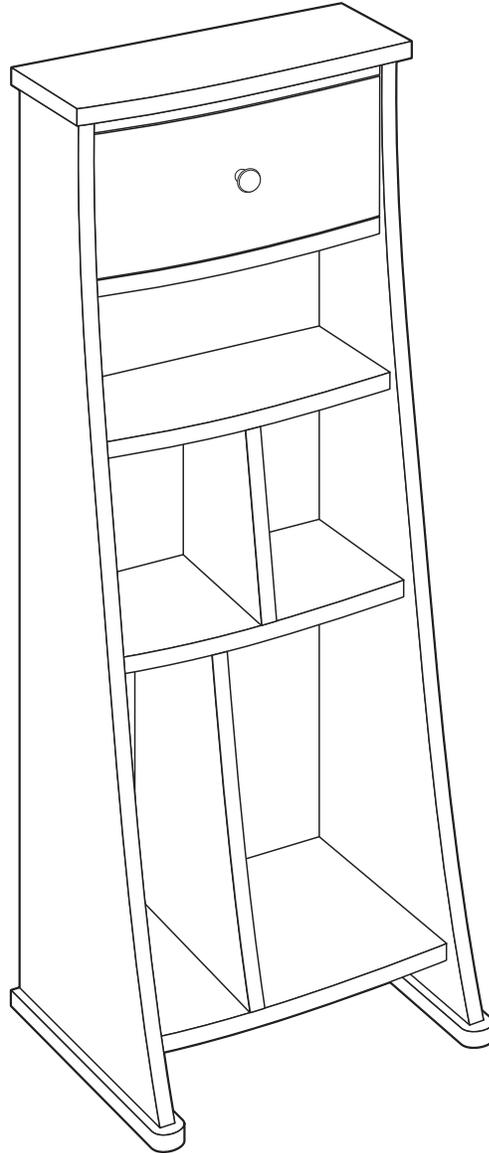




WOODWORKS: INTERMEDIATE PROJECT 2012-2013
VIDEO GAME STORAGE



If your video games are scattered all over your room, and you can't find your favorite ones, here's a cool-looking way to get them organized so you can spend less time searching and more time playing. With its many curves, this storage unit combines contemporary style with lots of room for dozens of disks and all your controllers. For intermediate woodworkers, the challenges include laying out and cutting the many curves and executing lots of precision biscuit joinery. 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
- Miter saw
- Bandsaw
- Orbital or finish sander

Miscellaneous

- Tape measure
- Pencil
- Wood glue
- Safety glasses
- 120-grit sandpaper
- Clean, lint-free cloths
- Respirator
- Gloves for finishing
- Mineral spirits, for cleanup of oil-based finishes
- Good quality, natural-bristle brush (oil-based finishes)
- Good quality, synthetic-bristle brush (water-based finishes)

SHOPPING LIST

Recommended Wood: Ash

Alternate Wood: Pine or Oak

Parts	Material	Quantity
A, B, C, D, E, G, H	1 × 4 × 14'	2
A, B, C, E, F, I, K	1 × 6 × 9'	1
Woodscrews	#8 × 1¼" flathead	10

CUTTING LIST

Overall dimension: 41¼"h × 17¼" w × 13"d				
Part	Name	Qty	Dimension	Notes
A	Sides	2	¾" × 12½" × 39¾"	
B	Shelf	1	¾" × 11⅜" × 15"	Indicates width at ends. Curve on front adds approx ¼"
C	Shelf	1	¾" × 7½" × 15"	Indicates width at ends. Curve on front adds approx ¼"
D	Shelf	1	¾" × 6" × 15"	Indicates width at ends. Curve on front adds approx ¼"
E	Shelves under & over drawer	2	¾" × 5¼" × 15"	Indicates width at ends. Curve on front adds approx ¼"
F	Upper divider	1	¾" × 7½" × 8¼"	
G	Lower divider	1	¾" × 11⅜" × 14"	
H	Feet	2	¾" × 1½" × 13"	Round front end with ¾" radius
I	Top	1	¾" × 5⅝" × 17¼"	Indicates width at narrow point. Curve on front adds approx ¼"
J	Drawer front	1	¾" × 5⅝" × 14⅞"	Rabbit ends ⅝" x ½". Trace and cut curve.
K	Drawer sides	2	½" × 5⅝" × 5"	Rabbit back end ⅝" x ½"
L	Drawer back	1	½" × 5⅜" × 14⅜"	
M	Drawer bottom	1	¼" × 4⅞" × 14⅝"	
N	Drawer stops	2	¼" × 1½" × 2"	

WOOD FINISHING PRODUCTS

Recommended Finish

- Prep: Minwax® Pre-Stain Wood Conditioner (oil-based)
 Stain: Minwax® Wood Finish™, Classic Gray
 Finish: Minwax® Polycrylic® Protective Finish, Satin

Alternate Finish

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

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. Glue up panels as needed to make parts A, B, C, D, E, G and H.
2. Plane or sand the panels flat.
3. Cut the sides, A, to finished length. Measuring from the back edge, make a mark on the bottom end of the side panels at $12\frac{1}{2}$ ". Make a mark on the top end of the side panels at $5\frac{1}{4}$ ". Make a mark in the middle at $7\frac{1}{2}$ ". See Fig. 2a.
4. Using a piece of flexible material such as hard board, connect the three points made in the previous step and draw a line. See Fig. 2b.
5. Cut the curve using a bandsaw or jig saw. Sand the sawn edge. Trace this curve onto the other side piece, cut the line and sand the edge.
6. Determine shelf widths starting with shelf B. Measure up 2" from the bottom edge of the side and make a mark. This is the bottom of the lower shelf. Measure the width of the side at this point and subtract $\frac{1}{2}$ ".
7. Mark the width dimension from the previous step onto shelf B, measuring from the back edge. Find the center of the shelf (length-wise) and mark it.
8. Using the offcut from the side piece, align its center mark with the center mark on the shelf and its edge with the shelf width marks and trace the curve. See Fig. 2c.
9. Repeat the process for the other shelves, C, D and E. To locate shelf C, measure up from the bottom $16\frac{3}{4}$ "; for D, $25\frac{3}{4}$ " from the bottom. Shelf E under the drawer is $32\frac{1}{2}$ " from the bottom. Shelf E over the drawer is flush with the top of the sides.
10. Make three layout spacers. $\frac{3}{4}$ " \times 12" \times 2", $\frac{3}{4}$ " \times 12" \times $16\frac{3}{4}$ ", $\frac{3}{4}$ " \times 12" \times $25\frac{3}{4}$ " and $\frac{3}{4}$ " \times 12" \times $32\frac{1}{2}$ ". These will be used for locating the biscuits. The spacers can be made from scrap.
11. Make the spacer even with the bottom and back of the side. Cut slots wide enough for two biscuits for each shelf location.
12. Transfer the biscuit locations to the shelves and cut biscuit slots in the end grain.
13. Dry-assemble the project.
14. Measure for the upper and lower dividers, F and G, and cut them to length. Position the dividers in the case with the back edges flush. The lower divider is located $4\frac{1}{2}$ " from the inside face of the left case side. The upper divider is centered.
15. Using the curved offcut from one of the side pieces, trace the curve onto the dividers, just as you did with the shelves. Cut and sand the curve. See Fig. 2d.
16. Make spacers, as before, to locate biscuits for the dividers. Cut biscuit slots in the dividers and shelves.
17. Finish sand the interior faces of all parts. Glue up the sub-assembly of three shelves and two dividers. See Fig. 3.
18. Glue up the entire assembly, making sure it is square. See Fig. 4.

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.*

19. Make the feet, H. Round the front ends with a $\frac{3}{4}$ " radius. Sand smooth.
20. Fasten the feet to the bottom of the case sides using screws. Do not glue them, as this will limit expansion and contraction.
21. Cut the top, I, to size. It should be $\frac{3}{8}$ " wider and deeper than the shelf on top of the two sides.
22. Sand the exterior faces of the case. Screw the top to the case.
23. Make the drawer front blank, J. Cut it to fit the drawer opening. Cut the rabbets in the ends to receive the drawer sides.
24. Position the drawer front in the opening and trace the curve onto the top edge of the front face. See Fig. 5.
25. Cut the curve with a bandsaw and sand the face smooth.
26. Make the drawer sides, K. Be sure the length of the sides allows the drawer front to be flush with the front edges of the shelves. Rabbit the back end of the sides. Cut a $\frac{1}{4}$ " \times $\frac{1}{4}$ " groove in the drawer sides and front for the drawer bottom.
27. Make the drawer back, L. Assemble the drawer box.
28. Make and install the drawer bottom, K. It slides in under the back

and into the grooves on the sides and front.

29. Install the drawer stops, N, at the back.

30. Finish sand all parts.

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

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

32. Apply the Minwax® Wood Finish™ color you have chosen using a brush or a clean, lint-free cloth following the directions on the can. The brush will help you get the stain into the inside corners. Allow the Wood Finish™ to sit for about 5 to 15 minutes, and then wipe off any excess. To achieve a deeper color, you may apply a second coat after 4 to 6 hours, repeating the application directions for the first coat. Allow the stain to dry for 24 hours before applying the protective clear finish.

Woodworker's Tip: *When wiping off stain, make certain that your last wipe with the cloth goes with the grain of the wood.*

33. After allowing the piece to dry for at least 24 hours, apply Minwax® Polycrylic® Protective Finish following the directions on the can. Stir the can contents thoroughly before starting and periodically during your work session.

34. Working a small area at a time to maintain a wet edge, apply the first coat. Work quickly and make the final strokes in each newly finished section with the grain of the wood.

35. Allow the finish to dry a minimum of 2 hours. Then sand lightly with 220-grit or finer sandpaper wrapped around a soft backup block. Never use steel wool. Thoroughly dust off and wipe all surfaces with a cloth lightly dampened with water.

36. Repeat steps 34 and 35 to apply the second and final coat. Do not sand after the final coat. Allow the finish to cure for 24 hours before using the piece.

Alternate Finish

37. 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.

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

39. 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.

40. 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.

41. To apply a second coat, sand all surfaces lightly with 220-grit or finer sandpaper. Dust off and wipe all surfaces with a cloth lightly dampened with mineral spirits. Apply a second coat and set the piece aside to dry for 4 to 6 hours.

42. To apply a third coat follow step 41. Allow the final coat to dry 24 hours before normal use of the piece.

PRODUCT SAFETY

For your safety and the safety of those you work with, always read all the 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.

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

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

When using oil-based wood finishing products:

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.

When using water-based wood finishing products:

CAUTIONS: 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, or 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. Get medical attention if irritation persists. If swallowed, get medical attention immediately.

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

FIG 1.

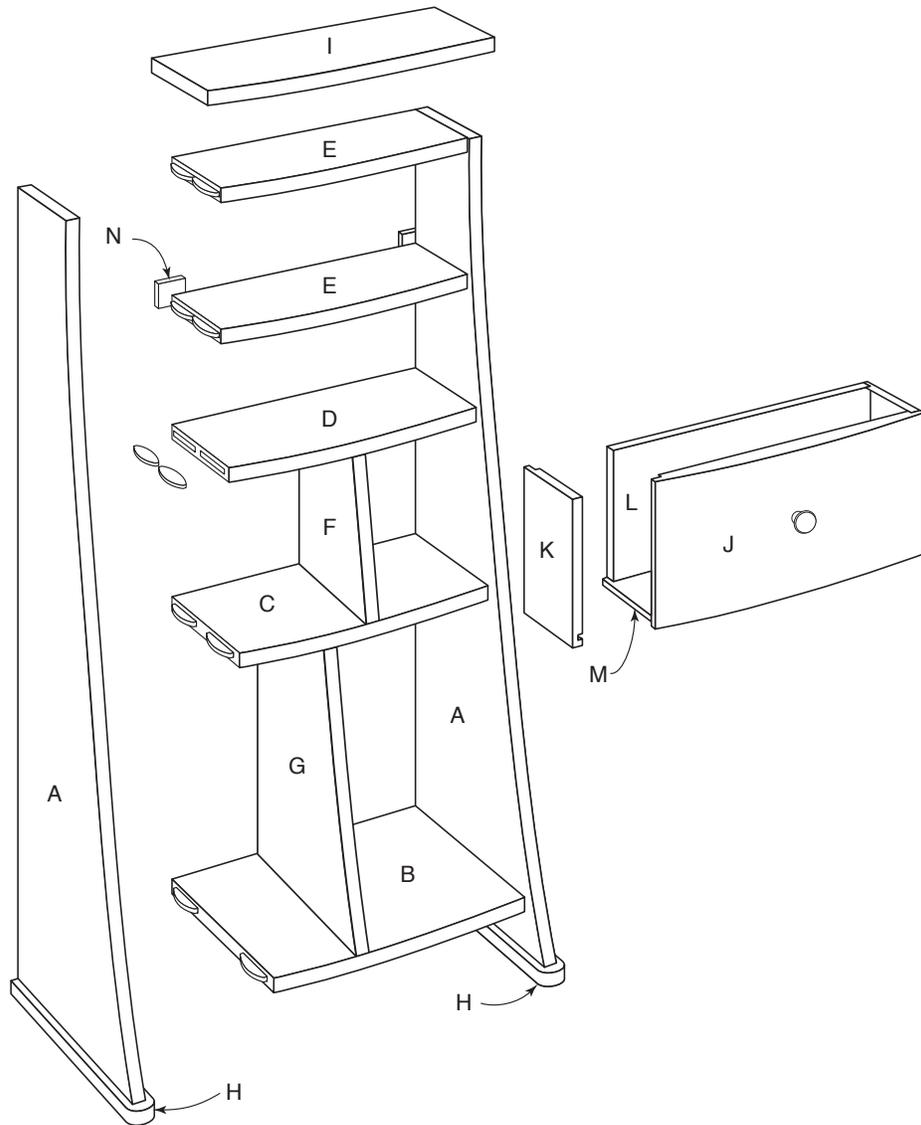


FIG 2. A

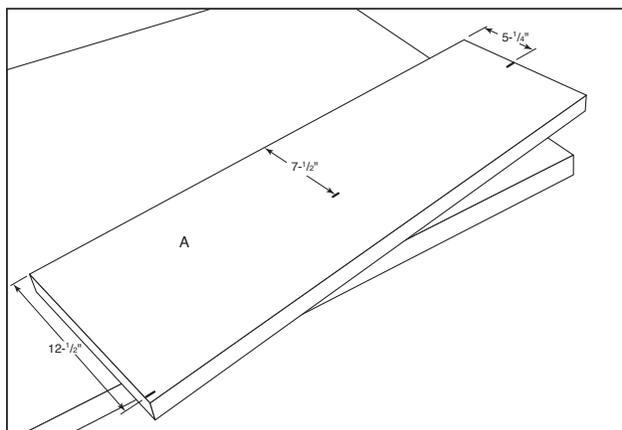


FIG 2. B

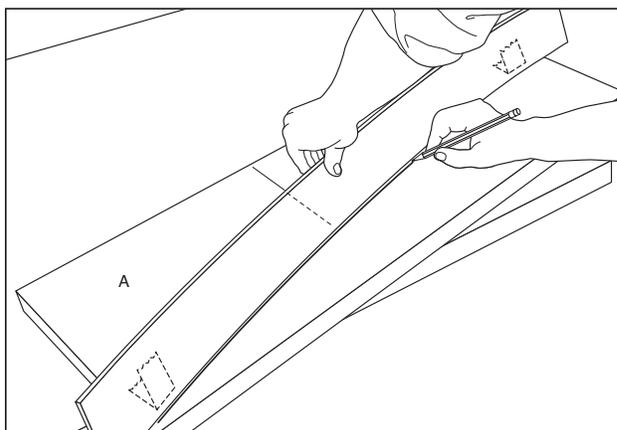


FIG 2. C

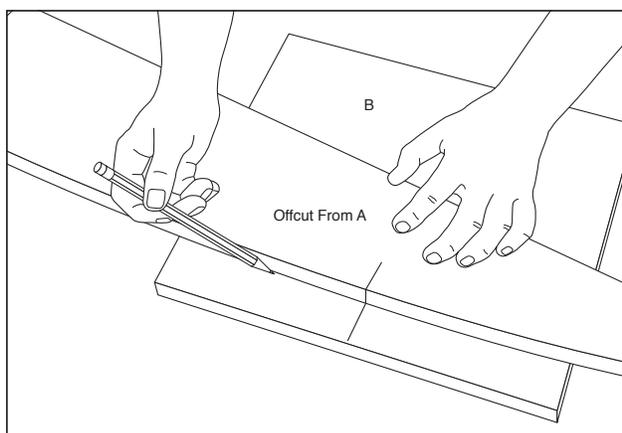


FIG 2. D

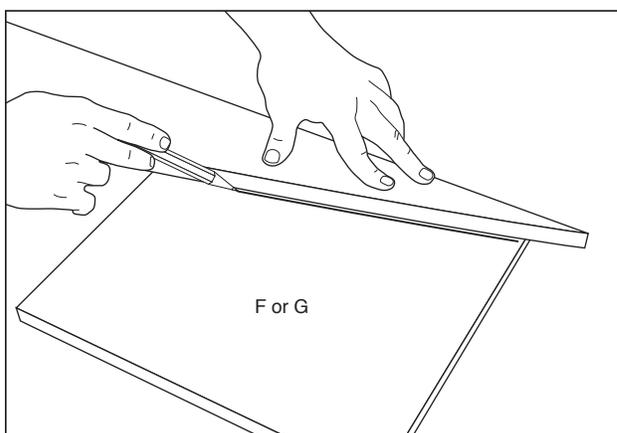


FIG 3.

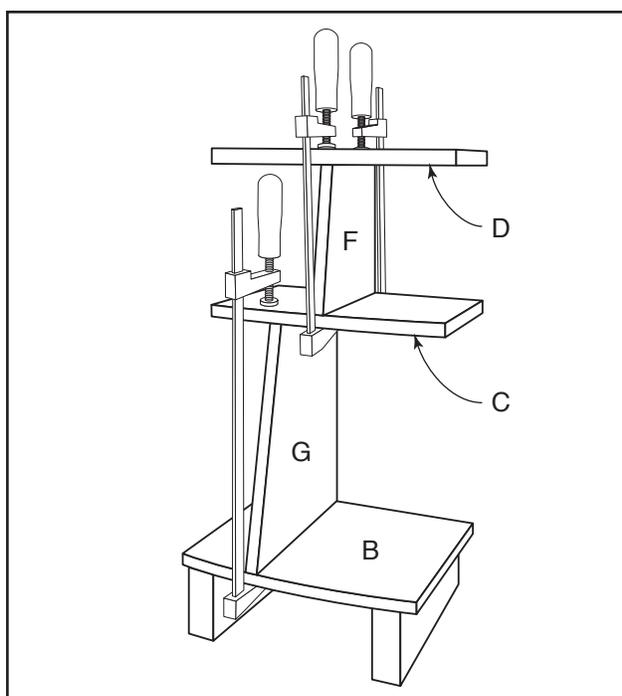


FIG 4.

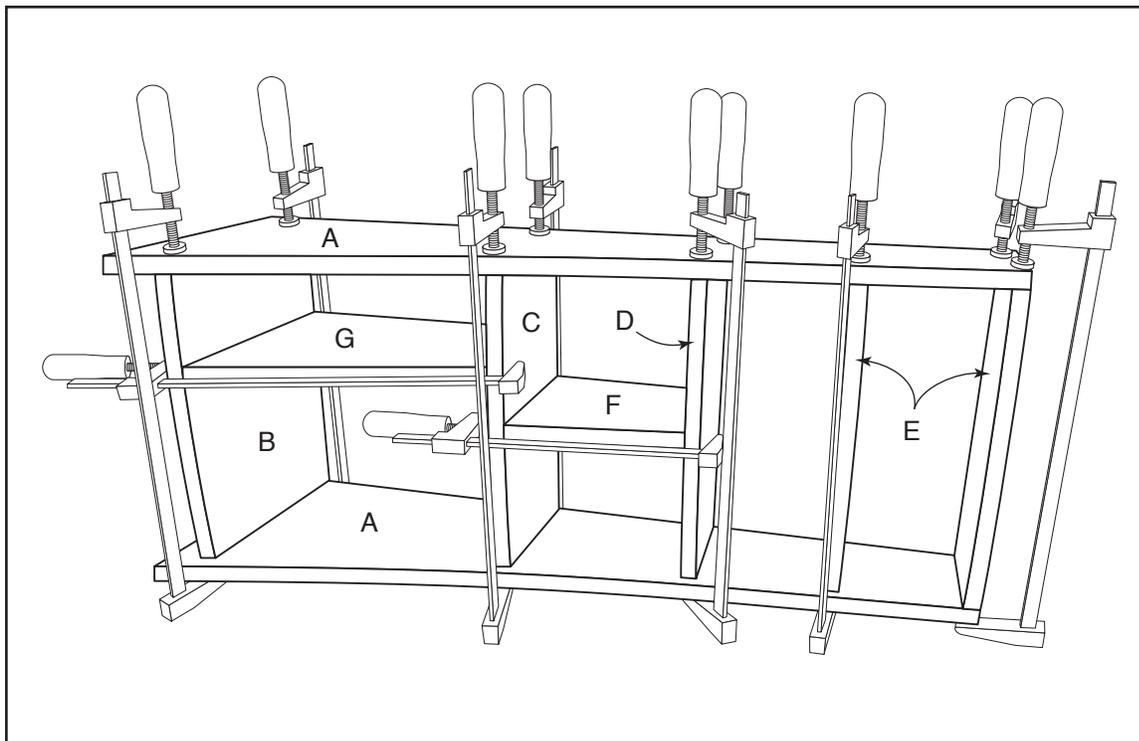


FIG 5.

