



## PROJECT

# 1

## WOODWORKS: BEGINNER PROJECT 2000-2001 SHAKER-INSPIRED MAGAZINE RACK

The magazine rack is a wonderful project for beginning woodworkers.

- The basic construction techniques allow you to create a finished piece that is both functional and decorative. By carefully reading and following these plans and directions, and discussing anything that you may not understand with your instructor, you will be able to successfully complete this project.
- Any home can use a magazine rack and the Shaker-inspired simplicity of this design will comfortably fit into any home décor.
- Because the surfaces of the rack are flat and unadorned with trims and moldings, you will easily learn to apply and master the basic steps for achieving a high-quality finish.

This magazine rack presents beginning woodworking students with the opportunity to learn a number of important, basic woodworking skills. These include measuring, marking, clamping, cutting, joinery and ploughing dados and edge rabbets. Finally, after constructing this rack, you will learn how to effectively apply and use finishes to help protect and keep the wood looking beautiful.

### TOOLS AND MATERIALS REQUIRED

#### Hand Tools

- Square, Try or combination
- Bar clamps
- Ruler (zigzag or tape measure)
- Sharp utility or razor knife
- Router, with straight (dado) and rabbet cutters

#### Power Tools

- Scroll or saber saw
- Saw (Hand or power)
- Biscuit joiner
- Electric drill

#### Miscellaneous

- Pencil
- Safety glasses
- Respirator

#### Buying and Cutting List

(Bring this materials list to the lumberyard when you go to buy the materials.)

MAKE SURE YOU READ ALL NOTES REGARDING NOMINAL LUMBER.

Key	Pcs.	Size	For	Stock	Cut From (BUY)*†
A	2	3/4 x 10-7/8 x 18"	ends	Pine	1/6' 1 x 6
B	2	3/4 x 11-3/4 x 16-3 1/4"	sides	Pine 1/3' 1 x 8	1/3' 1 x 6
C	1	3/4 x 10-1/8 x 16-1/4"	bottom- grade plywood	Pine or 3/4" cab. 1/2' 1 x 8	1/2' 1 x 6

\*Lumber is sold in nominal dimensions (i.e.: a nominal 1 x 6 actually measures 3/4 x 5-1/2").

† When ordering lumber, always specify in this sequence: the number of desired pieces/the length in feet/the board width and thickness.

Thus, for example, to order a 1 x 6 board 6 feet long, you specify 1/6 (number of pieces/length), then the board in nominal dimensions, 1 x 6.

**IMPORTANT NOTE:** Inch marks *are not* used when working with nominal dimensions.

**MISC:** No. 20 biscuits, 1-1/2" common nails, carpenter's glue, sandpaper (80 through 220 grit).

### WOOD FINISHING PRODUCTS (Choose recommended stain/finish or create your own combination)

Prep.: Minwax® Pre-Stain  
Wood Conditioner

Stain: Minwax® Wood Finish™,  
Ipswich Pine

Finish: Minwax® Fast-Drying  
Polyurethane, Satin

#### Alternate Finish

Minwax® Water-Based Pre-Stain Wood Conditioner

Minwax® Water-Based Wood Stain  
For a natural, Early American look; English Oak

For a contemporary color finish, Café Latte  
(Or pick a color from the 60 to choose from)

Minwax® Polycrylic® Protective Finish

#### Miscellaneous

Tack cloths

Clean, lint-free rags

Paint thinner, if necessary

Water-filled metal container with tight-fitting lid

Minwax® Wood Finish™ Stain Brush, a

Polyurethane Brush, and/or Polycrylic® Brush

## BEFORE YOU BEGIN

Good craftsmanship begins and ends with good work habits. This means that you should make the following steps your routine workshop practice:

- Always carefully and fully review plans and instructions before ever putting a tool to the project lumber.
- If you have any doubts or questions, discuss them with your shop instructor.
- At the end of every work session, clean up your shop and put away all tools—so you will start the next work session in a safe and pleasant atmosphere.
- Work sensibly and safely. Wear safety goggles when doing work that creates flying chips and sawdust; wear the appropriate respirator whenever making sawdust or working with thinners or solvents.

## PROCEDURE

*The instructions that follow are for working with narrow boards as spelled out in the materials buying list.*

1. Lay out parts A, B and C to exact size on your boards and cut these parts to length.
2. Select pairs for creating each panel (members; two A's, two B's). Align each pair of boards to obtain the most pleasing grain arrangement for each panel. NOTE: To minimize chance of cupping and warping, boards to be joined should be laid out so their annular rings are reversed. (See drawing)
3. When satisfied with grain arrangement of the four panels, mark each with a cabinetmaker's triangle; then make the matchmarks for ploughing the biscuit slots.
4. Finally, mark each panel for quick identification (1,2,3,etc.) on the board ends.
5. Using the plate joiners, plough all boards for the number 20 biscuits.
6. Using the cabinetmaker's triangle (see drawing) along with matchmarks on board ends, reassemble the four panels using glue and no.20 biscuits; apply light pressure with bar clamps to hold the joints closed while the glue dries. Set the clamped-up boards aside for 24 hours.
7. Next day, remove the clamps and return them to the clamp rack.
8. Working with a try or combination square lay out the dado and edge rabbets on both end panels.
9. After making certain router is disconnected from power source, install a 3/4"-dia. straight cutter set to cut exactly 3/8" deep. Position and clamp the straight edge guide to plough your first dado.

**Cabinetmaker's Tip:** *In order to determine the exact placement for a clamped-on straight edge guide, you must make a test cut in scrap stock. To do this after installing and securing the router cutter, start the router and, carefully and slowly, push the spinning cutter into the edge of the test stock. As soon as the cutter enters the wood, release the trigger and hold the router perfectly motionless until the cutter stops spinning. When it does and without moving the router, carefully make a pencil mark alongside the edge of the shoe at board edge. Remove the router and measure the distance from pencil mark to edge of the groove just cut. This is the offset for this particular bit; that is, the distance a straightedge guide must be positioned from the desired groove or dado.*

10. Working with one panel at a time, plough all the edge rabbets and dados in both "A" members; make certain you use a securely clamped guide for the router shoe to ride against, for every cut.

11. Repeat the procedure to cut the edge rabbets at bottom of members "B".

12. Temporarily assemble both parts A and B using partially driven 4-penny finishing nails. Turn the rack upside down on bench and measure the exact dimension for the bottom piece. Then cut "C" to size and make a test fit to ensure all being as it should be.

13. Visually check the rack overall for fit and appearance. If necessary, sand corners where they abut to obtain a smooth and neat-looking fit. Disassemble the rack taking care to not make any hammer marks as you pull the temporary nails; i.e., use a scrap block of wood beneath the hammer's head.

14. On a project like this one—where all parts are flat and without adornment—sand all of the parts before final assembly. This makes this part of the job both easier and faster. Start with either 100- or 120-grit paper, depending upon the condition of your stock, and work your way up to 150-grit. This abrasive grit will provide an adequate degree of smoothness on raw pine.

15. The rack can be assembled using carpenter's glue and a pneumatic nail gun and 1-1/4" nails. If preferred, you can instead assemble your rack with glue, counterbored flathead wood screws and dowels (to hide the screw heads).

16. Start by fastening one side panel "B" to one of the end panels "A". Then install the second side panel and finish by installing the other end panel. Before glue has a chance to set, place the rack upside down on your workbench and drop in the bottom; secure it with nails (or screws). NOTE: It is important that the bottom be installed immediately after joining the side panels since this is what will hold the rack square while the glue dries.

17. Leave the rack undisturbed for 24 hours before proceeding to the staining and finishing section.

## STAINING/FINISHING

**Cabinetmaker's Tip:** *Though you may be tempted to cut short your sanding and wiping time, don't do it. Both of these tasks are very important steps in obtaining a high-quality finish. Remember that it is the finish on the furniture that people see—and it is the finish on the piece, as much as any of the building elements, that will have great bearing on how people judge your craftsmanship. By following the steps below and the instructions the manufacturer puts on the can label, you will finish like a professional—even if this is your very first project.*

1. Sand the entire piece using 120-grit abrasive paper, then move up to 150-grit to complete the pre-finish smoothing. Use a pad sander and with-the-grain sanding strokes. This should remove any marks or scratches that may have occurred during assembly—dust off the piece and wipe it carefully with a tack rag.
2. Apply Minwax® Pre-Stain Wood Conditioner following the directions on the label. After 15 minutes, wipe off all excess Conditioner using a clean, lint-free rag. Proceed to the staining within 2 hours.
3. Do the staining in two steps; first, the interior surfaces, then, the exterior. Apply the Minwax® Wood Finish™ Ipswich Pine (or, the stain color of your choice) to the interior surfaces using either rag or brush. Allow stain to set about 10-15 minutes then wipe off all excess stain. Repeat for the exterior surfaces. Allow stain to dry 24 hours.

**Finisher's Tip:** When wiping off stain, make certain that your last wipe with the cloth is in a with-the-grain direction. This way, any stain you miss during wipe-off will be visually minimized by the wood grain.

4. Apply Minwax® Fast-Drying Polyurethane following the directions on the can. . . Note: To obtain the look of hand rubbing, use Satin finish (if a high shine is desired, use Gloss). In either case, make sure you use a brush intended for use with Polyurethane. Allow the first coat of finish to dry overnight.
5. The next day, using with-the-grain strokes, sand all surfaces lightly with 220-grit paper; dust off and wipe with a tack rag. Apply a second coat of the Polyurethane and set aside to cure overnight.
6. Finally, sand lightly with 240-grit paper, dust off, wipe with a tack cloth and apply the third and final coat of Polyurethane. Allow the piece to cure for several days before actually using the rack.

#### If you opt for a water-based finish—

All the basic finishing steps, such as sanding, dusting, wiping off, apply when working with water-based finishes. Following are the basic steps to a water-based finish:

1. When using a water-based stain, first apply a coat of Minwax® Water-Based Pre-Stain Wood Conditioner. This helps to ensure uniform penetration when applying stain. Apply the Conditioner with a nylon-polyester brush and allow it to penetrate for about 5 minutes. Then, wipe any excess off the surface using a clean, lint-free cloth.
2. Wait about 15 minutes, then, using 180-grit abrasive paper, sand off any “whiskers” raised by the Conditioner.
3. Apply the stain you selected with either a nylon/polyester brush or clean rags. Allow stain to penetrate no longer than 3 minutes. While stain is still wet wipe off all excess with a clean cloth lightly dampened with stain. Allow the piece to dry for 2 hours before applying a second coat, if desired. Allow the piece to dry overnight before proceeding with clear finish.

**Finisher's Tip:** Minwax® Water-Based Stain is available in six factory (wood-tone) colors, a White Wash Pickling Stain and 60 custom colors. This means that you are not limited to just wood colors (pine, oak, walnut, etc.). Instead, you can actually pick and apply a color to compliment the décor of the room in which the rack will stand. For this reason, make sure you look over all of the Minwax® color charts before making your final selection.

4. Applying a clear protective finish, such as Minwax® Polycrylic® Protective Finish, is the final step. Stir the can contents thoroughly before starting and periodically repeat the stirring during your work session.
5. 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 brush strokes.
6. Allow the finish to dry a minimum of 2 hours. Then sand lightly using 220-grit sandpaper wrapped around a soft backup block. Thoroughly dust off and wipe with a tack rag.
7. Repeat steps 4, 5 and 6 to apply the second coat.
8. Repeat these steps to apply a third and final coat of Protective Finish. Allow the piece to rest for about a week before putting the rack into service.

#### FINISHING TRICKS YOU SHOULD KNOW ABOUT

1. It is smart to use scraps of wood to test the stains and finishes you are planning to use. On the back of the scrap, mark the stain/finish used and the type of wood on each test sample chip. Allow all samples to dry thoroughly before making your final finish selection for the project at hand. Save samples for quick reference on future projects.
2. It is critical that all stains and finishes be allowed to dry thoroughly between coats. Remember that drying times can vary due to humidity and other climactic conditions.
3. When additional surface protection is desirable, apply two or three coats of Minwax Paste Wax. Buff each coat with a clean, stiff fiber brush; after the last wax application and buffing, rub with a clean lint-free cloth.
4. You may or may not need to install furniture glides on your magazine rack. If these are used, install one per foot to ensure that the piece won't rock if placed on a slightly uneven surface (floor or rug). Use nylon glides if the rack will be used on either wood or carpeting; rubber glides if you want to make certain that the rack will not slide about on wood.

#### MORE TIPS

- If you have product left over, wipe the can rim so that product in the rim won't dry out and prevent the lid from forming a tight seal.
- Clean brushes used for oil-based finishes with mineral spirits; for water-based products such as Minwax® Polycrylic® Protective Finish, clean brushes with soap and warm water.

#### Product Safety

For your safety and the safety of those you work with, always read the safety warnings, which manufacturers print on their labels, and follow them to the letter. Typical safety advice and instructions will contain such as the following:

**DANGER! MINERAL-BASED PRODUCTS ARE HARMFUL OR FATAL IF SWALLOWED. SKIN IRRITANT. COMBUSTIBLE. KEEP OUT OF REACH OF CHILDREN. DANGER:** Contains mineral spirits.

Harmful or fatal if swallowed. Do not take internally. Skin irritant. Avoid contact with skin and eyes. Wear rubber gloves and safety glasses when handling. Combustible. Do not use or store near heat, sparks, flame or other source of ignition. Close container after each use. Avoid inhalation and use only with adequate ventilation. If using indoors, open all windows and doors to make sure there is fresh air movement. If you experience lightheadedness, dizziness or headaches, increase fresh air movement or leave the area. Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage. Intentional misuse by deliberately concentrating and inhaling the contents may be harmful or fatal.

**FIRST AID:** If swallowed: Do not induce vomiting. Call physician immediately.

**FOR SKIN CONTACT:** Wash thoroughly with soap and water. If irritation persists, get medical attention.

**FOR EYE CONTACT:** IMMEDIATELY flush eyes thoroughly with water, then remove any contact lenses. Continue to flush eyes with water for at least 15 minutes. If irritation persists, get medical attention.

**IF AFFECTED BY INHALATION:** Immediately remove to fresh air. If symptoms persist, call physician.

When using Minwax Polycrylic Protective Finish:

**VAPOR HARMFUL.** Use only with adequate ventilation. To avoid over-exposure, 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 supply or wear respiratory protection (NIOSH/MSHATC23C or equivalent) 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. **DO NOT TAKE INTERNALLY.**

**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, get medical attention immediately.

**DELAYED EFFECTS FROM LONG-TERM OCCUPATIONAL OVEREXPOSURE.**

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

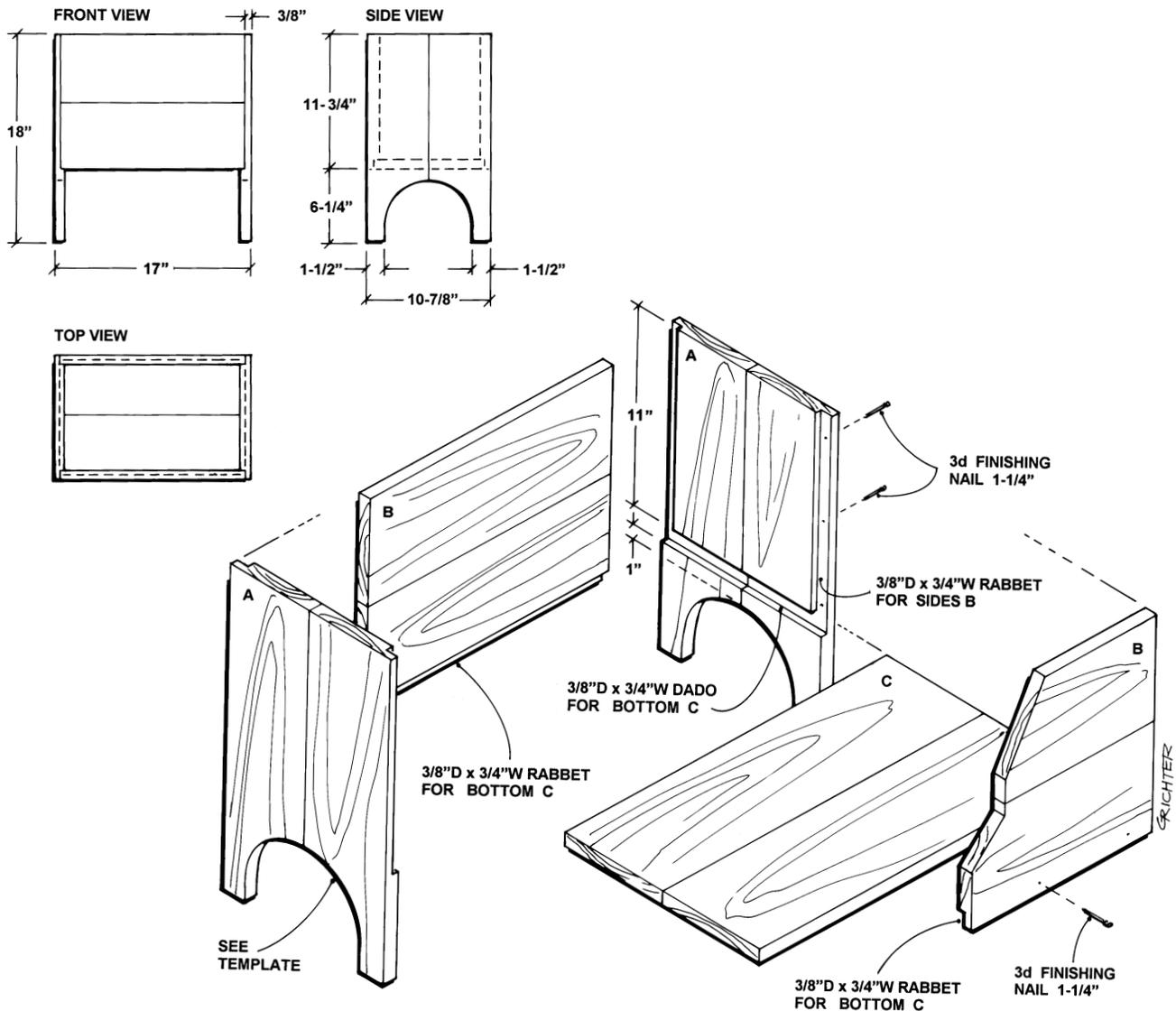
**Safe Disposal of Rags & Waste**

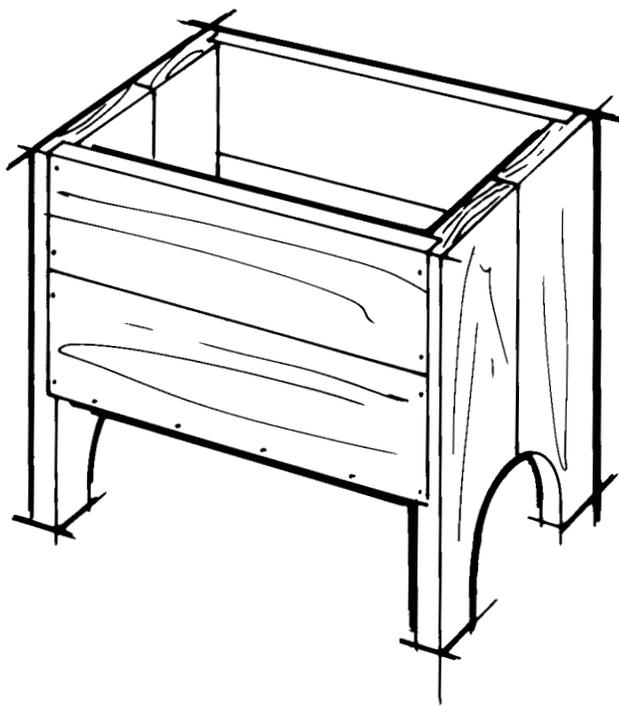
Please be mindful of the safe way to dispose of rags and other waste. Rags, steel wool and other waste products soaked with oil finishes or solvents may spontaneously catch fire if improperly discarded.

Place rags, steel wool and other waste immediately after use in a water-filled metal container. Tightly seal and dispose of the waste materials in accordance with local trash removal regulations. Be sure to keep the waste out of reach of children.

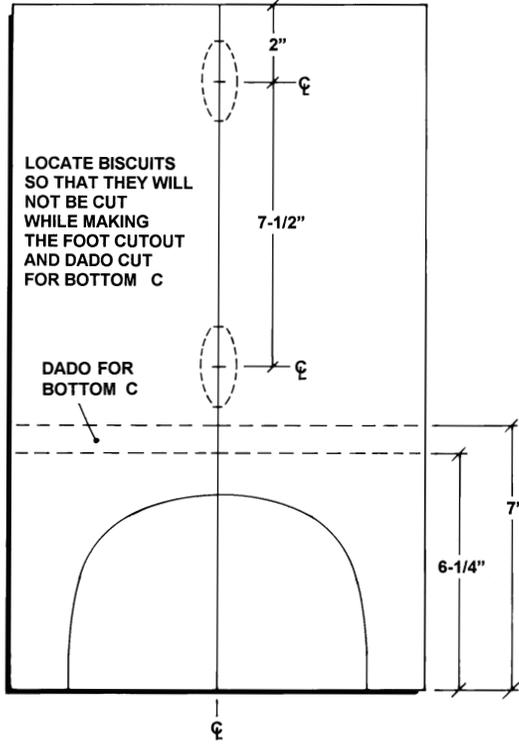
**MAGAZINE RACK**

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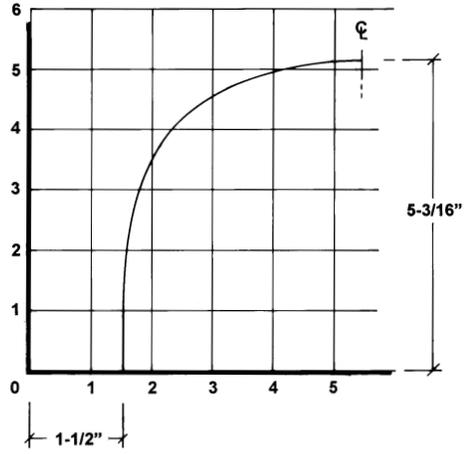




PANELS FOR ENDS A



PATTERN FOR ENDS A  
EACH SQUARE EQUALS 1"



CABINETMAKER'S TIPS

