

Art of Concealment

BY MATTHEW DWORMAN



This table hides your laptop,
jewelry and other small valuables
in plain sight.





Go for looks. In a small piece like this table, consistency of color and grain is important. Luckily, I was able to get all the body parts out of a single board. I mark out all the parts on the board in chalk and rough the parts out on a band saw.



In sequence. The drawer front, top and bottom rails are sequentially ripped from the same board for consistency of grain pattern, but the drawer face is planed $\frac{1}{16}$ " thinner to create a shadow line when assembled. I marked a cabinetmaker's triangle on the parts before separating them from the board.

Hidden compartments—just saying those words puts a smile on the face of most woodworkers. There is something magical about a secret space that reveals itself to only the person who knows about it. Since the origins of furniture, hidden compartments have been used for storing valuables, documents and other important belongings. With modern safes, security by obscurity is no longer commonplace. Finding it both fun and challenging, designing and building hidden compartments has become my specialty, and I incorporate hiding spots into nearly every piece I make.

I integrate them in one of two ways: either taking advantage of an otherwise wasted space, or designing into an area that appears to be structural, but isn't. In this seemingly simple Shaker-style table, we will use some trickery from the practice of magicians—misdirection and illusion—to do both. The end result is a hidden compartment that is unlocked by pressing a button hidden

in plain sight. A door pretending to be an apron falls open to reveal it, and a secret drawer masquerading as a front rail provides additional storage.

Legs & Layout

After surfacing and cutting the carcass pieces to final size (note from the cutlist that there are several different thicknesses required), start on the legs.

Lay them out, marking the sides that will be tapered, and mark the lo-



Quick cuts. A crosscut sled with a stop block makes quick work of dadoing the legs. Then a simple tapering jig helps me to taper the legs.

cations for the dados that accept the lower stretchers. With stretchers and tapered legs, it's easy to get mixed up. I mark out in big bold letters which sides get tapered and where the dados go.

It's much easier to cut the dados for the stretchers before the legs get tapered. Set up a $\frac{3}{4}$ "-wide dado stack, and with a crosscutting sled cut $\frac{3}{4}$ "-deep dados. (After tapering the legs, the dados will be only about $\frac{3}{16}$ " deep.) It's also easier to cut the mortise for the stretchers now, though not critical.

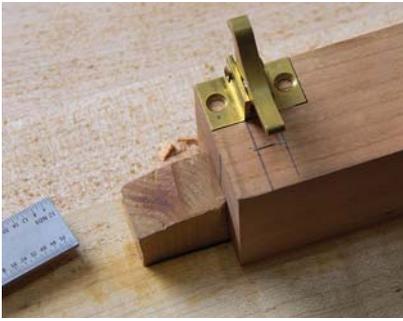
Next, taper the legs. I use a simple tapering jig, ending the tapers about 7" below the top of the leg. The aprons will be $6\frac{1}{2}$ "-wide, so this leaves room to clean up sawblade marks with a handplane and bring the taper up to $6\frac{1}{2}$ ".

The right rear leg will contain the locking latch for the side compartment. The catch is operated by pressing on what appears to be a peg from a pegged tenon, but is in actuality a free-floating dowel operating as a small plunger that engages the hidden elbow-catch.

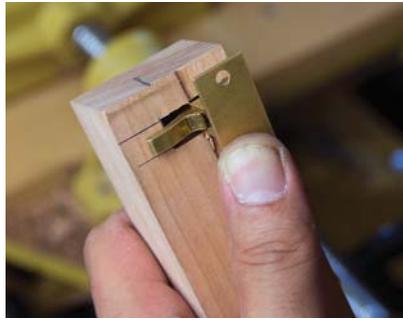
Begin by marking out its location inside the leg, and mortising for the base. This is not much different than mortising out for a hinge—quick work with a marking knife, chisel and small router plane.

Once the base of the catch fits nicely, mark out a recess to accept the body of the catch itself, and remove enough material to house the catch's main body at the hollow chisel mortiser. Because

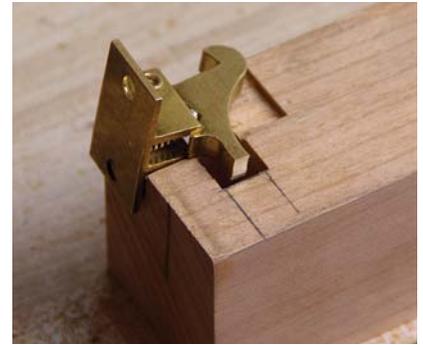




Catch layout. Mark the location for the catch, using the catch itself as a reference to set a marking gauge and router plane.



Cut the recess. Hollow out a recess for the catch at the mortiser, allowing just enough room for the body of the catch itself.



Hack it off. Brass cuts easily with a hacksaw. Mark it, cut it, perfect fit.

the opening is on two sides of the leg, cutting from both directions creates a clean bottom.

The tail on the catch is longer than what is needed to operate it, and I don't want to remove more wood than necessary from the leg, leaving too much weak end grain. Brass is easy to cut, so I mark the catch with a Sharpie and cut off the extra catch length with a hacksaw.

Next, drill for the dowel. I've found that small Miller dowels are perfect for the catch release; they are stepped and the shoulder creates a perfect stop for

the dowel that prevents it from escaping the leg. Mark the dowel location and drill a hole at the drill press from inside the catch mortise, using a Miller dowel bit. Enlarge the hole slightly with a twist bit from the outside of the leg, just large enough to allow the dowel to slide freely.

I use a bench hook and a backsaw to safely cut the tiny part to fit. Using a shooting board allows me to remove a few shavings at a time from the length until it mates precisely with the catch. I want it to just touch the catch. If it is too long, it will create too much ten-

sion, and it won't operate smoothly. Too short, and it will not extend back into position. Sand one side of the dowel's shoulder flat to let it register against the catch.

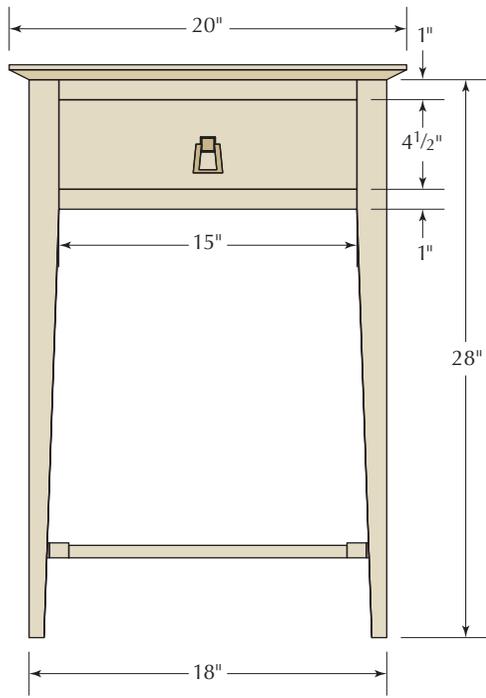
The table would look pretty funny with just one peg in one leg, so drill holes in the remaining legs to match, to make it look as if the aprons are joined to the legs with pegged tenons. The location of the Miller dowel in relation to the catch will now determine the layout and location of the faux pegs in the remaining legs. A little misdirection, and abracadabra – a lock release

Side Table with Hidden Compartment

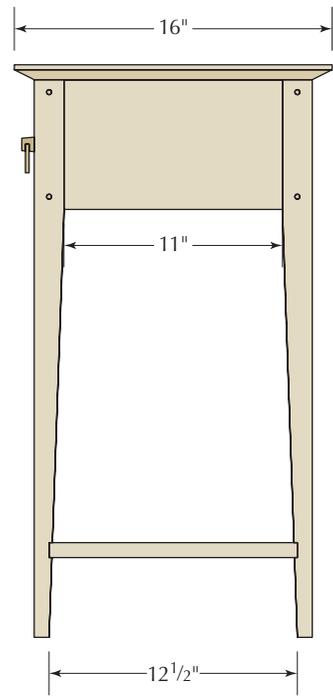
NO.	ITEM	DIMENSIONS (INCHES)			MATERIAL
		T	W	L	
1	Top	7/8	16	20	Cherry
4	Legs	1 1/2	1 1/2	28	Cherry
1	Back apron	3/4	6 1/2	15	Cherry
1	Inner (hidden) apron, left	11/16	6 1/2	11	Cherry
1	Inner (hidden) apron, right	11/16	4 3/4	11	Cherry
1	Inner (hidden) top rail	5/8	2	15	Cherry
2	Outer side aprons	3/4	6 1/2	11	Cherry
2	Outer front rails	3/4	1	15	Cherry
2	Lower shelf stretchers	3/4	2	12 1/2	Cherry
1	Lower shelf	11/16	7	14	Cherry
2	Drawer runners	3/4	1	12 1/4	Cherry
1	Drawer front	3/4	4 1/2	15	Cherry
2	Drawer sides	1/2	3 1/2	12 7/8	Maple
1	Drawer back	1/2	3 1/2	15	Maple
1	Drawer bottom	3/8	12 1/2	13	Cherry
2	Hidden drawer sides	3/4	1	12 1/4	Cherry
2	Hidden drawer front/back	3/4	1	13	Cherry
1	Hidden drawer bottom	1/4	11 1/4	13	Baltic birch ply
1	Hidden compartment bottom	1/4	12 3/16	15 1/2	Baltic birch ply



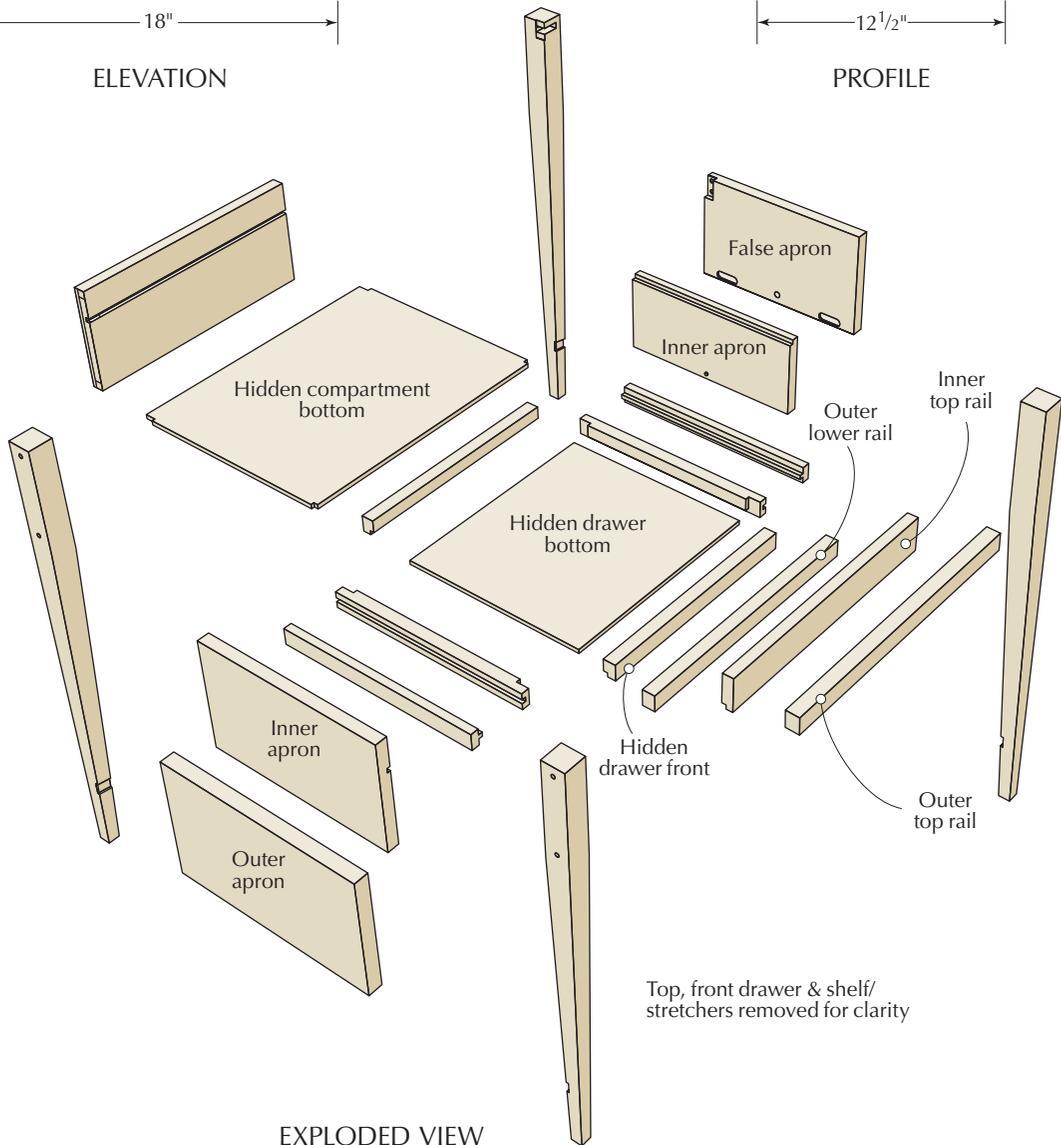
Catch-release hole. Drill a hole for the dowel from the inside, then enlarge it slightly from the outside.



ELEVATION



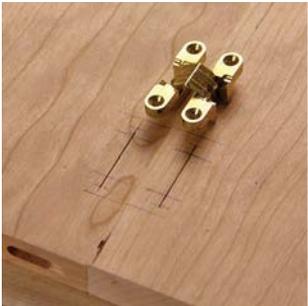
PROFILE



EXPLODED VIEW



Confirm fit. Check that the dowel fits freely, and stops securely. I use a bench hook to safely cut it and a shooting board to trim it to perfect length.



Soss hinge gains. I mark out the locations with a pencil, using a marking gauge to mark the centerline. Then drill out the mortises and clean the shoulders with a chisel.

hidden in plain sight.

Drill the holes, insert dowels with a dab of glue, and trim them flush with a flush-cut saw.

Soss Hinges

Now you need to mortise the right inner (hidden) apron and false apron to accept a pair of Soss hinges. These are beautifully engineered hinges that can be completely hidden and flush when closed—but they allow for zero adjustment. In this scenario, if the hinges are off by even 0.010", the false apron will bind and not operate. To compensate for a less-than-perfect fit, create room for adjustment in the mortises by making them about $\frac{1}{16}$ " wider than necessary; that allows $\frac{1}{32}$ " adjustment in either direction.

Mark out the locations with a pencil, use a marking gauge to mark the centerline, and drill out the mortises at the drill press using a Forstner bit. Clean up with a chisel and check the fit.

Put it Together

With all that fiddly stuff out of the way, we can finally get on to some assembly. Though I used loose-tenon joinery for this table (Festool Domino), there is no reason you can't use traditional mortise-and-tenon joinery (just adjust the lengths of the rail aprons accordingly).

Cut $\frac{1}{4}$ "-wide x $\frac{1}{4}$ "-deep grooves in the inner left apron and back, and rabbets of the same size in the inner right apron and inner top rail to accept a piece of $\frac{1}{4}$ " Baltic birch plywood that will become the base of the hidden compartment. (I recommend Baltic ply because it is good quality and super stable.)

Now mortise for the inner side aprons, back and inner top rail. Place the mortises for the back apron to leave a $\frac{1}{16}$ " reveal at the rear, and mortise for the other parts to make them dead flush with the legs' inner faces. You'll add the false outer rails and aprons to these later. The front rail is 2" wide and acts to secure the plywood compartment



Faux pegs. Drill holes for the faux pegs, insert the dowels with a dab of glue, and trim them flush with a flush-cut saw. (For the dowel that acts as a button, insert it from the inside, and trim it flush while pulling it tight.)

bottom. But a 2"-wide front rail would look funny, be out of proportion and possibly give away the location of the hidden compartment; so to hide this set it flush with the back of the front legs, and later glue a 1"-wide false rail to it. When the drawer is closed, there appears to be only a 1"-wide rail, and nobody is the wiser—presto-chango. As the Doctor says about the Tardis, "It's bigger on the inside than the outside."

Notch out the corners of the plywood to fit around the legs. After the glue dries, attach the front rail and back apron to one of the side assemblies, spread some glue in the grooves, slide in the Baltic birch base and clamp up the carcass.

Check everything for square, and



Side assemblies. These glue-ups reveal that all is not as it will seem.

“What the eyes see and the ears hear, the mind believes.”

—Harry Hourdini (1874-1926),
American illusionist

securely clamp the plywood to the rabbet in the front rail. Let that assembly dry, then glue the upper false front rail to the inner top rail.

Next, attach the lower shelf-and-stretcher assembly. I do this after assembling the carcass because things always tend to shift a little bit during glue-ups. I want the openings for the drawer and hidden compartment to be perfectly square, and without a rail below the drawer opening, there is still enough flex to move things around. Once this lower assembly is installed, everything locks up securely. I left the stretchers a little long so that I could tweak them with a shooting board to a precise fit. This allows me to spread the legs a tiny bit to widen the opening for square (if necessary).

Once you’ve checked and fit everything, glue up the stretcher/shelf assembly, apply a few drops of glue in the dados then slide the stretcher in from one side, persuading it gently with a mallet. Again, check everything for square, make any further adjustments, and clamp it until the glue dries.

With some Miller dowels still on hand, I used four of these to toenail the stretcher rails to the legs. Be careful doing this—if your angle is wrong, it is easy to go through the top of the rail or the leg (don’t ask me how I know this... ugh). Once it’s all dry, smooth plane the rails flush to the legs.

Hidden Drawer

Next, make the drawer runners—which have two purposes. Cut a $\frac{1}{4}$ " x $\frac{1}{4}$ " tongue on one side to mate with a groove that will be in the hidden drawer. Cut the runners to length, then glue and clamp them in place, flush with the bottom of the aprons. Then cut the parts for the hidden drawer to length, and cut a $\frac{1}{4}$ " x $\frac{1}{4}$ " rabbet to receive another piece of Baltic birch ply for the drawer bottom.

Cut rabbets on the ends of the



Clamp it up; check for square. Use cauls to prevent clamp marks on the legs. Once the carcass is dry, glue and clamp the false rail in place.



Add the shelf. Attach the shelf to its stretchers (I used Dominos), then slide the stretchers into their dados. I secured them from underneath using leftover dowels as wooden nails.

drawer sides, then glue and clamp up the drawer.

With that still in the clamps, I use more Miller dowels to secure the rabbets in the drawer sides to the drawer front and back. This is a tiny drawer and certainly doesn’t need dovetails. Flush things, and once everything has dried, cut $\frac{1}{4}$ " x $\frac{1}{4}$ " grooves in the sides to mate with the tongues on the run-

ners. Check for a smooth fit, and attach the false front, which will pretend to be a lower rail. Use a shooting board to fine-tune the fit, and clamp it in place while the glue dries.

With the body of the table now complete, turn your attention to the drawer. Having left the parts a little oversized, I trim them to fit the opening with a shooting board, plow a groove for the



Runners. Glue and clamp the runners flush with the bottom of the aprons. The tongue will also mate with the hidden drawer.



De-square. Placing a small shim (a couple shavings) under the board, or between the board and the fence, allows me to intentionally plane the door out of square and trim it to fit, one shaving at a time.

SUPPLIES

Lee Valley Tools

leevalley.com or 800-871-8158

1 ■ Small Miller dowels, walnut
#41K32.24, \$15.50/40

1 ■ Soss hinges, 1/2"
#00H02.02, \$19.30/pair

Rockler Woodworking

rockler.com or 800-279-4441

1 ■ Elbow catch
#10893, \$6.99

MSC Industrial Supply

mscdirect.com or 800-645-7270

1 ■ .064" x 2" x 12" brass strip
#54055306, \$11.52

Prices correct at time of publication.

Place & drill. Put the hinges in the mortises, and use a Vix bit to drill for screws.



drawer bottom, and lay out the parts for dovetails.

This drawer goes together a bit differently than most because the front has a 1" lip above the drawer sides that conceals the inner top rail. I mark the tails, then use the tails to lay out the pins on the drawer front, making sure that they are dead flush to the bottom. Taper the drawer bottom at the table saw (in effect, you're creating a raised panel), and assemble the drawer. Plane the sides flush, and slide it into the opening to keep everything square while it dries.

Complete the Assembly

Despite your best efforts, the side will almost always be a hair out of square—not enough to be visible, but enough to prevent the side false apron from opening freely. Again, I use a shooting board to remedy this. Placing a few shavings as shims under the apron creates a small back bevel. A shaving or two in between the apron and the fence will present it to the plane a fraction of a degree out of square. You need a gap that is large enough to allow the door to open freely, but small enough to not be seen. The

best result is one that is only a few thousandths of an inch wide. The only way to achieve this is with a shooting board, removing one shaving at a time.

With the false apron fit, it's time to install the Soss hinges. Because of the little slop in the mortise, the false apron can stay where it needs to be without any pressure on the hinges. Use a self centering Vix bit to drill the holes for the screws, and test-fit again.

The false apron door is now fit, but you need to install a strike plate for the elbow catch—and the strike that comes with the catch (see Supplies) will not work in this application. So I make one from some 1/16"-thick brass stock. You'll need two more of these as cleats for the leather lid stay, so make three.

With the false apron in place, mark out the location of the catch on the top, and mortise for the brass plate. I use a small router plane again, allowing me to sneak up on the perfect fit. But before you install that plate, chop a small mortise behind it—just enough to allow clearance for the catch to grab the plate's edge (two chops with a chisel at most).

Next, drill a 3/16" hole through the side of the inner apron and into the side of the hidden drawer about 1/2" into the



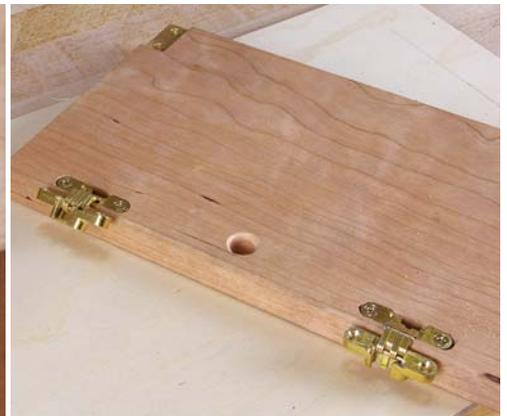
Strike. Mark out the size with a knife, and mark the locations for the screws with a small center punch. Drill them out with a countersink bit, and cut the strike to size with a hacksaw (or metal cutting blade on the band saw). File the edges, then sand the surface smooth.



Strike install. One of three little brass pieces is the catch for the false apron's latch.



Drawer lock. A brass rod acts as a lock for the hidden drawer. Mark its length, cut it to size, and chamfer the ends using a small file and a drill, guiding it with a hole drilled in a piece of scrap. Mark where it ends on the inside of the false apron, and drill a hole, then countersink the rim.



side. Insert a $\frac{3}{16}$ " brass rod to act as a lock for the drawer, mark it, protruding about $\frac{1}{2}$ ", and cut it to length with a hacksaw. Chamfer the end by drilling a $\frac{3}{16}$ " hole through a scrap of wood to act as a guide, chuck the rod in a cordless drill and spin it through the hole while holding it against a small file. Clean it up with some fine sandpaper.

Mark its location inside the false apron, bore a $\frac{3}{8}$ "-diameter x $\frac{1}{2}$ "-deep hole with a Forstner bit, and chamfer the rim with a countersink bit. This allows the false apron to close with the pin in place. (To access the hidden drawer, open the apron and pull the pin.)

A strip of leather prevents that false apron from swinging open too far when opened; it's attached at either end with those two additional brass cleats – a simple little solution.

Finally, it's time to cut the top to final size. I opted for $1\frac{1}{4}$ " overhang and a

20° , $1\frac{1}{8}$ "-wide underbevel, cut at the table saw with a tall auxiliary fence. Clean up the bevels with a handplane.

The top gets attached with a cleat screwed to its underside that has three Dominos that fit into mating mortises inside the back apron. Two screws through the bottom of the front false rail lock the top in place, and the Dominos allow it to expand and contract.

Finishing Touches

If you've smooth-planed each part along the way, there's little clean-up needed. Go over everything with #180-grit sandpaper as needed, then apply a finish. I used three coats of lacquer, sanding between coats.

After adding a polish with some wax, I installed a hand-cast bronze pull to complement the wild curly cherry grain. Two brass bullet catches installed in holes drilled under the top rail act as stops for the drawer so that it can't

easily be removed and expose the hidden drawer.

This small table is simple in style, and beautiful in form, but complex in construction, with double the number of parts as a comparable table without the secret compartments. But my hope is that you can see from this example table that incorporating a secret compartment or two into your designs can be as simple as utilizing some wasted space behind a rail. Looking at this table, nobody would ever guess that there are two good-sized compartments hiding in plain sight. If you build one, it's up to you to keep the secret. **PWM**

Matthew is the chief gadget officer at QLine Design, where he designs and builds custom furniture, specializing in the art of concealment.

ONLINE EXTRAS

For links to all online extras, go to:

■ popularwoodworking.com/nov16

WEBSITE: See more of the author's work at qlinedesign.com.

CLASS: Take a class on incorporating hidden compartments with Matthew Dworman at the Marc Adams School of Woodworking in May 2017.

VIDEO: Take a video tour of this table.

PLAN: Download a free SketchUp model of this project.

IN OUR STORE: "A Winchester Desk: Joinery Inside & Out," by Jeff Headley and Steve Hamilton.

Our products are available online at:

■ ShopWoodworking.com



Protect your feet. A $\frac{1}{8}$ " x $\frac{1}{8}$ " chamfer around the bottom of all the legs protects the feet from chipping as you move the table.