

1 family 1 handyman

BUILD IT. FIX IT. LIVE IT!®

EASY DIY CONTAINER GARDENS

A BETTER WAY TO GROW VEGETABLES

THE
**BEST
PAINT**
FOR TRIM

PLUMBER'S SECRET FOR
CLOGGED DRAINS
p. 9

SIMPLE
**SECURITY
CAMERAS**

REPAIR YOUR
SIDEWALK
LIKE A PRO

MARCH 2019

**FASTER
SPRING
CLEANING**
p. 68

ALL-NEW SILVERADO



THE STRONGEST, MOST ADVANCED SILVERADO EVER.

What's new about the All-New Silverado? Everything. Eight different trim levels, six different powertrains and the most functional bed in its class, with more cargo volume than any other pickup. See for yourself what happens when legendary dependability meets modern capability. The All-New Silverado.

FIND NEW ROADS™



CHEVROLET



Contents

MARCH 2019

family
handyman

EXPERT
DIY ADVICE
SINCE 1951

ON THE COVER

Raised planters can deter pests and weeds—and you can even add a self-watering option!

FEATURES

26

Raised Gardens

Grow your own food the easy way—no bending or stooping!

36

Buy Better Trim Paint

Our editor tested a lot of trim paints so you don't have to. Check out his best picks.

40

Sidewalk Surgery

Crumbling concrete? Here's how to repair it yourself and save.

46

Get the Most from Your Drill Press

14 proven techniques to boost accuracy, drill angled holes, hold small parts, and more.

54

Workshop Storage Tips

7 inventive ways to organize your space. Look at this great use for an old ladder!

68

Leaf Blowers to the Rescue

This versatile tool can tackle many tedious tasks—including cleaning your cars.

IN 1958, VARATHANE® SET OUT TO INSPIRE WOODWORKERS EVERYWHERE.

Since 1958, Varathane has been used by fine woodworkers and master DIYers like you. Every stain is formulated with a passionate respect for the wood, allowing you to create enduring pieces for generations to come.

We've earned the trust of woodworkers who want durable, time-saving, easy-to-use stains and coatings they can count on. And when it comes to innovation, we remain a category leader.

Trusted for over 60 years, Varathane stains and finishes are renowned for their stunning beauty and exceptional performance.

DON'T JUST FINISH IT. VARATHANE IT.

Varathane
— SINCE 1958 —



Available at





20



16

8 Stuff We Love

Ponchos for painting tools, a barrel-grip jigsaw, and a super-smart home security solution.

16 Handy Hints®

Tips for preventing tool rust, trapping fruit flies, cleaning computer ports, and more.

20 Home Smarts **NEW**

Reducing home allergens; bed bugs and home insurance; and the trouble with 4x4s.

59 Best Pro Tips

If you've got concrete that needs grinding you can save a lot of cash by doing it yourself.

66 Work Wheels **NEW**

What's in a well-stocked truck? A handy bed liner, a moving blanket, and a few clever kits.

78 Reader Info

Want to know how to subscribe, renew, send us a hint, and more? Check out this page.

80 Great Goofs®

Ashes, ashes, all around; jackhammer hijinks; and the free-falling basement ceiling.



8

59



AMERICAN CRUISE LINES

NEWEST FLEET ALONG THE MISSISSIPPI RIVER

BRAND NEW FOR 2019

NEW ENGLAND

SOUTHEAST

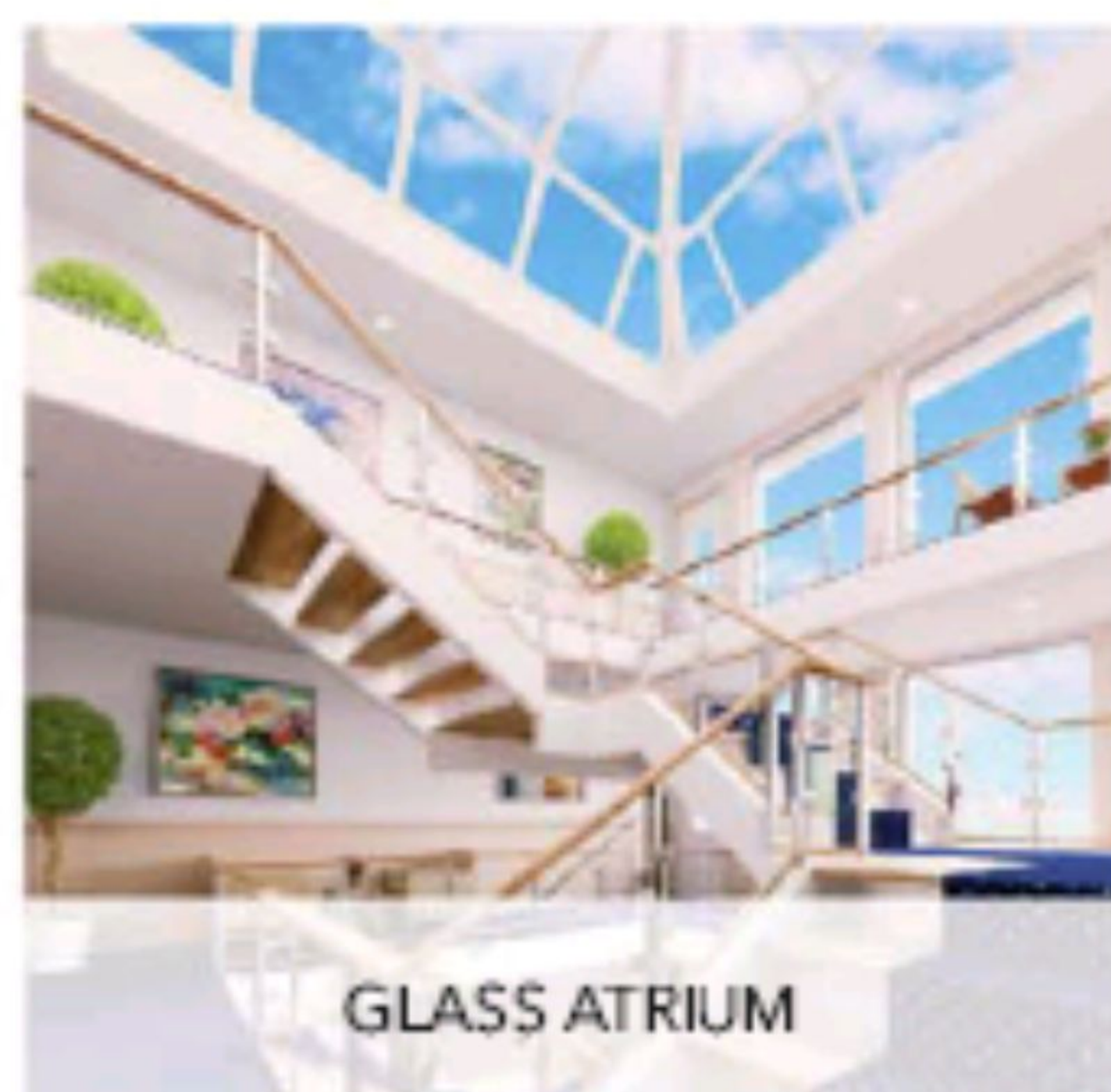
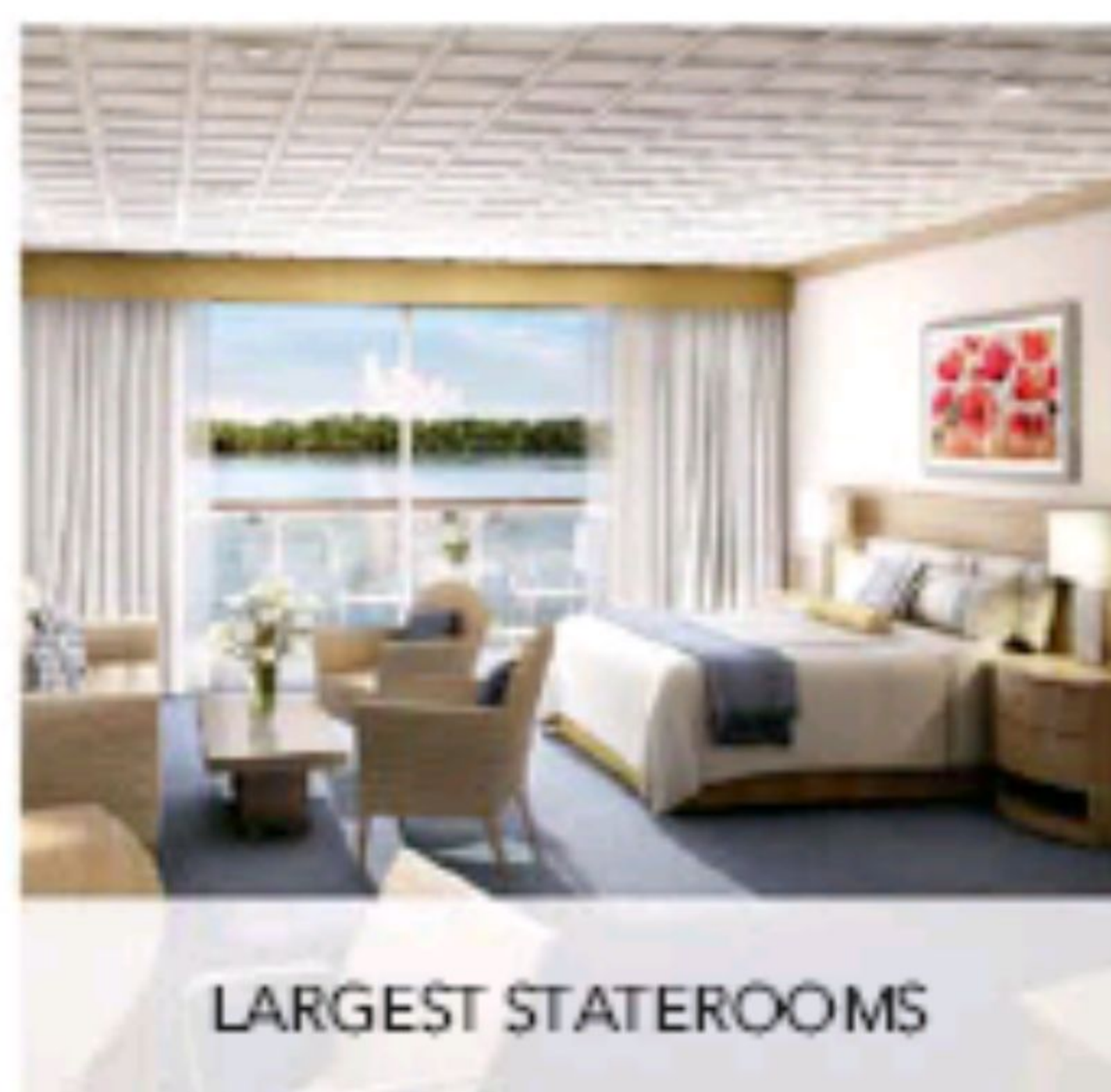
MISSISSIPPI RIVER

PACIFIC NORTHWEST

ALASKA

Introducing a new class of modern riverboats on the Mississippi River - the first of its kind to combine the contemporary styling of European riverboats with the premium comfort for which American Cruise Lines is known. Design features include the largest staterooms, private balconies, and a four-story glass atrium.

Small Ship Cruising Done Perfectly.*



Call today for your **FREE** Cruise Guide
1-866-975-1647
AmericanCruiseLines.com



MORE family handyman

facebook.com/thefamilyhandyman

pinterest.com/family_handyman

youtube.com/thefamilyhandyman

instagram.com/familyhandyman

SEE MORE "STUFF WE LOVE"

Have you signed up for the new Stuff We Love newsletter yet? Check out more of our favorite tools and gear every week! Go to tfhmag.com/signup



DIY QUICK CLASS
SUBSCRIPTION

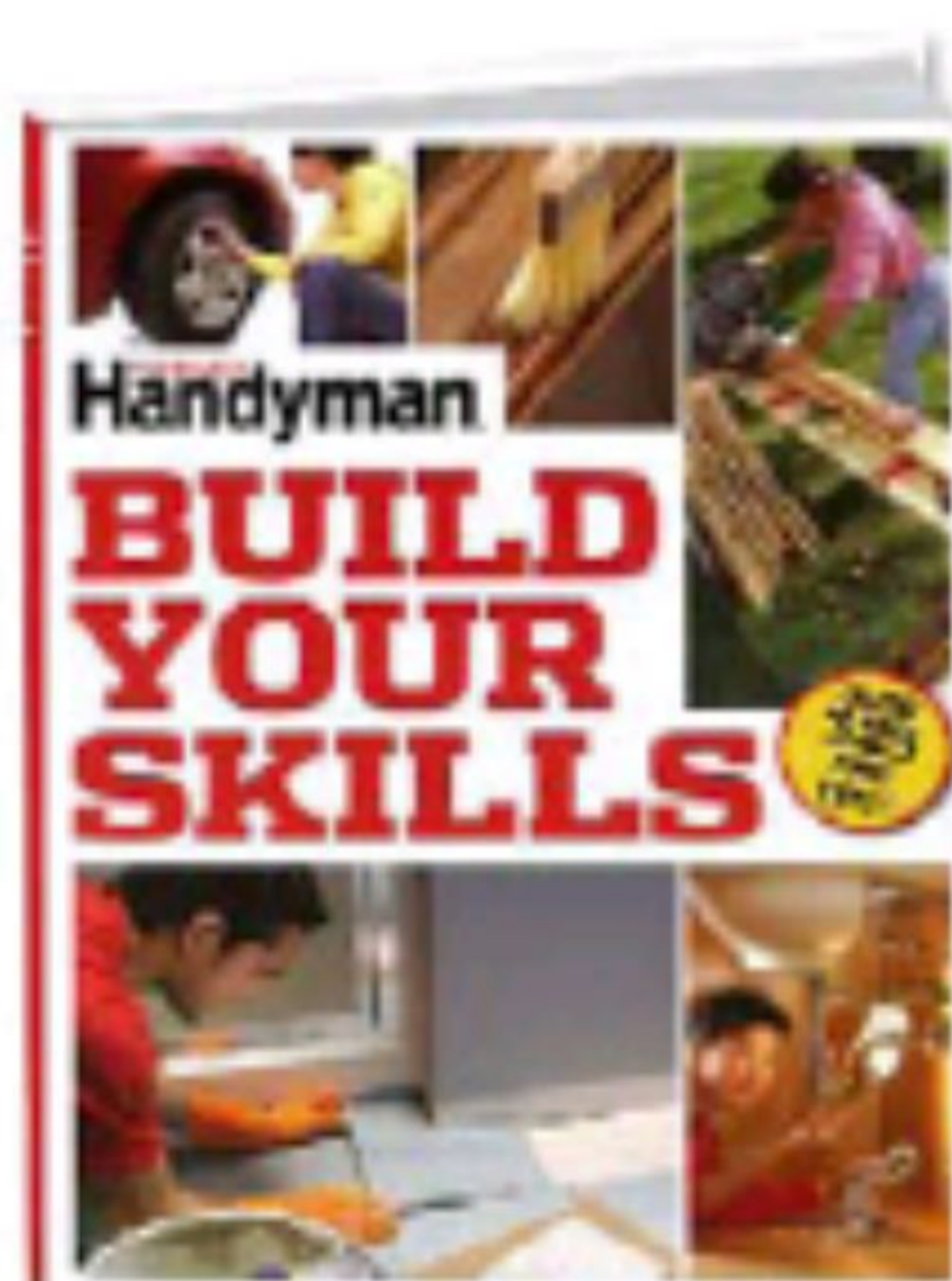
LEARN MORE. BUILD MORE.

Calling DIYers who want to tackle it *all*! Get unlimited access to *Family Handyman's* complete library of quick DIY University online classes. This includes two exciting new projects per month—things you've been dreaming about, and projects that may not have occurred to you. Get ready to build a wall-mounted bike rack or your own workshop, add elegant kitchen storage and a tile backsplash, install a sleek USB charging station, and much more! Start your 14-day FREE Trial at DIYUniversity.com.



New Woodworking Projects

Get plans and a video tutorial for this easy-to-stow workbench exclusively on our website. Go to familyhandyman.com and search for "folding mobile workbench."



Fix your home like a pro—no experience required!

The *Build Your Skills* book will teach you the basic building blocks of home improvement with more than 325 pro tips and techniques and step-by-step instructions and photos. Search for "build your skills" at rdstore.com.

Handy Hints® Surplus

We never have enough room in the magazine to include all the clever tips, tricks and home improvement hacks submitted by our readers—but you can find them on our website! Visit familyhandyman.com and search for "handy hints."



Plant Faster, Easier With **NEW SUPER PLUGS!**



Pre-cut
plugs
are 10x
bigger!

OR... Plant Your Way With **FREESTYLE PLUGS!**



Cut any
size plugs
from
sheets!

THE ONE TIME, LIFETIME LAWN SOLUTION!



**SAVE
OVER
50%**

**NEW PRE-CUT
SUPER PLUGS
now available!**

Stays
lush and
green in
summer

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

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

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

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

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

2 NO NEED TO DIG UP OLD GRASS

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

3 ENVIRONMENTALLY FRIENDLY

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

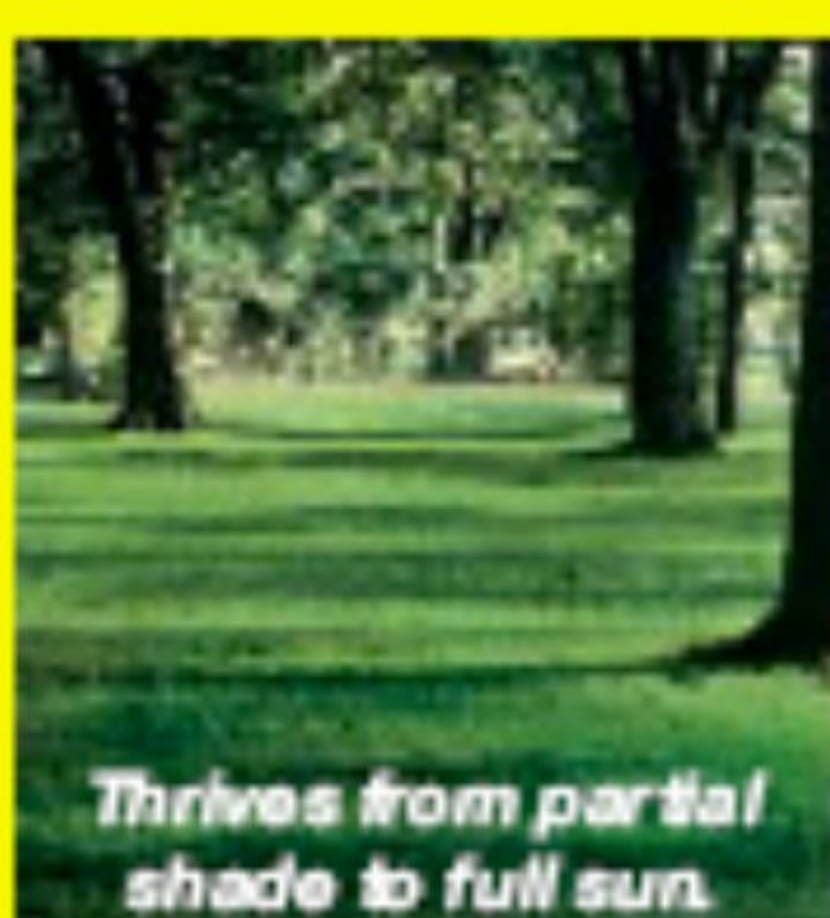
4 FOR SLOPES, PLAY AREAS, BARE SPOTS AND PARTIAL SHADE

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

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

5 IT STAYS GREEN IN SPITE OF HEAT AND DROUGHT

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



Thrives from partial
shade to full sun.



Plant it from
plugs.

Your Assurance of Lawn SUCCESS Each Order for Amazoy Zoysia is GUARANTEED

Guaranteed to grow new green shoots within 45-60 days or we'll replace it FREE – for up to 1 year – just call us. We ONLY ship you living genuine Amazoy Zoysia grass harvested direct from our farms. Easy planting and watering instructions are included with each order. Every Reorder assumes success of previous orders (plantings), voiding any previous guarantees, but initiating a new one-year guarantee.

©2019 Zoysia Farm Nurseries, 3617 Old Taneytown Rd, Taneytown, MD 21787

6 CHOKES OUT CRABGRASS AND WEEDS ALL SUMMER

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

7 NOW 3 WAYS TO START YOUR AMAZOY ZOYSIA LAWN!

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

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

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

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

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

Dept. 5212

Plugs only shipped to Continental USA & not to WA or OR.

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

Max Plugs*	Free Plugs	Grass Sheets*	Your PRICE	+ Shipping	SAVINGS
300	—	2	\$29.95	\$14.50	—
500	+100	4	\$50.00	\$16.00	25%
750	+150	6	\$66.00	\$19.50	36%
1100	+400	10	\$95.00	\$30.00	43%
2000	+1000	20	\$165.00	\$45.00	52%

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

Super Plugs	Free Plugs	Trays	Your PRICE	+ Shipping	SAVINGS
15	—	1	\$24.95	\$8.50	—
60	+15	5	\$90.00	\$20.00	34%
95	+25	8	\$110.00	\$30.00	47%
120	+30	10	\$125.00	\$35.00	50%
180	+45	15	\$180.00	\$50.00	54%

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

PLANTING TOOLS * PLANT FOOD * WEED AND PEST CONTROLS * ORGANIC PRODUCTS * SOIL TESTS * GARDEN GLOVES * EDGING AND MORE

All Available Exclusively at www.ZoysiaFarms.com/mag or 410-756-2311

ZOYSIA FARM NURSERIES, 3617 OLD TANEYTOWN ROAD TANEYTOWN MD 21787

AMAZOY IS THE TRADEMARK REGISTERED U.S. PATENT OFFICE for our Meyer Zoysia grass.

We ship all orders the same day the plugs are packed and at the earliest planting time in your state.

Stuff We Love

Our favorite DIY tools, materials + gear. By Mike Berner



Cordless jigsaws: Is 12 volts enough?

The tool shelf at the *Family Handyman* workshop holds both 12-volt and 18-volt jigsaws. To our surprise, we generally prefer the 12-volt models. They're lighter,

easier to handle and have plenty of power for cutting hardwoods or 1-1/2-in.-thick material. This Bosch 12V Max Barrel-Grip jigsaw is our current favorite because it's

especially compact, comfortable and smooth-running. The bare tool costs about \$110; with a battery and charger, about \$160.



Quick-switch bits



I never noticed the time I wasted changing out drill bits until I discovered hex shank bits. Whether I'm drilling 1/8-in. pilot holes or hogging out a 1/2-in. peg hole, the bit shank is the same size. So I just have to open the chuck slightly to swap out the bit. If I'm using an impact driver, the swap is even quicker! Several companies offer hex shank sets; my 18-piece Milwaukee set costs about \$20.

APRIL WILKERSON, a contributing editor for *Family Handyman*, can build just about anything. Check out her project videos at wilkerdos.com.



BLAST CLOGS AWAY

This Drain King drain cleaner from GT Water Products is my go-to tool for removing tough clogs. When drains in basements, bathrooms or kitchens stop up and homeowners can't plunge the clog out, I hook this tool up to a garden hose, feed it into the drain and turn on the faucet.

Here's how it works: The bladder swells and wedges itself in the pipe, and its patented dispersing valve vibrates the

pipe while shooting jets of water to dislodge the clog safely, without chemicals. Available in several sizes, it costs \$10 to \$40 at hardware stores and Amazon.

JOHN WOOD, a plumber for ProMech, has 25 years under his plumber's belt.



EVERY LAST GLOB

Remember the toy that had you fit square pegs in the square holes and triangular pegs in the triangular holes? Taping knives are straight; buckets of joint compound are round—a toddler could figure out that there's a better tool for scooping out mud. Enter the bucket scoop: Its curved blade is shaped to match the bucket, so you can scoop out every last glob. Various brands are sold for about \$8 at home centers.





Notes that weather the storm

How did 3M make the ubiquitous Post-it notes better? By making them stickier and tougher so anyone can jot notes on anything in all kinds of weather. Post-it Extreme Notes stick to rough material and won't bleed ink if they get exposed to moisture. You can get a three-pad pack at hardware stores for about \$5.



LIGHTS, CAMERA, CATCH 'EM

This Kuna Maximus Camera Floodlight (\$230) shines bright, rolls the camera and gives you peace of mind while you're away. When motion is detected, the light turns on and the built-in camera starts recording. There's a two-way speaker you can speak through or use to sound an alarm. Through the connected app on your smartphone, you can always take a peek at what's going on while you're away—perfect for checking on your latest Amazon delivery or finding out how late your teen actually got home.

Kuna also makes a more discreet version of this in the form of an outdoor scone (\$180). The video is clear and the app sends a notification to your phone (if you want) when the motion sensor is set off. You can find Kuna's lighting solutions at The Home Depot and Lowe's and at the website, getkuna.com.

AARON MASSEY is an all-around DIY guy with a passion for building stuff and making videos. He shares tutorials and plans at mrfixitdiy.com.



EASY-READ TAPE

Since getting my hands on a FastCap Pro Carpenter tape (\$10), I've refused to use any other tape measure. I love that it shows the fractions down to 1/16 in. right side up on both sides of the tape, which means I can pull

the tape from the left or the right and not have to read numbers upside down. It has an erasable writing pad, a built-in pencil sharpener and a white blade, which I prefer to yellow.

TAMAR HANNAH transforms rough lumber into unique conversation pieces. She creates project plans and shares them on her site, 3x3custom.com.



STUFF WE LOVE



Multi-utility knife

Fiskars has a great new knife designed for hanging drywall. The Pro Drywall's Utility Knife does double duty as a retractable utility knife and a switchblade-style jab saw. It's a bit pricy for weekend warriors, but if you do lots of drywall work, it will be well worth the \$30. Find one at a hardware store or fiskars.com.



FOLDABLE, ROLLABLE, SHAPEABLE SANDPAPER

Folding a piece of sandpaper usually means shortening its life span. Not so with these 3M Ultra Flexible Sanding Sheets. They're super tough and have a bit of stretch, so they won't tear nearly as easily as their paper counterparts. Just wrap a sheet around a block, dowel

or other profile to match your needs, then go to town.

The sheets are great for wet sanding. If your sheet gets clogged, just rinse it off or crinkle it up to release the dust. Available at hardware stores in a 10-1/2-ft. roll for \$11 or in a four-pack of half sheets for less than \$5.

TIME-SAVING BRUSH AND ROLLER COVERS

With a Paint Poncho, your paintbrush can stay fresh and reusable without cleaning between painting sessions. I know because I recently used one with the same brush and color for three straight weeks at my house with no bristle drying at all. Five-packs of brush or roller Paint Ponchos cost \$5 and \$6 respectively at paintponcho.com.

MIKE BERNER, ASSOCIATE EDITOR



These *Savings* don't require DIY.

GEICO could save you **\$500 or more** on car insurance.
Not only that, but the GEICO Insurance Agency can
help you get the affordable insurance coverage you
need for your beautiful home and belongings.

So ... What was that decor you were eyeing?
Get a quote today.

GEICO®

geico.com | 1-800-947-AUTO | Local Office



Some discounts, coverages, payment plans and features are not available in all states, in all GEICO companies, or in all situations. Average savings amount based on national GEICO New Policyholder survey data through March 2008. Homeowners, renters and condo coverages are written through non-affiliated insurance companies and are secured through the GEICO Insurance Agency, Inc. GEICO is a registered service mark of Government Employees Insurance Company, Washington, D.C. 20076; a Berkshire Hathaway Inc. subsidiary. © 2009 GEICO

Handy Hints®

Clever solutions from our readers

SHARE
YOUR
HANDY HINT
WITH US!

submissions@
familyhandyman.com



Rust Prevention Pouch

It's difficult to keep your tools free of rust if your toolbox is in an unconditioned garage or in the bed of your truck. Moisture in the air invades those spaces in a hurry, causing tools to rust. To absorb the moisture and prevent rust, I put a scoop of silica crystal cat litter in a rag and then tie it shut. I drop a pouch in every toolbox and replace them once a year.

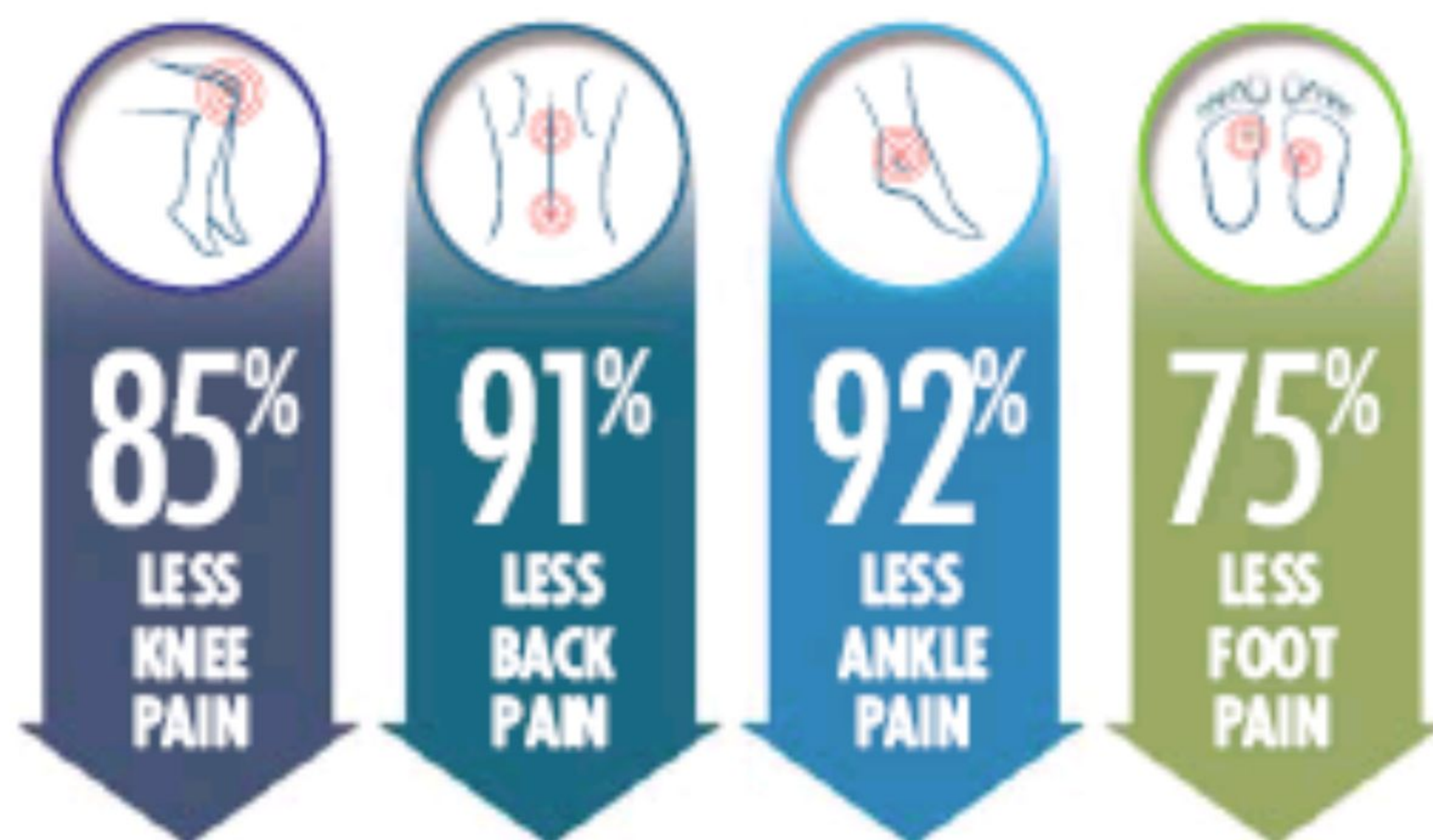
RICK AMBRASAS

LIVE LIFE WITHOUT PAIN

Plantar Fasciitis • Arthritis • Joint Pain • Heel Spurs • Back & Knee Pain



PATENTED VERSOSHOCK® SOLE SHOCK ABSORPTION SYSTEM



*Results of a double-blind study conducted by Olive View UCLA Medical Center.

“I've had lower back pain for years. Walking in these shoes was life changing for me. I feel like I'm walking on air.”

– Bill F.

Enjoy the benefits of exercise
with proven pain relief.

- ✓ Ultimate Comfort
- ✓ Renewed Energy
- ✓ Maximum Protection
- ✓ Improve Posture

G-DEFY ION \$150

X-WIDE
WIDTH
AVAILABLE

Men Sizes 7.5-15 M/W/XW

- Black TB9025MBB
- Red/Gray TB9022MRG

Women Sizes 6-11 M/W/XW

- Black/Blue TB9022FTL
- Gray/Teal TB9022FGU



**\$30 OFF
YOUR ORDER**

Promo Code PH2CLJ4
www.gravitydefyer.com

Expires June 30, 2019

Free Exchanges • Free Returns
100% Satisfaction Guaranteed

Call 1(800) 429-0039

Gravity Defyer Corp.

10643 Glenoaks Blvd. Pacoima, CA 91331



ACCREDITED
BUSINESS

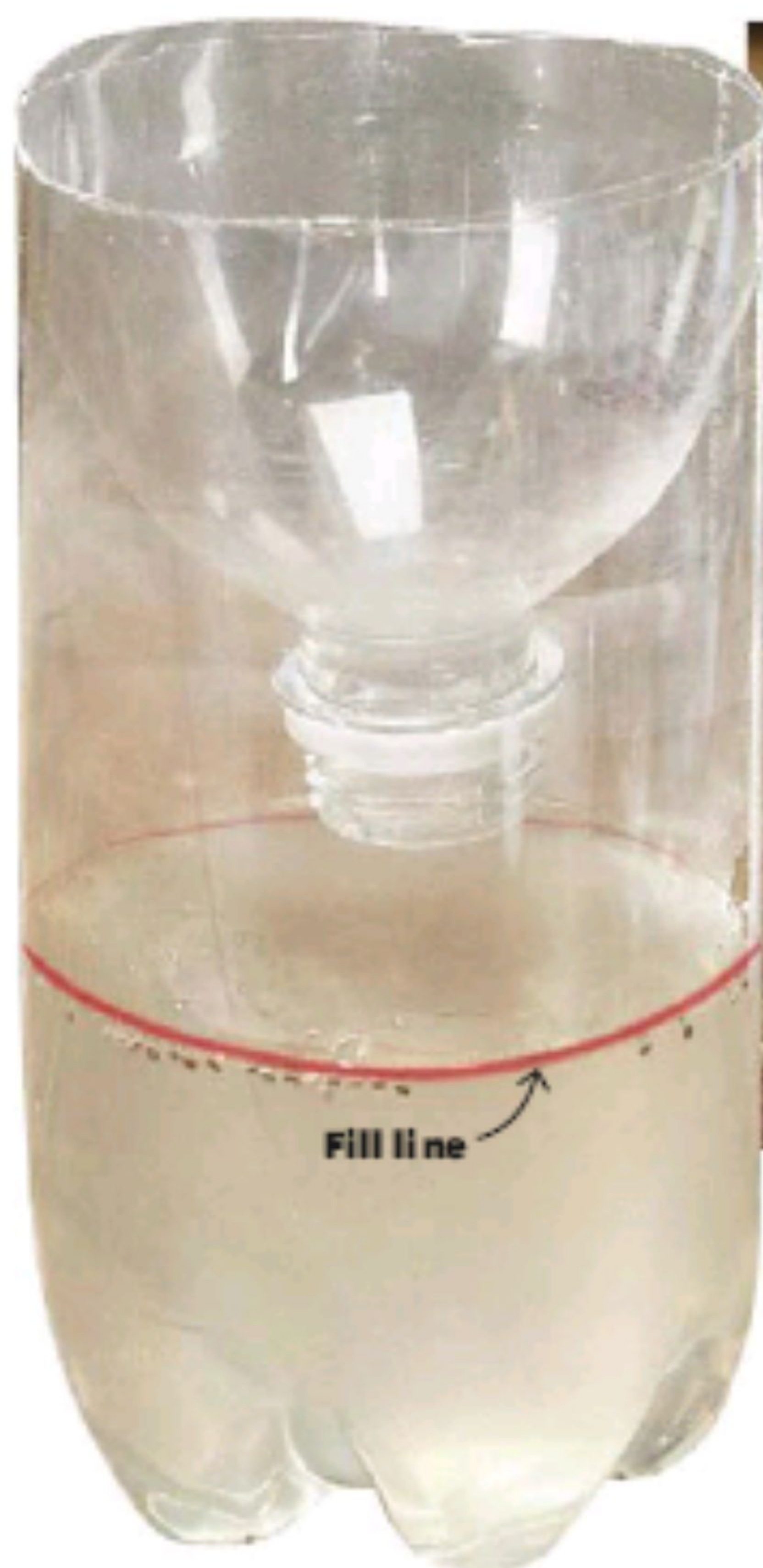
VersoShock® U.S. Patent #8,558,555; 5,268,821. This product has not been evaluated by the FDA. Not intended to treat, cure or prevent any disease. \$30 off applies to orders of \$100 or more for this limited time offer. 9% CA sales tax applies to orders in California. Shoes must be returned within 30 days in like-new condition for full refund or exchange. Credit card authorization required. See website for complete details.



Wine Cork Fire Starters

Fill a mason jar with wine corks and rubbing alcohol and let the corks soak. The corks will burn fairly well in a few days, but for the best results, soak them for a week. Be sure the corks are natural, not synthetic.

LAURIE AAMOTH



BOTTLE GNAT TRAP

Want to get rid of gnats or fruit flies? Wash a soda bottle, cut off the top and make a line at about the one-third mark. Dissolve 3 tablespoons of sugar in 1/4 cup of vinegar, pour it in and add water up to the line. Set the top upside down in the bottle. The pests can easily get in, but it's hard for them to get out. Place the trap wherever the bugs gather.

KELLY DAHLIN



POSTER-PUTTY PORT CLEANER

I use my computer a lot in my shop. Once, the magnetic charging port collected a bunch of metal filings. I tried blowing out the filings with compressed air, but that didn't work; the magnet wouldn't let go of them. What finally did the trick was a ball of poster putty. It removes debris without leaving any residue.

TRAVIS LARSON, SENIOR EDITOR



COFFEE-CAN SALT SHAKER

I buy ice-melt compound in 20-lb. bags, which aren't handy for dispensing. So I pour the granules into an empty coffee can and punch holes in the lid.

MIKE MAGNUSSEN

Restoration & Maintenance Products

ABATRON

**Solutions for your
toughest projects**

- Wood
- Concrete
- Metal
- Plaster
- Stone
- Porcelain



**Free Catalog • www.abatron.com
1-800-445-1754**

DR® CHIPPER SHREDDERS

- Chip big branches up to 5" in diameter.
- Shred yard & garden waste up to 1.5" thick.
- Powerful engines spin massive flywheels and shredding hammers to reduce everything FAST.



DRchipper.com

RENEW Your Driveway...



...with the amazing DR® POWER GRADER!

SAVES YOU MONEY—loosens and redistributes existing material, saving you from purchasing new gravel or stone.

EASY TO USE—tows behind your ATV or riding mower, filling in potholes and ruts.

PRECISE CONTROL of grading depth is adjustable from your driver's seat.

AMAZINGLY DURABLE carbide teeth last 10X longer than steel on ordinary box scrapers.

DRpowergrader.com

**FREE SHIPPING
6 MONTH TRIAL**

SOME LIMITATIONS APPLY
Go online or call for details.

Go Online or Call for FREE Info Kit!

TOLL FREE 800-379-9436



Home Smarts

MAINTENANCE & REPAIR | HEALTH | MONEY | TECH | STORAGE & ORGANIZATION

Share your
fixes, heads-ups
or DIY advice
with us!

submissions@
familyhandyman.com

The trouble with 4x4s

If you need 4x4s or other large posts, inspect them first. Why? Many of them, especially 8-ft. posts, come from logs used for veneer, which is peeled from the logs like paper towels from a roll, leaving only the very center of the log. The center "pith" is the least stable part of the log and is very prone to twisting, splitting and bowing. This is particularly true of treated 4x4s because the treatment exaggerates the warping. Examine the stack of posts at the home center and reject the posts with end grain that looks like a bull's-eye. Choose the straightest posts you can find, with the least amount of center pith.

BRAD HOLDEN, ASSOCIATE EDITOR

BEST OF THE PILE

Look for posts without a "bull's-eye" and growth rings from edge to edge. Perfect is rare. Find the best you can.

Reduce Home Allergens

When pollen and mold levels are high, allergy symptoms might force you indoors. But indoor allergens are troublesome too. They can cause sneezing, a stuffy or runny nose, and itchy, watery eyes. Your best bet for beating indoor allergies is to banish the things that trigger them. For starters, vacuum regularly, preferably with a HEPA-rated vacuum cleaner so you're not blasting allergens back into the air. When you dust, use a damp cloth to help trap the allergens. Below are a few specific allergy triggers and ways to combat them.



PET ALLERGENS

THE CAUSE: Dead skin flakes and saliva in dogs and cats, and urine in rabbits, guinea pigs, hamsters and mice. Although some animals trigger more allergic reactions than others, there is no such thing as a hypoallergenic pet.

THE FIX:

- Keep pets out of your bedroom.
- Regularly wash or replace your pet's bedding and toys.
- In extreme cases, consider replacing carpets with hard-surface floors.



MOLD & MILDEW

THE CAUSE:

Dampness.

THE FIX:

- Repair roof and plumbing leaks.
- Keep damp spaces—such as kitchens, bathrooms and basements—clean and well-ventilated.
- Replace vent switches with timers to fully vent moisture during and after showers.
- Don't install carpeting on concrete or damp floors.
- Don't store items like towels, bedding or clothes in damp areas.



COCKROACHES

THE CAUSE: Saliva, feces and body parts of cockroaches, which are often found in urban areas and in the southern United States.

THE FIX:

- Block any cracks or gaps in walls and windows where cockroaches can enter.
- Repair roof and plumbing leaks to eliminate the water sources needed by cockroaches.
- Apply bug barrier products around your home's exterior perimeter.



POLLEN

THE CAUSE:

Spores that make their way inside your home.

THE FIX:

- Keep doors and windows closed to prevent pollen from drifting in.
- Weatherproof around your doors and windows to seal any gaps.
- Change your air conditioner filter regularly.



DUST MITES

THE CAUSE: Warm, humid areas such as bedding and carpeting.

THE FIX:

- Allergen-proof covers on bedding.
- Wash bedding weekly in hot water and dry with high heat.
- Consider replacing carpeting with hard-surface flooring like tile, hardwood or vinyl. If you don't want bare floors, use washable area rugs.

STEPHANIE THURROTT, CONTRIBUTING EDITOR



REMOVE A BATHTUB DRAIN

Need to replace your tub drain? Removing the old one can be a real chore. Typically, you'd remove the drain with a drain wrench (\$10 online; Photo 1), but if the drain's crossbars are gone, you'll have to use a drain extractor (\$20 online; Photo 2). If the drain is really old, sometimes even a drain extractor isn't enough; you'll first have to knock it loose using an old chisel to bite into the metal (Photo 3). Once the drain is loosened a bit, turn it the rest of the way with the drain extractor.

BRAD HOLDEN
ASSOCIATE EDITOR



Correction

Shear pins for snow blowers come in a variety of designs, but the pins we showed on p. 75 in our Winter '19 issue were *not* true shear pins. Shear pins are designed to break when an object gets jammed in the auger. If you install bolts or pins that aren't designed to break, or shear pins that aren't designed for your blower, you risk damage to the machine and injury to yourself.



Secure Toilet Bolts to the Flange

When I install a toilet, I always fasten the flange bolts to the floor flange with a second set of nuts. Better flange bolt kits come with an extra set of nuts just for this purpose. The extra nuts anchor the bolts as you set the toilet in place. Use only corrosion-resistant brass or stainless-steel bolt kits.

LES ZELL
MASTER PLUMBER



Will Your Homeowners Insurance Pay for Bed Bug Extermination?

The cost for professional bed bug extermination typically ranges from \$500 to \$1,500, depending on the extent of the invasion. An infestation is a minor home disaster, so extermination must be covered, right?

Not so fast. Insurance companies classify bed bugs as a home maintenance issue and thus the owner's responsibility, says Michael Barry, spokesman for the nonprofit Insurance Information Institute.

A BAD RISK

Although bed bug infestations occur across the United States, they are too random (and costly) to fit insurance risk models, Barry says. "No insurer wants to take this on." Nor does renters insurance cover bed bugs, although in some locales—such as New York City—landlords are required to remove them.

CAN YOU GET RID OF THEM YOURSELF?

If you do face an invasion, it's possible to exterminate bed bugs yourself. It's a huge investment of time, but you'll save quite a bit of money. To learn how, visit familyhandyman.com and search for "how to get rid of bed bugs." For still more information, the EPA offers tips on extermination options at epa.gov/bedbugs. The National Pest Management



BED BUGS: THE (NOT SO) FUN FACTS

- 500 - The number of eggs a single bed bug can lay in a lifetime
- 50 - U.S. states where they are found
- 3x - The rate of urban vs. rural infestation
- 7x - The amount of blood, relative to body weight, they can consume
- 122 degrees F - The maximum temperature at which they'll survive

Source: National Pest Management Association



Association offers guidance at pestworld.org. And for a detailed look at homeowners and renters insurance, visit the Insurance Information Institute at iii.org.

FOCUS ON PREVENTION

Without a doubt, the best way to prevent bed bugs is to not bring

them home in the first place.

- Inspect used furniture before you bring it home. Live bugs are visible, as are dark spots of excrement. Crushed bed bugs leave a reddish stain.
- Vacuum frequently.
- Reduce clutter in your home, making cleaning easier.
- At a hotel, set suitcases on the luggage rack, not on the floor or bed.
- Inspect the hotel luggage rack before using it.
- Some savvy travelers even stow their suitcases in the bathtub.
- When you travel, keep dirty clothes in a trash bag and put them directly in the wash when you get home.

CHARLIE SLACK

CONTRIBUTING EDITOR

BED BUG HIDING SPOTS

Distribution of bed bugs found in 13 infested apartments:

- Box Spring: 34.6%
- Couch/Chair: 22.6%
- Mattress: 22.4%
- Frame/Headboard: 13.4%
- Walls/Ceiling: 2.3%
- Baseboard Areas: 1.4%
- Nightstand/Dresser: 0.2%
- Other: 3.1%



Getting Started with Security Cameras

Just the sight of a security camera can help prevent a break-in. And if someone is snooping around outside your house, motion and sound notifications can alert you immediately. An indoor camera lets you check on your kids or pets while you're at work. You can even use a speaker on the camera to tell your kids to start their homework.

STORAGE AND POWER

There are several types of security cameras, and getting started can be overwhelming. Cameras usually include streaming on your smartphone while you're away. Some systems offer free cloud storage for a set number of days, referred to as "rolling cloud storage." For example, if you have seven days of storage, you can see only the previous seven days. But, you can download any footage you need to keep. Other systems require a subscription for storage or are equipped with a memory card. Without storage, a camera provides only a live stream. Following are several options for powering and connecting your camera.

WIRED/IP

These are more traditional, heavy-duty security camera systems. Each camera connects to a recorder with an Ethernet cable. This provides



you with a stable 24/7 connection, independent from the internet. The downside of wired cameras is their complicated installation.

WI-FI

Wi-Fi cameras connect to the internet without complex wiring. Plug your camera into a power outlet, connect it to your Wi-Fi in the app, and it's done. These are easy to set up and move, but since they depend on the internet, crashes and even hacks are concerns.

BATTERY WI-FI

Completely wire-free, these cameras work on rechargeable batteries. Install them in a tree or anywhere your internet service can reach. When it's time to recharge, the app will notify you to plug the camera in for recharging or to replace the batteries.

REED & ALYSA KLEINMAN
CONTRIBUTING EDITORS
Smarthomesolver.com

EXPERT PICKS:



Wyze Cam V2: Super-affordable indoor camera (\$26) with 14 days of free rolling cloud storage. Incredible quality for the price, and you can even record 24/7 on an SD card.



Nest Cam: Integrates with Nest thermostats and other smart home tech. There is no free video cloud storage, but continuous video recording comes with your subscription. (Nest Cam Indoor, \$200).



Arlo Pro 2: Seven days of free rolling cloud storage, works on rechargeable battery or outlet power, and is weather resistant. You cannot record 24/7 unless you have a paid subscription and plug it in. (Arlo Pro 2 VMS4230P, \$450).

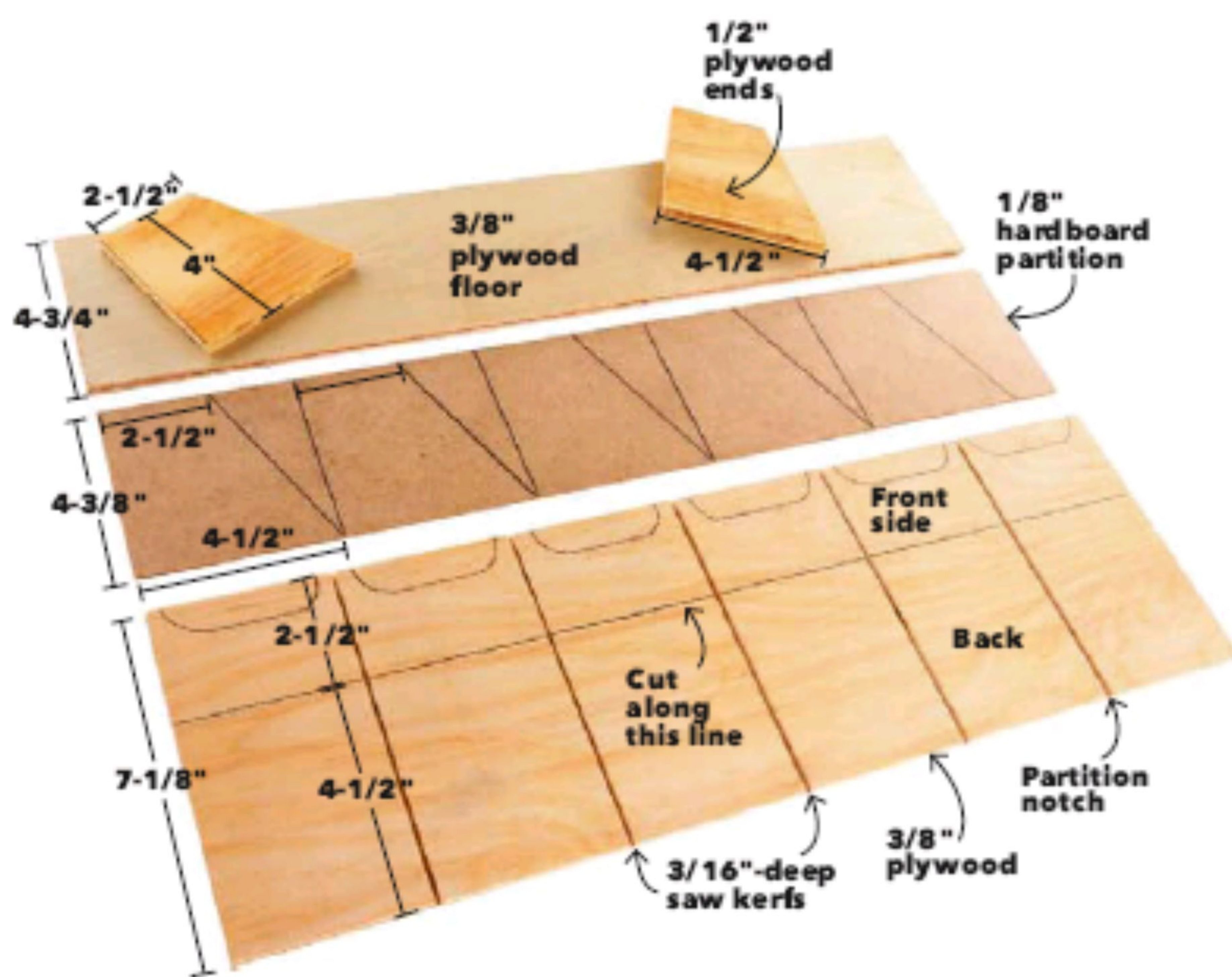
Adjustable Hardware Bins



Build these bin racks with removable partitions to suit the size of the hardware you're storing.

On a table saw, cut 3/16-in.-deep slots every 4 in. across the 24-in. x 7-1/8-in. piece of plywood. Make the slots just wide enough for the 1/8-in.-thick partition to slide in smoothly. Now saw the slotted piece into strips 4-1/2 in. and 2-1/2 in. wide. Use 1-in. brads and glue to assemble the sides and angled ends, then nail and glue the floor on. Drop the angled partitions into the slots, mount the rack to a wall, and go nuts sorting and organizing your scattered hardware.

BRUCE WIEBE
CONTRIBUTING EDITOR



RAISED GARDENS

A fresh way to grow a bumper crop

By Tom Dvorak

WHAT IT TAKES

TIME	COST	SKILL LEVEL
1 day	\$200	Beginner

TOOLS Circular saw or miter saw, metal shears, drill/driver, stapler, level





ACCESSORIZE IT! EASY ADD-ON OPTIONS:

1 SCREEN OUT CRITTERS. Simple arched ribs made from CPVC pipe let you protect your crop from hungry birds and beasts, especially deer!

2 EXTEND THE SEASON. Those same ribs can support plastic sheathing. This creates a "cold frame," allowing you to start plants earlier in spring and protect them against frost in autumn.

3 WATER ONCE A MONTH. Fill a buried reservoir that keeps soil moist for weeks. For details on how to add this feature to any raised planter, search for "self watering" at familyhandyman.com.

Some gardeners prefer traditional ground-level gardening, but not the ones we've been hearing from in recent years. Those who've made the switch love raised garden planters and won't go back.

The list of reasons is long, but these are the main advantages:

- Tending raised plants is a lot easier on the back and knees.
- You can fill planters with top-quality soil for more productivity in a smaller space.
- Raised beds curtail creeping weeds and drifting seeds.
- The height discourages pests, especially rabbits.

To build on these advantages, we designed our own raised planter. On the outside, it looks a lot like others. But we engineered ours for longevity and simple construction. And we added some optional improvements to make an even better home for your vegetables.

Gathering materials

Everything you need is available at home centers for about \$200 per planter. We chose pressure-treated lumber that's cedar tone rather than green. Take the time to select straight, good-looking lumber. When you get it home, cover it with plastic to slow its drying. Pressure-treated lumber tends to warp badly as it dries; much better to let it dry after assembly when the parts are fastened together.



MEET THE EXPERT

Tom Dvorak is an engineer and carpenter who has found fame and fortune by contributing to *Family Handyman*.



1 BUILD THE END FRAMES

Clamp the parts to a flat surface with the best-looking sides face up. Join the parts with screws as detailed in Figure A. The bottom rails (C) require a 2-in.-deep countersink hole drilled with a 5/8-in. spade bit.



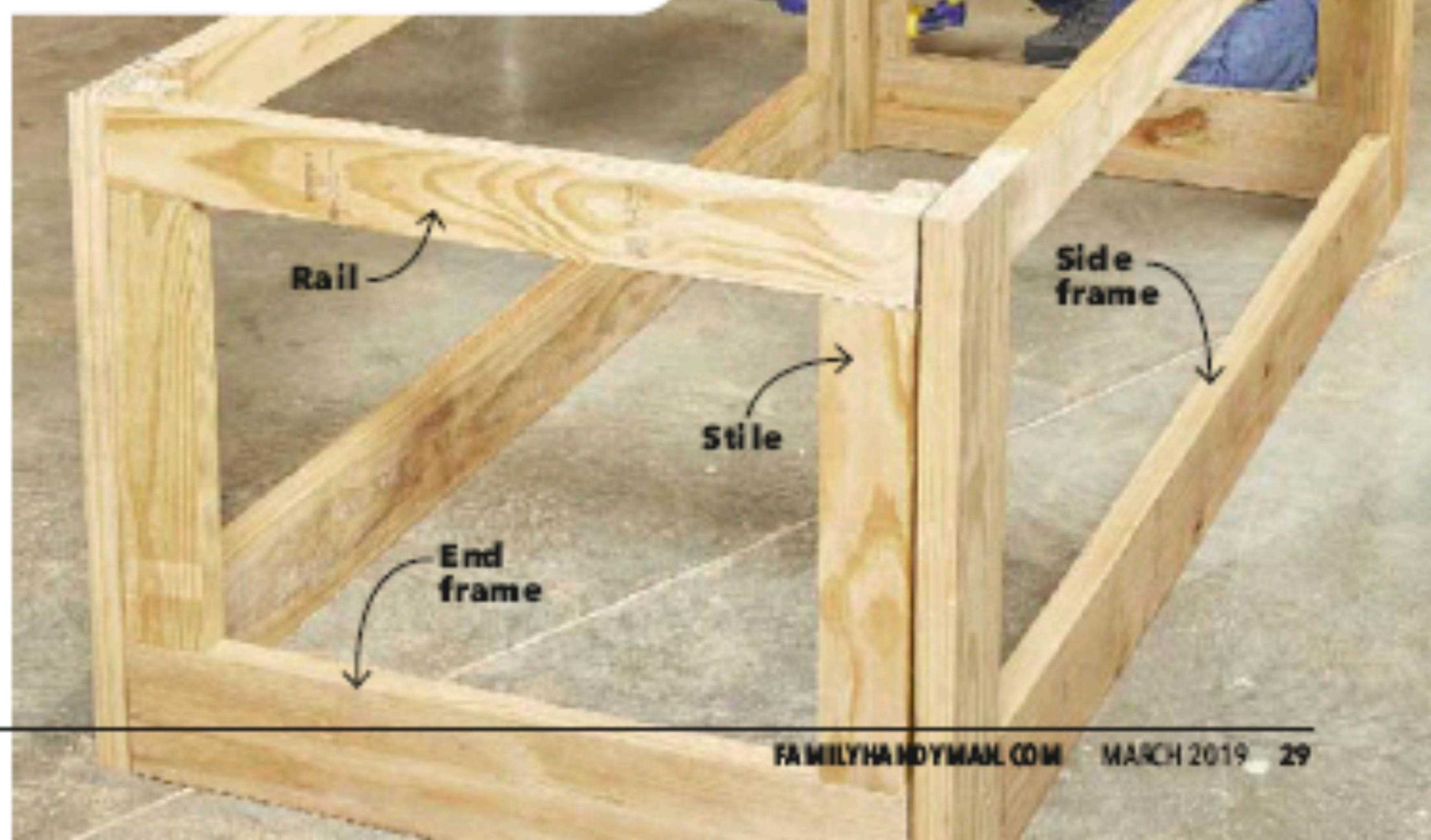
2 BUILD THE SIDE FRAMES

Fasten the side frame parts with "toe screws" (screws driven at an angle). If any of the screw heads don't sink into the wood, drill a shallow countersink hole sized to match the screw head. See Figure A for details.



3 ASSEMBLE THE BOX

Join the frames by driving screws through cleats at inside corners. Be sure that the "show" sides of the frames are facing out.





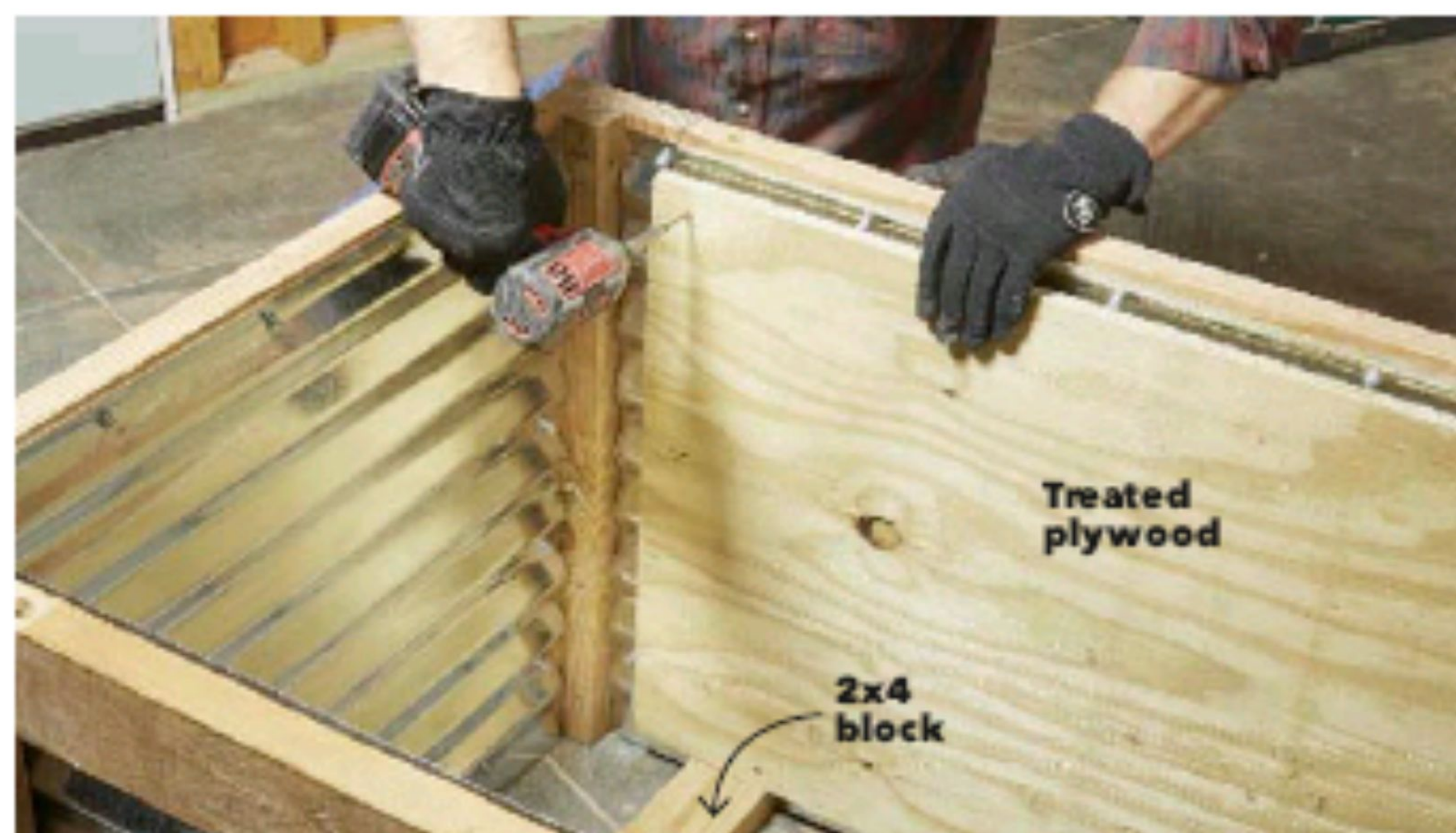
4 CUT THE METAL

First, slip on gloves—those metal edges are sharp! Then cut the panels to length with metal shears (\$25). Standard 26-in.-wide metal panels don't require cutting to width.



5 INSTALL THE METAL

Screw the panels to the frames, placing screws every 8 in. along the top and bottom edges. Along the side edges, drive a screw at every second rib.



6 ADD PLYWOOD BACKING

Reinforce light-gauge corrugated metal by screwing plywood over the metal. Set the plywood on 2x4 blocks to help position it.

Home centers typically carry light-gauge corrugated metal, which is fine for this project as long as you reinforce it with plywood (see Photo 6). Our metal is 30 gauge. When looking at gauges of metal, remember that a higher number means thinner material. Also, make sure all the screws you choose are rated for use with treated lumber.

Building tips

■ Start by cutting the parts according to the Cutting List. Cut shorter parts from your imperfect boards and save your straightest material for the long parts (E, G, M).

■ To avoid assembly mix-ups, note that the rails fit between the stiles on the side frames. On the end frames, the stiles fit between the rails.

■ We didn't use a finish on our planters. If you do, note that it will be much easier to apply before you install the metal panels.

■ If you're tempted to miter the corners of the rim, reconsider. Outdoor miters look better than square-cut butt joints at first, but they inevitably develop ugly gaps as the wood absorbs and releases moisture.

■ Here's how to install the planter: Set it into position, then slice into the soil around it, marking its footprint. Move the planter aside and dig a shallow perimeter trench, just a couple inches deep. Set the planter in place again and check it for level in both directions. Add soil or deepen the trench to level the planter.

■ When the planter is in place, cut a couple large slits in the bottom of the plastic liner so excess water can drain into the soil below—unless you plan to install a self-watering system. That requires a watertight liner.

■ Filling this planter requires a lot of soil, almost a cubic yard. But there are ways to fill the lower half of the planter with less effort and expense. One common filler is plastic milk jugs (with caps screwed on tight). Another trick is to set plastic buckets in place upside down.



7 LINE THE BOX

Staple plastic sheeting to the inside of the box, then trim off the excess with a utility knife. A plastic liner helps to keep the wood dry and the soil moist.



8 TRIM THE BOX

Top off the planter with a 2x6 rim. If necessary, add toe screws to the joints to hold parts flush.



EASY ARCHES FOR PEST OR FROST PROTECTION

Arches can support screen or mesh to stop pests, or poly sheeting to keep plants frost-free overnight. The three arches are simply 5-ft. sections of 1/2-in. CPVC pipe that you can bend and slip into 12-in. sleeves made from 1-in. PVC pipe. A 4-ft. x 25-ft. roll of fiberglass window screen costs about \$20.



The smartest bed in the world for the best sleep of your life, from \$999

Designed to keep you and your partner effortlessly comfortable, the Sleep Number 360® smart bed senses your movements then automatically adjusts. You can actually feel it contour to your head, neck, shoulders, back and hips, relieving pressure points.

Does your bed do that?®



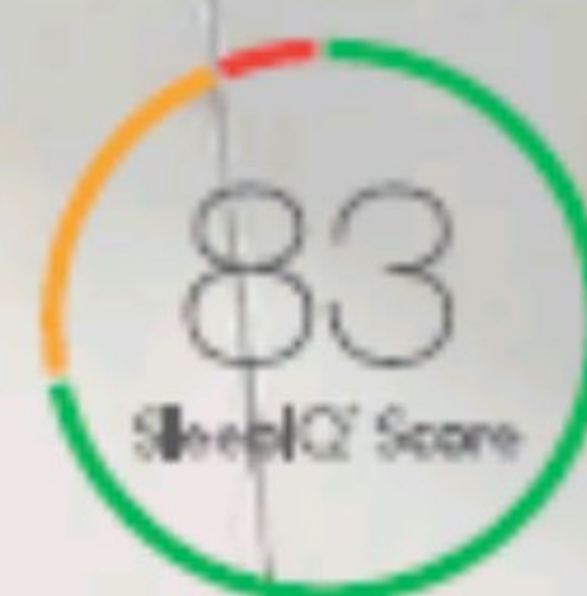
AUTOMATICALLY
RESPONDS TO YOU



ADJUSTABLE COMFORT
ON EACH SIDE



CONTOURS TO YOU
FOR MORE PROPER
SPINAL ALIGNMENT*



SHOWS HOW WELL
YOU'RE SLEEPING



25-YEAR
LIMITED WARRANTY†



100-NIGHT
TRIAL‡

sleep  number.

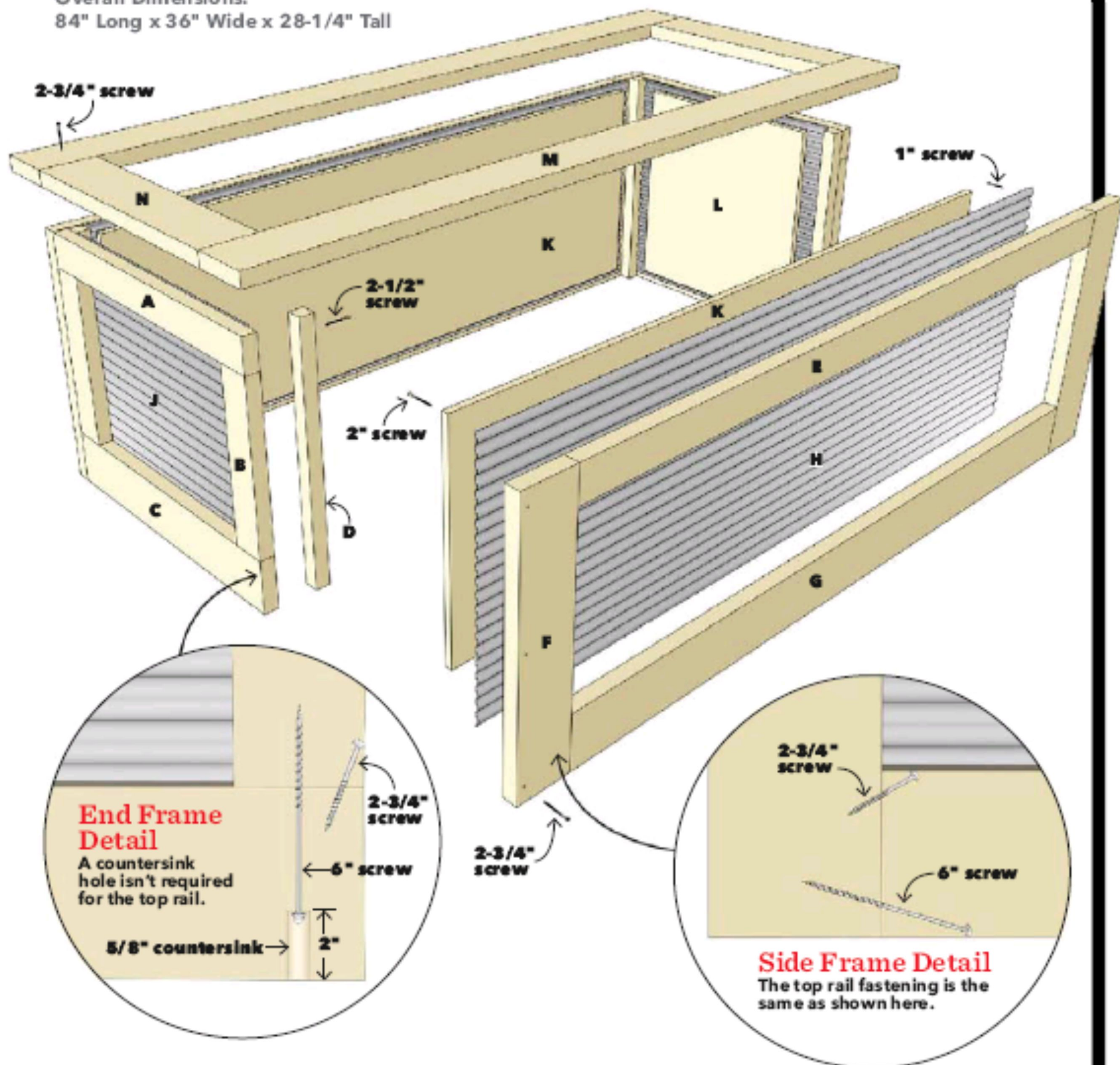
Call or Click for Your Free Catalog • 1.877.384.1052 (ext. 404339) • www.sleepnumber.com/handy

Upholstered furniture and pillows available at additional cost. Prices higher in AK and HI. *For a summary of clinical studies, visit sleepnumber.com. †2-Year Limited Warranty on SleepIQ® technology. Warranties available at sleepnumber.com. ‡Restrictions and exclusions apply. Does not apply to adjustable bases, Upholstered Collection, closed-out/clearance or demo floor model purchases or mattresses already exchanged under another In-Home Trial period. You pay return shipping. Refunds will be made to the original method of payment less original shipping/delivery fees. Visit sleepnumber.com for complete details. SLEEP NUMBER, SLEEP IQ, SLEEP NUMBER 360, the Double Arrow Design and SELECT COMFORT are registered trademarks of Sleep Number Corporation. ©2019 Sleep Number Corporation

Figure A Raised Garden Planter

Overall Dimensions:

84" Long x 36" Wide x 28-1/4" Tall



Materials List

ITEM	QTY.
2x6 x 10' treated lumber	5
2x4 x 8' treated lumber	4
2x2 x 8' treated lumber	2
3/4" x 4' x 8' treated plywood	1
26" x 1' corrugated metal panel	2
1/4" x 6" coated construction screws	1 lb.
1" sheet metal screws with washers	1 lb.
2" coated deck screws	1 lb.
2-1/2" coated deck screws	1 lb.
2-3/4" small-head deck screws	1 lb.
6-mil plastic, 9' x 12'	1
1/4" stainless steel staples	1 pkg.

Cutting List

KEY	QTY.	SIZE & DESCRIPTION
A	2	2x4 x 31" end frame top rails*
B	4	2x4 x 17-3/4" end frame stiles*
C	2	2x6 x 31" end frame bottom rails
D	4	1-1/2" x 1-1/2" x 26-3/4" cleats
E	2	2x4 x 71" side frame top rails
F	4	2x6 x 26-3/4" side frame stiles
G	2	2x6 x 71" side frame bottom rails
H	2	26" x 75-1/2" metal side panels
J	2	26" x 27-3/4" metal end panels
K	2	3/4" x 24" x 73-1/4" plywood side panels
L	2	3/4" x 24" x 22-3/4" plywood end panels
M	2	2x6 x 84" top side rails
N	2	2x6 x 25" top end rails

Want your plants to practically take care of themselves?

Search for "self watering" at FAMILYHANDYMAN.COM

*"Stiles" are the vertical parts of a frame.
 "Rails" are the horizontal parts. These terms are most often applied to cabinet doors and face frames.



More sizes[†], softer fabric[‡], long-lasting comfort.



* Registered Trademark of Kimberly-Clark Worldwide, Inc. © KCCWW



A better fit for your body.**

Depend[®] FIT-FLEX[®] Underwear gives you Trusted Protection in more sizes and an improved design for all around comfort.* Plus, it fits better than the leading bargain brand.**

GET A FREE SAMPLE AT DEPEND.COM

[†] vs. leading bargain brand

[‡] vs. previous FIT-FLEX[®] Underwear.

**vs. the leading bargain brand sizes small/medium.

Purchase by 2/26/19. Redeem within 30 days of purchase. Restrictions apply. See depend.com/yourbestfitguarantee for details.

BUY BETTER TRIM PAINT



A quest to find the best

By Mike Berner

I installed new trim when I replaced all the doors and windows in my house a few years ago. Unfortunately, I didn't get around to painting it. I recently decided it was time to finish the job, and the first step was to determine the paint that would perform best regardless of brand, sheen or color.

To research the options—for *Family Handyman* and myself—I picked up 12 trim paints to try. After running tests and conferring with pro painters and industry experts, I singled out a few top performers.

6 factors that matter

■ Cost

One thing I learned from the experts was that quality paint starts with expensive raw materials. That means cost is a pretty good predictor of the results you'll get. Using inexpensive paint could save a few bucks on the front end but cost you down the road. The paints I tested ranged in price from \$35 to \$90 per gallon.

■ Odor

I steered clear of any oil-based paints because of their smell, but some of the new acrylic-alkyd formulas still use solvent. These are a lot less stinky than pure oil-based paints, but some may bother sensitive noses.

■ Cleanup

With two kids under 2 running and crawling around, I don't want to mess with any solvent cleanup, and with so many great water-cleanup options, I don't think you should either.

■ Toughness

My trim takes some abuse from my kids. It's no fun sanding and repainting when it gets dinged up. I tested the toughness of the finish by dragging a piece of 80-grit sandpaper weighted with 1-lb. boxes of screws across it. The toughest paints took the punishment with only light scuffing.

■ Workability

A good trim paint can be applied in tight areas like corners and curved profiles and smoothed out before it starts to dry. I painted an intricate profile at a mitered corner to figure out which paints were more workable.



■ Smoothness

Smoothness is king when it comes to a trim paint job. I've worked hard to make my trim look great, and I don't want to ruin it with brush marks, drips or roller ridges. A good trim paint should flatten out and become smooth as it cures. Not all the paints I tested did this well.



THE TWO MOST COMMON OPTIONS FOR TRIM PAINT

ACRYLIC LATEX (\$15 TO \$70).

Most of the cans you see as you walk through the paint aisle will be labeled "acrylic." These vary drastically in both price and performance. Some gallons cost as little as \$15, but I steered clear of them. Paints made of 100 percent acrylic are more expensive but will cure harder and are less porous, making them durable and easy to clean. Acrylic latex paint can be a great choice for interior trim, but it won't match the toughness of an oil-based paint.

ACRYLIC-ALKYD HYBRID (\$35 TO \$90).

Acrylic-alkyd hybrid paints have been available to contractors for a while but are still fairly unknown to most homeowners. These paints have all the good qualities of an oil-based paint (leveling, hardness, flow and open time) while still providing easy soap-and-water cleanup and resistance to yellowing over time. Most brands have a version of these paints now, and they're definitely worth checking out.

TIP: Always ask specialty paint stores about possible discounts. My experience tells me they're often running some sort of unadvertised sale or may have the freedom to give discounts.

5 that stood out for me



SHERWIN-WILLIAMS EMERALD URETHANE TRIM ENAMEL (\$93). This represents a new category of paint, and it reminds me of a pigmented, water-based polyurethane—even the way it smells. This stuff produced the toughest coating of all the paints I tested. I dragged five 1-lb. boxes of screws on a piece of 80-grit sandpaper over the painted surface, and the paper just glided right along.

Emerald enamel brushes on well, has a long enough open time to work into the corners, and levels out nicely. It had less sheen than other paints; the semigloss I tested was more like a satin. If you want a super-hard finish and have \$90 to spend on a gallon, this is right up your alley. It would be my choice if cost didn't matter.



BEHR ALKYD (\$35). This acrylic-alkyd hybrid may not be as tough as other hybrid trim paints, but it's still pretty tough and because it's a great value, I included it in my list of standouts. It's thicker than other hybrids and brushes on really well. It also has great leveling characteristics and could get into the tough-to-reach areas in the mitered corners of my trim-painting test.



PPG BREAK-THROUGH! (\$70). This is one of the non-hybrid paints I tested. It's a low-VOC (volatile organic compound) formula with a strong ammonia odor, but it leveled out better than anything else on the list. According to the manufacturer, it's used to coat warehouse floors. If it can stand up to forklifts, it ought to be able to take on my son's Matchbox cars. It dries in 15 to 20 minutes, so you need to lay and smooth the paint quickly. It won't fill in dings or scratches, even small ones, so sand well before painting.



BENJAMIN MOORE ADVANCE (\$57). With a longer drying time, this acrylic-alkyd hybrid was the most workable of all the paints I tested, and it was also the runner-up in my toughness test. The downside is that you have to wait at least 16 hours between coats, compared with four to six hours for the other options. It also takes about 30 days to cure, so be careful reassembling parts or using the things you paint.



SHERWIN-WILLIAMS SNAPDRY (\$77). This acrylic latex ultra-fast-drying paint has great resistance to "blocking." That's the tendency of two painted surfaces to stick together, such as a door and its jamb. SnapDry's fast drying time worried me, but with some urgency, I was able to apply the paint and spread it before it became tacky. It leveled out fairly well and was one of the tougher paints I tested. It's harder to work with than others, but the super-fast drying time enables you to close your freshly painted door.

MY CHOICE

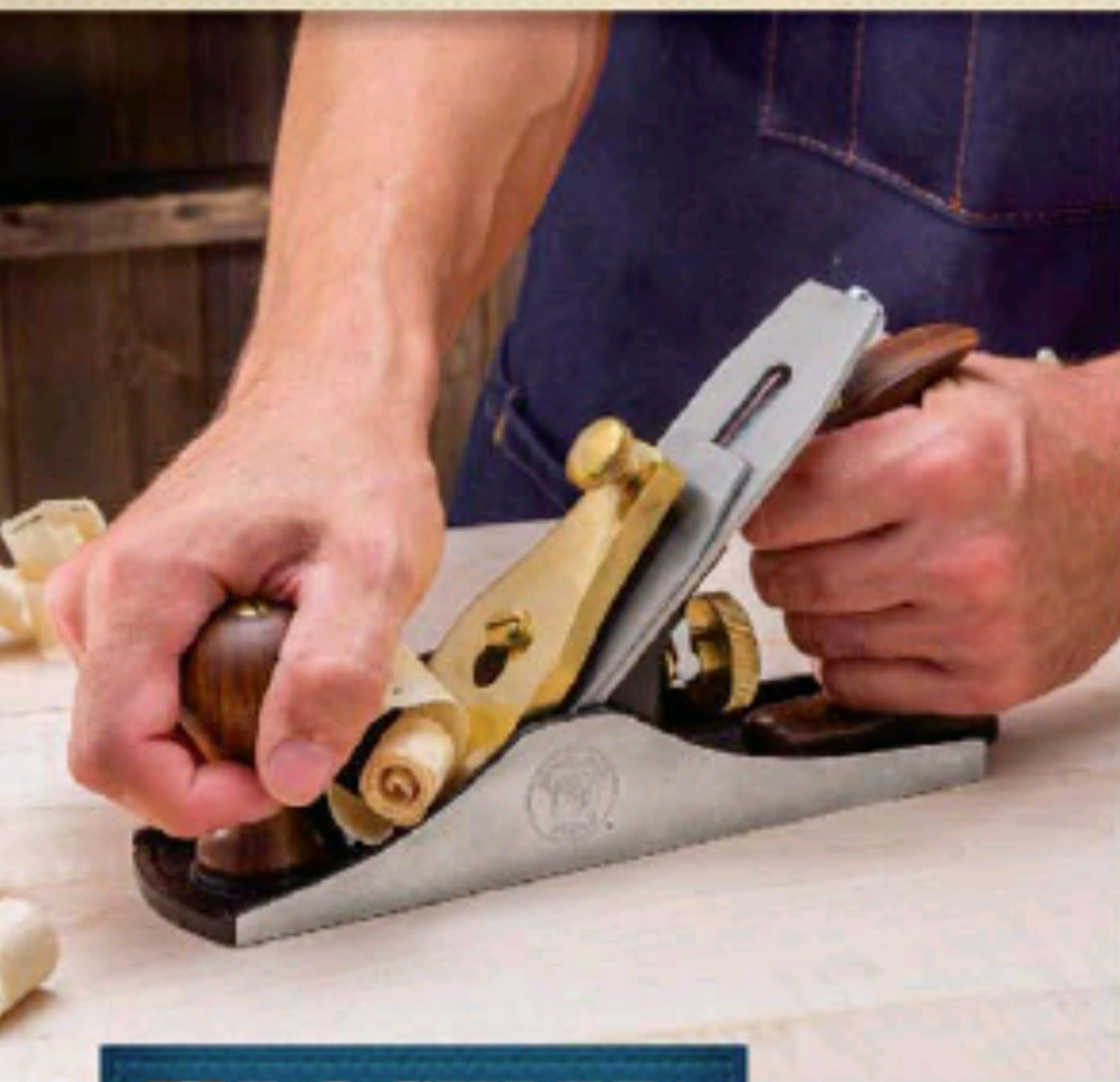
Ultimately, I decided to go with Benjamin Moore's Advance. I've worked so hard to make my trim look nice, and I want the paint to look like it's been sprayed on. The base trim also has to stand up to vacuum cleaners, play sets and toy trucks. Advance was a good balance of price and performance, and it hung with the top performers in my tests. I am making a sacrifice in recoat and cure times—I need to figure out how to add an extra day to the weekend.

MIKE BERNER, an associate editor at *Family Handyman*, is also a painting-expert-in-progress.



FAMILYHANDYMAN.COM MARCH 2019 39

Bench Dog hand planes: Quality you can feel



It's hard to think of a more enjoyable woodworking process than pushing a well-tuned hand plane. There's no noisy machinery creating dust or flying chips. It's just you, a finely-engineered hand tool and your material. Bench Dog hand planes exhibit top-quality components at a reasonable price. Once you've sliced a paper-thin shaving, you'll be looking for other hand tools that let you shed the power cord and *create with confidence*.

Check out our selection of Bench Dog® hand planes at Rockler.com/hand-tools/planes

EMAIL SUBSCRIBERS

**FREE
SHIPPING
EVERY DAY**
on \$35+ orders

Sign up for our emails and get every day **FREE SHIPPING!** For details go to rcklr.co/783 or call 1-800-279-4441 and mention code 783 at checkout.



ROCKLER®
WOODWORKING AND HARDWARE

Create with Confidence™

For a store near you or free catalog:

Rockler.com | 1-877-ROCKLER

SIDEWALK SURGERY

Replace crumbling concrete yourself and save hundreds

By Tom Dvorak

Concrete work is hard labor. But for small jobs, I usually find I can do it myself—and for about one-third the contractor's bid.

This sidewalk is a typical example. The materials and mixer rental cost about \$200; a pro would have charged me at least \$600. So I saved 400 bucks—not bad! You can do the same. Experience with concrete isn't necessary, but you will need tool know-how and a strong back. You can follow the steps here and find much more info at familyhandyman.com. Just search for "concrete."



MEET THE EXPERT

Tom Dvorak, a civil engineer, has spent 25 years buying bad houses and turning them into good homes.



BEFORE



AFTER

WHAT HAPPENED?

This sidewalk is more than 80 years old and still in good shape—mostly. So what went wrong with this section? Most likely, it was excess water: The builders added too much water to the mix or misted the surface to make troweling easier. Or maybe rain came before the concrete cured. Any of these circumstances makes concrete weak, porous and destined to disintegrate.

EXPECT A MISMATCH

New concrete looks very different from older concrete. The match improves with time, but that can mean years. One solution is to replace the entire sidewalk. Another approach—much easier—is to coat the whole sidewalk with a resurfacer. For an overview of that job, search for "resurface sidewalk" at familyhandyman.com.

1 DIG DITCHES

Trench along both sides of the walk at least 6 in. wide and 6 in. deep. These trenches will allow you to set up forms later.

2 CUT A CRACK STOP

When you break up the bad section, a cut that's at least 1-1/4 in. deep will prevent cracks from spreading to the good section. An existing groove in the concrete is usually the best place to cut. Cut with a diamond blade in a circular saw or an angle grinder.

3 BUST UP THE BAD SECTION

A small section of sidewalk usually doesn't require a jackhammer rental; try a sledgehammer first. A mattock is perfect for prying up broken concrete. Remove the chunks. For more concrete-busting tips, search for "concrete demolition" at familyhandyman.com.

4 PLACE THE FORMS

Select straight 2x4s for the forms and drive stakes every 24 in. Position the forms even with the adjoining sections of sidewalk, then drive screws through the stakes into the forms. The forms should feel rock-solid. If not, add stakes.

5 TRIM OFF THE STAKES

Cut the stakes flush with the forms with a handsaw or recip saw. Then span the forms with a 2x4 and slide it along the length of the forms. It should slide smoothly without hitting obstructions.



USE YOUR BLADE
GUARD—DON'T BE
LIKE TO M!





6 PREPARE THE BASE

Set a 2x4 across the forms and measure to the soil or gravel below in several spots. Your goal is a 4-in.-deep space for concrete. You may need to add or remove material. Then compact the base with a hand tamper (\$30 at home centers).

7 ADD EXPANSION JOINTS

Tack expansion joint material to the existing concrete with 1-in. masonry nails. A 50-ft. roll of expansion joint costs about \$20 at home centers.

8 OIL THE FORMS

A "release agent" allows for easy form removal after the concrete has cured. Spray lubricant is fast, but you can use a rag to wipe on any oil.

9 ADD REBAR

Rebar isn't essential for sidewalks, but it adds strength and longevity. The 3/8-in. rebar and support "chairs" shown cost less than \$20. "Pin" the new concrete to the old: Drill 3-in.-deep holes into the old concrete, insert 16-in. sections of rebar and tie the rebar frame to the pins (**Photo 10**).

More Concrete Knowledge

Get tips and how-to help for any concrete project at familyhandyman.com. Just search for "concrete."

10 WET THE BASE

Dry soil or gravel can absorb water and cause concrete to dry out quickly, before it has time to fully cure. Give the base a good dousing, but not enough to create puddles.

11 MAKE A MEASURING BUCKET

A strong, workable concrete mix contains just the right amount of water; follow the instructions on the bag. Measure the water into a bucket and mark that level on the bucket.

12 MIX AND DUMP

Consider renting a small concrete mixer (\$50 per day). Aside from saving you some hard labor, it lets you mix faster, so all your concrete will be at the same stage in the curing process. And that allows for a more consistent finish.

13 SCREED IT FLAT

Drag a 2x4 screed board over the forms as you add concrete and fill in any low spots. When the form is evenly filled, round up a helper for the final screed. With each of you holding one side of the screed board and making a sawing motion, screed off the entire length of the fresh concrete.





14

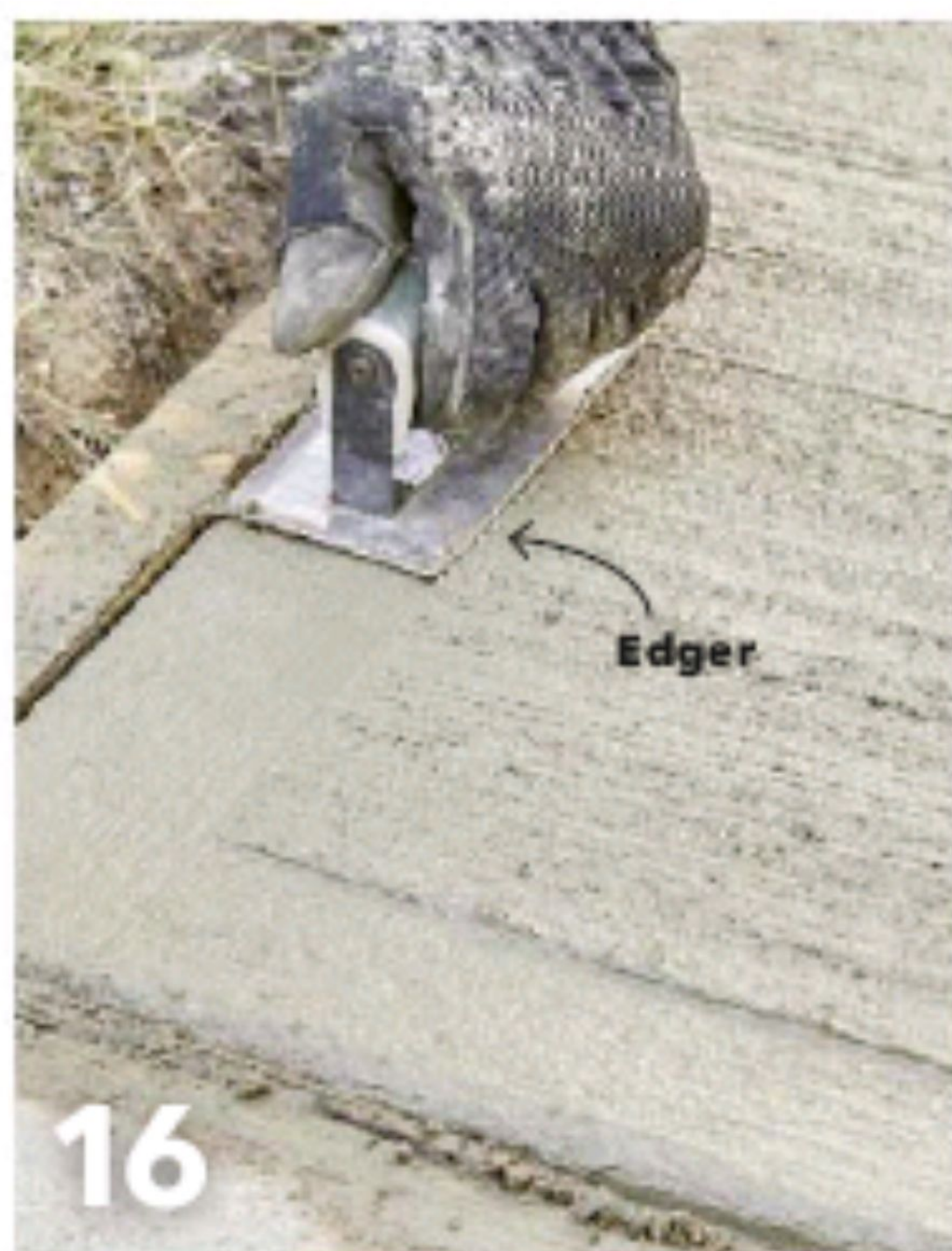
Float

14 FLOAT THE CONCRETE

Immediately after the final screed, smooth the concrete with a wood or magnesium float. Don't worry about small ridges left by the float; brooming the surface will erase them.



15



16

Edger

15 BROOM THE SURFACE

Drag a broom lightly across the concrete to create a nonslip surface. The time to do this is typically 30 minutes after floating, but that will vary a little depending on the temperature and humidity.

16 EDGE THE PERIMETER

An edger (\$10) forms a rounded edge, which looks good and is less likely to chip off. This can be done before or after you broom the surface.

17 GROOVE THE SURFACE

A groover (\$10) cuts a "control joint," which encourages any cracking to occur in the joint, rather than randomly. Typically, control joints are spaced 5 to 8 ft. apart.



17

Groover

Tips for a smooth, successful project

- Once you add water to concrete mix, the clock starts ticking. So the most important step in any concrete work is preparation. Mentally run through the entire job, make a list, and be absolutely certain you have all your tools and materials ready to go.
- To determine how many bags of concrete mix you need, search online for "bagged concrete calculator." Buy a couple extra bags. Running out can lead to disaster.
- Consider renting a mixer or calling in a ready-mix truck. Here's my personal rule: If you need more than 15 bags, rent a mixer. If you need more than 30 bags, order ready-mix.
- Whether you're mixing by hand or using a mixer, it's best to have a helper so you can get the final batch mixed before the first batch becomes too stiff to work with.
- A couple hours after finishing the concrete, cover it with painter's plastic for a few days. Concrete that stays wet longer grows stronger.
- Wait overnight (or longer) before you remove the forms.



INTRODUCING OUR ALL-NEW **DIY** QUICK CLASS SUBSCRIPTION

Get access to our complete library of DIY University quick classes—including two new projects per month! Get the skills to replace or fix a broken toilet, build a workshop, add elegant kitchen storage, and so much more.



START FREE

No risk. Unlock access to expert DIY and home improvement classes today.



CREATED BY THE EXPERTS

Get 64 years of DIY experience from experts and instructors at Family Handyman.



24/7 ACCESS

Access your classes anytime, anywhere—with a computer, tablet or smartphone.

Expert Advice, Unlimited Quick Classes, Start Your 14-Day **FREE** trial now! >>

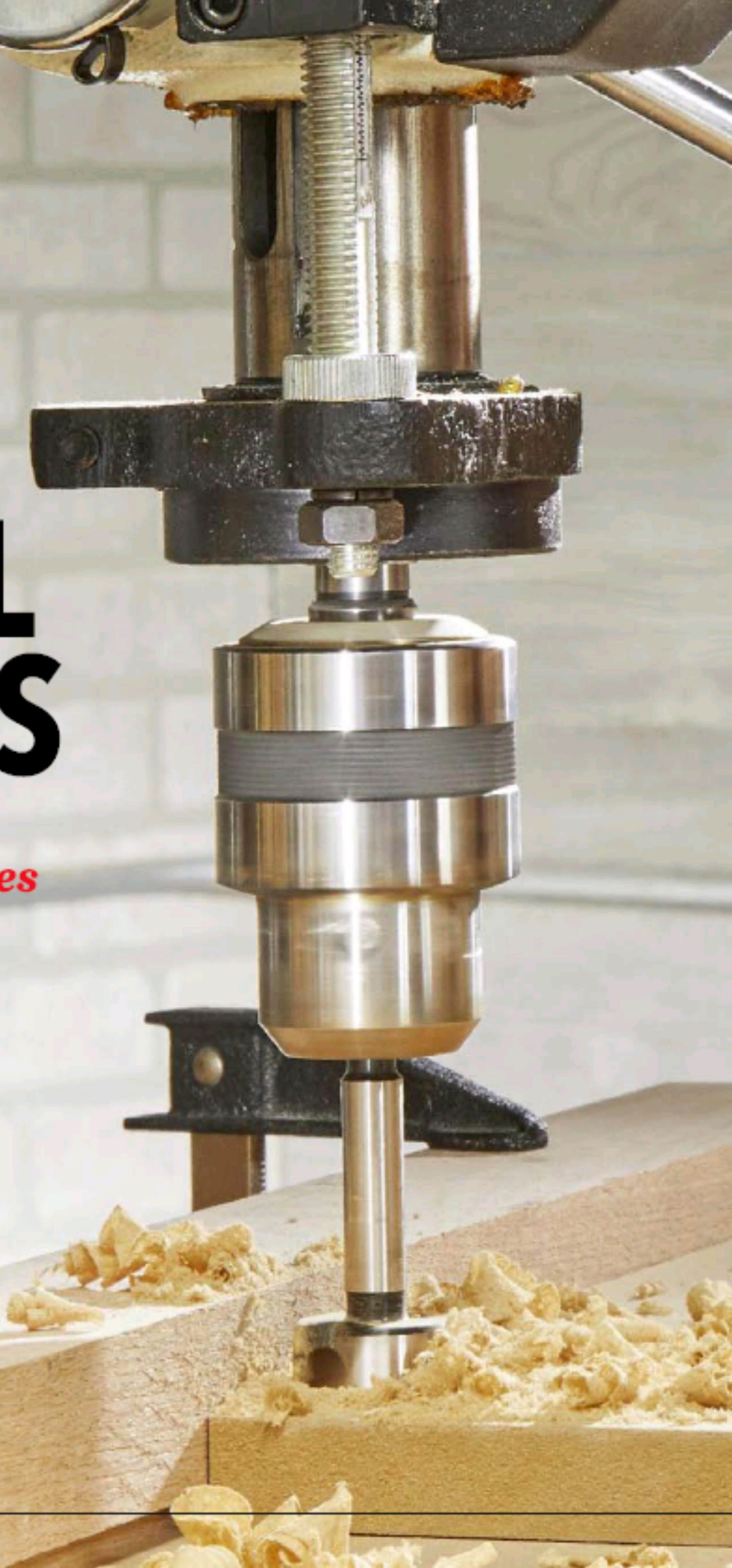
DIYUniversity.com

GET THE MOST FROM YOUR DRILL PRESS

14 *proven
techniques*

BY BRAD HOLDEN

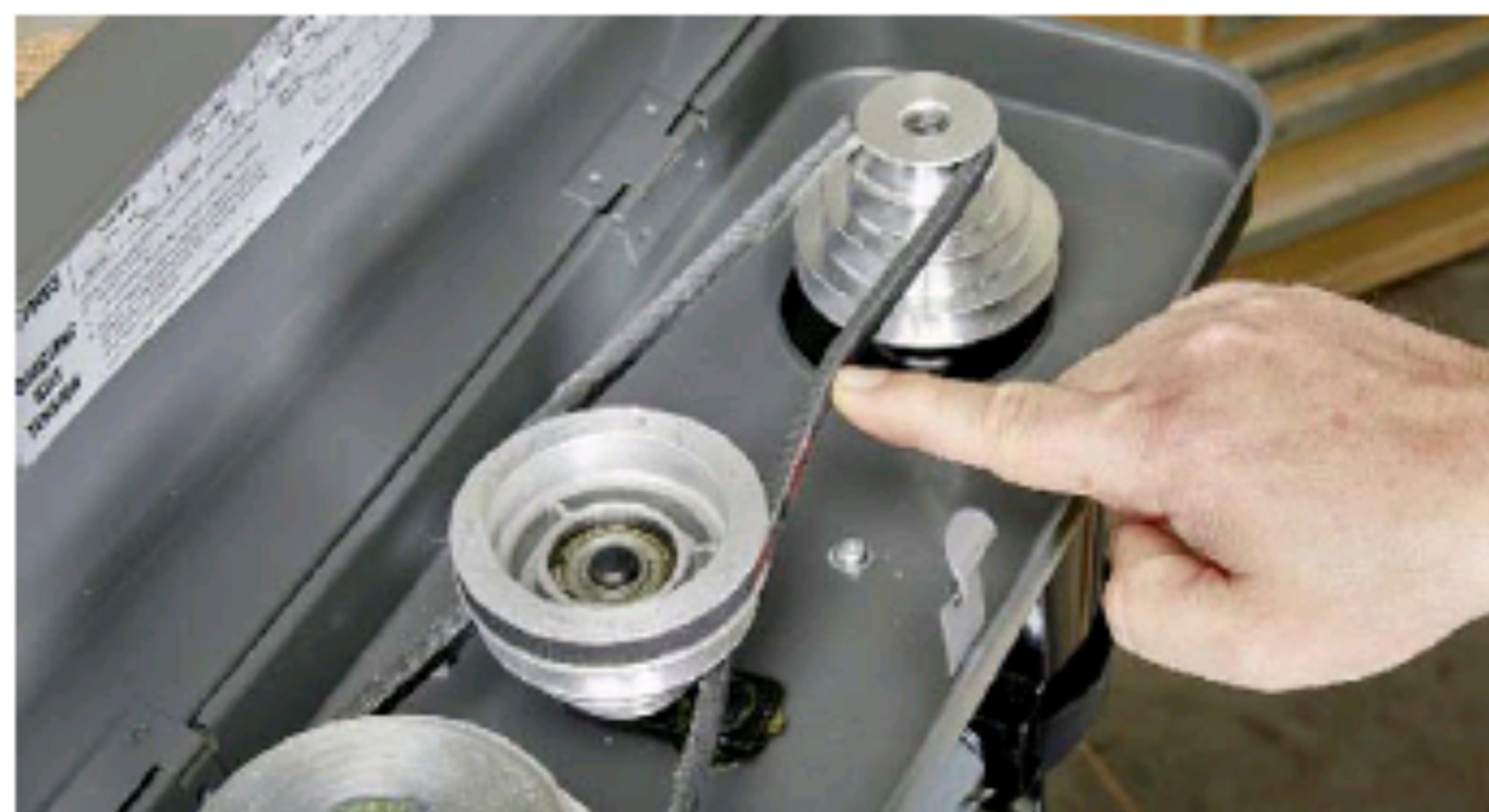
A drill press is a simple, one-job tool, right? Some might even call it "boring." But as is often the case with tools, many tinkering minds have come up with clever ways to use this humble shop staple. Here's how to use your drill press to its full potential.





SET THE TABLE FOR PERFECT "PERPENDICULARITY"

A drill press can only drill perfectly straight holes if the table is perfectly perpendicular to the spindle. Here's an old machinist's trick to make your table spot-on. Make about a 30-degree bend in a 1/4-in. steel rod about 2 in. from the end. Cut it to a length that will reach the outer edges of your table when the short end is in the chuck. Chuck in the rod and then turn the chuck so that the rod's end is oriented toward either edge of the table. Raise the table until the rod just touches the surface and then lock the table. Turn the chuck to position the rod on the opposite edge of the table. Adjust the tilt of the table until the rod touches both edges equally. Lock the tilt adjustment nut and never adjust it again. (Find out how to drill angled holes on p. 50.)



ADJUST BELT TENSION TO LIMIT VIBRATION

After you've changed speeds, or if your drill press has excessive vibration, check the belt tension. You should be able to deflect the belt with your finger no more than 1/2 in. midway between pulleys. To adjust the tension, loosen the motor lock, move the motor forward or backward, and then tighten the lock again. Some drill presses have a tension adjuster lever to move the motor.



CHECK YOUR SPEED FOR EFFECTIVE DRILLING

Detailed charts are available online with information about speed, bit types, diameters and the material being drilled. But here are two general rules: Decrease speed as the bit diameter increases, and slow way down for steel.

Some high-end drill presses have a variable-speed dial on the front. Otherwise, you'll change speeds by changing the belt position on the pulleys located under the top cover. On most drill presses, a graphic under the lid shows the speeds associated with different belt positions. To change the belt positions, first release the motor lock to take the tension off the belts.



MEET THE EXPERT

Brad Holden, an associate editor at *Family Handyman*, has been building cabinets and furniture for 30 years.

PLUNGE AND RELEASE TO CLEAR THE FLUTES

Don't bore a hole in a single plunge. The bit's flutes will fill up with sawdust, create heat, slow down drilling and dull the bit prematurely. Instead, drill in small increments, raising the bit often to release the sawdust. If the sawdust doesn't come out on its own, blow it out.



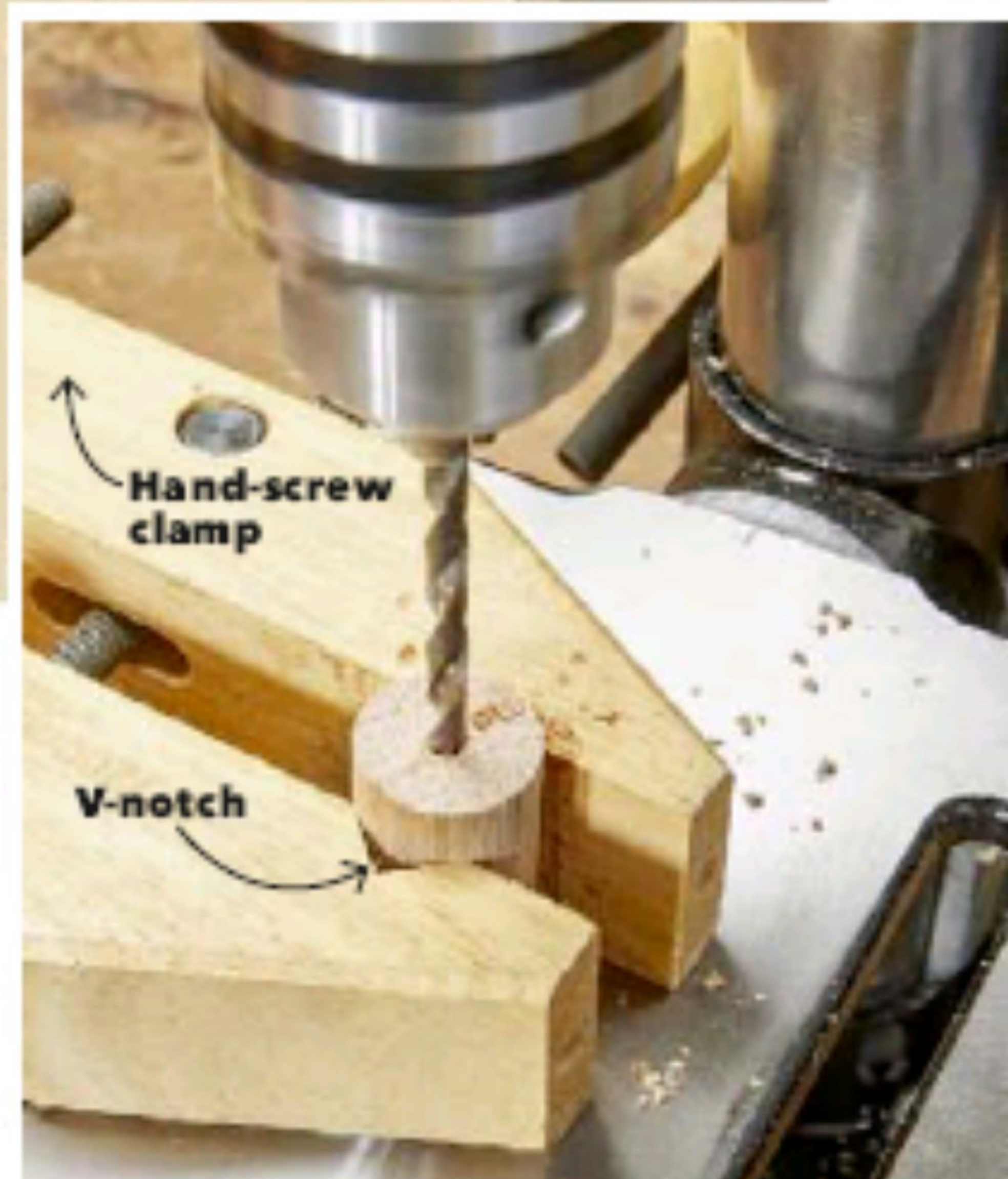
NO-FUSS DEPTH SETTING

Mark the desired depth on the edge of your workpiece. Lower the spindle until the bit reaches the mark, and then set your depth stop.



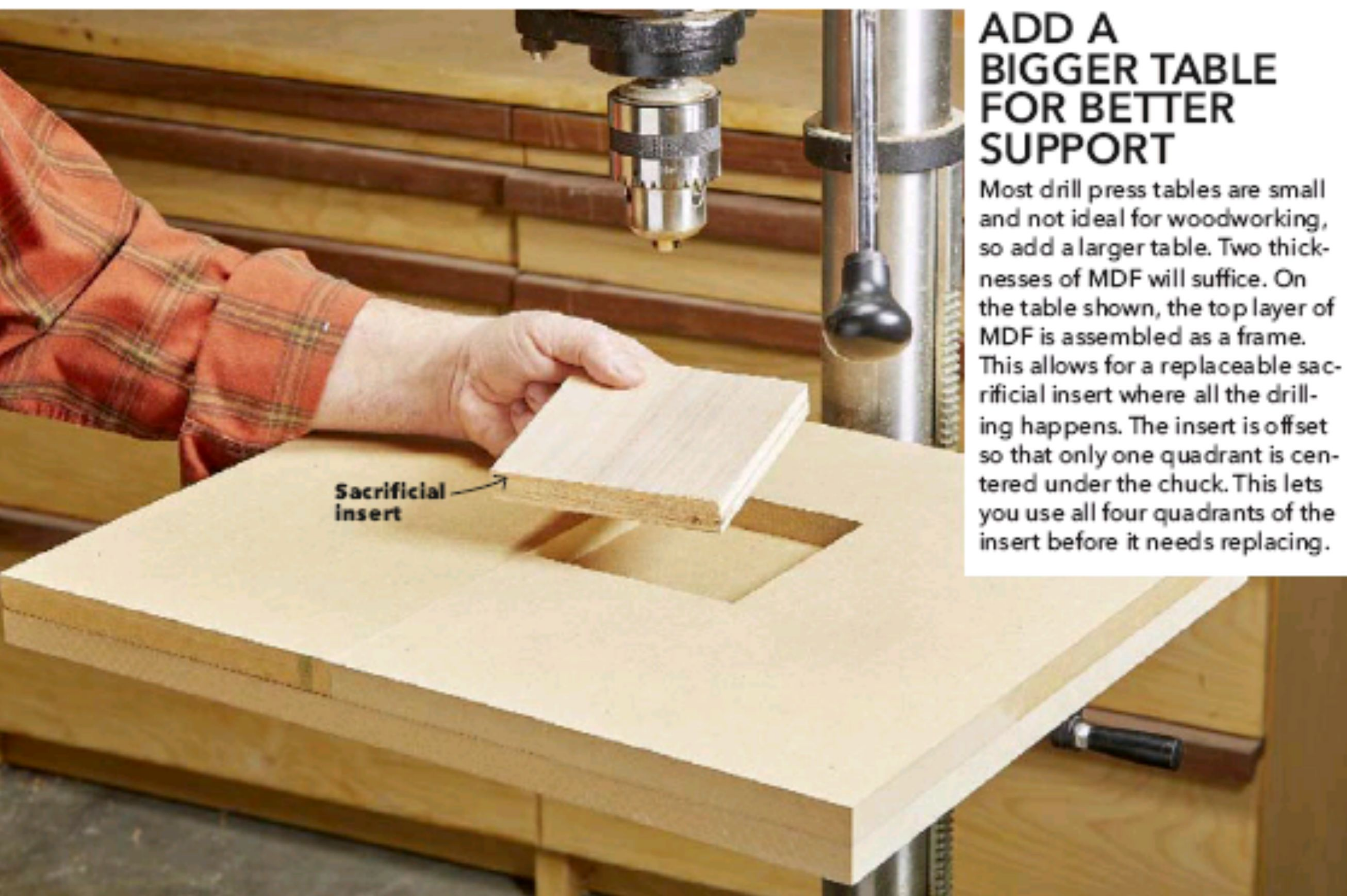
MAKE A CLAMP BAR FOR SMALL PARTS

To safely drill small parts, you need a way to hold them. A clamp bar is a fast solution. Predrill a screw hole in the end of a 1x2, and then screw it directly to the table where needed, according to the size of the workpiece. This pivoting bar lets you squeeze the workpiece against the fence while keeping your hands out of the way. For dowels, cut a V-notch in the bar to keep them from sliding. A hand screw clamp (right) also works well for small parts, again with a V-notch for dowels.



ADD A BIGGER TABLE FOR BETTER SUPPORT

Most drill press tables are small and not ideal for woodworking, so add a larger table. Two thicknesses of MDF will suffice. On the table shown, the top layer of MDF is assembled as a frame. This allows for a replaceable sacrificial insert where all the drilling happens. The insert is offset so that only one quadrant is centered under the chuck. This lets you use all four quadrants of the insert before it needs replacing.



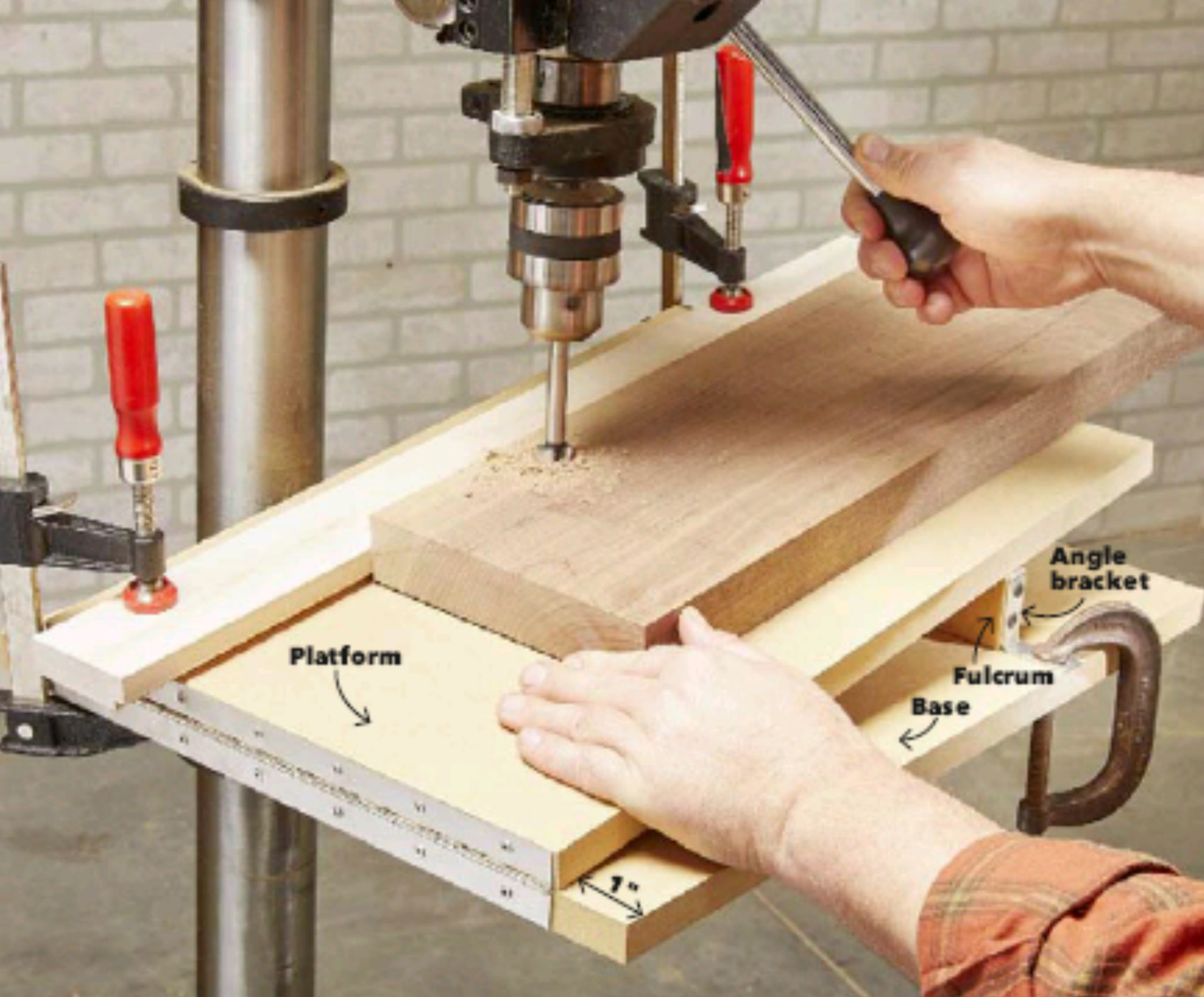
CLEAR DEBRIS QUICKLY WITH AN AIR NOZZLE

I've tried shop vacuums and dust collection setups on my drill press, but they're not very effective. The best thing for clearing dust off the table and out of the bit's flutes is compressed air. I hang an air nozzle from an eye screw on the underside of the table.



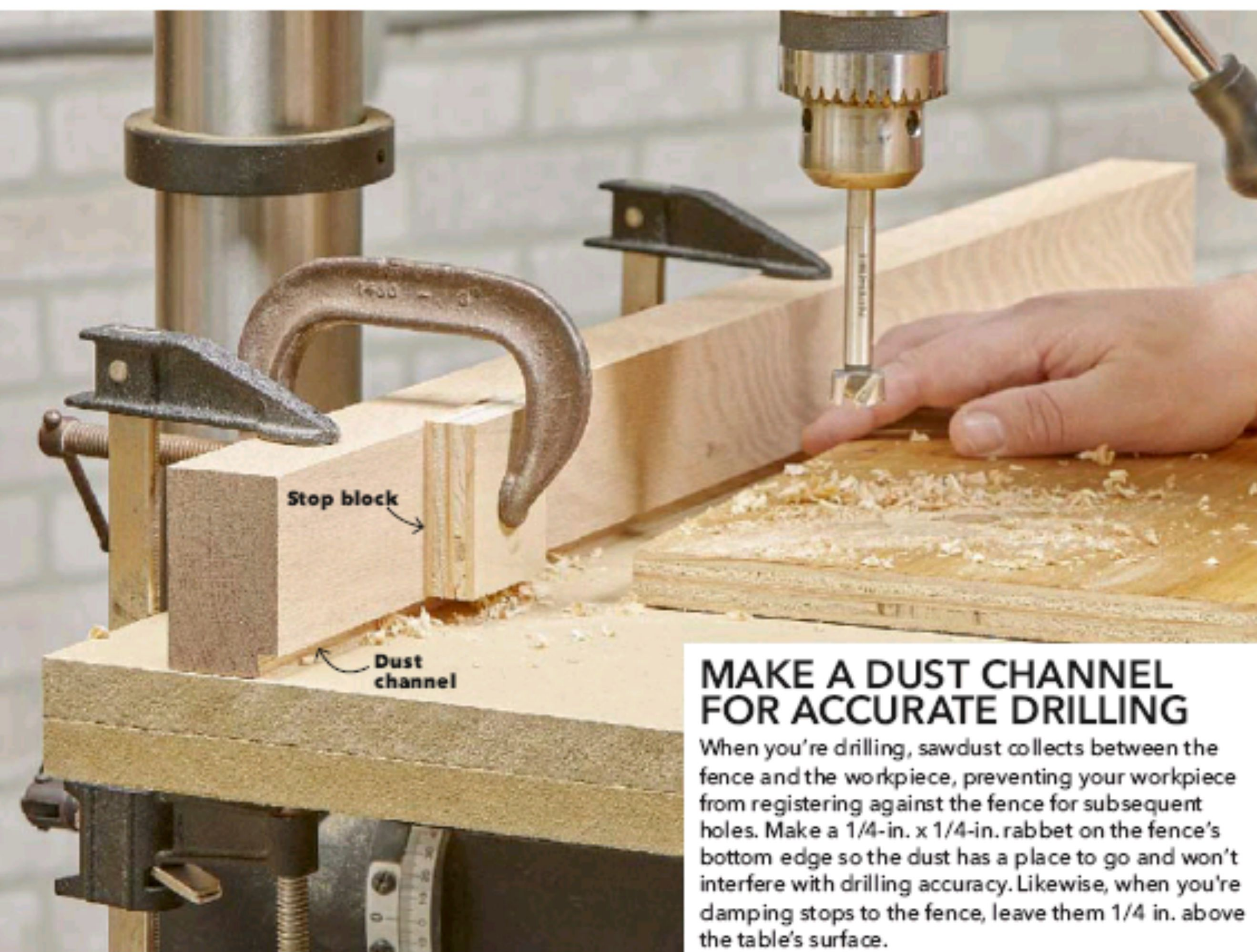
SECURE WORKPIECES WITH TOGGLE CLAMPS

Sometimes—such as when you're drilling steel—you need to firmly clamp your workpiece to the table. I use a pair of toggle clamps (\$6 each at harborfreight.com). I just screw them directly to the table where needed.



DRILL ANGLED HOLES WITH A HINGED TABLE

To drill shallow angles, don't tilt the table. Instead, make a hinged platform. Join two pieces of MDF together at one end with a piano hinge. The platform is 3 in. narrower, centered on the base. The fulcrum is 1-1/2 in. tall, and its length is the same as the platform's width. Fasten a 1-1/2-in. angle bracket to each end of the fulcrum. To use, slide the fulcrum to create the desired angle, and then clamp or screw the angle brackets to the base.



MAKE A DUST CHANNEL FOR ACCURATE DRILLING

When you're drilling, sawdust collects between the fence and the workpiece, preventing your workpiece from registering against the fence for subsequent holes. Make a 1/4-in. x 1/4-in. rabbet on the fence's bottom edge so the dust has a place to go and won't interfere with drilling accuracy. Likewise, when you're clamping stops to the fence, leave them 1/4 in. above the table's surface.

DISCOVER CNC SHARK HD4®

INDUSTRIAL PERFORMANCE —
SMALL SHOP FOOTPRINT



The CNC Shark HD4® features:

- Commercial grade, industrial construction
- Use a 2-1/4HP router or our variable speed, water-cooled spindle
- Perfect for heavy cutting, carving and machining on wood, soft metals or plastics
- Upgraded software is included with Virtual Zero, Auto Piece Alignment, X/Y Homing Switches, Auto Rotation, Edge Detection and more!
- Also available with an extended, 50" base
- User-friendly interface with touch screen, color pendant display



www.NextWaveAutomation.com

Next Wave
Automation



✓Yes



✓Yes



xNo



✓Yes



✓Yes



✓Yes

- ✓ Reliably Low Prices
 - ✓ Easy To Use Website
 - ✓ Huge Selection
 - ✓ Fast Shipping
- www.rockauto.com

RA
ROCKAUTO.COM
ALL THE PARTS YOUR CAR WILL EVER NEED.



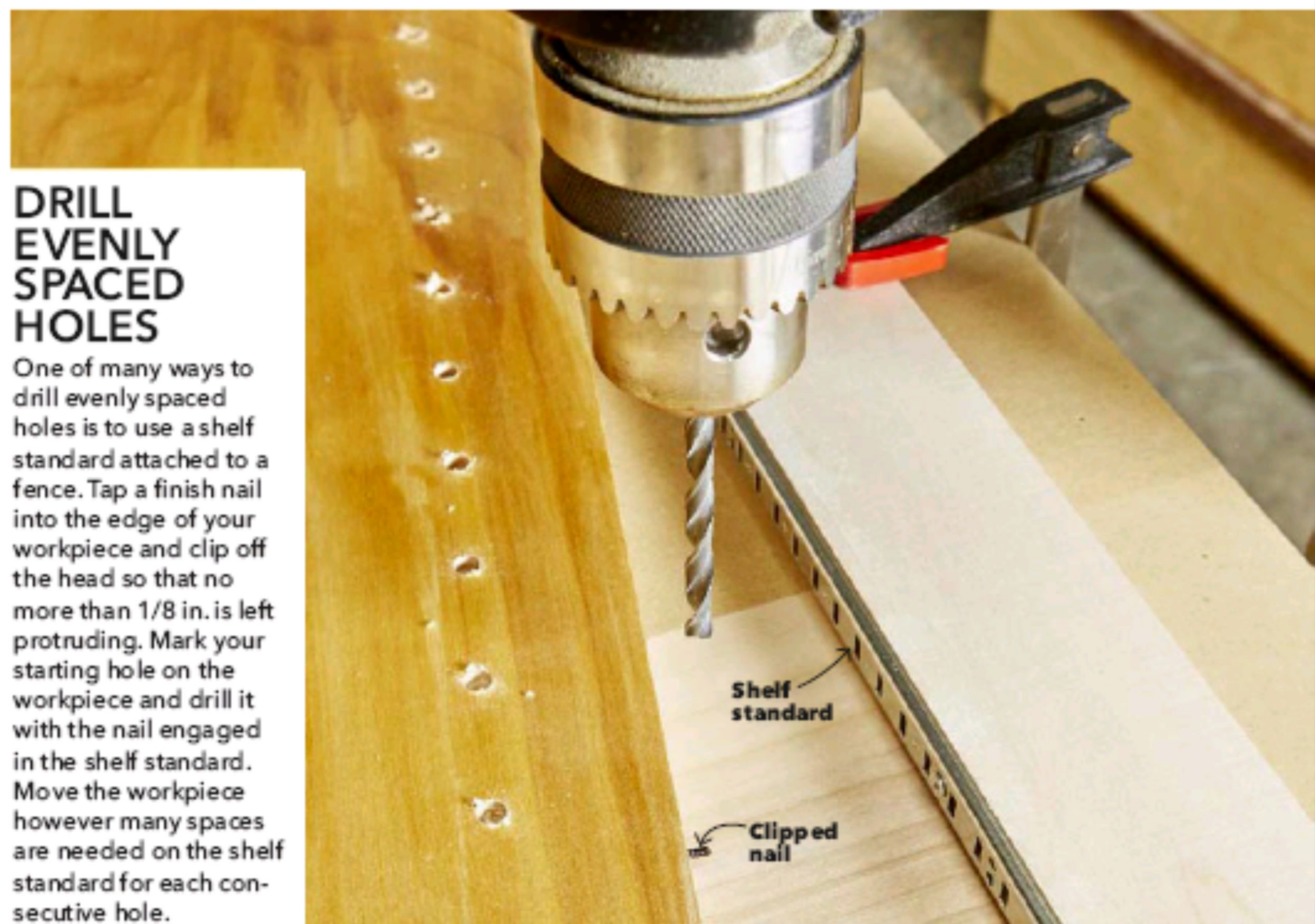
STABILIZE ROUND STOCK WITH A V-BLOCK

To drill a hole or a straight line of holes in a cylindrical object, use a shop-made V-block. To make one, set your table saw or circular saw blade to 45 degrees, and then make two passes to create the "V." Leave a little extra length on the dowel, screw the end of the dowel to the V-block and cut that end off later when you're finished.



BUILD A SANDING TABLE IN 5 MINUTES

A set of sanding drums is a handy addition to your drill press. One advantage this setup has over a spindle sander is that you can set the height of the drum to utilize the entire sanding surface. All you need is a piece of plywood with a cutout sized for the sanding drum you're using. Swing the table off to one side and clamp the sanding platform into place.



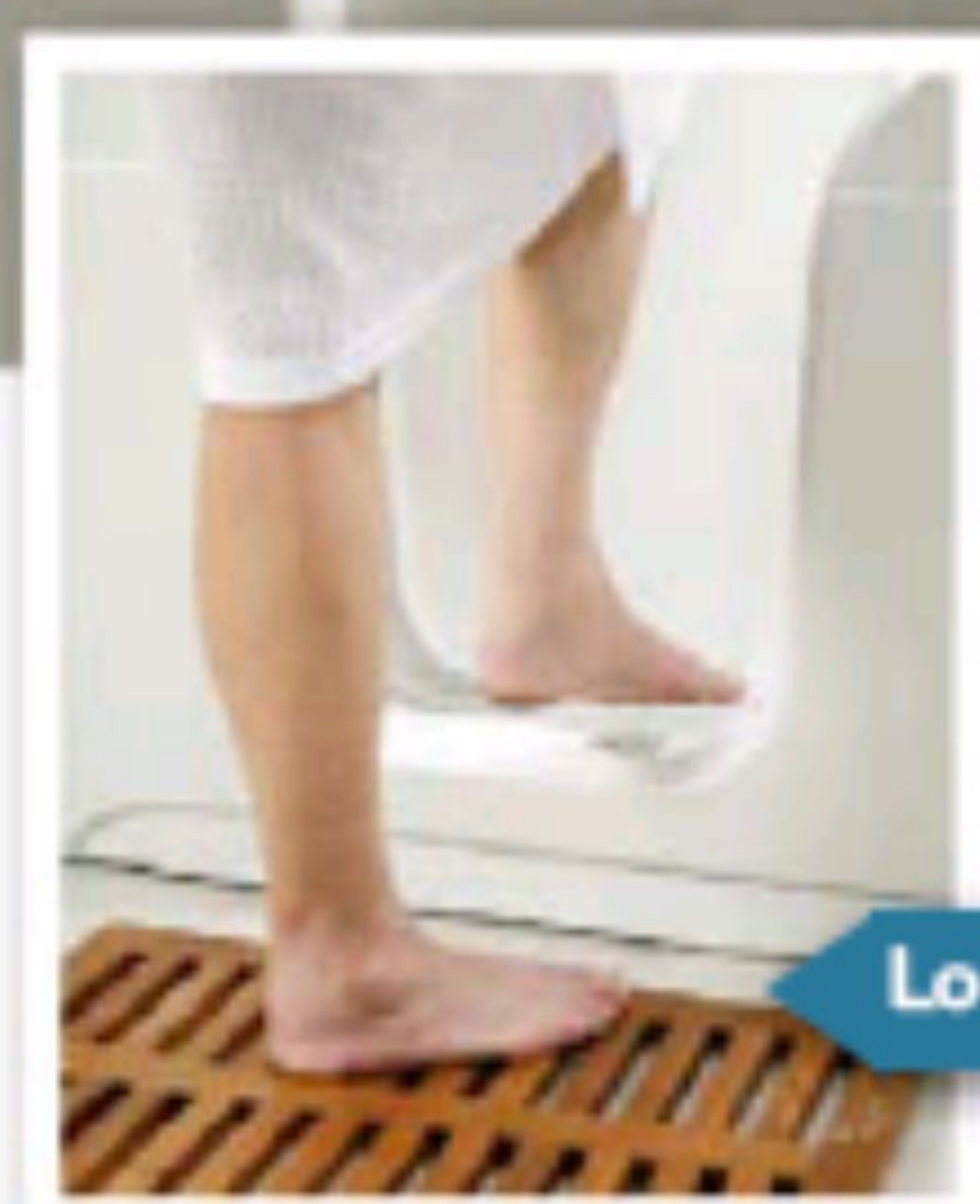
DRILL EVENLY SPACED HOLES

One of many ways to drill evenly spaced holes is to use a shelf standard attached to a fence. Tap a finish nail into the edge of your workpiece and clip off the head so that no more than 1/8 in. is left protruding. Mark your starting hole on the workpiece and drill it with the nail engaged in the shelf standard. Move the workpiece however many spaces are needed on the shelf standard for each consecutive hole.

Stay Safer & More Independent with a Jacuzzi® Luxury Walk-In Bathtub

SAVE \$1,500

on your NEW Walk-In Tub
with ONE DAY installation



Low Entry Step

The safety features of the Jacuzzi® Walk-In Bathtub help with mobility in and out of the tub, and also help you feel more secure and independent when bathing at home.

Enjoy Legendary
Jacuzzi®
Jet Technology

Don't let mobility concerns end your ability to enjoy a relaxing and therapeutic bathing experience

- ✓ **NEW!** Epsom salt compatible with hydromassage relaxes the mind and body
- ✓ **NEW!** A quieter and energy efficient pump provides a more enjoyable bathing experience
- ✓ **NEW!** Relaxing Bubble Foot Massage
- ✓ **NEW!** Heated back and seat for more comfort and relief
- ✓ **PLUS!** Installation in as little as one day available!

NEW!



**Epsom Salt
Compatible**

Now enjoy the relaxing health benefits of Epsom salt in your tub without the worry of rust or damage to your tub's components.

CALL TODAY & SAVE \$1,500

Call now for limited-time savings on your new Walk-In Bathtub and details on installation that takes as little as ONE DAY!



Call: 1-888-469-7960

or Visit: www.JacuzziWalkIn.com

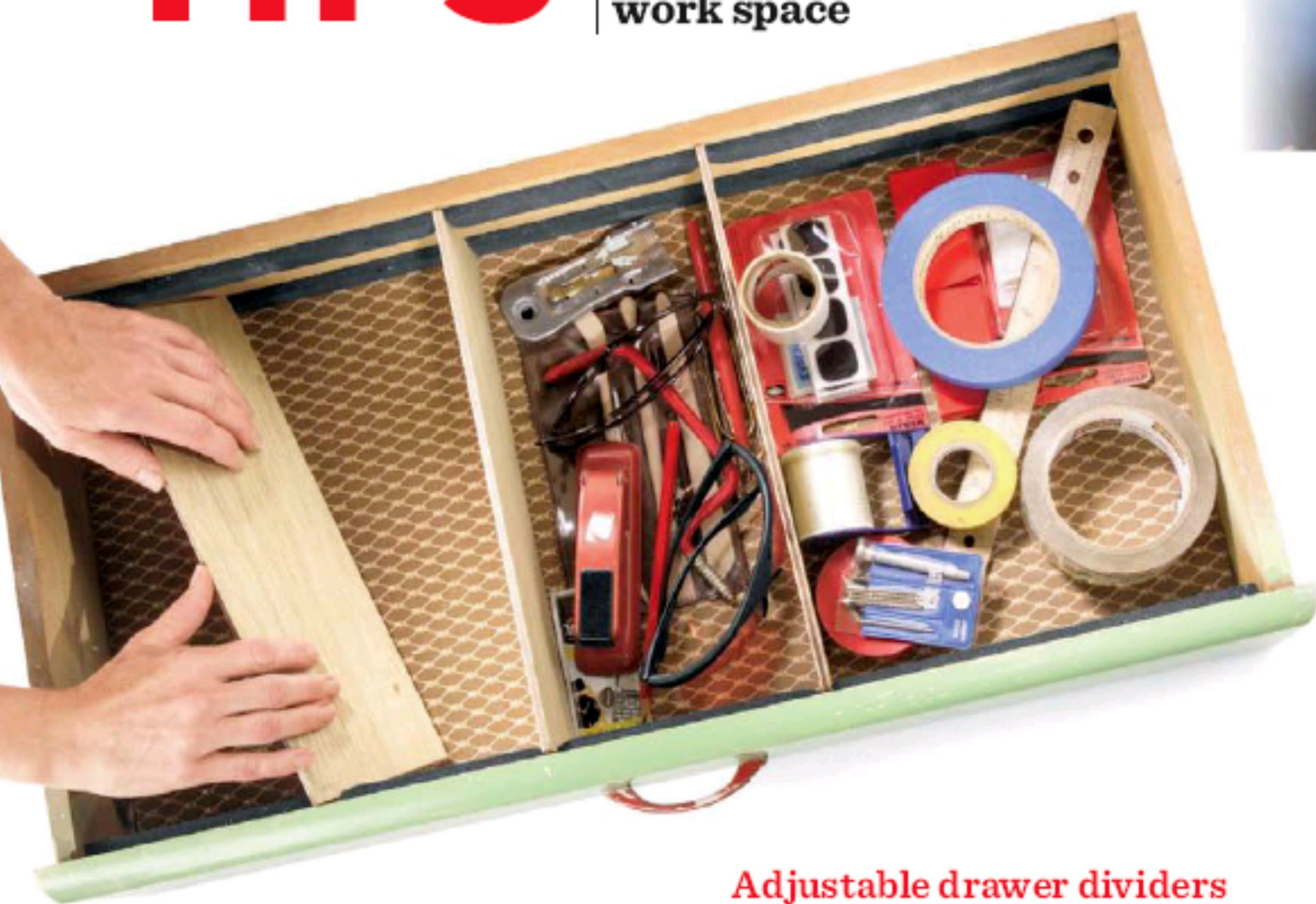
Ask About
Affordable
Financing

The NEW Gold Standard
of Walk-In Bathtubs



WORKSHOP STORAGE TIPS

7 inventive ways
to organize your
work space



Adjustable drawer dividers

You can restore order to messy shop drawers with 1/4-in. plywood partitions and self-stick weather stripping (\$3 a roll at home centers). For the strongest grip, use spongy "closed cell" weather stripping.

Apply weather stripping to two sides of the drawers as shown, then cut the partitions long enough so they squish firmly into the rubber on both ends. A good rule of thumb is to make the partitions 1/4 in. longer than the inside measurement between the pieces of weather stripping.





PVC pipe clamp rack

Are your pipe clamps missing in action right when you need them? Build this snap-in, snap-out storage rack from PVC pipe. For 1/2-in.-diameter iron pipe, use 3/4-in. PVC, and for 3/4-in.-diameter pipe, use 1-in. PVC.

To make the rack, cut 2-in. lengths of PVC, and with a hacksaw or band saw, slice them lengthwise about 3/16 in. past the diameter's centerline. This creates the gripping action to firmly hold the heavy iron pipe. Drill and countersink two holes in each PVC piece, then screw them to a pair of boards. Attach the upper board to your shop wall and snap a pipe clamp in each end to position the lower board for screwing to the wall.



Countersink bit



Store sheet goods on a ladder

An old extension ladder is just right for holding leftover plywood, drywall, plastic laminate and spare boards. Take the ladder sections apart, lay one on the floor near a wall and then load it up. This handy rack will hold your sheet goods high and dry and make it easier to find what you need.



File by grit

Organize sandpaper by grit in a handy plastic file box (\$10) available at office supply stores. Just list the grits on the tabs and you can instantly find the right one. The box is also a good place to store partially used pieces that often get thrown away.



Spray-can six-pack

A cardboard six-pack corrals loose spray cans for a neater shop.



Grizzly Industrial

PURVEYORS OF FINE MACHINERY,
SINCE 1983

9" BENCHTOP BANDSAW



2018 WOOD
Magazine
TOP VALUE
7-12 Bandsaws
under \$100

MADE IN
AN
ISO 9001
FACTORY

G0803 **ONLY \$199⁹⁵**

1 HP DUST COLLECTOR

TOOL
BUYING GUIDE
2018 Edition



Reviews & Awards
2018 Edition



G08027 **ONLY \$245⁰⁰**

6" COMBINATION SANDER

6" X 48" BELT, 9" DISC



G10142 **ONLY \$425⁰⁰**

THE ULTIMATE 14" BANDSAW



Reviews & Awards
2018 Edition



\$99
4 Year
Warranty

G0555 **ONLY \$625⁰⁰**

1/4 HP BENCHTOP OSCILLATING SANDER



G0723 **ONLY \$239⁹⁵**

12 1/2" LEAN & MEAN PLANER

WITH DOUBLE-SIDED
KNIVES!



MADE IN AN
ISO 9001
FACTORY

\$49
4 Year
Warranty

G0505 **ONLY \$395⁰⁰**

6" JOINTER

WITH KNOCK-DOWN STAND

BUILT-IN MOBILE BASE!



\$99
4 Year
Warranty

G0813 **ONLY \$599⁹⁵**

10" HYBRID TABLE SAW

WITH T-SHAPED FENCE

FREE 10" X 40T
CARBIDE-TIPPED
BLADE

MADE IN AN
ISO 9001
FACTORY



\$119
4 Year
Warranty

G0771Z **ONLY \$895⁰⁰**

PLEASE VISIT GRIZZLY.COM* FOR COMPLETE DETAILS & SPECIFICATIONS

PRICING CODE
15FAMILY
*not for resale
without the price code
19815

1-800-523-4777
grizzly.com

TECHNICAL SERVICE:
570-546-9663
FAX: 800-438-5901

BUY NOW
PAY LATER
with Afterpay
*Check your
monthly payments
to be sure

View More
grizzly.com

AMERICAN
Express

VISA

DISCOVER



Up, up and away

Put joist spaces to use with this simple storage idea. Fasten eye screws to the joists and cut lengths of chain to keep odd lengths of trim and pipe out of the way but easy to find. Open one side of the eye screw with a pliers to slip the chain into place. Make the chain a bit longer for future expansion.



Hang-it-all hooks

The plastic hooks that plumbers use to support pipes make convenient hangers for just about anything. They're strong and cheap and come in a range of sizes. Find them in the plumbing aisle.



MARK E INDUSTRIES

GOOF PROOF[®] SHOWERS



GOOF PROOF LINEAR DRAIN 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.

Check our website for videos and more information: www.goofproofshowers.com

Mark E Industries, Inc. Toll Free: 1-888-771-8470 • info@markindustries.com

Steel Yourself

At \$59, this blade of legendary Damascus steel is a real steal

Damascus steel is the stuff of legend. Using a technique first mastered in the ancient city, swords made from Damascus steel were known to slice gun barrels in half and separate single strands of hair in two, even if the hair simply floated down onto the blade.

Now, you can be a part of the legend. The 7 1/2" *August Knife* features a blade of modern Damascus steel, inspired by the production techniques and legends of history. Damascus steel blade knives can cost thousands. So, at \$59, the price itself is also legendary.

Once a lost art, we sought out a knifemaker who has resurrected the craftsmanship of Damascus steel to create the *August Knife*. The elusive, ancient production technique mixes different steel alloys to form a super steel—the outcome is a beautiful one-of-a-kind pattern of banding and mottling reminiscent of flowing water.

Limited availability. Only a handful of artisans make these blades, with each handcrafted knife taking months to perfect. We currently can get less than 1500 this year,

so we can't promise they'll stick around for long—especially at this price. Call today! Your satisfaction is 100% guaranteed. If you don't feel like we cut you a fair deal, send it back within 30 days for a complete refund of the item price. But we believe once you wrap your fingers around the *August's* handle and experience the beauty of its Damascus steel blade, you'll be ready to carve out your own legend.

August Knife

non offer code price \$149*

Offer Code Price Only \$59 + S&P

1-800-333-2045

Your Insider Offer Code: AGK262-01

You must use the insider offer code to get our special price.

Stauer[®]



14101 Southcross Drive W.,
Ste 155, Dept. AGK262-01
Burnsville, Minnesota 55337
www.stauer.com

*Discount is only for customers who use the offer code versus the listed original Stauer.com price.

What customers are saying about Stauer knives...

★★★★★

"Very hefty, well-built knife and sheath. Extremely good-looking and utilitarian."

— R., Lacey, Washington

**Limited
Collector's
Edition**

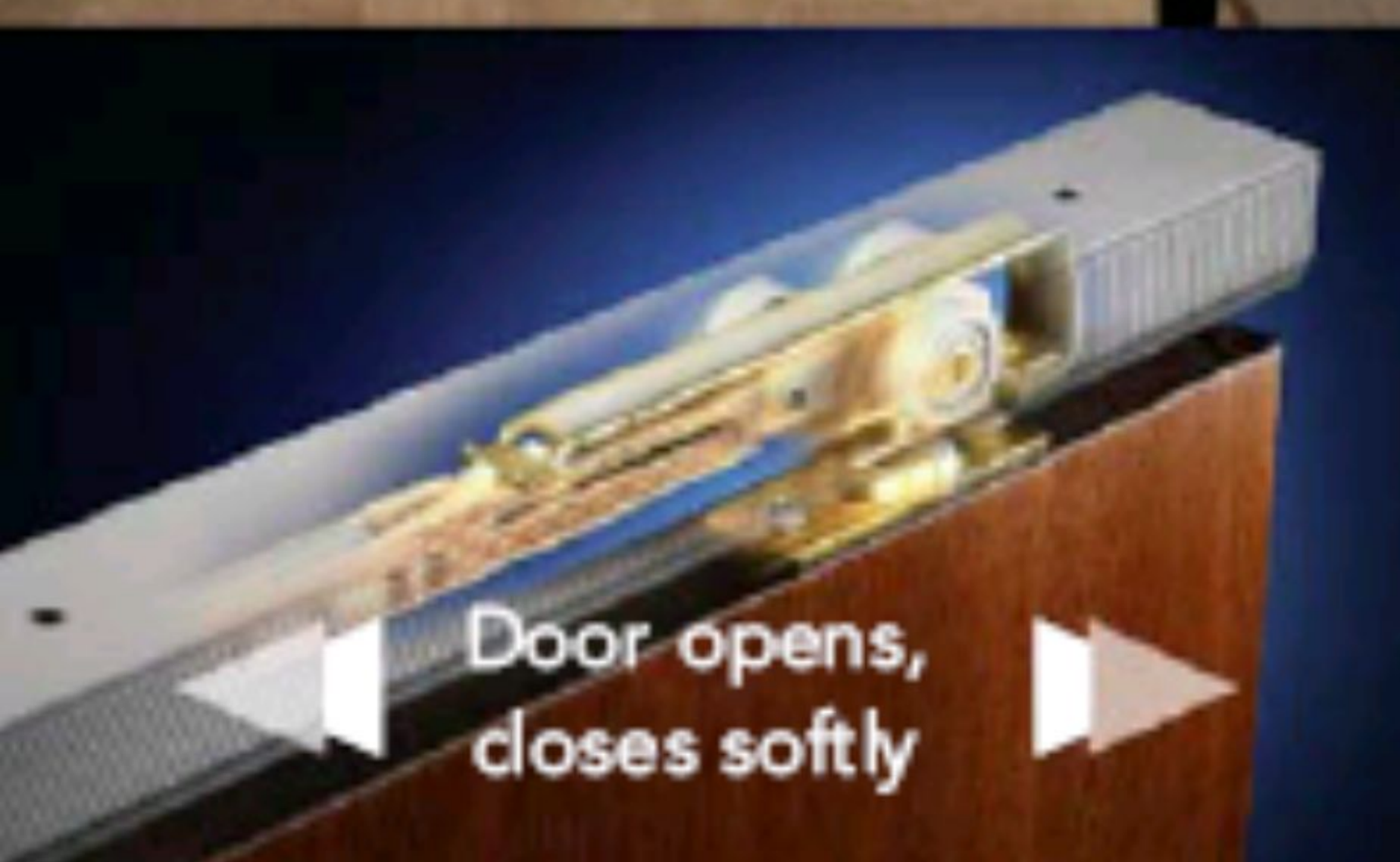
BONUS! Call today and you'll also receive this genuine leather sheath!

Not shown actual size.

• 7 1/2" overall length • Genuine Damascus steel blade • Stainless steel guard • Leather handle • Includes genuine leather sheath



Smooth
Silent
Soft-close



Sliding door hardware

Works like a cabinet door closer. Easy to install. Prevents door slamming and pinched fingers. Ideal for use with new or existing Johnson pocket, sliding and wall mount hardware.



Follow us on
Instagram:
Johnsonhardware

www.johnsonhardware.com/soft-close

EST 1928

WOODCRAFT®

QUALITY WOODWORKING TOOLS • SUPPLIES • ADVICE®
Over 75 Stores Nationwide – Stop In And Visit With Us!

Use Woodcraft Magazine Classic® Project Plans To Furnish Your Outdoor Retreat

Our shop-friendly plans make building picnic tables, benches, Adirondack chairs and other furniture easy and enjoyable!



Table and benches project photo from Woodcraft Magazine Vol. 9/No. 52.

For A Free Catalog Or To Find Your Local Woodcraft Store, Visit woodcraft.com Or Call 800-225-1153. For Technical Support Call 800-535-4486. Follow Us: [f](#) [t](#) [p](#) [i](#) [n](#)

SIMPLER STRONGER FASTER

...than any
Hydraulic
Log Splitter!

Starting
at just
\$499.99



DR® KINETIC LOG SPLITTERS

ELECTRIC MODELS TOO!

SO SIMPLE it's practically maintenance free. There are no hydraulic pumps, valves, pistons, hoses or fluids to leak or replace—EVER.

SO STRONG its cast iron flywheel and hardened steel components show almost no wear after splitting hundreds of cords.

SO FAST it is the world's fastest splitter. Splits anything a hydraulic splitter will—but in one-sixth the time!

Split wood
indoors!



1990EX © 2019

FREE SHIPPING

6 MONTH TRIAL

SOME LIMITATIONS APPLY
Go online or call for details.

Go Online or Call for FREE Info Kit!

DRLogsplitters.com

TOLL FREE 800-379-9436



Best Pro Tips

Expert advice from the job site. By Mike Berner

SAVE THAT SLAB!

If you have an uneven concrete slab, you could replace it or cover it with leveling compound. But consider grinding it instead. Powerful grinding equipment is available at rental centers that cater to contractors. Here are a few of the most common uses:

- Tapering cracks or heaves to reduce tripping hazards.
- Flattening high spots or ridges before you install flooring.
- Grinding down leftover thin-set or other hard coatings.
- Removing a sealed surface to accept adhesive, thin-set or epoxy.



Find a rental store

Call around to find a rental store that carries a few floor-grinding options. Grinding down high spots in concrete requires removing lots of material; be sure to rent a high-speed grinder that rotates about 1,500 rpm or faster. Once you explain your task, the rental store staff should be able to set you up with the right equipment.



Walk-behind floor grinder

Different sizes for different jobs

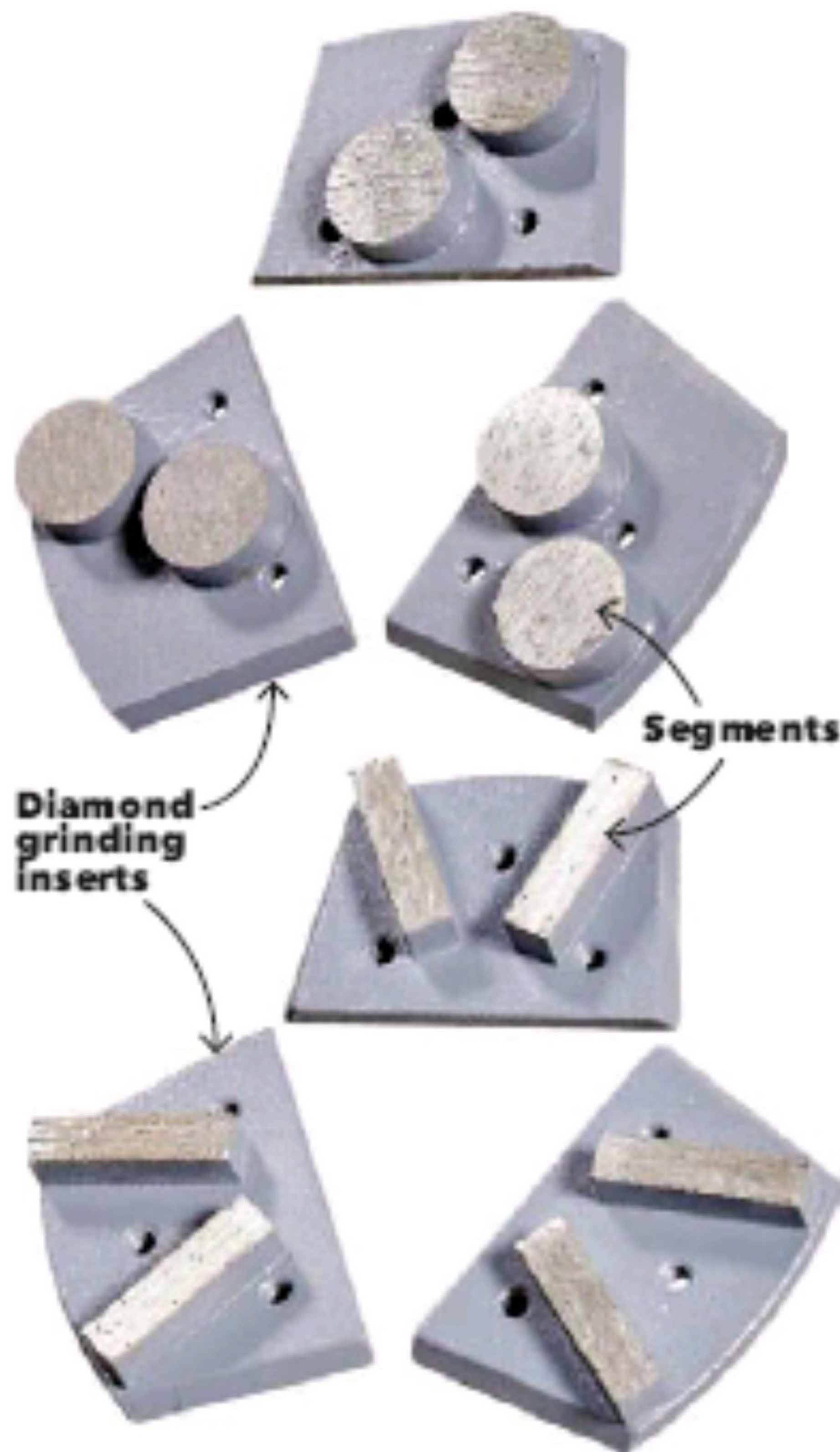
If you have a large floor that needs to be ground down, plan to rent a walk-behind floor grinder. You'll spend \$90 to \$150 per day, but a big machine can grind a large space within the rental period. Depending on the store and the machines it carries, a diamond grinding wheel may be included in the rental or you may have to buy diamond grinding inserts for about \$150 a set.

For a small job, rent an angle grinder equipped with a diamond grinding wheel (\$50 a day or less). It's the perfect tool for taking down just a few high spots or tough-to-reach areas near walls. Be sure the one you rent comes with a means of attaching a vacuum to suck up the dust. If you plan to grind right up to a wall, make sure you rent a grinder with a convertible dust shroud that will flip up to expose the wheel enough to get into the corner.



7" angle grinder

Diamond grinding wheel



Diamond grains do the cutting

The cutting surfaces of these grinders are diamond grains held by "segments," the raised metal parts of the wheel. An aggressive wheel, which can take down 1/4 in. of concrete or more, grinds away material faster but leaves a rougher surface. A less aggressive wheel removes smaller amounts of concrete and leaves a smoother surface.

Here's the rule of thumb for choosing a wheel: The more surface area it has, the less aggressive the wheel. Choose an aggressive one to remove high, long ridges or large, rough areas of concrete, and a less aggressive one for tasks like cleaning up tile thin-set residue from a wall or prepping for an epoxy coating.

How long will the job take?

If you have a 3/4-in. difference in height between sidewalk slabs, you should be able to knock that down in a few hours, but it depends on how hard the concrete is and the grinding wheel you use.

Wear safety gear!

Plan to deck yourself out in safety gear: hearing protection, safety glasses and a respirator. The high-speed machines are loud and can send concrete rubble flying from the grinding wheel.

Grinding concrete also releases fine silica dust, which can cause health problems. Always wear a NIOSH-certified N95-rated respirator. Disposable masks cost as little as \$2 each, but for \$25 you can get a half-mask respirator that will have a better seal. Check the seal with this easy test: If you can exhale and inhale sharply without air escaping, you're good to grind. If you have facial hair, even a bit of stubble will ruin the seal. Go ahead and shave—it will grow back!



Avoid tripped circuit breakers

Both the grinder and the vacuum draw a lot of power, so if possible, plug them into separate circuits and wrap the cord so the connection stays away from moisture. Otherwise you may find yourself flipping tripped circuit switches all day long. And if the grinder is struggling to start up when the cutter head is resting on the ground, lift up the head before starting the grinder. That will reduce resistance during startup.



MEET THE EXPERT
Brian Farmer teaches skills in plaster, concrete floor polishing and floor-coating application. We joined him at the Cement Mason's Union training facility, where he shared tips for dealing with common grinding situations.



Keep the machine in motion

While you're grinding, keep the cutter head moving, especially with a large floor grinder. Pivot the machine on its wheels, moving the cutter head in an arcing motion. If the cutting surface is riding on only one edge, work the machine in small circles to flatten out the surface.



Choosing dust control

There are two great ways to keep the dust from going wild. You can use a hand-pump sprayer to soak the floor with water as you grind to keep the dust down. But you'll have a messy slurry that will need to be hosed away or sucked up with a wet vacuum.

Or you can rent a heavy-duty vacuum (regular shop vacuums won't be able to keep up) to hook up to the grinder. It will also do a very good job of dust removal, but it will cost \$75 and you'll need to put up walls of plastic sheeting and cover nearby vents. The choice is yours, but remember to wear your respirator either way!



MOST COMFY PANTS EVER!

FLEECE CARGO PANTS

Plus,
**FREE
SHIPPING***

**Comfortable Stretch Waist
With Inside Drawstring!**

GREY
HEATHER
(6)

**Two MagicCling™
Secure Back
Pockets!**

**Soft, Cozy
Brushed Fleece!**

**Two Deep Side
Pockets!**

**Two Extra-Deep
MagicCling™ Secure
Cargo Pockets!**

Roomy cargo pockets make these sweats stand out from the rest! Plus there's 4 more pockets — 6 in all (4 have MagicCling™)! Concealed zipper fly. Polyester/cotton is machine wash. Imported. Sizes: S, M, L, XL \$19.99 Buy 2, ~~\$17.99~~ ea. **Buy 2, \$14.99 ea.** Sizes: 2XL, 3XL, 4XL \$25.99 Buy 2, ~~\$23.99~~ ea. **Buy 2, \$20.99 ea.** Inseams: XS(25-26) S(27-28) M(29-30) L(31-32) XL(33-34) in sizes S-XL only

BLACK
(01)

CHARCOAL
(07)

NAVY
(03)

**Heavyweight
Fleece Fabric!**

HABAND.

ROYAL
(10)

FLEECE CARGO PANTS

14⁹⁹ per pair
when you
buy 2

**Satisfaction
Guaranteed or
Full Refund of
merchandise
purchase price up to
90 days after receipt.**

**Shop at Haband.com or
Call Now! 1-800-742-2263**

Haband® PO Box 8, Warren, PA 16366-0008

☐ Haband ☐ SURR ☐ Visa ☐ MC ☐ Discover* ☐ AmEx ☐ Check

Card # _____ Exp.: ____/____

Mr. Mrs. Ms. _____

Address _____ Apt. # _____

City & State _____ Zip _____

Phone/Email _____

In the event of an issue with this order, you expressly consent to receiving automated and prerecorded message calls, from us, our agents and others calling at our request or on our behalf, at this telephone number (including any cellular telephone number).

I enclose \$_____ purchase price, & only \$9.99 shipping & handling for my entire order. Add applicable sales tax. (Sales tax is charged as required by law. We reserve the right to charge or collect applicable sales tax for your order, which may differ from the amount you provided. See our website or call customer service for sales tax information.)

Please use blue or black ink.

Search this code at
Haband.com to get this
price & **FREE SHIPPING!**

*Valid on standard shipping for areas
served by the US Postal Service.

☐ Check for Protection
Plus! (PSB)
Expedited replacement of items
lost in transit. Add \$2.95 to
protect your entire order.

	76D-01P8G	WHAT WAIST?	WHAT INSEAM?	HOW MANY?
61	GREY HEATHER			
10	ROYAL			
01	BLACK			
07	CHARCOAL			
03	NAVY			

When you pay by check, you authorize us to use info and let it on your check to check it electronically.
Funds may be withheld until you cancel us, so or as the same day we receive your payment,
and you will not receive your check back from your financial institution.



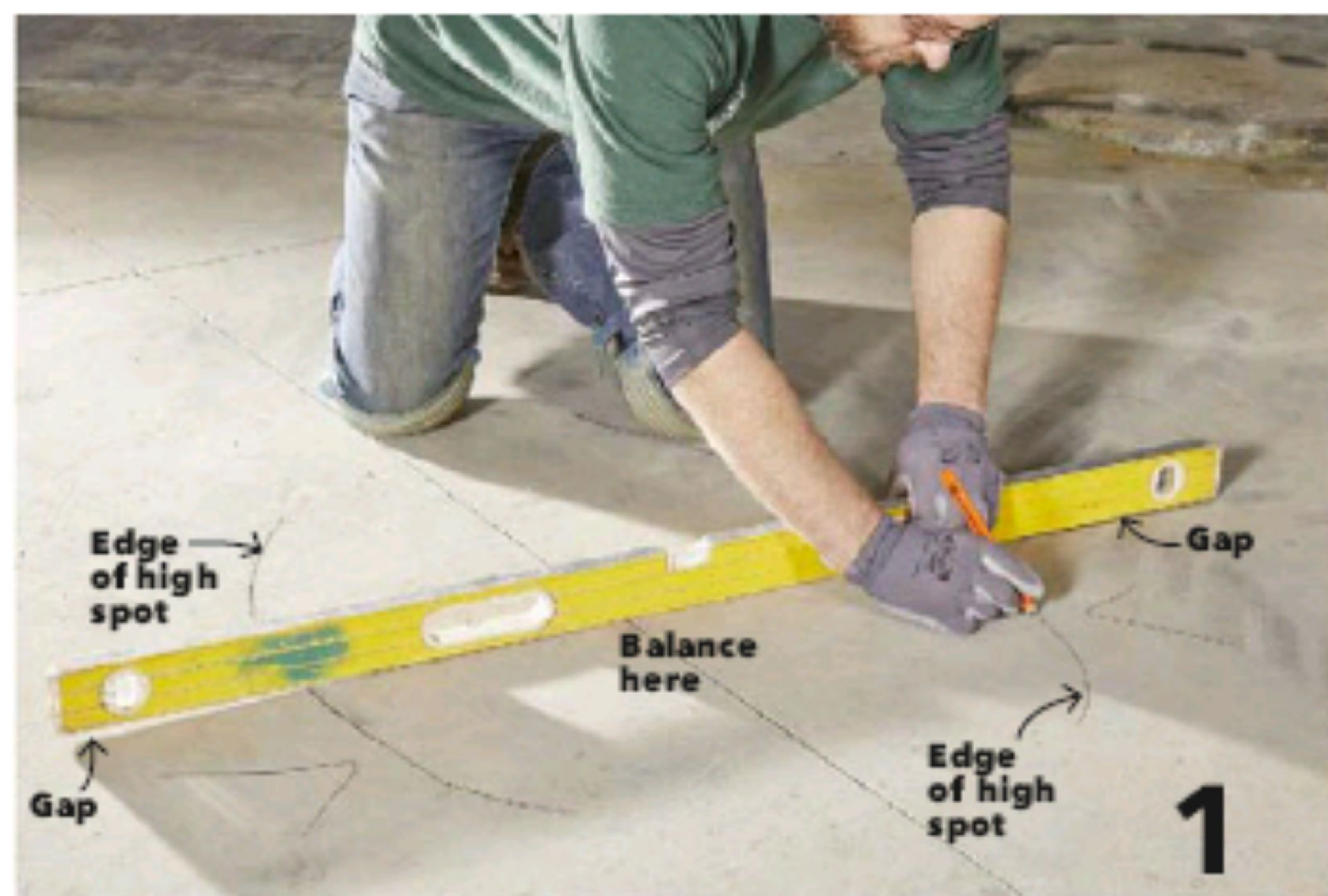
Nibble at a heave

For a heaved sidewalk or cracked slab, tilt the grinder slightly and remove the meat of the concrete and then feather back the high spot. You may never get toe-stubbing heaves completely flat, but you can lessen the hazard. When tilted, the dust shroud can't catch all the dust, so you'll need a second hose and a helper.



Grinding to the edge

Never remove a dust shroud to get close to a wall. You'll increase your exposure to nasty silica and remove a safety barrier. To grind near walls with a convertible dust shroud attached, push the open end of the dust shroud against the wall and make steady, shallow passes. Be sure you don't dig the edge of the wheel into the concrete as you move it back and forth.



Mark where to grind

1. Trace the high spots

Outline the space that needs to be ground. Using a level or other straightedge, find where the high spot meets the flat surface. Balance the straightedge on the high spot and mark where the ends of the level are equidistant from the ground and trace around the high spot. This can be done by eye; it won't be perfect, but it will be a good start.

2. Check your progress

Start grinding on the crown of the high spot and work your way toward your marks. When you feel you've made progress, use the straightedge again to check for flatness. Retrace the high spots and grind them down. Repeat this grind-and-check process until the high spot is gone.



Keep grinder flat against concrete

When possible, make sure the entire grinding surface is touching the concrete. Grinding with only one edge of the wheel will wear down the segments unevenly.

Create Your Own Outdoor Room...In Just Seconds!



Motorized & Manual Awnings Available!

**LOW
Factory
Direct
Prices!**

Introducing The Revolutionary SunSetter Retractable Awning!

If you're tired of having your outdoor enjoyment rained on...baked out...or just plain ruined by unpredictable weather...

At last there is a solution! One that lets you take control of the weather on your deck or patio, while saving on energy bills! It's the incredible SunSetter Retractable Awning! A simple...easy-to-use...& affordable way to outsmart the weather and start enjoying your deck or patio more...rain or shine!

The SunSetter® is like adding a whole extra *outdoor room* to your home...giving you instant protection from glaring sun...or light showers! Plus it's incredibly easy to use...opening & closing effortlessly in *less than 60 seconds!*

So, stop struggling with the weather...
& start enjoying your deck or patio more!

For a **FREE** Info Kit & DVD email your name & address to freedvd@sunsetter.com

**FREE!
Info Kit
& DVD**

**Opens at the Touch
of a Button!**



Protects you from 99% of UV rays



You choose full sun or total protection in just seconds!

FREE Info Kit & DVD
Call Toll-Free: 1-800-876-8060 Ext. 35410

☒ **Yes!** Please send your **FREE** Info Kit & DVD...including a \$200 Savings Certificate...**TODAY!**

Name

Address

City State Zip

Email

(Important: Be sure to give us your email address to receive our best deals!)



\$200 Savings Certificate Included!

SunSetter
RETRACTABLE AWNINGS

184 Charles Street, Dept. 35410, Malden, MA 02148
Visit us today at www.sunsetter.com

Work Wheels

Expert advice on repair, maintenance and gear



The well-prepared truck

Gotta-have items our editors carry everywhere

Easy bed liner

Know about Bagster bags? You can buy one for about \$30 at a home center or Amazon. Fill it with demolition or other debris, then schedule a pickup by Waste Management, which costs about \$135. I buy the bag, skip the pickup and use it over and over as a truck bed liner for hauling demo and lawn and garden debris. It makes unloading at the dump or compost site super easy, and my pickup bed stays immaculate. Refolded carefully, it fits under the seat.

MIKE BERNER, ASSOCIATE EDITOR





Moving blanket

A cheap moving blanket is a nice thing to have in your truck. A few uses:

- Put it on the ground to keep yourself clean and prevent losing nuts and bolts.
- Use it to cover your carpeting when you're slogging through mud at job sites.
- Shield your seat covers when you're filthy or your dog is with you on the job. (It works under children and ice cream cones too.)
- Protect delicate furniture and appliances that are tied down in the bed.
- Keep it on hand for an emergency blanket.

BRAD HOLDEN, ASSOCIATE EDITOR



Home center cutting kit

When I buy long materials at the home center that I don't need full length, I often cut them down to size in the parking lot for easier hauling. A small saw works great for slicing trim, plastic pipe or conduit; snips easily handle metal items like drip cap or roof edge.

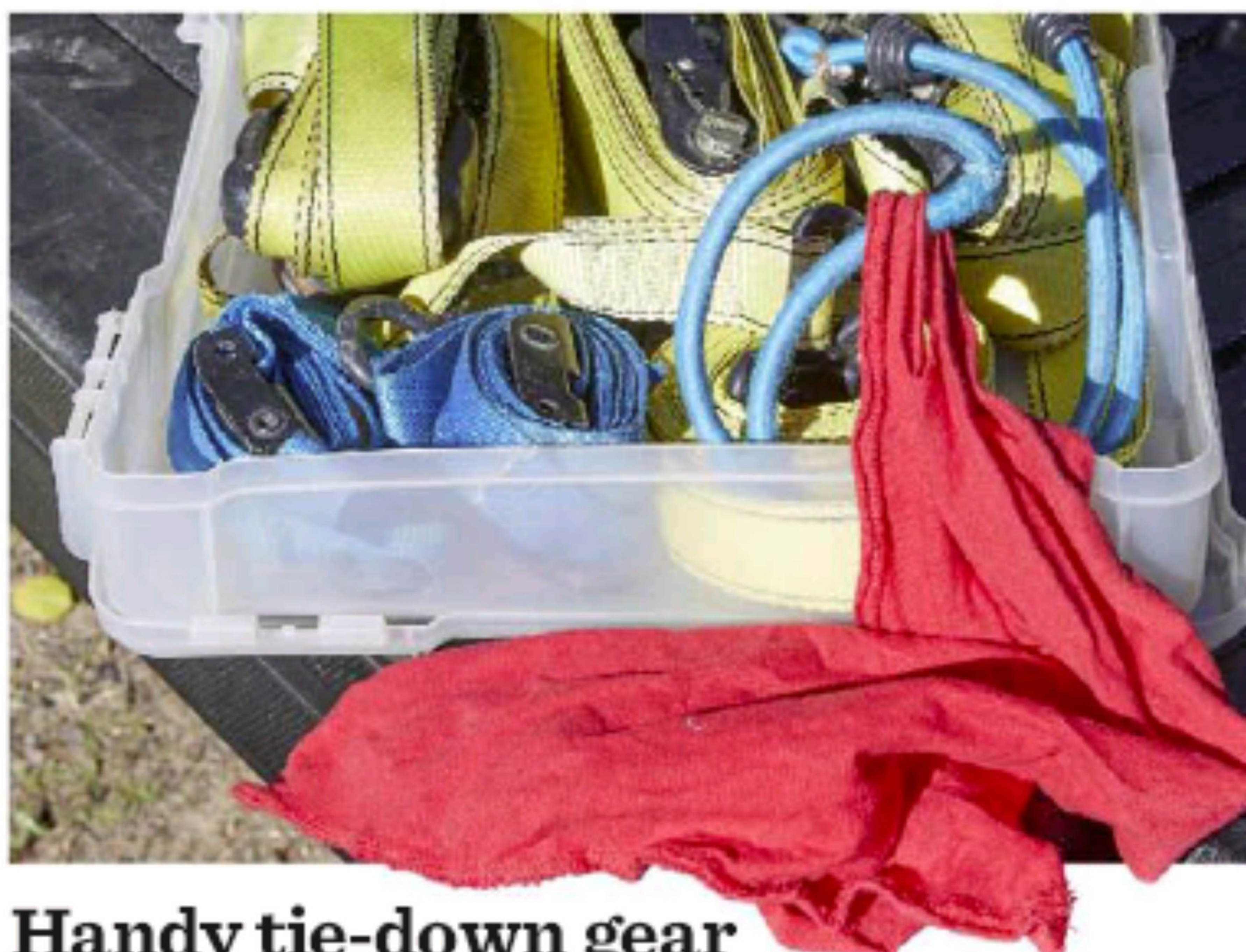
GARY WENTZ, EDITOR-IN-CHIEF



DIY fix-a-flat kit

My flat-tire kit includes: plugger, reamer, needle-nose pliers, plugs, valve stem tool, extra valve stem caps, air chuck and tire pressure gauge. A kit like this will likely pay for itself the first time you use it. And yes, we know the tire experts say you're not supposed to plug a tire from the outside, and you definitely shouldn't plug sidewalls. But I've personally plugged at least 20 tires (lots of nails and screws on construction sites) without any failures, safety issues or reduction in the overall life of the tires.

MARK PETERSEN, SENIOR EDITOR



Handy tie-down gear

I keep this container under my front seat at all times to hold my ratchet straps and a red flag for when I haul long material in the back of my truck. My ratchet straps stay together and untangled, and the flag is easy to wrap around the load because I punched a hole in it for use with a bungee cord.

TRAVIS LARSON, SENIOR EDITOR

Leaf blowers to the rescue!

They can do many tedious tasks—fast

BY TRAVIS LARSON

My wife and I live in the middle of a mature hardwood forest, which puts us knee deep in leaves much of the year. In October and April, I spend hours with a commercial-grade backpack blower strapped to my back. But the other 10 months, I depend on my battery-powered blowers—and I'm not kidding. Let me show you what I use them for.

Cleaning shop vacuum filters

I used to hold shop vacuum filters at arm's length and blow them out with my air hose nozzle—ideally when there was a breeze so the dust would blow downwind of me. But I still ended up covered in dust every time I did it. Now I just hold the filter down with my foot and blow it out with the leaf blower. I stay a lot cleaner with this method.



Wood Shop

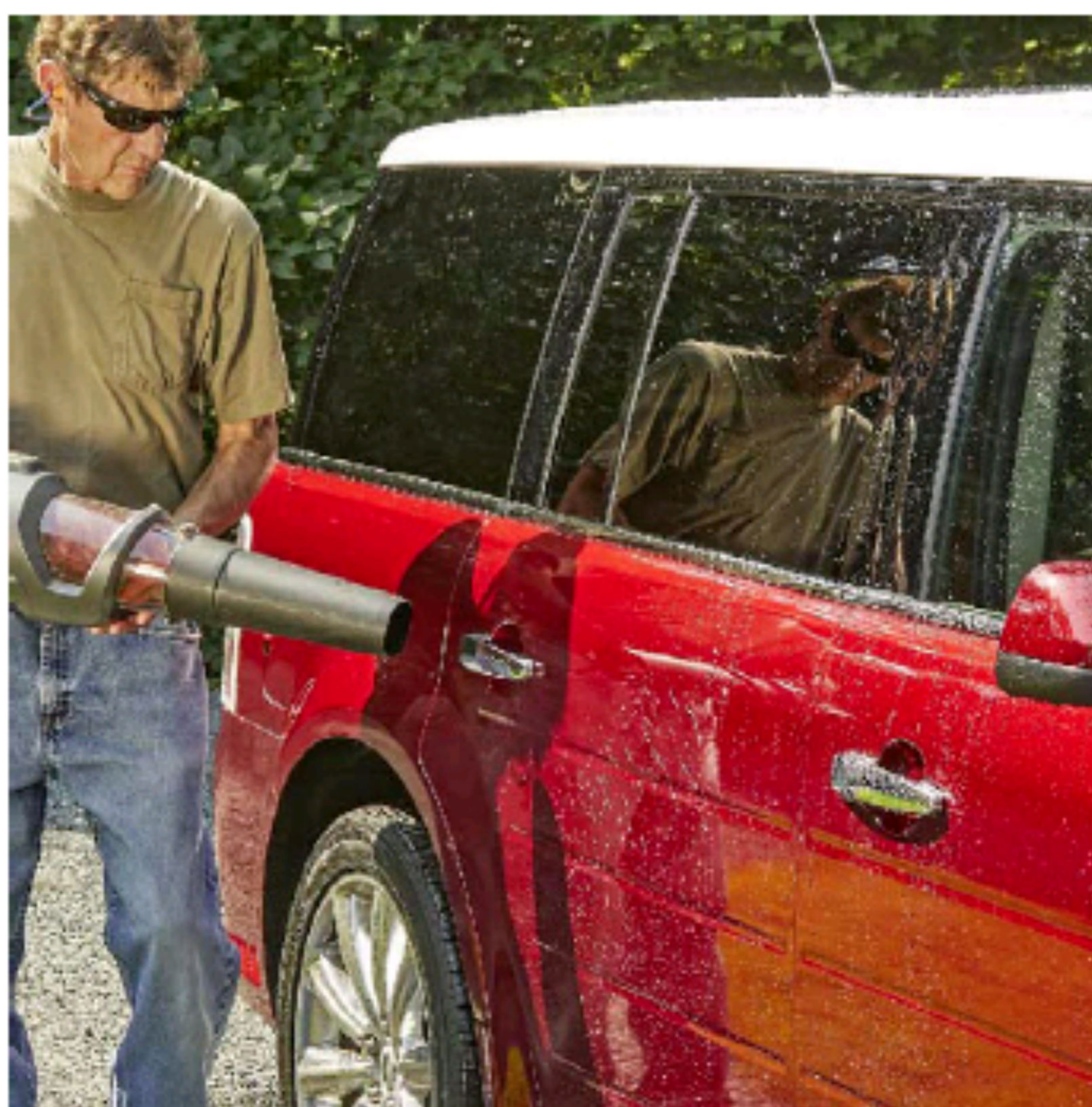
A few times a year, I give my dust-covered shop a blowing-out. First I open the doors and put a couple of box fans in the doorways, blowing air outside. Then I open all the blast gates on the power tools and switch on the dust collector.

I put on my dust mask, safety glasses and hearing protection, and then I go nuts with the leaf blower, starting at the back of the shop and working my way toward the doors. Under and over benches, shelving, air collection ducts and overhead lights—everything gets blasted. The dust that isn't blown outside gets sucked into the dust collector, which I leave running for about 20 minutes after blowing.



Grass-free mower decks

Grass that collects on top of the mower deck gets under the pulleys and wrapped around the drive shafts. Blow it off before it becomes a problem.



Spot-free car washing

Whether you go to a self-service car wash or swab your car down at home, blow-dry it after rinsing and your car will be spot-free. Start at the roof and work your way down. By the way, if you use car-wash detergent from an auto parts store, you'll get far better results than you would using dish-washing soap or other household cleaners.



Soffit blasting

When you're blasting your soffits to get rid of all the cobwebs, do one more thing. Diligently blow out all the dust from the perforations in your aluminum soffits (or rectangular screens if you have plywood soffits). Dust can block some of the airflow into your attic, and that airflow is important for keeping the attic cooler in summer and for preventing ice dams in winter.

Light snow

If my car is covered with light snow, I just blow it off with the leaf blower. I do the same with my deck.



After the rain...

Want to dine alfresco on the deck tonight? Blow the water off the chairs and table so you can enjoy the evening with friends and family without worrying about wet seats.

Blowing out the cars

I haul around a lot of construction tools—and therefore debris—in my cars (two long years now without a pickup). So I use my leaf blower to do a big overall cleaning. I blow out the back, the floors, the dash—everything. I even take out the rugs and blow them off. It isn't exactly "detailing" a car, but if you're like me and you'd rather be watching golf, you've got to get creative once in a while.



Electric fire bellows

Need to get that fire started in a hurry? Give it a massive shot of oxygen. Just don't get so close that you melt the plastic nozzle—and be sure to wear safety glasses.

Installs easily

Each 5-ft section comes with 3 brackets & 6 screws. Do entire home in 3 or 4 hours.

Prevents Erosion

Runoff is changed to a 3 foot wide band of soft rain-sized droplets.

Self-Cleans

Unique louver design allows leaves and debris to blow or wash away. Self-cleaning system protects you from climbing ladders.

Maintenance-Free

All-aluminum Rainhandler louvers make messy, leaking gutters history.

Protects Property

Eliminates clogged, overflowing gutters & downspouts. No ground erosion, No more destructive ice dams.

Guarantee

Money-back satisfaction guaranteed for one full year, 25-year warranty.

For FREE information call or fax
Pc: 800-942-3004, Fax: 800-806-2028

SPECIAL OFFER! 30% OFF

Mention Code **FH0319**

when you call or enter online at checkout

www.rainhandler.com

OFFER EXPIRES 03/31/2019

RAINHANDLER
USE RAINHANDLER
GET RID OF YOUR GUTTERS

MADE IN
THE USA



MEET THE BLOWHARD

Travis Larson has been an editor at *Family Handyman* magazine for a couple of decades now. When he's not creating stories for the magazine or producing videos for familyhandyman.com, he's at home doing woodworking projects and playing with his leaf blowers.



NEW Rechargeable Digital Hearing Aid Technology Only \$229!*

(*Each when you buy a pair)

The new more powerful HearClear™ HCR3 rechargeable hearing aid combines advanced technology with a low price to provide you with outstanding value.

5 Star Reviews! ★★★★★

Outstanding Product! "This product is outstanding. Dad loves it, my mom loves it, and I am grateful! Don't believe that you have to spend a lot of money to get a quality hearing aid"

- Gilmore B.

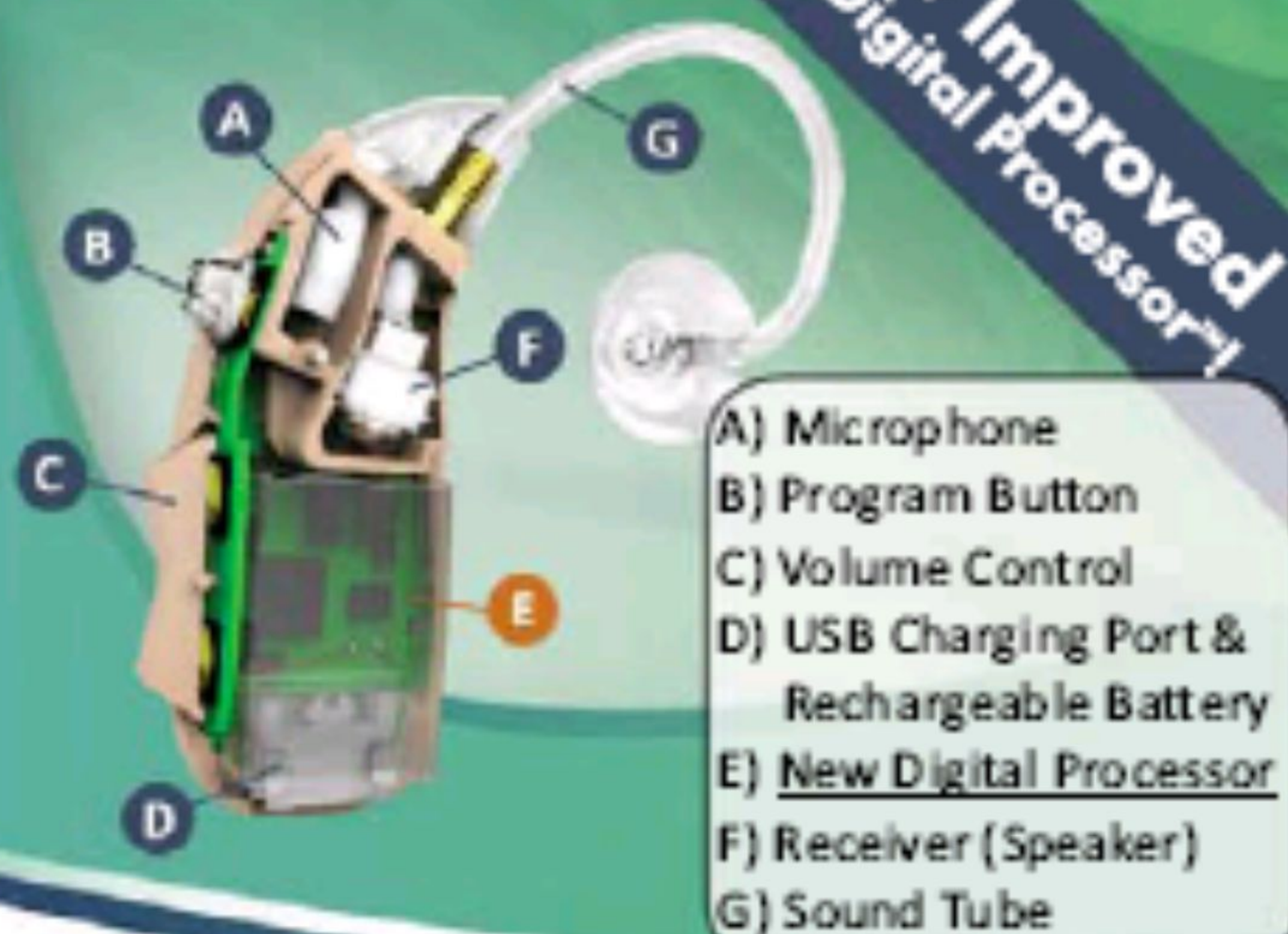


HCR3 Features!

- ✓ Digital sound processing chip provides clear sound and makes speech easier to understand with less feedback than old analog technology
- ✓ Don't worry about replacing batteries! Full Charge Gives 16 Hours of Use! (Charger Included)
- ✓ Easy On / Off Button
- ✓ Automatic Noise Reduction and Feedback Cancellation
- ✓ 100% Money Back Guarantee
- ✓ 4 Programs for different listening situations

Even Better In Pairs!

Your brain is designed to use both ears working together. In fact, studies show that you may be able to hear up to 3 times better in noisy situations when using two hearing aids. Buy a pair for the best results and maximum savings!



New Improved
R3 Digital Processor!

**Simple.
Affordable.**

Rechargeable Digital Hearing Aid - For Only \$229!*

The new HearClear™ HCR3 Rechargeable Digital Hearing Aids are now available to you for an unbelievably affordable price! The HCR3 is packed with the same key technologies that all high end digital hearing aids share while leaving out the extra bells and whistles that increase cost and require expensive adjustments. This helps you hear better, while saving you a lot of money.

Your new HearClear HCR3 hearing aids work at a fraction of the cost of name-brand hearing aids, and you don't have to keep changing the batteries! You will love the discreet, comfortable, lightweight Open-fit design. The HCR3 is shipped directly to you and pre-programmed for most hearing losses. It will help you hear better right out of the box and does not require professional appointments to make costly adjustments.

You can spend thousands for an expensive hearing aid, or you can spend just \$249 for a hearing aid that is great for most hearing losses (only \$229 each when you buy a pair – hear up to 3 times better than wearing just one). We are so sure you will love your hearing aids that we offer a 100% Money Back Guarantee - Risk Free if you are not satisfied for any reason.

NOW ON SALE!

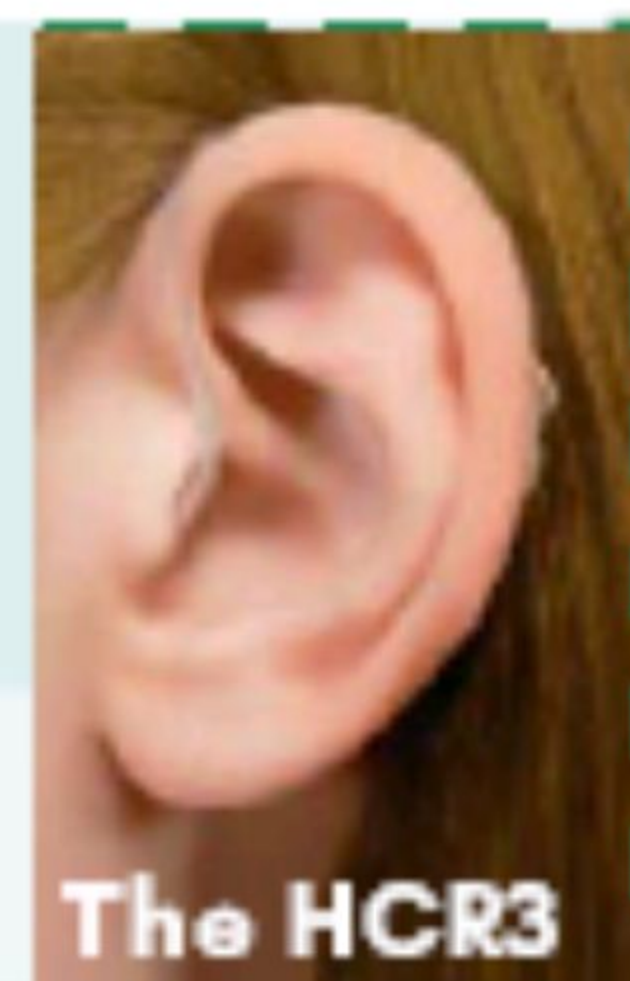
~~List Price: \$849~~
Sale Price: \$229*

MONEY SAVING OFFER!

Use Coupon Code: **FH93**

1-877-300-2069

*Only \$229 Each When You Buy A Pair!
(Coupon Code & Price Valid For A Limited Time Only)



The HCR3

 **Advanced Affordable Hearing**™
Affordable Quality Since 1996!



FDA
REGISTERED

Visit and Save: www.AdvancedHearing.com/FH93

Work+Shop

FREE INFORMATION

Circle the numbers for each advertiser or category on the attached card, stamp and mail or visit

WorkShop-FreeInfo.com

AUTO

100

1. **geico.com**

You could save 15% or more. Get a FREE rate quote today. 1-800-947-AUTO **Geico.com**



2.

Buy everything from one lug nut to a new fender at reliably low prices. Get your auto parts at **RockAuto.com**

BUILDING & CONSTRUCTION

101

3. **DRYLOK** by UGL

Waterproofing masonry made easy. See how easy it is to protect basement walls and other masonry surfaces from the damaging effects of water penetration with Fast Plug and DRYLOK Etch. United Gilsonite Laboratories. 1.800.272.3235 **ugl.com**

4. **pro'wood**

ProWood® professional grade treated lumber offers a wide selection including color-infused ProWood Dura Color®. **ProWoodLumber.com**

5.



Save more when you buy in bulk. Everyday bulk pricing available on drywall, insulation, plywood, shingles, concrete and more. See your local Pro Desk for details. **HomeDepot.com/Pro**

KITCHEN & BATH

104

6.



For Pocket Door Hardware, visit **johnsonhardware.com**, call 800-837-5664, or follow on Twitter @JohnsonHrdware.

OUTDOOR/LAWN & GARDEN

105

7.



Get so much more than a shed. Discover unique practical benefits, plus tools and advice to help you get started. **LPshed.com 1-844-557-7433**

8.



SIMPSON is a leading brand of pressure washers and other outdoor power equipment including generators and water pumps. **simpsoncleaning.com**

9.



Want a great lawn? Start with a better grass – Amazoy Zoysia Grass! 1-410-756-2311 **Zoysiafarms.com**

TOOLS

107

10.



Grizzly Industrial, Inc. Purveyors of Fine Machinery since 1983. **Grizzly.com 1-800-523-4777**

11.



Harbor Freight Tools is the leading discount tool retailer in the U.S. selling great quality tools at "ridiculously low prices" in over 800+ stores nationwide and on its website. **HarborFreight.com 1-800-423-2567**

12. WOODCRAFT®

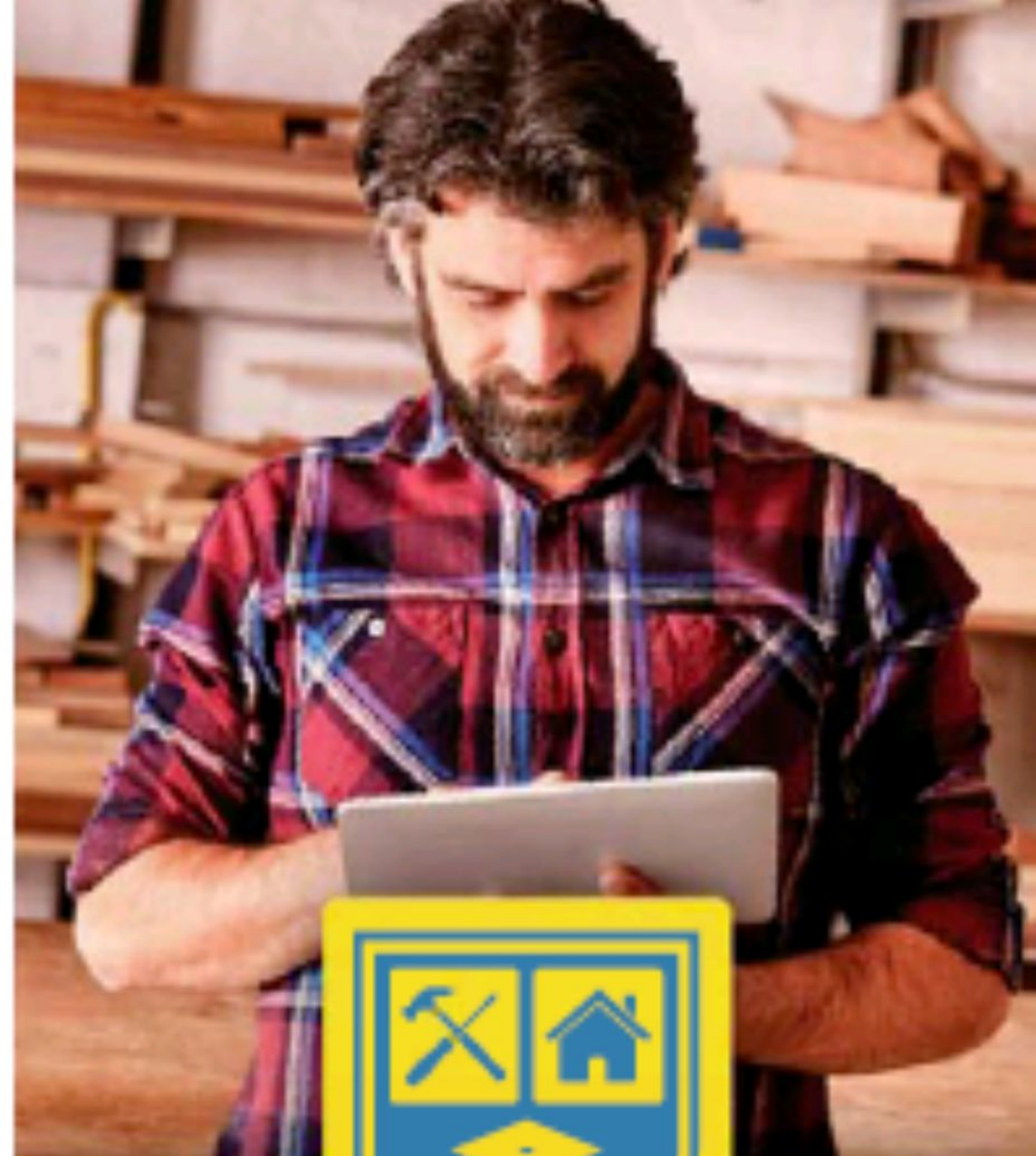
Shop Woodcraft Supply for quality woodworking products – over 20,000 including brand-name tools and hardware – at stores nationwide, our catalog and Woodcraft.com

14.

SimpliSafe wireless home security systems are easy to self-install, easy to purchase direct online, and don't require a contract or a telephone line. 24/7 Professional Monitoring for just \$14.99 a month. That's smarter home security. Protect your home today. Go now to SimpliSafe.com/handy or call 888-799-1859

MISCELLANEOUS**108****13. ALL-PRO™ LED**

Upgrade your outdoor security lighting with LED motion activated, flood and dusk-to-dawn consumer products. Learn more at Eaton.com/lighting



LEARN MORE. BUILD MORE.

Online home improvement classes made for you by the pros.

REGISTER TODAY!

DIYUniversity.com

IT'S FREE!

TALK SHOP

FOR A CHANCE TO

WIN STUFF!

Join the *Family Handyman* Inner Circle today!

- Share feedback & chat with editors
- Answer quick polls on DIY topics
- Chances to win great prizes & more!

GO TO TMBINNERCIRCLE.COM

**family
handyman**

**ENTER FOR A CHANCE
TO WIN A**

\$100

**AMERICAN
EXPRESS
GIFT CARD**

**WHEN YOU REQUEST
ANY OF THIS FREE
INFORMATION ONLINE
OR WITH THE CARD
ATTACHED**

No purchase necessary to enter or win. Sweepstakes begins 2/6/18 and closes 1/23/19. Open to residents of the U.S., its territories and possessions, ages 21 and over. Void where prohibited. For entry and other details including official rules visit WorkShop-FreeInfo.com.

Special Offer for New Customers Only
YES! Please send me the 46-Coin 2010-Date National Park Quarter Set for ONLY \$12.95 - reg. \$84.50, plus Free Shipping. Also, send my FREE Gift (1 per customer, please).
☐ Check payable to Littleton Coin Co.
 Charge my: ☐ VISA ☐ MC ☐ AmEx ☐ Disc
 Card #: _____ Exp. Date: ____/____/____
 QTY DESCRIPTION PRICE TOTAL
 46-Coin Quarter Set (first 5 sets) \$12.95
 * Sales Tax
FREE Shipping! Merchandise TOTAL \$
 We are required by law to collect sales tax on orders shipped to January 1, 2010 for the following states. Tax requirements are subject to change. Visit www.LittletonCoin.com/taxinfo for the up-to-date list. For orders paid by credit card, we will calculate and charge the tax required by law. Total Amount is taxable: IL, IA, IN, MI, MN, MO, NE, ND, OH, OK, PA, RI, SD, TN, TX, VA, VT, WA, WI, WY.
 Name: _____
 Address: _____ Apt # _____
 City: _____ State: _____ Zip: _____
 E-Mail: _____
 Please send coupon to: Littleton Coin Co., Dept. S, 506411 1309 Mt. East St. Rd., Littleton, NH 03561-3737
 America's Favorite Coin Source - TRUSTED SINCE 1982



Get ALL 46 National Park Quarters issued to date!
SAVE 84%!
 Struck for only ten weeks each and then never again... The beautiful National Park quarters honor a cherished site in each of the 50 states, D.C., and the 5 U.S. territories. Order your set now for only \$12.95 and SAVE 84% off the regular price of \$84.50.
 You'll also receive our fully illustrated catalog, plus other fascinating selections from our Free Examination Coins-on-Approval Service, from which you may purchase any or none of the coins - return balance in 15 days - with option to cancel at any time. **Order now to SAVE 84%!**
 FREE Gift
 when you order by deadline
 Mail coupon and order to: www.LittletonCoin.com/npqsets

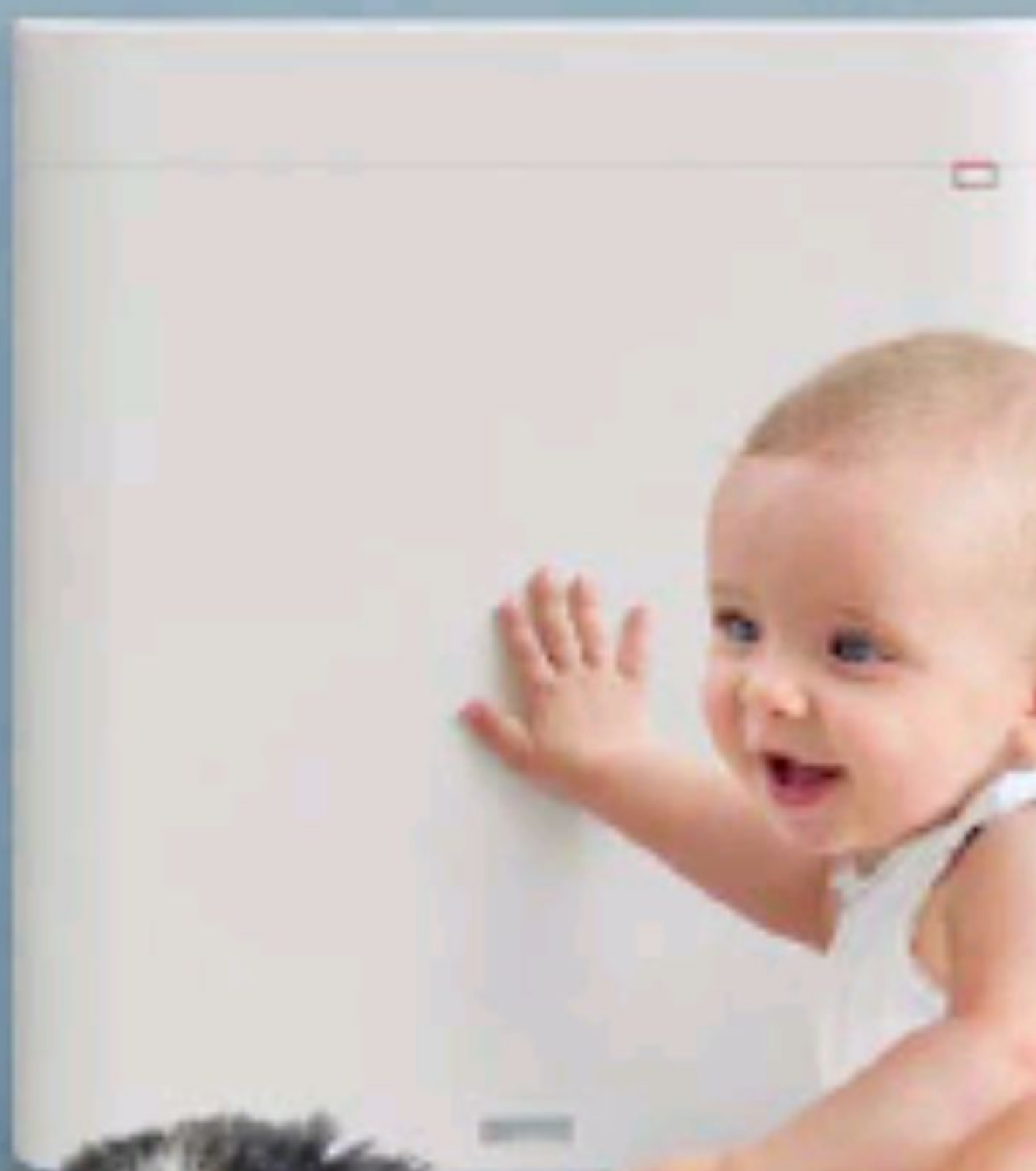
NEW!
Oil Vanish
 Oil Stain Remover Products
Strong enough for the garage, safe enough for the kitchen.
 Advanced Formula Cleans and Degreases without Corrosive Chemicals. Safe on Aluminum, Painted Surfaces & Glass.
 Available at these fine retailers:
 ACE Hardware, AutoZone, Northern Tool & Equipment, Meijer, Target

INCINOLET®
 electric incinerating toilets
PROBLEM SOLVED!
 Need a toilet conveniently located? Home, cabin, shop, boat or dock - INCINOLET is your best solution!
SIMPLE to install, maintain. Only electricity needed: 120 or 240 volts
ULTRA CLEAN: waste reduced to sterile ash, as little as a cupful weekly. Dump in garbage.
TOP QUALITY: stainless steel, platinum odor control, quality construction for a lifetime of satisfaction.
www.incinolet.com
 Call 1-800-527-5551 for info, prices and personal attention.
 RESEARCH PRODUCTS, Inc. nashville
 2639 Andon • Dallas, Texas 75220

Need more space? Build your own murphy bed.
 Create-A-Bed®
 Toll Free 1-877-966-3852
www.createabed.com
 Piston-lift mechanism kit includes step-by-step construction plans and instructional DVD

SHELVES TO SLIDE
 Custom pull out shelves and Kitchen cabinet accessories
 1-800-598-7390
www.shelvestoslide.com
 Order OnLine
 Custom made for your cabinets: Kitchens • Pantries • Bathrooms
 • Limited Lifetime Warranty
 • Solid Birch Construction
 • 100 Pound Capacity
 Call or email for a free catalog

ULTRA
SAFE
SUPER
EFFICIENT
TOTALLY
SILENT
HEATING
FOR PEACE OF MIND!



envi

WWW.EHEAT.COM
1-800-807-0107

ENERGY SAVING

heats room as little as 4 cents per hour!*

ULTRA-SAFE

leave unattended 24/7; cool to the touch

HEALTHY

fanless - doesn't blow dust or dry the air,
ideal for those who have asthma or dry eyes

SILENT

fanless design, auto dimming power light

STYLISH AND SLEEK

slim space saving design, only 2" thin!

EASY INSTALL

installs in minutes, no drill required;
hardwired & easy plug-in models available

10% OFF 1 or more Envi Heaters. Coupon Code: FH1910 / free shipping!



Less Pees, More Zzz's...

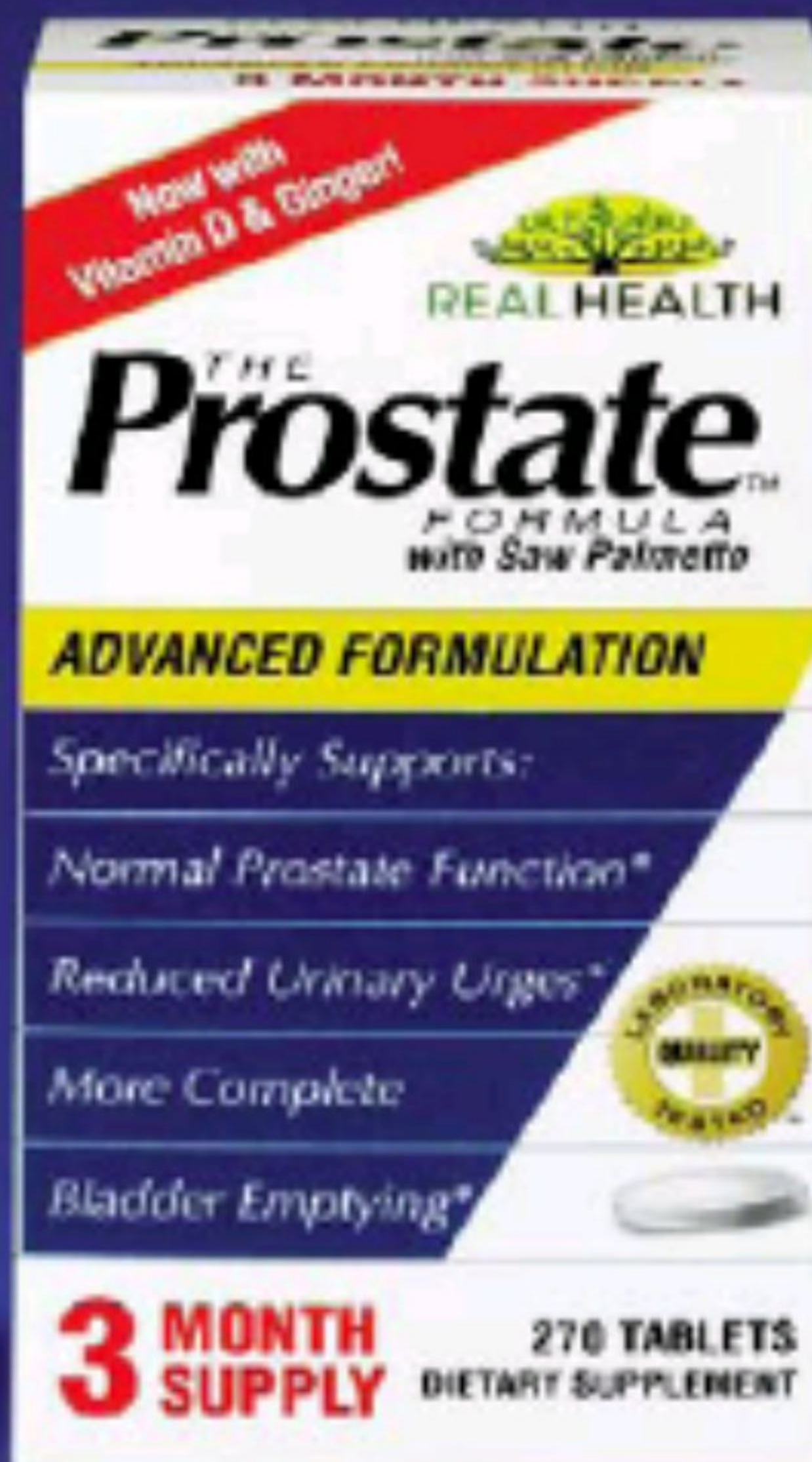
One of the signs of an aging prostate is an increased need to urinate, often in the middle of the night.

That's where The Prostate Formula can help. The Prostate Formula specifically supports:

- ✓ Normal Prostate Function
- ✓ Reduced Urinary Urges
- ✓ More Complete Bladder Emptying

In short? More time catching Zzz's, less times getting up to pee.

For coupons and more information:
www.ProstateFormula.com



CVS/pharmacy

drug mart

Harris Teeter
Neighborhood Food & Pharmacy

K
kmart

RITE
AID

Walgreens

These statements have not been evaluated by the FDA. This product is not intended to diagnose, treat, cure or prevent any disease.



**15
Snow
Guard
Models**

Snow Guards For Metal Roofs



**Metal
Roof
Accessory
Attachment**

Attach Roof Accessories With RoofClamp



**METAL
ROOF
SNOW
RETENTION**

SNOBAR COLORBAR COLORRAIL



**EASY
Gutter
Leaf
Protection**

Available In 4, 5, 6, 7, And 8 Inch Diameters



**Prevent Chimney
& Vent Pipe
Damage**

**3 Sizes Available For Most Roof Types
Standing Seam Adapter Plate Available**



Toll Free: 800-766-5291
Phone: 717-737-4398

www.SNOJAX.com

Stop Dangerous Snow Slides On Metal Roofs

SnoBlox-Snojux 671 Willow Street Lemoyne, PA 17043

**Earn
\$500 a day
making bunk beds
from your shop!**

Even if you only have basic woodworking skills you can easily learn this business.

**THIS MONTH'S SPECIAL
2 Territories for the Price of 1**

- Perfect for both beginning woodworkers and experts alike
- Recover your investment with ease
- Ranked A+ by the Better Business Bureau



1800BunkBed

It's Your Business!™

ACT TODAY
to see if your territory is available!

Visit 1800BunkBed.com

ATHENA PHEROMONE 10x™



Created by Dr. Winnifred Cutler,
co-discoverer of human pheromones in 1986

INCREASES AFFECTION



unscented

Proven effective in an 8 week double blind published study. Worn daily (not 4 to 6 months). Will work for most, but not all. 10:13 for women \$88.50, 10:13 for men \$89.50. Cosmetics. **FREE US SHIPPING.**

Visit our **NEW MEN'S CORNER** on the web

♥ **Don (CA)** 23 orders. "I know the Athena Pheromones are based on substantial science. And they work to make women want to be in my company. At parties, I'll invariably end up surrounded by women. The Athena 10X claims are absolutely true."



Not in stores **610-827-2200**
Athena Institute, 1211 Braefield Rd., Chester Spgs, PA 19425
or view the science and order online at
Athenainstitute.com FHD

It's FINALLY HERE!

**NEW DIESEL
POWER!!!**



Tough Jobs...Made Easy!

- ✓ Excavate, Clear Land, Make Roads
- ✓ ATV Trails, Demolish Old Sheds
- ✓ Dig a Foundation or even a Pond!

The **NEW** MAGNATRAC® MH8500 is your year round power solution for the toughest jobs on your property. Demolish sheds, clear land, install septic, dig a foundation or a pond! The list goes on & on! - Made in the USA for over 50 yrs!

Get Your FREE Catalog Today!



Promo Code: FHM319

1-877-828-8323

StruckCorp.com/sale

Underbed Dressers



**Put Up to 24 Drawers
Under Your Beds**

ultimatebed.com

Where will your customers
look for the things they need
to get the job done?

The Workshop

Advertise today.

Call 203-604-1744
for more information.

NORTH AMERICA'S

#1 Selling Walk-In Tub

Featuring our *New Exclusive Shower Package*

NEW PRODUCT

Now you can finally have all of the soothing benefits of a relaxing warm bath, or enjoy a convenient refreshing shower while seated or standing. Introducing Safe Step Walk-In Tub's exclusive *NEW Shower Package!*

- ✓ First and only walk-in tub available with a customizable shower
- ✓ Fixed rainfall shower head is adjustable for your height and pivots to offer a seated shower option
- ✓ Durable frameless tempered glass enclosure available
- ✓ High-quality tub complete with a comprehensive lifetime warranty on the entire tub
- ✓ Top-of-the-line installation and service, all included at one low, affordable price

Now you can have the best of both worlds—there isn't a better, more affordable walk-in tub, that is made in the USA!



Call today and receive a
FREE SHOWER PACKAGE!

FOR A LIMITED TIME ONLY

Call Toll-Free 1-888-243-1329

SAFE STEP
WALK-IN TUB
www.BuySafeStep.com

With purchase of a new Safe Step Walk-In Tub.
Not applicable with any previous walk-in tub purchase.
Offer available while supplies last. No cash value.
Must present offer at time of purchase.

For your **FREE** information kit and
our Senior Discounts, Call Today Toll-Free

1-888-243-1329

FINANCING
AVAILABLE
WITH APPROVED
CREDIT



LIFETIME
LIMITED WARRANTY



CSLB 983603 F13000002885 13HV08744300



**Need more
Family Handyman?
Get our best tips
and hints in your
inbox. Sign up at
tfhmag.com/diytips**

GOT A DIY QUESTION?

Finding answers is easy at familyhandyman.com. Just use the search box at the top of the page to get expert step-by-step help with your projects.

GOT A HANDY HINT OR TIP FOR US?

To share your information with us, submit a copy of your original contribution, including photos and/or sketches, by email to:

submissions@familyhandyman.com

Or mail to: *Family Handyman*,
2915 Commers Drive, Suite 700,
Eagan, MN 55121

Please include your name, mailing address and email address if you have one, and indicate to which department you are submitting. We reserve the right to publish your submission in any appropriate department, or elsewhere. Contributions will not be acknowledged or returned.

RIGHTS

By submitting material to us, you grant Home Service Publications, Inc., its parent company subsidiaries, affiliates, partners and licensees worldwide use of the material without time limitation, including the right to use your name and city/state/province in connection with any such use. We reserve the right to modify, reproduce and distribute your material in any medium (now or hereafter existing) and in any manner or appropriate place, including but not limited to magazines, promotional merchandise and marketing, and other related materials.

By submitting material to us, you represent and warrant that you have full authority to grant the rights set forth above and that your material will not, in whole or in part,

infringe the intellectual property rights, rights of privacy or publicity, or any other rights of any third party. You further represent and warrant that you have attained the legal age of majority in your state/province (18 in most states/provinces). If you're a minor under the law of your state/province, your parent or guardian must submit on your behalf.

CUSTOMER CARE

For subscriptions, renewals, gifts, payments, account info and other inquiries, email customercare@familyhandyman.com or visit familyhandyman.com/customercare

You can also write to: *Family Handyman* Customer Care, PO Box 6099, Harlan, IA 51593-1599

Single copies of past issues are available for purchase at our affiliate, Shoptasteofhome.com. The cost is the cover price (either \$3.99 or \$4.99) plus \$1 shipping and handling for each copy.

COMMENTS AND SUGGESTIONS

We welcome your ideas and opinions. Write to: The Editor, *Family Handyman*, 2915 Commers Dr., Suite 700, Eagan, MN 55121. Fax: 651-994-2250. Email: feedback@familyhandyman.com

TO REQUEST PERMISSION TO REPRINT

If you'd like permission to reprint any material that appears in *Family Handyman*, please write to us with the nature of your request. Please include as much detail as possible relating to your intended use of the material and specify the issue date and page number (or URL, as applicable) where the material originally appeared. Please email permissions@tmbi.com

FAMILY HANDYMAN® ISSN: 0014-7230, USPS: 515-930. Vol. 68, No. 8, 591st Edition. Published 8 times per year: March, April, May, June, July/August, September, October/November, December/January/February by Home Service Publications, Inc., 1610 N. Second St., Suite 102, Milwaukee, WI 53212. We may also occasionally publish extra issues and special issues (which count as two in a subscription). Periodicals postage paid at Milwaukee, WI, and at additional mailing offices. **POSTMASTER:** Send address changes to customercare@familyhandyman.com, visit familyhandyman.com/customercare or write to *Family Handyman* Customer Care, PO Box 6099, Harlan, IA 51593-1599. **SUBSCRIPTIONS:** In the U.S.A., its territories and possessions, \$24 for one year (8 issues). For countries outside the U.S.A., subscriptions are \$28.97 per year in American currency. Canadian GST registration number R123771891. CPM agreement number 40065693. **Printed in the U.S.A.** Copyright ©2019 Home Service Publications, Inc. All rights reserved. Unauthorized reproduction, in any manner, is prohibited. *Family Handyman*, Handy Hints, Great Goofs and Build It Fix It Live It! are registered trademarks of Trusted Media Brands, Inc. Wordless Workshop, Workshop Tips and  are trademarks of Trusted Media Brands, Inc. **SUBSCRIBERS:** If the U.S. Postal Service alerts us that your magazine is undeliverable, we have no further obligation unless we receive a new address within one year. **CONSUMER INFORMATION:** *Family Handyman* may share information about you with third parties for the purpose of offering products and services that may interest you. If you would rather not receive such offers via postal mail, please write to: *Family Handyman* Customer Mailing List, PO Box 3122, Harlan, IA 51593-0188. You can also visit www.tmbi.com/preference-center to manage your preferences and opt out of receiving such offers via email. Please see our Privacy Policy at www.tmbi.com/privacy-policy.

family handyman

EDITORIAL

Chief Content Officer	Nick Grzechowiak
Editor-in-Chief	Gary Wentz
Senior Editors	Mary Flanagan
	Travis Larson
	Mark Petersen
Associate Editors	Mike Berner
	Brad Holden
	Josh Risberg
Managing Editor	Donna Bierbach
Assistant Editors	Matt Boley
	Elizabeth Flaherty
	Harrison Kral
Contributing Copy Editor	Peggy Parker
Contributing Editors	Spike Carlsen
	Rick Muscoplat
	April Wilkerson
	Jeremiah James
Lead Carpenter	Peggy McDermott
Editorial Services Associate	

ART

Associate Creative Director	Vern Johnson
Senior Designer	Marcia Roepke
Graphic Designer	Mariah Cates
Production Artist	Mary Schwender
Photographer	Tom Fenenga

DIGITAL

Digital Product Manager	Gina Kapfhamer
Senior Analyst, Digital Analytics	Ashley Knoebel
Senior Digital Editor	Jenny Stanley
Associate Digital Editor	Nick Gerhardt
Social Media Manager	Kellen Berg
Online Learning Manager	Kat Gritsenko
Video Producer	Will Leighton
Production Assistant	Courtney McDermott

ADVERTISING

Director of Ad Sales Analysis	Heather McKean
VP, Integrated Sales	John Dyckman
New York, 646-518-4215	Richie Matz
	Ray Rienecker
	Kelly Loalbo
Midwest, 312-540-4824	Matt Avery
West Coast, 646-518-4215	John Dyckman
Classified and Small Display	Eric Genova
Ads: 212-779-7172, ext. 221	
Associate Marketing Manager	Christine Galletta
Advertising Coordinator	Selena Cohen
Senior Production Manager	Leslie Kogan

TRUSTED MEDIA BRANDS, INC.

President & Chief Executive Officer	Bonnie Kintzer
Chief Financial Officer	Dean Durbin
Chief Marketing Officer	C. Alec Casey
Chief Revenue Officer, North America	Zach Friedman
Chief Digital Officer	Vince Errico
SVP, Training and Coaching	Phyllis E. Gebhardt,
	SPHR; SHRM-SCP
General Counsel	Mark Sirota
VP, Human Resources and Benefits	Heather Schwartz
VP, Operations	Michael Garzone
VP, Product Marketing	Brian Kennedy
VP, Consumer Acquisition	Heather Plant
VP, Consumer Marketing Planning	Jim Woods
VP, Digital Product & Technology	Nick Contardo
VP, Digital Content & Audience Development	Kari Hodes
VP, Marketing	Jason Sinclair
VP, Programmatic and Data	Scott Mulqueen
Product Operations	
VP, Revenue Operations	Larry Mlawski
VP, Digital Sales	Randy Saperstone

EDITORIAL OFFICE

2915 Commers Drive, Suite 700,
Eagan, MN 55121; 651-454-9200



Best digital **FDA Registered hearing aid** for the price... **GUARANTEED!**

ONLY **\$299** EACH!

**45-DAY
RISK-FREE
TRIAL**



Same high-quality **DIGITAL** hearing aids offered by Audiologists and ENT's.

- ✓ 100% Risk-FREE 45-day home trial
- ✓ FREE shipping
- ✓ Payment plans available
- ✓ FREE, unlimited support from licensed professionals

We trust you...
**SEND
NO MONEY
NOW!**

FOR QUALIFIED BUYERS.

The Apollo™-6205 is the perfect FDA registered digital hearing aid if you want the BEST technology for the BEST price. American Made electronics give you advanced technology in a durable, easy to maintain hearing aid. Includes four channel compression for crisp, clear sound and feedback cancellation that virtually eliminates squeal. Discreet slim-tube design gives you the most natural sound with total comfort.

The typical hearing aid costs at least \$2,300 but your price is nowhere near that with this special offer! You SAVE 85% compared to your local hearing aid store.

Try the Apollo-6205 with NO MONEY DOWN completely Risk-FREE for 45 days in the comfort of your own home and see if it's everything we've promised. Call now to take advantage of our 45-day Risk-FREE offer!



**ADVANCED
American Made Technology**

Doctor Designed • Audiologist Approved

"I like the fit and the difference it makes in my hearing is great. The price and the personal care you have shown me is the best!"

★★★★★ J.R. - Montgomery, AL

"I can hear conversations in a crowd. I'm so glad I picked up the phone and gave you a call. What a world of difference these hearing aids have made in my hearing."

★★★★★ P.S. - Venice, FL



Hearing aids by mail for 39 years

750,000 CUSTOMERS CAN'T BE WRONG!

**Try the Apollo™-6205 hearing aid
risk-free for 45 days.**

SEND NO MONEY NOW!

If you like it then pay only \$299 per aid or simply send it back.

By phone (Mon-Fri • 8 am - 5 pm Central Standard Time)

Expires: 5/31/19



1-888-847-1189

**PROMO CODE
02-361**

Visit us online and SAVE! (Deposit required for online orders.)

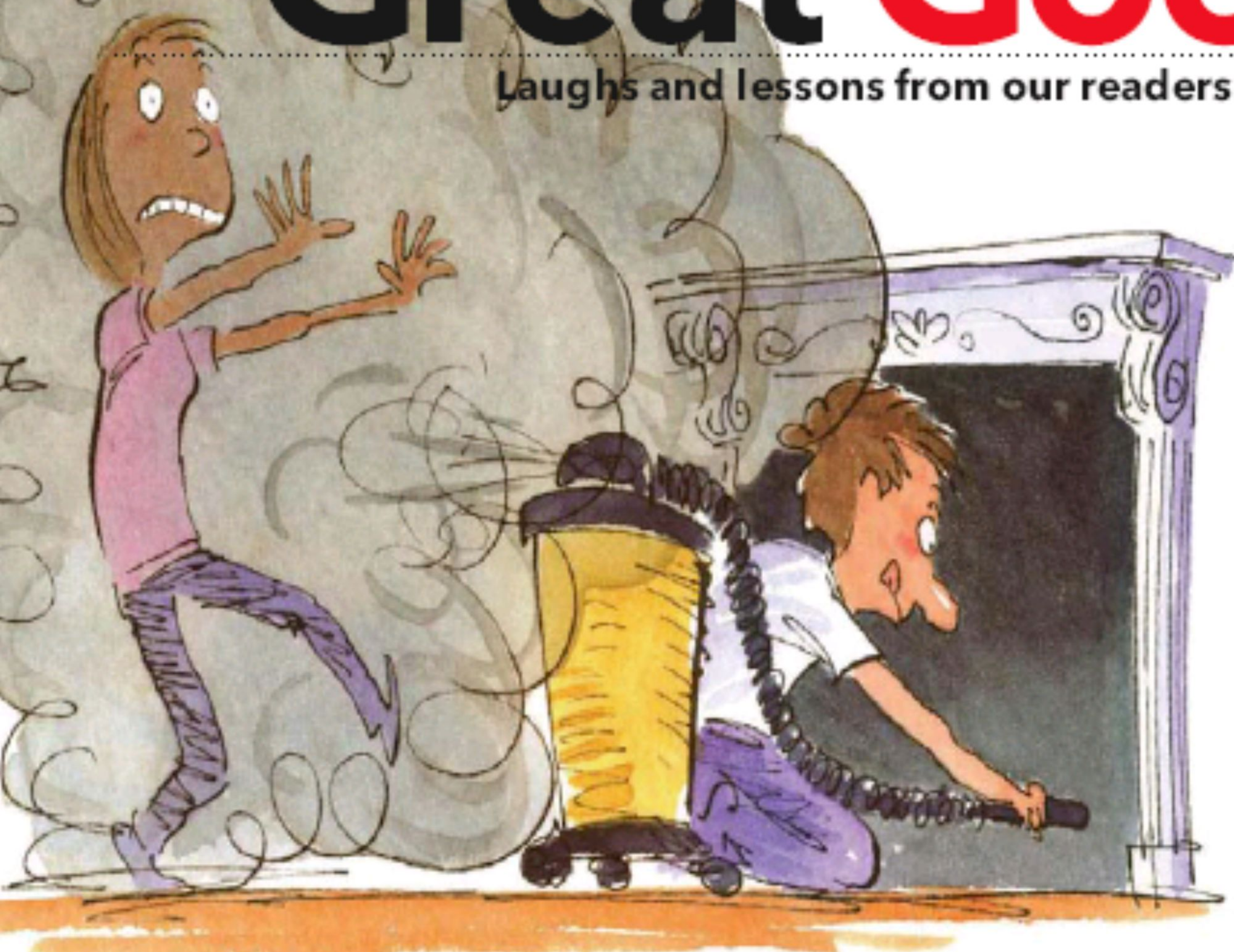


www.HearingHelpExpress.com



Great Goofs®

Laughs and lessons from our readers



ASHES, ASHES—THEY ALL DRIFT AROUND

When we put our house on the market, one of my jobs was to clean out the fireplace. Armed with my trusty shop vacuum, I went to work sucking up the ashes. Everything was going fine until my wife ran into the room yelling, "Stop!"

I pulled my head out of the firebox to see a huge cloud of ash dust floating across the room. My face turned whiter than the ash as I realized that I'd forgotten to put the filter in the vacuum, and the exhaust vents were blowing the fine particles all over the room. The upside: We were already planning to replace the carpet, and we learned that ash doesn't stick to walls. Now if we can just find a home buyer...

ERIC NELSON

SAFE, BUT SORRY

I decided to buy a floor safe to protect my wife's jewelry. The locksmith wanted \$200 to install it in my concrete floor—which was more than the safe cost! To do the job myself, I rented the biggest jackhammer known to humankind and bought some concrete mix for the patchwork. I fired up the jackhammer and it broke through the basement slab just fine. Then it hammered through the main water line, sending water shooting up like a geyser.

The project took some extra time and an emergency visit from my plumber, but you know what? That \$200 locksmith would have caused the same disaster!

PATRICK HINDLEY

WATER AND CEILINGS DON'T MIX

The spring and pulley on my dishwasher door broke, so I bought the part to fix it and made the repair in about 30 minutes. As I pushed the dishwasher back into place, I felt pretty good about saving the \$100 I would have had to pay a technician.

Early the next morning, while I was still enjoying a peaceful night's sleep, my wife woke me up by telling me that the basement ceiling was falling down and the basement was flooded. Turns out, when I pushed the dishwasher back in, it pulled the water supply line free. Water ran onto the underlying ceiling all night, ruining everything below. That \$100 I saved cost me \$1,000 for a new ceiling and flooring.

GEORGE LOUIE



Experts love it.
Readers voted for it.
Intruders?
Not really feeling it.



But that should come as no surprise for home security that's designed to stand up to surprises, from unexpected power outages to uninvited guests. Could be why PCMag recently named us both Readers' Choice and Editors' Choice. And why more than 3 million people now rely on SimpliSafe for 24/7 protection, with another home opting in every 3.5 seconds. SimpliSafe is home security that makes it easy to love home security.

Right now, get free shipping at
[SimpliSafe.com/handy](https://www.simplisafe.com/handy)



SimpliSafe™
HOME SECURITY

WE HOLD DIRT IN THE HIGHEST REGARD

We respect dirt in all its forms. We're honored to find it under our fingernails, and more honored to shake the hands of those who have it under theirs. It's why we dig in and do whatever it takes to make owning a Kioti the best machine-owning experience the world has ever known.



WE DIG DIRT

