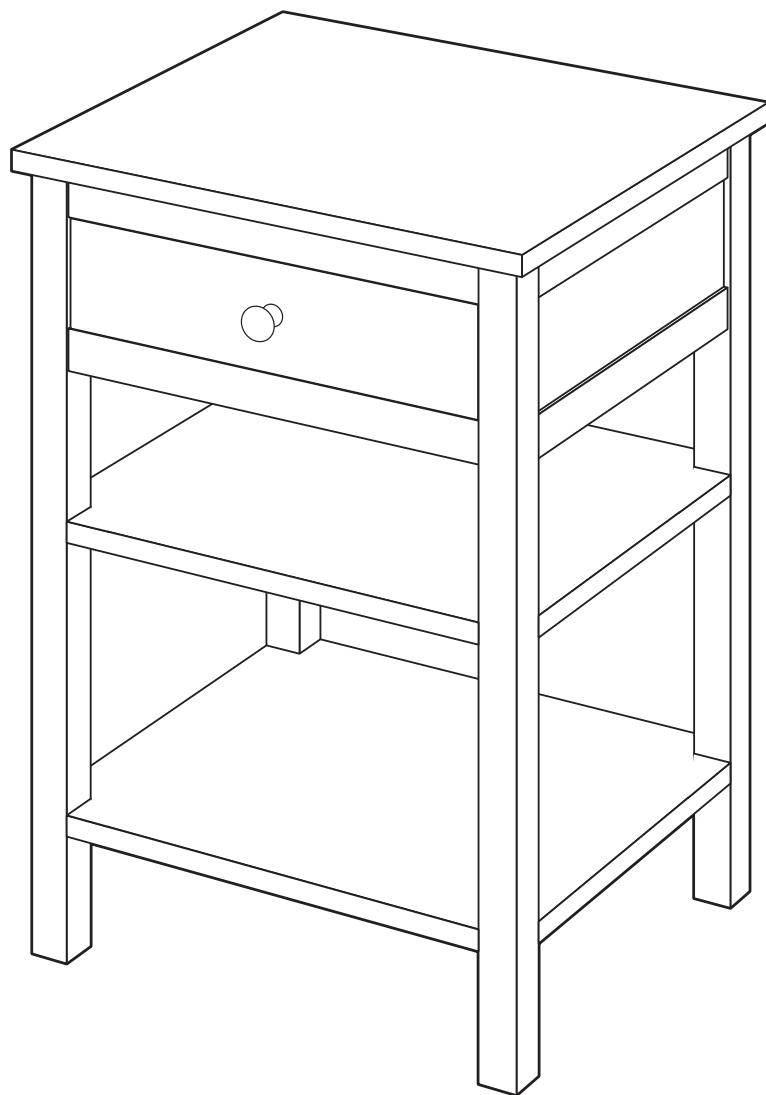


WOODWORKS: ADVANCED PROJECT 2012-2013
BEDSIDE TABLE



If you don't have one, you probably need one: a place to put all your bedside stuff. The clock radio, the lamp, the phone charger, the books, magazines... and whatever else you need to help relax at night and wake up in the morning. With its drawer and two shelves, this table is as practical as it is good-looking. And while it may look simple, building it will challenge your shop skills and probably add some new ones, too. You'll gain practice in cutting mortises and tenons on the router table, joining hardwood boards to make the tabletop and shelves, and assembling the pieces with great precision so that all four legs evenly touch the floor. And after you build it, you will learn more about applying stain and using finishes to protect the wood and keep it looking beautiful.

TOOLS REQUIRED

Hand Tools

- Bevel square
- Sanding block
- Pipe or bar clamps, C-clamp
- Adjustable square

Power Tools

- Belt sander
- Table saw
- Dado head
- Miter saw
- Router table
- Orbital or finish sander
- Jointer

Miscellaneous

- Tape measure
- Pencil
- Wood glue
- Safety glasses
- 120-grit sandpaper
- Clean, lint-free cloths
- Respirator
- Gloves for finishing
- Mineral spirits for cleanup
- Good quality, natural-bristle brush

SHOPPING LIST

Recommended Wood: Oak

Alternate Wood: Pine

Parts	Material	Quantity	Source
A	8/4 × 8 × 3'	1	
B, C, D, E, F, G	1 × 8 × 8'	1	
H, I, J, K, M	2 × 8 × 10'	2	
L	¼" birch or luan plywood	1' × 1½' pc.	
N	Table top & shelf fasteners	12	www.rockler.com #34215
O	12" full extension drawer slides	1 pair	www.rockler.com #29300

CUTTING LIST

Overall dimension: 29"h × 21"w × 18"d				
Part	Name	Qty	Dimension	Notes
A	Legs	4	1½" × 1½" × 28¼"	
B	Side rails	4	¾" × 1½" × 15"	Length allows ½" tenon on each end
C	Front & back rails	4	¾" × 1½" × 18"	Length allows ½" tenon on each end
D	Side panels	2	¼" × 4½" × 14⅞"	
E	Back panel	1	¼" × 4½" × 17⅞"	
F	Shelf brackets	8	¾" × 1⅜" × 1⅜"	Plane to fit into notches on legs
G	Top	1	¾" × 18" × 21"	
H	Shelves	2	¾" × 17" × 20"	Notch corners to fit around legs
I	Drawer slide fillers	2	⅝" × 3½" × 14"	Plane to fit between inside face of leg to inside face of rail
J	Drawer sides	2	½" × 3½" × 12"	
K	Drawer front and back	2	½" × 3½" × 15½"	Allow for width of slides and dimensions of rabbets
L	Drawer bottom	1	¼" × 11⅝" × 15⅞"	Cut to fit
M	Drawer face	1	¾" × 3 ¹³ / ₁₆ " × 16 ¹³ / ₁₆ "	Cut to fit opening, allowing ⅜" gap per side

WOOD FINISHING PRODUCTS

Recommended Finish

Prep: Minwax® Pre-Stain Wood Conditioner (oil-based)
 Stain/Finish: Minwax® Polyshades®, American Chestnut, Satin

Alternate Finish

Prep: Minwax® Pre-Stain Wood Conditioner (oil-based)
 Stain: Minwax® Gel Stain, Aged Oak
 Finish: Minwax® Fast-Drying Polyurethane, Semi-Gloss

BEFORE YOU BEGIN

Good craftsmanship begins and ends with good work habits, so make the following steps part of your routine workshop practice. If you have any doubts or questions about how to proceed with a project, always discuss them with your shop instructor.

- Carefully and fully review plans and instructions before putting a tool to the project lumber.
- Work sensibly and safely. Wear safety goggles. Wear the appropriate respirator whenever making sawdust or working with thinners or other solvents.
- At the end of every work session, clean up your shop area and put away all portable tools.

CUTTING AND ASSEMBLY PROCEDURE

1. Rough cut 8/4 stock close to finished length for legs, A. Joint one edge of stock and then rip legs to $1\frac{9}{16}'' \times 1\frac{9}{16}''$.
2. Plane legs, removing $\frac{1}{32}''$ from each face to take them to final dimension.
3. Cut one end of each leg square. Clamp a stop block on the miter saw fence and cut each leg to finished length.
4. Cut rail stock to rough length. Joint, rip and joint rails, B, C, to finished width.
5. Cut one end of each rail square. Cut rails to length.
6. Set up a $\frac{1}{4}''$ – diameter router bit in the router table. Set the height of the cutter to slightly more than $\frac{1}{2}''$ (finished length of tenons).
7. Position the fence so it is $\frac{1}{2}''$ from the face of the fence to the center of the bit. This allows a $\frac{1}{8}''$ reveal between the outside face of the rail and the outside face of the leg.
8. Make a test cut in scrap to check fence position and bit height. The distance from the edge of the mortise to the edge of the workpiece should be $\frac{3}{8}''$. Depth of the mortise should be about $\frac{17}{32}''$.
9. Position a piece of scrap against the flute of the router bit. Measuring from the edge of the scrap, make a mark on the fence at $6\frac{3}{4}''$. See Fig. 2. This is the length of the mortise in the leg. Repeat the process measuring from the left side of the cutter, making a mark $6\frac{3}{4}''$ to the right of the bit.
10. Position the legs the way they'll be used in the table. Get the end grain of each piece going in a uniform direction. This will provide the most consistent look of face grain on the legs. Mark Front, Back, Left, Right, and mortise locations. See Fig. 3.
11. Cut the long mortises. Note that the long mortises are not cut into the inner faces of the two front legs. These will receive short mortises. Three mortises are cut by starting with the leg on the router table and moving forward until the end of the leg reaches the left stop line. Three mortises are cut by starting with the top end of the leg on the right start line, plunging into the cut, and moving the leg from right to left. Note that you must always cut right to left on a router table. When the long mortises are complete you'll have six mortises cut.
12. Repeat the layout process used above and make a line on the router table fence $1\frac{1}{4}''$ to the left of the router bit, measuring from the right side of the cutter, and $1\frac{1}{4}''$ to the right of the bit, measuring from the left side of the bit.
13. Cut the short (1") mortises in the legs.
14. Use the lines made in Step 9 to measure from the left line and make a mark $\frac{3}{4}''$ to the right. Measure from the right line and make a mark $\frac{3}{4}''$ to the left.
15. Plunge cut the two mortises for the rails under the drawer. See Fig. 4.
16. To cut the tenons in the rails, B, C, put a $\frac{1}{2}''$ or larger diameter bit in the router table. (Alternatively, the tenons can be cut using a dado head on the table saw.) Set the height of the bit to just under $\frac{1}{4}''$.
17. Position the fence so it is $\frac{1}{2}''$ from the face of the fence to the edge of the bit. Make a test cut in scrap that is exactly the same thickness as the rail material. Test the resulting tenon in a mortise. If the tenon is too large, raise the cutter slightly and cut again. Additionally, measure the length of the tenon to make sure it is $\frac{1}{2}''$. Reset the fence as needed.
18. When the bit height and fence position are correct, cut both ends of each rail. The rail that fits below the drawer will be cut on four surfaces. All the other rails will be cut on three surfaces.
19. Cut a $\frac{1}{4}'' \times \frac{1}{4}''$ groove into the inner edges of the side and back rails to receive the panels, D, E. This may be done using a dado head on the table saw or a router bit on the router table.
20. Secure the rails in a vise and round the corners of the tenons on the rails so they fit into the round ends of the mortises. Use a sharp chisel.
21. Rough cut pieces for the side and back panels, D, E, to size, then resaw the $\frac{3}{4}''$ material in half with a bandsaw. The bandsaw is the easiest way to do this. Glue the pieces together to make full-width panels.
22. Dry-assemble the rails and legs and measure for the final size of the panels. Cut the panels to size.
23. Cut the slots in the legs for the shelf brackets, F. Do this using a v-block and dado head on the table saw. With the leg nested in the v-block set the height of the blade to cut $\frac{5}{8}''$ into the leg. Position the fence $3\frac{3}{4}''$ from the inside face of the blade to the face of the fence. Cut the inside corner, bottom end, of each leg. This results in a notch in the leg. See Fig. 5
24. Reposition the fence so it's $13\frac{1}{2}''$ from the dado head and make a second cut in each leg.

25. Make blanks for the shelf brackets, F. Plane them to fit into the shelf bracket notches.

26. Cut a groove into the shelf bracket blank and the top rails to receive the table top fasteners. The groove needs to be far enough from the edge of the piece to provide tension on the table top fastener when it's installed. Make a test piece with some scrap.

27. Cut the shelf brackets to length and glue them into the notches. See Fig. 6. Note that the upper brackets should not be glued into the two back legs until after the shelves have been installed.

28. Sand all parts. Lightly hand sand the corners to remove sharp edges. Glue the leg, rail and insert assemblies together. Note that it's easiest to assemble tables by doing them in subsections. Assemble and clamp the two sides, and let the glue dry. Then do final assembly on the table bringing the two sides together with the front and back pieces. Do not glue the insert panels in place. They need to float.

Woodworker's Tip: *Be sure to wipe off any excess glue immediately. Dried glue will seal the pores of the wood and prevent it from absorbing your wood stain. Use an absorbent cloth soaked in water to remove the excess. Make sure the cloth is soaked (not just damp) with water. The water will dilute the glue, permitting the fibers of the cloth to absorb the glue with the excess water.*

29. Glue up panels for the top and shelves, G, H. Glue the panels oversized and cut them to finished size later.

30. Sand the top and shelf panels flat. Cut the top 1" larger than the leg/rail assembly.

31. Cut the shelves to fit from outside of leg to outside of leg. Notch the corners of the shelves $1\frac{1}{2}'' \times 1\frac{1}{2}''$ to fit around the legs. Lay out the notches and cut them using a hand-held jig saw staying on the waste side of the line. File or sand to the line.

32. Make the drawer slide fillers, I. These parts need to fill in from the inside of the legs to the inside face of the rails. The mechanical drawer slides, O, will be fastened to them. Measure from the face of the rail to the face of the leg and carefully plane a piece to match. Glue and clamp the piece in.

33. Make the drawer parts to fit. Cut the sides, J, to the same length as the slides. Cut rabbet joints in the front and back ends of the sides using a dado head on the table saw. Cut a $\frac{1}{4}'' \times \frac{1}{4}''$ groove $\frac{1}{4}''$ up from the bottom of each drawer box part. Cut the drawer front and back, K, to fit between the rabbeted sides and drawer slides. Most slides require that the drawer be 1" narrower than the opening, but confirm this with your hardware before cutting the front and back to finished length.

34. Sand the drawer box parts and assemble the drawer. Carefully check it to make sure it's square.

35. Make the drawer face, M. Measure and cut very carefully to produce a $\frac{3}{32}''$ gap on each side between the drawer front and the legs and rails.

36. Use a piece of scrap that's the same thickness as the drawer front, and mark the thickness of the front on the table frame. This mark is used to locate the front end of the slides.

37. With the table top upside down on a workbench, center the frame. Pre-drill and screw the table top fasteners to the table. Clamp the shelf in place and use table top fasteners to secure it. See Fig. 7.

38. Fasten the drawer front to the box. Install the slides according to the manufacturer's instructions. Insert the drawer box into the table. The table is now ready for finishing. After finishing, install a drawer pull or handle of your choice.

STAINING AND FINISHING

Woodworker's Tip: *Though you may be tempted to cut short your sanding, preparation and application time, don't do it. These tasks are very important steps in obtaining a high-quality finish. Remember, it is the finish, just as much as the fit and smoothness of the parts, that will have an impact on how people judge your craftsmanship. To ensure an excellent result, follow the steps listed in this section and also the instructions the finish manufacturer puts on its products.*

FINISHING TIPS

- Test the stains and finishes you are planning to use on scraps of wood. On the back of the scrap, mark the stain/finish combination and the type of wood. Allow all samples to dry thoroughly before making your final finish selection. Save your samples for quick reference on future projects.
- All stains and finishes must be allowed to dry thoroughly between coats. Remember that drying times can vary due to temperature, humidity and other climatic conditions.
- If you have some leftover stain or finish, wipe the can rim so that stain or finish in the rim won't dry out and prevent the lid from forming a tight seal.
- Brushes used for oil-based finishes must be cleaned with mineral spirits.

Recommended Finish

39. Before applying Minwax® Polyshades®, apply oil-based Minwax® Pre-Stain Wood Conditioner following the directions on the can. Applying a pre-stain conditioner will help ensure even absorption of stain and prevent blotchiness.

40. Apply Minwax® Polyshades® following the label directions. Use a good quality, natural-bristle brush suitable for use with polyurethane. Stir the can contents thoroughly before starting and periodically during your work session. Do not shake.

41. Dip the brush an inch or so into the can, gently tapping it against the inside to remove any excess. Do not wipe. Apply a very thin, even coat following the direction of the wood grain. Make sure to maintain a "wet edge." To minimize brush marks and bubbles after staining, tip off the surface by holding the brush at a 45-degree angle and lightly run the bristles over the entire wood surface. Allow the first coat to dry at least 6 hours or more.

42. For the second coat, sand all surfaces lightly with very fine (000) steel wool. Remove all of the dust with a cloth dampened with mineral spirits. Apply a second coat of Polyshades®, following the directions above. To achieve a deeper color, you may apply a third coat after 6 hours or longer, repeating the application directions.

Alternate Finish

43. Before using Minwax® Gel Stain apply oil-based Minwax® Pre-Stain Wood Conditioner, following the directions on the can. Applying a pre-stain conditioner will help ensure even absorption of stain and prevent blotchiness.

44. Before use and occasionally during the application, stir Minwax® Gel Stain until creamy.

45. Evenly apply a liberal amount of the Minwax® Gel Stain with a brush or rag. Wait 3 minutes and, using a clean rag, wipe with the wood grain to remove the excess. Allow Gel Stain to dry for 8 to 10 hours. To darken the color, apply additional coats of Minwax® Gel Stain. Allow the stain to dry for 24 hours before applying the finish.

46. Apply Minwax® Fast-Drying Polyurethane following the directions on the can. Use a good quality, natural-bristle brush. Allow the first coat to dry 4 to 6 hours.

47. To apply a second coat, sand all surfaces lightly with 220-grit or finer sandpaper with the wood grain. Dust off and wipe all surfaces with a cloth lightly dampened with mineral spirits. Apply polyurethane. Allow it to dry 4 to 6 hours.

48. To apply a third coat, follow Step 47. After final coat, allow the finish to cure for 24 hours before using the piece.

PRODUCT SAFETY

For your safety and the safety of those you work with, always read the all directions and safety warnings, which manufacturers print on their labels, and follow them to the letter.

WARNING! Removal of old paint by sanding, scraping or other means may generate dust or fumes that contain lead. Exposure to lead dust or fumes may cause brain damage or other adverse health effects, especially in children or pregnant women. Controlling exposure to lead or other hazardous substances requires the use of proper protective equipment, such as a properly fitted respirator (NIOSH approved), and proper containment and cleanup. For more information, call the National Lead Information Center at 1-800-424-LEAD (in U.S.) or contact your local health authority.

DANGER: Rags, steel wool, other waste soaked with oil-based stains and clear finishes, and sanding residue may spontaneously catch fire if improperly discarded. Immediately place rags, steel wool, other waste soaked with oil-based products, and sanding residue in a sealed, water-filled metal container. Dispose of in accordance with local fire regulations.

CAUTIONS: CONTAINS ALIPHATIC HYDROCARBONS.

Contents are **COMBUSTIBLE**. Keep away from heat and open flame. **VAPOR HARMFUL**. Use only with adequate ventilation. To avoid overexposure, open windows and doors or use other means to ensure fresh air entry during application and drying. If you experience eye watering, headaches, or dizziness, increase fresh air, wear respiratory protection (NIOSH approved), or leave the area. Avoid contact with eyes and skin. Wash hands after using. Keep container closed when not in use. Do not transfer contents to other containers for storage.

FIRST AID: In case of eye contact, flush thoroughly with large amounts of water for 15 minutes and get medical attention. For skin contact, wash thoroughly with soap and water. In case of respiratory difficulty, provide fresh air and call physician. If swallowed, call Poison Control Center, hospital emergency room, or physician immediately.

DELAYED EFFECTS FROM LONG-TERM OVEREXPOSURE.

Contains solvents, which can cause permanent brain and nervous system damage. Intentional misuse by deliberately concentrating and inhaling contents may be harmful or fatal.

WARNING: This product contains a chemical known to the State of California to cause cancer and birth defects or other reproductive harm.

DO NOT TAKE INTERNALLY. KEEP OUT OF REACH OF CHILDREN.

CONFORMS TO ASTM D-4326. Contact a physician for more health information.

FIG 1.

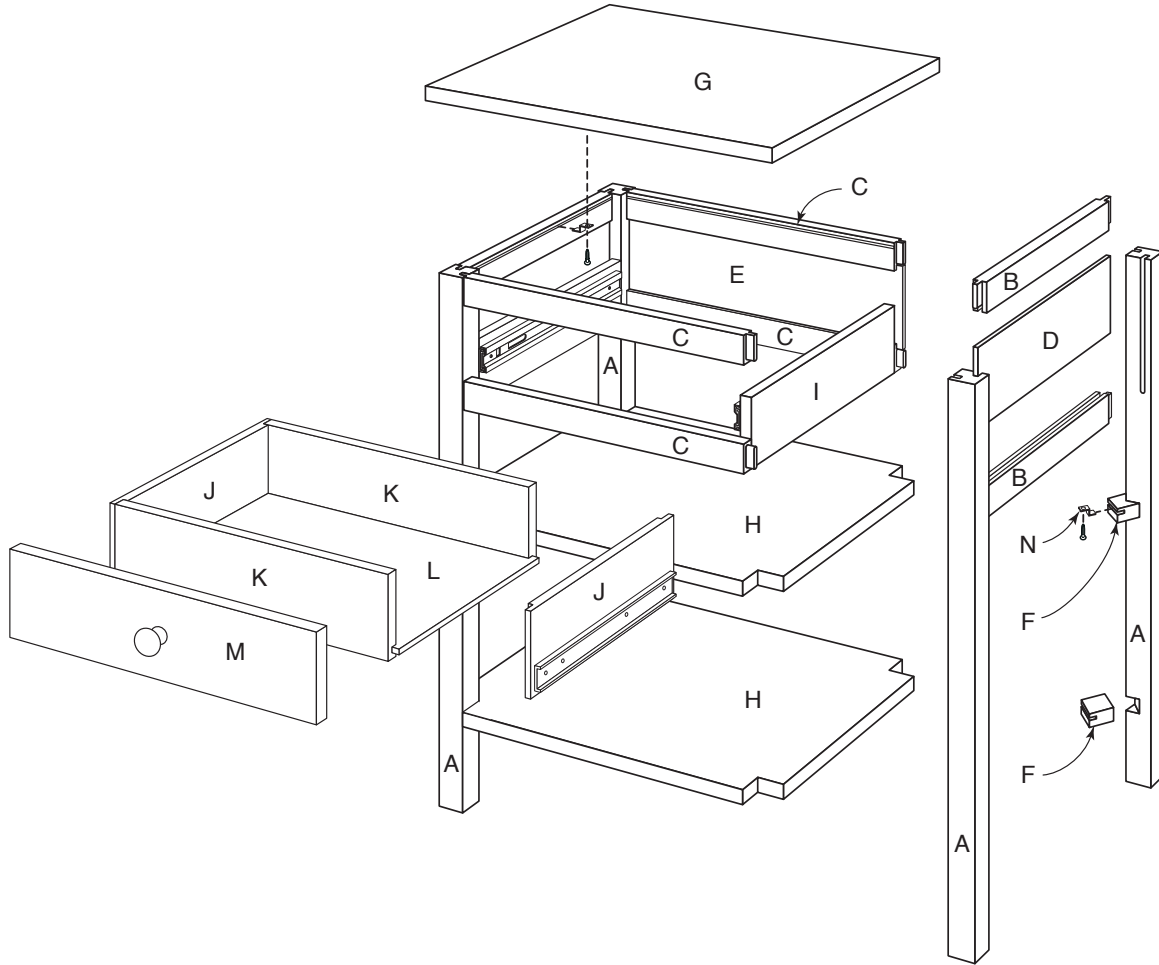


FIG 2.

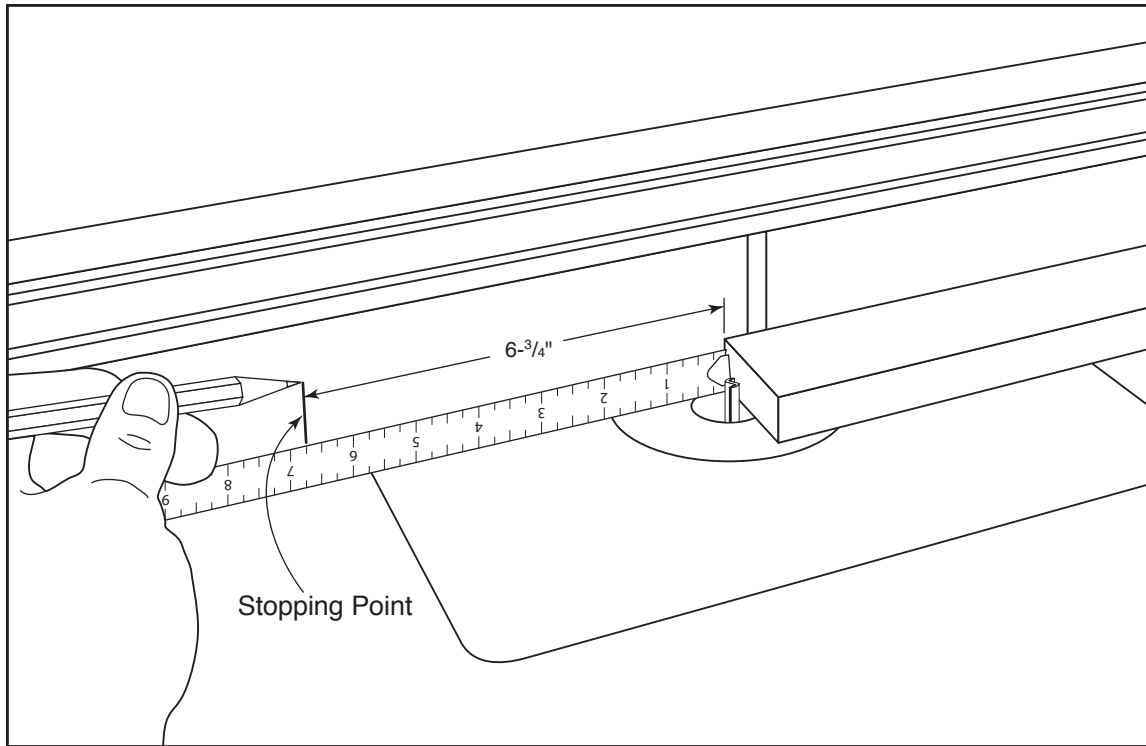


FIG 3.

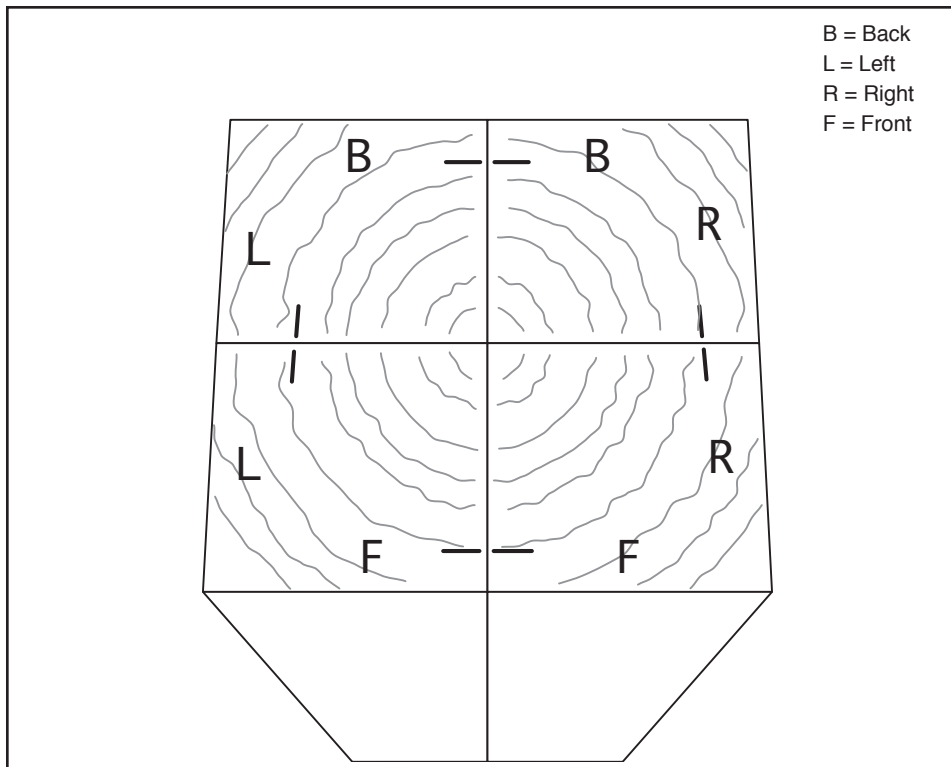


FIG 4.

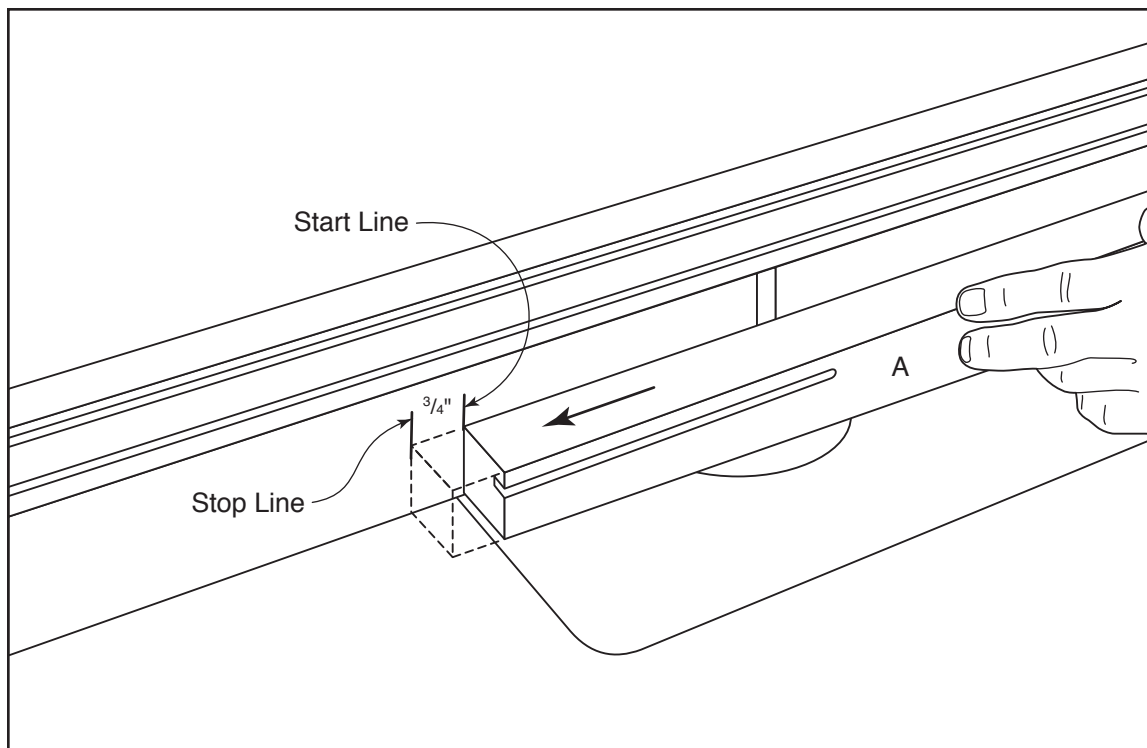


FIG 5.

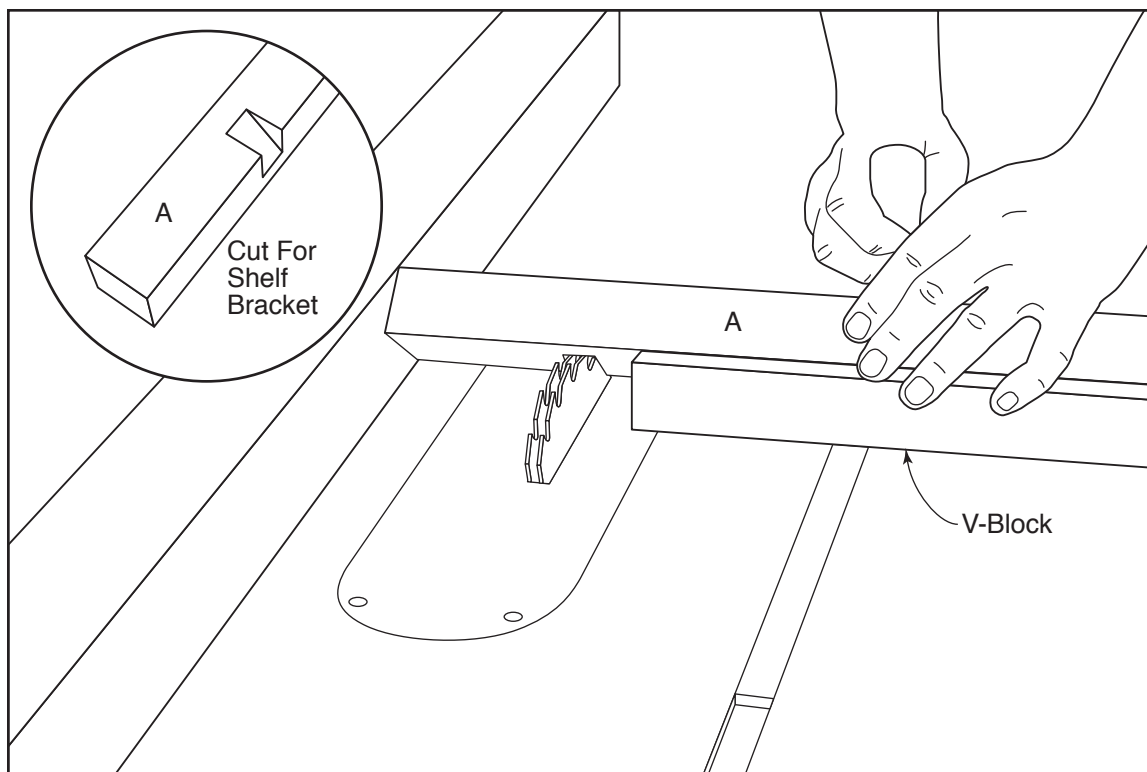


FIG 6.

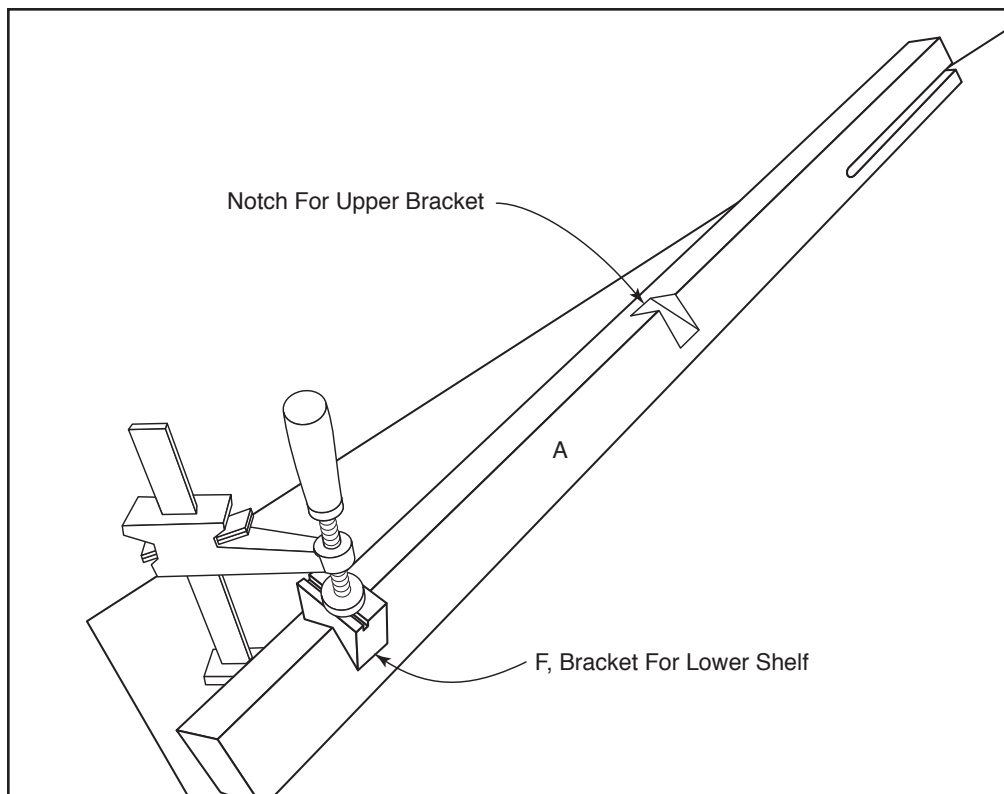


FIG 7.

