family handyman®

SMART HOME IMPROVEMENT®

SUPER EASY WORKBENCH

BUILD IT BASIC OR LOAD IT WITH FEATURES!

OUR FAVORITE CORDLESS ROUTERS

THE BEST GLUE **FOR EVERY JOB!**

EXPERT TIPS **FOR A HEALTHY GARDEN**

NO MORE MOWING **IS A ROBO MOWER RIGHT FOR YOU?**

FASTEN ANYTHING TO CONCRETE!

APRIL 2021

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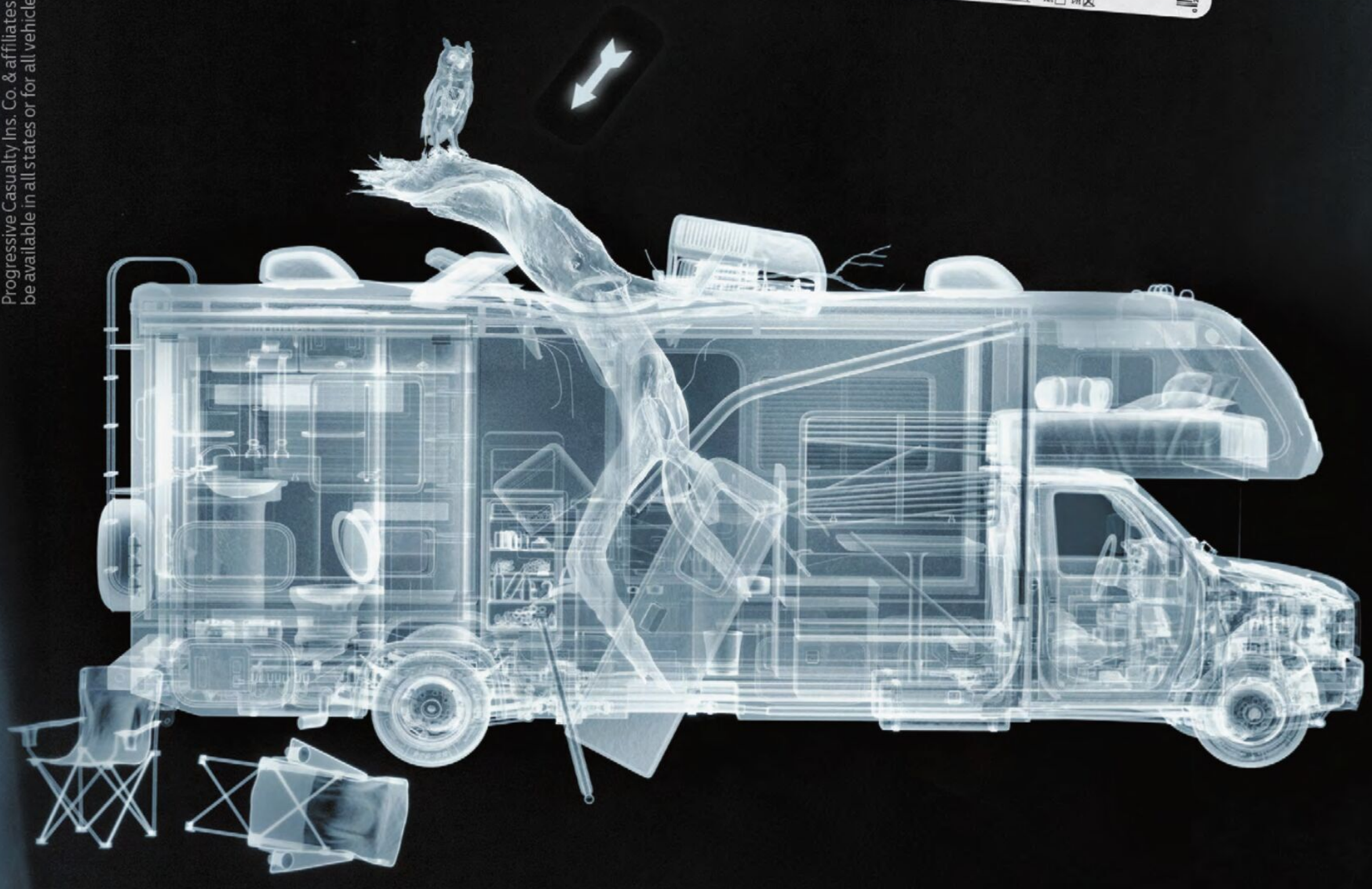
TREE LIMBECTOMY

DATE 07/19 HR 03 MIN 24 AM ☐ PM ☒



Translation: Your RV has a brand-new skylight thanks to an age-old tree branch.

But no matter the diagnosis, we're here to help with Comprehensive and Collision coverage. Get protection you can really see with Progressive.

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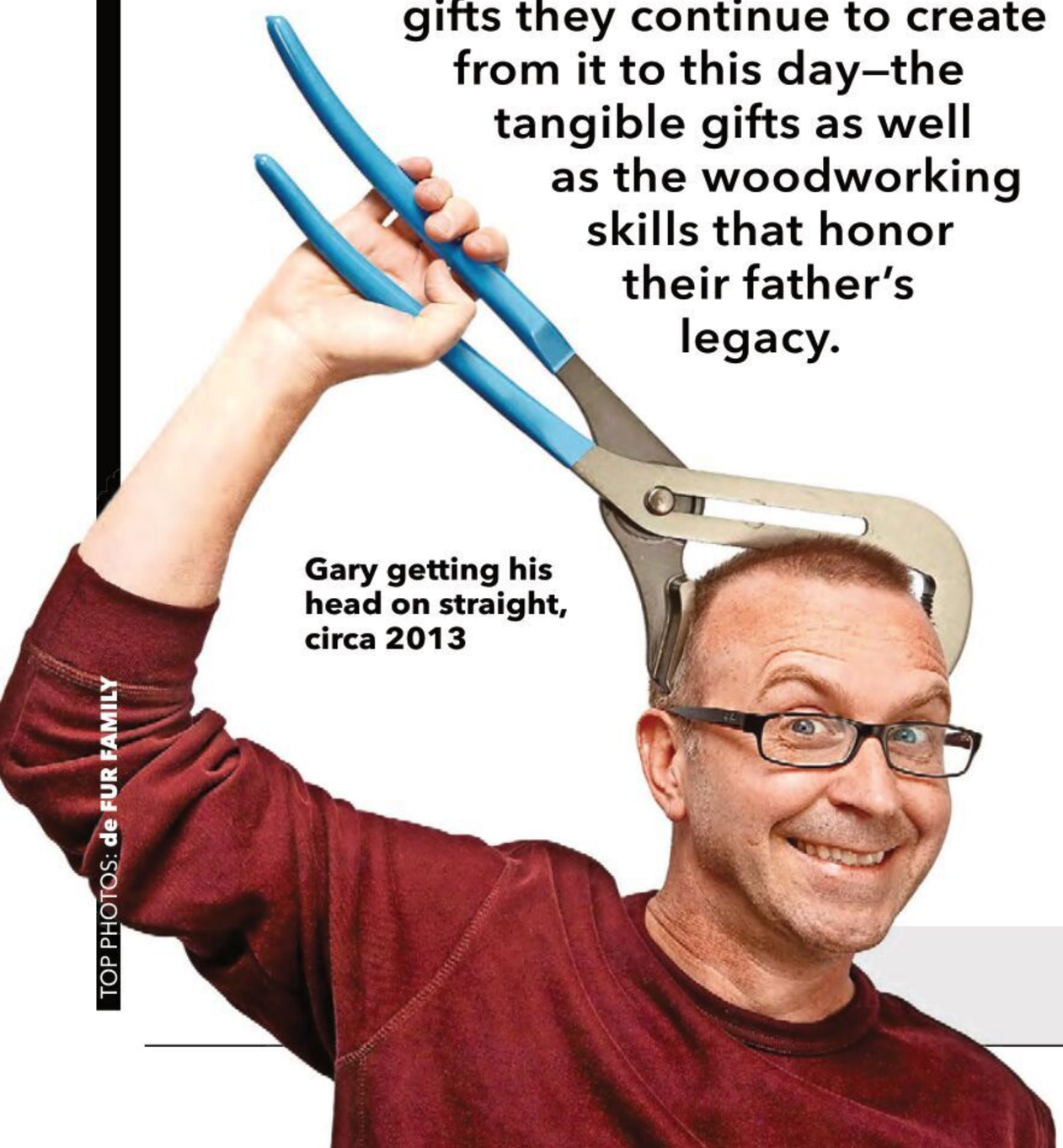
Progressive Casualty Ins. Co. & affiliates. Coverage features subject to policy terms, and may not be available in all states or for all vehicles. Deductible applies. Prices vary based on how you buy.

EDITOR'S LETTER

Past, Present, Future

When we celebrated our 70th anniversary a few months ago, we heard from many readers about the role of *Family Handyman* in their lives. One of my favorites came from the heirs of the late Paul de Fur, the first editor of *Family Handyman*. His children shared the story of the black walnut tree their father had cut down a few years after the magazine was launched. It's a story not only of the tree itself but also of the gifts they continue to create from it to this day—the tangible gifts as well as the woodworking skills that honor their father's legacy.

Black walnut bowls from the de Fur family tree



Gary getting his head on straight, circa 2013

TOP PHOTOS: de FUR FAMILY

Last month we also marked a bittersweet moment. After nearly three decades at *Family Handyman*, Gary Wentz decided to hang up his shop apron. With his hands-on knowledge and unfailing sense of humor, Gary shaped this magazine for good. We're thankful for his guidance both to our readers and to the editorial staff as we move into our next 70 years.

All of this leads me back to what we do and why. What are we building? What are you building? What is it that we're all passing along? It might be knowledge, but it could also be cabinets that are hung correctly or the flooring we choose to put down next. It all adds up to a legacy being built in real time.

As the landscape around us continues to change, so will the tools and techniques we use. Trends come and go, as we've recorded in the issues of our magazine. But the importance of home never changes. Thank you for allowing us into yours and helping to build our legacy.

NICK GRZECHOWIAK
CHIEF CONTENT OFFICER

SHARE YOUR FEEDBACK!
Write to us at editors@thefamilyhandyman.com

For certain adults with **newly diagnosed metastatic non-small cell lung cancer (NSCLC)** that **tests positive for PD-L1**

OPDIVO® (nivolumab) + YERVOY® (ipilimumab) = **A CHANCE FOR MORE BIG HORIZONS**

A Chance to Live Longer™

THE ONLY FDA-APPROVED **CHEMO-FREE COMBINATION** OF **2 IMMUNOTHERAPIES** THAT WORKS DIFFERENTLY

In a study of newly diagnosed advanced NSCLC patients, half of those on OPDIVO + YERVOY were alive at 17.1 months versus 14.9 months on platinum-based chemotherapy.

Thank you to all the patients, nurses, and physicians in our clinical trials.

Results may vary. OPDIVO® + YERVOY® is not approved for patients younger than 18 years of age.

Indication & Important Safety Information for OPDIVO (nivolumab) + YERVOY (ipilimumab)

Only your healthcare professional knows the specifics of your condition and how OPDIVO in combination with YERVOY may fit into your overall therapy. The information below does not take the place of talking with your healthcare professional, so talk to them if you have any questions.

What are OPDIVO and YERVOY?

OPDIVO and YERVOY are prescription medicines used to treat people with a type of advanced stage lung cancer called non-small cell lung cancer (NSCLC). OPDIVO may be used in combination with YERVOY as your first treatment for NSCLC when your lung cancer has spread to other parts of your body (metastatic) **and** your tumors are positive for PD-L1, but do not have an abnormal EGFR or ALK gene.

It is not known if OPDIVO and YERVOY are safe and effective when used in children younger than 18 years of age.

What is the most important information I should know about OPDIVO and YERVOY?

OPDIVO and YERVOY are medicines that may treat certain cancers by working with your immune system. OPDIVO and YERVOY can cause your immune system to attack normal organs and tissues in any area of your body and can affect the way they work. These problems can sometimes become serious or life-threatening and can lead to death and may happen anytime during treatment or even after your treatment has ended. You may have more than one of these problems at the same time. Some of these problems may happen more often when OPDIVO is used in combination with YERVOY.

Call or see your healthcare provider right away if you develop any new or worse signs or symptoms, including

- **Lung problems:** new or worsening cough; shortness of breath; chest pain
- **Intestinal problems:** diarrhea (loose stools) or more frequent bowel movements than usual; stools that are black, tarry, sticky, or have blood or mucus; severe stomach-area (abdominal) pain or tenderness
- **Liver problems:** yellowing of your skin or the whites of your eyes; severe nausea or vomiting; pain on the right side of your stomach area (abdomen); dark urine (tea colored); bleeding or bruising more easily than normal
- **Hormone gland problems:** headaches that will not go away or unusual headaches; eye sensitivity to light; eye problems; rapid heartbeat; increased sweating; extreme tiredness; weight gain or weight loss; feeling more hungry or thirsty than usual; urinating more often than usual; hair loss; feeling cold; constipation; your voice gets deeper; dizziness or fainting; changes in mood or behavior, such as decreased sex drive, irritability, or forgetfulness
- **Kidney problems:** decrease in the amount of urine; blood in your urine; swelling in your ankles; loss of appetite
- **Skin problems:** rash; itching; skin blistering or peeling; painful sores or ulcers in mouth or nose, throat, or genital area
- **Eye problems:** blurry vision, double vision, or other vision problems; eye pain or redness

Problems can also happen in other organs and tissues. These are not all of the signs and symptoms of immune system problems that can happen with OPDIVO and YERVOY. Call or see your healthcare provider right away for any new or worsening signs or symptoms, which may include:

- Chest pain; irregular heartbeat; shortness of breath; swelling of ankles
- Confusion; sleepiness; memory problems; changes in mood or behavior; stiff neck; balance problems; tingling or numbness of the arms or legs
- Double vision; blurry vision; sensitivity to light; eye pain; changes in eye sight
- Persistent or severe muscle pain or weakness; muscle cramps
- Low red blood cells; bruising

Getting medical help right away may help keep these problems from becoming more serious. Your healthcare team will check you for these problems during treatment and may treat you with corticosteroid or hormone replacement medicines. Your healthcare team may also need to delay or completely stop your treatment if you have severe side effects.

What should I tell my healthcare provider before receiving OPDIVO and YERVOY? Before you receive OPDIVO and YERVOY, tell your healthcare provider about all of your medical conditions, including if you:

- have immune system problems such as Crohn's disease, ulcerative colitis, or lupus
- have received an organ transplant

- have received or plan to receive a stem cell transplant that uses donor stem cells (allogeneic)
- have received radiation treatment to your chest area in the past and have received other medicines that are like OPDIVO
- have a condition that affects your nervous system, such as myasthenia gravis or Guillain-Barré syndrome
- are pregnant or plan to become pregnant. OPDIVO and YERVOY can harm your unborn baby
- are breastfeeding or plan to breastfeed. It is not known if OPDIVO or YERVOY passes into your breast milk. Do not breastfeed during treatment with OPDIVO or YERVOY and for 5 months after the last dose of OPDIVO or YERVOY

Females who are able to become pregnant: Your healthcare provider should do a pregnancy test before you start receiving OPDIVO or YERVOY.

- You should use an effective method of birth control during your treatment and for at least 5 months after your last dose of OPDIVO or YERVOY. Talk to your healthcare provider about birth control methods that you can use during this time.
- Tell your healthcare provider right away if you become pregnant or think you are pregnant during treatment with OPDIVO or YERVOY. You or your healthcare provider should contact Bristol Myers Squibb at 1-844-593-7869 as soon as you become aware of the pregnancy.

Tell your healthcare provider about all the medicines you take, including prescription and over-the-counter medicines, vitamins, and herbal supplements.

Know the medicines you take. Keep a list of them to show your healthcare providers and pharmacist when you get a new medicine.

What are the possible side effects of OPDIVO and YERVOY?

OPDIVO and YERVOY can cause serious side effects, including:

- **See "What is the most important information I should know about OPDIVO + YERVOY?"**
- **Severe infusion reactions.** Tell your healthcare team or nurse right away if you get these symptoms during an infusion of OPDIVO or YERVOY: chills or shaking; itching or rash; flushing; shortness of breath or wheezing; dizziness; feel like passing out; fever; back or neck pain
- **Complications, including graft-versus-host disease (GVHD), of bone marrow (stem cell) transplant that uses donor stem cells (allogeneic).** These complications can be severe and can lead to death. These complications may happen if you underwent transplantation either before or after being treated with OPDIVO or YERVOY. Your healthcare provider will monitor you for these complications.

The most common side effects of OPDIVO when used in combination with YERVOY include: feeling tired; diarrhea; rash; itching; nausea; pain in muscles, bones, and joints; fever; cough; decreased appetite; vomiting; stomach-area (abdominal) pain; shortness of breath; upper respiratory tract infection; headache; low thyroid hormone levels (hypothyroidism); decreased weight; and dizziness.

These are not all the possible side effects of OPDIVO and YERVOY. Call your doctor for medical advice about side effects.

You are encouraged to report side effects of prescription drugs to the FDA. Call 1-800-FDA-1088.

OPDIVO (10 mg/mL) and YERVOY (5 mg/mL) are injections for intravenous (IV) use.

This is a brief summary of the most important information about OPDIVO and YERVOY. For more information, talk with your healthcare providers, call 1-855-673-4861, or go to www.OPDIVO.com.

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7356-US-2100021 02/21

APRIL 2021

family handyman

EXPERT ADVICE
SINCE 1951

FEATURES

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Timeless tricks for painting and much more.

NOW YOU ARE THE MASTER!

Fluidmaster gives you the **tools** you need and your **toilet** the **tech** it needs to keep your bathroom performing at its **best** with the **NEW Everything Kit!**

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www.Fluidmaster.com

Shop storage that's ready to roll!

Storing, organizing and moving your clamps and tools where you need them are among the most fundamental challenges in any shop – especially in small shops. Our new Pack Rack Plus is an efficient single solution for all three challenges. You can load it up with clamps or add accessories for other tools and roll it to where you're working, freeing you to *create with confidence.*

Rockler Pack Rack Plus
Clamp and Tool
Storage System
(53871) $199.99

Shown with optional accessories

FREE SHIPPING OVER $39
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For a store near you or free catalog: Rockler.com

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DEPARTMENTS

10 Stuff We Love
A roll-up dish rack, a compact copper tubing cutter, and custom lawn care by mail.

16 Handy Hints®
How to remove a stubborn fence post, label your plants, and get your grill to clean itself.

22 homeLAB
Tips for buying a bed in a box, a faster poly finish, and 5 things to know about robotic mowers.

61 Best Pro Tips
Ready to start your garden? Here's how to cultivate the best conditions for your plants.

66 Home Care
For a fast home sale, focus on fixing what buyers see first. Plus, plunger tips to save the day!

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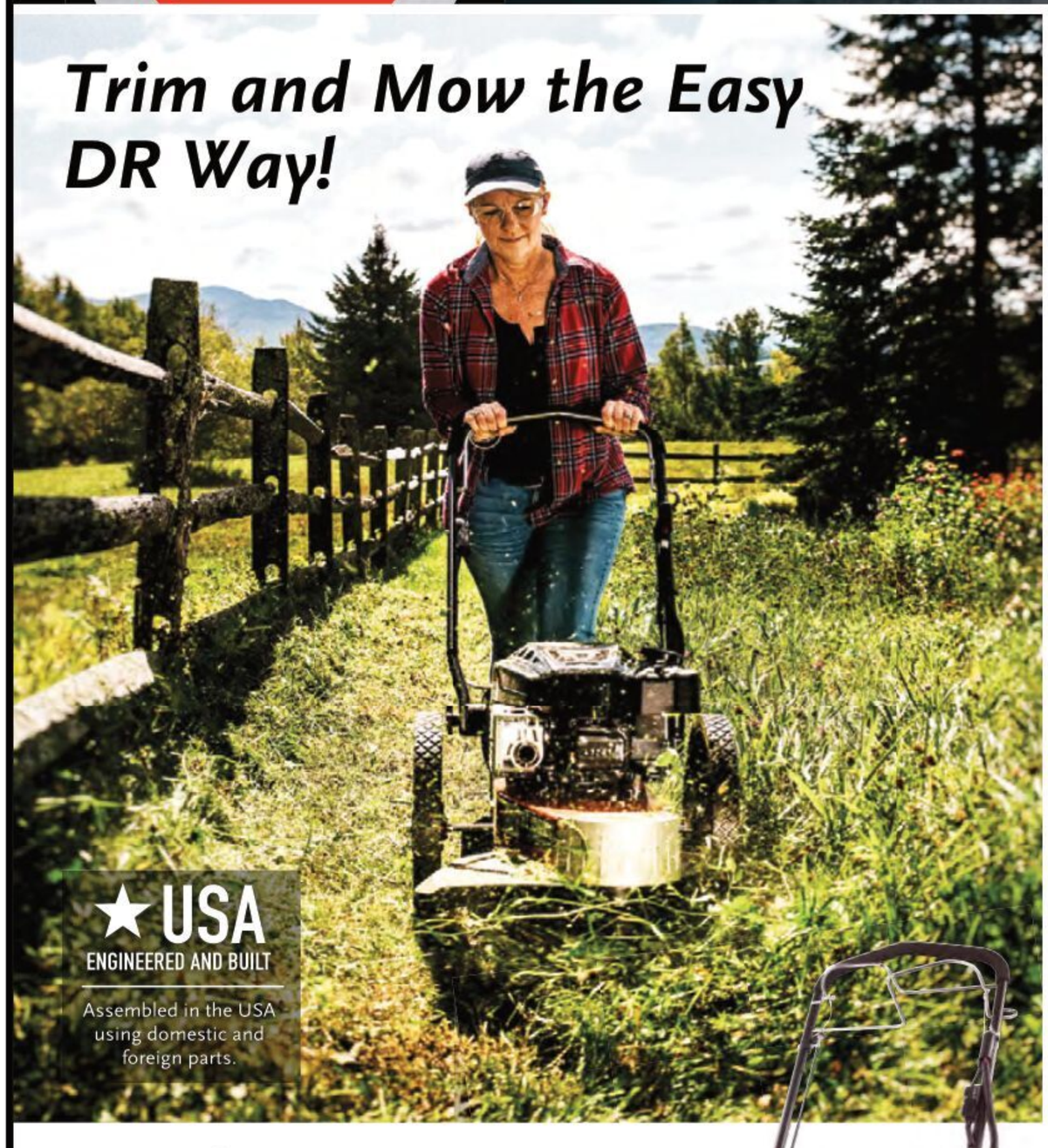
80 Great Goofs®
A super-soaking faucet job, a mis*bee*having hammer, and the beeping from beyond.

PHOTO: MASTERFILE

Do it Right with DR®

Trim and Mow the Easy DR Way!



- TRIM fencelines and perimeters
- MOW waist high grass and weeds
- 5X the power of hand-held trimmers
- Self-propelled models
- Gas- or battery-powered

DRtrimmer.com

Make Stumps Disappear!

- Grind away stumps fast
- Tungsten carbide-tipped teeth
- Rotary head takes 360 "bites" per second
- Self-propelled available

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ENGINEERED AND BUILT

Assembled in the USA using domestic and foreign parts.

DRstumpgrinder.com

BURN SAFELY with the Portable BurnCage™

- Stainless steel design
- Light, durable, portable, folds flat for storage
- Perforated construction maximizes airflow
- Traps embers and burns more thoroughly
- Now in 3 sizes!

DRburncage.com

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Some limitations apply. Go online or call for details.

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Online or Toll-Free at 800-456-2068

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WHAT'S NEW at *Family Handyman*

Social links

facebook.com/thefamilyhandyman
pinterest.com/family_handyman
youtube.com/thefamilyhandyman
instagram.com/familyhandyman

GET YOUR OUTDOOR SPACES LOOKING GOOD!

Scan the code to find tips on how to clean your patio furniture, repair broken pavers, power wash and stain your deck and more. With all that out of the way, you can just sprawl in a lounge chair and enjoy the relaxing weather ahead!

WHAT'S YOUR ORGANIZING STYLE?

Are you a minimalist or an avid collector? Take our quiz and discover how to make your decluttering efforts more productive and organize your home so it's just right for you. Search for "organizing quiz" at **familyhandyman.com**

HAPPY HOME

The editors of *Family Handyman, Taste of Home, Reader's Digest, Birds & Blooms* and *The Healthy* offer advice and inspiration for turning indoor and outdoor spaces into your personal happy places. Sign up here: **familyhandyman.com/newsletter/**

BRAND NEW BOOK!

Don't miss out on this limited time offer! Our 288-page *Whole House Repair Guide 2021* is just $10 and ships free! You'll start saving money instantly when you follow the expert instructions in this photo-packed book. **familyhandyman.com/GDE21**

ALL ABOARD, HANDYMAN PRO!

Check out our *Handyman Pro* newsletter to get timely news on construction industry trends, products and tips to help pros run their businesses better. Sign up here: **familyhandyman.com/pro**

DIY UNIVERSITY

With a DIYU Quick Class Subscription, you'll get unlimited access to *Family Handyman*'s complete library of DIY University on-demand classes. This includes two new projects per month! Sign up today for a free 7-day trial at **DIYUniversity.com**

Watering chores,water bills! Sweating behind a roaring mower!
Spraying poison chemicals and digging weeds...

...you can end such lawn drudgery – here's how!

THE ONE TIME, LIFETIME LAWN SOLUTION!

Mow your Zoysia lawn once a month – or less! It rewards you with weed-free beauty all summer long.

7 Ways Our Amazoy™ Zoysia Lawn Saves You Time, Work and Money!

1 CUTS WATER BILLS AND MOWING BY AS MUCH AS 2/3

Would you believe a lawn could look perfect when watered just once? In Iowa, the state's biggest Men's Garden club picked a Zoysia lawn as "top lawn – nearly perfect." Yet, this lawn had been watered only once all summer to August!

In PA, Mrs. M.R. Mitter wrote, "I've never watered it, only when I put the plugs in...Last summer we had it mowed 2 times...When everybody's lawns here are brown from drought, ours stays as green as ever." *That's how Amazoy Zoysia lawns cut water bills and mowing! Now read on!*

2 NO NEED TO DIG UP OLD GRASS

Plant Amazoy *your way* in an old lawn or new ground. Set plugs into holes in the soil checkerboard style. Plugs spread to create a lush, thick lawn, driving out weeds and unwanted growth. Easy instructions included with every order.

3 ENVIRONMENTALLY FRIENDLY

No weeding means no costly chemicals. Since Amazoy Zoysia lawns naturally resist insects, you'll save money, while helping to protect the environment. You'll never have to expose your family and pets to the risk of weed killers and pesticide poisons.

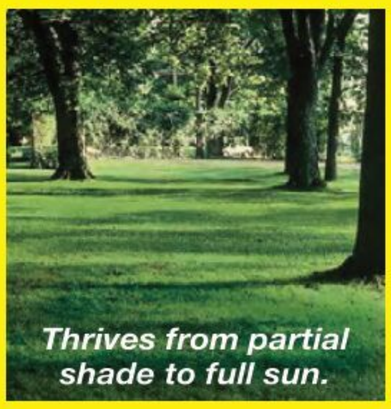
4 FOR SLOPES, PLAY AREAS, BARE SPOTS AND PARTIAL SHADE

You can't beat Amazoy Zoysia as the low-cost answer for hard-to-cover spots, play-worn areas, places that have partial shade and erosion on slopes.

Meyer Zoysia Grass was perfected by the U.S. Gov't, released in cooperation with the U.S. Golf Association as a superior grass.

5 IT STAYS GREEN IN SPITE OF HEAT AND DROUGHT

"The hotter it gets, the better it grows!" Plug-in Zoysia thrives in blistering heat, yet it won't winter-kill to 30° below zero. It just goes off its green color after killing frosts, and begins regaining its green color as temperatures in the spring are consistently warm.



Thrives from partial shade to full sun.

Plant it from plugs.

Your Assurance of Lawn SUCCESS
Amazoy Zoysia Grass is GUARANTEED

Guaranteed to grow new green shoots within 45-60 days or we'll replace it FREE – for up to 1 year – just call us. Guarantee is valid on one order at a time, typically the most recent. We ONLY ship you hardy field grown genuine Amazoy Zoysia grass harvested direct from our farms. Easy planting and watering instructions are included with each order.

©2021 Zoysia Farm Nurseries, 3617 Old Taneytown Rd, Taneytown, MD 21787

6 CHOKES OUT CRABGRASS AND WEEDS ALL SUMMER

Your established Amazoy Zoysia lawn grows so thick, it simply stops crabgrass and most summer weeds from germinating!

7 NOW 3 WAYS TO START YOUR AMAZOY ZOYSIA LAWN!

1) Freestyle plugs come in uncut sheets containing a maximum of 150 - 1" plugs that can be planted up to 1 ft. apart. Freestyle plugs allow you to make each plug bigger and plant further apart – less cutting and planting – you decide.

2) New Super Plugs come precut into individual 3"x3" plugs ready-to-plant (minimum 1 per 4 sq. ft.). They arrive in easy to handle trays of 15 Super Plugs. Save more time and get your new lawn even faster!

3) Amazoy Approved Seed-As The Zoysia Specialists for 60+ years, we finally have a Zoysia seed available that meets our standards and homeowners expectations.

Learn why at **zoysiafarms.com/mag** or by phone at **410-756-2311**.

ORDER TODAY – GET UP TO 1000 FREESTYLE PLUGS – FREE!

Freestyle Plugs You decide how big to cut the plugs. Each grass sheet can produce up to 150-1 in. plugs. Plant minimum 1 plug per sq. ft.

Max Plugs	Free Plugs	Grass Sheets	Your PRICE	+ Shipping	SAVINGS
300	—	2	**$29.95**	$16.00	—
500	+100	4	**$50.00**	$18.00	25%
750	+150	6	**$66.00**	$22.00	36%
1100	+400	10	**$95.00**	$33.00	44%
2000	+1000	20	**$165.00**	$54.00	52%

Super Plugs Precut plugs 3 inches by 3 inches READY TO PLANT Packed in trays of 15 Super Plugs. Plant minimum 1 plug per 4 sq. ft.

Super Plugs	Free Plugs	Tray	Your PRICE	+ Shipping	SAVINGS
15	—	1	**$24.95**	$12.00	—
60	+15	5	**$90.00**	$24.00	35%
95	+25	8	**$110.00**	$34.00	49%
120	+30	10	**$125.00**	$40.00	53%
180	+45	15	**$180.00**	$54.00	56%

EVERYTHING YOU NEED TO START AND MAINTAIN A CAREFREE BEAUTIFUL ZOYSIA LAWN

Zoysia Farm NURSERIES
Improving America's Lawns Since 1953
3617 Old Taneytown Rd./Taneytown, MD 21787

PLANTING TOOLS • PLANT FOOD • WEED AND PEST CONTROLS • ORGANIC PRODUCTS
SOIL TESTS • GARDEN GLOVES • EDGING AND MORE ... ALL AVAILABLE EXCLUSIVELY AT:

www.ZoysiaFarms.com/mag OR 410-756-2311

Harvested Daily from Our Farms and Shipped to You the Same Day the Plugs are Packed

Amazoy is the Trademark Registered U.S. Patent Office for our Meyer Zoysia grass.

Savings shown over aggregate base price and shipping

Promo Code 5650

Stuff We Love

Our favorite DIY tools, materials + gear

Roll-Up Dish Rack

This is the perfect all-around kitchen rack. Made of steel rods wrapped in food-safe silicone, the Surpahs dish rack conveniently rolls up for compact storage. Heat resistant up to 400 degrees F, it also functions as a trivet for hot dishes or even as a cooling rack for baked goods. You can set it over the sink to drain washed produce or thaw frozen food, or you can set a cutting board on it and push scraps into the sink. And, it's dishwasher safe. The 20-1/2 in. x 13 in. rack fits sinks up to 19-1/2 in. wide and costs $30. The smaller version (17-1/2 in. by 13 in.) is $25. You can find both online.

MIKE BERNER, ASSOCIATE EDITOR

CUSTOM LAWN CARE BY MAIL

Don't waste time in the yard and garden aisle wondering what product to use. Just connect with getsunday.com to get a plan developed specifically for your yard. Sunday Lawn Care provides nontoxic, customized lawn care products by mail. Using GPS imaging and regional soil sample data, the company will give you just the right amount of what you need for a healthy lawn. Starting at $119, a full-year plan comes with a free soil test, the tools needed and up to three shipments of nutrient pouches.

BILL BERGMANN, ASSOCIATE EDITOR

COMPACT TUBING CUTTER

A tubing cutter is essential for plumbing work. Most require you to tension the cutting wheel by hand with every turn around the pipe. This gets especially tough in tight spaces. The AutoCut Copper Tubing Cutter by General Pipe Cleaners automatically tightens as you turn it. The spring-loaded cutting wheel applies equal cutting pressure to avoid accidental crimping of the pipe. It'll work with just an inch of clearance but has a ratcheting handle accessory if you're really tight on space. Each AutoCut is size- and material-specific, to work with 1/2-, 3/4- and 1-in. copper or plastic pipe. Find them online and at most plumbing supply houses for $20 to $30.

JOSH RISBERG, LEAD CARPENTER

TOP: **SUNDAY LAWN CARE**

EASY FIX FOR TOWEL BAR TEAR-OUT

When towel bars, hooks and other accessories tear out of the wall, the usual fix involves replacing drywall. You can spend a few hours taping, mudding, sanding and repainting—or spend $35 on this Wallshark repair kit. This kit contains everything you need to do this repair, without drywall replacement or repainting. If you've tried toggle bolts and every other drywall anchor and your towel bar is still loose, save yourself an afternoon of work and go to wallsharkproducts.com.

BILL BERGMANN, ASSOCIATE EDITOR

BIT DRIVER works with supplied drill bit and Phillips bit

WALL PLUG threads into wall to attach bracket

WALL CUTTER creates a hole for the wall plug

WALL SANDER removes paint and drywall texture

WALL GUIDE guides the drill bit

Saddles for Stable Cuts

A stable surface for cutting in the workshop or on the job site is a must, for both safety and accuracy. By securely holding either 1-by or 2-by lumber on edge, these Veritas Platform Saddles let you easily create a stable, sacrificial surface for cutting. No more accidentally cutting into your workbench top or ruining saw blades by hitting screws in your sawhorse tops.

Veritas Platform Saddles come with posts that fit a common 3/4-in. bench-dog hole, or you can screw them directly to a bench or sawhorse. Either size in a set of four will set you back just $15 at most woodworking supply stores.

MIKE BERNER, ASSOCIATE EDITOR

PLEASE, KEEP YOUR DIGITS INTACT

Almost everyone I know has a personal or secondhand story about a nasty injury on a table saw or other stationary tool. We think this MICROJIG GRR-RIPPER is a wise investment. Its design maximizes the downward, inward and forward pressure needed to safely guide most workpieces in a variety of cutting operations. On a table saw, it significantly reduces the risk of kick-backs and keeps your fingers safely out of the way of the blade. The GRR-RIPPER also works with jointers and router tables.

The basic model shown here is $60. MICROJIG offers two upgraded versions, for $80 and $130, that offer more cut capacity and versatility. All are available at microjig.com and most major woodworking retailers.

JAY CORK, ASSOCIATE EDITOR

WHAT'S YOUR PSI?

In 2008 the U.S. mandated all new passenger cars to have tire pressure monitoring systems. This new standard was enacted mainly as a safety measure, but proper tire pressure also improves gas mileage and tire longevity.

If your vehicle predates 2008, get a set of these mechanical valve stem caps. No need for a pressure gauge: Red means low; green means you're good to go. My Gozens set of four costs just $10. They're psi-specific, so before you order, you'll need to check your tire's sidewall or your vehicle manual to see what your tire pressure should be.

BRAD HOLDEN, SENIOR EDITOR

CASTLE 110

Professional pocket joinery… in seconds.

Quickly and easily create our exclusive, low-angle pockets, right out of the box.

Say goodbye to joint creep and misalignment… with the 110, you'll make fast, strong, stable, and attractive joints for all of your wood projects.

All you have to do is plug it in.

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Do it Right with DR®

America's Original Field & Brush Mower

- Mow field grass up to 8' high
- Cut brush up to 3" thick
- Engines up to 22 HP
- Decks up to 34" wide
- Power steering

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Assembled in the USA using domestic and foreign parts.

DRfieldbrush.com

Great Gardens Start with DR® Rototillers!

- Bust sod and churn through the most compacted ground
- Prepare seedbeds or till garden waste back into your soil
- Full line includes walk-behinds, tow-behinds, and cultivators

DRrototiller.com

Haul up to 800 lbs with a Powerwagon!

- Self-propelled hauler
- Powers up hills with ease
- Powered dumping
- Converts to a flatbed

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ENGINEERED AND BUILT

Assembled in the USA using domestic and foreign parts.

DRpowerwagon.com

SALE!

Including

FREE SHIPPING | EASY FINANCING

Some limitations apply. Go online or call for details.

DR Power Equipment

A GENERAC POWER SYSTEMS COMPANY

- Fill in potholes and smooth out washboard
- Loosen & redistribute existing material
- Tow with your ATV, UTV, or tractor

DRpowergrader.com

World's Most Powerful Leaf Vacuum!

★ USA
ENGINEERED AND BUILT

Assembled in the USA using domestic and foreign parts.

Tow-Behind

- Rated #1 in vacuum power
- Huge capacity up to 321 gallons
- Folds flat for storage

Walk-Behind

- For landscaped or smaller properties
- Easy on/off 8-bushel collector bag
- Self-propelled models available

DRleafvac.com

Make Yard Cleanup EASY with a Chipper Shredder!

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No-sweat fence post pulling

To remove a stubborn 4x4 fence post, fasten a 2x4 to the post with five or six screws as shown. Then just set a car jack on a board or a block underneath the 2x4 and jack the post right out of the hole.

DAVID YANCIW

WINE CORK GARDEN MARKERS

I save wine corks (and collect them from friends) to use as garden markers. I label the cork with a permanent marker. Then I stick a skewer into the cork and poke the skewer into the ground at the end of the row.

CHRIS CONNOLLY

FRESH, CLEAN DISHWASHER

Once a month or so, add a cup of vinegar to your empty dishwasher and let it run a full cycle. Your kitchen may smell a bit like a pickle jar for a few hours, but hard-water lime buildup will be rinsed away, freeing up the spray arm and other dishwasher parts.

STEVE LADENDORF

Save that caulk

Don't discard half-used caulk tubes just because the nozzle is plugged with dried caulk. Slit the nozzle on both sides and pry out the plug. Then tape the nozzle halves back together with electrical tape and get back to work.

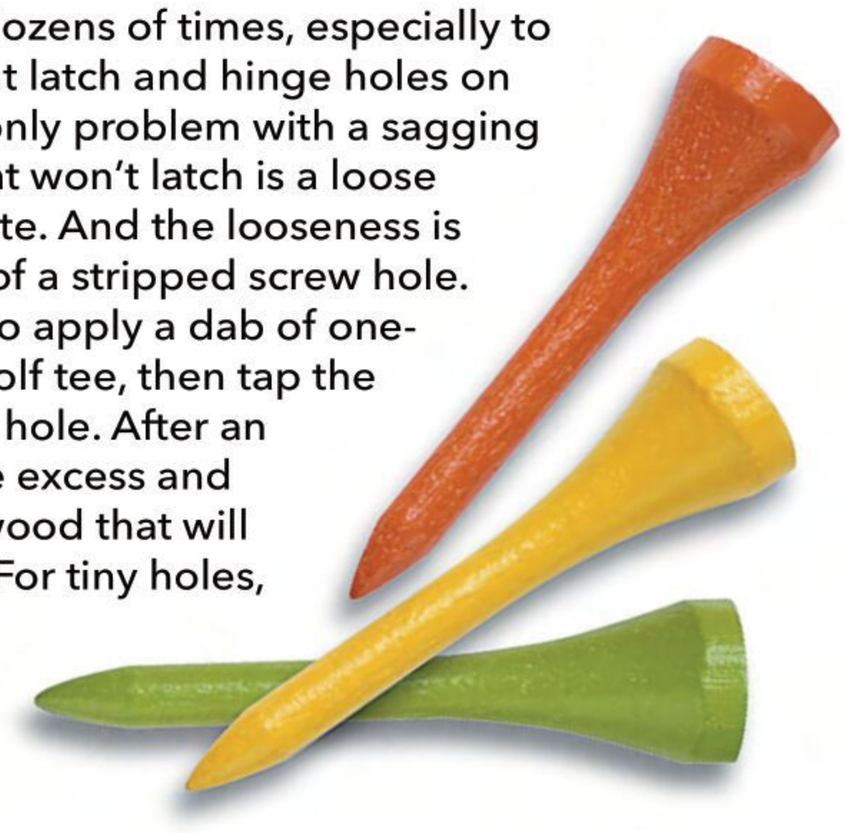
LARRY STEWART

GOLF TEE TO THE RESCUE

I've used this tip dozens of times, especially to repair stripped-out latch and hinge holes on doors. Often the only problem with a sagging door or a door that won't latch is a loose hinge or strike plate. And the looseness is usually the result of a stripped screw hole.

The solution is to apply a dab of one-hour epoxy to a golf tee, then tap the tee into the screw hole. After an hour, chisel off the excess and you'll have solid wood that will hold new screws. For tiny holes, use a few toothpicks instead of a tee.

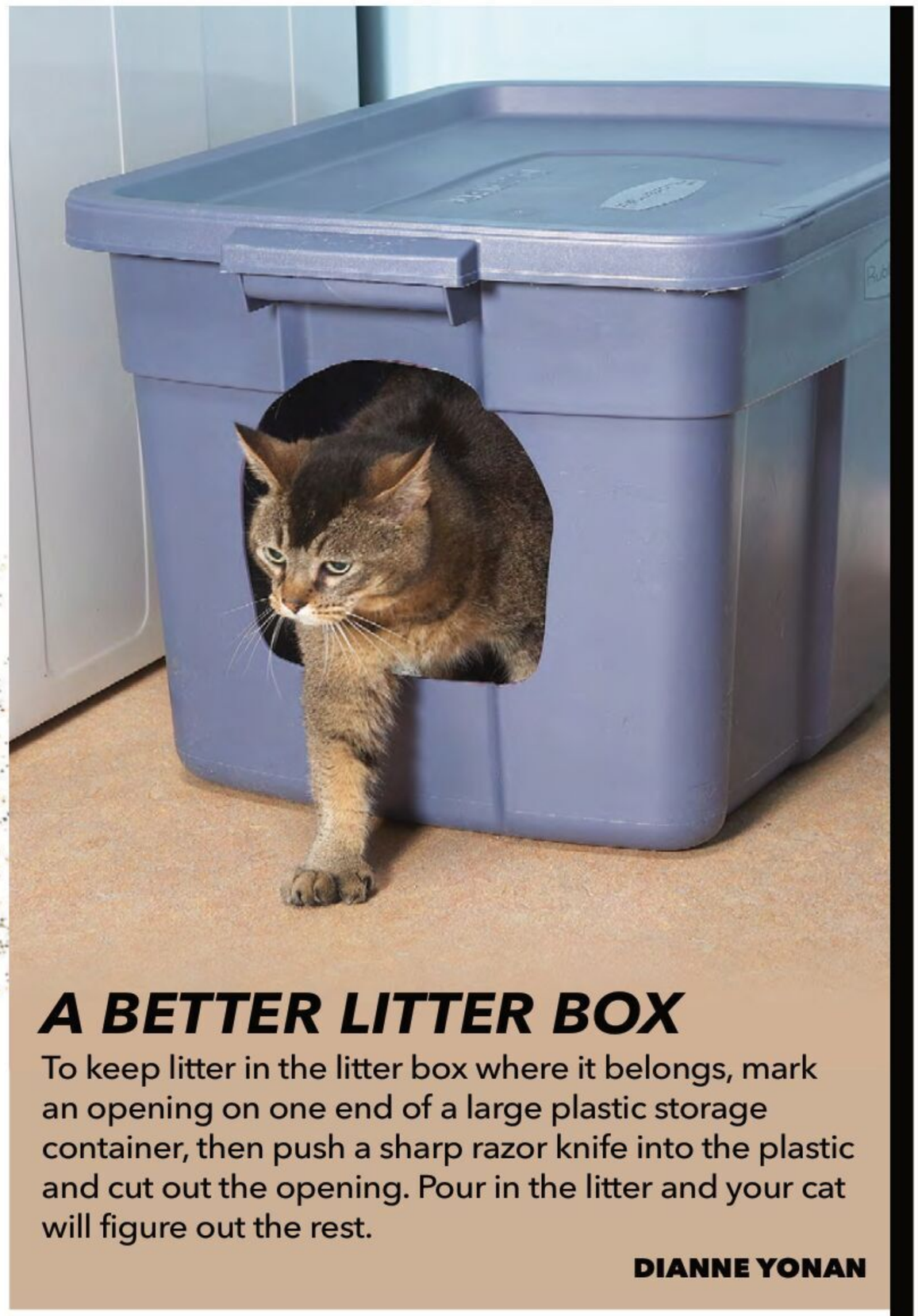
ROCKY LARSON



EASY-TO-INSTALL PLANT PROTECTOR

Here's a great way to protect your flowers, bushes and grass when you're using a broadcast spreader for weed-and-feed fertilizer or a sand-and-salt mixture for an icy sidewalk. Hang this simple plywood shield on the side of your spreader with a pair of spring clamps.

JOHN MAKI



A BETTER LITTER BOX

To keep litter in the litter box where it belongs, mark an opening on one end of a large plastic storage container, then push a sharp razor knife into the plastic and cut out the opening. Pour in the litter and your cat will figure out the rest.

DIANNE YONAN

Airtight paint cans

If you store paint cans upside down, the paint itself forms an airtight seal around the rim. But make sure the cover is on tight! Hold the can upright and shake it vigorously before you open it so the paint solids drop off the lid.

ANDY SMITH

For adults with type 2 diabetes (T2D), along with diet and exercise, once-daily RYBELSUS® can help lower blood sugar

Wake Up to the Possibilities of Reaching Your A1C Goal

RYBELSUS® is proven to lower blood sugar and A1C

In a 6-month study of people with an average starting A1C of 8%, the majority of **people taking RYBELSUS® reached an A1C of less than 7%**[a]:

- Nearly 7 out of 10 people on 7 mg of RYBELSUS®
- Nearly 8 out of 10 people on 14 mg of RYBELSUS®
- About 3 out of 10 people on a sugar pill

RYBELSUS® may help you lose some weight

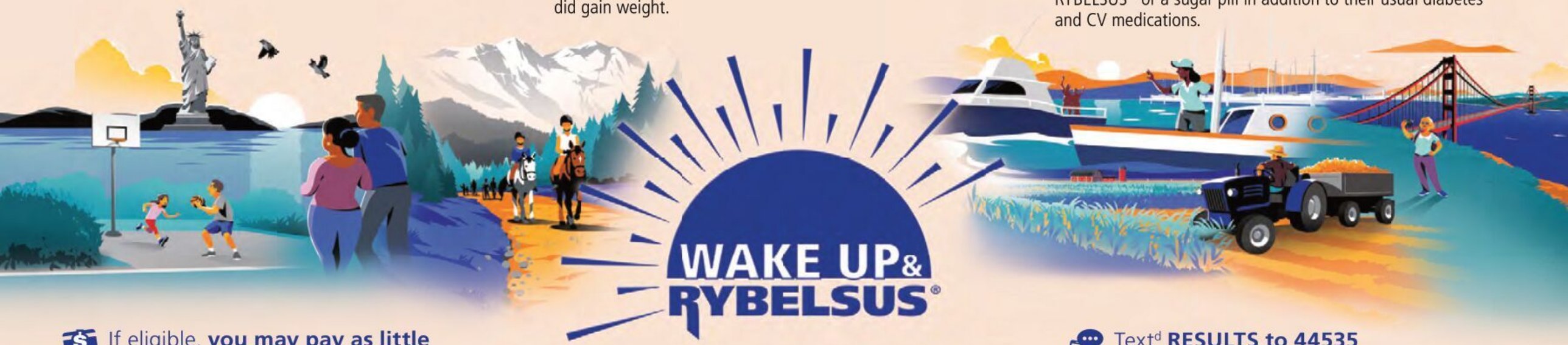
While not for weight loss, in the same 6-month study, people with an average starting weight of 195 pounds **lost up to 8 pounds**[a]:

- 5 pounds on 7 mg of RYBELSUS®
- 8 pounds on 14 mg of RYBELSUS®
- 3 pounds on a sugar pill

While many people in medical studies lost weight, some did gain weight.

RYBELSUS® does not increase the risk of major cardiovascular (CV) events such as heart attack, stroke, or death[b]

[a]In a 6-month study looking at A1C with 703 adults with T2D comparing 7 mg RYBELSUS® and 14 mg RYBELSUS® with a sugar pill when both were added to diet and exercise.
[b]In a cardiovascular safety study, 3183 adults with T2D and a high risk of CV events were treated with either 14 mg RYBELSUS® or a sugar pill in addition to their usual diabetes and CV medications.



If eligible, **you may pay as little as $10 for a 30-day prescription**[c]

Text[d] **RESULTS to 44535** to learn more about RYBELSUS®

What is Rybelsus®?

Rybelsus® (semaglutide) tablets 7 mg or 14 mg is a prescription medicine for adults with type 2 diabetes that along with diet and exercise may improve blood sugar (glucose).

- Rybelsus® is not recommended as the first choice of medicine for treating diabetes
- It is not known if Rybelsus® can be used in people who have had pancreatitis
- Rybelsus® is not for use in people with type 1 diabetes and people with diabetic ketoacidosis
- It is not known if Rybelsus® is safe and effective for use in children under 18 years of age

Important Safety Information

What is the most important information I should know about Rybelsus®?

Rybelsus® may cause serious side effects, including:

- **Possible thyroid tumors, including cancer.** Tell your healthcare provider if you get a lump or swelling in your neck, hoarseness, trouble swallowing, or shortness of breath. These may be symptoms of thyroid cancer. In studies with rodents, Rybelsus® and medicines that work like Rybelsus® caused thyroid tumors, including thyroid cancer. It is not known if Rybelsus® will cause thyroid tumors or a type of thyroid cancer called medullary thyroid carcinoma (MTC) in people

Do not use Rybelsus® if:

- you or any of your family have ever had MTC, or if you have an endocrine system condition called Multiple Endocrine Neoplasia syndrome type 2 (MEN 2)
- you are allergic to semaglutide or any of the ingredients in Rybelsus®

Before using Rybelsus®, tell your healthcare provider if you have any other medical conditions, including if you:

- have or have had problems with your pancreas or kidneys
- have a history of vision problems related to your diabetes
- are pregnant or plan to become pregnant. It is not known if Rybelsus® will harm your unborn baby. You should stop using Rybelsus® 2 months before you plan to become pregnant. Talk to your healthcare provider about the best way to control your blood sugar if you plan to become pregnant or while you are pregnant
- are breastfeeding or plan to breastfeed. Breastfeeding is not recommended during treatment with Rybelsus®

Tell your healthcare provider about all the medicines you take, including prescription and over-the-counter medicines, vitamins, and herbal supplements. Rybelsus® may affect the way some medicines work and some medicines may affect the way Rybelsus® works.

What are the possible side effects of Rybelsus®?

Rybelsus® may cause serious side effects, including:

- **inflammation of your pancreas (pancreatitis).** Stop using Rybelsus® and call your healthcare provider right away if you have severe pain in your stomach area (abdomen) that will not go away, with or without vomiting. You may feel the pain from your abdomen to your back
- **changes in vision.** Tell your healthcare provider if you have changes in vision during treatment with Rybelsus®
- **low blood sugar (hypoglycemia).** Your risk for getting low blood sugar may be higher if you use Rybelsus® with another medicine that can cause low blood sugar, such as a sulfonylurea or insulin. **Signs and symptoms of low blood sugar may include:** dizziness or lightheadedness, blurred vision, anxiety, irritability or mood changes, sweating, slurred speech, hunger, confusion or drowsiness, shakiness, weakness, headache, fast heartbeat, and feeling jittery
- **kidney problems (kidney failure).** In people who have kidney problems, diarrhea, nausea, and vomiting may cause a loss of fluids (dehydration), which may cause kidney problems to get worse. It is important for you to drink fluids to help reduce your chance of dehydration
- **serious allergic reactions.** Stop using Rybelsus® and get medical help right away, if you have any symptoms of a serious allergic reaction including itching, rash, or difficulty breathing

The most common side effects of Rybelsus® may include nausea, stomach (abdominal) pain, diarrhea, decreased appetite, vomiting, and constipation. Nausea, vomiting, and diarrhea are most common when you first start Rybelsus®.

Please see Brief Summary of Prescribing Information on adjacent page.

[c]Commercially insured patients only. Offer valid for up to six 30-day fills. Eligibility and other restrictions apply.
[d]Message and data rates may apply. Check with your mobile service provider. Message frequency will be based on your selections. Text **HELP** to **44535** for help. Text **STOP** to **44535** to quit. See Terms and Conditions of Use at RYBELSUS.com.

See cost and savings info at RYBELSUS.com, and ask your healthcare provider about RYBELSUS® today.

RYBELSUS®
semaglutide tablets 7mg | 14mg

novo nordisk®

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Brief Summary of information about RYBELSUS® (semaglutide) tablets

RYBELSUS®
semaglutide tablets 7mg | 14mg

Rx Only

This information is not comprehensive.

- Talk to your healthcare provider or pharmacist
- Visit www.novo-pi.com/rybelsus.pdf to obtain the FDA-approved product labeling
- Call 1-833-GLP-PILL

Read this Medication Guide before you start using RYBELSUS® and each time you get a refill. There may be new information. This information does not take the place of talking to your healthcare provider about your medical condition or your treatment.

What is the most important information I should know about RYBELSUS®?

RYBELSUS® may cause serious side effects, including:

- **Possible thyroid tumors, including cancer.** Tell your healthcare provider if you get a lump or swelling in your neck, hoarseness, trouble swallowing, or shortness of breath. These may be symptoms of thyroid cancer. In studies with rodents, RYBELSUS® and medicines that work like RYBELSUS® caused thyroid tumors, including thyroid cancer. It is not known if RYBELSUS® will cause thyroid tumors or a type of thyroid cancer called medullary thyroid carcinoma (MTC) in people.
- Do not use RYBELSUS® if you or any of your family have ever had a type of thyroid cancer called medullary thyroid carcinoma (MTC), or if you have an endocrine system condition called Multiple Endocrine Neoplasia syndrome type 2 (MEN 2).

What is RYBELSUS®?

RYBELSUS® is a prescription medicine used along with diet and exercise to improve blood sugar (glucose) in adults with type 2 diabetes.

- RYBELSUS® is not recommended as the first choice of medicine for treating diabetes.
- It is not known if RYBELSUS® can be used in people who have had pancreatitis.
- RYBELSUS® is not for use in patients with type 1 diabetes and people with diabetic ketoacidosis.

It is not known if RYBELSUS® is safe and effective for use in children under 18 years of age.

Do not use RYBELSUS® if:

- you or any of your family have ever had a type of thyroid cancer called medullary thyroid carcinoma (MTC) or if you have an endocrine system condition called Multiple Endocrine Neoplasia syndrome type 2 (MEN 2).
- you are allergic to semaglutide or any of the ingredients in RYBELSUS®.

Before using RYBELSUS®, tell your healthcare provider if you have any other medical conditions, including if you:

- have or have had problems with your pancreas or kidneys.
- have a history of vision problems related to your diabetes.
- are pregnant or plan to become pregnant. It is not known if RYBELSUS® will harm your unborn baby. You should stop using RYBELSUS® 2 months before you plan to become pregnant. Talk to your healthcare provider about the best way to control your blood sugar if you plan to become pregnant or while you are pregnant.
- are breastfeeding or plan to breastfeed. Breastfeeding is not recommended during treatment with RYBELSUS®.

Tell your healthcare provider about all the medicines you take, including prescription and over-the-counter medicines, vitamins, and herbal supplements. RYBELSUS® may affect the way some medicines work and some medicines may affect the way RYBELSUS® works.

Before using RYBELSUS®, talk to your healthcare provider about low blood sugar and how to manage it. Tell your healthcare provider if you are taking other medicines to treat diabetes, including insulin or sulfonylureas.

Know the medicines you take. Keep a list of them to show your healthcare provider and pharmacist when you get a new medicine.

How should I take RYBELSUS®?

- Take RYBELSUS® exactly as your healthcare provider tells you to.
- Take RYBELSUS® by mouth on an empty stomach when you first wake up.
- Take RYBELSUS® with a sip of water (no more than 4 ounces).
- Do not split, crush or chew. Swallow RYBELSUS® whole.
- After 30 minutes, you can eat, drink, or take other oral medications. RYBELSUS® works best if you eat 30 to 60 minutes after taking RYBELSUS®.
- If you miss a dose of RYBELSUS®, skip the missed dose and go back to your regular schedule.
- Talk to your healthcare provider about how to prevent, recognize and manage low blood sugar (hypoglycemia), high blood sugar (hyperglycemia), and problems you have because of your diabetes.

What are the possible side effects of RYBELSUS®?

RYBELSUS® may cause serious side effects, including:

- **See "What is the most important information I should know about RYBELSUS®?"**
- **inflammation of your pancreas (pancreatitis).** Stop using RYBELSUS® and call your healthcare provider right away if you have severe pain in your stomach area (abdomen) that will not go away, with or without vomiting. You may feel the pain from your abdomen to your back.
- **changes in vision.** Tell your healthcare provider if you have changes in vision during treatment with RYBELSUS®.
- **low blood sugar (hypoglycemia).** Your risk for getting low blood sugar may be higher if you use RYBELSUS® with another medicine that can cause low blood sugar, such as a sulfonylurea or insulin. **Signs and symptoms of low blood sugar may include:**
  - dizziness or light-headedness
  - anxiety, irritability, or mood changes
  - slurred speech
  - shakiness
  - fast heartbeat
  - hunger
  - weakness
  - feeling jittery
  - blurred vision
  - sweating
  - confusion or drowsiness
  - headache
- **kidney problems (kidney failure).** In people who have kidney problems, diarrhea, nausea, and vomiting may cause a loss of fluids (dehydration) which may cause kidney problems to get worse. It is important for you to drink fluids to help reduce your chance of dehydration.
- **serious allergic reactions.** Stop using RYBELSUS® and get medical help right away, if you have any symptoms of a serious allergic reaction including itching, rash, or difficulty breathing.

The most common side effects of RYBELSUS® may include nausea, stomach (abdominal) pain, diarrhea, decreased appetite, vomiting and constipation. Nausea, vomiting and diarrhea are most common when you first start RYBELSUS®.

Talk to your healthcare provider about any side effect that bothers you or does not go away. These are not all the possible side effects of RYBELSUS®.

Call your doctor for medical advice about side effects. You may report side effects to FDA at 1-800-FDA-1088.

How should I store RYBELSUS®?

- Store RYBELSUS® at room temperature between 68°F and 77°F (20°C to 25°C).
- Store in a dry place away from moisture.
- Store tablet in the original pack.
- Keep the tablet in the pack until you are ready to take it.
- **Keep RYBELSUS® and all medicines out of the reach of children.**

Revised: 01/2020

Manufactured by: Novo Nordisk A/S, DK-2880 Bagsvaerd, Denmark
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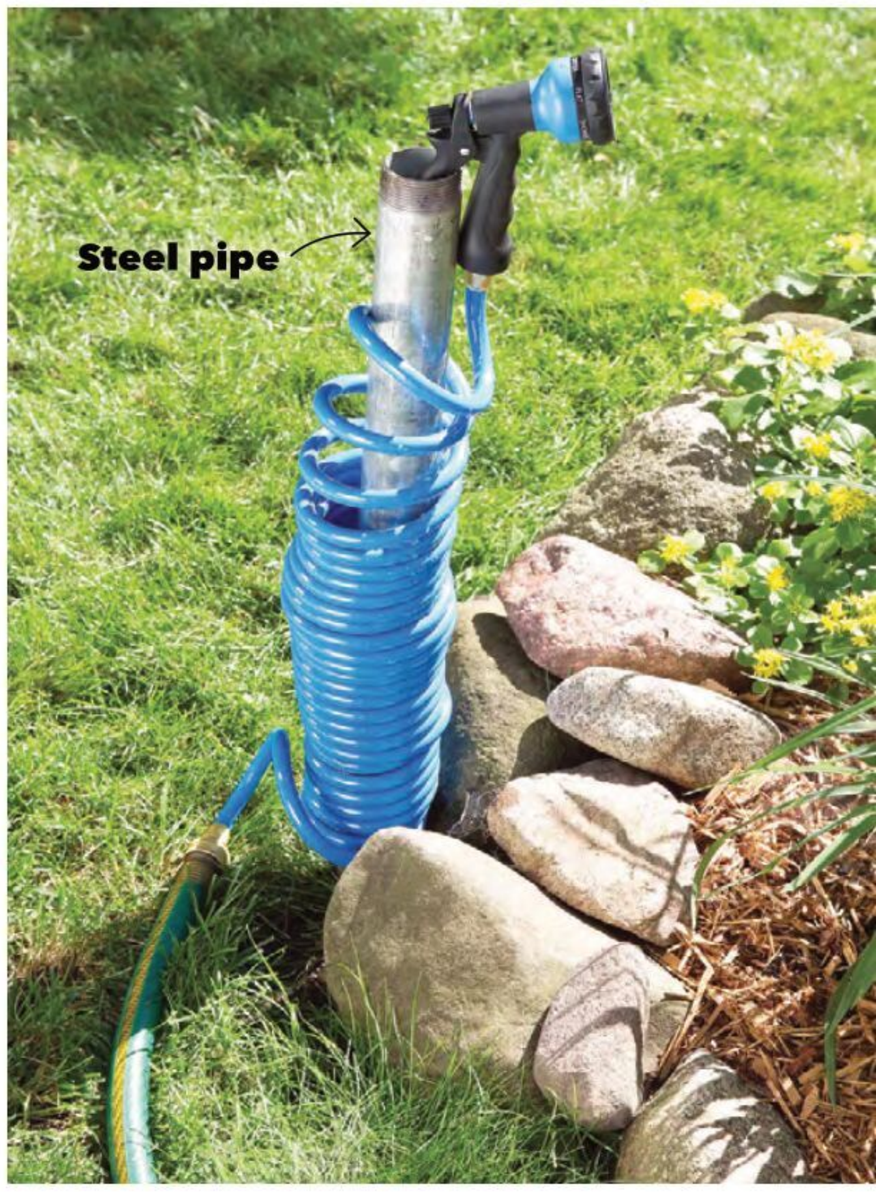
HANDY HINTS



SPACE-SAVING HOSE STORAGE

If you have a small yard, don't waste precious real estate on a bulky hose reel. Pound a 4-ft. length of galvanized steel pipe ($7 at home centers) into the ground, and coil up to 50 ft. of hose around it. Attach a hose nozzle that can hang from the end of the pipe.

SEAN PRICE

Self-cleaning barbecue

If you're going to run a self-clean cycle on your oven, grab the grease-covered racks out of your barbecue grill and throw those in too. The self-clean cycle will incinerate stubborn deposits with little to no work on your part!

ADAM HALVERSON

GARBAGE BAG HOLDER-UPPER

Tired of the garbage bag slipping down into the trash can? Cut out the middle of the lid with a utility knife and snap the outer rim over the bag to keep it in place. This works great for recycling, not so great for stinky stuff!

SUSAN DALHAUG

ROBOTIC MOWERS: *WHAT TO KNOW*

BY BILL BERGMANN

If you're intrigued by the idea of having a robot mow your lawn, you're not alone. We couldn't resist trying out this Husqvarna 450X Automower. Here are five things we learned:

Boundary Setup

Robotic mowers require a boundary wire around the perimeter of your yard and any obstacles like trees or garden beds. Some also need a wire to guide them back to their charging dock. The setup for a typical city lot can be done in an afternoon.

Phone App Control

Newer robotic mowers operate via a phone app. The Husqvarna uses GPS to map out your yard, and its Smart Connect app creates no-go zones where the mower might get stuck. The app also sets the cutting height and mowing schedules, accesses performance monitors and connects with Alexa or Google Assistant.

Continual Operation

Robotic mowers cut off only a fraction of an inch at a time, going back to the charger and starting up again to complete the job if necessary. Instead of a weekly job, mowing is done continually to keep your lawn well kept all the time. The Husqvarna varies its cut pattern and its route to the charger for optimal lawn health and appearance.

Noise Level and Safety

Robotic mowers are much quieter than gas mowers. The 450X runs at about 59 dB, compared to a gas mower's 95 dB. For safety, an auto-stop feature cuts power if the mower tips over. Also, there's ample space between the deck rim of the 450X and the blade, preventing hands or feet from reaching the blades accidentally. Regardless, it's best to turn it off when kids are playing in the yard.

Cost

The Husqvarna 450X costs $3,500 online. A Robomow RS630 runs about $2,300. Both cut up to 3/4 acre and have similar features. Both the 450X and the Robomow have antitheft features to protect your investment. The initial cost is high, but considering time saved, the cost of gas or the price of a lawn care service, it might be worth it.

PHOTO: HUSQVARNA

A FASTER FINISH

The downside of any film-forming finish is the time and labor it takes to build up a protective coating; typically, three or four coats. Water-based polyurethane dries faster than oil, but there's still time spent sanding between coats. Varathane now offers a triple-thick water-based polyurethane that promises to cover in one coat.

All finishes raise wood grain on the first coat, so a single coat rarely gives a smooth finish. But even to be able to stop at two coats with Triple Thick poly is a game changer.

Because it's water-based, it dries fast, so you can brush on the second coat sooner. But it also means that you need to apply it quickly to avoid visible brush strokes. Triple Thick poly, applied generously on horizontal surfaces, levels out nicely, but on vertical surfaces, the thinner coat necessary to avoid drips dries quickly, leaving brush marks. I had difficulty staying ahead of the drying curve to get a thick coat on a vertical surface. An extender like General Finishes Enduro slows the drying time for a better finish.

Despite my workability struggles, tests show Triple Thick poly to be harder than regular poly, making it ideal for tabletops, floors and other horizontal surfaces that let you float it on. So it's not a one-coat wonder, but it's definitely a step in the right direction.

TOP RIGHT: **ARTEMIS HOME**

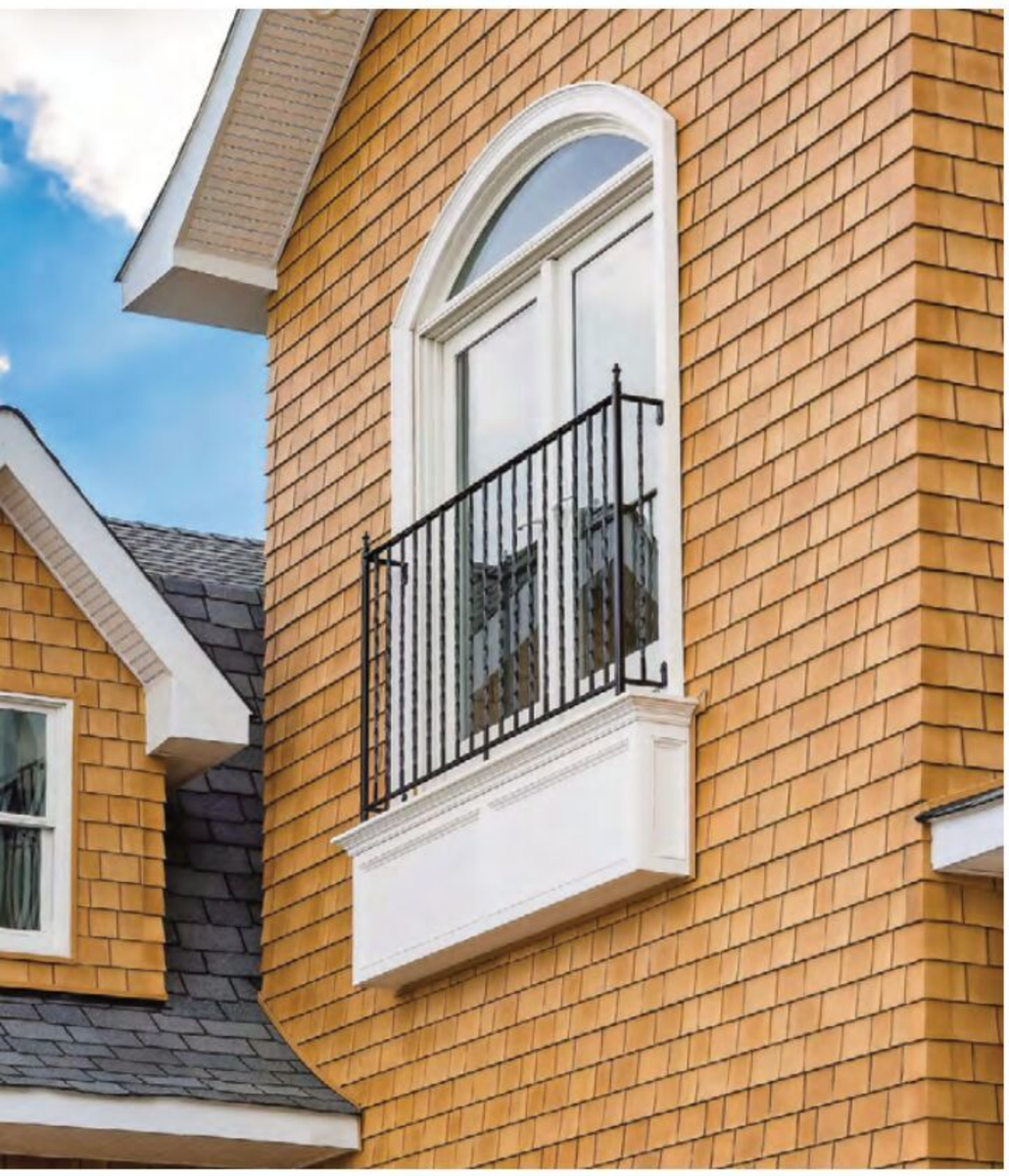
NO-MESS WALLPAPER

Wallpapering demands a certain level of DIY prowess. Peel-and-stick wallpaper promises to take the skill requirement down a few notches. The folks at Artemis sent us a roll of peel-and-stick wallpaper to test out on a wall in our homeLAB.

After washing and prepping the walls, you still need to measure and cut precisely, but there's no messing with wallpaper paste or wetting prepasted paper. There's a knack to peeling off the backer and setting each 2-ft.-wide swath of paper, but it lifts off easily if you need to reset it.

For pattern matching, the Artemis paper has an overlap of 1/2 to 5/8 in., making it more forgiving than the typical 1/16- to 1/8-in. overlap of regular wallpaper. However, the trade-off is a more visible seam.

Once the paper is on, the included applicator does an adequate job of removing air bubbles. The instructions suggest a hair dryer to flatten out stubborn spots. According to Artemis, if you want to replace the paper with a fresh look down the road, peeling off the old and applying new are a breeze.



IS IT WOOD OR PLASTIC?

Most imitation wood siding falls short of resembling the real deal, but Beach House Shake siding from Tando is an exception. This siding is a hollow polypropylene extrusion available in 34-in.-long panels. It installs just like vinyl siding, which is considerably easier than installing real cedar.

What sets these shakes apart from other imitation wood shakes is the variation in size, grain and color, mimicking real cedar. Compared with the monolithic look of other vinyl or polymer shakes, Beach House Shake siding looks astoundingly real, and has the benefit of zero maintenance. Tando has authentic-looking corner pieces, but you still need J-channel trim around windows and other transitions. This does lessen the authentic look slightly; real cedar would be neatly flashed and/or caulked.

Beach House Shake siding comes in several different colors ranging from the look of new cedar to weathered gray. If you've always wanted cedar shake siding but have balked at its practicality, this is one of the best alternatives available.

Bed in a Box

The invention of a machine that compresses foam mattresses into a box for delivery launched the concept of "bed in a box." Many mattress companies now offer this option. If you're considering one, keep the following things in mind.

BUYING BEFORE TRYING?

The rule for mattress shopping is to spend at least 15 minutes trying one out. You can still do this with a bed in a box. Most companies let you try your mattress for several nights before you make a final decision.

WILL IT GO BACK IN THE BOX?

Don't worry—if you don't like it, you don't have to stuff it back into the box. Most sellers provide a refund and may let you keep the mattress, help you donate it to a local charity or arrange a pickup.

WHAT KIND OF MATTRESS COMES IN A BOX?

These mattresses are made mostly of memory foam. They're rated for firmness and suitability to your favored sleep position and body size. Some offer orthopedic benefits or cooling gel layers and copper-infused toppers to regulate body temperature. Memory foam traps heat and prevents air circulation, so it might not be right for you if you typically get overheated during the night. Also, foam mattresses need support from either a box spring or a platform.

HOW MUCH ARE THEY?

Starting as low as $300 and seldom more than $1,500, bed-in-a-box mattresses are more affordable than traditional mattresses.

TOP LEFT: TANDO BEACH HOUSE SHAKE

You love one-stop shopping because it simplifies your life, and usually saves you money, right? When it comes to insurance, GEICO's your one-stop shop to help you save when you box up coverage for all your needs — like homeowners, motorcycle, boat, RV insurance, and more. Go to geico.com to see how easy it is to get great savings all in one spot with GEICO.

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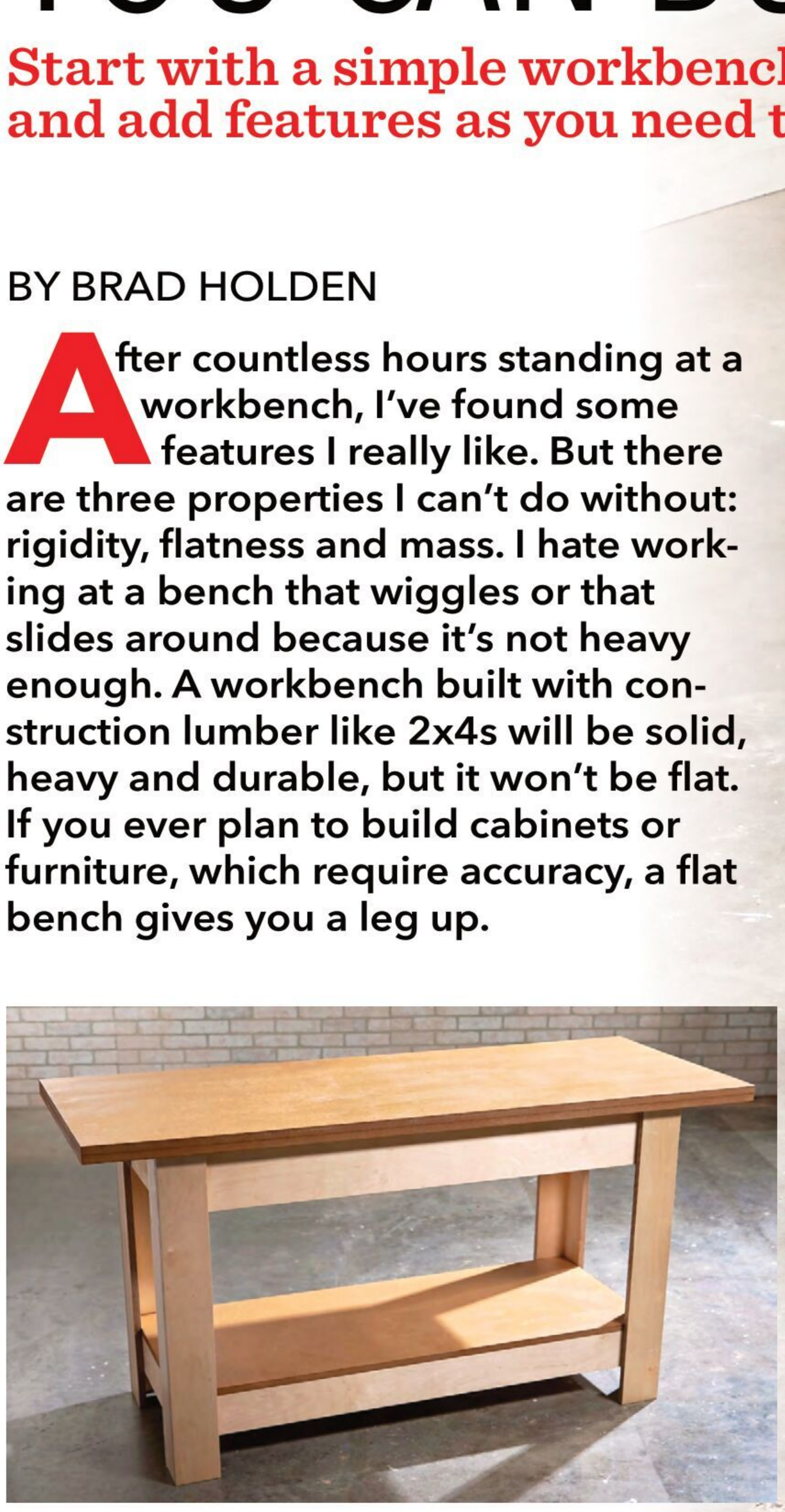
A BASIC BENCH YOU CAN BUILD ON!

Start with a simple workbench and add features as you need them

BY BRAD HOLDEN

After countless hours standing at a workbench, I've found some features I really like. But there are three properties I can't do without: rigidity, flatness and mass. I hate working at a bench that wiggles or that slides around because it's not heavy enough. A workbench built with construction lumber like 2x4s will be solid, heavy and durable, but it won't be flat. If you ever plan to build cabinets or furniture, which require accuracy, a flat bench gives you a leg up.



This bench is constructed from plywood (Baltic birch) and MDF (medium-density fiberboard). Both are inexpensive, flat and stable. The design is simple, with rigidity in mind, and the double-layer top adds necessary mass. Build the basic bench and call it good, or add all the extras.

INSTALL A VISE
The heart of a good workbench

ADD A TOOL PLATFORM
Swing it up into place when you need it

MAKE IT MOBILE
Side-mount casters so it moves only when you want it to

WHAT IT TAKES

TIME	COST	SKILL LEVEL
1–3 days	*$100 for basic bench; $250 as shown*	*Beginner*

TOOLS
Table saw, miter saw, drill/driver, finish nailer

GET SUPPORT FROM A "DEAD MAN"
Quick, adjustable support for long pieces

DRILL DOG HOLES FOR CLAMPING VERSATILITY
Hold parts in place without clamps

TACK ON A TOOL TRAY
Keep your tools at hand but off the work surface

ADD A FIDDLE
Perfect belt-sanding helper

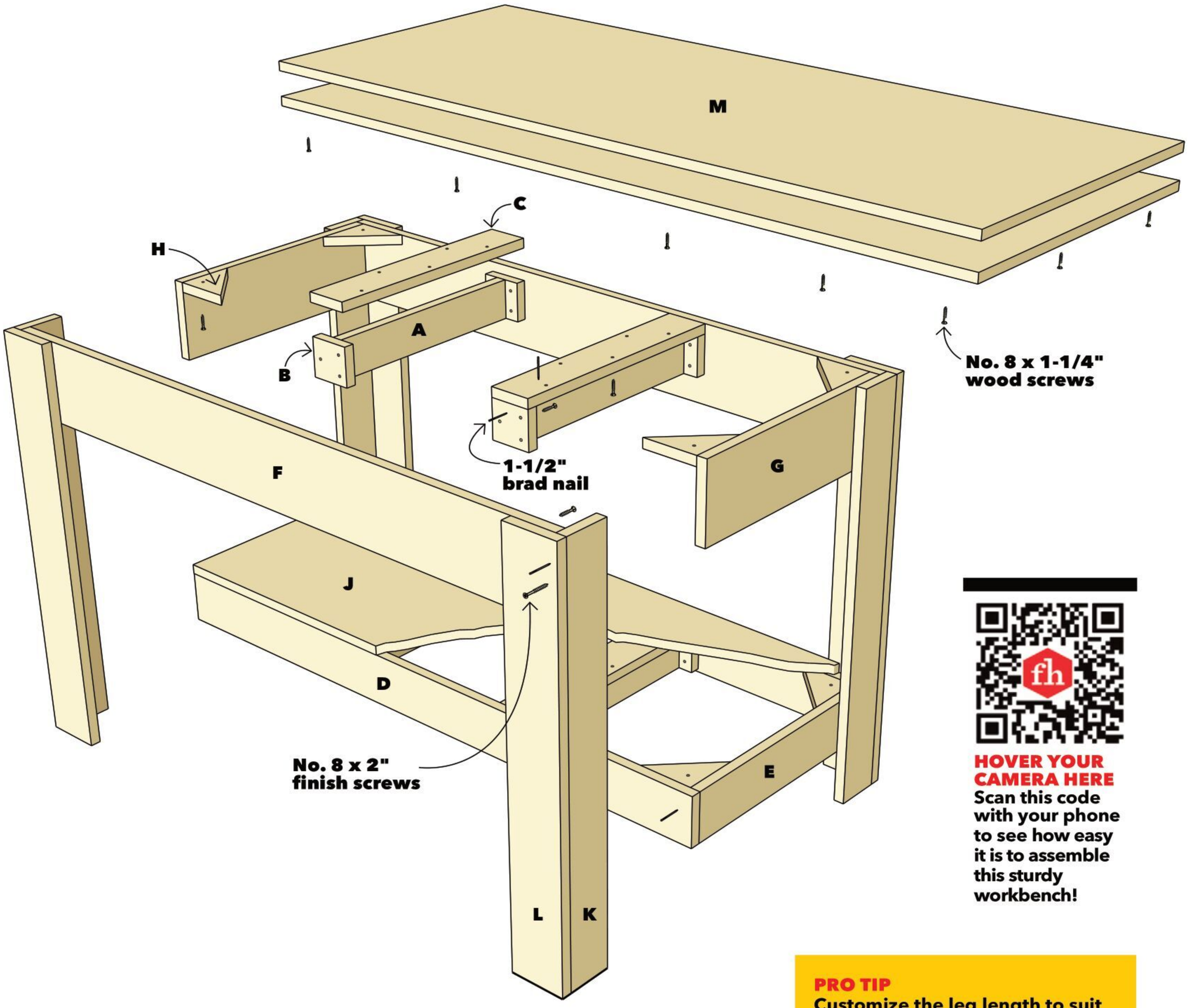
SLIP IN SOME SHELVES
Narrow shelves add a little extra storage

ADD A STACK OF DRAWERS, OR TWO OR THREE
Simple drawers keep stuff at hand and protected

MEET THE BUILDER
Brad Holden, a senior editor at *Family Handyman*, has built custom cabinets and furniture for 30 years.

Figure A Basic Bench

OVERALL DIMENSIONS: 33" H x 60" W x 24" D



HOVER YOUR CAMERA HERE
Scan this code with your phone to see how easy it is to assemble this sturdy workbench!

Materials List

ITEM

1 sheet of 3/4" x 4' x 8' plywood
1 sheet of 3/4" x 4' x 8' MDF
No. 8 x 2" finish screws
No. 8 x 1-1/4" wood screws
18-gauge 1-1/2" brad nails
Wood glue
1 qt. polyurethane

OPTIONAL

Woodworking vise
1/2" x 4' x 8' plywood (for drawers)
4" fixed casters
36" piano hinge
1/4-20 threaded inserts
1/4-20 jig knobs
5mm bullet catches
1-1/4" dowel
3/4" dowel

PRO TIP

Customize the leg length to suit your height. I like my benchtop to be at wrist height with my hands at my sides. Once you've determined that detail, cut all the parts.

Cutting List

KEY	QTY.	DIMENSIONS	PART
A	4	3/4" x 3" x 15-1/2"	Brace web
B	8	3/4" x 3" x 3"	Brace flange ends
C	4	3/4" x 3" x 17"	Brace flange top
D	2	3/4" x 4" x 46-1/2"	Lower platform sides
E	2	3/4" x 4" x 17"	Lower platform ends
F	2	3/4" x 6" x 46-1/2"	Upper platform sides
G	2	3/4" x 6" x 17"	Upper platform ends
H	8	3/4" x 4" x 4"	Corner braces
J	1	3/4" x 18-1/2" x 46-1/2"	Lower platform top
K	4	3/4" x 3-1/4" x 31-1/2"	Leg 1
L	4	3/4" x 4" x 31-1/2"	Leg 2
M	2	3/4" x 24" x 60"	Top base and work surface

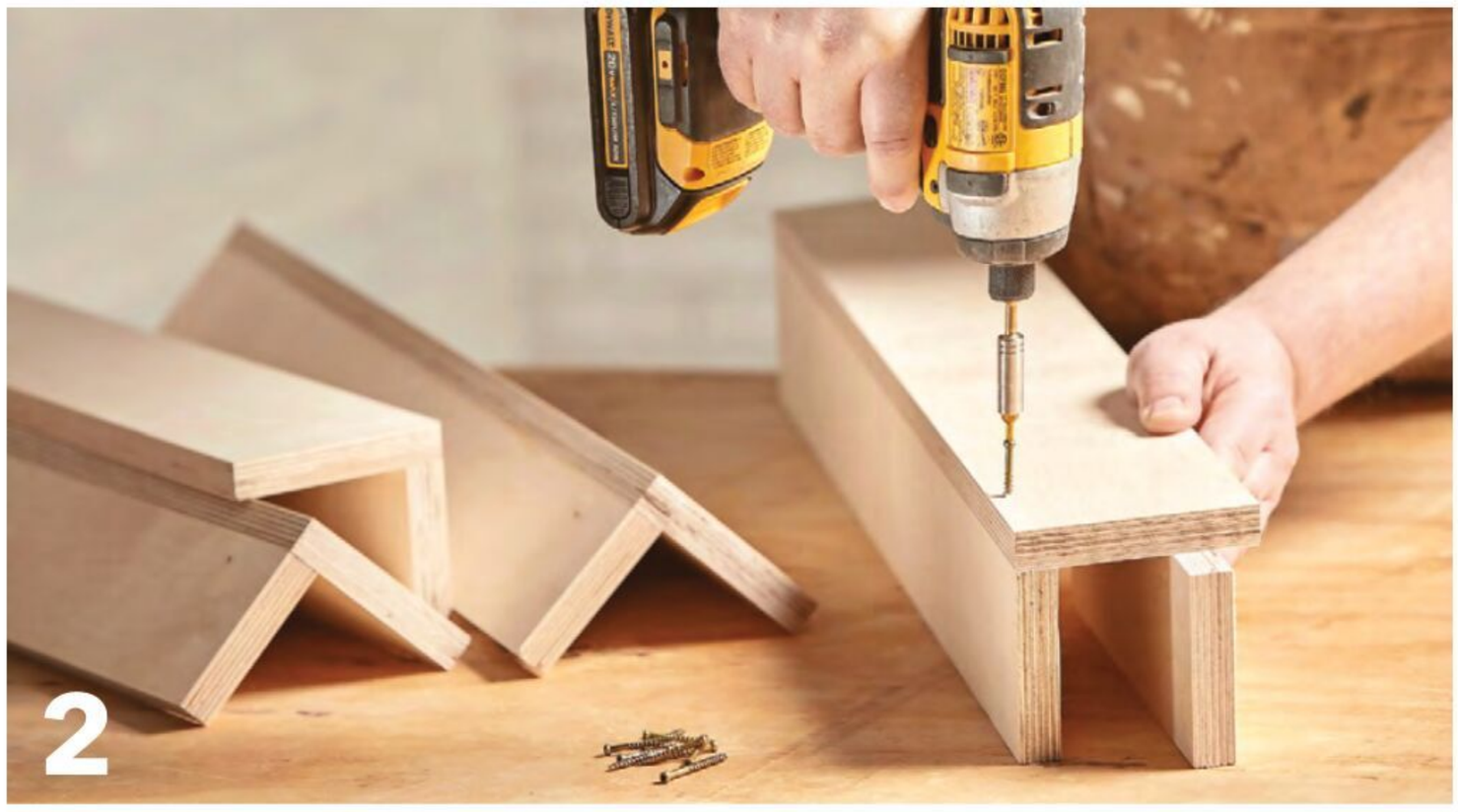
1 BUILD THE PLATFORMS

Assemble the braces (A – C), then build the platform frames (D – G) and attach the braces using glue and screws. Glue and screw the corner braces (H) in place. Attach the lower platform top (J) by driving screws through the brace flanges and corner braces. (See **Figure A**.)

1

2 BUILD THE LEGS

Glue and nail leg parts 1 and 2 (K and L) together in an "L" shape. To make assembly easier, support leg part 2 with a scrap the same height as leg part 1. Once the parts are tacked together with brad nails, add a few screws for strength.


2

3 ATTACH THE LEGS

Attach the upper platform flush with the tops of the legs, using glue and screws. Glue and screw the lower platform to the legs at whatever height you like. The top of my lower platform is 8 in. high. Drive screws from the inside of the legs if you prefer that they don't show.

3

4 ADD THE TOP

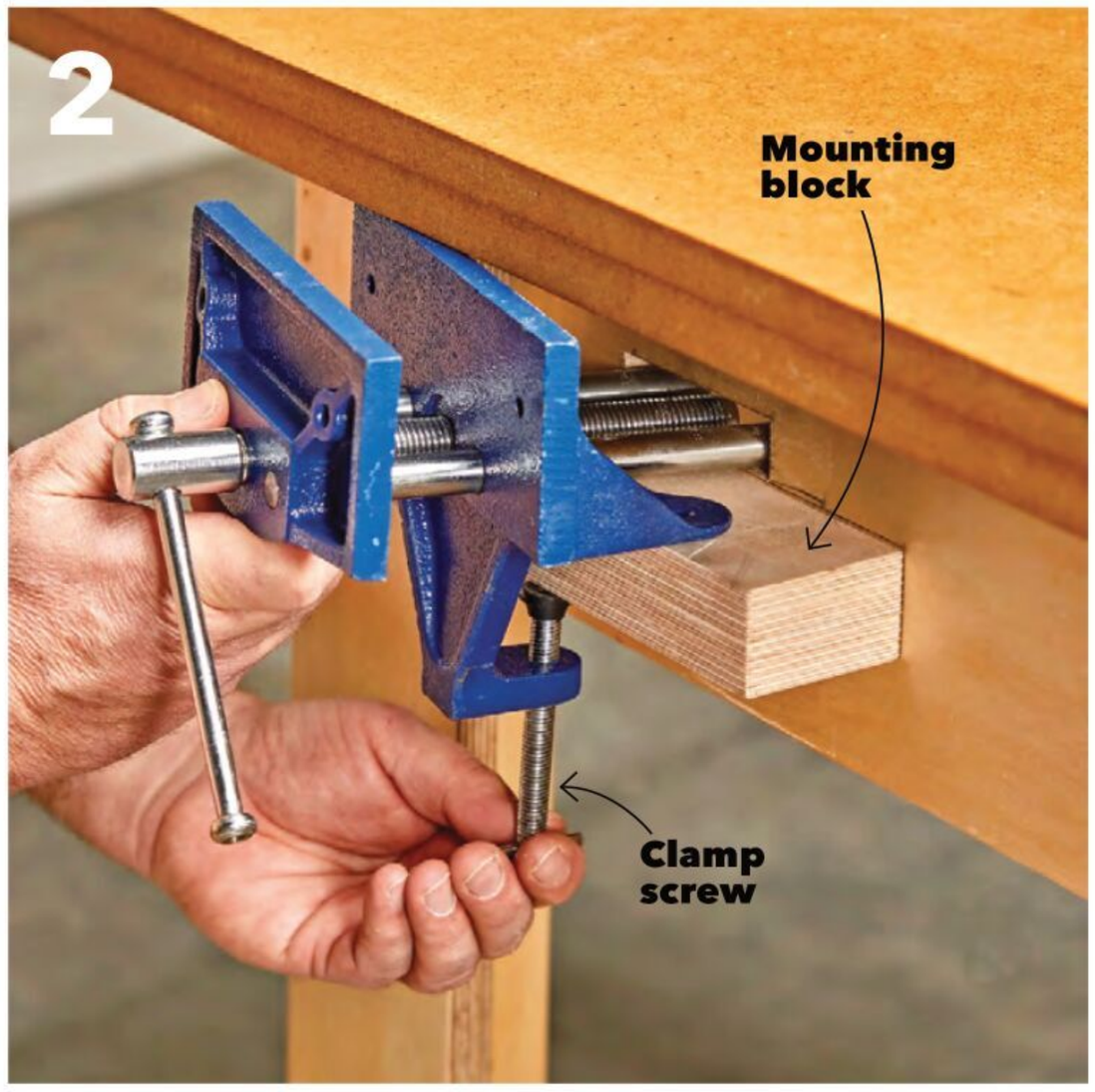
Fasten the layered top (M) in two steps. With the top base and work surface upside down on sawhorses, center the assembled bench framework on it and drive screws through the brace flanges and corner braces, into the top base only, and then predrill screw holes in the top base for attaching the work surface. Drilling these holes after attaching the top base guarantees that they'll be accessible if you need to replace the work surface. Fasten the work surface to the base with wood screws.

4

You can stop right here and have a great basic bench—or add the handy upgrades you'll see on the following pages. They're easy to adapt to an existing workbench too.

INSTALL A VISE

Holding your work steady is essential, and the best way to do that is with a woodworking vise. You can get by with a small, inexpensive vise like this ($25 at Harbor Freight), or spend a couple hundred bucks for a larger, deluxe model. With a cast iron vise like this, line at least the front jaw with a wood pad to prevent marring your workpieces. I mount vises so the tops of the jaws or jaw pads are flush with the work surface.



MAKE A PORTABLE TOOL MOUNT

Fasten a 2x4 on edge to a piece of plywood. Bolt on a bench grinder or other tool you use only occasionally. When you're ready to use the tool, clamp the 2x4 in your vise.

1 MAKE ROOM FOR THE VISE

Vises have different mounting methods. For this one, I cut a hole in the platform side to allow the vise screw and rods to pass through. I like the back jaw of my vises to be flush with the edge of the workbench, essentially making the entire edge of the bench an extension of the back jaw. This way, I can clamp one end of a long workpiece in the vise and clamp the other flat against the edge of the bench using a pipe clamp.

2 ATTACH THE VISE

Glue up a plywood mounting block for the vise. Glue and screw the mounting block to the platform side. If you plan to upgrade vises later, skip the glue. Bolt the vise to the mounting block or just use the built-in clamp screw. Screw on the front jaw pad, making its top edge flush with the work surface.

ADD A STACK OF DRAWERS, OR TWO OR THREE

Drawers tucked neatly under the bench create storage for all the stuff you like to have close at hand. The finger pulls in these drawers serve double duty, acting as a hole for a "dead man" (see p. 34).

1 BUILD THE DRAWER CABINET

Cut the parts (N – S), and assemble the cabinet as shown, using glue and screws. The part dimensions vary according to your bench dimensions, but the construction is simple; it's an open-front plywood box with a back. You can install drawer slides, but wooden runners work just fine. The bottom runners are 1/8 in. thick; the rest are 1/2 in. x 1/2 in. They provide a gliding surface and keep the drawers from tipping. This type of runner also makes it easy to bring a drawer and its contents wherever you need it.

2 BUILD THE DRAWERS

Cut the drawer parts (T – W), allowing for 1/8 in. of play from side to side when installed. Drill 1-1/4-in.-diameter finger holes in each drawer front, then assemble the drawers with glue and finish nails.

Cutting List

KEY	QTY.	DIMENSIONS	PART
N	2	3/4" x 16-3/4" x 18-1/2"	Drawer cabinet sides
P	2	3/4" x 11" x 18-1/2"	Drawer cabinet top and bottom
Q	4	1/2" x 1/2" x 17-1/2"	Standard drawer runners
R	2	1/8" x 1/2" x 17-1/2"	Bottom drawer runners
S	1	3/4" x 11" x 15-3/4"	Drawer cabinet back
T	6	1/2" x 4-3/16" x 17-1/2"	Drawer sides
U	3	1/2" x 4-3/16" x 9-7/8"	Drawer backs
V	3	1/2" x 5" x 10-7/8"	Drawer fronts
W	3	1/4" x 10-7/8" x 17-1/2"	Drawer bottoms

Figure A
Drawer Cabinet

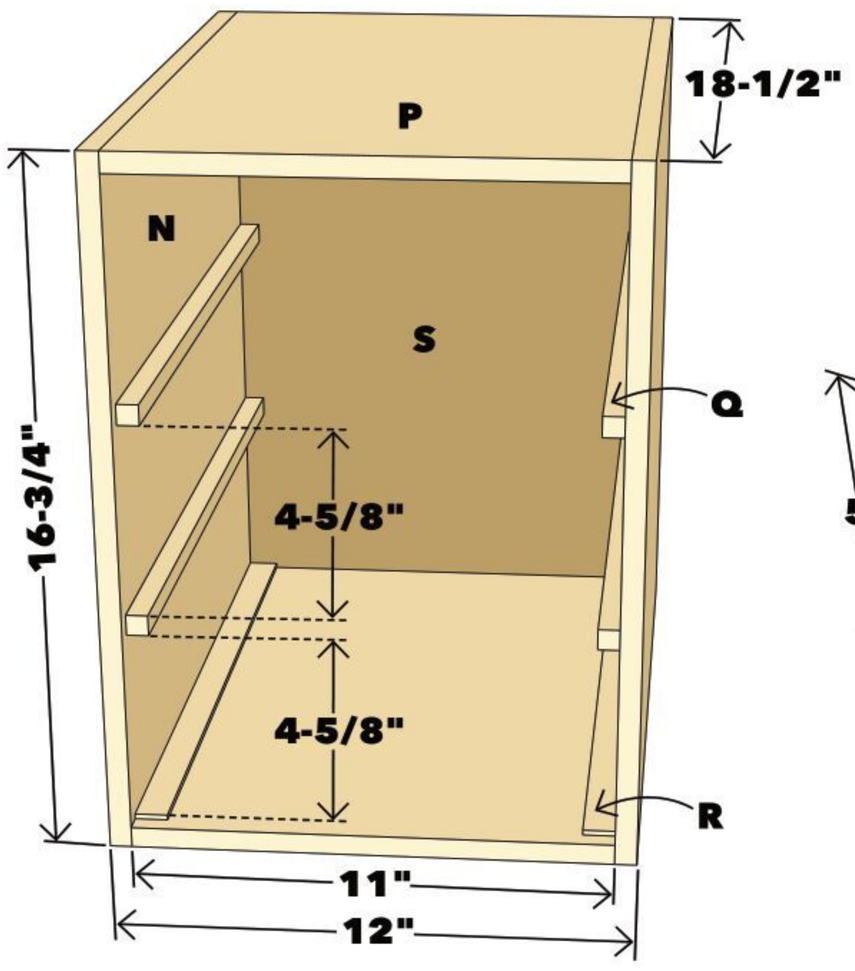
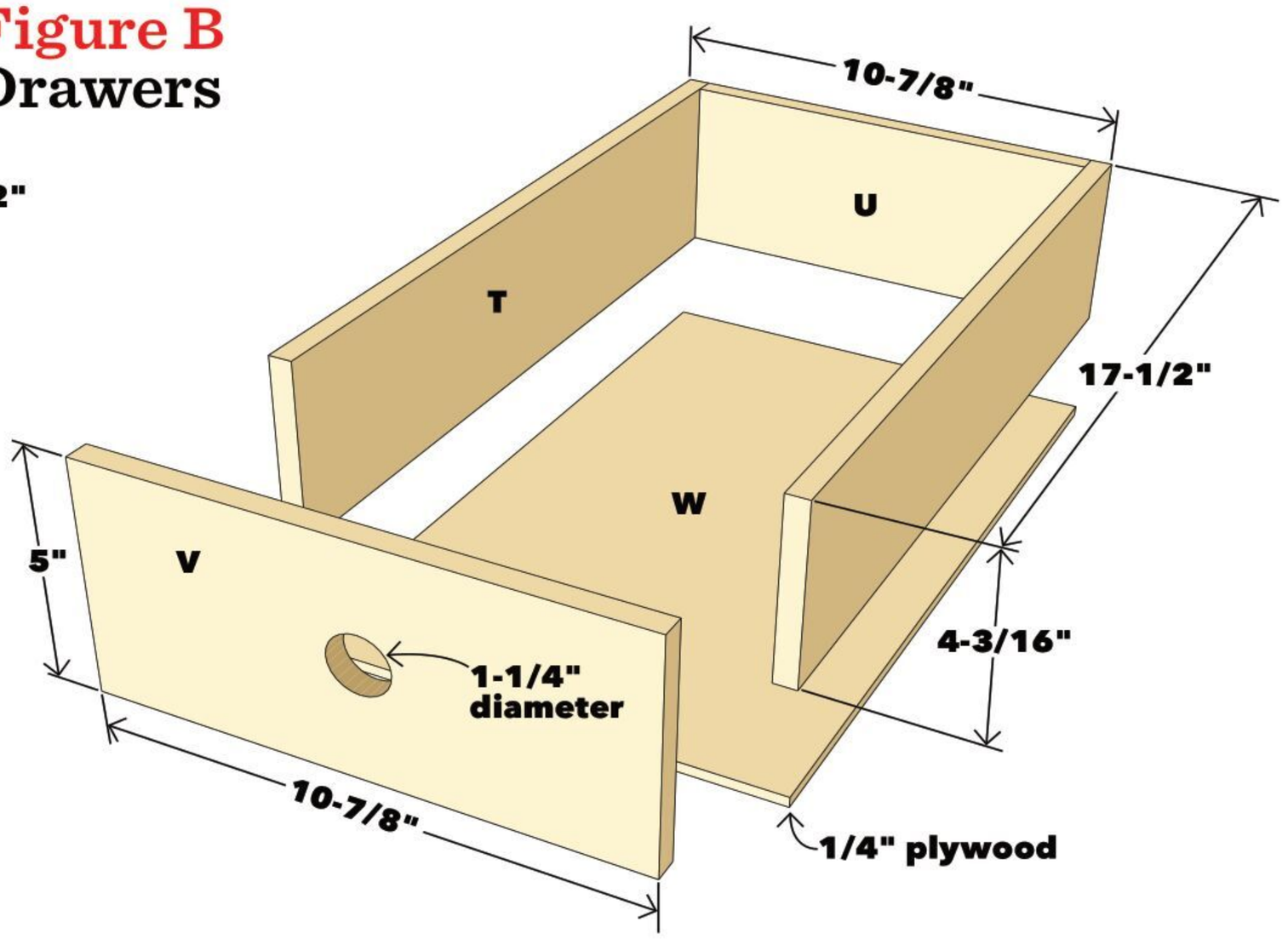
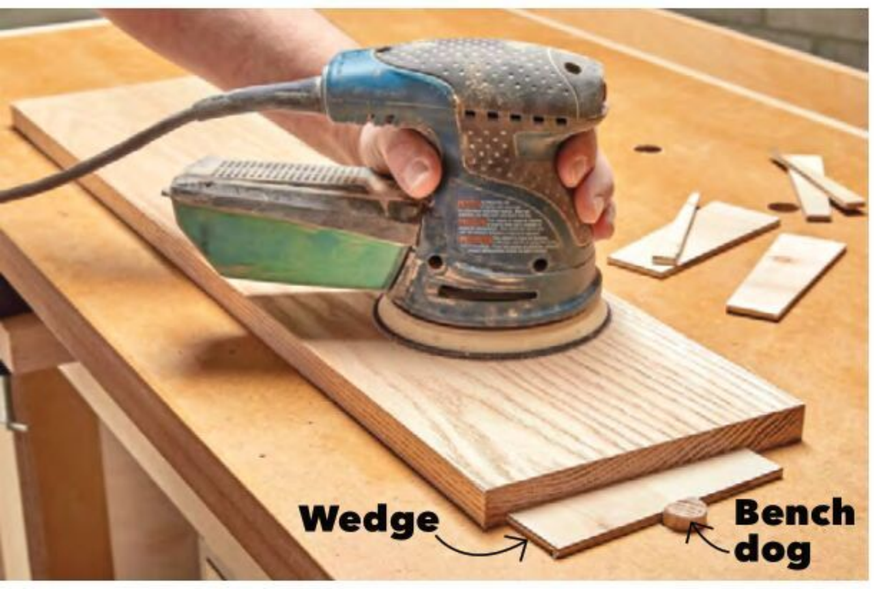


Figure B
Drawers





DOG HOLES FOR CLAMPING VERSATILITY

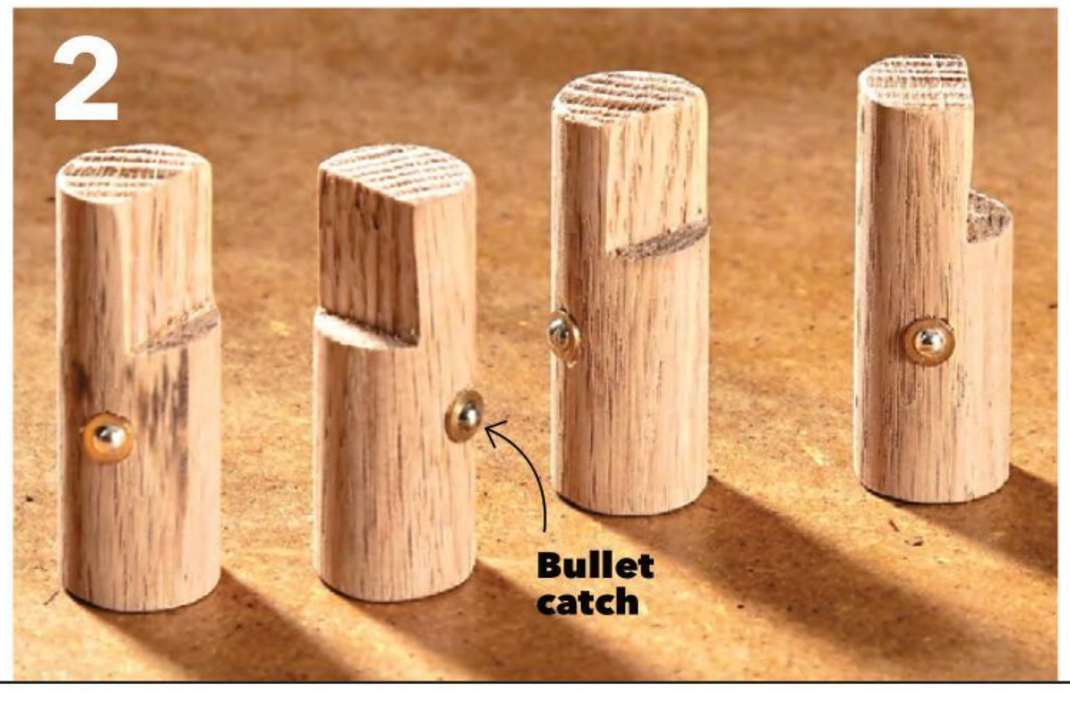
Bench dogs are a time-tested method for holding parts. You'll drill a series of holes through the benchtop and use wedges to hold parts in place between the bench dogs. Bench dogs also work with a tail vise or fiddle (see p. 34). You can buy bench dogs or make your own (see below).

1 DRILL THE HOLES

Lay out the dog holes on the work surface, placing them so you won't drill into any braces. If you're nervous about drilling straight holes freehand, make a drilling guide out of a block of wood approximately 2 in. x 2 in. x 4 in., with square edges. On your drill press, drill a hole through the block the diameter of your drill bit or its shank. Use a jigsaw to make a cutout to accommodate the bit's cutting head and to see where you're drilling. To use the guide, slip the bit's shank through the hole, then chuck it in your drill.

2 MAKE BENCH DOGS

Cut 3/4-in.-diameter dowels to length. For this 1-1/2-in.-thick top, I made the dogs 2 in. long. Cut a 1/8-in. x 3/4-in. flat face at the top using a handsaw and chisel. Drill a hole and glue in a bullet catch ($10 per 20-pack on Amazon) roughly centered on the dog's height. When you slide the dog into its hole, the bullet catch holds it in place at the desired height. If your dowel fits snugly in the dog holes, you'll need to very slightly recess the bullet catches.



ADD A SAW PLATFORM

If your miter saw doesn't already have a permanent home, customize your workbench to accommodate it with this flip-up platform. The platform sets your saw's table level with the benchtop to accommodate long workpieces. Depending on which end of your workpiece needs support, you can spin the saw around to work from either side of the bench.

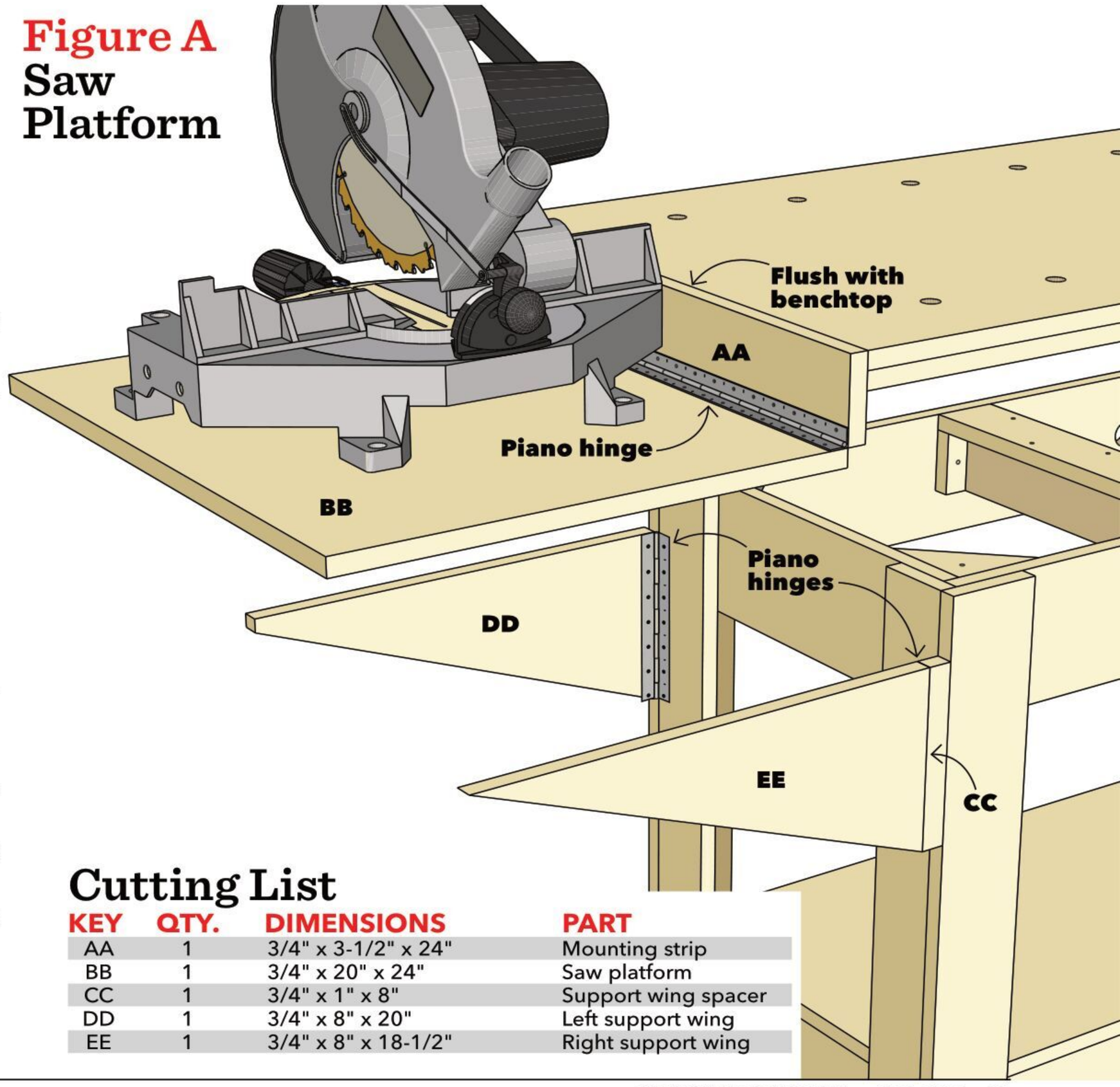
1 ATTACH THE PLATFORM

Cut the platform (BB) to the size you want and attach it to the mounting strip (AA) with a length of piano hinge. Leave the mounting strip wide for now. Set the assembly on the workbench, and set the saw on the platform. Flip up the mounting strip and mark it where it'll be flush with the saw table as shown. Remove the strip, cut it to width and reattach it to the platform. Attach the platform assembly to the edge of the bench with 2-in. wood screws.

2 INSTALL THE SUPPORTS

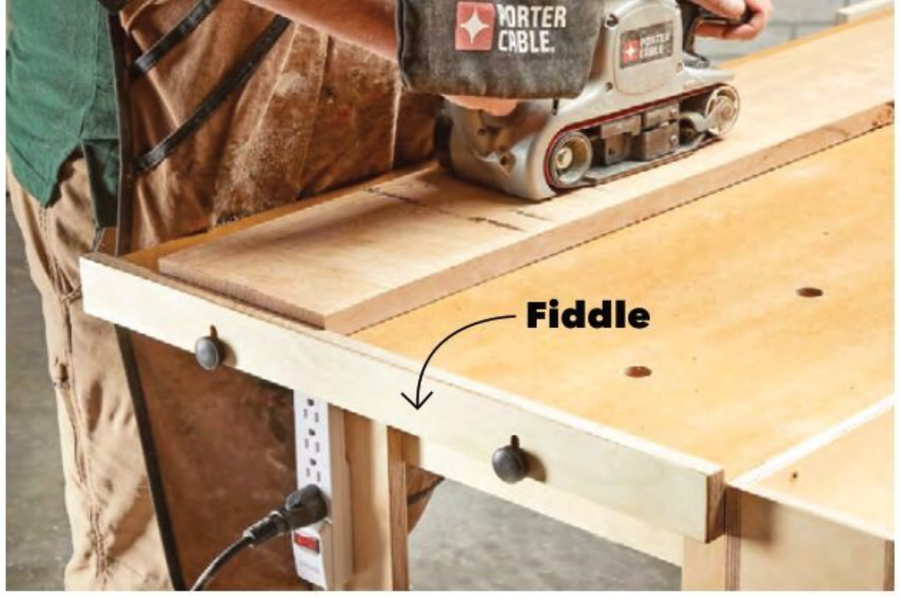
Make the support wings as long as possible within the span of the bench legs. For the right support wing (EE), screw the spacer (CC) directly to the leg, then attach the wing to the spacer with a length of piano hinge. The spacer allows the left support wing (DD) to fold in behind the right. Attach the left support wing directly to the leg using a length of piano hinge. Cut the tip off the left support wing so it folds in completely.

Figure A
Saw Platform



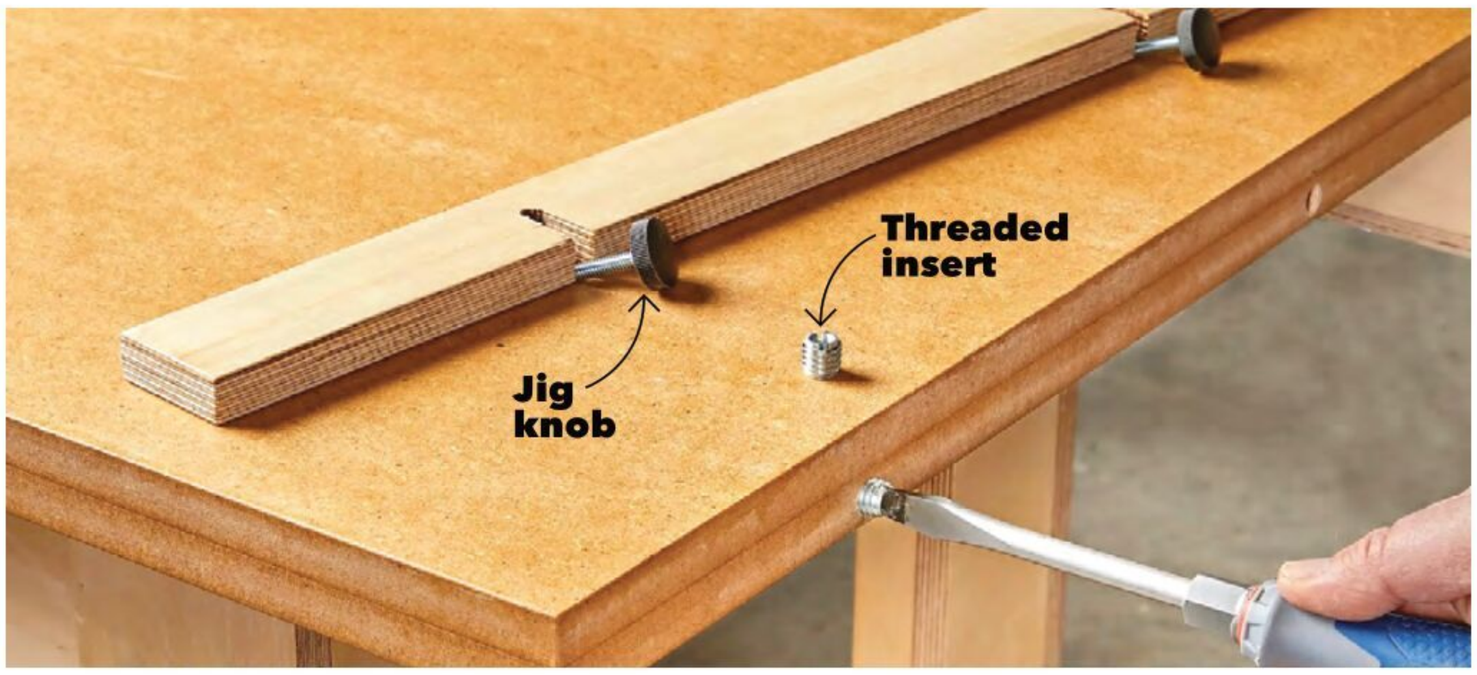
Cutting List

KEY	QTY.	DIMENSIONS	PART
AA	1	3/4" x 3-1/2" x 24"	Mounting strip
BB	1	3/4" x 20" x 24"	Saw platform
CC	1	3/4" x 1" x 8"	Support wing spacer
DD	1	3/4" x 8" x 20"	Left support wing
EE	1	3/4" x 8" x 18-1/2"	Right support wing



ADD A FIDDLE

When you're belt-sanding a workpiece, it wants to shoot off the end of the bench unless it's held in place. Clamps work, but you need to relocate them to get at the entire surface. A fiddle stops the piece from moving without getting in the way.



MOUNTING THE FIDDLE

Predrill pilot holes in the bench edge for 1/4-20 threaded inserts (eight for $8 at Rockler), then drive them in flush. Typically, the pilot hole is about 1/32 in. less than the insert's outer thread diameter. Cut the fiddle from 3/4-in. plywood, sized to match the bench end. Cut slots in the fiddle to line up with the inserts and attach it with 1/4-20 jig knobs ($2 each at Rockler).

GET SUPPORT FROM A "DEAD MAN"

When I'm working on a door, shelf or any long workpiece, it's nice to have someone to hold up the other end. In this case, that helper is called a dead man. All you need is a length of 1-1/4-in.-diameter dowel. Stick the dowel in the drawer finger hole or apron that's the right height and you're set. Drill extra holes in the apron or drawer fronts as needed.

TACK ON A TOOL TRAY

A tool tray—standard on a traditional cabinetmaker's bench—provides a place for keeping the stuff I'm using close by, while keeping it off the work surface. Build the tray whatever size you like (mine is 4 in. x 4 in.), then screw it to the back edge of the benchtop.

SLIP IN SOME SHELVES

The combination of the drawer boxes and the leg construction leaves a shallow cavity. Don't waste it. Cut shelves to fit the space. Install shelf standards to make the shelves adjustable, or just nail in cleats to support the shelves.

POWER UP

Mount a power strip to one of the legs so you never have to search for an extension cord again.

MAKE IT MOBILE

I like my workbench to stay put until I need to move it. This caster mounting method keeps the legs firmly on the floor. Mounted with bolts, nuts and washers, the wheels don't quite touch the floor. Reinforce the legs with 3/4-in.-thick plywood where the casters bolt on. To move the bench, lift the end opposite the casters until the casters contact the floor.

CONNECTING TO CONCRETE

With a little know-how, it's as easy as other fastening jobs

BY MIKE BERNER

Fastening to concrete, brick or stone might be intimidating if you haven't done it before. But I've found that the toughest part is drilling the hole; after that, it's just like fastening to any other material.

So don't be intimidated! With these tips, you'll be able to attach just about anything to concrete.

MEET THE BUILDER

Mike Berner is an associate editor at *Family Handyman* who has built modern houses out of concrete and attached everything to it… Yes, even a kitchen sink.

HOVER YOUR CAMERA HERE

Scan this code to see concrete fastening tools, tips and tricks in action.

What's the Difference Between a Hammer Drill and a Rotary Hammer?

HAMMER DRILLS often come as a combination driver that has a drill, drive and hammer setting. In the hammer setting, a pair of grooved discs rotate, making the chuck slam forward and back as the chuck rotates. This hammering force makes the drill bit chip into the concrete as it spins.

MORE PRESSURE, MORE PROGRESS

When you're using a hammer drill, more force equals faster progress. But watch out, these bits can break—ease up if it starts to bend!

DIAL IN THE RPM

With a hammer drill, I find that slower rpm means slower drilling while higher rpm doesn't mean faster drilling. The sweet spot for me is medium-high rpm. My hammer drill has two speed settings, so I use the high setting and nudge the speed up until I find that sweet spot where the bit proceeds at a steady pace.

ROTARY HAMMERS are the hammer drill's big brother. The motor rotates the bit and moves a piston back and forth, which gives the tool more pounding power. Many rotary hammers are multifunctional, adding drill and hammer to the basic rotary hammer function, making them far more useful. If you have lots of drilling to do, a rotary hammer will cut your labor considerably. You can buy a rotary hammer starting at about $100.

LET THE TOOL DO THE WORK

Unlike with a hammer drill, you don't need to put your weight behind a rotary hammer. Too much force reduces the effectiveness of the piston motion. Apply just enough pressure to make steady progress.

My Go-To Concrete Fasteners

DRILL A HOLE THE RIGHT SIZE

You'll find a dozen fastener choices at the hardware store, all suited to different tasks. The most important thing is to drill the proper hole size for your fasteners.

CONCRETE SCREW

I choose concrete screws for most fastening jobs because they're easy to use, strong and removable. They range in diameter from 3/16 to 3/4 in. and in length from 1-1/4 in. to 6 in.

Pro Tip: An impact driver is my go-to tool for driving concrete screws. It's the only way to go!

PLASTIC ANCHOR

Plastic anchors work the same in concrete as they do in drywall; press the anchor into the hole and it expands for a snug fit as you drive a screw into it. Plastic anchors are the cheapest option, and they're best for light-duty tasks like hanging small pictures and shelf brackets.

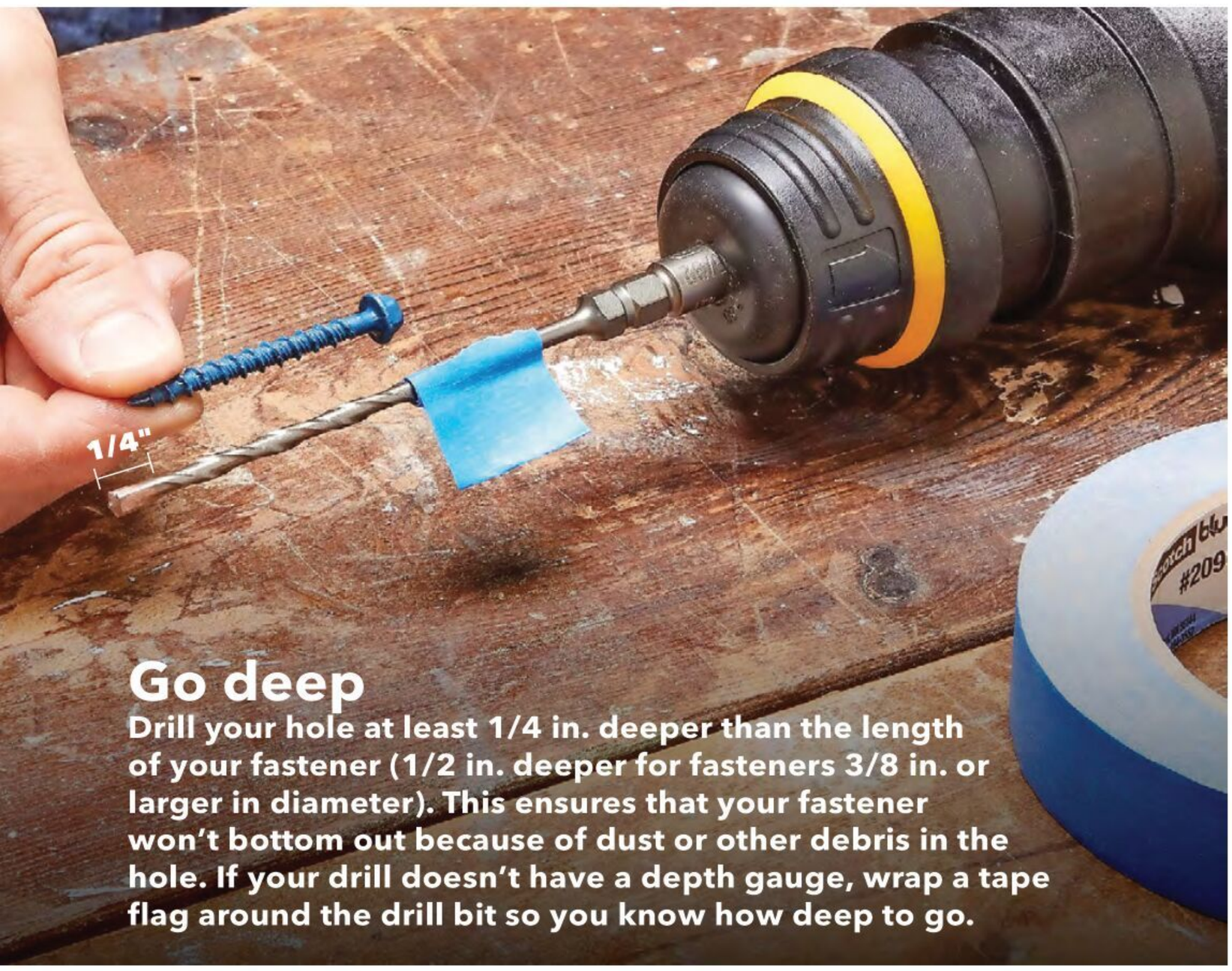
SLEEVE ANCHOR

Used for heavy-duty fastening or hanging, sleeve anchors are permanent, very strong and less expensive than large concrete screws. They can be used in any concrete or masonry and have either a screw head or a nut to tighten. The sleeve expands as you tighten the nut for a firm grip.

WEDGE ANCHOR

Wedge anchors provide the strongest connection for demanding jobs like fastening structural hardware to concrete. Hammer the anchor into the hole, then turn the nut to lock the anchor in place. Don't use wedge anchors in brick, block or mortar joints. The force may cause cracking.

Concrete Fastening Tips From the Job Site



Go deep

Drill your hole at least 1/4 in. deeper than the length of your fastener (1/2 in. deeper for fasteners 3/8 in. or larger in diameter). This ensures that your fastener won't bottom out because of dust or other debris in the hole. If your drill doesn't have a depth gauge, wrap a tape flag around the drill bit so you know how deep to go.

Fix a strip-out

So you've drilled your hole and for some reason your fastener doesn't grab. Before throwing in the towel, try these options:

■ ADD A WIRE
Push a copper wire into the hole, then drive your concrete screw.

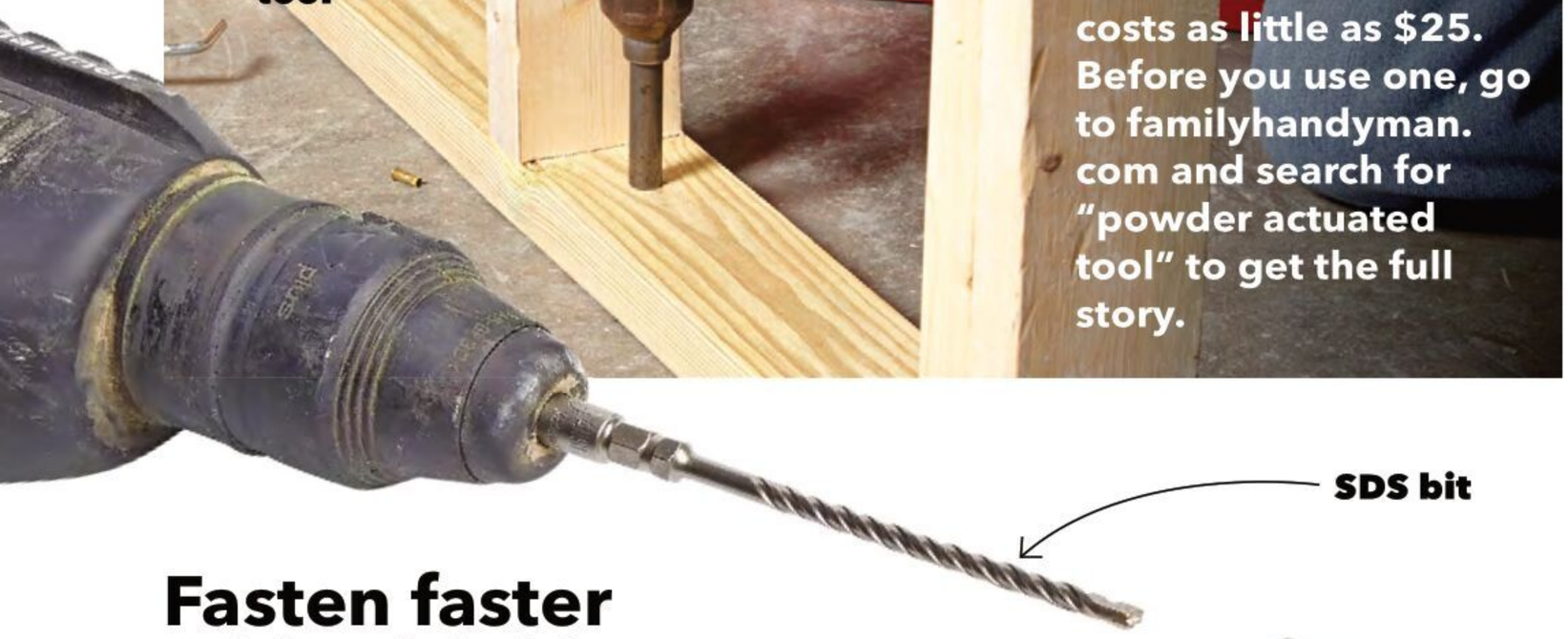
■ DRILL A BIGGER HOLE
Upsize the hole and drive in a bigger fastener. You may also need to drill out the hole in the parts you're fastening.

Shoot nails into concrete

If you have a lot of concrete fastening to do, consider a powder-actuated tool. It uses a gunpowder load to shoot a special nail into concrete. It's the quickest masonry fastener available and costs as little as $25. Before you use one, go to familyhandyman.com and search for "powder actuated tool" to get the full story.

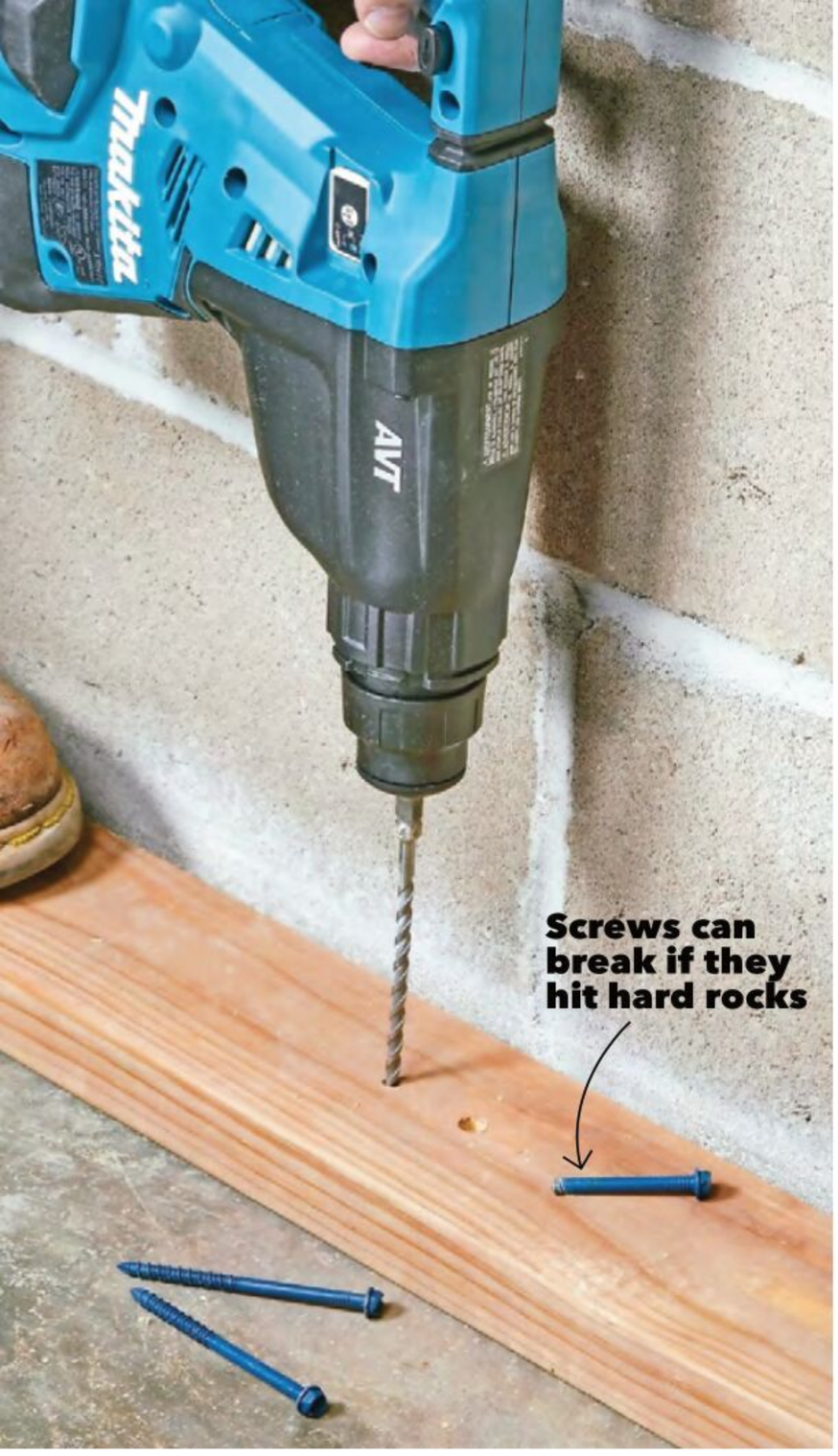
Control the dust

Concrete contains crystalline silica, which can lead to very serious health issues. Always wear a respirator when drilling concrete. But don't stop there: A vacuum nozzle close to the action prevents most of the dust from ever getting into the air.



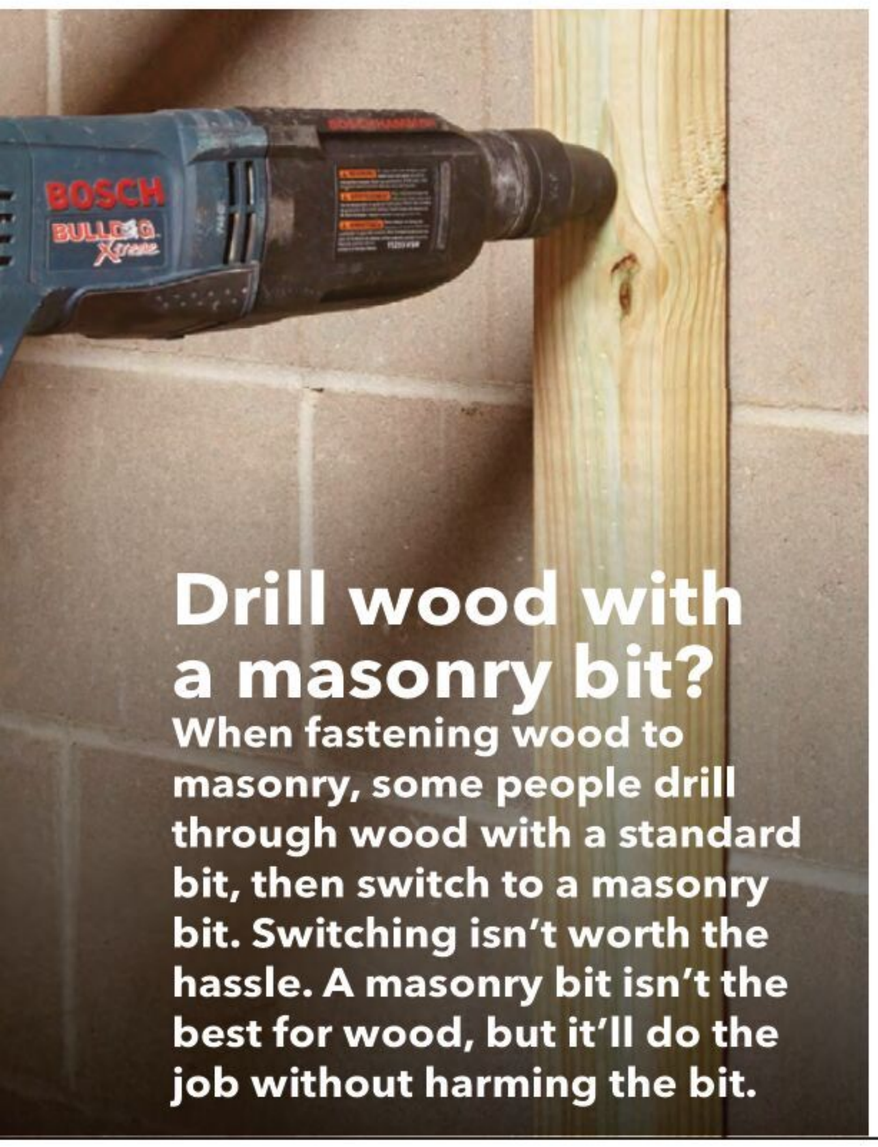
Fasten faster with a bit kit

To speed up drilling and driving, use a special kit like this Bulldog Anchor Drive Installation Kit by Bosch. Many brands make a similar installation tool; this one costs about $40. It slips over an SDS (slotted drive shaft) bit, letting you drill and drive fasteners without swapping bits.



If you hit a hard spot, move on

When you're drilling concrete, sometimes you'll hit something that the bit can't easily penetrate, typically a rock or rebar. Sometimes you can work through it, but it's best to try a different spot. Even if you get through it, your fastener will hit it too and likely shear off as you're driving it.



Drill wood with a masonry bit?

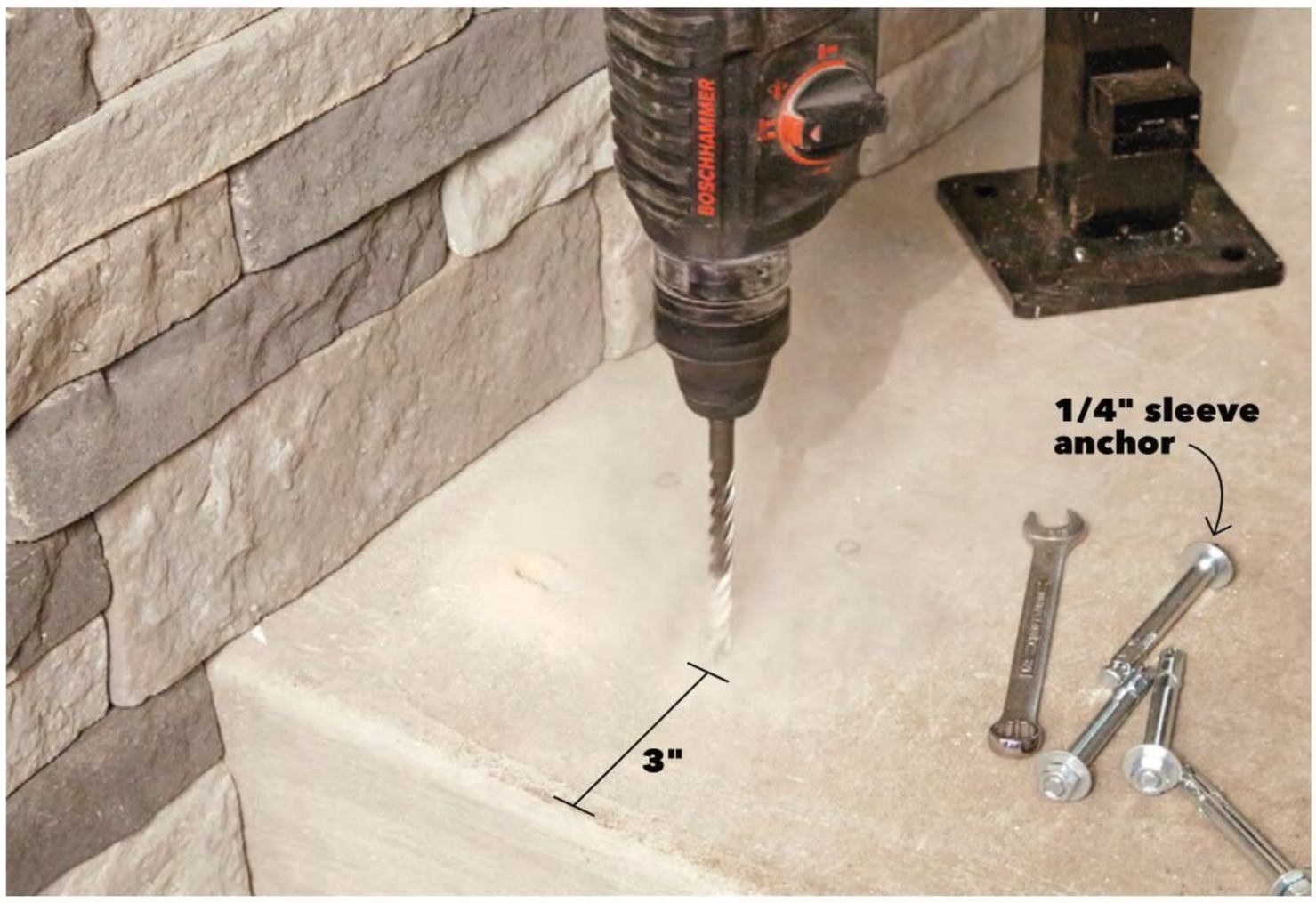
When fastening wood to masonry, some people drill through wood with a standard bit, then switch to a masonry bit. Switching isn't worth the hassle. A masonry bit isn't the best for wood, but it'll do the job without harming the bit.

Clean out the hole

When you drill a hole, dust settles to the bottom and clings to the sides of the hole. The dust could keep your fastener from embedding all the way or cause a sleeve or wedge slip. Use a vacuum and a copper fitting brush to remove all the dust.

CAUTION

Silica dust can damage your lungs. Always wear a respirator when you're drilling or cutting concrete or masonry.



Stay away from the edge

A good rule of thumb is to keep an anchor away from an edge a distance of at least 12 times the diameter of the anchor. For example, a 1/4-in. anchor requires a minimum distance of 3 in. from an edge. Don't use a wedge anchor in this situation; its outward force could cause a blowout.

Do I fasten to mortar or the block/brick?

Drill into mortar if you're hanging a picture frame or lightweight holiday decorations. Mortar is a lot easier to drill into. It's more prone to crumbling, but it's easier to patch. When you're hanging heavier objects like a TV, it's better to fasten directly to the brick or block. The material is harder but still brittle, so avoid wedge anchors.

Mortar joint

For a smoother ride, use a four-cutter bit

Two-cutter bits work fine, but four-cutter bits are better. Four-cutter bits are available at home centers for about 20% more than two-cutter bits. Four-cutter bits last longer, cut smoother and easier and are less likely to twist the drill out of your hand if you hit a hard rock or rebar.

Clear the flutes

The bit's flutes carry dust up and out of the hole as you drill, but they can get clogged. When they do, the bit spins without making any progress. To release the dust buildup, just pull the bit out of the hole while it's spinning. I typically do this every inch or so of depth.

Don't bother with masonry nails

You'll likely still find a dusty box of masonry nails tucked away at the hardware store. Leave it there. Masonry nails aren't up to the standards of newer fasteners and anchors, and they require more effort than concrete screws.

imbruvica®
(ibrutinib)
560, 420, 280, 140 mg tablets | 140, 70 mg capsules

Important Facts about IMBRUVICA® (im-BRU-vih-kuh) tablets and capsules

The risk information provided here is not comprehensive. To learn more, talk about IMBRUVICA® with your healthcare provider or pharmacist. For more information, call 1-877-877-3536 or go to www.imbruvica.com.

What is IMBRUVICA®?

IMBRUVICA® is a prescription medicine used to treat adults with:
- Mantle cell lymphoma (MCL) who have received at least one prior treatment
- Chronic lymphocytic leukemia (CLL)/Small lymphocytic lymphoma (SLL)
- Chronic lymphocytic leukemia (CLL)/Small lymphocytic lymphoma (SLL) with 17p deletion
- Waldenström's macroglobulinemia (WM)
- Marginal zone lymphoma (MZL) who require a medicine by mouth or injection (systemic therapy) and have received a certain type of prior treatment
- Chronic graft versus host disease (cGVHD) after failure of 1 or more lines of systemic therapy

It is not known if IMBRUVICA® is safe and effective in children.

What should I tell my doctor before taking IMBRUVICA®?

Before taking IMBRUVICA®, tell your healthcare provider about all of your medical conditions, including if you:
- have had recent surgery or plan to have surgery. Your healthcare provider may stop IMBRUVICA® for any planned medical, surgical, or dental procedure.
- have bleeding problems
- have or had heart rhythm problems, smoke, or have a medical condition that increases your risk of heart disease, such as high blood pressure, high cholesterol, or diabetes
- have an infection
- have liver problems
- are pregnant or plan to become pregnant. IMBRUVICA® can harm your unborn baby. If you are able to become pregnant, your healthcare provider will do a pregnancy test before starting treatment with IMBRUVICA®. Tell your healthcare provider if you are pregnant or think you may be pregnant during treatment with IMBRUVICA®.
  - **Females** who are able to become pregnant should use effective birth control (contraception) during treatment with IMBRUVICA® and for 1 month after the last dose.
  - **Males** with female partners who are able to become pregnant should use effective birth control, such as condoms, during treatment with IMBRUVICA® and for 1 month after the last dose.
- are breastfeeding or plan to breastfeed. Do not breastfeed during treatment with IMBRUVICA® and for 1 week after the last dose.

Tell your healthcare provider about all the medicines you take, including prescription and over-the-counter medicines, vitamins, and herbal supplements. Taking IMBRUVICA® with certain other medicines may affect how IMBRUVICA® works and can cause side effects.

What should I avoid while taking IMBRUVICA®?

Do not drink grapefruit juice, eat grapefruit, or eat Seville oranges (often used in marmalades) during treatment with IMBRUVICA®. These products may increase the amount of IMBRUVICA® in your blood.

What are the possible side effects of IMBRUVICA®?

IMBRUVICA® may cause serious side effects, including:
- **Bleeding problems (hemorrhage) are common** during treatment with IMBRUVICA®, and can also be serious and may lead to death. Your risk of bleeding may increase if you are also taking a blood thinner medicine. Tell your healthcare provider if you have any signs of bleeding, including:
  - blood in your stools or black stools (looks like tar)
  - pink or brown urine
  - unexpected bleeding, or bleeding that is severe or that you cannot control
  - vomit blood or vomit looks like coffee grounds
  - cough up blood or blood clots
  - increased bruising
  - dizziness
  - weakness
  - confusion
  - change in your speech
  - headache that lasts a long time or severe headache
- **Infections** can happen during treatment with IMBRUVICA®. These infections can be serious and may lead to death. Tell your healthcare provider right away if you have fever, chills, weakness, confusion, or other signs or symptoms of an infection during treatment with IMBRUVICA®.
- **Decrease in blood cell counts.** Decreased blood counts (white blood cells, platelets, and red blood cells) are common with IMBRUVICA®, but can also be severe. Your healthcare provider should do monthly blood tests to check your blood counts.
- **Heart problems.** Serious heart rhythm problems (ventricular arrhythmias, atrial fibrillation and atrial flutter), heart failure and death have happened in people treated with IMBRUVICA®, especially in people who have an increased risk for heart disease, have an infection, or who have had heart rhythm problems in the past. Tell your healthcare provider if you get any symptoms of heart problems, such as feeling as if your heart is beating fast and irregular, lightheadedness, dizziness, shortness of breath, swelling of the feet, ankles or legs, chest discomfort, or you faint. If you develop any of these symptoms, your healthcare provider may do a test to check your heart (ECG) and may change your IMBRUVICA® dose.
- **High blood pressure (hypertension).** New or worsening high blood pressure has happened in people treated with IMBRUVICA®. Your healthcare provider may start you on blood pressure medicine or change current medicines to treat your blood pressure.
- **Second primary cancers.** New cancers have happened during treatment with IMBRUVICA®, including cancers of the skin or other organs.
- **Tumor lysis syndrome (TLS).** TLS is caused by the fast breakdown of cancer cells. TLS can cause kidney failure and the need for dialysis treatment, abnormal heart rhythm, seizure, and sometimes death. Your healthcare provider may do blood tests to check you for TLS.

The most common side effects of IMBRUVICA® in adults with B-cell malignancies (MCL, CLL/SLL, WM and MZL) include:
- diarrhea
- tiredness
- muscle and bone pain
- rash
- bruising

The most common side effects of IMBRUVICA® in adults with cGVHD include:
- tiredness
- bruising
- diarrhea
- mouth sores (stomatitis)
- muscle spasms
- nausea
- pneumonia

Diarrhea is a common side effect in people who take IMBRUVICA®. Drink plenty of fluids during treatment with IMBRUVICA® to help reduce your risk of losing too much fluid (dehydration) due to diarrhea. Tell your healthcare provider if you have diarrhea that does not go away.

These are not all the possible side effects of IMBRUVICA®.

Call your doctor for medical advice about side effects. You may report side effects to FDA at 1-800-FDA-1088.

What are the ingredients in IMBRUVICA®?

Active ingredient: ibrutinib
Inactive ingredients:
IMBRUVICA® capsules: croscarmellose sodium, magnesium stearate, microcrystalline cellulose, and sodium lauryl sulfate. The 70 mg capsule shell contains gelatin, titanium dioxide, yellow iron oxide, and black ink. The 140 mg capsule shell contains gelatin, titanium dioxide, and black ink.
IMBRUVICA® tablets: colloidal silicon dioxide, croscarmellose sodium, lactose monohydrate, magnesium stearate, microcrystalline cellulose, povidone, and sodium lauryl sulfate. The film coating for each tablet contains ferrosoferric oxide (140 mg, 280 mg, and 420 mg tablets), polyvinyl alcohol, polyethylene glycol, red iron oxide (280 mg and 560 mg tablets), talc, titanium dioxide, and yellow iron oxide (140 mg, 420 mg, and 560 mg tablets).

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CORDLESS AND COMPACT

These powerful trim routers make it easy to cut the cord

BY MIKE BERNER

Cordless tool technology has come a long way in a short time. Five years ago, I tried a first generation cordless router and hated it, thinking some tools just weren't meant to be cordless. But I've been proven wrong. Today's cordless routers can handle 90% of my routing tasks.

THE CASE FOR COMPACT CORDLESS

If you own a router and are considering a second, I recommend a cordless. Light edge profiles make up most of my routing, so a compact is perfect for me, and cordless is even more appealing. I grab my full-size corded router only for heavier jobs. Compact cordless routers are also a good choice for a first router. They'll do everything a corded compact can.

DON'T WORRY ABOUT RUN-TIME

For five of the six routers we tested, the manufacturers claim they'll rout at least 250 linear feet on a single charge. But run-time partly depends on whether I'm trimming laminate or routing a big round-over. With two batteries, all I need is a charger that keeps pace with the job at hand. And I can't remember the last time I had to rout 250 ft. of anything! All the routers we tested had sufficient run-times and speedy charging, making this rating a nonissue for me.

PUTTING BATTERY POWER TO THE TEST

I put the battery-powered compact routers through the test shown below to evaluate their ease of use, run-time and overall power. I started by cutting a 3/8-in.-deep groove and dado with a spiral bit, then switched to a chamfer bit and made a 1/2-in. profile along one edge and one end.

I made plenty of sawdust for this story! I tested the six routers by making four different cuts in three types of wood.

HOVER YOUR CAMERA HERE
See the cordless routers in action and find out which ones we like the best.

Features That Matter

Invest in dust extraction

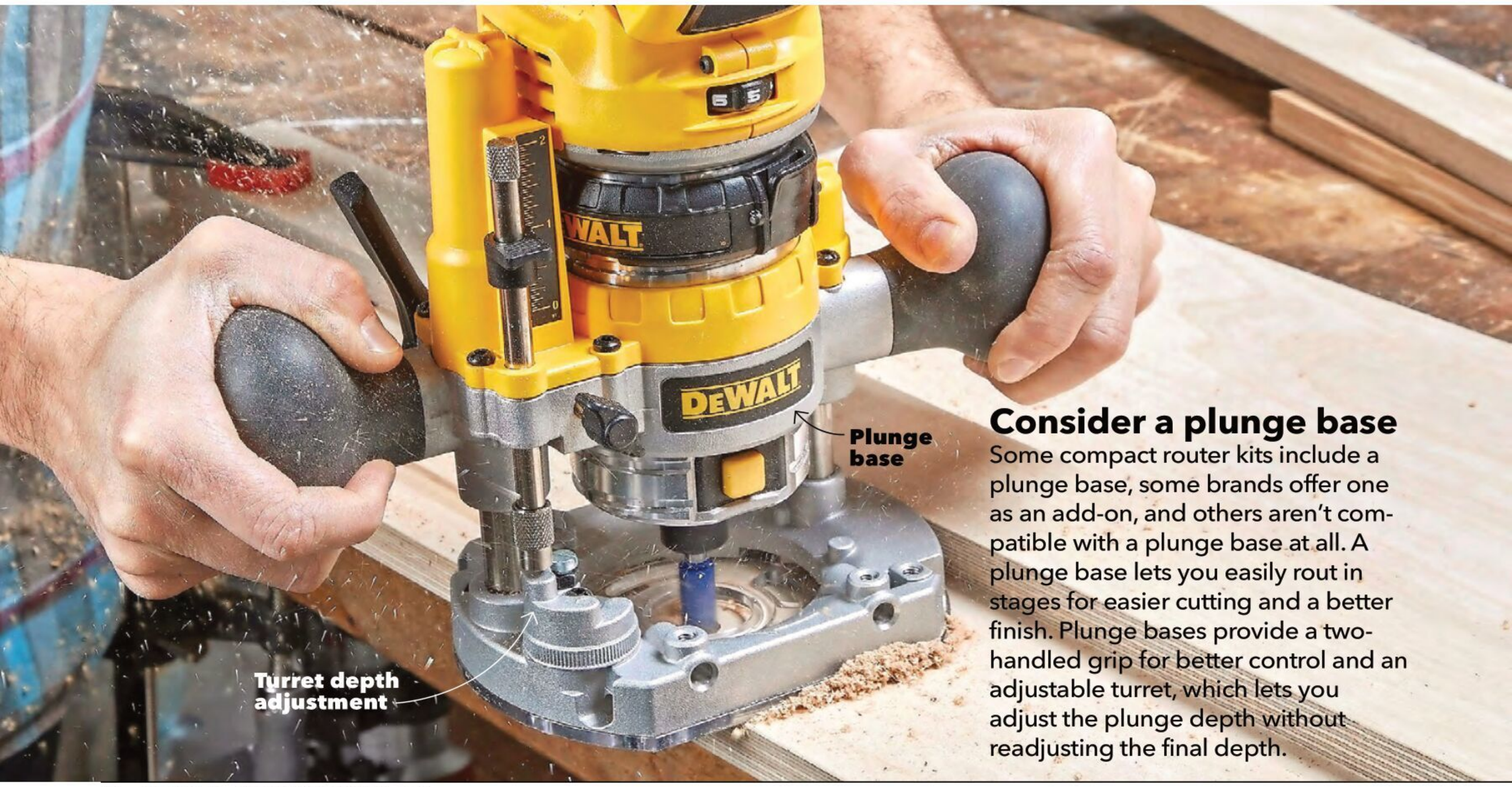
Dust isn't just messy. It builds up while you're routing dadoes and grooves and causes burning. To avoid this and make it easier to see what you're doing, get a dust port for your router. Many brands include them in their kits. If yours doesn't, it's smart to buy one (about $15).

1/4-in. shanks only

Compact routers accept only 1/4-in. shank bits, which aren't outfitted with large profile cutters. For large-profile cutters with a 1/2-in. shank, you'll need a full-size router.

PLENTY OF POWER

When it comes to power, compact cordless routers can go toe-to-toe with their corded cousins. I tested each cordless model alongside a corded version and found no difference in power.



Consider a plunge base

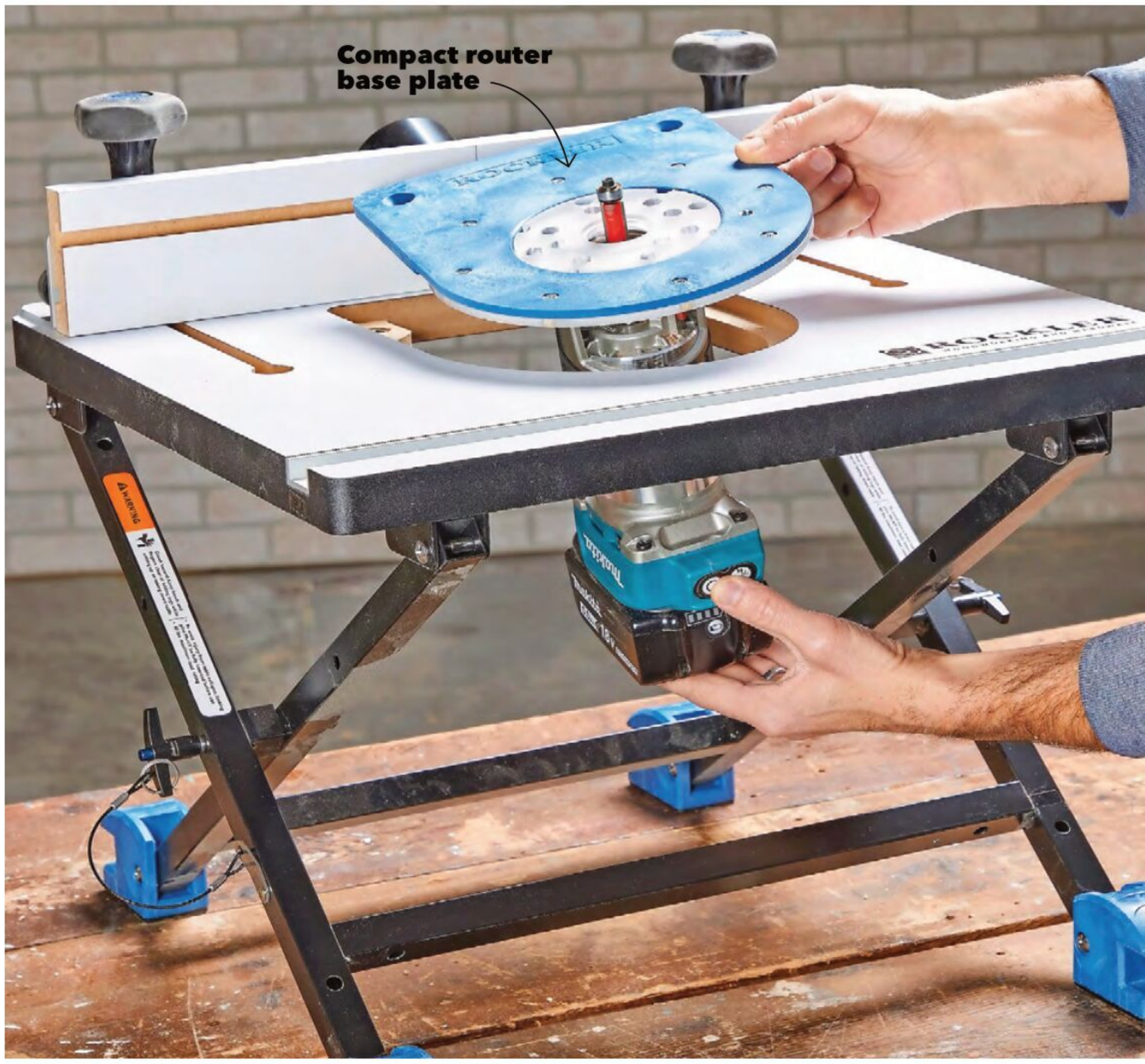
Some compact router kits include a plunge base, some brands offer one as an add-on, and others aren't compatible with a plunge base at all. A plunge base lets you easily rout in stages for easier cutting and a better finish. Plunge bases provide a two-handled grip for better control and an adjustable turret, which lets you adjust the plunge depth without readjusting the final depth.

SOFT START, FAST STOP

Some compact routers instantly rev to 30,000 rpm when you flip the switch, creating a surprising kick. A soft-start feature is worth looking for, as the tool eases up to top speed for safer start-ups. Another safety feature is an electric brake, which stops the bit almost immediately when you switch the router off. You can safely set the tool on your bench right away—no waiting for it to wind down.

Why does variable speed matter?

Large-profile bits should be run at a lower rpm than small-profile bits. This applies whether the bit has a 1/4-in. shank or a 1/2-in. shank. If the bit is "jumping" or burning your material, slow it down a little.



A router table *is* an option

A router table makes any router much more versatile. Most are made for full-size routers, but baseplates are available to accommodate compact routers. They're a worthwhile investment.

THEY'RE ALL SMALL

In the not-too-distant past, I saw a few full-size cordless routers. But all the models I found recently are compact. A compact router can handle most jobs, so that's not a problem for me.

No need for a bigger battery

During my testing of these routers, I tried 5AH batteries and 2AH batteries to see if there was a power difference. There was no discernible difference. And the 2AH battery gave the router better balance; there was less of that top-heavy feeling. For this reason alone, if you have the option, go with a smaller battery.

The Routers

These routers have very similar features: adjustable bases, variable speed dials and the ability to make micro adjustments. But each one has something that separates it from the rest. I paid close attention to the ease of bit adjustment, safety features, accessories and the general feel while cutting.

BOSCH 12V (GKF12V)

$149 (TOOL ONLY)

This model is the only 12V tool on this list, but it has the power to do what the 18V tools can do. It didn't struggle with any of the cuts I made with it. One thing I really like is that the bit is offset to one side, which lets you get more of the tool on the work surface. The height adjustment is very quick and easy.

PROS

- The tool is very lightweight and compact.
- Depth adjustments are fast with a quick-release button and fine adjustment screw.
- The spindle is offset, providing lots of room for the base to rest on a flat surface.

CONS

- The base isn't removable.
- The tool isn't compatible with a plunge base.
- The unique grip design takes some getting used to.

EDITORS' CHOICE
BEST OVERALL

DEWALT (DCW600B)

$200 (TOOL ONLY)

The DeWalt is the biggest of the bunch, and in a class of compact routers, that's not necessarily a plus. Of the six routers, it has the easiest screw collar height adjustment, and it's very accurate for both macro and micro adjustments. The router cuts smoothly, without chatter.

PROS

- The base is easy to remove, and the spindle lock button has several stops for easy one-tool bit changes.
- It has a large, squared-off baseplate for accurate routing against a fence.
- Soft-start feature and fast-acting electric brake.
- Two LEDs light the work area nicely.

CONS

- All accessories sold separately.
- It's the most expensive tool-only router.

MAKITA (XTR01Z)

$129 (TOOL ONLY)

The Makita is the smallest router I tested, but it has a solid feel and a sturdy, mostly aluminum body. Its heft helps with the balance, and it made the smoothest cuts of the group. The rack-and-pinion height adjustment is unique to the Makita and great for rough height changes, but fine adjustments were harder to dial in.

PROS

- Soft-start motor.
- Power switch safety eliminates unintended power-ups.
- As a kit, it's an incredible value: two batteries, charger, plunge base, edge guide, all in a nice tool case for about $350.

CONS

- Small baseplate.
- No micro adjustment.
- There's no electric brake.

MILWAUKEE (2723-20)

$199 (TOOL ONLY)

The Milwaukee has a comfortable rubberized grip for a solid, controlled feel. The 5AH battery gives a top-heavy feel, but the larger baseplate helps steady it on the work surface. The quick-release button lets you easily remove the base for bit changes. During my first cut, the base shifted slightly, but I tightened the latch and it didn't happen again.

PROS

- The microadjustment knob moved the base smoother than others with a similar design.
- Includes a removable dust extraction port and two baseplates.
- Bit changes are simple and fast.

CONS

- Out of the box, the latch needed tightening to keep the base from slipping.

RIDGID (R860443)

$129 (TOOL-ONLY KIT)

The Ridgid has features similar to those found in other routers and includes extras like an edge guide and soft case. The body is plastic, and the base doesn't have a rubberized grip, but it's narrower and still easy to hold. This model chattered a bit on deep cuts, but was very smooth on shallow passes.

PROS

- The tool-only kit includes an edge guide, a dust extraction port and an extra baseplate.
- This router affords the best visibility of the bit from both sides while you're routing.

CONS

- The switch is awkward to operate.
- I found it difficult to raise the bit against gravity with the microadjustment knob. I needed to flip it upside down to make the adjustment.

EDITORS' CHOICE BEST VALUE

RYOBI (P601)

$70 (TOOL ONLY)

The Ryobi feels a little top-heavy, especially with the smaller base. On deeper cuts, it chatters quite a bit, but on shallow cuts it performs well. It has high-end features, such as a microadjustment and a quick-release lever. A plunge base isn't available for this router. The Ryobi cuts really well for light-duty, shallow work.

PROS

- The quick-adjust is integrated in the same mechanism as the latch that secures the base.
- Smooth microadjust mechanism.
- The value is hard to beat.

CONS

- The grip zone isn't where I would grip the tool while in use.
- The heavy battery and small baseplate make the tool feel unbalanced.
- The base is a little fussy to remove for bit changes.

THE BOTTOM LINE: STICK WITH THE BATTERY SYSTEM YOU HAVE

After testing these routers, I definitely have preferences. But honestly, there isn't a big difference between my least favorite and my favorite. They're all good tools that I'd be happy to have in my shop. My advice? If you've already invested in a battery platform, get the cordless router of the same brand. The benefit of having extra batteries outweighs any other advantages.

MAKE A BETTER ROUTER BASE

Stabilize your compact router with this easy project

BY MIKE BERNER

Compact routers have a small base, and that, combined with one-handed operation, can make them feel slightly unstable. This simple oversize base with handles solved the problem for me. I built it in less than an hour with materials that cost about $20.

1 LOCATE THE BASEPLATE HOLES

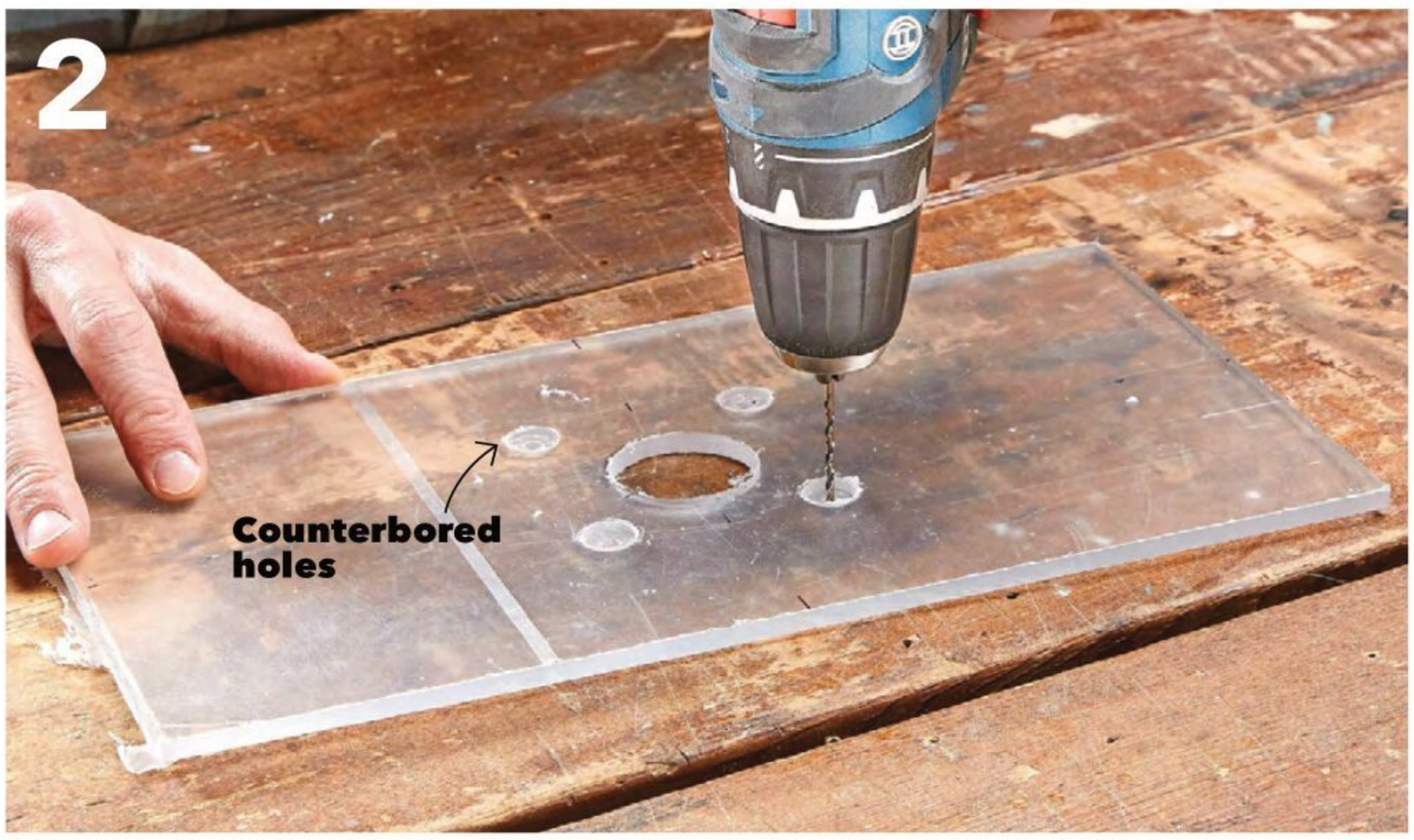
Remove the factory baseplate and position it in the middle of a 6-in. x 10-in. piece of 1/4-in.-thick acrylic. Trace around the baseplate and inside the center hole, and mark the screw holes with a permanent marker.

2 DRILL THE HOLES

Use a 1/4-in. Forstner bit to drill partway through the acrylic at the screw holes. Drill just deep enough so the screw heads will be below the surface when you mount the plate to the router. Drill a 3/16-in. hole through the centers of the counterbored holes. Cut the large center hole with a hole saw or Forstner bit.

3 ADD CABINET HANDLES

Make two more counterbored holes, centered and about 1-1/2 in. in from each end, to mount the knobs. I attached wood knobs with short wood screws. If you use machine-screw threaded knobs, you'll have to shorten the machine screws to make them work. Attach the base to your router using the factory screws.



GET THE RIGHT

GLUE

Stick to my advice and you can't go wrong

BY JAY CORK

MEET THE EXPERT

Jay Cork, an associate editor at *Family Handyman*, was 11 the first time he glued his fingers together with superglue.

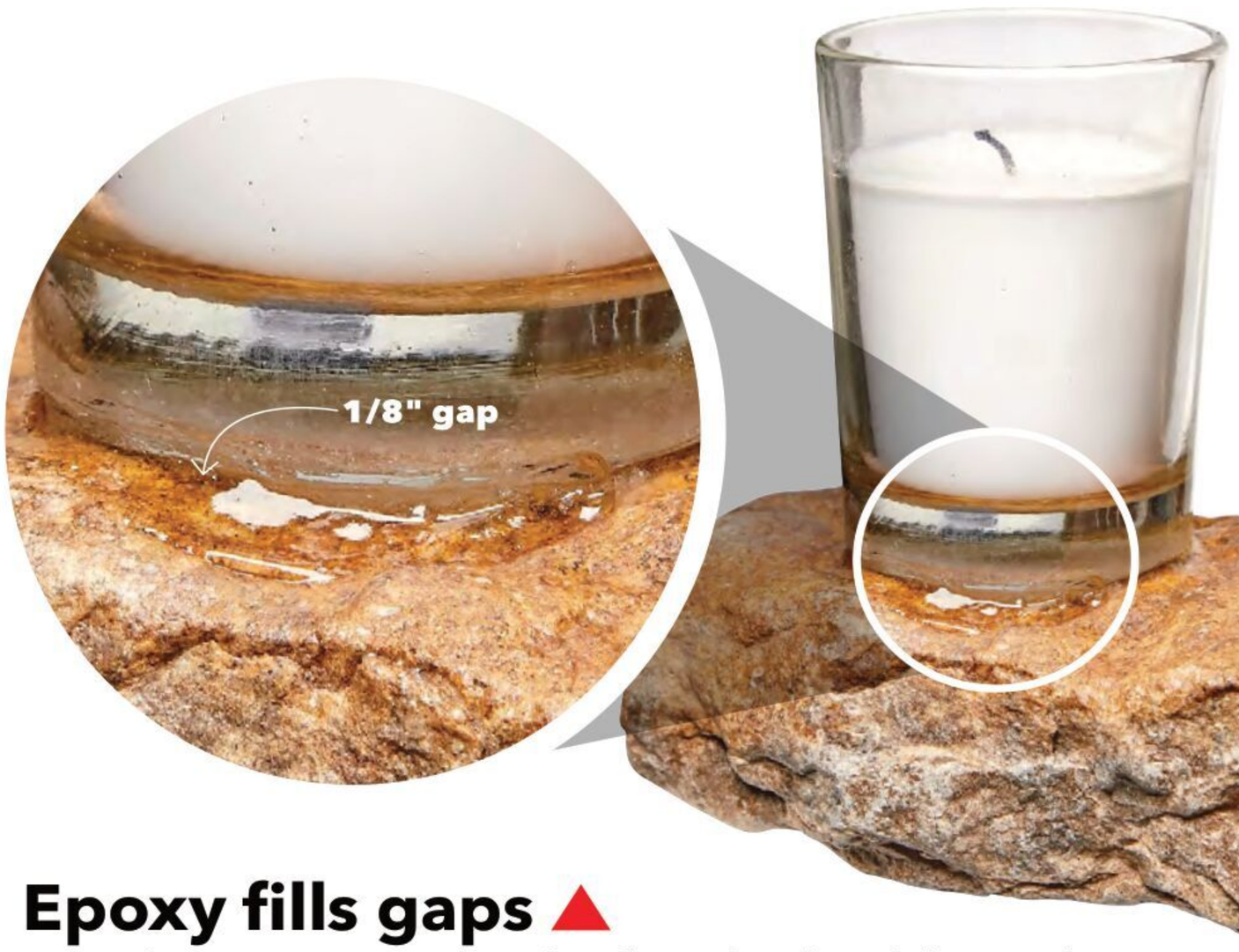
I've used just about every type of glue on the market today. Still, if I were to go strictly by the info on the packaging, even I might be a little confused in the glue aisle at my local home center. They all have strengths and weaknesses, and knowing how and when to use each type will make you a better DIYer.

Polyurethane glue for oily woods

The oil in woods such as padauk, purple heart, olivewood and cocobolo can cause standard wood glues to fail. That's why I've always used polyurethane glue with these hardwoods; it penetrates deep into the wood grain and creates an extraordinarily strong bond. To ensure a good result, I thoroughly clean the surface of the wood with acetone before glue-up.

Best glue for a busted shoe

E6000 craft glue ($5 for 2 oz.) is one of my favorite adhesives. It's useful for many repairs, but I like it especially for fixing shoes. It bonds extremely well to leather and rubber, remains flexible after it's cured and withstands a wide temperature range.



Epoxy fills gaps

Most glues are meant to bond surfaces that fit tightly together. They don't have much "bridging strength" to bond loose-fitting parts. Epoxies, on the other hand, fill gaps very well without sacrificing strength.

My go-to for gluing metal ▲

In my experience, the only adhesive that reliably works on metal is J-B Weld Original Formula. I've had great success with this glue in nonstructural and low-stress applications. If a piece of structural steel broke under stress, however, gluing would probably not be the best fix. J-B Weld is available at home centers and auto parts stores for about $7. Like any other epoxy, it's a two-part system that requires mixing.

Make your own slow-setting glue

Slow-setting wood glue like Titebond Extend adds extra working time for your glue-up, but it can be hard to find. Here's how to extend the working time of standard wood glue. Pour the glue into a container, add a little water (about 5% by volume at most) and mix it well. This increases the open time without reducing the strength of the bond.

DON'T RUIN YOUR MIRROR!

Solvent-based construction adhesive can deteriorate mirror plating and show through on the face of the mirror. So check the label and be sure to choose a product intended for mirrors. Loctite PL 530 ($7) is one choice.

DON'T LET GLUE FREEZE!

If you left your glue in the garage during the winter, it's probably time to get a new bottle. Many adhesives—wood glue especially—are ruined by just one freeze/thaw cycle. Store them in a heated space during cold months.

USE ACCELERATOR WITH CA GLUE

Apply CA (cyanoacrylate) glue to one surface, spray accelerator to the other, and the glue will bond as soon as the surfaces touch. CA glue can often emit a strong odor when used with accelerator. This can be highly irritating, so work in a well-ventilated area.

STOP THE RATTLING WITH HOT GLUE

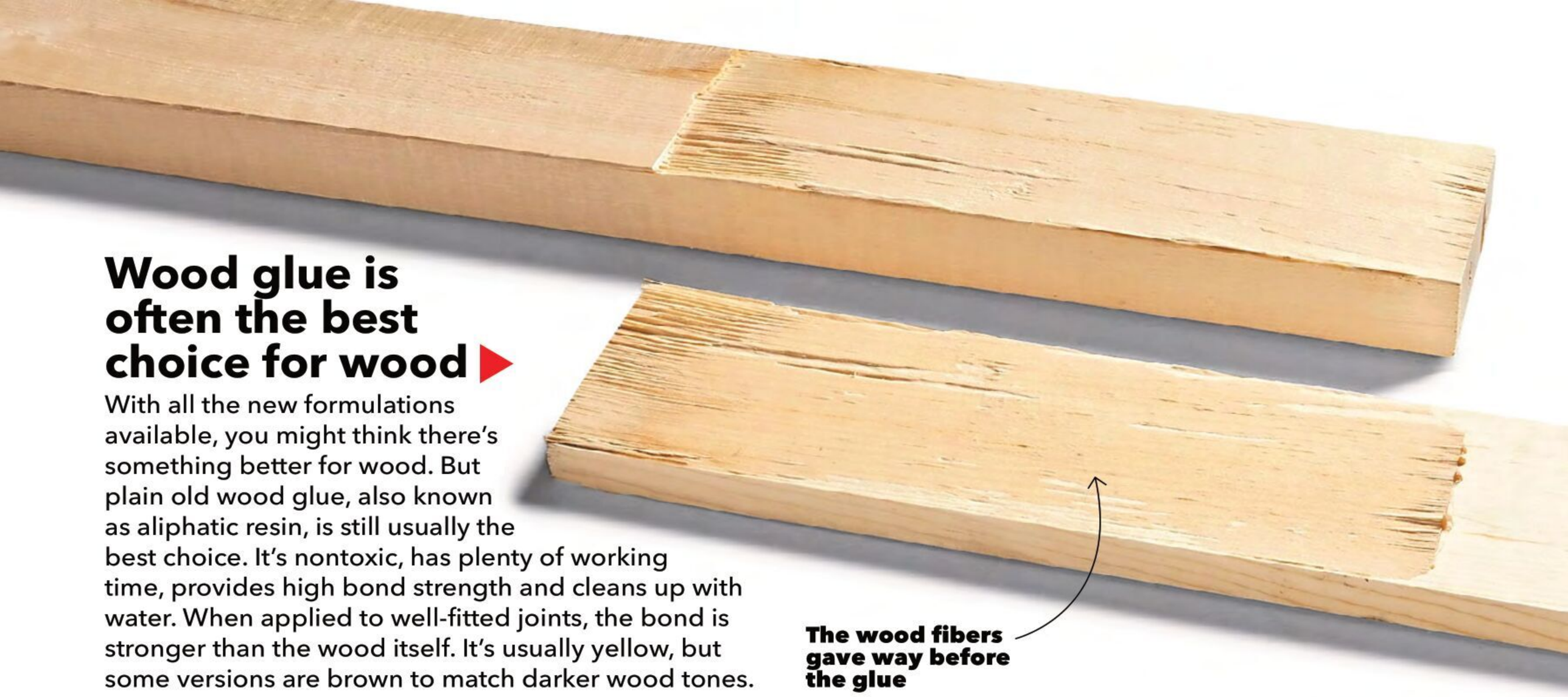
As a cabinetmaker, I used hot glue on the underside of drawer bottoms to keep them from loosening over time. I'll do the same with old cabinet doors with a loose panel. On the back of the door, I'll put a line of hot glue in the edge where the panel meets the rail and stile.

LET FOAM CURE BEFORE CLEANUP

Polyurethane glues foam as they cure. It's tempting to clean off the squeeze-out right away, but don't! You'll force it into the grain and never get it out. Instead, wait for the glue to cure completely. When it's cured, it's easy to remove with a putty knife.

Wood glue is often the best choice for wood

With all the new formulations available, you might think there's something better for wood. But plain old wood glue, also known as aliphatic resin, is still usually the best choice. It's nontoxic, has plenty of working time, provides high bond strength and cleans up with water. When applied to well-fitted joints, the bond is stronger than the wood itself. It's usually yellow, but some versions are brown to match darker wood tones.



For epoxies, longer cure times produce stronger bonds

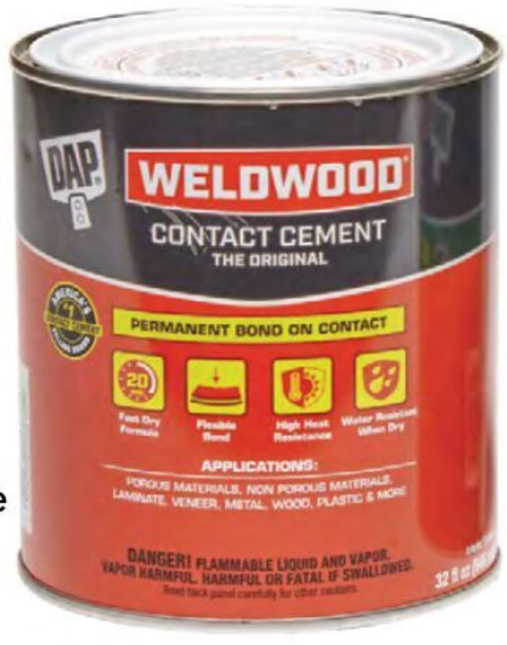
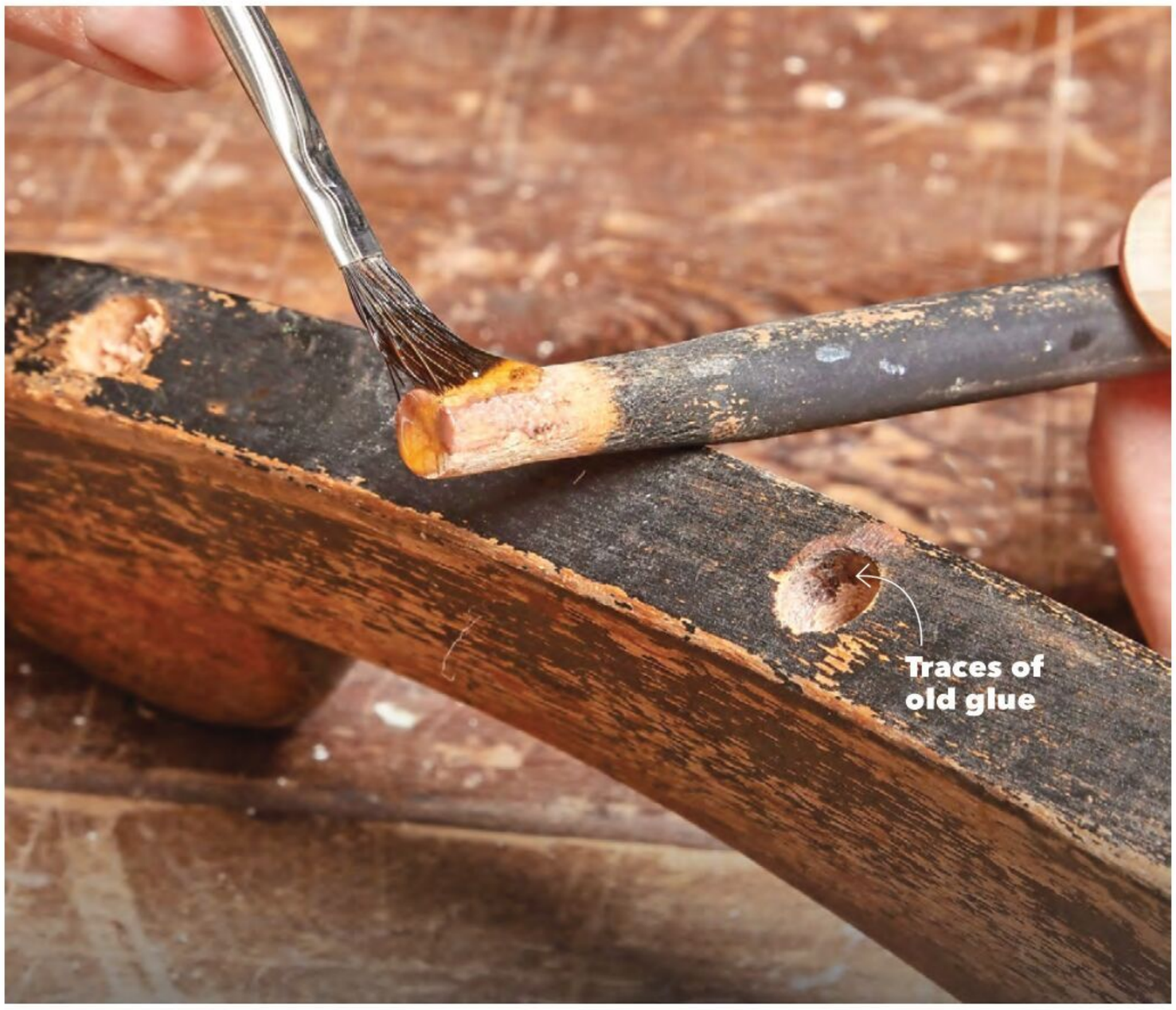
Quick-cure epoxies are available in 1-, 5- and 15-minute setting times. They're great for quick repairs, but I've found they're not as strong as longer-cure epoxies. Often, that's OK, but when I need a higher-strength bond, I choose a one-hour epoxy and let it cure for at least 48 hours.

Instant-grab adhesives let you skip the nails

When nailing or clamping just isn't an option, instant-grab construction adhesives can save the day. I like these glues for attaching chair rail or crown molding to plaster or brick and for delicate pieces of molding where nails just won't work. DAP and Loctite are two common brand names.

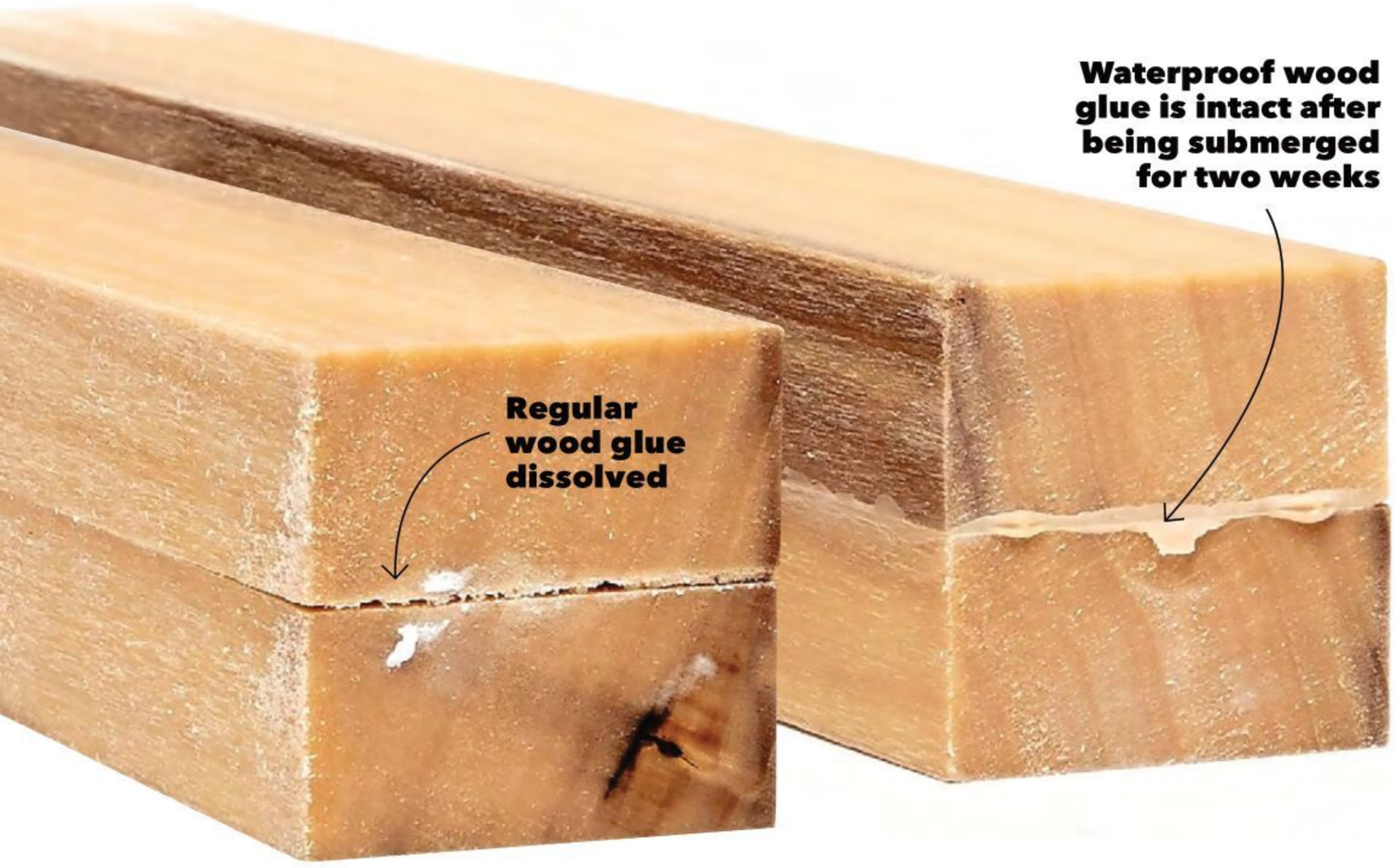
Solvent-based contact cement is best

I prefer using solvent-based contact cement for adhering plastic laminate. Because the fumes are strong and toxic, I have tried low-VOC formulas. The smell is more tolerable, but they lack the instant bond strength I'm used to, and I've experienced delamination with them. So I stick with the original and work in a well-ventilated area.



Use hide glue for antiques ▲

I use hide glue to repair wooden musical instruments and antique furniture because it was most likely used in the original construction. Hide glue is unique in that it rejuvenates any remaining old glue in the joint being repaired. It makes a strong joint that can be taken apart with a little heat or steam. I love traditional granular hide glue, but it's labor intensive and very stinky. So instead, I usually reach for Old Brown Glue ($10 at woodcraft.com).

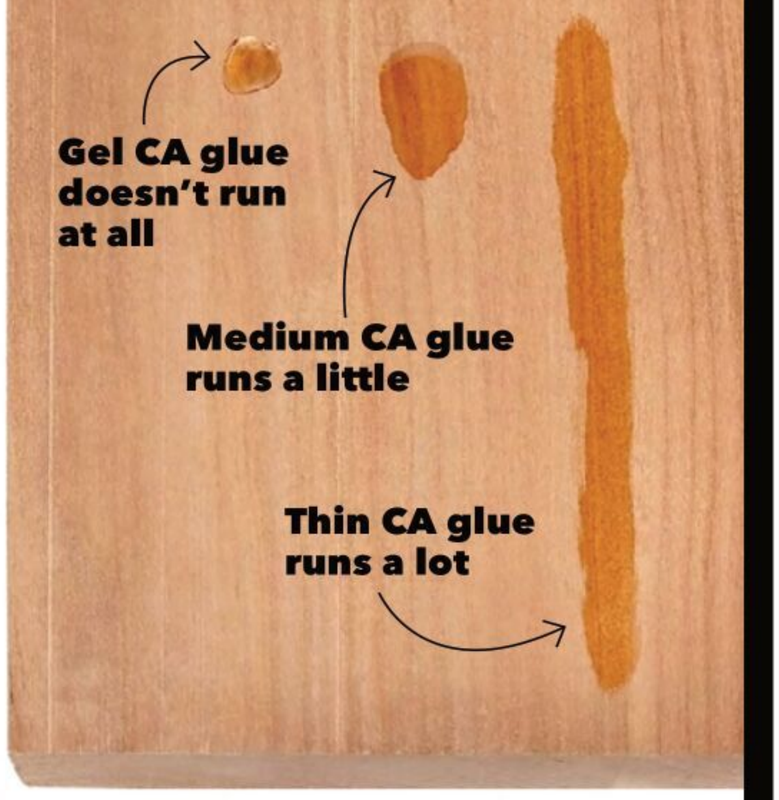


Choose waterproof glue for outdoor projects ▲

Epoxies can handle wet conditions, but for bonding wood that is going to be constantly exposed to the elements, I still choose a waterproof wood glue such as Titebond III ($14 for 16 oz.) or Elmer's Wood Glue Max ($10 for 16 oz.). Because of their long open time and water cleanup, I prefer them to a two-part system—like epoxy—that requires mixing.

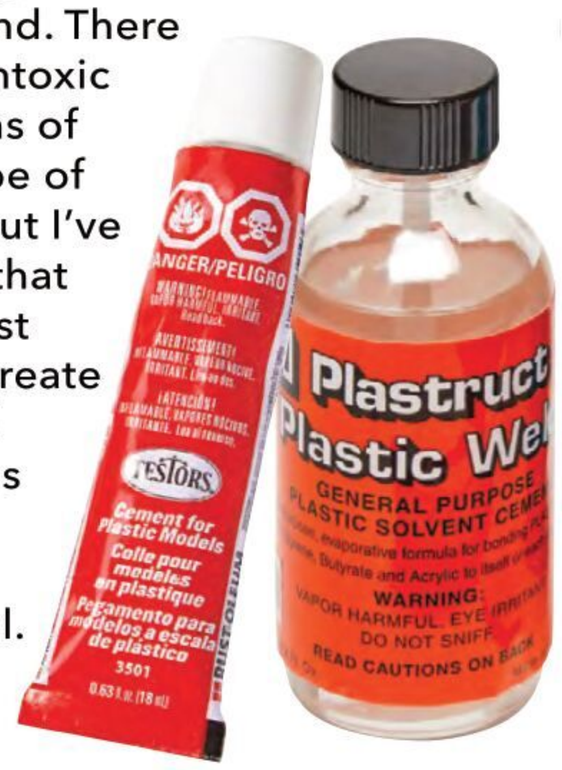
Pick the right superglue

CA glue formulations range from watery thin to thick gels. Gels are good in vertical applications where running is a problem, and are essential with porous materials like ceramics and wood. Those materials soak up thin glues, resulting in a weak bond or no bond at all. I've found that thin CA is the best choice for repairing glass and delicate plastics.



Solvent-based glue for plastics ▼

Most glues don't work well on plastics. For polystyrene and ABS plastics, I reach for the old standard: Testors Cement for Plastic Models. You can find it for about $4 at any hobby or crafts store. It contains solvent that "welds" the pieces, creating a strong and lasting bond. There are nontoxic versions of this type of glue, but I've found that they just don't create a bond that's as strong as the original.



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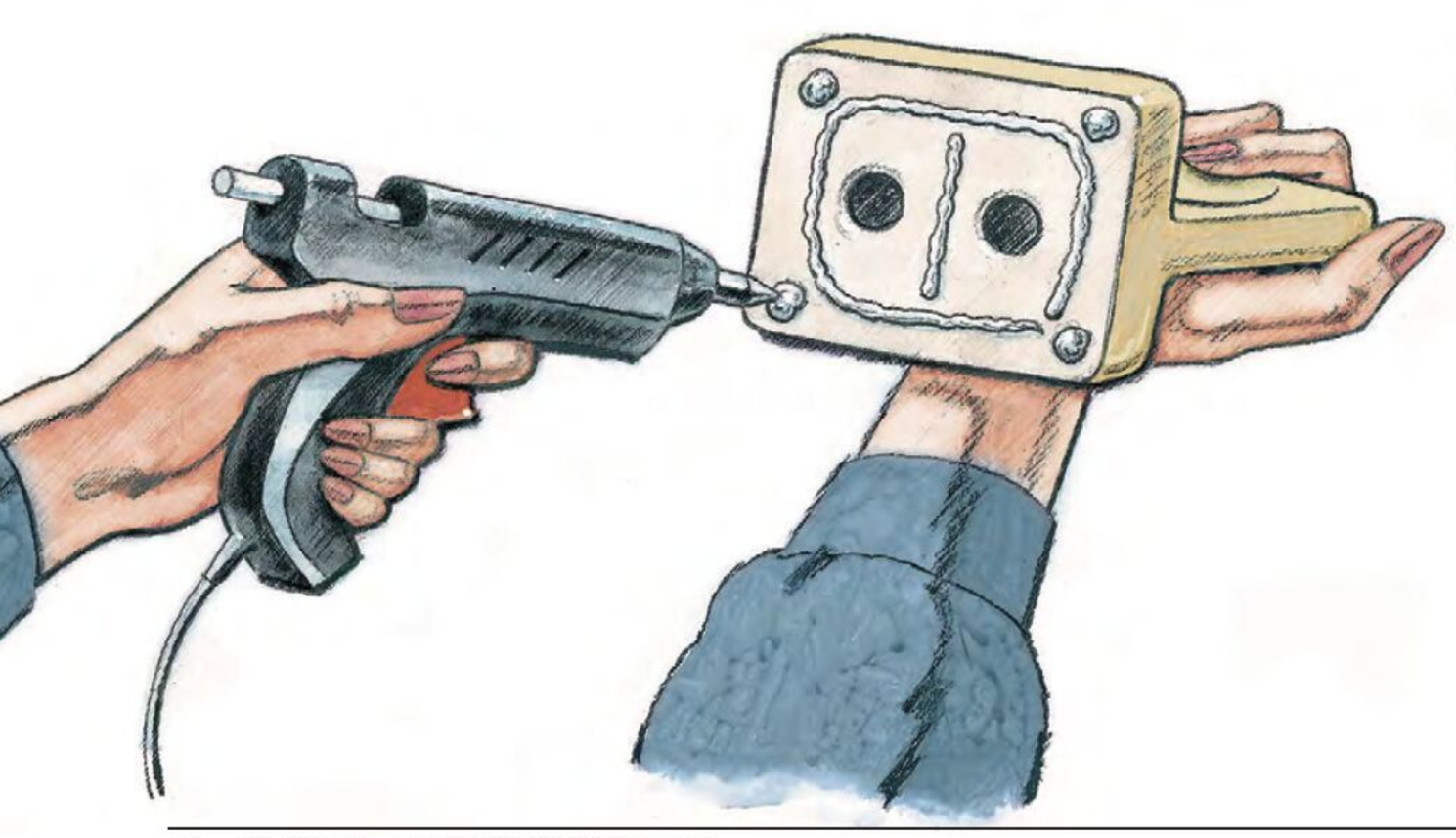
vintage HANDY HINTS®

Neat window paint scraper

You say you never get paint on the glass when you paint windows? Ha! Well, if you ever do, here's a neat and painless way to scrape it off: After the paint is dry, place the edge of a 6-in. drywall knife tight against the putty, sash or muntin as a guide for your razor blade scraper. It's fast and foolproof, and it leaves a thin strip of paint on the glass to provide a good seal.

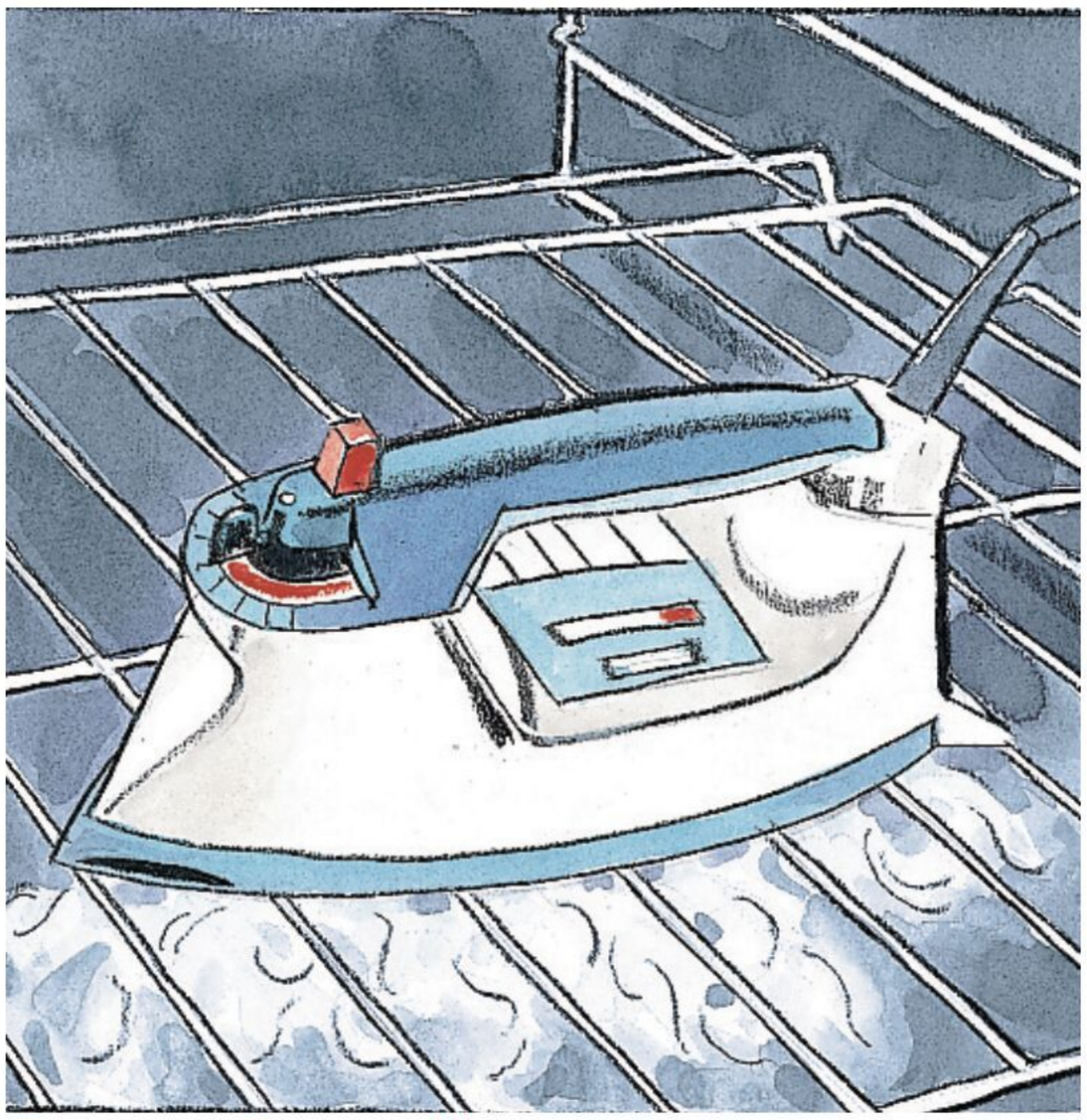
BRIAN BEA



Two glues are better than one

To attach a heavy ceramic fixture like a soap dish or toothbrush holder, the normal approach is to put a slow-setting adhesive, like mastic (for cement board) or silicone caulk (for tile), on the back of the fixture, and then prop or tape it in place while the adhesive sets. Here's an easier way: Apply a few dabs of hot-melt glue, in addition to your main adhesive, then quickly put the fixture in place. The hot-melt glue will hold the fixture in place while the other adhesive sets.

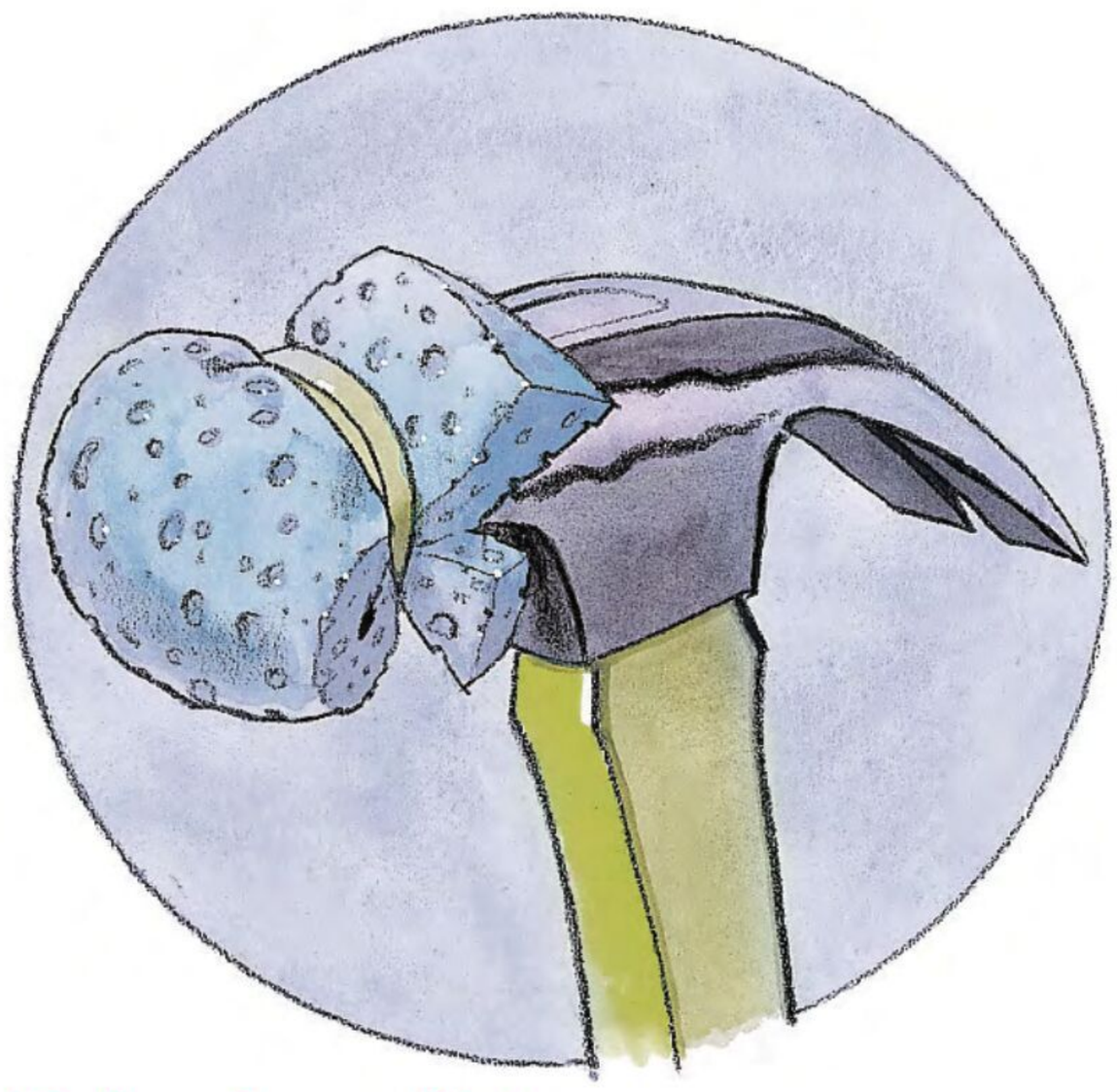
JIM PARKS



Steam-iron clean-out

Got a steam iron that won't steam? Chances are it's clogged with mineral deposits. Fill the iron with white vinegar instead of water. Then set it flat on an oven rack, and let it steam away. By the time the vinegar is steamed out, your iron should be clean.

NANCY LAUWEY



Make-do mallet

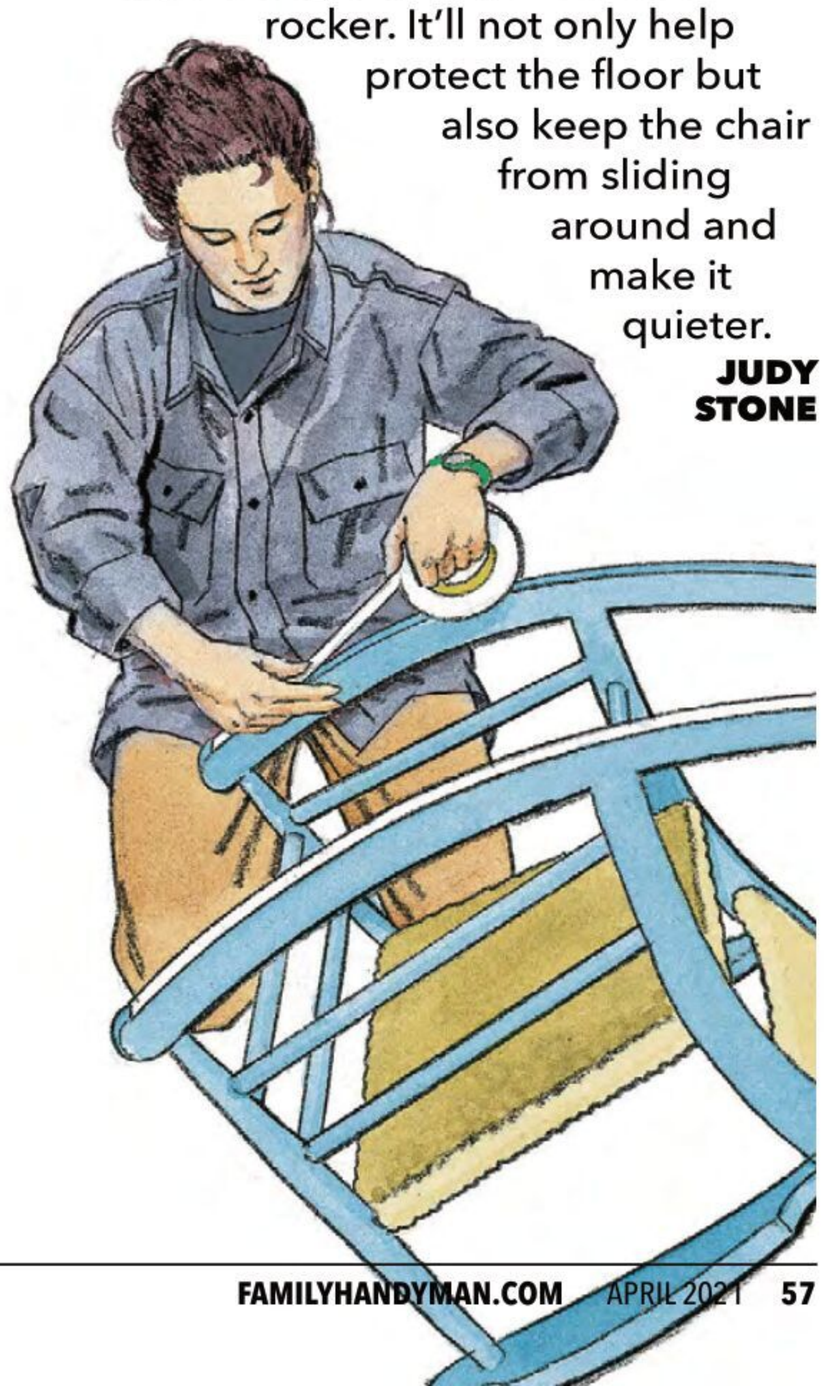
If you need a mallet once in a blue moon, but don't own one, improvise: Wrap a sponge around your hammer's head and secure it with a strong rubber band. If the sponge is stiff, get it wet and wring out as much water as possible first.

STEVEN NOVAK

Wood floor saver

Prevent your rocking chair from damaging your wood floor by running two strips of cloth adhesive tape along the bottom of each rocker. It'll not only help protect the floor but also keep the chair from sliding around and make it quieter.

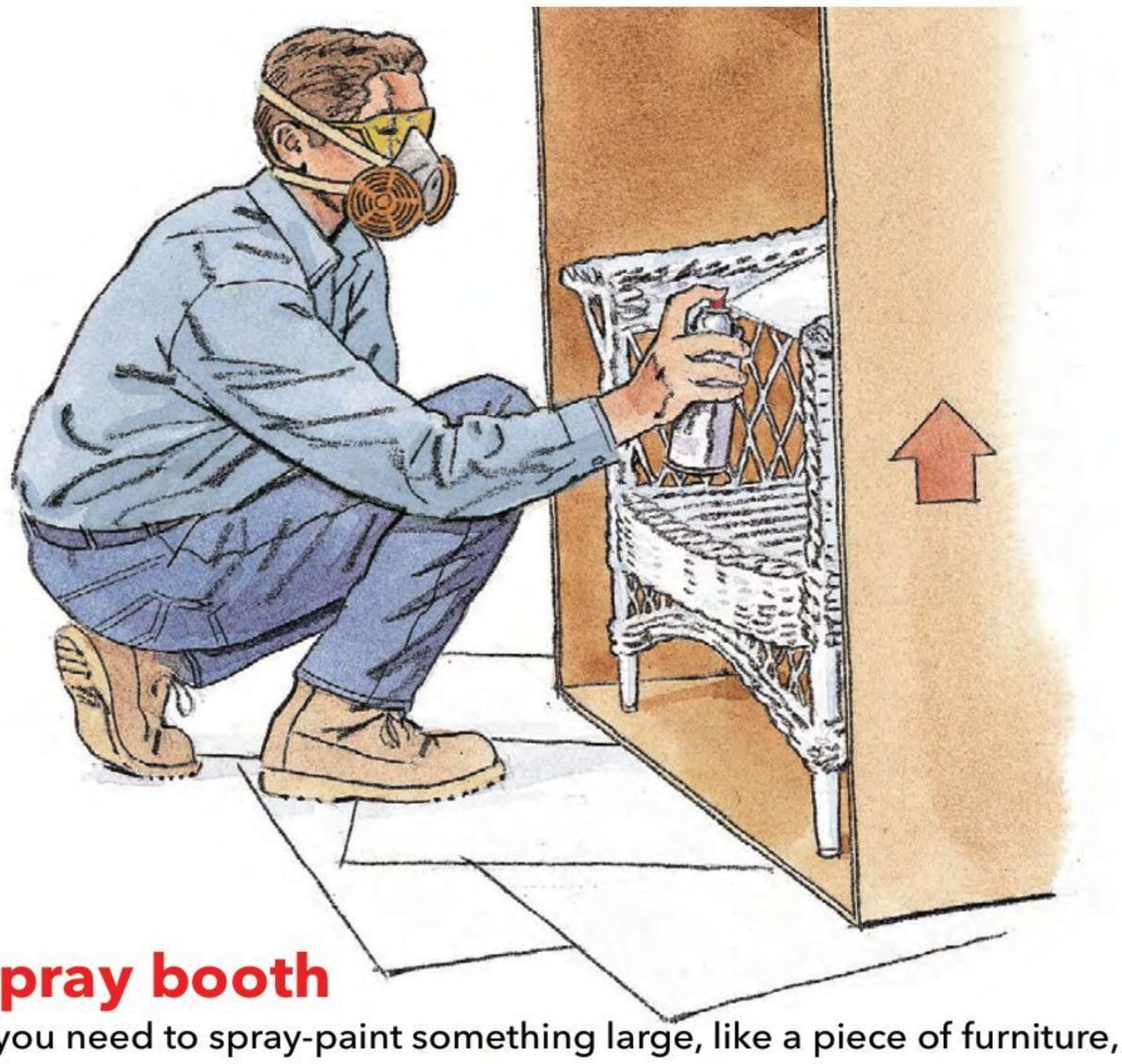
JUDY STONE



Door silencer

Tired of doors banging closed and disturbing your peace? Here's how to quiet them even when your kids get carried away: Apply two or three 1/4-in. dabs of clear silicone caulk to the edges of the stops of noisy doors. They make a cushion for the door, and they're just about invisible.

ED McKINLEY



Spray booth

If you need to spray-paint something large, like a piece of furniture, here's how to avoid painting your whole basement or garage. Get a large cardboard carton from an appliance dealer, cut the front off, and use it for a spray booth. Make sure you have plenty of ventilation in the area. If you can't locate a large carton, you can make a spray booth from a sheet or two of 1-in. rigid foam insulation, taped together with duct tape.

PHIL WERF

Pipe crimper

To connect two pieces of ducting, gutter downspout or metal flue that have equal diameters, use an ordinary needle-nose pliers to crimp the end that will be inserted into the other piece. It works nearly as well as a special crimping pliers. Grip the edges of the pipe with the full length of the jaws, squeeze, and then give a slight sideways twist.

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If you're on the hunt for a knife that combines impeccable craftsmanship with a sense of wonder, the **$79 *Huntsman Blade*** is the trophy you're looking for.

The blade is full tang, meaning it doesn't stop at the handle but extends to the length of the grip for the ultimate in strength. The blade is made from 420 surgical steel, famed for its sharpness and its resistance to corrosion.

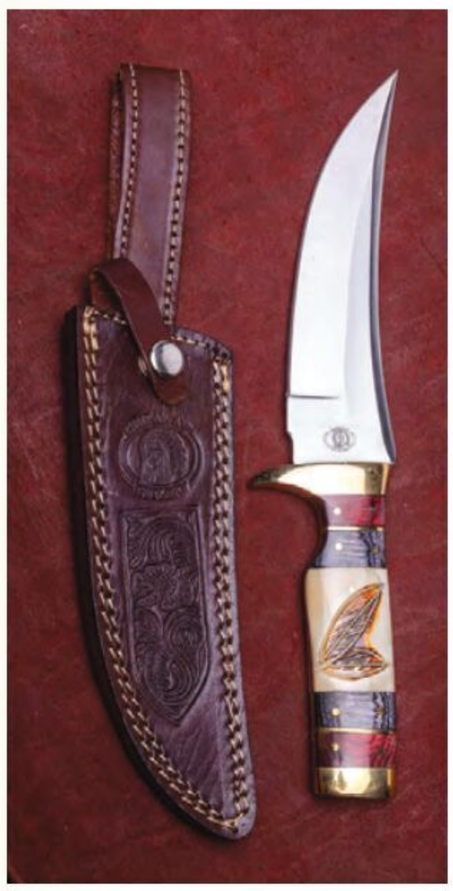
The handle is made from genuine natural bone, and features decorative wood spacers and a hand-carved motif of two overlapping feathers— a reminder for you to respect and connect with the natural world.

This fusion of substance and style can garner a high price tag out in the marketplace. In fact, we found full tang, stainless steel blades with bone handles in excess of $2,000. Well, that won't cut it around here. We have mastered the hunt for the best deal, and in turn pass the spoils on to our customers.

But we don't stop there. While supplies last, we'll include a pair of $99 8x21 power compact binoculars *and* a genuine leather sheath **FREE** when you purchase the ***Huntsman Blade***.

Your satisfaction is 100% guaranteed. Feel the knife in your hands, wear it on your hip, inspect the impeccable craftsmanship. If you don't feel like we cut you a fair deal, send it back within 30 days for a complete refund of the item price.

Limited Reserves. A deal like this won't last long. We have only 1120 ***Huntsman Blades*** for this ad only. Don't let this beauty slip through your fingers. Call today!



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Best Pro Tips

Expert advice from the job site. By Jay Cork

START A GARDEN

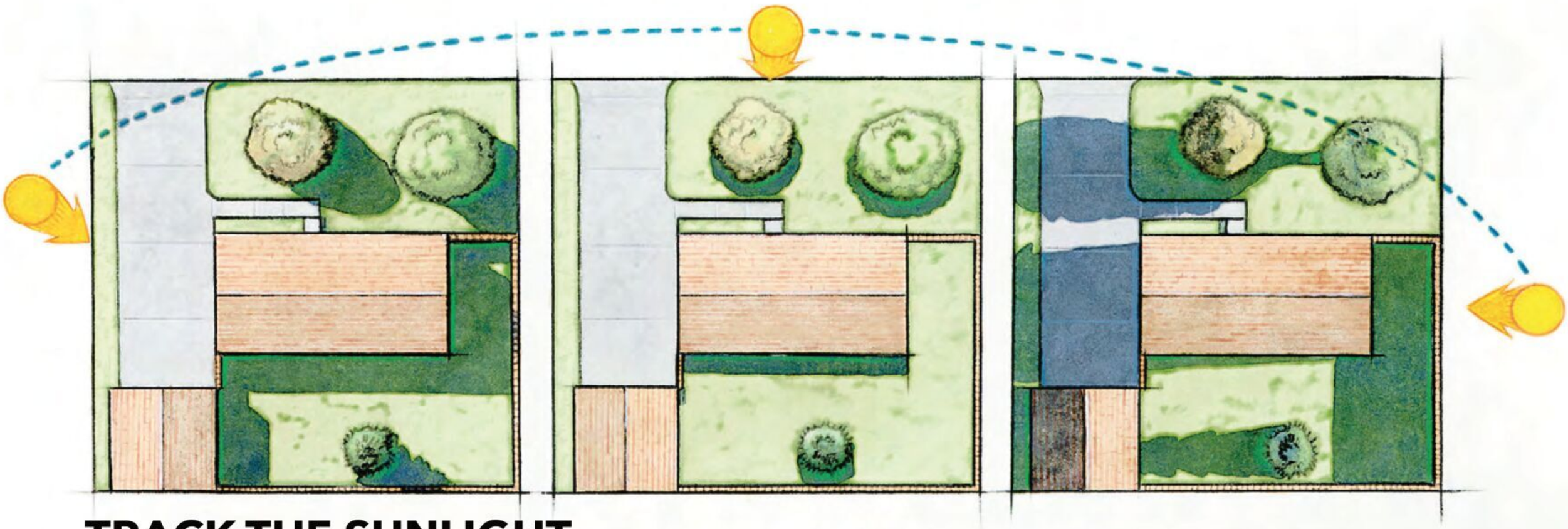
Expert advice for growing healthy plants

PHOTO: ARIEL SKELLEY / GETTY IMAGES

There's more to starting a healthy garden than just grabbing a shovel and starting to dig. First, you need to test the soil and cultivate the ideal conditions for whatever you plant to thrive. I spoke with Ashley Hansen from Bachman's Garden Center to get her best advice for creating a garden from scratch.

MEET THE EXPERT

Ashley Hansen is a certified Minnesota Nursery & Landscape Association professional and a sales consultant at Bachman's Garden Center. She loves to grow zinnias for their amazing colors.



TRACK THE SUNLIGHT

Take photos of your desired garden location in the morning, at noon and again in the evening to see how much sun it gets. To provide ideal sunlight for the widest selection of plants, place your garden in full sun to light shade. A vegetable garden requires full sun.

START SMALL

Consider how much time and money you're willing to devote to your garden—not just to install it, but to maintain it as well. By starting small, there's less investment and more chance of success because you won't get overwhelmed by maintenance. You can always expand your garden over time, but starting big and losing control of it guarantees a weed-infested eyesore.

OUTLINE THE GARDEN BED

Outline your garden's perimeter with marking paint ($7 at home centers). Gentle curves are visually pleasing and easier to mow around than sharp corners.

TEST THE SOIL

A soil test tells you whether you need to work in nutrients such as nitrogen, potassium or phosphorus. Test kits are available at home and garden centers, but you'll get more comprehensive results from a university extension service or state-certified soil testing lab. You'll pay $20 to $50 for these tests and get the results in just a few weeks.

Take samples from several areas. For a good sample, shovel a 6-in.-deep, V-shaped hole. Take a slice off one side of the hole, remove all the plant matter and put the soil in a clean plastic bucket. Thoroughly mix all the samples in the bucket.

One to 1-1/2 cups of soil is enough for a lab to run the tests. Some labs even supply a special bag for your soil sample; just fill the bag and return it.

ILLUSTRATION: **KEN CLUBB** MIDDLE LEFT: **ARIEL SKELLEY / GETTY IMAGES** MIDDLE RIGHT: **BILL ZUEHLKE**

DEFINE THE EDGE

Once you've determined the placement of your garden, define the perimeter. With a spade, follow the outline of the garden bed, slicing down about 6 in. When you've sliced the entire perimeter, create a 3- to 6-in.-wide trench. This prevents the sod cutter or herbicide from straying into your yard when you remove or kill the grass.

REMOVE THE GRASS

The grass has got to go, but clearing sod by hand is hard work! So rent a sod cutter from a local rental center instead. It'll cost about $100 per day, and the cutter will cleanly cut the sod below the roots. Once the sod is cut, you can roll the strips into easy-to-carry bundles.

ENRICH YOUR SOIL

Adding organic matter such as compost or manure improves drainage in heavy clay soils and the water-holding capacity of sandy soils. It also makes the soil more permeable, which encourages root growth and attracts organisms that add nutrients. Spread 2 to 4 in. of organic matter over the garden and with a digging fork, work it into the top 6 to 10 in. of soil. Consider renting a power tiller (about $70 a day) if your garden is too big to do by hand.

TOP RIGHT: **BILL ZUEHLKE** BOTTOM: **MASTERFILE**

Grass killing methods

A sod cutter is the fastest way to remove grass, but if you can't get your hands on one, you can kill the grass and till it instead. Here are three options:

PLASTIC. Lay down black plastic that's at least 3 mil thick over the garden for six to eight weeks. When the grass is dead, power till the soil.

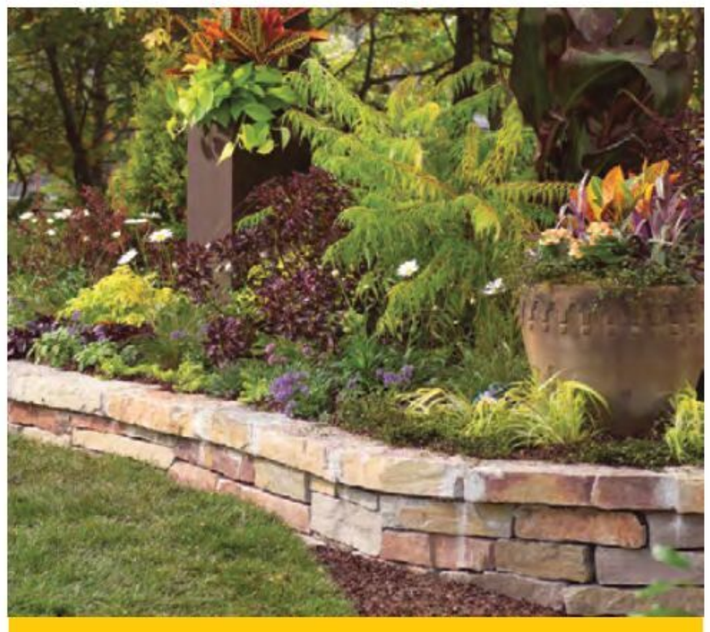
MULCH. Cut the grass as short as possible. Cover the area with at least 2 in. of leaves or wood mulch and keep it wet. The covering and the grass will naturally decompose, leaving a rich compost. This process can take several months, so plan ahead.

HERBICIDE. Spray the area with a non-selective herbicide. Do this only after you've edged the garden so the weed killer won't harm the adjacent lawn. If there is anything still growing after seven days, spray it again and wait another week.

BEST PRO TIPS

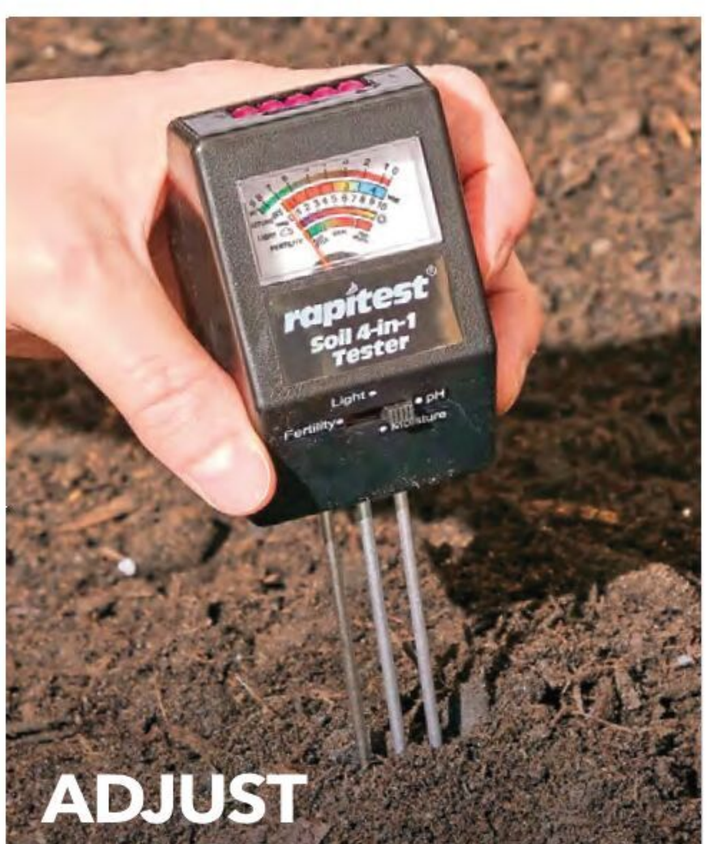
CUSTOM-FERTILIZE YOUR PLANTS

Your soil test helps you determine the type of fertilizer you need to add to suit your plants. There are three main nutrients needed for plant growth: nitrogen, phosphorus and potassium. Fertilizer labels list them in order as a series of numbers. For example, 10-20-10 contains 10 percent nitrogen, 20 percent phosphorus and 10 percent potassium. If your soil needs only one nutrient, don't bother adding the others. Buy a slow-release granular fertilizer that contains the appropriate percentage of nutrients your soil needs, and add it just before planting.



Consider a raised bed

If your yard has a lot of heavy clay, rocky soil or poor drainage, then a raised garden bed is the perfect solution. It lets you bring in good soil and create the ideal garden bed. It also lets you garden without bending over as far or working on your hands and knees. A raised garden bed should be built at least 12 in. deep and filled with topsoil.



ADJUST THE SOIL pH

The pH level of your soil determines your plants' ability to absorb nutrients and can affect their yield. A pH level in the 6.0 to 7.0 pH range is perfect for most home gardens. A pH tester ($25 online) lets you monitor and maintain proper pH levels in your garden.

Adding lime or wood ash improves acidic soil. If your soil is alkaline, add ground sulfur or calcium sulfate.

KEEP THE GRASS OUT

Add a border to keep grass from getting a start in your garden; it's hard to get rid of grass once it invades. Strips of steel or heavy-duty plastic edging are unobtrusive and work well on fairly even terrain. But pavers and brick are an attractive alternative, forming a wide border that provides a flat surface to mow over. To keep grass from intruding, be sure your border extends at least 4 in. into the ground.

TOP AND BOTTOM RIGHT: **BILL ZUEHLKE**

Ashley's favorite gardening gear

Ashley works at a gardening center and devotes a lot of time to her own garden. Here are some of the tools she loves and has come to rely on.

SPADE OR FLAT SHOVEL
A spade usually has a shorter handle and a flat blade. It's handy for cutting sod and edging. Pick one up for about $20 at a garden center.

HORI HORI MULTI-TOOL
The hori hori knife is a heavy, serrated steel blade used for digging, cutting, weeding and planting. They're available for $20 and up.

ROUND-POINT SHOVEL
A full-length round-point shovel is best for digging large holes and working over large areas of soil.

KNEE PADS
Gardening can be hard on the knees. Ashley prefers these waterproof memory foam knee pads from Kneelo. At just over $40, they're a little expensive, but your knees will thank you!

HAND TROWEL
A hand trowel is a must-have. There are many sizes to choose from. Ashley recommends searching for one that feels good in your hand, as it's the one tool you're likely to use every time you work in your garden. Expect to pay about $20 for a good hand trowel.

DIGGING FORK
For cultivating compost and turning over soil, Ashley recommends a digging fork. They cost about $40 at home and garden centers.

GRIPPY GLOVES
Ashley likes these polyurethane coated gloves from MUD. Their form-fitting stretch shell is breathable and has an outstanding wet/dry grip. They cost about $10 online.

BYPASS PRUNERS
Ashley prefers Felco bypass pruners. They give smooth, clean cuts wihout damaging her plants. Every gardener should have a pair. Expect to pay at least $60 for these.

PLANTS: JILL FERRY / GETTY IMAGES

Home Care

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A good first impression for a fast sale

Of course, the best home-selling advice is to fix everything that needs fixing. But pay special attention to the things a buyer will see first. Anything needing repair or replacement will put a buyer off. Here are the top items you should focus on:

- The front door or storm door should have a fresh finish and operate smoothly.
- A doorbell that isn't working sends a clear message that you're not on top of household maintenance. Fixing it is easy (search for "doorbell repair" at familyhandyman.com), and installing a new battery model is even easier.
- A weather-beaten mailbox and exterior light fixtures just look sad. One trip to the home center and you can update both. For all the how-to, search for "install a mailbox" and "exterior light fixture" at familyhandyman.com.

MEET THE EXPERT
Melanie Zaelich is a certified home stager and stylist, and the owner of Happy Place Interiors (happyplace interiors.com).

PHOTO: HIKESTERSON/GETTY IMAGES

When to use fiber-reinforced thin-set

Whenever I'm installing large-format tile, thin tiles requiring thick buildup or tile on high-traffic areas—both interior and exterior—I use fiber-reinforced thin-set. The inclusion of microscopic fibers greatly strengthens the mix and virtually eliminates shrinking and cracking during the curing process.

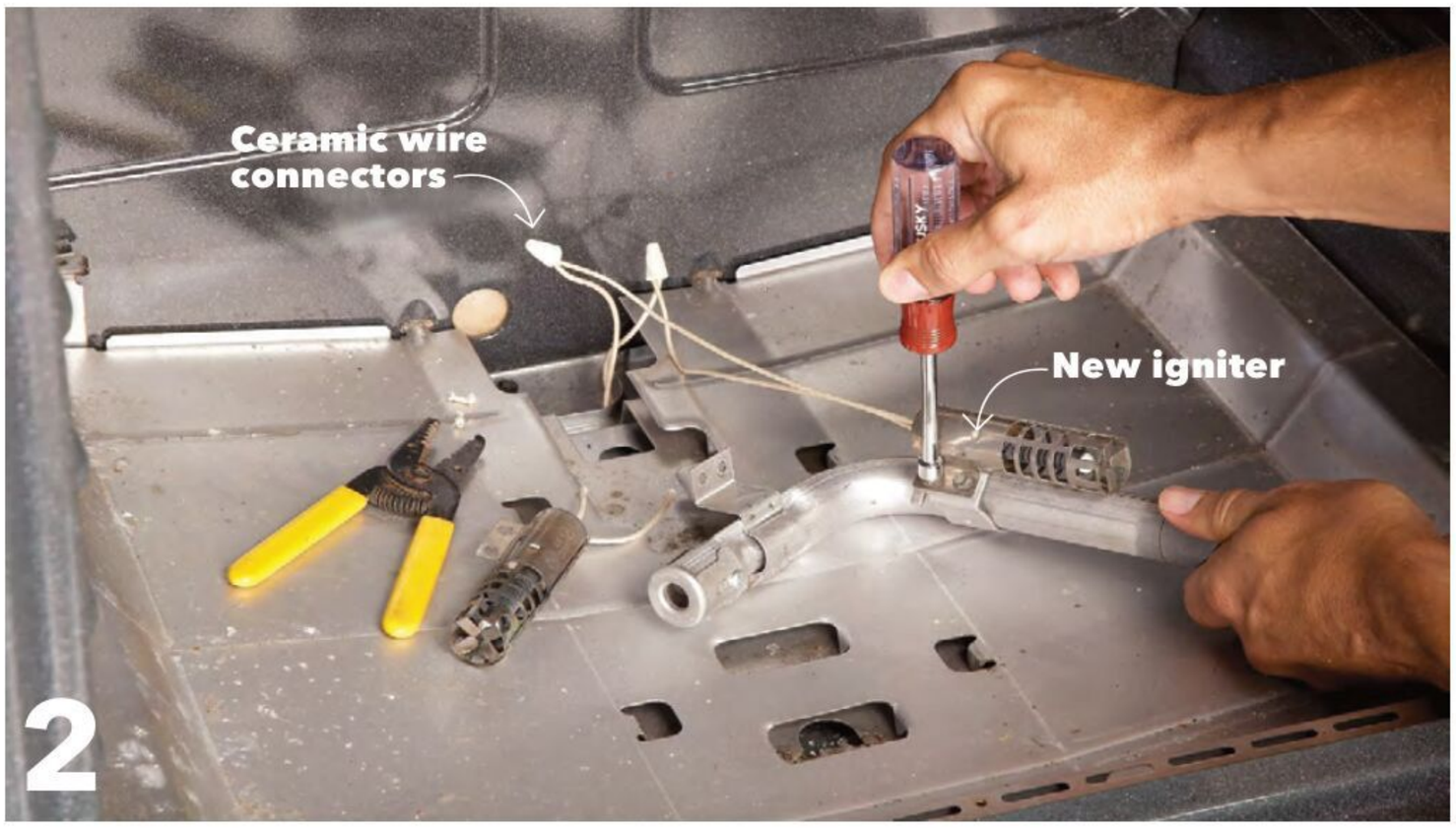
JOSH RISBERG
LEAD CARPENTER

Gas oven won't light? There's an easy fix

If your oven won't light, first verify that it's plugged in and getting power and that the gas valve is open. If your oven still won't light, you probably need a new igniter. Even if you see the igniter glowing, it can be faulty.

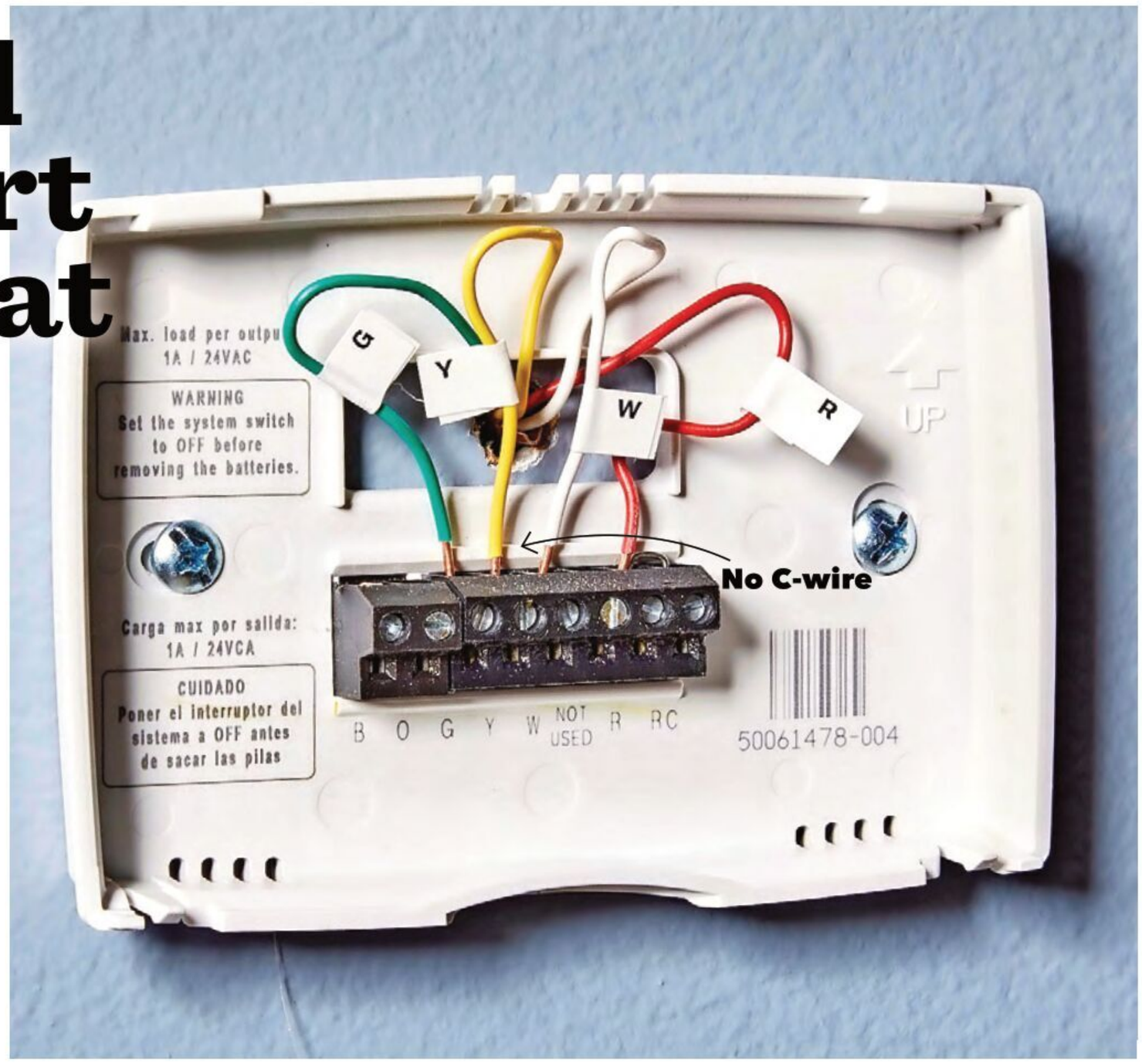
First, turn off the gas valve and power for the oven. We removed the burner to the igniter **(Photo 1)**, but on some ovens this isn't necessary. To take out the igniter, remove the screws that secure it to the burner. Then remove the wires. Some igniters simply unplug. Others, like ours, require you to cut and strip the wires and connect the new igniter using the special ceramic wire connectors included with the igniter **(Photo 2)**.

Remove 1/2 in. of insulation from the wires with a wire-stripping tool. Connect the new igniter by aligning the ends of the stripped wires and twisting on the ceramic wire connectors. Reassemble the igniter and burner in the reverse order.



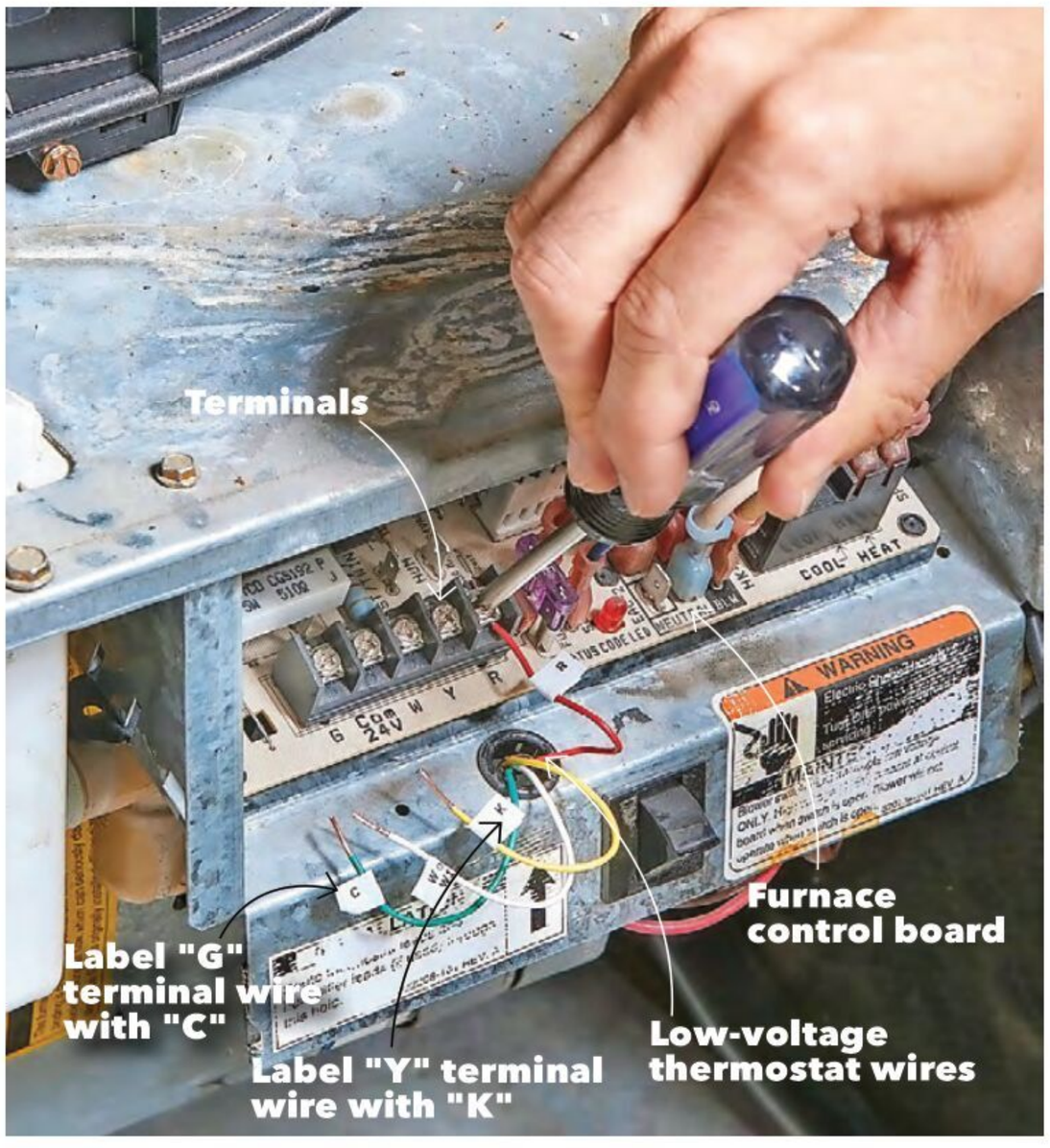
Get wired for a smart thermostat

If you're replacing an old dial thermostat with a smart thermostat, you may find that you're missing a wire. Don't worry. Usually, all you need is an adapter kit to add a "C-wire." These are often included with a smart thermostat, and they're easy to install.



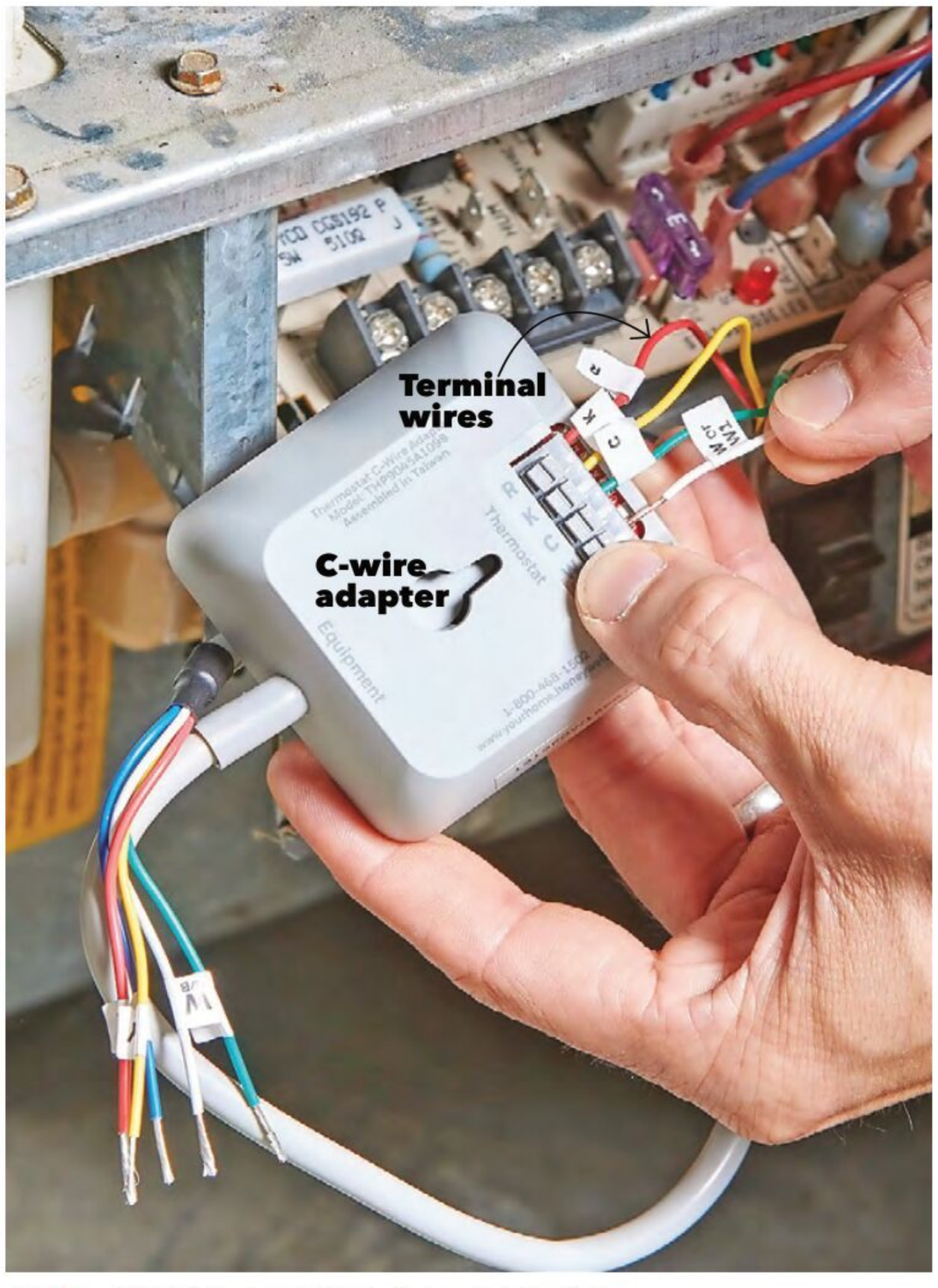
1 CHECK FOR A C-WIRE

Cut power to your furnace. Remove the old thermostat and label the wires according to the terminal they're attached to. If there is a wire in the "C" terminal, you're good. If not, you'll connect the adapter to your furnace's control board.



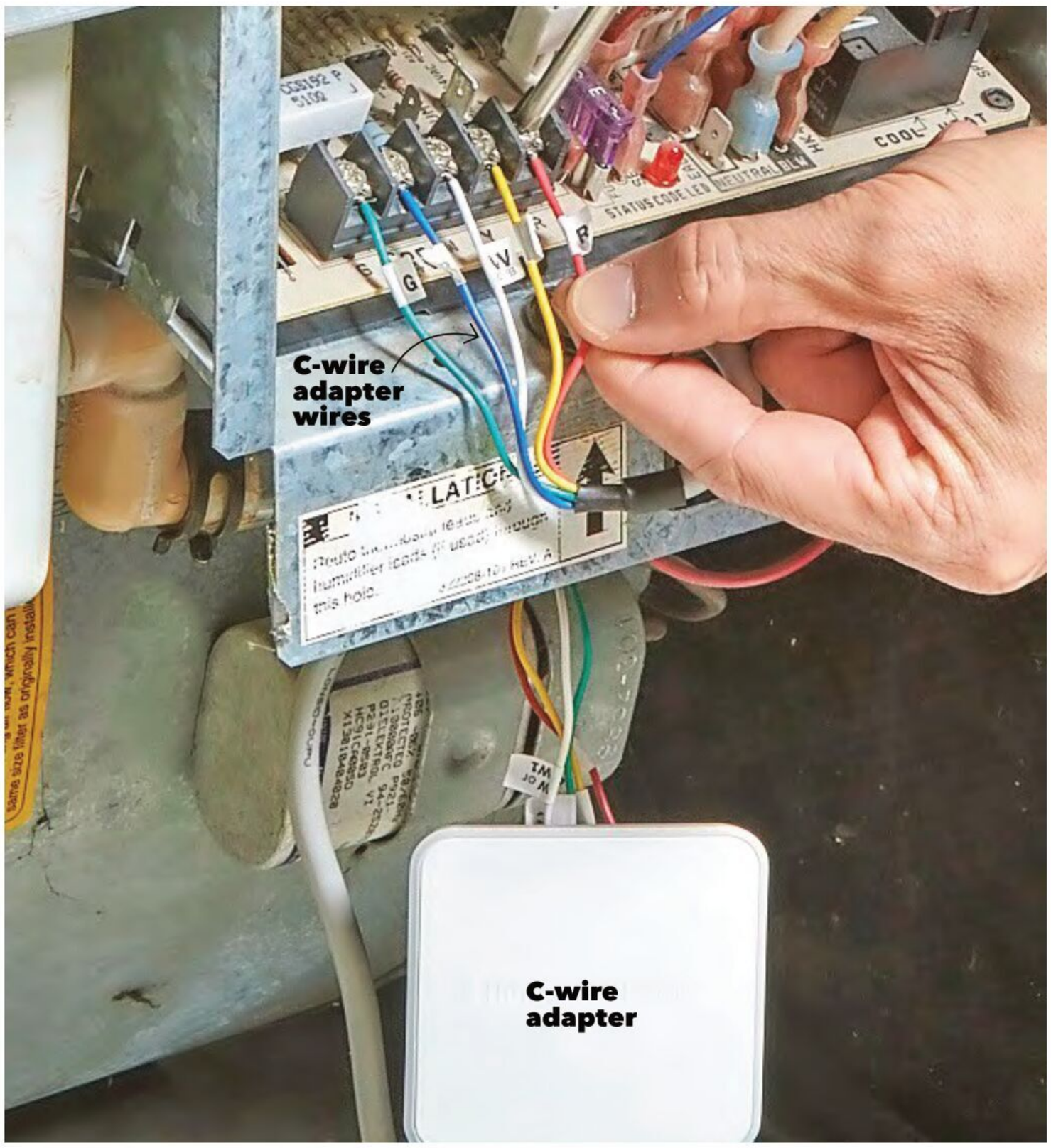
2 LABEL AND REMOVE THE WIRES AT THE FURNACE

Find the furnace control board and take a photo of the wire arrangement. Label the wires according to which terminal they're in, except for the "G" and "Y" terminal wires. Label the "G" terminal wire with a "C" and the "Y" terminal wire with a "K." Unscrew the terminals and remove the wires. If there are wires that aren't connected to anything, leave them alone.



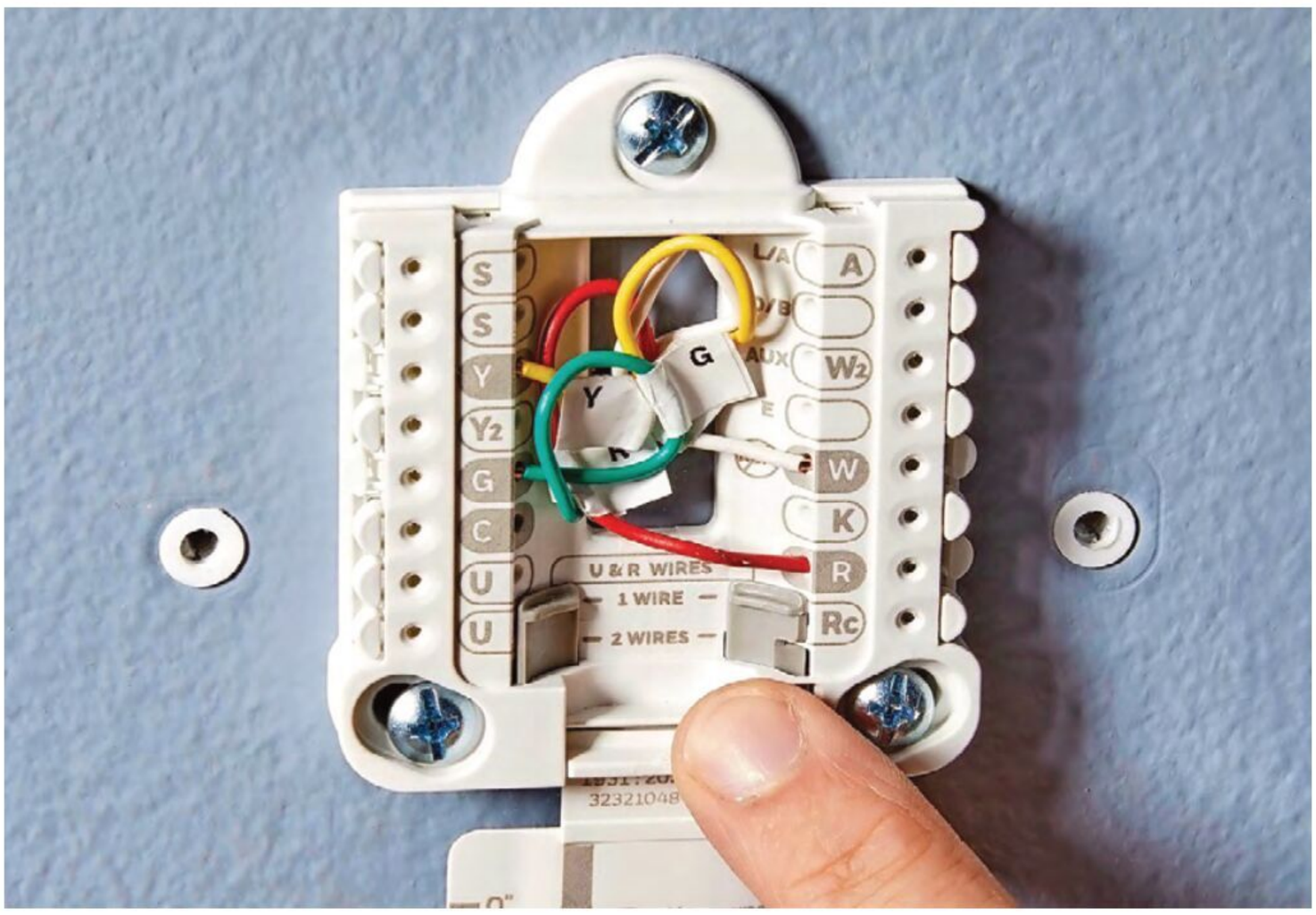
3 WIRE THE ADAPTER

Connect the wires to their corresponding terminals on the C-wire adapter.



4 CONNECT THE ADAPTER TO THE FURNACE

Connect the wires from the adapter to their corresponding terminals on the furnace control board. Mount the adapter inside the furnace and close the furnace cover.



5 CONNECT THE NEW THERMOSTAT

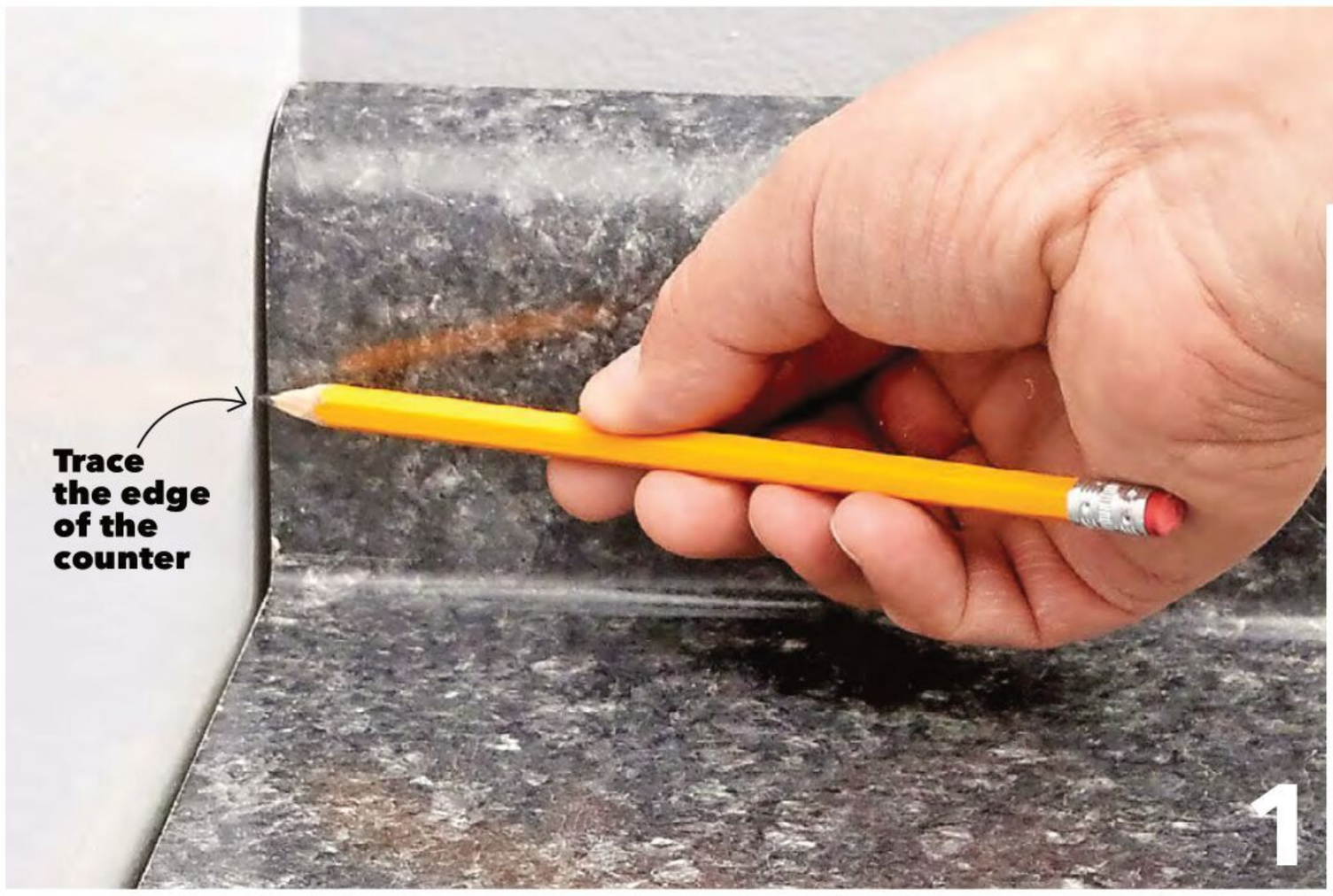
With the new wall plate fastened to the wall, connect the wires to the corresponding terminals.

My favorite plunger, and how to use it

I've been unclogging toilets for people for years, and there have only been a handful of times when I've needed anything more aggressive than a plunger. The flange plunger is my weapon of choice for a clogged toilet. The extended bell gets flow deeper into the drain, accelerates the water's velocity and makes a good seal. But technique is equally important. Here's the method that works best for me:

- Put the seat down to help block splashes.
- Submerge the plunger and gently push down to expel any air. If your plunger is filled with air, it'll just make bubbles and splash more water out of the bowl. Next, let up to suck water back into the plunger bell. Now, the plunger is "loaded." The goal is to forcefully propel the water in the plunger down the drain.
- Use short, sharp strokes, like you're doing CPR. This exerts force without making big splashes. Get your upper body into the act by leaning over the top and straightening your arms. You'll use a little arm motion, but most of the power comes from applying your upper body weight.
- On the lift stroke, don't lift the plunger out of the water or you'll lose the water stored in the bell.

NICK WIESNESKI
OWNER, NICK OF ALL TRADES LLC



A better way to make countertops fit the wall

If you've ever tried to fit a countertop or cabinet to a wall, you know how frustrating it is when walls aren't flat and corners aren't square. It's equally frustrating to scribe, cut and sand a countertop to perfectly fit the wall, particularly with an integral backsplash, as shown in the photos. So, in most cases, whether it's a cabinet or countertop, I just don't bother. I cut out the wall instead. Here's how to do it.

Take note of where the gap is widest and roughly how wide the gap is. You'll only need to cut where the counter touches or is very close to the wall. Trace the outline of your countertop onto the wall where it makes contact **(Photo 1)**. Next, cut on the line with a utility knife **(Photo 2)**, making sure to cut through the paper. A little deeper is good. Chisel out enough drywall inside the cut to make a recess roughly as deep as the widest gap **(Photo 3)**. Slide the countertop into position **(Photo 4)**; repeat the process if necessary. If you find that you're digging close to the full depth of the drywall, take extra care in case there are pipes or wires inside the wall.

Don't worry about making it perfect. Most countertops get a finishing bead of caulk, so as long as you stay within a 1/8-in. margin of error, you'll get a clean installation.

MEET THE EXPERT

Seth Prince owns PrinceWorks, a Minneapolis remodeling company specializing in transforming kitchens, baths and other interior spaces.

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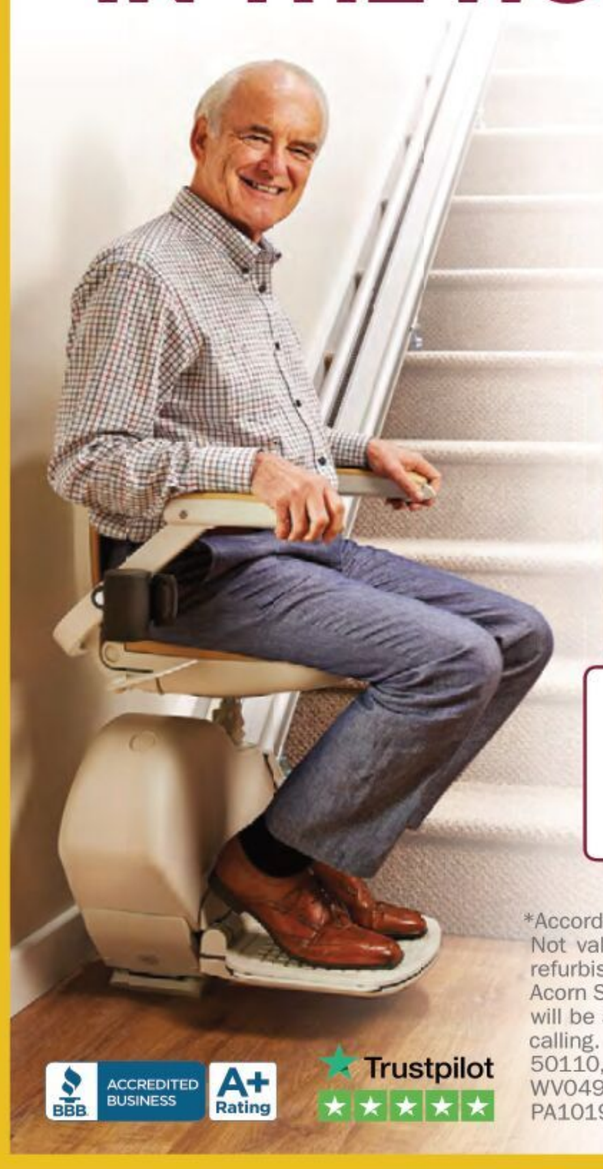

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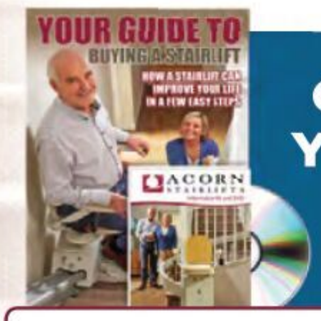

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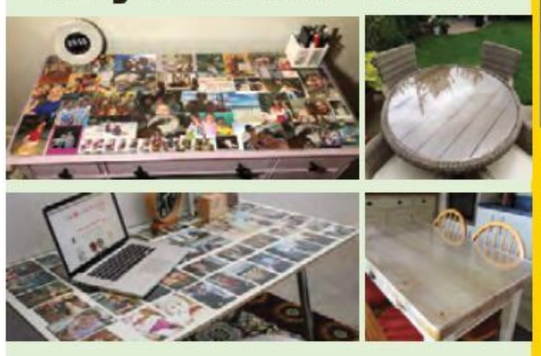

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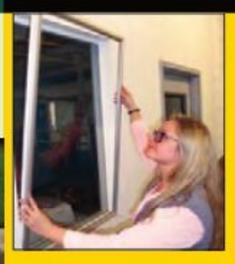

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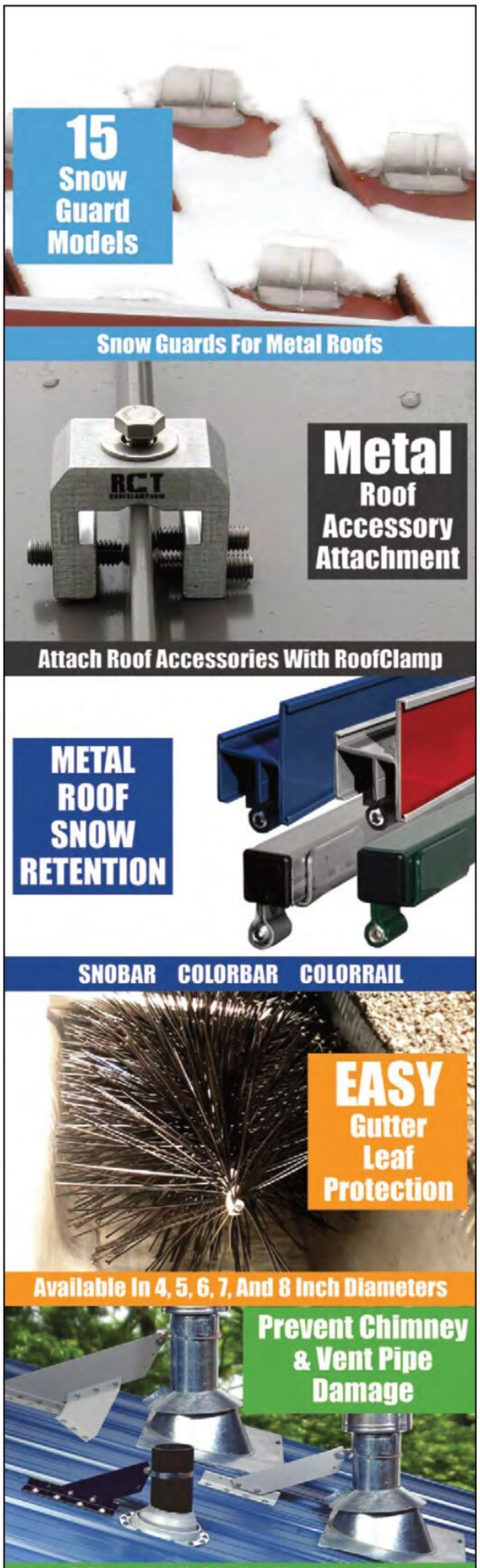

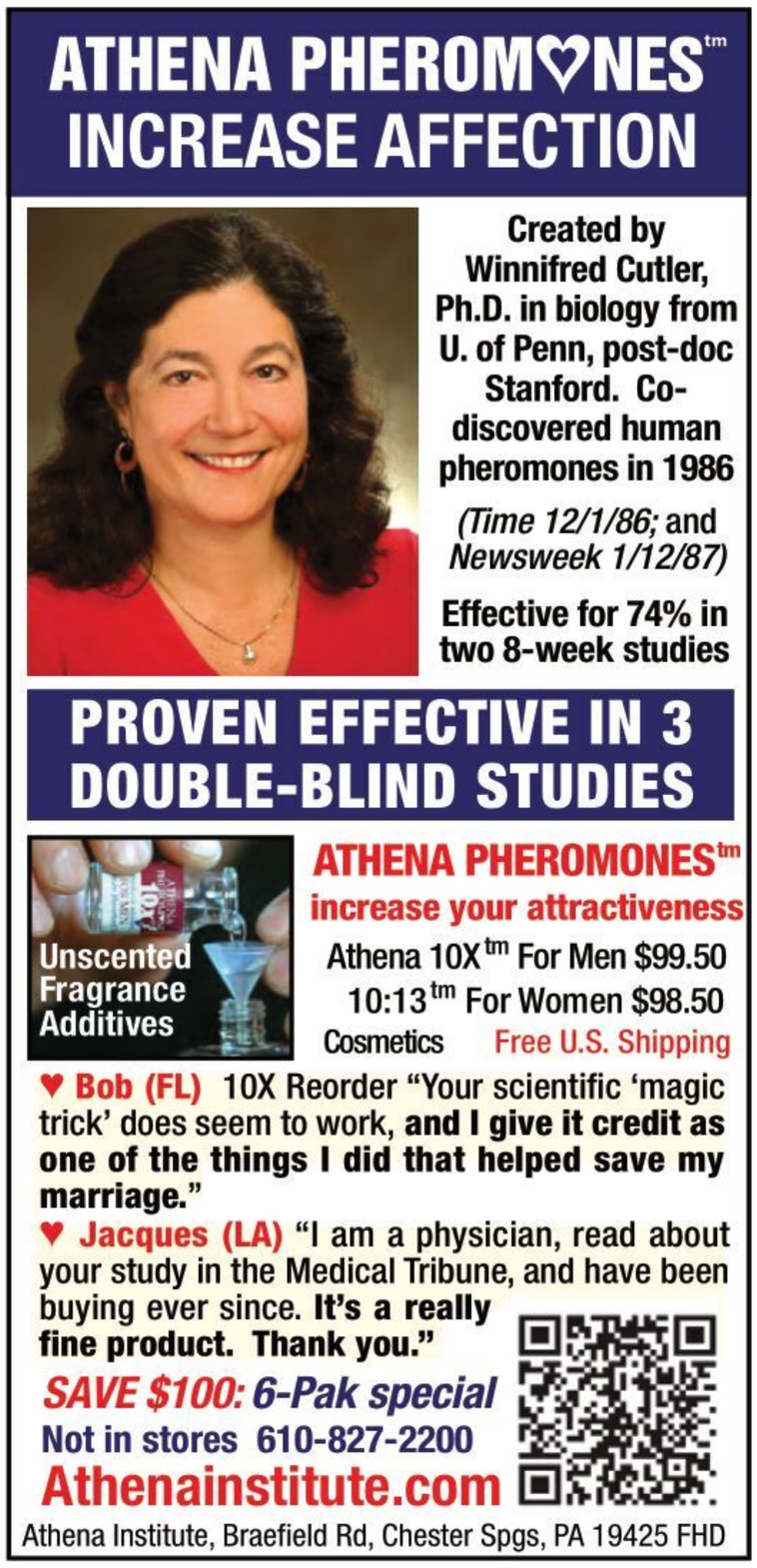

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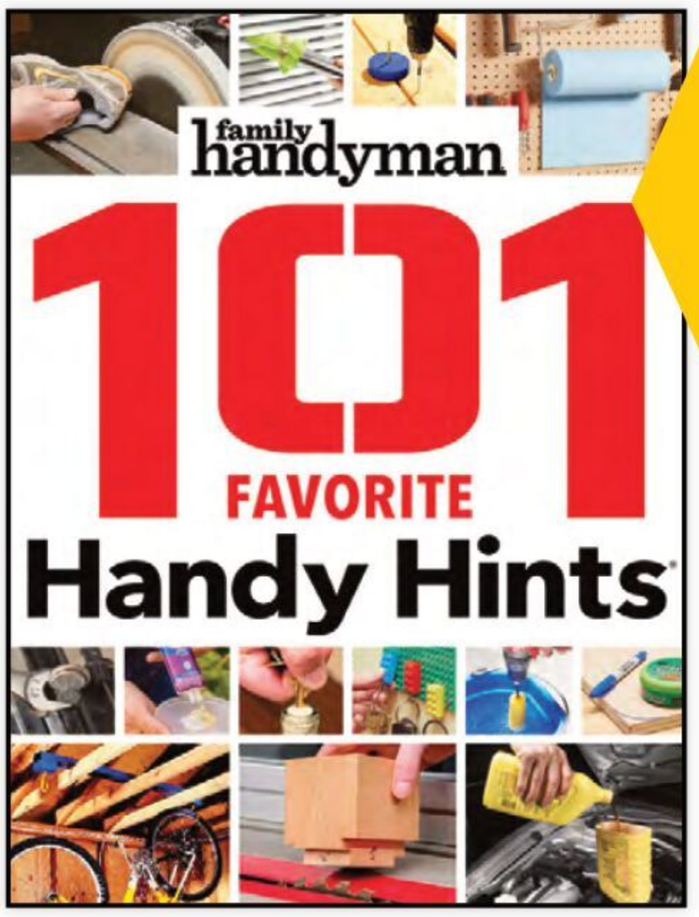

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Laughs and lessons from our readers

CAN YOU HEAR ME NOW?

I was going to install a faucet in our upstairs bathroom and had brought home some new quarter-turn ball valves to replace the old shutoffs under the sink. My wife went shopping for the new faucet while I got started on the valves. When it was time to turn the main water line back on, I had my 15-year-old son stand in the bathroom with his cell phone to watch for leaks.

Out at the street I called him on my cell phone and said, "OK, here we go" as I turned on the water. Then my phone went dead. What a time for a dropped call! I quickly redialed, but the call rolled to my son's voice mail. I hung up and my phone rang immediately. "Dad, shut the water off!" I did and raced inside and up the stairs, only to find the entire bathroom and hallway carpet completely soaked. Turns out I'd left my slick new ball valves in the open position when I installed them.

VAUGHN WILLIAMS

BEE CAREFUL WITH THAT HAMMER

I was tearing down an old shed that wasn't much more than weathered lumber over a dirt floor. A fair number of bees were flying around, but I kept going until the shed was down and stacked into neat piles. There was one last piece of plywood lying on the ground. I used the claw of the hammer I had in my hand to lift up the plywood. Out from the ground came more bees!

I dropped the plywood and started running. One of the bees was gaining on me! I instinctively waved my hands to ward it off, but I had forgotten I was holding the hammer! The emergency room doc was laughing so hard that he had a tough time keeping the stitches straight as he worked on the gash above my eyebrow.

NORMAN BULLOCK

BEEPING FROM BEYOND

The ceilings in our first home were in pretty rough shape, so I decided to pull them down and put in new drywall. I disconnected all the smoke alarms except one, because my safety-conscious wife wanted a smoke detector working during the construction. I set it on the rafters and, of course, forgot all about it.

Months later, we started to hear a beep coming from somewhere in the house. It went on for days and drove us crazy! I replaced the batteries in all of our smoke detectors and shut off the circuit breaker to the hardwired alarms, but nothing I did stopped the beeping. That's when it occurred to me that the smoke detector I'd left on the rafters above my beautiful new ceiling had a low battery.

DENNIS DUBBELDEE

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