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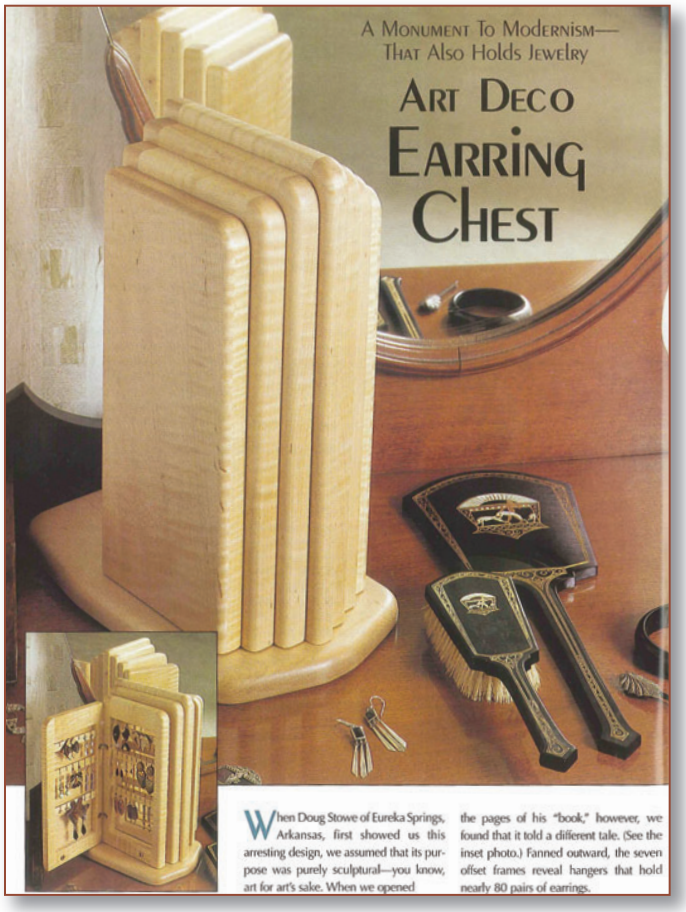
Classic Project

In this plan you'll find:

- Step-by-step construction instruction.
- A complete bill of materials.
- Construction drawings and related photos.
- Tips to help you complete the project and become a better woodworker.

Art Deco Earring Chest



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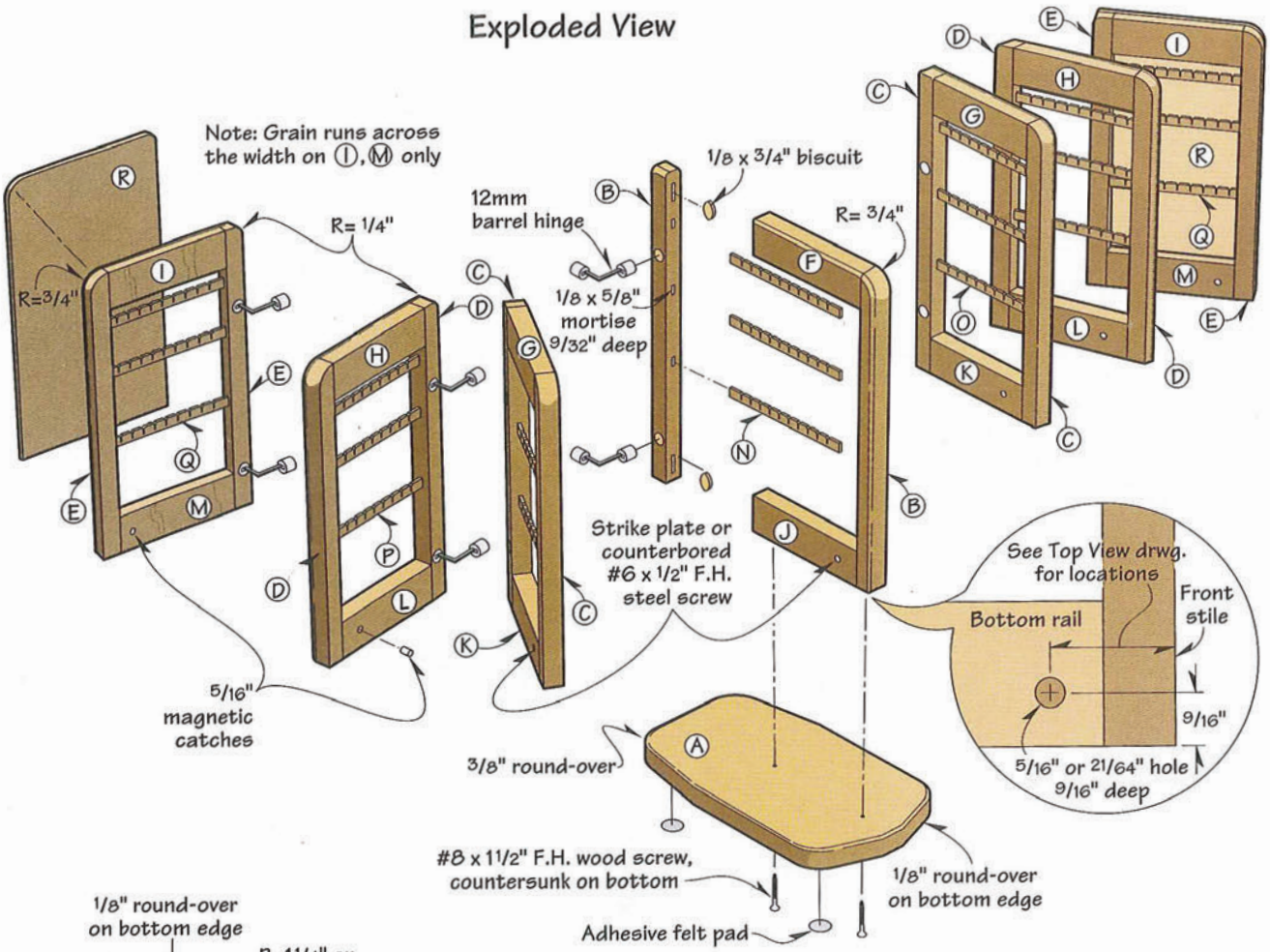
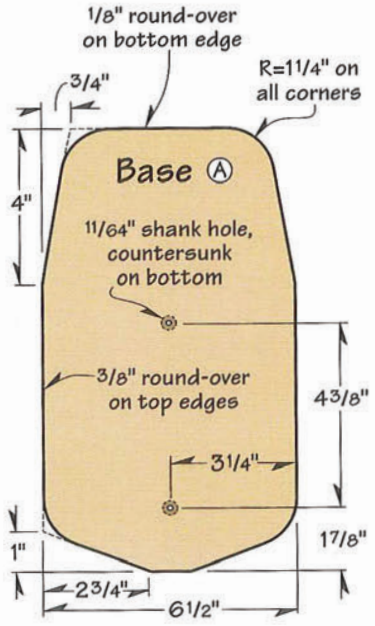
A Monument To Modernism—
That Also Holds Jewelry

Art Deco Earring Chest

When Doug Stowe of Eureka Springs, Arkansas, first showed us this arresting design, we assumed that its purpose was purely sculptural—you know, art for art's sake. When we opened the pages of his "book," however, we found that it told a different tale. (See the inset photo.) Fanned outward, the seven offset frames reveal hangers that hold nearly 80 pairs of earrings.





Before You Start

We followed Doug's lead in selecting curly maple for our chest. Be advised, however, that curly hard maple, which we used here, requires light cuts with well-sharpened tools. Curly soft maple works more easily but usually lacks the dramatic figure found in hard maple and often has a gray cast to it.

To join the frame parts, we used miniature biscuits, which require a special 1"-diameter slot cutter with a ⅜"-diameter bearing.

If you'd rather stick with tools and materials you have on hand, use ⅛"-thick splines (loose tenons) cut from scrap stock and rout the mortises. You could also dowel the frames together using a drill press or doweling jig to drill the holes and dowel centers to transfer centerpoints.

We suggest you acquire the barrel hinges and check their actual dimensions before you begin construction. Ours required a 12mm hole 9/16" deep, although we went a bit shallow on the depth (about 1/64") to prevent the connecting links on the hinges from bottoming out on the frame faces and marring them.

Size Your Stock, Then Cut and Slot the Frame Parts

Step 1. Start by planing your stock to thickness: ¾" for the base and interior frames, ½" for the two outside (door) frames, ¼" for the two door skins. (We saved our most dramatically figured pieces for the skins.) Note: To improve appearance and prevent delamination (from cross-grain construction), you'll want to cut the four door-frame rails (I, M) with the grain running widthwise instead of lengthwise. To plane the stock for these parts safely, start with boards at least 12" long.

Bill of Materials

Chest

Part		T	W	L	Mat.	Qty.
A	Base	¾"	6½"	11⅜"	CM	1
B	Stiles 1	¾"	¾"	13"	CM	2
C	Stiles 2	¾"	¾"	12½"	CM	4
D	Stiles 3	¾"	¾"	12"	CM	4
E	Stiles 4	½"	¾"	11½"	CM	4
F	Top rail 1	¾"	1½"	5½"	CM	1
G	Top rails 2	¾"	1½"	5"	CM	2
H	Top rails 3	¾"	1½"	4½"	CM	2
I	Top rails 4*	½"	4"	1½"	CM	2
J	Bottom rail 1	¾"	1⅛"	5½"	CM	1
K	Bottom rails 2	¾"	1⅛"	5"	CM	2
L	Bottom rails 3	¾"	1⅛"	4½"	CM	2
M	Bottom rails 4*	½"	4"	1⅛"	CM	2
N	Hangers 1	⅛"	⅝"	6"	M	3
O	Hangers 2	⅛"	⅝"	5½"	M	6
P	Hangers 3	⅛"	⅝"	5"	M	6
Q	Hangers 4	⅛"	⅝"	4½"	M	6
R	Door skins**	¼"	5½"	11½"	CM	2

* Grain direction on door rails runs opposite that of other rails to match door grain.

** Parts cut to final dimensions during construction. Please read all instructions before cutting.

Materials List

CM – Curly maple
M – Maple

Supplies

12–12mm barrel hinges; 6–⅝"-diameter magnetic catches; #6x½", #8x1½" flathead wood screws; ⅛x¾" biscuits; self-adhesive felt pads.

Step 2. From ¾"-thick stock, cut the base (A) to shape as dimensioned on the Base drawing on *page 47*. Sand the edges smooth. Then, rout a ⅜" round-over along the top edge and a ⅛" round-over along the bottom edge. Drill and countersink 11/64" shank holes where shown on the drawing, then finish-sand the base and set it aside.

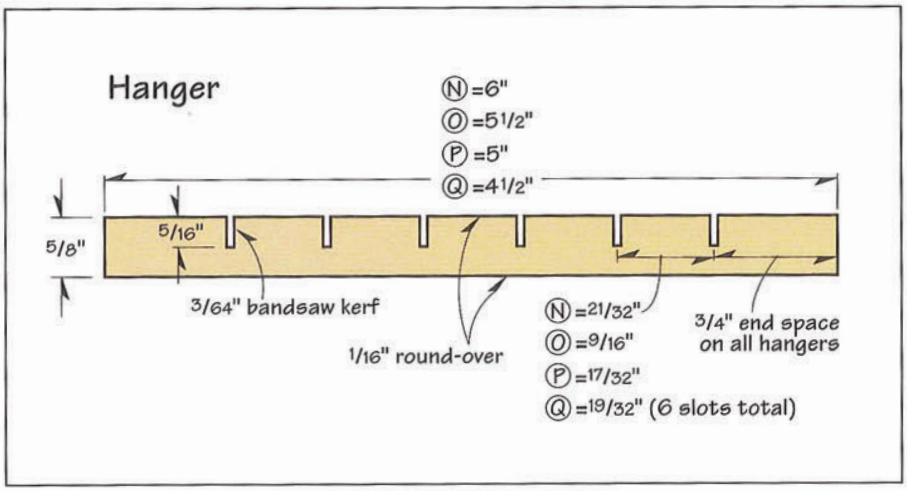
Step 3. Cut all stiles (B, C, D, E), top rails (F, G, H, I), and bottom rails (J, K, L, M) to the dimensions listed in the Bill of Materials, using the correct stock thickness for each. Note: To ensure uniformity, rip all of the stock for the stiles using a single fence setting, then do the same in turn for the top rails and bottom rails. Now, crosscut all parts of each length using a single stopblock setting.

Step 4. Rout mating biscuit slots in each end of all rails and along one edge of all stiles, using the techniques described in "Slotting the Frame Parts" *opposite*. Then, dry-assemble the seven frames using biscuits, and check for fit. Adjust any parts that need it, but keep the frames dry-assembled to avoid confusion during glue-up.

Make the Earring Hangers, Then Mortise the Stiles

Note: Before you make the hangers, figure out which approach you'll use to rout the hanger mortises. (See "Mortising the Stiles" on *page 51*.) If you opt to rout a single long groove in each stile and then glue spacers into the gaps between hangers, you'll want to omit the 1/16" round-over on the hanger edges. If you choose to cut individual mortises for each hanger, we suggest routing a test mortise first. As you machine the hanger blanks, use this mortise as a width/thickness gauge to ensure a snug fit.

Step 1. To make the hangers, prepare 9' of ⅛x⅛" stock. (We used a 36"-long scrap of hard maple, ripping 3/16"-thick strips and then planing them to ⅛".) Note: If your planer has table rollers, run these thin strips on a piece of scrap stock to support the



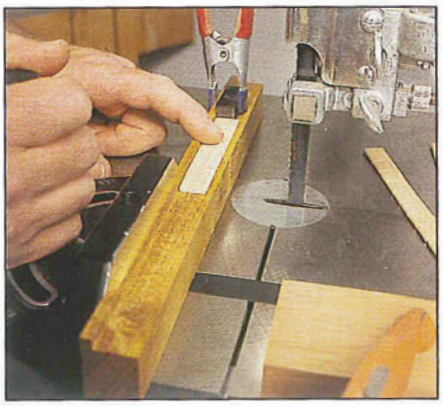


Photo E: Use a rabbeted miter-gauge extension and stopblocks to bandsaw the hanger slots accurately.

Slotting the Frame Parts

Because it's difficult to center a routed slot vertically on the end or edge of a workpiece, we opted instead to mark a common face on each pair of mating parts and made sure we routed both slots with the common face down. This ensured that the slots would mate perfectly.

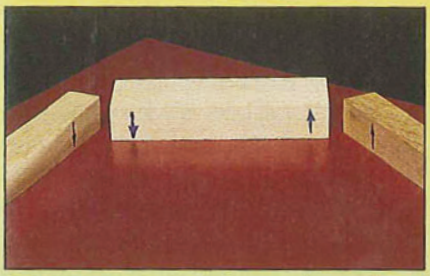


Photo A: Dry-assemble frames, then mark a common face at each joint. To slot parts, lay them common face down.

Dry-assemble the seven frames, then mark a common face on the mating parts at each joint *(photo A)*. We're using a single setup to rout both ends of the parts, so you'll need to flip-flop the two pairs of parts with respect to each other for both the top-rail and the bottom-rail joints. As shown in photo A, we thus marked a common "down" face at each joint (i.e., the face that had to be down for routing).

We used a 6x10" piece of ¾" plywood as a stopblock and used just one setup. Before positioning the stop, we cut a 3/16x¾x6" shim from solid stock and attached it to the stop's leading edge with countersunk flathead screws *(photo B)*. This allowed us to set the stop for a centered slot on the end of the 1⅛"-wide bottom rails and then to rout a centered slot on the 1½"-wide top rail ends by simply removing the shim.

(Because the bit on a table-mounted router turns counterclockwise, we set the stopblock to the right of the bit to resist its rotation.)

To slot the ¾"-thick frame parts, elevate the bit so it clears the table by 5/16". Next, set a fence flush with the bearing on the slot cutter. Position and clamp a stopblock to the fence to center the slot horizontally on the end of the 1½"-wide top rails. Note: Before you rout any of your actual parts, test the setup using same-sized scrap stock.

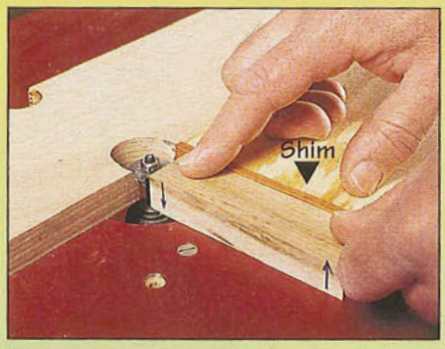


Photo B: To slot 1⅛"-wide rail ends, attach a 3/16"-thick shim to end of router-table stopblock.

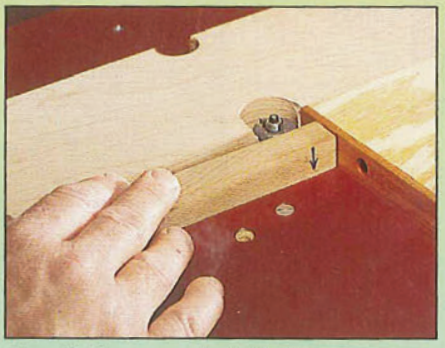


Photo C: Use same setup (with shim still in place) to slot stile edges for bottom-rail joints.

Rout one end of the bottom rail on one of the ¾"-thick frames by sliding it along the stopblock until it makes contact with the bearing. Check the corresponding stile to make sure its common face is oriented the same way, then rout a slot along the edge at its mating end *(photo C)*. To do this, place the left end against the fence and the right end against the stopblock. Keeping this end against the block, pivot it into the cutter.

Now, flip the rail over and orient the other stile the same way before routing slots for the other bottom-rail joint. Repeat this operation until you've routed slots for all bottom-rail joints in the ¾"-thick parts.

To slot the top-rail joints, first remove the 3/16"-thick shim from the stopblock *(photo D)*. Then, repeat the procedure you used to rout the bottom-rail slots, making sure you orient the common faces properly. Rout slots for all four joints in turn on each ¾"-thick frame.

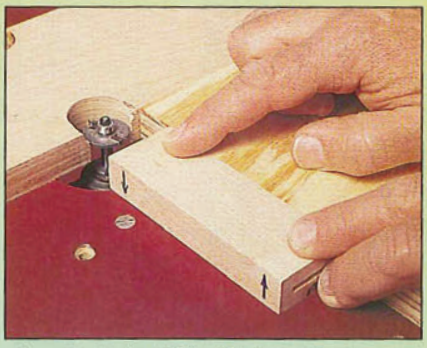


Photo D: To slot 1½"-wide top-rail ends and mating stile edges, use the same setup, but remove shim from stopblock.

To cut slots in the ½"-thick door-frame parts, first lower the bit so it clears the table by 3/16". Then, reattach the shim to the stopblock, and repeat the operations described for the ¾"-thick frame parts.

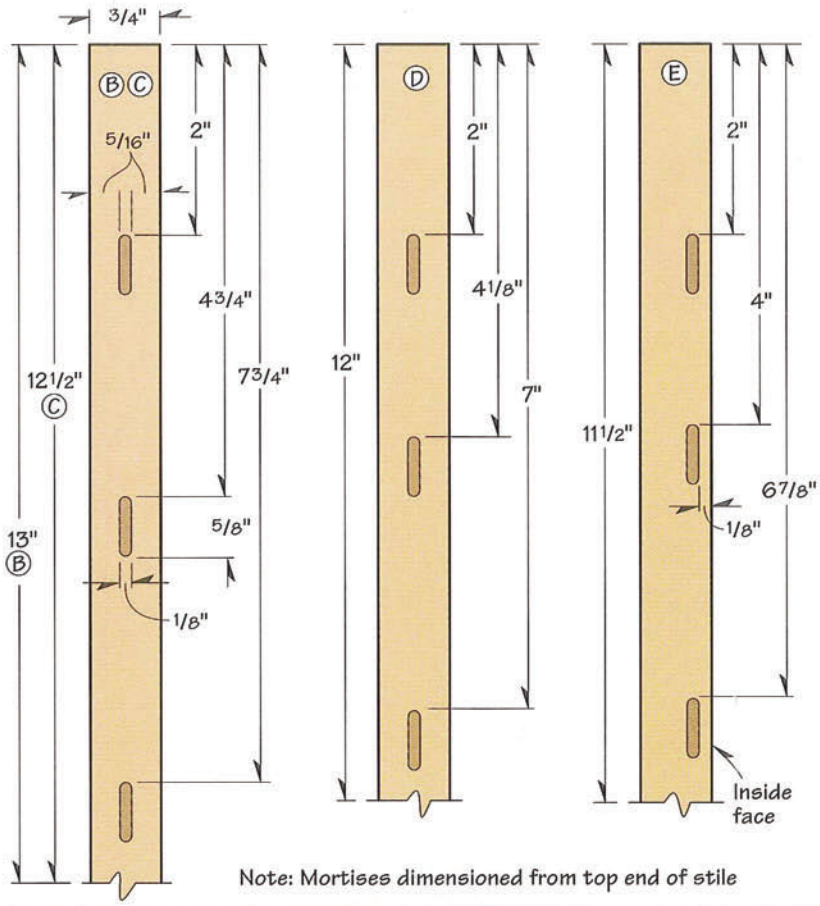
thin material during planing. Next, rout all edges of the hanger blanks using a 1/16" round-over bit and fence. (See the Hanger drawing *opposite*.) Now, crosscut the hangers (N, O, P, Q) to the lengths and quantities specified in the Bill of Materials.

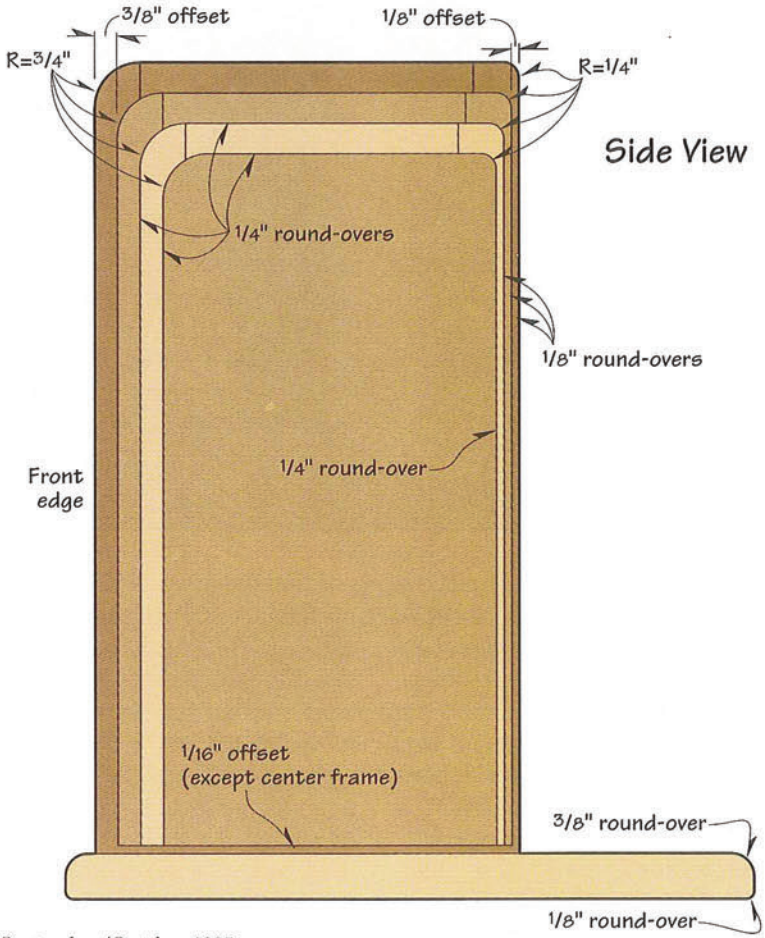
Step 2. Cut earring slots in the hangers. To do this, first set up your bandsaw with a miter gauge and rabbeted extension *(photo E)*. To make the extension, start with a 2x12" piece of 5/4 stock, and cut a ¾"-wide rabbet ⅛" deep along the top edge. Screw the extension to your miter gauge as shown, and lay the hangers in the rabbet to bandsaw the slots. Now, clamp a stopblock to the bandsaw table where shown in the photo to limit the slot length to 5/16" (half the width of the hangers).

Step 3. Using a spring clamp, attach a stop to the miter-gauge extension to position the first slot ¾" from each end of all hangers. Bandsaw the slot at one end, flip the hanger end for end, and slot the other end. Note: Feed the stock into the bandsaw slowly to minimize chip-out on the bottom face.

Step 4. Using the stop on your miter-gauge extension, cut six additional evenly spaced slots (between the two end slots) on the 15 hangers (N, O, P) that will go in the interior

Figure 1 Hanger mortise locations





frames. As you did in Step 3, set the stop, slot one end, flip the hanger end for end, and repeat. (See the Hanger drawing for center-to-center spacing intervals on the various hanger lengths.) The 4½" length of the door-frame hangers (Q) will allow only four additional slots. (Ours ran 19/32" on center.) Now, sand the hangers lightly, but avoid reducing their thickness any more than is necessary.

Step 5. To lay out hanger mortises on the four pairs of stiles (B, C, D, E), use the dimensions shown in figure 1 at *left*. Note: The mortises are centered on the edge of all interior stiles (B, C, D), whereas those on the door stiles (E) are ⅛" from the inside face. If you use a router table and fence, you'll either need to use two different fence settings for the two door stiles (⅛" and ½" from the edge of the bit) or, if you prefer to use a single fence setting, reverse the three stop setups to rout the second of the two stiles.

Step 6. Cut the three hanger mortises on each stile using one of the approaches described in "Mortising the Stiles" *opposite*. Whichever technique you use, test each setup using scrap stock. Also, mark the ends of the stiles "top" and "bottom" and double-check before you rout to make sure you have them oriented correctly.

Assemble the Frames, Then Treat the Edges

Step 1. Dry-assemble and clamp each door frame (with biscuits but without the hangers) in a large hand-screw clamp, keeping the clamp offset from one face so a handheld router will sit flat on the frame *(photo F)*. Install a ⅛" round-over bit in the router, and rout the inside edges of the two frames along just the interior face. With the frame still clamped, hand-sand the inside edges at this time as well. Unclamp, then repeat the process for the five interior frames, this time routing the inside edges along both faces.

Step 2. Dry-assemble the biscuited frames with the hangers to make sure everything fits. Note: In each frame, check to see that the slotted edge of every hanger is oriented toward the 1½"-wide top rail and

that the hangers fit snugly in their mortises. Assemble the hangers into the mortises without glue, then glue and clamp the frames. Check for squareness and flatness, and allow the glue to dry.

Step 3. Sand the outside face of each door frame flat. (We attached two sheets of 100-grit sandpaper to our saw table and applied equal pressure to the entire frame as we sanded.) From your surfaced ¼"-thick stock, rip and crosscut the two door skins (R) to ⅛" larger than the finished dimensions. Finish-sand the inside faces of the skins, but avoid rounding the edges—this would leave an unsightly gap after assembly. Mark the outside face of each door frame, then glue and clamp the skins to these faces.

Step 4. After the glue has dried, sand the inside faces of the door frames the same way you sanded the outside faces. Install a flush-trim bit in your table-mounted router, and rout the skins flush with the door-frame edges.

Step 5. Now, sand or bandsaw a ¾" radius on the top front corner of each frame, including the doors. (See the Side View drawing *opposite*. We laid out the radii using a plastic template, then sanded them to shape on our stationary disc sander.) Next, lay out and sand a ¼" radius on the top back corner of each frame. Now, block-sand the frame edges, taking care not to round them.

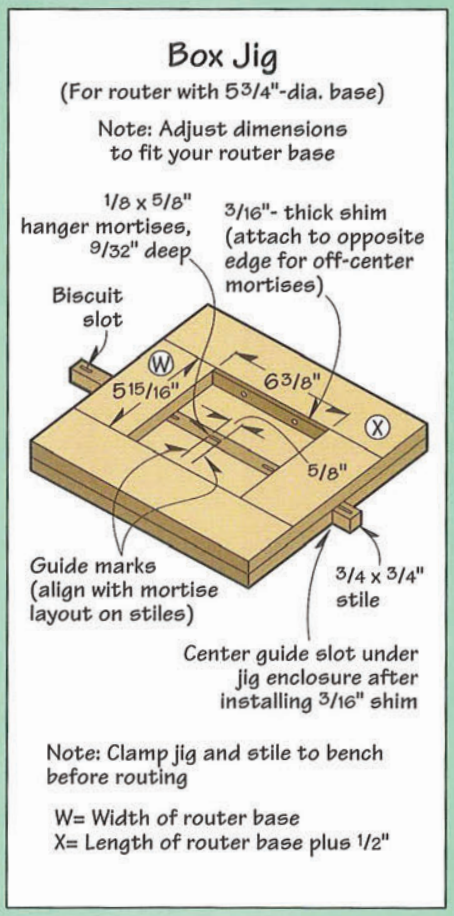
Step 6. Fit your table-mounted router with a ¼" round-over bit, and rout the top end and front edge of the center frame along both faces. Rout the same surfaces on the remaining frames and doors along the outside face only, and include the back (outside) edge on the doors. Switch to a ⅛" round-over bit, and rout the outside back edge of the interior frames and both back edges of the center frame.

Photo F: Dry-clamp frames using large handscrew, then rout ⅛" round-over on inside frame edges.

Mortising the Stiles

To mortise the stiles, we used a horizontal mortising machine. However, you can use any of the following approaches, depending on the equipment you have available.

If you have a router table, you can use a ⅛" straight or spiral upcut bit. Set a fence to center the mortise on the stile edge, and use start- and stopblocks to limit the mortise length, moving the stops for each mortise location. To cut each mortise, rest the right end of the stile against the right-hand stop, then lower the left end onto the bit, and feed the stile from right to left. When you reach the left-hand stop, lift the right end of the stile off the bit. Remember to reset the fence for the door-frame stiles, which are mortised ⅛" from the inside face.



As an easier alternative, use the same tools (router table, fence, and stops), but rout a single long groove in each stile. At each end of the stile, stop the groove 1/16" beyond the point at which it joins the rail, so the ends of the groove will be hidden. Cut spacers to match the dimensions of the groove, and glue them into the gaps between hangers. As mentioned earlier, refrain from routing a round-over on the hanger edges. Instead, use a sanding block to break the edges after assembly.

If you don't have a router table, or simply want to avoid all of the stopblock setups, we suggest making a box jig like the one shown on the drawing *below*. Instead of limiting the travel of the stile across the bit, the jig limits the travel of a handheld router across the stile, which is held in place beneath the jig by a pair of guides that also function as the jig's base. Attach a removable 3/16" shim to one edge of the jig enclosure. Center the guides beneath this shimmed enclosure, then rout all the centered mortises. Next, attach the shim to the opposite edge of the enclosure, and mortise the off-center door-frame stiles. Also, use a ¼"-thick shim underneath to hold these ½"-thick stiles snugly between the guides. You'll need to adapt the dimensions of your jig enclosure to fit your router-base diameter. Note: To cut the ⅝"-long mortise with a ⅛" bit, size the jig to allow only ½" of router travel. Use a plunge router if you have one. If you have a fixed-base router, make the jig enclosure from thick stock (1¼ to 1½"). The taller walls will help guide the router as you rock the bit into and out of the cut.

PRO TIP

Before you lay out your frames, we suggest making full-scale mockups of two adjacent frames from scrap ¾"-thick plywood. Using an extra-sharp pencil, practice your layout techniques on them. Then, drill holes and install hinges. Check the accuracy of offset and mechanical action before you proceed to the real thing.

Mark each frame on both faces to indicate whether the hole centers are located 5/16" or 7/16" from the edge. (See the Frame Assembly Top View drawing.) On both pairs of interior frames (those located between the center frame and the door), center the holes 5/16" from the edge on the inner face, 7/16" from the edge on the outer face. On both faces of the center frame, center the holes 7/16" from the edge, and on the inside door faces, center them 5/16" from the edge.

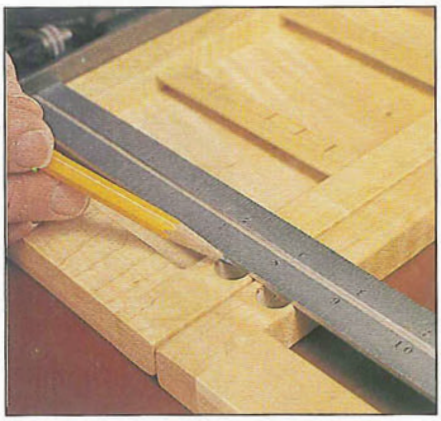
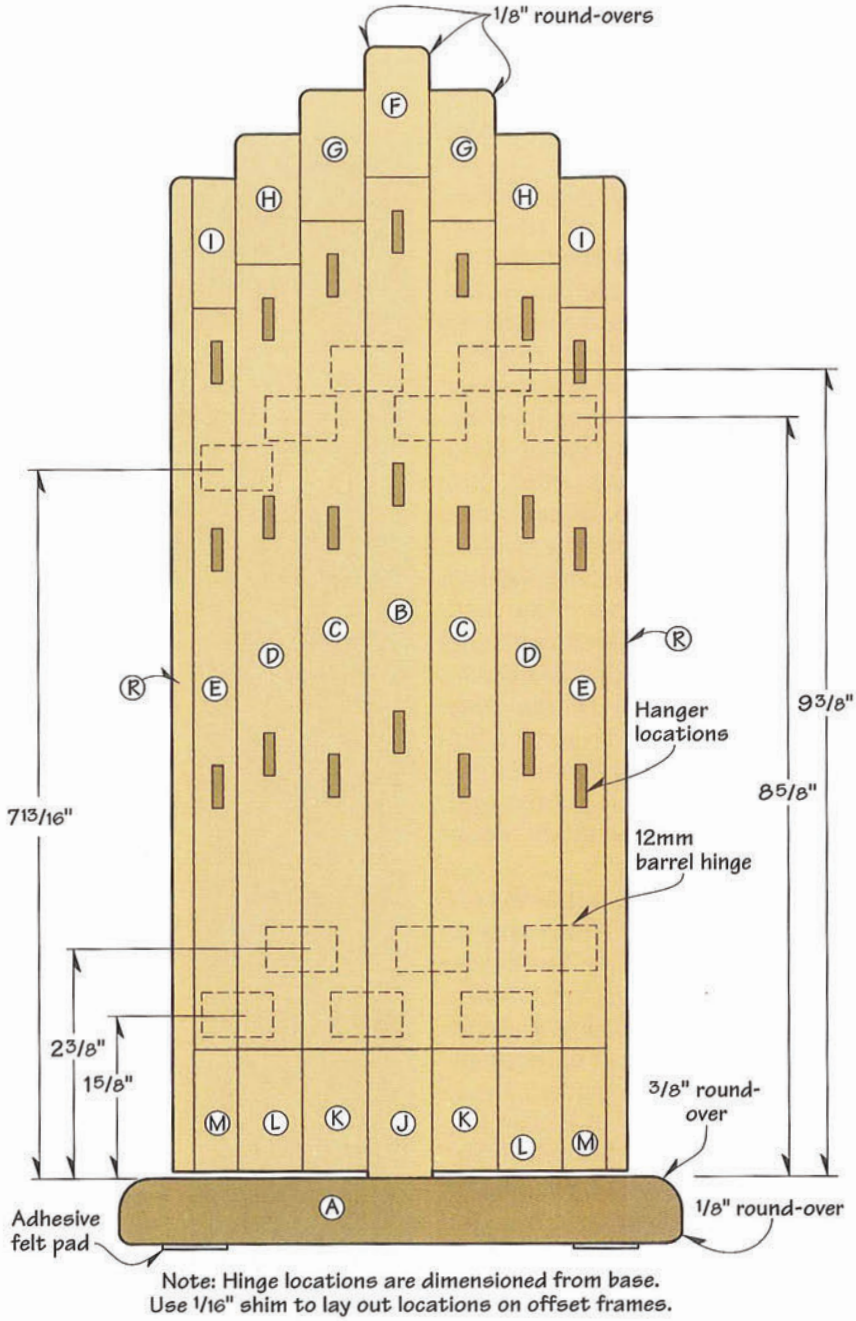


Photo G: To lay out mating hinge holes accurately on adjacent frames, use combination square to establish hole location vertically.



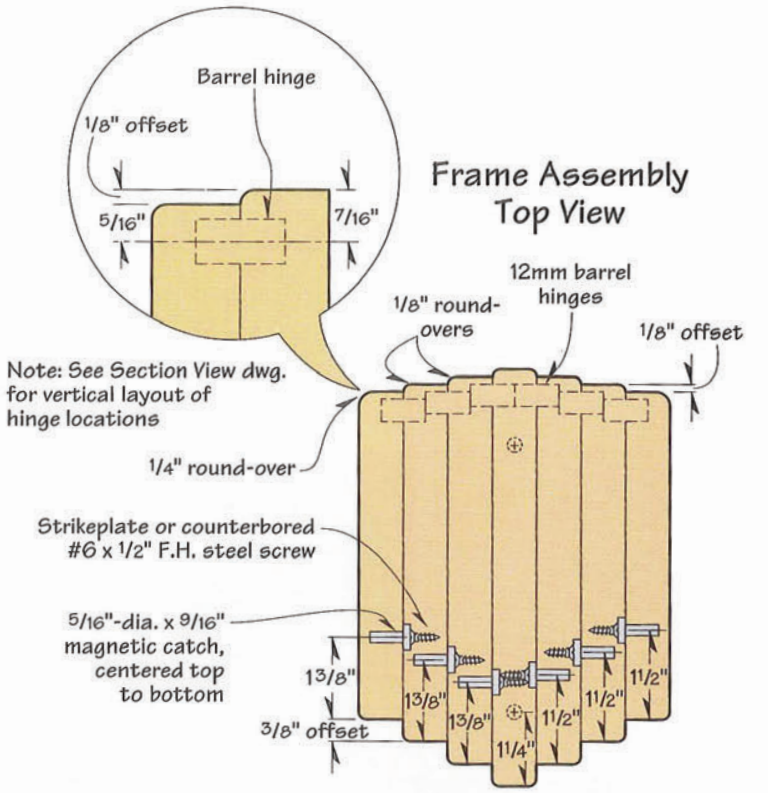
Section View

Install the Hinges, Then Add Magnetic Catches

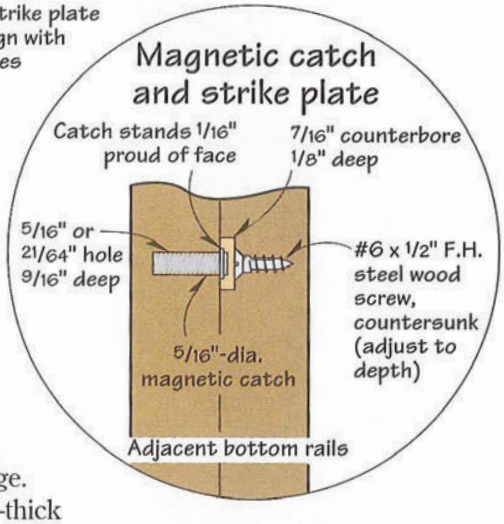
Note: Accuracy in laying out and drilling holes for the barrel hinges is critical both to the finished appearance and to the mechanical action of the chest. To create the correct offset between each pair of adjacent frames, you need to center the two hinge barrels 5/16" and 7/16" respectively from their back edges *(photo G)*. Also, the six outer frames (all but the center frame) must be offset 1/16" from the base in order to open freely. (We used a 1/16"-thick shim to create this vertical offset during layout and a 1/8"-thick hardboard shim during drilling to create the horizontal offset.)

Step 1. Lay out locations for the 12mm barrel hinges on each pair of adjacent frames where dimensioned on the Section View and Frame Assembly Top View drawings *above* and *opposite*. To do this, first align the bottoms of each pair of frames by butting them against a straightedge such as your rip fence. Use a try or combination square to align the centerpoints horizontally. Note: To properly align the center frame with its two adjacent frames before laying out, remember to insert a 1/16"-thick shim under the adjacent frame to offset it. (Before drilling, see the Pro Tip *above left*.)

Step 2. To drill the hinge holes, set a fence 7/16" from the point of the bit, then drill a test hole in scrap stock to double-check the setup. (We sawed the hole in half to get a precise measurement.) Note: To be on the safe side, you may want to blunt the brad point on your 12mm bit slightly to ensure that it won't break through the opposite frame face during drilling. Set



Note: Lay out strike plate locations to align with magnetic catches



the depth on the drill press to a scant 9/16"; this will prevent the connecting links from bottoming out on the frame faces when you open the frames completely. Once you've thoroughly tested the drill-press setup, drill those frame faces designated for holes 7/16" from the edge. Then, cut a shim from 1/8"-thick hardboard, and use it to offset the remaining faces for holes 5/16" from the edge. Now, dry-assemble all frames using the barrel hinges, and check the fit and action.

Step 3. With the parts still assembled, lay out hole centerpoints for the magnetic catches and strikeplates where dimensioned on the Frame Assembly Top View drawing. Double-check the layouts, then disassemble the frames and drill the holes. Note: We found that the 5/16" hole recommended for the catches listed in the Sources was too small. We used a 21/64" bit, which made installation easier and prevented possible splitting. Also, instead of using the strike plates that came with our catches, we drilled 1/8"-deep counterbores and installed #6x1/2" flathead steel screws opposite the magnets. The counterbored screws can be adjusted to just below surface level, which allows the doors to close snugly without an audible click.

Apply Finish, Then Assemble the Chest

Step 1. Finish-sand the frames and base to 320-grit, then break all remaining sharp edges. Next, apply your choice of finish. (We brushed on two coats of Minwax Antique Oil, allowing each to penetrate for 10 minutes, then wiped off the excess. We allowed the finish to dry overnight, then applied a coat of amber Butcher's Wax, buffing it to a low sheen.)

Step 2. Position and clamp the center frame to the base. Using the shank holes in the base as guides, drill 7/64" pilot holes 3/4" deep into the bottom rail of the center frame. Then, assemble the two parts using #8x1½" flathead wood screws.

Step 3. Install the magnetic catches and strikeplates in their respective holes. Hinge the two sets of frames together, then assemble these to the center frame. Adjust the strikeplates, and attach adhesive felt pads to the underside of the base.

Lead and inset phototgraphs: Studio Alex
Other photographs: Kevin May
Illustrations: Cad Art

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