PROJECT NUMBER 62

## MISSION-STYLE FRAMES

# MINUS THE MITERS

BY RALPH BAGNALL

Only your imagination will limit the picture frame variations you can make with this useful project - made easier with a special jig.

My wife recently came home with an interesting mission-style picture frame she wanted me to reproduce for her. It consisted of twin rails using half lap joints in the corners rather than miters. This lent a substantial but graceful look with just a small amount of stock.

Looking it over, I saw that with a few modifications, it would make a fun and useful weekend project.

The store-bought frame uses two different sets of parts. Simple square pieces form the outer rails, and a different set milled to include the rabbet for the artwork make up the inner rails. By milling the rabbet after assembly, both sets of rails can be made exactly the same way.

Now typically, I would form the half laps by milling a wider piece of stock, cut the dadoes, then rip the stock down to create the square pieces. For this project, I decided to build a simple jig to cut the half laps after the stock was ripped. Here's why. First, I wanted to use offcuts and other scraps I already had. Second, I was planning on making a number of frames of different sizes. Each frame requires sides and ends, so the measuring and marking for the half laps was looking like a long haul.

The jig cuts the half laps oriented from the ends of the stock. One setup is all you need to cut all the parts, even if you are making different-sized frames at the same time.

In fact, altering the lengths of the individual parts is the only adjustment needed to make frames of varying sizes.

### Stock preparation

The double frame allows for using smallish off-rips, but as always, stock preparation is the key to success. The stock must be square, straight and true, with no knots or blemishes. Any warp or twist after assembly will stick out like a sore thumb.

Begin by resawing the scraps to ¾" x ¾". This gives plenty of room for

jointing and planing the stock to true it up. Plane them down to ½" thick and ⅝" wide. The frame members will ultimately finish at ½" square, but I learned a long time ago to cut my half laps first, then plane and/or sand the parts to fit. This is far easier than milling all the stock then trying to set up your dado stack to the exact width of your carefully milled parts.

KEN BRADY

## Cutting to length

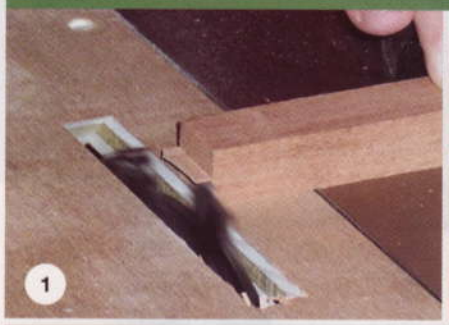
With all your stock at ½" by ⅝" it is time to crosscut the pieces to length. Determining the lengths is simple: All you need to know is the overall size of the picture being framed, including any borders or mats, then add 2½". For example, an 8" x 10" photo in a standard 11" x 14" mat needs a frame 13½" x 16½". So for this frame, crosscut four pieces at 13½" and four at 16½". Couldn't be simpler.

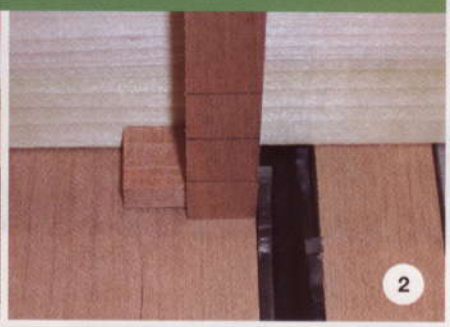
With all the parts sized and cut to length, it's time to mill the half laps. But first, we'll build a jig.

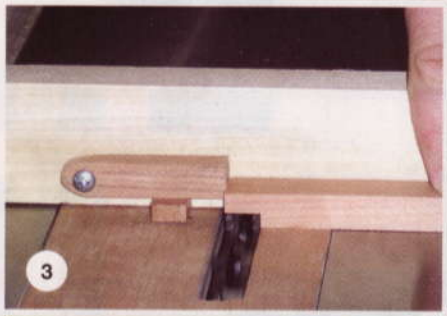
## Building the jig

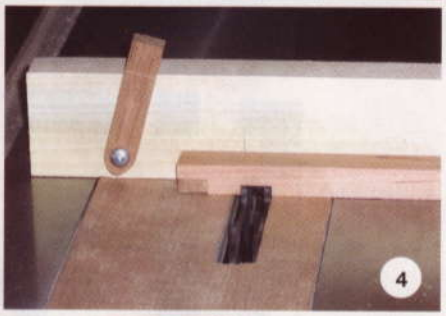
The half lap jig is really a modified box joint jig. Set up a stacked dado for a ½"-wide cut at a depth of about ¼". Test the depth with a leftover piece of your prepared stock. Cut one end, then turn the cut upward and cut again. The two should just meet in the middle, but not overlap **(Fig. 1)**.

With the depth set, clamp a straight piece of hardwood to the miter gauge as






a backer and make one pass through it. Unclamp the backer, and fit a small block into the groove to act as an index key. With the key in place, align the backer so that the key is ½" to the side of the dado stack. I used the ½" side of the stock itself to set the spacing **(Fig. 2)**.

Securely clamp or screw the backer to the miter gauge. It must not move. Two dadoes are needed on each end of the parts. The key sets the inner cut, but for the end cut, I added a flip stop. It is simply a small block with a hole drilled in one end for a pivot screwed onto the backer so that the end opposite the pivot is exactly aligned with the edge of the dado stack.

## Cutting the half laps

Now it's simply a matter of cutting all the half laps. Flip the stop down, slide the part over until it meets the stop and cut **(Fig. 3)**. Flip the stop out of the way, slide the part over until the open half lap you just cut is resting over the key and cut again **(Fig. 4)**. This process is done to both ends of each part.

Again, because the jig indexes the cut from the ends, all the parts, even from different frames, can be cut in the same setup.

With all the half laps cut, it is time to size the width of the parts to fit. I used my benchtop planer, taking very shallow cuts. Here, it is very important to make sure that your planer is set up properly to avoid snipping the ends of the parts. I always test with my leftover material at each new depth setting before planing my good stock.

If you own a drum sander, you can make the last few passes there, but careful attention with a properly set planer will give you a good fit.

The fit should be snug when the parts are slid together, but you should not need to force them. One note: hand sanding to fit is risky, because it is very difficult to achieve uniform results across the part.

## Assembly

Assembling the frames is quite easy. I applied a thin layer of glue to each half lap using a small brush. Squeeze-out in and around all those meeting edges is a pain to clean up, so apply the glue sparingly. Another potential problem is that too much glue in a good snug joint has no way to squeeze out either, so it can hold the joints open.

Clamping can be as simple as using spring clamps, but I prefer using parallel wooden clamps. There are four points of contact in each corner **(Fig. 5)**, and the wide wooden jaws span them all nicely.

## Milling the rabbet

Once the glue has cured, make sure the overlapping pieces are all flush. I made seven frames at the same time, and for some reason one of them needed a bit of touchup. A sharp block plane makes short work of cleaning up the edges.

The rabbet that will accept the artwork and glass is ¼" x ¼" **(Fig. 6)**. If you plan to use a double mat, you may want to increase the depth to 15/16".

I used a rabbet bit in the router table. To minimize chipping, you may want to use a larger bearing first to make a shallow cut, then re-cut with the proper size bearing. You can also set the bit shallow and raise it to final height.

Square up the corners of the rabbet with a chisel **(Fig. 7)**. Be sure that the frame is solidly supported underneath; otherwise you risk splitting the parts.

## Final steps

The simplest method of hanging these frames is a pair of small eye hooks and picture wire. I prefer the frame to hang flat to the wall, so I milled in hook slots using a keyhole bit **(Fig. 8 w/inset)**.

PROJECT PHOTOS: RALPH BAGNALL

I marked the center of one end and one side with low tack tape, then again on the router table, I carefully guided the bit into the outer rail then backed it out. Take care not to hit the inner rail when backing out of the cut.

I tried a couple of different finishes for these frames, including spray shellac in a can, danish oil, water-based poly sprayed from my HVLP system, and spray paint. All gave good results. The narrow surfaces don't tend to show flaws easily.

The easy way to add the glass to the frame is to have a local glass shop cut your glass to size. Since the rabbet is fairly shallow, you'll need ⅛"-thick glass.

In my house, with kids and pets, we prefer using ⅛" acrylic. Many home centers carry standard picture sizes precut. Many will also cut pieces to size for you.

Cutting your own is quite easy too. To minimize chipping, use a clean, sharp 60-tooth blade. Triple chip grind is best, but alternating top bevel works very well too. Use a zero-clearance insert for proper support. Cut the plastic to the same size as your mat.

Cutting thin materials like this requires a few safety notes. Use the blade guard. The thin plastic will want to ride up the front of the blade and the guard helps hold it down to the table. Keeping the blade a bit higher than normal minimizes this effect. Thin stock may also be able to slip under the rip fence. A piece of ¼" ply can help keep the edge above the bottom of the rip fence.

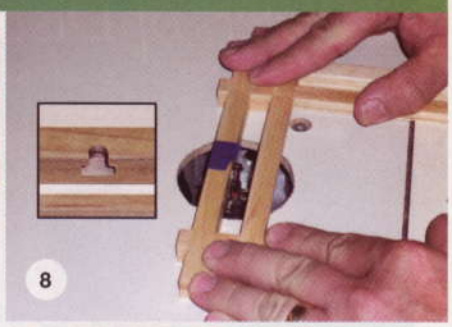
## Variations on a theme

One of the interesting benefits of this project was experimenting with the frame styles. Different finishes and details, and even making new parts, allowed me to play with all sorts of different looks.

Giving the frame a gloss black finish creates an Asian look, or the oak frame can be further distinguished as mission style by adding pyramid pegs to the corner holes. The cherry frame can be accented with maple blocks set low into the corner holes. Make them with a table saw, a simple stop system, equal lengths of stock, and (for pyramid pegs) the saw blade set at the desired angle **(Fig. 9)**. I added a bit of extra length to the inner rails of the maple frame to get a more contemporary look.

Once you get familiar with making the basic frames, try figuring out different changes and designs. Have fun with it! They may not all turn out well, but you'll learn a lot about design elements.

This turned into a fun and useful project. I hate making frames generally, but my new technique enabled me to make the frames shown here in a weekend. I have many more pictures to frame, but I don't dread the task anymore.




## Ralph Bagnall

A professional woodworker for 20 years, Ralph Bagnall builds reproduction furniture in his home shop, and has been teaching and writing for the past several years.