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family handyman

SMART HOME IMPROVEMENT

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DESK + BED COMBO

A GUEST ROOM IN SECONDS

**BEST
CORDLESS
JIGSAWS**
PAGE 41

**DO NEW
WINDOWS
PAY OFF?**
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PAGE 26

**MAKE A
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CEILING
LOOK
GREAT!** PAGE 11

**TRANSFORMS
INSTANTLY!**

APRIL 2020
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¹ Read the vehicle Owner's Manual for important feature limitations and information. Some camera views require available accessory camera and installation. Not compatible with all trailers. See your dealer for details. ² Excludes other GM vehicles.



CHEVROLET 

5 THINGS

I learned this month



My goal for every issue of *Family Handyman* is that you learn something that makes you a better, smarter homeowner. As a part of that effort, I get smarter too, learning from the editors and experts who build this magazine. Here are a few things I learned this month.



GARY WENTZ
EDITOR-IN-CHIEF

1 MICE ARE AMAZING (IN A BAD WAY)

Pest control guru Joe Stampley met with us to share his tools and tips. When we asked Joe to name his toughest adversary, he didn't hesitate: mice. They can get into just about any house and go anywhere within the house. They can squeeze through openings just 1/4 in. wide, climb walls and jump 12 in. straight up. (That would be like a person jumping up two stories!) But Joe knows how to defeat them. Check out p. 63.

2 TOXIN TRIVIA

The active ingredient in traditional rat poison isn't some exotic toxin. It's just vitamin D. Mammals can't live without vitamin D, but a massive overdose is deadly.

3 NEW TRICK FOR OLD WALLS

In my experience, electronic stud finders are worthless on old plaster walls. But associate editor Jason Ingolfsland found that magnetic versions can work well. Makes sense since the lath behind the plaster is secured with hundreds of nails. So I tried the homemade version shown here. Just drag the string along the wall and the dangling magnet will stick when it finds a stud. To see what Jason learned about stud finders, see p. 54.



Rare earth magnet

4 GIANT JIGSAW BLADE

For his jigsaw test (p. 41), associate editor Jay Cork bought an array of blades, including this 10-in. monster (\$10 online). It puts a strain on the saw, but it gets you straight or curved cuts in thick material. It also allows your jigsaw to cut like a reciprocating saw, though not nearly as fast.



Bosch 10" blade

Standard 4" blade

5 JIGSAW GENESIS

In 1946, Albert Kaufmann mounted a saw blade in his wife's sewing machine, and his first jigsaw went on sale the following year. It's unknown whether Mrs. Kaufmann ever got her sewing machine back.



INSTALLS IN LESS TIME. BACKED FOR A **LIFETIME.**

It's a good time to be a doer. Especially if you want to redo your floors. The Home Depot's LifeProof™ vinyl plank flooring features quick click-lock installation. And it's scratch-resistant. Available in over 70 waterproof colors. And backed for life. Learn more at <http://homedepot.com/Vinyl-Plank/LifeProof>.

How doers get more done.™



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Here are 11 great uses
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outside your shop.

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

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DEPARTMENTS

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A drip catcher for liquid detergent, instant ink remover, and a great place to stash cash.

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A night-light nightmare, a fast way to ruin new carpet, and the wrong way to find a water line.



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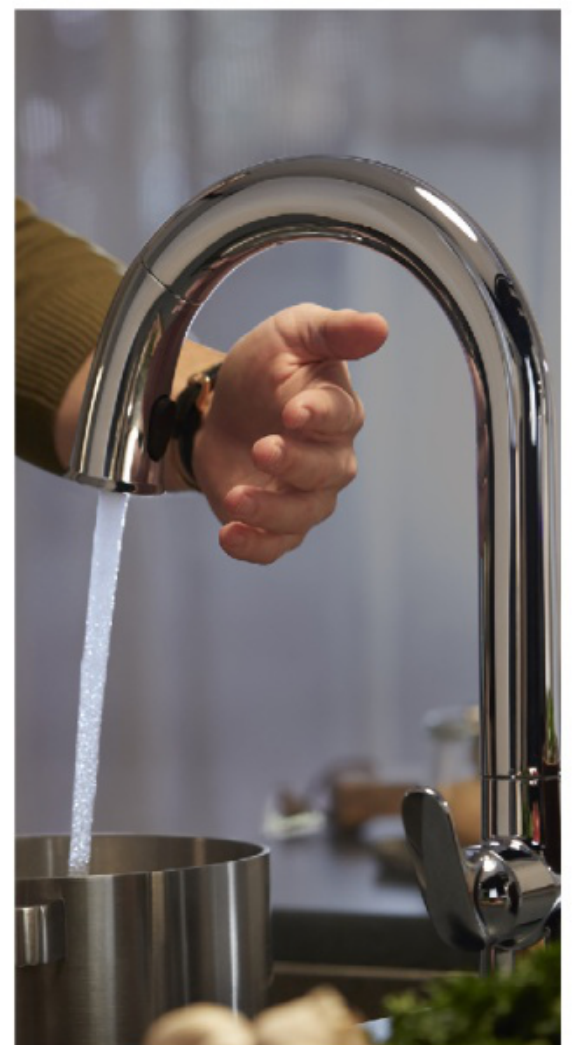
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TOP: GOODLUZ/SHUTTERSTOCK BOTTOM RIGHT: KOHLER

Meet the Watch That Shook Up Switzerland

A watch that revolutionized timekeeping at a price equally as radical.

In the history of timepieces, few moments are more important than the creation of the world's first Piezo timepiece. First released to the public in 1969, the watch turned the entire industry on its head, ushering in a new era of timekeeping. It's this legacy that we're honoring with the *Timemaster Watch*, available only through Stauer at a price only we can offer.

Prior to Piezo watches, gravity-driven Swiss watches were the standard bearer of precision timekeeping. But all that changed when the first commercially available Piezo watch came onto the market.

The result of ten years of research and development by some of the world's top engineers, they discovered that when you squeeze a certain type of crystal, it generates a tiny electric current. And, if you pass electricity through the crystal, it vibrates at a precise frequency—exactly 32,768 times each second. When it came on the market, the Piezo watch was the most dependable timepiece available, accurate to 0.2 seconds per day. Today, it's still considered a spectacular advance in electrical engineering.

“It was like a magnum bullet shot at the most sensitive spot of the mechanical watch industry... Switzerland was terrified.” —Ariel Adams of A Blog to Watch.

With the *Timemaster* we've set one of the world's most important mechanical advances inside a decidedly masculine case. A handsome prodigy in rich leather and gold-finished stainless steel. The simplicity of the watch's case belies an ornately detailed dial, which reflects the prestige of this timepiece.

Call today to secure your own marvel of timekeeping history. Because we work directly with our own craftsman we're able to offer the *Timemaster* at a fraction of the price that many Piezo watches cost. But a watch like this doesn't come along every day. Call today before time runs out and they're gone.

Your satisfaction is 100% guaranteed. Spend some time with this engineering masterpiece for one month. If you're not convinced you got excellence for less, simply send it back within 30 days for a refund of the item price. But we're betting this timekeeping pioneer is a keeper.

Timemaster Piezo Watch ~~\$299~~*

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- Date window display
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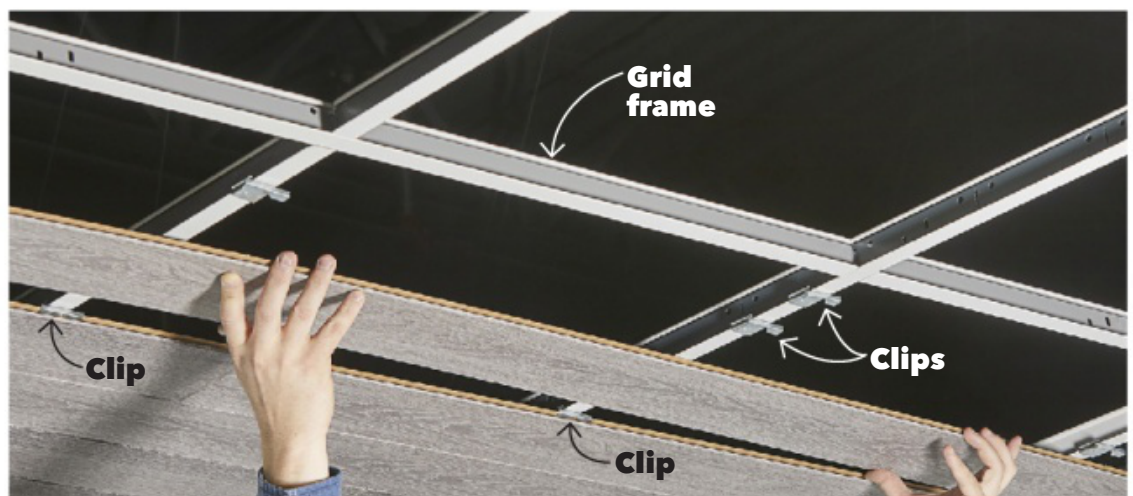
Stuff We Love

Our favorite DIY tools, materials + gear

Fast & easy ceiling makeover

These Armstrong WoodHaven Ceiling Planks easily install right over a suspended ceiling system. The clever Easy Up clips snap onto the grid and into grooves in the planks. The only nails you need are for any trim against the wall. You can go from bland acoustical tiles to a beautiful planked ceiling in a week-end without breaking the bank.

WoodHaven Ceiling Planks are available in several styles and colors and start at about \$2.50 to \$4 per sq. ft. For more information, visit armstrongceilings.com.



Remove the drop ceiling tiles and snap the Easy Up clips onto the grid frame. The clips fit into the groove and hold the plank in place. Push the tongue of the next board into the groove and repeat.



Compact square

A rafter square is standard cargo in most tool belts, and until now, you actually needed a tool belt to carry one around. Enter the Milwaukee 4-1/2-in. Trim Square. This is a precision-milled aluminum rafter square that will fit in your back pocket. The anodized red finish and laser etched markings make it easy to read, even in low light. It's available at some home centers and online for \$11.



EASY RAISED BEDS

With Birdies Raised Beds, you can have raised garden beds in about half an hour. The kits include several panels that are ready to assemble in six different configurations to suit your space. Just bolt the panels together and fill with soil. The panels, made from powder-coated steel, are available in three colors. You can order a 15-in.-tall garden bed for \$135 or a 30-in. for \$200 at epicgardening.com.



BEST AIR HOSE EVER

Unlike rubber air hoses, Ridgid's Lay Flat hose is lightweight and non-marring. Unlike polyurethane hoses, it doesn't form curly tangles; you won't feel like you're wrestling with an enormous Slinky toy. To avoid kinks, it has swivel fittings on both ends. But as usual, superiority carries a high price tag: A 50-ft. Lay Flat hose costs about \$45 at The Home Depot.

BOTTOM LEFT: BIRDIES GARDEN PRODUCTS



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



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

THE ONE TIME, LIFETIME LAWN SOLUTION!



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

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

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

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

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

2 NO NEED TO DIG UP OLD GRASS

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

3 ENVIRONMENTALLY FRIENDLY

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

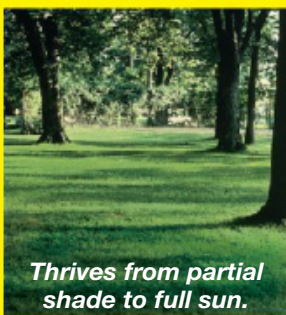
4 FOR SLOPES, PLAY AREAS, BARE SPOTS AND PARTIAL SHADE

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

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

5 IT STAYS GREEN IN SPITE OF HEAT AND DROUGHT

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



Thrives from partial shade to full sun.



Plant it from plugs.

6 CHOKES OUT CRABGRASS AND WEEDS ALL SUMMER

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

7 NOW 3 WAYS TO START YOUR AMAZOY ZOYSIA LAWN!

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

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

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

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

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

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

Max Plugs	Free Plugs	Grass Sheets	Your PRICE	+ Shipping	SAVINGS
300	—	2	\$29.95	\$15.00	—
500	+100	4	\$50.00	\$17.00	25%
750	+150	6	\$66.00	\$20.00	36%
1100	+400	10	\$95.00	\$30.00	44%
2000	+1000	20	\$165.00	\$50.00	52%

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

Super Plugs	Free Plugs	Tray	Your PRICE	+ Shipping	SAVINGS
15	—	1	\$24.95	\$10.00	—
60	+15	5	\$90.00	\$22.00	35%
95	+25	8	\$110.00	\$32.00	49%
120	+30	10	\$125.00	\$36.00	53%
180	+45	15	\$180.00	\$50.00	56%

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

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THE PERFECT LENGTH EXTENSION POLE

The Wooster Sherlock GT Convertible extension pole has a few pro features that make it a great option for DIYers. Many pro painters use longer poles, but the 2 ft. to 4 ft. version is the perfect length for painting rooms with 8-ft. ceilings. The pole extends long enough that you can paint up to the ceiling without using a ladder but not so long that you'll knock over paint pails.

The hexagonal pole uses a locking system that requires no twisting. When it's paired with a Wooster roller frame, the bayonet tip will lock the frame in place. It won't come loose, and you can quickly change out your painting tool with the press of a lever. The Sherlock GT in this length is available for \$25 at paint stores and online.



Locking lever

See-in-the-dark tape measure

There's a lot to like about Lufkin's Shockforce tape measures. What I like best are the markings: big, bold numbers on both sides of the blade and increments of 1/16 in. (1/32-in. marks are just clutter, in my opinion). The Nite Eye version—neon green on black—takes getting used to, but it's easier to read in dim basements, and the matte coating prevents glare in bright conditions. I have a stack of tape measures, but this is the one that stays in my tool belt and gets used. The 25-ft. tape costs about \$30 online.

GARY WENTZ, EDITOR-IN-CHIEF



LISTEN AND TALK WHILE YOU WORK

When you're working with loud equipment, hearing protection is a necessity, but why work in silence? WorkTunes Connect Hearing Protectors from 3M wirelessly connect to your smartphone via Bluetooth so you can listen to your favorite songs and podcasts. I found them comfortable and easy to pair, and I was pleased with the high sound quality. They also have a backup 3.5mm audio jack for non-Bluetooth connectivity and a microphone for phone calls. Their noise reduction rating is 24 decibels, which is more than adequate for most situations but lower than that of some other earmuffs. They cost about \$50 online.

JASON INGOLFSLAND,
ASSOCIATE EDITOR

LIVE LIFE WITHOUT PAIN

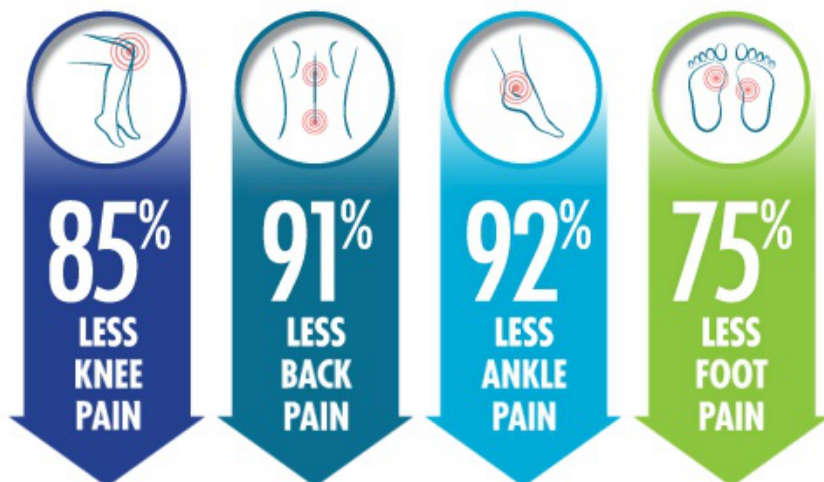
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LENGTHS

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of my new pants.
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and enjoyable to
wear. I'm coming
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Sizes 32-52
8.5" (22cm) inside leg
AF10029 OXU

ELASTIC WAIST PANTS
~~\$54~~ **\$27 SAVE \$27**

Sizes 32-52
27" (68.5cm) inside leg **AC10773 OXU**
29" (74cm) inside leg **AC10038 OXU**
31" (79cm) inside leg **AC10039 OXU**
Sizes 32-48
33" (84cm) inside leg **AC10040 OXU**
Sizes 34-48
35" (89cm) inside leg **AC10041 OXU**

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Catch detergent drips

To keep detergent from dripping all over your laundry room floor, add a wire handle to the cup. Poke two holes in the cup, thread wire through the holes, and hang the cup from the spout to catch the drips.

CHRIS BOULE

Copper
wire bail



INSTANT INK REMOVER

Alcohol-based hand sanitizers do a good job of removing permanent marker ink. They reactivate the ink, allowing you to easily wipe the stain off. Cover the entire ink stain with hand sanitizer. Let it sit for about a minute and then wipe off the ink with a soft rag.

RAY WESTERHOFF



DIY EDGE-BAND CLAMPS

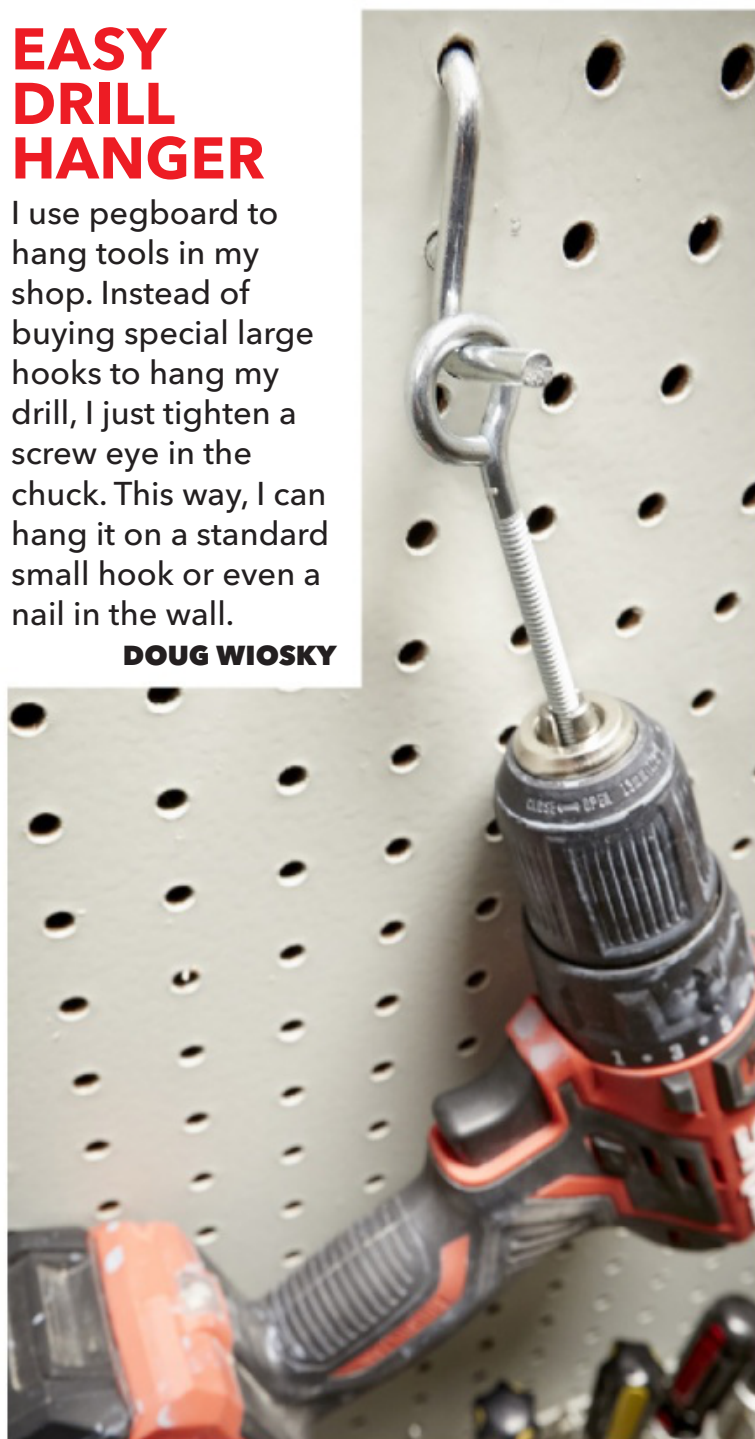
I could buy clamps ready-made for gluing on edge banding, but I came up with a way to make my own while working on a project recently. All you need are spring clamps and rubber bands. Poke the rubber bands through the holes in the jaws of the spring clamp, and then loop them around the end of the clamp to hold them in place. It works great!

TOM KRAMIN

EASY DRILL HANGER

I use pegboard to hang tools in my shop. Instead of buying special large hooks to hang my drill, I just tighten a screw eye in the chuck. This way, I can hang it on a standard small hook or even a nail in the wall.

DOUG WIOSKY



Dent Preventer

Prevent dings in finished surfaces by cutting a kerf into a shim and then slipping the shim around the nail as you hammer it in. The shim shields the surface against errant hammer blows.

JEFF WINZELER



HANDY SCREW LUBE

If you enjoy working with hardwoods, you know how important it is to lubricate screws. It makes driving the fasteners easier and reduces the amount of heat produced. But what if you don't have a bar of soap or a pile of beeswax nearby? Reach for a tube of lip balm. It does a fine job of lubricating screws, and it fits in your pocket.

DEAN GUTHRIE



No-Mess Pencil Sharpener

Small pencil sharpeners are convenient, but the shavings make a mess unless you sharpen over a trash can. Create a container for shavings by drilling a hole in the lid of a pill bottle, hot-gluing the sharpener to it, and then screwing the lid back on the bottle.

ELLEN HAAGE



JUST-IN-CASE CASH

These days, you're much more likely to forget your wallet at home than you are your phone. Keep a little extra cash tucked behind your phone case for emergencies.

J. M. ROTZENBERG



EASY-CLEAN GARBAGE CAN

Food juices leaking from garbage bags into the bottom of your garbage bin make a nasty and smelly mess. Put newspapers—or even some sawdust—in the bottom of the bin, under the bag, to soak up liquids and make cleanup easier.

NATE SOHNS



PAPER TOWEL CLAMP

I like to keep a roll of shop towels at hand when I'm at the workbench. To prevent the towels from rolling off the bench, I clamp a quick-grip-style clamp to the edge of the bench and slip the paper towel roll over the clamp's rod.

BRAD JOHNSON



Blade protector

Keep your hedge trimmer blades from getting dinged (or damaging other stuff) when they're not in use. Cut pipe insulation to length, slip it on the blades and secure with short bungee cords.

WILL STEARLEY

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I have

CLL

chronic
lymphocytic
leukemia

IMPORTANT SIDE EFFECT INFORMATION

What is IMBRUVICA® (ibrutinib)?

IMBRUVICA® (ibrutinib) is a prescription medicine used to treat adults with:

- Chronic lymphocytic leukemia (CLL)/Small lymphocytic lymphoma (SLL)
- Chronic lymphocytic leukemia (CLL)/Small lymphocytic lymphoma (SLL) with 17p deletion

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

Before taking IMBRUVICA®, tell your healthcare provider about all of your medical conditions, including if you:

- have had recent surgery or plan to have surgery. Your healthcare provider may stop IMBRUVICA® for any planned medical, surgical, or dental procedure.
- have bleeding problems.
- have or had heart rhythm problems, smoke, or have a medical condition that increases your risk of heart disease, such as high blood pressure, high cholesterol, or diabetes.
- have an infection.
- have liver problems.
- are pregnant or plan to become pregnant. IMBRUVICA® can harm your unborn baby. If you are able to become pregnant, your healthcare provider will do a pregnancy test before starting treatment with IMBRUVICA®.
 - **Females** should not become pregnant during treatment and for 1 month after the last dose of IMBRUVICA®.
 - **Males** should avoid getting female partners pregnant during treatment and for 1 month after the last dose of IMBRUVICA®.
- are breastfeeding or plan to breastfeed. You and your healthcare provider should decide if you will take IMBRUVICA® or breastfeed.

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

How should I take IMBRUVICA®?

- Take IMBRUVICA® exactly as your healthcare provider tells you to take it.

- Take IMBRUVICA® 1 time a day.
- Swallow IMBRUVICA® capsules and tablets whole with a glass of water.
- Do not open, break or chew IMBRUVICA® capsules.
- Do not cut, crush or chew IMBRUVICA® tablets.
- Take IMBRUVICA® at about the same time each day.
- If you miss a dose of IMBRUVICA® take it as soon as you remember on the same day. Take your next dose of IMBRUVICA® at your regular time on the next day. Do not take extra doses of IMBRUVICA® to make up for a missed dose.
- If you take too much IMBRUVICA®, call your healthcare provider or go to the nearest hospital emergency room right away.

What should I avoid while taking IMBRUVICA®?

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

What are the possible side effects of IMBRUVICA®?

IMBRUVICA® may cause serious side effects, including:

- **Bleeding problems (hemorrhage) are common** during treatment with IMBRUVICA®, and can also be serious and may lead to death. Your risk of bleeding may increase if you are also taking a blood thinner medicine. Tell your healthcare provider if you have any signs of bleeding, including: blood in your stools or black stools (looks like tar), pink or brown urine, unexpected bleeding, or bleeding that is severe or that you cannot control, vomit blood or vomit looks like coffee grounds, cough up blood or blood clots, increased bruising, dizziness, weakness, confusion, change in your speech, or a headache that lasts a long time.
- **Infections** can happen during treatment with IMBRUVICA®. These infections can be serious and may lead to death. Tell your healthcare provider right away if you have fever, chills, weakness, confusion, or other signs or symptoms of an infection during treatment with IMBRUVICA®.
- **Decrease in blood cell counts.** Decreased blood counts (white blood cells, platelets, and red blood cells) are common with IMBRUVICA®, but can also be severe. Your healthcare provider should do monthly blood tests to check your blood counts.

I took charge by asking my doctor if imbruvica[®] was right for me

IMBRUVICA[®] (ibrutinib) has helped many people with CLL/SLL live longer without their disease progressing.¹

- In a clinical trial of 269 adults with CLL/SLL, IMBRUVICA[®] lowered the risk of disease progression or death by 84% compared to a chemotherapy (chlorambucil)¹
- At a median follow-up of 18 months, 11% of IMBRUVICA[®] patients had disease progression or died compared to 48% taking a chemotherapy (chlorambucil)^{1,2}

IMBRUVICA[®] will not work for every patient. Individual results may vary.

IMBRUVICA[®] is not chemotherapy, but a once-daily oral therapy¹

Ask your doctor if IMBRUVICA[®] is right for you

- **Heart rhythm problems (ventricular arrhythmias, atrial fibrillation and atrial flutter).** Serious heart rhythm problems and death have happened in people treated with IMBRUVICA[®], especially in people who have an increased risk for heart disease, have an infection, or who have had heart rhythm problems in the past. Tell your healthcare provider if you get any symptoms of heart rhythm problems, such as feeling as if your heart is beating fast and irregular, lightheadedness, dizziness, shortness of breath, chest discomfort, or you faint. If you develop any of these symptoms, your healthcare provider may do a test to check your heart (ECG) and may change your IMBRUVICA[®] dose.
- **High blood pressure (hypertension).** New or worsening high blood pressure has happened in people treated with IMBRUVICA[®]. Your healthcare provider may start you on blood pressure medicine or change current medicines to treat your blood pressure.
- **Second primary cancers.** New cancers have happened during treatment with IMBRUVICA[®], including cancers of the skin or other organs.
- **Tumor lysis syndrome (TLS).** TLS is caused by the fast breakdown of cancer cells. TLS can cause kidney failure and the need for dialysis treatment, abnormal heart rhythm, seizure, and sometimes death. Your healthcare provider may do blood tests to check you for TLS.

The most common side effects of IMBRUVICA[®] in adults with B-cell malignancies (MCL, CLL/SLL, WM and MZL) include:

- | | | | |
|------------------------|------------|-------------|---------|
| • diarrhea | • rash | • nausea | • fever |
| • muscle and bone pain | • bruising | • tiredness | |

The most common side effects of IMBRUVICA[®] in adults with cGVHD include:

- | | | | |
|-------------|----------------------------|-----------------|----------|
| • tiredness | • diarrhea | • muscle spasms | • nausea |
| • bruising | • mouth sores (stomatitis) | • pneumonia | |

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

These are not all the possible side effects of IMBRUVICA[®]. Call your doctor for medical advice about side effects. You may report side effects to FDA at 1-800-FDA-1088.

General information about the safe and effective use of IMBRUVICA[®]

Medicines are sometimes prescribed for purposes other than those listed in a Patient Information leaflet. Do not use IMBRUVICA[®] for a condition for which it was not prescribed. Do not give IMBRUVICA[®] to other people, even if they have the same symptoms that you have. It may harm them. You can ask your pharmacist or healthcare provider for information about IMBRUVICA[®] that is written for health professionals.

Please see the full Important Product Information on the next pages.

References: 1. IMBRUVICA[®] (ibrutinib) Prescribing Information. Pharmacyclics LLC. 2019. 2. Burger JA, Tedeschi A, Barr PM, et al. Ibrutinib as initial therapy for patients with chronic lymphocytic leukemia. *N Engl J Med.* 2015;373(25):2425-2437.

If you have questions

Call us at 1-877-877-3536 or visit imbruvica.com/explore



imbruvica[®]
(ibrutinib)

560, 420, 280, 140 mg tablets | 140, 70 mg capsules

PATIENT INFORMATION	
IMBRUVICA (im-BRU-vih-kuh) (ibrutinib) capsules	IMBRUVICA (im-BRU-vih-kuh) (ibrutinib) tablets
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|-------------|----------------------------|-------------|
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These are not all the possible side effects of IMBRUVICA.

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

How should I store IMBRUVICA?

- Store IMBRUVICA capsules and tablets at room temperature between 68°F to 77°F (20°C to 25°C).
- Keep IMBRUVICA capsules in the original container with the lid tightly closed.
- Keep IMBRUVICA tablets in the original carton.

Keep IMBRUVICA and all medicines out of the reach of children.

General information about the safe and effective use of IMBRUVICA.

Medicines are sometimes prescribed for purposes other than those listed in a Patient Information leaflet. Do not use IMBRUVICA for a condition for which it was not prescribed. Do not give IMBRUVICA to other people, even if they have the same symptoms that you have. It may harm them. You can ask your pharmacist or healthcare provider for information about IMBRUVICA that is written for health professionals.

What are the ingredients in IMBRUVICA?

Active ingredient: ibrutinib

Inactive ingredients:

IMBRUVICA capsules: croscarmellose sodium, magnesium stearate, microcrystalline cellulose, and sodium lauryl sulfate. The 70 mg capsule shell contains gelatin, titanium dioxide, yellow iron oxide, and black ink. The 140 mg capsule shell contains gelatin, titanium dioxide, and black ink.

IMBRUVICA tablets: colloidal silicon dioxide, croscarmellose sodium, lactose monohydrate, magnesium stearate, microcrystalline cellulose, povidone, and sodium lauryl sulfate. The film coating for each tablet contains ferrousferic oxide (140 mg, 280 mg, and 420 mg tablets), polyvinyl alcohol, polyethylene glycol, red iron oxide (280 mg and 560 mg tablets), talc, titanium dioxide, and yellow iron oxide (140 mg, 420 mg, and 560 mg tablets).

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

homeLAB

A TESTING ZONE FOR *INNOVATIONS*

EASY-CLEAN CARPET

The secret is in the built-in pad

BY JASON INGOLFSLAND

Carpet excels at holding dirt. Even with frequent vacuuming, it's hard to remove dirt deeply embedded into the matted fibers. Recently, I came across Mohawk Air.o hypoallergenic carpet, flooring that claims to release more dust and dirt with each vacuuming, thanks to its unique design with better airflow. This sounded like a great concept to test, so I bought a two-yard sample of the Air.o (\$2.51 per sq. ft.) and a comparable standard carpet (\$1.69 per sq. ft.) and got them dirty.





The homeLAB test

I cut a sample of both carpets, then fastened foam pad to the standard carpet (the Air.o has an integrated felt pad). I weighed each sample on a food scale, poured 7 oz. of sandy dirt on them, massaged it deep in the fibers, then vacuumed. I repeated this process three times before a final weighing. By subtracting the first weight reading from the final weight, I could see how much dirt the samples retained.



Mohawk Air.o gets clean easily

The Mohawk Air.o carpet sample retained just a little dirt (0.3 oz). In contrast, the standard sample held on to almost twice as much dirt. Air.o carpet costs more but doesn't require a separate pad, which typically costs \$2 to \$8 per yard.

MOHAWK AIR.O CARPET

The built-in felt pad is engineered for airflow, allowing dirt to be suctioned away. It also stays flat with fewer wrinkles than a foam pad.



STANDARD CARPET AND PAD

Carpet with a woven backing requires a separate pad.





Thin vs. Thick Vinyl Flooring

Vinyl plank flooring costs anywhere from \$1.69 to \$3.19 per square foot. More expensive flooring is usually thicker and sometimes more attractive, but we wondered if it's more durable. To find out, we bought the most expensive option and the cheapest at a local home center, then did some tests.

WEAR LAYER

Vinyl flooring has a protective wear layer. This is measured in mils (one thousandth of an inch) and gives the flooring added durability. The higher the mil count, the greater the durability. In our case, the thin vinyl flooring we tested was 4 mils and the thick was 6 mils.

DROP TEST

Vinyl floors are susceptible to damage from falling objects. For our first test, we dropped a screwdriver from roughly 3 ft. onto each thick and thin floor. We dropped it three times. The two floors showed similar tiny surface dings.

ABRASION TEST

For this test, we used a random orbit sander with 180-grit sandpaper to simulate abrasion over a long period of time. First, we held the sander on the two types of flooring for 30 seconds each. The sander wore down the thin flooring more than the thick, leaving a

large, white circular mark. The thick flooring showed light, barely visible marks and some wear at the seams. For the second test, we moved the sander back and forth over the pieces of vinyl flooring for nine minutes each. The thin vinyl wore down quickly, leaving a streak of white, while the thick hardly showed any visible damage at all.

THICK IS TOUGHER

Thin vinyl flooring is cheaper, but in our tests, it wasn't as durable as the thick stuff. While both showed some damage from dropped items, the thick held strong against abrasion.

Make a dumb smoke detector smart—and save!

In my old house, every time I used the range, the smoke alarms would trigger. I'd have to grab a stool and air out the alarm or just disconnect it entirely. It made me want to microwave everything!

Smart smoke alarms today, like the Nest Protect, allow you to disable nuisance alarms from your phone. Unfortunately, the Nest Protect costs about \$120. I

looked for something cheaper and found the Roost smart battery, a 9-volt with a brain, which cost about \$35 on getroost.com. Intrigued, I purchased a few and tested them in the homeLAB.

Installation is as simple as putting a battery in a smoke alarm. To connect your smartphone to the battery, you need to download the Roost app (available on

Android and iPhone) and follow the prompts. Setup took a little less than five minutes, thanks to the app's simple, intuitive design. I did a few simple tests on the smoke alarm, and the batteries passed every test. Once the alarm triggered, a notification was quickly sent to my tablet. I had the option of snoozing the alarm or taking action. Roost provides a button to call the authorities in a real emergency.

It has a few other handy features, like allowing friends and family to monitor the alarm, and it reports the status of the battery life. Two features it doesn't have are simultaneous alarms on non-hardwired smoke detectors and remote testing. Those features put it up to about par with the Nest. But even without them, the Roost smart battery is a great little device at a reasonable price.



Do Stainless Steel Protectors Work?

Stainless steel appliances are prone to fingerprints, smudges and water stains. The refrigerator and dishwasher in our homeLAB are no exception, so I used them to test products that claim to not only clean the surface but also help it resist fingerprints and smudges. I bought three stainless steel cleaning products—Scotchgard (\$7), Weiman (\$6) and Magic (\$5)—and put them to work.

The homeLAB test

On both the refrigerator and the dishwasher, I taped off four sections, one for each product, and left another section bare. After applying the products, I did my best to create fingerprints and smudges for a couple of weeks. I also applied water to make water stains, a process I repeated three times.

Not the protection you're looking for

All three products did a good job of cleaning the stainless steel. In terms of preventing fingerprints, smudges and stains, they were less impressive. They did lessen the problem, but the treated sections showed only slightly fewer marks than the untreated section. And even that small amount of protection seemed to diminish within just a few days. There wasn't a large difference in protection between the products, but both Scotchgard and Magic performed slightly better than Weiman.





Soundproofing Solution: *Do putty pads block noise?*

Electrical junction boxes are a weak point in your wall for soundproofing. One solution is to wrap boxes with “putty pads” to block noise. Some pads are labeled for fire blocking, and others are labeled for sound, but they’re essentially the same stuff: sheets of putty that you mold over the box. They’re easy to install, but do they really work? To find out, I bought a box online (\$60 for 10 pads), installed them and tested them.



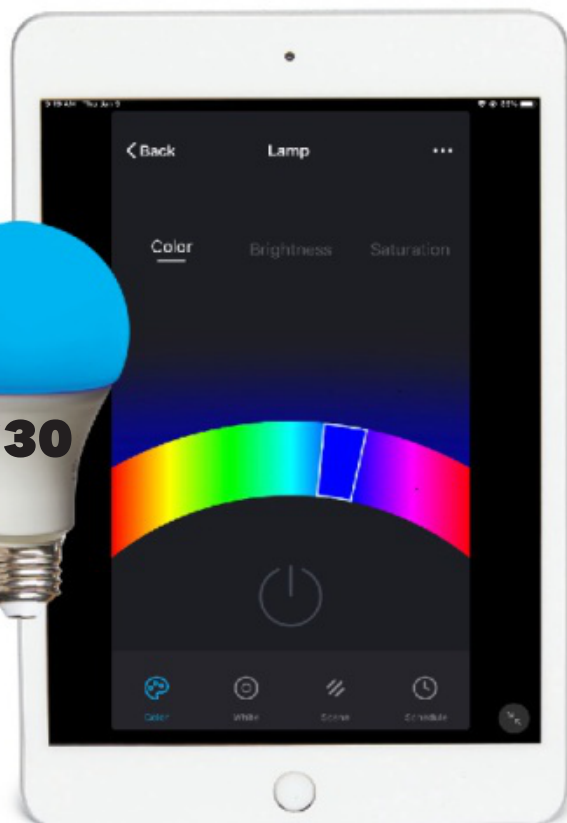
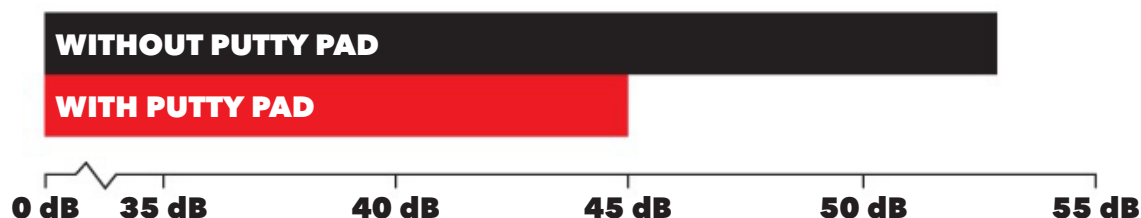
The homeLAB test

With the junction box bare, I placed a decibel meter against the outlet on one side of the wall while playing my favorite music on the other side of the wall. I checked the decibel level with the music playing, and then installed the putty pad and checked it again.

What I found

The putty pad worked much better than I had expected. The pad sealed the junction box and blocked the music on the other side of the wall. If you’re putting in a new wall, putty pads are a relatively inexpensive and effective way to reduce sound transmission.

Test results



Geeni App



LIFX App

up. But they vary greatly in price and I wondered why. So I bought bulbs at two different price levels (Geeni, \$30, and LIFX, \$60) online and gave them a try.

THE RESULTS

Both bulbs performed as promised. But with smart bulbs, the app to control your lighting experience makes all the difference. The LIFX app, for example, gives you full control of your lights on one screen, while the Geeni forces you to toggle between screens. The LIFX app also provides more color, warmth and brightness options than the Geeni, plus themes and effects, and you can even program the lights to change in warmth from dusk to dawn. Using a light meter, I also found that the LIFX is also substantially brighter, though the two bulbs have the same maximum brightness.

Smart Bulbs: What's the Smart Buy?

Smart lightbulbs let you adjust their warmth, light, color and other qualities for the time of day, your

activity and your mood. You can, for example, program them to gradually turn on when you want to wake

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3-1/2" VERTICAL CROWN MOLDING CAPACITY
2-5/8" TALL SLIDING FENCES
LASER GUIDE LIGHT

\$129.99 ~~\$153.99~~
SAVE \$88

COMPARE TO
PORTER-CABLE
WOODWORKER
MODEL: 6637

\$218.71

Blade sold separately.

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56775/61969 shown

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BETTER **ADMIRAL**
Superior Features and Accuracy

SUPER COUPON
Customer Rating ★★★★★

12" DUAL-BEVEL SLIDING COMPOUND MITER SAW WITH LED AND LASER GUIDE

6-1/2" VERTICAL CROWN MOLDING CAPACITY
4-1/2" TALL SLIDING FENCES
LASER GUIDE LIGHT & LED WORK LIGHT

\$179 ~~\$193.99~~
SAVE \$90

COMPARE TO
RYOBI
MODEL: TSS12X

\$269

FREE BLADE INCLUDED
\$19.99 VALUE

ITEM 64686

31392264

LIMIT 1 - Coupon valid through 5/17/20*

BEST **HERCULES**
Jobsite Features and Accuracy

SUPER COUPON
Customer Rating ★★★★★

PROFESSIONAL 12" DUAL-BEVEL SLIDING COMPOUND MITER SAW WITH LED SHADOW GUIDE

7-1/2" VERTICAL CROWN MOLDING CAPACITY
4-3/4" TALL SLIDING FENCES
LED PRECISION SHADOW GUIDE LIGHT

\$329 ~~\$349.99~~
SAVE \$270

COMPARE TO
DEWALT
MODEL: DWS12

\$599

FREE BLADE INCLUDED
\$44.99 VALUE

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LIMIT 1 - Coupon valid through 5/17/20*

SUPER COUPON

20% OFF

ANY SINGLE ITEM*

31371426

Limit 1 coupon per customer per day. Save 20% on any 1 item purchased. *Cannot be used with other discount, coupon or any of the following items or brands: Inside Track Club membership, Extended Service Plan, gift card, open box item, 3 day Paying Last Sale item, compressors, floor jacks, sales, storage cabinets, chests or carts, trailers, welders, Admiral, Ames, Atlas, Bauer, Central Machinery, Cobra, CoverPro, Dayton, Diamondback, Earthquake, Fischer, Hercules, Icon, Jupiter, Lynx, Poulan, Predator, Tailgator, Viking, Vulcan, Zurich. Not valid on prior purchases. Non-transferable. Original coupon must be presented. Valid through 5/17/20.

HARDY **SUPER COUPON**

POWDER-FREE NITRILE GLOVES
PACK OF 100 • 5 mil thickness

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AVAIL. IN SM, MED, LG, XL, XXL

SAVE 59%
\$7.99

COMPARE TO
VENOM
MODEL: VEM145

\$14.97

NOW \$5.99

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31403428

LIMIT 4 - Coupon valid through 5/17/20*

CENTRAL MACHINERY **SUPER COUPON**

16" VARIABLE SPEED SCROLL SAW

Customer Rating ★★★★★

COMPARE TO
PORTER-CABLE
MODEL: PC837SS

\$199

SAVE \$129

NOW \$69.99
~~\$99.99~~

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LIMIT 1 - Coupon valid through 5/17/20*

SUPER COUPON

7 FT. 4" x 9 FT. 6" ALL PURPOSE/WEATHER RESISTANT TARP

Customer Rating ★★★★★

COMPARE TO
BLUE HAWK
MODEL: 88X16-Y

\$878

SAVE 65%

NOW \$299
~~\$499~~

ITEM 69115/69121/69129/69137/69249/877 shown

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LIMIT 6 - Coupon valid through 5/17/20*

SUPER COUPON

FREE

OVER 5,000 5 STAR REVIEWS

SUPER BRIGHT LED/SMD WORK LIGHT/FLASHLIGHT

- Super Strong, Ultra-Lightweight Composite Plastic
- Magnetic Base & 360° Swivel Hook for Hands-Free Operation
- 3-AAA Batteries (included)
- 144 Lumens

ALL IN A SINGLE SUPER POWERFUL LIGHT

ITEM 63878/63991
64005/60586/69667
63601/67227 shown

COMPARE TO
PERFORMANCE
MODEL: W2264

\$13.52

TOOL

31371042

Cannot be used with other discounts or prior purchases. Original coupon must be presented. Valid through 5/17/20 while supplies last. Limit 1 FREE OFF per customer per day.

FORTRESS **SUPER COUPON**

2 GALLON, 1.2 HP, 135 PSI ULTRA-QUIET, OIL-FREE PROFESSIONAL AIR COMPRESSOR

Customer Rating ★★★★★

\$169.99 ~~NOW \$149.99~~

COMPARE TO
CALIFORNIA AIR TOOLS
MODEL: CAT-201GA

\$189

SAVE \$39

ITEM 64688/64596 shown

31411967

LIMIT 1 - Coupon valid through 5/17/20*

BRAUN **SUPER COUPON**

5000 LUMEN 4 FT. LED HANGING SHOP LIGHT

- 30,000 hour LED life
- Sturdy lightweight design (1.75 lbs.)

Customer Rating ★★★★★

NOW \$19.99
~~\$29.99~~

SAVE 33%

ITEM 64410

31423332

LIMIT 4 - Coupon valid through 5/17/20*

PITTSBURGH **SUPER COUPON**

12" RATCHETING BAR CLAMP/SPREADER

LIFETIME WARRANTY

Customer Rating ★★★★★

COMPARE TO
IRWIN
MODEL: 1964718

\$1998

SAVE 85%

NOW \$299
~~\$429~~

ITEM 62123/46807/63017/69222 shown

31425298

LIMIT 4 - Coupon valid through 5/17/20*

Bauer **SUPER COUPON**

15 AMP, 12-1/2" PORTABLE THICKNESS PLANNER

Customer Rating ★★★★★

NOW \$299.99
~~\$349.99~~

ITEM 63445

SAVE \$149

COMPARE TO
DEWALT
MODEL: DW734

\$449

31428728

LIMIT 1 - Coupon valid through 5/17/20*

BANKS **SUPER COUPON**

18 GAUGE BRAD AIR NAILER

Customer Rating ★★★★★

NOW \$24.99
~~\$34.99~~

SAVE 71%

COMPARE TO
DEWALT
MODEL: DWFP12233

\$89

ITEM 64140

31433941

LIMIT 3 - Coupon valid through 5/17/20*

HaulMaster **SUPER COUPON**

18" x 12" MOVER'S DOLLY

Customer Rating ★★★★★

- 1000 lb. capacity

COMPARE TO
BUFFALO TOOLS
MODEL: HDFOOLLY

\$22.99

SAVE 65%

NOW \$7.99
~~\$10.99~~

ITEM 60497/61899/63095/63096/63097/63098 shown

31434053

LIMIT 1 - Coupon valid through 5/17/20*

DE DIAMONDBACK **SUPER COUPON**

7" INDUSTRIAL TILE/BRICK SAW

Customer Rating ★★★★★

NOW \$239.99
~~\$269.99~~

COMPARE TO
KOBALT
MODEL: KWS S7-06

\$339

SAVE \$99

ITEM 64683

31434464

LIMIT 1 - Coupon valid through 5/17/20*

PITTSBURGH **SUPER COUPON**

4 PIECE WOOD CHISEL SET WITH CLEAR PVC HANDLE

LIFETIME WARRANTY

Customer Rating ★★★★★

NOW \$5.99
~~\$7.99~~

SAVE 80%

COMPARE TO
DEWALT
MODEL: DWHT16063

\$29.97

ITEM 42429/69471 shown

31437647

LIMIT 1 - Coupon valid through 5/17/20*

SUPER COUPON

10" PNEUMATIC TIRE

Customer Rating ★★★★★

NOW \$3.99
~~\$5.99~~

SAVE 50%

COMPARE TO
FARM & RANCH
MODEL: FR1055

\$8.09

ITEM 69385/62388/62409/62698/30900 shown

31438655

LIMIT 5 - Coupon valid through 5/17/20*

Bauer **SUPER COUPON**

20V LITHIUM-ION 1/2" COMPACT DRILL/DRIVER KIT

- 450 in. lbs. of torque
- 1.5 amp hour battery
- Weighs 3.4 lbs.

Customer Rating ★★★★★

SAVE \$39

COMPARE TO
RYOBI
MODEL: P1811

\$99

NOW \$59.99
~~\$69.99~~

ITEM 64754
63531 shown

31439379

LIMIT 2 - Coupon valid through 5/17/20*

CENTECH **SUPER COUPON**

AUTOMATIC BATTERY FLOAT CHARGER

Customer Rating ★★★★★

NOW \$4.99
~~\$9.99~~

ITEM 69594/69955/64284/42292 shown

COMPARE TO
SCHUMACHER ELECTRIC
MODEL: SC1

\$30.41

SAVE 83%

31452679

LIMIT 4 - Coupon valid through 5/17/20*

U.S. GENERAL **SUPER COUPON**

26" x 22" SINGLE BANK EXTRA DEEP CABINETS

Customer Rating ★★★★★

NOW \$279.99
~~\$299.99~~

SAVE \$1,470

COMPARE TO
SNAP-ON
MODEL: KBA4000FPD

\$1,750

Item 64434, 64432, 64162, 56104, 56105, 56106

31453260

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ROOM TRANSFORMER

From home office to guest room in seconds

By Brad Holden



WHAT IT TAKES

TIME	COST	SKILL LEVEL
2 days	\$800	Intermediate

TOOLS

Circular saw, cutting guide, miter saw, drill, Forstner bits, handsaw, metric tape, nailer



If you're tight on living space or you want your guest room to double as an office, here's a piece of furniture you'll want to check out. This bed quickly converts to a desk without increasing its footprint. When you switch it back to a bed, the desk stays level, so you can leave all your stuff on it!

A company called Hiddenbed sells bed kits with all the parts precut and ready for assembly. You can also purchase just the hardware kit, which includes the plans, and that's the option shown here. Building the bed yourself instead of buying the precut kit can save you about \$1,200! To make this furniture even more user-friendly, I added a strip of LED lights and attached corkboards to the bed's underside.

Shopping for materials

The hardware for a twin bed costs about \$300 at hiddenbedusa.com. There are also versions for double- and queen-size beds. All the other hardware, fasteners and supplies are available at home centers.

I used maple lumber and plywood from a specialty lumberyard and finished it later with a couple coats of polyurethane. You could save money buying materials from a home center, but the quality won't be as good.



BED POSITION



DESK POSITION

Tip: The hardware kit includes everything needed for the folding mechanism, but not the fasteners used to assemble the bed/desk. The company offers a fastener kit, which I ordered. But, the fasteners in the kit are large-diameter screws with heads that show after assembly. I wanted a cleaner look, so I used glue and trim-head screws instead.

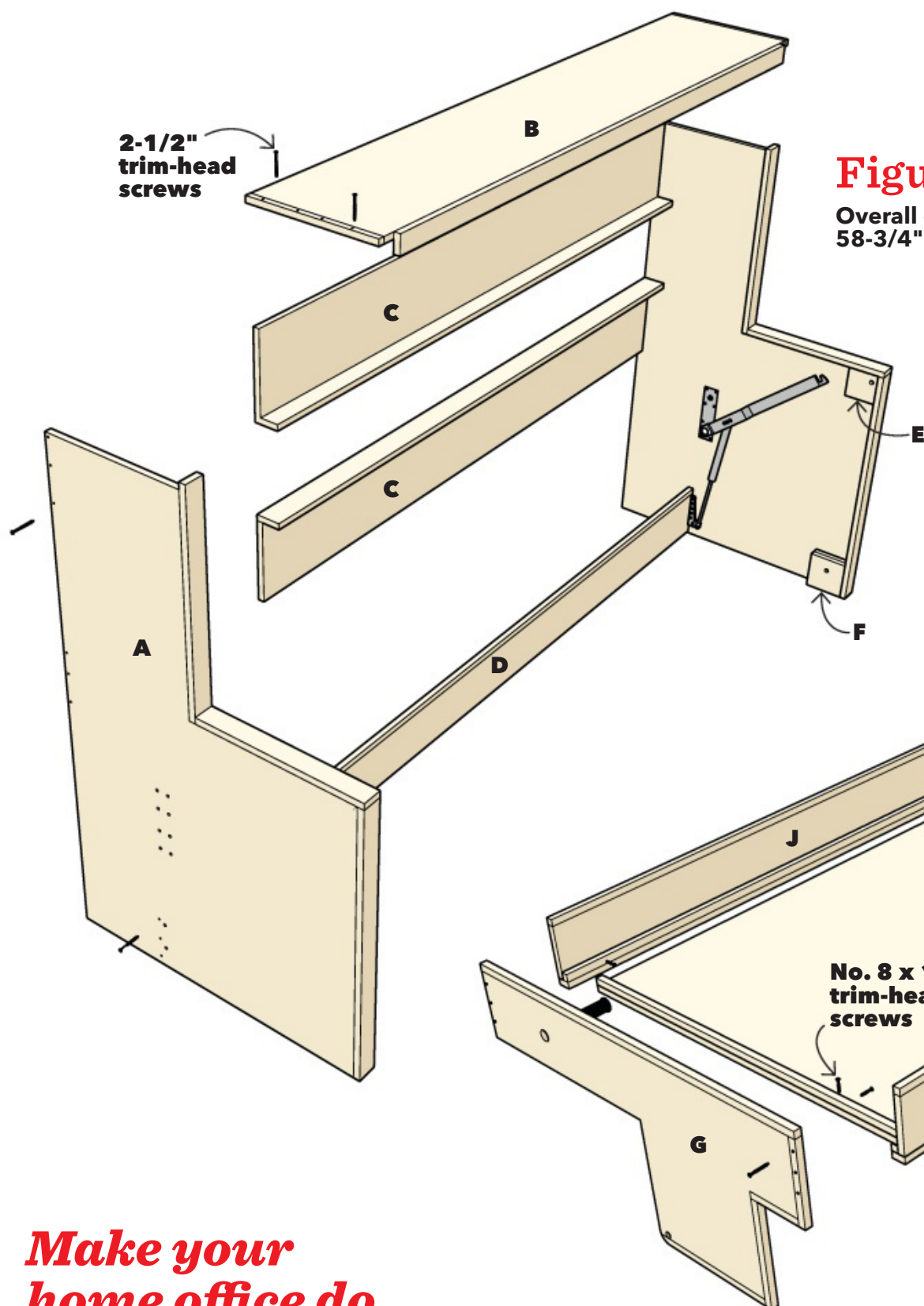


Figure A Cabinet

Overall dimensions:
58-3/4" x 81-1/4" x 36-1/4"

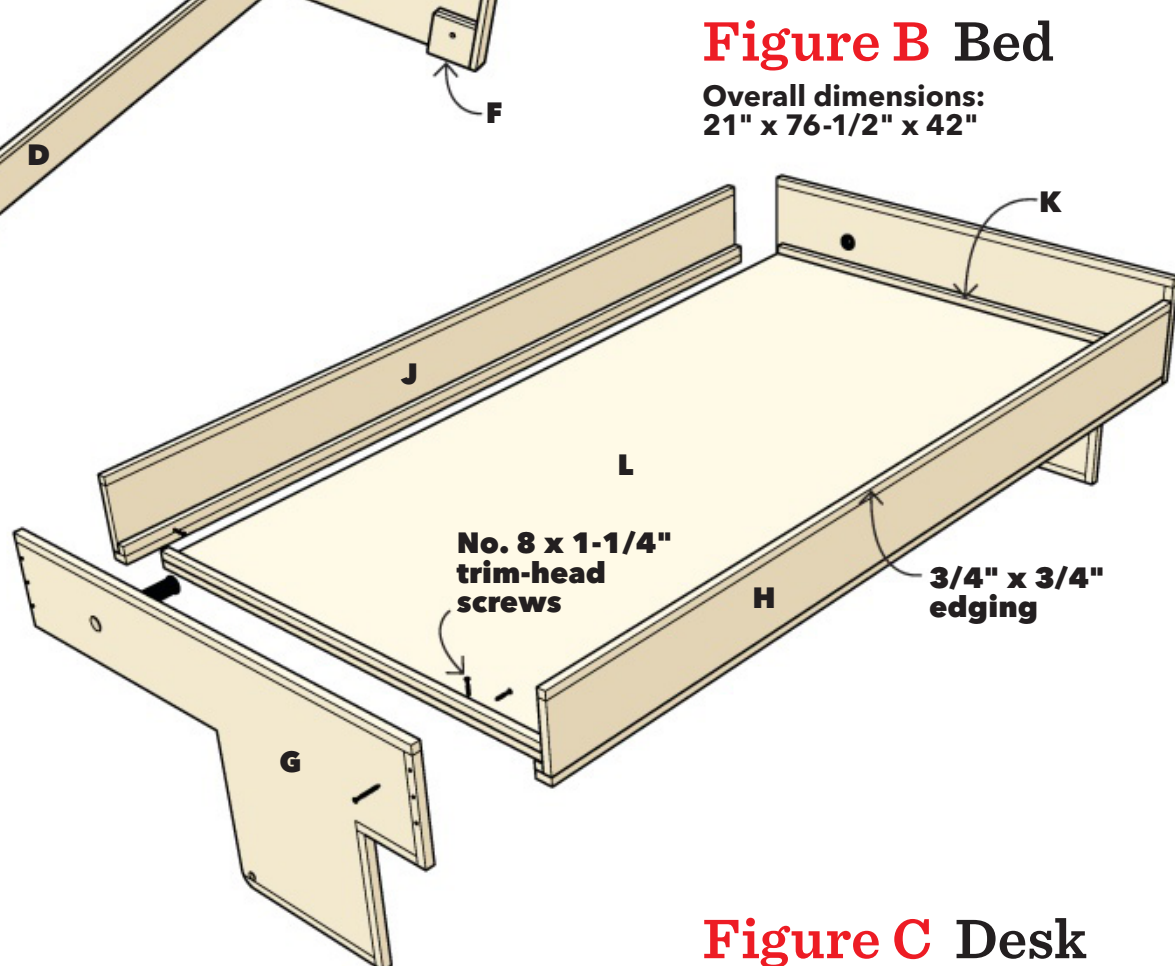


Figure B Bed

Overall dimensions:
21" x 76-1/2" x 42"

Make your home office do double duty as a guest bedroom.

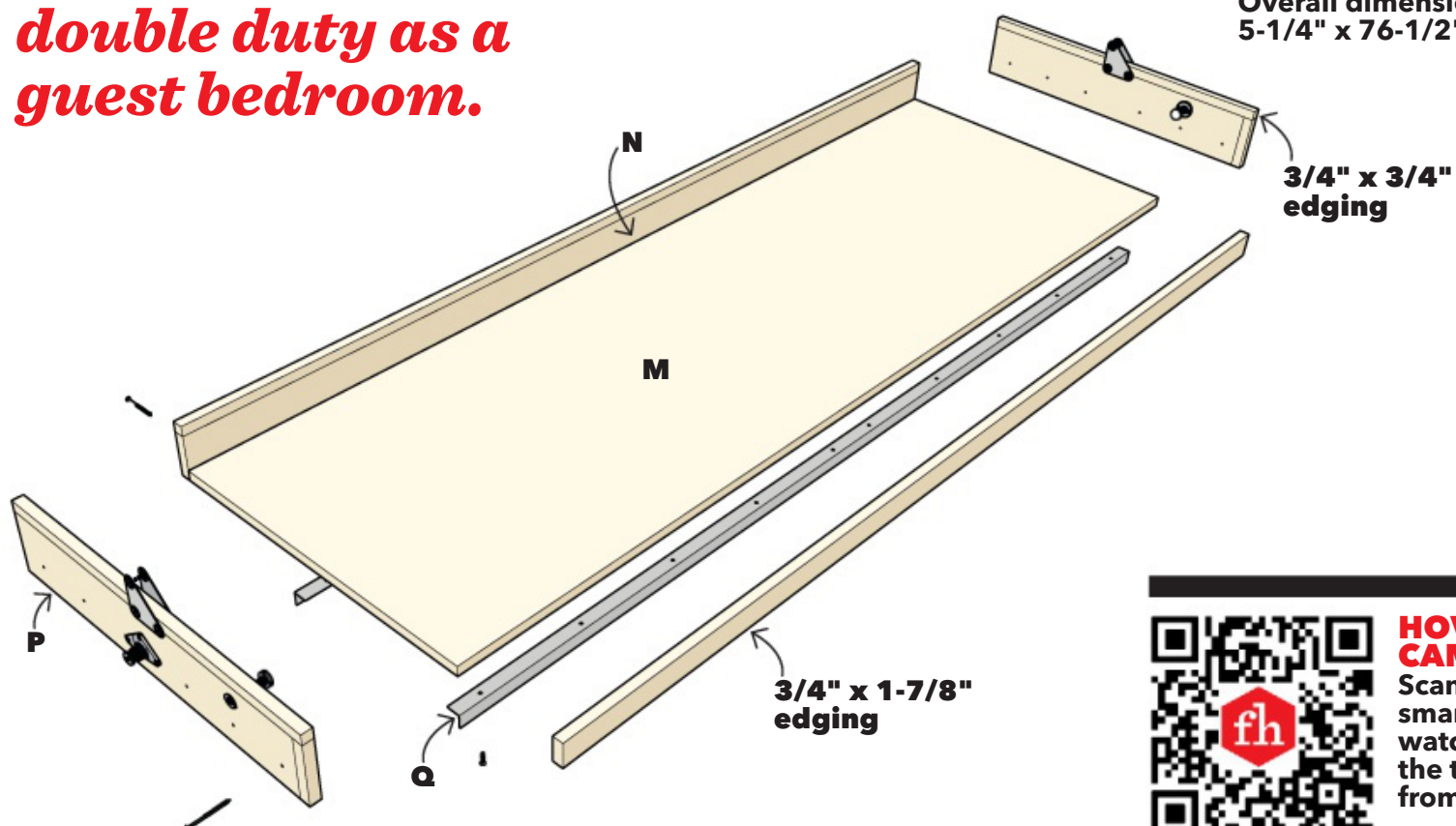


Figure C Desk

Overall dimensions:
5-1/4" x 76-1/2" x 25-1/2"



HOVER YOUR CAMERA HERE
Scan with your smartphone to watch a video of the transformation from bed to desk!

1 CUT THE PARTS

Most of the parts are simple plywood rectangles. But the sides and bed ends have inside corners, requiring stopped cuts. To make these cuts, mark out the cutting lines on plywood. Cut close to the corners using a circular saw with a cutting guide. Finish the cuts with a handsaw, then smooth the cuts with a file or sanding block.

2 APPLY THE EDGING

Cut all the edging about 1/16 in. wider than the thickness of the parts being covered, so it'll just barely overhang both faces. (Plywood and lumber thicknesses vary slightly, so standard 1-by lumber may not cover the edge of 3/4-in. plywood.) Apply the edging to all parts before assembly using glue and finish nails.

3 SAND THE EDGING

When the glue is dry, sand the edging flush with the plywood faces. To avoid sanding through the plywood's veneer, scribble a pencil line down the joint. Stop and check your progress frequently.

4 DRILL THE HOLES

The sides, bed ends and desk ends require accurately placed holes and recesses for hardware. The original plans for this bed were in metric, and because the hardware hole locations are critical, I recommend using a metric tape measure (less than \$20 online). I also recommend using Forstner bits because their guide points make it much easier to center holes precisely.



Materials List

ITEM	QTY.
4' x 8' sheets of 3/4" maple plywood	4
1x6 x 96" solid lumber for edging	4
1x4 x 96" solid lumber for edging	2
1' x 1' x 72" angle iron	2
1/4-20 x 3/4" hex-head bolts	16
1/4-20 x 2" hex-head bolts	4
1/4-20 cap nuts	20
1/4" lock washers	20
No. 10 x 3/4" flat-head wood screws	6
2-1/2" trim-head screws	
1-1/4" trim-head screws	
Polyurethane	1 qt.
LED strip lights	
Corkboard	
Wood glue	
Hardware kit, available from hiddenbedusa.com	

Cutting List

KEY	QTY.	PART	DIMENSIONS
A	2	Sides	3/4" x 35-1/2" x 58"
B	1	Top	3/4" x 16" x 79-3/4"
C	2	Backs	3/4" x 10" x 79-3/4"
D	1	Stretcher	3/4" x 6-1/4" x 79-3/4"
E	4	Upper lock blocks	3/4" x 4" x 4"
F	4	Lower lock blocks	3/4" x 5" x 5"
G	2	Bed end	3/4" x 19-1/2" x 41-1/4"
H	2	Bed rails	3/4" x 6" x 75"
J	2	Rail cleats	3/4" x 7/8" x 75"
K	2	End cleats	3/4" x 3/4" x 39-1/2"
L	1	Bed platform	3/4" x 39-1/2" x 75"
M	1	Desk top	3/4" x 24" x 75"
N	1	Desk back	3/4" x 3-1/4" x 75"
P	2	Desk ends	3/4" x 4-7/16" x 24-3/4"
Q	2	Desk stiffeners	1" x 1" x 72" angle iron

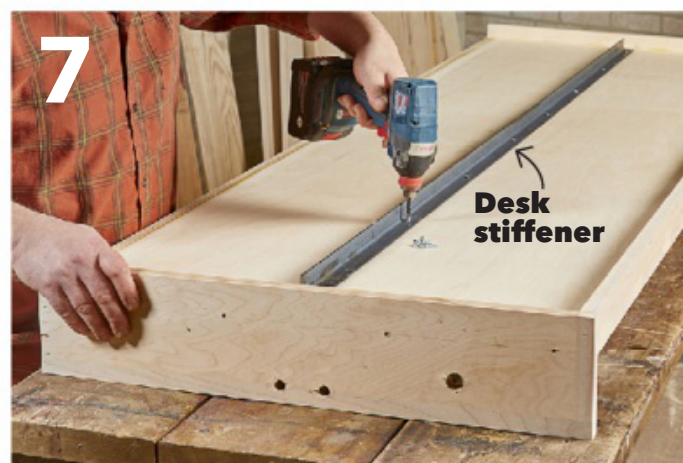


5 ASSEMBLE THE CARCASS

Prop up the sides on their back edges, then fasten the top to them with glue and trim-head screws. Attach the back shelves and bottom stretcher the same way. Because of the applied edging, you'll often be driving screws through solid lumber. Trim-head screws are self-drilling, but don't risk it. Drill clearance holes first. Glue and nail the locking pin blocks into place.

6 APPLY THE FACE FRAME

The edging on the front of the carcass is wider to hide the hardware. Apply this edging using glue and finish nails. When the glue is dry, sand the edging flush with the outer faces. Fill nail and screw holes with wood putty, sand the whole carcass to 180-grit, then apply a finish of your choice.



7 ASSEMBLE THE DESK

Glue and screw the desk back and ends to the desk platform. Drill and countersink screw holes in the angle iron desk stiffener. Flip the desk over and attach the stiffener to the underside using 3/4-in. wood screws.



8 BUILD THE BED

Cut and sand the radiused corners of the bed ends, then attach the front and back rails to the ends. Glue and screw the platform cleats to the rails, and then screw the platform to the cleats. The plans don't call for cleats on the bed ends to help support the platform, but I installed some anyway. Instead of attaching these to the underside, where they would show, I attached them above the platform, and then screwed the platform to them.



9



10

9 INSTALL THE DESK HARDWARE

Fasten the “tribearers” to the desk ends with No. 8 x 3/4-in. flat-head screws. Attach the link pivot to the desk ends using the provided threaded pivot rods and screws. Make sure you orient the plates correctly. I put them on wrong the first time. Thinking the holes were mismeasured, I drilled new ones. Eventually, I found my mistake and had to make new ends!

10 INSTALL THE PIVOT PINS

Press the plastic bushings into the holes in the bed ends, and then insert the pivot rods.

11 ATTACH THE SIDE HARDWARE

Attach the pivot arm plate and spring bracket using hex-head bolts and flat hex-drive cap nuts. I was tempted to use screws for this so no hardware would show on the exterior. Because of the torque applied to these parts, however, I decided through-bolts were a better choice. You could use carriage bolts, but the cap nuts (\$10 for a 12-pack online) give a tidy, finished look. Then insert the locking pin bushings into their holes.



11



12

Link pivot

Tribearer



13

Trunnion

12 ATTACH THE BED TO THE DESK

Set the desk on the floor. With a helper, slide the bed ends into place in the pivot links on the desk. Install the pivot rod screws, securing the bed and desk together.

13 ATTACH THE BED/DESK TO THE CARCASS

Insert the bushings and trunnions into their holes in the bed ends, and then slide the bed/desk assembly into the carcass. Line up the trunnion screws with the threaded holes in the pivot arm plates and thread them in. Hook the pivot arms under the tribearers.

14 INSTALL THE LOCKING PINS

Insert the locking pins into their holes in the desk ends, and then mark the pin locations in the locking pin blocks. Drill the locking pin holes in the blocks, then fasten the locking pins in place using the provided screws.



14

Locking pin



Mattress strap

15



LED strip light

16

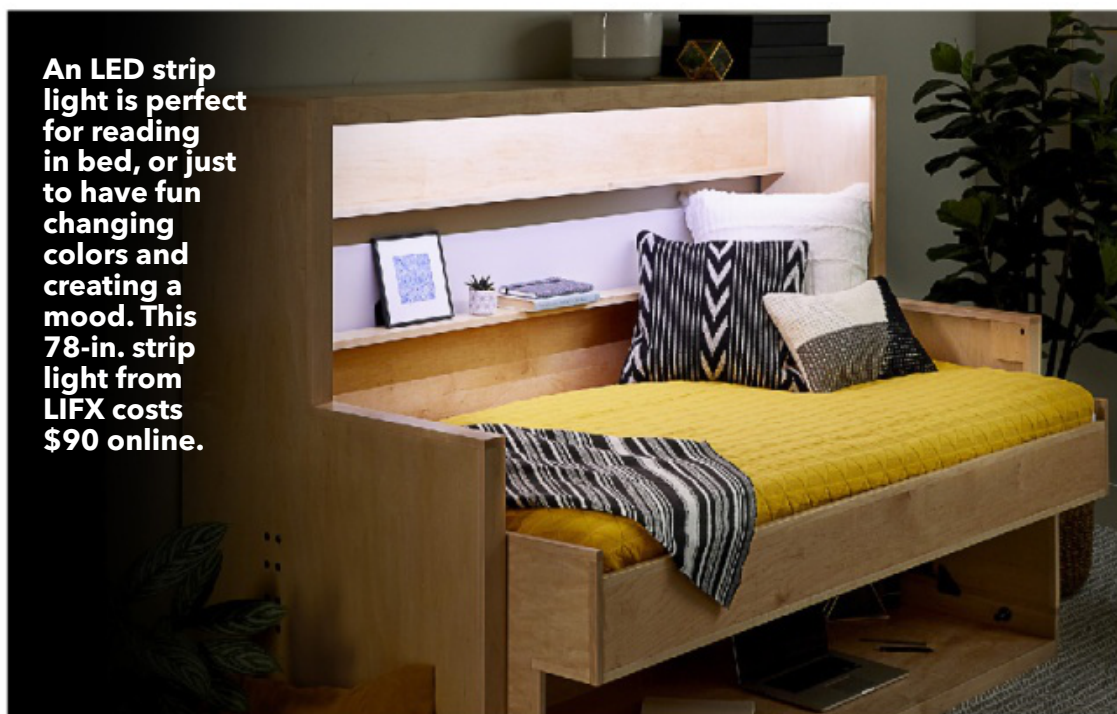
15 SECURE THE MATTRESS

To keep the mattress from tipping against the narrow shelves when you fold up the bed, secure it with elastic straps at the corners. Attach the straps to the bed platform with wood screws and flat washers.

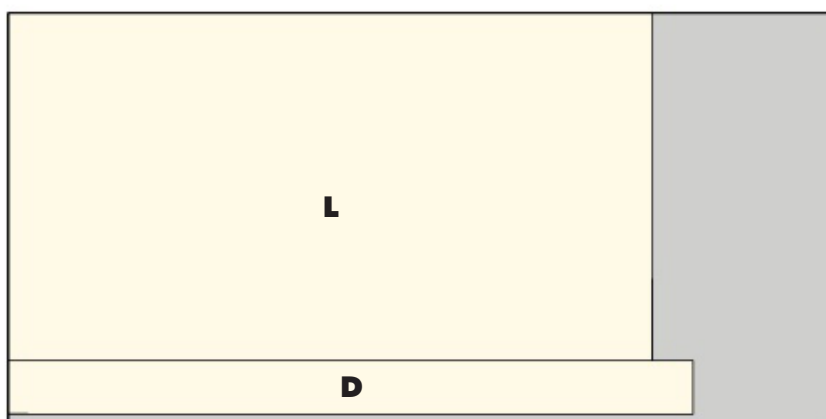
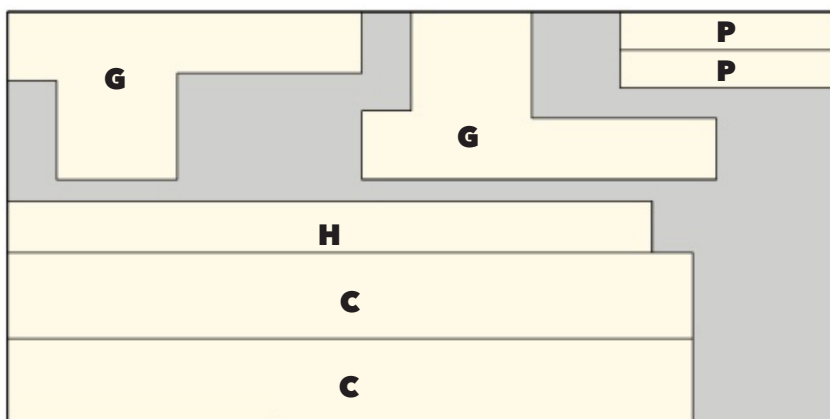
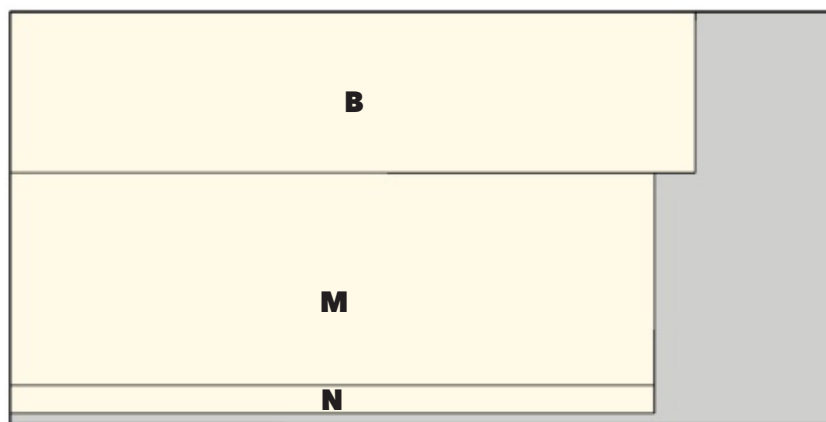
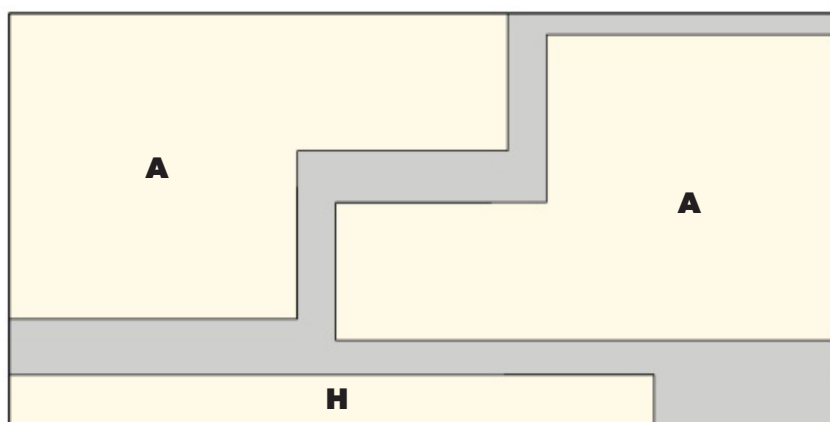
16 INSTALL STRIP LIGHT

The LED strip light is optional, but it's a nice feature. It's adhesive-backed, so you just stick it into place, plug it in and set up the app on your phone.

An LED strip light is perfect for reading in bed, or just to have fun changing colors and creating a mood. This 78-in. strip light from LIFX costs \$90 online.



Plywood Cutting Diagrams





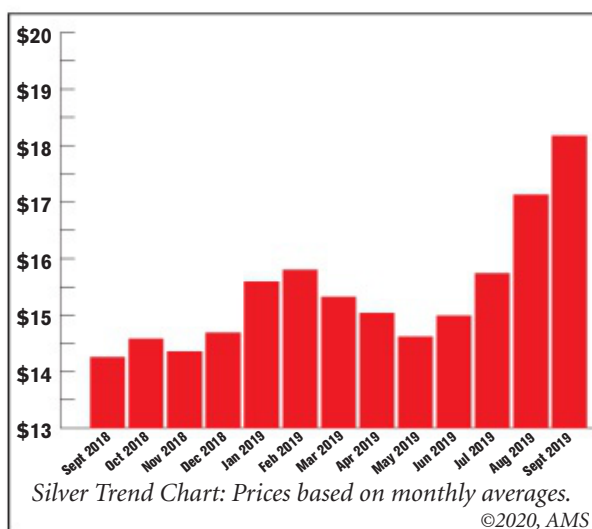
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Choose the best **CORDLESS JIGSAW**

Cut the cord, keep the power

BY JAY CORK



You may already own a jigsaw, but if yours is like mine, it likely has a cord attached. I wanted to find out how cordless models stack up against the corded type I've used for years. Using a range of blades and various types of cuts in different materials, I put eight cordless jigsaws through their paces. At the end of this article, I'll give you a rundown on how they compared with one another.

D-handle



Barrel grip



D-handle or barrel grip?

I'm a devout D-handle guy—no two ways about it. That's not to say I don't recognize the benefits of a barrel grip jigsaw; it's just not for me. And that's the point. With jigsaws, it really comes down to what is comfortable for you, the size of your hand and how you like to use this tool. A D-handle may be more suitable for smaller hands; holding a barrel grip may cause fatigue. A barrel grip jigsaw might be more awkward to hold for some, but its lower center of gravity will allow for better control. I prefer a D-handle because I can control the blade speed on the trigger. Barrel grip models have just an on/off switch.

Corded or Battery-Powered?

All the tools tested are in the 18- to 24-volt range and cost from \$50 to \$200. That price range is similar to that of corded models, so the question is: If I'm buying a new jigsaw, why would I choose cordless over corded? I believe the deciding factor should be how the tool will be used. If it will never leave the shop, then I prefer the reliability of corded power without the need to maintain batteries. In the field, on the jobsite or in other situations where I may find myself without a power outlet, then the sweet freedom of battery power is the better choice.

Some tools, like circular saws or compressors, put a heavy load on batteries, so you often have to sacrifice power for convenience. But jigsaws draw less power than most other tools, so there's rarely a noticeable performance difference between corded and cordless models.





Dust blowers

For me, the ability to keep dust off the cutting line is a far more important feature than a vacuum port. Of the eight jigsaws in my test, only Bauer and Ryobi did not offer a dust blower. Milwaukee's did a good job of keeping dust well away from the line.



Easy blade changes

All the jigsaws tested have a toolless blade change system. You don't have to touch a hot blade to change it out for a fresh one. Kobalt takes it one step further in allowing you to insert the blade without having to hold a lever. DeWalt jigsaws also reliably accept and eject blades without any issues. However, not all quick-change systems are equally quick. I struggled with Milwaukee's and Ryobi's.

Dust extraction

In my experience, dust collection systems for jigsaws never work very well. Half of the dust naturally falls to the floor, and there's the added inconvenience of having to move a vacuum hose around as you cut. Of the eight models, only Milwaukee and Ridgid offered dust collection ports, so dust collection wasn't part of my test criteria.



Blade deflection

With most jigsaws, you'll experience blade deflection, which means the blade doesn't cut perfectly perpendicular to the surface. Many factors contribute to this, including the blade guide design, the quality and length of the blade, the material being cut, and the most common, operator error. The saws shown here have similar blade guide designs. Kobalt and Ryobi produced very little blade deflection in my tests, while Bauer performed the best in this category.



12-volt

20-volt

12- vs. 20-volt power

Only a few manufacturers still offer a 12-volt cordless jigsaw. Most jigsaws range from 18- to 24-volt. So why would you want something significantly smaller? If you simply want a jigsaw around the house for odd jobs, a small 12-volt model like the Bosch JS120 may be all you need. Battery run-time will be less, and you won't have quite the cutting power of a 20-volt tool, but at half the size and weight, it might just fit the bill for you.

Best Jigsaws

Aside from specs and features, I judged these saws by test results. I measured the noise level with a decibel meter, and for vibration, I set the running saws down on a level table. Some saws bounced around a bit; others sat perfectly still. Cleanliness of cut, cutting speed and blade deflection were all tested with the same blade in identical material.

BAUER 1773C-B



\$50

20V | 2,400 SPM | 1" Stroke

By far the best value! This saw hung right in there with DeWalt and Milwaukee for one-fourth the price. Not the fastest cutting speed, but not the slowest. Easy blade changes, excellent cut quality and almost no blade deflection. Minimal vibration.

DEWALT DCS334B



\$180

20V | 3,200 SPM | Variable Speed Dial | 1" Stroke

Earning top scores across the board, this was easily my favorite. Easy blade changes, high quality cuts and minimal vibration.

CRAFTSMAN CMCS600D1



\$120

20V | 2,500 SPM | 3/4" Stroke

The only saw to include a battery. Lower than average noise rating. There's no light, which makes it hard to see the cutting line. Minimal vibration but prone to blade deflection.

KOBALT KJS 324B-03



\$120

24V | 3,000 SPM | 1" Stroke

The easiest blade insertion and ejection of the entire group. Cuts fast with very little blade deflection. Moderate vibration.

RYOBI P524



\$120

18V | 3,500 SPM | Variable Speed Dial | 1" Stroke

Part of Ryobi's large family of 18-volt tools, the P524 performed very well. Light, quiet and priced right in the middle of all the saws tested. Great cut quality and minimal vibration.



HOVER YOUR CAMERA HERE
Scan this code with your smart-
phone to get complete results
and specifications for all the saws
shown here.

HART HPJS01



\$54

20V | 3,000 SPM | 1" Stroke

This the lightest of all jigsaws tested, but also one of the loudest. It cut well, with very little blade deflection. Look for a full line of 20-volt tools from Hart, exclusively at Walmart.

RIDGID R8832B



\$130

18V | 3,500 SPM | Variable Speed Dial | 1" Stroke

The quietest tool on the testing table, Ridgid performed well. Some blade deflection, but fast cutting with decent cut quality. Moderate vibration.

MILWAUKEE 2737-21



\$200

18V | 3,500 SPM | 1" Stroke

Coming in as the heaviest and loudest, this saw is a workhorse. The dust blower performed well, keeping the cutting line clear. Higher vibration than other saws, but fast cutting.

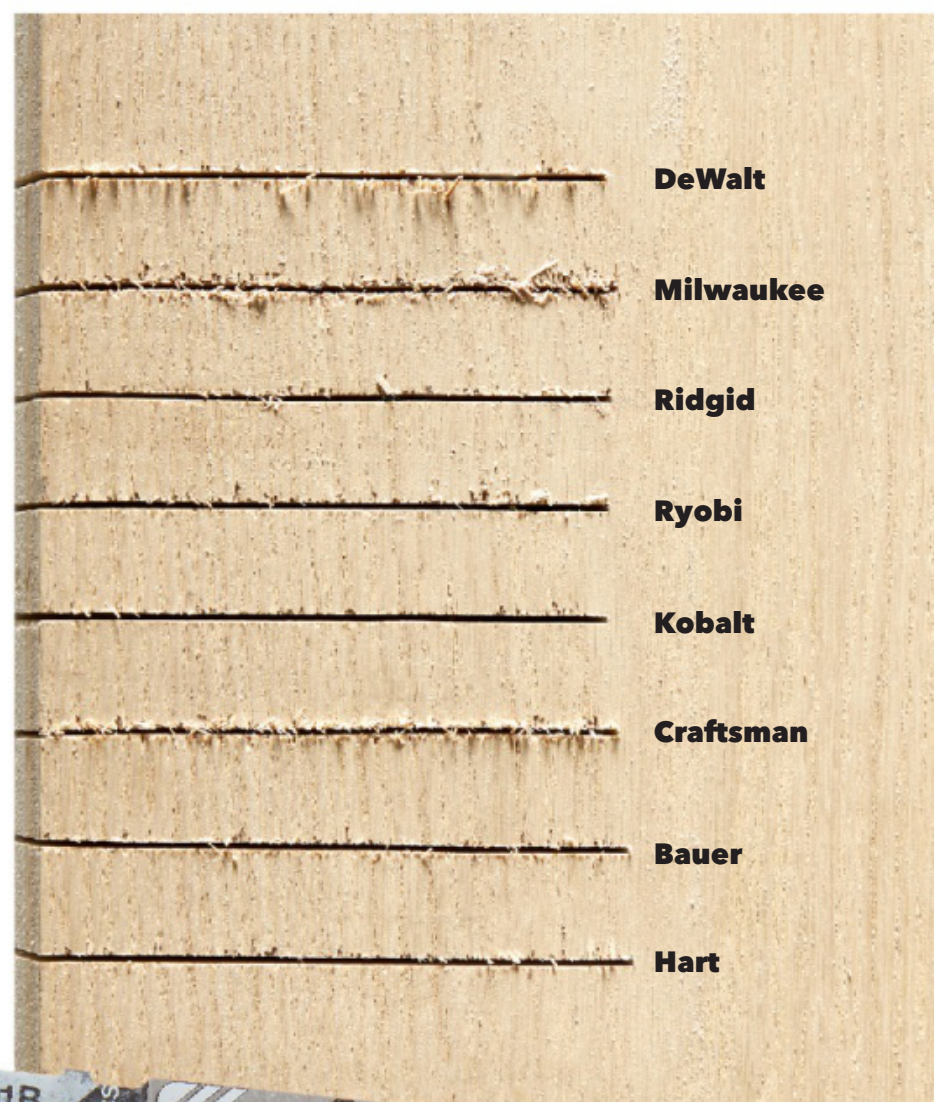
Blades matter!

The saying "You get what you pay for" is especially true for jigsaw blades. Bosch and Festool blades top my list because of their rigidity and precise manufacturing. For me, it's worth the extra money because I know these blades will produce less chip-out and stay sharper longer. They're also less prone to blade deflection.

Jigsaw blades are available in T-shank and U-shank styles. The T-shank style was created for the quick-change blade systems found on most jigsaws produced today. Older saws require the U-shank.

Chip-out test

Chips and splinters can be expected with jigsaws. To compare cutting performance, I set the oscillation to zero and fit each saw with identical wood-cutting blades from Bosch, then cut across the grain on oak plywood. Chip-out can be minimized by reducing the orbital setting and keeping your blade speed and feed rate down. Choosing blades without any set to the teeth will also help keep the cut nice and clean.



THE RESULTS

The Kobalt and Hart jigsaws made the cleanest cuts. The Milwaukee and Craftsman saws produced the most splintering.



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BEST INVERTER GENERATORS

Quiet, clean power on the go

BY JASON INGOLFSLAND

Small inverter generators are surprisingly versatile. They're capable of powering a slew of electronics, devices and power tools. They're also lightweight and portable and quiet enough to not drive your neighbors crazy. However, with so many options to pick from, it's hard to know where to start. I chose five popular models within the 2,000-watt range, costing \$499 to \$1,049, to test their noise, features, ease of maintenance and portability. After comparing them, I'll tell you my top choices.



What's an inverter generator?

Standard portable generators create “dirty” power, an unsteady current that could damage sensitive electronics such as TVs, cell phones and computers. An inverter fixes that problem. The generator produces raw AC power, and the inverter turns that into low-voltage DC power, and then back into clean, stable 120-volt AC power that’s safe to use with your devices.

What they are (and aren't) good for

These generators are lightweight, small and quiet, making them great for the jobsite. They're also useful for camping and tailgating. They can charge your laptop and power your circular saw at the same time or keep your fan, lights and outdoor electric grill running at the campsite. They don't produce enough power to back up your whole house if there's a power outage; you'd need a higher-watt option.

Things to consider

Running watts

Every generator has two watts ratings: “starting watts” and “running watts.” The starting watts rating is always higher because it includes the extra power the generator can put out for a few seconds to start a device with an electric motor. The running watts rating is the maximum power the generator can supply to actually run devices. It's the only rating you should consider when buying a generator.

Fuel, run-time and load gauges

Fuel, run-time and load gauges let you know how much fuel you have left, how many devices you're powering and the time remaining until the generator will lose power. Keep in mind, the run-time gauge won't be too helpful if you're using the generator only periodically. Surprisingly, these features aren't common; only the Predator and Ryobi include them.





Ease of maintenance

Unlike many midsize models, inverter generators hide their motor behind a plastic casing. To change the oil, air filter or spark plug, or to winterize, you need to open a top or side hatch. They all have similar motor designs, but some are more maintenance friendly than others. Some components are tough to reach or hidden behind other parts.



Bluetooth

The Ryobi Bluetooth 2,300-watt model allows you to check the fuel levels, the run-time and the load—and even shut it down—all from your smartphone. This comes in handy when you're camping and don't want to leave your RV, or when you're at a tailgating party and want to quickly check how much longer the fuel will last.



HOVER YOUR CAMERA HERE

Scan this code with your smartphone for generator maintenance tips and tricks.



Portable power stations

Lithium-ion portable power stations have the same AC inverter and can charge at a wattage output comparable to that of inverter generators. Not having a motor, they're silent, clean, require little maintenance and can be recharged through a home AC outlet or a separate travel solar panel. Of course, they're also much more expensive, costing from \$600 to \$3,000. A Goal Zero Yeti 1400 portable power station costs about \$1,900 on Amazon.



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Connect two for more power

If you need more power, inverter generators can also link together to combine their wattage capability. This provides flexibility for different tasks: If you're hosting a tailgating party, you can bring a small generator rather than lug around a mid-sized one, but if you're camping in an RV, you can link both together. It also helps with reliability. If one generator goes down, you can still use the working generator to power some things rather than go without.

Energy throttle

Inverter generators have a throttle as a standard feature to slow down the motor and conserve gas when you aren't using much power. It's great when you're using low-watt devices and want to make the generator quieter and extend your run-time. If you're using load-heavy equipment, you should turn off the throttle.



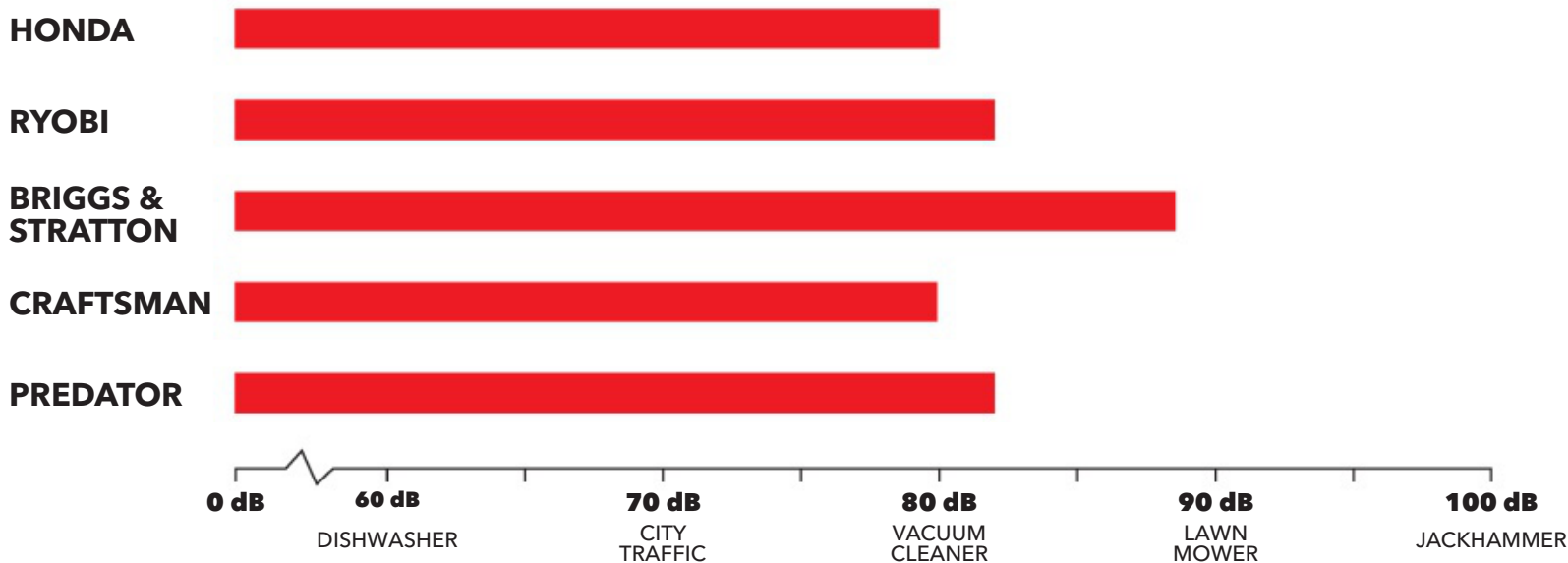
Easy portability

Inverter generators are lightweight and small enough that most people could carry them with one hand. Typically there's just a large handle on the top, but the Ryobi makes transport easier with wheels and a long handle.

How loud are they?

Inverter generators run quietly on idle, but I wanted to test how noisy they are while running a power tool. To do this, I used a Reed Sound Level Meter (about \$160 online) to measure the decibels.

I placed the sound meter roughly 6 in. away from the generator for an accurate reading of the sound source. According to the Inverse Square Law, doubling the distance from a sound source subtracts 6 dB in an open field. That means the farther you are from the source, the decibel levels significantly decrease. Here are my results:



Models We Tested



EDITORS' CHOICE
BEST OVERALL



EDITORS' CHOICE
BEST VALUE



HONDA EU2200i

\$1,049

47 LBS.
1,800 RUNNING WATTS

PROS:

- Compact and lightweight
- Easy to carry
- Easy maintenance
- Quick start
- Quiet
- Runs well with power tools

CONS:

- No gauges
- High price

RYOBI 2300

\$599

53 LBS.
1,800 RUNNING WATTS

PROS:

- Telescoping handle bar
- Wheels
- Quiet
- Easy maintenance
- Fuel, run-time and load gauges
- Bluetooth capability
- Low price

CONS:

- Large
- Heavy

BRIGGS & STRATTON P2200 *

\$649

54.6 LBS.
1,700 RUNNING WATTS

PROS:

- Easy start
- Easy maintenance
- Multiple handlebars

CONS:

- Heavy
- Bulky
- Loud

CRAFTSMAN 2200i

\$649

46.6 LBS.
1,700 RUNNING WATTS

PROS:

- Quiet
- Lightweight

CONS:

- Large
- Difficult start
- High maintenance

PREDATOR 2000

\$499

47 LBS.
1,600 RUNNING WATTS

PROS:

- Lightweight
- Quiet
- Fuel gauge
- Low price

CONS:

- High maintenance
- Difficult start

* This model will be discontinued and replaced by the P2400 later this spring.

STUD FINDERS, SIMPLIFIED

With a little knowledge, choosing the right one is easy

BY JASON INGOLFSLAND

When I went out shopping for a stud finder, I was amazed by the range of options. From tiny magnets to radar devices that connect to your phone, the world of stud finders feels needlessly complicated. Finding a stud shouldn't be this hard! So, armed with a company credit card, I bought a slew of stud finders and set out to demystify this buy for you.

How I tested them

It turns out that our office is a stud-finding playground. I tested the finders on a variety of materials and thicknesses, from drywall to tile to wood planks fastened on top of drywall. I scanned over AC wires, copper pipes, PVC pipes, and metal and wood studs, using some of the more advanced features, like deep scan and metal detect. My main focus was stud-finding accuracy, but I considered other qualities as well, like ease of use and speed.

For more on finding studs and other stuff inside walls, search for "stud finders" at familyhandyman.com.



MEET THE EXPERT

Jason Ingolfsland started using a stud finder when he found tapping a knuckle against drywall to be unreliable and drilled one too many holes.



Mark studs with tape

Bosch Digital Multi-Scanner GMS120 (\$55)

INEXPENSIVE AND SIMPLE ARE ALL YOU NEED

For those of us who live in homes with drywall, I found that an inexpensive and simple model is all you need. It's easy to believe that expensive means better, but in this case, it doesn't—all the low-cost options shown here are accurate on drywall and do a great job. Of these, I'd recommend the Zircon L20. This model is simple, cheap and accurate. Plus, it doesn't have an AC wire detector beeping at you all the time. You can find it at Lowe's for about \$11.

BEYOND STUDS

Expensive stud finders, costing \$30 to \$60, have lots of added features. They can detect metal studs, metal pipes, rebar and AC wires, and they include deeper scans. While deeper scans are helpful on textured and thick walls, I didn't find their ability to detect metals, pipes and AC wires accurate enough. In my tests, they indicated a general area rather than an exact location. The AC wire detectors also had many false positives, making the job more frustrating. For most DIYers, these added features just aren't worth the extra cost.

TIP FOR TEXTURED WALLS: SCAN OVER CARDBOARD

Electronic stud finders need a smooth surface to work properly. If your walls aren't smooth, place a piece of cardboard against them and run the stud finder over it. Since the cardboard adds thickness, you may need to use a deeper scan setting.

EDGE VS. CENTER

The two most common types of electronic stud finders are edge finders and center finders. No-frills edge finders are cheaper and require you to find the stud center. This adds a few steps. Center finders find the center for you, but they cost about \$10 more. If you need to find studs quickly, center stud finders are best.

HANDS OFF THE WALL

When you're using an electronic stud finder, don't place your other hand on the wall or the finder. The stud finder sends out an electric field to find density, and your hand may interfere.



Craftsman Stud Finder
(\$21)



Stanley Stud Sensor
\$50 (\$12)



Zircon L20
(\$11)

WALABOT DIY PLUS

In tandem with an Android phone, this device uses RF (radio frequency) technology to see what's inside your wall and detects wood and metal studs, pipes, wires, and even rodents and pests. You can use it on several surfaces, from drywall to plaster and lath, but I found it struggles on plaster and lath. Its unique strength is locating pipes and wires, pinpointing them with greater accuracy than electronic models. Unfortunately, it's bulky and difficult to hold, the calibration process takes longer than 15 seconds, and the app interface is choppy. But if you need to locate pipes and wires, you can buy one online starting at about \$60.





**Ryobi
Whole Stud
Detector
(\$30)**

WIDER IS BETTER

If you're checking for studs often, you might want to spend more on a model with more sensors, like the Ryobi Whole Stud Detector or the Franklin Sensors ProSensor 710+. By scanning a wider area, these models show you the whole stud, even if it's a doubled stud. I especially like the Franklin model because it's simple, finds studs better than any of the others I tested and doesn't require calibration (starting at a spot where there is no stud). With the Ryobi, the calibration process took 10 to 15 seconds.



**Franklin Sensors
ProSensor 710+
(\$55)**

WAIT AFTER YOU PAINT

Moisture and humidity cause electronic stud finder sensors to provide erratic results, even if the moisture isn't visible. After painting a wall, you should wait a few days before hunting for studs.

SMARTPHONE APPS

Free stud finder apps on your phone use the built-in magnetometer to detect metal. The one I tested was inaccurate. Worse, I scratched my camera lens against the wall. A cheap magnetic stud finder is a better choice.



HOVER YOUR CAMERA HERE

Scan with your smartphone to buy your own Franklin Sensors ProSensor.

MAGNETIC MODELS ARE BEST FOR LATH AND PLASTER

I love the simplicity of magnetic stud finders; they find studs by clinging to screws or nails. That makes them a pain to use on drywall—you have to run them over the wall in a zigzag motion until you find a fastener. But that isn't a problem on old plaster and lath walls since there's a continuous line of nails on every stud. And I found magnetic models more reliable than electronic models on plaster and lath. Of course, they're great with metal studs, too.

With most magnetic models, you detect a stud by feeling the magnetic pull, but some models, like the StudPoP, have a center ball that jumps as you pass over metal, helping you move a little faster. Magnetic stud finders cost \$6 to \$11.



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Hanson
Magnetic
Stud
Finder
(\$8
online)**

**StudPoP
(\$11 online)**





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11 GREAT USES FOR HOT AIR

Get more done with a heat gun

BY JAY CORK

IT'S HARD TO CATEGORIZE THE HEAT GUN; it's just so useful in so many ways. It's basically just a fan blowing air over a heating element, but a heat gun is an essential tool for pros and DIYers alike. It's amazing what can be manipulated with the application of a little heat: Glue and caulk can be softened, plastics and metal bend to our will, and of course marshmallows can be turned a toasty, golden brown!



MEET THE EXPERT
Jay Cork has been a carpenter, cabinetmaker and craftsman for more than 20 years.

Selecting a heat gun

Heat guns can cost more than \$200, but \$20 will get you a decent gun with high and low settings. For occasional use, that's all you really need. I use a heat gun regularly for a wide variety of jobs, so I spent \$70 on a Wagner Furno 750. It gives me heat settings from 120 to 1,300 degrees F, plus variable fan speed. It stands up on its own and when it's turned off, the fan keeps running to cool the heating element—a nice safety feature! This one will outlast cheaper models, and it gives me much more control.

1

MANIPULATING PLASTIC, PVC OR RUBBER

Sometimes we need a little help to make that new radiator hose fit, or maybe we need to bend that PVC pipe just enough to make it work. Whatever your situation, a heat gun can often provide a little persuasion.



Toothpick

2 SPEED UP CONTACT CEMENT

Contact cement needs 15 to 30 minutes to tack up, but this may not be fast enough for some situations. When you're making a repair, such as regluing a countertop end cap, applying heat will cause the solvents in the cement to evaporate more quickly, and the two sides will be ready much faster. When using contact cement, always do so in a well-ventilated area with the proper safety gear.

TIP: When you're repairing an end cap, hold it away from the countertop with a toothpick.



Reflector

3 SEAL OUTSIDE CABLE CONNECTIONS

Heat shrink tube is a polyolefin material that shrinks when heat is applied, making it very useful for sealing cable and wiring connections. The inexpensive, thin heat shrink tubing that you'll find at the home center is fine for light-duty applications and will typically work well with a hair dryer.

For outdoor connections, I like to use double-walled, adhesive-lined heat shrink tubing (\$20 for an assorted kit online), but it requires more heat. In this case the connection is right up against the house, so I want to avoid using an open flame. A heat gun with a reflector attachment is perfect for the job.

4 MAKE PLASTIC FITTINGS ACTUALLY FIT

The most common complaint about shop vacuum fittings is that they don't always fit the tools that need them. Softening plastic fittings with a heat gun can help make these mismatched pieces play nice with each other.





5 FIX A WARPED CABINET DOOR

While moving into a new house, I noticed one of the tall cabinet doors in the kitchen was badly warped. Rather than replace the door, I decided to fix it with a little heat. This can be tricky, and it's not going to work 100% of the time, but it beats the alternative of having to build a new door.

This technique requires two clamps and a few blocks of wood. I screwed down two blocks for clamping each end of the door, and another as a fulcrum to bend the door against. As clamping pressure is increased on the ends, the door is bent against the warp.

Here's where the heat gun comes in. It's important to heat the entire thickness of the wood to an even temperature, not just the surface. To do this without damaging the finish, slowly apply heat to both sides of the door. I used an infrared thermometer to monitor the surface temp, which needed to be 130 degrees F or less. Running the heat gun back and forth along the edge of the door for about 30 minutes, I gently increased clamping pressure, bending a little farther than I thought necessary. Whenever wood is bent with heat, "springback" is to be expected; the wood will relax back to the desired position.



Before



After

6 THAW FROZEN PIPES

A frozen pipe can be catastrophic and can leave us with nasty repair bills. If you see frost or ice on a water pipe in your home, warm the area with a heat gun set on low. **Search for "frozen pipes" on familyhandyman.com for more great tips on preventing frozen water pipes.**

7 CRACKLE PAINT FINISH

That old, worn barn wood look is easy to achieve with some heat. This can be done with multiple colors of paint, or a coat of paint over the top of stained wood. The technique I used for this piece involved brushing out a coat of Titebond Liquid Hide Glue (\$9 for 8 oz. at Woodcraft) over the red base coat and letting it dry for about 10 minutes or so. When the glue is almost dry, I quickly brushed on a coat of acrylic latex. Once the topcoat is on, run the heat gun over the wet paint to force it to dry faster. How much heat you apply and how fast you work will determine the amount of crackle that occurs. Always do a test piece to practice the steps and see how you like the results.

AN INFRARED THERMOMETER HELPS!

For critical situations where too much heat will damage a surface, an infrared thermometer is a great helper. You can reach and maintain a specific surface temp and avoid scorching. You can find one for about \$40 at home centers.



8 LOOSEN A GLUED JOINT

A heat gun can help soften glue joints so you can make that repair on Mom's favorite rocking chair. If you move the heat gun evenly around the joint, it'll begin to warm the wood and the glue inside. This can take some time, so patience is required! As you're heating a joint on repairs like this, check often to see whether it has loosened. If the piece has a finish on it, be cautious! Don't exceed a surface temp of 130 degrees F. An infrared thermometer really comes in handy for jobs like this.



9 WATERPROOF YOUR LEATHER

For decades, I've used Sno-Seal (about \$8 for 8 oz. online) on all my leather items. Along the way, I've found that heat helps it get into the little nooks and crannies of seams and stitching. I like to lightly preheat the leather, then liberally apply the Sno-Seal with a rag. I run the heat gun over the piece again until the wax looks wet and shiny, then I rub it down with a rag. Using a bristle brush (cheap is fine) on the seams helps work it into the stitching. I reapply about once a year.

10 ERASE BLEMISHES IN EPOXY

If you've ever poured epoxy, then you probably know the trick of using a heat source to help eliminate bubbles. But heat can also smooth over little blemishes (like fingerprints) in epoxy that has dried to the touch. Set the gun to low heat, warm the area around the blemish and the surface will magically become smooth again. It's important to catch the blemishes quickly. I'm sorry to say that if you wait longer than a day or two, this trick isn't going to work.



11 SERIOUSLY ... S'MORES!

If sushi chefs can use a blowtorch on raw tuna, then why can't we use a heat gun to make s'mores? In fact, I like this method better than a fire because I can warm the graham cracker and the chocolate too!



Best ProTips

Expert advice from the job site. By Mike Berner

WIN THE WAR ON PESTS

Tools and tricks of an expert

Joe Stampley does battle with home invaders every day. And wins. Some of it is dirty work: crawling under decks, squeezing into attics, cleaning out traps and removing wasp nests. But there is a lot more to pest control than dirty work. Joe's skills in identification and prevention and his experience outsmarting pests are what really make Joe successful. To help you win the war, he opened his toolbox and shared some tricks of the trade.

MEET THE EXPERT

Joe Stampley is a technician for Plunkett's Pest Control (plunketts.net).



MORE SMARTS = LESS CHEMICALS

"It's more practical than spraying a chemical." Joe uses chemicals as a last resort—only about 10% of the time.



IDENTIFICATION IS KEY

Understanding what you're up against is the first step to getting your pest problem under control.



MICE ARE THE WORST

Joe's toughest foes are mice. They reproduce and populate quickly, making them hard to eliminate.

Joe's Pest Tool Chest

Joe carries a lot of gear to jobs. He needs to be prepared with tools to identify, contain and exterminate pests safely. We dumped out all his tools and asked about each of them.

DISINFECTANT SPRAY + DUST BRUSH + TOILET BRUSH

Joe makes sure the area he leaves behind is cleaned up and sanitary for the homeowners. Disinfecting spray and a dust brush are the perfect tools for small droppings and other messes. He wields a toilet brush for bigger messes.

HEADLAMP

Frequently encountering dark spaces, cracks and crevices, Joe finds a light mandatory, and having both hands available to plug holes and set traps, priceless.

Kneepads

RESPIRATOR

Joe doesn't often use chemicals—only when all his other options have failed—but when he does, he protects himself with a mask and respirator. He changes the filters regularly and makes sure his mask is cleaned every day so he doesn't have to smell yesterday's cheeseburger.

BAIT GUN

This gun can apply bait, insecticide and rodenticide gels with pinpoint precision. Joe prefers using the bait gun because chemical sprays drift around.

LATEX GLOVES

You might think these are for protecting Joe's hands from the chemicals, and you'd be right, but they also keep scents from giving Joe away. Many pests have a strong sense of smell and run for cover when they smell humans.

Safety glasses



COPPER MESH

Forget steel wool; it can rust and crumble away. Use copper mesh instead. It will last forever, and the interlocking design makes it difficult for rodents to gnaw through and pull out of cracks.

EXPANDING FOAM

Joe uses window and door foam instead of foam formulated to stop pests. Anti-pest foams work, but Joe would rather avoid chemicals in areas where kids might poke and pick at foam.

DID YOU KNOW?

Ants are the ultimate pest: They are found on every continent except Antarctica and have been around for more than 50 million years. They don't have eyelids, so they never sleep. They also snack on rodenticide without harm.

ZONE MONITOR

These sticky cardboard tents attract and trap insects. They allow Joe to identify the pests and know the quantity he's dealing with. And that helps him decide what to do next.

Specimen tray

Inspection mirror

INSECT BULB DUSTER

Joe uses a bulb duster to gently apply powdered pesticides in cracks and on other surfaces. He also has one for nontoxic powders like flour or baby powder that he uses to track pests in areas where chemicals should be avoided, such as kids' rooms and daycare centers.

BRUSH MULTI-TOOL

Joe has fashioned this trap cleaner into his own pest multi-tool. It not only cleans out the traps he empties daily but also contains the keys for opening them.

HANDY STICK

This is a home-made tool consisting of a hook screw and a dowel. Joe uses it to reach into small crevices and ones he'd rather not stick his hands into. And sometimes, he uses it to scoop something up off the ground to avoid bending over.

Flashlight

Bait station

First aid

BEST PRO TIPS



Joe's tips for outsmarting pests

HEED THE WARNINGS ON PESTICIDES

The labels on insecticide and rodenticide products have important information on how to use them safely, including where to spray, when to spray, how much and how often. Keep yourself, your family and the environment safe by strictly following these guidelines.

ASK GOOD QUESTIONS OF POTENTIAL EXTERMINATORS

When hiring a pest control service, ask:

- How do you plan to identify the pests?
- What removal methods do you use, and how do you keep pests out?
- When do you decide to resort to chemicals, and what products do you use?

The answers can help steer you to a professional, safety-minded company. For more info about hiring a pro, visit pestworld.org.

DON'T EXPECT INSTANT RESULTS

Pest control is a process, not a set-it-and-forget-it solution. Joe often makes several trips to identify, monitor and solve problems. In some cases, you'll need ongoing service to keep pests from returning.

OVERDO TRAPS

Joe always puts out more than the required number of traps. If the situation calls for 15 traps, he puts out 20. This ensures that he catches all the rodents. For extra insurance, he leaves a few traps behind.



PROTECT OTHER ANIMALS

When targeting pests, you can accidentally harm other animals. This is called secondary poisoning, and birds and other animals that make a snack out of pests can get caught in the crossfire. Joe uses pesticides that contain warfarin or bromethalin because they pose less risk to birds and mammals through primary and secondary poisoning.



DOUBLE UP

Mice can nibble away expanding foam, and tiny insects can sneak past copper mesh. When possible, use both. Stuff in the mesh then seal it in with foam.



DON'T SKIP TINY HOLES

Mice can fit into a hole as small as 1/4 in. If their elongated skulls can fit through, the rest can too. Plus, filling those holes will also keep bugs out.



KEEP THE LIGHTS OFF

To find pest entry points, head to the basement, crawl space or garage and keep the lights OFF. Light shining through gaps and cracks will show you where pests can get in. And you'll have better luck tracking down rodents and other pests because many are nocturnal and sensitive to light—when a light goes on, they will scurry!



SAFE, EFFECTIVE PESTICIDE

Diatomaceous earth is harmless to humans; some brands are even considered safe for consumption (although there's no reason to eat it). Here's how it works: When insects like bedbugs or ants crawl over diatomaceous earth, this abrasive powder scratches off the waxy layer of their exoskeleton. The bugs then become desiccated and die. Joe spreads diatomaceous earth with his bulb duster under mattresses, bed frames and at the baseboard trim.



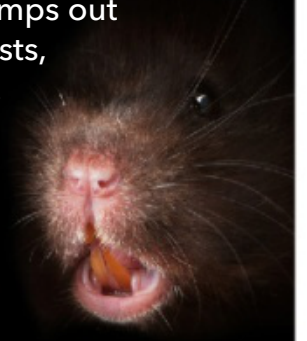
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12 simple steps to prevent pests

Sometimes it doesn't take a pest pro to keep out pests. There are many quick and easy steps you can take yourself:

- Install a squirrel guard on your bird feeders. It will keep rodents from spilling the food and attracting more pests.
- Clean outdoor grills and cooking areas.
- Use city-issued trash bins, and if they get cracked or the lid goes missing, ask for a replacement.
- Move stacks of firewood away from your house. They make perfect homes for pests. If you don't want a pest nest, don't stack wood at all.
- Take out the trash more often.
- Don't store paper bags or an excess of household cleaning products under cabinets, near trash or next to your fridge.
- Run a dehumidifier to remove moisture.
- Go through your storage area twice a year and move things around. If nothing jumps out at you and you see no signs of pests, you're fine—but you probably will.
- Remove clutter.
- Eliminate standing water.
- Get rid of mold and bacteria.
- And finally, Joe says, "If you see a hole and you can plug it, plug it."



Homemade jams



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An induction cooktop reduces energy costs, nearly eliminates heat loss in the kitchen and greatly diminishes the risk of burns and stovetop fires. It can also reduce the time it takes to prepare a meal.

Best of all worlds

An induction cooktop has faster temperature response than a gas burner and a safer, cooler cooking surface. The cooktop is far more energy efficient than a standard glass cooktop and similar to clean. It's easy to wipe off, but baked-on stains require elbow grease.

A safer choice

Unlike with traditional cooktops, there is little risk of burns from the heating elements. In fact, if the cooktop is on but there's no pan sitting on top of it, it simply does not get hot.

A net-zero hero

A net-zero home is highly energy efficient, well insulated and airtight. The last thing we want to do is to introduce wasted heat into the system every day. Induction cooktops are an excellent solution; the food being cooked will receive more than 90% of the heat generated, compared with only 40% to 55% for gas and 60% to 65% for electric. This minimizes the energy required for cooking while keeping the kitchen much cooler during meal preparation.

Any downsides?

Specific cookware. You'll need cookware that's compatible with induction. To see if your cookware will work, hold a magnet to your favorite pan. If you get a strong bond, you're good! If not, it won't work. But don't worry; there are many options available.

Noise. This may come as a surprise, but induction cooktops may make some noise. This is due in part to the different materials found in clad cookware, the weight of the cookware, the power level and what's being cooked. The noise is just a slight hum or buzz, but it may bother some people.

What does it cost?

Not too long ago, induction cooktops commanded a premium price, but when I compared the costs of gas, electric and induction cooktops today, the prices for equivalent functionality were very much on par. Paying a premium for the benefits of induction seems to be a thing of the past. If you're not sure you'll like induction, you can buy a two-burner countertop model from Duxtop for less than \$200 online, use it and decide whether you want it to replace your current cooktop.

INDUCTION IS "EXCITING"

An induction cooktop has little in common with electric and gas ranges. With these, you set a pan on the heat source and wait for some of that heat to cook the food. In contrast, an induction cooktop uses electromagnetic coils to "excite" the iron molecules of the cookware itself. This allows the cookware to heat up significantly faster and gives you much better control over the temperature.



Applying water-based finishes over oil— and vice versa

Oil and water don't usually mix, but if you take precautions, it's perfectly acceptable to combine water-based and oil-based stains and poly.

"The most common situation is when people use an oil- or water-based stain and then want to put on a poly finish of the other kind," says Kevin Southwick, an expert in custom wood finishes.

The key is having the patience to let the first product cure. "After an oil-based product has cured, it's no longer oily. It's an inert plastic material," Southwick says. "So when you put another plastic material over the top of it, it doesn't matter which type it is." An oil-based stain can usually be coated the next day with an oil poly. But to apply a water-based poly on oil-based stain, wait three days for the stain to cure. Water-based stains typically dry and cure in less than a day. "If you make sure the first one is cured, then the next one will be fine. It's that simple."



MEET THE EXPERT

Kevin Southwick specializes in the conservation and restoration of antiques and in custom wood finishes.

De-stink your fridge

When your power goes out and the food in your fridge and freezer goes bad, you've got a really stinky mess on your hands. Obviously the first two steps are to remove the food and wipe the interior down with a disinfecting cleaning spray. Then you have to follow that with a thorough cleaning.

The most common mistake DIYers make here is not cleaning all the nooks and crannies inside. Most often overlooked are the shelf supports. Remove them and clean behind them with detergent and disinfectant to get rid of any blood or crud. If they're permanently attached, soak them with cleaning spray. Next, forget about those expensive charcoal odor removers or coffee (which is even more expensive). Just use newspaper and charcoal briquettes. Finally (and this is the most important part), replace the old newspaper and charcoal with fresh stuff every day for about a week or until the smell is gone. A single treatment is rarely enough.

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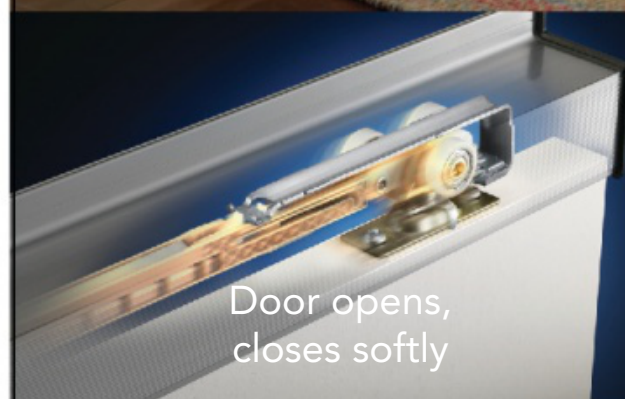
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Under-Sink Water Filtration

The water you cook with can affect your family's health, so consider installing a filtering system to eliminate pesticides, algae, heavy metals and chlorine. You'll reduce your exposure to toxins and gain peace of mind.

In-line filter or reverse osmosis?

I've always considered reverse osmosis (RO) to be the more effective water treatment system, but it does have some negative aspects. When I had well water, it was certainly the best choice, but RO systems can waste up to 5 gallons of water for every gallon filtered, and they can remove beneficial minerals as well. In the city, where I pay for every gallon used, I wanted to find a better alternative. In recent years, in-line filtration systems have really stepped up their game and boast similar filtration statistics without wasting water.

What's in your water?

A wide variety of organic and inorganic contaminants are a cause for concern, including chloramine or chlorine, water-soluble heavy metals (cadmium, chromium VI, lead, mercury), herbicides, pesticides, sediment, algae, mold and others.

Knowing how your local water is treated is also important when you're choosing a filtration system for your home. If you get city water, call or visit your municipal water provider's website and review the Annual Water Quality Report. This will tell you whether your water is treated with chlorine or chloramine, and if fluoride is added. If you get your water from a well, a whole-home RO system can be a great choice.

JAY CORK, ASSOCIATE EDITOR



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At about \$250, the UC-200 from CuZn is an affordable bacteriostatic filter. Unlike carbon-only filters, bacteriostatic filters don't support bacterial growth. Water is purified selectively, which means it allows beneficial mineral content to remain. It requires virtually no maintenance and installs under the counter in about 10 minutes; you simply hook it up to the cold-water supply. Visit CuZn.com to find a solution that fits your needs.

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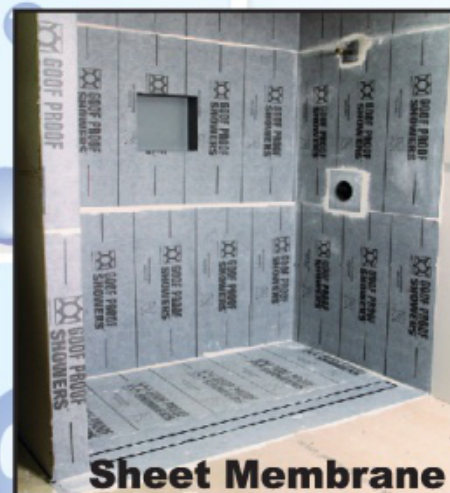
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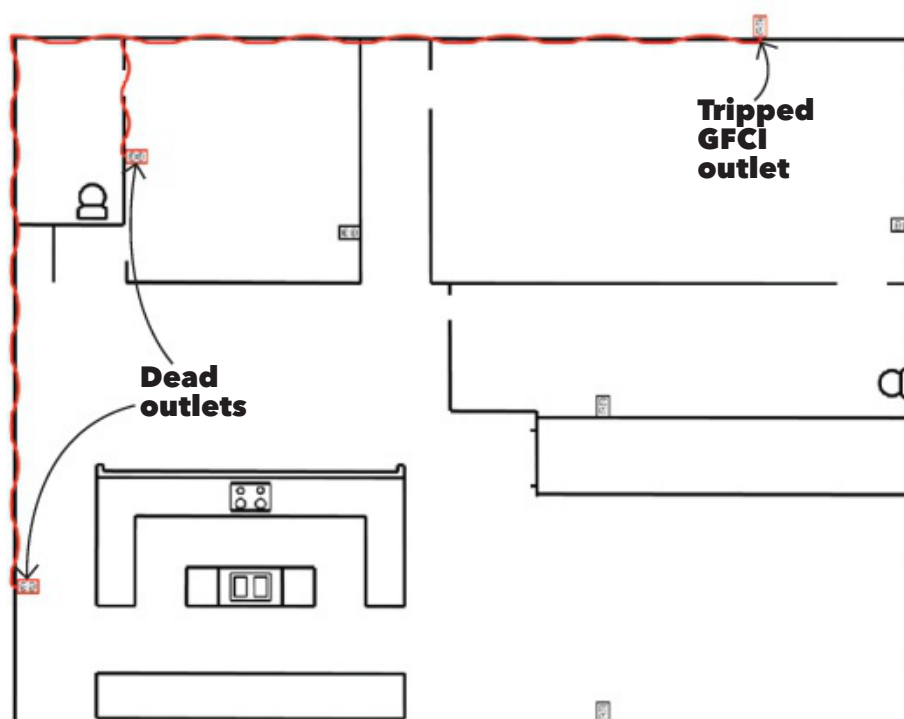
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Reviving Dead Outlets

When an outlet isn't working, the next step is usually to check the electrical service panel. But if no circuit breakers are tripped, the trouble could stem from a tripped GFCI outlet. That's because the same GFCI outlets that protect against shocks in kitchens, bathrooms and other wet or exposed areas are sometimes wired to shut off standard outlets downstream. These outlets might be in the same room as the GFCI or more distant, so you'll need to search carefully. New homes might have GFCI outlets installed in every room.

Typically, a green light indicates normal operation, while a red light shows the outlet has been tripped. If the outlet is tripped, first push the "Test" button and then "Reset." If there is no light and/or the outlet will not reset, the GFCI might not

be receiving power or it might need replacing. If an outlet works but trips frequently, it's possible that a hot wire is loose and/or contacting bare metal. In that case, you'll need to fix the problem before you can reset the outlet and restore power to the downstream outlets. If you see or smell smoke around the outlet or discover singed areas, call an electrician and/or replace the GFCI outlet.



ELECTRICAL CIRCUIT

When a GFCI trips, it cuts off power to all the "downstream" outlets connected to it.



DO NEW WINDOWS PAY FOR THEMSELVES?

There are lots of smart reasons to replace windows: New ones will open and close easily, look better, possibly make your home less drafty and dampen outside noise. They'll also save energy. But as a strictly energy-saving investment, new windows rarely cut utility bills enough to provide a fast payback.

A typical window project (with the replacement done by pros) costs about \$16,000. The annual energy savings is about \$400, a high-end estimate from the U.S. Department of Energy and others. At that rate, it would take 40 years to break even.

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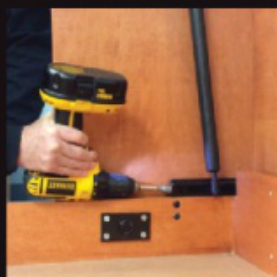
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Remember when you were a child and got your first bicycle? I do. It gave me a sense of independence... I felt like I could go anywhere, and it was so much easier and more enjoyable than walking. Well, at my age, that bike wouldn't do me much good. Fortunately, there's a new invention that gives me the freedom and independence to go wherever I want... safely and easily. It's called the Zoomer, and it's changed my life.

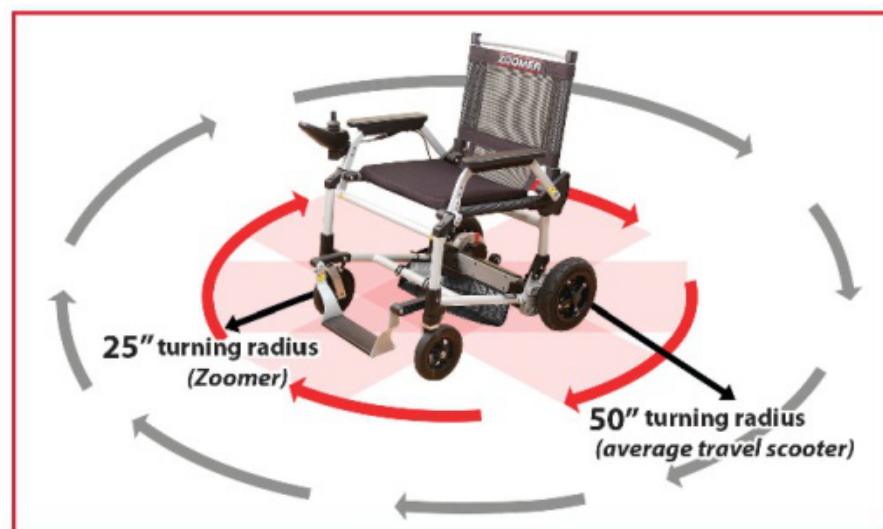
If you are one of the countless Americans who need a little help getting around, there is a safe, simple and easy-to-use solution... the Zoomer. It is propelled by small yet powerful dual motors for speeds of 3.7 miles per hour over a variety of terrains, on up to a 10 degree incline. Its innovative airline-safe Lithium Ion battery enables you to go 8 miles on a single charge, and the automatic electromagnetic brakes let you stop on a dime.



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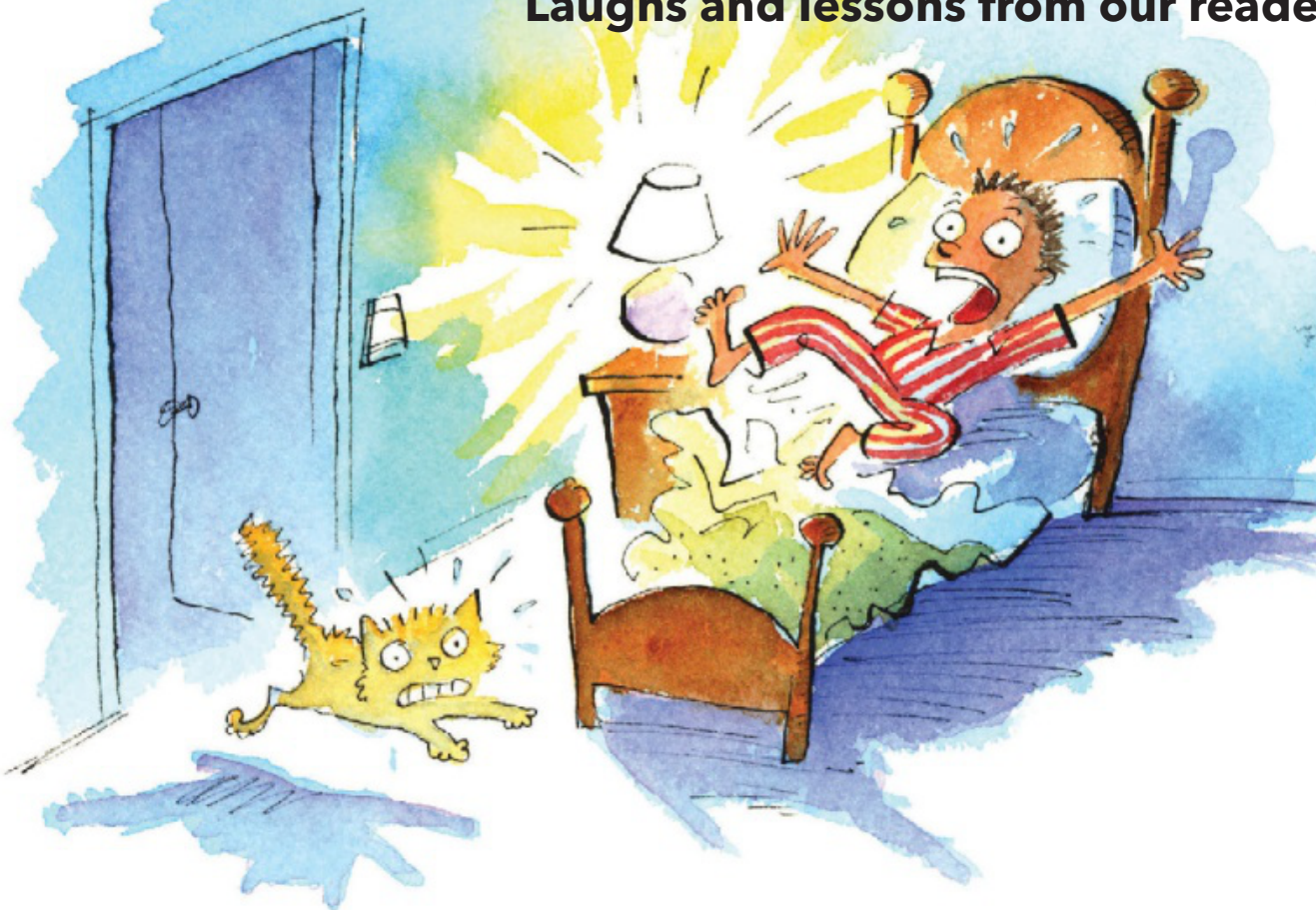
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Great Goofs®

Laughs and lessons from our readers



NIGHT-LIGHT NIGHTMARE

I installed a motion sensor switch in our laundry room, and my wife loves it. Every time she walks in carrying a load of laundry, the light automatically comes on, and it turns off soon after she leaves. So, since the kids are always leaving the light on in their bedroom, I decided to put one there, too.

Big mistake. Sure, the light turned off when there wasn't anyone in the room. But it also turned on when we didn't want it to—like when the kids rolled over in their sleep or the cat entered the room on its nightly patrol and jumped up on their beds. The instant-on light woke up the kids, who in turn woke me up with their yelling. I swapped it with the old switch the next morning. Now if I can just keep out the cat, I'll be able to get a peaceful night's sleep.

DAVE AHRENDT

A SNAG IN THE SHAG

A few years ago, I was installing bypass closet doors in a customer's newly finished basement, which had beautiful, expensive new carpet. Everything was going fine until it was time to screw the door guides to the concrete floor. I got out my hammer drill to drill the pilot holes for the concrete screws.

In a split second, the drill bit grabbed a carpet fiber and ripped a perfectly straight snag right down the middle of the \$30 a yard woven carpet. I had to recruit my friend the carpet expert to fix the problem—he said it happens to carpenters all the time. I just wish I had cut a little slit in the carpeting before drilling. Then I wouldn't have lost money on that job.

PETE BOUMAN



MORE BRAWN THAN BRAIN

My wife and I had just purchased a small cottage out in the country, and I wanted to install a wire fence for our dogs. I bought steel fence posts and a roll of white wire fencing. Then I carefully laid out the fence line so the fencing would be nice and straight.

Using a sledgehammer, I set the first few posts and was feeling good about my progress. But the next post met with some resistance and seemed bouncy as I hit it. I told my wife to stand back so I could get a good swing. Then I hit the post with my best "carnival strongman" swing and was immediately sprayed with water. I had driven the post through the water line that ran from the well to the house.

Several hours later, after I had repaired the water line and finished the fence, my dogs got to run in their new yard. It was a bit on the muddy side.

DOUG JOHNSON



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