Learn how to register your Little Free Library on page 156.

Kitchen Cabinet Upcycle

One of the easiest things to upcycle, or repurpose, into a tiny structure is an old kitchen cabinet with doors. A cabinet is a complete six-sided wood box and needs little more than a roof and a good slathering of protective finish to be ready for outdoor duty. Almost any small- to medium-size cabinet will do, but it's usually best to use a wall cabinet, as opposed to a base cabinet. Wall cabinets tend to be a more manageable size and have a more finished look—without the deep recess and toe-kick space at the bottom that base cabinets have.

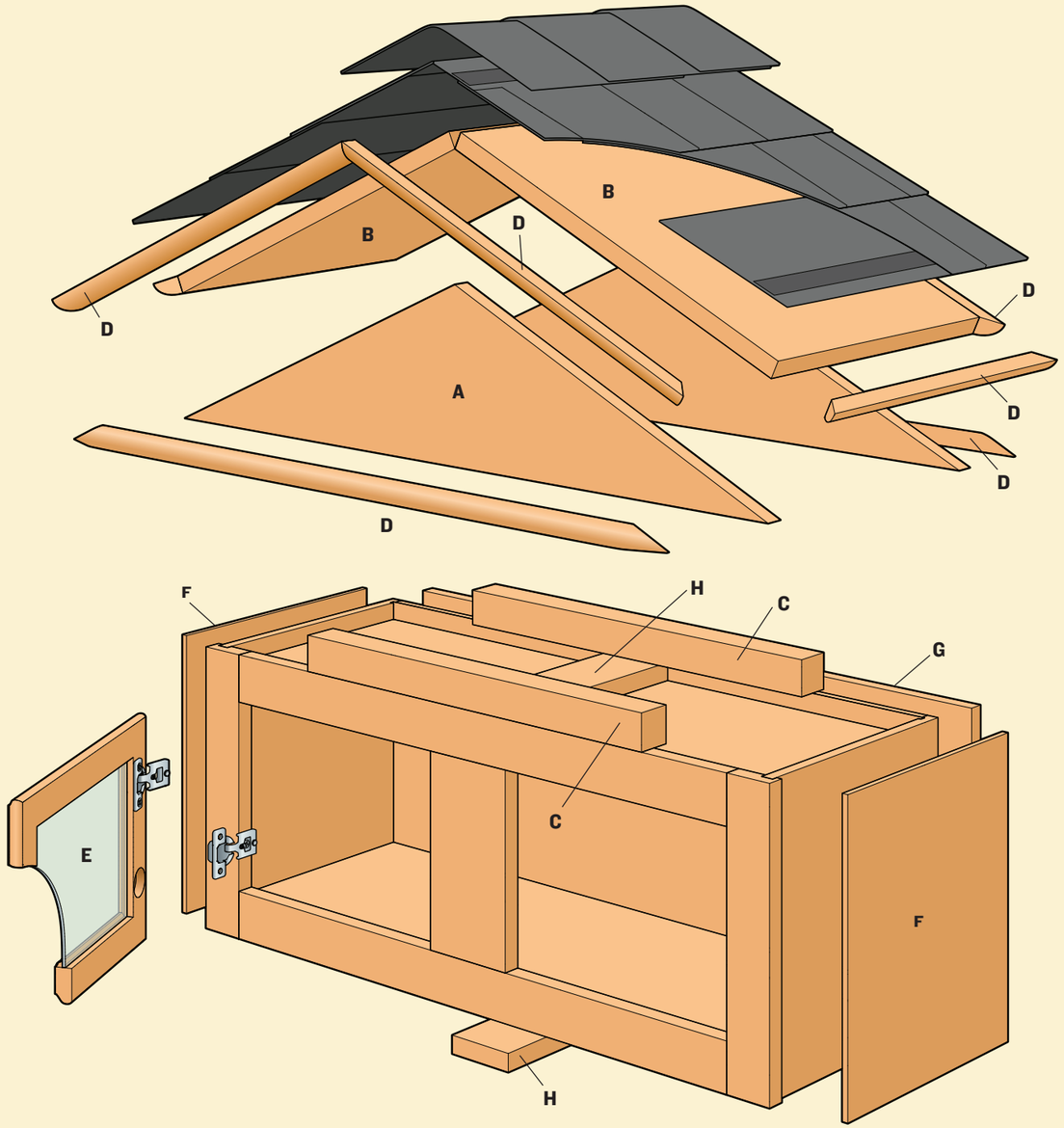
You can also use different shapes of cabinets, and the instructions here teach you how to build a custom roof to fit any cabinet box. It's a bonus if the cabinet has traditional frame-and-panel doors, with a wood panel captured inside a solid-wood frame. This may sound high-end and is often found on better-quality cabinets, but it's also a common feature of builder-grade cabinets (usually made of oak) sold off the shelf at home centers. The nice thing about the frame-and-panel doors is that you can easily remove the panels (they're not glued in place) and replace them with clear acrylic glazing to make see-through doors.

The most important rule about cabinet structures is that you must finish them—but good! Cabinet boxes (every part except the face frame and doors) are typically made of particleboard—a nice, flat, smooth material when it's dry, but if it gets wet, it swells up and eventually falls apart. And don't be fooled by the "wood look" on the cabinet panels; these are just particleboard covered with a thin layer of melamine plastic. Give everything a complete coating of exterior paint to protect it from moisture.

The project as shown has standard three-tab "asphalt," or composition, shingles for roofing. It requires only five shingles for the entire roof, so this is a good option if you have some leftover shingles around the house (new shingles are usually sold in bundles of 22 shingles; way more than you need). Otherwise, any alternative roofing material will do.

Note: The cabinet shown here required a few additional pieces for reinforcement and aesthetics. These include ¼-inch plywood side panels (for looks and additional weather protection), a reinforcing back panel of ⅝-inch plywood (the cabinet had only a thin hardboard back), and reinforcing strips of ⅝-inch plywood at the top and bottom (to stiffen

1. Use a straightedge to experiment with different roof slopes and mark the slope for each side of the roof. 2. Drive screws through the gable nailers and into the center (of the thickness) of the cabinet edges. 3. Install the gables so they overlap the front and back of the cabinet and are flush at the top with the cabinet's corners.



TOOLS & MATERIALS

Straightedge
Square
Circular saw or jigsaw
Drill-driver
Pilot-countersink bit
Screwdriver bit
Miter saw, miter box, or handsaw
Utility knife
Caulking gun

Wall cabinet
4 × 4' sheet of ¾" plywood
2 × 2 (nominal) × 8' pine
(2) ¾ × ¾ × 96" quarter-round molding
⅛" acrylic glazing (optional; size as needed to fit doors)
(5) 3-tab (flat) composition roofing shingles (approx. 12 × 36")

(8) 2½" wood screws
(24) 2" wood screws
(32) 1½" finish nails
(38) 1¼" roofing nails
Waterproof wood glue
Clear silicone caulk (optional)
Eye and ear protection
Work gloves

CUTTING LIST

KEY	PART	DIMENSIONS	PCS.	MATERIAL
A	Gable	¾" × cut to fit	2	Plywood
B	Roof deck	¾" × cut to fit	2	Plywood
C	Nailer	1½ × 1½" × cut to fit	2	Pine
D	Trim	¾ × ¾" × cut to fit	8	Quarter-round molding
E	Door glazing	⅛" × cut to fit	2	Acrylic glazing
F	Side cladding	¼" × cut to fit	2	Plywood or siding
G	Back cladding	⅝" × cut to fit	1	Plywood or siding
H	Stiffener	⅝ × 3" × cut to fit	2	Plywood

the cabinet box and provide more support where the bottom will mount to a post). Your cabinet may or may not need similar or other additions; they are merely shown here as an example and are not included in the project steps.

INSTRUCTIONS

Lay out the Roof

A traditional gable roof is easy to build and can be customized with any slope, or steepness, you like. Use a half-sheet of ¾-inch plywood as a drawing board to lay out the roof for your cabinet. You will cut the roof parts from the same plywood, but at this stage you're just laying out the shape of the roof and finding its dimensions.

Draw a straight line across the face of the plywood using a straightedge. Mark the center of the line, then use a square to draw a perpendicular line at the mark. Place the cabinet on its back over the plywood so the top edge of the cabinet overhangs the line by ½ inch and the cabinet box is centered side to side over the perpendicular line.

Position the straightedge so it touches the cabinet top and intersects the perpendicular line. The straightedge represents one side of the gable roof. Experiment with different roof slopes to find what you like. Draw an angled line along the bottom edge of the straightedge to define the roof slope. Draw a matching line on the other side of the roof so the lines create a symmetrical triangle (photo 1). The resulting point at the top is the roof peak. In the project shown, the roof measures about 7 inches from the baseline to the peak.

Cut the Gables

Remove the cabinet from the plywood. Measure the laid-out triangle and draw the same triangle along the edge of the plywood panel. **Tip:** You can avoid the long straight cut by laying out the triangle along one of the panel's factory edges. Cut out the gable with a circular saw or jigsaw.

Using the cut gable as a template, trace around its perimeter to mark the cutting lines for the second gable, then cut out the second gable.

4. Position all roof deck trim so the rounded side of the molding faces out. 5. Cut the horizontal trim to fit the gable slope, then bevel the cut for a finished look.

Install the Nailers

Cut the two 2 × 2 nailers about 12 inches shorter than the width of the cabinet. The nailers provide backing for fastening the gables, but their edges should not stick up above the top sloping edges of the gable. If your roof has a very low slope, you may need to make your nailers a bit shorter; if your roof is steep, you can make the nailers a bit longer.

Position a nailer onto the front edge of the cabinet box so it is centered side to side on the cabinet and the front face of the nailer is flush with front of the cabinet. Drill four pilot holes (see Screwing and Nailing in Wood on page 33) through the nailer and into the top edge of the cabinet.

Apply wood glue to the top edge of the cabinet face frame in the area where the nailer will go. Reposition the nailer and fasten it to the cabinet with four 2½-inch wood screws (photo 2). Repeat the same process to install the other nailer at the rear of the cabinet, so the outside face of the nailer is flush with the back of the cabinet.

Install the Gables

Set the cabinet on its back. Apply glue to the front edge of the front nailer. Position one of the gables over the cabinet so its bottom edge overlaps the top of the cabinet by ½ inch (as you did with the gable layout) and it is precisely centered side to side. The sloping top edges of the gable should just cover the top corners of the cabinet (photo 3). This ensures that the area under the roof will be enclosed once the roof deck panels are installed.

Fasten the gable to the nailer with four 2-inch screws. Flip the cabinet onto its front side and install the second gable at the back using the same techniques.

Cut and Install the Roof Decks

Measure the distance between the outside faces of the two gables, measuring straight across the top from front to back; use this dimension for the width of the roof deck panels. Measure from the peak of each gable to the point at the bottom end; use this dimension for the length of the roof decks. Cut the two roof deck panels to size.

Apply glue to the top edges of the gables. Position the roof deck panels on the gables so the roof decks meet at the peak (there will be a gap at the top corners of the roof decks; this will be covered later with roofing) and all the pieces are flush at the front and rear. Fasten the roof decks to the gables with four 2-inch screws along each edge.

Trim the Roof Decking

Use quarter-round molding to cover the exposed edges of the roof decking. It looks best to miter the ends of the trim at the corners, and you may have to make a few test cuts to get the angles right. Make the cuts with a miter saw or miter box, or simply with a handsaw, following a cutting line.

Start with the pieces covering the front and rear edges of the roof decking; the miter angles at the top are based on the shape of your roof. Make test cuts to find the right angle, then cut the top end of each trim piece using that angle. Cut the bottom end of each piece at 45 degrees. Apply glue to the front and rear edges of the roof deck and install the trim so it is flush with the top faces of the roof decking. The round side of the trim should face out; the flat sides go against the plywood and face up, respectively. Tack each piece of trim in place with four 1½-inch finish nails.

Cut two more pieces of trim to cover the bottom edges of the roof decking, mitering each end at 45 degrees so the pieces meet the gable trim at the corners. Install each piece with glue and three 1½-inch finish nails (photo 4).

Add the Horizontal Trim

The front and back sides of the cabinet get horizontal pieces of quarter-round that meet the angled gable trim. At the front of the cabinet, the horizontal trim serves as a drip cap (see Ready for Rain on page 29) over the door. The joint where the horizontal and sloping trim meet is a tricky one, given the acute angle and the rounded shape of the molding. To simplify the cut on the horizontal trim, make a sharp miter cut that follows the sloping trim pieces, then bevel the end so that it tapers down to the gable panel, or you can make your own custom cut as desired.

Cut the horizontal trim for the front and rear of the cabinet so that one flat side of the molding is flush with the bottom edge of the gable panel and the other flat side is against the gable panel (photo 5). The rounded side faces out. Install the trim with glue and 1¼-inch finish nails.

Install the Starter Shingles

Starter shingles are partial-width shingles installed along the bottom edge of the roof. They are covered by, and prop up, the first row of exposed shingles to establish the stepped pattern, and they cover the gaps between the tabs of the first-row shingles.

Place a full three-tab shingle flat on a cutting surface (such as scrap plywood). Using a straightedge and utility knife, cut off the three tabs at the top of the tab notches, yielding an approximately 7-inch-wide × 36-inch-long strip; you don't need the tabs. The cut should be about 1 inch away from the adhesive strip on the top surface of the shingle.

Cut the strip into two pieces that are about ½ inch longer than the width of the roof decking. Position one of the cut pieces along the bottom of one roof plane so the cut edge of the shingle overhangs the bottom and side edges of the roof deck by about ¼ inch. The adhesive strip should be near the bottom edge of the roof. Nail the shingle in place with three 1¼-inch roofing nails driven about 3 inches up from the bottom edge (photo 6). Install the other starter shingle on the other side of the roof.

Install the Remaining Shingles

Cut eight (or as many as needed for your roof) pieces of shingle to equal the roof width plus ½ inch. For each piece, measure from one of the factory side edges of the shingle, and make the cut near the center of the shingle's length. These are full-width shingles; you don't cut down the width as with the starter shingles. If the roof is narrow enough, you can get two pieces from each full three-tab shingle.

Place the first cut shingle over the starter shingle on one side of the roof so the bottom and side edges of the shingles are flush. Nail the top shingle with three roofing nails, just below the adhesive strip and above the tab slots on the shingles.

6. Install each starter shingle so it overhangs the decking by about ¼" and the adhesive strip is near the bottom (eave) edge of the roof. 7. Nail the shingles just above the level of the tab slots so the nails are covered by the next row of shingle.


8


9


10

8. Trim the last cap piece so it is flush with the roof edge. 9. Make several passes with a utility knife to cut out the back lip of the doorframe channel. 10. Apply a continuous bead of caulk around the glazing, sealing it against the wood frame.

Place the next shingle over the first full-width shingle so the tab slots are offset by about half a tab's width. Overlap the first shingle to the tops of the tab slots. Nail the second shingle with three nails, as with the first.

Repeat the same process to install two more shingles, offsetting the tab slots with each new row (photo 7). Trim the top shingle along the roof peak. Install the remaining shingles on the other side of the roof using the same techniques.

Add the Ridge-Cap Shingles

Cut a full shingle into thirds along the tab lines to create three 12 × 12-inch pieces; these are the ridge caps. Wrap the first cap over the roof peak so it covers the top shingles equally on both sides of the roof and the finished edge of the cap is flush with the shingles at the front. Nail the cap with one nail at each side, just in front of the adhesive strip.

Place another cap piece onto the ridge, overlapping the first cap as with the other shingles. Nail the second cap in place. Fit the last cap in place and mark it at the rear roof edge. Trim the cap at the marks using a utility knife, then install the last shingle with four nails, one near each corner. Make sure the nails go into the roof decking and not the trim molding.

Remove the Door Panels

The remaining steps are optional and apply only to cabinets with frame-and-panel doors. This type of door typically has a solid-hardwood frame and a separate wood panel that is held in place by channels in the edges of the frame pieces. To modify the doors for glazing, you can cut out the back portion of the channel to remove the panel, then cut glazing to fit in the frame. If you don't want glazed doors, or if your cabinet doesn't have frame-and-panel doors, you can skip right to finishing your project.

To remove the door panels, first remove the doors by separating the door-half of each hinge from the cabinet-half of the hinge. Cabinet hinges usually include two pieces that can be separated by pressing a spring tab or removing a screw or two.

Lay each door face down. Slip a piece of paper between the back of the door panel and the hardwood frame until

the paper stops in the bottom of the channel. Mark a line on the paper along the edge of the frame, then pull out the paper. This tells you how deep the channels are.

Using the marked paper as a guide, draw lines along the side and bottom edges of the frame, indicating the depth of the channels. Cut along these lines with a utility knife (use a new blade), making multiple passes until you cut through the lip that creates the back of the channel (photo 9). This frees up the edges of the door panel along the sides and bottom of the frame. If you can remove the panel, you can leave the top channel intact; if you can't remove the panel, cut out the back of the top channel as well, then remove the door panel.

Cut and Install the Door Glazing

Cut two pieces of acrylic glazing to the same size as the wood door panels (see Cutting and Drilling Plastic Glazing on page 35 for help with cutting acrylic glazing). This should leave about 1/16 inch of space around the perimeter of the glazing, for expansion. Fit each piece of glazing into the channels of a doorframe. Caulk along the perimeter of the glazing to secure the edges to the frame (photo 10). Let the caulk cure overnight.

If you're ready to apply a finish to your project, you can leave the doors off for the finishing process. To reinstall the doors, fit the hinge halves back together, securing them with the tabs or screws, as applicable.