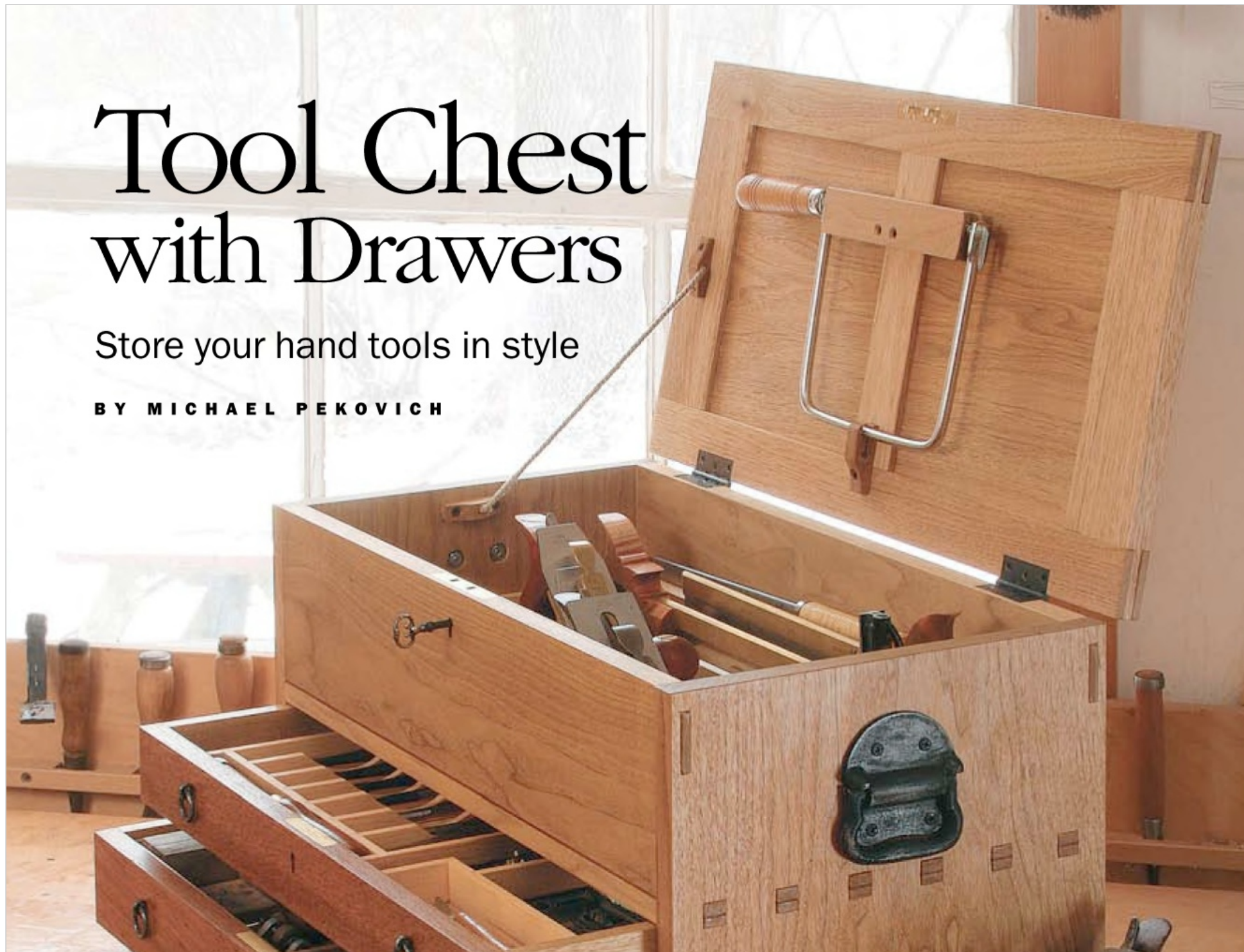


Tool Chest with Drawers

Store your hand tools in style

BY MICHAEL PEKOVICH





I teach woodworking on a regular basis, and I invariably would stuff hand tools into a canvas tote to take along with me. While convenient, the tote didn't offer much protection in transit or easy access once I was at school. So I finally got around to making a traveling tool box that not only holds my tools more

securely but also lets me get at them when I need them.

You don't need to be an itinerant woodworker to make good use of this chest. While a wall-hung tool cabinet like the one I made for a recent Video Workshop might offer more storage, it also requires dedicated wall space. If you haven't set up

a permanent shop yet and need to stow your tools on occasion, a tool chest makes sense. This small case will house your essential hand-tool collection, keep it close at hand on a benchtop or countertop, and tuck away just as easily. Another reason I like it is that it has forced me to think about which hand tools I really need. For

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Anatomy

This small chest combines a deep well for planes and saws with a pair of drawers below. The dovetailed bottom and tenoned shelf make the box sturdy, allowing the front, back, and drawer divider to be tongue-and-groove panels.

Tenon, $\frac{1}{4}$ in. thick by $1\frac{1}{2}$ in. wide by $\frac{1}{16}$ in. long, inset $\frac{1}{2}$ in. from top edge

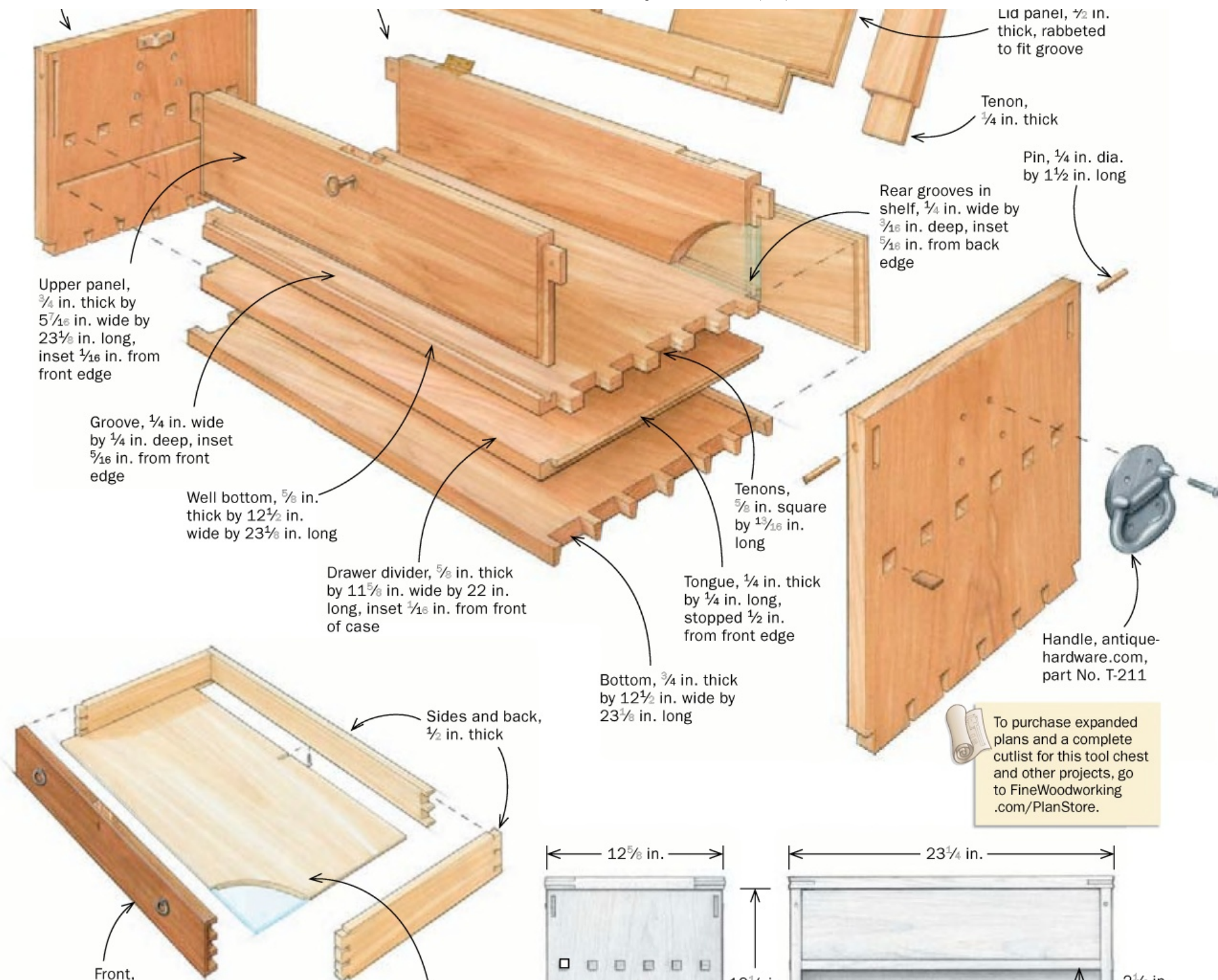
Side, $\frac{3}{4}$ in. thick by $12\frac{1}{2}$ in. wide by $12\frac{1}{4}$ in. tall

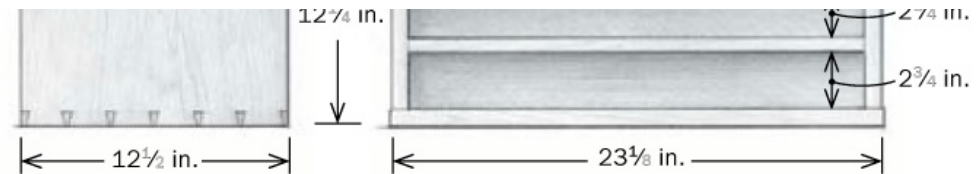
Center rail, $1\frac{3}{4}$ in. wide

Lid stile, $\frac{3}{4}$ in. thick by $1\frac{3}{4}$ in. wide by $23\frac{1}{4}$ in. long

Panel groove, $\frac{1}{4}$ in. wide by $\frac{5}{16}$ in. deep, centered in frame

Lid rail, $\frac{3}{4}$ in. thick by $2\frac{5}{8}$ in. wide by $12\frac{7}{8}$ in. long



$\frac{3}{4}$ in. thick**DRAWER DETAIL**Bottom, $\frac{3}{8}$ in. thick, rabbeted to fit $\frac{1}{4}$ -in. groove

Photo, opposite page: Michael Pekovich; drawings: Bob La Pointe

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Box

DOVETAILS AT THE CORNERS



Tails first, of course. After scribing the baselines with a marking gauge, lay out the tails with a bevel gauge set to a 1:8 slope (left). Saw to the baseline with a backsaw (right). Don't worry about following your pencil line precisely; you'll scribe the pins to fit later. Just keep your sawcuts square and try not to go past the baseline.



more on that, check out my free video at FineWoodworking.com/extras.

I studied quite a few classic tool chests as I designed this one. I went with a well deep enough to store handplanes and backsaws up top, and drawers below that allow easy access to chisels and layout tools.

To keep the weight down, I made the case from butternut. It's as light as pine but a lot prettier. Another thing I love about butternut is how it works with hand tools. It dents easily, so be sure to keep your work surface clean and chip-free. It also has a tendency to be a little fuzzy, but a sharp handplane leaves a glass-smooth surface and brings out the luster in the wood.

The case joinery looks impressive but is pretty simple. The sides attach to the bottom with hand-cut through-dovetails, and the well bottom is attached with through-tenons, also hand-cut. I like to leave this type of joinery a little proud to add interest. The rest of the case joinery is mostly routed grooves and



Remove the waste. Use a coping saw to remove most of the material (above). This makes chopping faster and keeps your chisels sharper longer. Then chop to the baseline, taking thin cuts (right). Angle the chisel slightly and work in from each face to create an undercut shoulder. This ensures that the joint will come together tightly.



the case joinery is mostly routed grooves and rabbeted panels. I built the frame-and-panel lid with tenons and bridle joints that I cut quickly and easily at the tablesaw, though you could do them with hand tools, too.

Tips for hand-cut dovetails

Begin by dovetailing the bottom to the sides. The tails are flush with the bottom of

Scribe the pins for a perfect fit. Clamp each pin board in a vise, level with the top of a scrap board. Raising the tail board lets you focus your pressure in its center, which will ensure accuracy by keeping it motionless. Another key here is to use a marking knife, not a pencil. Carry the lines onto the faces, and then saw, chop, and pare the pins to fit.



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**THROUGH-TENONS
CONNECT THE SHELF**



Layout tip for old eyes. Wood grain can make scribed lines tough to see, so Pekovich puts painter's tape on each face before marking the mortises. Use a marking gauge to scribe both the mortises on the sides (1) and the tenons on the shelf. Then use a square and marking knife to scribe the top and bottom edge of the mortises (2). Peeling away the tape provides a clear border for drilling out the waste and chopping the mortises square (3). Work inward from both faces.



the case, but the pins extend past the sides a bit. This requires two marking-gauge settings for the baselines. Set the gauge to the thickness of the stock and mark the case sides. Increase the gauge distance by $\frac{1}{16}$ in. to scribe the case bottom.

This is a good time to scribe the shoulders of the other case parts as well. It's a great trick I picked up from period furniture maker extraordinaire Steve Latta. When you have a lot of parts with the same shoulder-to-shoulder dimension, cut them all to the same length even if the final lengths of the parts will differ. That way you can scribe all the parts with the same gauge setting. Later you can cut them to final length, knowing the case will turn out square. So go ahead and scribe the should-



Chamfer and kerf the tenons. Saw the tenons like the dovetail pins. Before glue-up, use a block plane to lightly chamfer the ends (above) and then cut slots for wedges using a backsaw. Work-



ders on the well bottom, drawer divider, and front and back panels.

Now back to dovetailing. Set a bevel gauge to a 1:8 slope and lay out evenly spaced tails with a half-pin at each end. Use a backsaw to cut the tails. Don't worry about nailing your line. The exact shape of the tails doesn't really matter because you'll be scribing the pins directly from them. Think of these cuts as a warm-up for the pin cuts. Those are the ones that count.

Use a coping saw to remove the waste between tails and clean up the corners with a chisel (see opposite page). Now

When cutting for wedges using a backsaw, starting from each end, saw an outside tenon and then use it as a guide for the adjacent ones (right).



you are ready to tackle the pins. Scribe them directly from the tail board. Mark the waste areas with a pencil to make sure you cut on the right side of the line.

I try to cut right along the scribe line because it reduces the paring I have to do. I'm not trying to save time; instead, I'm trying to avoid errors, because I seem to create most of the gaps in my dovetails while paring. With all of the mating

surfaces, sometimes it's hard to figure out exactly where the joint is hanging up.

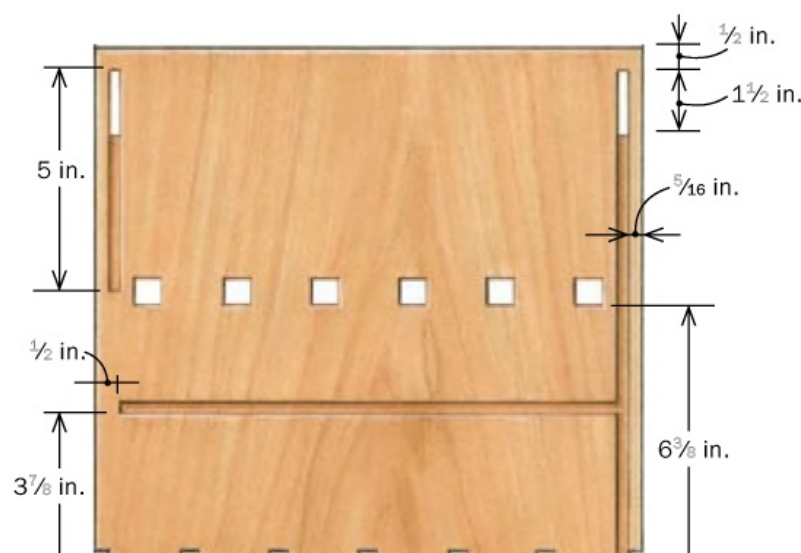
After coping and chopping out most of the waste between the pins, it's important to check how straight you made your cuts. It's common to veer away from the line as you cut. This results in wedge-shaped pins that are wider at the bottom. They can make fitting a pain and can lead to cracked parts if you try to force the joint

Photos, except where noted: Rachel Barclay

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Box

PANELS NEED GROOVES



Little through-tenons first. Start these on the outside face. Use a router with



SIDE JOINERY DETAIL

an edge guide and a $\frac{3}{8}$ -in. spiral straight bit to rout most of the way through (left). The groove will finish the job from the other side. Square up the mortises with a chisel (right).



Rout the grooves on the inside face. Set the bit slightly deeper than the tongues on the panels to allow for glue squeeze-out. Cut the grooves along the edges of the sides before resetting the fence to cut the narrow dado for the drawer divider. You'll need to groove the well bottom, too.

home. So the first task is to trim the pin walls straight. Now you can go about paring for a perfect fit.

Tips for tenons, too

The through-tenons on the well bottom are easy to handle with hand tools. When marking along the grain in butternut, it can be really hard to see the line. Instead of investing in a new pair of reading glasses, lay a strip of painter's tape across each face of the case sides before scribing the mortises. Once the mortises are marked out with a knife, peel away the squares for easy reading.

To cut the mortises, start by drilling out most of the waste at the drill press. Then



Easy tongue-and-tenon combo. Use a dado set to rabbet both faces of the panels to create a centered tenon. Then trim the tenons on the bandsaw as shown to leave a perfect through-tenon.

ASSEMBLY TIME



Surface and seal. The soft butternut planes easily and yields a shimmering luster (top). Apply a washcoat of shellac to all the parts, especially the end grain of the tenons and dovetails, but stay clear of the glue areas.



One big glue-up. Unfortunately the case glue-up can't be broken into smaller sub-assemblies. So do a dry run (above) to reduce some of the

chop back to the scribe lines, working from each face. Undercut the inner surfaces a little as you chop. Cut the tenons just like the dovetail pins, sawing as close to the line as you dare. Then cope out the waste and pare to the line as necessary.

A hybrid joint

With the major case joinery complete, you can rout the grooves and through-tenons for the panels. Start by routing a short groove for the through-tenons on the outside faces of the sides. Once you groove the inside face, the two cuts will combine to create a through-mortise to accommodate the tenons at the top of the upper panels. This is an interesting joint I call a dog-eared tenon (actually I just made that up). The tenon is glued and pinned to the sides, while the rest of the panel is allowed to expand and contract with the seasons. Note that the grooves in the well bottom are shallower to avoid weakening it.



stress and avoid any surprises once the glue is on. For the actual glue-up, use plenty of clamps to bring the case together. Then put glue in the slots in the shelf tenons and drive wedges in place (left).

Get organized for the glue-up

Prior to assembly, use a backsaw to cut slots in the through-tenons. Then chamfer the ends of the tenons and dovetails, and plane or sand the parts. Butternut is too soft to scrape effectively so I'd avoid that. Apply a washcoat of shellac to the parts prior to glue-up, staying clear of glue surfaces. When dealing with protruding dove-

tails and tenons, it's important to seal the end grain before gluing or you'll end up with a blotchy finish there.

On a side note, one feature on this chest that you may want to skip is the half-mortise locks for the drawers and lid. I added them to keep the drawers closed during transit and to keep the tools secure once I'm at my destination. If you

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Lid

FAST FRAME-AND-PANEL ON THE TABLESAW

Bridle slot meets panel groove. If you run the workpieces in both directions to center the panel grooves, you can do the same thing on the tenoning jig to cut



do add them, be sure to cut the mortises for the lock bolts in the underside of the well bottom and drawer divider prior to gluing up the case. Trust me, it's much easier that way.

Once the case is clamped up, tap in the wedges. Finally, drill through the tenons at the top of the case and drive in pins for even more strength and sturdiness.

A power assist for the lid

bridle joints that line up with the grooves.

Align the blade with the inside edge of the groove (inset), then just flip the workpiece for a perfect cut on the other side, too.



Tenons last. *Align the blade with the outside of the panel groove to cut the tenon cheeks (left). To cut the shoulders, trim away most of the waste first on the bandsaw to avoid a trapped offcut, and then use your miter gauge and rip fence (above) for the final cut.*



I could have done the lid joinery by hand, too, but my tablesaw was sitting right there itching to tackle it for me, with a fast, accurate way to cut the bridle joints and panel grooves. I used a $\frac{1}{8}$ -in.-thick blade with a flat-top grind to cut this joinery. The bridle joint is exposed, so you want the slots to have dead-flat bottoms. Start by cutting the panel grooves, which are centered in the frame parts. Make one pass, and then flip the workpiece for a second pass, resulting in a $\frac{1}{4}$ -in.-wide groove that's perfectly centered. Now break out your tenoning jig. Start by cutting the slots in the stiles. Align the blade with one side of the groove and make a cut. Because you took care to center the groove, you can now flip the piece to cut the second side and it should be aligned with the opposite wall.

Cut the tenon cheeks in the same way, this time simply aligning the blade with the outside edge of the groove. To avoid trapping the offcut when cutting the shoulders, trim away most of the waste on the bandsaw, then cut the shoulder on the tablesaw. Cut a stub tenon on the center stile to fit the panel groove. Finally, use your dado





Clamp from three directions. A bridge joint needs a lot of help to pull it together. Start by clamping across the rails, then add clamps across the stiles (left). Check to make sure that the joints are pulling closed in each direction as you tighten the clamps. Finally, clamp vertically at each corner to ensure a good glue bond (above).

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Dividers

ARRANGE THEM BY EYE





3 **No-math solution for dividers.** Start by milling divider stock to match the width of a $\frac{3}{4}$ -in. dado stack. Then set your tools where you want them and mark dado locations wherever you need a divider (1). Cut dados for the dividers in pairs (2). Install the dividers, making cutouts to allow easy access to your tools (3).

set to rabbet the panels, leaving a $\frac{1}{8}$ -in. gap between the panel and the frame.

The lid is attached with butt hinges, and a simple rope stay keeps it from opening too far. I used 4mm hemp cord threaded through wood blocks screwed to the lid and case side. Instead of knotting the rope, add glue and pound a wedge into the rope hole. Pare the rope and wedge flush with the block once the glue is dry.

The drawers are the standard dovetailed variety. I chose brown oak for the drawer front to add contrast and provide better purchase for the half-mortise lock screws.

Online Extra

For a video tour of the tool box and the author's essential set of hand tools, go to FineWoodworking.com/extras.

The $\frac{3}{8}$ -in.-thick pine drawer bottoms are glued along the front edge and screwed to the drawer back to help prevent sagging.

When mounting the cast-iron trunk handles, I replaced the supplied screws with through-bolts. I drilled a counterbore on the inside face of the sides so that the nuts would be recessed.

Divide and conquer

To keep tools from rattling around, I installed simple pine dividers in one of the drawers and the plane well. To secure the saws and scrapers, slot a pine block on the bandsaw. The kerf allows just the right wiggle room for sawblades and scrapers. The drawer with the dividers houses a set of chisels, a spokeshave, and layout gear.

The bottom drawer doesn't have fixed dividers. Instead, I've left room for removable boxes and trays. This lets me organize small items and keep them handy. I made a large tray for all my sharpening gear that I can take to my sharpening station. There's a small box for carving tools and another that contains hardware for the projects I'm



Simple storage for saws. Pekovich cut kerfs in pine blocks to secure his handsaws, scrapers, and combo square. The blocks are glued to an MDF base and installed as a single unit.

working on as well as the drill bits and screws necessary for installation. Finally, I have a small tray for odds and ends like tweezers, a pocket flashlight, and such.

I finished the chest by wiping on a few thin coats of shellac. This provides some protection, but doesn't leave the surface too glossy. □

Michael Pekovich is FWW's art director, and a prolific furniture maker.

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