

HANDY

HANDYMAN CLUB OF AMERICA MAGAZINE

GETTING ORGANIZED

BUILD A BOOKCASE
FIND SPACE UNDERFOOT
SHAPE UP YOUR SHOP

NEW
YEAR'S
GEAR!

+ GREAT
GARAGE
UPGRADES
• FLOORING FIXES
• CABINET IDEAS

JANUARY 2013

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Add storage and style to a room or hallway with custom built-ins



COVER PHOTO BY MARK MACEMON

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GEAR FOR THE NEW YEAR

KICK OFF 2013 BY ADDING SOME OF THESE GOODIES TO YOUR SHOP



▲ WORX SD SEMIAUTOMATIC DRIVER

Cool enough for James Bond yet easy to use for all DIYers, the Worx SD Semi-Automatic Driver features a revolving chamber that houses six hex-shank bits for various tasks. Simply draw back the cover to advance the appropriate bit into the chamber and then slide the cover closed to start driving screws. There's even a screw-starter bit in case you need to drill a pilot hole. The tool is powered by a built-in 4-volt Li-Ion battery and boasts 27 in.-lbs. of maximum torque. It also includes an LED light and a forward/reverse button. [LINK ▶](#)

▼ PANASONIC CORDLESS 1/2-IN. DRILL AND DRIVER KIT AND CORDLESS RECIPROCATING SAW KIT WITH DUAL VOLTAGE TECHNOLOGY

Panasonic's Tough IP line of Li-Ion cordless power tools now includes products that feature Dual Voltage Technology, which allows the same tool to use 18-volt or 14.4-volt batteries. For example, users can operate the Cordless 1/2-in. Drill and Driver Kit (EY74A1LS2G) and the Cordless Reciprocating Saw Kit (EY45A1LS1G; both tools shown here) with either the 18-volt or the 14.4-volt battery, depending on how much power is required for the task at hand. [LINK ▶](#)



▲ ROCKWELL SONICRAFTER AND SHOPSERIES SONICTOOL

Most multitools accept only accessories made specifically to fit each individual tool, but the new Rockwell Sonicrafters and ShopSeries Sonictool feature a Universal Fit System that allows them to accept accessories from other brands without the need for adapters. The Sonicrafters have also been upgraded with a new Hyperlock tool-free quick-release feature that provides 1 ton of clamping force to prevent blades and other accessories from slipping. Raise the Hyperlock lever to swap out the accessory; then push the lever back down to lock it in place. [LINK ▶](#)

▼ KIDDE WORRY-FREE SMOKE ALARM

Featuring a sealed-in 10-year Li-Ion battery, the Kidde Worry-Free Smoke Alarm promises to provide a decade of protection without having the battery replaced, saving homeowners an estimated \$40 in battery costs throughout the life of the alarm (according to the manufacturer). It is also the only UL-listed alarm to contain a photoelectric smoke sensor that is programmed to reduce cooking-related nuisance alarms. Room-specific features are built into the alarm as well, including a bright LED light in the Hallway Alarm and an additional voice warning in the Bedroom Alarm. [LINK ▶](#)



▼ LUFKIN P SERIES TAPES

New P1000 and P2000 tapes from Lufkin (a premium brand of Apex Tool Group) are made of ABS plastic for strength that exceeds the American Society for Testing and Materials (ASTM) standards for abrasion resistance. In addition, the tapes' Quad-Hook steel-reinforced four-rivet end hook is durable and promotes longer tape life. The P Series tapes also feature a new case with a toggle blade lock and are available in more than 40 width and length combinations. [LINK ▶](#)



PHOTOS COURTESY MANUFACTURERS



▲ **HUNTER FAN UNIVERSAL INTERNET THERMOSTAT**
Control your home's heating and cooling from your smart-phone or other Internet-connected device with the Universal Internet Thermostat from Hunter Fan. Compatible with a broad range of heating and cooling systems, the thermostat responds to commands via Hunter Fan's native app for the iPhone, iPad and iPod (or my.hunterfan.com for all other devices). These devices can even be set to receive e-mail messages when a home's temperature exceeds a predetermined point, alerting homeowners to potential problems such as freezing pipes or mold growth. The thermostat can be powered by both replaceable AA batteries and common 24-volt wiring, and its Five Minute Installation System is simple. [LINK](#) ▶



▲ **MAKITA HRH01ZX2 ROTARY HAMMER**
Makita's HRH01ZX2 cordless rotary hammer boasts twice the drilling speed and the potential for three times as many holes drilled compared with standard 18-volt rotary hammers. The tool's two 18-volt LXT batteries provide power comparable to that of a corded version of the same tool. The rotary hammer features a 1-in. drilling capacity, zero to 4,800 beats-per-minute (bpm), zero to 1,200 rpm and 3.0 joules of impact energy. [LINK](#) ▶

▼ **TURTLE WAX HEADLIGHT LENS RESTORER**

Made for all lenses, Plexiglas and other plastic surfaces, the Turtle Wax Headlight Lens Restorer kit works to reverse the effects of sun damage, scratches and oxidation to make night driving safer. The kit comes with all of the necessary tools for improving cloudy and yellowed lenses: lens-clarifying compound, spray lubricant, three restoration pads and a lens-sealing wipe. [LINK](#) ▶



▼ **MILWAUKEE M12 FUEL DRIVER KIT AND M12 FUEL 1/4-IN. HEX IMPACT DRIVER KIT**

Combining three technologies — a Powerstate brushless motor, a Redlithium battery pack and Redlink Plus intelligence — Milwaukee's new M12 Fuel cordless drill/drivers and impact drivers provide performance comparable to 18-volt tools in a compact 12-volt size. The new line, which includes the M12 Fuel Driver Kit (2402-22) and M12 Fuel 1/4-in. Hex Impact Driver Kit (2453-22) shown here, promises more power, more run time and longer life than previous versions of the tools. [LINK](#) ▶ ■





▲ Whether you do it yourself or hire professionals, installing new cabinets will help restore order to your garage. Veneer-core plywood construction and sliding dovetail joinery make these Slide-Lok cabinets strong and easy to assemble.

GARAGE CABINETS

ORGANIZE
CLUTTER BEHIND
CLOSED DOORS

Specialized racks and brackets are perfect for storing large items such as yard tools and bikes in your garage, but how do you stow the small stuff? Just a few paint cans, portable power tools and garden supplies can make a garage look cluttered. The solution is cabinets that corral the mess behind doors and in drawers, lending your garage a clean, orderly appearance.

Two types of cabinets are commonly used in garages: portable and stationary. Portable cabinets are mounted on casters so that they can easily be moved around and kept close at hand either in the shop or out in the driveway. The most common portable units are metal mechanics' cabinets, which feature multiple drawers designed to organize a variety of tools.

Fixed cabinets have no wheels and are either floor-standing or wall-mounted. Many homeowners install old kitchen cabinets in their garages; recycling these castoffs is a great secondary benefit of remodeling. However, because kitchen cabinets often do not hold up well to the rigors of garage use, several manufacturers offer cabinets that are built specifically for garages. These units feature durable surfaces and heavy-duty, corrosion-resistant hardware.

Garage cabinets are made from a variety of materials, including plywood, particleboard, metal and plastic. In general, metal cabinets are most durable, especially when they are made of corrosion-resistant metal such as stainless steel. Veneer-



▲ To install a direct-mount cabinet, drive a 3-in. wood screw through the hanger strip near the top of the cabinet back and into a wall stud.



▲ Some cabinet manufacturers provide a wall-mounting system that typically uses a metal track secured to the wall studs and adjustable brackets that are attached to the cabinet sides.

core plywood is also very durable, and you can finish it to match any style. Particleboard is typically coated with a colored melamine that gives the cabinets a smooth, easy-to-clean finish. Plastic is a lightweight, durable and often less-expensive option.

Design your cabinet layout to suit your needs. A row of full-height cabinets provides maximum storage but no work surface. If you plan to work on projects in the garage, you'll need at least two base cabinets to support a countertop. Most homeowners will opt for a combination of base, upper and full-height cabinets. Full-height cabinets work best at the end of a run of cabinets.

Base cabinets that feature deep drawers or pullout shelves offer the best



▲ A French cleat is a set of interlocking homemade wood cleats or manufactured metal cleats. One cleat is attached to the cabinet and the other is attached to the wall. The cabinet cleat rests on the wall cleat, and the mating cleat bevels keep the cabinet from falling.

PHOTOS BY DAN CARY AND MICHAEL ANDERSON AND COURTESY MANUFACTURERS



Stanley

▲ Cabinets made from noncorrosive and impermeable materials, such as stainless steel or plastic, are easy to clean and won't absorb liquids.

accessibility. Also consider installing cabinet organizers and accessories, such as the door-mounted metal racks, drawer dividers and under-cabinet lights that are marketed for kitchen cabinets. The kitchen-design areas at home centers can be great sources for ideas.

Installing garage cabinets is similar to any other cabinet installation, with one big exception: Garage floors are likely to get wet and messy for longer periods than kitchen floors. It's best to keep as much off of the floor as possible, including cabinets. One solution is to mount both the upper and lower units on the wall. Be sure to leave at least 4 in. below the lower cabinets so



Hercke

▲ These steel cabinets are created by combining modular components, offering maximum design flexibility and allowing for future expansion.

that you can still sweep or vacuum under them. Another option is to support the lower cabinets with legs made from a noncorrosive material such as stainless steel or hard plastic.

If you want to keep collectables or memorabilia in the garage, consider turning an upper cabinet into a display case. You can remove the cabinet doors to reveal open shelves for display, or you can make replacement doors with clear-plastic panels. (Glass doors could pose a hazard in the garage.) This project is simple: Build a door frame that matches the size of the solid door from 1x2 lumber; then rout a 1/4-in.-wide x 1/2-in.-deep rabbet in the back inside edge of the frame to contain the plastic. You can

reuse the old hinges on the new door.

Whether you choose the latest high-tech stainless steel units or castoffs from a kitchen remodel, adding cabinets to your garage will make a big impact. Besides making the space look neat, this upgrade will make future projects easier because you'll know where everything is when you begin and where to stow it when you're done — out of sight. ■

SOURCES

Hercke [LINK](#) ▶
 Rubbermaid [LINK](#) ▶
 Slide-Lok [LINK](#) ▶
 Stanley [LINK](#) ▶



Rubbermaid

▲ Wall-mounting cabinets (so they don't need legs) protects them from moisture damage and keeps the floor clear for easier cleaning.



▲ Manufactured or DIY pullout shelves and racks improve access to objects stored in lower cabinets. Just about any kitchen cabinet accessory can also be installed in a garage cabinet.

Add another reason to
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BLINDS COURTESY LEVOLOR
WINDOW COURTESY JELD-WEN WINDOWS AND DOORS

TOP-SHELF BOOKCASE

ADD STORAGE AND STYLE TO A ROOM OR HALLWAY WITH A BUILT-IN UNIT

Whether you fill it with first-edition novels, art pottery or your favorite DVDs, a bookcase is a useful and versatile piece of furniture in any home. Freestanding and wall-mounted bookshelves offer the benefits of portability and easy installation. But by making a little extra effort you can greatly increase storage capacity and architectural interest with a built-in unit.

Built-in bookcases can be elaborate, but they are not necessarily hard to build. We designed an elegant cabinet that even a beginning woodworker can complete; the most difficult aspect might be handling the plywood and finding the space to assemble the large cabinets.

CUSTOMIZE THE DESIGN

You might think built-in bookcases are only for large rooms, but they also work well in very small rooms and even hallways. Tight spaces like these are often too small for furniture arrangements but offer enough space to accommodate a built-in cabinet. Bookcases are often installed on an empty wall, but you might consider building one around a door or window to make the unit seem more integrated with the room. This approach can also make the unit more functional — for example, the bookcase I built also serves as a nook and window seat. To incorporate a door opening into the unit, you can install a cabinet above the door that connects bookcases on both sides.

If you are planning to install a bookcase on an empty wall, consider breaking up the bookcase units with an opening instead of filling the entire wall with shelves. This approach can create a nook that adds dimension to the room and provides a place to hang a piece of art. Another option is to install bookcases on two adjacent walls, butting the inside bookcase corners together to create a corner unit.

Two additional design considerations are which type of shelving to use and whether you will integrate lighting into the bookcase. Plywood shelves are most common but require solid-wood edging as reinforcement to prevent them from bowing. Glass shelves should be used to support only lightweight decorative objects and should be made of tempered glass that's at least 1/4 in. thick and no wider than 30 in. You can build integral lights into the unit or install them in



CONFIGURATION OPTIONS



WINDOW SEAT



OVER DOOR



OPEN WALL WITH SEAT



CORNER UNIT

ILLUSTRATION BY MICHAEL ANDERSON

the room and direct them toward the bookcase. The most common integral lights are small “pot” or “puck” lights. These lights are typically recessed in 55mm to 60mm holes that are drilled through the top of the cabinet. Install pot lights before attaching the face frame and trim. I installed recessed ceiling lights in front of the bookcase.

Once you have determined the

space that you want the bookcase to fill, it is time to design the specific structural elements. This bookcase is simply a set of cabinet boxes with a face frame covering the seams. Determine the number and size of cabinets that will be required to fill the space, keeping in mind that no vertical cabinet should be more than 30 in. wide. For example, we combined three tall cabinets and one short cabinet to fit

around a window. You might need to change the dimensions of the boxes to fit your space, but the construction will be the same.

The 2-in.-wide face will align with the cabinet side differently, depending on whether it covers an exposed end panel or the seam between two cabinets or it butts against an adjacent wall. The outside edge of the face frame should be flush with the outside face of an exposed end panel. The face frame should be centered on the seam between two cabinet side panels. And the face frame should overhang cabinet sides that butt against an adjacent wall by approximately 3/4 in. to allow for scribing. I designed our face frame in three sections to cover the large double cabinets on the left, the window seat and the single cabinet on the right side.

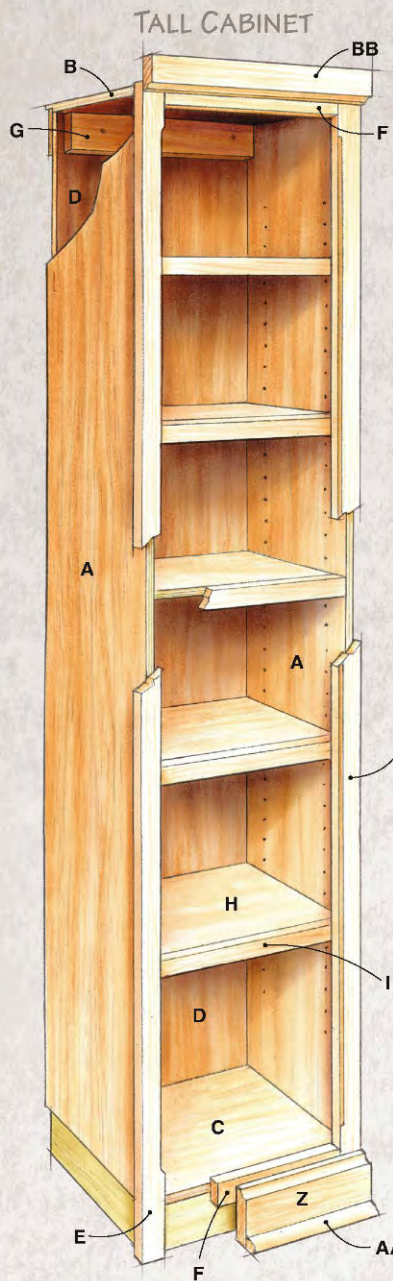
BUILD THE CABINETS

Sheet goods such as plywood and medium-density fiberboard (MDF) are perfect for building a large bookcase. A unit made with such large panels of solid wood would not only take longer to build and cost more but also be more vulnerable to future structural problems such as warping and splitting. For a natural-wood finish, use hardwood-veneer plywood for the cabinets and shelves and a matching solid wood for the face frames and shelf edging. If you plan to paint the

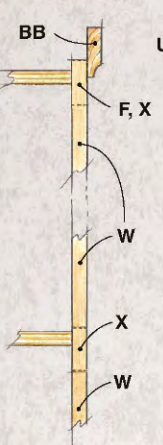
CUTTING LIST

▶ KEY	DESCRIPTION	SIZE	▶ KEY	DESCRIPTION	SIZE
▶ 24-IN.-WIDE TALL CABINET			▶ O	Side seat-board edging	3/4 x 1-1/4 x 5-3/4 in.
▶ A	Side panels	3/4 x 11-1/2 x 91 in.	▶ P	Face-frame stiles	3/4 x 2 x 17-1/2 in.
▶ B	Top panel	3/4 x 11-1/2 x 24 in.	▶ Q	Face-frame rails	3/4 x 2 x 21-3/4 in.
▶ C	Bottom panel	3/4 x 11-1/2 x 22-1/2 in.	▶ R	Side filler strips	3/4 x 3-3/4 x 17-1/2 in.
▶ D	Back panel	1/4 x 23-1/2 x 90-1/2 in.	▶ S	Wall cleats	3/4 x 2 x 22-7/8 in.
▶ E	Face-frame stiles	3/4 x 2 x 94 in.	▶ 36-IN.-WIDE OVER-DOOR CABINET		
▶ F	Face-frame rails	3/4 x 2 x 20 in.	▶ T	Side panels	3/4 x 10 x 11-1/2 in.
▶ G	Wall cleat	3/4 x 2 x 22-1/2 in.	▶ U	Top and bottom panels	3/4 x 11-1/2 x 36 in.
▶ H	Shelves	3/4 x 10-1/8 x 23-3/4 in.	▶ V	Back panel	1/4 x 11 x 35-1/2 in.
▶ I	Shelf edging	3/4 x 1-1/4 x 22-3/8 in.	▶ W	Face-frame stiles	3/4 x 2 x 12 in.
▶ 48-IN.-WIDE WINDOW SEAT			▶ X	Face-frame rails	3/4 x 2 x 32 in.
▶ J	Side and center panels	3/4 x 16 x 12 in.	▶ Y	Wall cleat	3/4 x 2 x 34-1/2 in.
▶ K	Top and bottom panels	3/4 x 16 x 48 in.	▶ TRIM		
▶ L	Back panel	1/4 x 16 x 47-1/2 in.	▶ Z	Baseboard	3/4 x 4-1/2 x cut to fit
▶ M	Seat board	3/4 x 16 x 48 in.	▶ AA	Base shoe	3/4 x 3/4 x cut to fit
▶ N	Front seat-board edging	3/4 x 1-1/4 x 50-1/2 in.	▶ BB	Top cap	3/4 x 2-1/2 x cut to fit

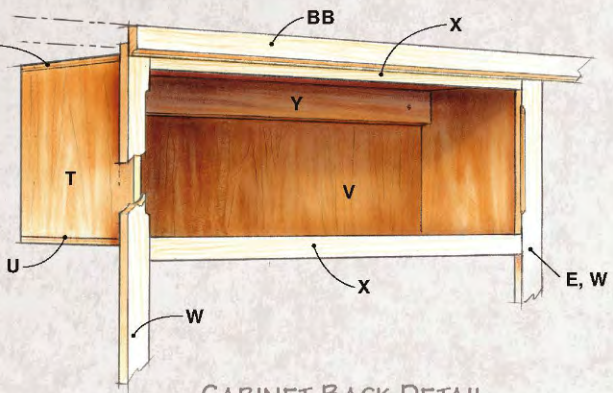
BOOKCASE



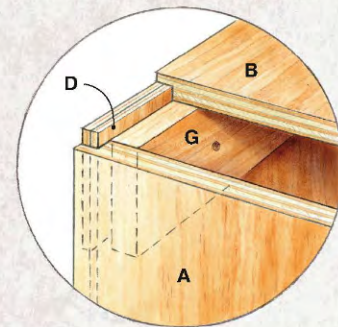
FACE FRAME
DETAIL



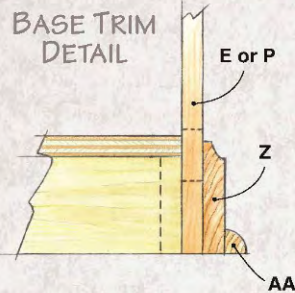
OVER-DOOR CABINET
DETAIL



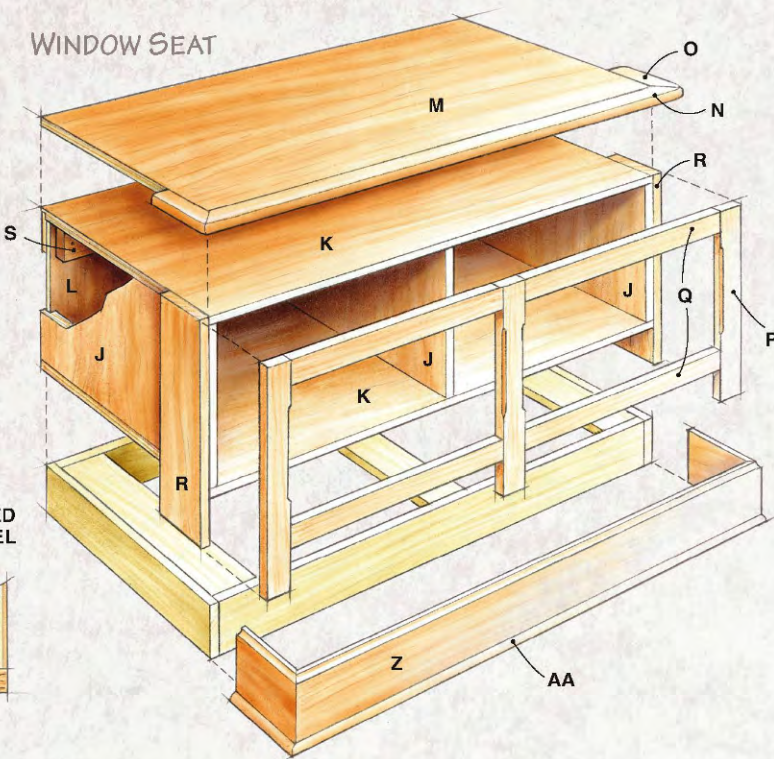
CABINET BACK DETAIL



BASE TRIM
DETAIL



WINDOW SEAT



STILE OVERLAP DETAIL

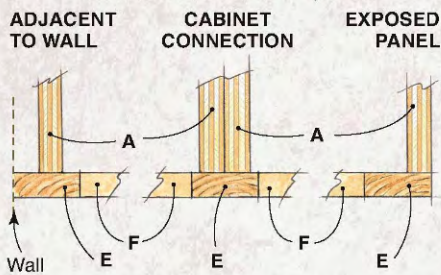


ILLUSTRATION BY TECH ART AND DESIGN

bookcase, consider substituting MDF for the cabinets and shelves, and use poplar or pine for the face frames and shelf edging. (Either way, use solid wood for the face frames because of its appearance, workability and durability.)

We used 1/4-in. shelf pins (available at home centers and hardware stores) to support the shelves. Once you've routed the rabbet for the back (photo 1), bore the shelf-pin holes, using a piece of perforated hardboard as a template (photo 2). Drill the holes 1-1/2 in. from the front and

back edges, 3 in. apart and beginning and ending 8 in. from the top and bottom.

The cabinet sides, top and bottom are joined with butt joints fastened with No. 8 x 2-in. wood screws (photo 3) and concealed by trim. Fasten the back, which covers the wall and squares up the cabinet, with glue and 1-in. crown staples or brads (photo 4). Then cut the shelves to size and attach a piece of solid-wood edging along the front edge of each shelf for reinforcement.

MILL THE TRIM

We used 2-in.-wide stock for the face frames, which are easy to assemble using pocket screws (photos 5 and 6). However, these fasteners require a drilling jig and stepped drill bit (see SOURCES) to make an angled counter-sink hole for the pocket screw.

When milling the face frames, you can cut the profiles either after assembly or before you cut the stock to length. I cut the stopped cove profiles in the face frames after they were assembled, using a router with a bearing-piloted cove bit and stop blocks clamped at each end of the stile (photo 7). I worked

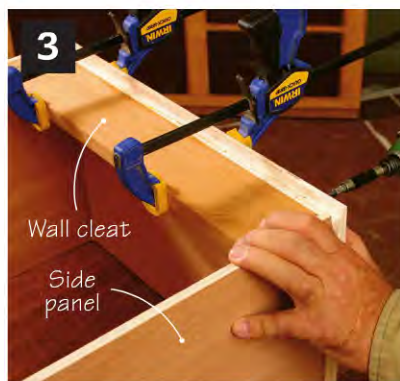
BUILDING A BOOKCASE



▲ Rout a 1/2-in.-wide x 1/2-in.-deep rabbet in the back inside edge of the top, bottom and side panels. The depth of the rabbet is twice the thickness of the back panel.



▲ Use perforated hardboard as a jig for drilling the shelf-pin holes in the side panels. Space the holes 3 in. apart and 8 in. from the ends of the panels.



▲ Assemble the top, bottom and side panels with glue and 2-in. coarse-thread screws. Then attach the wall cleat to the top and side panels with glue and 2-in. coarse-thread screws.



▲ Glue and clamp the face frame together, and secure the joints by driving self-tapping washer-head screws into the pocket holes.



▲ Rout the stopped cove profile in the face-frame stiles with a bearing-piloted 1/4-in.-radius cove bit. Clamp a 2-in.-wide stop block to the rails to stop the cove cut at each end.



▲ Create a bullnose edge on the seat board by first attaching the seat edging to the seat board with glue and biscuits and then routing a 3/8-in.-radius roundover on the edges.

in reverse order on the trim stock, cutting the profiles in the trim stock on a router table before cutting it to final width and length (photos 9 and 10). Cutting the profiles first allows for cleaner miter cuts and reduces tear-out.

APPLY THE FINISH

If you want a natural-wood look, apply the finish before installing the cabinets and trim — this keeps the mess out of the house. You can fill nail holes with matching wood putty after completing the installation.

If you choose to paint the bookcase, apply one coat of primer before in-

stallation. After you've completed the installation, you can caulk all of the seams, fill the nail holes with spackle and apply two coats of satin or semi-gloss interior paint.

INSTALL THE BOOKCASE

A built-in bookcase should look like it is a part of the house and make flush connections with the surrounding surfaces. Achieving a clean and flush installation is not always easy because most homes do not have flat, square walls. Compensating for irregularities is one of the biggest challenges of installing any built-in project.

The easiest way to overcome variations in floor height is by installing the bookcase on a level base called a plinth. Before securing the plinth, check that the walls are plumb, and position the plinth so that the back edge is in line with the part of the wall that extends farthest into the room (see "Positioning the Base," p. 16). Next, shim and level the plinth on the floor and screw it to the wall (photo 11, p. 16).

Large dips or variations in the wall's surface will be more apparent after the bookcase is installed. If variations in the surface are greater than 1/4 in., smooth them out with a



▲ Attach the back panel to the cabinet with glue and 1-in.-crown staples. Then attach a 3-in.-wide strip of the back material to fill the gap left behind the wall cleat.



▲ Use a stepped drill bit and pocket-hole jig to drill the pocket-screw holes in the rails.

MAKING MOLDINGS



▲ To make the base shoe molding, first rout a 3/8-in.-radius roundover on a piece of trim stock lumber that is wider than the final base shoe width.



▲ Next, rip the base shoe molding to its final 3/4-in. width. Repeat the routing and ripping process to create multiple pieces of molding. You can use the same technique with any thin stock molding.

INSTALLING A BOOKCASE



▲ Position, level and fasten the plinth to the wall studs with 2-in. screws. Leave a 3/4-in. space between the plinth and any adjacent side wall.



▲ Scribe the edge of the face frame to follow the wall profile using a compass. Trim to the line with a jigsaw or belt sander.



▲ Fasten the face frame to the first cabinet with 2-in. finish nails. Secure the cabinet to the plinth with 1-1/4-in. screws and to the wall with 3-in. screws driven through the wall cleat.

POSITIONING THE BASE

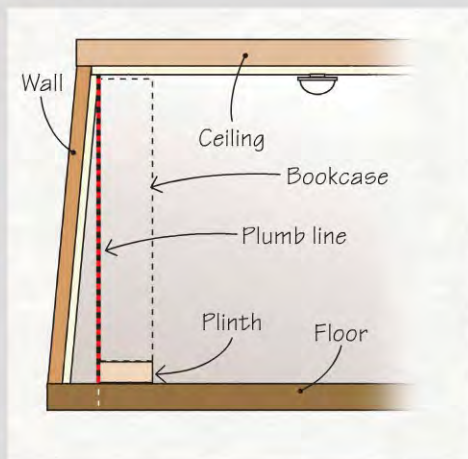


ILLUSTRATION BY MICHAEL ANDERSON

Use a 4-ft. level, laser level or plumb bob to check each wall for plumb (photo, left). Position and secure the base so that the back edge of the base is directly below the part of the wall that extends the farthest into the room (illustration, above).

skim coat of joint compound before installing the bookcase.

We used two methods to create a tight connection between the walls and ceiling. The first method, scribing, employs a compass or scribe to transfer the irregularities of the wall to the cabinet or face frame, which is then cut to match the profile of the wall. Our bookcase cabinets are designed with extra material to accommodate a small amount of scribing where the back meets the wall. The rabbet that holds the back panel is twice as deep as the back panel, leaving a 1/4-in.-wide x 1/4-in.-deep cabinet side extension beyond the back for scribing. If your walls will require more than 1/4 in. of scribing, you can cut a deeper rabbet for the back, but this may require you to make the shelves narrower to compensate for lost space inside the cabinet.

Position the cabinet and face frame so that it is plumb and touches the wall. Set the scribe or compass to match the widest gap between the wall and the face frame; then scribe the wall profile onto the face frame (photo 12 and



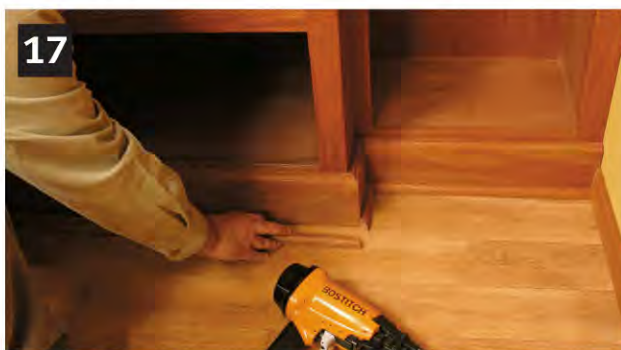
14 ▲ Install the rest of the cabinets. Secure the cabinet sides to each other with 1-1/4-in. screws, to the wall by driving 3-in. screws through the wall cleat, and to the plinth.



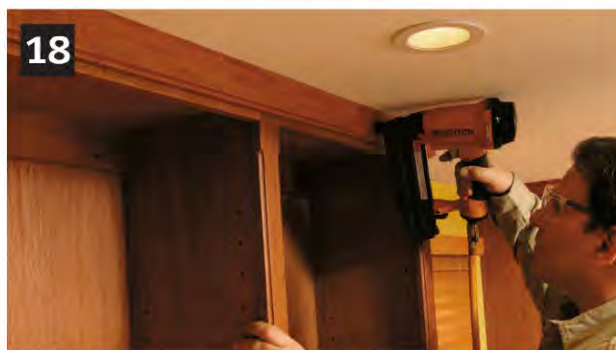
15 ▲ Solid filler strips conceal the sides of the window-seat cabinet. The window seat face frame is fastened with 2-in. finish nails.



16 ▲ Attach the window-seat board with 2-in. finish nails. To prevent nails from popping through the top of the window-seat cabinet, be careful to drive them into the face frame and cabinet sides.



17 ▲ Miter the inside and outside corners of the base molding. Then position the base molding 1/4 in. below the top edge of the bottom face-frame rail and attach it with 1-1/4-in. finish nails. Next, conceal any gaps between the base molding and the floor by attaching the base shoe.



18 ▲ Finish the installation by attaching the top cap molding to the face frame. If there are gaps larger than 1/4 in., scribe the top cap to match the ceiling. Otherwise, caulk any small gaps between the cabinet and walls or ceiling, and touch up with matching paint.

inset). Trim the face frame on the scribe line. When you attach the face frame to the cabinet, it will fit tightly against the wall, covering any gaps.

The second way to compensate for gaps is to cover them with trim pieces. This technique is easy, but it works best with flexible pieces of trim. For example, we used base shoe to conceal the gaps between the baseboard and floor.

The bookcase must be securely fastened to the wall. In order to ensure a flush fit against the side wall, I secured the scribed face frame to the first cabinet before securing it to the plinth and

wall (photo 13). I then fastened the first cabinet in place by driving 1-1/4-in. screws through the bottom into the plinth and by driving 3-in. screws through the wall cleat at the stud locations. Secure the remaining bookcase cabinets to each other with 1-1/4-in. screws and then fasten them to the plinth and wall (photo 14). Finally, attach the remaining face frame and trim to the cabinets with 2-in. and 1-1/4-in. finish nails (photos 15 to 18). Fill the nail holes with putty to match the wood finish, or apply spackle and then paint.

Allow the finish to cure before in-

stalling the shelf pegs and shelves. When deciding what to put on each shelf, place the largest and heaviest items on the lower shelves, and work your way up with smaller or lighter-weight objects. This technique makes the bookcase more stable and enhances its visual appeal. ■

SOURCES

Jeld-Wen Windows and Doors [LINK](#) ▶

Kreg Tool Co. (pocket-hole jig and self-tapping screws) [LINK](#) ▶

Levolor (window and door blinds) [LINK](#) ▶

HOME SKILLS

BY DAN CARY | PHOTOS BY SCOTT JACOBSON AND DAN CARY

STORAGE UNDERFOOT



SCAVENGE
CAPACITY
WITHOUT
SACRIFICING
SPACE

/// The Addams Family made it the home for their pet dragon, Spot, but in most houses the space under the stairs is overlooked. Its cramped configuration often limits its usefulness (and its appeal as a storage area). But you can recoup even a small under-stair space with a set of built-in cabinets that provides an accessible and attractive place to stow clutter.

Building an under-stair cabinet is easier than you might think. It's just a basic cabinet box, and only the front face and interior are finished. Once you learn how, you can apply the same techniques to make built-in wall cabinets for other areas of your home, such as a closet cabinet (see "In-Wall Options," right), a bookcase, a bathroom cabinet or an entertainment center.

DESIGNING THE CABINET

When designing a built-in wall cabinet, you have four main considerations: the amount of space, the wall framing, what you intend to store and the finished appearance.

First determine how much space is available, factoring in the wall framing and wall contents. It's easiest to install cabinets in spaces that you already have access to because you can examine the framing layout and look for wiring or plumbing obstructions without removing any wallboard. If the space where you intend to install

the cabinet is enclosed, you'll need to cut a 1-ft. square exploratory hole. (Cut carefully so you can reuse the piece to patch the opening if you discover the project isn't feasible.) If you find electrical or plumbing lines in the way, you'll need to decide whether moving them is worth the effort.

Because the top of the cabinet can't interfere with the stair stringers (the angled and notched 2x12s that support the treads), the closer the side of the

IN-WALL OPTIONS

With the same techniques that I used to build the under-stair cabinets, I designed these built-in closet cabinets to fill closet space that was previously concealed behind the wall. I built two vertical cabinets in the shop and then slid them into openings that I framed in the wall. Trim covers the seams and creates a unified appearance. — DC

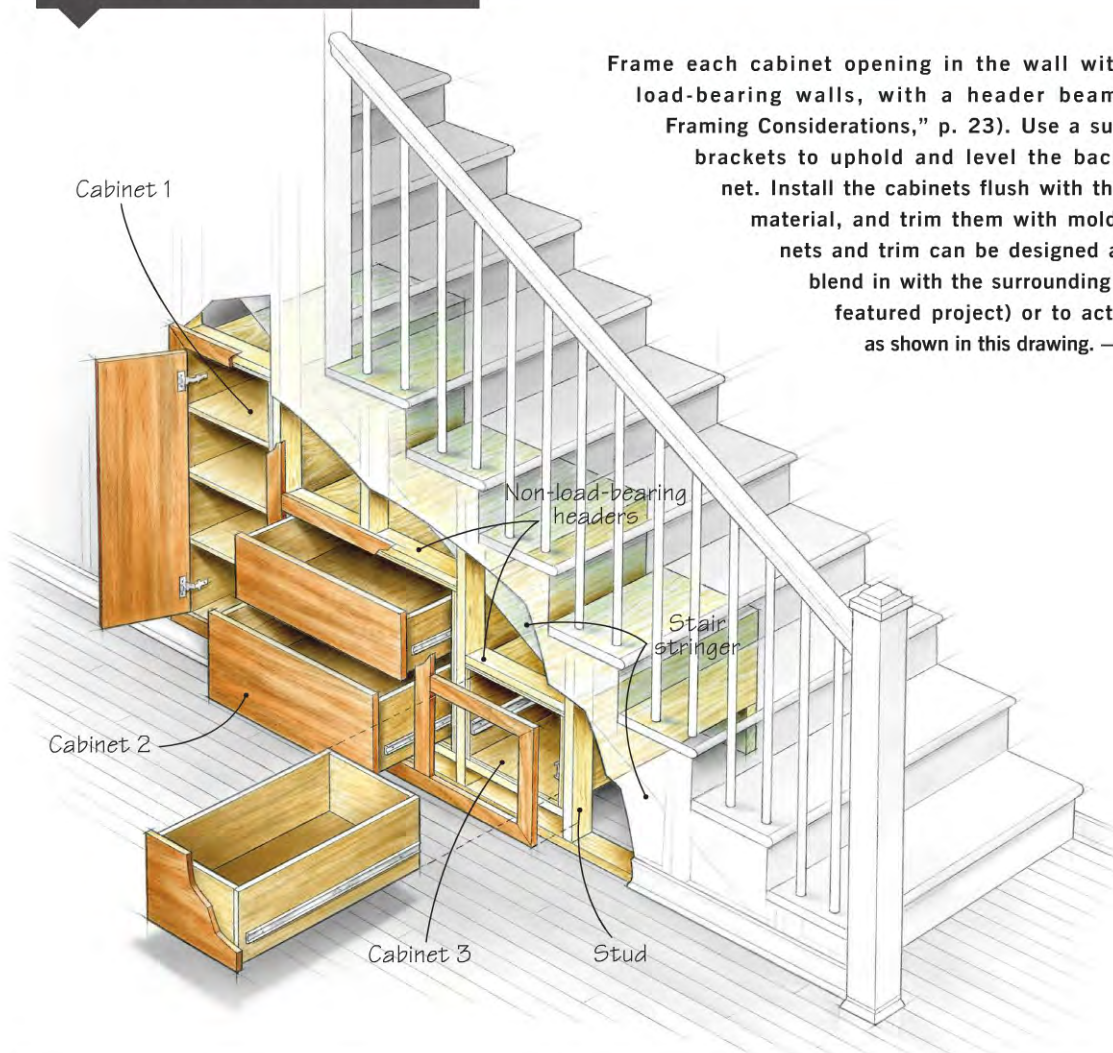


INSTALLING AN UNDER-STAIR CABINET



▲ Drill shelf-pin holes in the sides and attach solid-wood edging or veneer edge banding to the front edges of the cabinet frame. Then assemble the cabinet frame with glue and screws.

UNDER-STAIR CABINETS



Frame each cabinet opening in the wall with 2x4s or, in load-bearing walls, with a header beam (see “Wall-Framing Considerations,” p. 23). Use a support frame or brackets to uphold and level the back of the cabinet. Install the cabinets flush with the finished wall material, and trim them with molding. The cabinets and trim can be designed and finished to blend in with the surrounding wall (as in the featured project) or to act as an accent, as shown in this drawing. — DC

ILLUSTRATION BY TECH ART AND DESIGN



▲ Mount drawers or pullout trays in the cabinet frame on full-extension drawer slides. Hang the inset doors using European-style cup hinges. Once the doors and drawers are adjusted to fit, remove the hardware and apply finish to the cabinet.



▲ Mark the location of studs and other wall framing such as the stair-landing joists. Mark the outline of the cabinet opening. Limit dust by using a drywall handsaw wherever possible. Use a reciprocating saw to cut the studs.

cabinet is to the bottom of the stairs, the shorter the cabinet must be. The bottom can extend to the floor, but I typically do not go below the existing base molding because I like to leave it intact — it's one less component to modify.

The wall framing also affects the width of the cabinet (see "Wall-Framing Considerations," opposite). In many

IDENTIFYING WALLS

One or more of the following characteristics may indicate the wall type.

LOAD-BEARING:

- Full-height walls that extend to the ceiling
- 2x6 framing
- Located directly above or below a wall on an adjacent floor

NON-LOAD-BEARING:

- Partial-height walls, such as below-stair balusters
- 2x4 framing
- Constructed directly on the subfloor

cases studs can be removed to create a wider opening, but it's easiest to build cabinets that fit between the studs.

The most versatile under-stair cabinet designs incorporate multiple units that increase in size as the stairs go up. Cabinets can include any typical cabinet features or accessories, including drawers, doors, shelves, closet rods or pullout organizing racks. Measure the objects you plan to store before you begin designing — you don't want to find that the items won't fit after the cabinets are built.

Finally, choose the right materials and finishes for the look you want. For example, you can paint medium-density fiberboard to blend in with the surrounding walls, or you could choose a wood species that makes the cabinet stand out as an architectural accent.

BUILDING THE CABINET

Because of under-stair cabinets' space limitations, I prefer frameless designs. (Face-frame cabinets have less usable interior space.) A frameless cabinet designed to fit into a standard 16-in.-OC opening will have an outside width of 14-1/2 in. and an interior width of

13 in. A drawer in that cabinet, built with 1/2-in.-thick material and mounted on typical 1/2-in.-wide drawer slides, will have an interior width of 11-1/2 in. That's large enough to hold many common objects, but I wouldn't want one that was any smaller.

Because most of the cabinet is hidden behind the wall, construction needs to be functional; appearance is less important. I use plywood and fasten the sides, top, bottom and back together with glue and screws. Then I cover the exposed front edges with veneer or solid-wood edging. If the cabinet has drawers, I use slightly more-refined joinery, such as dado-and-rabbet joints or dovetails, for the drawer boxes.

To minimize dust, fumes and inconvenience inside the house, I build and finish these types of cabinets in the shop. Installation creates enough of a mess in the living space without adding to it.

INSTALLING THE CABINET

My goal during installation is to minimize the amount of patching and touch-ups. So I try to cut the wall opening exactly to the final dimension.



▲ Because this is not a load-bearing wall, the new framing simply acts as a support for the drywall and supports the cabinet.



◀ A frame must be installed to support the back of the cabinet. To determine the height of the support, rest a level on the bottom framing and measure down to the floor.

► Attach the rear support frame to the floor with screws. In this case shims were used to level the support over the multiple layers of subfloor plywood.



The first step is to mark the location of the studs and then mark the outline of the cabinet. If no studs are being removed, use a wallboard saw or spiral-cutting saw to remove the wall material within the cabinet area. I try to leave the wallboard strips that are directly over the studs; otherwise furring strips must be attached to make the studs flush with the surrounding wallboard. Attach 2x4s between the studs and behind the wall surface above and below the cabinet to frame the top and bottom of each opening.

If you are removing studs in a non-load-bearing wall, you must cut them 1-1/2 in. above and below the finished opening to create a space for the top

and bottom framing. There are two ways to do this. You can cut the wallboard opening and studs on the same line, attach the top and bottom framing, attach furring strips and then cover the strips with trim that is at least 2 in. wide. Or you can use my preferred method, which is to cut the wallboard opening to match the cabinet dimensions and then carefully cut the studs off 1-1/2 in. above and below the wallboard opening (see “Installing an Under-Stair Cabinet” step-by-step photos starting on p. 20). I then attach the top and bottom framing and patch any saw holes left in the wallboard.

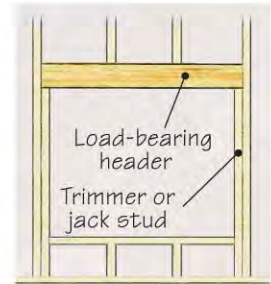
After you have cut and framed the wall opening, use a level to determine

the spacer height needed to support the back of the cabinet. I typically use scrap 1x or 2x lumber to build the support frame. Mark the depth of the cabinet in the stair space, and attach the support frame to the floor. Then slide the cabinet into the opening and secure it to the framing and back support with screws.

The final step is covering the seam between the cabinet and the wall with trim molding around the cabinet. I overlap on the front edge of the cabinet by 3/8 to 1/2 in. Attach the molding to the cabinet and to the wall framing with 1-1/2-in. finish nails. Now you're ready to introduce your clutter to its custom-built home under the stairs. ■

WALL-FRAMING CONSIDERATIONS

The framing in your wall affects the size of the cabinet. Non-load-bearing walls offer the most flexibility because you can cut studs to create a wider opening. Cut each stud so that the remaining portions connect with the rough frame for the cabinet. Cabinets in load-bearing walls must be built to fit between the existing studs or you must install an appropriate header (see drawing, right). Consult a structural engineer to determine the size of the header. When working on a load-bearing wall, I limit the cabinets to fit between the studs to minimize structural modification. — DC



▲ Slide the cabinet into the opening so that the front edge is flush with the outside face of the drywall. Attach the cabinet to the framing with screws.



▲ Miter-cut the trim to fit around the cabinet. Attach the trim with 1-1/2-in. brad nails. Then fill the nail holes, touch up the paint and reattach the doors.

FAST FLOOR FIXES

TWO WAYS TO IMPROVE YOUR GARAGE FLOOR

DIY FLOOR COATING

Most of us use our garage for more than parking the family car — it often serves as a woodshop, a hobby center or even a place to entertain guests. And the more you use it, the more particular you'll likely become about how it looks and how well it functions.

You can make a lot of improvements that enhance the versatility of your garage, but if you want to make a significant, quick upgrade, start with the floor. A smooth, clean floor will make the garage a more inviting place to work and socialize.

Several DIY choices enable you to create durable finishes for concrete, including stains, paint and epoxy products. Before you apply them, however, you must start with a sound, smooth surface. You'll first need to repair cracked, pitted or spalled concrete.

EVALUATE, THEN FIX

Even in gentle climates, time, chemicals and wear-and-tear take their toll on a garage floor. If you live in a salt-belt state and your garage floor is more than five years old, it probably needs some attention. It may show only minor pitting and a few cracks, but if you've neglected it, the damage may require patching.

Fixes include concrete-patching products that are formulated to fill damage deeper than 1/8 in. and topping materials that can resurface rough concrete (for areas where the hard-troweled surface has deteriorated). You'll need to determine the extent of the



▲ Recoating a worn garage floor will protect your investment and help to create a more appealing space.

Before

▲ A lightly pitted or spalled floor like this can be resurfaced. More extensive damage will need to be repaired first with a concrete product that can fill deep holes and cracks.

1

▲ Before using any resurfacing product, it's essential to clean the floor and remove all traces of oil and grease. It's best to use a pressure washer on concrete with embedded dirt.

PHOTOS BY LARRY OKREND AND SCOTT JACOBSON



2

▲ Rust-Oleum's Concrete Resurfacer is a two-part mix of polymer and a Portland cement formulation — no water is used. Mix the parts in a 5-gallon bucket with the provided stirring blade and a drill.



4

▲ The mix is rolled on rather than applied with a squeegee or trowel (like other resurfacing products). Load the roller by simply dipping it in the mixing bucket. For the best durability and leveling of damaged areas, two coats are recommended. It's possible to recoat in 30 to 60 minutes.



3

▲ Before applying the resurfacer, mist the floor with a garden pump sprayer. This prevents the concrete from pulling moisture out of the mix too quickly.

damage and use the appropriate product. For example, the part of the floor that lies beneath your car's wheel wells can become deeply spalled and should be patched before you apply a resurfacing product.

Most concrete-repair products will work indoors or outside, so also consider repairing areas such as walks, patios and basement floors while you're working. Once you've applied a resurfacer, you should paint, seal or stain the floor to protect it from damage.

A SIMPLE DIY PROJECT

When it comes to resurfacing concrete, preparation is key. The cleaner the surface, the better the product will adhere. Resurfacing products won't stick if the surface has been painted or sealed because they rely on a mechanical bond with the concrete. You must strip any old coatings by grinding or with chemicals.

For otherwise untreated concrete, scrub out grease and oil spots with a suitable degreasing product. (It's a good idea to scrub the entire floor.) Ideally, you should use a wire brush to remove loose concrete and then a pressure washer to remove embedded grime.

Several companies manufacture

concrete-resurfacing products. For this project, I used Rust-Oleum Epoxy Shield Concrete Resurfacer (about \$75 for the kit). The company describes it as an acrylic-polymer microcoating that can be used on concrete porches, patios, walkways, driveways, garages, basements, etc. When the recommended two coats are applied, each kit covers about 125 sq. ft. The coverage will vary depending on the porosity and texture of the surface. I found the application process to be simple and forgiving. The finished surface can be walked on in eight hours and is ready for normal use in 24 hours.

If a new epoxy surface requires more work than you're willing to tackle, you can simply apply concrete paint to a clean garage floor (such as UGL's Drylok latex concrete floor paint). Although it's less durable than epoxy, concrete paint is very easy to apply, and at about \$40 a gallon, it may be a good alternative if you're on a tight budget. No matter which option you choose, improving the floor is bound to make your garage look brighter and cleaner — and inspire you to start dreaming of future upgrades. — *Larry Okrend*

PROFESSIONAL FLOOR COATING



PHOTOS BY ALLEN BROWN, SCOTT JACOBSON AND LARRY OKREND

Another option for the garage is a beautiful, showroomlike floor that can make an otherwise humdrum space look like a million bucks.

Professionally applied coatings are durable, oil-resistant, last a long time and are easy to clean. A newer approach in professionally applied coatings utilizes polyaspartic poly-

ureas instead of epoxies to solve common problems such as hot-tire pickup and pop-off. To ensure optimal performance from the polyaspartic coatings his company applies, Club member Joe Sheehan, who applied the flooring shown in the photo above, has developed a preparation system in which he

▲ A beautiful floor can make even an average garage look like a professional showroom.

grinds the slab to remove surface impurities and achieve an 80-grit profile that provides an ideal bonding surface.

Sheehan's typical polyaspartic

BEYOND COATINGS



Another way to upgrade a garage floor is to install a new covering over the existing surface. You can use snap-together polypropylene tiles (shown here) or roll-out PVC sheets to create an attractive surface in a variety of colors and designs. Though these products are easy to install, there's a price for convenience: Tiles average about \$4.50 apiece (bringing the cost of a typical two-car garage to about \$2,400), and an 8 x 24-ft. roll of PVC flooring averages about \$650 (for a total of \$1,950 for the same garage). — *MB*



▲ Grinding the surface removes any residual contaminants that might interfere with the polyaspartic coating's ability to bond with the concrete.

application involves three coats: a primer (which penetrates into the surface), a "build coat" containing the decorative application and a topcoat. You can usually walk on the floor after



► Before applying the coating, all cracks or other damage to the slab are repaired.

a few hours and drive on it in the next day. Prices run about \$4 a square foot for polyaspartic polyurea application, which includes all prep work and minor concrete repairs. — *Mike Berger* ■

TESTING FOR MOISTURE PROBLEMS

Before you add new flooring, make sure your garage doesn't have moisture problems with this simple test: Tape a plastic bag to the garage floor. After 24 hours, lift the corner of the bag. If it's dry underneath, the floor should accept either professionally applied or DIY coating options. If there's moisture, you will need to evaluate and fix the problem before applying any coating. — *MB*

EXTRA

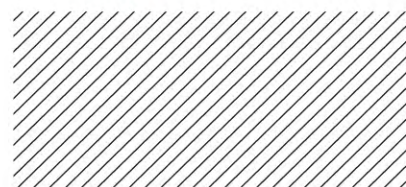
Click here to read more about applying an inexpensive garage-floor coating.



► No, it's not fairy dust — it's a flurry of color chips that's being spread over the damp coating.

SOURCES

Rust-Oleum [LINK](#) ►
UGL [LINK](#) ►





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SKILLS

BY JENNY STANLEY

SHIPSHAPE SHOP

MAKE THE MOST OF YOUR TIME
AND SPACE WITH THESE TIPS FOR
ORGANIZING YOUR HOME WORKSHOP





PHOTOS BY MARK MACEMON AND COURTESY MANUFACTURERS

Whether you have a dream home workshop or a small slice of garage as your DIY dungeon, simple organization solutions can make your time there more productive and enjoyable. To help you get started, Eileen Roth, professional speaker and author of *Organizing for Dummies*, outlines several easy steps for tidying your handy hideout.

GET IN THE ZONE

Start by identifying your workshop's boundaries, Roth says. Adding a room divider to a multipurpose area can help better define different zones. Then sort and purge items that don't belong, including things you no longer use. But before you haul in a Dumpster, consider handing down your unwanted goods to those who could put them to use. (For tips on donating tools and materials, see "Handy Hand-me-downs," p. 34.)

This is also a good time to assess ways that you can make your workshop's atmosphere more comfortable: Think about lighting, air quality, temperature, pest control, etc. Paying attention to these often-overlooked factors can have a big impact on your shop's workflow.

A GROUP EFFORT

It may seem like a no-brainer, but storing similar items together is among the best organizing techniques. One way to apply this method is to create stations that can house tools, materials and equipment related to different tasks. For example, a router station can corral a router, bits, jigs, etc. A metalworking station can store welders, grinders and associated safety gear. (Keep in mind the location of electrical outlets as well as safety precautions, which may determine your layout.) You can even custom build a workbench specific to your equipment (see Extras, p. 34).

At a more basic level, Roth says, all hammers should be grouped together; the same goes for chisels, fasteners, measuring devices and more. Storing like items alongside each other will help you remember where they are.



▲ A mechanic's chest is not just for mechanics. The small drawers are the right size for storing various hand tools.



▲ Use Flip Clips to install shelves, hooks and containers between wall studs.



CARTONS, CRATES, CASES AND MORE

After sorting your workshop's contents into like groups, you'll need various containers for storing them — and the possibilities are endless.

Many tool companies supply cases for their products, but other storage options are available. Try thinking outside the box and consider using storage devices in ways other than they are intended. *HANDY* Editor Larry Okrend, for instance, prefers using a mechanic's chest for corralling his woodworking hand tools, and the open spaces be-

◀ Add wheels to your scrap-wood bin to save a few steps.

tween wall studs are great for stashing lumber or hanging shelves with Flip Clips (see bottom photo, opposite). Even everyday household items can be useful: ice-cube trays for fasteners, magnetic knife holders for screwdrivers, etc.

Though open shelves and pegboards may be the norm in most workshops, *HANDY* Executive Editor Dan Cary recommends closed storage that protects contents from dust and prevents a cluttered appearance. Sometimes custom-built containers are the most effective.

LOCATION, LOCATION, LOCATION

Strategic placement is another key element of an organized workshop. Simply put items where you use them.

Keep the items you use frequently easily accessible so you can dive right into projects when you enter the room. Adding casters to stationary objects such as trash bins can save you steps and time. Items you use less often (such as that dusty tile cutter you haven't touched since last year's bathroom remodel) should be kept farther away from main workspaces, perhaps in a high cabinet. Just remember to test all possibilities before nailing down the best option.

Some potentially hazardous items may require limited access. Flammable or toxic chemicals, for example, should be stowed in a locking metal cabinet, out of the reach of children and pets and safe from stray sparks.

IDENTIFICATION, PLEASE



Even though I sometimes poke fun at my wife's label-maker addiction, I can't deny that labels make a workshop more efficient. Using them to identify the contents of cabinets, drawers or hardware bins is an obvious application, but I also like to label my power-tool cases. I'm surprised by how many tool companies don't identify the type of tool on the outside of the case. If you own multiple cases that look alike, label the side that is visible when the case is in storage and you'll never grab the wrong one again. — Dan Cary



▲ The unused spaces between wall studs are ideal for storing lumber.



▲ With a few pieces of scrap wood, you can build a wall-mounted clamp rack to suit a specific clamp collection.

EXTRA

Try your hand at building a lumber storage cart: Click here.



◀ **Building a custom lumber cart is well worth the effort for serious woodworkers.**

fort to tidy up each time you use the shop or when a project is complete, everything will stay neat. A weekly brush-up also helps, especially if more than one person uses the space — it's common for multiple users to inadvertently rearrange or misplace items.

For optimum efficiency, Roth suggests reevaluating your organization system after a few months. If you add or subtract tools from your collection, you may need to make a few minor tweaks.

Another good time for a review is when you are beginning a large project. Ask yourself whether a setup tailored for that project is worth the time and effort it takes to rearrange the workshop.

The bottom line is to develop the best system for your needs. As your organizational practices become habits, your home workshop can grow into the productive handy headquarters that it's meant to be. ■



For simple repairs and projects throughout the house, Roth suggests keeping a small grab-and-go tool bag on hand. Include a screwdriver and screws, a small hammer and nails, glue, a tape measure, a utility knife and any other tools you often need for these jobs.

ONCE IT'S NEAT, DON'T RETREAT
After implementing your ideal organization plan, upkeep is simple: When you're done with something, put it away. Roth says the key is to not let things pile up. If you make a small ef-

◀ **Employ a clearly labeled locking metal cabinet for storing hazardous materials.**

EXTRAS

See plans for building a custom workbench. Click here.

Build a wall-mounted shop organizer. Click here.

SOURCES

Eileen Roth,
Everything In Its Place [LINK ▶](#)
Inspire Design Group LLC
(Flip Clip Instant Storage) [LINK ▶](#)
ORG (home organization solutions) [LINK ▶](#)

HANDY HAND-ME-DOWNS

Get your workshop in order and help those less fortunate in the process. These organizations accept used tools and materials:

- Habitat for Humanity [LINK ▶](#)
- Hearts & Hammers [LINK ▶](#)
- Paint Your Heart Out [LINK ▶](#)
- Rebuilding Together [LINK ▶](#)



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‡vs. PCL180CD, 7/8" wood boring bit through framing lumber



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