

The Family

TABLE SAW TIPS & JIGS

# Handyman

Tons of projects, tips & tools

March 2001

## STONE PATH

**COMPLETE  
step-by-step  
instructions**

**PLUS**

**6 EASY DECK REPAIRS, p. 90**

**WIRING BASICS**

**PRESSURE WASH IT!, p. 29**



# The Family Handyman

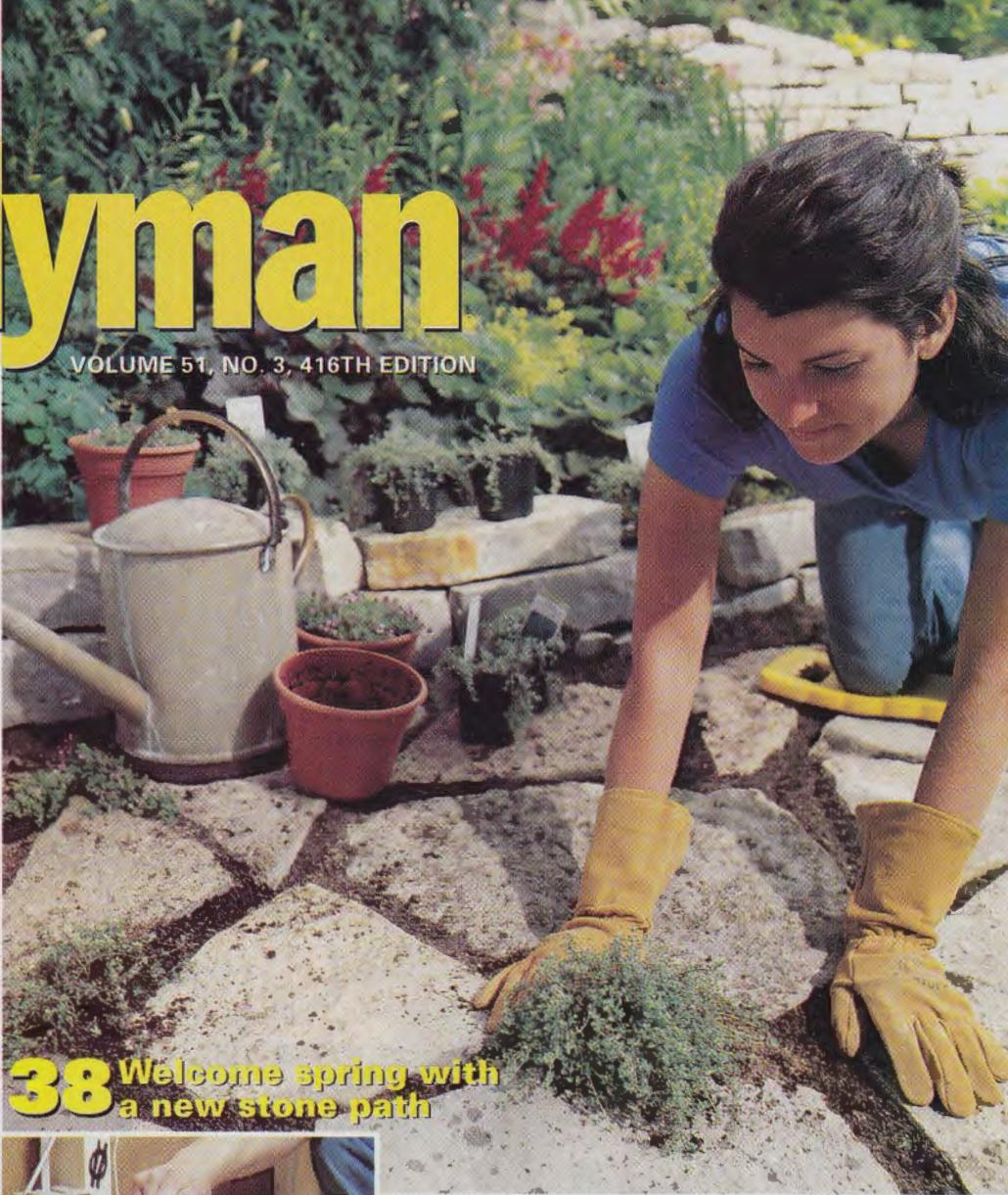
MARCH 2001

VOLUME 51, NO. 3, 416TH EDITION

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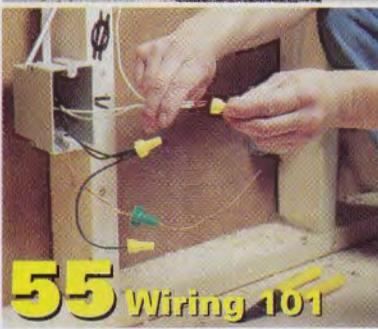
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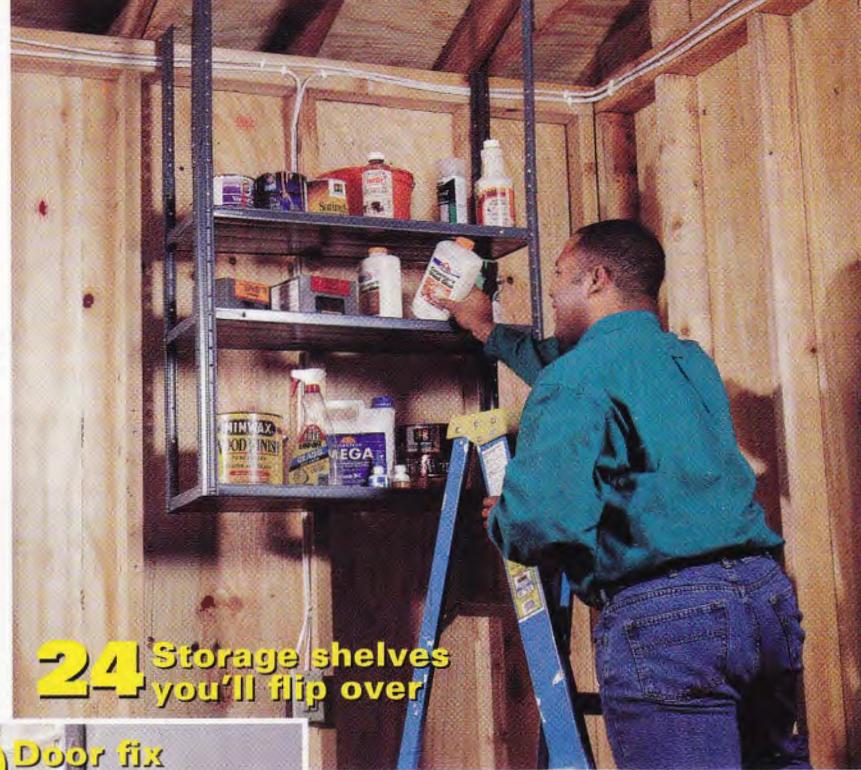
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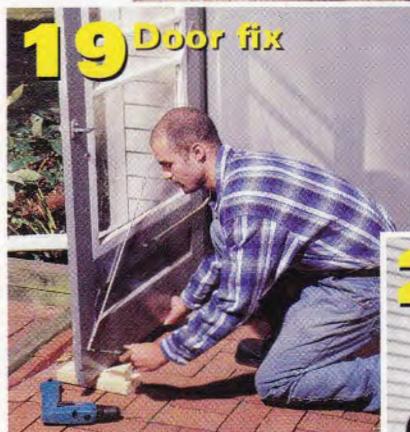
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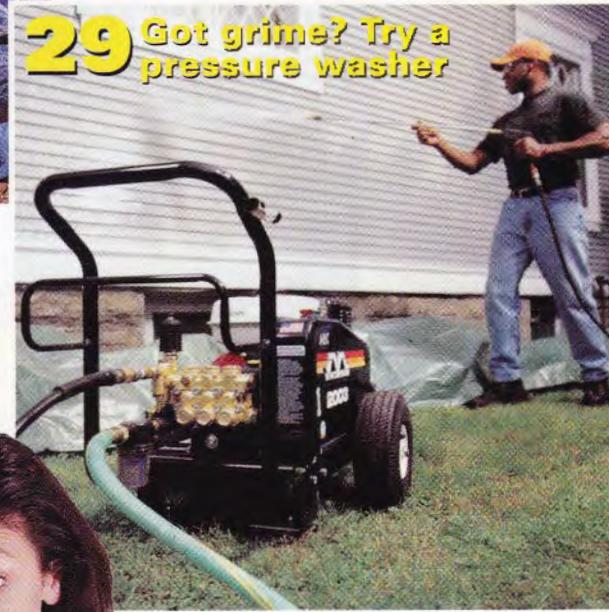
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# Ask Handyman

by Travis Larson



## What's the root cause of plugged sewer lines?

*We own a 27-year-old home on a heavily wooded lot. Tree roots between the house and city sewer line clog our sewer line about every two years, requiring a call to "Roto-Rooter" for a pipe reaming. Is there anything we can do—short of cutting down the trees—to save this biannual hassle and expense?*

Brian Zondlak, via E-mail

As you can see from the photo, the tree roots work their way through cracks or joints in older sewer lines made of clay tile, cast iron or an asphalt composite style called "orangeberg" piping. The roots are seeking that nutrient-rich soup you're sending down the drains and toilets (there's no accounting for taste). Clay and cast iron are rarely used anymore because of those loose-fitting joints that tree roots can penetrate. These materials are also heavy, hard to work with, expensive, brittle and prone to breakage. Nowadays nearly all sewer lines are made of plastic pipe—it's cheap, tough and lightweight, and the joints are impervious to tree roots.

You've got three options, none ideal: Continue reaming the lines periodically, cut down the trees, or call in the pros.



Larger sewer-cleaning companies will ream out the line or actually send a mini video camera inside the pipe to determine exactly what the problem is. They'll find out if the line is crushed, cracked, or sloped improperly, or if tree roots are worming their way through cracks or loose joints. Then they'll recommend a course of action, which could be:

- Digging up the old line and replacing it with plastic.
- Treating the line with a poison formulated to kill nearby tree roots. That way it'll take much longer for new roots to cause problems. These poisons are designed to kill just problem roots—not the whole tree.

■ Sealing the line by lining the existing pipe with an internal plastic fabric and cement. Companies have been doing this for years on larger lines and are just beginning to line residential ones. Chances of finding a local company that does residential sewer lining are slim, but it doesn't hurt to ask.

One of our editors has the same recurring problem as you. He got tired of the \$100 service call every year (always on a Sunday while entertaining friends), so he bought his own \$400 power auger and cleans out the lines himself. You can also rent one for \$40 to \$75. To learn how to run this auger, see "Clearing Out Stubborn Drain Clogs," Sept. '98, p. 25. To order a copy, see p. 108.

## Smooth finish for particleboard?

I'm going to buy some particleboard storage closets. How can I finish them so the surface will be smooth?

Maria McMillan, Ukiah, CA

**A**First, particleboard is really not meant to be smooth. Second, anyone who's tried to paint or seal particleboard will tell you it's a ton of work! So, you may want to consider buying a Melamine or unfinished wood storage closet materials.

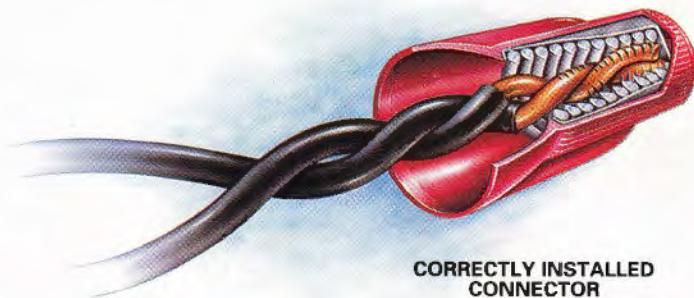
If you still want to build your own storage closets from particleboard, here's what we recommend:

- Sand the surface with 80- to 100-grit sandpaper and round the edges slightly.
- Fill in rough areas with spackling compound or wood putty if you plan to varnish it. Pay special attention to edges because they're the roughest and most porous part.
- Sand thoroughly and then remove dust with a tack cloth.
- Prime and paint the surfaces, lightly sanding between coats. You can also apply varnish, again sanding between coats. Build up your coats (it may take two or three) until you have a smooth surface.

## How do I install wire connectors?

*When you use wire connectors to join wires, should you first twist the wires together, then screw on the connector, or just hold the wires together and let the connector do the work as you tighten?*

Tim McDonald, Columbus, OH



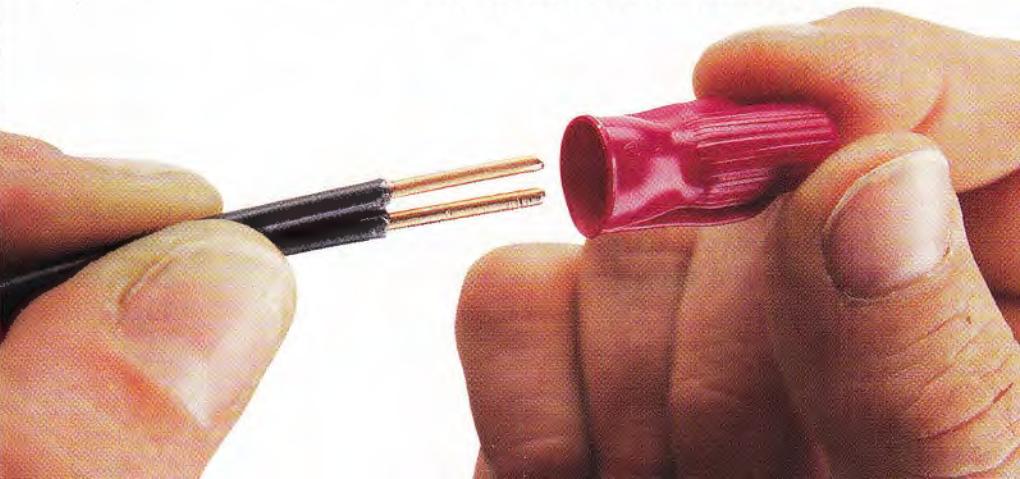
CORRECTLY INSTALLED CONNECTOR

**A**Read the directions on the box—some connectors allow both methods. As a rule, it's best to let the connector do the twisting for you. Here's why:

- The sharp-edged conical spring inside the connector makes a solid, durable electrical connection. The threads feed the wires into the connector and slightly cut into the wires as you tighten.
- The cutting action removes any oxidation on the outside of the wires for better contact with the spring, which helps conduct the electricity.
- The connector's cone shape progressively tightens and clamps the ends together.

To make a good connection, strip about 1/2 in. off the ends of the wires (this too can vary; read the directions on the box). Then hold the ends of the wires even and screw the connector on clockwise until the insulated portion of the wire has one or two twists in it. Some connectors are better than others, so don't go cheap. A solid, long-lasting electrical connection is worth the extra cost.

**More ASK HANDYMAN >>**



## Plumbing valves: An open-and-shut case

*Our plumber, while doing some other work in the house, switched our main water supply valve from a gate valve to a ball valve. What's the difference? Is one better than the other?*

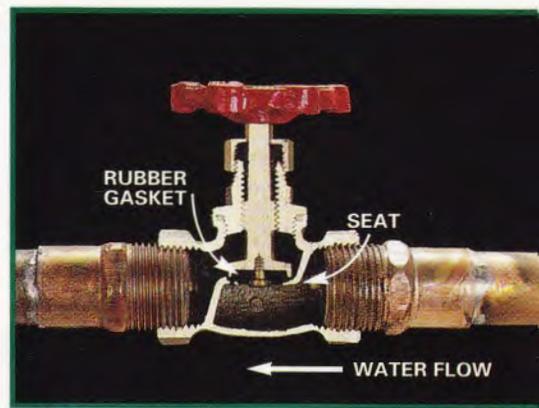
Aaron Kaufmann, Warmego, KS

There are three basic valve styles, making this a classic case of good, better and best (described in order as follows). All three can be used for water, oil or airflow control if the casting has "WOG" stamped on it. **Stop valves (top photo)** are closed by screwing a rubber gasket down onto a seat in the middle of the valve. Pros only use small versions that act as shutoff valves for fixtures such as sinks and toilets and outdoor sillcocks. Flow is inefficient because of the circuitous route the fluid (water, in most cases) has to follow. It's important to orient the valve in the right direction with the arrow (cast into the side of the valve) aligned with flow direction. That way, water flows against the bottom of the rubber gasket. If the

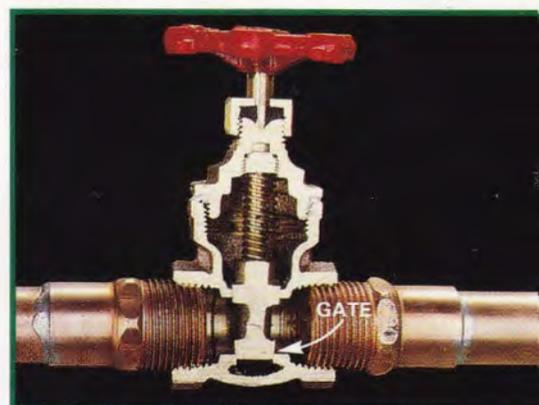
valve is put in backward, the flow will force the gasket away from the top of the valve.

**Gate valves (middle photo)** are called "full-flow" valves; there's a direct unobstructed path for flow right through the middle of the valve. A wedge-shaped brass gate is lowered into a machined slot to close the valve. They should either be completely open or completely closed. Water flowing through a partially open gate valve wears away the metal and causes the valve to fail over time.

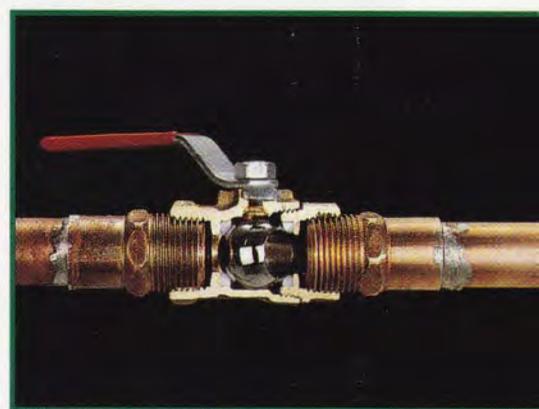
**Ball valves (bottom photo)** contain a finely machined stainless steel ball with a hole drilled through the center that pivots in plastic bushings. Like the gate valve, it's a full-flow valve. The hard steel allows this valve to be partially open without wearing out. In the closed position, the lever is perpendicular to the pipes; in the open position it's parallel, so a glance will tell you if it's open or not. The downside? If the pipes are tight against the wall, you may not be able to operate the lever.



Stop valve



Gate valve



Ball valve

## Is a microwave worth fixing?

*My microwave oven still cooks stuff but not nearly as fast as it used to. A friend told me that the magnetron (whatever that is) is shot. Since it's well past the warranty period, I'm considering replacing the magnetron myself. Is it worth doing, or should I just buy a new oven? Do you have any advice?*

George Lepon, via E-mail

Yes—don't go anywhere near it! Microwave ovens have capacitors that store up to 4,000 volts for long periods of time after the oven has been used. In fact,

this stored voltage electrocutes an average of four people every year. The only two "repairs" a homeowner should attempt are changing the light bulb and tripping the circuit breaker located on the back of most machines.

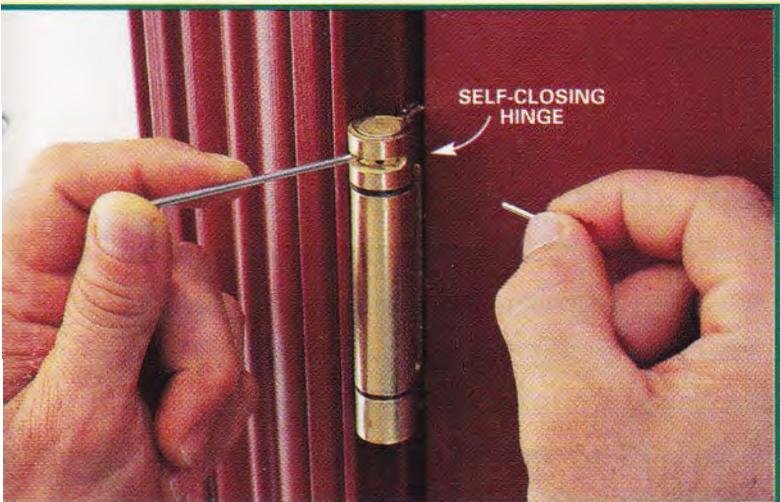
As far as having the oven repaired, a new magnetron would run anywhere from \$80 to \$130, plus \$80 in labor to install it. You'd need to be very emotionally attached to your oven to justify that expense. Microwave ovens are so cheap nowadays that it's hardly worth having them repaired. Splurge and go buy a new one.

## How do you make an existing garage service door self-closing?

We recently put our home on the market and were told by a home inspector that the door between the house and the attached garage should be self-closing. How do I make the door self-closing?

G. Nicholson, Jackson, MS

It's code in most areas that the entry door to an attached garage be "fire-rated" and have a self-closing device. The purpose is to keep a garage fire from spreading to the house. But don't worry—making this door self-closing is as simple as changing two or three of the door's hinges or installing a door closer at the top of the door. It'll cost about the same (\$25 to \$30) to go



either route, and either is acceptable.

If you plan to use self-closing hinges (**left photo**), take the original middle hinge to your home center or lumberyard, and find self-closing hinges with plates the same size as the ones already on the door. You may have to chisel the edge of the door to get a new square-cornered hinge to fit in mortises machined for round-cornered hinges. Self-closing hinges look much like ordinary hinges except they have a bigger barrel to house the internal spring that makes them self-closing. Switch hinges one at a time so you won't have to remove the door, then wind and adjust the springs with the tools and instructions provided.

Door closers (**top photo**) work well for odd or old doors that have hard-to-match hinges. They're also a good choice if existing trim won't allow for the extra thickness of the barrel found on self-closing hinges. You can mount them on either side of the door. Drilling templates and installation instructions come with the closer.

Whether you use a closer or self-closing hinges, adjust the mechanism so the door closes and latches on its own from a wide-open position.

## Free home-buying info

[www.hud.gov](http://www.hud.gov). If you're considering buying a first or new home or have questions about your mortgage, let the Department of Housing and Urban Development begin your education. You can find out about your rights as a home buyer, get mortgage

tips and use the mortgage calculator, and even find out if you have some money coming to you from a long-forgotten HUD refund.



Art Direction • BOB UNGAR & JANIS MCKAY BABCOCK  
Photography • BILL ZUEHLKE & MIKE KRIVIT

## Got a question?

Submit your questions to Ask Handyman, 2915 Commers Drive, Suite 700, Eagan, MN 55121. Due to the volume of mail received, we can't reply individually to questions submitted.

# You can fix it

by Bruce Clark

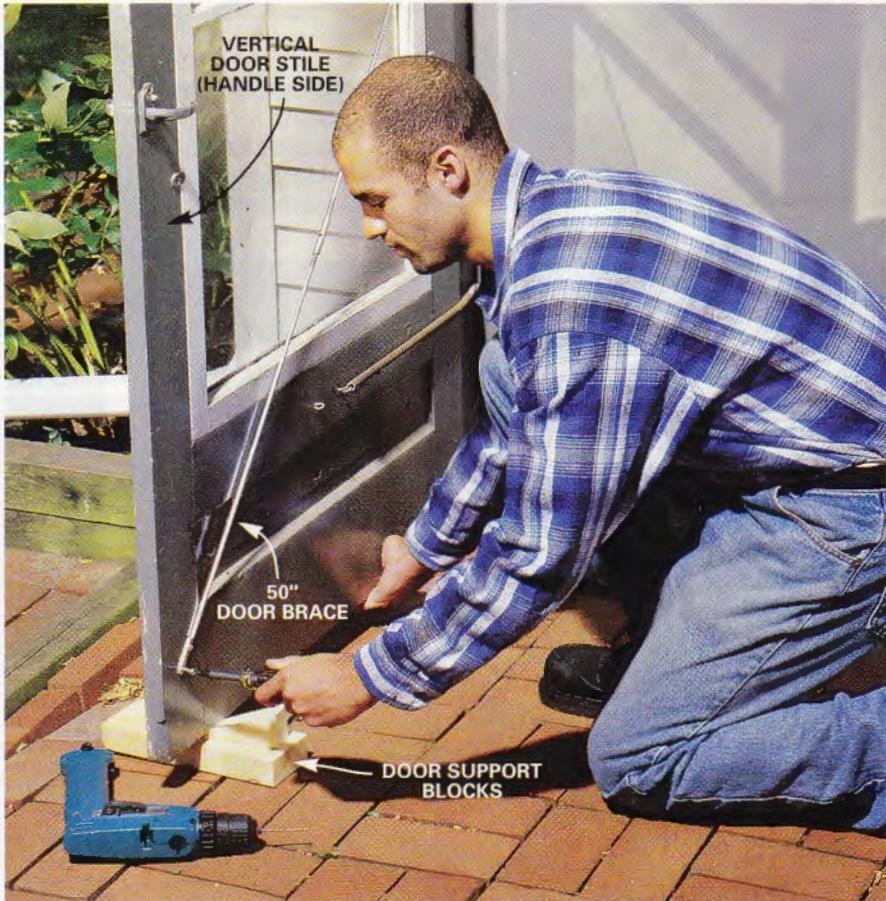
attach	screen door brace
repair	miscut mortise
remove	brick stains
install	a rain diverter

## attach a screen door brace

Over time, wooden screen doors can droop and begin to rub. Your first step should be to try tightening the hinge screws. If that doesn't fix the problem, check to see if the joints in the door are loose, causing it to sag out of square. If that's the case, correct the problem with a door brace (**Photos 1 and 2**). Purchase a 50-in. long door brace (\$7) from a hardware store or home center, and take 20 minutes to complete the repair.



**2** **INSERT** a 16d nail into the turnbuckle hole and turn the turnbuckle clockwise to adjust the door until it fits. Take care not to tear the screen.



**1** **SUPPORT** the outer edge of the door with wood scraps and screw one end of the brace to the center of the door stile 3 in. from the bottom. Drill a pilot hole and install only one of the two screws. Then drill pilot holes and screw the top end to the center line of the hinge-side door stile. Install the final screw in the lower brace.

### Here are some tips to make the job easier:

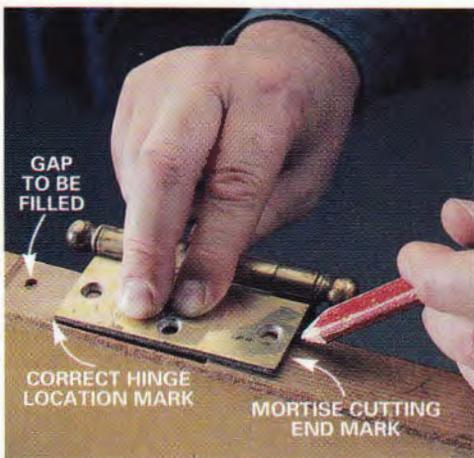
- Before you begin hanging the brace hardware, join the threaded ends of the brace's two halves by screwing each of them 1/2 in. (but no more) into the metal turnbuckle.
- Once the door brace is on and tightened, remove the door sup-

port blocks, close the door and check the gaps around it. Adjust the turnbuckle until the door closes smoothly.

- Add a turnbuckle to a new door to prevent future sagging.

**More YOU CAN FIX IT»**

## repair a miscut mortise



- 1 REMEASURE AND REINSTALL**  
the hinge in its correct location.

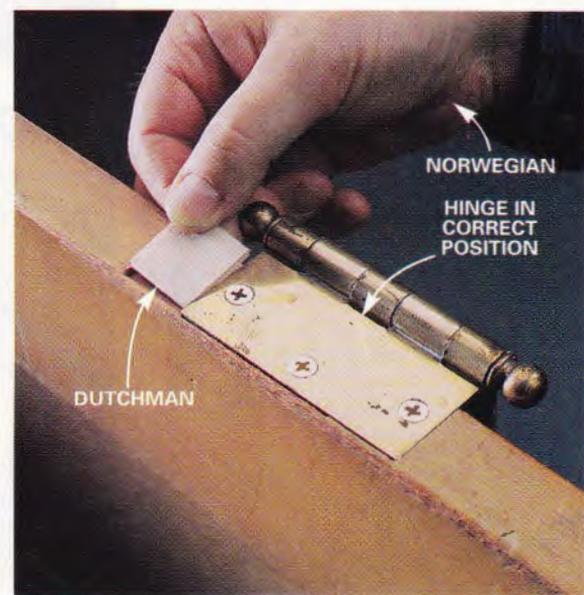


- 2 BELT-SAND** a paint-mixing stick the same thickness as the hinge and cut the stick to length. Older hinges are often the same thickness as the paint-mixing stick.

**F**illing a gap alongside a miscut hinge mortise is ticklish business. Once you've installed the hinge correctly, fill the "error gap" using a wood patch known as a "Dutchman."

If you're working on an *interior* door where the mortise for the hinge is less than 1-1/8 in. wide, save time and effort by cutting the patch from a paint-mixing stick. Check the thickness of the patch by placing the stick in the hinge mortise. If the patch is "proud" of the door edge, sand the paint stick to the proper thickness before cutting it to length.

For other doors and situations, use a table saw or fine-tooth handsaw to saw the patch from scrap wood that's the same thickness as the hinge. If the door is painted rather than stained, hemlock, birch or maple scrap wood will work for the patch, since you don't have to make the repair blend perfectly.



- 3 CHECK THE FIT** of the patch. If it fits snugly and is flush with the surface of the door edge, glue the patch in place and paint or stain it to match the door.

## remove stains from brick

**L**ook up at your chimney. If you notice a white crystalline substance on the face of the bricks, you're seeing a chemical residue called efflorescence. Calcium carbonate, a soluble salt, is leached from the brick and mortar by

moisture wicking out of the chimney.

If the chimney moisture isn't affecting any other part of your house and you want an easy cosmetic fix, scrub off the white gunk with a wire brush, then take

a garden hose and flush off both the bricks and the roof.

**NOTE:** There's no easy way to stop this chemical reaction. Periodic cleanings may be necessary.

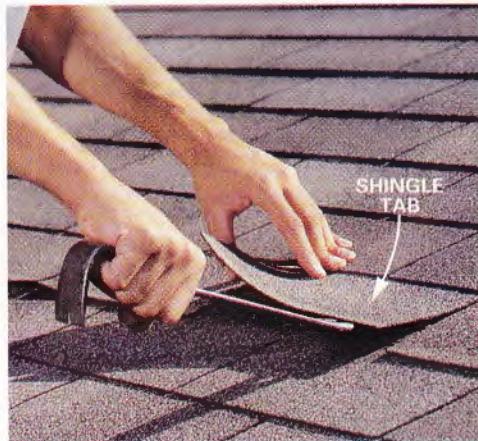
**More YOU CAN FIX IT>>**

## add a rain diverter

If your house lacks gutters, rain that's pouring off the roof will give you a good soaking when you come and go. In winter, melting snow creates a slip-and-fall hazard when it drips and freezes on porch stoops. Avoid those problems by taking 25 minutes and using the techniques shown in **Photos 1 - 3** to install a rain diverter.

Purchase metal D-style drip edge (ordinarily used as roof edge flashing) and install it upside down as a diverter. Drip edge comes in 10-ft. lengths, costs \$5 and is usually available in white, brown and unpainted aluminum. Cut it to length, equaling the width of your stoop. Also buy a 10-oz. tube of clear silicone caulk (\$4) for use as an adhesive and sealant.

Work carefully to break the bond to release the shingle tabs (**Photo 1**). Work from a stable ladder centered on the doorway and release only those tabs along the third course of shingles up from the eave. To avoid breaking the tabs on older, brittle shingles, lift them only 2 to 3 in. On newer roofs where the shingles are more pliable, fasten the diverter in place using both silicone (**Photo 2**) and roofing nails. Space the nails every 2 ft. under the shingle tabs. Caulk the nailheads with silicone.



**1** **LIFT** the shingle tabs that are centered over the porch stoop by gently pushing the flat end of a pry bar under each tab. If the asphalt sealant holding the courses of shingles together won't release, apply more force to the pry bar by punching the back of the bar using your palm or tapping the bar *lightly* with a hammer. Work in temperatures of about 40 to 70 degrees F.

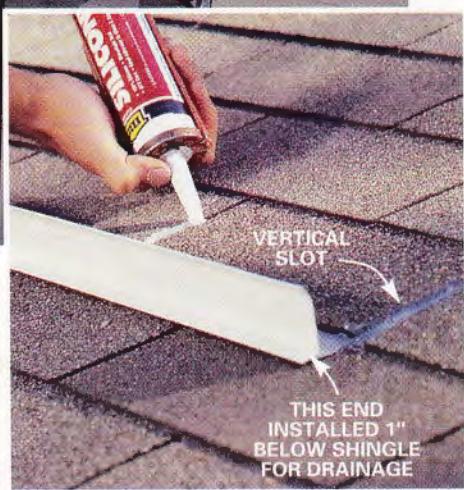


SILICONE CAULK  
BEAD OF SILICONE APPLIED TO UNDERSIDE OF DIVERTER

**2** **APPLY** a 1/4-in. thick bead of clear silicone caulk on the *underside* of the drip edge, lift the shingle tabs up slightly and slide the diverter under the tabs. Slide one end of the diverter tight to the bottom of the shingle tabs and leave a 1-in. exposure at the other end to create a drainage pitch.



**3** **APPLY** a dab of silicone caulk to the vertical slots in the shingle tabs above the diverter to ensure that water doesn't seep under the top edge of the metal.



VERTICAL SLOT  
THIS END INSTALLED 1" BELOW SHINGLE FOR DRAINAGE

# Workshop TIPS

by Bruce Wiebe

TRIM POSTS TO LENGTH AND ATTACH TO JOISTS

ADJUSTABLE HEIGHT SHELVES

BUILT-IN LIP PREVENTS ITEMS FROM FALLING OFF SHELF!

## Upside-down shelves!

Here's some neat and fast storage for your shop's upper regions. Bolt together a set of inexpensive metal shelves (about \$12 at a home center) and attach them upside down to the ceiling joists with lag bolts. The spacing between shelves is completely adjustable. Hang the shelves so they're easy to reach, or set them high so you won't bonk your head. Trim the shelf posts to just the right height with a tin snips. Thanks to reader Kurt Pederson for taking our shelving to the next level.

**More WORKSHOP TIPS >>**



## Holsters for safety glasses

To keep eye protection within arm's reach, buy a pair of glasses for each stationary power tool in your shop, then attach plastic sunglasses holders to each tool in a convenient spot. Sunglasses holders (\$1 each at auto parts stores) have adhesive pads on the back for an instant grip. When you finish working, slide the glasses into the holder so they're ready to go next time.

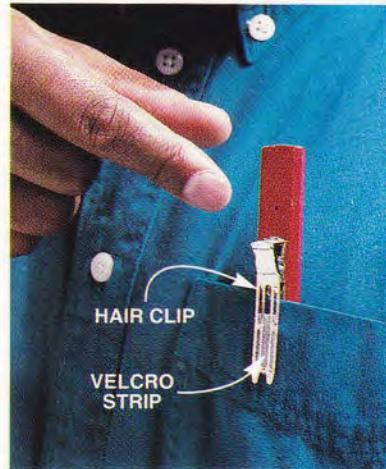
## Workshop tips



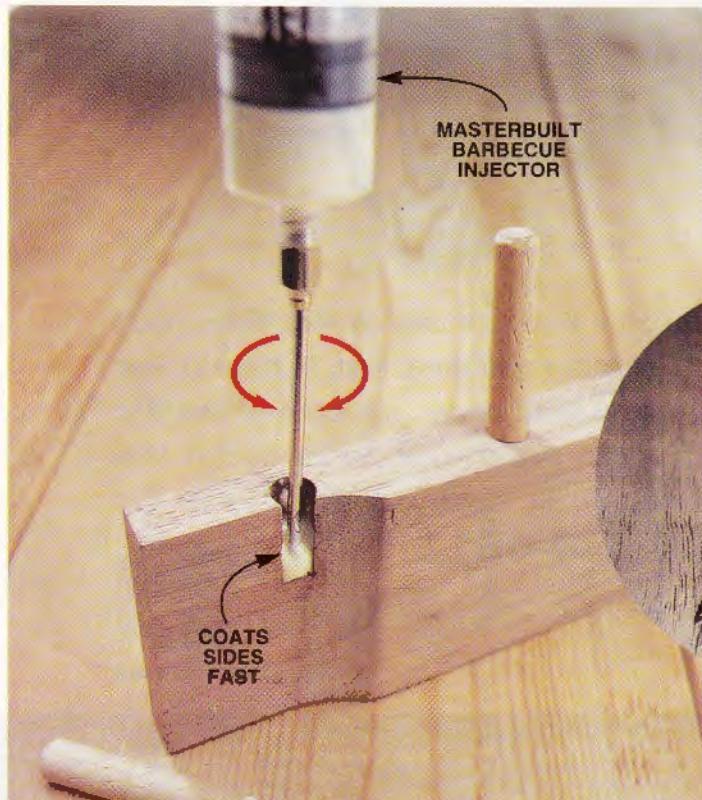
## Where's my carpenter's pencil?

Faithful reader Robert Mills really made his mark with this tip for keeping track of your carpenter's pencil.

Drive two No. 2 x 3/16-in. wood screws about 1/2 in. apart into the flat, upper end of the pencil, leaving them a tad loose so you can slide the slotted leg of a hair clip under the screws. Tighten them securely, then stick a small strip of



Velcro fastener on the inside of the other leg to improve the clip's holding ability.



## Fast and smooth dowel-hole gluing

To coat dowel holes quickly and with no mess, or to fill a crack during furniture repair, buy a Masterbuilt barbecue injector. You can get one for \$6 by calling (800) 489-1581, ext. 101, or visiting the company's Web site at [webcatalog.masterbuilt.com](http://webcatalog.masterbuilt.com) (fax: 706-327-5632).

To use it, pull out the plunger, pour in some glue and press the plunger down. The glue ejects sideways from the needle, so it's easy to fully coat the length of the dowel hole or crack. After the glue job is finished, push the plunger to empty the glue into the glue bottle. To clean up, pull out the plunger, fill the syringe with warm water and press the plunger again to rinse out the syringe with high-pressure action.

## Sit-level stool

If the legs of a four-legged stool or chair aren't of equal length—and you get that irritating rocking-horse effect when you sit on it—try this quick fix. Tape two 80-grit sanding discs on a flat surface—like a table saw table—and rotate the project side to side with the longer leg ends rubbing on the sandpaper. Check your progress often by moving the legs off the sandpaper and testing the "sit" of the stool or chair. When all four hit the floor at the same time, you're on the level.

P.S. If the floor where the stool sits isn't flat, move the stool to a new location (or rebuild your home!).



## Two ways to stretch a veggie rubber band

Here are two more reasons to eat your broccoli, courtesy of reader Gene Black. Save the wide, tough rubber band that's wrapped around it and use it as a clamp for smaller wood-gluing jobs or pull it over a power cord to keep the cord coiled.

**More WORKSHOP TIPS>>**

# No Match



A yellow plastic bottle of Ronsonol Lighter Fuel. The label features a red and blue design with text that reads: 'BEST FOR ALL WICK LIGHTERS', 'RONSONOL LIGHTER FUEL', 'ALSO EXCELLENT FOR REMOVING GREASE, OIL STAINS, TAR & LABELS', '12 fl. oz. (355 ml.)', 'CONTAINS NAPHTHA', 'DANGER: FLAMMABLE HARMFUL OR FATAL IF SWALLOWED READ CAUTION STATEMENT CAREFULLY', and 'MADE BY RONSON'.

**ALSO EXCELLENT FOR  
REMOVING GREASE, OIL  
STAINS, TAR & LABELS**

**RONSON**

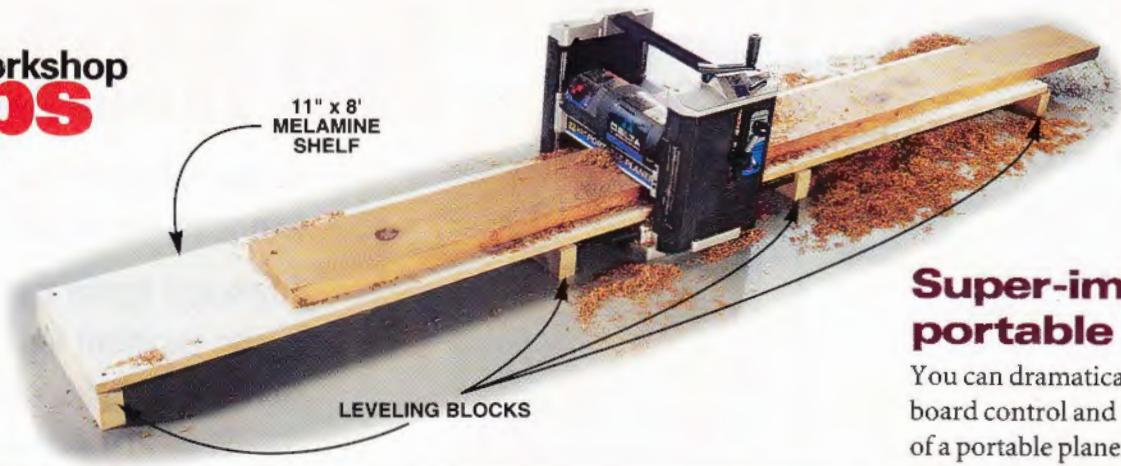
RONSON CORPORATION - SOMERSET, NJ, USA

TEN BUCKS SAYS  
YOU LIKE TO  
**FIX THINGS**  
THAT AREN'T BROKEN

**WANNA BET?**

**BLACKJACK.COM**

PLAY NOW AND GET \$10 FREE.



## Super-improved portable planer

You can dramatically increase the board control and cutting quality of a portable planer with an 11-in. wide x 8-ft. standard piece of Melamine-covered particleboard. This white plastic-covered shelving product costs \$10 at home centers. Longer, heavier boards will slide smoothly across the slick surface, and you don't have to run around in circles to support them as they leave the planer. You'll also notice an absence of "snipe" (divots on the end of the board as it exits the planer) thanks to the increased support.

You can set up the jig on a long workbench or countertop, but I use mine right on the shop floor or, in good weather, on the deck. With the planer unplugged, slide the Melamine particleboard between the planer bed and cutter head, and screw blocks underneath to level it and hold it tight against the infeed and outfeed tables. That's it! You've lost only 3/4 in. of overall height capacity while increasing the board length your planer can efficiently plane.

If you can't find Melamine particleboard, glue plastic laminate on a piece of particleboard or plywood.

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Art Direction • DAVID FARR  
Photography • MIKE KRIVIT and BILL ZUEHLKE

If you have a shop tip you'd like to share, send it to Workshop Tips, The Family Handyman, 2915 Commers Drive, Suite 700, Eagan, MN 55121. We pay \$100 for tips we print. Original contributions become our property upon acceptance and payment. We're sorry, but tips can't be returned.

# Using tools



## Pressure washers

**Wash siding, concrete floors, decks and even your car faster and easier.**

by Bruce Clark

**P**ressure washers are so much fun to use—and show such dramatic and quick results—that you'll be begging to clean your neighbors' siding, driveways and cars once you've finished your own.

You can rent or buy a pressure washer to clean nearly any outdoor item. By following the tips in this article, you'll learn how to use pressure washers safely and efficiently.

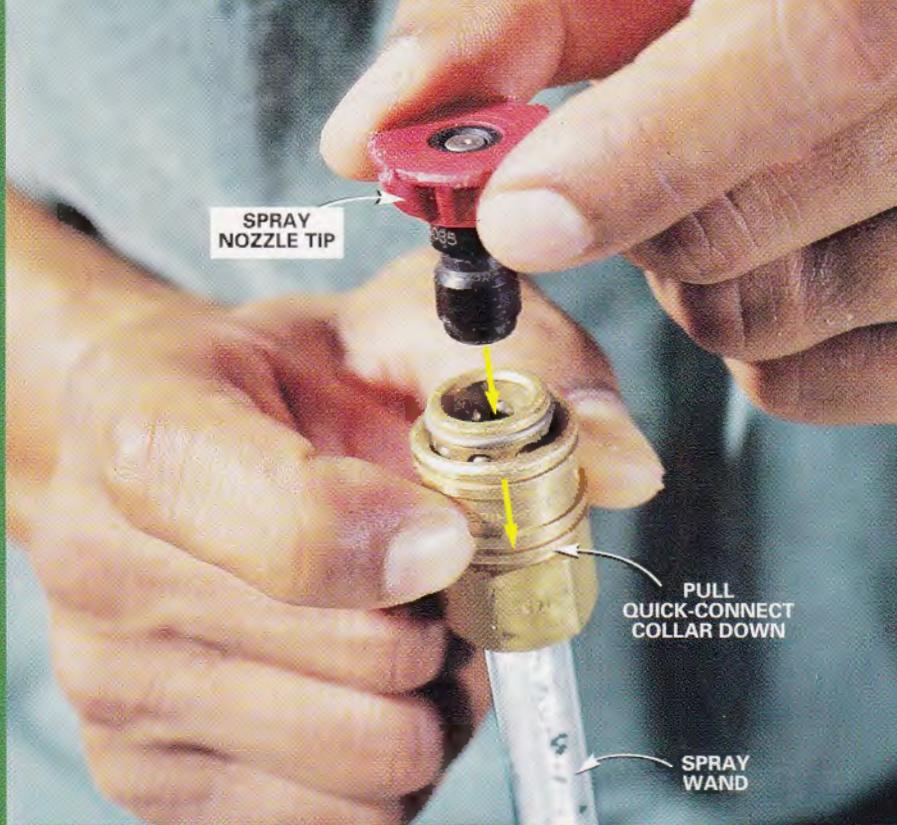
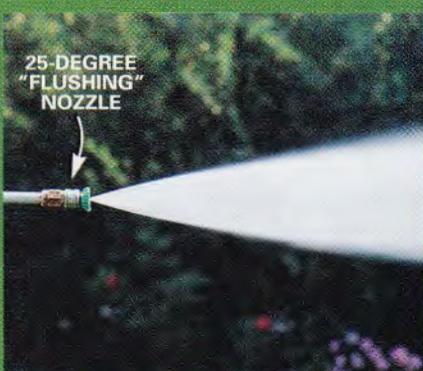
### Two types of pressure washers and how they work

Pressure washers, whether they're powered by electric motors or gas engines, run a pump that pressurizes the water from your garden hose to 1,000 lbs. or more, then forces it out through a spray wand. The higher the pressure (measured in pounds per square inch—psi), the tougher the cleaning jobs they can tackle. Both types require a

steady, uninterrupted supply of water (in gallons per minute—gpm). For occasional use, most homeowners will find that a washer with a pressure range of 1,300 to 2,400 psi works best.

Electric pressure washers deliver 1,300 to 1,400 psi, require about

**More USING TOOLS >>**



**INSERT** individual nozzle tips into the spray wand by retracting the quick-coupling collar, pushing the tip in as far as it will go and releasing the collar. Pull on the tip to confirm that it's firmly locked in position. Point the spray wand away from people and property when starting the pressure washer.

## Spray nozzles for different tasks

Pressure washers that deliver less than 2,400 psi generally come with a single adjustable spray nozzle that delivers zero to 60-degree fan patterns. Some brands offer accessory "rotating" or "turbo" nozzles that clean more effectively than standard adjustable nozzles because they spin the water stream.

Heavier-duty units generally come with four or five color-coded, individual nozzle tips (three are shown here). They create specific fan patterns: wider (for using detergents), medium (for general cleaning) and narrower (for blasting deep stains).

1-1/2 gpm and are the best choice for light-duty cleaning like washing cars (**Photo 3**), outdoor grills and garage floors (**Photo 4**). They generally cost less than \$200 and are quieter, lighter in weight and more portable than gas-powered washers. Many have built-in tanks for optional detergent use. Always connect electric washers to power outlets that are protected by a ground fault circuit interrupter (GFCI) and use only 12- or 14-gauge extension cords.

Most pressure washers that you'll find for rent or sale are gas-powered. This type can deliver higher water pressure than the electric kind, some more than 3,000 psi. But gas-powered washers also require more water: 2 to 3 gpm. These washers are the best choice for bigger jobs like preparing siding for painting (**Photo 2**), removing "aging" stains from wood decks (**Photo 5**) and deep-cleaning concrete. You can rent one for about \$60 a day, plus the cost of acces-

sories like chemical injectors (**Photo 1**) or longer spray wands for reaching high places. Gas-powered washers (non-commercial units) cost \$300 to \$800 depending on the pressure they deliver, their features and the engine and pump quality.

### Operating procedures

All pressure washers seem intimidating the first time you use them. Have the rental center or tool retailer instruct you on its use, and follow these guidelines:



**1 TO START** a gas-powered washer: (1) Clean any debris from the inlet filter. (2) Connect any accessories (like this chemical injector). (3) Run water through the washer for one minute to prime the system and remove any air. (4) Squeeze the spray wand trigger to bleed water pressure, and (5) pull the starter cord to start the engine.

**Water supply.** Make sure your water supply can deliver the gallons per minute specified for your machine. For example, if your pressure washer needs 2-1/2 gpm, time how long it takes your garden hose to fill a 5-gallon pail. The garden hose must be 50 ft. long or less and have a 3/4-in.

inside diameter, with standard 3/4-in. hose fittings for connecting to the washer's inlet. To ensure that water circulates unobstructed through the system, check the water inlet filter or screen and clean it of debris. Also make sure the garden and pressure hoses are kink free.



**2 WASH** siding to prepare it for painting. Begin with the wand's nozzle 4 ft. from the house and slowly move it closer until you achieve the desired cleaning effect. Grip the spray wand with two hands, direct the water stream at a 45-degree angle to the siding and move the water stream constantly.

**Start-up procedure (Photo 1).** Before starting the washer, it's imperative that water be flowing through the washer and out the spray wand. Follow these steps:

**More USING TOOLS >>**

## Safety concerns

Pressure washers deliver extreme pressure and can cause serious injuries if misused. For safety, follow these guidelines:

■ Don't point the pressure washer at people or pets or put your hand in front of the nozzle. The pressurized water stream could actually penetrate your skin or cause serious cuts.

- Wear safety glasses when operating the washer.
- Don't use pressure washers while working from ladders. Once you squeeze the trigger, the powerful recoil on the spray wand can throw you off balance and off the ladder.
- Maintain a minimum 6-ft. distance when spraying water around power lines, electrical masts or outlets.

- Before uncoupling hoses, stop the machine, turn the water faucet off and squeeze the spray wand trigger to release all water pressure in the system.
- Engage the safety lock on the trigger when you're not actually washing and when changing nozzle tips.

# Using tools



- Tighten all hose connections so no air can enter the lines.
- Set the spray wand to a low- or no-pressure setting to prevent recoil, or kickback, when the washer is started. Electric washers and gas washers with variable nozzles should be on low-pressure, wide fan settings. Gas washers with individual nozzle tips (**photos**, p. 30) should have their nozzle tip removed at this point.
- Completely turn on the water faucet at the house. Squeeze the spray wand trigger to prime the pump and purge air from the system.
- Start the washer (**Photo 1**). If it's a gas unit, steady it when pulling the starter cord by bracing your foot against a wheel. Let the washer run for a minute to warm up. *To avoid damaging the pump: Never run a washer longer than three to five minutes (depending on the model) while the trigger is off.*
- With the washer running and the trigger locked "off," adjust pressure and spray settings, or insert nozzle tips

**3** **CLEAN** cars and other items with an accessory brush and detergent. First rinse the area with water, then switch to a detergent wash and finish with a rinse.

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**SCOUR** oil and dirt off a garage floor with a detergent: (1) Rinse surface dirt off the floor at high pressure. (2) Change the nozzle setting to low pressure to dispense detergent. (3) Finish by changing the nozzle back to high pressure and rinsing with water.

4

in the spray wand (**right photo**, p. 30). Now the washer is ready to use.

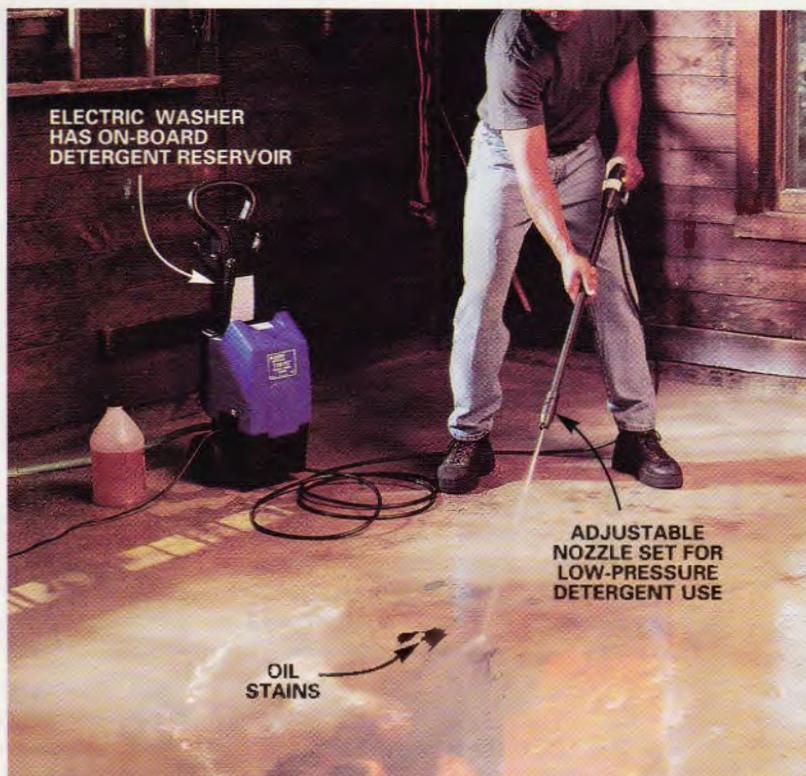
### Power cleaning techniques

Pressure washing removes dirt and grime, but it isn't designed to strip paint or kill mildew on siding or decks. For the best cleaning results without damaging any surfaces, first test the pressure setting and spray pattern on an inconspicuous place.

When washing house siding, follow these rules:

- Lay tarps around the house perimeter to protect plants and collect paint chips blown off during washing. Houses built before 1977 may have lead paint chips that will have to be collected and properly disposed of at a hazardous waste facility.

**More USING TOOLS >>**



THE FAMILY HANDYMAN MARCH 2001 35

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# Using tools

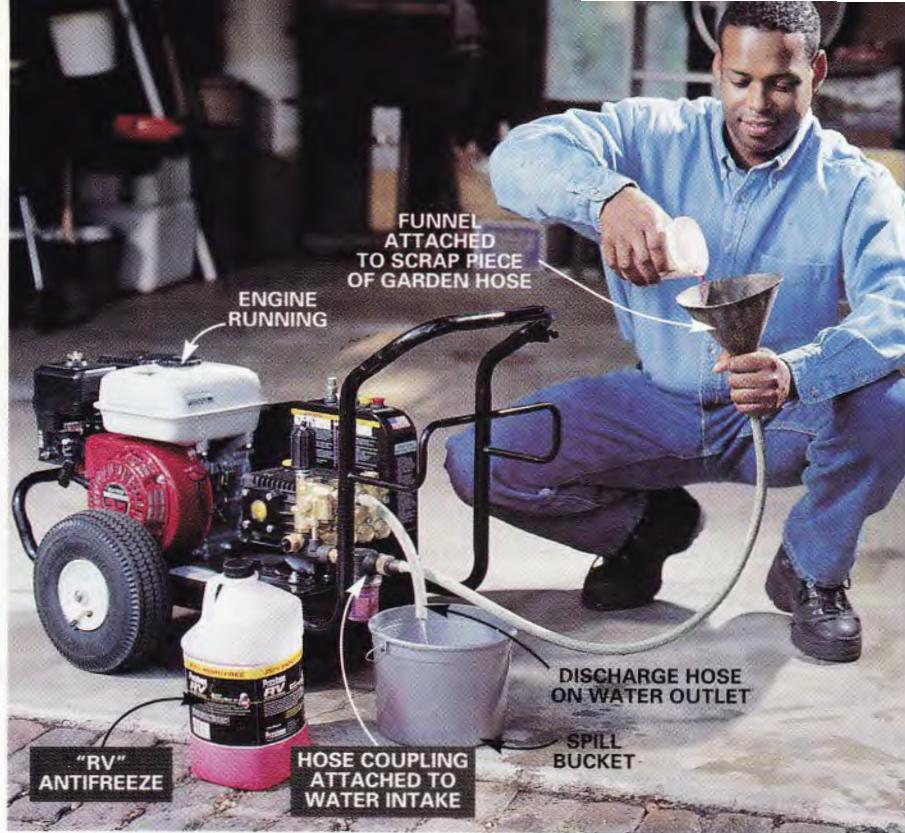


**5** **RENEW** deck boards by holding the spray wand at a 45-degree angle 1 to 2 ft. from the decking. Keep the water stream constantly moving. Use a higher-pressure (2,000 psi or greater) gas-powered washer and a concentrated spray nozzle setting (15-degree).

- Don't hold the spray wand "head on" to the siding. This drives dirt into the surface rather than washing it away. Hold the wand at a 45-degree angle to the siding and at a distance that yields the best cleaning results without gouging wood or denting metal or vinyl.
- Work small areas at a time. To prevent streaks, start washing from the bottom and work up. For even cleaning, use long, overlapping strokes. Rinse the siding by working from the top down.
- Avoid driving water up behind the siding by keeping the spray stream level. Use an extension spray wand for reaching higher places. *Be careful when using a lance extension. The "kickback" can throw it into contact with power lines.*
- Don't spray windows. The high pressure can break them.

## Better cleaning with detergents

Detergents (about \$6 to \$14 a gallon) and accessory brushes increase cleaning effectiveness while reducing cleaning time.



**6** **WINTERIZE** a pressure washer by filling the pump and internal system with undiluted RV-type antifreeze. Insert a funnel into a 3-ft. section of garden hose (one with a male faucet coupling), attach the coupling to the water intake on the washer and slide a 1-ft. section of hose over the water outlet. Start the gas engine and pour antifreeze into the funnel until a steady stream of antifreeze flows from the discharge hose. Stop the engine, pull off the hoses, and seal the intake and outlet with duct tape.

When renting or buying a pressure washer, inquire what accessories and detergents are available for it. To prevent damage to the internal parts, never run bleach in the machine or use detergents not designated for use in pressure washers.

Detergents can only be run through pressure washers using a wide spray pattern. In addition, electric pressure washers require a low-pressure setting on the spray wand. Follow your machine's instructions for using detergents, diluting the detergent and (if necessary) hooking up a chemical injector (**Photo 1**).

For the best cleaning results, first loosen the dirt with plain water under high pressure using a medium spray pattern. Next, apply the detergent using a wide nozzle setting and let the detergent sit a few minutes to penetrate the dirt. Keep the surface wet to avoid possible discoloration or dam-

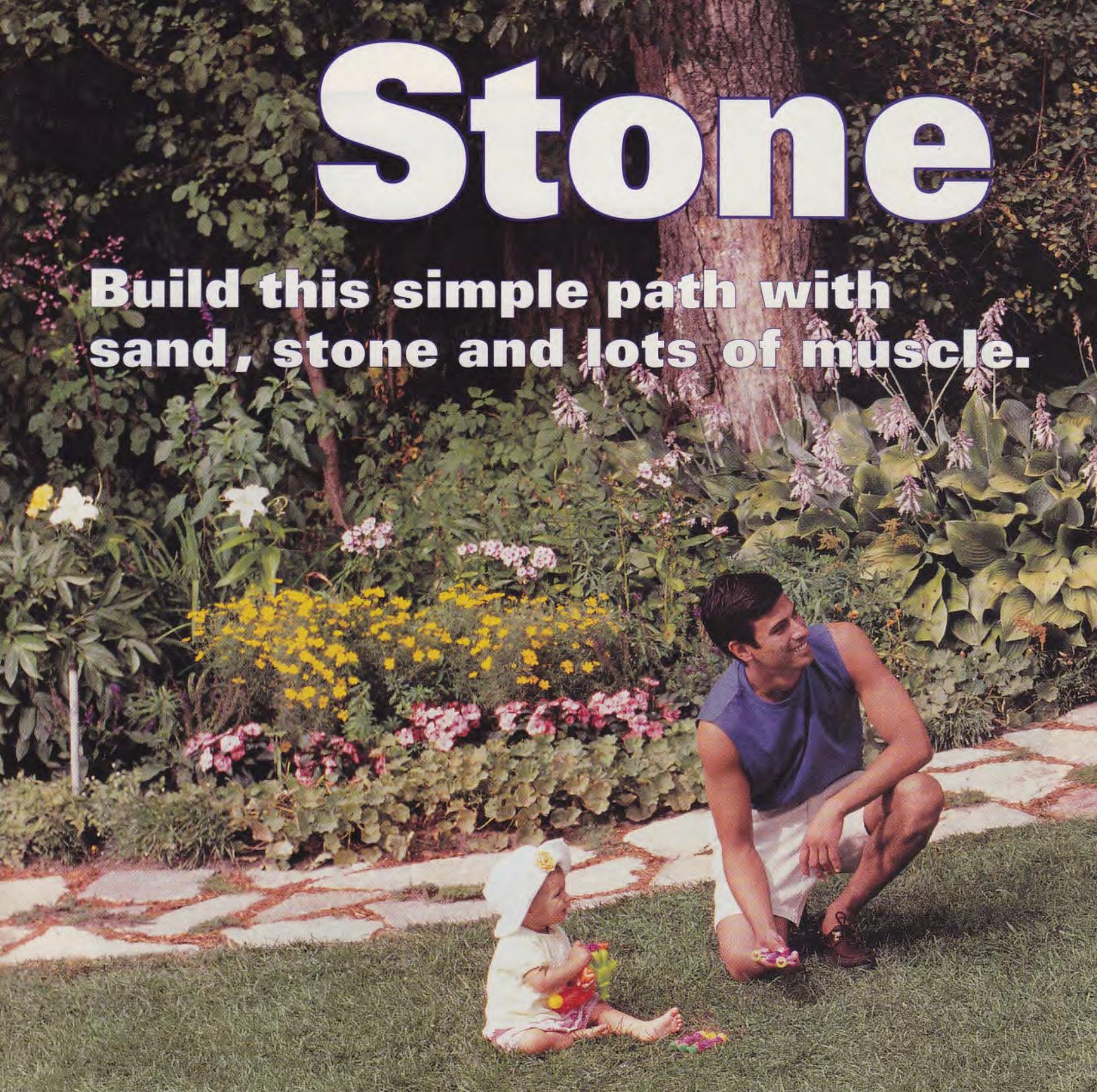
age by the detergent. Finish by resetting the nozzle to a medium pattern (or changing the nozzle) and rinsing with plain water. Switch detergents by draining the first detergent from the pressure washer, rinsing the system with plain water and introducing the next detergent.

## Maintaining the machine

If possible, store the washer indoors in the off-season to avoid damage to the pump, hoses and spray wand. Otherwise, winterize them using only antifreeze designed for recreational vehicles (RVs); see **Photo 6**. When a gas-powered washer won't be used for a month or more, prevent damage to the engine by draining the system of gas or adding a gas preservative to the fuel tank. 

# Stone

**Build this simple path with  
sand, stone and lots of muscle.**



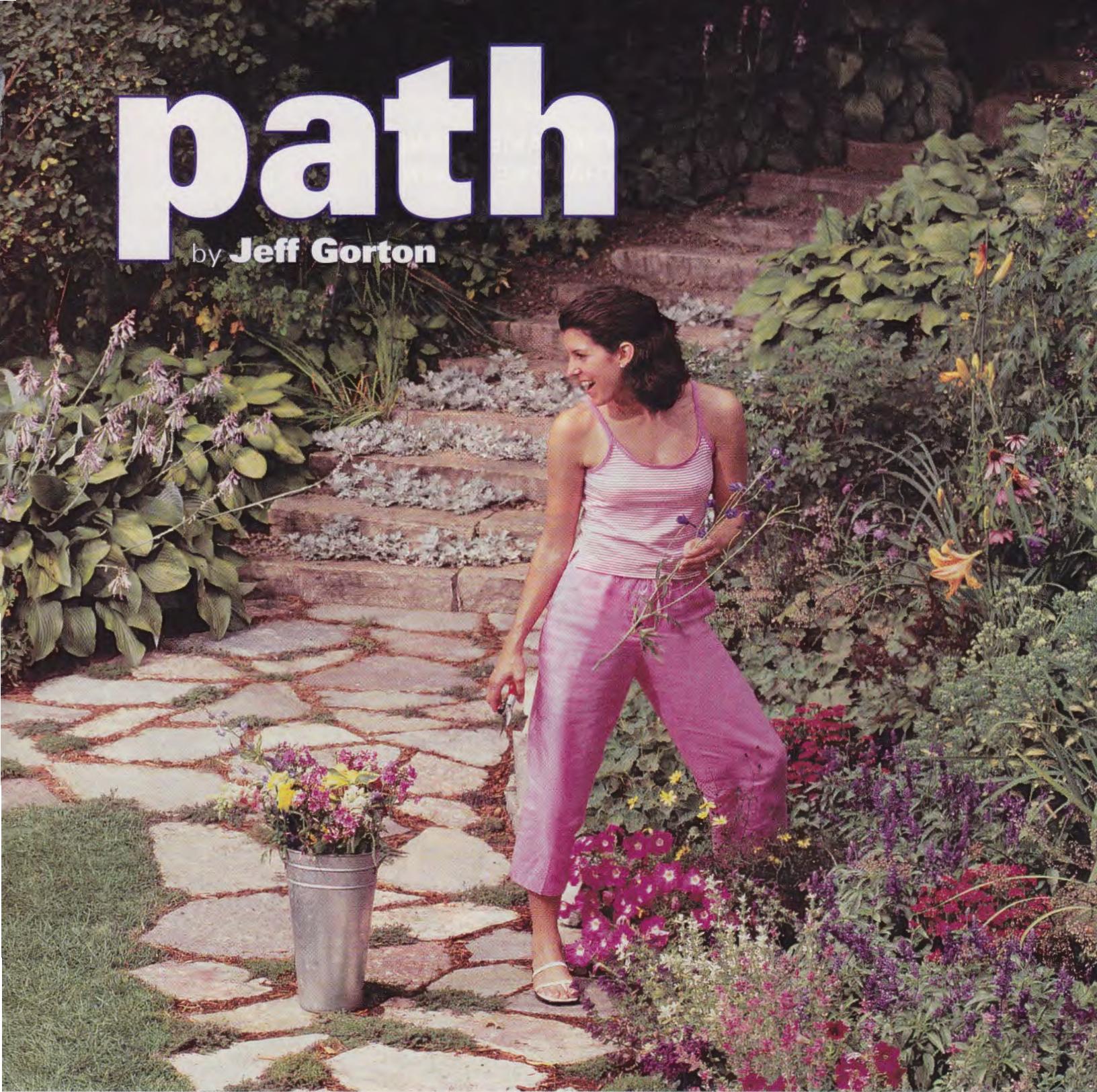
**1**  
**Dig  
the  
path**



**2**  
**Pour  
the  
sand**

# path

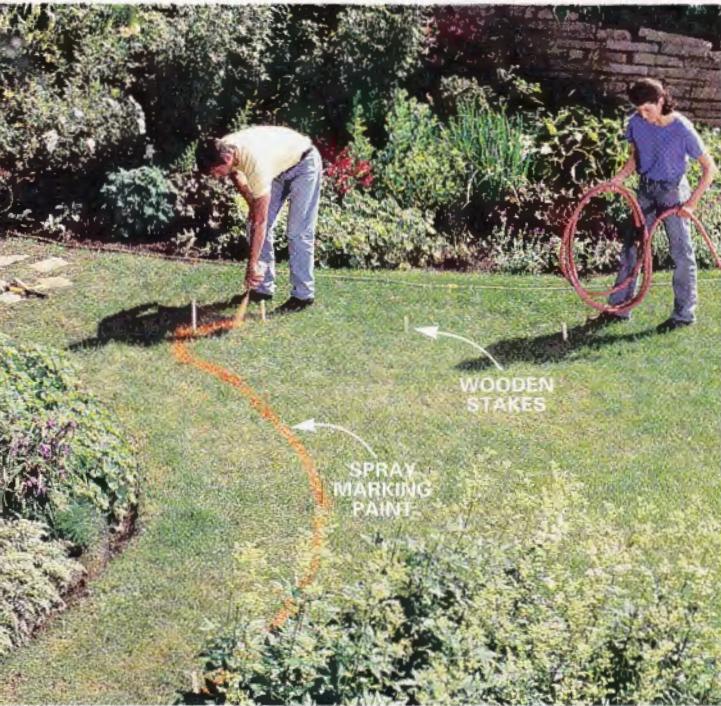
by Jeff Gorton



## 3 Lay the stone

You don't have to be a skilled mason to lay a natural stone path like this one. If you have a strong back and an eye for fitting jigsaw puzzles, you can weave a casual garden path like this just about anywhere in your yard. There's no thick base to install or difficult cutting and fitting—you just lay natural stone over a simple sand bed.

# Lay out the path



**1** **MARK THE PATH'S EDGE** with special upside-down spray marking paint. Spray along the path's edge outlined by the stakes.

You'll be moving a lot of dirt and stone, so a good shovel and wheelbarrow will pay off here. To simplify the grass removal, we rented a power sod cutter (\$45 per half day, and you'll need a pickup truck to haul this brute). For smaller paths, a kick-type sod cutter would work fine (\$20 per day to rent). Buy a heavy rubber mallet or deadblow hammer (\$10 at hardware stores) to settle the stone into the sand bed. If your project requires a step or retaining wall like ours, you'll also need a level and a hand tamper (**Photo 5**). Buy a tamper for \$28 or rent one for \$8 per day. Finally, you'll need a garage broom to sweep the soil mixture into the cracks, and a good pair of heavy leather gloves to protect your hands.

## You'll order tons of stone

For our path, we chose a locally quarried limestone called Chilton. The 1-1/2 to 2-1/2 in. thick



**2** **REMOVE THE SOD** in the area of the path with a sod cutter. Set the sod cutter to maximum depth to minimize additional digging. Dig out the path area to about 5 in. deep to allow for 3 in. of sand and 2-in. thick stone.

"stepper" stones cost about \$300 per ton (a ton covers about 90 sq. ft.), but costs vary widely depending on what's locally available. Measure the length of your path and multiply this by its width to determine the square footage. Then add about 15 percent. Our 3-ft. wide by 70-ft. long path required about 3 tons of stone.

Check the Yellow Pages under "Stone, Natural" or call local landscaping suppliers to find stone in your area. Visit the stone yard to select the stone, since it varies in color, texture and cost. This is also a good time to discuss delivery options. Usually the stone will be stacked on pallets and dropped off near the street.

In addition to the steppers, we needed about a ton of 8-in. wide by 3- to 5-in. thick stone for the wall and a few 6-in. thick stones to build the step (**Photos 4 and 6**). Your stone dealer can help you figure the amount of stone you'll need for special projects like this.

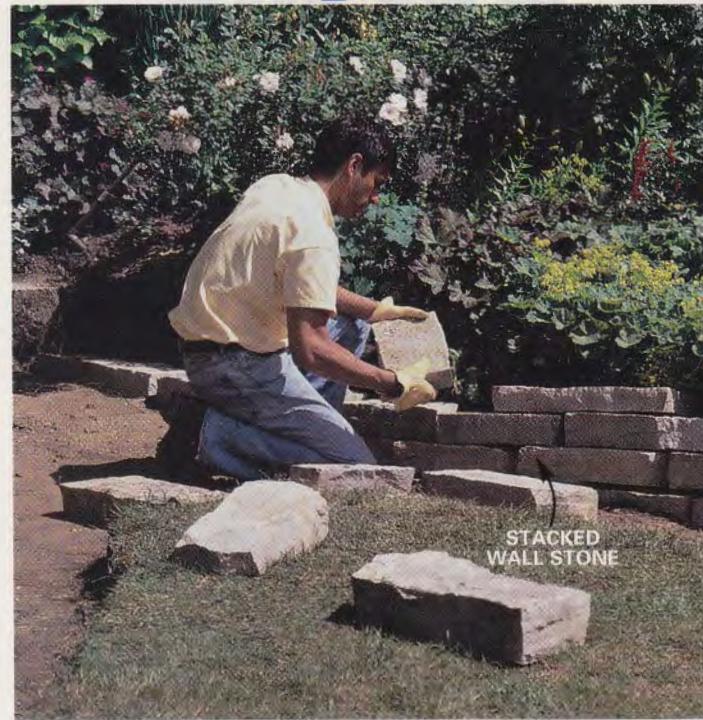
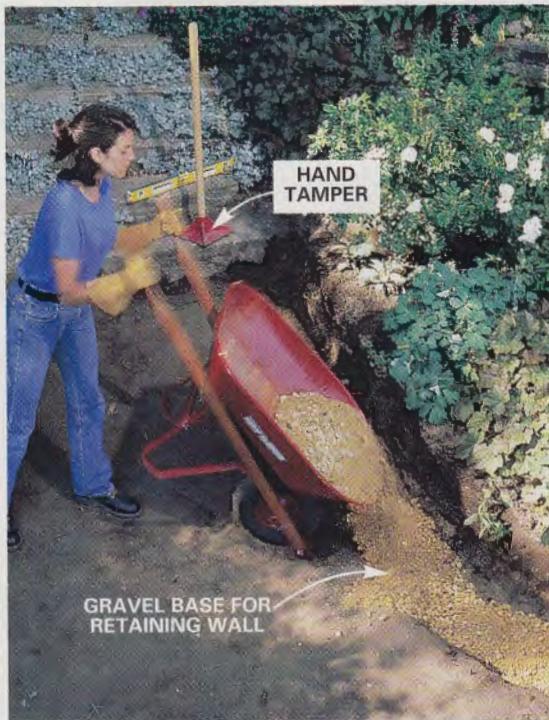
Because this garden path is informal, we decided to set the stone on a 2- to 3-in. thick sand bed rather than the 6-in. deep compacted gravel base used under more heavily traveled walks and patios. Although you'll spend a lot less time digging and moving dirt with our method, you may have to reset a sunken or tipped stone every few years,

**More STONE PATH >>**

# Build walls and steps

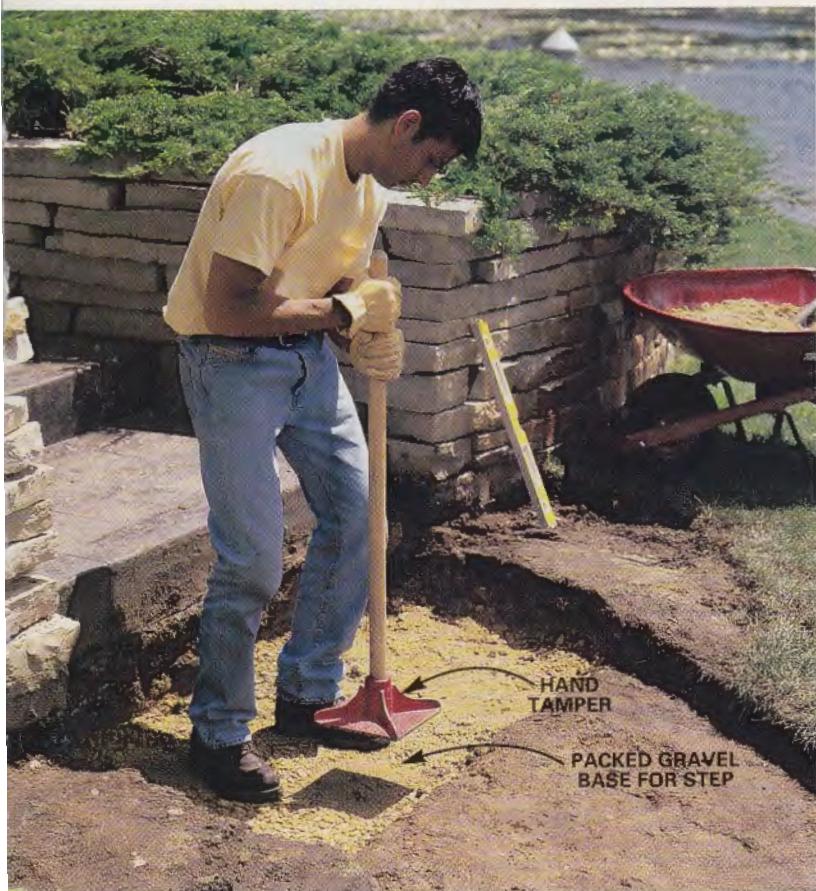
## POUR AND PACK 3

gravel into an 8-in. deep trench for the retaining wall footing only. Spread the gravel in 2-in. layers, packing each layer with a hand tamper before adding the next. Use a level and straightedge to level the final layer before you pack it down.

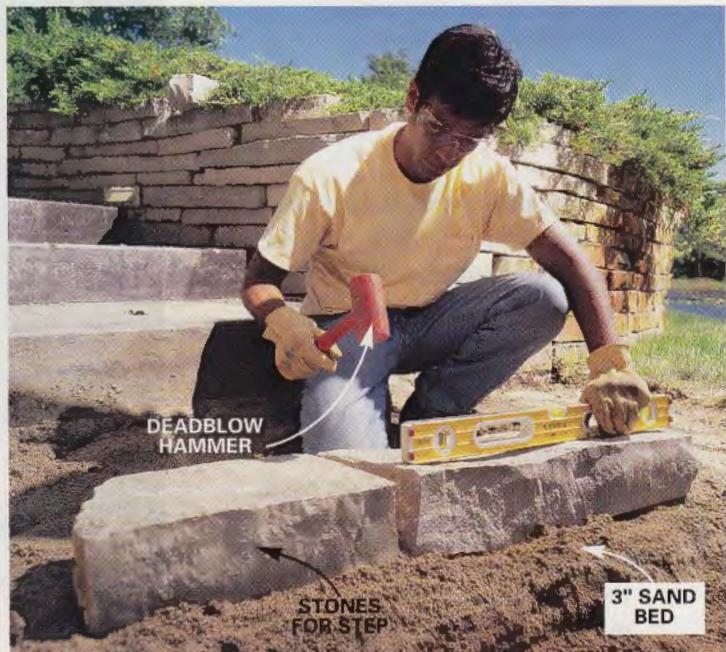


## 4 STACK the stone for the low retaining wall on the compacted gravel base.

Stagger the joints in the stones and set each row back 1/2 in. behind the face of the stones below so the wall "leans into" the hill. Pack soil behind the stones as you build the wall.



**5** TAMP gravel in 2-in. layers to form an 8-in. deep base under the step.



**6** SET 6 x 8-in. wall stone into a 3-in. bed of sand to form the step. Settle and level the stones with a rubber mallet or a hammer and block of wood. Then fill behind the step stones with packed sand and set the path stones even with the top of the step.

# Set the stone



**7** SPREAD a 3-in. layer of sand over the path. Use a rake to smooth the sand about 2 in. below the surface of the lawn.

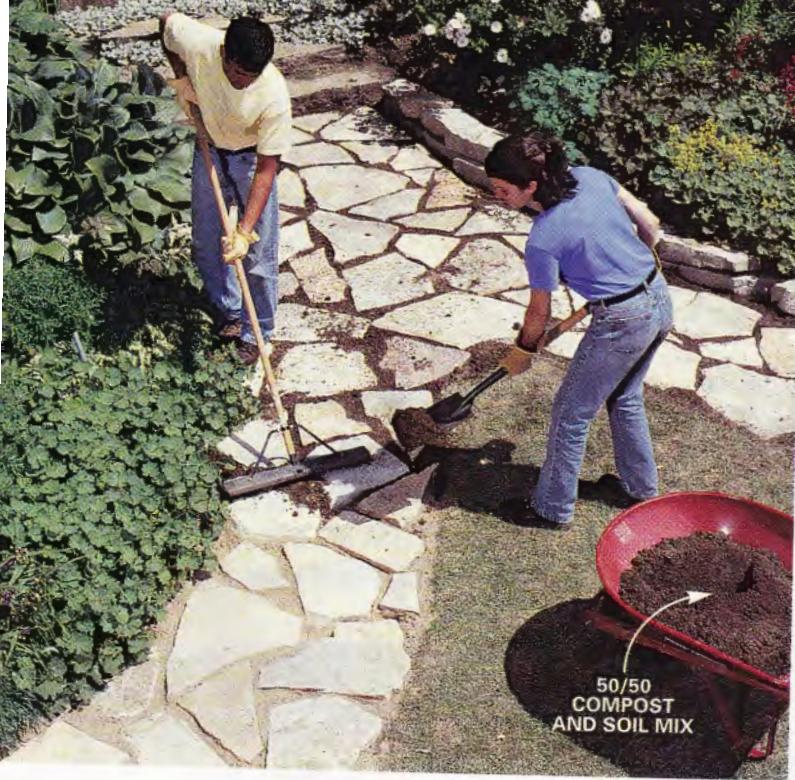


**8** ARRANGE the stone on the sand, mixing shapes and colors to create a natural-looking path. Leave about 2 in. between stones for plants to fill in.



**9** TIE a string to stakes about an inch above the finished height of the path for a guideline. The string should follow the natural slope of the path; it doesn't have to be level. Adjust the depth of the sand so the tops of the stones align under the string. Wiggle the stones into place and settle them down into the sand by pounding on the top with a rubber mallet.

**More STONE PATH >>**



### Use steps and low walls to manage sloping sites

You can lay a stone path like this almost anywhere that's not too steep for comfortable walking. If after laying out your path (**Photo 1**), you notice a section that seems too steep, plan on building in a step to break the path into sections that are more level (**Photos 5 and 6**). You'll have to buy a few stones about 6 in. thick and the right length to form the step. Then level them on a bed of packed gravel and fill behind them with sand before you continue laying path stones.

If your path runs along the edge of a slope like ours, level it by digging it into the slope and building a low retaining wall (**Photos 3 and 4**). We simply stacked wall stones on a compacted gravel bed for our retaining wall, but if it's more than a foot tall, consider stronger construction techniques. (See "Raised Stone Patio," June '99, p. 30. To order a copy, see p. 108.)

### A sand bed makes it easy to level the stones

Laying the stone is like assembling a big, heavy jigsaw puzzle (**Photo 8**). Spread the stones out on the ground

# Set the stone

## 10 FILL THE CRACKS

**between stones with a 50/50 mix of potting soil and sifted compost or bark mulch. Spread the soil mix and sweep it into the cracks with a broom.**

so you can pick shapes and colors that fit. Use a wheelbarrow or a two-wheel dolly to move heavy stones, and always lift with your legs, not your back. Don't worry about tight fits. The path will look more natural if you leave a few irregular spaces and an occasional stone jutting out into the yard.

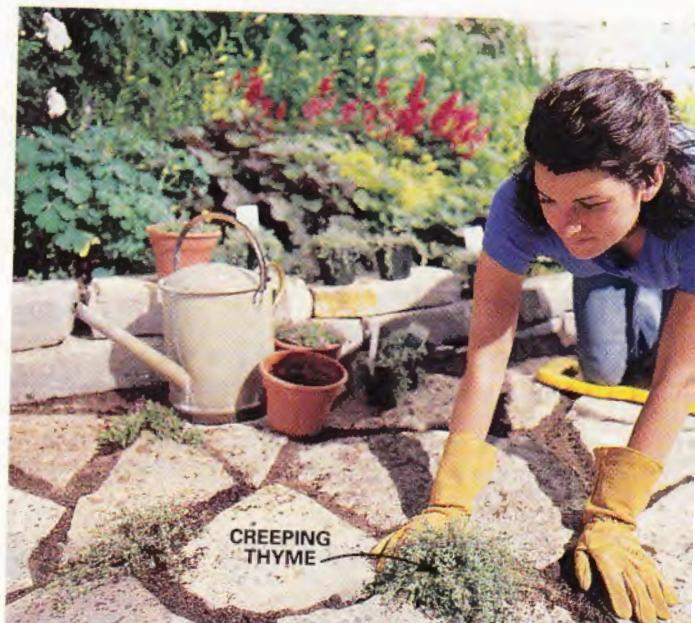
Start laying stones against walls, steps or other established borders. Then work out and along the path (**Photo 8**). Loosely assemble a half dozen stones and stand back to take a look at the arrangement. Reposition the stones if you like, and then set these stones before moving on.

**PLANT** **11**  
creeping thyme or  
another durable  
spreading plant in the  
larger spaces. Dig  
down into the sand  
base to provide room  
for the roots. Loosen  
the roots and spread  
them out in the hole,  
then refill around the  
plant with potting mix  
and water the plant.

The goal for placing the stones is to keep all the tops even. Adjust the height of each stone by scooping out or adding sand (**Photo 9**). As you gain experience, you'll be able to look at the thickness of the stone and judge how much sand to leave. We staked up string as a rough guide so that instead of waving up and down, our path dips gradually over its length to follow the natural terrain (**Photo 9**).

Complete the path by filling the joints between stones with soil mix and planting a durable ground cover (**Photo 11**). We planted creeping thyme in the larger spaces. Eventually the thyme will spread and fill the cracks for a low-maintenance, fragrant path. Check with your local nursery for advice on durable, spreading plants for your climate. If you'd rather not grow plants, fill the spaces with mulch or finely shredded bark.

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# Table saw tips

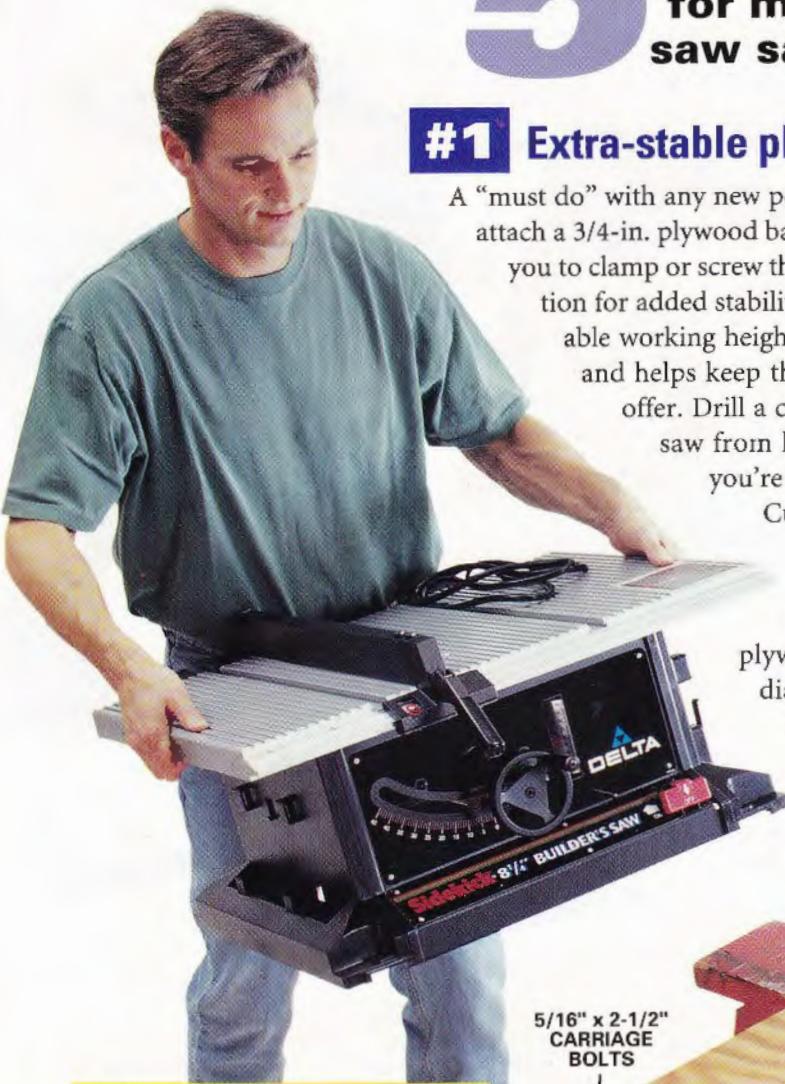
**5** simple homemade accessories  
for making your portable table  
saw safer and more versatile.

## #1 Extra-stable plywood base

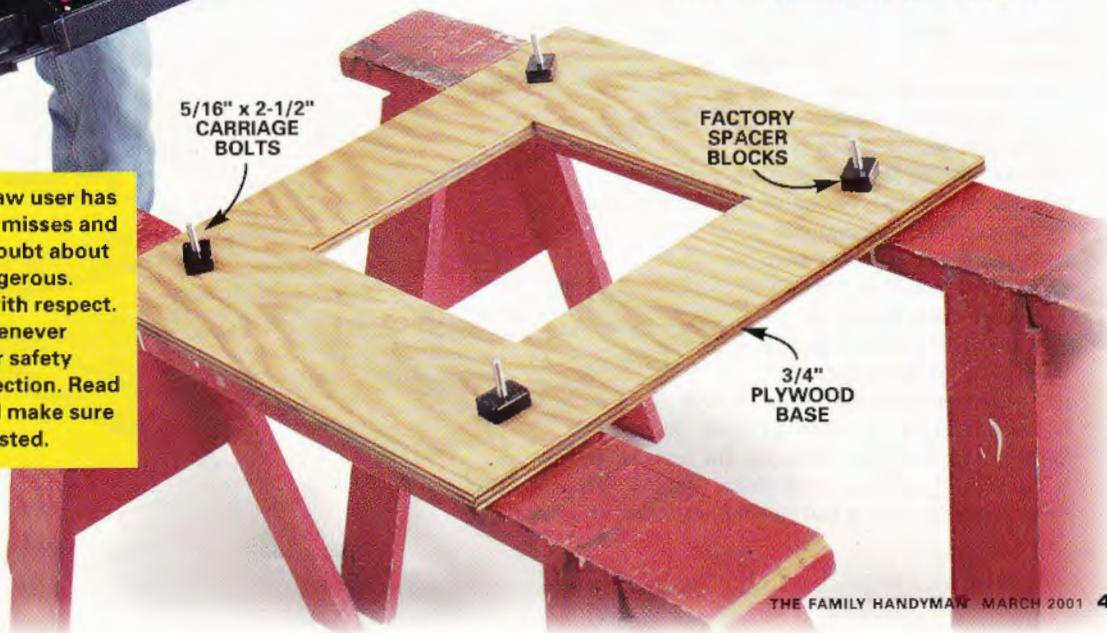
A "must do" with any new portable table saw (when you're not using a leg set) is to attach a 3/4-in. plywood base with a hole cut in the center. This simple base allows you to clamp or screw the table saw to sawhorses, which provide a wide foundation for added stability. This also raises the saw off the ground to a comfortable working height. The hole in the bottom lets the sawdust fall through and helps keep the saw running cool. But that's not all the base has to offer. Drill a couple of 1/2-in. holes on one side so you can hang the saw from hooks fastened to the workshop or garage wall when you're finished using it.

Cut the plywood base a few inches wider and longer than the base of your saw, and then cut a 1-sq.-ft. hole in the center. Center your saw on the plywood and mark the mounting holes. Drill a 1/8-in. hole through the plywood at each mark. Flip the piece over and drill 1-in. dia. holes about 1/4 in. deep to recess the carriage bolt heads. Next, drill 5/16-in. holes in the center of the recesses. Pound in the carriage bolts, slip the saw over the bolts (use spacers if they come with the saw) and fasten the saw to the base with washers and nuts.

**More TABLE SAW TIPS >>**



**CAUTION:** Every table saw user has horror stories about near misses and not-so-near misses. No doubt about it: Table saws can be dangerous. Always approach them with respect. Use your blade guard whenever possible and always wear safety glasses and hearing protection. Read your owner's manual and make sure your saw is properly adjusted.



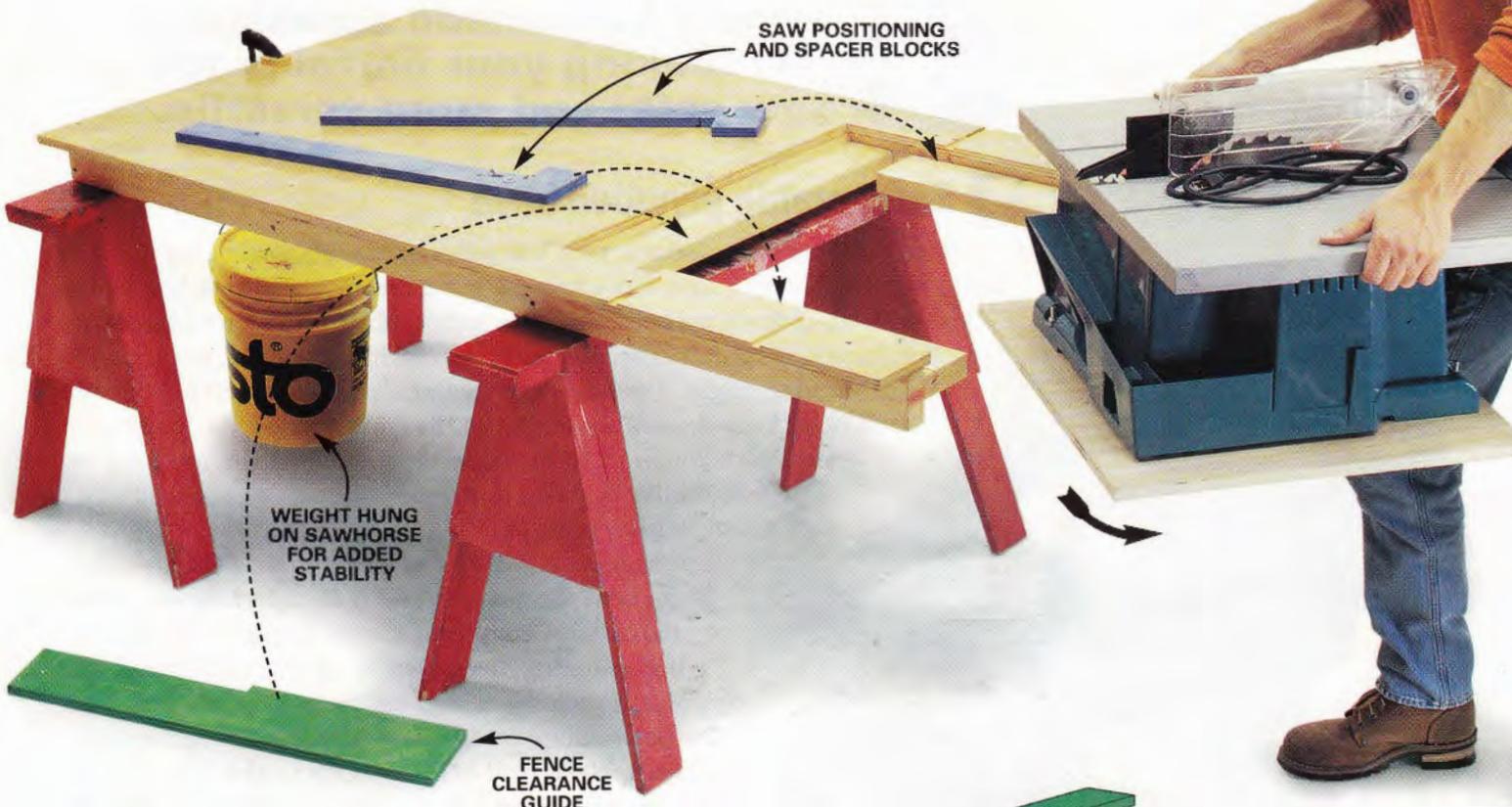
# Table saw tips

## #2 Combination ripping and crosscut table

This nifty homemade plywood and 2x4 jig is designed to handle both ripping and crosscutting. You'll have to customize it to fit your saw's table. Portable saws are light enough

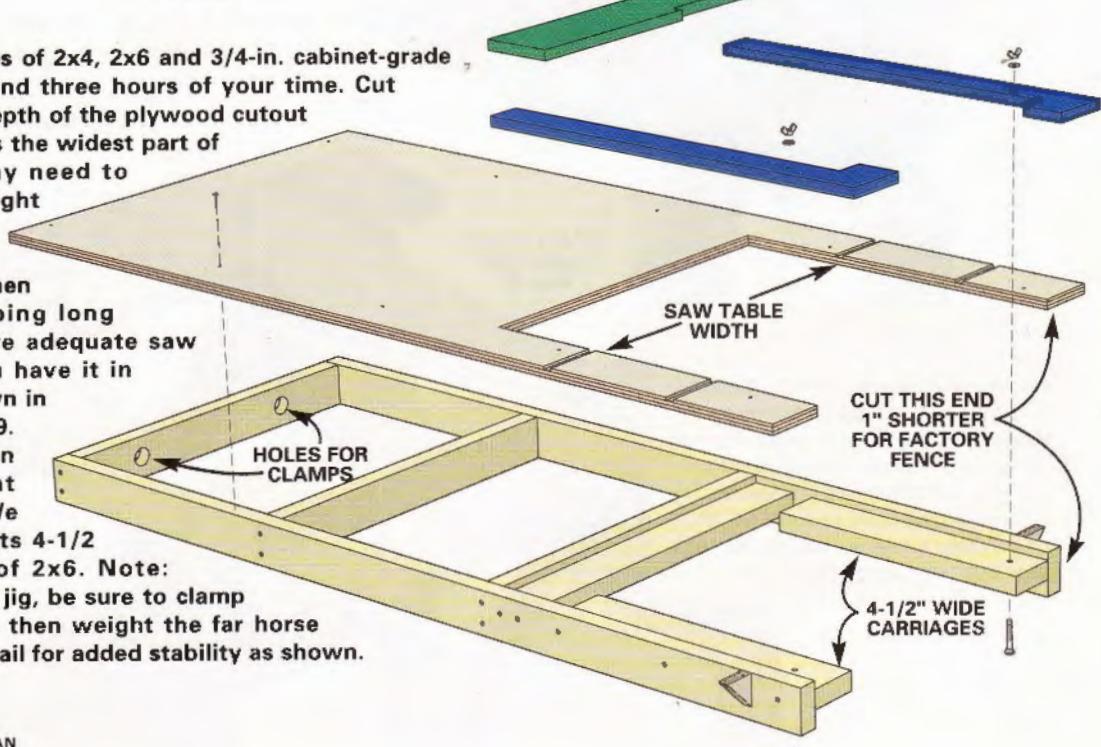
to suspend from the jig. Just lift and turn the saw in the jig to change it from one operation to the other. Notice the plywood inserts (blue

and green pieces) that help position the saw for each operation. See **Fig. A** for details.



**FIG. A**

**BUILD** the jig from pieces of 2x4, 2x6 and 3/4-in. cabinet-grade plywood for about \$50 and three hours of your time. Cut the opening width and depth of the plywood cutout to the same dimension as the widest part of the saw table. You may need to remove 1 in. from the right end so you can move the fence fully to the right side of the table when you're using it for ripping long pieces. Be sure you have adequate saw table support when you have it in the side position as shown in "Crosscut Position," p. 49. The saw table must sit on the support carriage at least 1 in. on each side. We cut our carriage supports 4-1/2 in. wide from pieces of 2x6. Note: Before using this cutting jig, be sure to clamp it to each sawhorse and then weight the far horse with a sandbag or a full pail for added stability as shown.



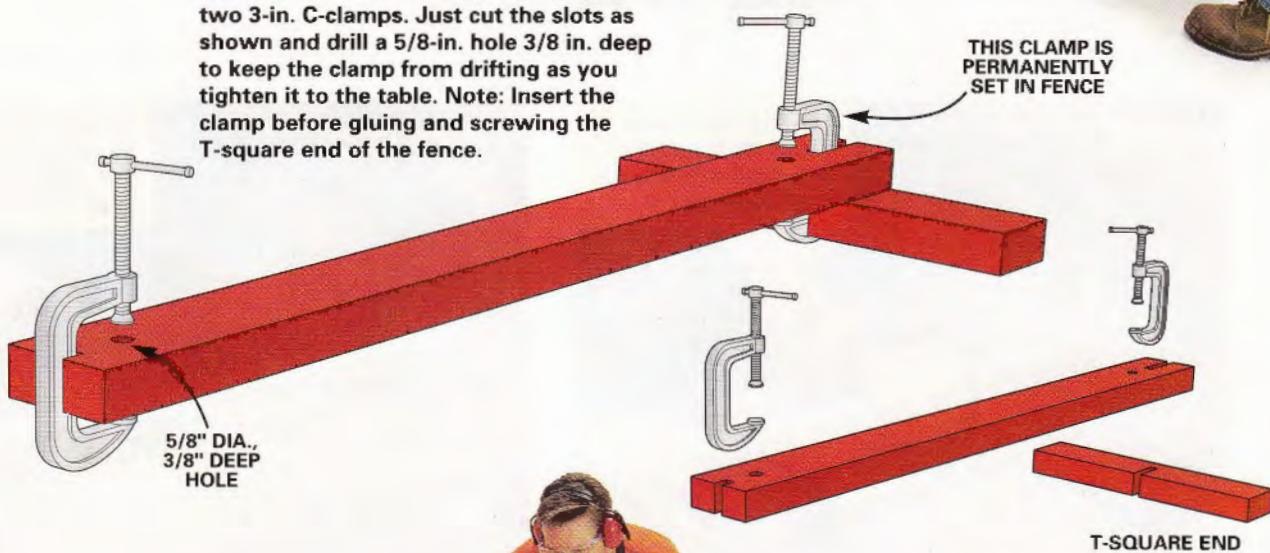
## Rip position

Rip long pieces safely and comfortably. Be sure to clamp the jig to the sawhorses and weight the rear sawhorse for added balance and stability. Follow the basic plan shown and adapt the jig to fit your saw.



**FIG. B**

**BUILD** this fence from 2x4 lumber and two 3-in. C-clamps. Just cut the slots as shown and drill a 5/8-in. hole 3/8 in. deep to keep the clamp from drifting as you tighten it to the table. Note: Insert the clamp before gluing and screwing the T-square end of the fence.



## Crosscut position

Cut wide panels such as cabinet doors or shelving with full support. For really large pieces (deeper than 3 ft.), have a helper support the pieces after you cut them or use an outfeed jig like the one shown on p. 52. Notice that the fence clamps to the tabletop and adjusts to more than 4 ft. from the blade. Be sure to make your fence parallel to the blade and check it before each cut to ensure that your workpiece won't bind as you cut it.

**More TABLE SAW TIPS >>**

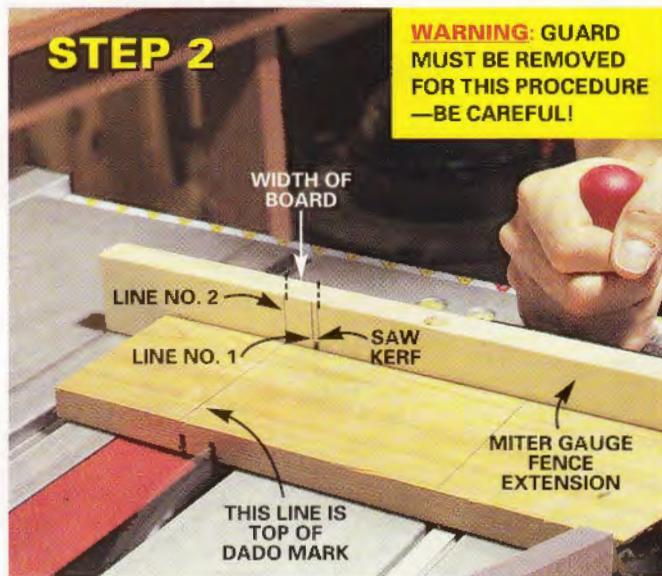
# Table saw tips



## #3 Cut-off block for duplicate lengths

Dangerous kickback can occur when you crosscut directly against a rip fence. Kickback happens when the part of the board between the fence and the blade gets pinched, and the blade, spinning toward you, catches it and hurls it back at you.

You can prevent this hazard with a simple block. Cut and clamp a block to the side of your rip fence and then position the fence the correct distance from the blade (the length of cut plus the thickness of the safety block). *Clamp the block so that as the workpiece enters the blade, it's no longer in contact with the safety block.* This cross-cutting method prevents the workpiece from binding between the fence and the spinning blade. Never make a cut that binds against the blade in any way. Think through all your cut setups before you start!



## #4 Dado guide using standard blade

Cut accurate dadoes without a dado blade by making successive passes over the blade. The tough part here is to get a tight fit. Screw a 1x3 fence extension to your miter gauge and make a saw kerf in it. For a tight fit, trace the width of the board onto the homemade miter gauge fence extension (see **Step 1 photo**). Then follow the **Step 1 and 2 photos**. Try this method on a test piece to get the hang of it.

**STEP 1** Make your first cut by aligning the top dado mark with Line No. 1 drawn on the miter gauge fence. *This cut establishes the top of the dado.* The line takes into account the thickness of your blade.

**STEP 2** Make your second cut by aligning the same dado mark with Line No. 2 on the fence shown in Step 2. *This cut establishes the bottom of the dado.* To finish the dado, just make several passes to cut away the area between your initial cuts. Make slight adjustments if the fit is too tight or too loose.

**More TABLE SAW TIPS >>**

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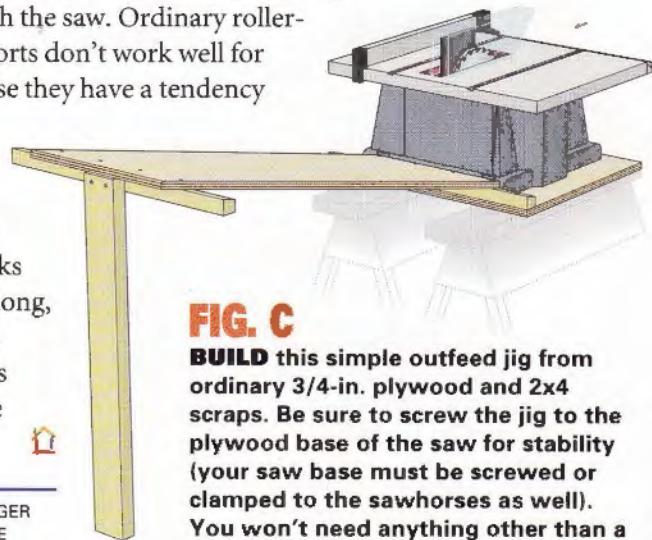
**SEARS**  
THE GOOD LIFE  
AT A GREAT PRICE  
GUARANTEED<sup>SM</sup>

# Table saw tips



## #5 A simple outfeed jig supports those long, dangly boards

Cut long pieces confidently with an easy-to-make outfeed jig screwed to your plywood base. Be sure to have the highest point of the jig even with the saw table. The gradual incline of the jig (about 12 degrees) helps guide sagging pieces and slowly bring them up as you push your board through the saw. Ordinary roller-style outfeed supports don't work well for long boards because they have a tendency to tip over when the board sags and hits the stand beneath the roller. This jig works especially well for long, thin pieces such as siding, which tends to sag and separate as you cut.



**FIG. C**

**BUILD** this simple outfeed jig from ordinary 3/4-in. plywood and 2x4 scraps. Be sure to screw the jig to the plywood base of the saw for stability (your saw base must be screwed or clamped to the sawhorses as well). You won't need anything other than a single 2x4 for the far leg support.

Art Direction • BECKY PFLUGER  
Photography • BILL ZUEHLKE  
Illustrations • BRUCE KIEFFER

# ROUGH-IN wiring

Pro techniques for a safe wiring job

by Jeff Gorton



**P**lastic boxes and flexible nonmetallic cable (commonly called Romex) put electrical wiring projects within the skill range of every dedicated DIYer.

In this article, we'll show you some basics—how to position outlet and switch boxes and run electrical cable between them. We won't cover many other details. For information about how to connect the outlets, switches and light fixtures, see "For More Information" on p. 68. For help with circuit design and making connections to your main electrical panel, we recommend you consult a licensed electrician.

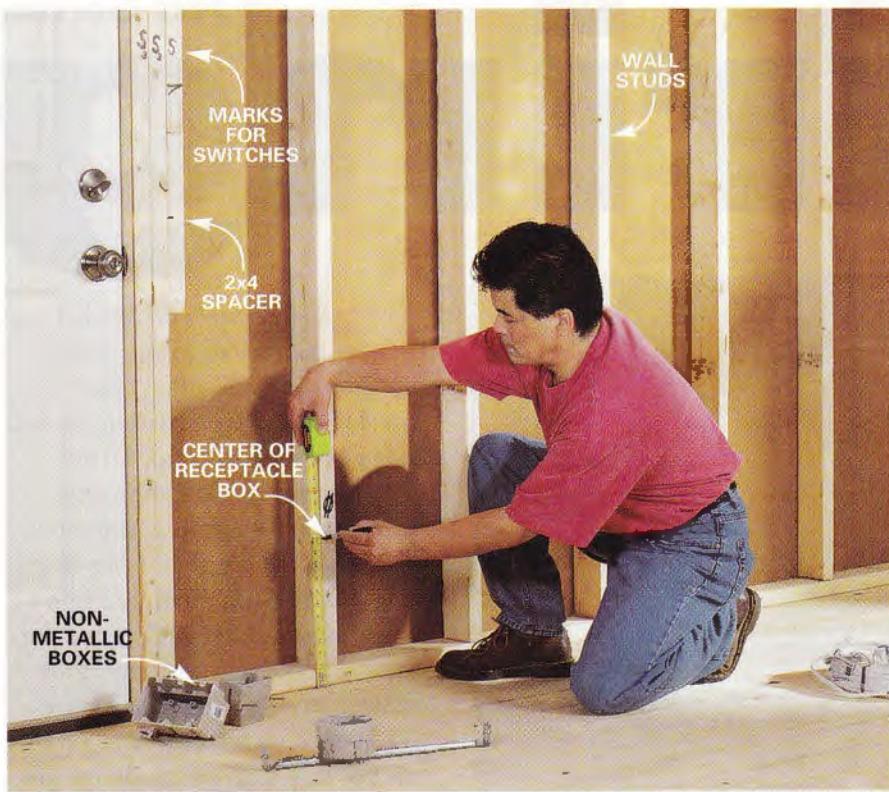
Besides standard hand tools, you'll need a special-purpose tool to cut and strip wire. We like the Klein No. 1412 (p. 61; \$18 at hardware stores and home centers). To drill a few holes, use a 3/4-in. spade bit in your electric drill. For larger jobs, rent a heavy-duty right angle drill (\$25 per day) and equip it with a 3/4-in. x 6-in. auger bit (\$7, p. 58).

Electrical wiring mistakes can be deadly, so make sure you obtain a permit from your local building department and have the work inspected when you're finished. Draw a sketch of your room that shows lighting, switch and outlet locations. Review your plan with the inspector and ask whether there are any special requirements.

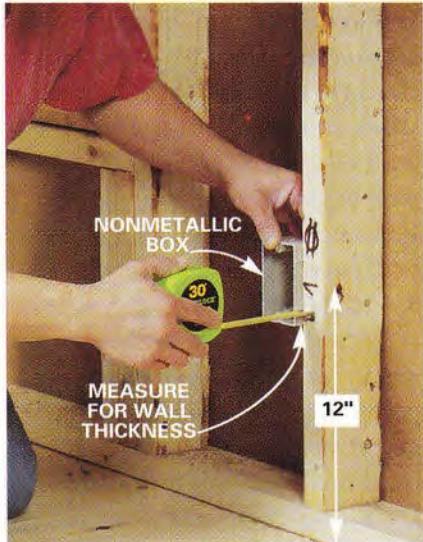
SEE P. 68 FOR A LIST OF BASIC SUPPLIES.

**More WIRING >>**

## Nail up boxes



**1** **MEASURE AND MARK** the center of each box. Use letters and symbols to identify boxes. Add 2x4 blocks to position boxes away from wide window and door trim.



**2** **POSITION** the box so its face will be flush with the wall covering material. Then nail the box to the framing. Double-check that the face of the box is parallel with the framing member.

**F**irst mark the box locations on the studs (**Photo 1**) using symbols to indicate outlets, switches and lights.

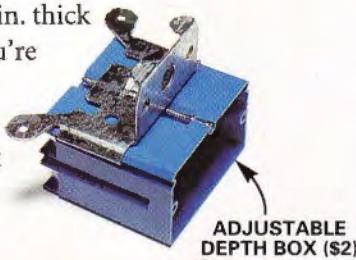
= Duplex receptacle

= Single switch

= Three-way switch

= Light fixture

Mark the height from the floor to the center of the boxes (usually 48 in. for switches and 12 in. for outlets) or line them up with existing boxes. Then nail up the boxes so the face of the box will be flush with the face of the future wall covering (**Photo 2**). Most boxes have nibs or marks to help you align the box for use with standard 1/2-in. thick drywall. If you're not sure how



thick the final wall material will be, use a special adjustable depth box. Paddle fans require a special box assembly that is rated to support the weight and stress of a spinning fan (see "Special Boxes," p. 68).

### Calculating Box Sizes

The electrical code limits how many wires you can safely put in an electrical box. To figure the minimum box size required by the National Electrical Code, add:

1 – for each hot and neutral wire entering the box

1 – for all the ground wires combined

1 – for all the cable clamps combined (if any)

2 – for each device (switch or outlet—but not light fixtures)

Multiply the total by 2 for 14-gauge wire and 2.25 for 12-gauge wire to get the minimum box size required in cubic inches. Plastic boxes have their volume stamped inside. Steel box capacities are listed in the electrical code.

**More WIRING >>**

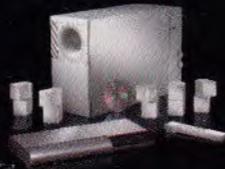
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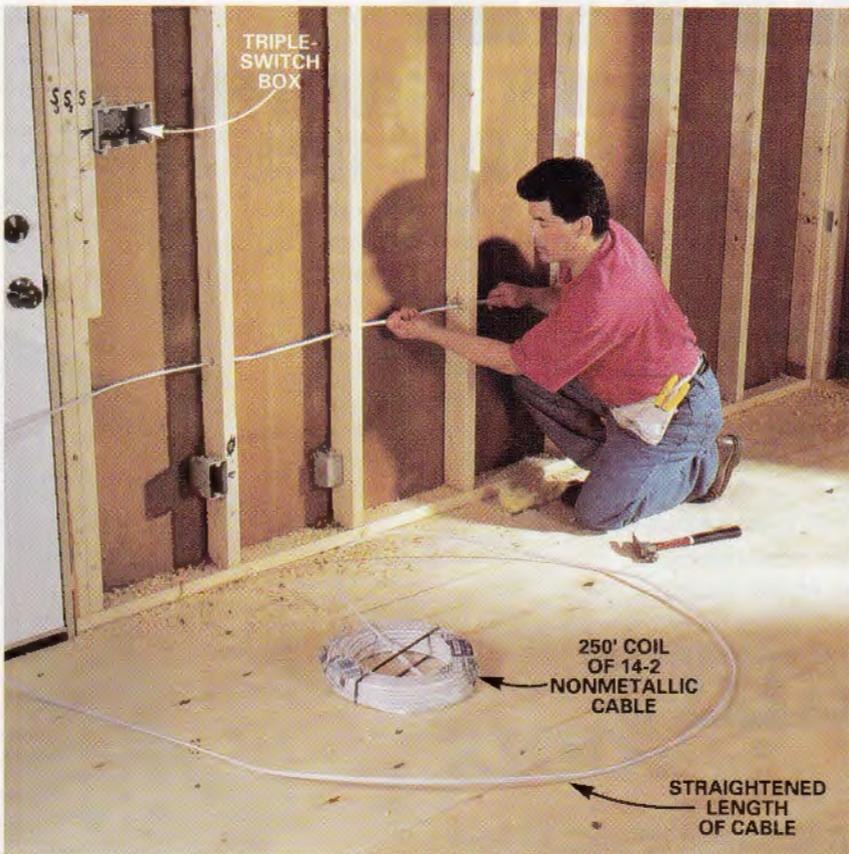
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## ROUGH-IN WIRING

### Pull the cable



**5** **Straighten** about 12 ft. of cable and thread it through the holes from one box to the next. When you reach each new box, follow the stripping procedure shown in Photo 7, push the conductors and about 1/4 in. of sheathed cable into the box, and staple the cable (Photo 8). Then cut the end still connected to the coil and repeat the process at the other box.

**W**hen you're done drilling holes, pull the cable between the boxes and to the service panel to complete the circuit.

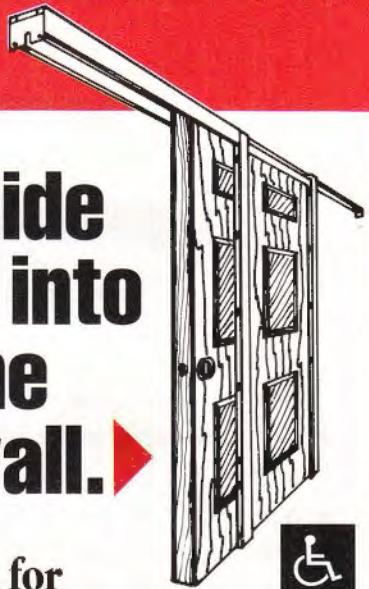
Start by pulling about eight loops from the center of the coil and tossing them away from you. Then pull the 12-ft. length of cable back between your thumb and forefinger to remove the twist and straighten it out. The whole process takes only a few seconds and keeps the cable from twisting and kinking as you pull it through the holes (**Photo 5**).

Once you've pulled the cable through the holes, push it back a little to leave a small amount of slack. This is handy insurance in case you cut the cable a little short and need extra length, and it also allows other tradespeople a little slack to push your wire out of the way.

**Photo 6** shows one method of getting the cable around a corner. But keep in mind that it's often faster and easier to drill up through the double top plate of the wall and route the cable up over the corner and down the other side.

Remove about 12 in. of the white outer plastic sheathing from the cable before you push it into the box (**Photo 7**). Use a stripping tool like ours

# No room for a door?



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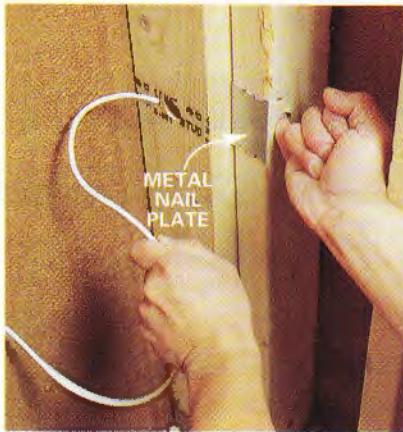


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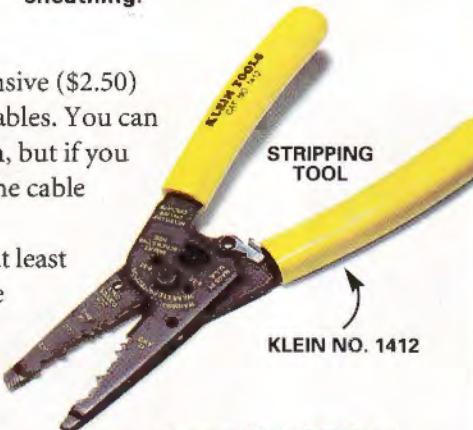


**6** **FISH** the cable around corners by bending a sharp hook in it. Then stick your little finger into the hole to feel for the cable and guide it through as you apply pressure with the other hand.

**7** **GRAB** the cable at the point you estimate it will enter the box. Cut the cable about 12 in. beyond this spot and strip off all but about 1 in. of sheathing.

for 12-2 and 14-2 cable, or an inexpensive (\$2.50) sheathing stripper that works on all cables. You can also use a sharp knife to slit the sheath, but if you nick the insulation on the wires, cut the cable off at that point and try again.

Push the cable into the box so that at least 1/4 in. of sheathing is visible inside the box. The National Electrical Code requires that at least 3 in. of wire protrude beyond the face of the box, but we recommend at least 6 in.



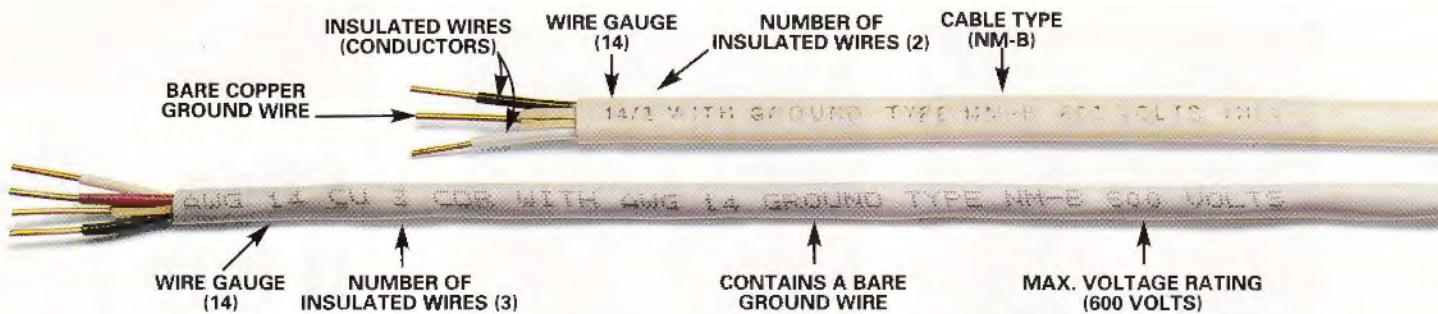
**More WIRING >>**

## Planning tips

Position outlets so that no point in any wall space is more than 6 ft. from an outlet without crossing a doorway. Install an outlet in every wall section that's 2 ft. wide or wider.

- Add at least one 15-amp circuit for every 600 sq. ft. of building area. Twenty-amp circuits are required for kitchen, pantry, breakfast, dining room, laundry rooms and bathrooms.
- Add separate circuits for heavy power users such as room air conditioners and electric space heaters.
- When possible, install new circuits by running cable all the way to the service panel rather than connecting to existing circuits.

## Staple the cable

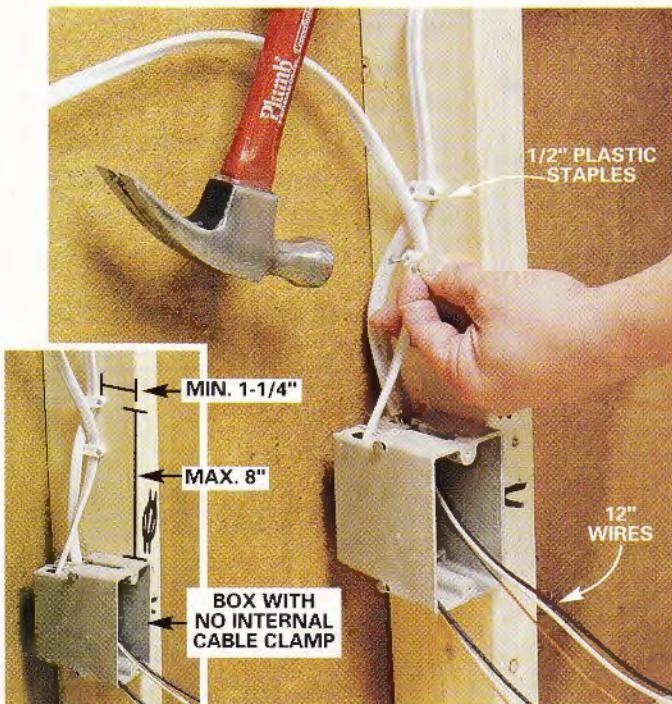


Next staple the cable in place. Position the staples in the following locations:

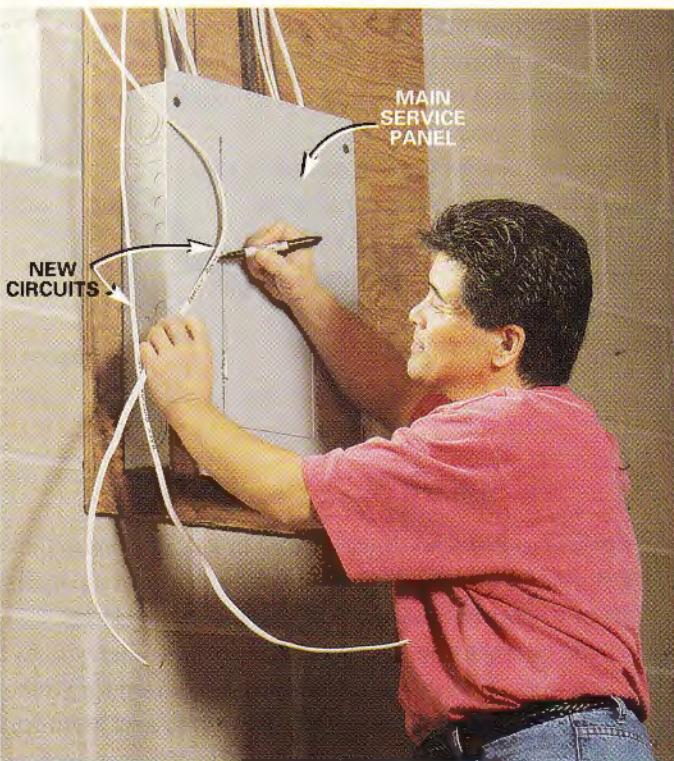
- Within 8 in. of boxes without cable clamps or within 12 in. of boxes with cable clamps. Most plastic boxes for two or more switches have built-in cable clamps.

- Every 4 ft. 6 in. along framing members like joists and studs. This is the maximum distance. Many electricians put them closer as needed.
- Within 12 in. of where a cable runs through a hole and continues along a framing member, like a ceiling joist.

Because cables must be kept at least 1-1/4 in. from the face of studs, you can't staple them side by side along a 2x4. The electrical code also prohibits you from placing more than one cable under standard 1/2-in. staples. Instead, weave the cables (**Photo 8**) or use special cable stackers (**opening photo**).



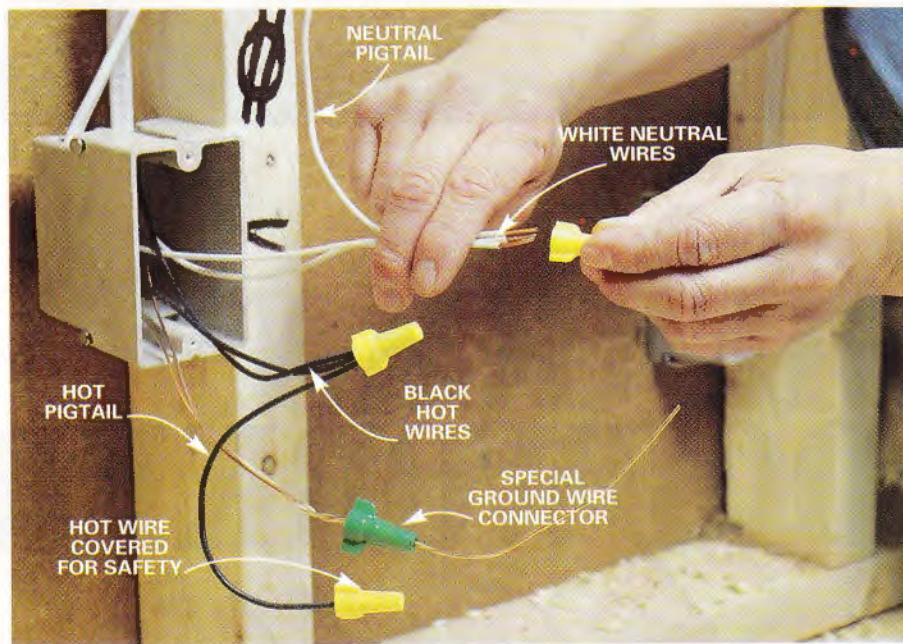
- 8** **PUNCH** a hole (or two for two cables) through the knockout area of the box with a screwdriver or the point on your stripping tool. Push the conductors and about 1/4 in. of sheathed cable into the box and staple the cable within 8 in. of the box. The cable must be at least 1-1/4 in. from the face of the framing. Push the first cable aside while you staple the second cable.



- 9** **RUN** cable(s) from your completed circuits to the service panel. Leave 4 extra feet of cable for the electrician to work with. Label the cables with the location of the circuit. Then call in the electrician to connect the circuits.

**More WIRING >>**

## Connect the wires

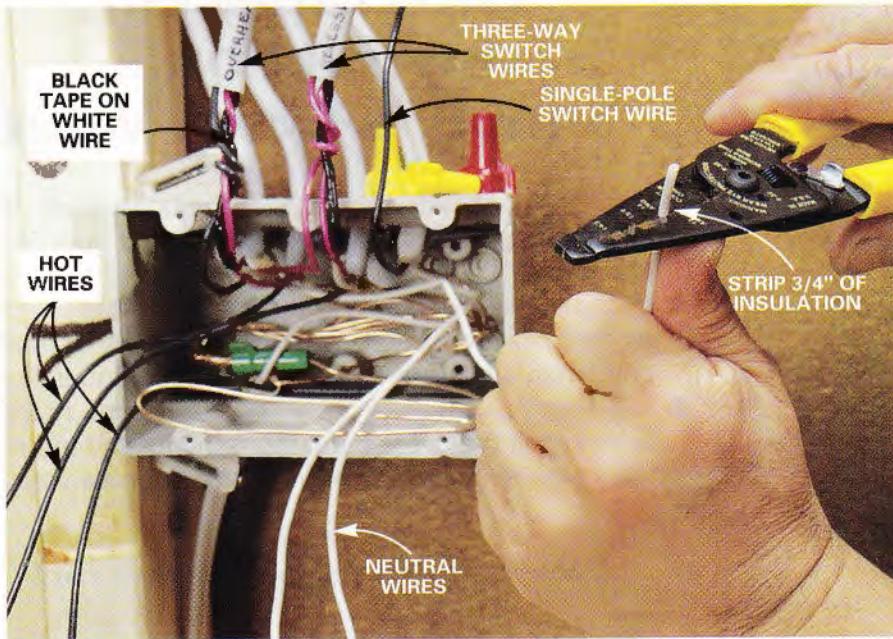


**10** **CUT** all the wires to leave at least 6 in. protruding past the face of the box. Leave one bare copper ground wire an extra 6 in. long. Thread the long ground wire through the hole in the top of the special green wire connector and splice all the ground wires by holding them together and twisting the connector clockwise until it's tight. Strip the ends of the white and black wires and one end of each 6-in. long pigtail and splice them with wire connectors. Cover the unstripped end of the black (hot) pigtail with a wire connector for safety.

**C**omplete the rough-in phase of the wiring job by connecting the appropriate wires with wire connectors, adding short lengths of wire (pigtails) where they're needed and folding all the wires neatly into the boxes.

**Photos 11 and 12** illustrate a number of important concepts and handy tips for making up any box. In addition, follow these guidelines:

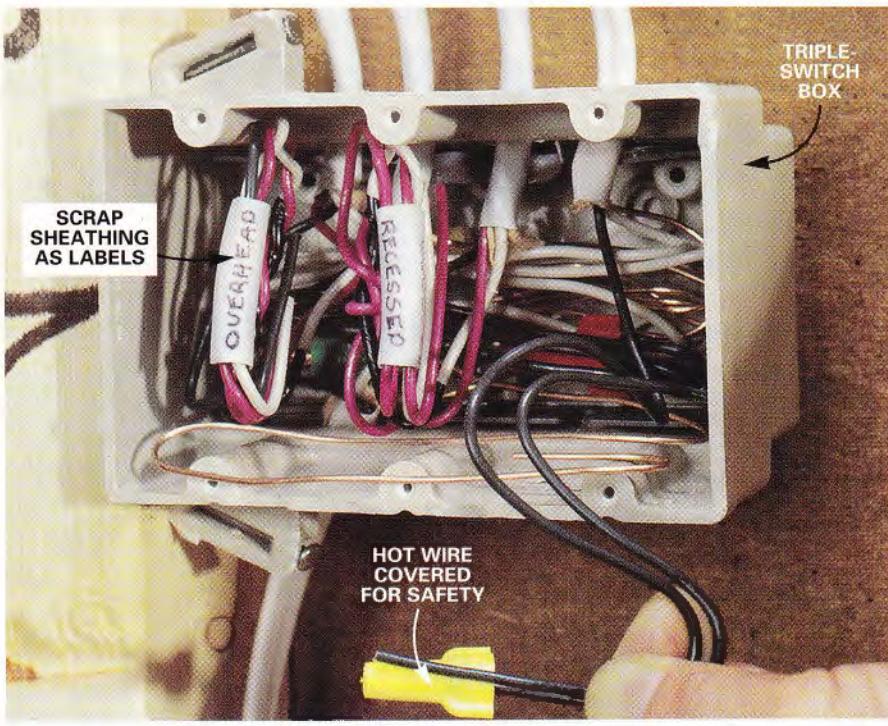
- When the circuit continues through a box, connect the wires and add pigtails as shown in **Photo 10**. This method is easier and safer than connecting both sets of wires to the receptacle.
- Leave one bare ground wire long, and snip the rest to 6 in. beyond the box. Push the long wire through the hole in the top of the special green wire connector and connect the remaining wires to it by twisting the connector clockwise until it's tight. Fold the ground wires neatly into the back of the box (**Photo 11**).
- Snip all the white neutral wires to the same length (6 in. beyond the box). Strip 1/2 to 3/4 in. of insulation from each wire and join them with the right size connector. The instructions on the connector packaging will list both the length of stripped wire required and the maximum number and size of wires the connector can safely join.
- Identify the white wires you'll be using as hot wires (with switches) by wrapping them with black electrical tape.
- Organize the wires so you can understand them, and label them.



**11** **GROUP** and label the wires in the switch boxes so you'll know how to connect them after the drywall is complete.

**More WIRING >>**

## Connect the wires



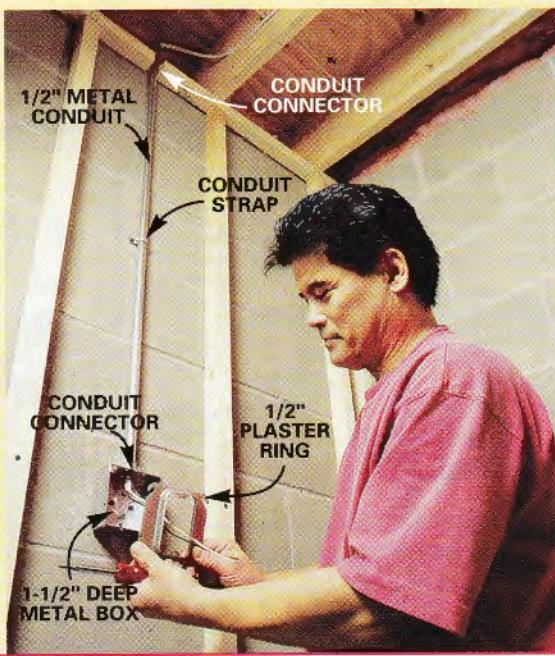
**12** **FOLD** and pack the wires neatly into the box to conserve space and reduce pressure on connections. Label wires with scraps of cable sheathing.

to avoid confusion. It's much easier now than when the cables are covered by drywall (**Photo 11**). For labels, slide short scraps of plastic sheathing over the wires.

- To keep track of three-way switch wires (two "travelers" and one common), twist the travelers together and wrap the common wire around them (**Photo 11**).
- It's good practice to cover the end of a hot wire with a wire connector. This helps to identify the wire later and allows you to safely energize the circuit if you need to (**Photo 12**).
- Use cable stackers (**opening photo**, p. 55) when you don't have room to staple all the cables in the usual way.
- Fold and tuck all the wires neatly into the box so they won't be damaged during the drywall and taping process.
- Neatly fold the wires into the box in this order: grounds, neutrals and then hots.

## Skinny walls

**PROTECT** the cable in 1-1/2 in. or thinner walls by running it through 1/2-in. metal conduit. Anchor a 4 x 4 x 1-1/2 in. metal junction box and attach a length of conduit to it with a conduit connector (you'll need two conduits for two cables). Secure another conduit connector to the top of the conduit to protect the cable from the sharp edge of the pipe. Secure the conduit with a conduit strap. Attach the ground wire to the metal box with a ground screw driven into the threaded hole. Finally, cover the box with a plaster ring that matches the wall covering thickness.



Before calling for a wiring rough-in inspection, look around to make sure you've installed enough cable staples and added nail plates where cables run too close to the face of a stud. Finally, to prevent air leakage, fill with expanding spray foam all of the holes through the top and bottom plates of the wall, and around exterior outlets and lights.

**More WIRING >>**

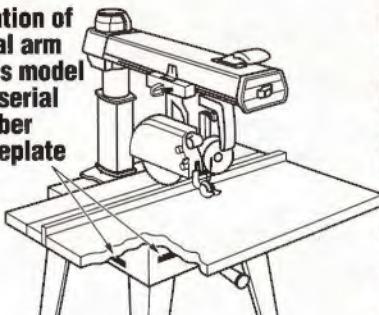
# IMPORTANT SAFETY NOTICE

Craftsman® Radial Arm Saws  
Model Nos. beginning with 113

Emerson Tool Company has announced the voluntary recall of certain 8, 8-1/4, 9 and 10 inch Craftsman radial arm saws manufactured from 1958 through 1992 (the 8-1/4 inch through 1995) in order to provide a retrofit guarding kit. If the saw is not retrofittable, Emerson Tool will pay \$100 for the return of the carriage/motor assembly. The saws were sold without a guard that covered the entire blade. Consumers have come into contact with the blade resulting in severe injuries.

Consumers should call Emerson Tool at 1-800-511-2628 or visit [www.radialarmsawrecall.com](http://www.radialarmsawrecall.com) to determine if their saw is subject to the recall and to ensure that they have proper safety and use instructions.

Location of radial arm saw's model and serial number nameplate



# IMPORTANT SAFETY NOTICE

## ROUGH-IN wiring

### Basic supplies

For an average-size room, you'll be able to buy all the electrical rough-in supplies you'll need at hardware stores or home centers for less than \$100. Here's what to buy:

#### ✓ NONMETALLIC CABLE (NM)

For a room like ours with 15-amp circuits, buy a 250-ft. coil of 14-2 W/G Type NM-B (\$15 to \$25). You'll also need some three-conductor cable for the three-way switches.

#### ✓ PLASTIC BOXES

Plastic boxes are less expensive and easier to use than metal boxes. Buy single 18- or 20.3-cu.-in. nail-on boxes for receptacles and single switches, and double-, triple- or quadruple-switch boxes for multiple switches. Buy round boxes for light fixtures. Use round boxes with a bar hanger (**opening photo**, p. 55) when the light fixture location is between studs or joists.

#### ✓ WIRE CONNECTORS ("WIRE-NUTS")

Buy a box each of red and yellow wire connectors. We recommend the type with wings. Buy green ground wire connectors if your inspector requires them. *Read the instructions on the container to see how many wires each connector will hold and how much insulation to strip off the wire.*

#### ✓ ODDS AND ENDS

Buy a bag of fifty 1/2-in. staples. Pick up a half dozen metal nail plates (**Photo 6**) to protect vulnerable cables and a roll of black electrical tape to mark white wires (**Photo 11**). 

### Special boxes



PADDLE FAN BOX WITH BAR HANGER



LIGHT FIXTURE OR PADDLE FAN BOX

#### For More Information

- "Electrical Box Basics," "Handyman Reports," Sept. '98, p. 92.
- "Understanding (and Curing) Electrical Overloads," "How a House Works," Dec./Jan. '00, p. 106. Understand and map the circuits in your home.  
To order back issues, copies of articles or the Five-Year Index, see p. 108.
- The following book offers helpful information on house wiring basics: "Wiring a House" by Rex Cauldwell, The Taunton Press, 1996. Available on-line at [www.tauntonpress.com](http://www.tauntonpress.com) or call (800) 283-7252. \$34.95 plus \$3.95 shipping.

Art Direction • BECKY PFLUGER

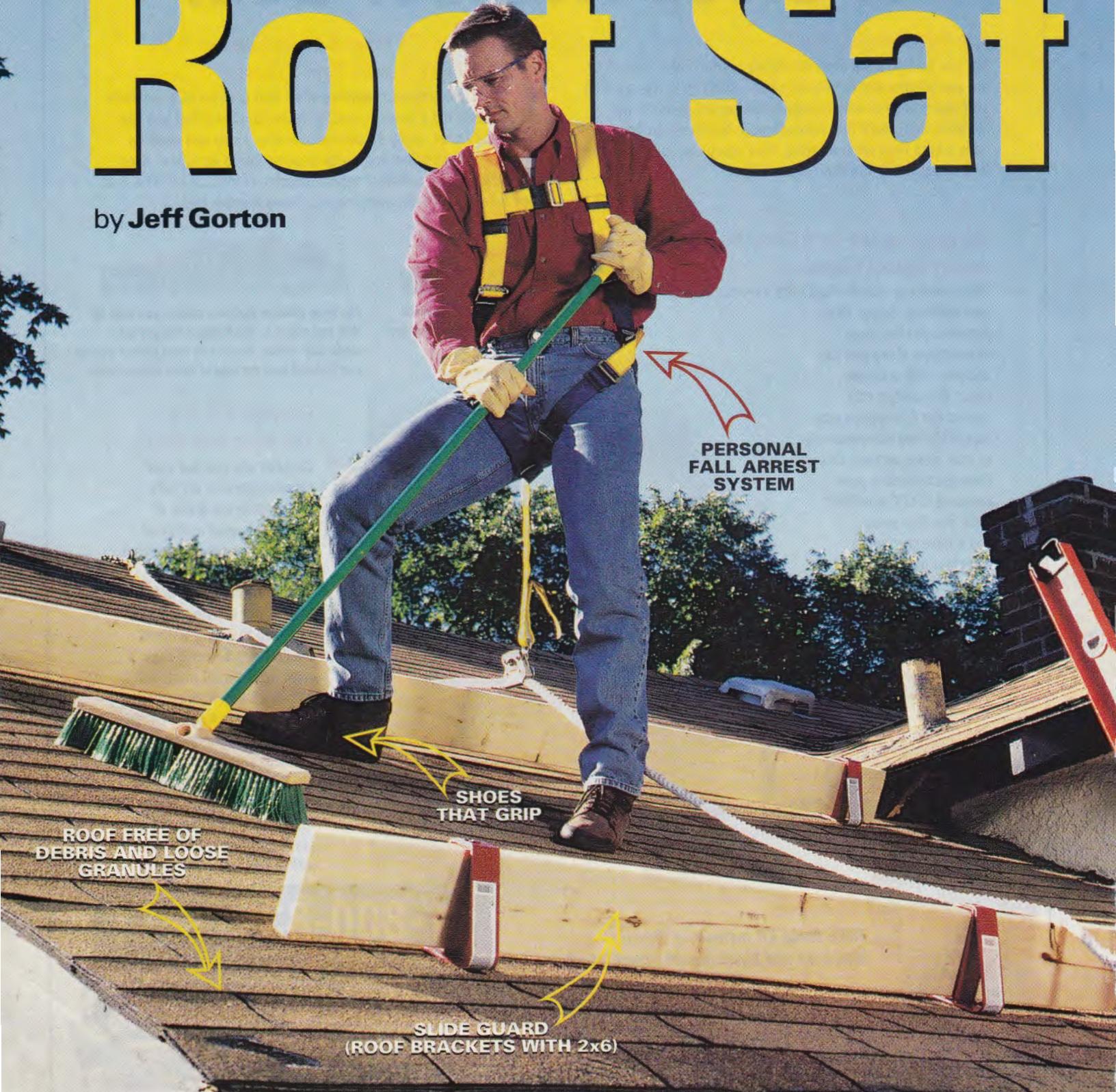
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# Roof Saf

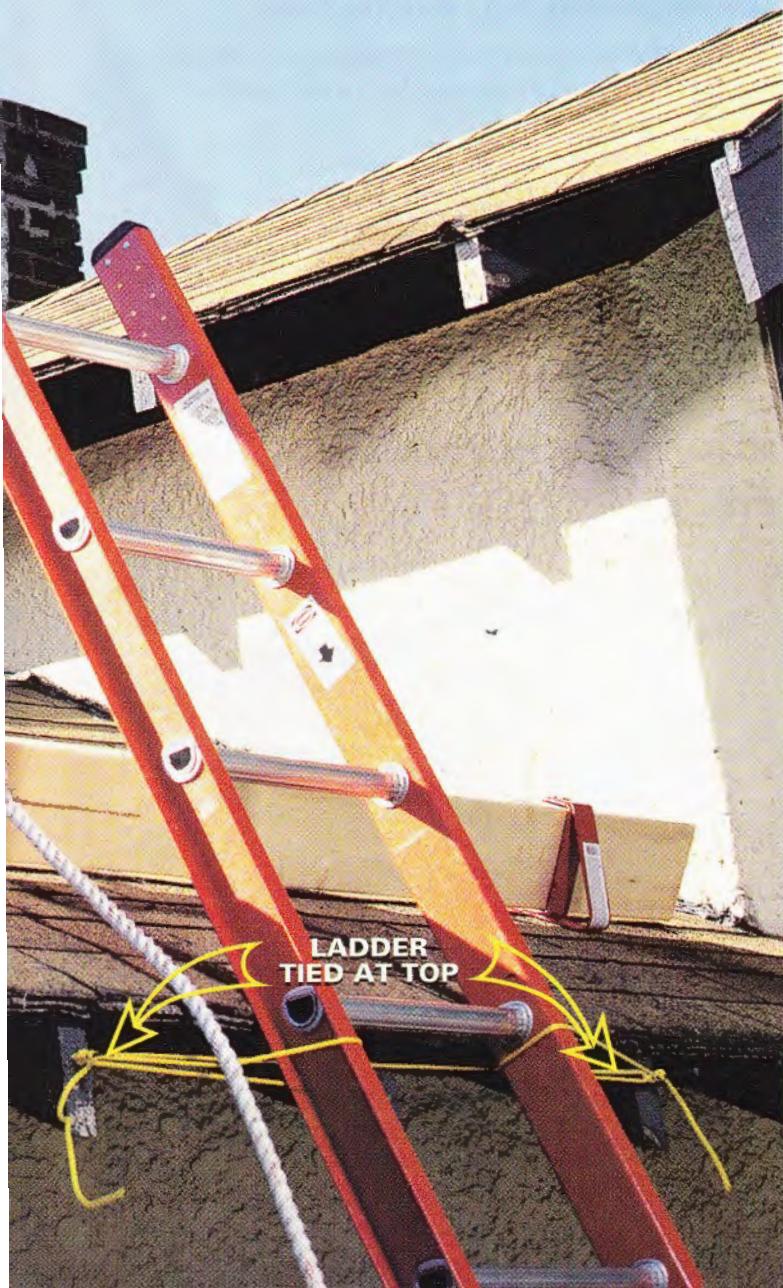
by Jeff Gorton



**SWEEP** the roof as you work to remove debris and loose shingle granules that cause slippery footing. Keep the lanyard adjusted to minimize slack in the rope between you and the roof anchor. Tie or wire the top of the extension ladder to nails set in the rafter ends.

# ety

- ✓ Roof brackets
- ✓ Safety harness
- ✓ Commonsense rules



**L**et's face it—roofs are dangerous places. But sooner or later you'll have to clamber up there to fix a leak, replace a vent or evict a family of squirrels. In this article, we'll show you a few simple ways to make roof work a lot safer.

A minimal investment in roof brackets will immediately reward you with much greater roof safety and convenience. But if you have to spend a lot of time up there or have an especially steep roof, we recommend that you also buy a roof harness system (about \$300). It's the next best thing to a parachute. We'll tell you what to buy and how to use it, and give you some general roofing safety tips too.

## Roof smarts

When it comes to roofs, even the best safety equipment is no substitute for common sense and good judgment. Here are some tips for working safely on a roof:

- Leave steep and/or high roof work to the pros. The few dollars you'll save by doing it yourself aren't worth the risk of death or a lifelong disability if you fall.
- Pick a clear, calm, cool time of day to work on roofs. Wet roofs are slippery. Wind also poses a danger, and excessive heat softens the shingles, making them vulnerable to damage.
- Wear shoes with a soft rubber sole for extra traction.
- Keep the bottom of your shoes free of mud and dirt, and the roof swept clear of dirt and debris.
- Rope or mark off the ground beneath your work area to let people below know you're working above. Even the most careful worker eventually drops a tool off the roof. Always look and call out before tossing anything down.
- When you're not using your power tools, secure them with short lengths of rope or bungee cords. Keep hand tools and supplies in a 5-gallon bucket hung on a roof bracket. Carefully position ropes and extension cords so they're not underfoot; they're very slippery.
- Stay off slate and tile roofs. Loose tiles or slate can fall out and the surfaces are easily damaged if you're not experienced.

**More ROOF SAFETY >>**

# Roof Safety

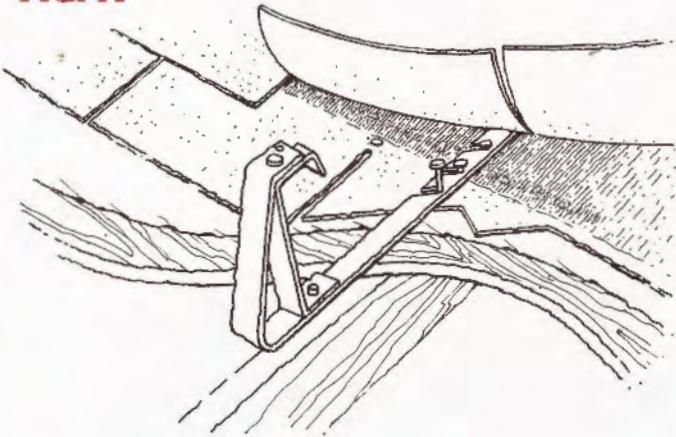
## Getting up to the roof safely is the first step

If you don't own one already, buy (\$200) or rent (about \$30 per day) a sturdy extension ladder that extends at least 3 ft. above the roof edge. Aluminum is the lightest, but fiberglass ladders provide better protection against electrocution in case the ladder accidentally touches a power line or live wire. If possible, set the ladder on firm, level ground. On uneven ground, place squares of plywood under one foot to level the ladder base and then secure it with wire or rope tied to stakes. Fasten the top of the ladder with rope or wire tied to a secure anchoring point such as a 20d nail driven into a rafter. That will keep it from sliding sideways as you step onto the roof (**opening photo**).

Stepping from the ladder to the roof or from the roof to the ladder is precarious and can be unnerving. Here are a few pointers to make it easier and safer:

- If possible, avoid carrying anything up the ladder. Use a helper and a bucket tied to a rope to hoist up tools and supplies.
- Extend the top of the ladder at least 3 ft. above the roof edge so you'll have something to hang on to as you step onto and off the roof. Never step on any of the ladder rungs above the roof.
- Keep two hands on the top rung of the ladder as you step onto and off the roof.

## ROOF BRACKET NAILING FIG. A



- **LAY** a 2x6 plank across the brackets and attach it to the brackets with screws. Make sure the 2x6 extends at least 6 in. but not more than 12 in. past the end brackets. Set another row of roof brackets and planks about every 8 ft. up the roof, or as close together as needed to make your work safe and convenient.



- **NAIL** a row of roof brackets about 18 in. up from the eave and about 4 ft. apart. Position the brackets directly over a rafter or truss (Fig. A). Install each bracket by lifting a shingle tab and sliding the bracket under it. Then pound 20d common nails into each slot, making sure they hit the rafter or truss.



**3** STRAP on the safety harness according to the manufacturer's instructions. Tighten the straps for a snug fit. Double-check all the buckles before you go onto the roof.



## Buying roof safety gear

### Safety harness

The harness is only one part of a personal fall arrest system. It's called a "system" because all the components—the harness, lanyard, rope-grab, rope and roof anchor—are carefully engineered to work together. One brand is DBI/SALA (800-328-6146). The company sells a "roofer's kit" through local distributors for about \$300 with everything you'll need, including 50 ft. of rope and a storage bag. You can also check at roofing suppliers (see "Roofing" in the Yellow Pages). Consider splitting the cost with friends or neighbors and sharing the kit.

I don't know a single carpenter or roofer who hasn't had a close call on a roof, but most will readily admit they were doing something stupid at the time. Roofs are inherently dangerous places, but if you follow our suggestions and stay focused on safety, you'll greatly reduce the chances of an accident. And with the roof brackets and personal fall arrest system in place, if you do slip, at least you'll live to tell about it.

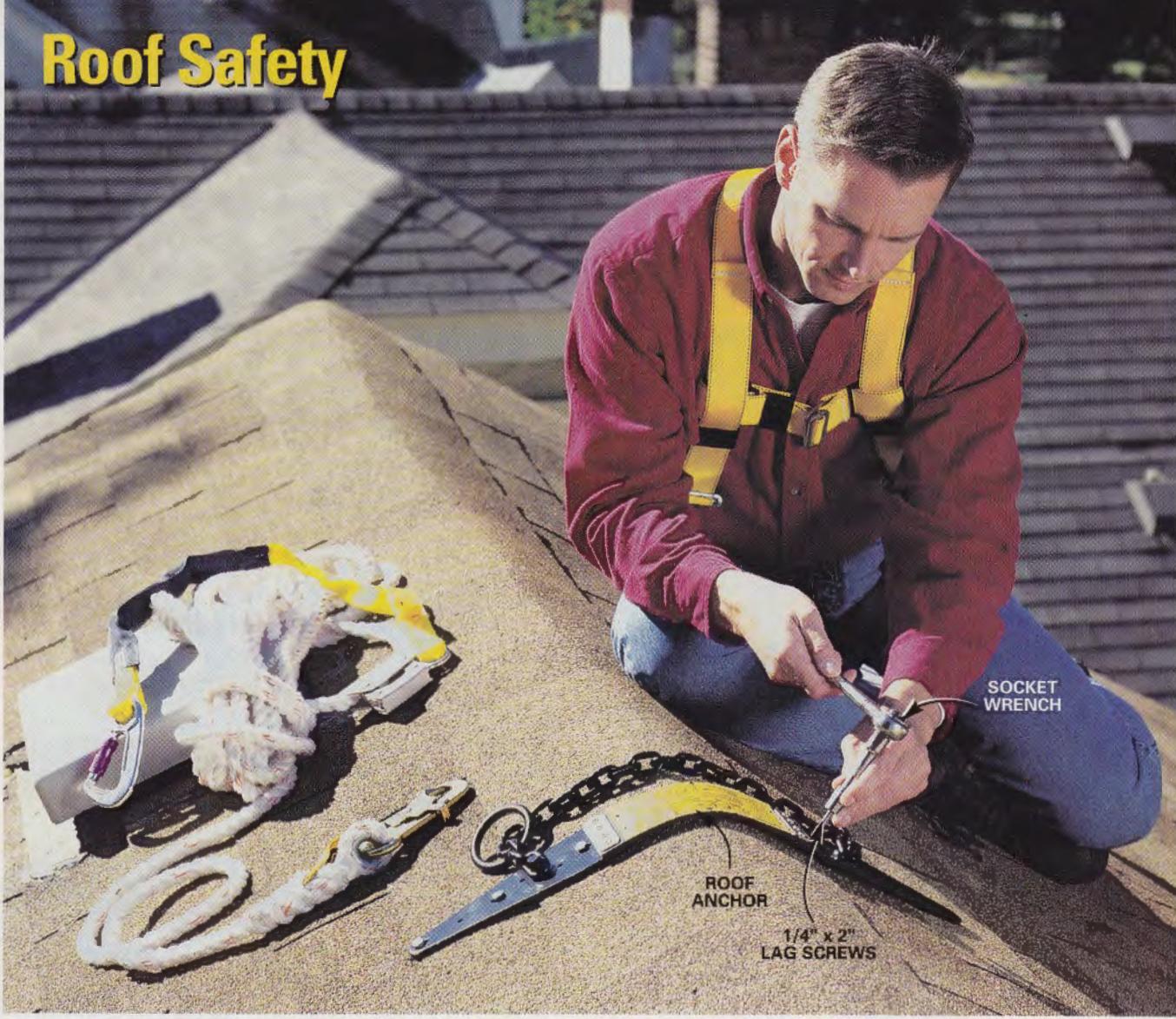
### Roof brackets

Roof brackets are available at hardware stores, lumberyards, roofing suppliers and home centers for \$5 to \$10 each. Buy enough 90-degree brackets (**Photo 1**) to place one bracket every 4 ft. along the edge of the roof below where you'll be working. Use brackets designed to hold a 2x6. Larger planks are too hard to step over when you're getting onto the roof. You'll want additional rows of brackets and planks about 8 ft. apart across the roof to rest supplies on and provide secure footing.

Buy the best 2x6s you can find. Make sure the knots are small (under 1 in. diameter) and don't go all the way through the board.

**More ROOF SAFETY >>**

# Roof Safety



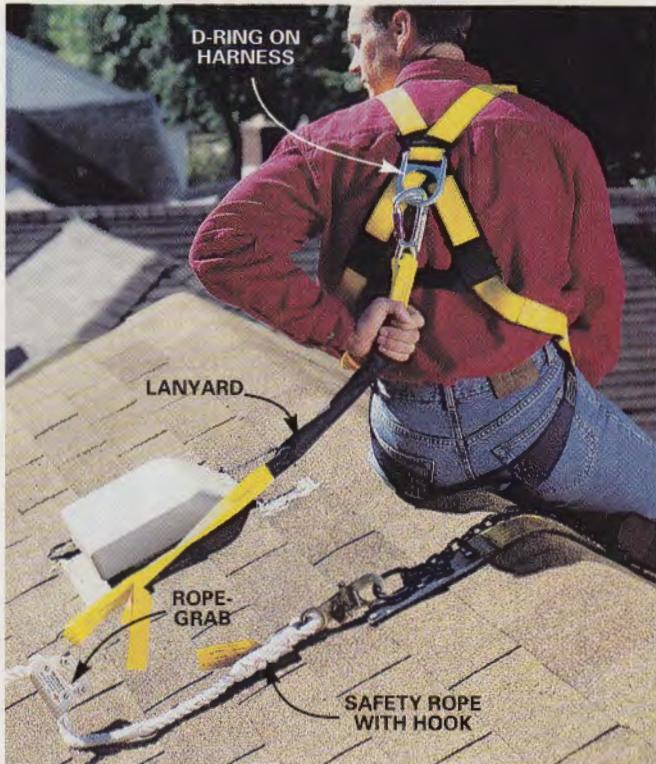
**4** **FASTEN** the roof anchor to the peak according to the manufacturer's instructions. We drove six 1/4" x 2-in. lag screws through the roof boards into the rafters. Predrill 3/16-in. holes. Then use a wrench to tighten the lag screws.

## Build a 'slide guard' with roof brackets and 2x6s as a first line of defense

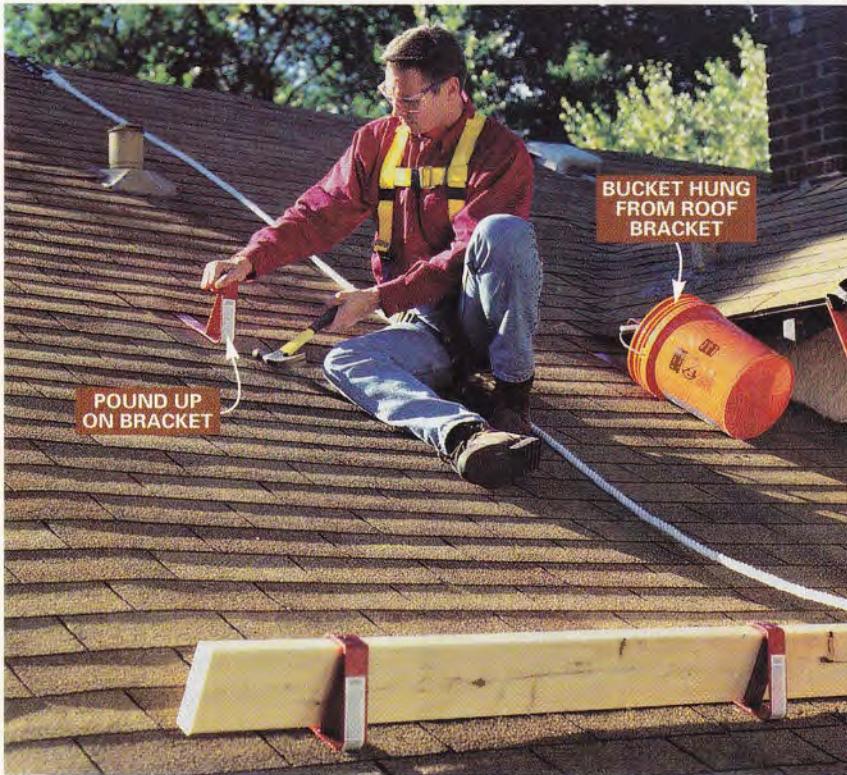
Once you're safely up to the roof, you'll want to set up roof brackets and planks all along the eave (**opening photo**). These serve a dual purpose. They allow you a safe place to step onto and rest tools and materials. And they also act as a slide guard that will help prevent you from falling off the edge of the roof if you lose your footing higher up and slide down.

## More ROOF SAFETY >>

**CLIP** the end of the safety rope to the ring on the roof anchor. Then clip the **5** lanyard to the D-ring on the back of the harness. Squeeze the rope-grab and slide it along the safety rope to reposition the lanyard on the rope as you move around the roof.



# Roof Safety



**6** **RELOCATE OR REMOVE** brackets by pounding up to slide them off the nails. Keep the lowest set of planks in place until you're done on the roof. Store tools and supplies in a bucket hung from a roof bracket.

**Photos 1 and 2** show how to fasten the brackets to the roof and secure the planks. Each roof bracket should have a label on it with complete instructions. Read and follow them carefully.

First locate a truss or rafter—the roof brackets must be nailed through the sheathing and into these structural members. The exposed rafter tails on our roof made this easy. If you're not so lucky, listen and feel for a solid spot as you tap across the roof with a hammer. When you locate solid wood, carefully slide the blade of a pry bar under the shingle to separate it from the shingle underneath, and gently bend the tab up. Then you can place the nails where they'll be covered by the shingle (**Photo 1**). If you feel the nail miss the rafter (it will penetrate easily), pull it out and put a dab of caulk or plastic roofing cement on the hole

to seal it. Then move the nail over an inch and try again.

Rafters in older homes are usually 16 in. apart, while trusses in newer homes are usually 24 in. apart. Both have 1-1/2 in. of nailing surface. Measure from the first bracket to find more rafters or trusses. Complete the slide guard by adding the 2x6 plank (**Photo 2**). Now you can safely work your way up the roof by adding more brackets and planks about every 8 ft.

When you're done on the roof, remove the brackets and planks in the opposite order, starting at the top and working down (**Photo 6**).

## You can't just tie a rope to your belt

On low-pitched roofs where footing is no problem and the eaves are

**More ROOF SAFETY >>**

# Synthetic Oil

# MYTH #8:

"Using synthetic motor oil will void my warranty."

# FACT:

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## Roof Safety

less than 12 ft. or so from the ground, you may feel safe working with just roof brackets and planks in place. This is OK. But for the ultimate in roof safety, especially on steeper roofs or big jobs, invest in a safety harness and rope. (See "Buying Roof Safety Gear" on p. 73.)

**Photos 4 and 5** show how to set up the harness and rope (technically called a "personal fall arrest system"). The roof anchor must be fastened securely to solid wood like a rafter, truss or ridge beam, not just through the roof boards or plywood. Models vary slightly, so read the manufacturer's instructions and follow them carefully. Here are a few of the key points:

- Inspect the harness and lanyard for loose stitching and worn webbing. Never reuse a harness or lanyard that has been subjected to a fall. Send them back to the manufacturer for inspection. Examine the rope for fraying.
- Adjust the harness buckles for a snug fit.
- Locate the roof anchor directly above where you'll be working on the roof. Don't work more than 4 ft. to the side of the roof anchor. Relocate the anchor or add more anchors if necessary.
- Mount the roof anchor to the peak no closer than 6 ft. from the edge of the roof.
- Reposition the rope-grab as you work to minimize the amount of slack in the rope between you and the roof anchor.

Art Direction • BECKY PFLUGER  
Photography • BILL ZUEHLKE  
Technical Art • GREGG WEIGAND





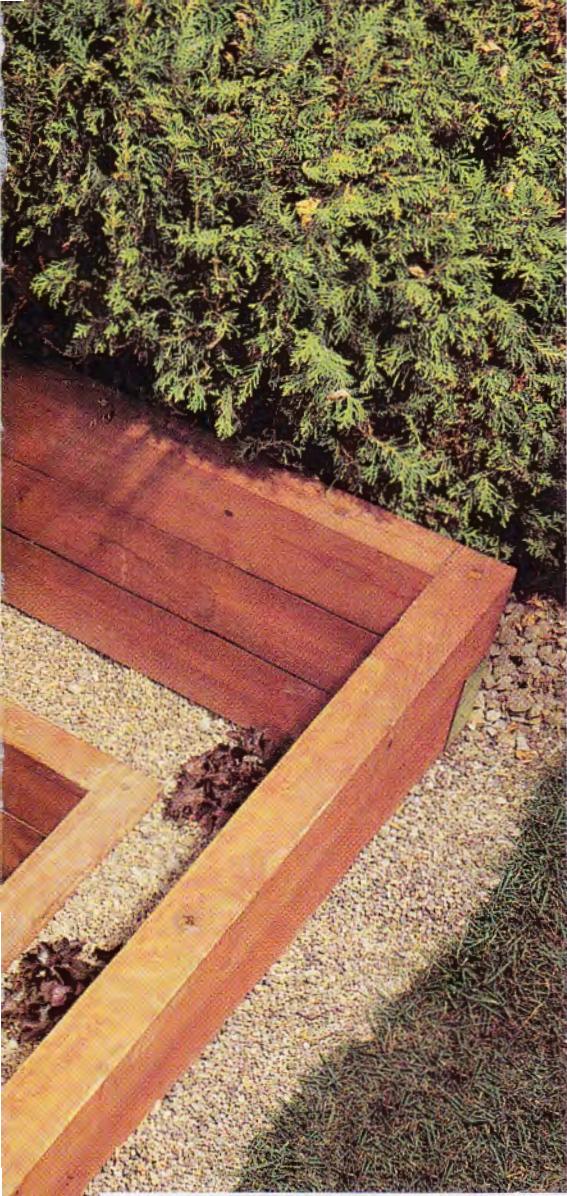
# Terraced window well

Dark Lower  
level?  
Let the  
light in.

by Sam Satterwhite

- Brightens lower-level room.
- Easier emergency escape.
- View with a window garden.
- Easy-to-adapt 4x6 timber construction.





**DRIVE** a stake for a center marker and mark an outline for each layer with spray paint. Dig each shelf about 17 in. deep and 12 in. wide (Fig. A). This will leave room for about 8 in. of gravel behind the wall. Protect your lawn with a tarp.



**T**he first step toward making that dreary basement into a bona fide room, a place where you'd want to hang out, is to flood it with natural light. Start by adding a window, or better yet, a pair of windows such as we showed in the previous issue (Feb. '01, p. 66). Then build a terraced window well to funnel down as much outdoor light as possible.

You can build this well as part of an egress window project or simply relandscape an existing window well. Our terraced window well is essentially a series of low, U-shaped retaining walls. In addition to the flood of light it brings to a basement room, you get these four benefits:

1. Two planting ledges that help you turn the well into a window garden.
2. Stepped sides that make emergency escape easier, especially for children.
3. A series of terraces that eliminate a potentially dangerous drop into the well.
4. A more spacious view, so the area outside the window opens up and expands the room.

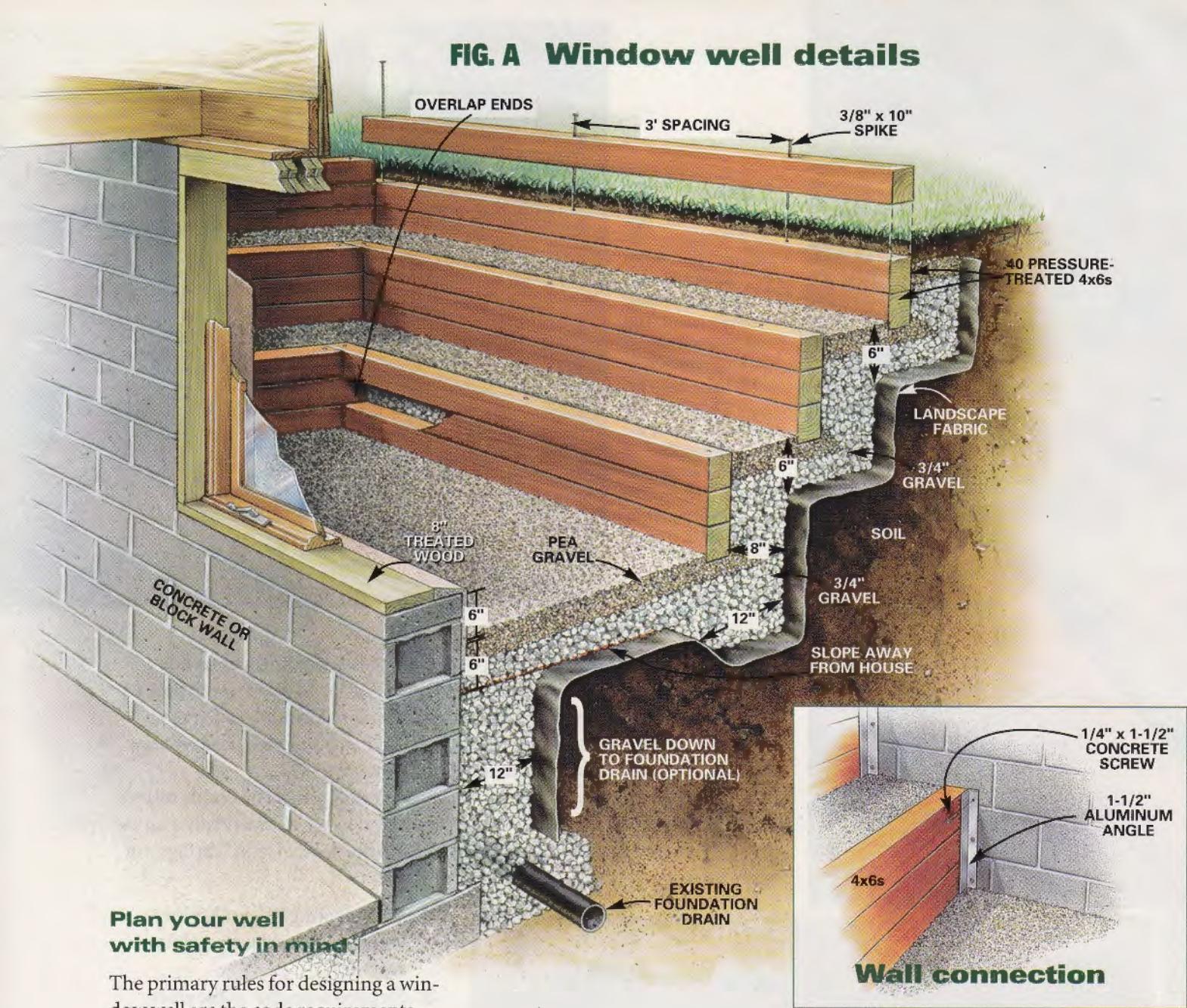
In this article, we'll walk you through the construction process and tell you how to deal with the all-important issue of drainage.

**Last month we showed you how to install an egress window. Now learn how to finish the job!**

**More WINDOW WELL >>**



# FIG. A Window well details



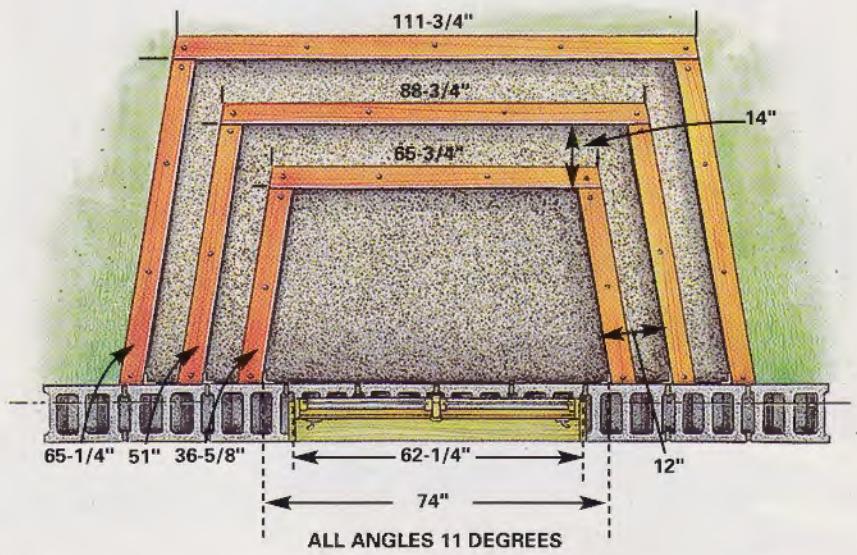
### Plan your well with safety in mind.

The primary rules for designing a window well are the code requirements for an egress window. The bottom of the well must be at least 3 x 3 ft., the well can't interfere with opening the window, and you have to provide a permanent ladder if the walls are more than 44 in. high. Terracing our well eliminates the ladder requirement.

Otherwise, you're only limited by safety and drainage issues. Any window well is inherently dangerous because of the potential for falls. Covered window wells are safest, but you can't let the cover hinder the window operation and it must be easily removable (without tools) to provide easy egress and emergency escape.

Terracing minimizes the danger of a fall. We recommend that you con-

### Well dimensions

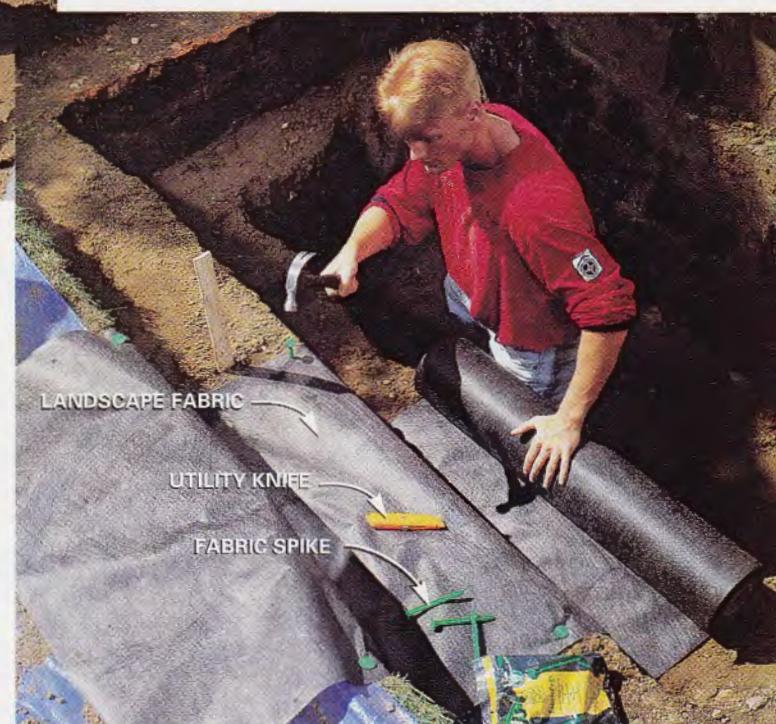


## Terraced window well

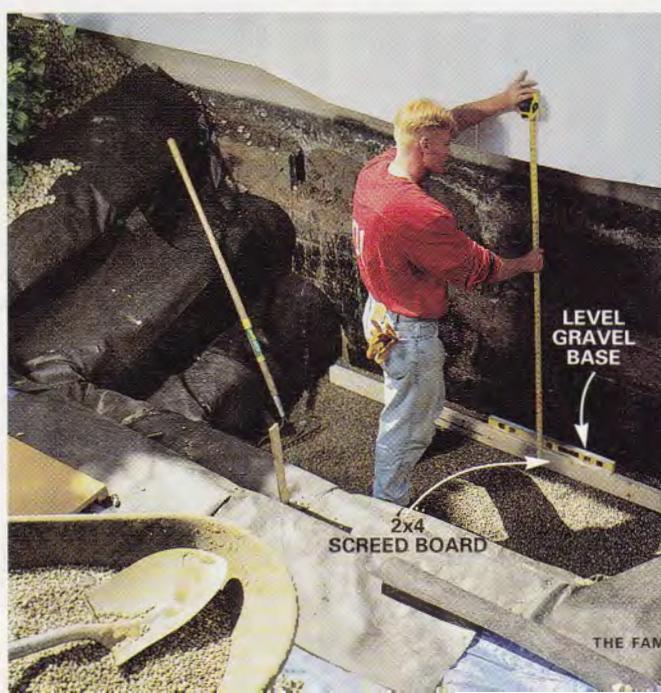


**2 DIG OUT** the bottom level 12 in. deeper than the bottom of the rough window opening. Slope the bottom 1/2 in. per foot away from the foundation. Along the edge of the base farthest from the wall, dig a 12-in. wide x 6-in. deep drainage trench.

**CAUTION:** BEFORE DOING ANY DIGGING, ALWAYS CALL YOUR LOCAL UTILITY COMPANIES (NATURAL GAS, WATER, ELECTRIC, PHONE AND CABLE) TO LOCATE BURIED LINES.



**3 LINE** the entire well with landscape fabric. Use fabric spikes to hold it in place and fold it into the corners to get complete coverage. The fabric acts both as a weed barrier and as a filter to keep soil from clogging your gravel drainage system.



**4 DUMP** in a layer of 3/4-in. gravel, then add pea gravel until the surface is 6 in. below the rough window opening (Fig. A). Use a 2x4 to flatten and level the gravel. If you haven't cut the opening yet, mark the rough opening clearly so you don't overfill the hole.

struct the widest terraces and lowest steps that your site will allow. You could also put a railing around the well, a feature we recommend if you have a walk nearby. The window well we're building opens onto a spacious yard, away from walkways. Still, we took the extra precaution of adding a curb about 8 in. above grade plus flower beds and low bushes to keep folks from stepping into it.

### We chose timbers, but other materials work well too

We constructed our terraced well with 4x6 treated (.40) wood timbers because they're long lasting, easy to cut and level, and economical. To dress up the timbers, we stained all sides before installation with an oil-based semitransparent redwood stain. Materials for our well cost about \$500.

Decorative concrete wall block is another good choice for terracing. This block will last forever, but it's about twice as expensive as wood.

**More WINDOW WELL >>**



FIRST  
11-DEGREE CUT  
SECOND  
11-DEGREE CUT

**5** **CUT** the 4x6 timbers with a circular saw set at an 11-degree angle. It will take two passes to complete the cut. As you cut the timbers to length, remember to adjust the length to alternate the overlap at the corners.



RUBBER GLOVES  
REDWOOD SEMI-TRANSPARENT OIL-BASED STAIN  
WOOD PRESERVATIVE  
TREATED END GRAIN

**6** **TREAT** the cut ends of the timbers with a wood preservative to stop rot. Then lay the wall timbers according to the plan in Fig. A.

and harder to cut and assemble.

Another option is to buy a manufactured well. These range from the corrugated steel culvert style (available in most home centers for about \$150) to manufactured terraced wells. One attractive, maintenance-free model is called the Scapewell and comes in several sizes and depths. (Contact Bilco at 800-854-9724 or [www.bilco.com](http://www.bilco.com).) Manufactured wells cost \$450 to \$650; covers are available for \$250 more.

### Good drainage is the key

If your basement hasn't suffered any moisture or flooding problems, digging a window well or expanding an existing well is unlikely to create water problems, as long as you follow the instructions in the photos. The two sizes of gravel we show provide a path for water to easily flow down into the soil without filling up the well. The landscape fabric acts as a filter to prevent soil from clogging the gravel drain field.

Soil with a high clay content, however, poses another problem. This soil tends to trap water instead of letting it drain away. For yards with clay soil or poor drainage, or for

**SET** each level of timbers using the following steps. **7** Create a level base for each timber wall with about 6 in. of gravel (no compacting needed). After completing the first wall, use the timbers as a guide to level the base for the remaining walls.



24" LEVEL  
1/4" TO 1/2"  
PEA GRAVEL

## Terraced window well

damp basements, consult a professional before undertaking the project. (Check the Yellow Pages under "Waterproofing Contractors.")

One option to ensure good drainage is to tie the well's drain field into the existing drainage system around the footing of your basement (**Fig. A**). If you don't know if you have foundation drains, you'll have to call the builder or the city department of inspections, or dig down to the footing at the bottom of the wall and look for a gravel bed with a plastic or other type of pipe. If you find the pipe, simply fill the hole with 3/4-in. gravel to connect the two drain fields.

Some homes have drains on the interior, under the basement floor, and rely on a sump pump to get rid of water. Connecting to this type of system is more complicated and difficult. We suggest that you leave this work to a pro.

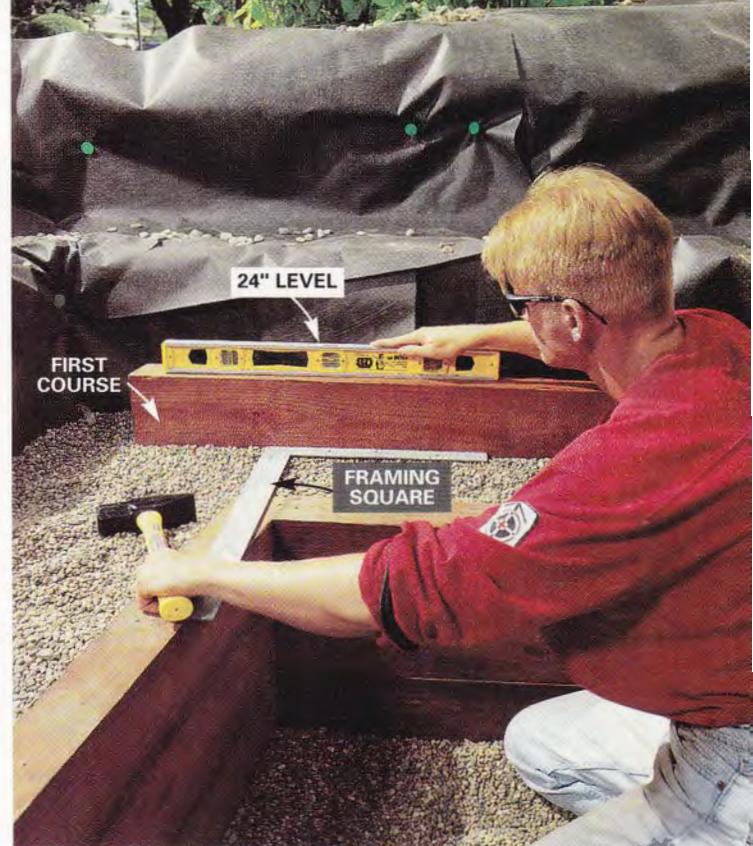
Be sure to show your plan to your local building inspector and obtain a permit. Ask about any special requirements and discuss drainage issues. The inspector should be familiar with local soil conditions.

### You'll be surprised by the mountain of soil you have to dig

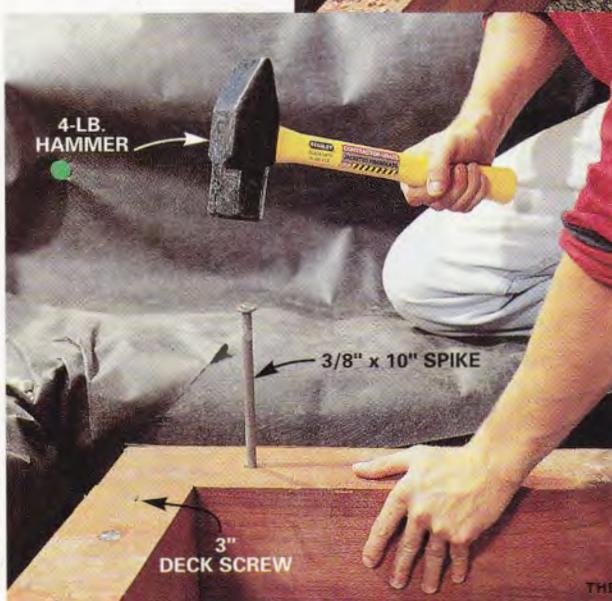
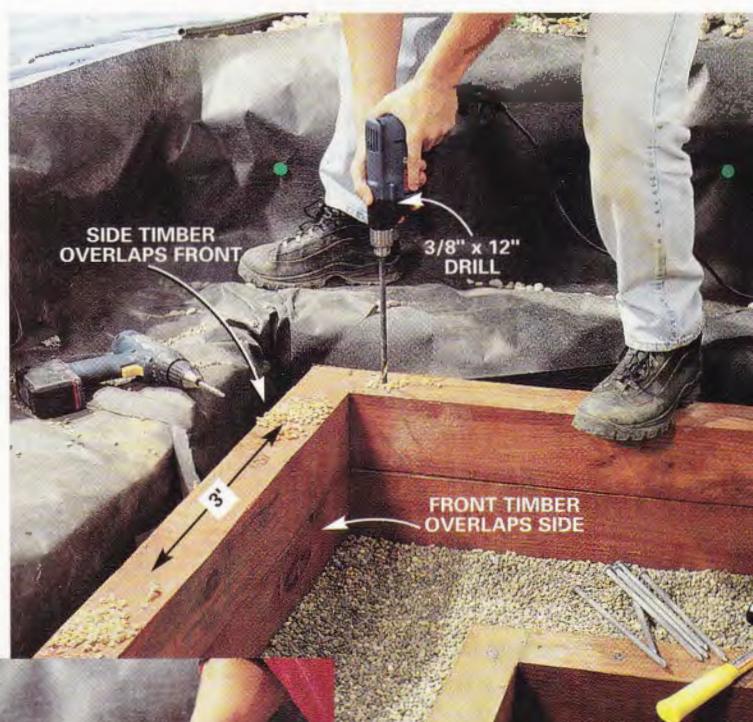
The photo series walks you through all the steps for constructing the well. **Fig. A** shows you the exact dimensions we used, but you can easily adjust them to fit your site. Your layout doesn't have to be precise; a stake centered on the window will be accurate enough for digging (**Photo 1**).

To build the size well we show here, you'll be removing a small mountain of dirt (more than 8 cu. yds.). Save your topsoil, but get rid of the rest of the dirt by renting a 20- or 30-yd. trash container (\$200

**USE a framing square to establish the setback from the previous wall (12 in. on the side and 14 in. on the front). Tie the first course together (two side pieces and a front) with two 3-in. screws at the joints. Then tamp the course perfectly level with a hammer.**



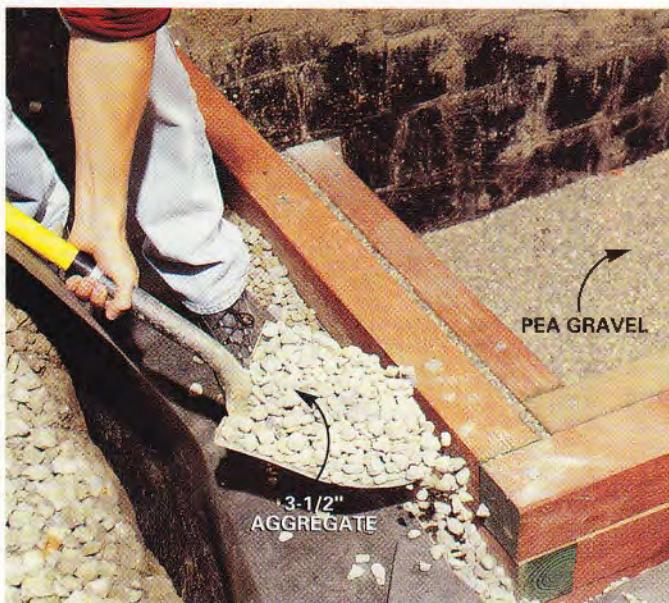
**SET the second course in place.** **9**  
Make sure to alternate the joints so the timbers overlap at the corners. Screw the second course together at the corners. With a 3/8 x 12-in. drill bit, predrill the timbers for spikes at the ends and about every 3 ft.



**10 SPIKE** the timber courses together with 3/8 x 10-in. spikes and a 4-lb. hammer.

**More WINDOW WELL >>**

## Terraced window well



**11** BACKFILL behind the timber walls with 3/4-in. aggregate, capping it with a 3- to 4-in. layer of pea gravel for the next wall. The larger aggregate will promote drainage.

to \$500 rental). The oversized container gives you a large base so you don't have to pile the dirt so high. Make sure the trash container has a gate on the back that you can swing open for the wheelbarrow.

Tell the waste company that you'll be loading dirt in the container so it's aware of the weight involved. If you have to put it curbside, you'll probably have to get a permit from the police department.

We built our entire well first, then added the window. But it's easier to cut in your egress window after you're done with the initial digging (**Photo 2**). (See "Egress Window," Feb. '01, p. 66. To order a copy, see p. 108.) Then finish the well.

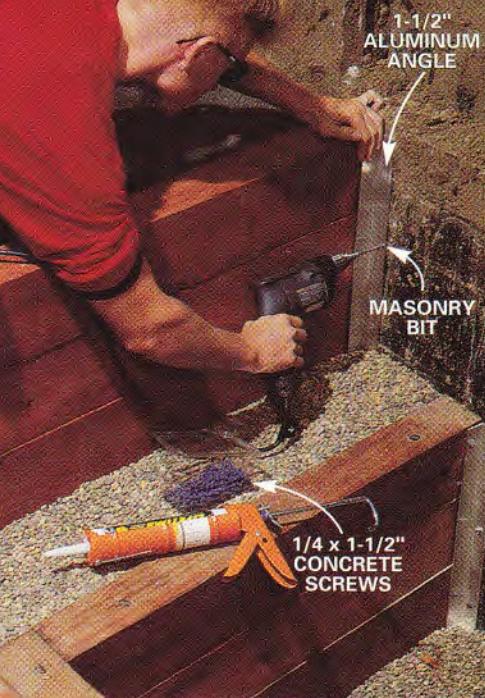
**TIP:** Cover the excavation during rainy periods to keep water out and keep the walls from eroding.

With the bottom level and the window accurately marked, lay out your wall pattern. Then measure the lengths and angles of the timbers and cut them (**Photo 5**). Often, the cuts expose untreated wood, so treat

raw ends after cutting (**Photo 6**). Use a wood preservative containing copper (available at paint stores, hardware stores or home centers).

We didn't show you how to set the first timber level, but the process is exactly the same as for the second (**Photos 7 – 11**). Driving the spikes takes some effort, so be sure to predrill with a 12-in. bit (**Photo 9**).

One good reason to backfill with

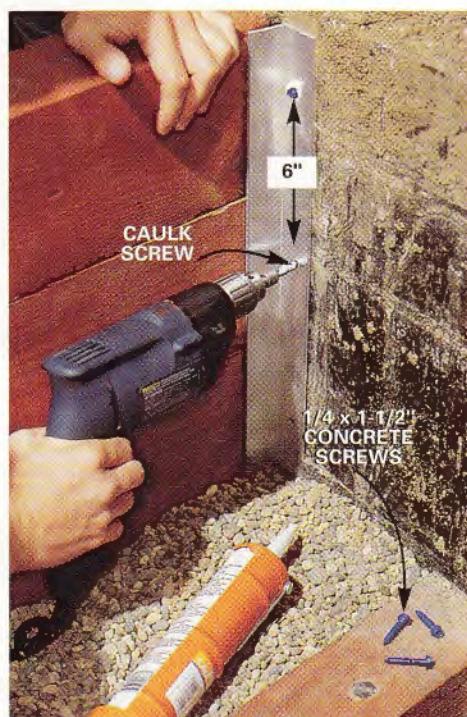


**12** PREDRILL 5/16-in. holes in 1-1/2 in. aluminum angle, hold it in place and predrill 3/16-in. holes into the concrete with a masonry bit.

gravel is to avoid the need for compacting (**Photo 11**). Backfilling with soil would require a lot of tamping to keep it from settling over the next year or two.

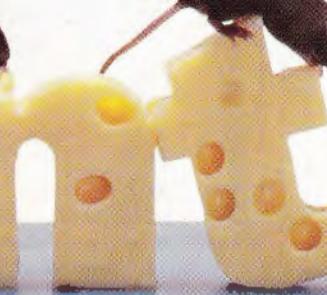
### Spruce it up

Once you finish the well, scatter decorative stone over the surfaces to spruce up its appearance. If you decide to add plants, confine them to pots nestled into the gravel. That way soil won't clog up the drainage. Or encourage vines to grow over the top and down the sides. But leave an uncluttered pathway open for emergency escape.

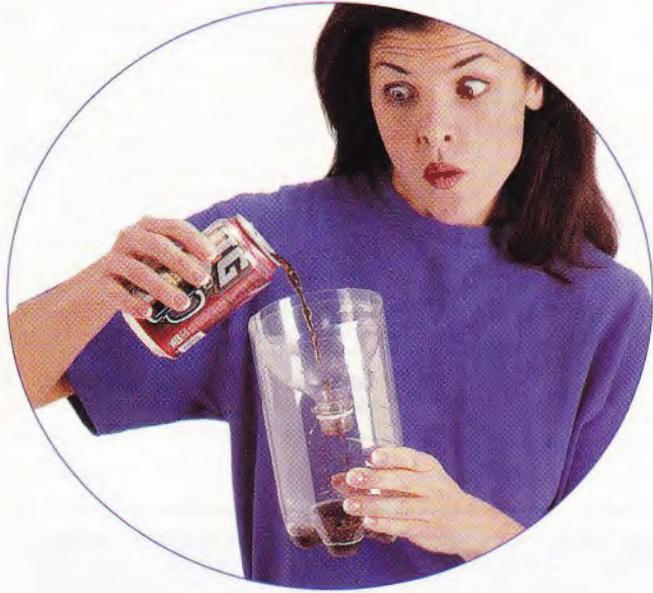


**13** APPLY a dab of caulk to 1/4-in. x 1-1/2 in. concrete screws and drive them home. Do not secure the stop to the timber wall. This allows the timbers to move slightly during freeze/thaw cycles.

# handy



## for Pesky Pests, from our Readers



### Soda-bottle bee trap

My husband stumbled on this cheap, effective bee and wasp trap. (Never thought I'd be *glad* he drinks soda all the time.) Cut the upper one-third off the top of a 2-liter plastic soda bottle with a utility knife. Pour a few ounces of soda pop into the bottom, then invert the top of the bottle and nest it inside the bottom part. Bees and wasps are attracted to the sweet smell and find their way through the bottleneck but can't find their way out. Eventually they get exhausted, fall into the water and drown.

*J. Chamberlain*



### A better mousetrap (no, really!)

Mice don't spend all their time foraging for food. They also spend a lot of time searching for bedding materials. Instead of baiting traps with cheese or peanut butter, try cotton balls. Just tuck the cotton into the trap mechanism. While the mouse is trying to tug it free, the trap is sure to spring. You can use the trap again and again without rebaiting. And Rex and Mittens won't get their sniffers snapped anymore because they won't be tempted by the cotton.

*Walter Fick Jr.*

### Mousetrap disposal bag

The only thing more unpleasant than setting a mousetrap is removing a squished mouse and resetting the trap—yuck! I'd rather throw away the dead mouse—with the 49¢ trap—than even think about resetting it, but that still means touching it. Now, I bait the trap and then carefully slide it into a paper lunch bag. After it's sprung, I chuck the whole mess into the garbage.

*Melanie Bailey*



## High fly sucker-upper

We live on a farm, so keeping flies out of the house and evicting them once they've moved in is a constant headache. When they swarm against the inside of the windows, we simply suck them up with a vacuum cleaner nozzle. The problem was that the hose didn't reach the skylights. Then my husband thought of duct-taping a 10-ft. length of PVC pipe onto the end of the nozzle. Now we can suck flies down from the highest skylights in the house.

*Louise Veldhuizen*



## Bird-eviction caulk

Here's how to keep nuisance birds from perching and building nests on house ledges. Apply a nontoxic product called Bird Proof Gel to the perching surfaces. Apparently birds just can't stand the feel of it, and they won't hang out at or return to an unpleasant perching spot. I like it because it's more humane than my husband's pellet gun.

[You can get three tubes for \$30 or 12 for \$95 (plus shipping) by contacting Bird-X Inc., 300 North Elizabeth St., Chicago, IL 60607; (312) 226-2473. [www.bird-x.com](http://www.bird-x.com)]

## Ant-proof your hummingbird feeder

If it bugs you that ants come to your hummingbird feeder and treat it like a picnic table, try this. Punch a little hole in the bottom of a shallow can and thread through the line that suspends the feeder. Tie a large knot in the line so the container rests on the knot. Seal the hole at the top and bottom with silicone caulk. Then punch a hole in a smaller can, slip that over the string and caulk it to the bottom of the first can. After the caulk hardens, pour in water and your feeder will be ant-proof. It acts like the moat around a castle.

*Glenn Rosser*

*[A layer of cooking oil on top of the water will slow down evaporation.—T.L.]*





# 6 ways to

by Spike Carlsen

The average deck has a life span roughly equal to that of your refrigerator. But unlike your fridge, which dies a sudden death, a deck dies slowly—stairs start bouncing, rails begin to wobble, deck boards twist and bow, and you begin to notice an overall shakiness. If your deck shows signs of rot and deterioration, it needs replacement. But if the wood and support footings are in good shape, there are steps you can take to solidify your deck and prolong its life.

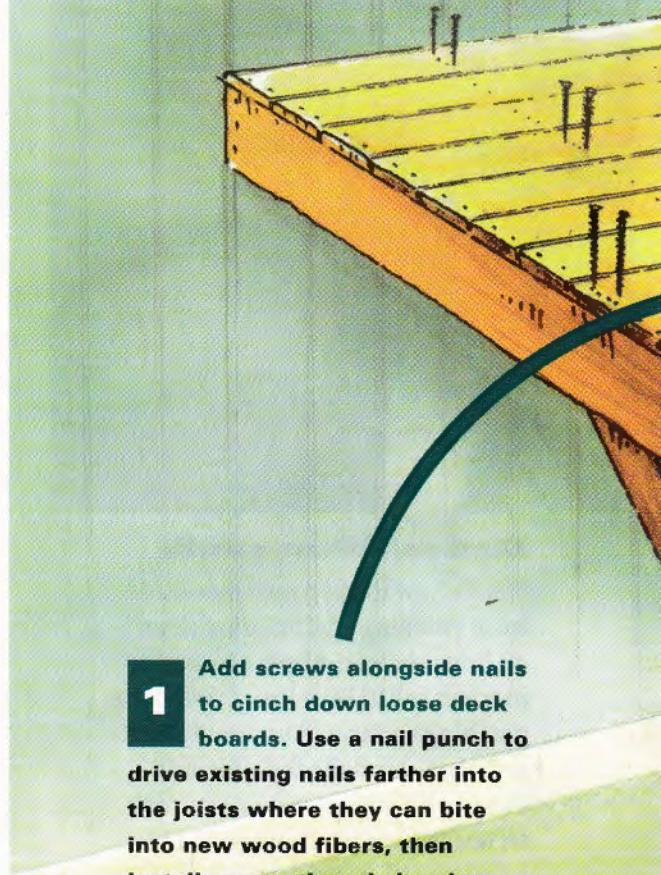
## A trio of deck enemies

Decks are the most vulnerable parts of our homes. They lie flat and unprotected. They're constantly exposed to rain, snow, wind, heat and other elements. We walk all over 'em. The wobbles, sways and bounces that result can mostly be traced to three inevitable forces:

■ **Wood shrinks and expands.** Wood expands when it gets wet and shrinks when it dries. As wood moves, a number of things happen, and if your deck was built from treated wood with a high moisture content, they can happen in a rapid and dramatic fashion. Joists can shrink and pull away from rim joists (see No. 5) or no longer seat snugly in joist hangers. They can twist and wind out of their vertical position, weakening them. And the dozens of once-square, tight-fitting joints (which add rigidity to the deck) become loose and wiggly.

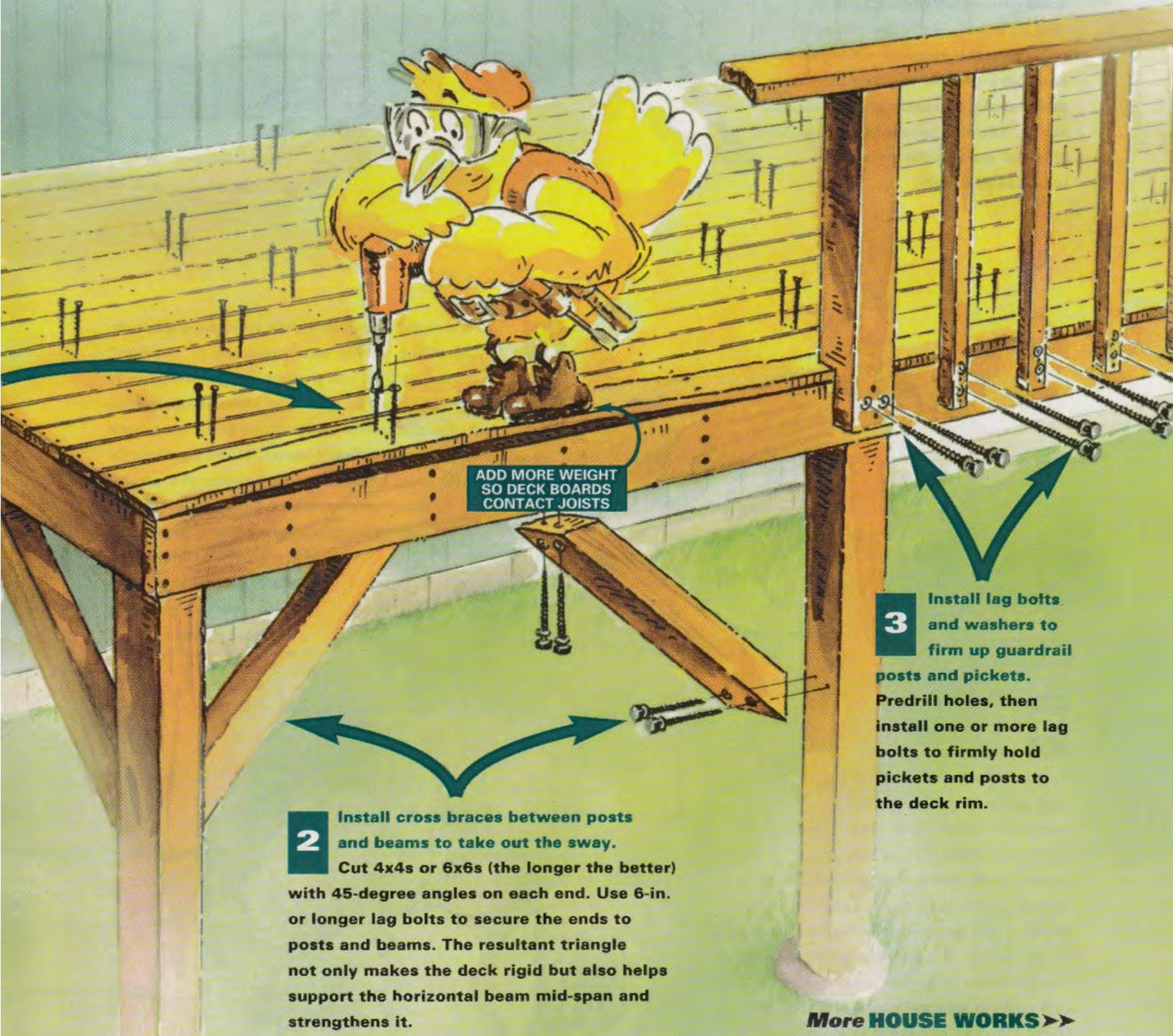
■ **Wood becomes more elastic.** Joists, beams and stair stringers—even when initially installed in their strongest position, with the bow or crown up—eventually lose their stiffness and become more elastic and more “bouncy.”

■ **Fasteners loosen.** When wood fibers shrink, nails and screws that were once tightly wedged lose their grip. When this happens, deck boards, railings and handrails loosen. These three pages show six simple steps you can take to help counteract these forces.



- 1 Add screws alongside nails to cinch down loose deck boards. Use a nail punch to drive existing nails farther into the joists where they can bite into new wood fibers, then install coarse-threaded, galvanized “deck” screws alongside. Stand or kneel on the deck boards so they’re in tight contact with the joists as you install the new screws.

# beef up a wimpy deck

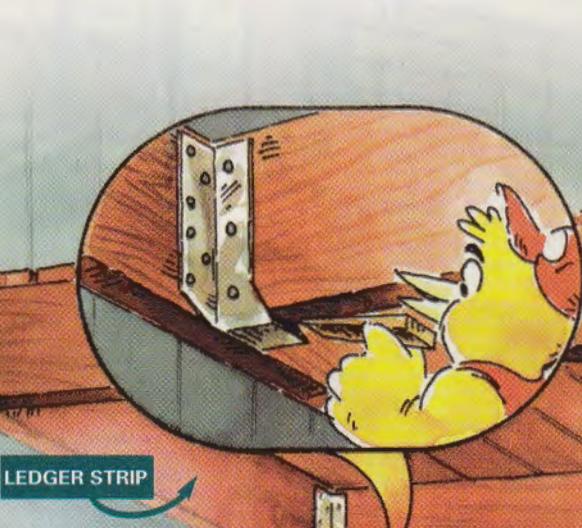
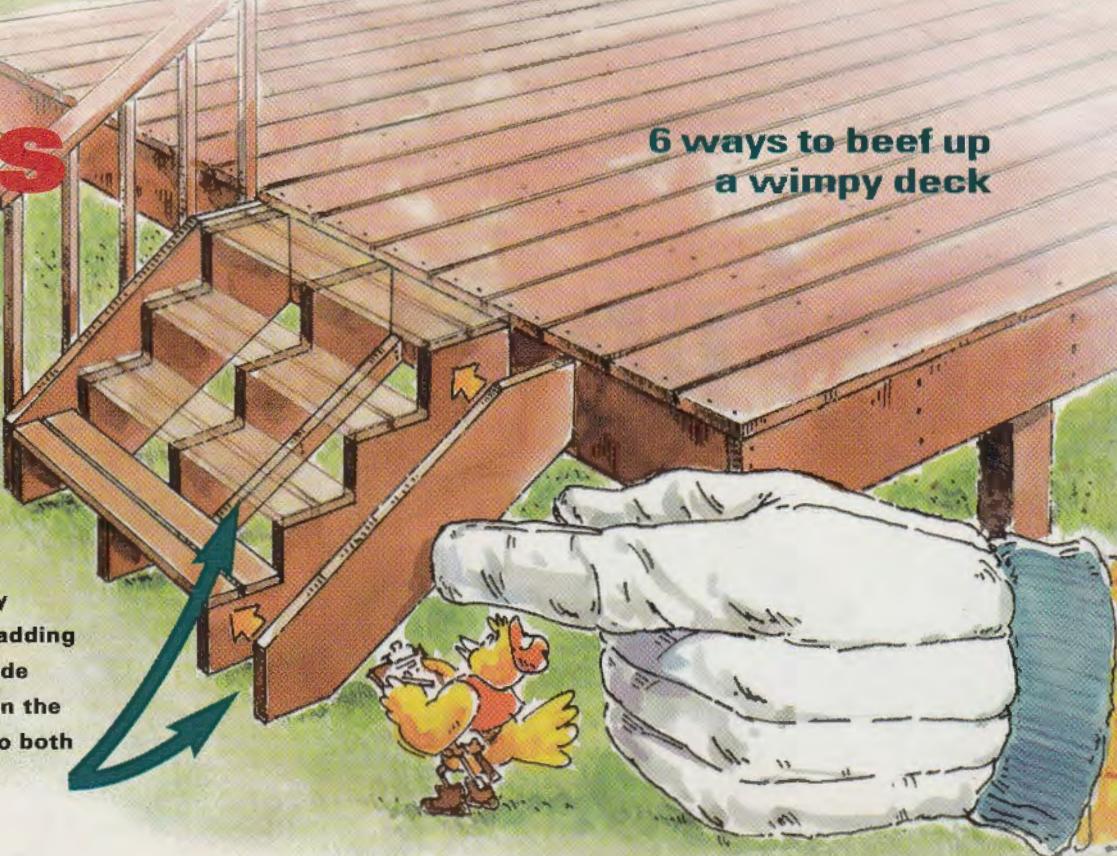


**More HOUSE WORKS >>**

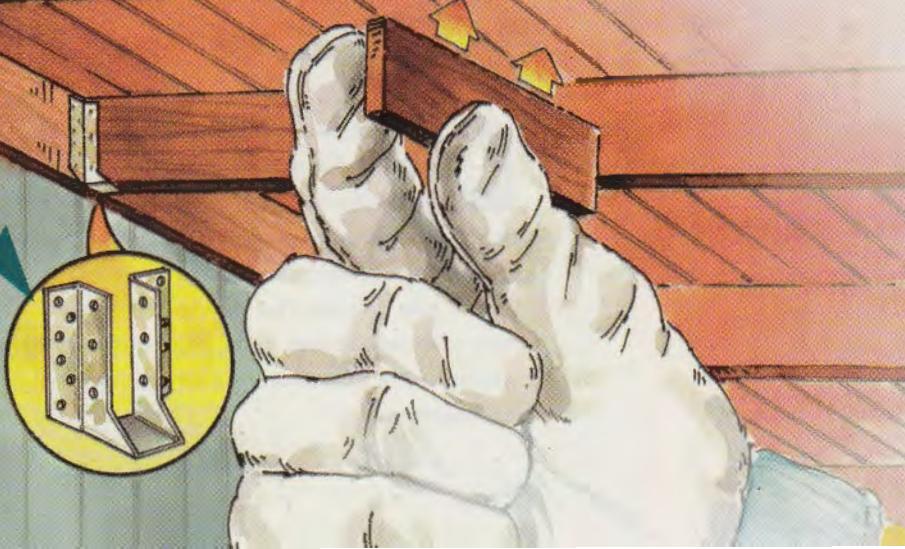
# How a house works

## 6 ways to beef up a wimpy deck

**4** Add solid stringer supports to firm up stairs. Cutting the "dinosaur scales" into stair stringers can effectively reduce the continuous solid part of a 2x10 or 2x12 to that of a mere 2x4. Temporarily removing the existing rail and adding solid stringers to the two outside stringers will greatly strengthen the stairs. You can also add 2x4s to both sides of the middle stringer to increase strength.



**5** Install joist hangers, or if joists have shrunk so their bottoms no longer rest on existing hangers, install wedges. If your deck was constructed without joist hangers, install them using 16d galvanized nails to secure them to the ledger strips and beams, and special galvanized stubby nails to the joists. If a gap has formed between the bottoms of existing hangers and joists, cut slender treated wood shims and drive them into the gap until they're snug.



**6** Add blocking between joists to reduce bounce. Blocking serves two purposes: It "unifies" the joists so that weight applied to one joist is partly distributed to those on either side. It also forces them into the vertical position where they're strongest. Don't install blocking directly under gaps between deck boards; it'll create little troughs, which hold water. If you have a wiggly second-story deck, you can add rigidity by installing blocks between the joists to create a gigantic V-shaped pattern.

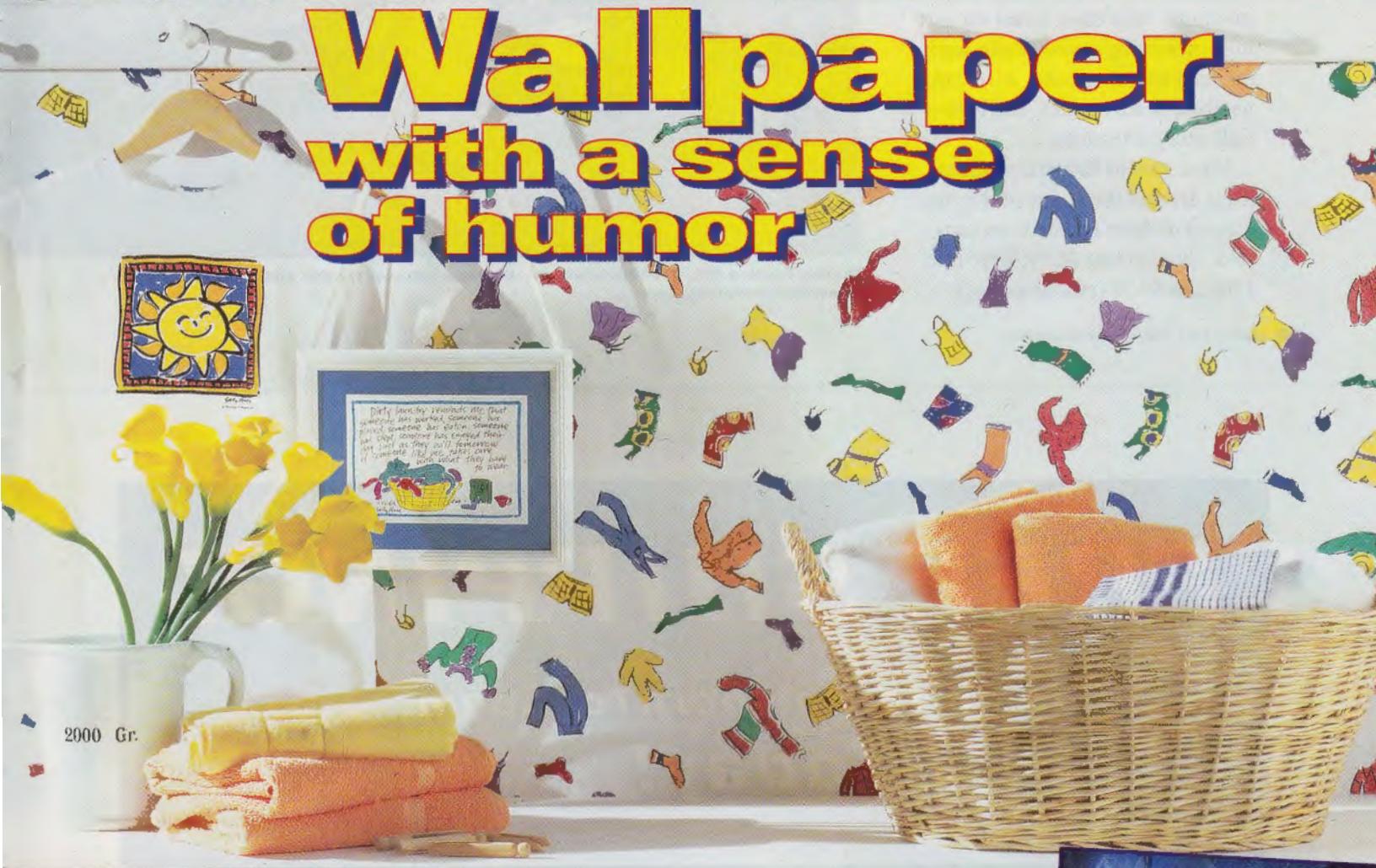
Art Direction • JANIS MCKAY BABCOCK  
Illustrations • JOHN KEELY

# New products

by Spike Carlsen



## Wallpaper with a sense of humor



**T**here may be 782,436 different patterns of wallpaper in the world—but none with more personality than this new “Happy Home” line of papers and borders from Seabrook. Created by artist Sally Huss, the designs feature clotheslines, coffee cups, birdhouses, underwater scenes, rows of houses and other funky patterns. I especially like the border that includes line after line of good-cheer quotes. This wallpaper is available at paint and wallpaper specialty stores. A typical roll, covering 28 sq. ft., costs about \$25.99. Borders cost \$25.99 per 15-ft. roll. Matching fabrics are available too. Call Seabrook to find a dealer near you.

Seabrook, 1325 Farmville Rd., Memphis, TN 38122, (800) 238-9152. [www.seabrookwallcoverings.com](http://www.seabrookwallcoverings.com)

**More NEW PRODUCTS >>**



## New products

### Doodad organizer

From the people who brought you the Bucket Boss for storing big stuff in 5-gallon buckets comes the Coffee Can Organizer for stashing small doodads in (you guessed it) coffee cans. The trays come in sets of three, in two different sizes: 5-3/4 in. diameter trays for large coffee cans and 4-3/4 in. diameter trays for medium coffee cans. Great for sorting and storing screws, nails, washers, wall anchors, bolts, wire connectors, beads, spices, marbles—well, you get the idea.

Make sure to flatten that sharp ridge around the inside of the rim.

A set of three for medium cans (No. 15061) costs \$8.99; large (No. 15062) is \$9.99 (plus shipping).



Duluth Trading Co., 8300 Highland Dr., Wausau, WI 54401; (800) 505-8888.  
[www.duluthtrading.com](http://www.duluthtrading.com)

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## Fast, sturdy gate brackets

Good fences make good neighbors—and good gate hardware makes it easy for them to come visit. The SturdyGate package consists of four welded steel, triangular corner brackets, two with hinges welded directly to them. To build a gate, cut four 2x4s the appropriate length, screw them to the brackets, add your pickets, then screw the hinges of the completed gate to the fence support post. They'd be plenty handy for building sag-proof doors for storage sheds and outbuildings too. SturdyGate is available at some home centers or for \$37.50 plus \$7.50 shipping from the company below.

**Modern Farm Mercantile, P.O. Box 1420,  
Cody, WY 82414; (800) 443-4934;  
[www.modfarm.com](http://www.modfarm.com)**

**More NEW PRODUCTS >>**



THE FAMILY HANDYMAN MARCH 2001 97

## H.E.S.T.IMONIAL #16

Jeff Kirkwood  
gets the most out  
of his SUV with  
Berryman.



"My SUV had been sitting for six weeks so when I took it for a ride she coughed, hacked and stuttered. I drove her to an auto parts store and grabbed a bottle of Berryman's Premium Gas Treatment cause I remembered seeing an ad about a H.E.S.T. test. I poured it in, drove out and caught the first light. Sitting there I noticed that the truck wasn't shaking anymore. When I got the green and floored it my little SUV was strutting her stuff!"



Berryman Products, with their High Energy Solvent Technology (H.E.S.T.), are strong medicine for whatever's ailing your car's engine. Check it out for yourself at: [www.berrymanproducts.com](http://www.berrymanproducts.com)

# New products

## Go stir crazy

Painting is tedious enough without spending an extra 20 minutes stirring, then cleaning up the spills and drips on the floor around you. Simplify life with the Stir-N-Pour. You simply snap the stirring cap over the rim of a gallon paint can and crank the handle. You can use the built-in spout to pour paint into a tray or bucket, and the airtight



## Heavy Duty Electric Brad Nail Gun



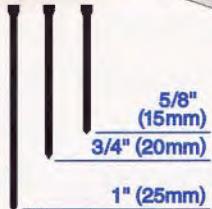
ET100™  
Nail Master®

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- Durable
- Powerful

10 Amps

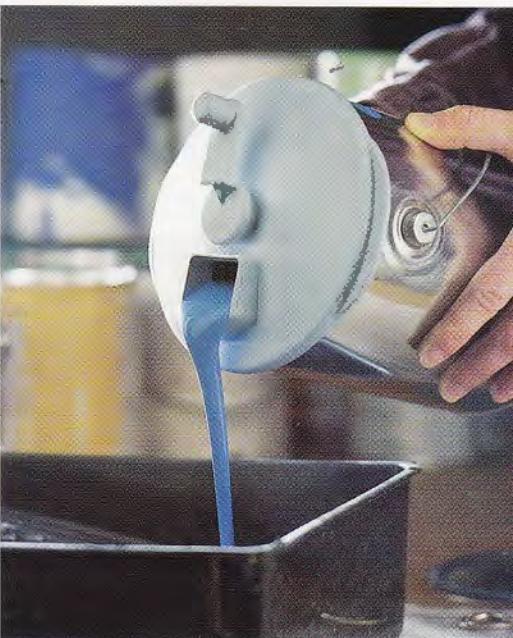
Removable  
Non-Marring  
Bumper

Shoots 3  
Different  
Length Brads



lid helps keep paint fresh. It's especially good for paint or stain that's been sitting around a long time and needs some serious stirring. Stir-N-Pour (No. 1170T) is available from the company below for \$9.75 plus shipping.

**Sporty's Tool Shop, Clermont**  
County Airport, Batavia, OH 45103;  
(800) 543-8633. [www.sportys.com](http://www.sportys.com)



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[www.arrowfastener.com](http://www.arrowfastener.com)

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## One hardworking crocodile

For anyone who's struggled to secure a tarp over a boat, log pile, trailer or half-shingled roof, here's an ingenious helper—the Crocodile Clip. Place the edge of a tarp between the two jaws, slide the locking mechanism until the jaws have a solid bite, then attach a Bungee cord or rope.

You can use it to keep bags securely closed, hold rain flaps over tents and do other gripping tasks. About \$1.59 each at hardware stores, home centers and paint stores.

**Homax Products Inc., P.O. Box 5643,  
Bellingham, WA 98227; (800) 729-9029.  
[www.homaxproducts.com](http://www.homaxproducts.com)**

**More NEW PRODUCTS >>**

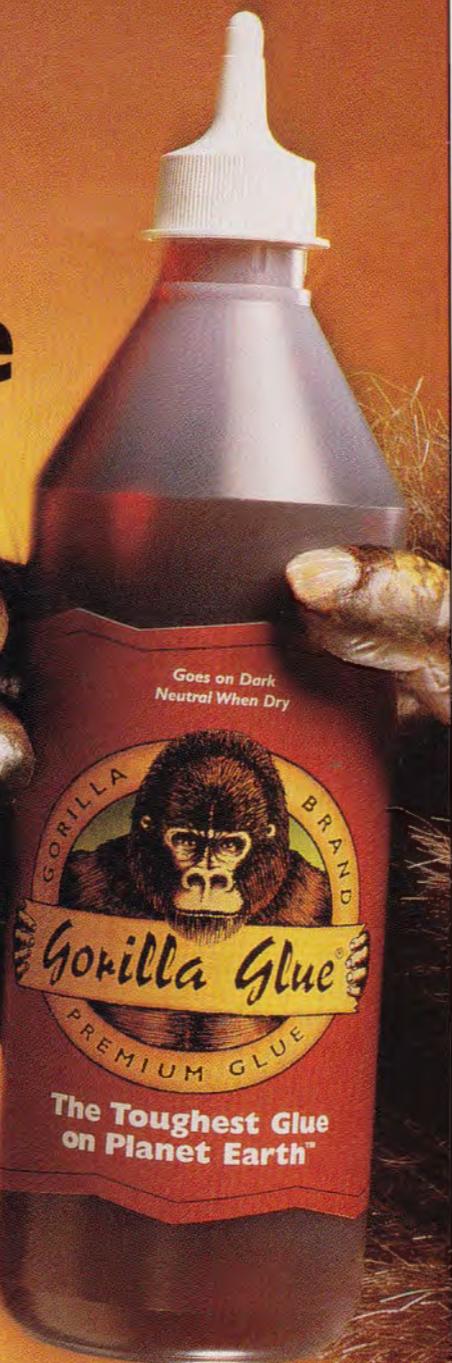


## Anything You Can Glue, I Can Glue Better.

You're beyond simple yellow glues, and you don't want a different bottle of glue for every project. You want Gorilla Glue®. Bonds wood, stone, metal, ceramic, plastics and more. Incredibly strong and 100% waterproof. Don't monkey around with other glues. Call 800-966-3458 or visit [www.gorillaglue.com](http://www.gorillaglue.com) for a retailer near you.



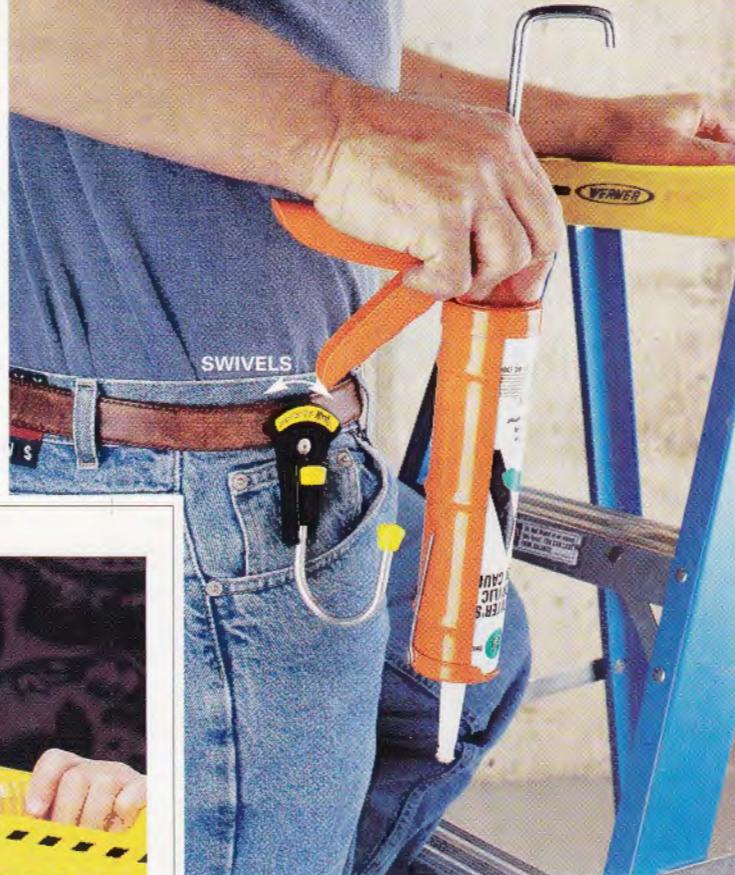
**The Toughest Glue  
on Planet Earth™**



## New products

### Big hook, big helper

Climbing a ladder with a circular saw, nail gun or cordless drill in one hand can be clumsy and dangerous—but what's the alternative? Check out the ingeniously simple Monster Hook from Prazi. You slip the small backside hook over your belt or tool belt, then load the big hook up with the tool of your choice. The hook can be adjusted to accommodate left- or right-handed users and it



## The easy way to protect beautiful wood from life's bumps and spills.



Now, beautifying and protecting wood is as easy as brushing on Minwax® Polycrylic® Protective Finish. Polycrylic dries fast and cleans up with soap and water, allowing you to complete projects in less time. And its remarkable clarity and smooth, durable finish let wood's natural beauty shine through. *Polycrylic, the easy way to keep wood beautiful.*



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This Old House  
The New Yankee  
WORKSHOP  
PROUD SPONSOR

swings to keep it more or less vertical. The big plastic nub on the end keeps tools from slipping off (and snagging unsuspecting bystanders). You can even bend the slightly pliable hook to conform to the size and shape of the tool. Good for carrying paint cans, extension cords and your lunchbox, too.

The Monster Hook is available for about \$10.95 at hardware stores.

Prazi U.S.A., P.O. Box 1165,  
Plymouth, MA 02362; (800) 262-0211.  
[www.praziusa.com](http://www.praziusa.com)



**More NEW PRODUCTS >>**

## Labeler for neat freaks

If you got D's in penmanship but still like all your stuff labeled neat as a pin, check out the Heavy Duty Labeler by Stanley and Brother International Electronics. It's basically a handheld typewriter that creates adhesive labels you can apply to parts bins, circuit breaker panels and file folders. Letters, numbers and words are displayed on an LCD screen as you type them in, then you hit the PRINT button and use the tape-cut lever to release the label. Here are some of the cool features:

- Tapes are available in 1/4-, 3/8- and 1/2-in. widths with clear, white or colored backings.
- You can create five different size letters in bold, italic,

- outlined and other styles.
- You can print words vertically, mirrored and framed.
- It'll create cool little "no smoking," "handicap accessible" and "skull and crossbones" symbols.

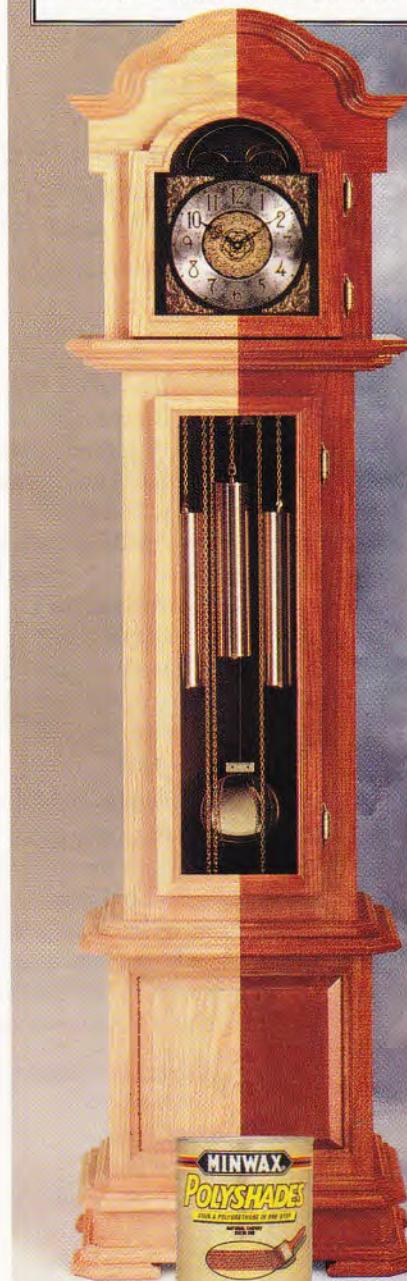
Beware! There's no spell-check feature. The heavy-duty model shown costs \$69; the standard model is \$49. An AC adapter (\$25) is available for those into serious labeling. Extra tapes cost \$17 to \$23 each.

**Brother International Electronics, (901) 379-1010. [www.brother.com](http://www.brother.com)**

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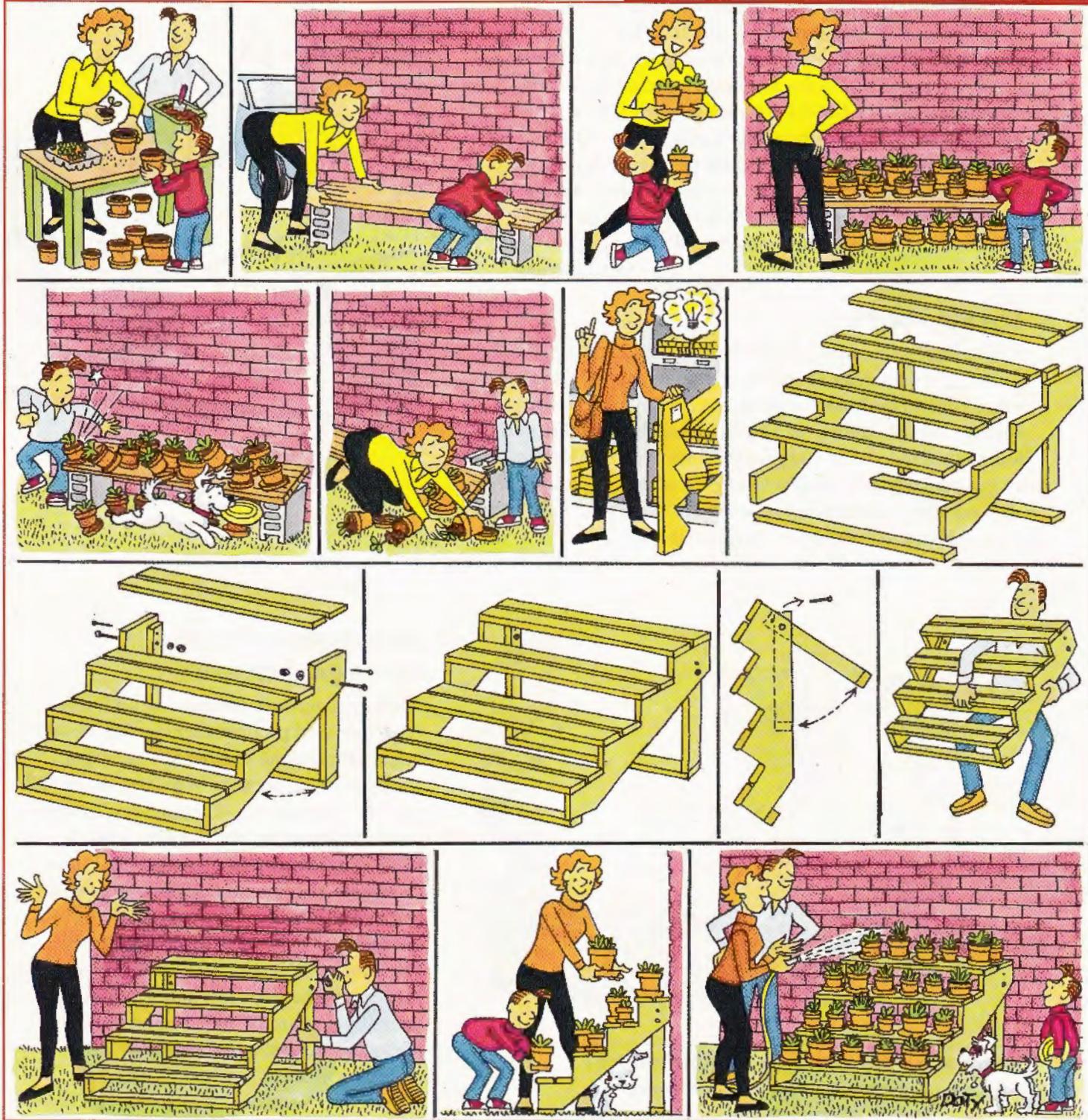
Makes And Keeps Wood Beautiful®  
[minwax.com](http://minwax.com)

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# Wordless workshop

by Roy Doty

## STAIR-JACK PLANT STAND



Our thanks go to Margaret Dowd, Superior, WI, for this idea. **We'll pay \$100** for any ideas published, so send in those sketches and notes!

Submit your idea to Wordless, The Family Handyman, 2915 Commers Drive, Suite 700, Eagan, MN 55121. Only ideas we purchase can be acknowledged. Original contributions become our property upon acceptance and payment.

# Great Goofs

## A/C on the loose

At the end of the summer, I decided to beat the fall to-do list and remove the window air conditioner units at my law office. I proceeded to remove the screws from the window sash of the first unit and muscle it out myself. Well, it slipped and fell out the window a few feet into a mulched flower bed. My secretary asked if I could use some help with the next one. Stubbornly I forged ahead by myself. The second unit was much larger and my plan of attack failed even more miserably as the unit slipped from my hands and went crashing to the sidewalk 10 ft. below. Luckily, no one was in its path. I promised my secretary that *next* time I'd ask for help!

— Skip Spurling

## Topsy-turvy

While hanging a new six-panel door in an existing jamb, I was extremely careful to make precise measurements for the hinges before I drilled the holes for the lock set. Everything was going perfectly. After installing the hinges, I lifted the door into position, slipped the pins in and gave the door a try. It swung and latched perfectly. But my new feelings of pride were quickly crushed when my wife entered the room and said, "Aren't the small panels supposed to be at the top like the rest of the doors?"

— Bill Youngberg



### Got your own do-it-yourself mistake?

We pay \$100 for each one we print. Write to:

Great Goofs, The Family Handyman  
2915 Commers Drive, Suite 700  
Eagan, MN 55121

Original contributions become our property  
upon acceptance and payment.

## Sprayed—and sprayed again

Recently, I purchased some new, unfinished French doors. I propped them up outside and began painting one with my new spray gun. To my surprise, big globs of paint splattered all over the door and me—the gun wasn't adjusted correctly. I went into the house to wash the mess off my hands and get some rags. While I was gone, the automatic sprinklers came on and soaked the doors. To make matters worse, the doors fell onto the newly mowed grass. I let the doors dry out and several days later, I sanded off the globs of splattered paint and grass clippings, made sure my gun worked perfectly and repainted them out of the sprinklers' reach.

— Greg Alderete

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