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27 THINGS homeowners MUST KNOW

**SURVIVE
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safe?
FOR YOUR
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**FRAMING
TECHNIQUES
FROM THE PROS**

**POWER
TOOLS +
pumpkins!**

**5
COMMON
ROOF LEAKS
AND HOW TO
FIX THEM!**

Oct/Nov 2018

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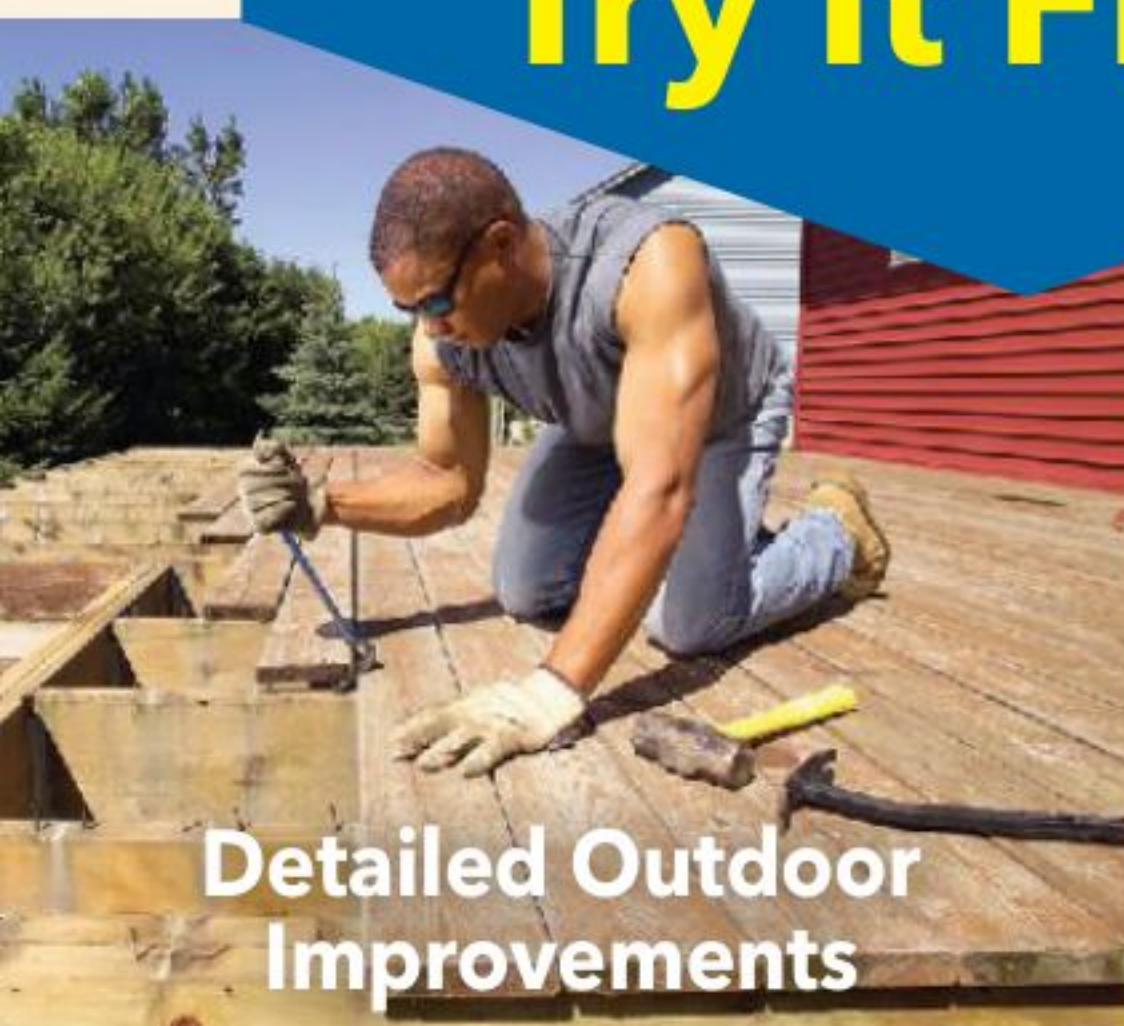
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Stuff We Love

Our favorite DIY tools, materials + gear. By Travis Larson

TRIED & TRUE

Socks that work

A friend recently told me that there are two signs you're getting older. One, you start noticing bird behavior. Two, a good pair of socks becomes worth its weight in gold. I know he's right about the second point because I had just bought a dozen different pairs of crew socks and tested which performed the best.

For starters, I wore them all a couple times and eliminated the ones that were too hot, didn't stay up, were hard to put on or just didn't feel good. Next, I randomly wore the remaining six pairs to see which ones held up the best over several washings and wearings. I didn't keep a record of how many times I wore each one; I just tried to mix it up as best I could.

Fortunately, the pair that outlasted all the others was also the most comfortable. The clear winner was Duluth Trading Company's 7-Year Performance Lightweight socks. Unfortunately, at about \$18 a pair, they were among the most expensive I tested. But they were still cheaper than gold, so I bought a bunch more at duluthtrading.com. Now if I can just get those pesky blue jays to stop chasing all my robins away.

MARK PETERSEN, SENIOR EDITOR



BUZZWORTHY

FAKE WASP NEST

When I first saw this thing, I thought it was really stupid. But surprisingly, it works. Seems that wasps are very territorial and don't want to build one of their high-rise condos anywhere near another one. And it turns out they're not smart enough to tell the difference between a fake one and a real one. So if you have wasp issues, go ahead and hang up a few fake nests wherever they usually appear. You can order a set of two from gardeners.com for \$10.

TRAVIS LARSON, SENIOR EDITOR



LIGHT & NIMBLE

Handy blower

We have a gas-powered leaf blower, but I hate to start it, and I got tired of begging my husband to do it for me. So I had resorted to using a broom to clean off our deck, stairs and paver patio. Not anymore. I bought this cool battery-powered blower, and what used to take me an hour or more now takes 10 minutes or less! I start up on the deck, work my way down the stairs and then blow all the debris from the patio out into the lawn or away from the driveway. I paid about \$40 for the Ryobi ONE+ 18-volt model P2190 without the battery. (I use the batteries from my husband's other Ryobi 18-volt tools.) The blower is light and has enough battery life to do everything I need to do. No more gas-powered blowers or brooms for me!

JAN LEHMAN, BLOWER-IN-CHIEF



TRACTION TO GO!

Winter tires that grip

I always run winter tires on both my truck and minivan. I've tried a handful of different brands and have found that Blizzak DM-V2 tires, from Bridgestone, provide the best traction by far.

Last spring, my wife made it home safely after a storm dumped 18 in. of wet snow on Minnesota and left dozens of vehicles stranded everywhere. In addition to the super-aggressive traction, Blizzak DM-V2 tires are much, much quieter than any other winter tire I've tried. Prices start at \$150 per tire.

JOSH RISBERG, ASSOCIATE EDITOR

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WE DIG DIRT



BACK SAVER

Effortless hauling; easy dumping

The first time I used a gas-powered wheelbarrow, I thought I'd died and gone to heaven. I was in heaven vibrating like mad with ringing ears, but at least my back wasn't killing me. However, the Greenworks G-MAX 40V self-propelled wheelbarrow provides the best of both worlds—it gets your stuff where it needs to go, and does it quietly and painlessly.

The dual 10-in. pneumatic front wheels supply the propulsion while the back wheel does the steering. It'll haul up to 220 lbs. while tackling inclines of up to 20 degrees. The nearly 4-cu.-ft. tray is spacious enough to haul dozens of tools, many bags of mulch, or armfuls of twigs and weeds. It dumps with the squeeze of a lever and the lift of a handle.

It has "tortoise" and "rabbit" speeds as well as forward and reverse. The throttle is a motor-cycle-style twist grip. According to the manufacturer, the battery will

last up to 45 minutes between charges. Two dinky quirks: You can't disengage the drive system and push it like a normal wheelbarrow, and you need to push the "safety switch" each time you put it in motion. Both are easily forgiven once you haul four bags of mulch

uphill without breaking a sweat.

The bare version costs \$350; with battery and charger, \$500. The G-MAX 40V wheelbarrow is available online and at some home centers.

SPIKE CARLSEN, CONTRIBUTING EDITOR



MUST-HAVE

SMART CHARGING

A while ago, I created a power charging station where I could amass a bunch of my battery chargers. All the chargers were connected to one power strip. It did help organize my shop, but it always bugged me that all those chargers sprang to life when I turned on the power strip even when I only needed to charge one battery. Not a big deal if the chargers are empty,

but I often leave batteries sitting in the cradle until they're needed again.

I solved the problem by buying a power strip that has a separate switch for each outlet. There are a few brands available online. I bought the Tripp Lite model TLP76MSG for \$23. Six of the outlets are switched while one stays on all the time, and all seven have surge protection.

MARK PETERSEN, SENIOR EDITOR



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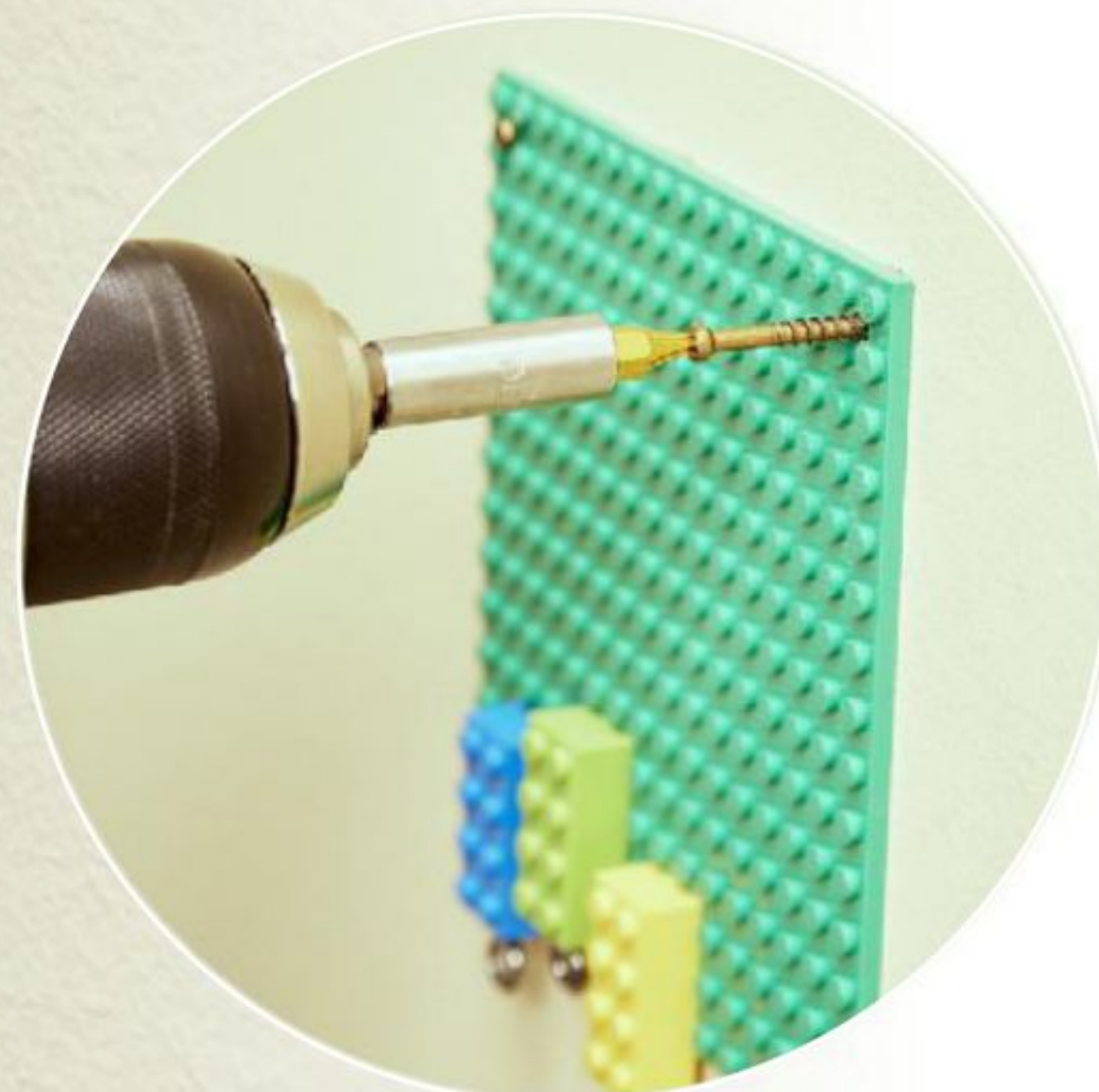
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Colorful Key Station

When my kids outgrew their LEGO bricks, I repurposed a few of them to make this handy key station. I predrilled holes in the small bricks to thread in eye screws, and then slipped the key rings onto the eye screws. Fasten the base to the wall with screws.

JANET RODRIGUEZ





NO-WAIT GLUE

I don't like waiting for the glue to reach the bottle's tip when I'm in the middle of a big glue-up. To make sure the glue is ready to flow immediately when I pick up the bottle, I just turn the bottle upside down in a can that sits on my workbench.

BRAD HOLDEN



UNDER-THE-HOOD MAINTENANCE RECORD

My truck's air filter cover makes a perfect blackboard for my maintenance schedule. I use a chalk marker to write down the dates I last changed the oil, air filter, spark plugs, etc. The chalk marker isn't affected by water but is easily cleaned off with an ammonia-based cleaner (such as Windex). For me, this is much simpler than recording everything in the owner's manual. It's right where I need it!

HANK HUFF



MEASURING STICK FOR FIREWOOD

For a tidy stack, I like my firewood to be all the same length. The simplest measuring device I've found is my chain saw's bar.

TRAVIS LARSON



Nut or washer

CARRIAGE-BOLT LADDER HOOK

Sometimes there isn't room to set all the stuff I might need at the top of my ladder. So I attach a bolt to the top surface through one of the existing tool holes. You'll need a nut and washer on top and underneath. It's perfect for hanging an extension cord, a tool belt or even a bucket.

MARK AMMONS



AROUND-THE-SHOP CURVE GUIDES

When I need to draw a curve on a project, instead of reaching for a ruler and a compass, I start looking around my shop. There are dozens of round objects available for tracing a perfect curve or radius—anything from a 5-gallon bucket to a roll of tape to the dime in my pocket.

BOB TURNER



BLADE-HEIGHT GAUGE BLOCK

Here's a quick way to set the height of a table saw blade. I cut notches on the end of a 4x4 block at the blade heights I use most often: 1/4 in., 3/8 in., 1/2 in. and 3/4 in. To use the block, position the desired notch over the blade and raise the blade until its highest point just touches the block.

VERN HAUSER



FLEXIBLE PAPER TOWEL STORAGE

I needed out-of-the-way storage for paper towel rolls. My simple solution uses four eye hooks and two bungee cords. Attach two eye hooks low and two higher up. Stretch the bungee cords from the lower hooks to the upper hooks.

MIKE DAVENPORT



QUICK FIX FOR MARKER MISTAKES

Who hasn't accidentally written on a white board with a permanent marker? Luckily, it's a snap to remove. Simply write over the permanent marker ink with a dry-erase marker and then wipe with an eraser or a dry cloth. Your dry-erase board will be as good as new!

ELIZABETH FLAHERTY

DIY Essentials

Our best tips for getting your project done right. By Travis Larson

Finding & Fixing **ROOF LEAKS**

**Fix it
yourself
and save
money!**



If you have water stains that extend across ceilings or run down walls, the cause is likely a roof leak. Tracking down the leak

can be hard; the fixes are usually pretty easy. We'll show you simple tricks for finding and repairing the most common types of roof leaks.

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Find the leaks

When you're trying to track down a leak, start by looking at the roof uphill from the stains. Roof penetrations are the first thing to look for. Items that penetrate the roof are by far the most common source of leaks. In fact, it's rare for leaks to develop in open areas of uninterrupted shingles, even on older roofs. Penetrations can include plumbing and roof vents, chimneys, dormers or anything else that projects through the roof. They can be several feet above the leak or to either side of it.

If you have attic access, the easiest way to track down a leak is to go up there with a flashlight and look for evidence. There will be water stains, black marks or mold. But if access is a problem or you have a vaulted ceiling, you'll have to go up onto the roof to examine the suspect(s). The photos on the following pages will show you what to look for.

If the problem still isn't obvious, enlist a helper and go up onto the roof with a garden hose. Start low, soaking the area just above where the leak appears in the house. Isolate areas when you run the hose. For example, soak the downhill side of a chimney first, then each side, then the top on both sides. Have your helper stay inside the house waiting for the drip to appear.

Let the hose run for several minutes in one area before moving it up the roof a little farther. Tell your helper to yell when a drip becomes visible. You'll be in the neighborhood of the leak. This process can take well over an hour, so be patient and don't move the hose too soon. Buy your helper dinner.

Water stains can also indicate condensation or ice dam issues. Condensation problems can often be caused from bath, cooking or even dryer vents exhausting into attics rather than through the roof.

Ice dams usually happen in cold climates in the spring or on mild winter days. Have a big chunk of ice along the eaves during winter? That's an ice dam.



Minor leaks can cause major damage

Discover a roof leak? Well, you'd better fix it, even if it doesn't bother you much or you're getting a new roof next year. Over time, even small leaks can lead to big problems, such as mold, rotted framing and sheathing, destroyed insulation and damaged ceilings. The flashing leak that caused this \$950 repair bill was obvious from the ceiling stains for over two years. If the homeowner had dealt with it right away, the damage and subsequent repairs would have been minimal.

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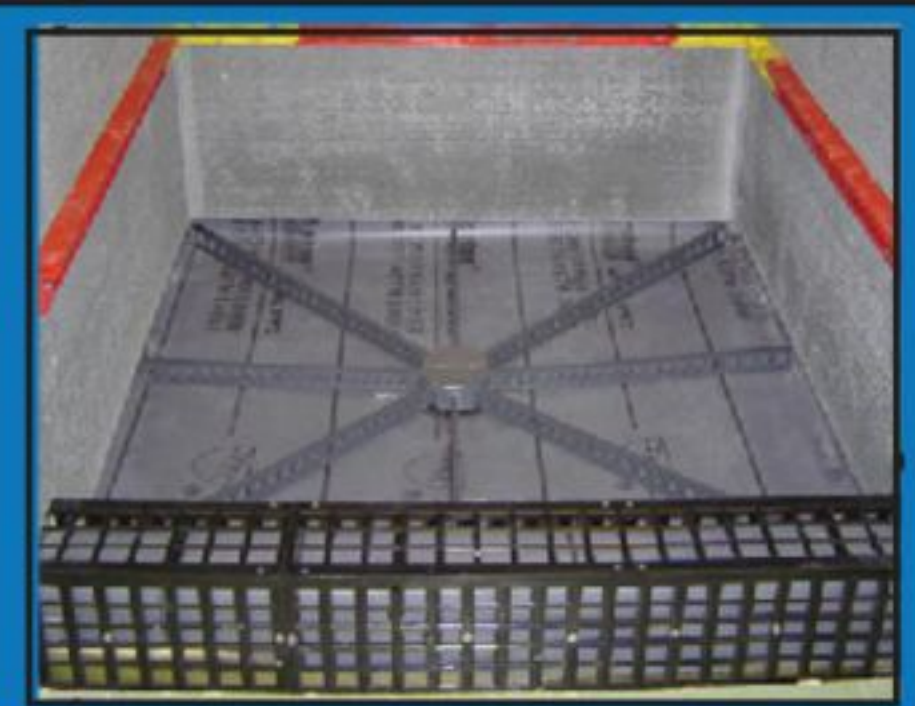
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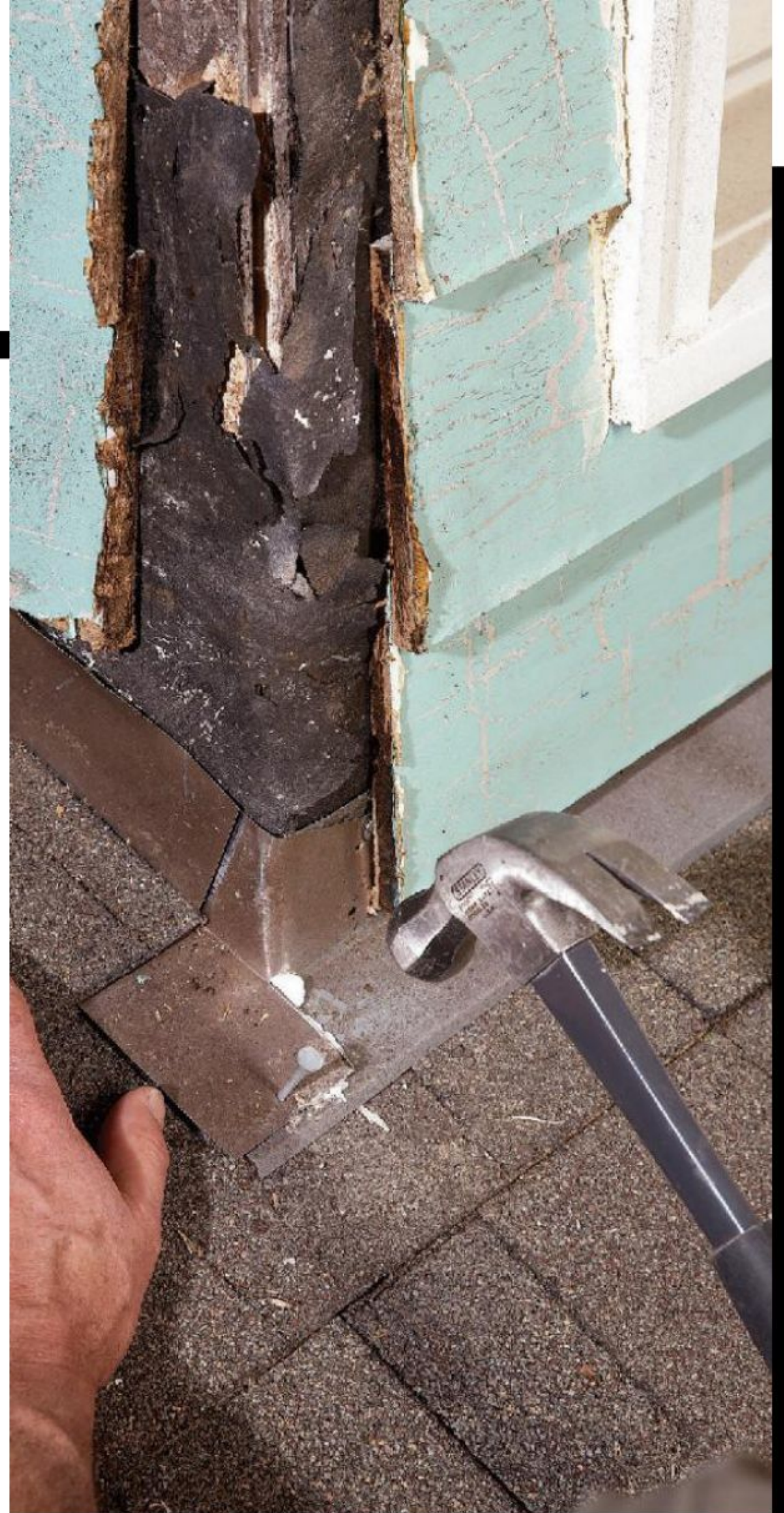


Leaky walls & dormers

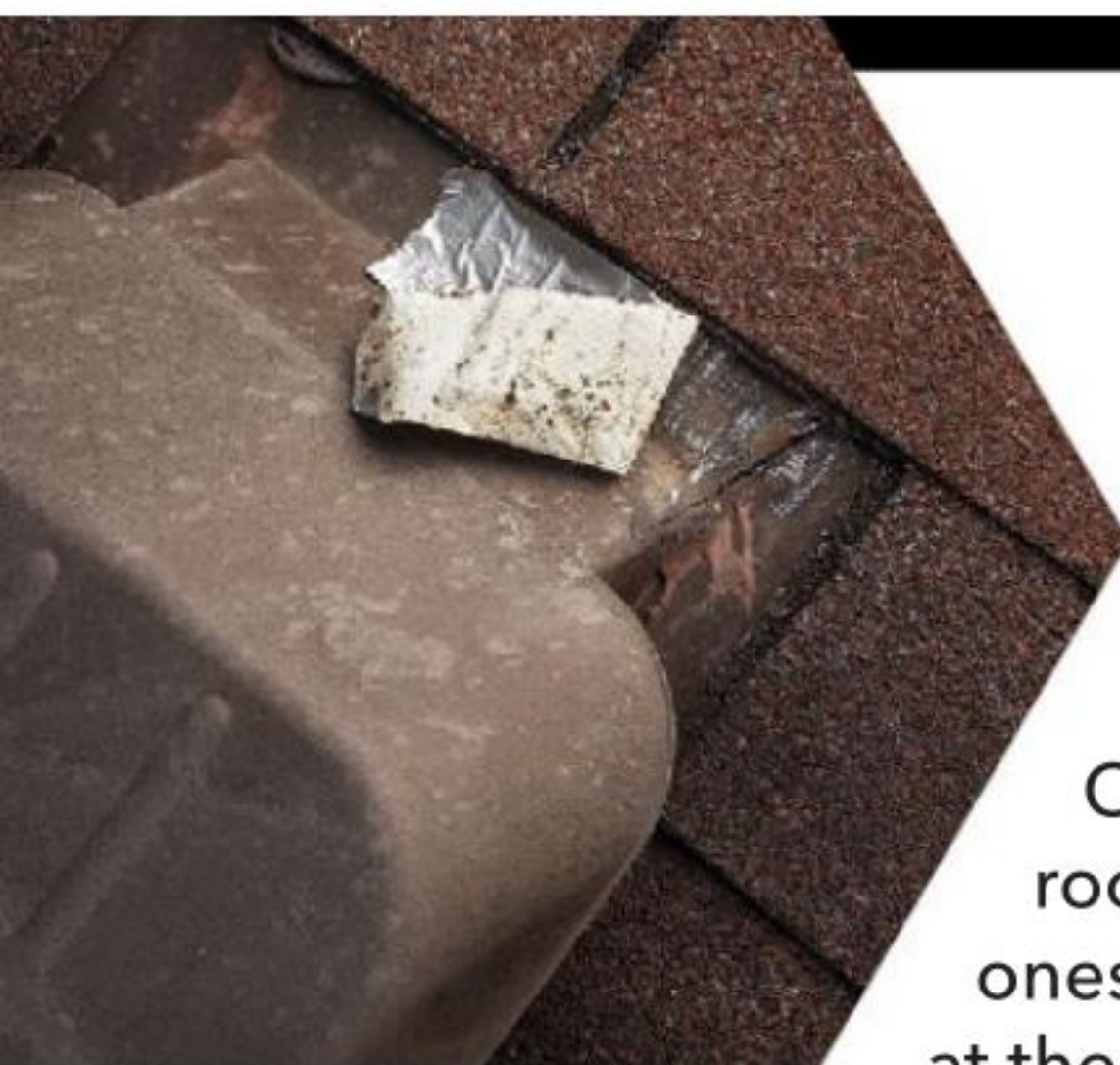
PROBLEM: Water that sneaks behind walls and dormers dribbles down into your house just like a roof leak.

Water doesn't always come in at the shingled surface. Often, wind-driven rain comes in from above the roof, especially around windows, between corner boards and siding, and through cracks and knotholes in siding. Dormer walls provide lots of spots where water can dribble down and enter the roof. Caulk can be old, cracked or even missing between the corner boards and between window edges and siding. Water penetrates these cracks and works its way behind the flashing and into the house.

Even caulk that looks intact may not be sealing against the adjoining surfaces. Dig around with a putty knife to see if the area is sealed. Dig out any suspect caulk and replace it with a siliconized latex caulk. Also check the siding above the step flashing. Replace any cracked, rotted or missing siding, making sure the new piece overlaps the step flashing by at least 2 in. If you still have a leak, pull the corner boards free and check the overlapping flashing at the corner. Often, there's old, hardened caulk where the two pieces overlap at the inside corner.



SOLUTION: Recaulk the corner flashing. Lift the overlapping section, clean it thoroughly and add a generous bead of fresh caulk underneath. Make sure the gap at the corner is filled with caulk.



Roof vents

PROBLEM: Plastic roof vents can crack and leak. Duct tape is not the solution this time!

Check for cracked housings on plastic roof vents and broken seams on metal ones. You might be tempted to throw caulk at the problem, but that solution won't last long. There's really no fix other than replacing the damaged vents. Also look for pulled or missing nails at the base's bottom edge. Replace them with rubber-washed screws.

In most cases, you can remove nails under the shingles on both sides of the vent to pull it free.

There will be nails across the top of the vent too.

Usually you can also work those loose without removing shingles. Screw the bottom into place with rubber-washed screws. Squeeze out a bead of caulk beneath the shingles on both sides of the vent to hold the shingles down and to add a water barrier. That's much easier than renailing the shingles.



SOLUTION: Replace the old vent. If you're careful, you won't have to remove any shingles to slip out the old one and slide the new one into place.



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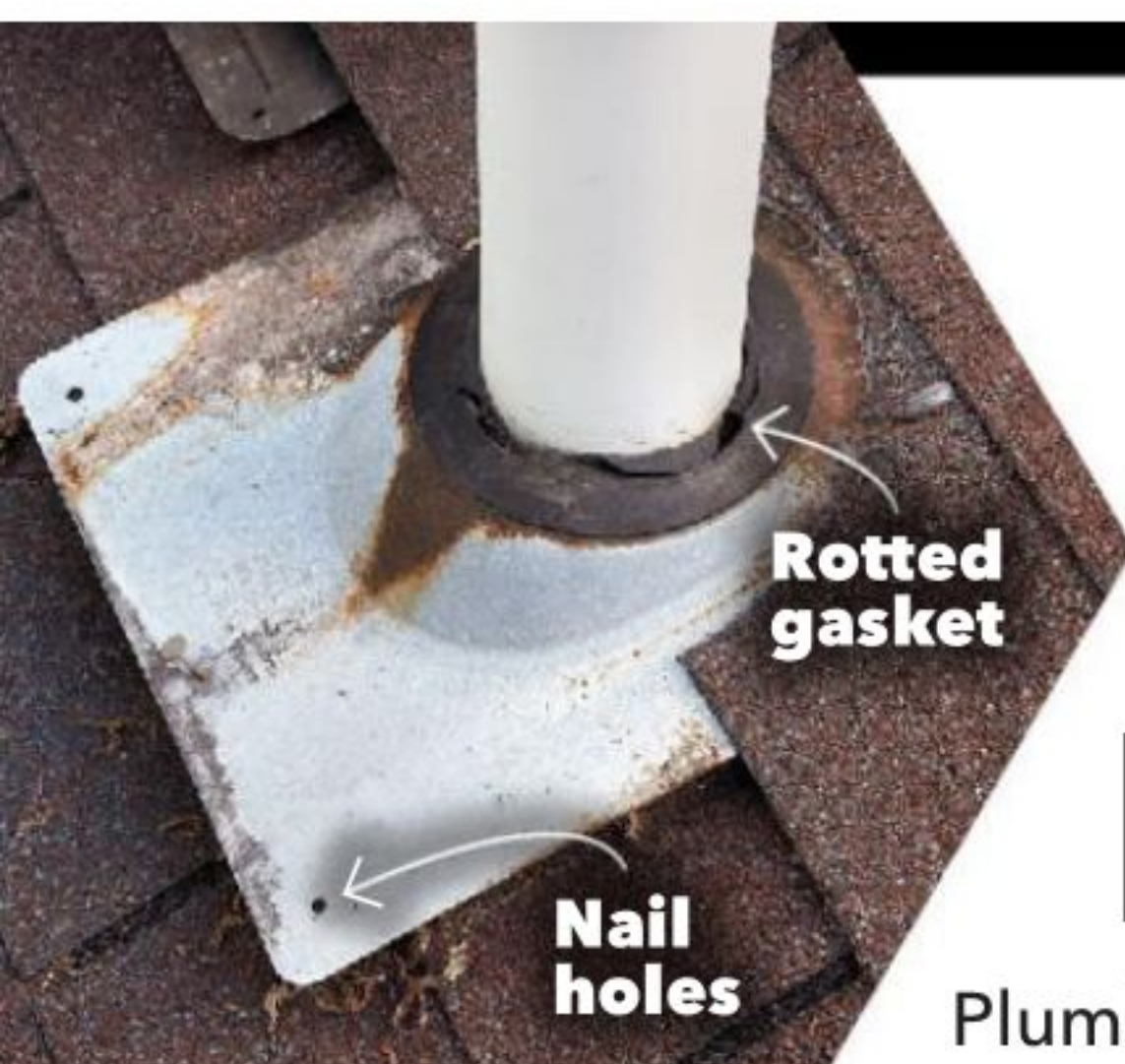
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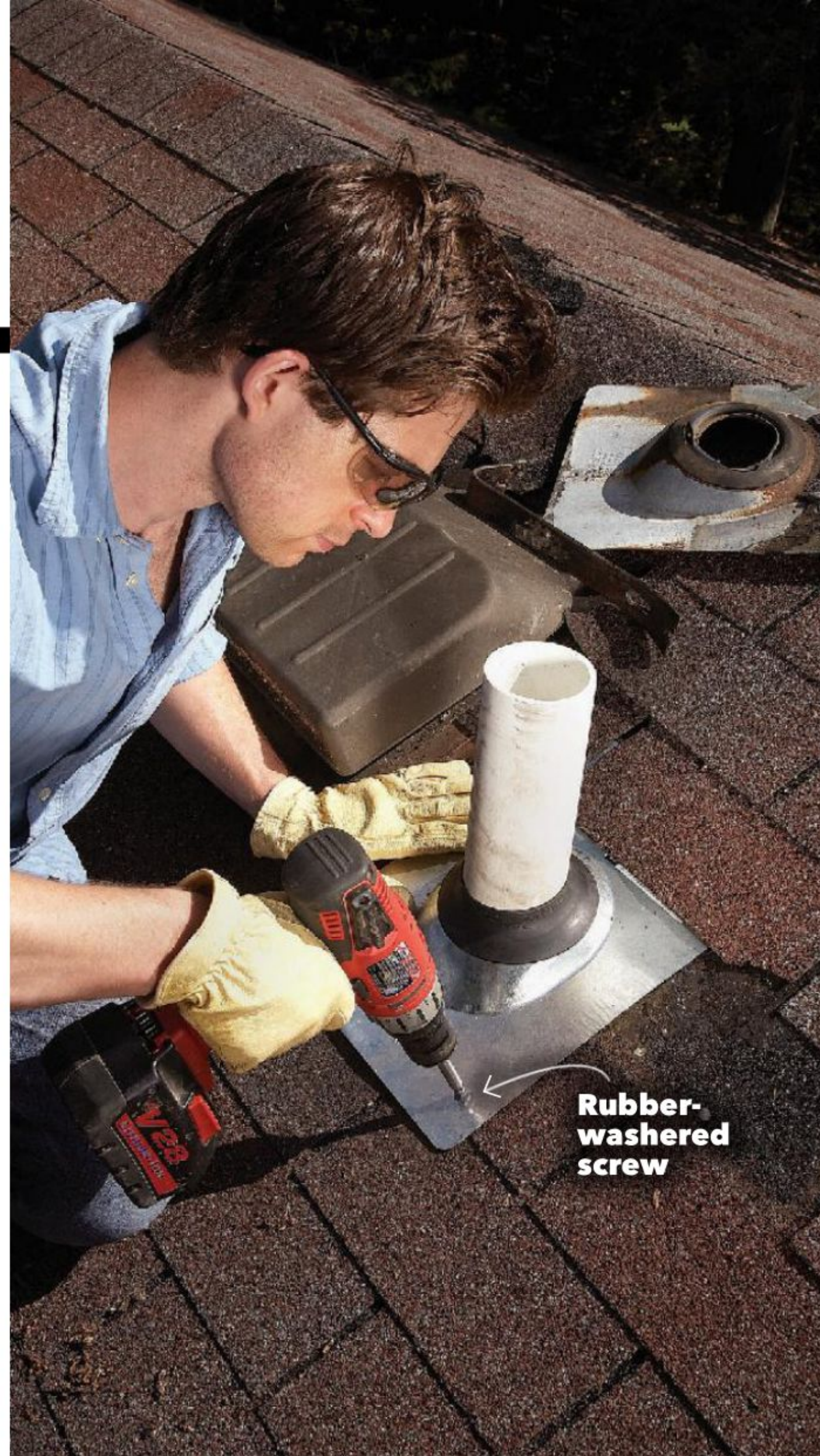


Plumbing vent boots

PROBLEM: When the source of a leak is gasket-type vent flashing, the culprit is usually a cracked gasket or missing or loose nails.

Plumbing vent boots can be all plastic, plastic and metal, or even two-piece metal units. Check plastic bases for cracks and metal bases for broken seams. Then examine the rubber boot surrounding the pipe. That can be rotted away or torn, allowing water to work its way into the house along the pipe. With any of these problems, you should buy a new vent boot to replace the old one.

However, if the nails at the base are missing or pulled free and the boot is in good shape, replace them with the rubber-washed screws used for metal roofing systems. You'll find them at any home center with the rest of the screws. You'll have to work neighboring shingles free on both sides. If you don't have extra shingles, be careful when you remove shingles so they can be reused. Use a flat bar to separate the sealant between the layers. Then you'll be able to drive the flat bar under the nail heads to pop out the nails.



SOLUTION: Replace the old boot. Screw the base to the roof with rubber-washed screws. Don't use nails. They'll just work loose over time.



Small holes

Tiny holes in shingles are sneaky because they can cause rot and other damage for

PROBLEM: Leftover mounting holes can let in vast amounts of water.

years before you notice the obvious signs of a leak. You might find holes left over from satellite dish or antenna mounting brackets or just about anything. And exposed, misplaced roofing nails should be pulled

and the holes patched. Small holes are simple to fix, but the fix isn't to inject caulk in the hole. You'll fix this one with flashing as shown here.



SOLUTION: Seal nail holes forever. Slip flashing under the shingle and add a bead of caulk under and over the flashing to hold it in place.



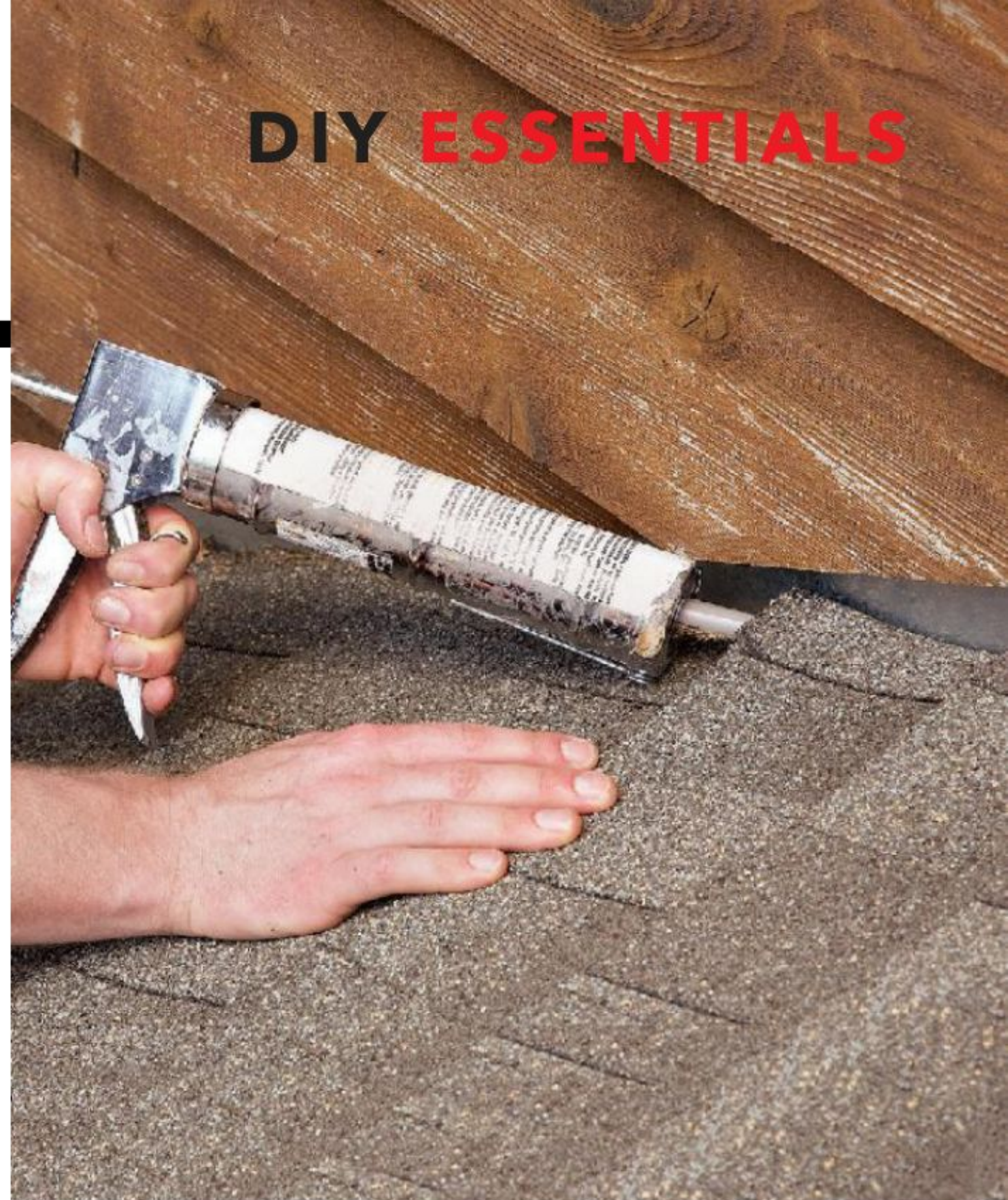
Slipped flashing

Step flashing

Step flashing is used along walls that intersect the roof. Each short section of flashing channels water over the shingle downhill from it.

PROBLEM 1: Unnailed step flashing can slip down and channel water into the wall.

But if the flashing rusts through, or a piece comes loose, water will run right behind it, and into the house it goes. Rusted flashing needs to be replaced. That means removing shingles, prying siding loose, and then removing and replacing the step flashing. It's that simple. But occasionally a roofer forgets to nail one into place and it eventually slips down to expose the wall.



SOLUTION 1: Push a loose piece of step flashing right back into place and then secure it with caulk above and below.



Brick chimneys

All kinds of bad things can happen around brick chimneys. In fact, there are far too many to cover in this story. Flashing around chimneys can rust through if it's galvanized steel, especially at the 90-degree bend at the bottom. A quick but fairly long-term fix is to simply slip new flashing under the old rusted stuff. That way any water that seeps through will be diverted.

The best fix, though, is to cut a saw kerf into the mortar and install new flashing. If you want to see what's involved, search for "chimney flashing" at familyhandyman.com.

Wet ceilings aren't always from roof leaks!

Water stains on the ceiling don't always indicate a leak up on the roof. Many times the stains come from, or are caused by, problems up in the attic. Here are three of the main culprits:

ATTIC-MOUNTED A/C COMPRESSORS. Clogged condensate tubes will cause collection trays to overflow. And improperly sealed or insulated ducts can cause condensation to form and drip into the house. A quick look around the attic will help you track down this problem.

BATH AND KITCHEN VENTS. These vents are often vented directly into the attic (or become detached from roof vents). They can pour gallons of water vapor into the attic, where it'll freeze or condense and drip back into the house. Again, a visit to the attic will locate it. Even an uninsulated exhaust vent that is vented through the roof can create condensation on the duct. That moisture then leaks back into the house, usually around vent grilles. Those ducts should be replaced with insulated ones.

ICE DAMS. Ice buildup on eaves, coupled with water coming in along outside walls, is a sure sign of ice dams. They're usually caused by some combination of improper attic venting, attic bypasses and inadequate attic insulation. To learn more, search for "attic bypasses" and "ice dams" at familyhandyman.com.

Best Pro Tips

Expert advice from the job site. By Mark Petersen



BE A FRAMING HERO

Here are some great framing tips to help you build your walls straight, strong and fast. And let's face it—plumb walls and square corners will make life easier for everyone who follows you. You'll be a rock star in the eyes of the general contractor, the homeowner and especially the drywall crew, long after your taillights have faded over the horizon.



MEET THE EXPERT

Before Josh Risberg joined our editorial team, he spent 13 years in the remodeling business.



Nail the tie plate over studs

Do a favor for the electricians, mechanical guys and plumbers by nailing the tie plate to the top plate over the studs only. That way they'll never encounter nails when drilling or cutting holes.



Snap long lines half at a time

Keep long lines straight by having a helper in the middle hold down the line with a finger and snapping each side separately.



Rounded vs. square lumber

If you have a say in the matter, ask for square-edge lumber instead of rounded. Here's why:

- Tape measures grab and hold better.
- More accurate measuring.
- Better sight lines for crowning.
- Easier to line up to pencil marks and chalk lines.
- Final product looks more professional.



Slope windowsills with a piece of siding

Even if you're doing your best to follow best practices for proper waterproofing, water can still find its way onto the wrong side of a window. It's a good idea to slope the sill in the rough opening to help unwanted water find its way back out.

You could slope the sill itself, which requires cutting the cripples at a slight angle and causes the sill to protrude a bit on each side. Instead, rip down and install a tapered piece of lap siding. Make sure to frame the rough openings a little larger to account for the width of the siding. And of course, cover it with flexible flashing before installing the window.



Handy framing tool

This V-Line Clamp is the perfect tool for snapping lines on plywood—especially angled ones when the chalk line hook won't hold its place. Just clamp it to the mark on the edge of the plywood and hook it on the end of the chalk line. It even works on super-sharp angles. The V-Line Clamp costs about \$10 online.



Use waned wood wisely

"Wane" refers to the edges of lumber that are partially bark or missing altogether. When you're sistering waned boards together, have those edges facing in. Also avoid using the waned areas on outside or inside corners for walls because you'll be missing important nailing surfaces for drywall, corner bead and trim.

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• Adjustable spray nozzle
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A better way to install ceiling backers

Here is the best way to both anchor and provide ceiling drywall backers for walls that run parallel to trusses or joists.

Run 2x4 blocking between the trusses 1-1/2 in. above the bottom of the truss. Then center and install a 2x8 backer where the top of the wall will be built. When you do build the walls, there will be plenty of wood on either side of the 2x8 for anchoring drywall, and you can be confident the drywall will stay in plane with the rest of the trusses.

Another benefit is that you can install a continuous moisture barrier across the backing before installing the wall. No cuts, no taping.

Buy pro markers

If you're a pro, you probably buy professional-grade tools. Markers should be no exception. Professional-grade markers last much, much longer than standard ones.



Offset the blocks

When you're installing fire blocking on a wall, it's tempting to snap a line and keep all the blocks on one plane. But don't do it. Blocks are easier to install if you stagger them as shown because you can fire the nails almost straight into the ends instead of angling them.

If you think a straight line of blocks looks nicer (for the short time they're visible), think again. Blocks will rarely be installed perfectly straight, but a staggered line tricks the eye and looks more uniform. If you're covering seams in the sheathing, install the blocks in a straight line.



✓Yes



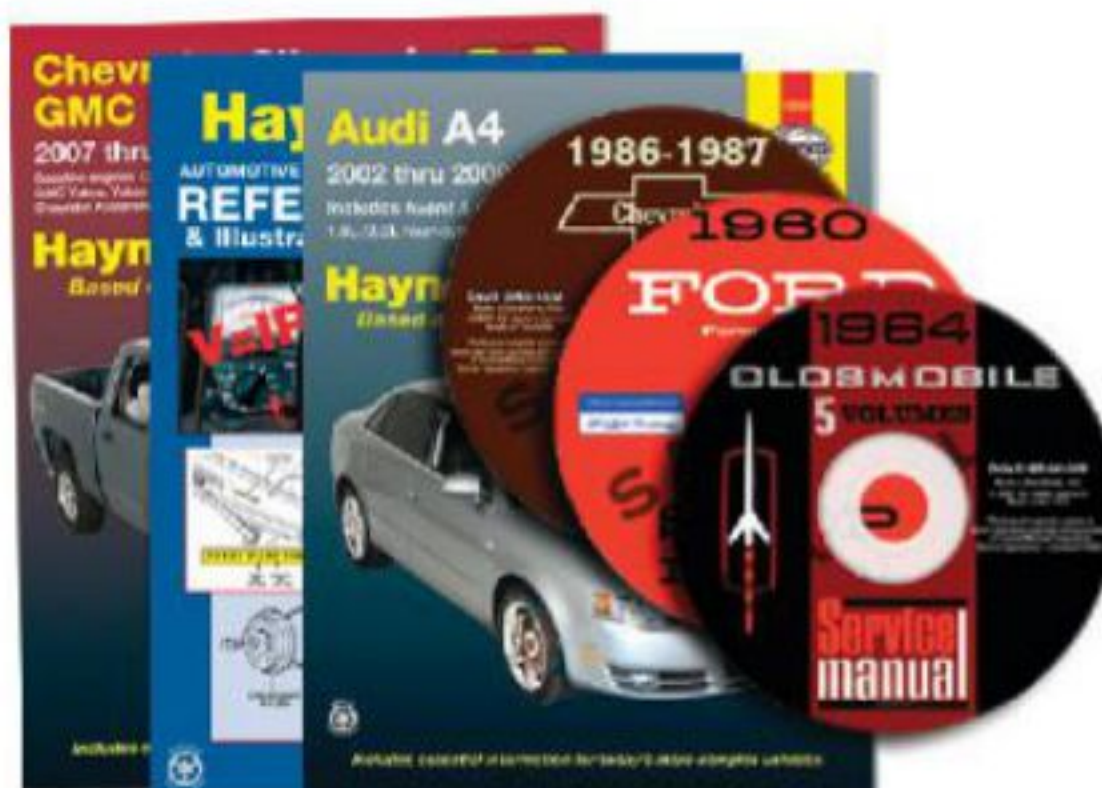
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xNo



✓Yes



✓Yes



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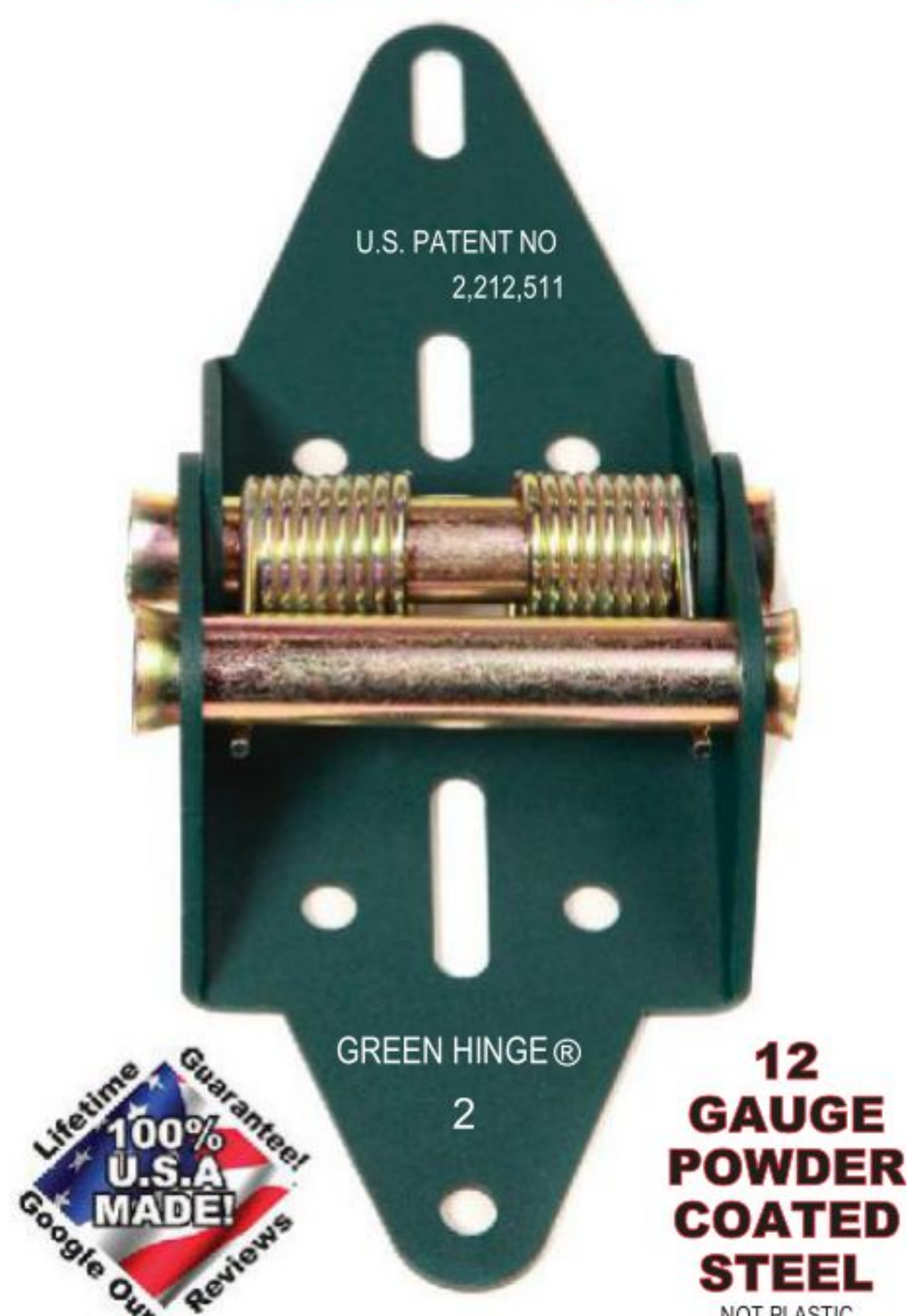
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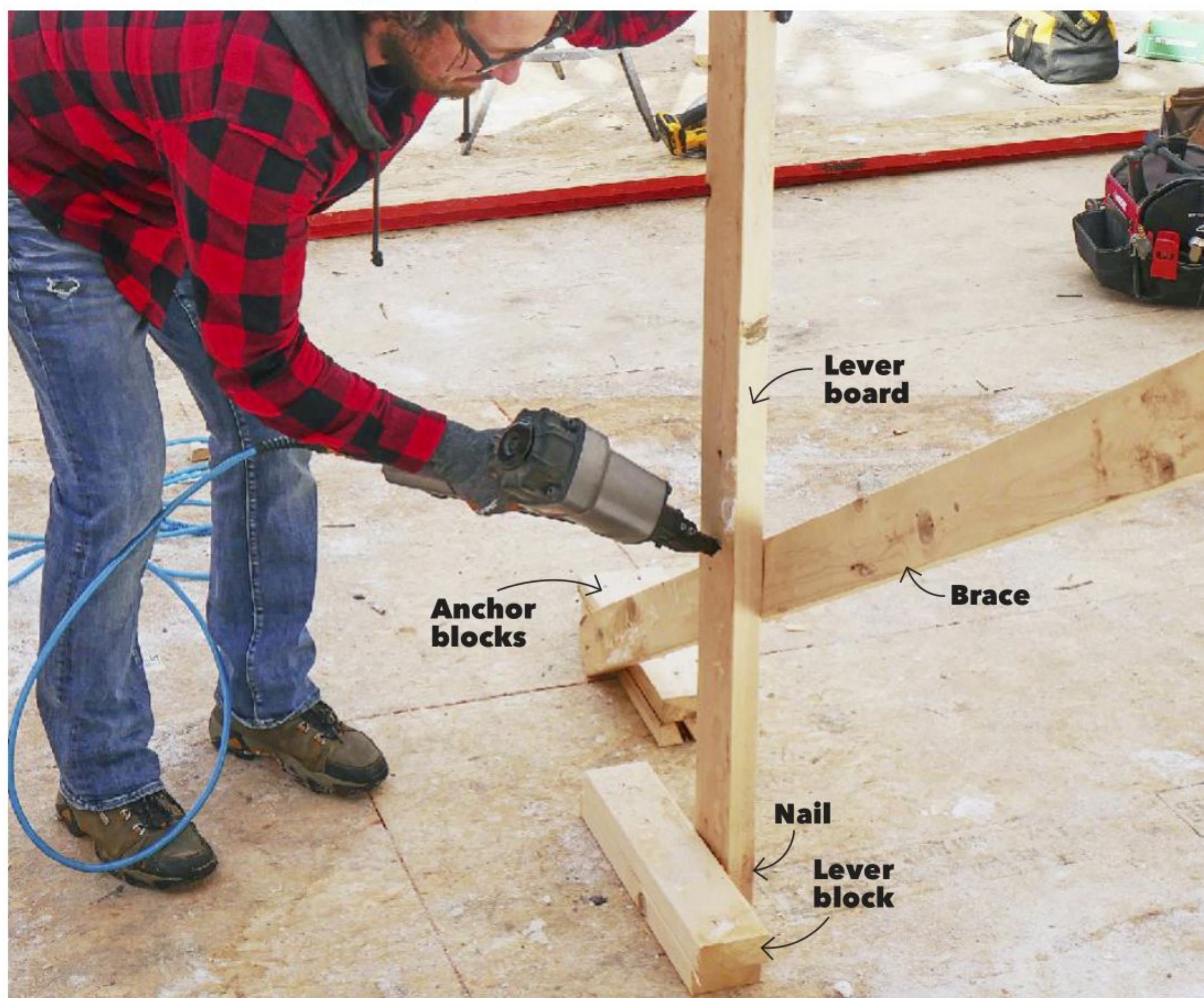
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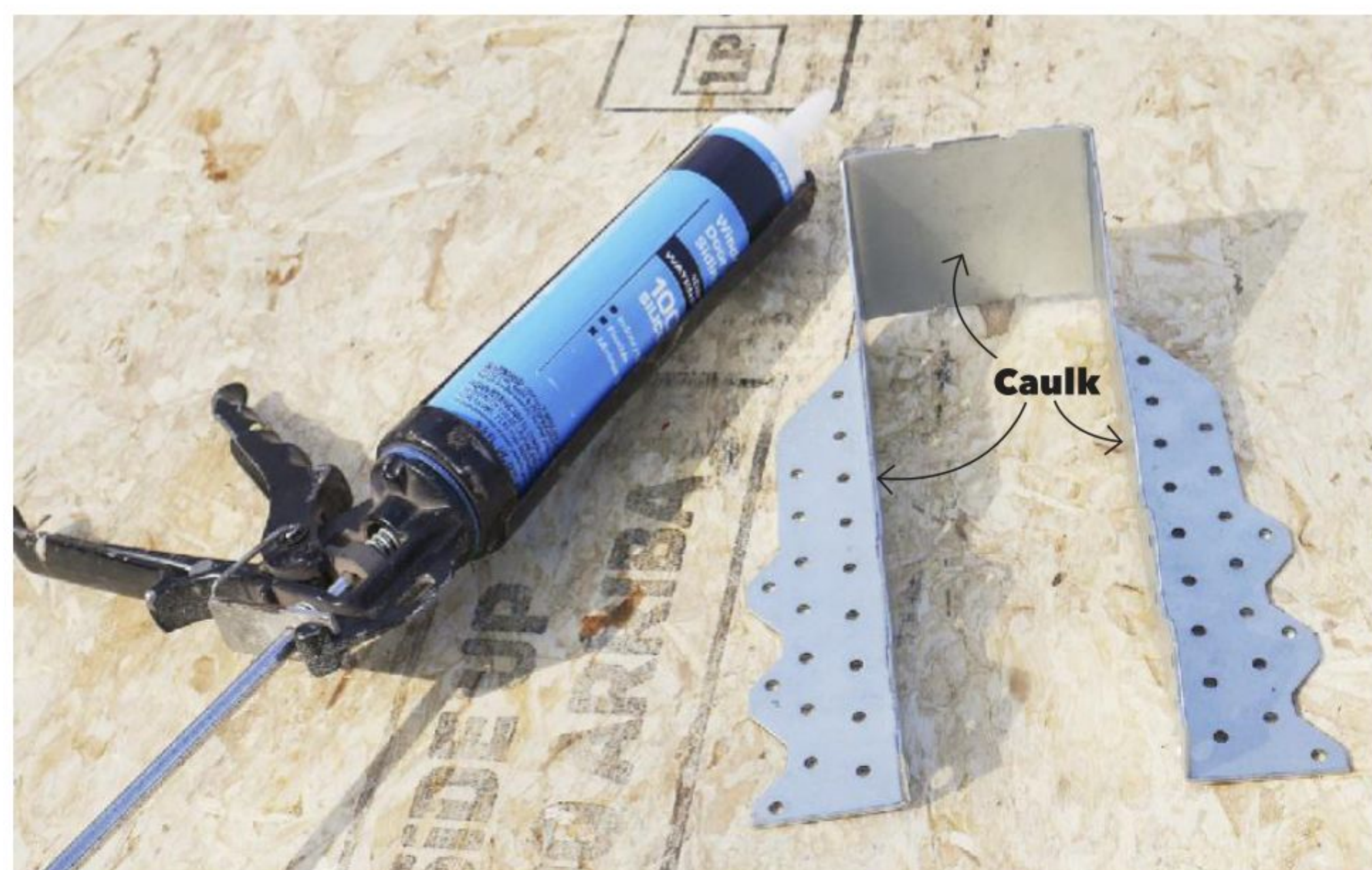
BEST PRO TIPS



Straightening walls

Here are the most common methods for straightening walls:

1. Attach a long 2-by brace to a stud near the top of the wall.
2. Nail two anchor blocks to the floor framing at the end of the brace. Add two more lever blocks a couple of feet in from the anchor blocks.
3. Fasten the lever board to the brace with a few closely spaced nails.
4. Have someone sight the wall top plates for straightness while you lever the wall until it's straight.
5. Hold it in position and nail the end of the brace to the anchor blocks.



Avoid squeaks

Many floor squeaks are caused by joists slightly rubbing against joist hangers. Even perfectly installed joist hangers can develop squeaks over time. Completely eliminate the possibility by adding a bead of silicone caulk to the inside edges and the bottom of the hanger before dropping in the joist.



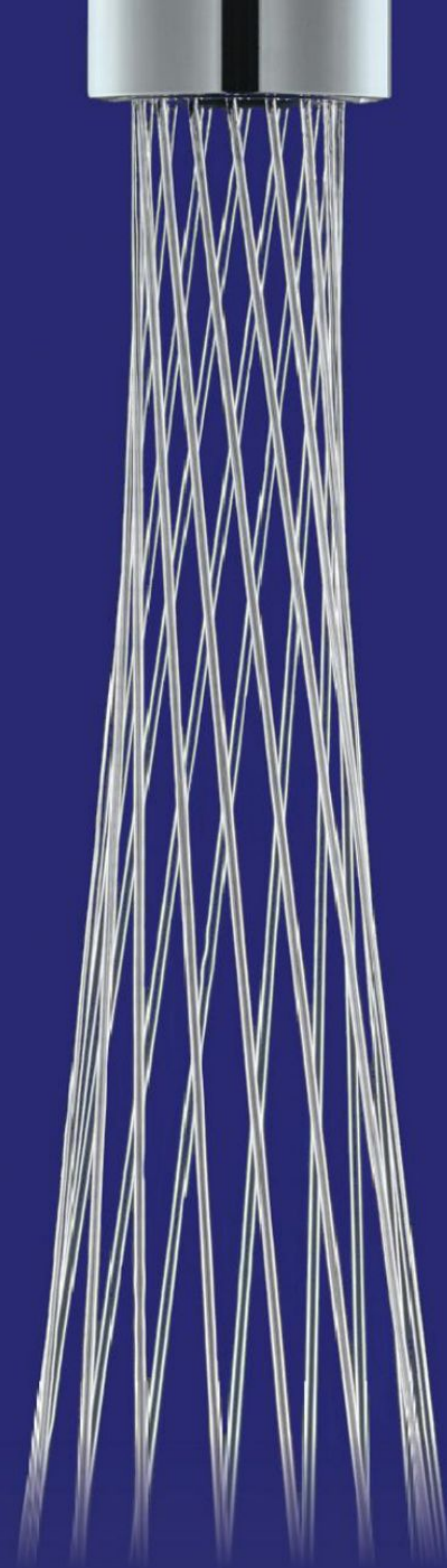
Lay down a mulch path

A mulch path near door entrances on muddy job sites helps keep the mud out of the house. Buy the cheapest mulch or wood chips you can find. It can all get graded into the yard when the project is done. Be sure to buy several extra bags to freshen up the path once in a while.



Don't forget the backers

Before you leave the job, run around and install backers for handrails, bathroom grab bars and other hardware. Take photos and send them to the job supervisor. This will ensure that everyone is on the same page and earn you a few bonus points.



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Common leak, easy fix

Most plumbing valves—like the shutoffs under your sink or outdoor faucets—have a packing nut and a packing washer. And sooner or later, they'll leak. In most cases, the fix is simple: Just tighten the packing nut. If that doesn't work, remove the old washer and take it to a home center to find a match.

“DIY is partly about know-how. But sometimes, being in the know is even more important. Knowing the right material to choose, remembering a clever trick or understanding the cause of a problem can make all the difference. Here are a few favorite tidbits of knowledge, picked up over 30 years of home ownership, maintenance and improvement.”

**GARY WENTZ,
EDITOR-IN-CHIEF**



STAY SAFE ON THE ROOF

Whether you're reroofing or just cleaning gutters, a roof harness can prevent tragedy. You can get a complete kit for less than \$150 online.



DON'T SQUISH ANTS
The easiest way to wipe out an in-house ant colony is to set out ant bait. And if you do that, those ants crawling across your floor will be carrying toxic treats back to the colony. Let them help you!



Oil poly vs. water-based

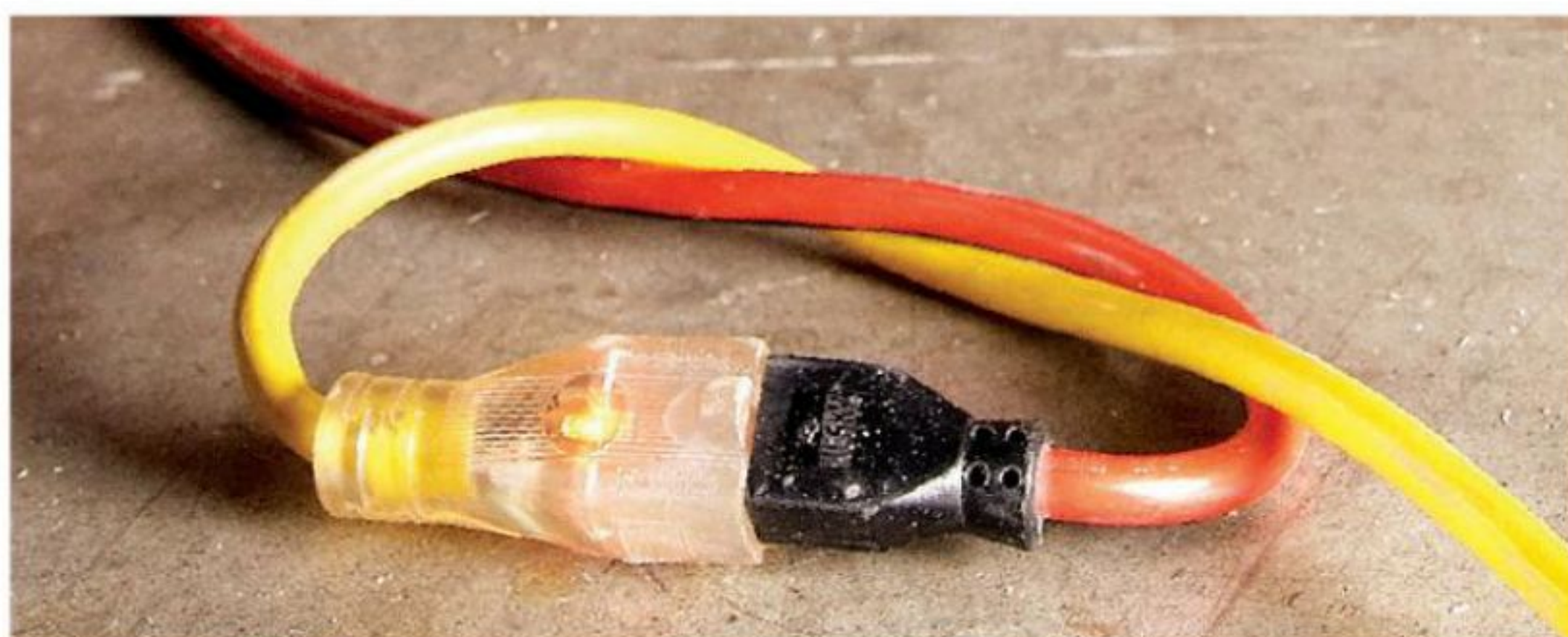
Neither is better than the other, and neither is tougher; durability depends on the formulation of the specific product. But there are important differences:

- Oil usually contains more "solids" and less solvent, which means you'll get a thicker buildup from each coat.
- Oil dries slower. That makes it easier to apply smoothly but also allows more time for airborne dust to create "whiskers" on the surface.
- Oil is yellowish, which can be good or bad, depending on the look you want. Water-based poly is colorless.
- Water-based poly doesn't fill the air with nasty fumes and cleans up with soap and water.



AVOID SQUEEZE-TUBE CAULK

Caulk is available in tubes that require a caulk gun and in squeeze tubes like the ones for toothpaste. When neatness counts, go with the gun, which allows better control of both placement and flow.



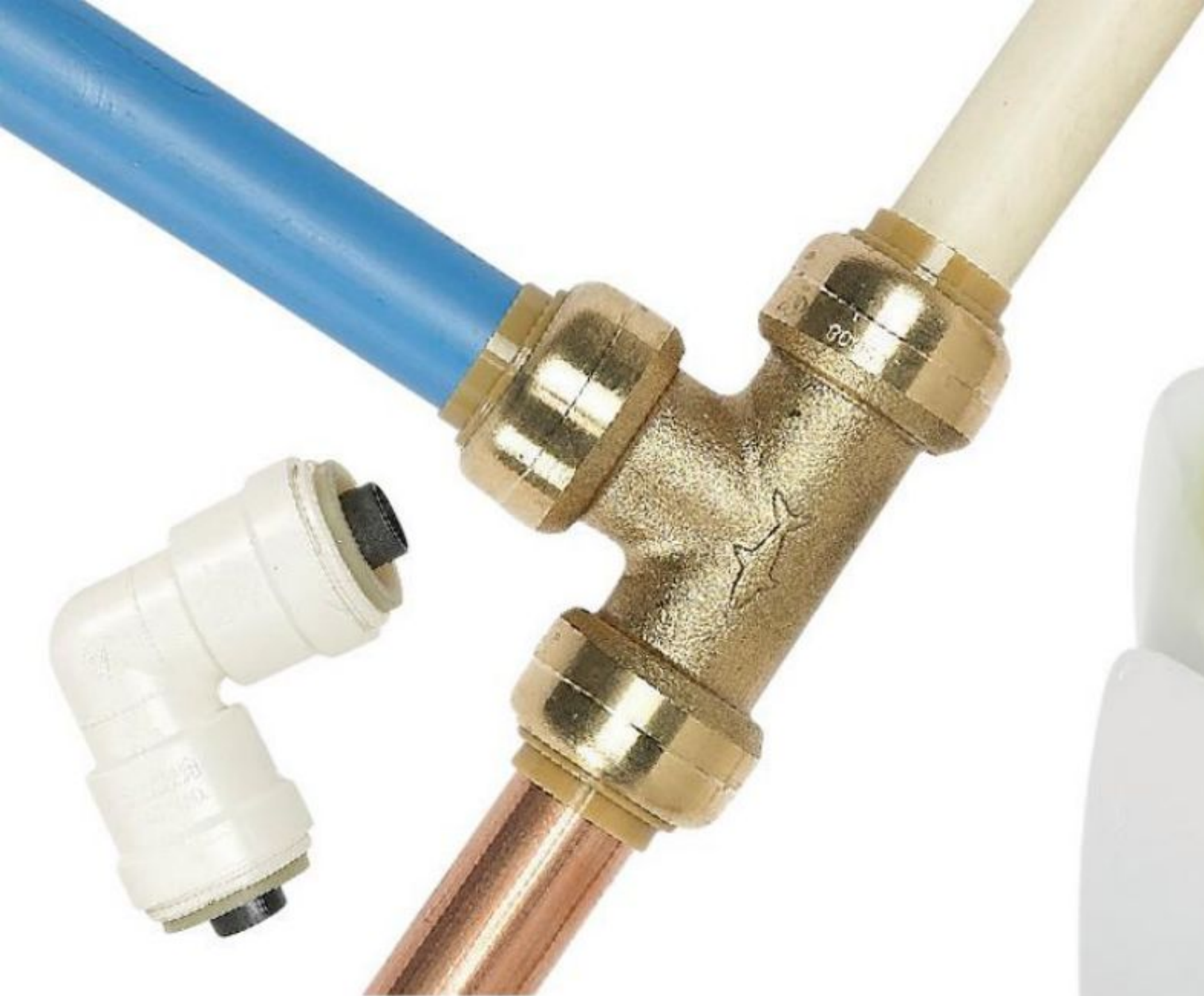
Solid cord connection

A knot keeps the ends of your cords from pulling apart as you drag the cords around.



MAKE PAINT LAST

Here's the most common peeling scenario for exterior paint: Over time, paint develops tiny cracks. Then moisture gets behind the paint, weakening the paint's bond and causing peeling. Left alone, that process spreads and accelerates. For you, that means days of tedious scraping before you can repaint. But you can avoid that by touching up cracks every year. Painting spots that don't look bad (yet) may feel like a waste of time, but it will save you major work later.



No-skill pipe connections

Got a broken pipe? Before you call a plumber, consider this: Push-in plumbing connectors let you join pipes instantly just by shoving the pipe into the connector. No skills, knowledge or tools needed. Push-ins work with copper, PEX or CPVC plastic pipe. So if you need to replace a section of copper pipe, for example, you can simply cut out the bad section and replace it with a piece of PEX and a couple push-ins. Even a first-time plumber can manage that. Push-in plumbing connectors of various types and sizes are sold at home centers.



The smartest move you can make before a vacation

Every insurance adjuster has a hundred stories like this one: The homeowners left town Friday and returned Sunday evening to find thousands of dollars in water damage. The moral of these stories is simple: Before going on vacation, turn off the main valve. In less than a minute, you can eliminate the most common cause of home damage.



KEEP BATTERIES COMFORTABLE

When it comes to temperature, cordless tool batteries are fussy. For storage, 40 to 50 degrees F is optimal. That doesn't mean you have to create a climate-controlled storage space. But avoid the extremes that will gradually damage batteries. Don't leave them in your freezing garage all winter or in your car trunk on a sunny summer day.

BARGAIN POWER TOOLS

Online, you'll find several sources of "reconditioned" tools, sometimes at excellent prices. Several of us at *The Family Handyman* have bought, saved and been completely satisfied. We have no bad experiences to report. Just be sure to add the shipping costs, which might lessen the bargain. And if you find a sweet deal, grab it. Supplies are often limited.



SPEND MORE ON PAINTER'S TAPE

When buying masking tape, let price be your guide. More expensive tapes block paint better and release easier without harming surfaces. You might save \$3 on cheap tape, but you'll regret the purchase.

AN EXTINGUISHER CAN SAVE YOUR HOME

A fire extinguisher can mean the difference between a minor fire and total destruction. Experts recommend that you have one on each level of your home. Just remember that household extinguishers are meant for small fires. With a larger or fast-spreading fire, forget the extinguisher and get out of the house and call 911.

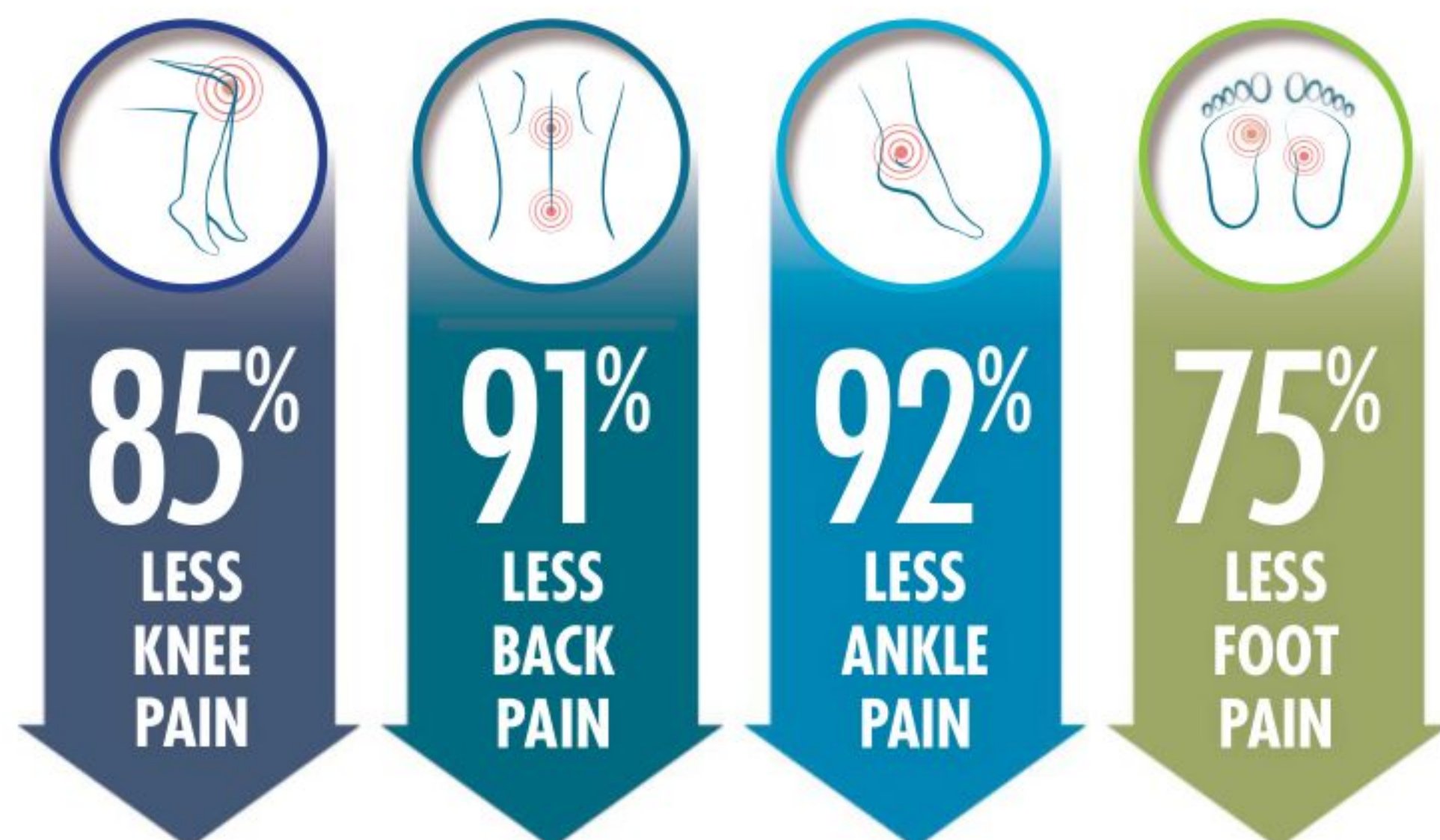


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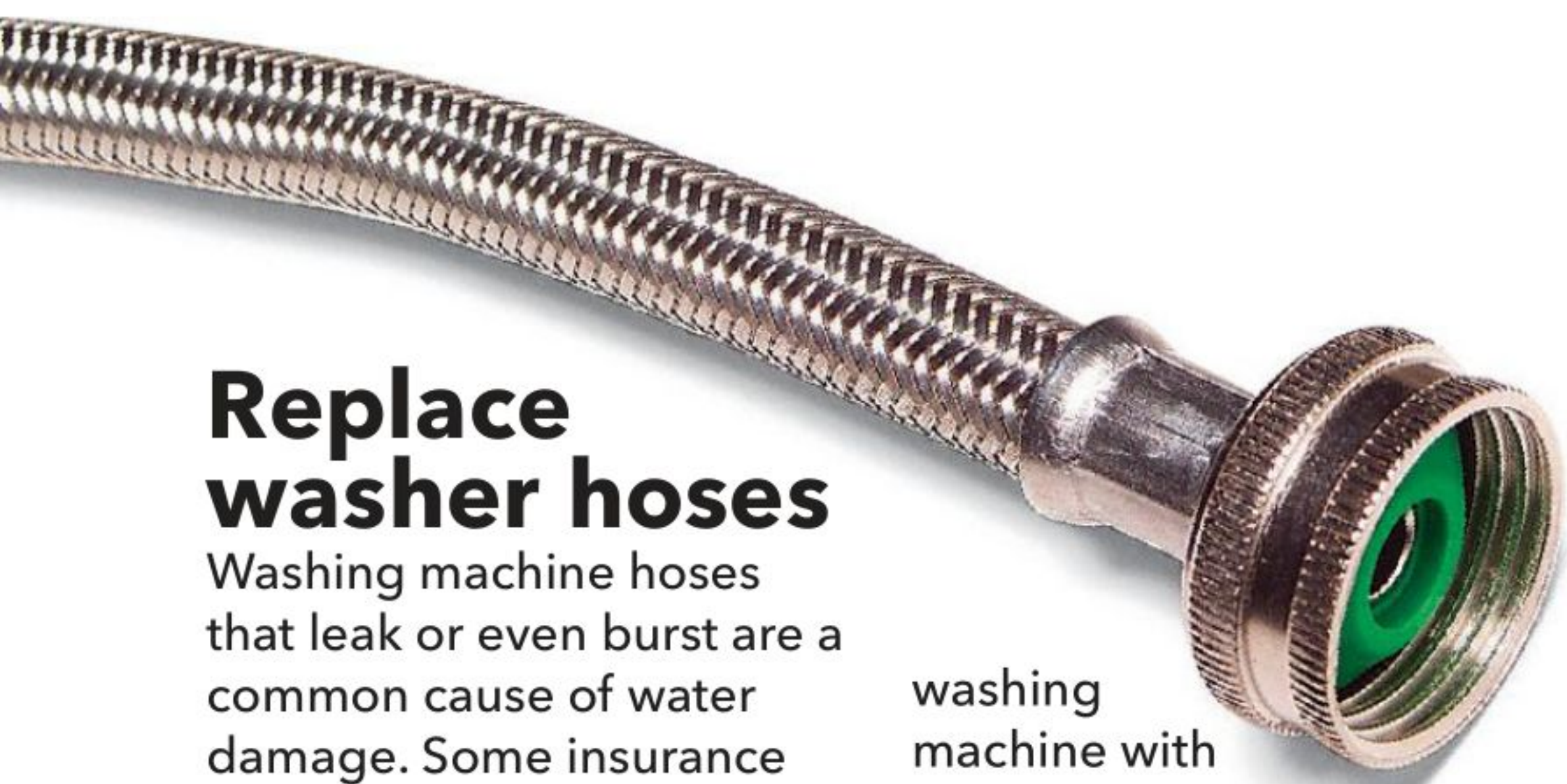
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Replace washer hoses

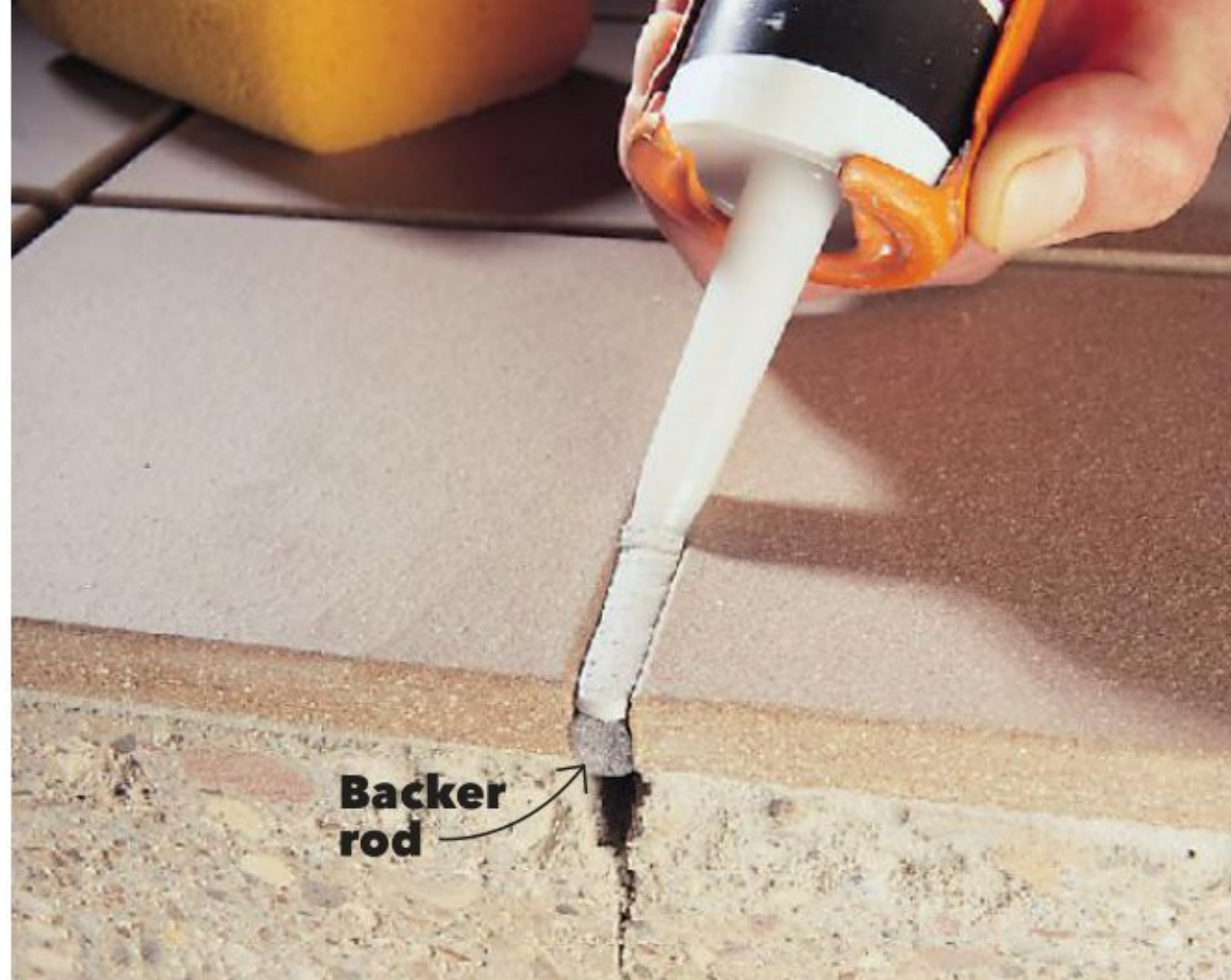
Washing machine hoses that leak or even burst are a common cause of water damage. Some insurance companies offer a discount of up to 10 percent on your premiums if you replace the rubber hoses on your

washing machine with no-burst stainless steel hoses. In 10 minutes, you could save five times the cost of the hoses on your next bill, but this is a smart move even if your insurer doesn't offer a discount.



Toss out battered bits

Over the past 30 years, I've spent countless Saturday afternoons helping inexperienced friends with building projects. Here's a typical scene: I hear the telltale chatter of cam-out, walk over to my friend, scowl, yank the drill out of his hand and insert a fresh bit. Problem solved. As driver bits wear, cam-out becomes inevitable. So keep a supply of new bits and toss the old ones.



BACKER ROD MAKES CAULK LAST

When you're caulking a deep gap, backer rod has two benefits: It saves caulk, and more important, it makes a thinner caulk bead that will last longer. (A thick bead can't flex as easily and is more likely to fail as building materials move.) Backer rod is simply a foam rope available in various diameters. Get 20 ft. at any home center for about \$5.



Monetary measurements

A dollar bill is 6.14 in. long. But you don't have to memorize that; just remember that a buck is about 6 in. long and you'll always have an approximate measuring tool in your wallet.



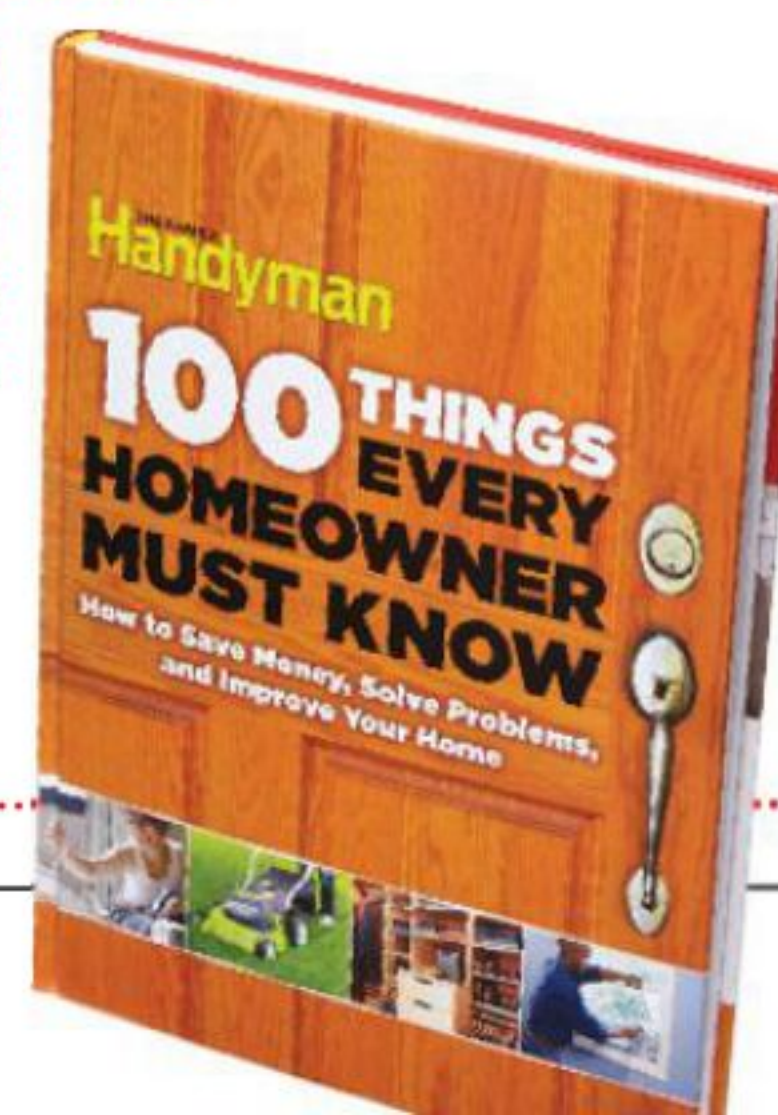
Your beard may be a health hazard

Respirators (including "dust masks") are supposed to form an airtight seal against your face. But facial hair can prevent a reliable seal, allowing you to inhale dust or fumes. That's why OSHA says "respirators shall not be worn when facial hair comes between the sealing surface of the facepiece and the face." If you don't want to shave, the deluxe solution is a PAPR (powered air-purifying respirator), which can set you back \$1,000 or more. For other options, search online for "respirator for beards."

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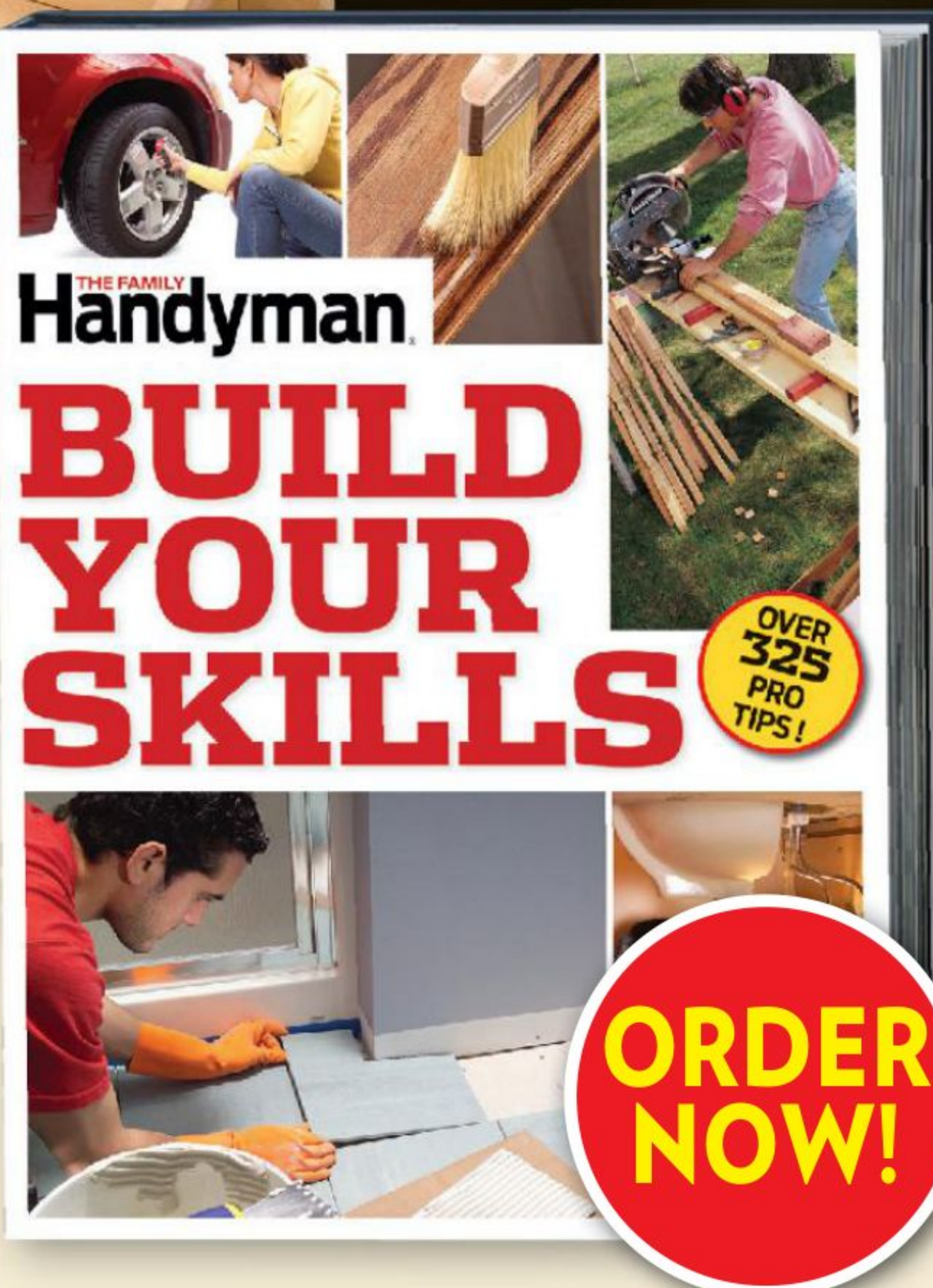
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NOW!**



IS TREATED WOOD SAFE?

Pressure-treated lumber used to contain arsenic. But arsenic was banned for residential use back in 2003, and today's treated wood is considered safe, even for food contact. Some common labels are ACQ, CA and MCQ.

Code sticker



Many locks, one key

At most home centers, you can buy "keyed alike" locks in pairs, but what if you want three? Just look for a "key code" sticker on the package. The same code number means the same key. You can also rekey locks yourself. To see how, search for "rekey" at familyhandyman.com.



Change furnace filters —or pay

If you regularly change your furnace filter, you're saving on energy and repair costs. If you don't, the HVAC pros we work with would like to thank you for your generous support. Your dirty filters provide lots of repair work and sometimes even furnace replacement jobs.



EASY DISHWASHER MAINTENANCE

Most people don't even know it's there, but the filter inside a dishwasher tub needs occasional care. As it gathers debris, it gets partially plugged. That means poor cleaning of dishes, slow draining and rotten odors. Chances are, you can locate and remove the filter without any know-how. But if you need help, just search online for the make and model. After that, cleaning is an easy 10-minute job.

POWER OUTAGES CAN CONFUSE YOUR WATER SOFTENER

Your softener is probably set to clean and recharge the resin bed at night while you're sleeping. But after a long power outage, it might recharge as usual, not recharge at all or do it in the morning, delaying your morning shower and making you late for work. To reset the timer, check the owner's manual.



CO detectors are mandatory

Most things that burn fuel vent exhaust gases outside. But exhaust systems can fail, so CO detectors are the best way to stay safe. Install one on each level of your home. Locate them in hallways near bedrooms but at least 15 ft. away from fuel-burning appliances. CO is roughly the same weight as air, so it neither rises to the ceiling nor sinks to the floor.



SEALING AIR LEAKS SAVES BIG
When you think of energy efficiency, you probably think of major upgrades like a new furnace or extra insulation. But before you go down that path, seal up air leaks. In most homes, especially older ones, sealing has a much greater payoff. And most air-sealing tasks are easy. To see how, search for "air leaks" at familyhandyman.com.



Bath fans aren't just for odors

The most important job of a bath fan is to exhaust moisture. Excess humidity in a home causes a range of problems: mold and odors, condensation on windows, rot inside walls, even peeling paint inside and out. It's best to run your bath fan for at least 15 minutes after a bath or shower.

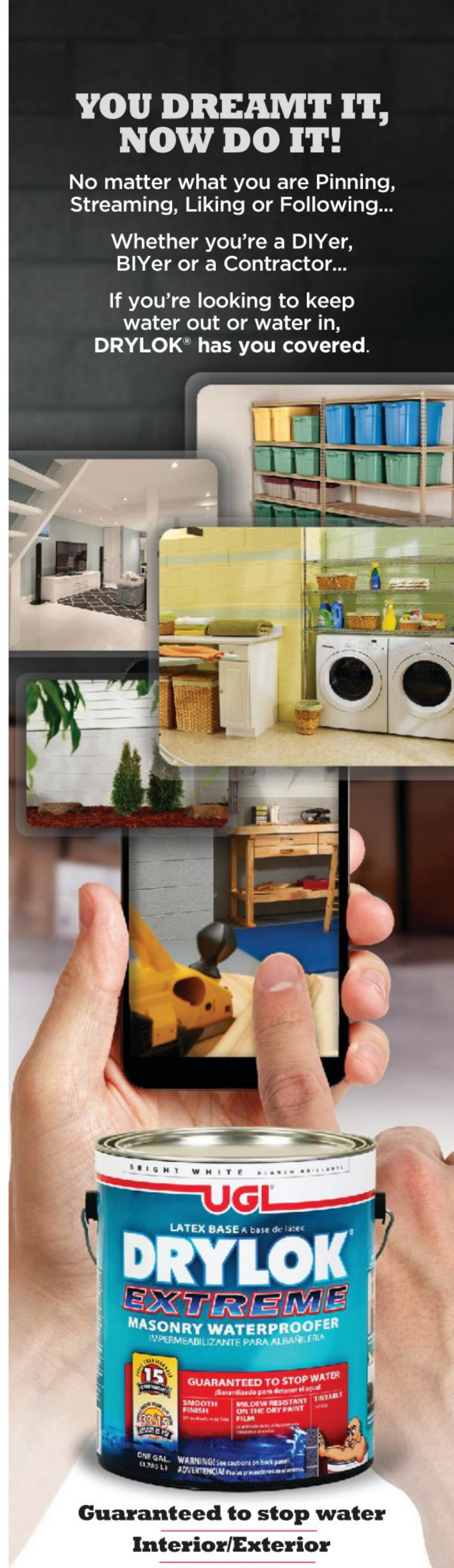
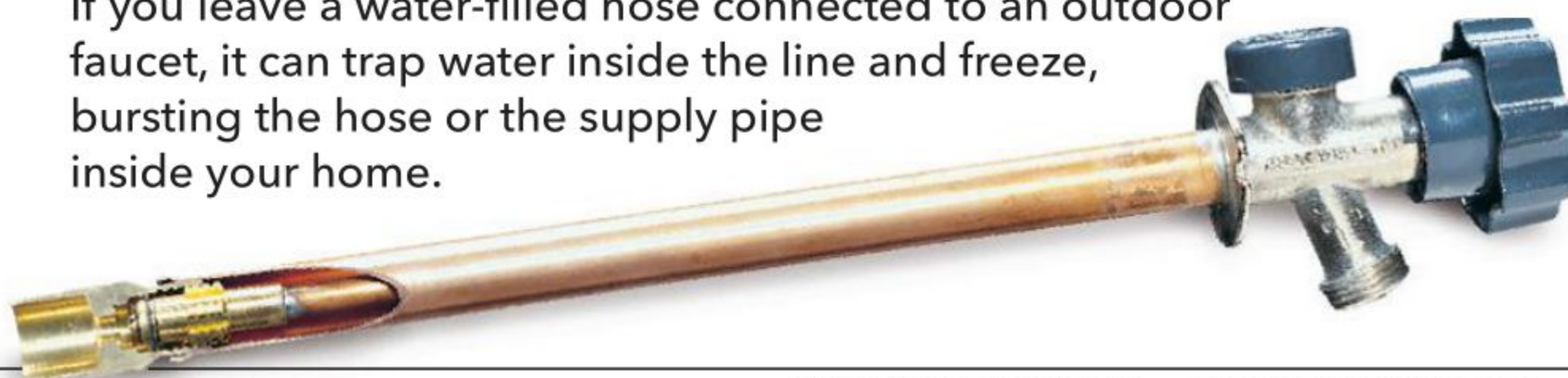


GOT A PUDDLE? LOOK OUT!

Water heaters sometimes leak from the drain valve or relief valve. Those valves are easy to replace. But if a leak is coming from the tank, you've got serious trouble. The tank is lined with a thin coat of glass. Over years, that glass begins to crack, the steel begins to rust away and a puddle appears. Left alone, the tank will eventually rupture, causing an instant flood. It may take months for a leak to become a flood, or it may take days. But it will happen. Don't gamble. Replace that time bomb now.

"Frost-proof" faucets can freeze

If you leave a water-filled hose connected to an outdoor faucet, it can trap water inside the line and freeze, bursting the hose or the supply pipe inside your home.



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STAY WARM WHEN THE POWER'S OUT

10 tips to keep your house from turning into a deep freeze

By Brad Holden

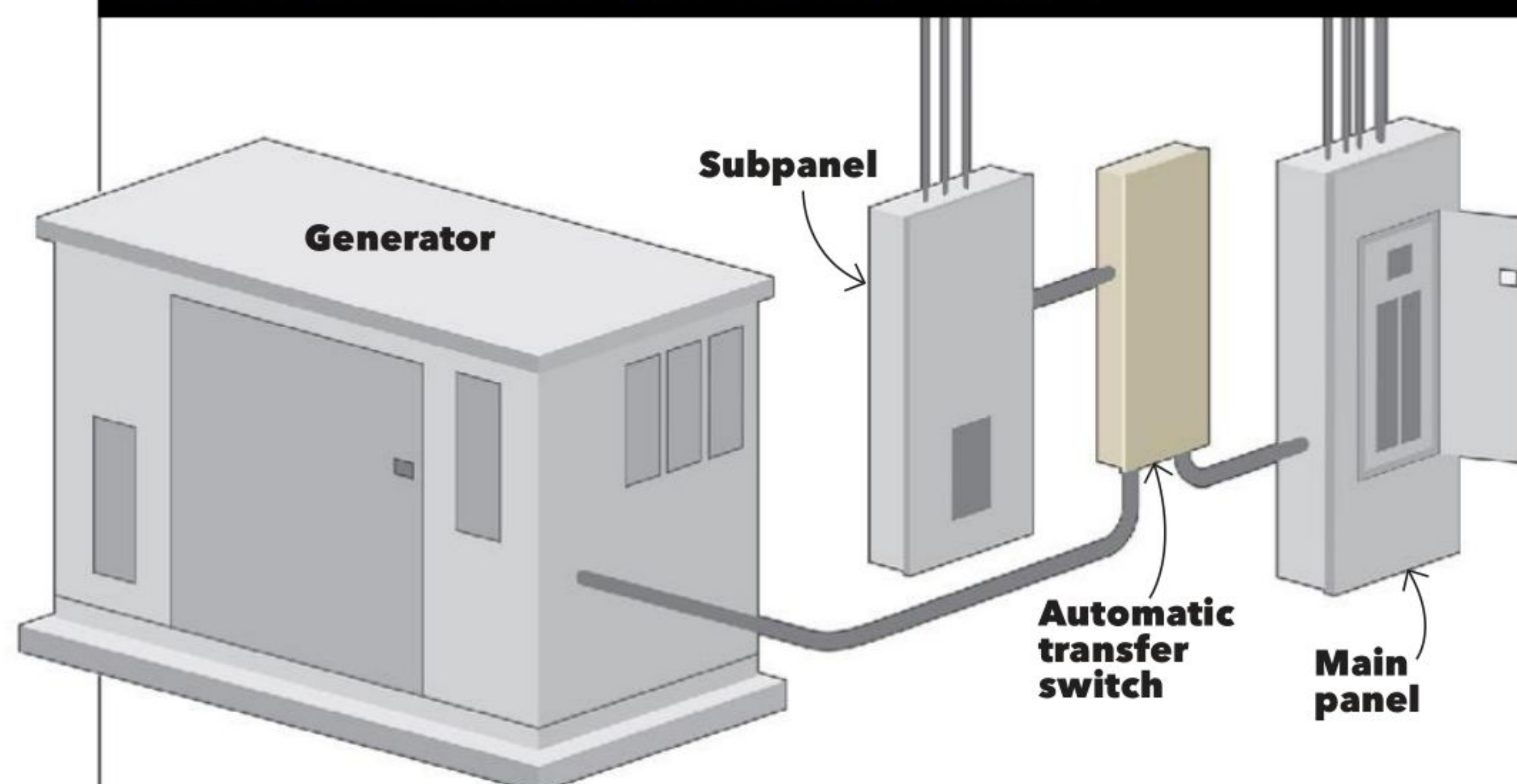
Heating systems need power. Even natural gas, propane and oil furnaces often use electricity for ignition, power dampers, fans or pumps. A power outage is always inconvenient. But in low temperatures it can be catastrophic. Frozen pipes can burst, causing thousands of dollars of damage in just a few minutes, and within a few hours, the damage costs can easily reach six figures. But there are ways to keep your home habitable and above freezing without power, even in the coldest weather.

CAUTION

When using any fuel-powered heat source, it's imperative to have operating battery-powered carbon monoxide and smoke detectors.



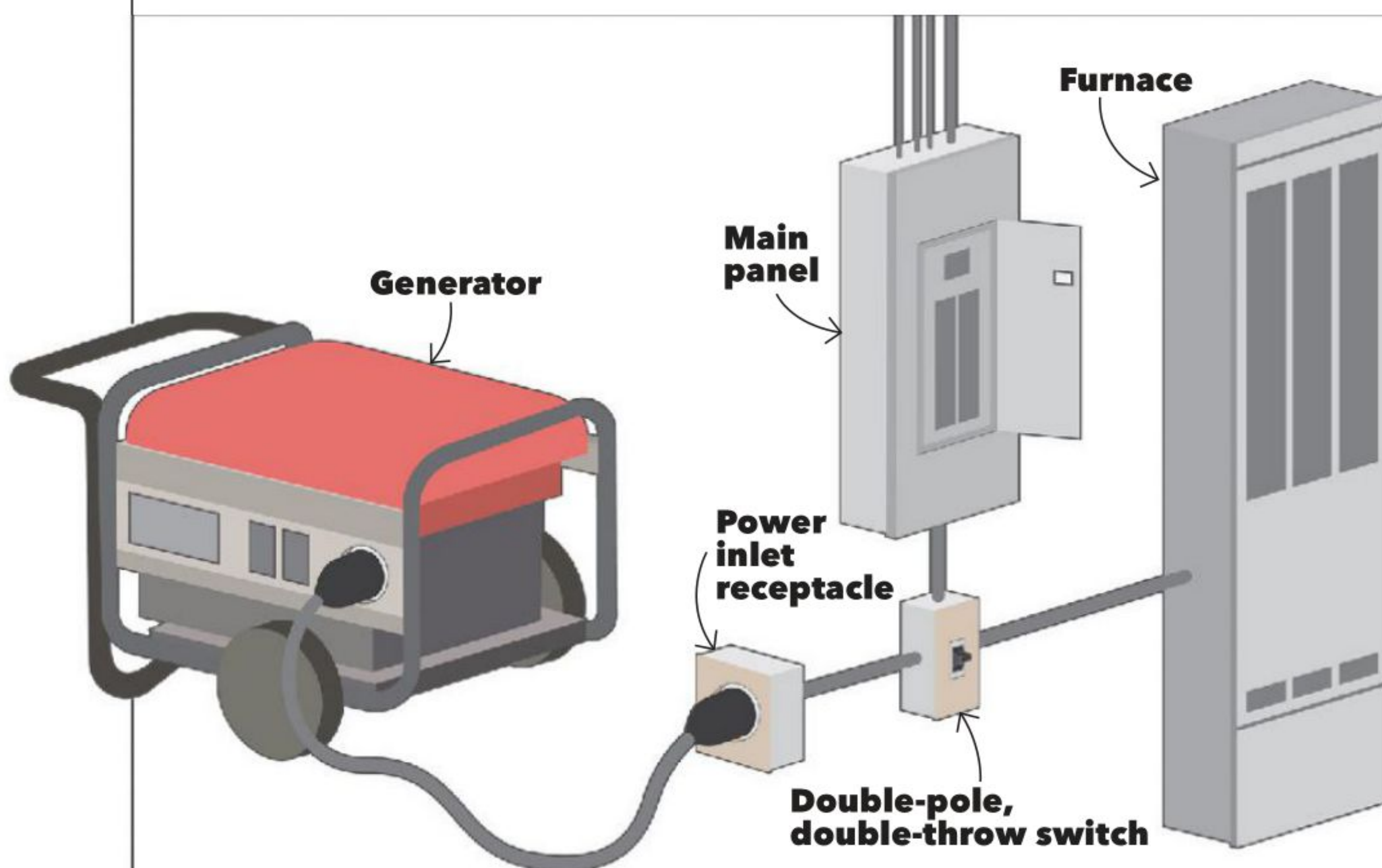
FURNACE BACKUP TIPS



PERMANENT AUTOMATIC GENERATOR

This is the most efficient—and the most costly—option. You can easily spend \$10,000 to \$15,000, plus installation, but it gives you a seamless power transition. In the

event of an outage, selected circuits such as the one for your furnace are on a subpanel and automatic transfer switch, which is powered by the generator.



PORTABLE GENERATOR

Portable generators aren't designed to take over any portion of your home's circuitry via a subpanel and transfer switch. Their outlets are for plugging in appliances.

But here's a safe method for powering just your furnace with a portable generator. Connect a heavy-duty double-pole, double-throw switch (such as Leviton No. 1262; \$40 at home centers) to the furnace, along with a power inlet receptacle (such as Leviton No.

5278-CWP; \$40 at home centers). If the utility power goes out, flip the double-pole switch to disconnect the permanent furnace circuit, and then run a cord from the portable generator to the inlet. The double-pole, double-throw switch prevents the portable generator from back-feeding the entire house or, worse, the utility's system. To be extra safe, turn off the main circuit breaker at the main service, disconnecting the house, to eliminate any chance of back-feeding the utility.

OTHER OPTIONS TO KEEP YOUR HOUSE WARM

If the generator methods aren't an option for you, there are other, less costly measures you can take.



Don't panic

If your home is well insulated, it's typically a matter of days, not hours, before pipes will freeze, even in subzero temps.

Move to one room

It's far easier to keep one room in the house comfortable than to heat the whole house. If you have a basement, that's a good choice, because it's usually easier to maintain a constant temperature underground.



Use your blinds

Keep the blinds closed except to let in direct sunlight.



PHOTO: ALEXMASTER/SHUTTERSTOCK

Use your fireplace

Fireplaces are notoriously inefficient heat sources, as lots of heat goes up the chimney. But in an emergency, you can keep warm by a fire if you have enough wood to burn. A gas fireplace works too, and is more efficient than a wood-burning fireplace.

Block drafts

Little drafts around doors and windows go unnoticed when the furnace is operating. But when the power's out, these drafts really bring on the chill. Block drafts with towels.

Note: Don't block drafts if you're running a fuel-powered heater. These small air intrusions help the heaters burn efficiently and provide ventilation.



Preheat your home

If you have advance warning, set the thermostat higher than usual and heat typically unused spaces to boost thermal mass.

Keep doors closed

Opening a door to the cold lets out a lot of heat. Limit trips in and out of the house, opening doors only when necessary.



Indoor-safe propane or kerosene heater

Propane or kerosene heaters are safe for indoor use only if they're labeled "indoor-safe" and you follow the manufacturer's instructions. They come in different sizes to suit the area to be heated. These portable heaters are available at home centers and online, ranging in price from \$80 to \$500. Manufacturers recommend opening a window an inch or so when using these heaters, particularly in a super-insulated home. If you're using a fuel-powered heater in a very small room, open a door to an adjoining room.

CAUTION

Propane and kerosene heaters produce carbon monoxide just as gas stoves, ovens and fireplaces do. When running any fuel-powered heat appliance during a power outage, it's imperative to have operating battery-powered carbon monoxide and smoke detectors. Read and adhere to all of the heater manufacturer's warnings.



PHOTO: MR. HEATER



Bottle Caddy

By Des Sikowski-Nelson



A handmade gift is better than store-bought. And building this caddy is a lot more fun than shopping at crowded malls. Here's how our family mass-produced 20 of them to share with friends.

Our whole family—father Val, son Aaron and daughter Des—got involved in the building of these caddies. We used reclaimed lumber from a 100-year-old barn in Wisconsin. But you can select any type of wood available at your local home center.

It took us three days in the shop to transform that gorgeous barn wood into 20 handsome caddies. Each one holds eight longneck bottles or six heritage bottles, which have fatter bottoms. Along with a plan for the caddy and a list of materials, we show a couple of jigs to help streamline the process so you can build a bunch of these at the same time.



GET DAD'S HELP

Here's 91-year-old Val stacking the parts after the angles were cut. Thanks, Dad!



A FAMILY THAT BUILDS TOGETHER

Aaron, a pro woodworker for 41 years, and Val have been working together on special projects for more than 30 years.



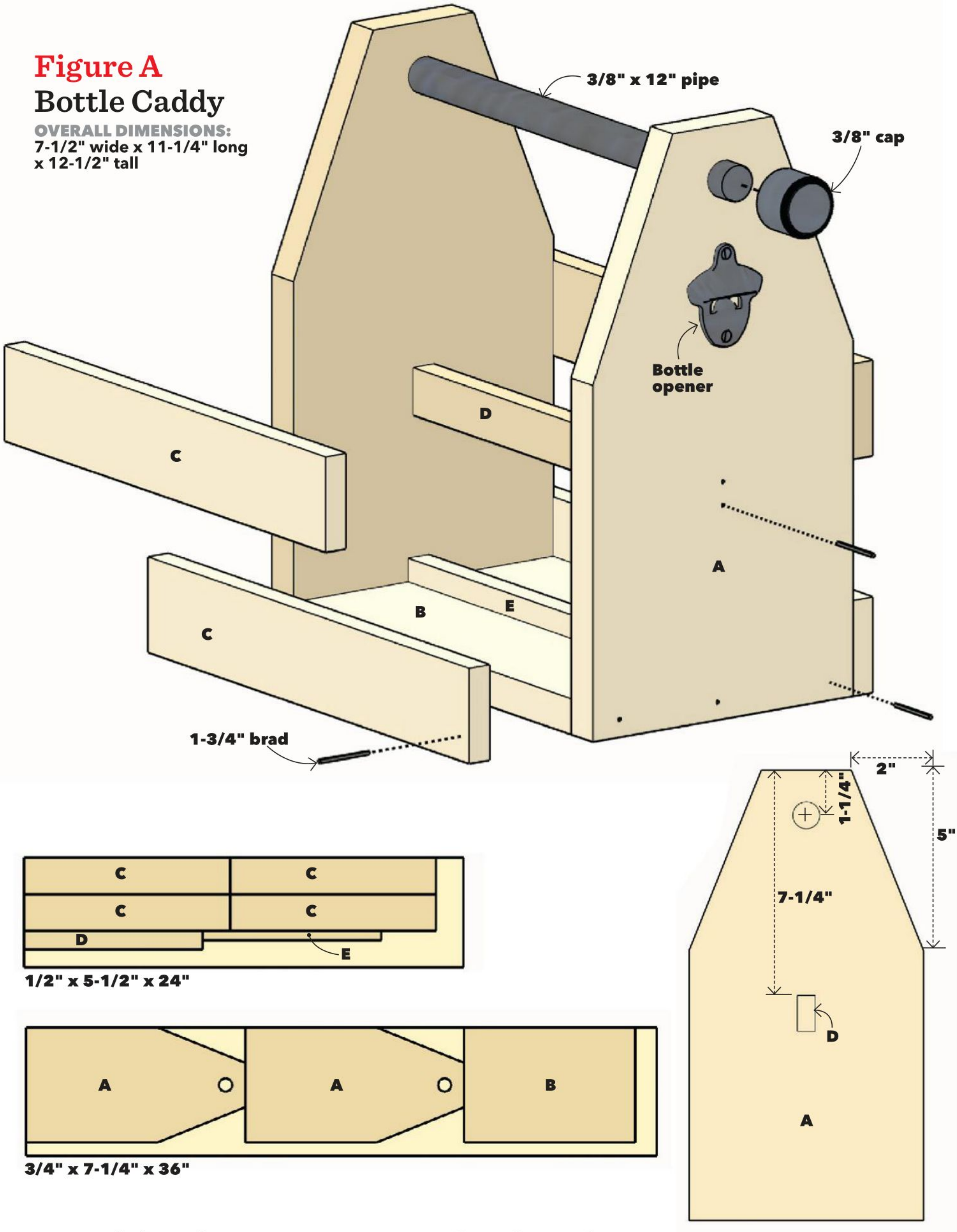
IT ALL STARTS WITH AN IDEA

Recently Des and Aaron designed and built several musical instruments, including cigar box and lap steel guitars.

Figure A

Bottle Caddy

OVERALL DIMENSIONS:
7-1/2" wide x 11-1/4" long
x 12-1/2" tall



Materials List

ITEM	QTY.
1x8 x 3'	1
1/2x6 x 3'	1
3/8" x 12" black threaded pipe	1
3/8" threaded end caps	2
Wood glue, 1-3/4" brads, nails or screws. Search online for "wall mount bottle opener" to find endless options starting at \$4 each.	

Cutting List

KEY	NAME	QTY.	DIMENSIONS
From 1x8			
A	Ends	2	12-1/2" x 6-1/2"
B	Bottom	1	9-3/4" x 6-1/2"
From 1/2x6			
C	Slats	4	11-1/4" x 2"
D	Upper divider	1	9-3/4" x 1"
E	Lower divider	1	9-3/4" x 1/2"

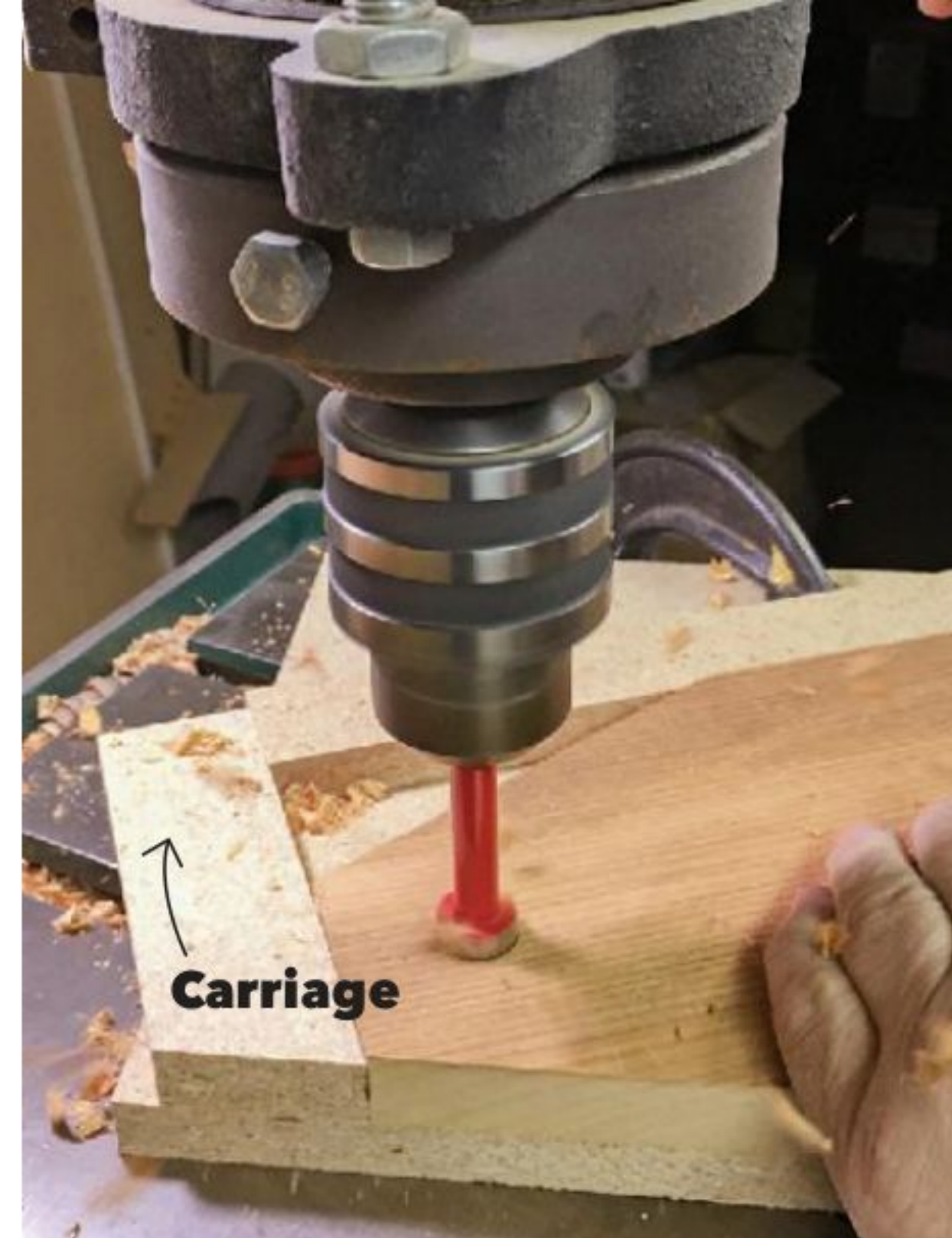
Mass production

If you want to build a bunch, here are some labor-saving tips.



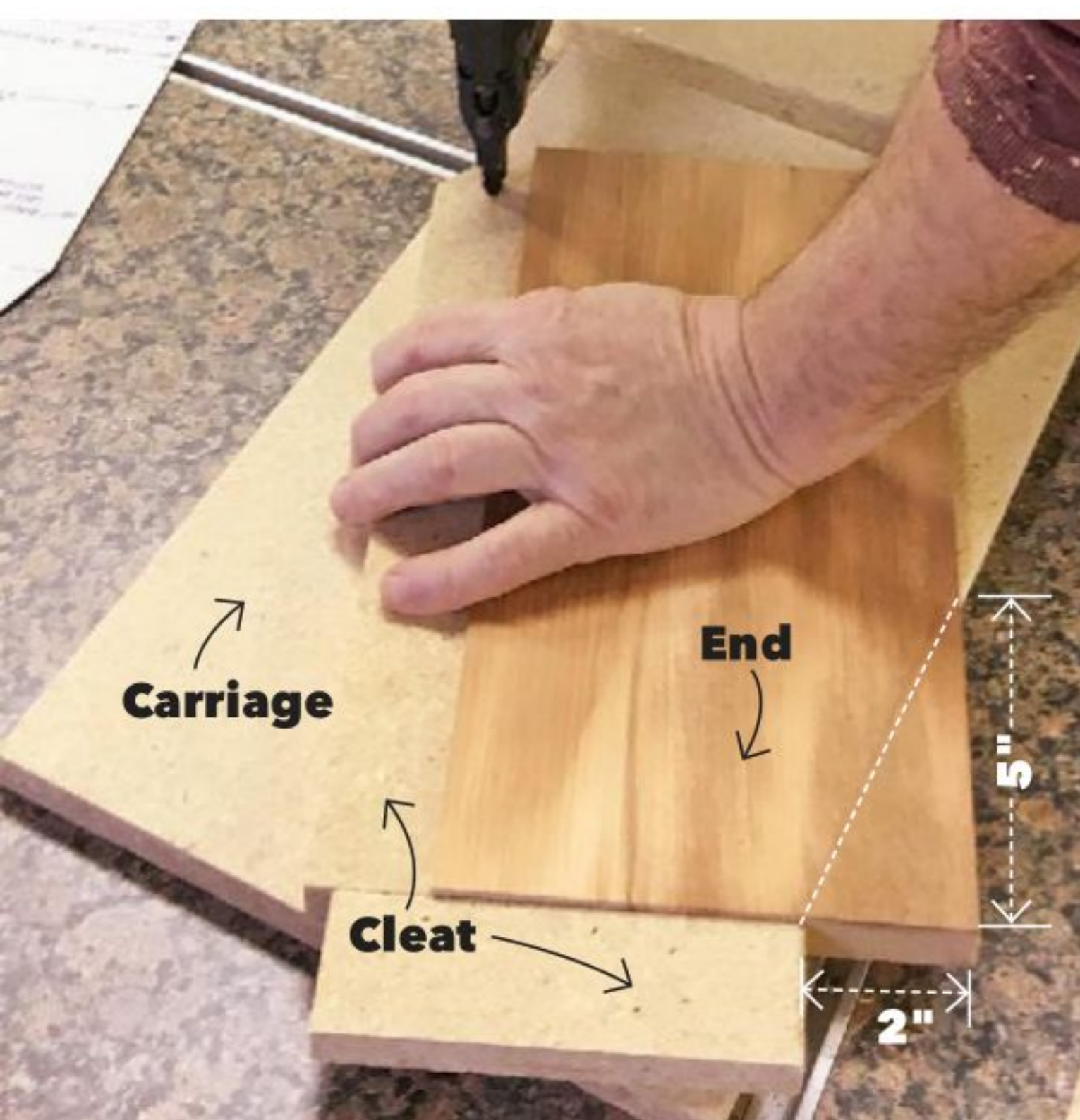
Cut uniform parts with a stop block

Clamp a block to your fence so you can cut parts to precisely the same length without measuring and marking.



Drill handle holes

Clamp the carriage to a drill press table so you can set each end in place and bore the handle hole. We used a 3/4-in. Forstner bit, which is about right for 3/8-in. black pipe.



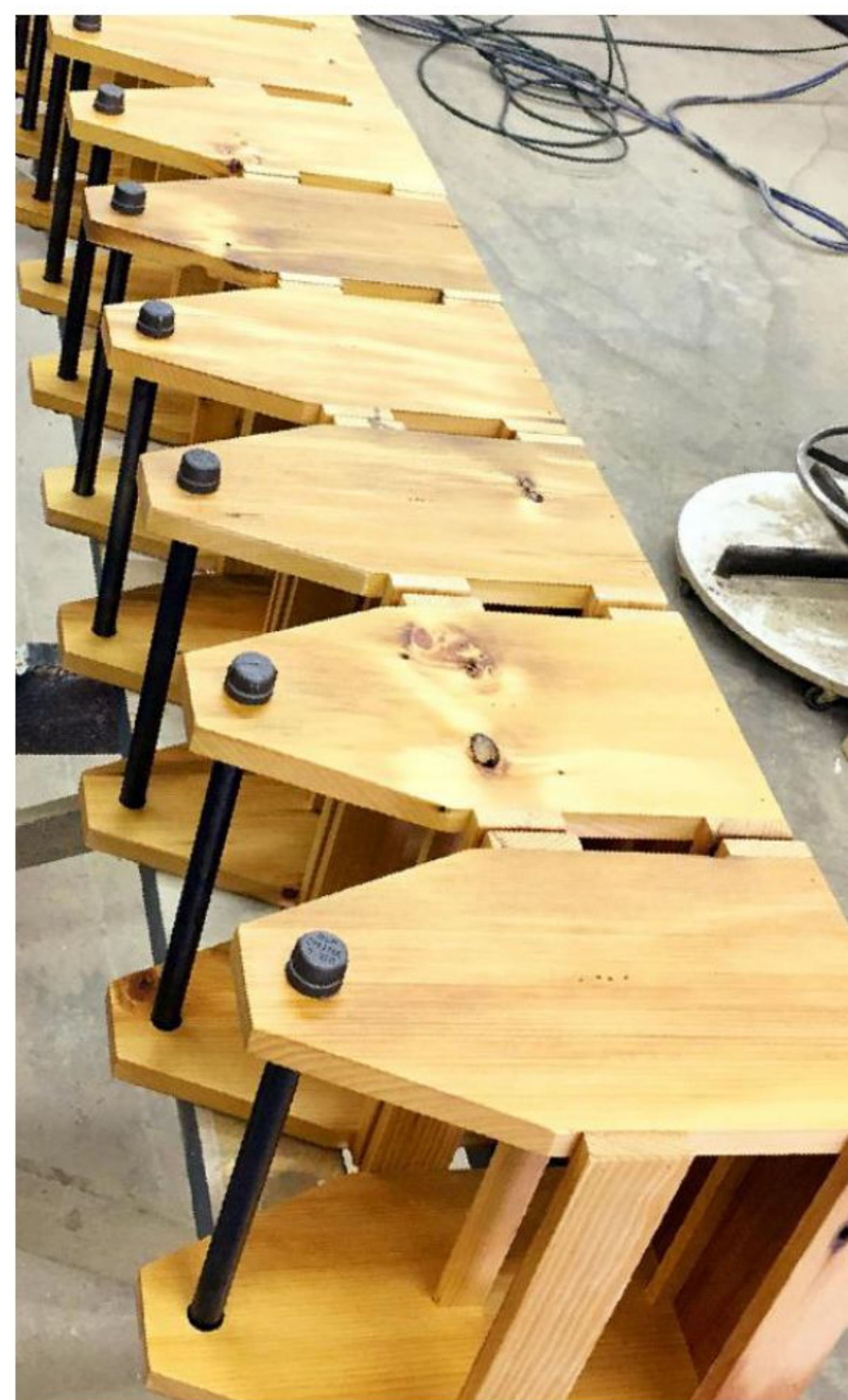
Make a carriage jig

Mark the angle cut on one of the end parts (A) and set it on a 10 x 14-in. scrap. Then add cleats to hold the end in position.



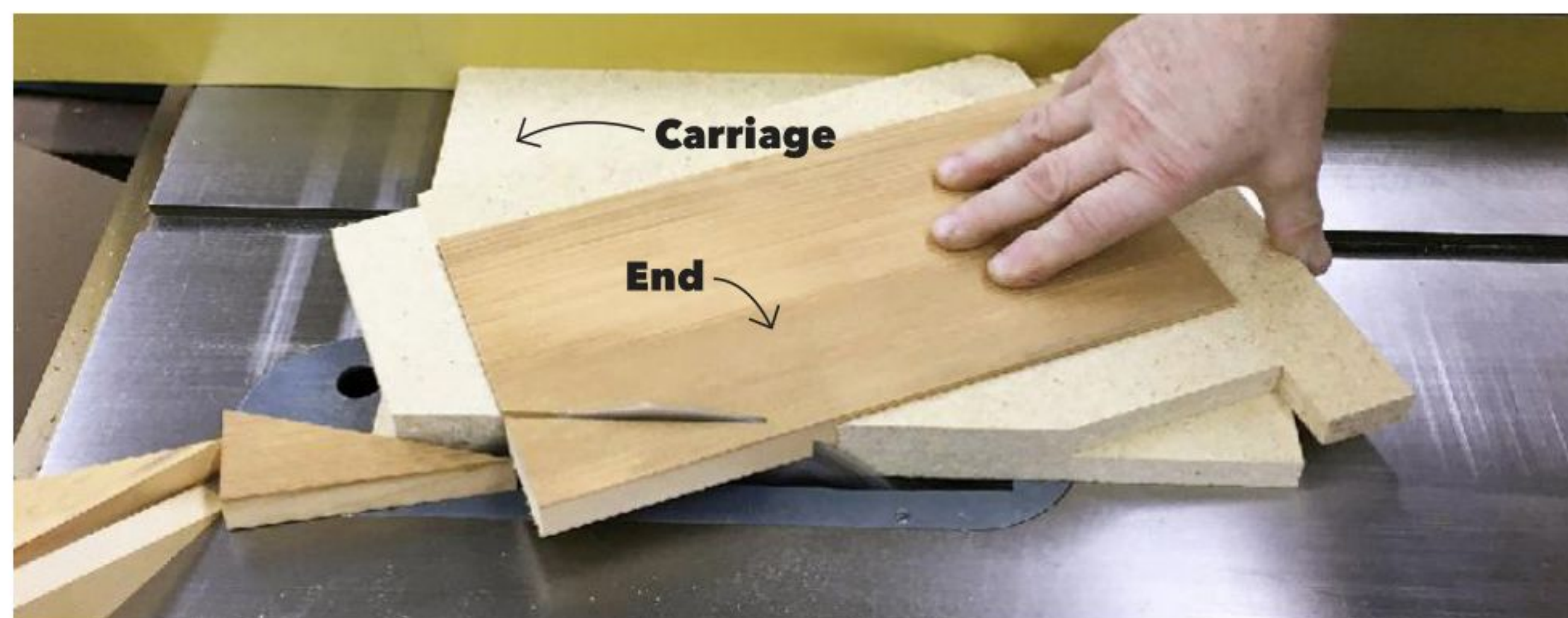
Soak off labels

Labels on steel pipe are tough to remove. To make it easier, we picked up an aluminum foil roasting pan (\$5 at home centers) and soaked the pipes in mineral spirits overnight.



Line 'em up and spray 'em

We finished our bottle caddies with two coats of spray varnish. After the first coat, we lightly sanded with a fine sanding sponge. Then we added the handles and sprayed again. When the finish was completely dry, we attached an old-style metal bottle opener to one side of the caddy.



Cut the angles

Set the table saw fence at 10 in. and slide the carriage against it to cut the angled ends. After the first angle is cut, flip the board and cut the other side. **CAUTION: Guard removed for photo. Use yours!**

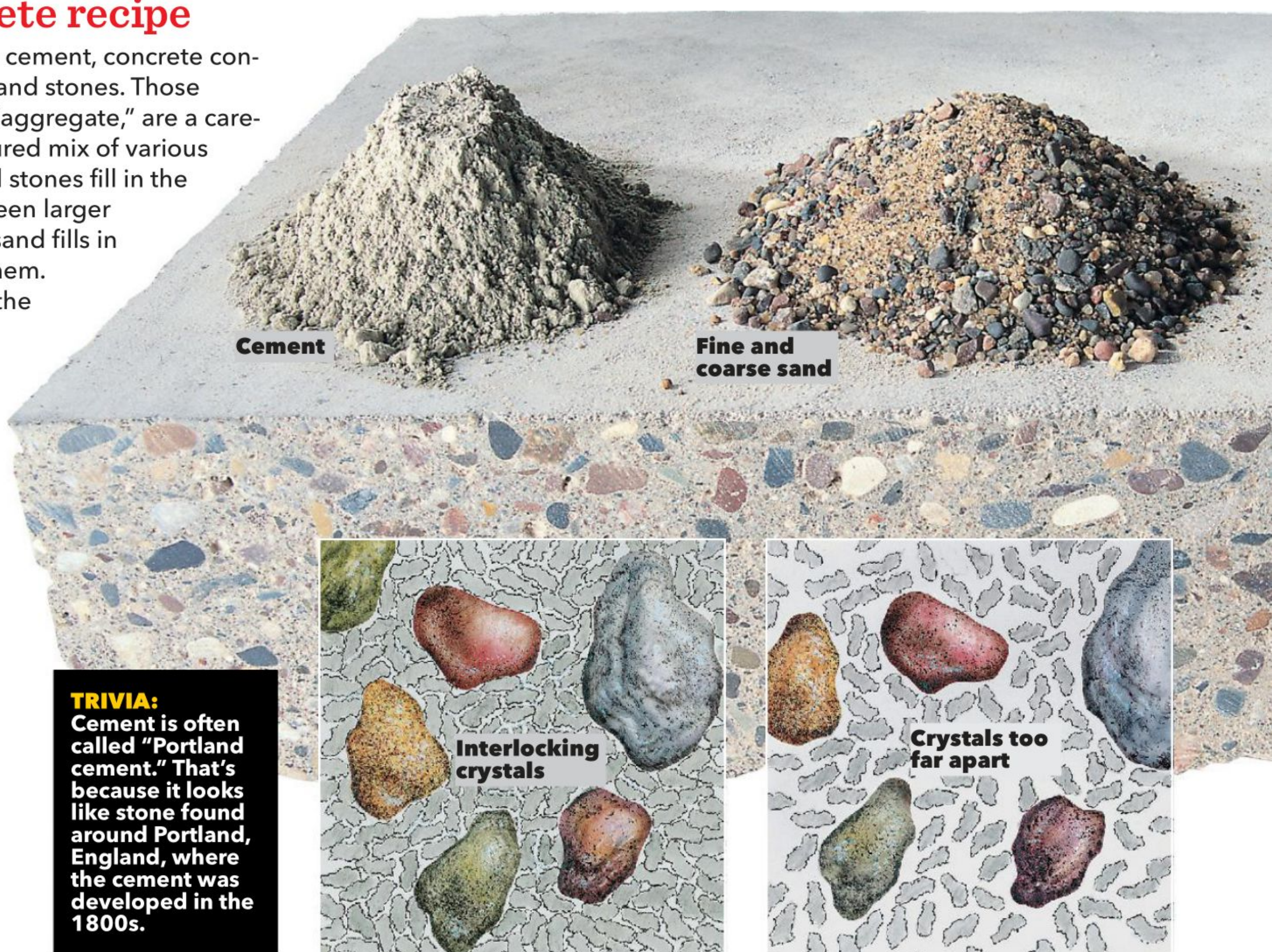
CONCRETE BASICS

What every DIYer needs to know

By Gary Wentz

Concrete recipe

Aside from cement, concrete contains sand and stones. Those stones, or "aggregate," are a carefully measured mix of various sizes. Small stones fill in the gaps between larger ones, and sand fills in between them. Cement is the glue that holds it all together.



TRIVIA:

Cement is often called "Portland cement." That's because it looks like stone found around Portland, England, where the cement was developed in the 1800s.

Interlocking crystals

Crystals too far apart

IT'S NOT "CEMENT"

Most people say "cement" and "concrete" interchangeably. But they're not the same thing.

Cement is just one of the ingredients in concrete, and if you ask for cement at the lumberyard, you might get a bag of Portland cement.

Water makes concrete "work"

Cement is mostly limestone that's been ground up and superheated. Adding water causes a chemical reaction; microscopic crystals develop, grow and interlock, binding the aggregate together and forming a rock-hard mass.

VOCAB:

The hardening process of concrete is called "curing."

Too much water makes it weak

It's tempting to add extra water to make concrete easier to work with or to soften concrete that has begun to harden. But don't do it. With too much water, cement crystals develop too far apart, leaving concrete weak and porous.

CONCRETE DOESN'T "DRY"

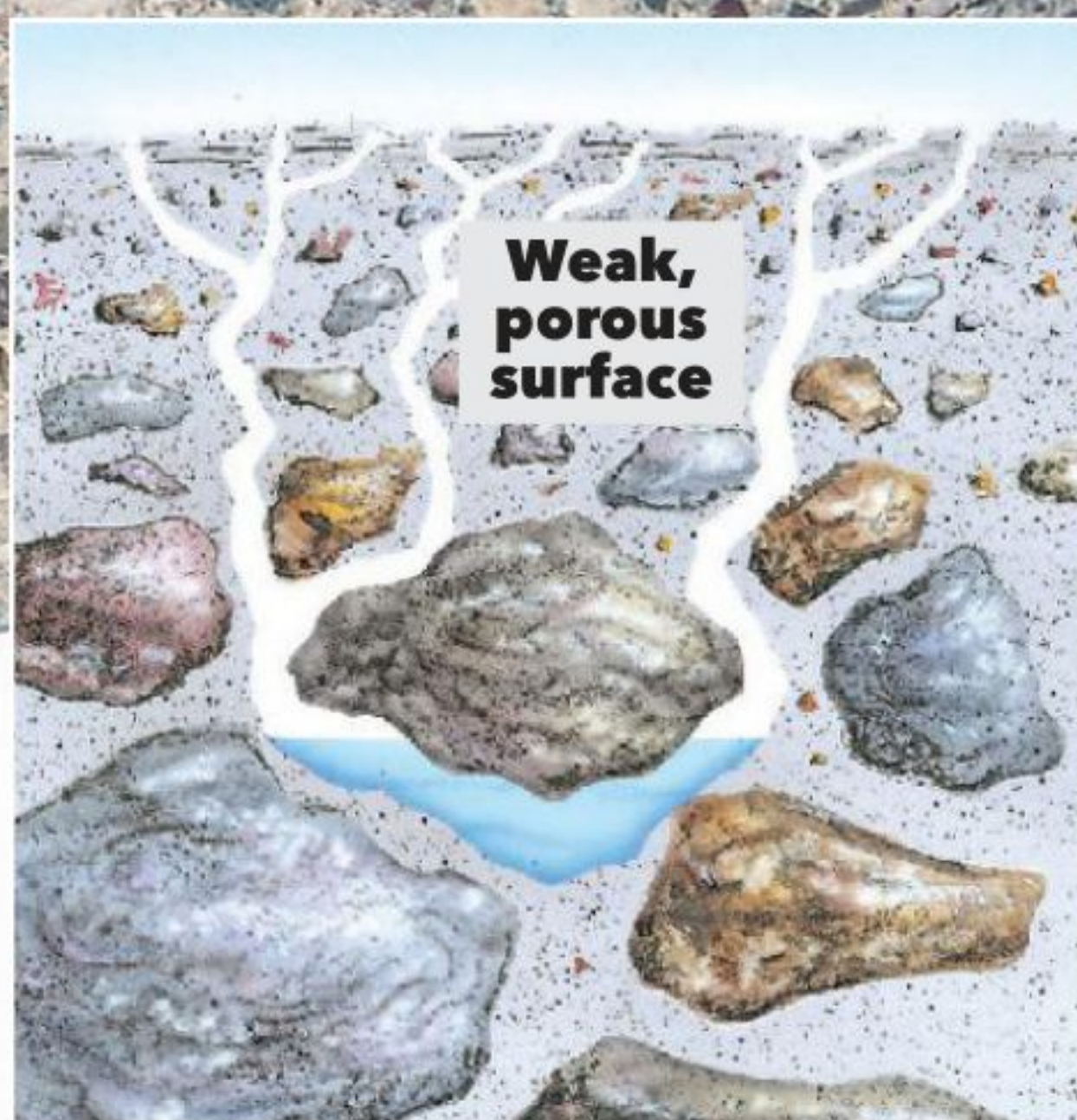
Concrete hardens while it's wet—not as it dries. If, for example, you throw a bag of concrete mix into a bathtub full of water, it will harden underwater (but we really don't recommend you do that).



TRIVIA: If kept constantly moist, concrete will continue to grow stronger for years. But those gains in strength are small after the first few weeks.



Aggregate



Keep it wet longer to make it stronger

Concrete will continue to harden until it dries out completely. That's why pros often use blankets, plastic sheets or spray-on coatings to retain moisture. Since most of the strength gain takes place in the first few days, experts often recommend a "wet cure" of three to seven days. Typically, concrete is considered fully cured after 28 days.

Don't overwork it

To finish the surface, concrete is first "floated" with a float or a darby. This pushes the aggregate down and pulls fine sand and cement to the surface—just what you need to form a smooth, troweled finish or a rough-broomed finish later. But limit float work to two or three passes. Too much floating leaves a topping of watery cement. And that means a weak, porous surface. Too much troweling causes the same trouble.

Simple safety

Cement is caustic. So it can cause anything from dry skin to nasty burns that require medical attention. Wear gloves and protect your eyes. Concrete dust is bad for your lungs. So strap on a respirator while mixing or cutting it.





BEYOND CONCRETE:

Portland cement is also the key ingredient in other building materials such as mortar, stucco and tile grout.

DOES DEICING SALT DAMAGE CONCRETE?

Some deicing chemicals, at very high concentrations, can damage concrete. But most often, damage occurs this way: Deicers turn the ice to water, which seeps into concrete pores. Later, the water freezes and expands, causing tiny craters in the surface. With each cycle, the damage grows worse. One way to reduce this damage is to sweep or shovel meltwater and slush off the concrete. Masonry sealers also help by plugging the pores in concrete.

A LITTLE THICKER IS A LOT STRONGER

A 4-in.-thick sidewalk is fine. But for driveways or slabs that will bear heavy loads, go for at least 5 in. That extra inch provides about 50 percent more strength but adds only a few hundred bucks to the cost.



Allow for cracks

Concrete shrinks as it cures, which causes shrinkage cracks. Settling and frost heaves also lead to cracks. Instead of risking random, meandering cracks, provide "control joints" for straight, invisible cracks to occur. You can plow control joints into fresh concrete with a groover (as shown here) or use a saw when the concrete is partially cured. On sidewalks, control joints are needed every 4 to 5 ft. On wide slabs like driveways, place them 10 to 12 ft. apart.



Speedy concrete

By adding an "accelerator" to the mix, manufacturers produce bagged concrete that hardens in an hour or less. That's great for small jobs but risky for big jobs that require ample finishing time.

CONVENIENT CONCRETE:

In the 1930s, bagged concrete mix hit the market. Before that, folks had to mix up cement, sand and aggregate themselves.

MUCH MORE ONLINE

Get step-by-step instructions for sidewalks, slabs, repairs and other concrete projects. Search for "concrete" at familyhandyman.com.

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Cedar Bath Mat

**1-HOUR
PROJECT**

**It's just right for an
entryway or a closet, too**

By Matt Boley

WHAT IT TAKES

TIME
1 hour

COST
\$20

SKILL LEVEL
Beginner

MATERIALS 1x2 or 1x6 lumber,
1-1/4-in. brads or nails, paint
stir stick, sandpaper, antiskid
pads, finishing supplies



I saw a cedar mat like this online for \$35 and thought, “Hey, I can make a better one for less.” The project is super simple, practical and versatile: It can be a bath mat, an entry mat for a patio or a drip-dry platform for wet shoes. Here are some planning and building tips:

- I chose cedar for its looks and rot-resistance. But any wood would be fine.
- My mat is 14-1/2 x 30 in., but you can make yours any size. Just be sure the slats are supported by runners no more than 15 in. apart.
- Large knots create weak spots, so you may need to buy extra lumber to get sections that are free of knots.
- Although the nail holes won’t show, I patched them with wood filler before sanding and finishing. Left exposed, the nail heads may rust and stain the floor.
- I finished my mat with tung oil. Oil finishes aren’t as durable as some others, but they’re easy to renew when the finish starts to wear—just wipe on a fresh coat.
- Be sure to apply antiskid pads on the bottom to keep the mat from sliding on hard floors.



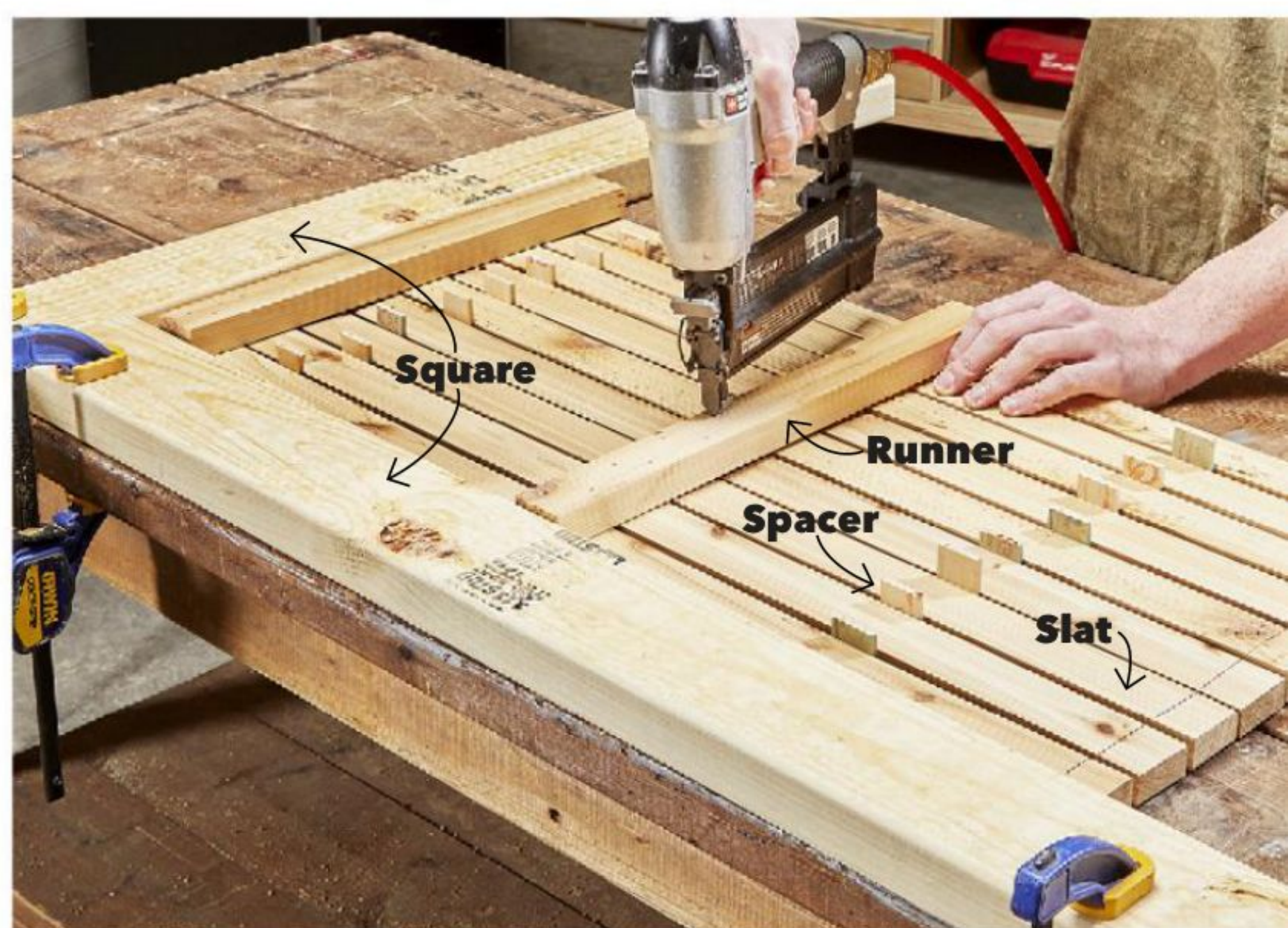
1. CUT THE SLATS

If your local home center doesn’t have good-quality 1x2 stock for the slats, buy a 1x6 and cut 1-1/2-in. strips. An 8-ft. 1x6 provided all the slats I needed.



2. ROUND THE EDGES

I rounded the slat edges with a 1/4-in. round-over bit. If you don’t have a router, ease the edges with 100-grit sandpaper.



3. ASSEMBLE THE MAT

Clamp wood scraps to your workbench to form a square. Lay out the slats against the guide using spacers cut from a paint stir stick. Then cut three runners 1 in. shorter than the width of the mat. Fasten the runners to the slats with 1-1/4-in. brads or nails.

Hole Saw Jack-o'-Lantern

Frightening, fast & fun
By Gary Wentz

A few years ago, I promised to provide 20 jack-o'-lanterns for a Halloween party. I stared at my truckload of pumpkins, regretted my promise and wondered how to produce good-looking jack-o'-lanterns fast. The answer: hole saws! Here are the gory details:

I used 1-1/4-in. and 2-1/4-in. hole saws, but it's best to have several sizes to choose from. I removed the drill bits from my hole saws so there wouldn't be holes in the center of the eyeballs.

Instead of using a drill, I cut holes by hand. Here's why: First, starting a hole without the center drill bit is more difficult with a drill.

Second, I was able to feel when the hole saw was starting to break through to the inside of the pumpkin. At that point, I would stop and push the cutout plug into the pumpkin with my fingers. If you drill completely through, the plug will be stuck in your hole saw and you'll have to pry it out with a screwdriver.



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Plug

You can cut holes faster with a drill, but you're more likely to end up with a plug stuck in your hole saw.



1. CUT OUT THE LID

A jigsaw works slick for cutting the lid. Just plunge the blade into the pumpkin, start up your saw and cut. Don't forget to clean off your tools. Pumpkin goop is surprisingly tough to remove after it dries.



2. START THE HOLE

A hole saw tends to wander as you start the cut. To avoid that, push hard so all the teeth sink into the pumpkin. Then twist. Cut slowly enough to stay focused on keeping the hole saw centered.



3. DRILL WITHOUT A DRILL

When your cut is about 1/4 in. deep, grab the arbor with locking pliers (such as Vise-Grip pliers) to make cutting easier. As the hole saw begins to break through the pumpkin, stop. Then push out the plug by hand. Cut an "eyeball" out of the plug using a smaller hole saw. Or you can cut the eyeballs first, then cut out the larger eye opening. I used the leftover rings as ears and fastened them with screws.



4. SCREW IN THE EYEBALLS

Slippery pumpkin parts are hard to hold steady, so it's best to hold each eyeball on your benchtop while you start the screw. Then drive it into the pumpkin. Fasten the ears with shorter screws. Form the mouth by making overlapping cuts with a hole saw.



Every year, *The Family Handyman's* power-tool pumpkinpalooza yields a few masterpieces, minor injuries and a shop full of fruit flies.

Fix it, maintain it, improve it. By Brad Holden

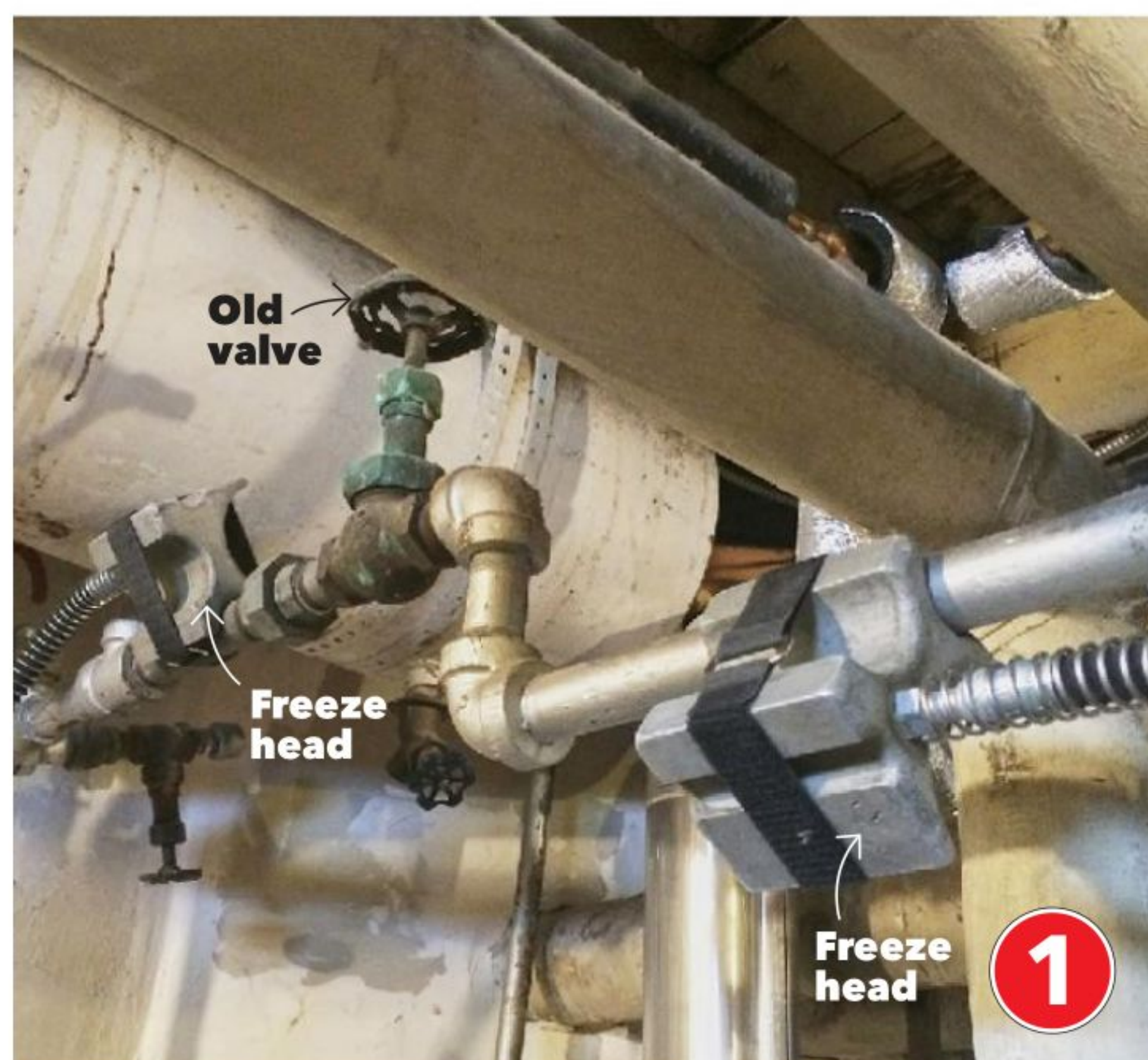
58 OCTOBER 2011 [FAMILYHANDYMAN.COM](http://www.familyhandyman.com)

[PROBLEM SOLVER]

Freezing pipes... on purpose!

Sometimes, turning off the water at a shutoff valve isn't the best option. I needed to replace two valves on a boiler for a three-story building. I could either wait for heating season to end and drain the system, or I could isolate the valves with ice plugs and avoid the hassle of draining and refilling the system. So I decided to go for the latter. I rented the Ridgid SF-2500 SuperFreeze, which circulates refrigerant through two freeze heads, forming a pair of ice plugs. The unit cost \$60 for a day at my local rental center. It can't be used on plastic pipes, just copper up to 2-1/2 in. or steel up to 2 in.

KURT MEYERS, CONTRIBUTING EDITOR



1 ATTACH THE FREEZE HEADS

Strap the freeze heads into position on both sides of the repair using the included hook-and-loop straps or a quick clamp. Think through the placement because once freezing begins, you can't move the heads until the repair is complete. Be sure you have the clearance you need to turn wrenches and make any necessary cuts. If you need to solder, keep the freeze heads at least 3 ft. away from the heat source for each inch of pipe diameter.

2 SPRAY WATER TO FORM AN ICE BRIDGE

With the heads in place, switch on the machine. After five or 10 minutes, spray water on the heads to form an ice bridge for more efficient freezing. It took about 45 minutes for plugs to form in this 3/4-in. steel pipe.

3 REPAIR THE PIPES

Once the plugs form, make the repair and turn off the machine. The plugs will melt in about 15 minutes.



"To you, it's the perfect lift chair. To me, it's the best sleep chair I've ever had."

— J. Fitzgerald, VA



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46482

[QUICK FIX]

Is Your Square Square?

Framing squares—even brand-new ones—aren't reliably square.

1 To test your square, place the tongue (the short part) against the factory edge of a sheet of plywood and make a line along the body (the long part) using a sharp pencil.

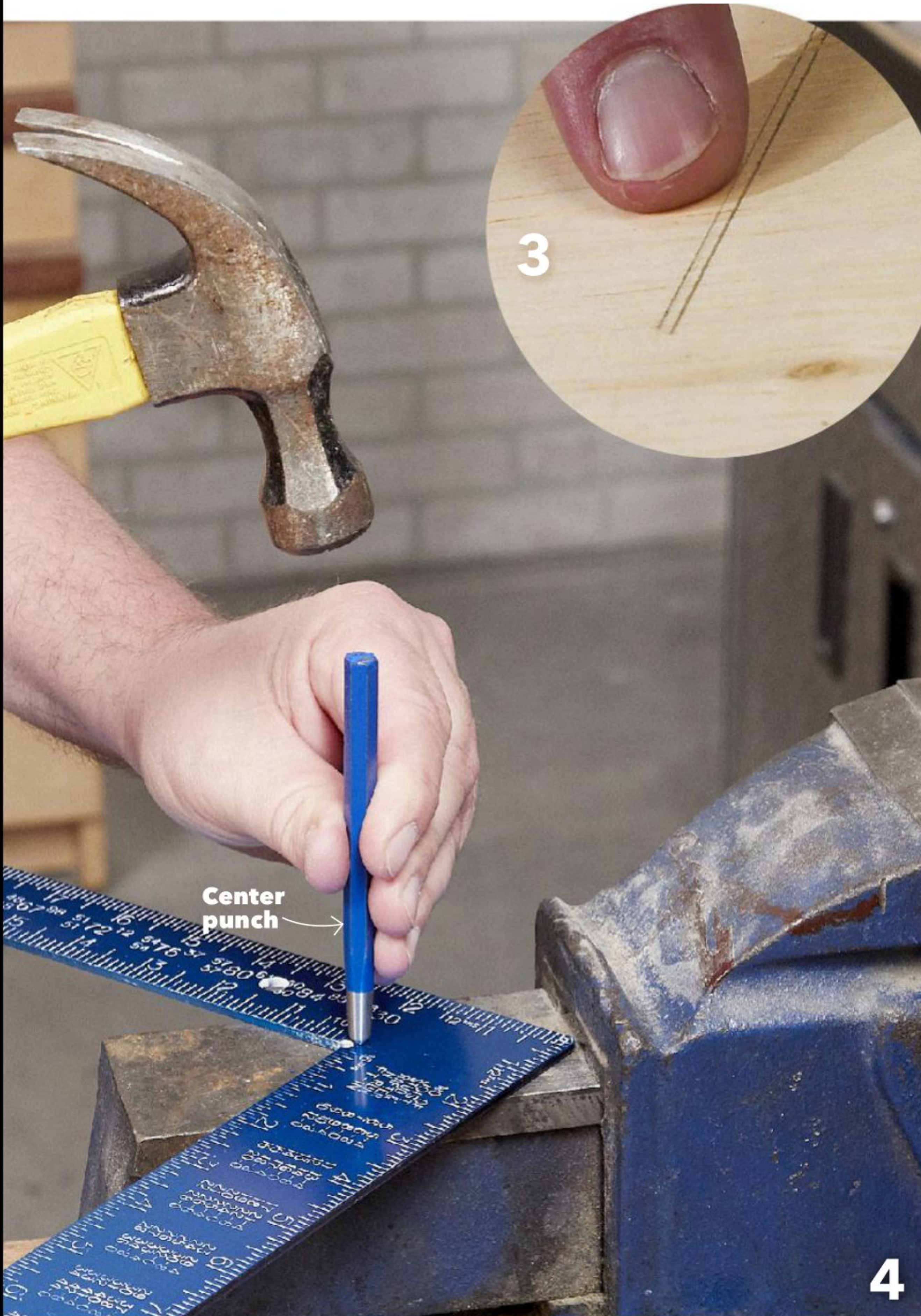
2 Flip the square and line up the body with the line you just made. If it lines up perfectly, you have a square square.

3 If it doesn't line up perfectly, you can try to fix it (next step). You'll need a center punch, a hammer and something to use as an anvil, such as your vise (a wood surface doesn't work).

4 If your square is less than 90 degrees, set it on your "anvil" and punch the inside corner hard enough to make a dimple. Squeezed between the punch and the anvil, the metal moves outward. Recheck the square, starting with a new line. Increase the dimple as needed, rechecking each time you strike the square.

5 If your square is more than 90 degrees, dimple the outside corner.

If you're shopping for a new square, grab a handful of them, take them to the plywood aisle, sharp pencil in hand, and test them first.



HOME CARE+REPAIR

[SIMPLE SOLUTION]

Shortening furniture legs

Got a bar stool that's too tall? Just cutting a little off the legs is easy, but if the legs are angled, how do you maintain the proper angle to the floor? It's pretty simple. Decide how much you want to cut off, and find a block of wood or any object of that height. Set the block on the floor and lay a pencil on it. Holding the pencil and the block, trace around the leg. Cut with a handsaw, and then round over the sharp edges with sandpaper. The same technique applies to metal legs, but you'll have to cut them with a hacksaw and round the sharp edges with a metal file.



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[PRO ADVICE]

Installing gutters

If you're installing your own gutters, check out an option called "chop & drop," which is offered by many pro installers. The installer drives a seamless-gutter truck to your house, churns out the gutter lengths you need and drives away. This is a much better option because you won't have seams in your gutters from joining the pre-cut lengths available at home centers. If you choose a gutter color other than white, be sure you get all the end caps, downspouts and fasteners to match from the supplier. Home centers typically carry only white.



MEET THE EXPERT

Before Mark Petersen joined our editorial team, he owned and ran a siding and gutter installation company for 18 years.

[HEADS UP]

PEX can limit water flow

We love PEX. But most PEX tubing has a smaller inside diameter than its copper counterpart. More important, PEX connectors are much smaller. Some nominal 1/2-in. plastic connectors have an interior diameter as small as 5/16 in. This can make a difference in your water flow.

EASY SOLUTION: If you're concerned about water flow, step up the size of the PEX. If you're replacing a 1/2-in. copper pipe with PEX, for example, use 3/4-in. PEX instead of 1/2-in.



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copper
pipe

1/2"
PEX

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Car + Garage

Expert advice on repair, maintenance and gear. By Rick Muscoplat



Safely jack and support a car or truck

Following these steps could save your life!

You can save quite a few bucks by doing your own car or truck repairs and maintenance. But if that involves jacking up your vehicle, and you want to live long enough to spend all the money you've saved, you owe it to yourself and your loved ones to bone up on jack safety.

Start by parking your car or truck on flat concrete. Trucks and most full-size SUVs have steel frames that support the entire vehicle. Nearly all cars and crossover vehicles, on the

other hand, have "unibody" construction; that is, they don't have a frame. Each type of vehicle requires different points of support for jack and jack stand placement.

Consult your owner's manual to locate the recommended lift

points and support locations for your vehicle. Before jacking, engage the parking brake and

chock the rear wheels to prevent car movement. Start jacking from the front of the vehicle. The front end of four-wheel-drive trucks can usually be raised by placing the

jack under the differential. For two-wheel-drive trucks, place the jack beneath the jacking pad under the engine.

Place the jack so the cross member or differential lines up with the recessed area of the jack saddle. Slowly pump the jack handle until the front wheels leave the ground. Then stop jacking and double-check the jack placement. Look at



MEET THE EXPERT

Rick Muscoplat has decades of automotive repair experience and a great website: ricksfreeautorepairadvice.com.

IF YOU PLAN TO REMOVE YOUR TIRES, LOOSEN THE LUG NUTS SLIGHTLY WHILE THE CAR IS STILL ON THE GROUND. THAT WILL KEEP THE WHEELS FROM SPINNING WHILE YOU TURN THE LUG WRENCH ONCE THE CAR'S RAISED.

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the front of the vehicle to make sure it's not leaning to one side. If it is, lower and recenter the jack. Otherwise, continue pumping until the vehicle reaches the desired height.

Support the front of a truck by placing the jack stands directly under the frame. Support the rear of the truck with a jack stand under each axle or location listed in the owner's manual. Turn the handle very slowly until the vehicle starts easing down. A quick release will result in a sudden drop. Lower the car or truck until it almost touches the saddle of the jack stand. Then double-check the frame-to-jack stand alignment before lowering the full weight onto the stand. Remove

the floor jack and move it to the rear of the vehicle.

Locate the recommended rear lift point and repeat the jacking procedure at the rear of the vehicle. Place the two rear jack stands in proper support locations and lower the rear onto those stands.

With the vehicle up on all four jack stands, gently shake the vehicle side to side and up and down. This tests whether the vehicle is sitting squarely on the jack stands and the jack stand saddles have full contact with the support points. If the vehicle wobbles, stop immediately and reposition the problem jack stand before crawling under the vehicle.

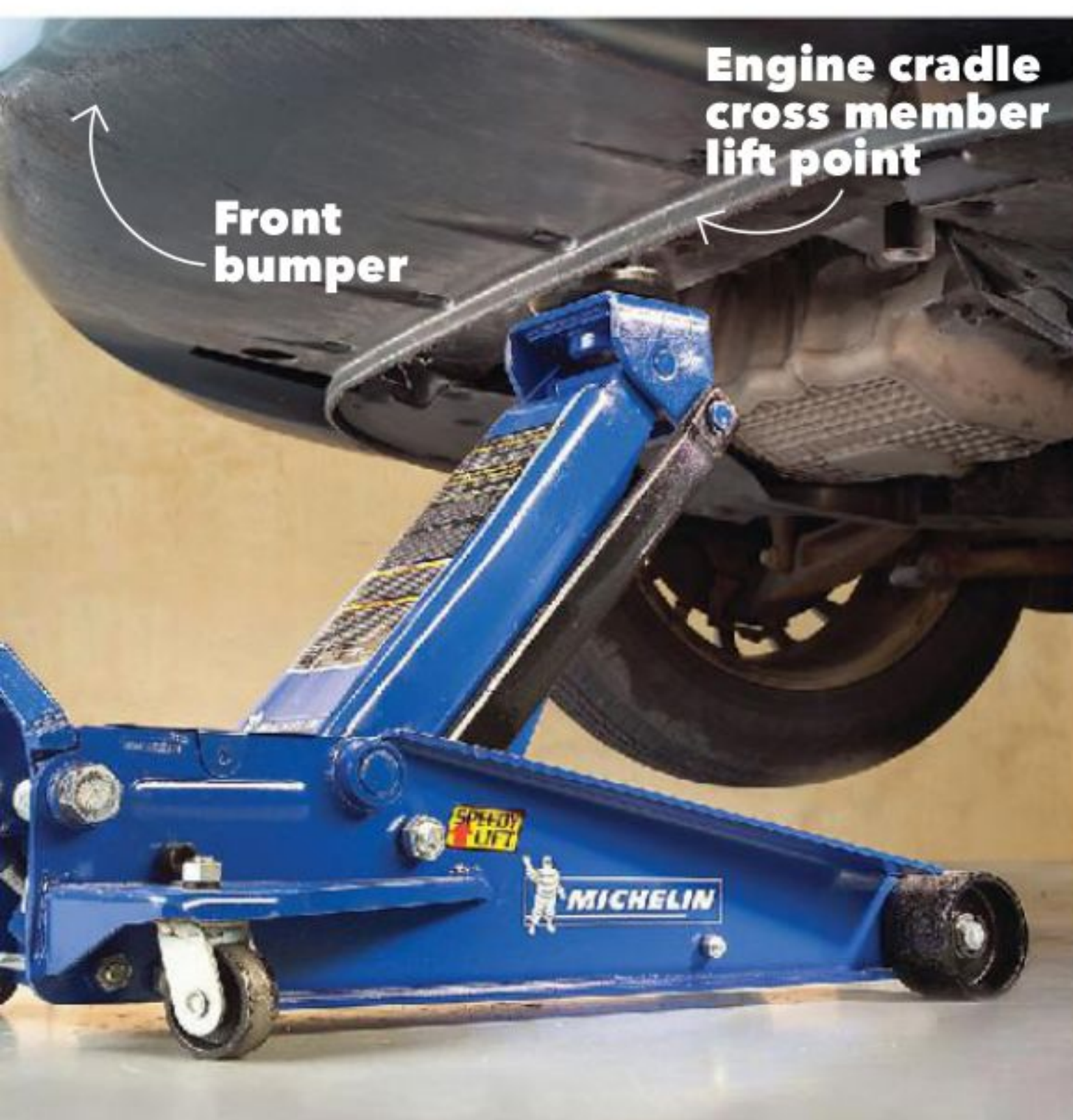


CHECK THE LIFT CRADLE!

Most front-wheel-drive cars have heavy steel engine cradle cross members that can be used with a floor jack. However, some late-model cars have one-piece cast aluminum engine cradles. These vehicles require special jacking procedures. Using the incorrect procedure is not only dangerous but can cause extensive damage to your vehicle.

Jack and support a car

For most cars, the recommended front lift point is the engine cradle cross member (Photo 1). Lift and support the front of the car first. (If you start with the rear, the front end may tilt so far that you can't roll a jack under it.) Place the jack so the cross member lines up with the recessed area of the jack saddle. The jack stand support locations (pinch welds; Photo 2) for cars are usually located behind the front wheels and in front of the rear wheels.



1. Place the recess of the jack saddle directly under the engine cradle cross member.



2. Place the jack stand under the support point. Raise the saddle and make sure it locks into place.

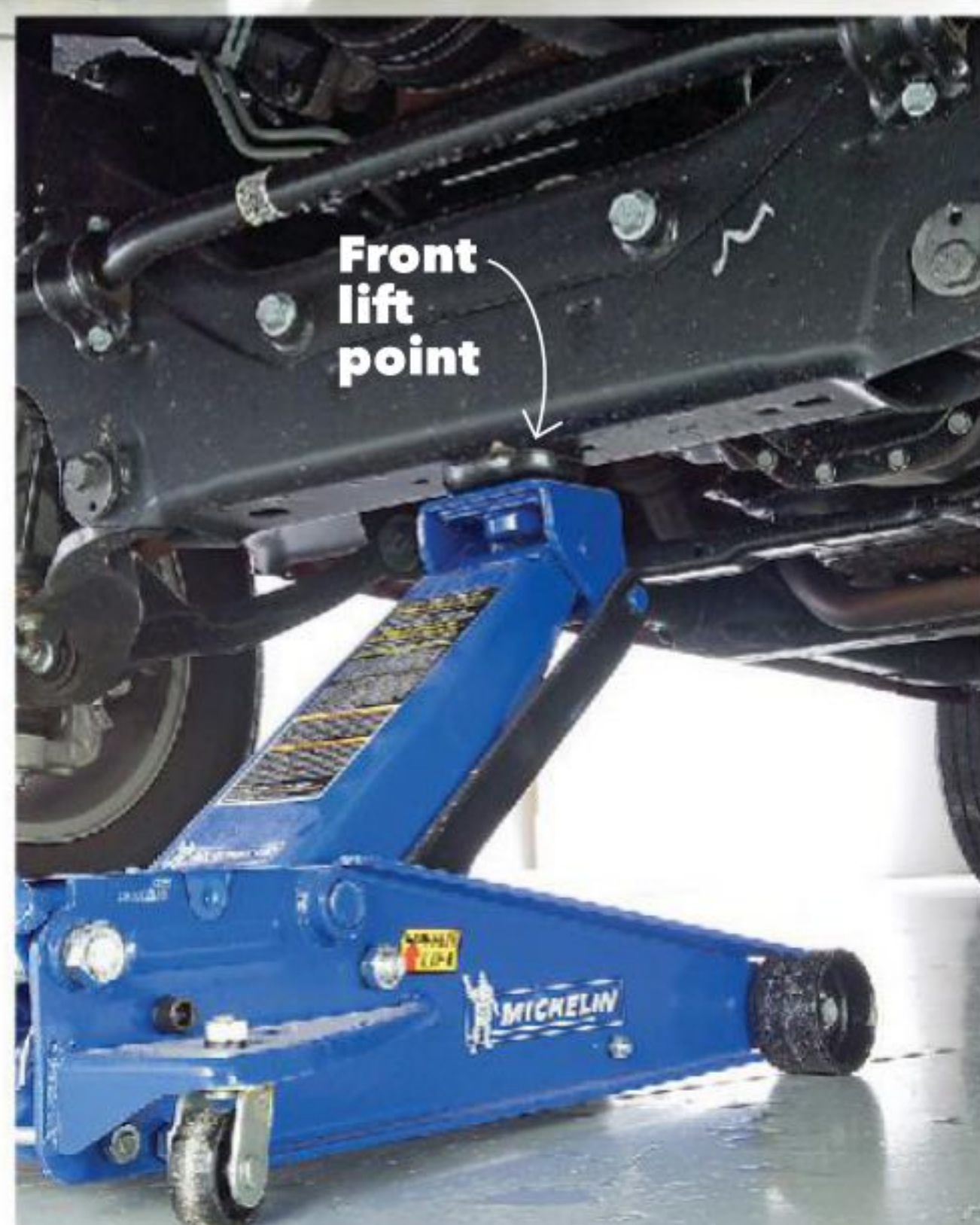


3. Place the floor jack so it contacts the rear lift point and raises the vehicle.

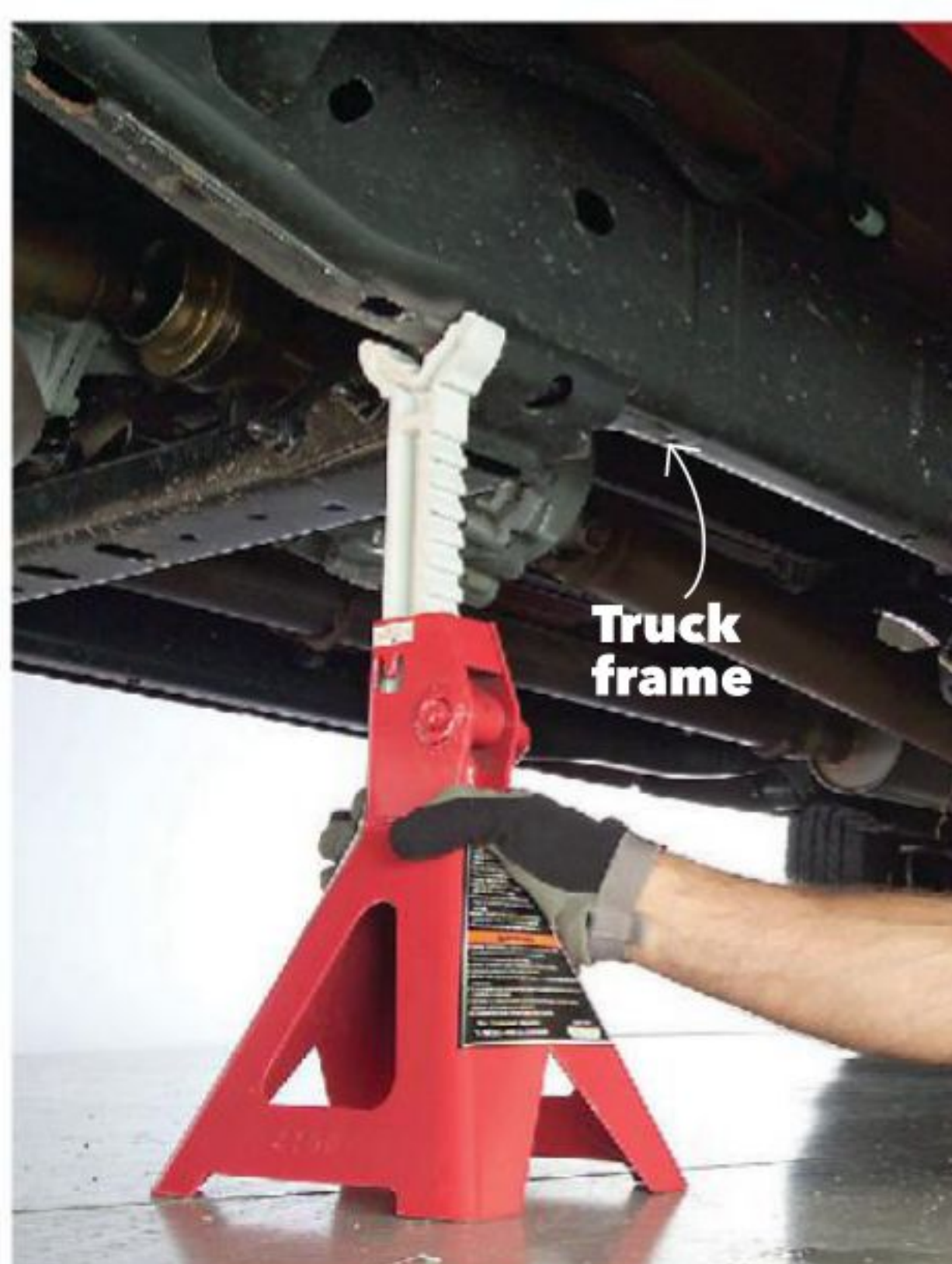


Jack and support a truck

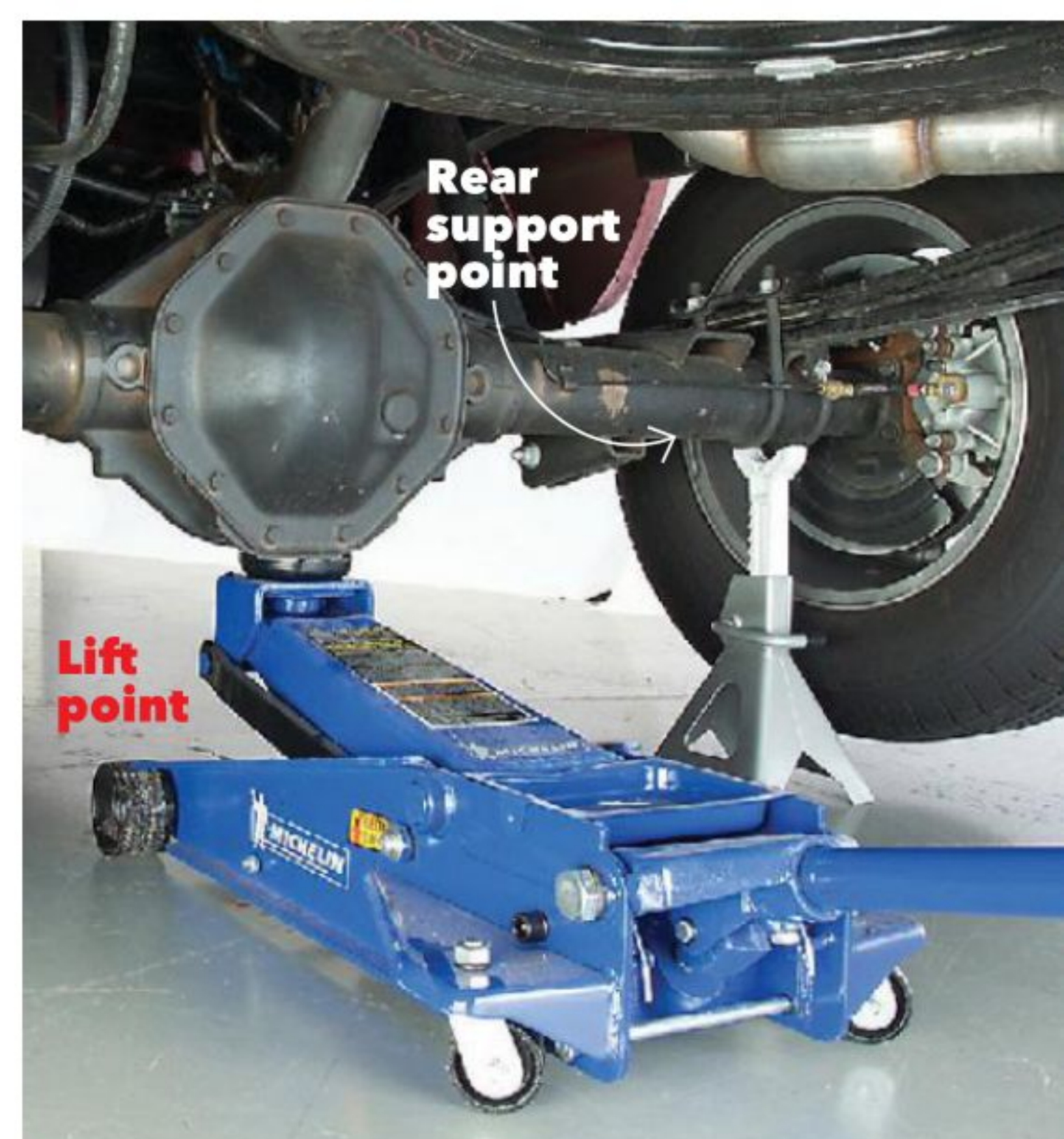
You can raise some two- and four-wheel-drive trucks by placing the floor jack under the front and rear differentials. However, not all differentials are designed for lifting, so consult your owner's manual or shop manual for proper jack placement. Always place jack stands directly under the frame or axles after raising the truck.



1. Place the jack directly under the truck's front lift point.



2. Place the jack stand directly under the truck's frame.



3. Position the jack saddle directly under the rear differential.

Diagnose chirps and squeals with a stethoscope



If you want to be a real car doctor, you've got to use the right tools. An automotive stethoscope (sold at any auto parts store) can be the most effective diagnostic tool in your toolbox. It works just like the ones doctors use, allowing you to "hear inside" a mechanical component. The stethoscope we chose comes with two attachments—a metal probe and a sound amplifier (shown at left).

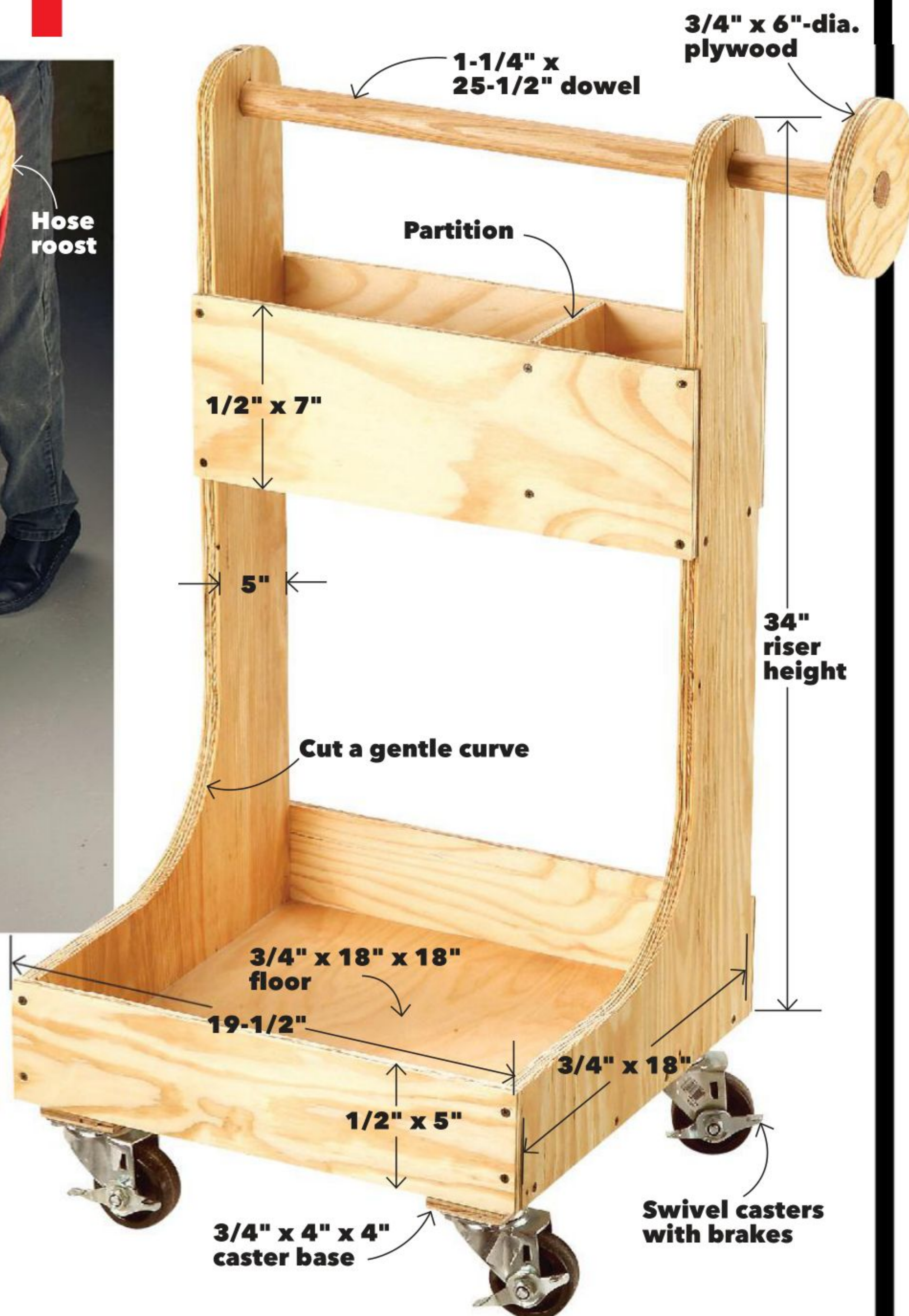
Connect the amplifier attachment to the hose and move it around the engine compartment. That will narrow your search to a smaller area. Then switch to the metal probe (right photo) to locate the exact source of the problem.



Touch the scope's metal probe to the nonrotating part of the suspect component. If it's worn, you'll hear an unmistakable metallic sound.

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PROJECT**

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Here's a smart way to mobilize your air compressor and neatly store air nailers, nails and air hoses on board. Our cart's dimensions fit a pancake-style compressor, but you can easily adapt the dimensions for another style.

To build one like ours, you'll need:

- Two 2 x 4-ft. sheets of 3/4-in. plywood
- Scraps of 1/2-in. plywood
- 1-1/4-in. x 3-ft. dowel
- Four 3-in. casters with brakes and miscellaneous hardware

Cut the floor from 3/4-in. plywood and screw four square pieces of 3/4-in. plywood under it to attach the casters to. Cut the side risers from 3/4-in. plywood and screw them to the floor. Then cut the front and back pieces of 1/2-in. plywood and screw them together to box in the compressor. Build the tool storage box on the risers with a 3/4-in. floor and 1/2-in. sides,

adding a plywood partition to organize the storage space.

Drill 1-1/4-in. holes in the ends of the risers, then screw and glue in the dowel, leaving a protruding end for keeping the hose on board. Add a 3/4-in. plywood disc to the end of the handle for hose storage. Attach the casters with 1/4-in. x 1-in. screws, load up your cart and head for your next project!

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Years of work by innovative engineers have resulted in a mobility device that's truly unique. They created a battery that provides powerful energy at a fraction of the weight of most batteries. The Zinger features two steering levers, one on either side of the seat. The user pushes both levers down to go forward, pulls them both up to brake, and pushes one while pulling the other to turn to either side. This enables great mobility, the ability to turn on a dime and to pull right up to tables or desks. The controls are right on the steering arm so it's simple to operate, and its exclusive footrest swings out of the way when you stand up or sit down. With its rugged yet lightweight aluminum frame, the Zinger is sturdy and durable yet lightweight and comfortable! What's more, it easily folds up for storage in a car seat or trunk—you can even gate-check it at the airport like a stroller. Think about it, you can take your Zinger almost anywhere, so you don't



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WHAT'S **WRONG** WITH THIS PICTURE?

We'll show you the problem—and the fix. By Brad Holden



TRENCH WARFARE

No gutters? No problem!

Just letting the drip line excavate its own trench isn't the right solution. This homeowner is flirting with wet basement problems later on.



THE RIGHT WAY:

The first step in solving a wet basement is to install gutters (or repair bad ones). Make sure to route the downspouts away from the foundation. The second step is to regrade the landscape near the foundation. It should slope away from the house 6 in. over 4 to 6 ft.



Thanks to our friends at Structure Tech Home Inspections for sharing these photos. For more home inspection insights, visit structuretech1.com/blog



HOOK-UP FAIL

Missed it by that much

Looks like the HVAC technician took an early vacation, leaving exhaust ducts unconnected to vent hoods on the roof. This is going to exhaust warm, humid air (from kitchen and bath fans) into the attic, creating the perfect conditions for mold and mildew. In the winter, frost will build up in the attic. When that frost melts, it will damage ceilings and give the false impression that the roof is leaking.



THE RIGHT WAY:

Exhaust ducts should always be insulated so moisture won't condense on the inside or outside of the duct. And, of course, they have to exhaust outdoors, not into the attic.



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WHAT'S WRONG



WHO, ME?

Fake access panel

Building codes require an access panel behind bathtubs so you can access the fixtures and drain lines if they need work. This homeowner was trying to fake out the building inspector by installing a false panel. Nice try.



THE RIGHT WAY:

Generally, creating an access is just a matter of cutting a hole in the drywall behind the tub plumbing and installing a panel. If the access is in a closet, just cover it with a piece of plywood. If it's in a finished room, use a more decorative panel.



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WHAT'S WRONG



DANGER!

Don't kill a lineman

This homeowner is powering the house with a portable generator by plugging it directly into a house circuit. He's made a double-end male plug so he can plug in an extension cord from the generator. Yes, it works. And yes, it's extremely dangerous. If the main breaker isn't turned off, electricity is getting pumped right into the power grid outside the house. Linemen working on the electrical system down the road could very easily get electrocuted.

THE RIGHT WAY:

Appliances or other devices should be plugged into the generator itself using an extension cord. If you want to power a few vital circuits, you can do that through the main panel, but the generator has to be wired through a transfer switch with a power inlet receptacle (powered by the generator) that is then connected to those circuits in the main panel. See "Stay Warm When the Power's Out," p. 43.



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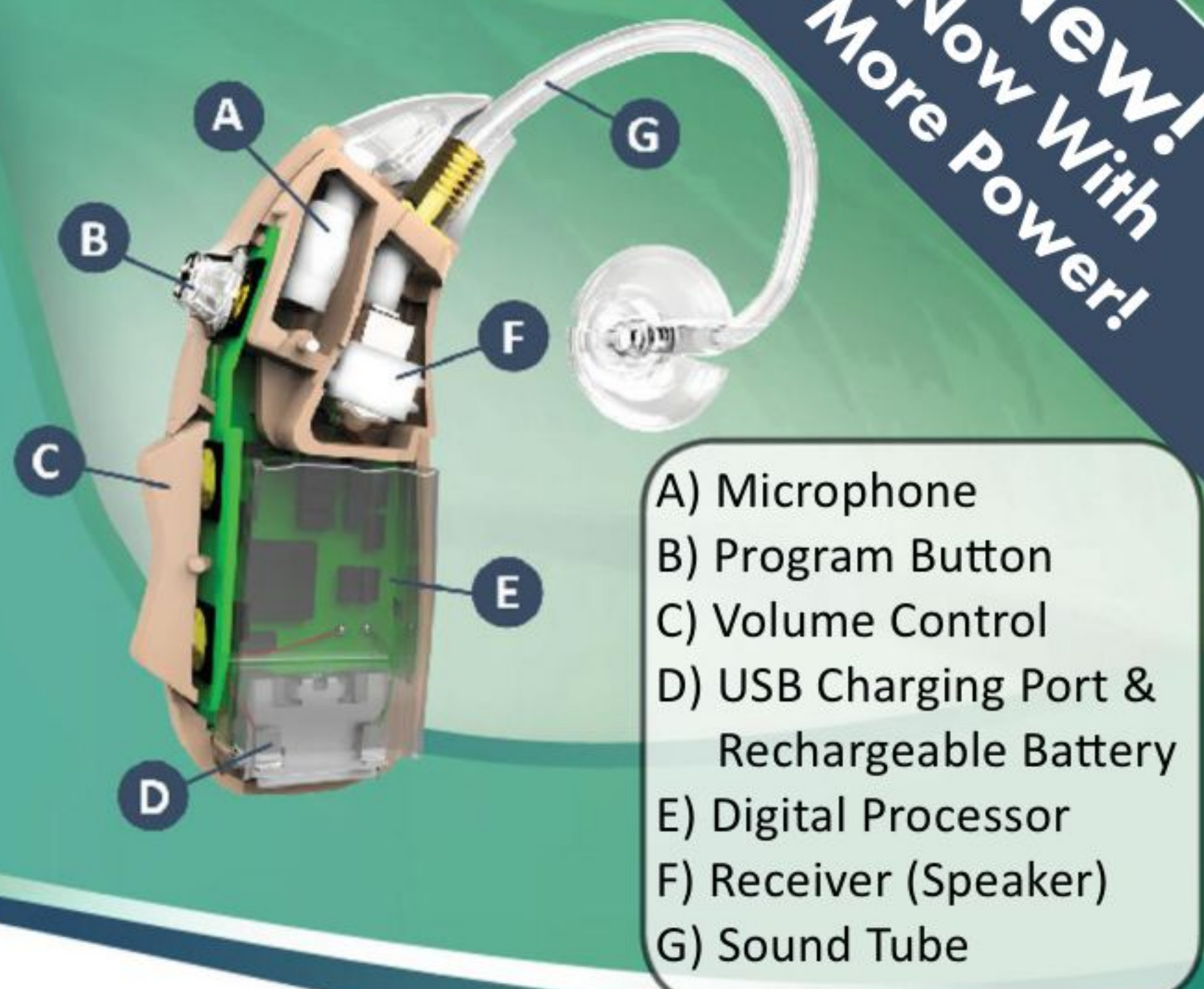


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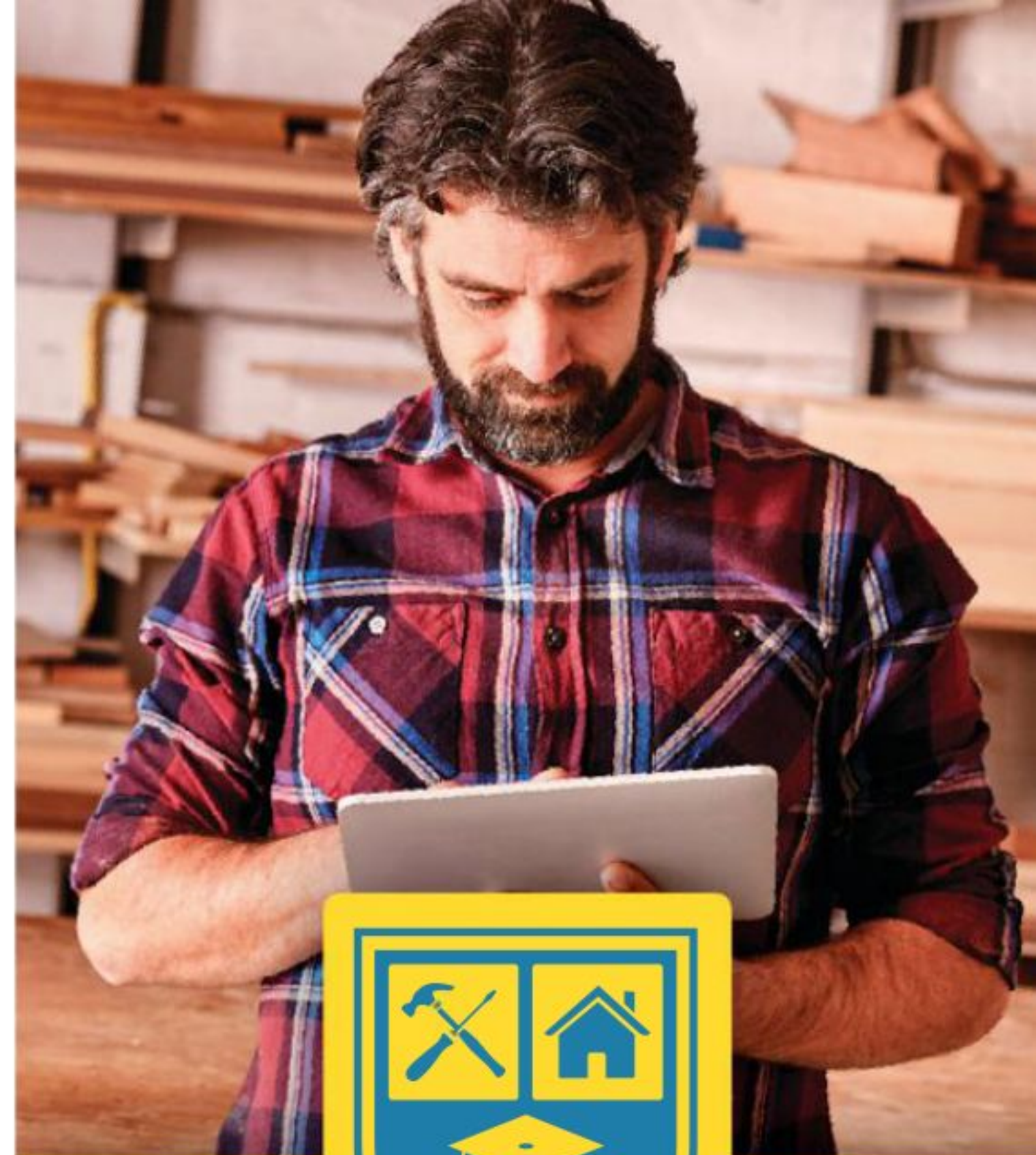
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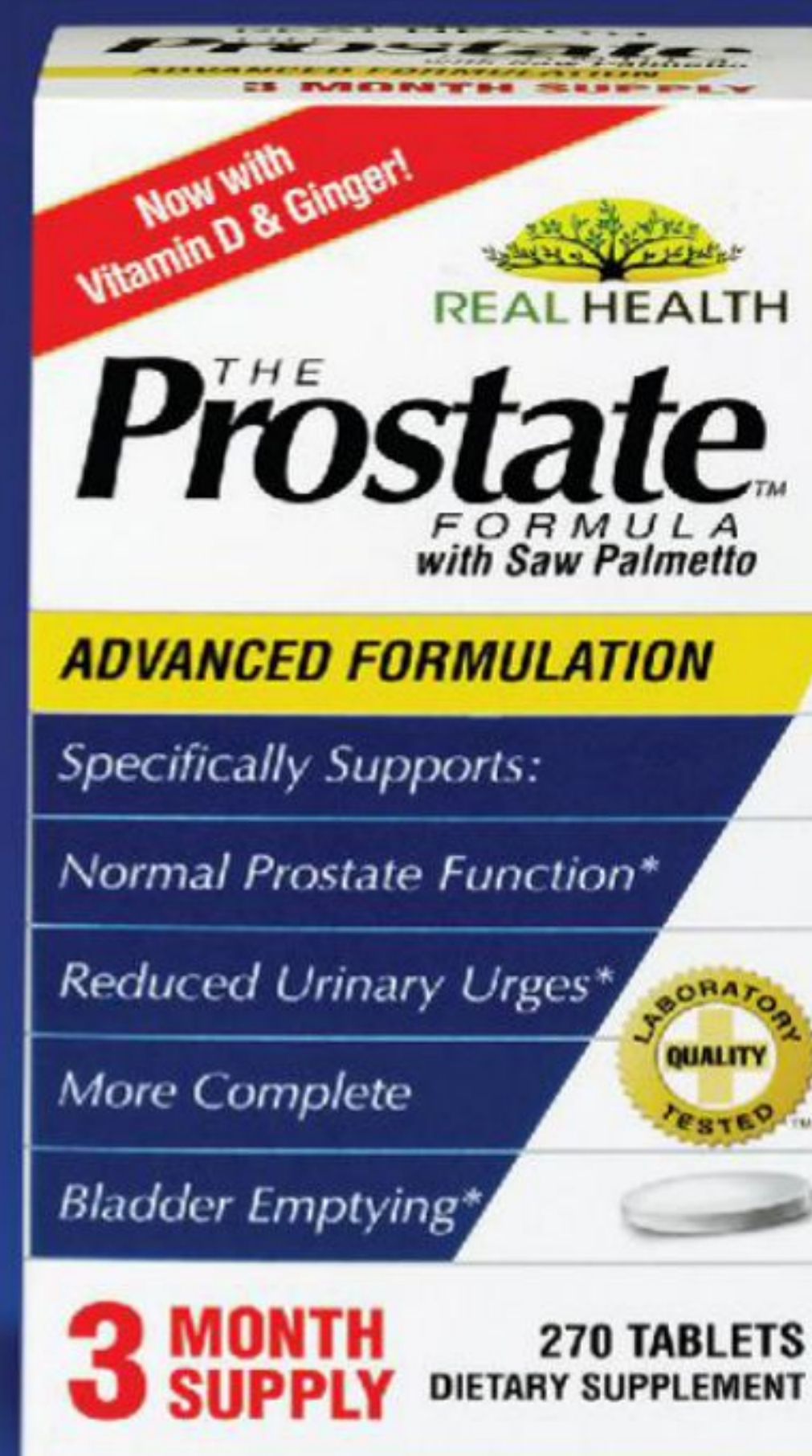
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Laughs and lessons from our readers



A SHAVE AND A CUT

While I was out of town, my wife took a turn mowing the lawn. When we talked on the phone that night, she said the mower engine had died about a dozen times. That surprised me because I'd never had any trouble with it.

When I got home and saw the lawn, I knew what the problem was. A look at the mower confirmed it. I always kept the wheels at the highest setting. My wife had run the

mower into a landscaping rock, knocking a rear wheel down to its lowest setting. This caused the blade to drag on the ground on one side, repeatedly killing the engine. Every pass of the mower gave the lawn a nice "cultivated" look.

MIKE SAMS, JR.

A WAVE OF REGRET

My handy husband was tearing out our old fiberglass tub/shower combination to remodel our bathroom. He proudly brought out his trusty reciprocating saw and went to work. All of a sudden, the steady buzz of the blade cutting through fiberglass was replaced with his favorite naughty word, followed by a cry for help. He'd sawed clear through a water pipe, and water was spraying everywhere. Our remodeled bathroom is extra deluxe now that it has some brand new pipes.

JEAN R. WRIGHT



ROUGH-IN RUSE

When I decided to put a bathroom in the basement, my dad and I thought it would be easy to find the rough-in connections for the fixtures. But we couldn't find them anywhere, so we rented a jackhammer to tie in to the main waste pipe below the concrete floor. When the rough-in was complete and the floor patched, we moved the water softener for more access. Lo and behold, we found the hidden rough-ins. That cover-up cost us a few weeks of work, a few hundred dollars and my sanity.

GREG BIENEMA



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