Versatile Shop Cabinets

Organize tools, jigs, accessories, hardware, and more

BY ASA CHRISTIANA

1 SIMPLE, STURDY DRAWERS

The tongue-and-grooved drawers have a nailed-on MDF bottom that slides into slots in the cabinet sides. Other details include drilled finger pulls, label holders, and drawer dividers fixed in place with hot glue.

Woodworkers pick up an endless array of essential items along the journey, some used every day, others once a year, all indispensable when their moment arrives. Very soon this plethora of paraphernalia piles up around the shop, stuffed and stacked in every nook and cranny. That makes items hard to find when you need them, and hard to clear out of the way when the shop needs cleaning.

The problem isn't just one of volume but also variety. There are handheld tools small and large, machine helpers, finishing supplies, half-emptied boxes and bags of hardware, odd-shaped jigs and accessories, and so much more—all defying easy, accessible storage.

As a former editor and current freelancer for *Fine Woodworking*, I've traveled around North America documenting clever storage solutions from all corners. In 2020 I visited Clark Kellogg in Houston, Texas, to shoot photos for his articles on hexagonal boxes (*FWW* #285) and custom brass hardware (*FWW* #287), and he showed me a system of slotted cabinets that got my imagination spinning.

While Kellogg's cabinets, (which appeared in Workshop Tips, *FWW* #287) have shelves only, and were designed mainly to hold Systainer tool cases from Festool, I realized that the same slotted system could also support drawers of all sizes, with overlapping bottoms acting as runners. The design and storage options multiplied from there, and the cabinet that now lives in my workshop was born.

Kellogg was only too happy to see his idea evolve, and I'm excited about the sequel. I've used reclaimed kitchen cabinets to organize past shops, but they've always left me frustrated. This system lets me customize drawers for items large and

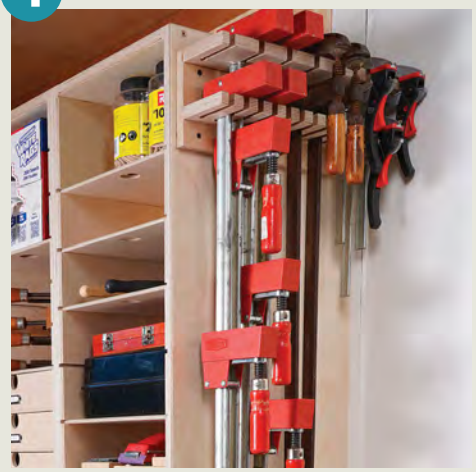
2 SLIDING SHELVES

Thin plywood shelves slide into the same ¼-in. cabinet slots, and are surprisingly strong if you run the grain cross-wise.

3 SMART SANDPAPER STORAGE

A stack of shallow drawers organizes sandpaper and sanding disks.

4 EFFICIENT CLAMP STORAGE

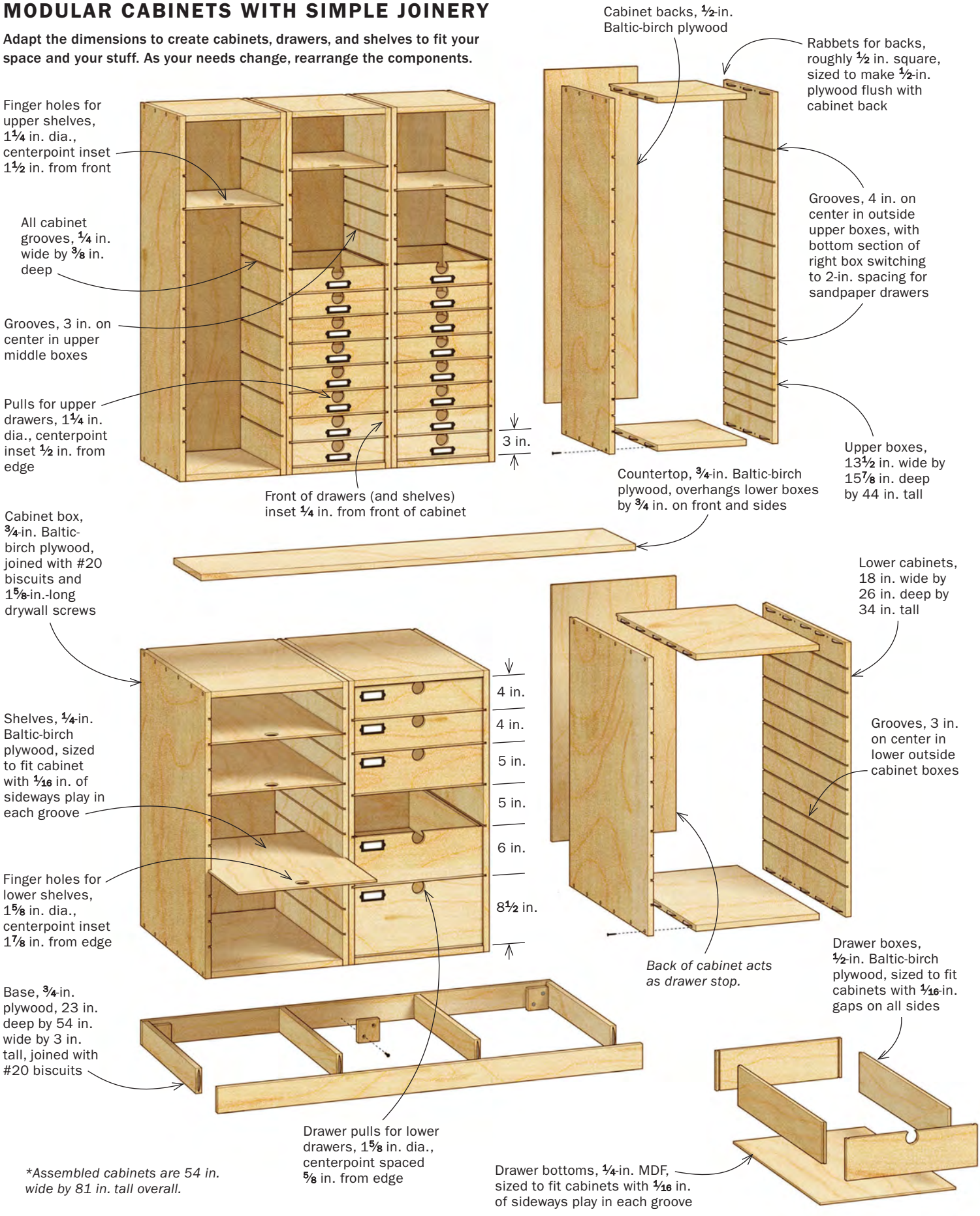


If one end of the cabinet is exposed, it's a great place to attach clamp racks.

Photos: Asa Christiana

MODULAR CABINETS WITH SIMPLE JOINERY

Adapt the dimensions to create cabinets, drawers, and shelves to fit your space and your stuff. As your needs change, rearrange the components.



**Assembled cabinets are 54 in. wide by 81 in. tall overall.*

Drawings: John Hartman

Managing big pieces on the tablesaw

You can use a circular saw and clamp-on fence to break down big sheets into more manageable sizes. Then ripcuts will be straightforward on the tablesaw. Crosscuts will be trickier however.

Crosscut the largest pieces against the rip fence. *Find and mark a square factory corner (above), and place that against the rip fence to ensure the opposite end is cut square. Maintain pressure against the rip fence as you cut.*

Crosscut the rest on a big sled. *For all but the largest panels, Christiana used a crosscut sled with a 24-in. by 48-in. base. For consistent cuts on parts longer than the sled, he clamped a hook stop to the fence.*

small, and stows everything else on open shelves that can be set to any spacing, making everything easy to grab in seconds. Better yet, I can change the array at any time.

My favorite part of the cabinets is the stack of shallow drawers in the middle, with labels on the front and hot-glued dividers inside, creating the hardware cabinet I've always wanted.

I had a blast designing my version of this variable system, and I'm excited to see how readers re-imagine it.

Easy construction

The great thing about building shop cabinets is that many of the regular furniture-making rules, like hiding screws and plywood edges, don't apply. That means you can make these cabinets with almost any joinery method you prefer, place them together on a level toe kick, and simply screw them to their neighbors and the wall for a super-solid assembly, sized to fit your unique space and stuff.

While Kellogg used screws and dadoes to build his boxes, I went with biscuits and screws. I like the way biscuits hold the parts in place while you drive the screws, and how the screws let you assemble the boxes one joint at a time.

Drawer construction is quick and practical, with an easy tablesaw joint connecting the corners and an overlapping MDF bottom nailed on from below, strengthening the joints and serving as slick runners at

Box-joint jig spaces slots

Every cabinet side gets a row of ¼-in. dadoes, ⅜ in. deep, with spacing varying between cabinets. Use an auxiliary fence, clamped to your crosscut sled, to crank out the rows of slots efficiently and accurately.

Set up a dado stack. *Size the stack just over ¼ in. wide (0.260 in. works well) and check that the ¼-in. MDF (for the drawer bottoms) slides nicely in it. The ¼-in. plywood shelves will be thinner, and guaranteed to fit in the same slots.*

Box-jig basics. *Cut a ¼-in. slot in an auxiliary fence and glue in a key of the same width. Sand or chisel a little taper on its top edges before gluing it in place, to encourage the workpiece dadoes to drop onto it. Then clamp the fence to your sled as shown, setting the desired distance between slots. To change the spacing, just move the fence.*

Back edges get rabbets. *Set up a wider dado stack and bury it partially in a sacrificial rip fence. To be sure you rabbet the right edges, start by matching up slots in mating sides and marking their back edges. Cut a test piece to be sure the ½-in. plywood back will end up flush at the back edge.*

the same time. I used an air gun to drive ¾-in. brads through the bottoms, but ¾-in. drywall screws would also work.

By the way, I tried a variety of materials for the drawer bottoms, from plywood to tempered hardboard and MDF, checking the action of a heavily loaded drawer in the plywood dadoes, and MDF was the runaway winner, sliding beautifully.

Like Kellogg's, my shelves are ¼-in. plywood, and are surprisingly stiff, especially if you run the grain cross-wise. If you're concerned about very heavy loads, you can use thicker plywood, and rabbet the edges to create ¼-in. tongues. This will be much easier than varying the sizes of the dadoes.

Practical beauty

Efficiency aside, there's plenty of design here. Like Kellogg, I used Baltic-birch plywood throughout, a very consistent material with pretty edges. I used ¾-in. for the cabinets, ½-in. for the drawer boxes, and ¼-in. for the sliding shelves. For the cabinet backs, I went with ½ in. thick, to allow a strong screwed connection to the wall studs.

Sizing the cabinets—For a variety of reasons, I wanted the lower cabinets to be considerably larger than the uppers. For one, woodworking storage needs vary a lot. Second, I like the look of different cabinet widths in the upper and lower sections. And last, making the lower cabinets significantly deeper than the uppers let me add a narrow countertop at waist height, where drawers can be sifted through and their contents set aside for use. The shallow countertop adds to the finished look of the cabinets and provides level support for the lowest drawers in the upper cabinet.

To come up with the final cabinet sizes, I juggled a few other factors. I started with the amount of shop space I could dedicate to the overall array, sized the lower cabinets to hold a standard 16-in. by 20-in. plastic bin, and made sure that the upper drawers would be large enough to hold a sheet of sandpaper. In addition, I tried to optimize plywood usage as best I could.

Drawer sizes and slot spacing—The drawers are another design opportunity. I spaced the upper and lower arrays symmetrically around a vertical centerline for visual symmetry, and graduated the lower drawers for style and function. Off to one side, I added a stack of shallow drawers for sandpaper storage—long overdue in my life!

I borrowed Kellogg's round finger pulls for the shelves, and then echoed them in the partial-circle drawer pulls.

To fill the cabinet boxes top to bottom and get the drawer sizes I wanted, I varied the spacing of the ¼-in. dadoes in different cabinets. I encourage you to do the same.

Details add beauty and function—I softened the plywood edges with a trim router and two small roundover bits, giving the cabinets, countertop, shelves, and drawer pulls a more finished look and a friendlier feel.

To add a traditional touch to the supply drawers and avoid the guessing game, I added inexpensive label holders (thanks, Amazon) to each one. Inside the hardware drawers, I installed MDF dividers, holding them in place with just a few dots of hot glue at each end. They go in solidly in seconds yet are easy to change out later if you need to rearrange the compartments.

Finish is optional—I like the look of the unfinished birch plywood in the shop

Biscuiting is next

Here are a few tips for cutting quick, accurate biscuit slots. You'll be using the fence to locate all of your cuts. So start by making sure it's square to the front of the tool, parallel to the base across its width, and located to place biscuits at the midline of your plywood. Check the cutting depth too; the biscuits should drop in a little more than halfway.

Start at the outside edges. *To locate the outside slots quickly and accurately, reference the edge of the base on the edges of the workpiece. At the back edge, use the inside of the rabbet. Also, make sure the fence is resting on the outside face of each piece.*

Use layout marks for the rest of the slots. *Mark their locations on blue tape (far left), stuck to your measuring tape, and you'll eliminate measuring errors. Hold the tool's fence as shown (left) to keep it flat and stable as you cut.*

Go vertical to biscuit the sides. *Space the biscuits the same way you did on the tops and bottoms, but inset the layout marks from the edge to make them visible along the bottom of the machine's base. Make sure the fence is tight to the edge as you cut slots, and support the base as shown to keep it from wobbling.*

Drill and assemble

The screws act as clamps, letting you assemble one joint at a time, making the glue-up easier. Dry-fit one upper and one lower cabinet first, so you can measure for and cut the backs.

Drill clearance holes. *With the biscuit slots facing up, you can eyeball the hole locations, lining them up with the slots. Then flip the workpiece and countersink the other side.*

Glue goes in slots only. *Put a bead in each slot, spread it with a small brush, and pop in the biscuits.*

One joint at a time. *Make sure the front edges are flush as you drive screws.*

Add the fourth side. *Flip the workpieces so the last side is on top. The rabbets make it impossible to reverse the pieces and misalign the rows of dadoes.*

Drop in the backs right away. *The snug-fitting backs will square the cabinets. Spread some glue in the rabbets, drop in the back, and nail or screw it in place to complete a strong, square box.*

Round over the inside edges. *Small roundovers (3⁄16-in. radius) combine with inset drawers to create a furniture look. Wait until the cabinet boxes are combined to round over their outside edges.*

Installation is easy too

Mount these modular cabinet boxes on a separate, level base, made by biscuit-joining ¾-in. Baltic-birch plywood.

How to level the base. *Start by leveling the back edge from end to end, placing shims underneath where needed. Then use more shims to level the base front to back. When it's level in every direction, screw plywood feet inside the base to lock it at that level and support the heavy cabinets. Don't attach the feet to the floor.*

setting, and I won't mind when my cabinets start looking a little worn and used. But if you want to protect your new storage system against shop grime and finger grease, I recommend a couple of coats of Zinsser Bulls-Eye SealCoat shellac. It's ready to use out of the can, dries quickly, and won't add a yellow-brown tone to the bright birch.

Warning: Applying a finish will require a lot more sanding! I'll save that for my furniture.

Tips and tricks

While it's fun to build with plywood, especially when you don't have to hide the edges, you'll be using a bunch of it for this project, as well as a couple of sheets of ¼-in. MDF. So clear some extra storage space, and line up some help with lifting. To estimate and optimize materials, start with the front and side view shown in the drawing—or your own custom design—and create a list of all of the parts. Then sketch those out on scale drawings of plywood sheets.

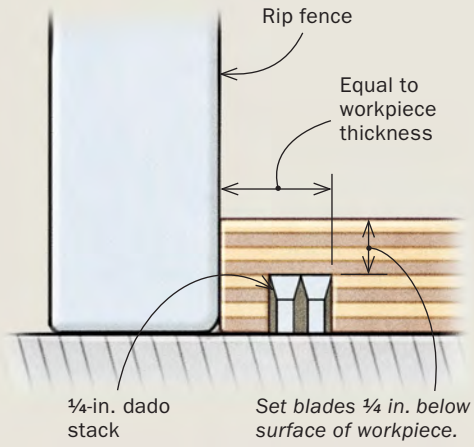
Baltic-birch plywood comes in 4x8 and 5x5 sheets, so see what's available near you and what you can haul, and plan accordingly. Once I got the materials home, I used my plywood-optimizer drawings, circular saw, and clamp-on cutting guide to break down the full sheets into more manageable pieces. If you don't have a vehicle that can transport full-size sheets, you can ask your supplier

Stack and align the boxes. *Start screwing lower boxes to the base at the most visible end, making sure they are flush with the base and each other. Align their front edges carefully as you move down the line. Then screw the upper boxes together. Wait until the end to connect the upper and lower boxes, then screw the whole unit to the wall. Let the base float outward if necessary; if there's a gap at the top, shim it before driving screws.*

Easy drawer joint

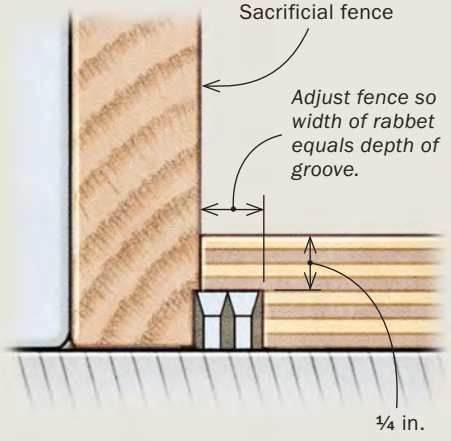
All the drawers are assembled with the same tongue-and-groove joint, and all are cut at the same time with two setups on the tablesaw. Start by measuring your cabinets to size the parts accurately.

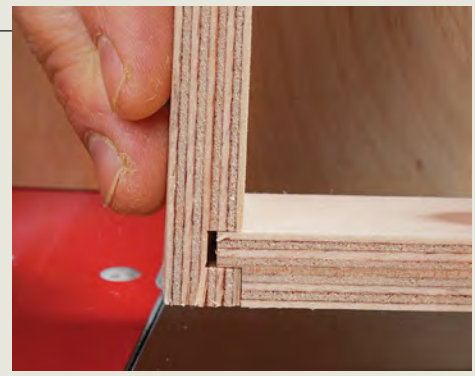
GROOVES



Groove the fronts and backs. *Cut all of these drawer parts, regardless of size, with the same setup. The miter gauge guides the workpieces—with a sacrificial fence preventing tearout—and the rip fence acts as a stop.*

RABBETS





Rabbet makes the tongue. *The next step is rabbeting the ends of the drawer sides to form a small tongue, using the same ¼-in. dado stack, buried slightly in a sacrificial rip fence. Using test pieces, start by dialing in the cutting height (left) and the resulting tongue thickness (right), and then move the rip fence to set the length of the tongue.*

to make these preliminary cuts for you.

When you are installing the cabinets on the long, level base, remember that the base floats on the floor. So if the back wall is out of plumb, you can bump the whole assembly out from the wall a little bit, or place shims behind the upper cabinets when you attach them to the wall.

When you've assembled each of the cabinet boxes and installed the backs, measure them for the shelves and drawers. Measure from the bottom of the dado on one side to the bottom of the dado on the other side; then subtract ⅛ in. to get the width of the shelves and drawer bottoms. To get the width of the drawer boxes themselves, measure between the inside faces of the cabinet sides and subtract the same amount. This will leave 1/16 in. of clearance on each side.

The cabinet backs act as the drawer stops in this simple system, and the front edges of the drawers and shelves are inset ¼ in. to create a shadow line. Measure from the inside face of the back to the front edge to determine lengths.

The last step before cutting the drawer joinery is shaping the finger pulls on the fronts. Forstner bits make it easy to cut partial holes for the pulls. Just set up a fence on the drill press so the hole is drilled partly in the fence and partly in the drawer front. Note that there are different pull sizes for the upper and lower drawers. I routed a ⅛-in. roundover inside the finger pulls for style and function.

Once the drawer bottoms are cut to size, assemble the drawers. Installing the bottoms will serve to square up the drawers, while the glue is still wet in the tongue-and-groove joints.

Finishing touches—If you're leaving your cabinets unfinished, like me, all that's left now is attaching the little label holders, and hot-gluing dividers in the drawers

that need them. To locate the label holders consistently, I made a couple of small drilling guides for their small screws—nothing more than a piece of ¼-in. MDF with a small fence attached. I drilled through each guide on the drill press, using a tiny bit for the pilot holes. I located the holes so I could simply align the guide with one end of the drawer front and push the fence snug against the bottom. Then I ran the same bit through the guide, using my cordless drill this time.

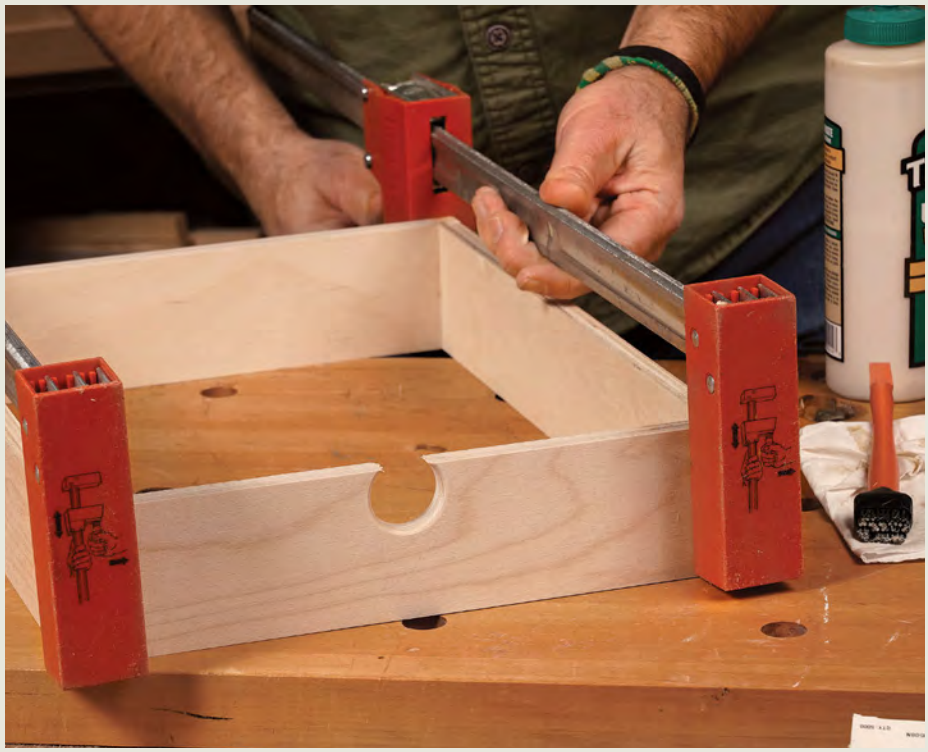
As for the dividers, only the drawers of fasteners really need them, and I installed them in the easiest way possible: by cutting strips of ¼-in. MDF to fit, and securing them with a hot-glue gun. It only takes a couple beads of glue at each end. And you can write on the edges of the dividers to label the little compartments.

Last, I cut up some index cards to make labels, and took advantage of my wife's superior penmanship to put the final touch on the best-looking fixture in my shop. □

Asa Christiana teaches, builds, writes, and shoots photos in Portland, Ore.

Drawer assembly tips

Before assembling drawers, cut the overlapping MDF bottoms to size and draw guidelines on them for nailing, as shown below. Prep the little alignment block too.



Clamp them right-side up. *Parallel-jaw clamps work well here. Make sure the top edges of the box are flush and the clamps don't extend past the bottom edge.*

Start attaching the bottom at a front corner. *Use a little alignment jig to set the overlap, and make sure the bottom is flush at the front edge. Then shoot one 1¼-in. brad at that corner, and a row along the front edge.*

Continue down the same side. *Use your overlap jig again near the back corner, pulling the whole box into alignment as you do, and shoot nails down the side. The layout lines help you place nails in the center of the drawer sides. To prevent brads from curling sideways and popping out, keep the gun parallel to the pieces you're nailing into. Once the front edge and one side are aligned and attached, shoot nails into the other edges.*