

1 family handyman

70TH ANNIVERSARY ISSUE

SMART HOME IMPROVEMENT®

STAIRCASE STORAGE

IT'S EASIER THAN YOU THINK!

FIREPLACE FACE-LIFT
MODERN MAKEOVER
IN ONE WEEKEND

TOUGHER PAINT
FOR HIGH-TRAFFIC
AREAS

GRILL REHAB
MAKE IT BETTER
THAN NEW

HAND TOOLS
THAT BEAT
POWER
TOOLS



70 YEARS OF
TOOLS, TIPS &
DIY INSPIRATION

DEC | JAN | FEB 2021 WINTER

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



= A CHANCE FOR MORE GAME DAYS

A Chance to Live Longer™

THE 1ST AND 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.

Results may vary.

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. Some of these problems may happen more often when OPDIVO is used in combination with YERVOY.

YERVOY can cause serious side effects in many parts of your body which can lead to death. These problems may happen anytime during treatment with YERVOY or after you have completed treatment.

Call or see your healthcare provider right away if you develop any symptoms of the following problems or these symptoms get worse. Do not try to treat symptoms yourself.

- **Lung problems (pneumonitis).** Symptoms of pneumonitis may include: new or worsening cough; chest pain; shortness of breath

- **Intestinal problems (colitis) that can lead to tears or holes in your intestine.** Signs and symptoms of colitis may include: diarrhea (loose stools) or more bowel movements than usual; mucus or blood in your stools or dark, tarry, sticky stools; stomach-area (abdomen) pain or tenderness; you may or may not have fever
- **Liver problems (hepatitis) that can lead to liver failure.** Signs and symptoms of hepatitis may include: yellowing of your skin or the whites of your eyes; nausea or vomiting; pain on the right side of your stomach area (abdomen); drowsiness; dark urine (tea colored); bleeding or bruising more easily than normal; feeling less hungry than usual; decreased energy
- **Hormone gland problems (especially the thyroid, pituitary, and adrenal glands; and pancreas).** Signs and symptoms that your hormone glands are not working properly may include: headaches that will not go away or unusual headaches; extreme tiredness or unusual sluggishness; weight gain or weight loss; dizziness or fainting; changes in mood or behavior, such as decreased sex drive, irritability, or forgetfulness; hair loss; feeling cold; constipation; voice gets deeper; excessive thirst or lots of urine
- **Kidney problems, including nephritis and kidney failure.** Signs of kidney problems may include: decrease in the amount of urine; blood in your urine; swelling in your ankles; loss of appetite
- **Skin problems.** Signs of these problems may include: skin rash with or without itching; itching; skin blistering or peeling; sores or ulcers in mouth or other mucous membranes
- **Inflammation of the brain (encephalitis).** Signs and symptoms of encephalitis may include: headache; fever; tiredness or weakness; confusion; memory problems; sleepiness; seeing or hearing things that are not really there (hallucinations); seizures; stiff neck
- **Problems in other organs.** Signs of these problems may include: changes in eyesight; severe or persistent muscle or joint pains; severe muscle weakness; chest pain

Additional serious side effects observed during a separate study of YERVOY alone include:

- **Nerve problems that can lead to paralysis.** Symptoms of nerve problems may include: unusual weakness of legs, arms, or face; numbness or tingling in hands or feet



Talk to your doctor about OPDIVO + YERVOY

www.OPDIVOYERVOY.com 1-855-OPDIVOYERVOY

- **Eye problems.** Symptoms may include: blurry vision, double vision, or other vision problems; eye pain or redness

Get medical help immediately if you develop any of these symptoms or they get worse. It may keep these problems from becoming more serious. Your healthcare team will check you for side effects during treatment and may treat you with corticosteroid or hormone replacement medicines. If you have a serious side effect, your healthcare team may also need to delay or completely stop your treatment with OPDIVO and YERVOY.

What should I tell my healthcare provider before receiving OPDIVO and YERVOY? Before you receive OPDIVO and YERVOY, tell your healthcare provider if you: have immune system problems (autoimmune disease) such as Crohn's disease, ulcerative colitis, lupus, or sarcoidosis; have had an organ transplant; have lung or breathing problems; have liver problems; have any other medical conditions; are pregnant or plan to become pregnant. OPDIVO and YERVOY can harm your unborn baby. **Females who are able to become pregnant:** Your healthcare provider should do a pregnancy test before you start receiving OPDIVO and YERVOY.

- You should use an effective method of birth control during and for at least 5 months after the last dose. 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. You or your healthcare provider should contact Bristol Myers Squibb at 1-800-721-5072 as soon as you become aware of the pregnancy.
- **Pregnancy Safety Surveillance Study:** Females who become pregnant during treatment with YERVOY are encouraged to enroll in a Pregnancy Safety Surveillance Study. The purpose of this study is to collect information about the health of you and your baby. You or your healthcare provider can enroll in the Pregnancy Safety Surveillance Study by calling 1-844-593-7869.

If you are breastfeeding or plan to breastfeed: It is not known if OPDIVO or YERVOY passes into your breast milk. **Do not** breastfeed during treatment and for 5 months 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.

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 and YERVOY?"**
- **Severe infusion reactions.** Tell your doctor or nurse right away if you get these symptoms during an infusion of OPDIVO or YERVOY: chills or shaking; itching or rash; flushing; difficulty breathing; dizziness; fever; feeling like passing out

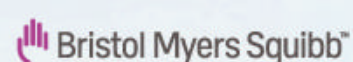
The most common side effects of OPDIVO when used in combination with YERVOY include: feeling tired; diarrhea; rash; itching; nausea; pain in muscles, bones, and joints; fever; cough; decreased appetite; vomiting; stomach-area (abdominal) pain; shortness of breath; upper respiratory tract infection; headache; low thyroid hormone levels (hypothyroidism); decreased weight; 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 negative side effects of prescription drugs to the FDA. Visit www.fda.gov/medwatch or 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 provider, call 1-855-673-4861, or go to www.OPDIVO.com.



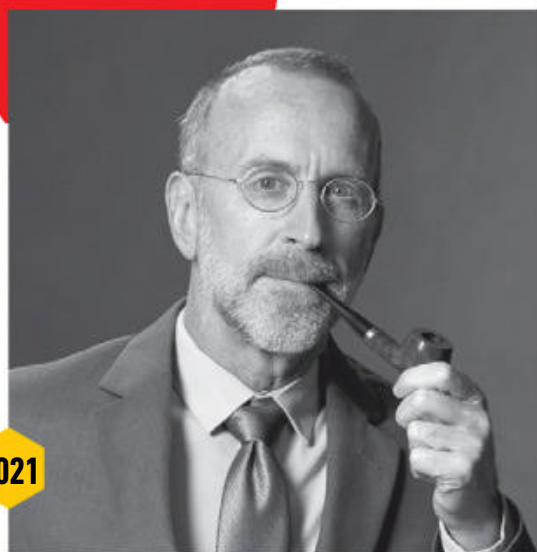
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70 YEARS

OF ADVICE AND INSPIRATION

family handyman *flashback*

2021



In preparation for this anniversary issue, I did two things: First, I bought a pipe to honor and imitate our first editor. (It makes me look distinguished even if I don't smoke it, right?) Second, I dusted off the very first editor's letter, published in Winter 1951. Reading it, I was stunned by how little has changed since then. While our reach has grown beyond the wildest dreams of our founders, the core mission—to provide DIY inspiration and information—hasn't changed a bit. Another constant is our hands-on expertise. Like our first editor, the current editors at *Family Handyman* bring years of real-world building experience.

I began my own building career in high school, starting with the job title of Assistant Flunky, sweeping up sawdust and schlepping 2x4s. Eventually, I became a skilled builder. But sometimes, working alongside the amazing experts who guide *Family Handyman*, I still play the role of Assistant Flunky today.

GARY WENTZ
EDITOR-IN-CHIEF

MEET THE EDITOR!

Paul de Fur, Texan transplanted to a Connecticut farm, today is famous as America's number one handyman. It all started when his family moved into the Louisiana bayou country to take over a sawmill while Paul still was a schoolboy. He and his brother built a complete house, starting from the standing trees. Then his father, brother and he proceeded to operate the sawmill, with Paul inventing gimmicks to keep it running. This background led to a post, later, as a high school instructor in woodworking, with Paul attracting local notice for developing new techniques in furniture refinishing.

Author of several books, he has also acquired some reputation as an inventor. Today he is constantly being consulted by his Connecticut neigh-



1951

bors and, through the mails, by householders as far away as India. Manufacturers flood him with tools and home gadgets they want him to test. And his do-it-yourself attitude is contagious. His wife not merely makes the clothing for his three kids, but also turns out Paul's famous collection of sport jackets.

This is your magazine . . .

THE inaugural issue of THE FAMILY HANDYMAN launches a new idea in publishing. Here, for the first time, is a magazine devoted exclusively to do-it-yourself home repair, maintenance and improvement.

You will find some of the projects simple, others more elaborate. But all, we hope, are presented clearly and in as non-technical a fashion as possible so that you, the reader, need not be skilled with tools or blueprints to accomplish an emergency repair or install an improvement.

Our aim is high. We want to contribute to the comfort and safety of you and your family—save you time, trouble and expense—add to the livability and investment value of your property. But to reach these goals, we need your cooperation. Please write us, telling what you think of this issue—what you want to see in future issues. Remember, this is *your* magazine. Your opinions and wishes will shape its future contents.

THIS IS STILL YOUR MAGAZINE The introduction to our first issue laid out the principles that still guide us 70 years later. Our mission hasn't changed. And we still depend on your input. Write to us at editors@thefamilyhandyman.com

HOMEOWNERSHIP IS THE SAME, BUT DIFFERENT

The core purpose of *Family Handyman*—to share DIY inspiration and information—is just as vital today as it was 70 years ago. People still feel the same passion to improve their homes. But our homes and how we live have changed dramatically.



BIGGER BUILDS

The average home built in the early 1950s was about 950 sq. ft. By 2017, the average new-home size had almost tripled to 2,700 sq. ft. In recent years, square footage has fallen slightly.



SINGLE HOMEOWNERS

In the 1950s, the vast majority of homes were owned by married couples. Today, almost 40% of homeowners are single.



SINGLE WOMEN BUY HOMES

Single buyers made up a tiny fraction of home purchasers in the '50s, and most of those were men. Today, a single woman is about twice as likely to buy a home as a single man.



PIPES WEREN'T JUST FOR PLUMBING

Judging from our old photos, smoking a pipe was an essential part of DIY in the '50s, at least for men.



DRESSED UP FOR DIY

In our 1950s photos, DIYers were a bit overdressed for the occasion: Men wear ties for yardwork; women wear dresses to hang wallpaper.



MORE MORTGAGES

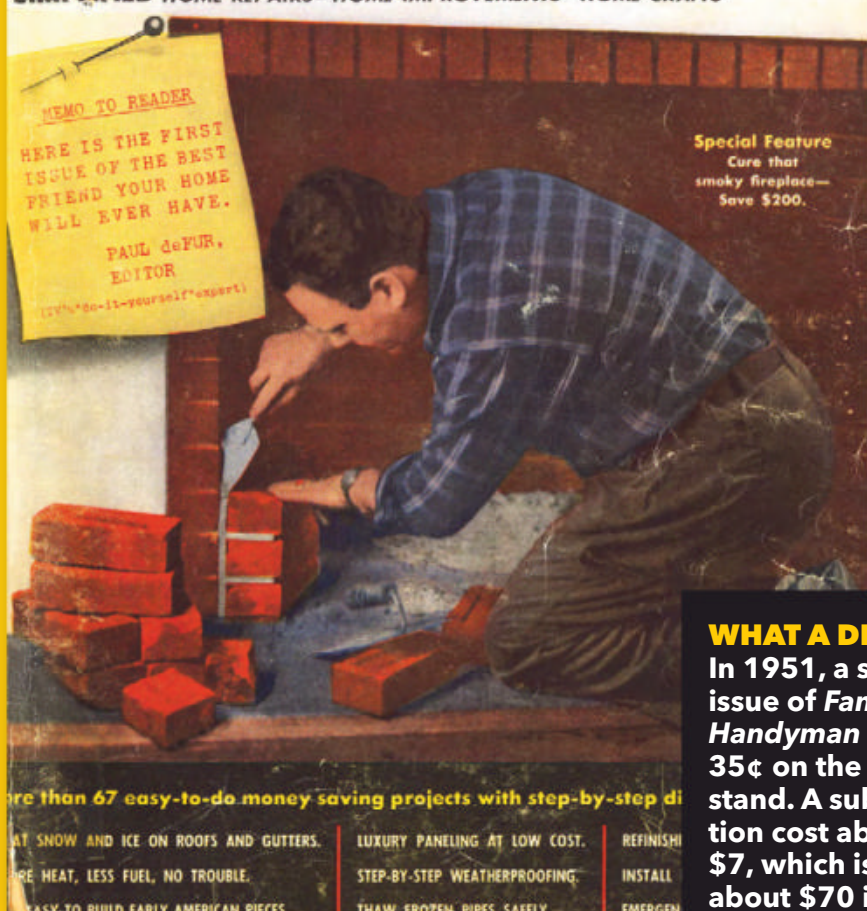
In 1950, about 60% of homes were owned outright and only 40% carried mortgages. Today that ratio is reversed.

THE FAMILY Handyman

WINTER ISSUE

35¢

SIMPLIFIED HOME REPAIRS—HOME IMPROVEMENTS—HOME CRAFTS



WHAT A DEAL!

In 1951, a single issue of *Family Handyman* cost 35¢ on the newsstand. A subscription cost about \$7, which is about \$70 in today's dollars.



DIY IS COOL NOW

Early editor's letters sometimes aimed to justify DIY; hiring and buying home improvements carried higher status. Today, celebrities (and the rest of us) show off our DIY projects on social media.



ONE TV PER PERSON NOW

When *Family Handyman* was launched, only one in five homes had a TV. The average number of TVs per home today—2.5—is about the same as the average number of people per household.



HOVER YOUR CAMERA HERE

Get a FREE digital copy of *Family Handyman's* entire first issue, from 1951.

MEET TODAY'S CREW:



BRAD HOLDEN

After getting a C- in 8th-grade wood shop, Brad dedicated 30 years of his life to woodworking, trying to make up for it.



MIKE BERNER

Mike gave up his job as a shop teacher to come to *FH*. His favorite part about that? "Wood doesn't give you attitude."



JAY CORK

Jay is a highly skilled woodworker and craftsman. And for the record, he's way taller than the rest of these clowns.



BILL BERGMANN

"Bungalow Bill" has worked on many old homes with big problems, so he's thrilled to be moving into a newer house.



JOSH RISBERG

Don't argue with Josh—you won't win. You'll only waste your time; he's just gonna build it his way anyway.

70TH ANNIVERSARY ISSUE

**EXPERT
ADVICE**
SINCE 1951

FEATURES

24 Things That Changed DIY Forever

These 26 innovations made our DIY projects faster and easier.

32 Fireplace Face-Lift Give your dated brick fireplace a sleek new look in one weekend.

40 Under-Stair Pullouts More storage space—right under your feet.

48 Hi-Lo Table It goes from coffee to dining table in no time.

54 Dynamic Accent Wall One-dimensional walls are so ordinary—here's how to make them 3D!

60 Install a Smart Switch Control your lights via voice command or an app on your phone.

64 Grill Revival 8 ways to bring your old grill back to life.

Progressive Casualty Ins. Co. & affiliates. Annual premium for a basic liability policy not available in all states. Total Loss Replacement is available for new vehicles. *Available with comprehensive and collision coverage.

IT'S WILD OUT THERE.

When it gets too wild, we have your RV covered. Basic plans start at \$125 a year with options to add total loss replacement*.

PROGRESSIVE

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78

DEPARTMENTS

10 Stuff We Love

A classic doweling jig, a tough little scraper, and a snow shovel that's easier on your back.

16 Handy Hints®

Here's how to free up space in your closet, open that frozen lock, and hang a picture fast.

20 homeLAB

Quick-stick construction adhesives, scuff-resistant paints, and Bluetooth earbuds.

71 Best Pro Tips

Check out this expert's guide to essential hand tools—which ones belong in your toolbox?

78 Home Care

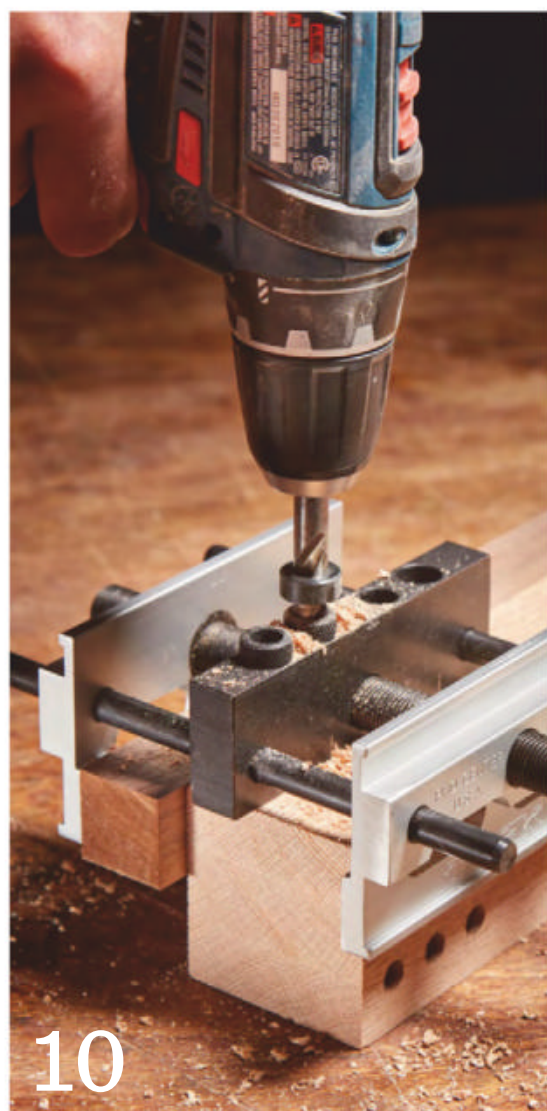
The right paintbrush for the job, finding quiet appliances, and understanding asbestos.

90 Reader Info

Here's how to subscribe, renew, send us a hint, and more!

92 Great Goofs®

An ice dam avalanche, holey cherry countertops, and a call-before-you-dig disaster.



10



20



16

ZIRCON

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to learn more, and receive a
limited time special offer.

For the first time ever, HAVE REAL CONFIDENCE Locating wood wall studs

THE ALL NEW ZIRCON® SUPERSCAN™ Advanced Wall Scanners

To a hammer, everything looks like a nail. To a typical stud finder, everything looks like a stud. But it's not that easy. Walls are complicated.

But not with a Zircon® SuperScan™ advanced wall scanner featuring all-new Target Control™ (TC™) Technology.

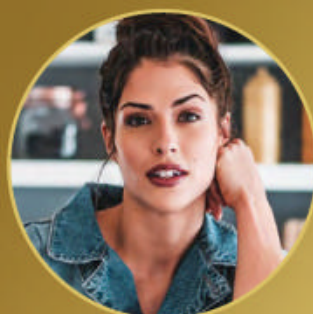
With multiple sensors streaming data, combined with sophisticated filtering and intelligence, TC™ is finely tuned to find wood studs, and ONLY wood studs – not metal, not plastic, not plumbing, conduit, straps, screws, wiring or ducts, virtually eliminating problems with false positive stud indications.

In other words, for the first time ever, only a stud looks like a stud.

Even better, our "Trust but Verify" scanning technique can find the safest places to drill up and down ALONG a wooden stud, in order to avoid screws, brackets, protector plates, and other metallic obstacles to your success – and, unlike typical stud finders, helps users confirm that the object they found truly is a wood stud and NOT plumbing or electrical...

For the first time ever, have real confidence...

MULTIPLE PATENTS PENDING



**"FINALLY, real stud finding confidence,
so I can tackle my projects with more
confidence, more accuracy, and quickly."**

–Rachel Metz, DIY Influencer



Visit zircon.com/FHM
to learn more, and receive a
limited time special offer.

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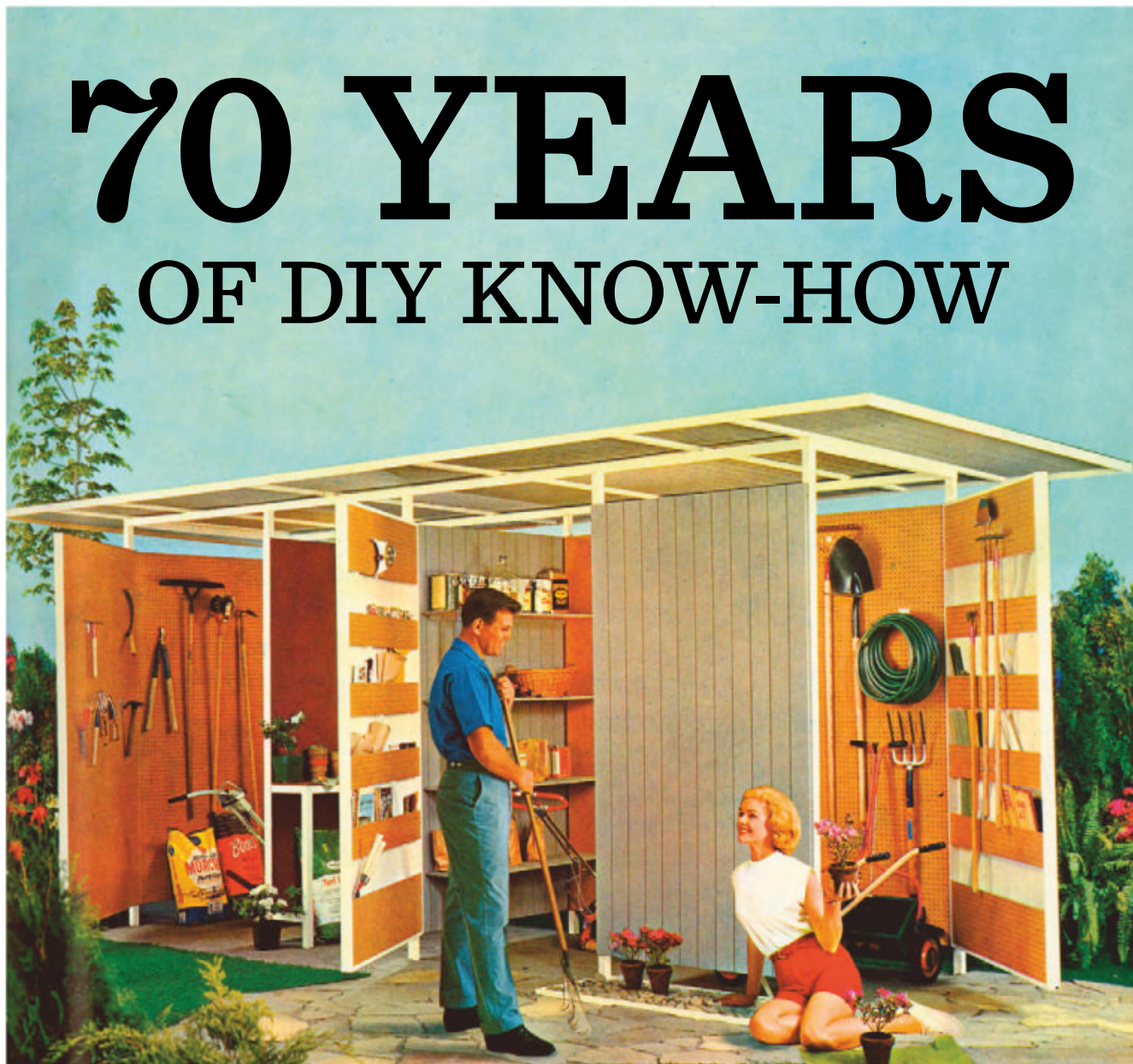
WHAT'S NEW

at Family Handyman

Social links

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

70 YEARS OF DIY KNOW-HOW



Seventy years is a long time to collect anything—we have archives bursting with top-notch home improvement advice. In celebration of our anniversary, we're sharing some of our most helpful and innovative DIY tips, projects and Handy Hints from over the years with you, our beloved readers. To get more of our vintage content, simply hover your camera here.



VINTAGE ADS

Check out our amazing collection of vintage ads from long-standing advertising partners here: familyhandyman.com/article/70th-anniversary/



PROJECT PLANS

Thinking of putting together a vintage project for your family this holiday season? How about a gift to yourself? Get old-school project plans as well as building tips and advice here: familyhandyman.com/article/70th-anniversary/



BRAND NEW BOOK!

Claim your FREE preview now at familyhandyman.com/FAMILY20. Inside, you'll find tons of brilliant tips that save time, trouble and money, plus complete, detailed plans and step-by-step photos for our favorite projects.



WE'VE LAUNCHED HANDYMAN PRO!

We deliver timely updates on industry trends and introduce innovative products and ideas to help pros better run their businesses and keep clients coming back. Check it out at familyhandyman.com/pro



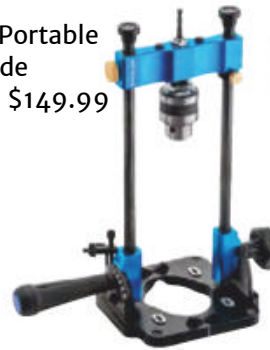
DIY UNIVERSITY

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

Drill-press precise – and portable!

Rockler's Precision Drill Guide goes where drill presses can't, combining control and accuracy with the portability of a handheld drill. Add the Self-Centering Vise and you can drill perfectly centered holes in turning blanks and much more. Both are built to last, so you can *create with confidence*.

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(52885) \$149.99



Rockler Self-
Centering Drill Vise
(50916) \$99.99



Get both and
save almost \$30
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SOLAR + BATTERY STORAGE SYSTEM

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Request your **FREE** copy of
the **PWRcell Buyer's Guide** today!

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(844) 383-8845

Stuff We Love

Our favorite DIY tools, materials + gear

Toolbox Boom Box

This AEPJS1 Jobsite Speaker by Klein Tools has been my constant companion on the job and in the shop. Its magnetic back lets you stick it on any metal surface—I've even attached it to the vent hood in my kitchen. This little 4-in. box truly rocks, and the Bluetooth range is better than I expected. As a bonus, I can even take a phone call on it.

This speaker is as tough as any of my favorite tools. I've dropped it countless times, lost it in piles of demo debris, and had it outside in rain and mud; it just keeps working and sounds great! At \$40, this Bluetooth box is a great bargain.

BILL BERGMANN
ASSOCIATE EDITOR



BOTTOM, LEFT: TITE-REACH BOTTOM, RIGHT: LACROSSE

WRENCH EXTENDER

The Tite-Reach wrench is the perfect fix for tight spaces where you can't fit a ratchet or drill. It's a geared ratchet extension that lets you do all the "wrenching" where there's plenty of room. I found it handy recently when I installed drawer slides in boxes a drill wouldn't fit inside. So if you're a mechanic, a farmer or a weekend DIYer who just wants to save your knuckles, pick up a Tite-Reach Wrench online for \$30.

BILL BERGMANN, ASSOCIATE EDITOR



Shoveling Snow Doesn't Have to Be a Pain

What I love about this ergonomic snow shovel is that it gives you more leverage with less body motion. When you're scooping your load, the spring-loaded D-handle allows you to throw it either forward or over your shoulder, all with minimal bending or twisting at the waist and knees. If you have chronic back issues-or want to ward them off-definitely consider this shovel. The scoop itself is 18 in. wide with an aluminum wear strip. You can find the Snow Joe Shovelution in blue or red for \$25 online and at most home centers.

BILL BERGMANN
ASSOCIATE EDITOR



TOUGH LITTLE CAR SCRAPER

The Better Ice Scraper from Better Stuff (\$13 online) chips and clears ice from your windshield in one back-and-forth motion. Aggressive teeth break up ice on the push stroke, and the non-scratching brass edge scrapes it off on the pull stroke. The scraper fits in your glovebox, but you'll max out your reach scraping your entire windshield. I wish it were on a long stick, yet it's still a worthy winter companion.

JAY CORK, ASSOCIATE EDITOR



WELLIES FOR WORK

You wouldn't normally expect a Wellington-style pull-on boot to meet OSHA safety standards, but LaCrosse has changed that with its Alpha Range boots (\$140). The boot's lowers are made of UV- and tear-resistant rubber laid over 1/4 in. of neoprene, which then continues up 14 in. to form the upper. An easy-to-grab cinch strap ensures a secure, comfortable fit in the calf. The composite safety toe and metatarsal guard provide impact protection without limiting range of motion. A sweet bonus is the little kickoff plate on the sole, making for easy exit at the end of the day. LaCrosse's temperature rating for these is minus 20 degrees F. We didn't wear them in that kind of cold, but they were plenty toasty down into the single digits and comfy all day long. If your jobsite is wet, muddy and cold, these boots will definitely achieve their Alpha status.

MIKE BERNER, ASSOCIATE EDITOR

Stuff We **STILL** Love

Our favorite DIY tools, materials + gear

Foolproof Finish

Watco's Danish Oil was one of the first formulated wipe-on finishes, and it's still one of our favorites for furniture, trim, molding and any interior wood surface. It comes in a few different shades, applies easily with a cloth and gives results comparable to a hand-rubbed finish when multiple coats are used.

Standard Danish Oil isn't film-forming, so it doesn't offer much protection. Watco's Wipe-On Poly, however, does build up a film, so it's a good choice for pieces that get regular use, like tables. It also adds a bit more sheen than the Danish Oil. Both products make finishing less daunting—there are no worries about visible brushstrokes or other finishing maladies, and no brush cleaning. Available at paint stores and home centers, a quart costs about \$18.

BRAD HOLDEN, SENIOR EDITOR



1964

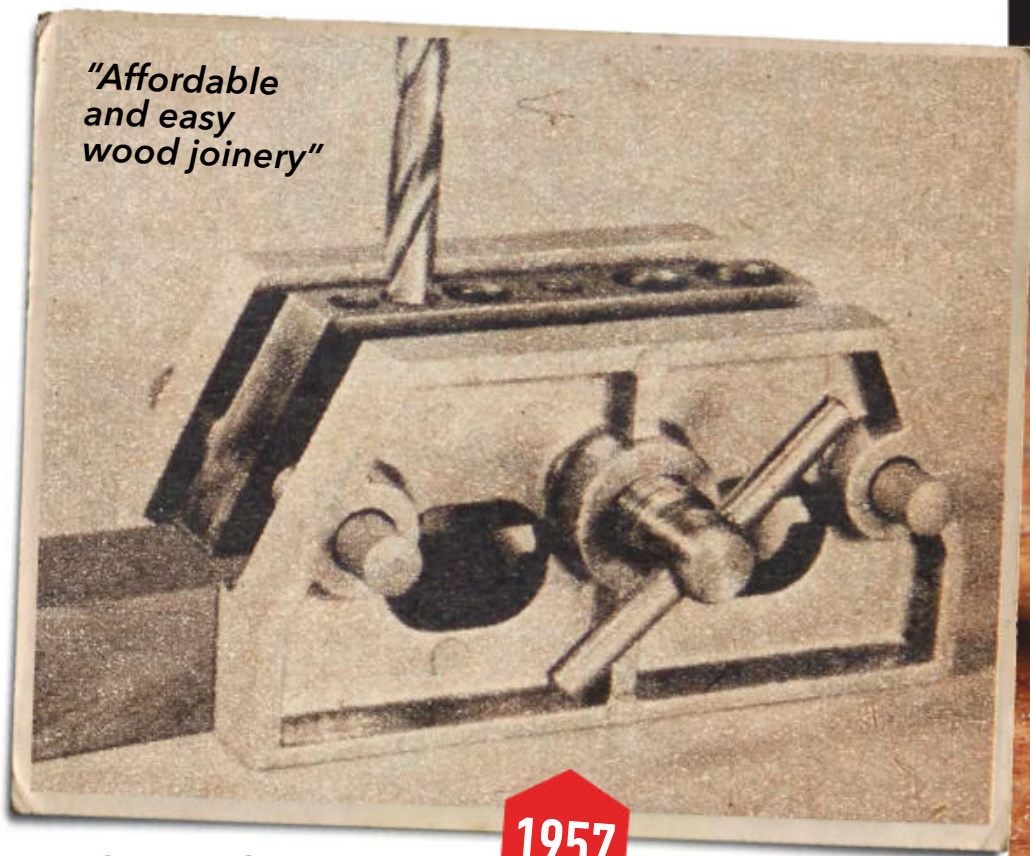
1 Easy Application

**PRIMES!
SEALS!
FINISHES!**



"Get envied and superior results with this easy to apply finish"

"Affordable
and easy
wood joinery"



JUST "DOWEL IT"

1957

Since the 1950s, doweling jigs have been the perfect wood joinery solution for novice to advanced woodworkers. Other simple, inexpensive joinery solutions such as biscuits and pocket screws have shown up on the scene, but a doweling jig

rivals them all for ease and affordability. And, coupled with a set of dowel centers, a doweling jig gives no ground on versatility. Dowl-It has been making this self-centering jig since 1949 and not much has changed. There are three versions

of the 2-in.-capacity model, and three versions of the 6-in., all with six boring sizes. At dowl-it.com, prices range from \$44 for the basic model up to \$65 for a 6-in.-capacity with different size bushings.

BRAD HOLDEN, SENIOR EDITOR



INTERNALLY GRATEFUL FOR THIS WRENCH

If you've ever tried to back out an old pipe and had it break off at the threads, having one of these internal pipe wrenches would have saved you from a panic attack. The design hasn't changed much since the wrench was first found on our pages in 1970, and that's because the makers got it right the first time. Available in a variety of sizes, the wrench is inserted into a pipe and the cam action wrench grabs the pipe's interior for tightening or loosening. Back in the '70s, a set of three would have cost about \$11. I found a General Tools set of four for about \$22 online.

BILL BERGMANN, ASSOCIATE EDITOR

1970

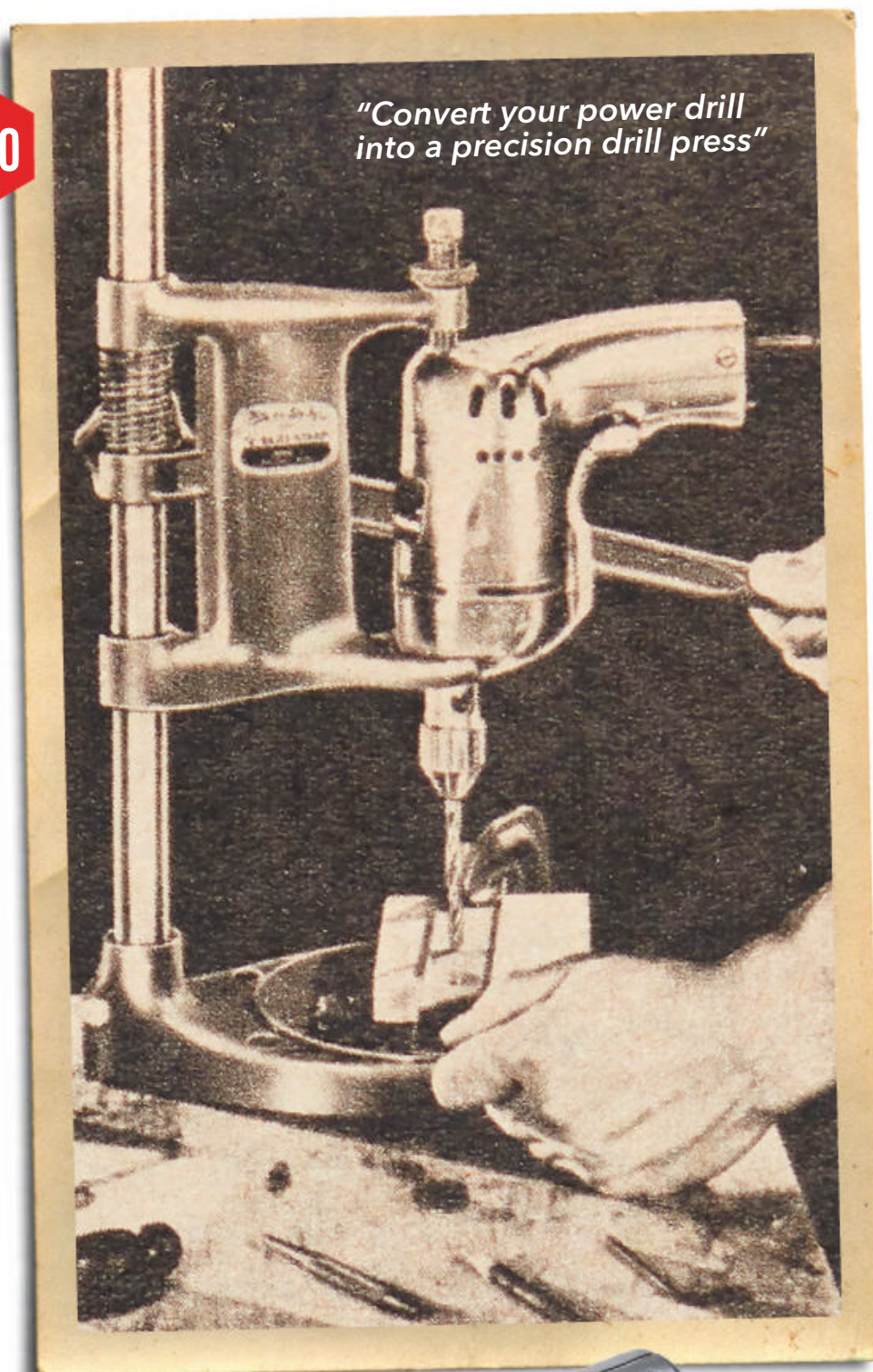


DRILL WHERE YOUR DRILL PRESS CAN'T

1960

We featured drill guides as far back as the early '60s. They're perfect for projects where you need accurate holes and a drill press just isn't an option. This Rockler Portable Drill Guide is the most deluxe drill guide I've ever used. You can drill precise angles with it up to 45 degrees. Its V-groove base secures a wide variety of round and odd-shaped workpieces, and the adjustable stop gives you the right depth every time. The design, quality and smooth operation of this guide are exceptional and make it so worth Rockler's \$150 price tag.

BILL BERGMANN, ASSOCIATE EDITOR



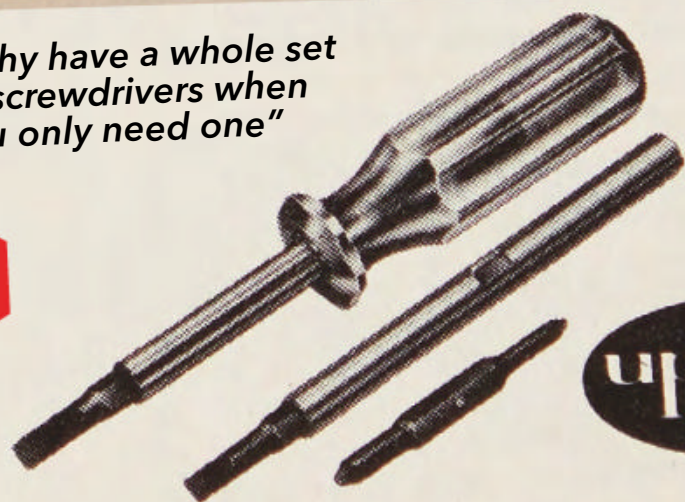
A SCREWDRIVER THAT CAN MULTITASK

Four-in-one, six-in-one and other multi-tip screwdrivers have been a favorite at *Family Handyman* for years. This Klein 11-in-1 is one of the most formidable multi-tip screwdrivers available. Its integrated screwdriver and nut driver shaft holds eight popular tips and converts to three nut driver sizes. All are quick and easy to switch out, and the handle has a super-comfortable grip. So, save time looking for the screwdriver you need, as well as space in your toolbox. At only \$15, you'll suffer no buyer's remorse.

BRAD HOLDEN, SENIOR EDITOR

"Why have a whole set of screwdrivers when you only need one"

1970



UPSON 4-IN-1 DRIVER
with interchangeable bits

CONFIDENT

AND COMFORTABLE IN YOUR OWN SKIN



Our DryShield™ Technology keeps you comfortable and dry while you take command of your day.



DRYSHIELD™
TECHNOLOGY
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Handy Hints®

Clever solutions from our readers

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submissions@
familyhandyman.com



No-Mess Charcoal Bags

Bags of charcoal are large, cumbersome and messy. Get around that by storing charcoal in small bags with about 15 to 20 briquettes per bag, perfect for one grilling session.

KAREN MERKEL



Hoe-ly Mixer

From the Editor: Back in 1953, Victor Lamoy sent us a hint about cutting holes in a garden hoe to make it a better tool for mixing concrete. It was such a good idea that it became a standard tool manufactured just for this purpose!

TRAVEL-SIZE ICE MELT

For small areas, don't lug around a big bag or bucket of deicer. Instead, save a Parmesan cheese canister and fill it with deicer. With its large holes for shaking out product, it makes a perfect dispenser.

**NATE
BIESKACHEK**

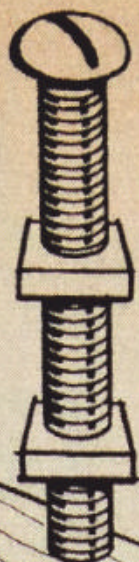


1964

How Deep to Go

Improvise a depth gauge for measuring blind holes by turning two nuts on a bolt. Place the bolt in a pilot hole, and run the nuts down to the surface of the workpiece. Tighten the top nut to hold the measure.

D. BOUSHA



SURE-GRIP PUSH BLOCK

To work with greater precision and safety when you're routing, dadoing or jointing workpieces, a grippy push block is the gold standard. To make your own, apply rubber shelf liner to a piece of 3/4-in. plywood with contact cement, then add a handle to maintain downward and forward pressure on the workpiece. For longer workpieces, use two blocks.

STEWART BERNER

Keep Parts Handy

A small repair job around the house often takes twice as long as it should because the right washer, nut or cotter pin is buried in some "catchall" box. Small parts will be at your immediate command if stored on shower curtain hooks on a basement or workshop wall so the entire assortment can be seen at a glance.

RONALD EYRICH



1951



PICTURE-HANGING HACK

Getting the wire to catch the nail's head isn't always as easy as it sounds. To eliminate frustration, slip a fork onto the nail and slide the wire over the fork until it's hooked on the nail, then pull out the fork.

ALEXA NAZARIO



Board reflection

No Square? No Problem!

Here's a cool trick for marking a square line across a board with nothing but a handsaw and a pencil. Place the saw teeth up on the board and rotate it until the reflection in the saw lines up with the edges of the board itself, then draw your line.

ROB WENTZ



No-Ladder Gutter Cleaning

If you don't like climbing ladders—or if you have no ladder—clean your gutters by tying your garden hose to a pole and hoisting it up. Direct the force with a cord tied just behind the nozzle. Collect debris into a corner or gutter end where it will be flushed out. Then hose down the wall.

ARTHUR N. NELSON



FREE UP CLOSET SPACE

To make space in your closet, hang hangers in a vertical, cascading fashion. Slide a pop-can tab over the hook of one hanger to create a hook for the next hanger.

CHRIS FARRELL

FROZEN LOCK TRICK

If you're struggling to open a frozen lock, squirt hand sanitizer on your key and then put it in the lock. This might take a minute, but it should defrost the lock so you can turn it. (And who doesn't have hand sanitizer handy?)

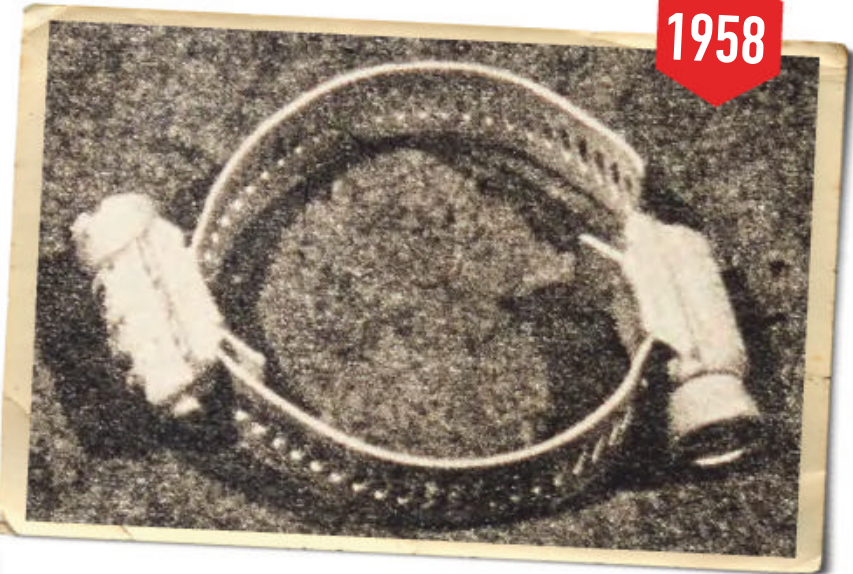
BARB WILLS



Precision Paint Cleanup

If you spill a bit of paint on the trim, fold a piece of cloth around the tip of a screwdriver. Dampen the cloth with the correct solvent, and then wipe the drip away.

MARJORIE JACOBSEN



Double Clamps, Double Size

If you find yourself in need of a large hose clamp and you only have small ones, join two of them as shown and skip the trip to the store.

CARLETON A. PHILLIPS

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 rhythm problems (ventricular arrhythmias, atrial fibrillation and atrial flutter).** Serious heart rhythm problems 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 rhythm problems, such as feeling as if your heart is beating fast and irregular, lightheadedness, dizziness, shortness of breath, 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
- mouth sores (stomatitis)
- pneumonia
- bruising
- muscle spasms
- diarrhea
- nausea

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 ferrousferic 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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For more information, go to www.imbruvica.com or call 1-877-877-3536.

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Keep the walls in your entry's "drop zone" looking fresh with this new generation of paints.



SCUFF-RESISTANT PAINTS

BY BILL BERGMANN

Painters and designers agree that flat, matte and eggshell are the best paint sheens for walls. They hide surface imperfections and reflect light evenly. But unlike glossier finishes, they're notorious for showing scuffs and not standing up well to washing.

Newer formulations are changing that. The latest generation of scuff-resistant paints have both the low sheen you want on a wall and the scuff resistance and washability of

higher-gloss paint. Behr Ultra Scuff Defense (\$33 per gallon) and Sherwin-Williams' Duration (\$70) also have a stain-blocking component, antimicrobial mildew resistance, and are a paint and primer in one. As for washability, Sherwin-Williams offers a guarantee of no color rub-off from washing with mild soap and water.

Minimizing repainting, touch-ups and cleaning is big for pros and homeowners alike. So, if you're

ready to repaint—especially hard-use areas like stairways or mudrooms—consider one of these scuff-resistant paints.



ADD-ON FOR ENDLESS HOT WATER

If your water heater isn't keeping pace with demand, a water heater booster might be the answer. The SmartBoost installs on a water heater's hot-water output, senses any temperature drop and boosts the temp back to your desired setting. The SmartBoost is most effective on electric water heaters. Tank boosters cost from \$300 to \$475. You can install one yourself or pay up to \$350 to have a plumber install it.

If you have the space, you could replace your water heater with a larger one (\$400 to \$900, plus about \$700 for installation). A SmartBoost is a more affordable option for avoiding a cold shower.



HEARING PROTECTION YOU'LL WANT TO WEAR

Too many people skip hearing protection because it's inconvenient or uncomfortable, or they're "just making one cut." Noise-isolating Bluetooth earbuds are an excellent solution. You can protect your hearing, listen to music or take phone calls while working, all without the bulk and discomfort of typical hearing protection.

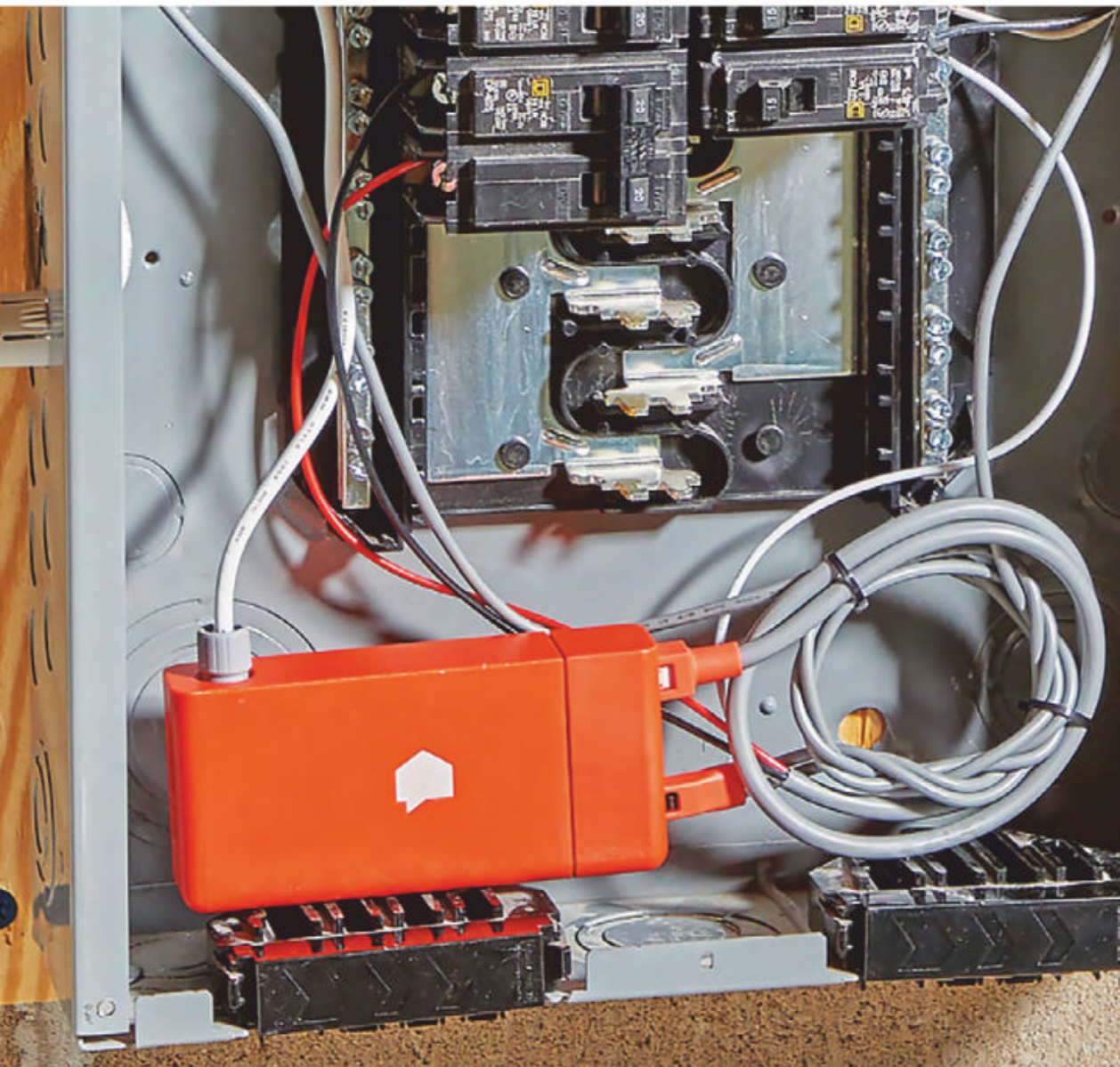
It's all about decreasing decibels (dB). A miter saw generates about 109 dB, and Bluetooth earbuds average a 25-dB reduction. That lower dB level complies with the OSHA recommendation of an average of 85 dB in an eight-hour period. For constant or higher dB levels, you can couple earbuds with a pair of earmuffs.

The Elgin Ruckus Bluetooth earplug earbuds shown here are an affordable option (\$55). They have an excellent seal, the neck harness is comfortable and the controls are easy to access. They're also dust, sweat and water resistant and have a 10-hour run-time. The range is good too. I can get about 50 ft. away without losing connection.

ISOtunes PRO 2.0 Bluetooth buds are more expensive (\$115), but they have a 27-dB reduction and excellent sound quality. Their unique case is a charger as well as a battery reserve that gives you 14 hours of additional run-time, with a recharge time of two hours.

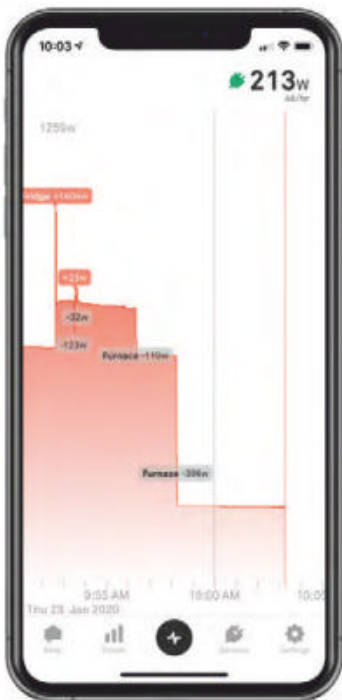
The Elgin model has active noise-canceling that kicks in when you're on a call, making it easier to converse while you're working; ISOtune PRO relies on passive noise isolation for calls. Both offer the comfort and convenience that will keep you dialed in and your hearing protection on.

← The Elgin Ruckus Discord Bluetooth earplug earbuds



ENERGY USE UNDER CONTROL

There is a growing consensus that lower energy consumption equates to a healthier planet and environment. Most of us have a general idea why our energy bill is so high, but we don't always act to reduce it. Good habits are really the only way to cut your bill, and now you can better inform and enable those habits with an increasing variety of energy monitors.



The Sense Energy Monitor shown here provides the unique ability to map out various devices in your house and gives detailed usage data on each. Once it's installed, you use its phone app to reveal your usage habits and that of any power-hungry devices. The app

then enables you to set up usage goals and alerts you if you're off track. It also sends alerts for any conspicuous consumption. It'll let you know if your garage door opens or if your sump is operating properly in a heavy storm.

For those with solar installations, the Sense Solar version gives real-time and historical solar production vs. usage comparisons, in addition to sell-back and grid usage calculations.

If you're confident working inside an electrical panel, you'll find that the Sense is a straightforward install. If you hire an electrician, the cost should be about that of an hour-long house call.

The key to reducing energy use is to identify those "always-on" devices, the inefficient or malfunctioning or even surplus appliance, like a chest freezer you don't use. Couple this with the added contentment from real-time safety monitoring away from home, and the Sense Energy Monitor is a truly smart investment at \$300 (\$350 for the Sense Solar).



QUICK-STICK ADHESIVES

Using high-initial-tack adhesives is like having another set of hands. DAP's DynaGrip and Loctite's Power Grab are two standouts. I first used Power Grab to hold long trim pieces in place for nailing, then discovered other great uses, such as positioning drawer fronts. But these aren't just specialty adhesives; they're powerful construction adhesives for both interior and exterior use. Power Grab and DynaGrip are water-based, so they're easy to clean up and don't have the strong fumes of a polyurethane adhesive. If you prefer polyurethanes, Loctite's FastGrab—a low-VOC polyurethane—has you covered.

We used Power Grab for the 3D wall feature on p. 54 and found that workpieces stayed in place but could be repositioned for about 10 minutes, making the project an easy one-person job. Available at any home center, a 9-oz. tube of these adhesives costs about \$5.

BRAD HOLDEN, SENIOR EDITOR





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SPLIT 1 CORD PER HOUR! With Fast, Dependable Kinetic Power

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ELECTRIC MODELS TOO!

Split wood indoors.



MORE POWER. Spinning flywheels (up to 150 lbs) drive the ram into the log at high speed to split the toughest logs.

MORE SPEED. With cycle times as low as 1 SECOND, you can split logs as fast as you can handle them.

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DRlogsplitters.com

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DR® SNOW BLOWERS



Professional-duty performance you can depend on...year after year!

- 4 Models from 24" to 34" wide
- Powerful Engines up to 14 HP
- EZ-TURN™ for effortless 180° turns
- 6 Speeds Forward/ 2 Reverse
- Big Impellers throw snow up to 50 feet
- Rugged Chute Controls
- LED Headlight and Heated Hand Grips



DRsnowblowers.com

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Easy-On, Easy-Off Snow Plow

PERFECT FOR HOMEOWNERS!

DO IT YOURSELF AND SAVE. Pays for itself quickly if you currently hire a plow. Don't struggle snow-blowing your entire driveway.

EASY-ON, EASY-OFF. Attaches to a front receiver hitch (included). Automatically engages when you drive forward and releases when you reverse. Works on gravel or pavement. Locks in travel position.

ONE PASS AND YOU'RE FREE TO GO. Never be trapped waiting for a snow plow again. The DR® Redi-Plow™ is light enough for one person to handle.

Tough Enough For Any Snowstorm!

- No Hydraulics or Electric Parts
- Heavy-Duty Rubber Blade Edge
- Receiver Hitch Included



For Trucks and SUVs.



DRrediplow.com

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26

THINGS THAT CHANGED DIY FOREVER

Innovations that improved
home improvement

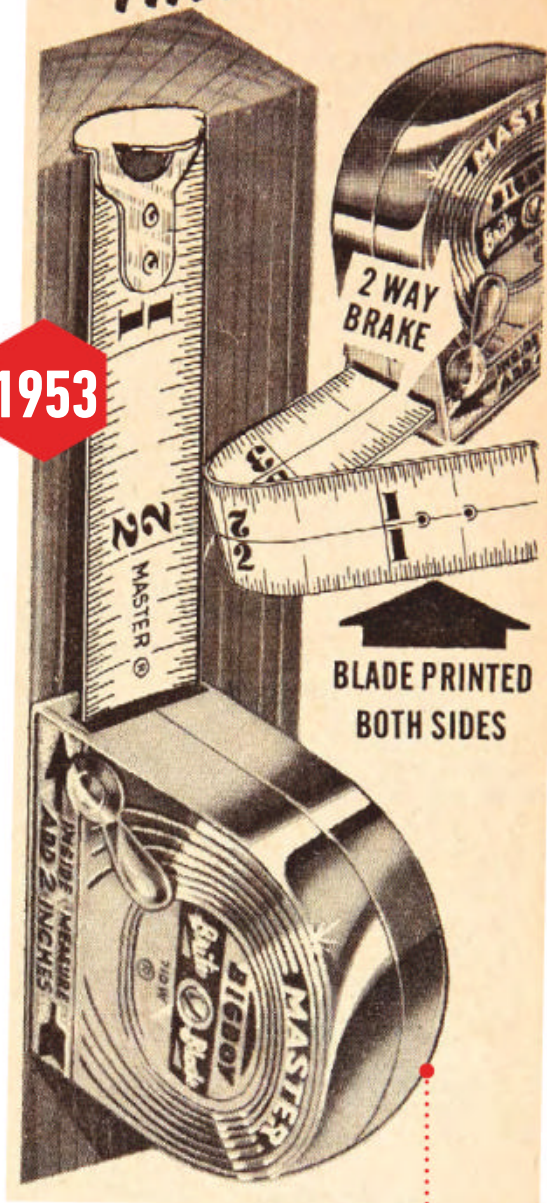
BY THE EDITORS OF *FAMILY HANDYMAN*

New products are constantly making DIY projects faster, easier and cheaper. Introducing these products is and always has been part of our mission. In fact, many of the most important advances were first publicized in *Family Handyman*. Here are a few of our favorite DIY breakthroughs.



From The
FIRST HOOK!

1953



1 THE TAPE MEASURE

The basic idea goes back centuries, and by the mid-1800s, there were tape measures much like the ones we use today. But early tapes were finicky and super expensive (about \$300 in today's dollars). So most DIYers and pros stuck with the old "folding rule." Finally, as manufacturing became better and cheaper in the 1950s, everyone, including *Family Handyman*, made the switch to tapes.

FREE BOOKLET shows how and where to use...

MASONITE

PEGBOARD

Panels and Fixtures



1957

AS SEEN ON H
WITH ARLENE FR



3

PEGBOARD

It just might be the greatest organizing invention of all time. The ad in 1957 said it all: "Turn any wall into a working wall with famous Masonite Peg Board." At that time, inventors were already working on ways to keep the hooks from falling out. Nobody has found the perfect solution yet.

2 FAMILY HANDYMAN MAGAZINE

In 1951, a publishing brand devoted to DIY was a radical idea. Today, that idea—and the brand that launched it all—is now at an all-time high in popularity. The founders of *Family Handyman* would be thrilled. They hoped to serve thousands of DIYers. Their radical idea now serves millions—through this magazine, how-to books and familyhandyman.com.

THE FAMILY
Handyman
The Magazine For Do-It-Yourself Homeowners
July/August, 1981 220th Edition \$1.50

the
Restorable House!
HOW TO FIND IT, HOW TO FIX IT!

Classic Captain's Bed!
Expandable,
Inexpensive!

Build Your Own
Backyard
Retreat

The DO-IT-YOURSELF MAGAZINE—Tells You How in Language You Can Understand
THE FAMILY
Handyman
November 1955 27th Edition

FAMILYHANDYMAN.COM

70TH ANNIVERSARY ISSUE

WINTER 2021

25

1957



DON'T WALK
Ride
WHILE YOU
CUT YOUR
GRASS!

4 THE MOTORIZED MOWER

The first issues of *Family Handyman* included only push-powered reel mowers, which made mowing a hard workout. But before long, ads and articles on gas-powered models appeared. Many of them were just motorized reel mowers, not the rotary mowers we use today. There was even a riding rotary mower!

5

Water-based paint

Acrylic latex paints hit the market in the 1950s, and *Family Handyman* quickly jumped on the bandwagon. But for decades, people held on to the notion that oil-based paints were better. As late as the 1980s, we were still trying to convince the skeptics that acrylic paints were superior—and a whole lot easier to clean up.

6 THE PAINT ROLLER

The first rollers produced in 1938 by David and Morris Welt were nearly worthless for applying paint. They just didn't soak up enough paint to coat a large area. But the WELTS did find that their "stipple roller" was great for giving paint a consistent texture after it was brushed on. Over the next decade, manufacturers developed fabrics that held paint better. But consumers were apparently skeptical. In 1953, *Family Handyman* was still encouraging readers to "try a paint roller."



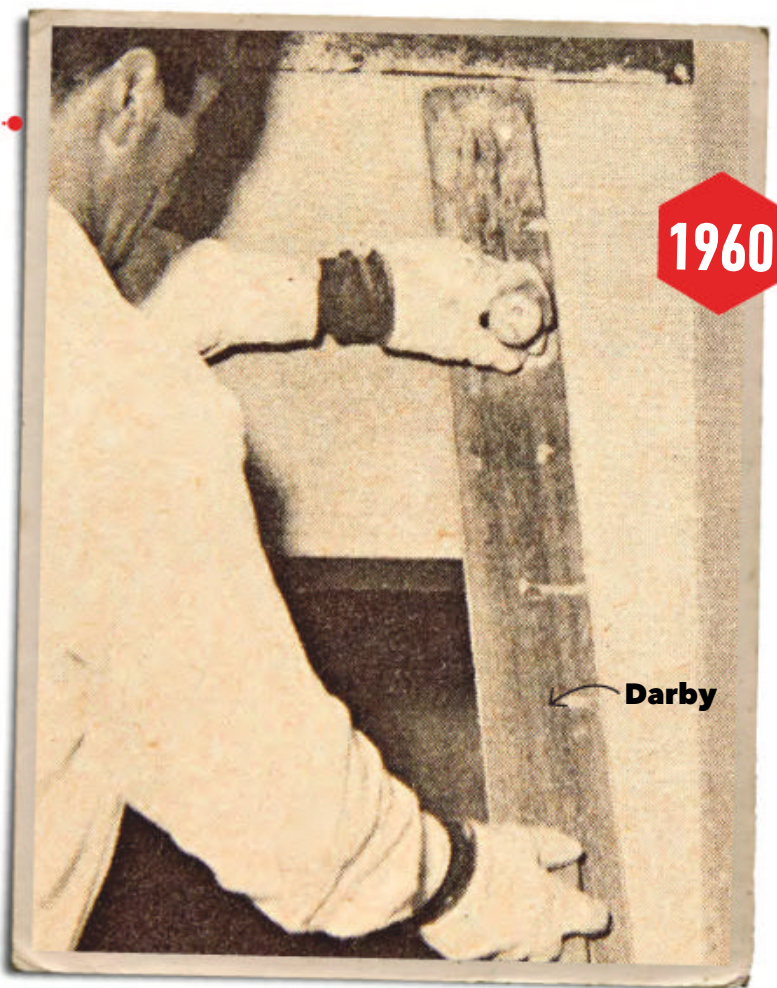
HOVER YOUR CAMERA HERE

Scan this code to see more vintage tips, projects and original ads from the past 70 years.

1953

7 DRYWALL

It's hard to fully appreciate drywall unless you know how bad things were before: Walls were covered with wood or metal lath (which took lots of time) and coats of plaster (which took lots of skill). A giant trowel, or "darby," was used to flatten plaster. *Family Handyman* generally recommended that DIYers steer clear of plaster work, but enthusiastically endorsed drywall as "the only way to go" in 1960.



Do it yourself with SpeedWay SpeedTools

Build, repair, install, finish or refinish—at your convenience, at low cost. Powerful SpeedTools take the drudgery out of work, help you do "professional" quality work in a hurry.

No. 150 SpeedSander
An all-ball-bearing, orbital-motion, finishing sander with powerful 3450 r.p.m., A.C. induction motor and cast aluminum body. **\$34.50**

No. 150-K SpeedSander Kit
The Sander with Accessories including: deep contour pad, finishing plate, felts for free abrasives and wet rubbing, lamb's wool bonnet, 90 sheet abrasive covers, etc. in fitted steel carrying case. **\$49.50**

No. 1000 SpeedSaw
¼ H.P. Universal Motor, cast aluminum housing, safety shut-off switch. Cuts all angles to 45°, any depth to 1½". **\$29.95**

SpeedDrills
(for metal or wood)
Extra power, high speed, electric drill with cast aluminum cases, and geared chucks.

No. 200-J ¼" SpeedDrill **\$19.50**

No. 400 ½" SpeedDrill **\$39.50**
also other sizes, types.

Drill Kits
Several fast selling kits. Painters and Householders Kit (illustrated) is typical. It has: ¼" Hornet Drill, Abrasive Discs and rubber backer plate, grinding wheel, wire brush, buff, etc. in attractive display carton. **\$19.95**

Write for catalog

SpeedWay MANUFACTURING CO.
1827 So. 52nd Ave., Cicero 50, Ill.

8

Safety gear

Apparently, nobody thought much about eye, ear and lung protection during the first decades of *Family Handyman*. Only in the 1970s did it begin to show up. We even found photos in the 1980s that made us cringe: This guy really needs a dust mask and hearing protection.



9 SNAP-TOGETHER FLOORING

In the early days of *Family Handyman*, every option for flooring required lots of time, skill and tools. Things got a little better over the decades, but nothing simplified DIY flooring half as much as today's interlocking laminate or luxury vinyl floors.

10 THE SKINNY 2x4

In 1964, the American Lumber Congress set 1-1/2 x 3-1/2 in. as the standard (not 2 x 4 in.). That may sound like a rip-off—less lumber for your money. But it made building much easier. Before the mandated standard, 2x4s from the same mill could vary in width or thickness by 1/2 in. or more.

11 AFFORDABLE POWER TOOLS

Nothing has made DIY faster, easier (or more fun!) than the falling cost of power tools. We took prices from 1950s ads and punched them into an inflation calculator. A typical drill cost about \$200 and a circular saw about \$300. Sanders were especially pricey: over \$300.

1993

12

The nail gun

Air-powered nail guns showed up at about the same time as *Family Handyman*. But they (and compressors) were just too expensive for DIYers and didn't appear in the magazine until 1993. Even then, an inexpensive brad nailer cost about \$200 in today's dollars. Today, you can get a good gun and compressor combo for less than that.

13 CORDLESS TOOLS

We were shocked to see that the first cordless drill hit stores way back in 1961. Great idea, but the technology of the time couldn't supply much power or run-time, so the cordless revolution didn't really get energized until the late 1980s.

1961

Black & Decker's first cordless drill

14 THE BUNGEE CORD

Soldiers returning from WWII introduced the stretchy strap into civilian life. The era of bungee misuse soon began, with roof-rack cargo strewn across highways, bad bumper repairs and hook-shaped scarring of scalps.

15 PEX PLUMBING

We think PEX is simply the greatest plumbing innovation of the past 100 years. Compared with steel, copper or CPVC pipe, it's amazingly easy.

16 THE UTILITY KNIFE

A blade you can just toss when dull—we take that for granted. But for DIYers in the '50s, it felt like a miracle. A super-sharp blade always, no sharpening hassles.

1960

17 PLASTIC PIPE

In the old days, using steel pipe for waste lines and vents required know-how and expensive equipment. Cast iron was even worse: Connections were sealed with molten lead! Thanks to PVC and ABS pipe, we don't have to melt lead in our basements.



1960

18 DRILL DRIVING

The experience of driving screws with a drill was "a pleasant surprise" to our editors in 1960. There was a problem, though: Many drills weren't reversible and couldn't remove screws.

19 NM CABLE

Armored cable—wires encased in flexible metal—is still required for some jobs. But luckily for us weekend electricians, "non-metallic" cable—wires sheathed in a plastic jacket—became the norm in the 1960s. Wiring a switch or outlet hasn't changed much, but working with NM cable is a whole lot faster and easier.

20 POCKET HOLE JOINERY

Craig Sommerfeld didn't invent pocket hole joinery when he built his own "Kreg Jig" in 1986. He did something even better: He turned an industrial method for joining wood into an easy, affordable option. Today, it's still an option used by most woodworkers (pros or DIYers).

1986



The original Kreg Jig



FREE
accessory kit, too!

Chain guard, file, work gloves, gasoline can, wedge, special lubricant—almost \$15 worth of accessories. All free with the new, more powerful Skilsaw Chain Saw. It's another good reason to see your Skil dealer soon.

(Hurry! Limited Time Offer.)

1969

21 THE CHAIN SAW

The first wood-cutting chain saws were big beasts that required two lumberjacks to operate. One-person models hit the market at about the same time *Family Handyman* launched. But the basic concept—a sharp chain racing around a bar—goes way back to an 1830s surgical tool designed to cut bone. Good concept for a horror movie?



1958

22

Spray paint

In 1949, Bonnie Seymour suggested to her husband, Ed, that paint could be packaged in an aerosol can, like the deodorizers she used around the house. Ed, a paint salesman, gave it a try and an entire industry was born. In 1958, spray-can wood finish debuted in *Family Handyman*.

1951



You Can Build It With Sakrete!

*Now
Concrete
& Mortar
in paper sacks*

PREMIXED
SAKRETE

23

Bagged concrete

Need to set a fence post? Here's the old process: Go buy some Portland cement, sand and gravel. Carefully measure the proportions of each, then add water and mix. Then bagged concrete came along. As the ad in the very first issue of *Family Handyman* said, "Just add water."

can patch
build that out
up that clothes dryer

24 PUSH-ON PLUMBING FITTINGS

A ton of testing shows that push-on connectors (such as SharkBite fittings) are reliable. Still, it's hard for some of us to accept...can something so easy really be good?

25 SMARTPHONES

It might be the greatest DIY tool ever! Order hardware online, check the electrical code, snap a photo of a plumbing fitting to find a match at the store, even install an app that turns your phone into a level...

26 DUCT TAPE

While working in an ordnance factory during WWII, Vesta Stoudt suggested that waterproof tape would provide a reliable, removable seal for ammunition boxes. Management didn't pursue the idea, but Vesta persisted; with two sons in the Navy, for her this was both personal and patriotic. She sent a letter and diagrams to President Roosevelt, and the War Department quickly put her idea into production. Soldiers soon discovered that the strong, super-sticky tape had a million uses. Later, HVAC installers found that it worked well to seal ductwork. Today, we have better tapes for ducts, but the name lives on.



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WHAT IT TAKES

TIME	COST	SKILL LEVEL
<i>A few days</i>	<i>\$600–\$1,200</i>	<i>Intermediate</i>

TOOLS

Brick set chisel, 3-lb. maul, 5-gallon buckets, chalk line, drill, 3/4-in. round-notch trowel, margin trowel, rail tile saw (rental), angle grinder, oscillating multitool

FIREPLACE FACE-LIFT

From dull and dated to modern masterpiece in one weekend

BY MIKE BERNER

A fireplace is THE focal point of the room it's in. The typical update is to paint it, and though that's an easy improvement, I wanted something bolder and more modern, something that would transform the look and feel of the room. I decided to cover the old brick with oversize tiles. I also removed the hearth for a more streamlined look. I'd never done a project quite like this, but it all came together without major snags. And the results are even better than I'd imagined.



family handyman *flashback*



... Several ways to revamp
your old fireplace ...
easy-to-handle materials
to help you make the fireplace
the decorative

1951

70 YEARS OF FIREPLACE PROJECTS

Family Handyman's very first cover story was "How to Repair a Brick Fireplace," and we've been serving up fireplace projects ever since. In fact, we showed how to cover brick with tile way back in 1953. Since then, better tools and materials have made it much easier for DIYers to tackle a project like this. Tile manufacturing has improved too, with more choices available, like the large tiles we used for our modern fireplace makeover.



MEET THE BUILDER

Mike Berner, an associate editor, is an accomplished woodworker, carpenter and teacher.



1 PROTECT THE FLOOR

This project calls for the ultimate floor protection: Start with a layer of rosin paper taped at the seams and edges. Then cut sheets of hardboard to fit around the fireplace and join them with duct tape. The rosin paper keeps granules that might get under the hardboard from scratching the wood floor, and the hardboard protects against dents.

2 CHIP OUT THE CORBELS

After removing the mantel (ours wasn't even fastened), chip out the corbels with a maul and a brick set chisel. These bricks were embedded, but I lightly chipped all the way around them and eventually they sheared right off.



Materials List

ITEM

Rosin paper
Hardboard
Painter's tape
Duct tape
2x4 x 8' lumber
1/2" cement board
Cement board screws
Modified thin-set
Porcelain tile
Metal edging

A few things I learned

■ LARGE TILE CARRIES AN EXTRA COST

I chose Sofia Charcoal porcelain tile for its texture and consistent color, which made the seams almost disappear. I needed to cover about 60 sq. ft., but with large tile there's a lot of waste. I had to buy 90 sq. ft. at \$9.20 per sq. ft., or just over \$60 a tile.

■ TILE COSTS VARY A LOT

The total materials bill for my project was about \$1,200. Tile was by far the biggest cost (\$900), but you can find good-looking tile for less than half that price.

■ RENT A TILE SAW

For the 31-in. x 31-in. tiles I chose, I had to rent a large-capacity saw (\$75 per day).

■ DIVE INTO SOMETHING NEW

In removing the hearth, I wasn't exactly sure what I was getting into. I'm usually not a fan of exploratory demolition, but one of the best ways to learn how to build something is to first take it apart.

■ CHOOSE REINFORCED THIN-SET

I used a modified thin-set (\$60 per bag) that's reinforced with fiber. It allowed the tile to stay put on the wall without sagging and provided an extended working time, so I didn't have to rush.

■ WIDE-NOTCH TROWEL

Larger tile tends to be slightly cupped. To make sure the tile adhered well, I had to fill it with thin-set to compensate. I used a 3/4-in. round-notch trowel to be sure there was enough thin-set to adhere the tile.

■ MIND THE EDGES

I opted to install the tiles tight together instead of leaving gaps for grout. To get these tiles to match up perfectly, I placed the factory edges of the tiles together and kept the cut edges on the outside.

■ BEWARE OF PAINTED BRICK

If you tile over a painted fireplace, you'll be rolling the dice. If the paint peels, so will the tile. The safe approach is to remove most of the paint before tiling.



3 BUST UP THE HEARTH

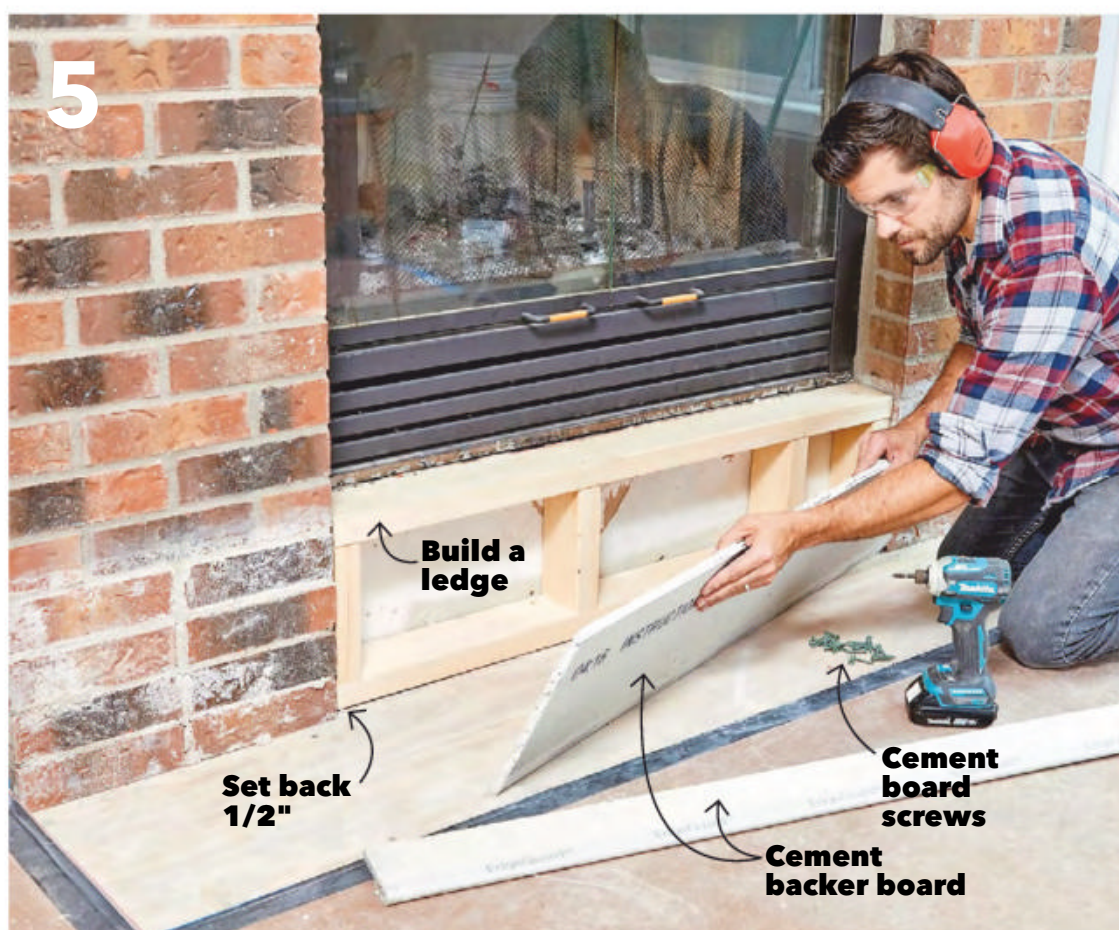
With a brick set chisel and a maul, start chipping away at the corner of the hearth. After peeling away the first layer, I thought that the hearth was solid brick. But as I kept chipping, I found packed sand, broken bricks and even an old soda can holding the rest of the bricks up.

4 CHANGE OF PLANS!

Most DIY projects include some surprises and require on-the-spot problem solving. In this case, I had intended to leave the brick ledge underneath the firebox, but as I finished cleaning up the area, I noticed nothing was holding these bricks up. I decided to knock them down and rebuild the ledge.

5 FILL THE EMPTY HEARTH SPACE

To fill the void left by removing the hearth, I built up the ledge in front of the fireplace. I set the 2x4 ledge 1/2 in. inside the opening, screwed it to the floor and anchored it into the brick at the sides. Then I covered this space with 1/2-in. cement backer board.



HOVER YOUR CAMERA HERE
Watch Mike transform this fireplace—and make a mess in the process.



6 CUT THE TILE

There are a few things to know about using a tile saw: Keep the blade cool with water and cut slow, especially through the last inch of tile. For notches, start with the tile saw and use an angle grinder or tile nippers to finish the cut.

7 TILE THE FLOOR FIRST

Cut metal tile edging to fit around the perimeter of the floor tile. Apply thin-set to the floor with a 3/4-in. round-notch trowel and press the metal edging into the thin-set. Starting with a full-width tile, spread a layer of thin-set on the back of it (called "back buttering"). Make sure the tile is centered and set it onto the floor. After the center tile is in place, cut and set the end tiles.

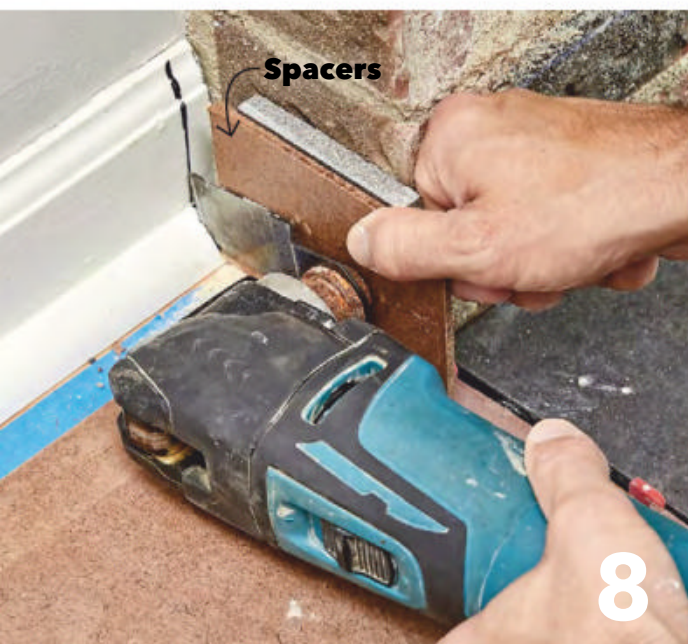


8 CUT THE TRIM

Instead of cutting the tile to fit the profile of the trim, cut the trim back and slip the tile against the wall. It's much easier. To cut the trim, use a piece of tile and a piece of hardboard as spacers and a guide for your multitool.

9 THEN START ON THE SIDES

Tile the sides first so the tile edges will be covered by the tiles on the face of the fireplace. Throughout this project, plan your cuts so that factory edges will meet other tiles and cut edges won't. For the sides, that means the factory edges will be the top and bottom and the cut edges will go against the wall and flush to the face of the brick.





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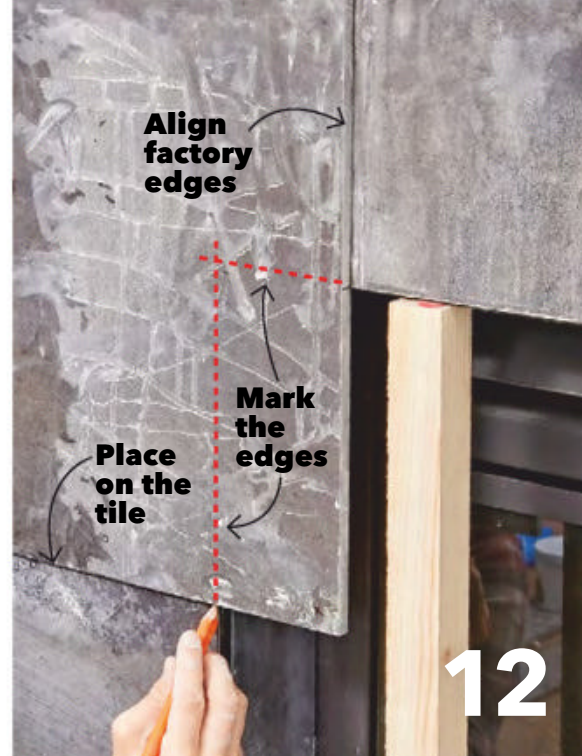




10



11



12

10 EMBED THE EDGING

Install edging over the sides of the fireplace and surrounding the fire-box. Cover the edge of the tiles with metal edging. Spread thin-set near the corner and press the edging into the thin-set. Use a margin trowel to embed the edging and smooth the thin-set.

11 BEGIN IN THE MIDDLE

I started with the middle tiles to make sure they were perfectly centered, level and plumb. After setting the lower tiles, I placed 2x2s within the fireplace box to prevent the next rows of tile from sliding downward. I finished tiling to the top and kept the supports in while the thin-set cured.

12 MAKE PRECISE MARKS

Cutting the tile around the fireplace is tricky. If the tiles don't line up, you'll notice, so precise cuts are important. Cut a tile to the proper width and dry-fit it into place. Mark precisely where it will meet the edges of the adjacent tiles and cut the notch away.

13 PLACE THE REST OF THE TILES

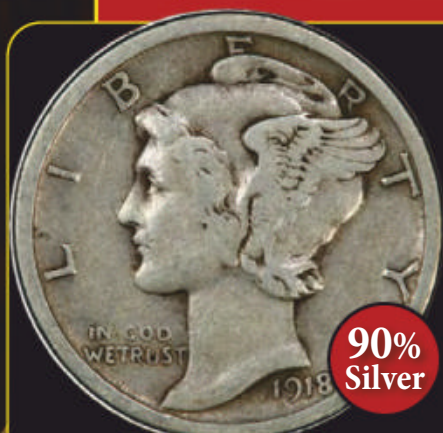
Once the sides and center column of tiles are attached, the last few pieces will go in pretty quickly. Wipe away any thin-set residue with a sponge and a 50/50 mix of vinegar and water. You'll be able to remove the supports and use the fireplace after 48 hours.



13

NEVER FORGET

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- ▶ Often used in the U.S. & by our soldiers during WWII



90% Silver

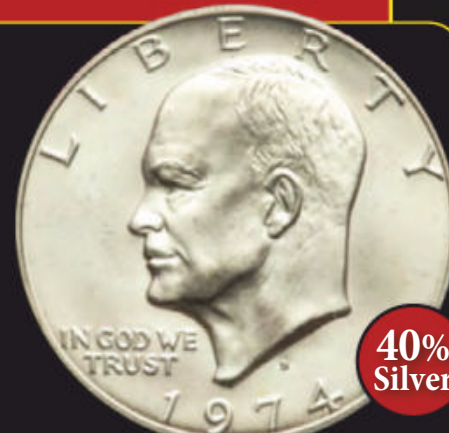
1964 Kennedy Half Dollar

Brilliant Uncirculated
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- ▶ John F. Kennedy
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UNDER-STAIR PULLOUTS

Organized, easy-access storage—and lots of it!

BY BILL BERGMANN

Need extra storage space? You might already have it right under your feet! Builders rarely utilize the space under a staircase; it's much easier to just wall it in than to make custom pullouts. But you can reclaim that wasted space in a couple weekends.

I built three pullouts to store everything from shoes to coats and backpacks. You can customize this design to get just the type of storage space you need.

WHAT IT TAKES

TIME	COST	SKILL LEVEL
4 days	\$800	Intermediate

TOOLS Table saw, miter saw, 18-gauge finish nailer, drill driver, circular saw, random orbit sander, framing square, combination square, caulk gun, 2-ft. level, putty knife



family handyman *flashback*



1955

A GREAT IDEA MADE BETTER

My design is very similar to one we featured 65 years ago. The building process was much the same, but I upgraded the plywood, used modern ball-bearing slides and chose concealed push latches for a clean look.



MEET THE BUILDER
Bill Bergmann is an
associate editor at
Family Handyman.



Hidden behind the
paneled wall is a lot of
accessible, organized
storage space.

Figure A
Pullouts

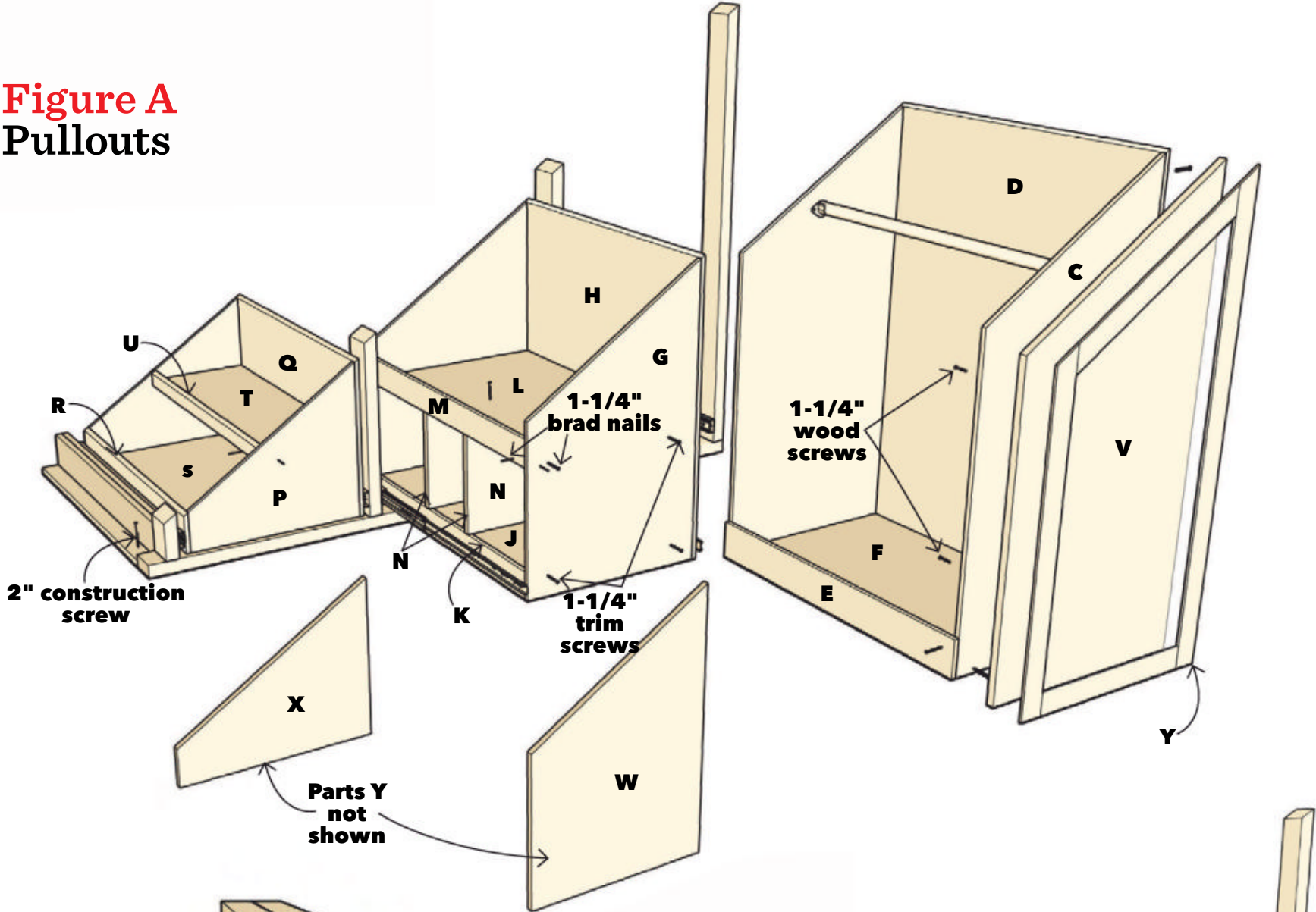


Figure B
Slide
Supports

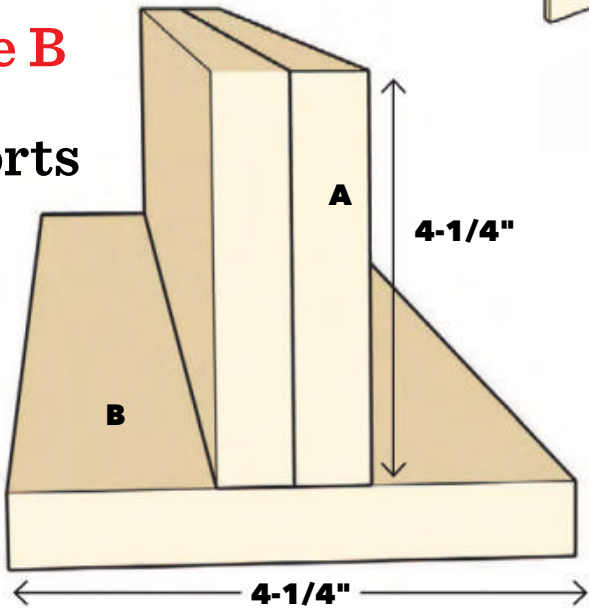
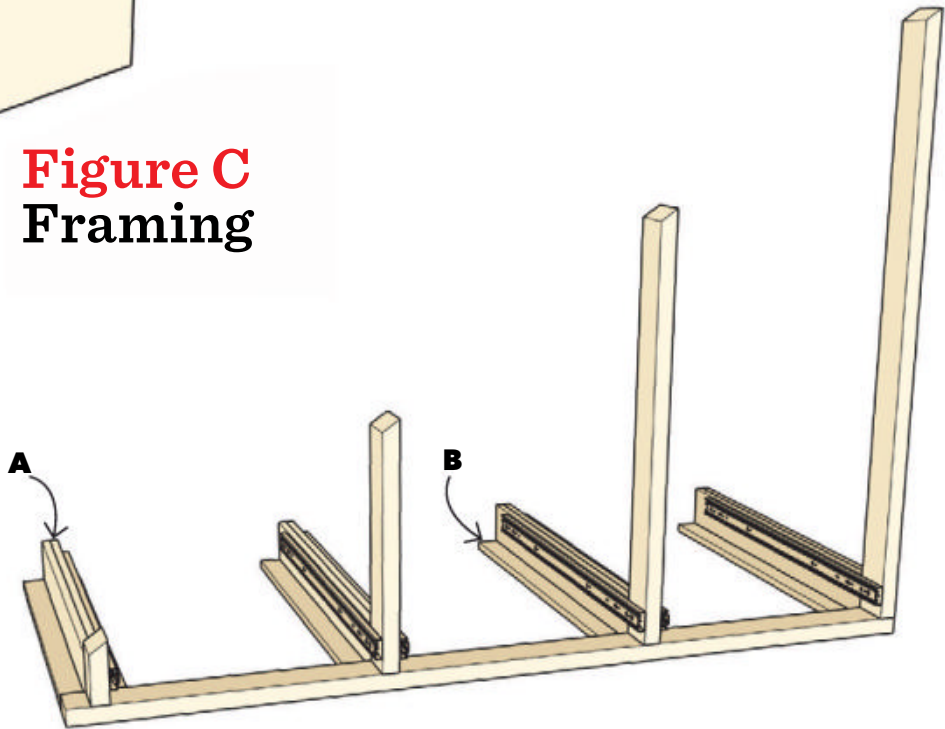


Figure C
Framing



Cutting List

KEY	QTY.	PART	MATERIAL
A	8	Slide support verticals	3/4" plywood
B	4	Slide support horizontals	3/4" plywood
C	2	Large drawer front & back	1/2" plywood
D	1	Large drawer tall side	1/2" plywood
E	1	Large drawer short side	1/2" plywood
F	1	Large drawer bottom	3/4" plywood
G	2	Middle drawer front & back	1/2" plywood
H	1	Middle drawer tall side	1/2" plywood
J	1	Middle drawer bottom	3/4" plywood
K	1	Middle drawer bottom lip	3/4" solid poplar
L	1	Middle drawer shelf	3/4" plywood
M	1	Middle drawer shelf lip	3/4" solid poplar
N	2	Middle drawer verticals	3/4" plywood
P	2	Small drawer front & back	1/2" plywood
Q	1	Small drawer tall side	1/2" plywood
R	1	Small drawer short side	1/2" plywood
S	1	Small drawer bottom	3/4" plywood
T	1	Small drawer shelf	3/4" plywood
U	1	Small drawer shelf lip	1/2" plywood
V	1	Large drawer front	3/4" plywood
W	1	Middle drawer front	3/4" plywood
X	1	Small drawer front	3/4" plywood
Y	12	Drawer front framing	1/4" solid poplar

Materials List

ITEM	QTY.
1/2" x 48" x 96" Baltic birch plywood	2
3/4" x 48" x 96" veneer-core birch plywood	1
1x6 x 8' poplar	3
34" Extra Heavy Duty drawer slides (500 lb.)	3 pr.
Primer	1 qt.
Satin enamel paint	1 qt.
Waterborne polyurethane	2 qt.
Spackling compound or wood filler	
Fast-tack construction adhesive	
18-gauge brad nails, 5/8", 1-1/4" and 2"	
1-1/4" trim screws	
1-1/4" wood screws	
2" and 2-1/4" construction screws	
Shims	



1 OPEN THE WALL

Pry off the baseboard, and then remove the drywall. I cut out a small section of drywall first, so I could see inside and verify that there were no wires or other obstructions in the cavity. If there is an existing outlet, you'll have to relocate it. I used a reciprocating saw to cut the drywall, taking care not to cut into the stair stringer.

2 REFRAME THE OPENING

Remove the studs, salvaging what you can for reframing. Attach a stud at each end of the opening, and divide the remaining space into three openings of equal width. Cut and attach the two inner studs, making sure they're plumb and accurately placed. To be sure that my pullout wouldn't hit the baseboard on the adjoining wall, I installed that tallest stud and trim 1-1/2 in. away from that corner.

3 BUILD THE DRAWER SLIDE SUPPORTS

Assemble the T-shaped drawer slide supports using glue and finish nails. Then add 1-1/4-in. wood screws for strength. The available depth under my stairs was 36 in., so I used 34-in. drawer slides. Subtracting 3-1/2 in. for the stud plate left 30-1/2 in. for the slide support length.



**HOVER YOUR
CAMERA HERE**
Watch Bill
build these
ingenious
pullouts!



1-1/4"
brad nail

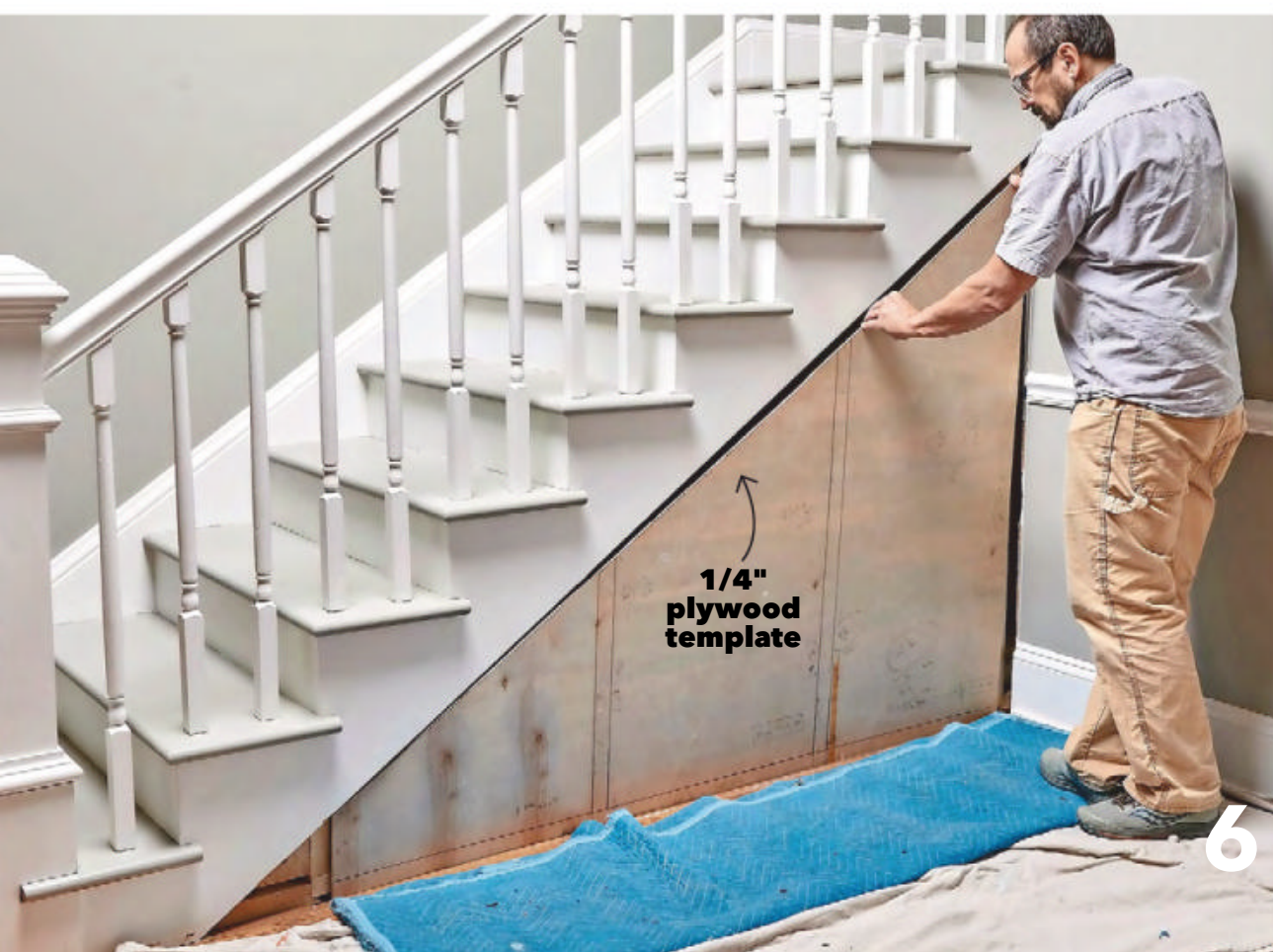


4 INSTALL SLIDE SUPPORTS

Attach the slide supports directly behind the studs using construction adhesive and 2-in. screws. Use a framing square to make sure the supports are square to the bottom plate so the drawer slides won't bind.

5 ADD FURRING STRIPS AND TRIM

I chose inset drawer faces, but wanted their faces and trim flush with the skirt board. This meant adding 1/2-in. furring strips to the adjoining wall stud and floor stud plate before attaching the trim. The drawer faces cover the other three studs, so they didn't need furring strips—just 1/4-in.-thick trim. I primed and painted the trim pieces before applying them.



6 MAKE A TEMPLATE

Building for this angled opening was tricky. A full-size plywood template of the opening proved very helpful for calculating drawer and drawer front sizes.

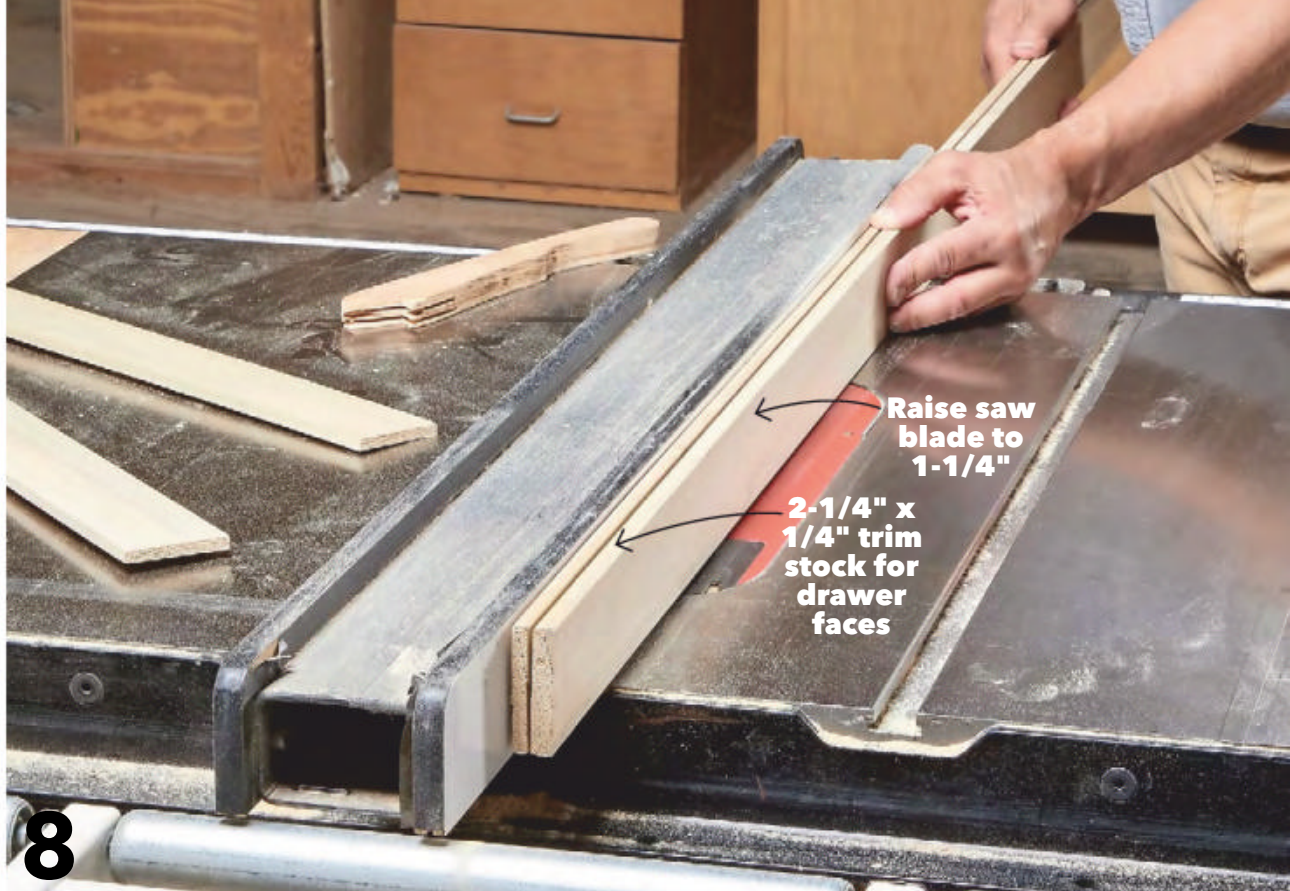


7 ASSEMBLE DRAWER BOXES

To calculate the drawer width, measure the opening and then subtract the thickness of two drawer slides. Make the drawers as deep as the drawer slide length. Make each drawer box 3/4 in. less than the height of the opening, for 3/8-in. clearance top and bottom. Glue and nail the boxes together, adding trim screws later for strength.

8 RESAW FRAME STOCK

Applying a hardwood frame to the face of 3/4-in. plywood is an easy way to simulate a frame-and-panel drawer front. Rip the frame stock to width, then resaw it into 1/4-in.-thick stock. Set your saw's fence to 1/4 in., then raise the blade to cut just over halfway through the board. Make the first pass, flip the board—keeping the same side against the fence—and finish the cut. Use a push stick as you get close to the blade. You can skip this step if you can find 1/4-in.-thick lumber at your local home center.



9 SAND OUT ANY SAW MARKS

Sand out any saw marks with a random orbit sander. A new or newly sharpened saw blade all but eliminates them. Mark the sanded surfaces for gluing so the factory sides face out on the drawer fronts.



10 APPLY FRAMES

Cut the drawer fronts to size, and the frame parts to rough length. Mark, cut and attach the frame pieces, using glue and 5/8-in. brad nails. For accuracy, instead of taking measurements, hold each piece in place, and then mark and cut them to length. Run the two vertical sides, or "stiles," long to hide the end grain of the horizontal rails.





11

Fill edges of
drawer
faces



12

Sanding
block

11 FILL THE EDGES

Fill any voids and gaps on the drawer front edges with putty or spackling compound. Fill the nail holes on the faces as well.

12 SAND THE DRAWER FRONTS

Once the filler has dried, sand the drawer fronts. I used 120-grit sandpaper on a block for the edges, and a random orbit sander for the large surfaces. Soften any sharp edges.



13

13 PAINT THE DRAWER FRONTS

Prime the frames, and then apply two coats of paint. Because I used prefinished plywood for the drawer fronts, I didn't need to prime them. I just reduced the gloss with 120-grit sandpaper before painting. The backs of the drawer fronts only need paint around their perimeter, about 3 in. in from the edge, as they're mostly covered by the drawer boxes.



14

Scrap of
2-by lumber

14 INSTALL THE DRAWERS

Set the slides $\frac{3}{16}$ in. back from the face of the finished furring strips and attach them to the supports, making sure they're level. These heavy-duty slides don't come apart, so the mounting procedure is a bit different. With the slides extended, set the back end of the drawer on a $\frac{3}{8}$ -in. shim in the opening. Then using a 2x4 and shims, level the drawer and attach the slides to it.

15 POSITION THE DRAWER FRONTS

Drive a couple screws through each drawer from the inside, until the points poke through. Set the drawer fronts on two shims that create an equal gap, top and bottom, and lean them into the opening. Adjust the gaps around the drawer front by sliding it right or left and raising or lowering it with shims. I usually eyeball the gap, but you can mark the gap on a shim and use it as a gauge for all the fronts. Once the gap is set, push the drawer front against the protruding screws, leaving two indents. Drill pilot holes at these points.



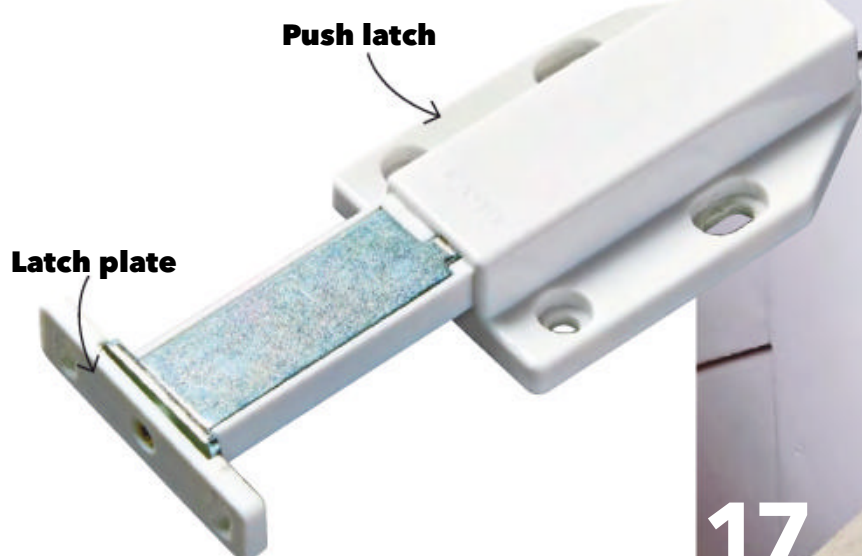
16 ATTACH THE DRAWER FRONTS

Drill and countersink holes where the marking screws were, and then attach the drawer fronts with 1-1/4-in. wood screws. Verify that the gap is still correct, then add more screws. I used eight on the large front, six on the middle one, and four on the small one.



17 INSTALL THE PUSH LATCHES

Attach the push latch in its approximate location using the two oblong holes. Stick the latch plate magnetically to the end of the fully extended latch. Push the drawer front in until it contacts the plate. Hold the plate while pulling the drawer front and plate free of the latch. Mark the plate location and attach the plate. Test the latch, adjust it as needed and then install the final two screws.



HI-LO TABLE

A coffee table that becomes a dining table or a desk—in seconds!

BY MIKE BERNER

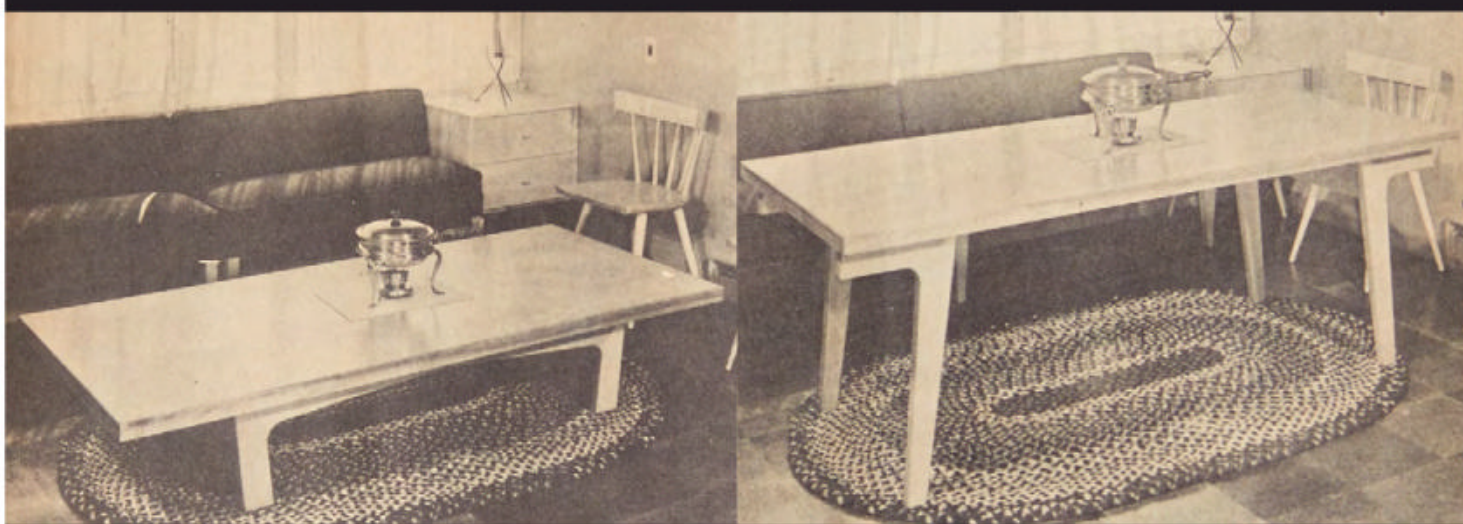
I've got a large family, and when we all gather, it's become tradition to haul a card table up from the basement and evict the coffee table to make more space for dining. Our next big get-together will be different; instead of shifting furniture around, I'll just flip up the coffee table legs and round up the kids!



WHAT IT TAKES

TIME	COST	SKILL LEVEL
A few days	\$200–\$400	Intermediate

TOOLS Miter saw, table saw, drill, tape measure, random orbital sander, flush-cut saw, jigsaw, 23-gauge pin nailer



A VINTAGE PROJECT THAT STILL HAS LEGS TODAY

1956

The inspiration for this project came from an article *Family Handyman* published way back in 1956. I thought the idea of a 2-in-1 table was brilliant, even for today. I used the same hinged-leg concept but updated a few key things:

■ The original article suggested using a door or solid wood for the tabletop. Plywood was available back then but in a limited range of options. Luckily for me (and you), we can now make projects faster, easier and often better with plywood.

■ In coffee table mode, this project looked awkward with its large overhangs and inward-tilted legs. So I tweaked the design and found that placing all eight legs on the floor gave the table a more balanced and unique look.

■ Since the legs will be swung in and out, I decided to build a half-lap joint instead of a miter, which would have to be reinforced. It also made assembling the legs much easier.



HOVER YOUR CAMERA HERE
Scan this code with your smartphone to see the table in action.



Underside of tabletop

6" strips for mounting legs

3" border

1 BUILD UP THE TOP

I started with a piece of walnut plywood cut to size. On the underside I glued 3-in.-wide strips of the same plywood on the edges and pinned them into place. I put one more 3-in. strip in the middle, and added two 6-in.-wide strips to provide a mounting surface for the legs. Doubling the top like this adds stiffness without too much additional weight.

2 BEVEL THE EDGING

The top is wrapped with edging to hide the plywood edges. Square edging would be fine, but I cut a 13-degree bevel on the edging stock. This bevel matches the angle of the legs and gives the table a more refined look.

3 ADD THE EDGING

Fasten the edging to the ends of the table first. When I added the side edging, I let it protrude beyond the bevels of the end edging. Instead of fumbling with long clamps, I used a pin nailer to hold the edging in place while the glue dried.

4 TRIM THE EDGING

Trim the overhanging ends of the edging to match the bevel. Protect the wood from the saw teeth with a layer or two of painter's tape. Then sand the cuts smooth and flush.

Materials List

ITEM	QTY.
3/4" x 4' x 8' walnut plywood	1
3/4" x 3-1/2" x 8' walnut board	5
3/4" x 2" x 8' walnut board	2
1-1/2" x 4' piano hinge	1
Trim screws	
Glue	
Pin nails	
Toggle clamps	2
Knob set	2



Edging flush with the plywood

Flush ends at the top

Overhang the bevel

2

3



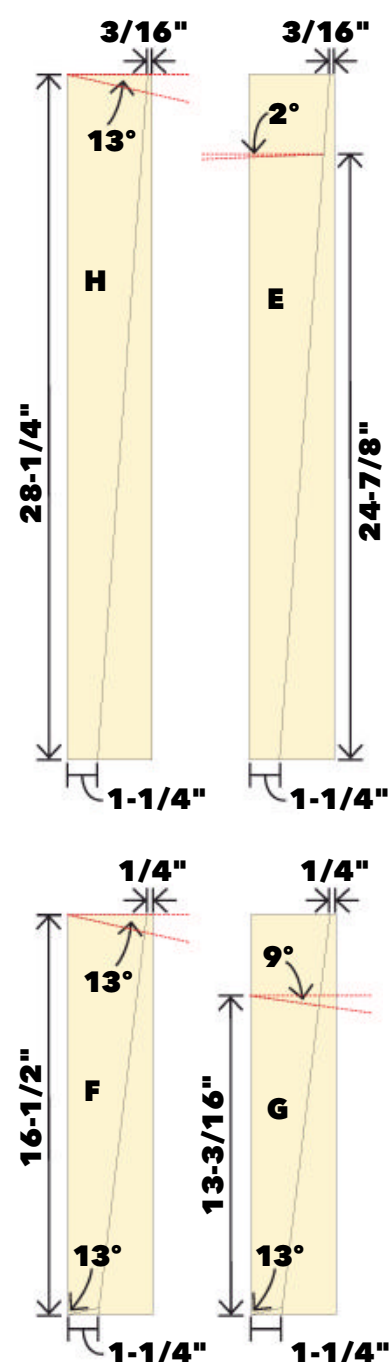
Painter's tape to protect the wood

Trim the bevel cut

Flush-cut saw

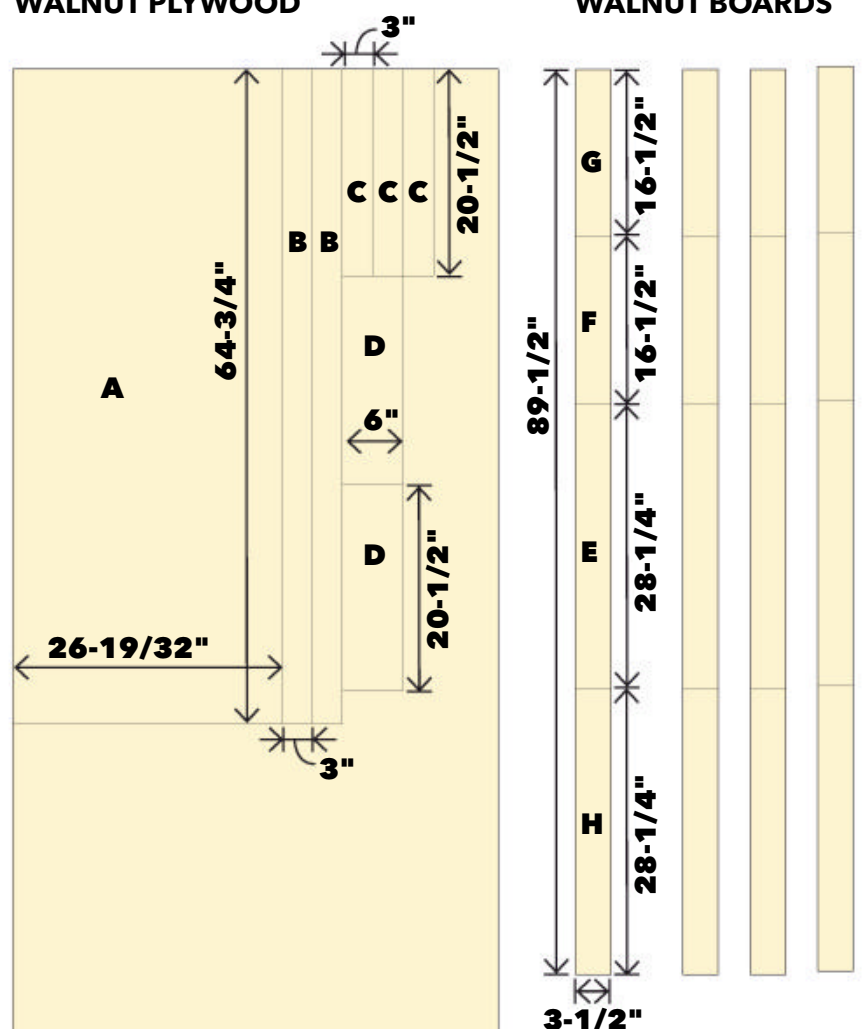
4

OVERALL DIMENSIONS:
29" H x 66-1/4" W x 28" D



WALNUT PLYWOOD

WALNUT BOARDS

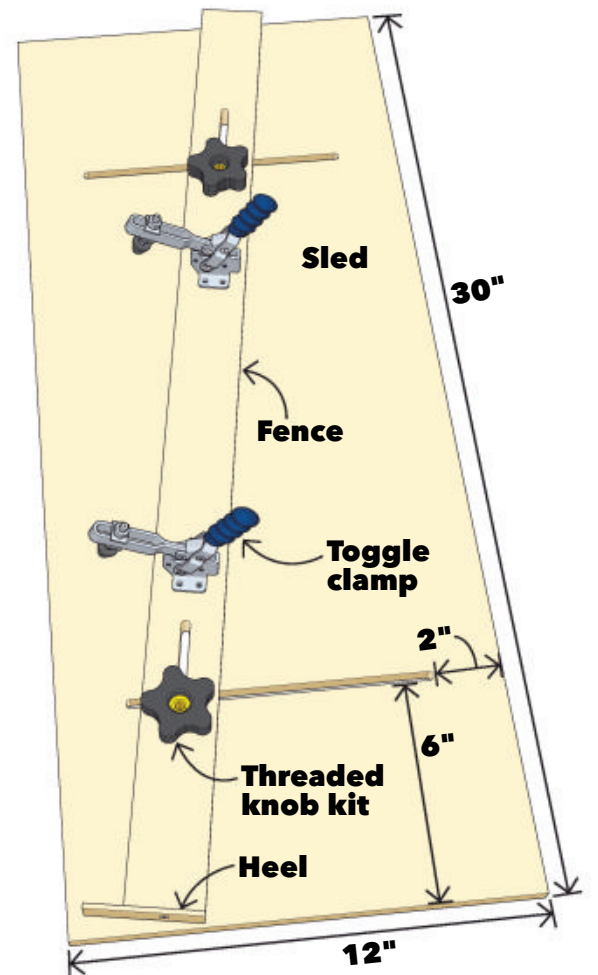


*** Parts E, H and F, G are cut to length, tapered and then angled**

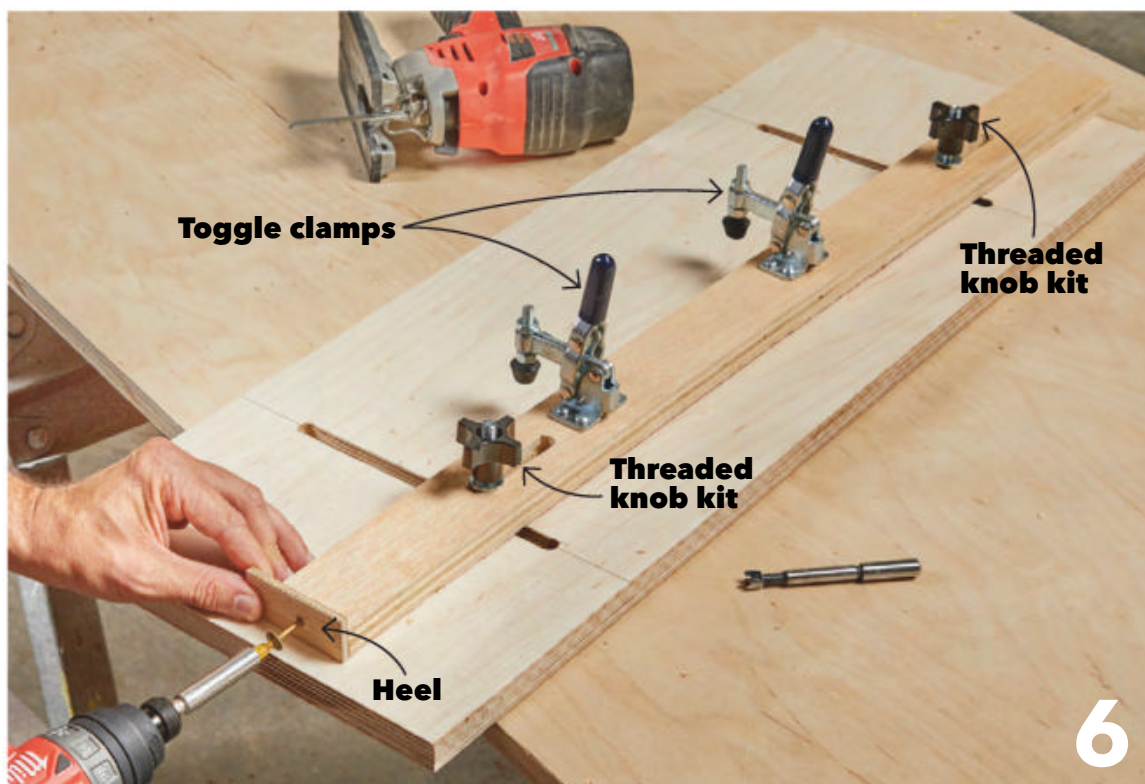


A JIG MAKES TAPERED LEGS EASY

To safely cut the tapered legs, you'll need a jig for the table saw. There are simpler jig designs, but this one is my favorite. You'll just need a few scraps of plywood, a pair of toggle clamps and knobs. In 30 minutes you'll have a great jig for this and future projects.



5



6

5 CUT SLOTS IN THE SLED

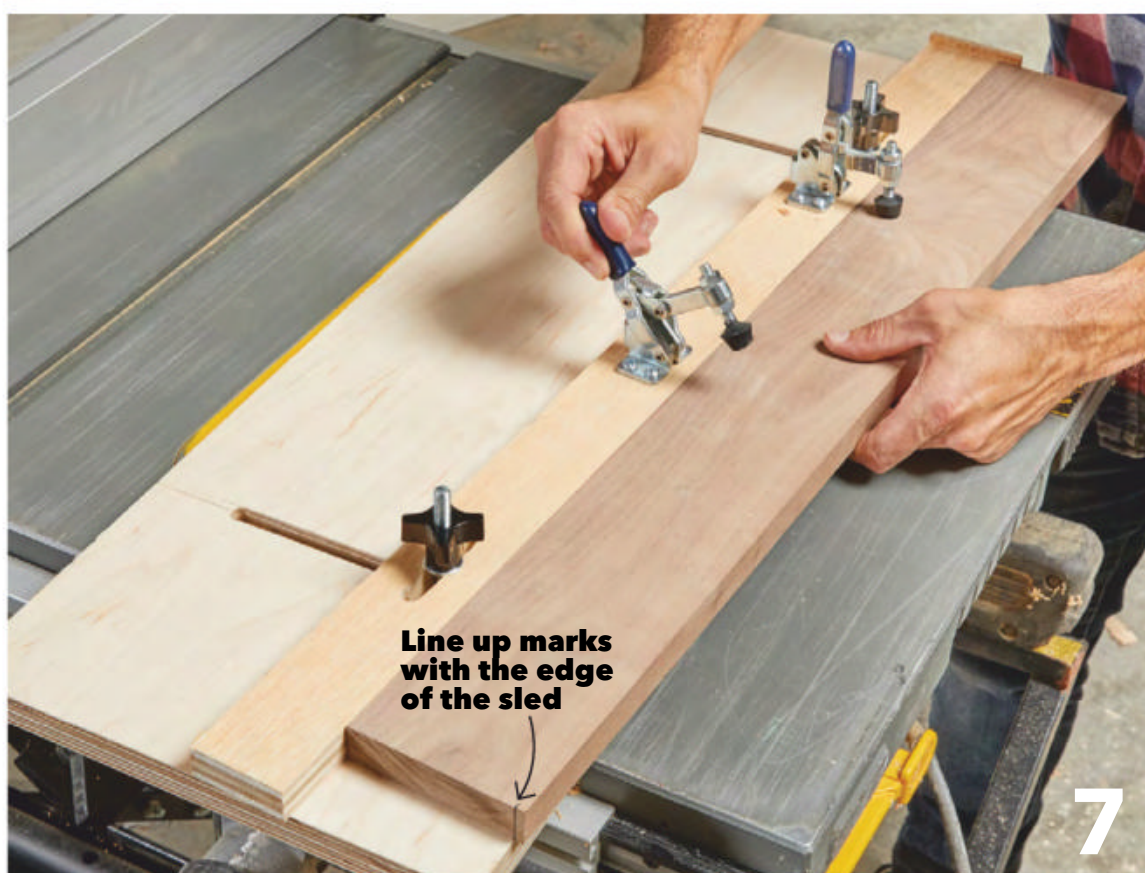
Drill two holes 6 in. from the ends of a sled made from a 12 x 30-in. piece of plywood. Draw lines to connect the holes, then cut out the slot with a jigsaw.

6 ASSEMBLE THE FENCE

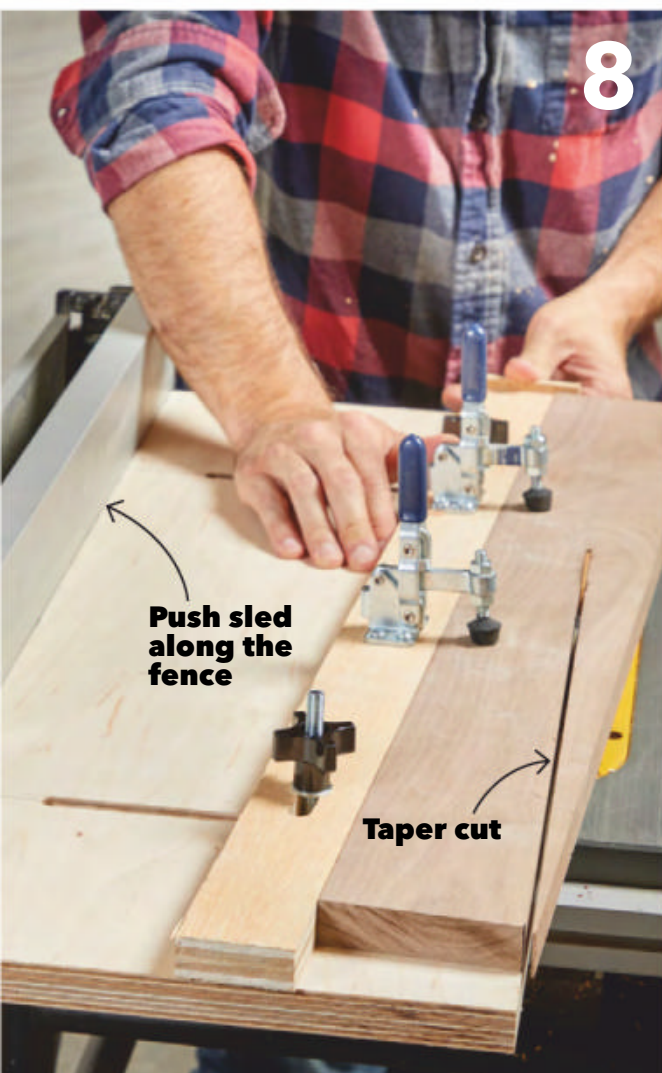
Cut two slots in a 2-in.-wide fence. The fence slots should line up and be perpendicular to the slots in the sled. Connect the fence to the sled with a pair of threaded jig knob and 1/4-in. bolts, then attach toggle clamps and a heel to finish the jig.

7 SET THE TAPER ANGLE

Align the end marks on the leg with the edge of the sled. Position the fence against the leg and lock the fence into place. Make sure the leg is against the heel of the fence and clamp it down.



7



8 TAPER THE LEGS

Adjust the table saw fence to cut along the edge of the jig and then make the cut. Cut all the long legs with the same jig setup, then adjust the jig to cut the shorter legs.

9 ASSEMBLE THE LEGS

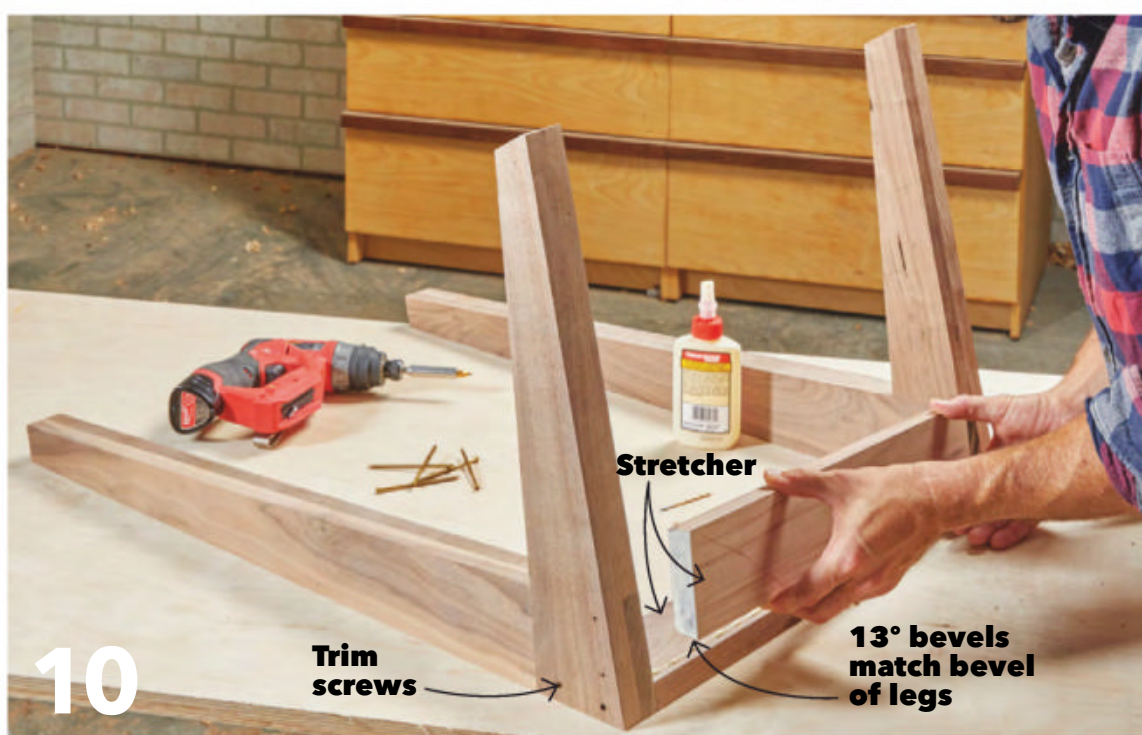
The half-lap joints for the legs are made by layering the leg parts. Fasten the parts with glue and a nailer or clamps. I built two leg sets at a time, laying them out on my workbench to make sure I got a "mirrored match."

10 CONNECT THE LEGS

I cut another 13-degree bevel in the stretcher then glued and screwed it between a pair of legs. I fastened a second stretcher to make a strong corner where the legs will pivot on the hinge.

11 ATTACH THE PIANO HINGE

Align ends of the short legs up to the inside of the edging. Position the legs with a framing square, then predrill and screw a length of piano hinge to the tabletop and the legs.







DYNAMIC ACCENT WALL

Turn a blank wall into a showpiece that transforms the entire room!

BY BRAD HOLDEN

This might be the easiest way to totally transform the look of a room. Once you've created your design, using this simple glue-and-stick application, you can finish it up in a weekend.

family handyman *flashback*



1960

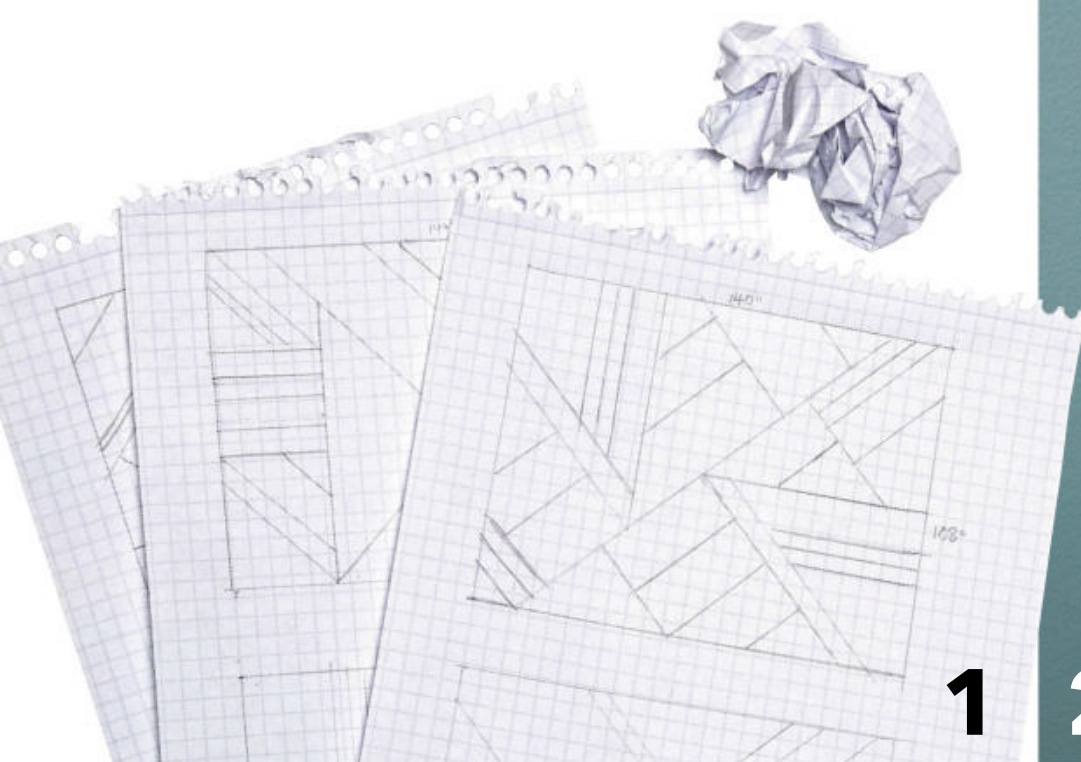
THREE DIMENSIONS ON A WALL

In June 1960, we applied a three-dimensional design to a wall by cutting and painting Styrofoam. Inexpensive and easy to work with, it was a good choice then. But now we have medium-density fiberboard (MDF). It's inexpensive, easy to work with, takes paint well and is much more durable than Styrofoam.

WHAT IT TAKES

TIME	COST	SKILL LEVEL
2 days	\$100	Beginner

TOOLS Table saw, miter box or miter saw, finish nailer, putty knife, laser level, Speed square



1



2



3

1 SKETCH OUT YOUR DESIGN

Make a scale drawing of your wall and draw different designs until you're satisfied. The internet is a good source of inspiration. A CAD program like SketchUp makes this process easy and accurate, but pencil and paper is fine.

2 PAINT THE WALL

Choose your paint color and paint the entire wall. It's easier to paint it before the strips are attached, and the results look better too.

3 RIP THE STRIPS

Using your design plan, estimate how many linear feet of strips you'll need, and rip them to 1-1/4 in. wide on the table saw. We used 1/2-in. MDF because when ripped into thin strips, it's thick enough to create a shadow yet flexible enough to follow minor wall irregularities.

4 SAND THE STRIPS

A sharp corner doesn't hold paint well, so sand the sharp corners on the faces of each strip with a sanding block. It doesn't take much—just enough to turn the sharp corner into a tiny bevel.



4



HOVER YOUR CAMERA HERE

Scan this code with your smartphone for three inspired wall patterns from one of our graphic designers.

5 PAINT THE STRIPS

Spread out the strips on your work table and roll on a coat of primer. This is an important step with MDF; paint causes it to get really rough. Shellac-based primer is a good choice because it dries fast and sands very smooth. When the primer has dried, sand the strips with a 220-grit sanding sponge. Wipe off the dust and paint the strips. They'll probably require two coats.

6 LOCATE THE STUDS

Find the studs and mark them with tape. We relied mainly on adhesive to hold the strips in place, but it's helpful to know where the studs are. If a strip needs a little more convincing to stay put, you can shoot a brad nail into a stud.

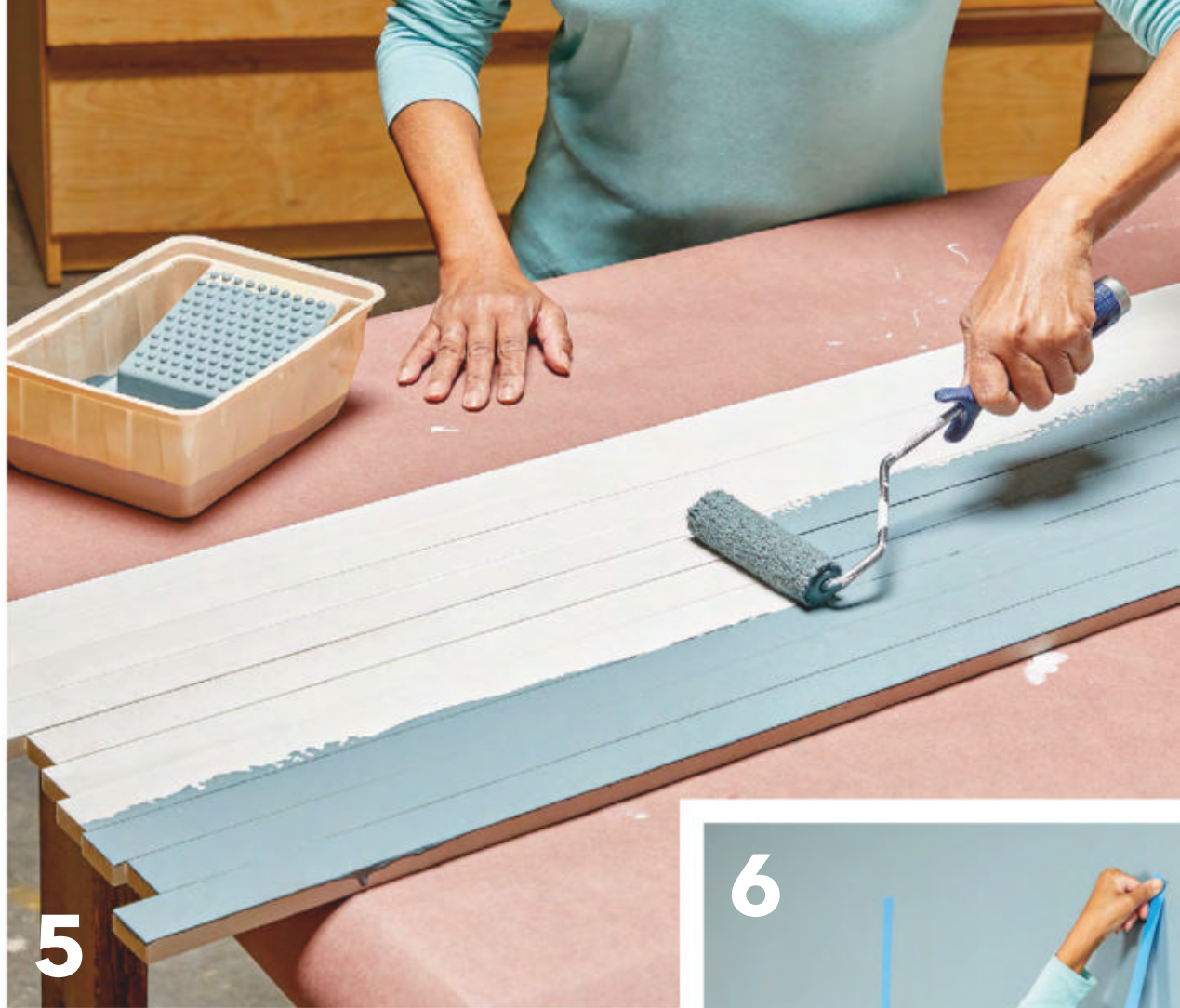
7 LAY OUT THE FIRST STRIP

Set up a laser level to get the long lines accurate. We used a self-leveling cross-line model from Skil (\$60 at home centers). It doesn't shoot a 45-degree line, but if you use a large Speed square and the level's locking mechanism, you can set it at 45.



LIVING ROOM-FRIENDLY MITER SAW

Running a miter saw in the house is a bad idea—it blows dust all over. But running to the shop for each cut doesn't make sense either. So, we made this simple "miter box" for a pull saw. First, make accurate 45- and 90-degree cuts on a 2x4 using a miter saw. Then, glue and nail these pieces to a scrap of plywood, using the saw's blade as a spacer. Now just clamp the miter box to a sawhorse right in the room where your accent wall is and make your cuts. No airborne dust, and no running back and forth to the shop!





8



9

8 GLUE THE FIRST STRIP

Cut the 45-degree angle on one end of the first strip, and then glue the back. Apply glue sparingly so the glue doesn't keep the strip from seating fully on the wall. We used a fast-grabbing construction adhesive (Loctite Power Grab) for this project. It has a fast initial tack, so it stays put as soon as you press it into place. If necessary, you can still shift it until it cures.

9 PRESS THE FIRST STRIP INTO PLACE

Line up the strip with the laser line, and then press it against the wall. Since this first one is so long, tacking it on with a brad nail every 2 ft. will help keep it straight.

10 ADD THE SECOND STRIP

The first line in our design requires two pieces, butt jointed together. Make the 45-degree cut on the second piece, hold it in place and then mark the butt joint. Cut the strip to length and glue it to the wall.

11 OUTLINE THE BIG SHAPES

Continue marking, cutting and attaching strips to outline the large shapes, as you did for the first piece. Use the laser level and adhesive, nailing where needed.

12 FILL IN THE SHAPES

Add the rest of the strips, proceeding from longest to shortest, filling in the large shapes.

13 FINISH UP

Fill any gaps or nail holes with spackling compound. When the spackling compound has dried, sand it smooth and touch up with paint.

Materials

ITEM

1/2" x 48" x 96" sheet of MDF
1 gallon of paint
Spackling compound
Fast-tack construction adhesive
Brad nails



10

11



12



13



PRO TIP:

If you need to tack a strip where there's no stud, shoot two brad nails at opposing angles—so they cross each other in the drywall—to hold the strip flat while the adhesive dries.

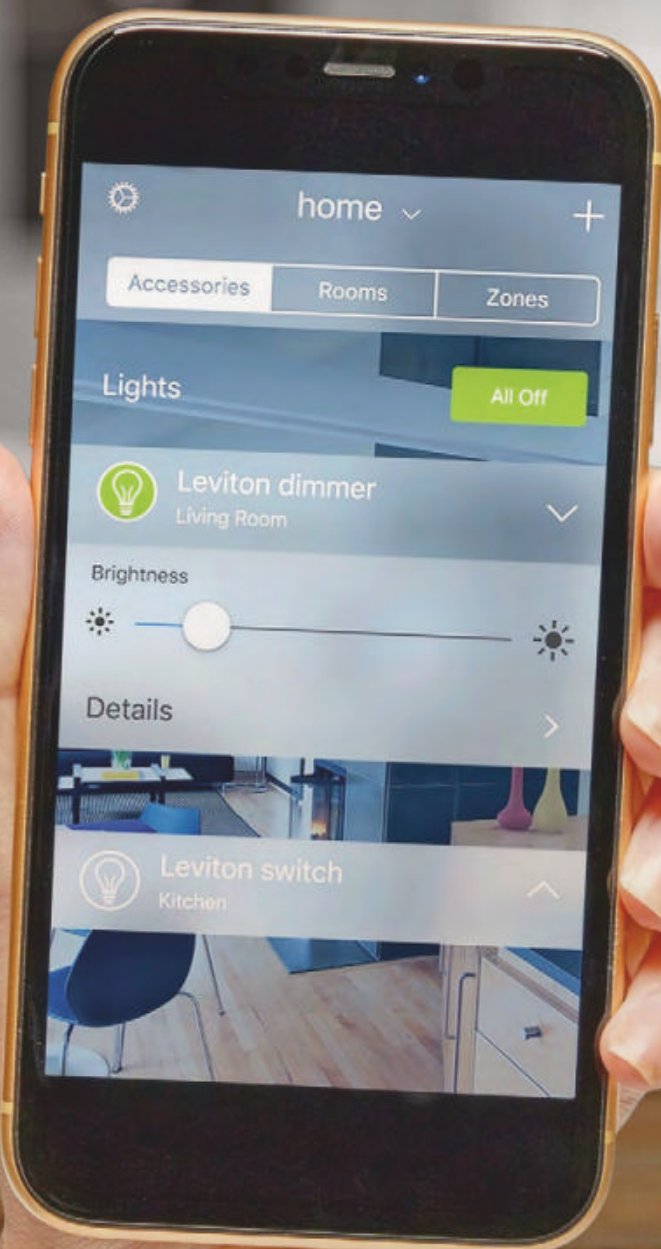
INSTALL A SMART SWITCH

Tips you won't find
in the instructions

BY BRAD HOLDEN

Installing a smart light switch is as simple as installing a regular switch, aside from connecting your light switch to your Wi-Fi. Smart light switches are considerably more expensive than standard switches (\$40 vs. \$3 at home centers), but they can do much more too. In this article, we're replacing existing standard switches with Leviton Decora Smart switches, but the tips apply to any brand.

PHOTO: ONURDONGEL/GETTY IMAGES

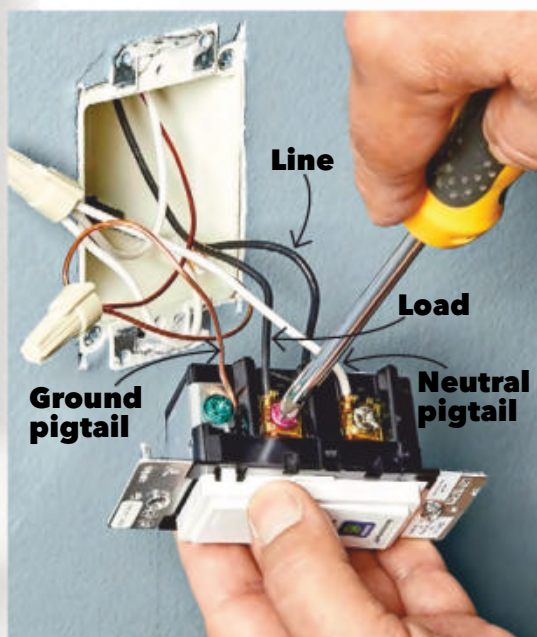


WHAT CAN A SMART SWITCH DO FOR YOU?

With a smart switch, you can program lights to turn on and off to suit your schedule. You can also operate your lights via voice command through a home assistant or by using an app on your phone. And yes, you can also operate them manually.

CHECK FOR POWER

At the main electrical panel, turn off the breaker that controls the switch you're working on, but don't rely on the breaker labels: A junction box can contain wires from two circuits. Remove the faceplate and use a voltage sniffer to verify that ALL the power is off.

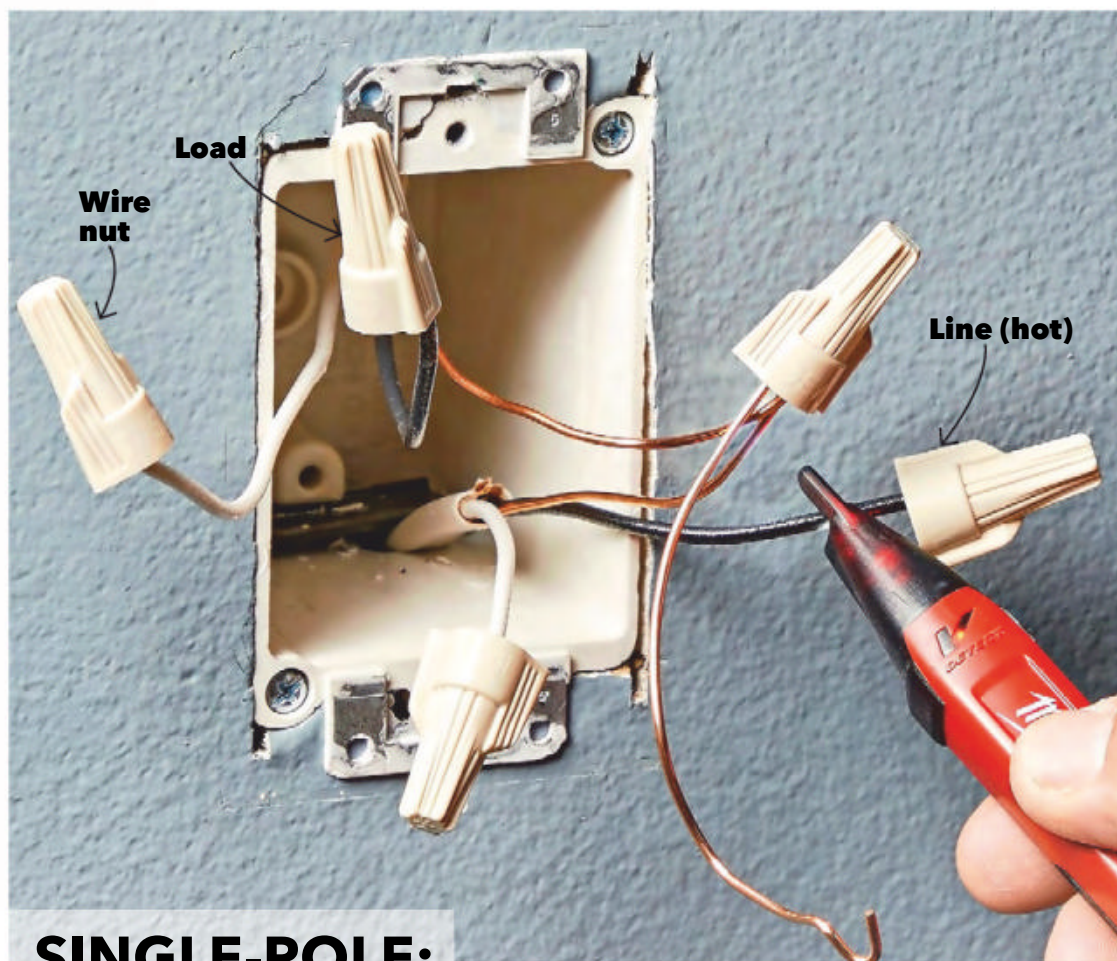


ADD A NEUTRAL

Unlike with a standard switch, you'll need to splice the neutral wires in the box and add a pigtail to connect to the neutral terminal on the smart switch.

MAKE SURE YOU HAVE A NEUTRAL

If your home is more than 15 years old, a junction box might have two hot wires and no neutral. So, before you shop for a smart switch, check to see if you have a neutral. If you don't, choose a smart switch that doesn't require a neutral.



SINGLE-POLE: IDENTIFY THE LINE AND THE LOAD

A single-pole switch controls a light or receptacle from a single location. Look at the cables entering the box. In newer houses, you'll typically see a power supply cable (the "line") coming in from the bottom of the junction box, with black (hot), white (neutral) and bare copper (ground) wires. Another cable (the "load") with the same color wires, goes out the top of the junction box to the light fixture. If it's unclear which is which, put a wire nut on each wire, turn the power back on, and test to see which black wire still has power (that's the line), then turn the breaker off again.



TAPE THE TERMINALS

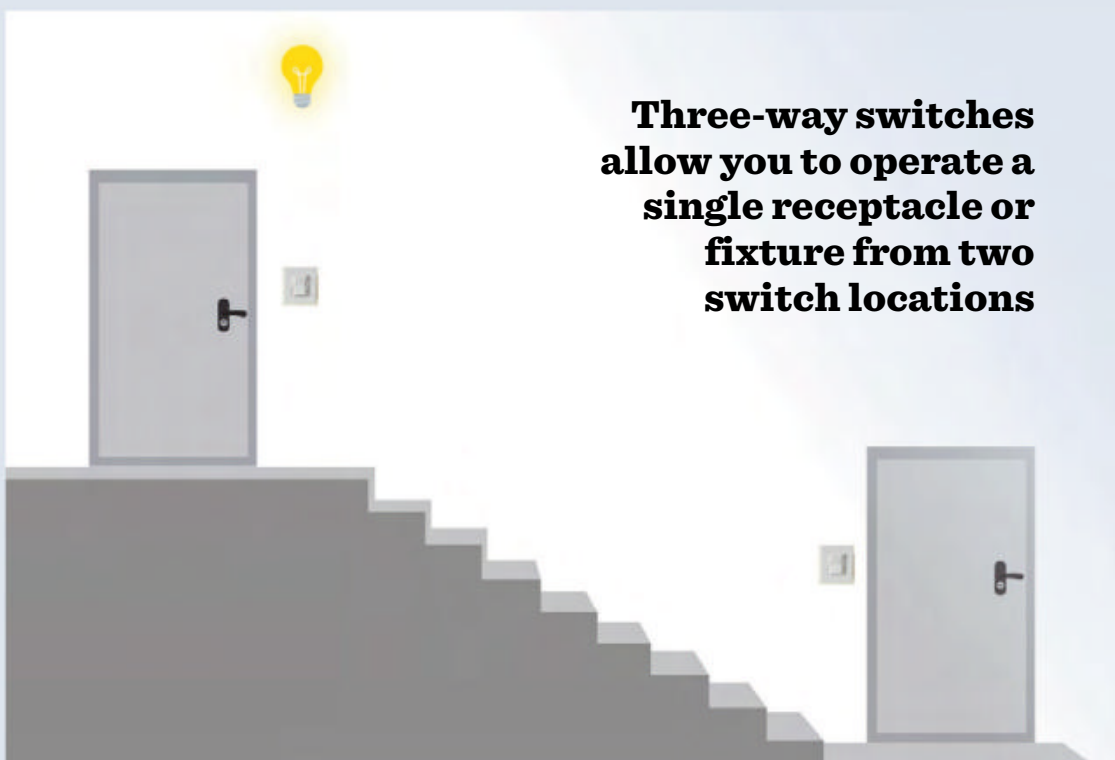
Wrap the wired switch with electrical tape to avoid arcing from bare terminals to ground wires or a metal box. When you're done, carefully fold the wires into the box and reinstall the switch.



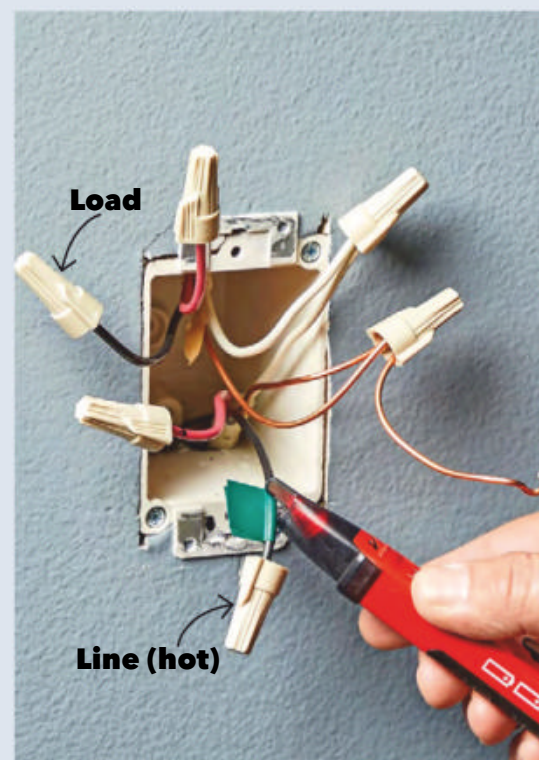
CHECK MANUAL OPERATION

Before you go through the Wi-Fi/app setup, turn the power back on and check your installation by operating the switch manually. If it's not working because you haven't connected it properly, you can correct the problem without having to do the setup twice.

Tips for Three-Way Smart Switches

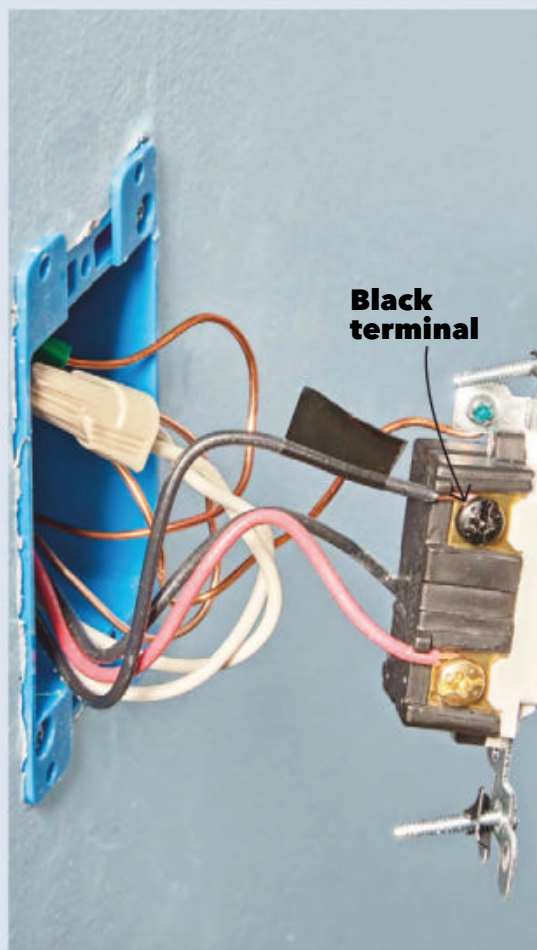


Three-way switches allow you to operate a single receptacle or fixture from two switch locations



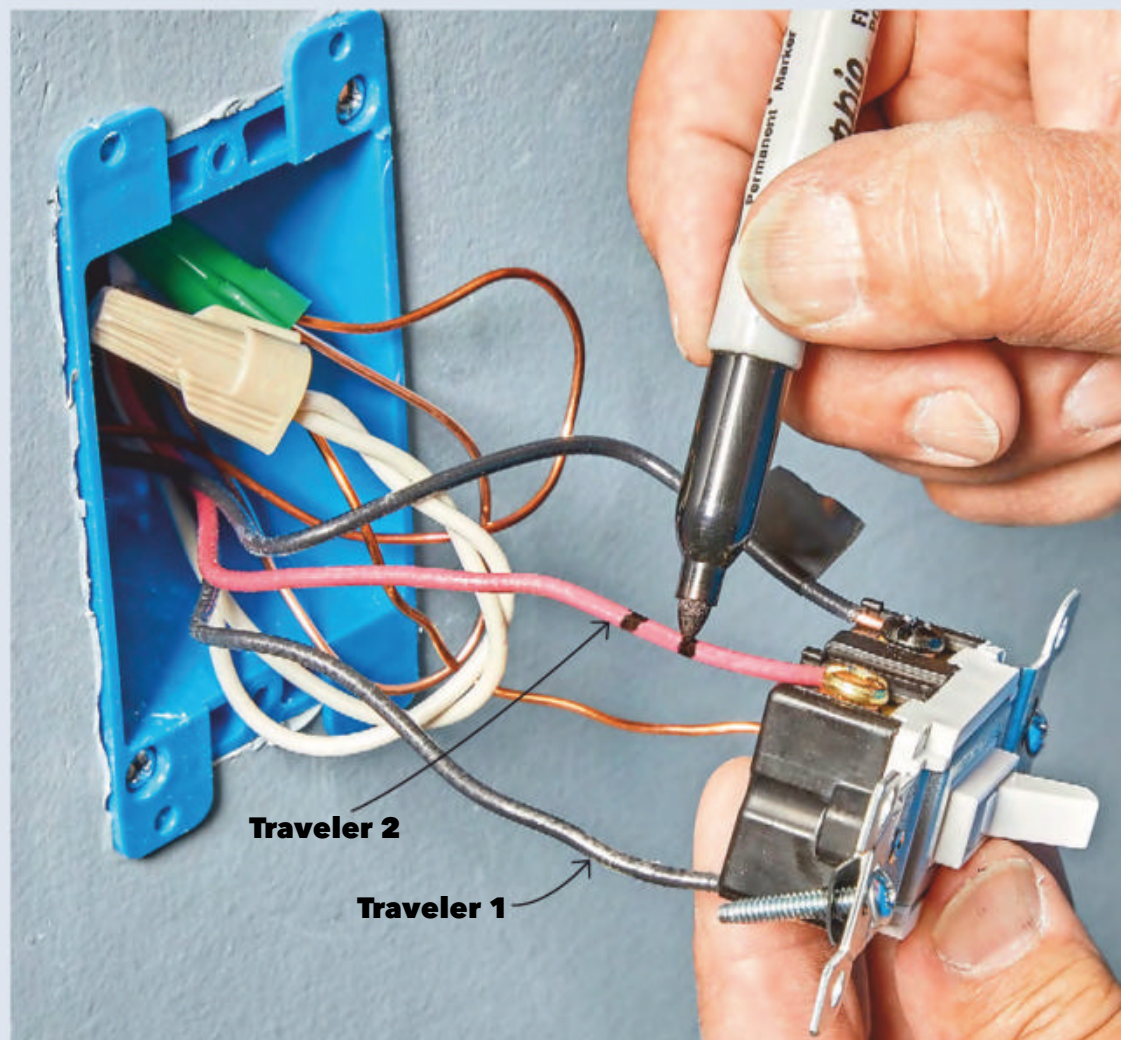
■ THREE-WAY: IDENTIFY THE LINE AND THE LOAD

The procedure is the same as it is for a single-pole switch, except only one of the two boxes contains the line. With the power off, disconnect all the wires and twist a wire nut on each individual wire. Turn the breaker back on and test the taped (common) wires in each box using a noncontact voltage detector. The one that still has power is your line feed. The taped wire that doesn't have power (in the other box) is the load connection, which goes to the light fixture. Once the line is located, turn off the power again.



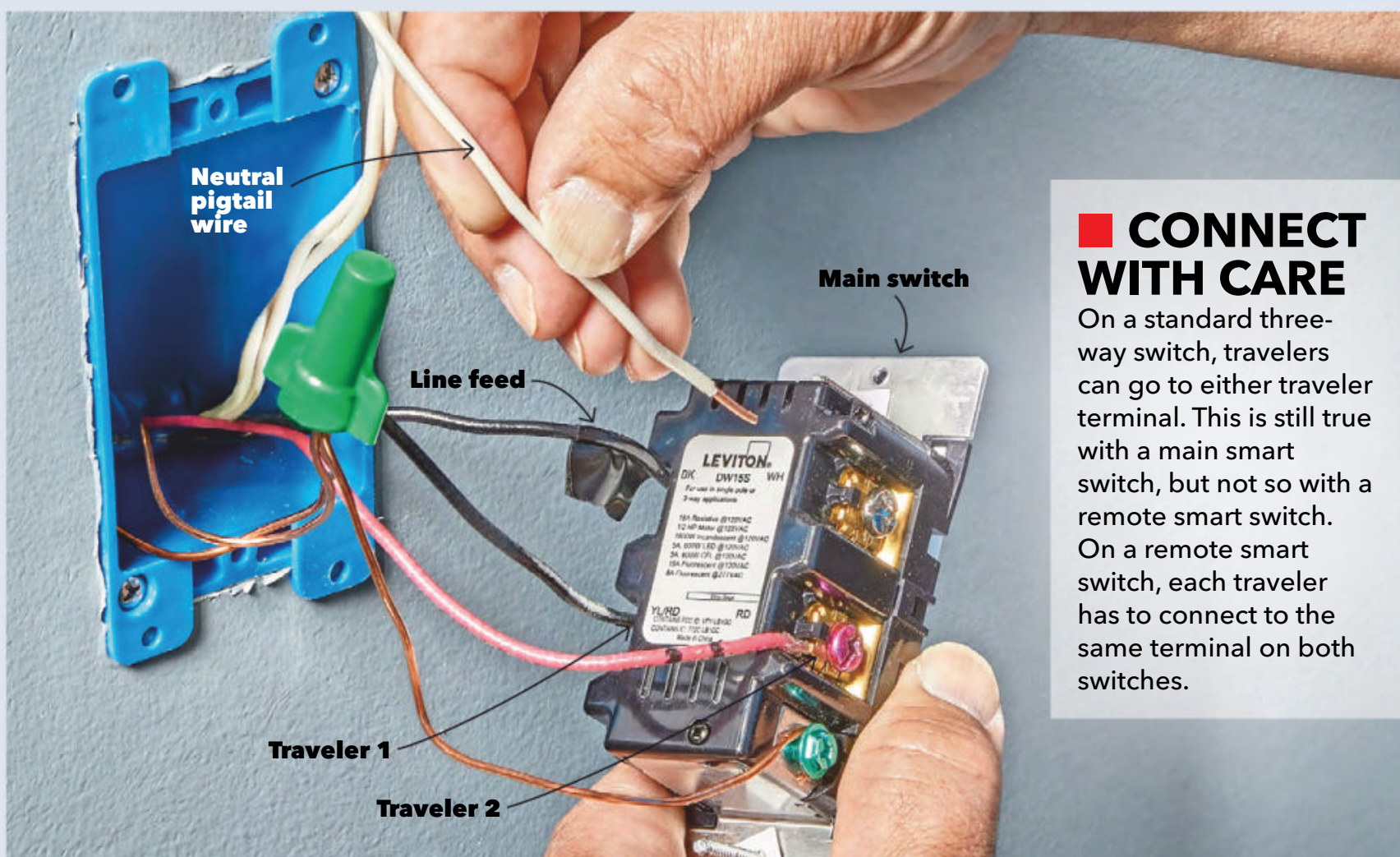
■ FLAG THE COMMON WIRE

Leaving the wires attached, pull both switches out of their boxes. Locate the black terminal (marked "common") on both switches. Use electrical tape to mark the wires attached to these terminals on both switches.



■ IDENTIFY THE TRAVELERS

Each switch has two wires connected to opposite terminals. These terminals are usually brass colored, and the wires connected to them are typically black and red, but not always. These are the traveler wires, which enable three-way switches to work together by creating two potential pathways to complete the circuit and send power to the light fixture. Mark these wires as Traveler 1 and Traveler 2.



■ CONNECT WITH CARE

On a standard three-way switch, travelers can go to either traveler terminal. This is still true with a main smart switch, but not so with a remote smart switch. On a remote smart switch, each traveler has to connect to the same terminal on both switches.

GRILL REVIVAL

8 ways to
make your
old grill good
as new
(or even
better)

BY JAY CORK

If your grill cooks as shabby as it looks, a new model is probably on your wish list. But before you start shopping, consider this: There's a solution for almost any grill problem, and the fixes are easy.

Winter is the perfect time to recondition a grill. I know—I tackled two of mine as the snow flew, and the next spring, they were set to go. All it took was a little elbow grease and DIY ingenuity. Now, these grills will be cooking for many seasons to come.



MEET THE EXPERT

Jay Cork is an associate editor at *Family Handyman*. Over the past decade, he's rescued many grills from the scrap pile.

PHOTO: LAURI PATTERSON / GETTY IMAGES

Grilling since 1951

The grill that did the most to popularize backyard grilling was born the same year as this magazine. In fact, *Family Handyman* was one of the first to introduce the Weber grill, and we've been featuring projects, tips and fixes for it ever since. The invention of the Weber grill is an inspirational DIY story, too...

Seeking to improve on the brazier grill he was using at home, George Stephen Sr. was inspired by a product he made at Weber Brothers Metal Works in Chicago: buoys for the U.S. Coast Guard. He cut the bottom off a buoy and added a leg stand. With the addition of a vented lid, the kettle grill was born. He called it "George's Barbecue Kettle" and started selling them in 1952. By the late '50s, his shop had stopped making buoys. Weber grills are still made in Illinois and are sold in more than 70 countries.



Each igniter is mounted to a burner tube with two screws



Cleaned and straightened, the igniter is ready to be reattached

◀ A GAS GRILL THAT WON'T IGNITE

When a gas grill won't ignite, it could mean the battery is dead or that the igniters have gone bad and need to be replaced. I was prepared to replace mine when upon inspection I discovered that they weren't actually bad. Instead, two had somehow gotten bent, and the gap between the igniter tips and the burner tubes must be 1/8 in. or less for a spark to occur. After cleaning and straightening the igniters, I reattached them and made sure they were properly positioned to create a spark.

UNEVEN FLAMES ▼

If the burners aren't severely rusted, they can be cleaned. First, clean the burner tubes with a wire brush or an abrasive pad, then clean out each burner hole with a toothpick. Doing this once a year will extend the life of any gas grill burner. But if the holes get too big or have rusted through in some places, it's time to replace the burners.



Try cleaning first—
a toothpick is the
perfect size and
won't harm the
steel



Retaining clips

I installed new
burners in place
of the old ones

WHERE TO FIND GRILL PARTS



Most home centers and garden centers carry one or two brands of grill parts, but I've always had difficulty finding parts for my particular grill. The good news is that parts are available online for virtually any grill ever made. I found several websites that cater to grilling fanatics. The folks at grillparts.com and bbqguys.com were happy to chat with me and help me find what I was looking for.

COALS KEEP LOSING HEAT OR GOING OUT ►

The vent on my charcoal grill was rusted shut. I couldn't find an exact replacement, so I decided to restore it.

The easiest way I've found to remove rust is to use cleaning vinegar, which is available at home centers (a half gallon costs about \$2). Cleaning vinegar is about 20 percent more acidic than the type you have in the kitchen cupboard. No harsh chemicals or acids to deal with, and I don't have to spend hours with a wire brush and sandpaper.

I soaked the parts in vinegar overnight, and by the next morning the rust rinsed right off. A quick coat of high-temperature paint and the vent was ready to be reinstalled. The refurbished vent looks great, and now my grill has proper airflow again.



I soaked the hinges and other parts in cleaning vinegar

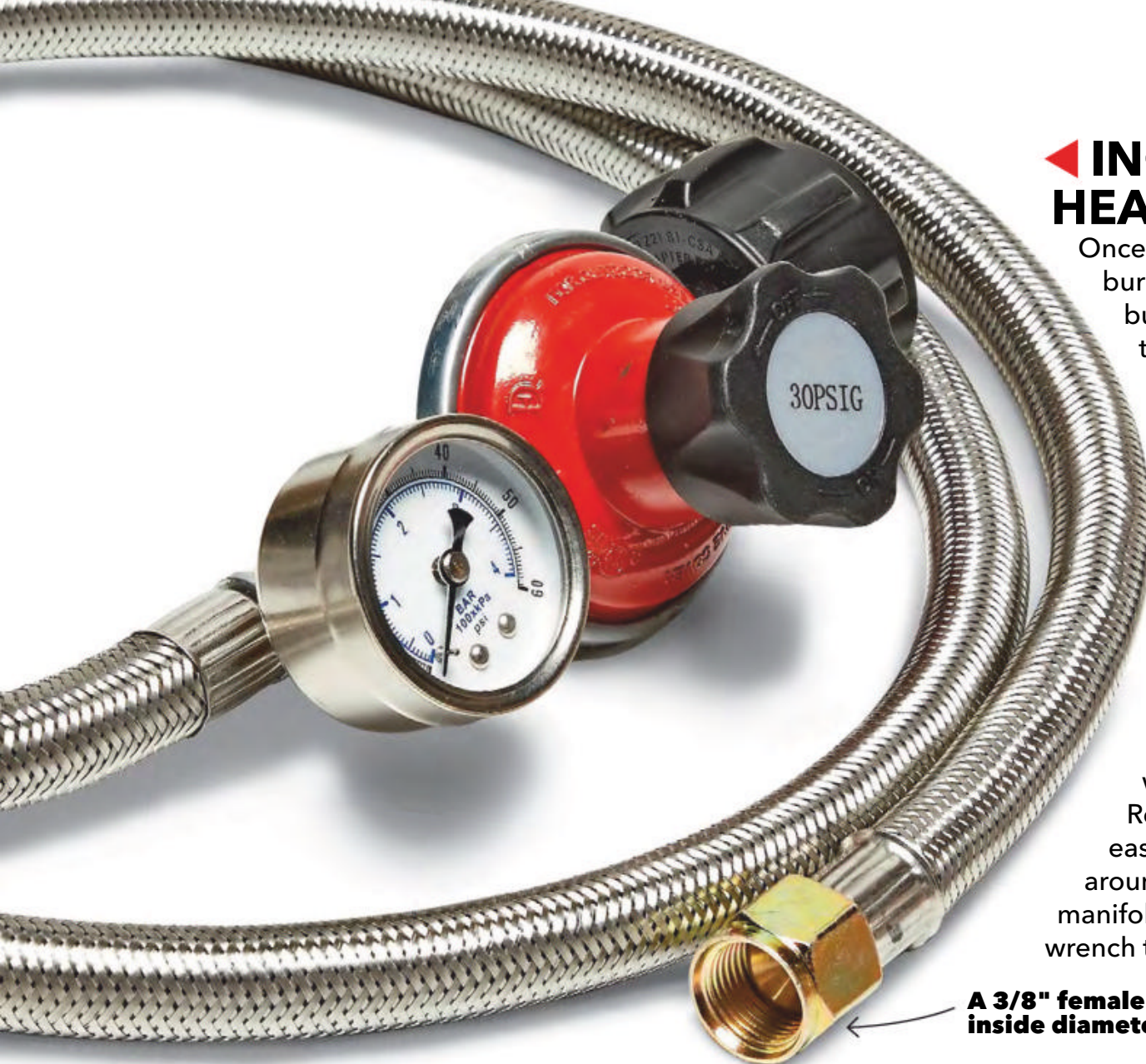


▲ WORN-OUT SIDE TABLES

The side tables on my charcoal grill were showing their age and had started to rust. So, I purchased bamboo cutting boards for about \$20 each online. After using the old side table as a template to trace the shape, I made a quick cut on the band saw and screwed them on. They look fantastic, and to keep them looking that way, I'll apply butcher block oil at the beginning of every grilling season.



I used auger tip screws because they don't require predrilling



◀ INCONSISTENT HEAT OR FLAMES

Once I replaced the burners, the burner closest to the fuel tank burned well, but the one farthest away would have either a small flame or none at all. This meant the regulator needed to be replaced.

Home centers and garden centers carry basic regulators for about \$20, but online I found this regulator with a stainless steel braided jacket for about \$30. It was longer than the original, which was nice; the old one was so short that it was hard to attach to the tank. Replacing the regulator was easy; after wrapping Teflon tape around the male threads on the manifold, I used an adjustable wrench to tighten it down.

← **A 3/8" female flare has an actual inside diameter of 5/8"**



← **I used one self-tapping screw per leg**

▲ LOOSE LEGS

When the legs on a kettle grill become loose, the grill can be a pain to move. Here's a permanent fix that took me about 10 minutes: I drilled a pilot hole in each leg and screwed in a self-tapping stainless steel screw. Go slow; the legs are aluminum and can easily strip out.



← **I reused the old washer but used a new cotter pin**

▲ BROKEN WHEELS

The plastic wheels on my charcoal grill were broken. I decided to replace them with heavy-duty rubber wheels (about \$30 a pair online). The ones I found were a little larger than the originals. To make sure the grill still sat level, I added a small rubber foot on the other end of the frame using self-tapping screws.

ADDING TEMPERATURE SENSORS

When the temperature sensors on my grills broke, I replaced them and added a few more. The additional sensors will give me a much clearer indication of what's going on inside my grill. I used a step drill to pierce the lid and then attached the new sensors with a threaded nut. I love step drills: perfectly round hole, automatically deburred. Step drill bits cost about \$40 at home centers.



Step drill bit



These temp sensors are available online for about \$15 each



▲ CHIPPED AND RUSTY PAINT

Repainting a grill takes time—time I didn't want to take during grilling season. In the winter, though, I could take my time to completely repaint it while I performed other repairs and upgrades. My grill had only a few rust spots to fix; most of it just needed to be degreased and cleaned with mineral spirits before being sanded.

I found I had to be aggressive with the sandpaper; I had to use 40 grit on some spots! But in the end, I sanded the grill up to 180 grit. After one more wipe-down with mineral spirits, it was ready to paint.

I used high-temperature paint in "Charcoal Metallic" from kbs-coatings.com. It's good to 1,500 degrees F. Because spray-painting indoors requires careful ventilation, I set up a fan behind me on low to help guide the overspray to the vent fan (set on high) in the wall.

This paint needs heat to cure, so I filled the firebox with coals, lit them and let it sit. It stayed at about 450 degrees for almost two hours. Perfect.



Aerosol coatings from KBS cost about \$20

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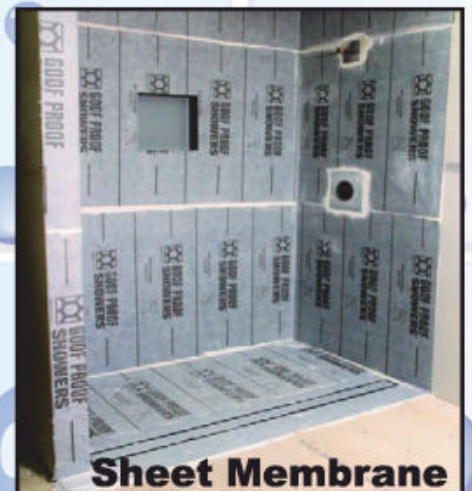
6 Length Combinations from 27" - 60"
designed for use with all waterproofing methods



Roll On



Vinyl Liner



Sheet Membrane

Prod. ID GPLD/26/60 Description: 6 length combinations ranging from 27" to 60" Tileable insert top (metal grates not available) with female receivers to attach Quick Pitch Float Sticks directly to the drain. Can be used with any waterproofing method including Roll on, Vinyl, and Sheet Membrane. Install with or without a curb to create a barrier free shower.

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Best ProTips

Expert advice from the job site. By Jay Cork

ESSENTIAL HAND TOOLS

Sometimes old-fashioned methods are still the best

In this age of power tools, it's easy to ignore old-fashioned hand tools. But you shouldn't. Even if your shop is full of high-end power tools, sometimes a hand tool will get the job done faster, better and neater.

One of our favorite woodworkers, Ralph Truesdell, owns nearly every hand tool there is, and he agreed to tell us about some of his favorites.

RALPH'S FAVORITE PLANE

Jack planes are the most versatile of all bench planes, and the WoodRiver No. 62 Low Angle Jack Plane is Ralph's absolute favorite. The adjustable mouth—the space in front of the blade—can be opened up for a rough cut or closed down for a fine cut.



MEET THE EXPERT

Ralph Truesdell is the resident hand tool expert at his local Woodcraft store, where he teaches woodworking classes. He's also a 7th degree Tae Kwon Do master, one of only a handful of people in the world to ever accomplish this.

Ralph's tool chest

After years of accumulating hand tools, Ralph has quite a collection. Here are some of his favorites.

SPOKESHAVE

This tool gets its name from the job it was designed to do: shape spokes for carriage wheels. Many spokeshaves cost well over \$100, but Ralph loves this WoodRiver Adjustable Spokeshave (\$60).

CARD SCRAPER

Cabinet scrapers, also known as "card scrapers," come in various shapes and sizes. A set of three costs about \$20 at woodworking stores.

JAPANESE SAW

Japanese saws cut on the pull stroke, and their tooth geometry produces very clean cuts in hard-wood. Most home centers sell basic Japanese saws, but for higher quality and a wider selection, go to japanwoodworker.com.

DETAIL MITER BOX

This mini miter box is perfect for cutting small trim. It's available for about \$31 at woodcraft.com.

SHOULDER PLANE

Ralph uses a shoulder plane to make the bottoms of dados and rabbets nice and smooth. These specialized planes cost about \$150 and up.

BLOCK PLANE

This pocket-size block plane is perfect for trimming small areas or the end grain of trim boards. Inexpensive ones are available at home centers for less than \$20, but expect to pay closer to \$100 for a quality block plane.

MARKING GAUGE

This Veritas Dual Marking Gauge & Shaft Clamp can mark two lines at once, which is really handy when you're marking tenons. You can find it for \$63 at leevalley.com.



FLUSH-CUTTING SAWS

Most saw teeth stick out to the side a little, but not on these saws. This allows them to trim dowels or through tenons without scratching the wood around the cut. A basic flush-cut saw costs about \$15 at home centers.

BENCH PLANES

Common bench planes are 8 in. to more than 20 in. long and are used for roughing, squaring and smoothing lumber. Most home centers and all woodworking stores carry a selection of bench planes.

BACKSAW

Ralph likes using traditional backsaws for dovetail joinery; their stiff blades allow for precise cuts. Prices vary widely, but many Veritas backsaws cost less than \$100. Visit leevalley.com to see a great selection.

CHISEL PLANE

Ralph likes using a chisel plane to clean glue squeeze-out from drawers and boxes. This one costs \$90 at woodcraft.com.

BRACE AND BITS

The original cordless drill! The old-fashioned hand brace with the ship auger bit is a formidable boring tool. You can still find basic models online for about \$45.

COPING SAW

This saw acquired its name in the early 20th century when carpenters started using it to cope inside miter joints. However, its lineage can be traced back to the 16th century. Coping saws are still sold in hardware stores everywhere.

CHISELS

Chisels for fine woodworking come in many different shapes and sizes. You can find a good chisel for about \$25, but the prices go up from there. Some Japanese chisels might cost you hundreds!

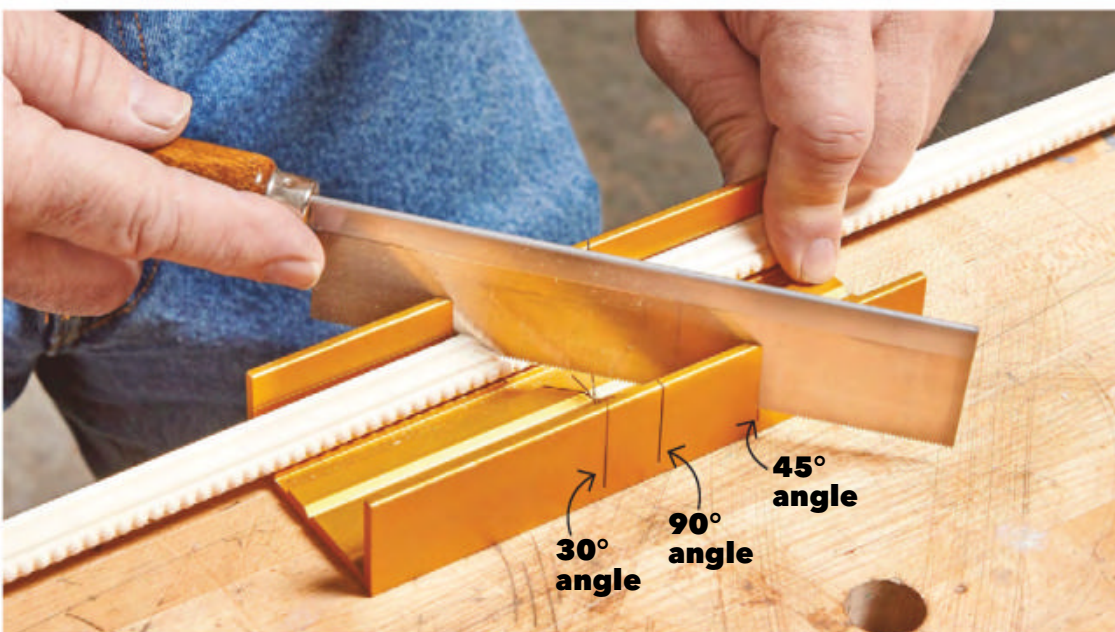


Ralph's essential hand tool tips



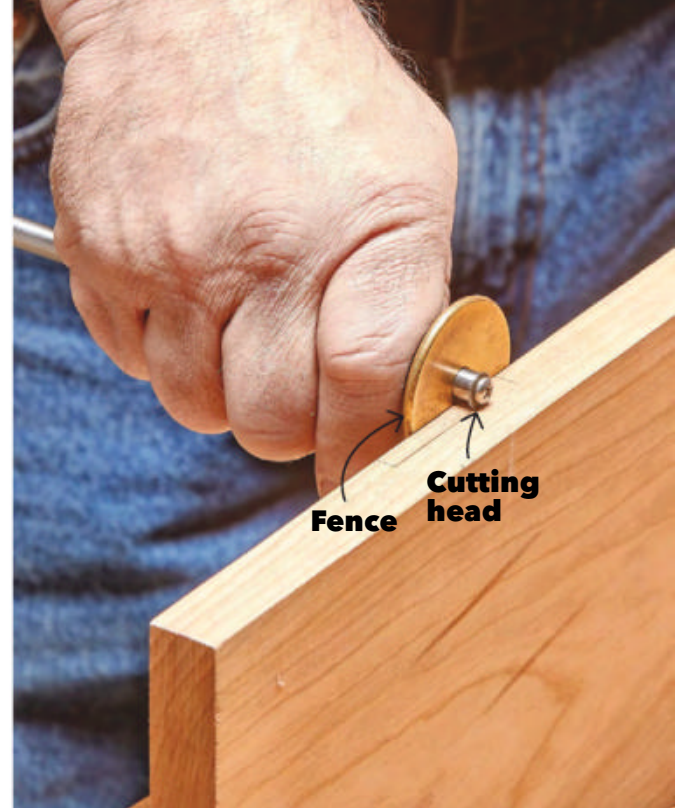
A SCRAPER BEATS SANDPAPER

To get wood smoother than sandpaper can, Ralph uses a cabinet scraper. Also known as card scrapers, these simple pieces of steel cut micro-thin shavings of wood. They're great for repairing scratches, final shaping or prepping a surface for finishing. Scraping can be hard work, but the reward comes when you apply the finish; the grain shows much more clearly and vibrantly than it does with sanded wood.



PERFECT MITERS FOR SMALL STUFF

Ralph uses this small Zona miter box to repair trim details on antiques, cut bracing for acoustic guitars and even install base shoe. Making cuts like these on a powered miter saw not only can be dangerous but also risks destroying delicate, and maybe irreplaceable, pieces of trim.



MARK WITH PRECISION

A marking gauge, which cuts tiny lines into the wood, is far more precise than a pencil. The fence can be set so you can make the same mark over and over with the same precision. Ralph always uses marking gauges when he's mortising for hinges. When it comes time to "hog out" the wood, his chisel falls perfectly into the line made by the gauge.



PLANE A PERFECT GLUE JOINT

Making a "spring joint" is easy, and when it comes time for glue-up, you'll only need one clamp! Ralph places two boards back-to-back in a vise and very lightly dishes the edges with a No. 4 bench plane. This creates a slight gap in the middle when he places the two boards together for glue-up. Then one clamp is all he needs to create a perfectly tight glue line.



MAKE SAFE AND ACCURATE CUTS

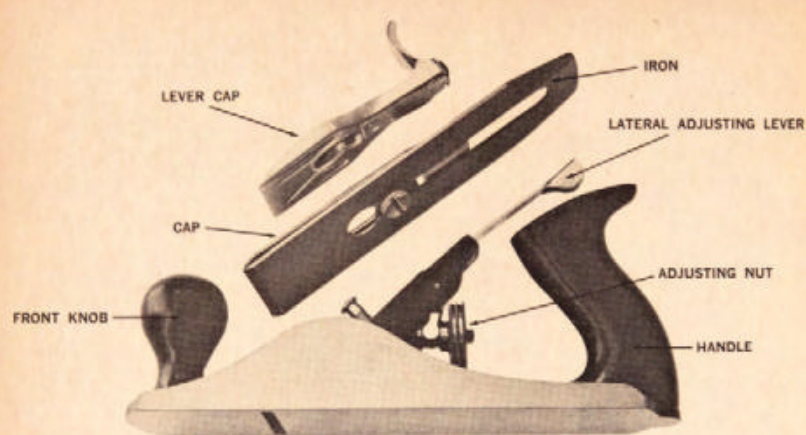
The Nobex 180 miter saw is a modern version of the old-fashioned bow saw, but attached to a precision miter box. It'll cut 2x4s, crown molding or even delicate trim just like a powered miter saw, but it's much safer and doesn't throw dust everywhere. Plus, you certainly don't need earplugs to use it. This saw is a little pricey—about \$200 at leevalley.com. And Ralph strongly suggests upgrading to the razor-sharp Japanese Ikeda blade (\$50).



ANGLE YOUR HAND PLANE

Instead of pushing it straight, Ralph will angle the hand plane just a little. This lowers the angle at which the blade meets the wood, helping it slice through the grain much more easily. Getting into this habit takes a little practice, but the effort is worth it.

family handyman *flashback*



Plain Talk About Wood Planes

by PATRICK K. SNOOK

The wood plane is one of the oldest, most basic tools in your shop, and is today known by a wide variety of models and sizes. Knowing which one to choose for the job—and how to use it—is the key to better work.

1966 AS ESSENTIAL AS EVER

Most DIY tools have improved dramatically over the years. But hand planes, whose origins reach back centuries, have remained very much unchanged. *Family Handyman* may have written more about them back when this photo was taken, but they're still relevant tools today. I believe every DIYer should own at least one. They're extraordinarily satisfying to use, and they just might change the way you think about woodworking projects.

JAY CORK, ASSOCIATE EDITOR



ALIGN YOUR SAW TEETH

When a saw doesn't want to cut a straight line, the teeth might be to blame. Most saw teeth have a "set," which is how far the teeth stick out on either side of the blade. When the teeth stick out farther on one side than on the other, the blade will drift in that direction. To correct the problem, *very* lightly grind down the protruding teeth with a sharpening stone. One stroke will often be enough.



SMOOTH CURVES IN SECONDS

Cutting a curve with a band saw or a jigsaw usually leaves a rough edge. Sandpaper is the typical solution but sometimes makes matters worse. Ralph likes to use a spokeshave to get those edges as flat and smooth as glass. The trick is to cut downhill so the blade is always cutting with the grain.



GO WITH THE GRAIN

When you're using hand planes and scrapers, it's important to cut with the grain of the wood. Following the lines of the grain, it's easy to see which direction to push the tool. Tracing the grain with a pencil can help reveal lines in lighter woods. But watch out! Sometimes a board has many directions of grain run-out. When it does, you'll just have to come at it from multiple directions.



SHARPEN TOOLS THE SIMPLE WAY

The No. 1 reason some people hate hand tools? They've never used one that was properly sharpened. Yes, you can spend a ton on fancy sharpening stones, but you don't need to. With the Veritas Mk.II Honing Guide (about \$71 at leevalley.com) and wet-or-dry sandpaper from the auto parts store, you can get your tools scary-sharp.

Using spray adhesive, stick wet-or-dry sandpaper to a flat surface like this melamine shelf or a slab of granite. The setup shown goes from 220 to 3,000 grit, plus the yellow honing film (\$6 at woodcraft.com), but you can get good results using just 220-, 600- and 1,000-grit paper.

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GET THE RIGHT BRISTLES FOR BETTER RESULTS

When you're choosing a paintbrush, you may not be thinking about how flexible the bristles are. But you should—your choice has a real effect on the results. Soft brush or stiff? Here's what you need to know.



Soft brushes provide a smoother finish

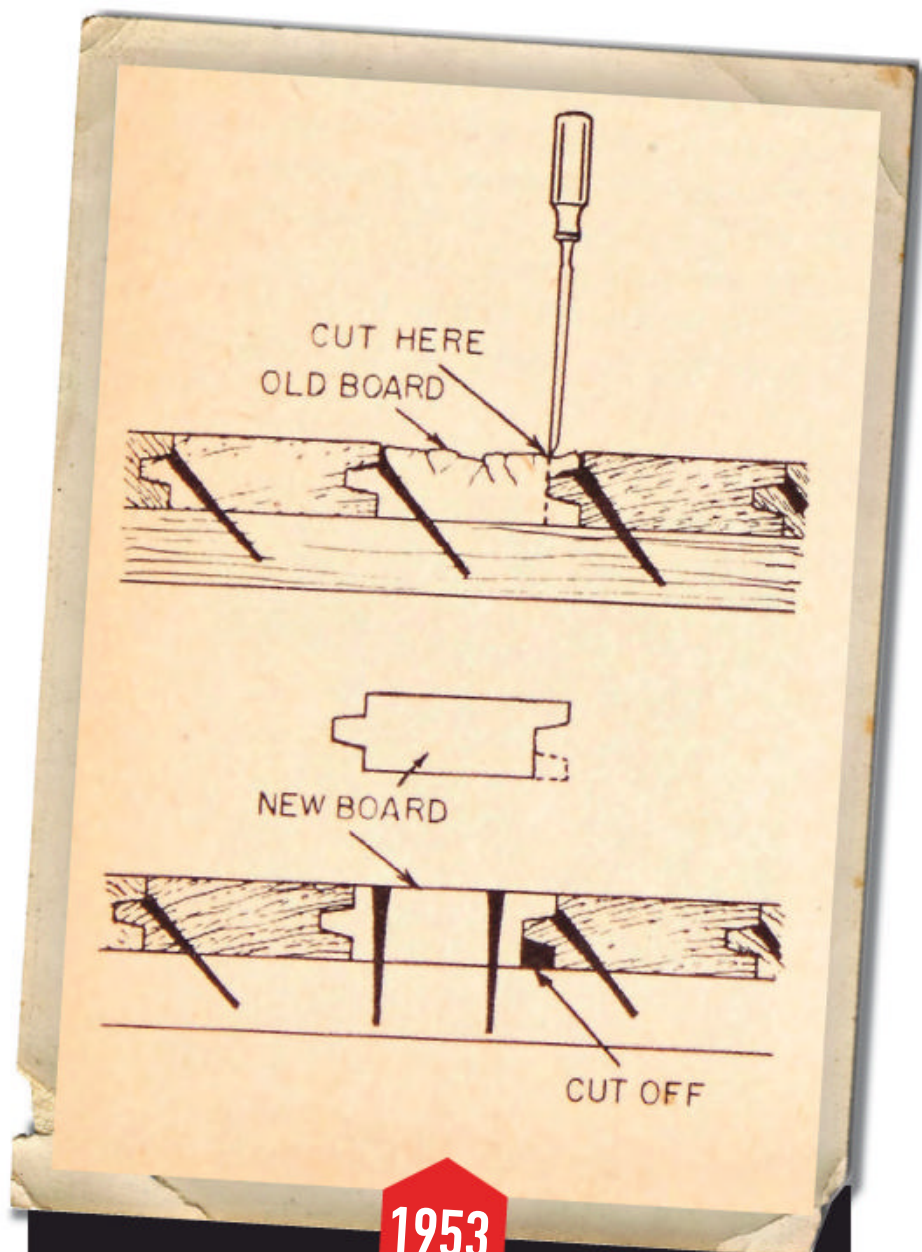
Soft brushes have "flagged ends," which resemble the split ends of hair. This results in a smoother finish with fewer brush marks.

Stiff brushes give you crisp lines

Stiff brushes are more durable, which is important when you're painting rough surfaces. The bristles are "tipped" at the ends like a sharp pencil. Pointy bristles also allow for crisp, sharp lines when you cut in around trim.



MEET THE EXPERT
Connie McKinney is a senior product manager with Purdy Professional Painting Tools.



1953

Replacing Single Floorboards

When tongue-and-groove floorboards become irreparably damaged, it's possible to replace a single board or two. A 1953 issue recommended that you "tackle the removal of the defectives with a hammer and sharp chisel." While that's still a perfectly fine solution, I'd use an oscillating multitool with a wood-cutting blade. You'll need to cut carefully so you don't damage neighboring floorboards, but it's faster than a chisel. The rest of the technique is exactly the same as it was in 1953:

Find an end joint between lengths and cut about 4 or 5 in. from the end and remove this short piece, noting which side the groove is on. Then, work along the length of the board, cutting the groove away without injury to the tongue of the adjoining board. The defective one can then be pried up for discard. Cut a new piece to the identical length, and then cut off the lower half of the groove. Insert the tongue of the new piece into the adjoining groove and press the opposite side down into the vacant space. Drive nails straight down 1/2 in. from each edge of the new strip, nailing at 1-ft. intervals, and countersink them.

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Remodeling changes the story, of course. Anytime you disturb materials containing asbestos, you risk releasing fibers into the air. And here's one of the greatest risks: Vermiculite insulation granules are not encapsulated, so air leaking through walls and ceilings can carry fibers into your home.



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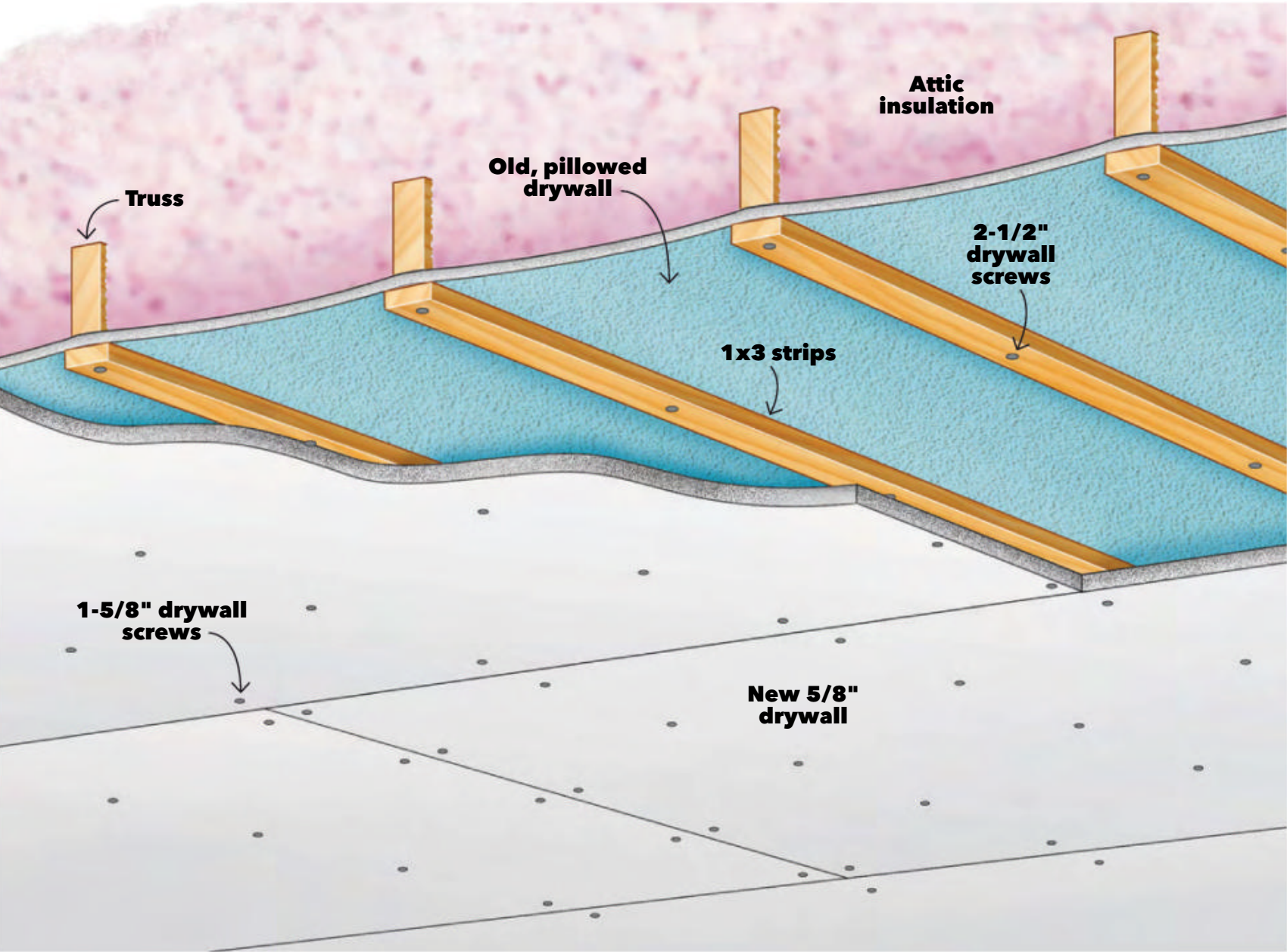
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Fix a pillowed ceiling

If your ceiling drywall is sagging between joists, sometimes called "pillowing," it's probably on the top floor and probably 1/2-in. drywall instead of 5/8-in. Half-inch drywall can sag if it's hung on framing spaced every 24 in. It isn't strong enough to handle the span, and the weight of the attic insulation just makes the sagging worse.

You have two choices: Rip out and replace the sagging ceiling, or add spacers and new drywall below it. In either case, you can use 5/8-in. drywall or lightweight, sag-resistant 1/2-in. drywall. Ripping out the old stuff might seem like the right approach, but it's a nightmare job. You have to pry out the ceiling drywall along the edges and pluck out all the old drywall screws. If you've ever torn out drywall, you know that without taking extreme measures, the dust goes all over the house. As if that weren't enough fun, the attic insulation will likely collapse into the room. That

in itself can make the decision easy. If the attic insulation contains vermiculite, there's no question. As noted in the asbestos discussion on p. 80, you don't want vermiculite floating around your house.

If you can live with a slightly lower ceiling height, you can save a lot of time by installing a new ceiling below the old one. Add furring strips on the trusses, as shown. To make the drywall easier to hang, use 1x3s rather than 1x2s. If your ceiling sags more than 3/4 in., use 2x2s. Screw the 1x3s to the truss framing with 2-1/2-in. drywall screws.

Next, install, tape and finish new 5/8-in. drywall. If you have ceiling fixtures, you'll have to extend all the boxes to make them flush with the new ceiling. It's OK to use standard 1/2-in. drywall on ceilings as long as it meets building code in your area. A better option is USG UltraLight Gypsum Board. It's stronger and lighter and it meets fire code.

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Family Handyman

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	Average	Single Issue
Total number of copies printed (net press run)	1,237,036	1,219,746
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Paid distribution—sales through dealers and carriers, street vendors and counter sales	18,261	20,287
Total paid distribution	1,101,181	1,074,962
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Total distribution	1,185,309	1,173,911
Copies not distributed	51,727	45,835
Total	1,237,036	1,219,746

Percent paid and/or requested circulation 92.90% 91.57%

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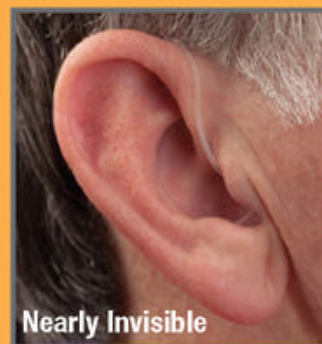
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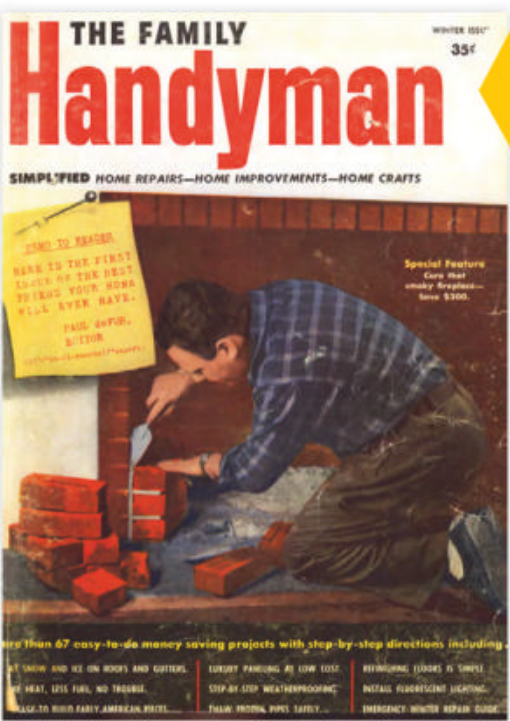
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For the countertop on a remodeling job, I ordered \$800 of prefinished cherry. I was pinning a 3/4-in. cherry strip to the underside of the countertop with 1-1/2-in. brad nails, angling them slightly so they wouldn't break through the piano-grade finish—scary! In the middle of the project, one of my carpenters asked to borrow my gun for a few minutes.

He returned the gun and I finished nailing on the trim. But when I tried to lift the piece up, I realized there was a definite problem—the countertop had been nailed through the drop cloth into the floor. What my knucklehead carpenter failed to tell me was that when he took my gun, he exchanged my nails for ones that were about an inch longer. I had to pay a furniture restorer \$200 to fix all the splintered nail holes. I still get mad every time I think about it.

MARTY HUWALD



ONE STEP FORWARD, THREE STEPS BACK

We hired a contractor to replace our front step. Once it was removed, he attached an auger to his skid loader and told one of his workers where to drill holes for the footings, then he left. After lunch, he returned to pour the concrete.

All seemed well and good until after supper, when we noticed that our laundry room floor drain had backed up. I thought that tree roots had grown into the sewer line again—it happens every year. But when city workers inspected it, they discovered something else: The contractor and his guys had drilled through the sewer line and filled it with concrete. Replacing the line involved digging up 40 ft. of our yard and 12 ft. under the house (taking out our basement floor) and cutting down a 50-year-old tree. What I learned is this: Anytime you're planning to dig big holes, have everything marked, including the sewer line.

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A glacier of an ice dam had formed on my roof—it must have been 2 ft. thick. I wanted to break it up before it caused any damage. I stood on a ladder and hit the ice with a hammer, but it wouldn't break. Heck, it wouldn't even crack. So I decided to go at it with heavy artillery—my sledgehammer.

I smashed the ice with the sledgehammer, and it worked—too well, in fact. A chunk of ice the size of a bathtub broke off, nearly knocking me off the ladder.

Although I escaped harm, my gas grill didn't. The avalanche landed right on it and utterly destroyed it. Now I stop those good-for-nothing ice dams before they start.

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