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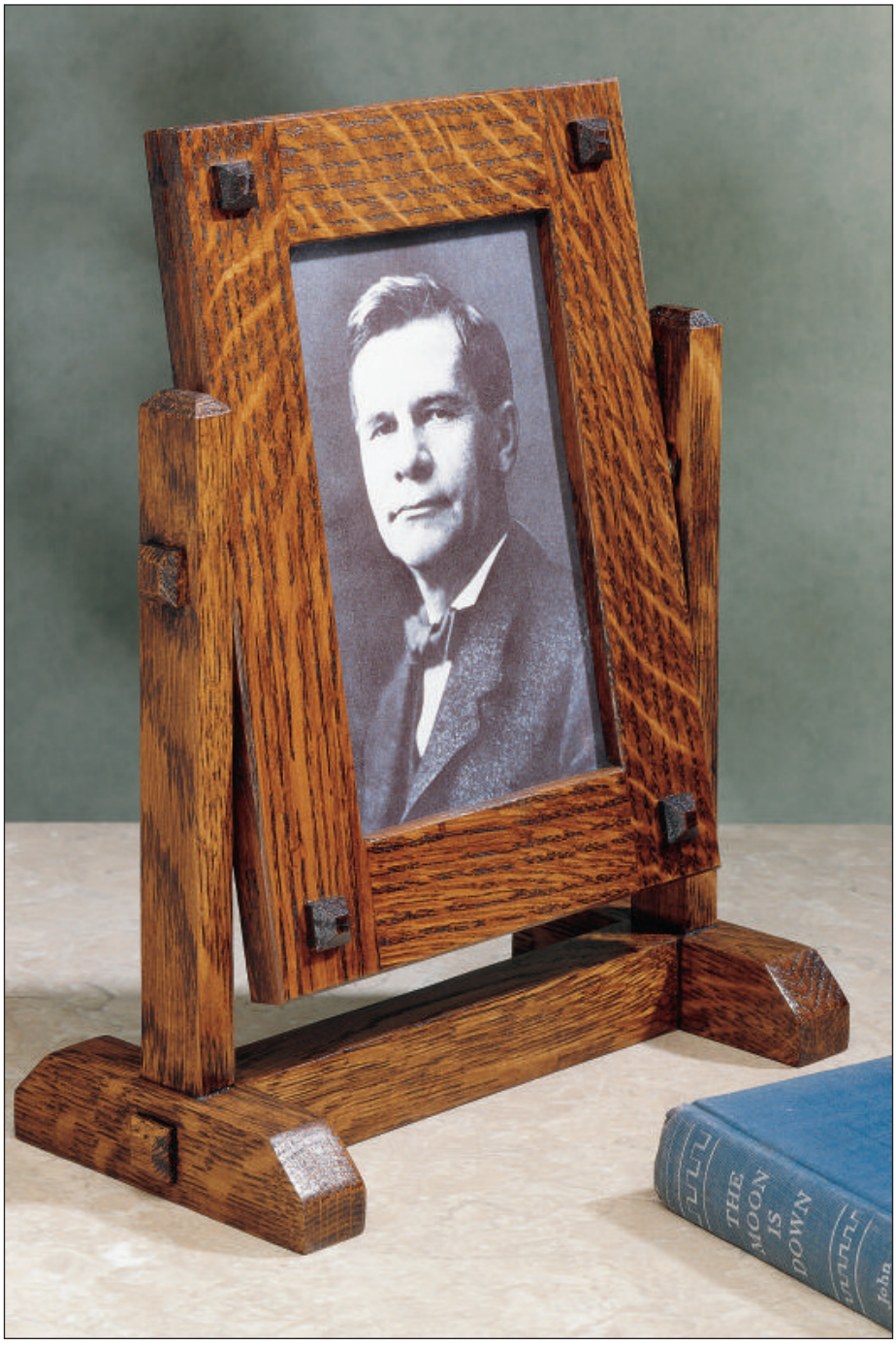
Arts & Crafts Picture Frame

In this plan you will be getting:

- Step by Step construction instruction.
- A complete bill of materials.
- Exploded view and elevation drawings.
- How-to photos with instructive captions.
- Tips to help you complete the project and become a better woodworker.



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Stickley photo courtesy of The Craftsman Farms Foundation, Parsippany, New Jersey

Arts & Crafts Picture Frame

Build a stylish picture frame over the weekend. We've included details for a traditional Arts & Crafts look or a more contemporary style with inlays. Either way, a handmade picture frame is a nice opportunity to do a small-scale project that still offers full-size satisfaction when you're finished—and they make great gifts.

Several years ago we nominated Gustav Stickley as the preeminent woodworker of the 20th Century. In honor of that recognition, we designed a picture frame that would feature Stickley in an appropriate way for our article. The picture frame got such rave reviews from readers that it became a project in it's own right. We also expanded on the theme and created a more contemporary version—one that would perhaps be more suitable for a modern woodworker—like Norm Abram.

The Arts & Crafts version of this frame includes square corner plugs, chamfers and quartersawn stock. For the contemporary version, we selected some beautiful quartersawn sycamore and accented it with ebonized plugs and strips of inlay (see page 113).

Setting Up: Tools and Materials

The essence of Arts & Crafts furniture was simplicity. The idea was to incorporate pre-industrial age values (such as hand-built quality) into the machine age. An Arts & Crafts piece was sturdy, functional and attractive but never gaudy or over-dressed in the way that Victorian pieces had been. This Arts & Crafts picture frame follows those guidelines: it is sturdy and durable, attractive in its own right, but not so ornate that it overpowers the image in the frame.

Construction is vintage Stickley. The material is quartersawn white oak, and the frame is assembled with open mortise and tenon joints. The uprights are mortised into the feet and pyramidal plugs are prominently used to evoke that pre-industrial age feeling.

While the frame's construction is relatively simple, it does require a fair bit of tooling. For example, you'll need access to a tenoning jig for the table saw, a mortising machine or attachment for your drill press, and a power miter saw. You'll also need a sander and a bearing-guided rabbeting bit for your portable router. Once you've assembled your tools, keep in mind this is the perfect project for setting up a production run.

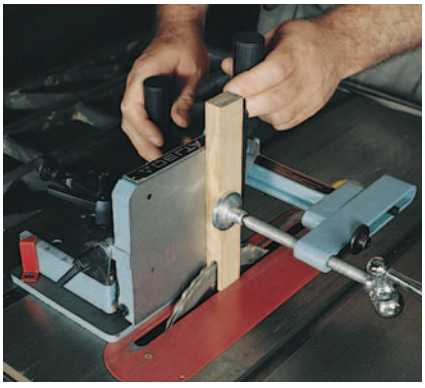
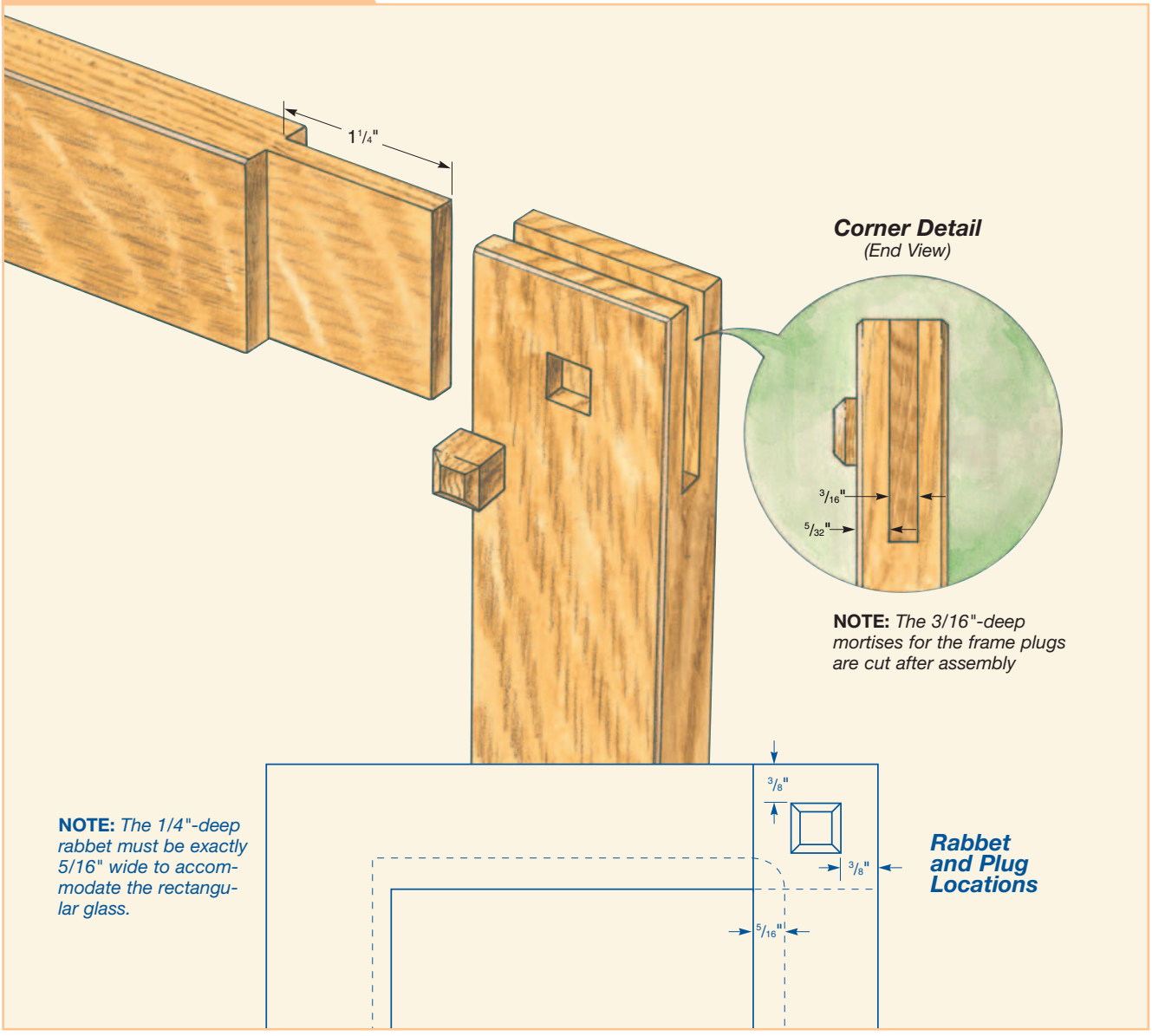


Figure 1: *Use a tenoning jig to form the tenons on the ends of the frame top and bottom and then reset it to plow the open mortises in the sides.*

Starting with the Frame

There are two distinct subassemblies in this project: the frame and the base. The frame is made up of two sides, a top and a bottom (pieces 1 and 2). After cutting these parts to the dimensions shown in the *Material List*, page 112, lay out the open mortise and tenon joints that hold them together. All the dimensions are provided on the *Technical Drawings* on pages 114 and 115. Use your table saw's tenoning jig to create the tenons on the ends of the frame top and bottom, then reset the jig to plow the open mortises in the frame sides (see *Figure 1*). Test all these cuts

Frame Joinery Exploded View



on scrap before milling the actual workpieces, paying special attention to how the parts fit together. You need a tight fit, but not one where you have to force the pieces together, which could risk splitting the walls of the open mortise.

Glue up the frame, applying glue to each mortise and tenon. Clamp the assembly so it is square and the joints are tight, then use four more clamps on the corners to ensure good contact between the tenon cheeks and the mortise walls.

When the glue is dry, sand the entire frame before creating the rabbet for the back and glass (pieces 3 and 4). Refer to the *Technical Drawings* and the *Elevation Drawings* for the dimensions and location of this rabbet, then mill it, as shown in *Figure 2*, next page. Use a piloted bearing bit to create a rabbet exactly 1/4" deep by 5/16" wide. You want to be precise here to ensure the rounded corners of this cut will accept the rectangular piece of glass you'll install later in the assembly process.

Making the Feet Next

After cutting the feet and base rail (pieces 5 and 6) to their overall dimensions, lay out the chamfers on each foot, following the dimensions on the *Technical Drawings*. Use your miter gauge with the stock clamped tightly in place to form these chamfers on the table saw. Since there will be some overlapping joinery, we recommend you complete the dado and tenon joint between the feet and the base rail now. Set up your table saw with a dado head

and form the dado at the center of each foot. Use the same basic setup to mill the cheeks on the base rail. Once you've got a tight fit, set up your mortising machine with a 1/2" bit and chisel and form the shallow mortises that will accept the plugs on the outsides of the feet. Now go ahead and glue the feet to the rail, taking care to keep everything square.

When the glue is dry, create another mortise on the top of each foot for the uprights (pieces 7). While you're at it, form the mortises toward the top of these uprights (for the plugs) and drill a small through hole for the nail that will hold the frame in place later. Check the *Technical Drawings* for all the dimensions and locations. As the mortising machine bit is a set size, while tenoning jigs are adjustable, it makes sense to chop your mortises first, then mill the tenons to fit. Once you've cut the mortises for the uprights into the feet, move to the uprights and form the tenons at their ends. These tenons can be milled on the table saw using the same jig you used earlier to build the frame. Check their fit in the mortises you just formed, then use the power miter saw to trim the chamfers at the tops of the uprights and on the plugs. (Use the same method described in the *tint box* at right.)

Assembling the Frame

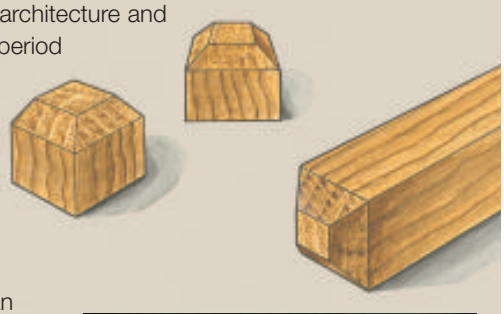
Before starting your assembly, move back to the mortising machine to form the four mortises for the pyramidal plugs (pieces 8) on the face of the frame. Test the fit of these plugs, as well as the four on the base subassembly. Now sand all parts through the grits to 220 grit, slightly chamfering the edges, then apply the stain of your choice. Traditionally, this would be a dark reddish brown: Stickley used to treat his oak pieces with ammonia to achieve this, but now we can use much safer and simpler stains to gain essentially the same results.

Install the frame plugs and the two on the feet, but hang onto the two at the top of the uprights for now. Dry-fit the uprights in the feet and, using small brass washers (pieces 9) as spacers, nail (piece 10) the uprights to the frame. (Note: Drill pilot holes in the uprights just large enough to provide a snug fit for the nails. Also, be sure to extend the pilot holes into the frame to prevent splitting.) When everything fits well, glue the uprights to the feet, keeping the frame in position so the uprights dry at 90°. Plug the last two mortises, apply a satin finish to all the stained parts, and set the photo and glass in the frame to test their fit.

Cut the frame back to size and band

MEDIEVAL INFLUENCES

The influence that medieval architecture and design had on the Arts & Crafts period is evident in the widespread use of pyramidal plugs found on turn-of-the-century Mission, Roycroft and other furniture lines. These plugs resemble the beaten heads of iron nails, used extensively in the carpentry and leatherwork of medieval European households.

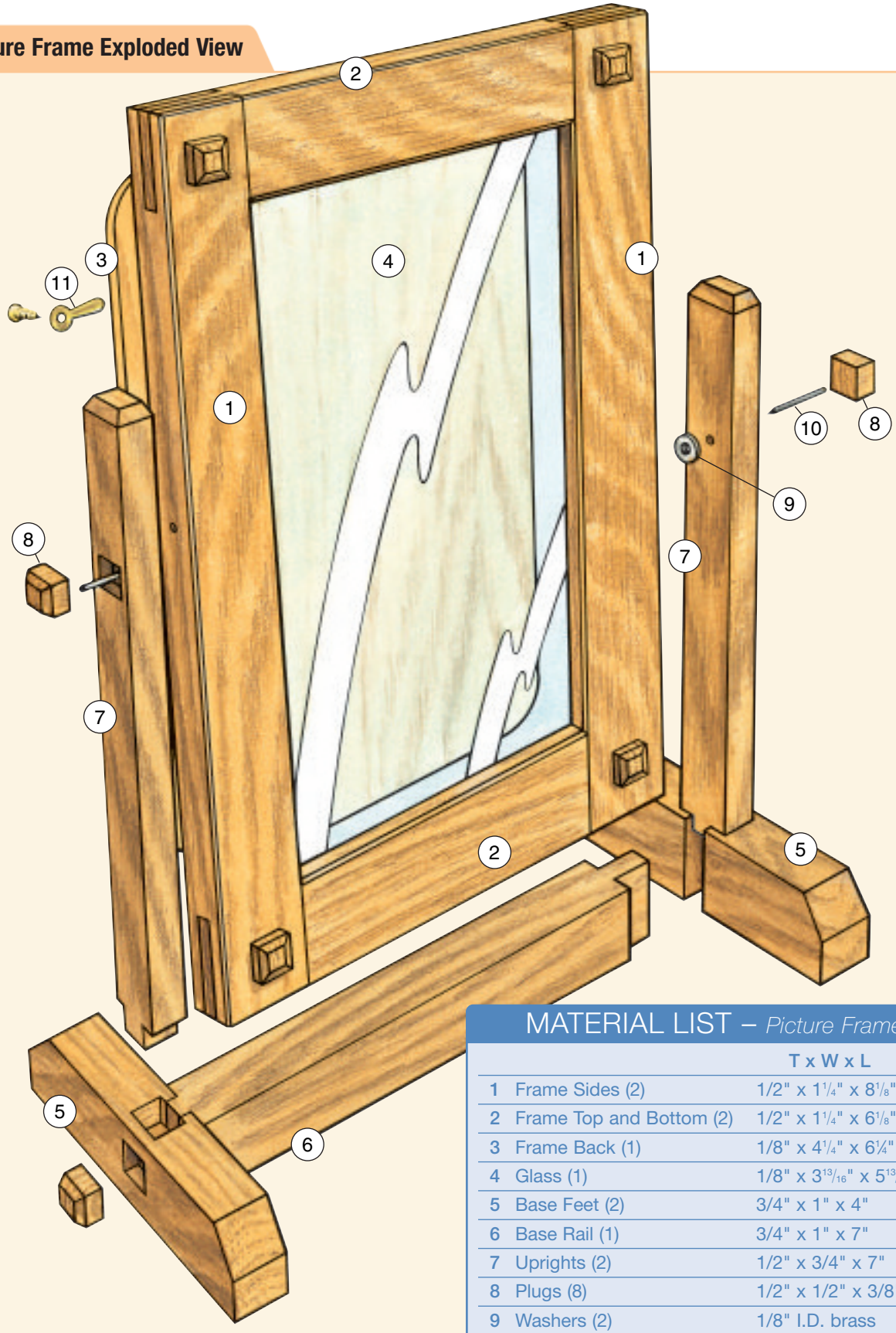


Begin making the plugs by setting your miter saw to 45° and attaching a piece of masking tape to the bed of your miter saw. Rip a piece of stock to 1/2" square, then set it on the saw and make the first chamfered cut, as shown at right. Before moving the workpiece, mark the stock's location with a pencil line on the tape, then simply line up the end of the stock with this mark as you rotate the piece 90° to make the other three cuts. Trim the plugs to length on the band saw: your miter saw is far too aggressive for this cut and the plugs will just go airborne.

Your power miter saw is a good choice for forming the chamfered tops on the plugs. Just be sure to switch to the band saw when you're ready to cut them to length.

Figure 2: *The size of the rabbeting bit and bearing is critical. The goal here is to fit a square cornered piece of glass into an opening with rounded corners.*

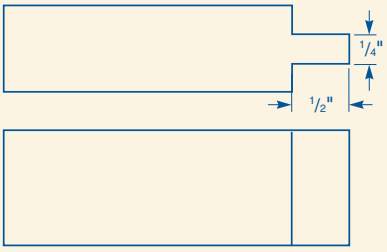
Picture Frame Exploded View



MATERIAL LIST – *Picture Frame*

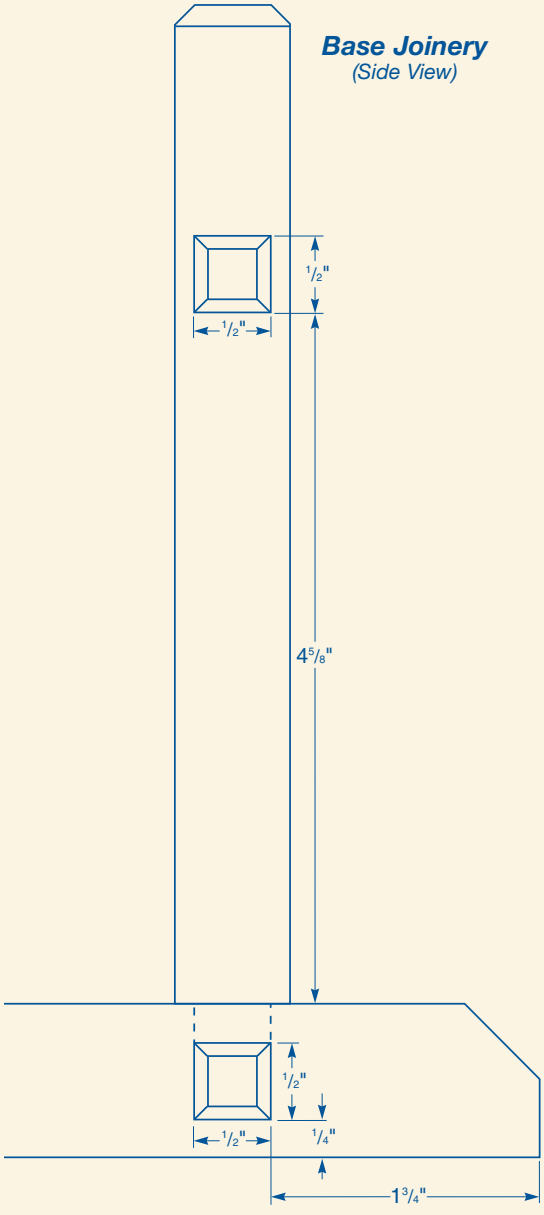
		T x W x L
1	Frame Sides (2)	1/2" x 1¼" x 8⅛"
2	Frame Top and Bottom (2)	1/2" x 1¼" x 6⅛"
3	Frame Back (1)	1/8" x 4¼" x 6¼"
4	Glass (1)	1/8" x 3 13/16" x 5 13/16"
5	Base Feet (2)	3/4" x 1" x 4"
6	Base Rail (1)	3/4" x 1" x 7"
7	Uprights (2)	1/2" x 3/4" x 7"
8	Plugs (8)	1/2" x 1/2" x 3/8"
9	Washers (2)	1/8" I.D. brass
10	Nails (2)	3/4" 6d (remove heads)
11	Turn Buttons (4)	7/8" Brass

Base Rail Tenon (Top View)



(Side View)

Base Joinery (Side View)



EBONIZED ACCENTS

This contemporary frame struck us as more suitable for a turn-of-this-century woodworker, like Norm Abram. Check out the Technical Drawings *for the inlay locations.*

In the world of fashion, if you can't find the right color, it's standard practice to "go with black." In woodworking, black also gets the nod, but it's more typically employed as the perfect accent color, complementing without competing. For years, ebony was the species of choice for this role, but today it is in short supply. It's also something of a waste, since you can achieve the same look, often with desirable grain highlights, by using a simple chemical reaction to transform oak's natural color to pure black—ebonizing it.

Of course, you could choose to paint the accents, but paint fills the pores and blends the grain configurations, masking the natural beauty. Staining will add color to oak while retaining its character, but stains can be messy to use and difficult to apply evenly. The following ebonizing process is easier than staining and creates a deeper black than can be attained with stains or dyes.

Try ebonizing something small at first, like the plugs on the frame at right. You can move on to small jewelry boxes, or even the top of an end table, once you get the hang of it. If you are working with previously treated wood, be sure to strip the finish and sand to 280 grit or finer.

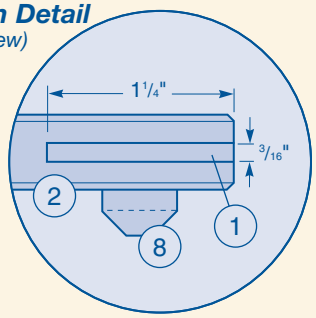
The process couldn't be simpler. First, completely immerse a handful of steel nails in a cup of white vinegar (use a wide-mouth container, such as a peanut butter jar). Let this steep for about a week, or until the liquid becomes murky. Try some of your brew on an oak scrap to see how it responds. It may be ready in as few as four days. No pressure, though: it will still be ready after a month. When you're happy with the appearance of your mixture on the scraps, liberally brush the solution onto your accent pieces. As it reacts with the tannin in the oak, the darkening begins. Apply several coats, allowing the wood surface to dry between coats. This takes about half an hour. When the oak is as black as you like, brush on household ammonia. It neutralizes the vinegar acid, stopping the reaction in its tracks. Once the piece is dry, it's ready. You'll find that your ebonized stock finishes nicely and accepts glue with no problem.

saw, then sand the corners to perfectly fit the rabbet in the back of the frame. Apply your stain, and finish both faces of this piece. When the finish has dried, install the back, photo and glass with four turn buttons (pieces 11) at the locations shown in the *Technical Drawings*.

Now that you've completed your first frame, it may be time to clean up the shop and set it up for a production run. After all, framed photographs do make for wonderfully personal gifts.

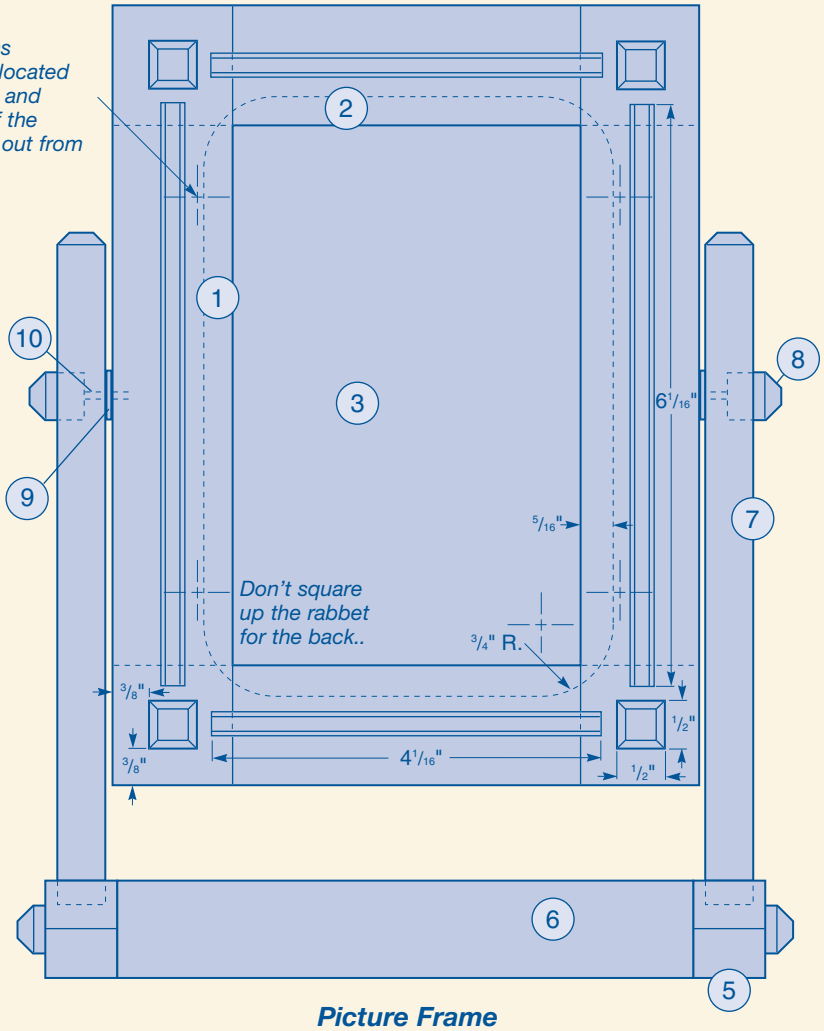
The back should fit perfectly, since this frame may be viewed from either side. Use brass turn buttons, and finish both sides of this piece to prevent cupping.

Mortise and Tenon Detail
(Top View)

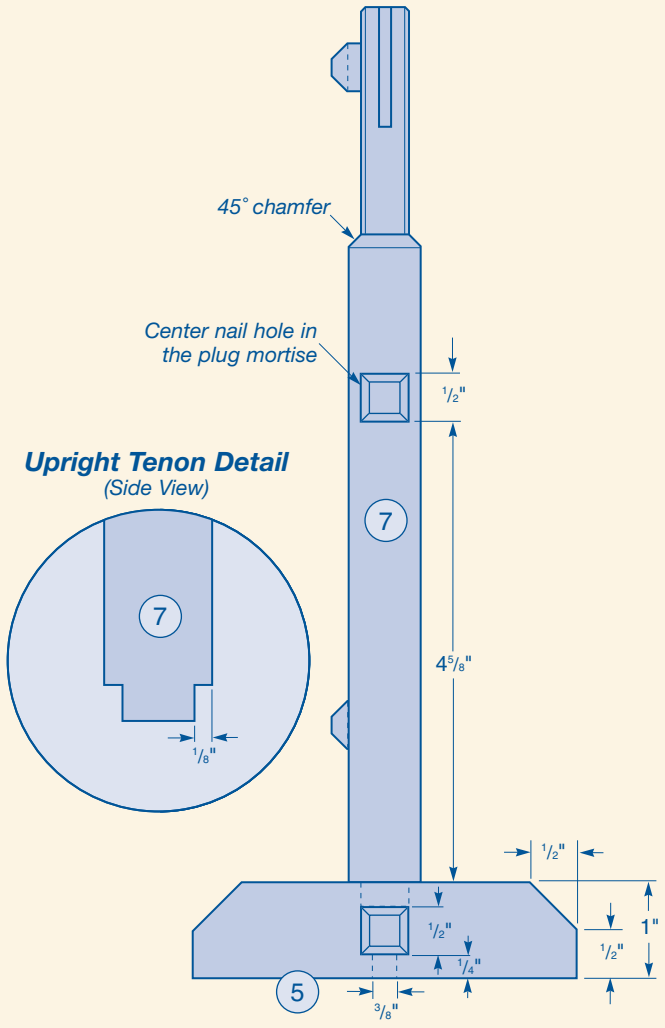


NOTE: *the inlays are optional and more appropriate for a contemporary version. From a design perspective, it is important to stop them short of the pyramid plugs.*

The turn buttons (pieces 11) are located 2" from the top and bottom edge of the frame and 1/8" out from the rabbet.



Picture Frame
(Front View)

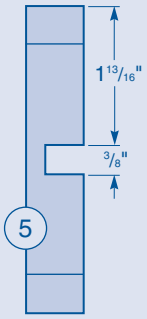


Picture Frame
(Side View)

Upright Tenon Detail
(Side View)

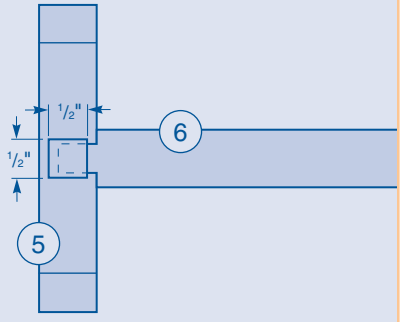
Base Foot and Rail Subassembly Detail

Step 1
Plow the rail dado.



(Top View)

Step 2
Center the upright's mortise after you glue up the foot and rail subassembly.



(Top View)