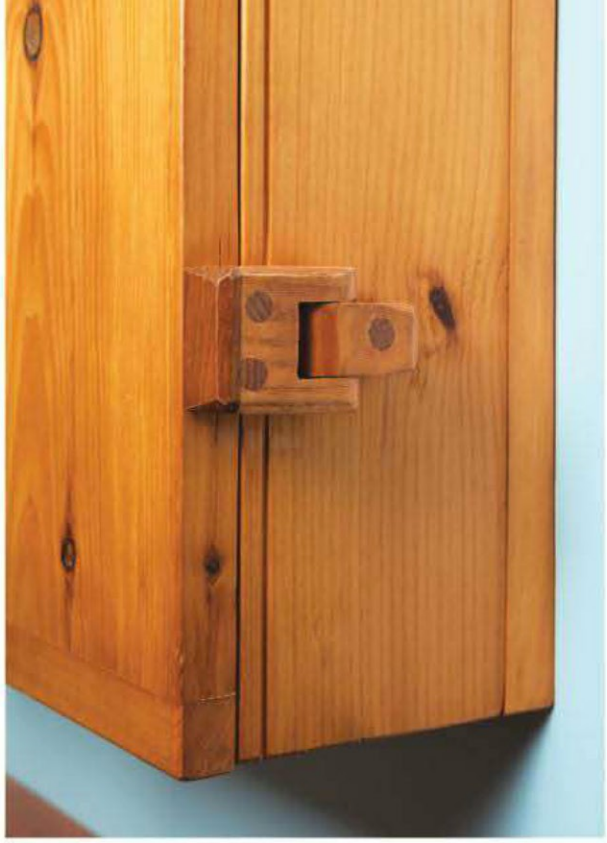
A PAINT & POLY PARTY

One advantage of working with plywood is that less time is required to get the surfaces ready for finishing. That's because the sheets come pre-sanded from the factory. All that's required from you is a quick sanding with 220-grit paper. I used acrylic craft paint to add colour to my project. Acrylic paint is a good choice for this application because it dries quickly and is readily available in a wide assortment of bright, primary colours. Only the exposed panels within the frames and the interior of the cabinet are to remain unpainted. It's a good idea to block off the edges of the unfinished areas with strips of painter's tape before dusting off the brushes. If you're brave, you can even invite the kids to help get the job done quicker. After the last coat of paint has dried, peel off the painter's tape and cover all the painted and unfinished surfaces with two or three coats of water-based polyurethane. This will adhere well to the acrylic pigments. A poly topcoat also provides long-lasting protection against inevitable bumps and scrapes.

HAND-TOOLED CABINET

Skill Level

Novice Expert



EVEN THE hardware is made of hardwood. Learn this technique once, and you'll want to use it again and again

Turn off the power and bring out the hand tools BY **STEVE MAXWELL**

WOODWORKING HAS BEEN around a lot longer than power tools, and building projects exclusively with hand tools still offers solid advantages. My bathroom wall cabinet began as a few rough-sawn white pine boards, and the electricity-free construction process was quiet, dust-free and even offered some useful exercise. Hand tools are ideal for working in small spaces where noise and airborne dust would rule out any woodworking at all.

Project, **Unplugged**

ELEVATE THE design of a simple door by breaking out the hand tools. A chisel and some time are all you need to create this elegant detail

Begin by rough-cutting 1"-thick rough pine boards to length and width with a handsaw. Make them larger than needed for now, then use a sharp hand plane to smooth one face of each piece. You could use any species of wood for this project, but white pine offers a great compromise between strength and easy working characteristics. That's why I like it.

MAKE IT SMOOTH

Planing is the most physically invigorating part of any hand-tool construction process, and it also demands a well-tuned hand plane. With one face of each workpiece smooth, use a combination square to mark a pencil line around all four edges of each piece of wood. These show a consistent thickness target for you to plane down to as you plane the second side. The boards I began with measured a full 1"-thick, and my final target width was ⅞". Exact thickness isn't as crucial as consistency; anything between ¾" and ⅞" is fine.

BODYWORK

Now, it's time to assemble the cabinet body. The ends of the top, bottom and shelves fit into rabbets and dados cut into the sides. Begin by cutting all parts to final length and width using a sharp handsaw. My current favourite is made by Irwin. It cuts quickly and smoothly, and costs

PHOTOGRAPHY: ROGER YIP

> Woodworking with hand tools takes longer and demands more skill, but there are advantages that go beyond just a quiet, dust-free process

TIPS FOR HAND-PLANING LUMBER

IF YOU DON'T have a workbench with bench dogs, fasten a strip of wood to the top of your bench to stop your wood from sliding as you plane each face. If your plane is sharp and you still find initial planing results are rough, you're probably planing against the grain. Simply turn the board around, end for end, and you'll get smoother results. You'll also find that rotating your plane to about a 45° angle relative to its forward motion yields the best results. This allows the blade to slice wood as the plane moves rather than just peel wood off.

about $20. Saw the boards to final length, but leave them about ⅛" wider than final width before planing the edges down to finished dimensions.

Use your combination square and a pencil to mark locations for the grooves in the sides that will support the ends of the top, bottom and shelves. Assign each part end to a corresponding location on the inside faces of the sides. Hand-planed parts

THIS CABINET is perfect for bathroom storage, but it would fit well wherever you need wall storage

builder's tip

Keep your hand tools in good working order so they are ready and able to perform as they should when you need them most. Clean off debris and sharpen plane blades, chisels and bits before storing your tools

naturally vary a little in thickness, so it's best to custom-cut joints to fit a particular part. Use a handsaw to cut a kerf down each side of all rabbet and dado grooves, then a couple of saw cuts in between. Chisel out the waste to create the joints. As you work, err on the side of joints that are a little too tight. This way, you can sneak up on an ideal fit by planing the ends of the boards slightly, so they fit just right. Test-fit the sides, top, bottom and shelf pieces, tweak as necessary, then glue parts together with clamps.

To keep construction simple, I applied the two back boards

You Will Need

PART	MATERIAL	IZE (T x W x L*)	QTY.
Wide door	pine	7/8" x 9 7/8" x 32"	1
Narrow door	pine	7/8" x 8 1/2" x 32"	1
Door end caps	pine	7/8" x 1 1/4" x 10 1/2"**	4
Sides	pine	7/8" x 4 3/4" x 34 1/2"	2
Top/bottom/shelves	pine	7/8" x 4 3/4" x 17"	5
Back panels	pine	7/8" x 9 3/8" x 32"**	2
Hinge knuckles	hardwood	1" x 1 7/8" x 2 1/4"***	2
Hinge bases	hardwood	1" x 1" x 2"	2

*Length indicates grain direction. ** Trim to fit. ***Length includes end cap

RECOMMENDED TOOLS

Various hand planes, handsaw, combination square, compass, chisels, screw driver, brace and bit

CARVING BASICS

To create a Tudor rose like mine, you'll need three carving chisels: a 3/8"-wide, 45° V-shaped parting tool; a gently curved, 1/2"-wide #5 straight gouge; and a more deeply curved, 3/8"-wide #7 straight gouge. Start by drawing two circles using a compass: one circle marks the overall outer diameter of the flower (8" on my cabinet); the other is about 1/8" smaller. Draw a third circle that marks the central part of the flower (mine is 1 5/8"), then straight lines radiating out evenly to define the petals. Large flowers work well with eight petals; six petals look best on flowers 8" or smaller in diameter.

Use the V-shaped parting tool to create a trough in the space between the two outer circles. It's important that you remove wood right up to these lines, but not beyond them. Next, repeat this marking process around the outside edge of the central circle. It's less critical that the width of this line be consistent—just don't venture into the circle. Finish up with the parting tool by making 1/8"-wide cuts along each straight line forming the initial boundaries of each petal.

Grab the #7 gouge, then remove wood in the petal areas between the straight lines, without removing to the full depth. This is the beginning of how the depth and texture of the petals is formed. Re-establish the straight lines with the parting tool and deepen the cut around the central circle, then switch back to the #7 gouge. Intentionally angle the cuts so the petals are cut deeper as you move closer to the central circle of the flower.

After two or three cycles back and forth with the parting tool and the #7 gouge, use the #5 gouge to round over the edges of the central circle. Aim to make it dome-shaped before switching back to the parting tool to deepen the lines defining the petals, followed by more work with the #7 gouge on the petals themselves. Your flower will really come to life when you round over the intersection points where the outer edges of the petals meet the outer circle. It's a small step that makes a huge difference.

PHOTO: STEVE MAXWELL

→ PLANS FOR THE HAND-TOOLED CABINET

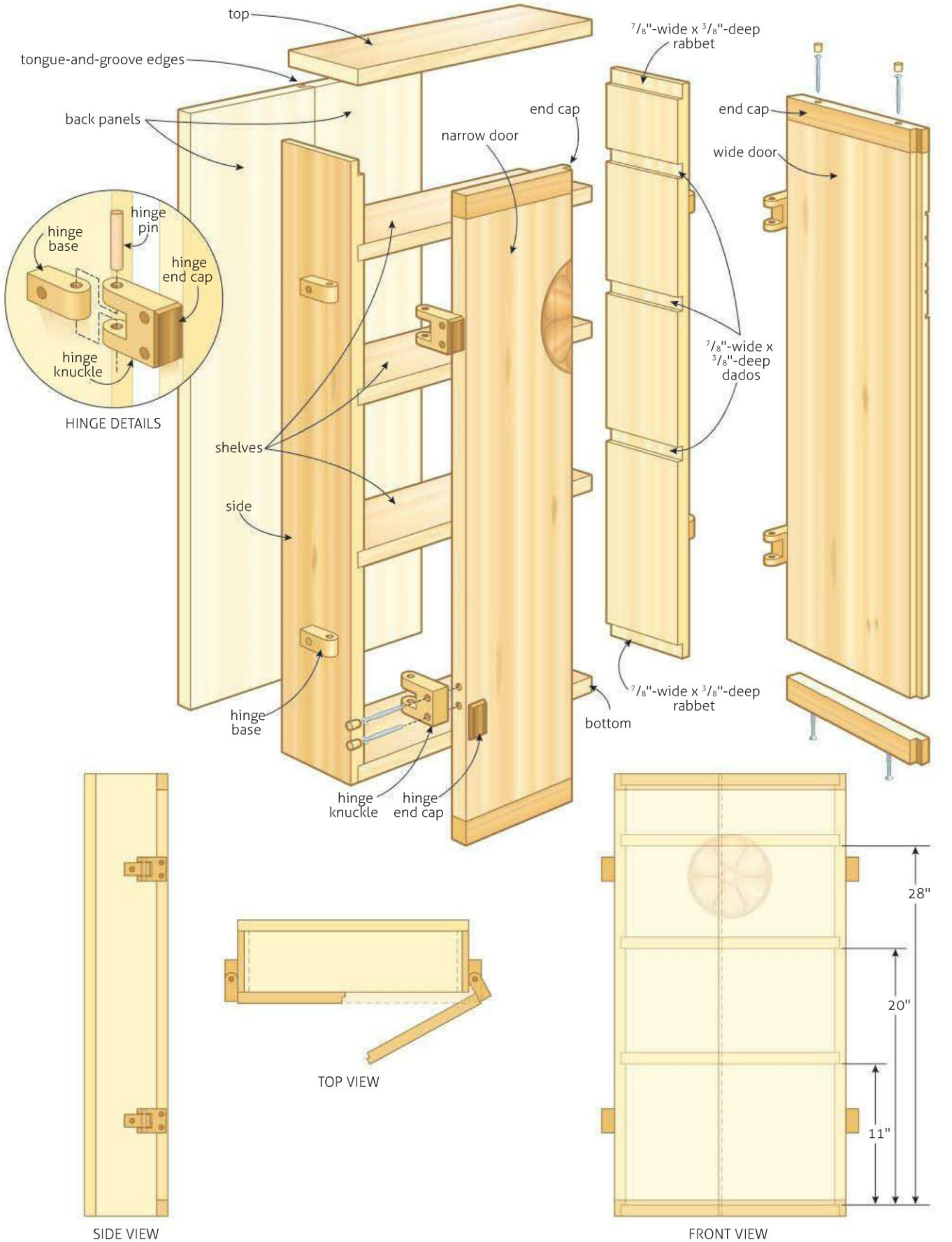


ILLUSTRATION: LEN CHURCHILL

KNOTS AND grain add to the cabinet's charm. Take a close look at each board and its characteristics before choosing pieces for each part

directly onto the back of the cabinet after creating tongue-and-groove details in their mating edges using a pair of antique hand planes. My great-grandfather brought these tools from England in 1902 and used them in his work as a cabinetmaker here in Canada. I also used one of his planes to create a decorative kerf on each outer side of the cabinet body, just back from the front edges. Fasten the back boards to the back edges of the cabinet using screws but no glue.

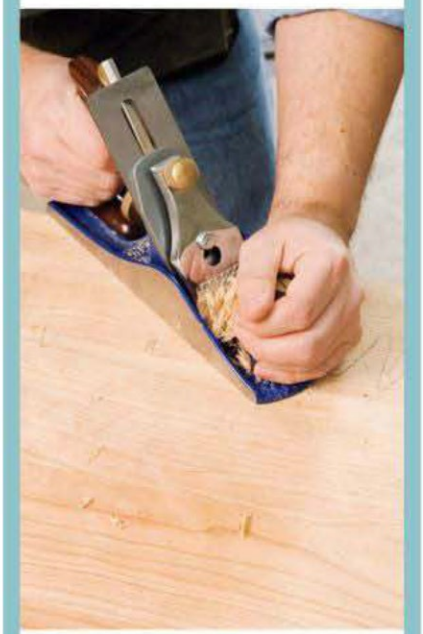
OPEN DOOR

Each door is made from one main piece of wood, with end caps secured to the top and bottom edges using tapered wooden plugs whittled by hand to cover the screws. I also opted to make one door wider than the other for style, with interlocking rabbet grooves where the doors meet. I carved my trademark Tudor-style rose design across the dividing line between the two doors, after they were installed and hinged. (See "Carving Basics" on page 48 for details on creating this design.)

Wooden hinges are the most complicated part of the project, but they are optional. You can opt for metal hinges or use some hardwood to make the hinge bases and knuckles, as shown in the plans. I used ash for these parts, with a layer of walnut glued to the ends of the knuckles for cross-grain strength.You'll find it easiest to drill holes for the hinge pins and mounting screws before cutting the notches in the knuckles. I used a sharp bit in a hand brace to make all holes, mounting the hinges with more plug-covered screws.

Woodworking with hand tools takes longer and demands more skill than using power tools, but there are advantages that go beyond just a quiet, dust-free process. There's something special about connecting with a woodworking tradition that's thousands of years old, especially when the results become part of your life. That's something I'm reminded of every time I open this cabinet and reach for my toothbrush.

CRITICAL TOOLS



A SMOOTHING plane requires a lot of elbow grease

SUCCESS WITH HAND tools is much more dependent on careful tool selection, adjustment and sharpening than with power tools.

SMOOTHING PLANE: Blade needs to be sharp enough to shave hair cleanly. The bottom of the plane, also called the sole, must be smooth and completely rust-free.

CHISEL: Also must be sharp enough to shave hair.

COMBINATION SQUARE: A simple but essential tool for marking square, consistent lines.

PENCIL: Mechanical design with H or 2H lead works best.

AUGER BIT: Sharpen the cutting edge and spur with a file.

HANDSAW: Japanese tooth pattern with a D-handle works best.

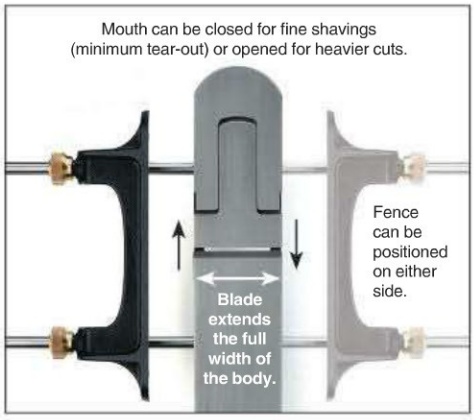
Our Newest Addition To Our Plane Family

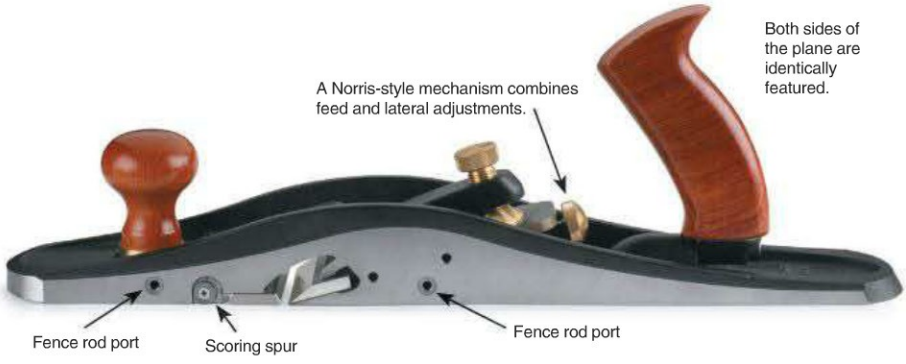
Veritas® Bevel-Up Jack Rabbet Plane

This plane takes large-scale rabbeting work in stride. Weighing 6 lb, with a full-width mouth and 15 1/8" long body similar to that of a jack plane, it is suitable for very large rabbets and fielded or bevelled panels – anywhere you need to make a long, wide cut that would require major effort with a smaller rabbet or shoulder plane. The long sole and substantial mass help ensure accuracy; it will not follow the bumps and valleys that a shorter plane would, and the 4 3/4" toe registers solidly to the workpiece. Set flush to both sides of the 2 1/4" wide body, the 3/16" thick bevel-up blade makes right- or left-handed corner cuts cleanly and accurately. The 15° bed angle, coupled with the 25° blade bevel, yields an effective cutting angle of 40°. Scoring spurs on either side of the body scribe the cut ahead of the blade, minimizing tear-out on cross-grain work. Adjustable for depth and projection, the spurs can be recessed for working with the grain or to ensure that the outside spur cannot accidentally score the workpiece. Mounted on two steel fence rods with brass collet screws, the 7 3/8" long removable fence can be set up to 5 1/4" from the shoulder and is through-drilled to accept a wooden fence extension. The rear tote tilts and locks to either side for knuckle clearance.

The stress-relieved ductile cast iron body is accurately machined, with a sole that is flat and square to the sides. The adjustable mouth can be closed to a narrow slit for fine shavings and minimum tear-out, or opened for heavier cuts. A Norris-style mechanism combines feed and lateral adjustments for easy, precise blade setting. Set screws on either side of the blade prevent it from shifting in use, but allow full lateral adjustment. Includes a lapped blade, available in A2, O1 or PM-V11™ steel. Patented. Made in Canada.

05P53.01	Jack Rabbet Plane, A2	**$299.00**
05P53.51	Jack Rabbet Plane, O1	**$299.00**
05P53.71	Jack Rabbet Plane, PM-V11™	**$309.00**
05P53.02	2 1/4" Blade, A2	**$ 37.00**
05P53.52	2 1/4" Blade, O1	**$ 37.00**
05P53.72	2 1/4" Blade, PM-V11™	**$ 48.00**





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FIREWOOD CART

Skill Level

Novice Expert

Fireside Function

Build a sturdy cart to help stoke your next fire

BY **RYAN SHERVILL**

THOSE OF YOU who have a wood stove or fireplace know how tedious it can be to move firewood from where it's stored to where it's burned. Whether you employ the "armload method" or use a canvas carrier, it generally means multiple trips back and forth from the woodpile to the stove. I designed this firewood cart to help make this chore easier and faster, requiring fewer trips to the woodpile and less strain on your back.

> The overall shape of the firewood cart is perfect for travelling up stairs or wherever you need to haul your logs

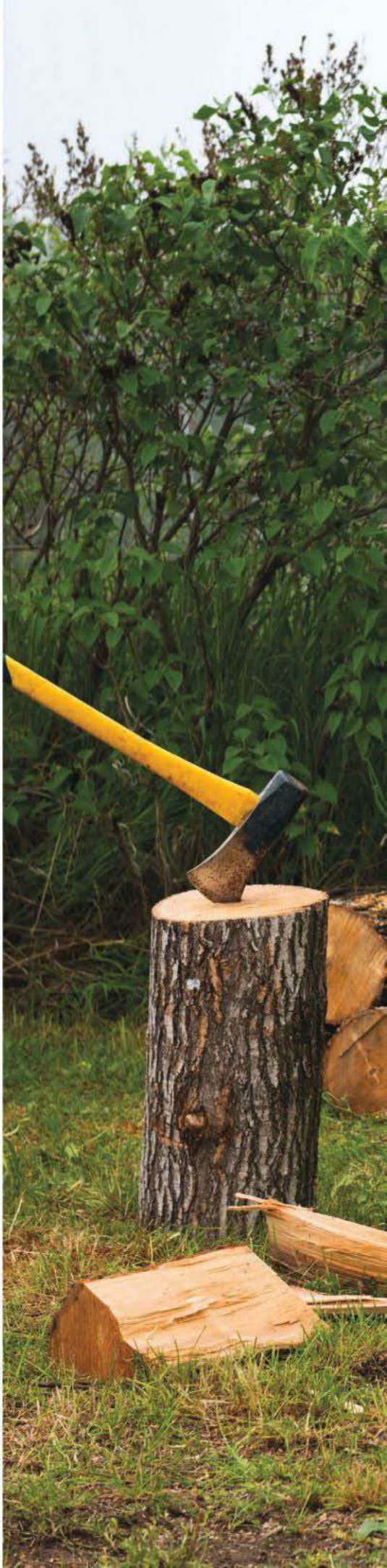
THE UNIQUE position of the handle make it easy to carry a big load

I had some objectives I wanted to achieve with this design. It had to be functional, of course, but I also wanted it to be made with readily available parts and materials, be lightweight and fit through a standard doorway. The unique, forward-of-centre placement of the handle and the pivot point make the cart extremely easy to tilt and manoeuvre.

SHOP WOOD

This entire cart is built from a 2x4 sheet of 12mm (essentially, ½" thick) Baltic birch ply straight off the rack. Since the biggest parts are irregular in shape, it makes sense to work straight from the grid cutting guide.

Begin by taking a long straight-edge and marking a grid of 1" squares on your plywood sheet with a pencil. When you are done, use the grid diagram to plot the shapes required on your sheet. The front supports and back support have straight edges, so you could simply measure, mark these with a pencil and cut them on the tablesaw; but the sides are too irregular to cut this



PHOTOGRAPHY: ROGER YIP

NEVER STRUGGLE again to carry just one more piece of firewood in your arms

builder's tip

Rather than using the jigsaw, the notches cut into the lower horizontal members are best made by drilling a 3/8"-diameter hole and then sawing down each side with a handsaw

way. With all parts laid out, saw them to shape. A jigsaw equipped with a plywood/veneer blade is ideal for cutting out the sides. Cut out all the parts, then sand to clean up any rough edges.

The next step is to drill the ⅝"-diameter holes through the sides for the axle, and the ¼"-deep x 1⅛"-diameter counterbored pockets to accept the long dowels

THE CART features a pivoting arm to facilitate quicker unloading if desired

Testimony

SHARPEN WITH EASE

Before you carry your firewood, you need a sharp tool to cut it up

I'VE SEEN TWO previous attempts to create a system that sharpens chainsaws as they run, but neither of them worked well enough. The Oregon Powersharp (powersharp.com; 1-800-223-5168) system is different. It fits most small- and medium-size saws, and greatly reduces the skill and time needed to sharpen a chain.

The Powersharp system has three unique parts: a sharpening unit that includes an internal, U-shaped grindstone; a special bar made to anchor this sharpener; and a proprietary chain that's designed to be sharpened on top of the teeth. The entire kit costs about $80. The bar and sharpener body will last a long time, and a new chain and replacement grindstone come together as a $35 package. You can expect five to 15 sharpening sessions before the chain is toast.

At the first sign that your chain is dull, shut off the saw, hinge open the sharpening unit, then, snap it shut around the two anchor holes. Start up your saw again, then find a stump, large rock or any other solid object and push the spring-loaded nose of the sharpener against it while the saw's engine is being revved up. This pushing operation slides the U-shaped grindstone into the moving chain as it travels around the tip of the bar. You know it's working because small sparks will come out from the bottom of the sharpening unit. A Powersharp-sharpened chain won't be quite as effective as a brand new chain, but it's still at least as good as what most chainsaw users can achieve with a file.

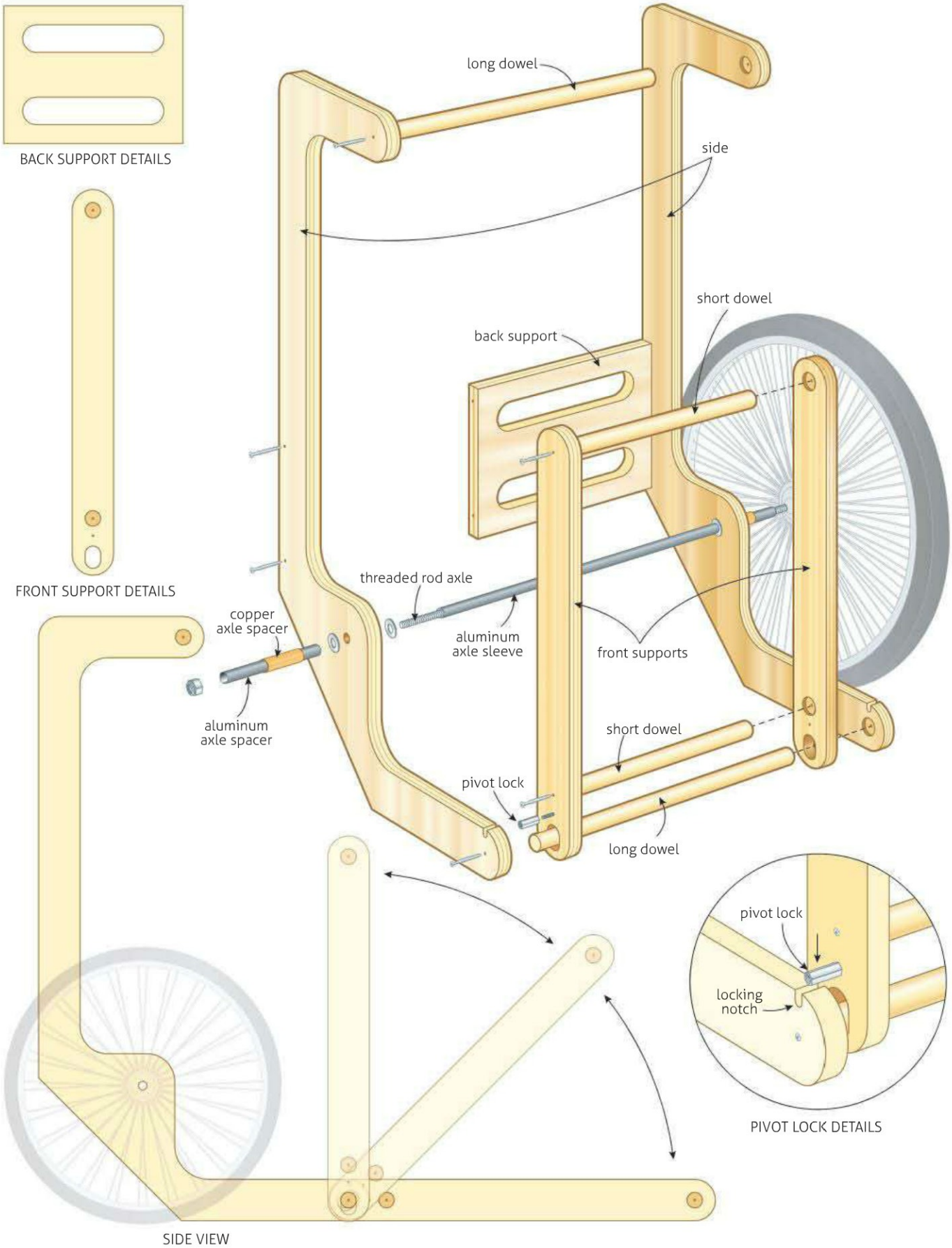
Besides sidestepping the steep learning curve involved with traditional chain-sharpening skills, the Powersharp is fast—making it attractive even for those who know how to sharpen with a file. It takes no more than a minute or two to complete the entire process. Even an extremely dull chain sharpens up quickly. Part of this comes courtesy of the flat, diamond dressed surface on the chain itself. This keeps the U-shaped surface of the grindstone relatively flat and glaze-free enough to sharpen the cutters well, even given the oily conditions that develop there.

I use chainsaws a lot, and although I'll still be sharpening my big saws the usual way, the smaller saw I use for limbing and light work won't see a file anytime soon.

—Steve Maxwell

OREGON POWERSHARP SYSTEM
Chainsaw sharpener
Price: $80

→ PLANS FOR THE FIREWOOD CART



ILLUSTRATIONS: LEN CHURCHILL

later. These dowels connect the sides of the firewood cart. The axle holes have to be located in exactly the same place on both sides, so clamp them together and drill both side parts at once. The counterbored pockets for the dowels are best created using a drillpress spinning a Forstner bit. Use the drillpress's depth-stop to ensure the holes are consistently ¼" deep. While you're at the drillpress, go ahead and bore the oblong holes through the front supports as well. These 1⅛" x 1⅝" ovals are made by drilling overlapping holes with the same Forstner bit, then straightening the sides of the holes with a sharp chisel. The last step is to drill a ⅛"-diameter hole in the centre of each pocket to allow easy driving of screws during assembly.

Now, it's time to cut two short dowels to 12⅜" long, and two long dowels to 13½" long. I used a 5'-long piece of 1⅛"-diameter hardwood dowel for all pieces. Mark and predrill 7/64"-diameter x 1½"-deep pilot holes in the ends of the dowels. These holes ease assembly and help to prevent the dowels from splitting as the screws are driven in later.

ASSEMBLY LINE

If you are going to be finishing your cart, now is the time to do it. I applied three coats of Krylon Clear spray to give the wood some protection, but you can use poly, lacquer or even just leave your cart unfinished if you like.

Begin by building the swing-away front assembly. Insert the 12⅜"-long dowels into the recesses you cut earlier in the front supports, then drive 1¾"- or 2"-long pan- or washer-head screws into the dowel's ends to lock everything together.

Next, assemble the sides of the cart using the same method. Just be sure to place the completed front support assembly between the side parts as you do. The bottom long dowel must go through the oval holes in the front supports. With the two long dowels in place, insert the plywood back panel, as shown in the plans, and secure it with three to four 1½"-long pan-head screws per side, driven into predrilled holes.

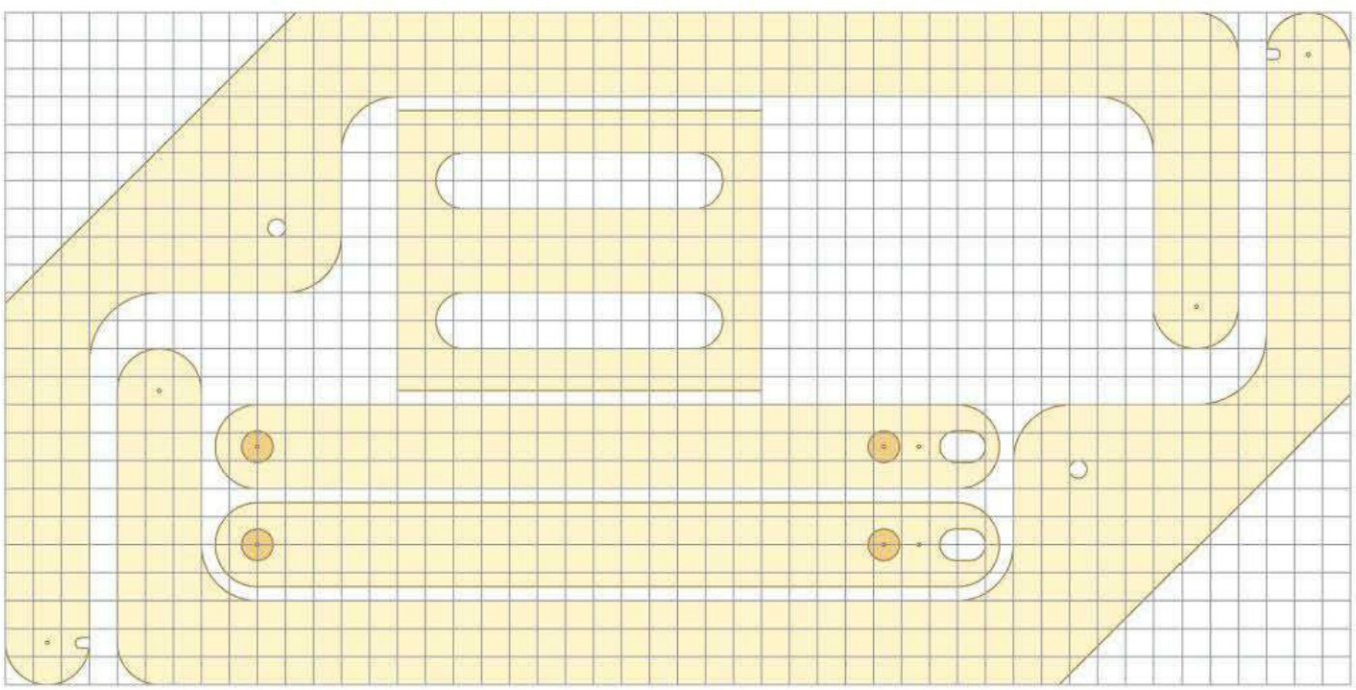
Next, you need to make the axle. I have a special technique I used for this. (See "Axle Excel" at right for the complete step-by-step instructions.)

The last step is to make the swivelling front supports capable of locking in the upright position. A small metal rod assembly makes this happen. Using a second set of hands or a clamp, swing the arm assembly into the upright position and clamp it there. Mark the

Shopping List

SHOPPING LIST	SIZE (T x W x L)	QTY.
Baltic birch plywood	1/2" x 2' x 4'	1 sheet
Hardwood dowel	1 1/8" x 5'	1
Threaded rod	1/2" x 36"	1
Aluminum tube	¾" outside dia. x 36"	1
Copper pipe	¾" inside dia. x 12"	1
Flat washers	5/8"	4
Lock nuts	5/8"	2
Stove bolts	1/4" x 1 1/4"	2
Coupler nuts	1/4"	2
Wheels	20"-dia., 3 1/4" hubs (LV# XP225)	2

CUTTING GUIDE FOR THE FIREWOOD CART



1 square = 1"

AXLE EXCEL

To build this cart, I used a favourite technique of mine: the torsion bar. Rather than just using a standard 3/4"-diameter axle, I used a 1/2"-diameter threaded rod and a 3/4"-diameter hollow-tube assembly setup in such a way that there is tension applied across the length of the axle. Having this assembly under tension creates an incredibly rigid axle, and locks together and stiffens the entire cart substantially. To make this assembly, you are going to need: a 36" length of 1/2"-diameter threaded rod, a 36" length of 3/4"-outside diameter aluminum tube, four 1/8"-thick 5/8" flat washers, two 5/8" lock nuts and a short length of 3/4"-diameter copper pipe.

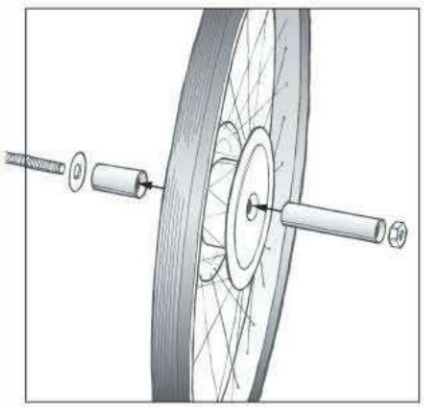
The torsion assembly requires three pieces of the 3/4"-diameter aluminum tube. (Note: Most 3/4" aluminum tube has an inside diameter of just over 5/8" and should accept the threaded rod, but it's a good idea to check before cutting.) Using either a pipe cutter or your mitre saw spinning a standard carbide-tooth wood blade used slowly, cut one piece of pipe 12 3/4" long for the centre, and two more at 5 3/4" long for the sides. The next step is to make up the spacers that keep the wheels in place, well away from the cart sides. I've found that standard copper pipe (with an inside diameter of 3/4") fits perfectly over the aluminum tube and makes a great spacer. Cut off two of these at a length of 2 3/8" and remove burrs on the ends with some sandpaper. You'll notice in the pictures that there is no copper pipe visible. It's there; I just painted it silver, so don't let the pictures confuse you.

Next, cut the threaded rod to approximately 28" long with a hacksaw to make it easier to handle during assembly. This is slightly over length, but you can cut it accurately in the last step.

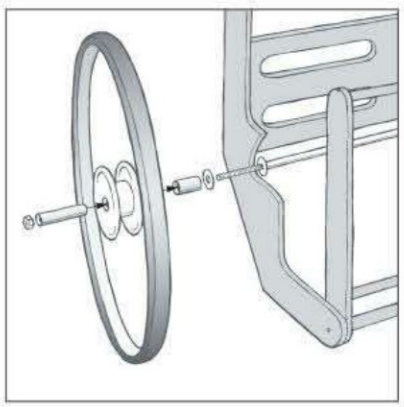
To assemble the wheel-and-axle assembly, take one end of the threaded rod and install one nut, keeping it flush with the end of the rod. Next on the rod goes the first short aluminum tube. Overtop of this tube, slide on your first wheel assembly, then follow that up with one of the copper pipe spacers and a flat washer.

Next, slide the rod through one side of the cart, through one flat washer, through the long aluminum tube, then through another flat washer, the other side of the cart and, finally, one more flat washer. Repeat the steps for installing the short aluminum tube, the copper spacer tube, the wheel and the nut.

At this stage, you should have an inch of threaded rod extending out past the nut on this last side. Clamp a set of locking pliers on the threaded rod to prevent it from spinning, then turn the lock nut with a wrench until it is very tight. By tightening this nut, the tubes are all put under compression, while the rod itself is put under tension. The result is the torsion effect I mentioned earlier, making for an extremely stiff and strong setup. In addition, the copper pipe spacers and the nuts serve as a stop on each side of the wheels, keeping them in place yet free to rotate. Remove the locking pliers, then grab a hacksaw and cut off the extra rod, flush with the nut.



IN THE wheel: one nut on the threaded rod, a short aluminum tube, then a copper pipe spacer and a flat washer



INSTALL THE axle on the cart with two flat washers and the long aluminum tube

TIGHTEN THE assembly with locking pliers on the threaded rod and a wrench on the lock nut

ILLUSTRATIONS: STEPHEN HUTCHINGS

correct location for the pivot-stop bolts, then drill ¼"-diameter holes through the sides with a brad-point bit. Insert a ¼"-diameter x 1¼" stove bolt into each hole, then thread a ¼" coupler nut over the end of each bolt. You'll end up with a solid-metal extension on the bottom sides of the front supports. If everything is working properly, the entire front assembly should settle down so the coupler nuts engage solidly into the locking notches. Test the locking and unlocking action, and adjust if necessary.

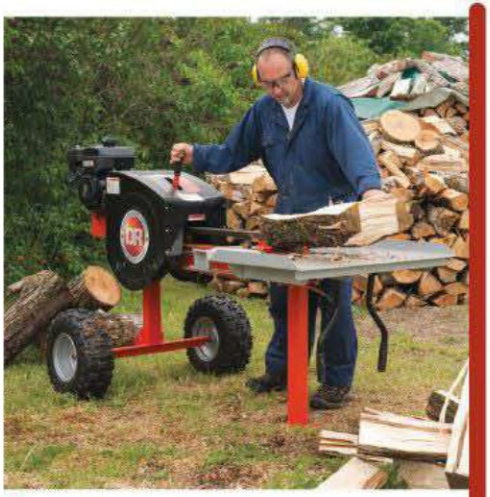
Ordinary hardware-store components, a couple of wheel assemblies and some plywood come together to make a handy cart to ease those many trips to the woodpile.

WOOD SPLITTER OPTIONS

IF YOU'VE SPLIT wood, you've been there: small logs that are full of knots and fibres that feel as if they are glued together, even after an assault with the sharpest axe. Or maybe you have several cords of round logs piled and waiting for your energy. That's where these power splitters come in handy. Crank up one of these beauties, and you're ready to make some fire-ready wood before you even break a sweat.

TRADEMASTER TG28001
ELECTRIC LOG SPLITTER

Log capacity (length): 20.5" long
Power: 4-ton splitting force
Features: Handle and wheels for easy mobility. Stand available (sold separately)
Price: $420
Contact: homehardware.ca



DR RAPIDFIRE GAS SPLITTER
6-HP INERTIA SPLITTER

Log capacity (length): 24" long
Power: Two 74-lb. flywheels
Features: Two-second cycle time. Fast cycle time saves fuel.
Price: $2,400
Contact: drpower.com

KING KCG-15LS
6.5-HP GAS LOG SPLITTER

Log capacity (length): 21" long (vertical or horizontal)
Power: 15-ton splitting force
Features: Eight second cycle time. Cross-wedge splits logs into four
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Contact: kingcanada.com

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Tub Makeover

An easy update for a tired bathtub

BY **GARY RUDY** PROJECT BY **DAVE PAUL**

STYLES COME AND go. And while nothing lasts forever, simple subway-style tiles coupled with a plain white tub are a classic combination that should stay in style for a long time. That was the idea behind this bathtub makeover—simple and long-lasting. The old and dated beige tiles were removed (and the resulting wall damage, behind the tile, repaired), and the next step was tiling the shower area. Once the tiles were complete, the bathtub was professionally sprayed.

1. Lay a sheet of plywood on the tub edges to provide a stable working surface, then draw a level reference line around the tub's top edges
2. Draw both a centre line running left to right and another line vertically in the middle of the wall
3. Begin by laying a full tile where the two reference lines intersect. Use a notched trowel to apply the mastic (adhesive) evenly on the wall

IT'S AN easy update...once the old tiles have been removed, the rest comes together quickly

4. Choose plastic spacers that will give you the spacing you prefer. Tiles usually come with a recommended spacing size

5. When cutting the tiles to fit, include the grout space

6. A snap cutter is an inexpensive and efficient way to cut most tile material

7. The hole for the shower head's supply pipe is cut using a Lenox diamond hole saw. The hole saw makes a neat and tidy hole in the tile

8. A hole for the tub's filler supply was cut using the same diamond hole saw

10 & 11. After the tile work is done, professional tub spraying is a great way to renew your worn tub. We hired thetubguys.ca to spray this 30-year-old steel tub, and the results were impressive

9. Glue plastic tile edging in place on the outside edges of the tub area. The plastic strips are available to accommodate different tile thicknesses and create a tidy transition at the edges

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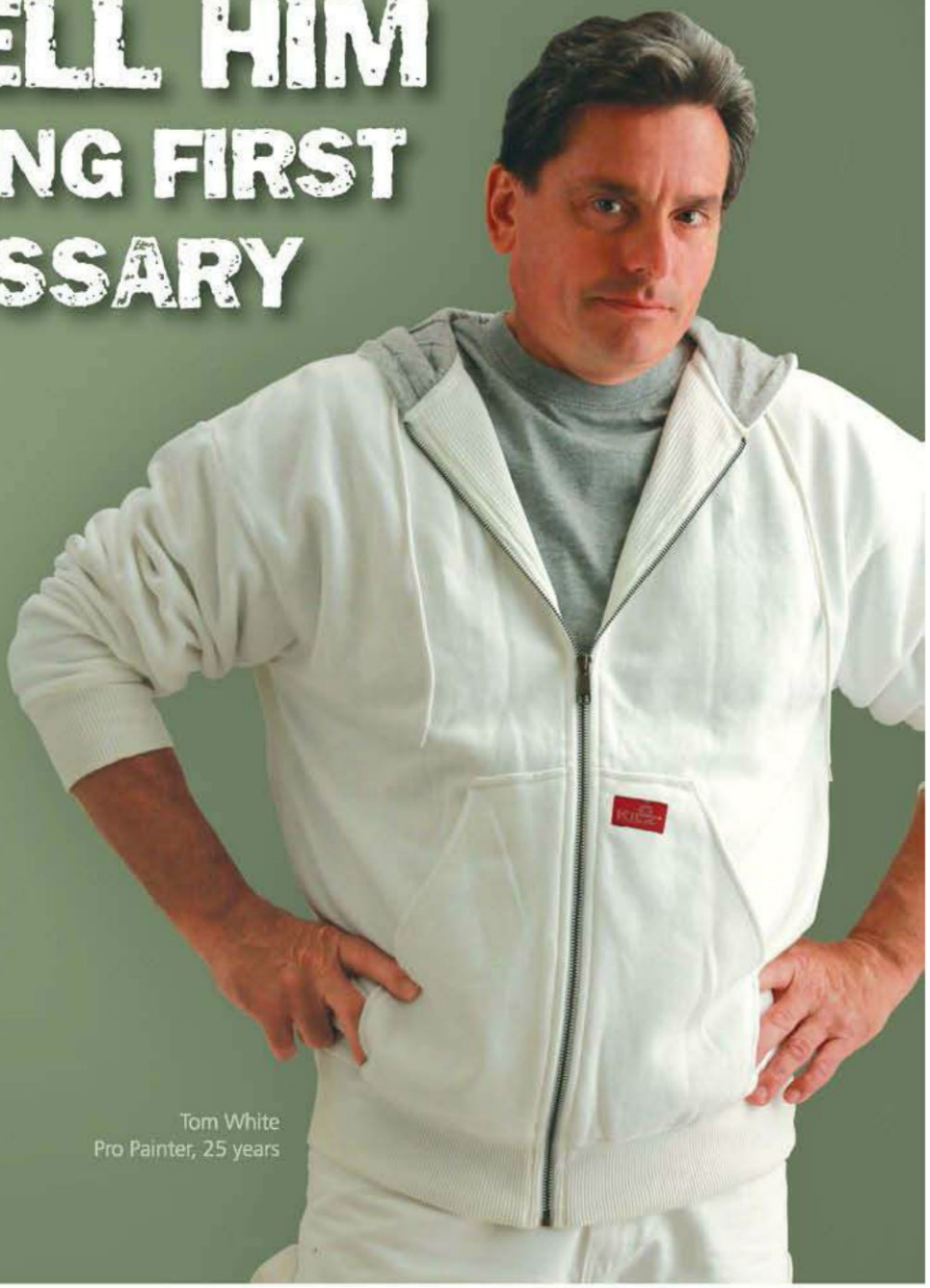

Tom White
Pro Painter, 25 years

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ANNIVERSARY TRIVIA

Canadian Home Workshop is celebrating 35 years of DIY know-how and woodworking wisdom. Test your knowledge of the magazine itself with some workshop trivia.

1 What was the original title of the magazine?
a) *Woodworking 101*
b) *Home Workshop*
c) *Canadian Workshop*

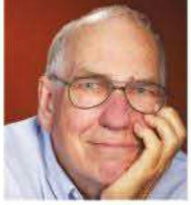
2 What year did the name change?
a) 1998
b) 1993
c) 1991

3 What woodworker has built the most projects for the magazine?
a) Steve Maxwell
b) Gary Walchuk
c) Paul Rush

4 Every spring, *CHW* holds a contest for readers to build a dream _____?
a) workshop
b) deck
c) rocking horse

5 How many trips to the emergency room has Paul Rush made in the writing of his column?
a) Too many to count
b) As many as the number of columns he's written
c) All of the above

ANSWERS: 1. c); 2. a); 3. b); 4. b); 5. c);



Paul's Place
BY **PAUL RUSH**

> There, on the very peak of my sloping garage roof, were four small boys peering down

Errors of the '70s

On the occasion of CHW*'s anniversary, Paul remembers projects from 35 years ago*

AT THE TIME this magazine came to life, 35 years ago, I was in the habit of doing simple projects that always had something out of kilter. Yes, even then. Take, if you will, my first and only wine cellar.

In the basement of my sturdy old house, there was a short passage from the workroom to the laundry room, a spot for shelves about 6' high and 4' wide. I realized I could store wine in this passage if I just cut a few boards and made some bins. Even for me, this was a simple thing; and, very shortly, I had bins that might hold 30 bottles. Excellent.

The bins were all slanted slightly toward the back to keep the bottles secure, and I started with about 10 or 12 bottles, very pleased with my efforts. A couple of days later, I went downstairs and there, on the floor, was a smashed bottle of Medoc. I assumed I had put it on the rack wrongly because all seemed secure.

Two days later, there was another broken bottle.

I went upstairs to my living room to ponder this and my four-year-old son came by.

"Watch me jump into the sunroom, Dad," he said. And with that, he did. A solid body thumping down exactly over my basement wine cellar. I went into the basement and called up to have him jump again. When he did, all the bottles shook.

I realized it would be easier to dismantle the cellar than to curb a young boy. I removed the wine, took it upstairs to the kitchen—and that was the end of my first and last wine cellar.

My next misadventure came almost at the same time, when I found simple plans for a play structure. I made a 6' cube out of 2x4s, added a few rungs and a simple ladder. Good fun for four-year-old boys, I thought.

I could have left it on the grass out back in our small yard, but our attached garage had a 4'-high flat roof that extended outward. It must have been added after someone bought a car with a long hood. I wrestled my structure up onto this roof and left it to the small children of the neighborhood to discover. Which they did.

The next afternoon, I was returning from a swim when I saw the kindly woman from across the street staring at my garage and flapping her hands. I stopped and she pointed. There, on the very peak of my sloping garage roof, were four small boys peering down, 15' above the hard cement drive. They had climbed my structure and made the natural progression onto the roof. I dashed to the back, shouted them down and removed the structure.

(It would be fair to add that a couple of years later, I clambered up onto this roof to reshingle and, while doing so, I fell through. Of course, I was not a small boy.)

ILLUSTRATION: STEPHEN MacEACHERN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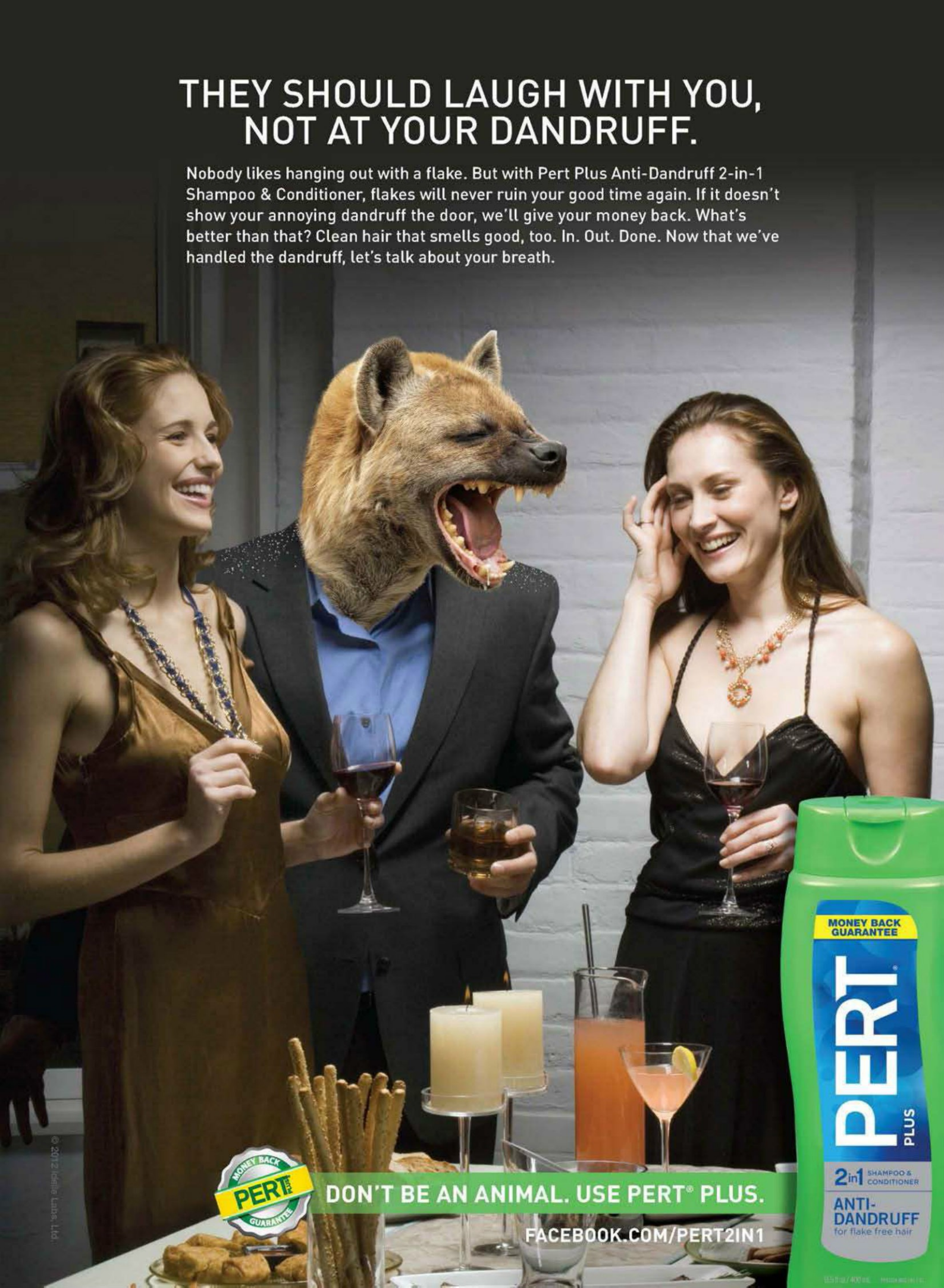

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