This is an excerpt from the book

Home Storage Projects

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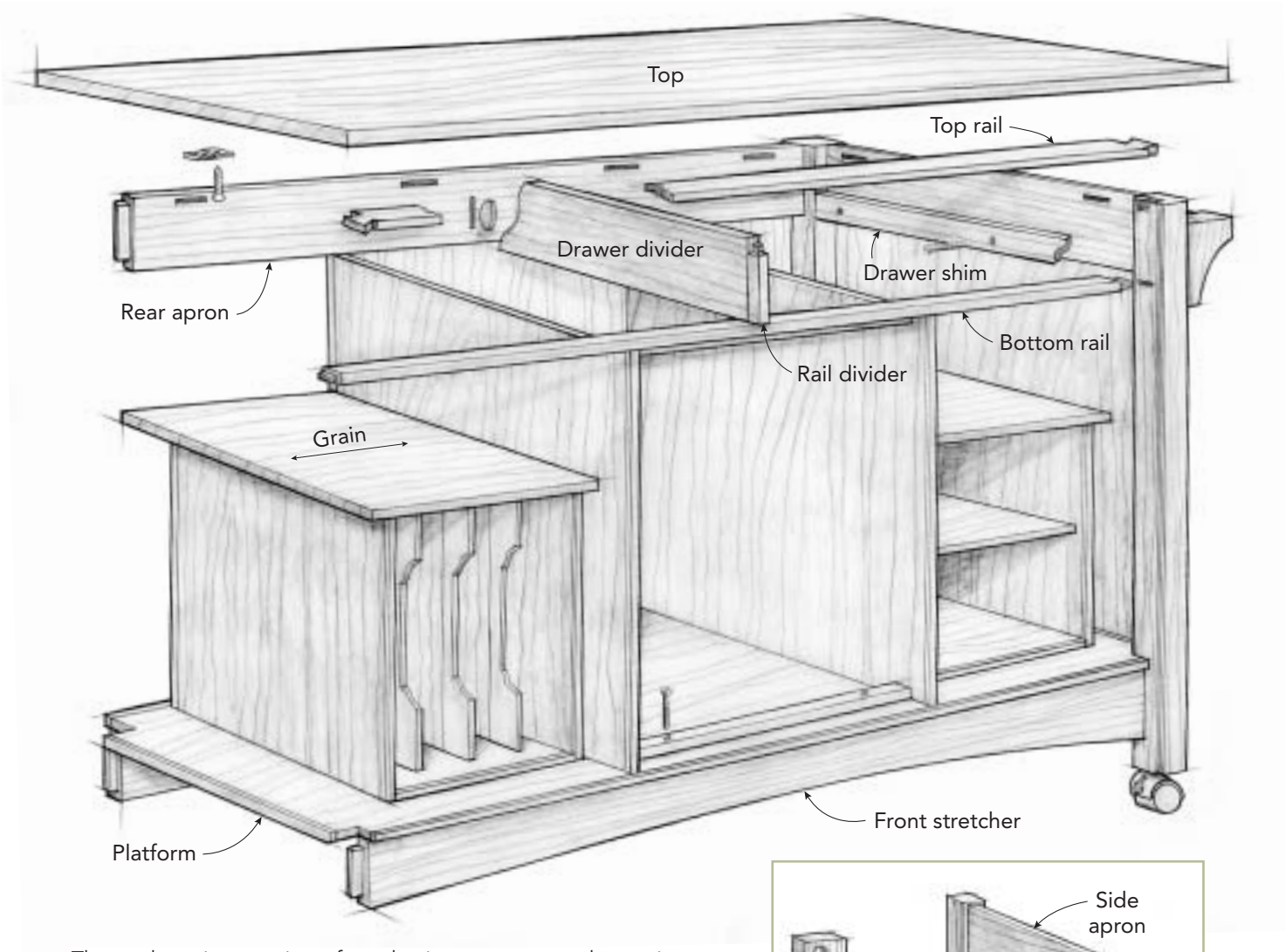
KITCHEN WORK STATION

IN MANY KITCHENS, counter space is at a premium. There just never seems to be enough, especially when you're cooking up a large or complicated dinner. That's when a portable kitchen work station can really come in handy. You can move it next to the stove or sink for an extra work area or for a staging platform for pots and dishes. The problem with many portable work stations is that they typically don't include much storage, so when they're not being used, they're basically wasting space.

I designed this oak mobile kitchen work station to satisfy the need for both extra counter space and extra storage. In smaller kitchens, you can roll it against a wall when you're not using it, and it's acts as a wall cabinet. In a larger kitchen, it can be left stationed in the center of the room where it will serve as an island. In fact, you can omit the casters if you don't intend to move the piece around much.

The cabinets underneath can be configured to suit your own needs. You can make all drawers, build a combination of drawers and closed cabinets, or incorporate open cabinets.

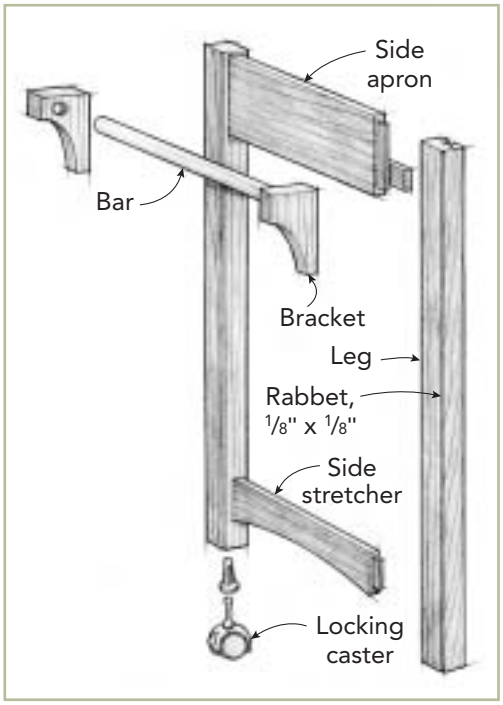
KITCHEN WORK STATION



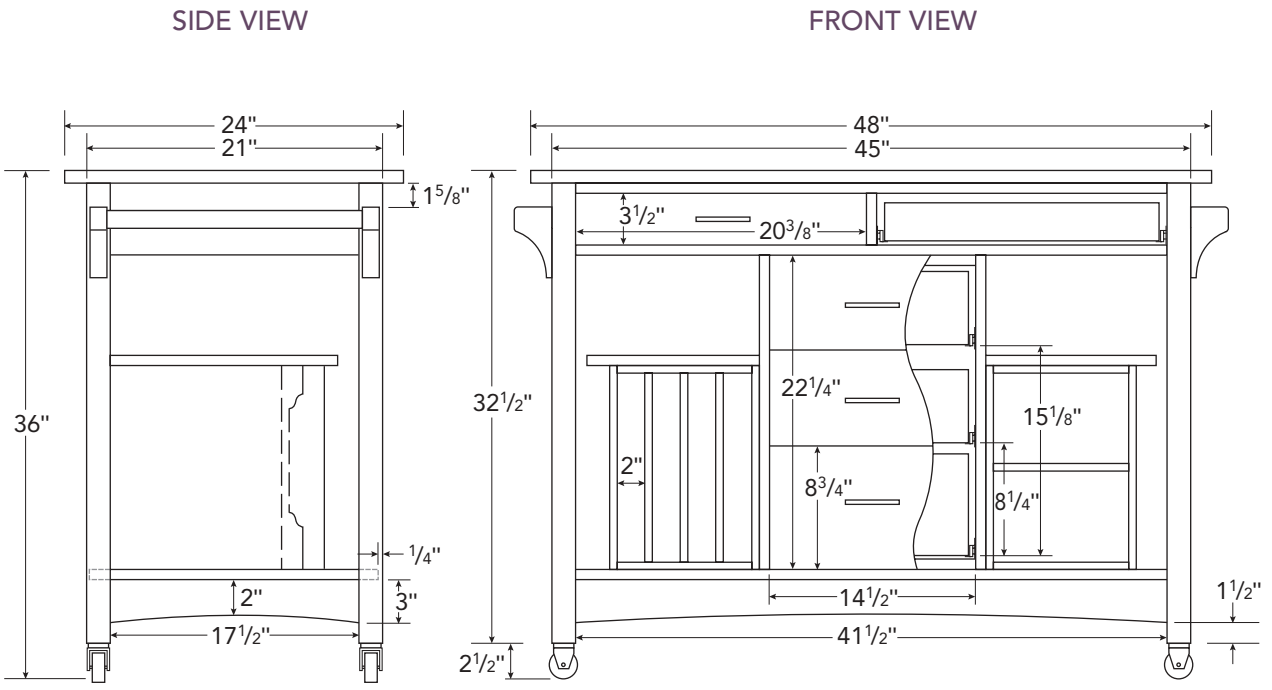
The work station consists of two basic components: the carriage and the cabinets. The carriage is the solid-wood framework of rails, aprons, stretchers, and platform that carries the cabinets. The plywood cabinets are built separately and then screwed to each other and to the carriage platform.

DESIGN OPTIONS

- **The top can be made from commercial butcher-block stock if desired.**
- **The under-counter cabinets can be configured to suit your needs. (For example, the drawer cabinet can be replaced with open shelving or the cabinets can be faced with doors.)**
- **For a permanent island, omit the casters and extend the leg length by 2½ in.**



Side and Front Views



THE CARRIAGE is the framework of the work station and carries the top and cabinets. It consists of the legs, aprons, rails, and stretchers. I build it first and then construct the cabinets independently and install them underneath.

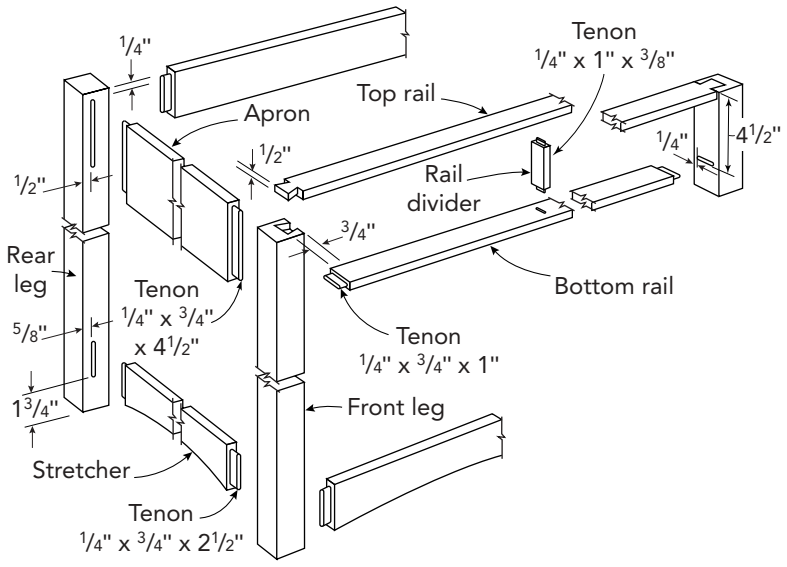
Constructing the Base Carriage and Tops

The kitchen work station uses a leg-and-apron framework that serves as a base for the three storage units that fit inside. There are also three tops: one on top of the unit and two smaller tops that fit over the lower storage compartments.

Make the tops

1. Using roughsawn 5/4 stock, lay out the boards for the 1-in.-thick top. Because the top will be prominent, take care to lay out the boards attractively (see "Composing

Carriage Joinery



CUT LIST FOR KITCHEN WORK STATION

Carriage

1	Top	1" x 24" x 48"	solid wood
4	Legs	1¾" x 1¾" x 32½"	solid wood
2	Side aprons	¾" x 5" x 19"	solid wood
1	Rear apron	¾" x 5" x 43"	solid wood
2	Side stretchers	¾" x 3" x 19"	solid wood
2	Front/ rear stretchers	¾" x 3" x 43"	solid wood
2	Rails	¾" x 1½" x 43"	solid wood
1	Rail divider	¾" x 1½" x 4¼"	solid wood
1	Drawer divider	¾" x 4¼" x 18¼"	hardwood plywood
1	Platform	¾" x 20" x 44"	hardwood plywood
2	Platform edgings	¼" x ¾" x 17½"	solid wood
2	Platform edgings	¼" x ¾" x 41½"	solid wood
4	Brackets	1¼" x 2¾" x 5"	solid wood
2	Bars	1¼" diameter x 19"	solid wood

Cabinets

2	Cabinet tops	¾" x 17¼" x 12"	solid wood
2	Drawer case sides	¾" x 18⅞" x 22¼"	hardwood plywood
1	Drawer case back	¾" x 14½" x 22¼"	hardwood plywood
2	Drawer case braces	¾" x 2½" x 14½"	solid wood
4	Small case sides	½" x 15½" x 14⅜"	hardwood plywood
2	Small case back	½" x 9½" x 14⅜"	hardwood plywood
4	Small case top/bottoms	½" x 15½" x 9½"	hardwood plywood
3	Small case dividers	½" x 12¾" x 13⅜"	hardwood plywood
1	Small cabinet shelf	½" x 15¼" x 9⅜"	hardwood plywood
2	Rear edgings	¾" x ¾" x 22¼"	solid wood

Cabinets

4	Rear edgings	½" x ½" x 14⅜"	solid wood
2	Front edgings	¼" x ¾" x 22¼"	solid wood
4	Front edgings	¼" x ½" x 14⅜"	solid wood
5	Front edgings	¼" x ½" x 9½"	solid wood
3	Divider edgings	½" x 1½" x 13⅜"	solid wood

Drawers

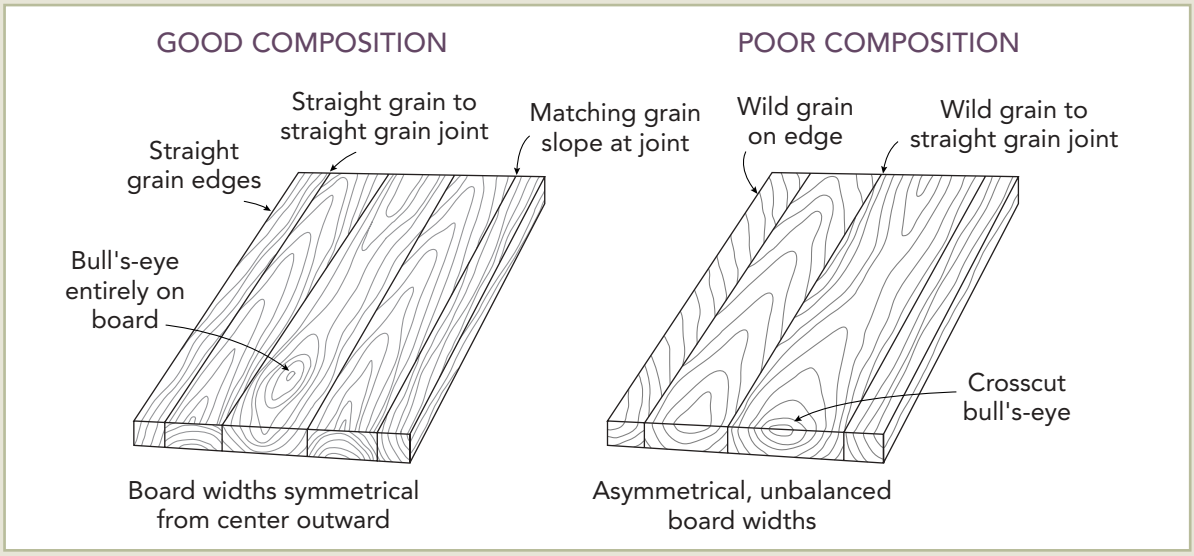
4	Drawer sides	½" x 2⅝" x 18"	solid wood
4	Drawer box front/backs	½" x 3" x 19⅜"	solid wood
2	Drawer bottoms	¼" x 18¼" x 18¾"	hardwood plywood
4	Drawer sides	½" x 5¼" x 18"	solid wood
2	Drawer sides	½" x 7¼" x 18"	solid wood
4	Drawer box front/backs	½" x 5¼" x 13½"	solid wood
2	Drawer box front/backs	½" x 7¼" x 13½"	solid wood
3	Drawer bottoms	¼" x 18¼" x 12⅞"	hardwood plywood
2	Drawer shims	¾" x 2" x 17½"	hardwood plywood
2	Drawer fronts	¾" x 3 7/16" x 20 5/16"	solid wood
2	Drawer fronts	¾" x 6 11/16" x 14⅜"	solid wood
1	Drawer fronts	¾" x 8 11/16" x 14⅜"	solid wood

Other materials

5 pair	Drawer slides	18"	*from* Woodworker's Hardware; item #RH501 18 ALM
5	Pulls	3"	*from* Woodworker's Hardware; item #A02378 PWT
4	Stem-type casters	2"	*from* Woodworker's Hardware; item #JH50 SBB
12	Metal tabletop fasteners		

Dimensions for all pieces with tenons include tenon length.

COMPOSING GRAIN FOR PANELS



Thoughtful board layout can make all the difference in the look of a solid-wood panel. When laying out, use long boards, sliding them against each other to create a good match at the joints. The tips shown above are just guidelines, of course. Rip, flip, and arrange the boards in whatever way is necessary to create the most continuous grain pattern and consistent color.

Grain for Panels"). While you're at it, join up the cabinet tops.

2. Joint and thickness plane the boards; then edge-join them together.

3. Plane or belt sand the tops. If you have access to a wide belt or drum sander, this is the perfect application for it (see **photo A**).

4. Round over the edges with a ⅛-in.-radius roundover bit or a handplane and sandpaper. Don't round over the edges of the cabinet tops that abut the center cabinet.

Prepare the parts

1. Lay out the stock for the parts. I used straight-grained material for the legs, ripping the pieces from the outer edges of wide 8/4 plainsawn boards.

2. Joint, plane, and rip the pieces straight and square; then crosscut them to length.

PHOTO A: A wide drum sander is the perfect tool for sanding tops. It quickly creates a smooth, flat surface.

PHOTO B: When routing the leg mortises, plunge to full depth at the mortise ends; then remove the remaining waste, taking shallow passes.

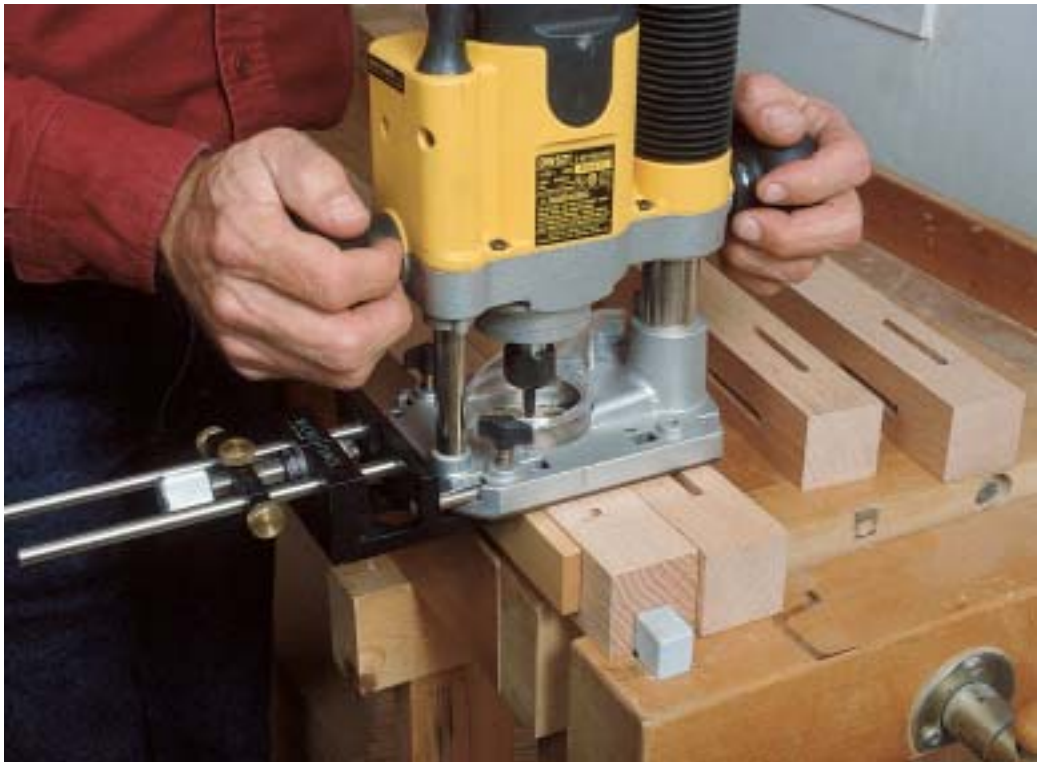


PHOTO C: A shoulder plane makes neat work of trimming tenon shoulders.

Cut the joints

1. Mark the legs for orientation; then lay out the leg mortises for the aprons and stretchers. Notice that the stretcher mortises are set in ⅛ in. more than are the apron mortises.

2. Rout the mortises using an edge guide on your router (see **photo B**).

3. Lay out and rout the mortises for the bottom rail and the rail divider. I use a shop-made T-square to guide the router (see photo A on p. 38).

4. Rout the ⅛-in. by ⅛-in. rabbets in the three outer edges of each leg.

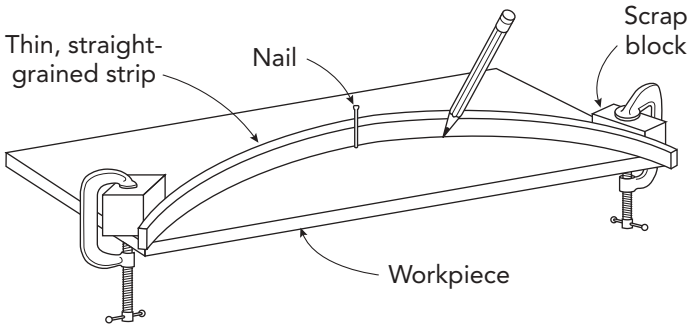
5. Saw the apron and stretcher tenons. I cut them on the table saw using a dado head. Aim for a snug fit in the mortises and against the leg. If necessary, trim the tenons with a rabbet or with a shoulder plane (see **photo C**).

6. Saw the rail and rail divider tenons for a snug fit in their mortises.

7. Lay out the stretcher curves. You can either use a long trammel bar as a compass or you can trace along a thin strip of wood pulled to the proper curvature (see "Springing a Curve").

8. Cut the stretcher curves with a bandsaw or jigsaw; then clean up the saw marks with a spokeshave, files, and sandpaper.
9. Dry-assemble the bottom rail and front stretcher to the front legs. Then lay out the dovetails on the top rail. I use a 7-degree angle on the dovetails and mark the shoulders directly from the legs.
10. Saw the dovetails; then trace their shapes onto the tops of the front legs using a sharp pencil. Align the rear of the rail with the inner faces of the legs. I rout out the dovetail sockets just shy of my cut lines and then pare to them with a sharp chisel.
11. Make the plywood drawer divider, glue it to the rail divider, and cut the biscuit slots for joining its rear edge to the rear apron, as shown in the drawing on p. 96.
12. Sand all carriage parts through 220 grit. Round over the edges of the leg rabbets slightly, but don't sand the innermost edges of the legs until after fitting the platform.

Springing a Curve



Make the platform and assemble the carriage

1. Dry-clamp the carriage to make sure the joints all pull up tight and align properly.
2. Glue up the side assemblies, making sure that the legs, aprons, and stretchers lie flat and square to each other under clamp pressure.
3. Make the platform edging pieces, cutting them slightly oversize. Then glue them to the platform, centering each one on the edge. Then plane, scrape, or sand the edging flush to the plywood.

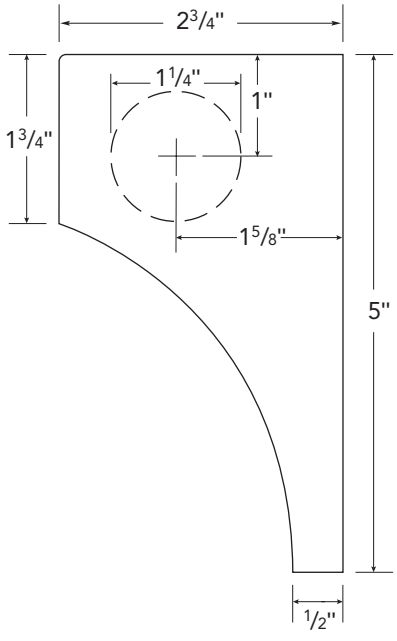
TIP

When wiping away excess glue, use a clean rag and replenish your water often to avoid spreading diluted glue into the wood grain. Alternatively, you can wait until the excess glue turns rubbery and then trim it off with a sharp chisel.

PHOTO D: After jigsawing the platform notches just a hair small, pare them to final size, guiding a chisel against a square wooden block.

PHOTO E: After gluing up the two side assemblies and notching the platform, glue and insert the rear apron, lower rail, and stretchers to one side assembly. Then slip one end of the platform unglued between the legs, and glue on the opposite side assembly.

Towel Bar Bracket



4. Dry-clamp the bottom rail, rear apron, and stretchers to the side assemblies. Measure the distances between the legs; then mark out the platform notches, carefully measuring outward from the center of the platform. Aim for a very snug fit between the legs.

5. Cut the notches. For the best fit, saw them slightly undersize and then pare them to your cut line (see **photo D** on p. 101). When you've got a good fit, sand the platform through 220 grit.

6. Glue the bottom rail, rear apron, and stretchers to the side assemblies (see **photo E**). Make sure the apron is lined up with the tops of the legs and that the stretchers are spaced 1½ in. up from the bottoms of the legs. Raise the platform off the stretchers to prevent glue squeeze-out from touching it.

7. After removing the clamps, run a thin bead of glue along the top edges of the stretchers; then clamp the platform down.

8. Glue and clamp the rail divider and top rail into place.

9. Sand the innermost corner of each leg, rounding it slightly with 150 grit and then 220 grit.

10. Drill the holes for the caster posts. To guide your bit, use a block that you've prebored on the drill press and then clamped to the leg. The casters I used required a 29/64-in.-diameter hole, but first drill a test hole in scrap to be sure.

Make the bar assembly

If you're not equipped to turn your own bars, you can order commercial dowel stock. I got mine from Woodworker's Supply (see "Sources" on p. 172).

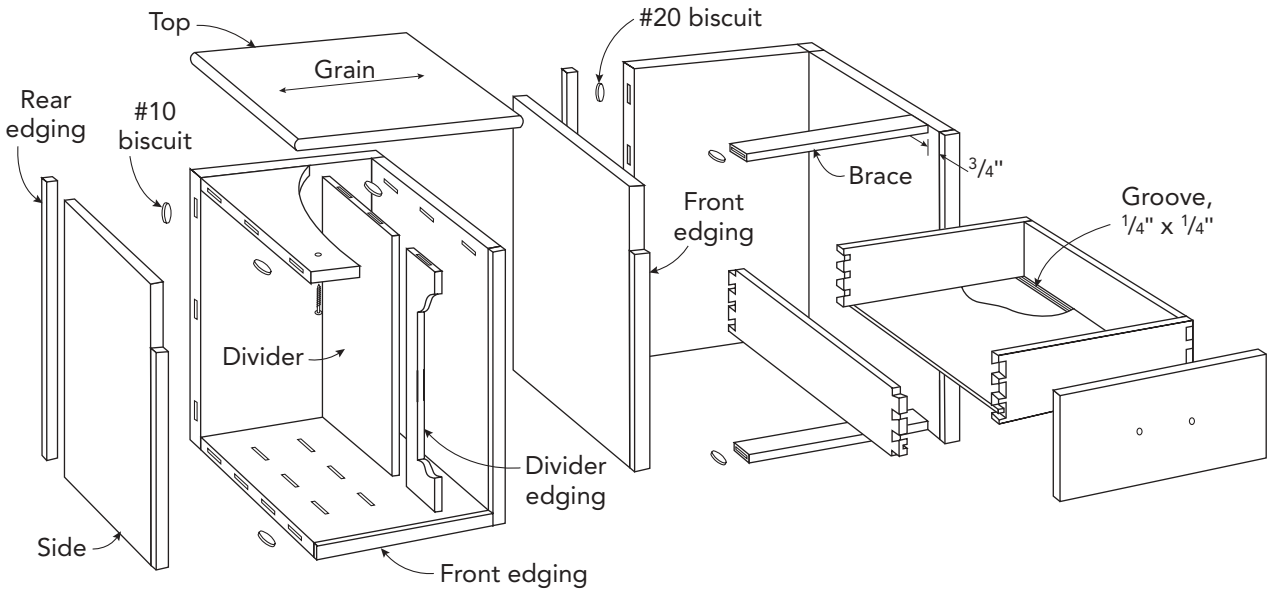
1. Make the blanks for the bar brackets.

TIP

To prevent marring your workpieces, glue thick leather scraps to the faces of pipe clamps using contact cement.

Cabinets

The cabinets are built of hardwood plywood panels edged with solid wood, which is applied to all front edges and to the rear edges of the sides. Then the pieces are joined with biscuits to ease alignment. Drawers are installed with commercial drawer slides.



2. Make a stiff paper pattern of the bracket (see "Towel Bar Bracket"). Then trace the shape onto the blanks.

3. Using a Forstner or other flat-bottom bit in a drill press, bore the ½-in.-deep blind holes to accept the bar. If your dowel stock is 1/16 in. or more undersize (mine was), use a smaller diameter bit. Clamp the bracket blanks to a fence to secure them while drilling.

4. Bandsaw the brackets to shape, sawing just outside of the cut line. Save the offcuts.

5. Sand to the cut line to smooth the curve. I used an oscillating spindle sander, but a regular drum sander in a drill press would work.

6. Cut the bars to length and insert them into their holes. If a dowel is slightly oversize, trim down the diameter with a block plane. Then sand the bars and brackets through 220 grit and set them aside for now.

Building the Cabinets

Size the parts and cut the joints

1. Lay out the case pieces and cut them to size. Make sure the drawer case sides and back will slip between the platform and the rail and apron with just a bit of room to spare.

2. Mill the solid-wood edging, ripping it from stock that you've planed about 1/32 in. thicker than the plywood. The edging at the rear of each cabinet is square in cross section, whereas the edging at the front is ¼ in. thick (see "Cabinets").

3. Make the edging pieces. Cut each one slightly longer than the edge to be covered.

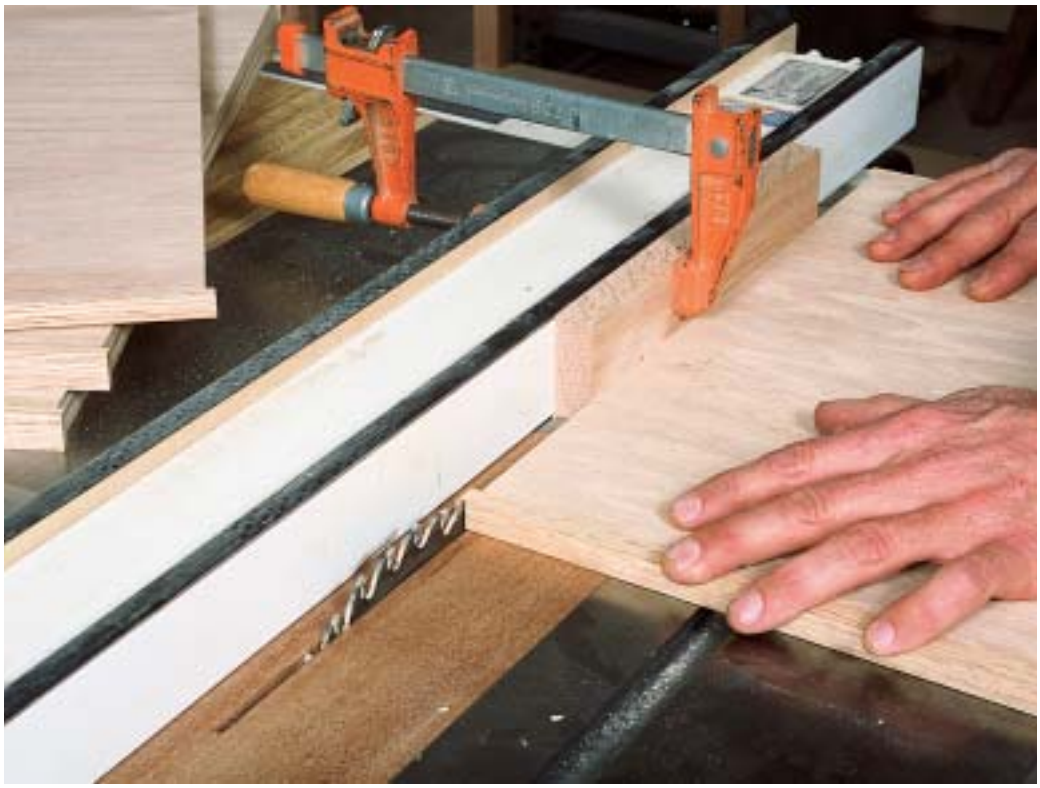
4. Glue the edging to the case sides, tops, bottoms, and dividers. Make sure that it overlaps the plywood on the ends and both faces.

5. Plane, scrape, or sand the edging flush to the plywood faces. Then trim it flush at the

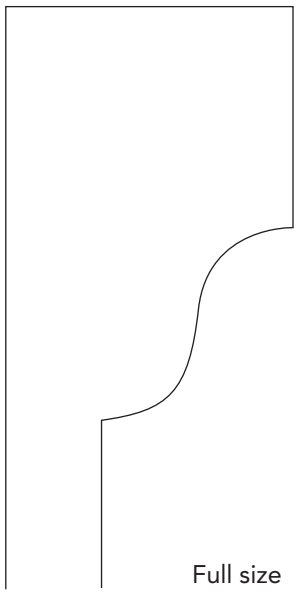
TIP

Manila folders make great material for small patterns. The paper is thin enough to cut easily but thick and stiff enough to trace around.

PHOTO F: Trim the edging flush to the case pieces by aligning a shim block flush with the outside face of the saw-blade teeth.



Divider Profile



ends. I do this on the table saw using a shim block clamped to the fence (see **photo F**).

6. Make a thick paper pattern of the ogee profile for the divider fronts (see "Divider Profile"). Then trace the profile onto the divider edging.

7. Saw the profile. I cut the curved sections with a scrollsaw and the straight sections with a bandsaw. Clean up the straight sections with a block plane, chisel, and sandpaper.

8. Make the braces for the center cabinet and drill the shelf support holes in the sides of the right-hand cabinet.

9. Lay out the biscuit joints for joining the case pieces, including the dividers. The small cabinets take #10 biscuits and the center cabinet takes #20 biscuits.

10. Cut the biscuit joints. When cutting slots into the face of a panel at the edge, clamp scrap to the panel for joiner fence support (see **photo G**). When cutting the divider slots, prop the divider up on ⅛-in.-thick shims to center the slots (see **photo H**).

PHOTO G: Square scrap clamped to the case pieces provides bearing for the biscuit joiner fence, preventing angled slots.

PHOTO H: When cutting biscuit joints for ½-in.-thick dividers, lay the divider on ⅛-in.-thick shims to center the slot in the end of the divider. To use the divider as a fence for cutting the case bottom slots, as shown here, use a ⅛-in.-thick spacer to offset the divider from the joint intersection line.

PHOTO I: To attach the bar brackets, set them on a length of thick scrap clamped to the legs. Clamp the lower section of each bracket using the curved offcuts. Thick leather scraps protect the finish.

Assemble the cabinets

1. Sand the dividers and the inside faces of the small cabinets, being careful not to round over the edges.

2. The divider cabinet would be difficult to finish after assembly, so mask off the joints and finish the dividers and inside faces of the case pieces now. While you're at it, finish the bars and exposed faces of the brackets too, as it'll be difficult to brush a finish onto them once they're attached. Leave about ⅜ in. of raw wood at the ends of the bars for gluing later.

3. Glue up all three cabinets. When assembling the divider cabinet, I first glue the dividers to the top and bottom, using deep-throat clamps at the center. Next, I attach the back, then the sides. Make sure all the cabinets are square under clamp pressure.

4. Finish-sand all surfaces that will be exposed.

5. Because of oak's open grain, I next treated the carriage and cabinets with pore filler to ensure a smoother finish. I also installed the case-half of each slide. It's easiest to do all this before installing the cabinets.

6. Fit the drawer shims to the carriage and screw them in place, as shown in the drawing on p. 96. Then install the drawer slides into the carriage.

Install the bars and cabinets

1. Spot-glue the bars into their brackets, orienting the annular rings on the ends of the bars parallel to the grain of the brackets to ensure equal wood movement. Then glue the brackets to the carriage legs (see **photo I**).

2. Install the center cabinet, insetting it ½ in. from the rear edge of the platform. I screwed through the bottom braces into the platform and then into the cabinet sides from underneath. Next, square up the face of the cabinet and shim any space between the sides and the bottom rail, making sure that the rails are square to the legs. Then screw through the rail into the sides (see **photo J**).

3. Install the small cabinets, insetting them ½ in. from the rear edge of the platform. Screw through the center cabinet sides into the top edges of the small cabinets, and through the platform into the cabinet sides.

Making the Drawers

Build the boxes

I made the drawer boxes from solid poplar, dovetailing the corners. Alternatively, you could use ½-in.-thick plywood, joining the corners with rabbet-and-dado joints (see "Quick 'n' Easy Drawers" on p. 77). If doing the latter, simply subtract ½ in. from the given lengths of the drawer box fronts and backs.

1. Plane, rip, and crosscut the drawer box pieces to size.
2. Saw the bottom grooves in the sides and box fronts, as shown in "Cabinets" on p. 103.
3. Cut the drawer box corner joints (see "Dovetailed Drawer Construction" on p. 113).
4. Assemble the drawers on a flat surface and compare the diagonals to ensure that the boxes are square under clamp pressure.
5. Sand the drawer boxes and ease the edges and corners with 150-grit sandpaper.
6. Attach the drawer slides to the drawer boxes; then fit them into the case, making sure that the drawer box fronts are parallel to the front of the case and carriage.

Fit the drawer fronts

1. Make the drawer fronts, initially sizing them to the drawer openings; then set them in place.
2. Using a pencil and ruler, draw a cut line around the edge of each drawer front to create a gap of about 3/32 in. all around. Then saw and plane to the cut line. Check the fit of the fronts and then remove all of the drawers except the bottom one.
3. Loosely clamp the drawer front to the bottom drawer box. Shift the front to achieve an even gap all around; then clamp the front tightly, remove the drawer, and screw the front on from inside the drawer. Repeat the procedure for the next drawer up.
4. Because there's no clamp access for the top drawer in the cabinet, use double-sided tape to hold the drawer front in place before screwing it on.
5. Use deep throat clamps to hold the drawer fronts to the two carriage drawers; then screw the fronts on with the drawers in place.

Finishing Up

1. Apply finish to all exposed surfaces. I brushed on two coats of semigloss polyurethane, wet-sanding with 400-grit sandpaper between coats. I sanded the final coat with 600-grit sandpaper to remove any nibs and then scrubbed it with 0000 steel wool to reduce the gloss somewhat.

PHOTO J: After shimming any space between the lower rail and the cabinet sides, drill a screw clearance hole through the rail and shims. Countersink the holes; then screw the rails to the cabinet sides.

2. Screw on the cabinet tops, aligning the rear edge of each with the rear edge of the center cabinet. Because a drill won't fit into the rear of the divider cabinet, I glued the rear portion of the top to the cabinet top. Elongate the front screw holes to allow about 1/8 in. wood movement.
3. Using a biscuit joiner or slot-cutting router bit, cut the slots in the aprons and rails to accept tabletop clips.
4. Attach the work station top. I used commercial S-shaped metal fasteners, setting them at least 1/8 in. away from the rail and rear apron to allow for wood movement.
5. Attach the pulls.