

Warren D. Messer, Red Barn Boats

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Joining Plywood End to End using a dovetail joint template and a router

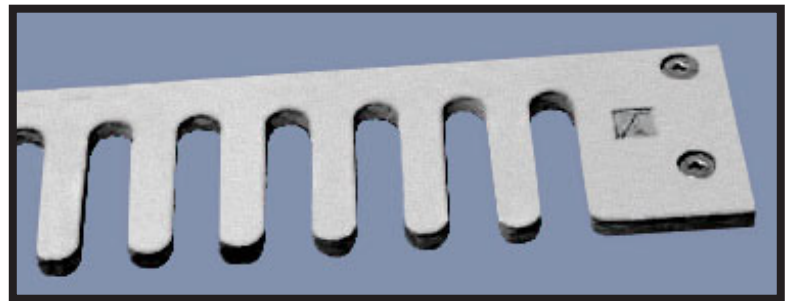
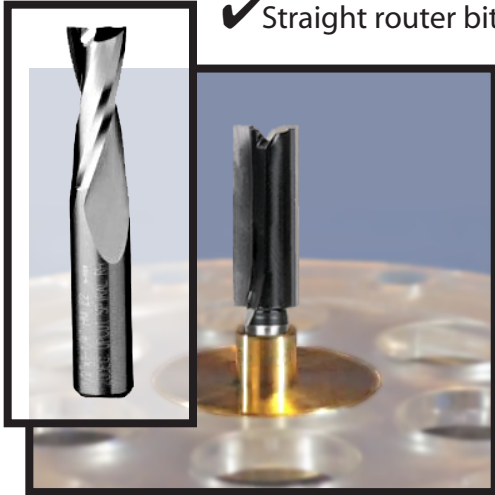
Precise, interlocking "finger joints" are best for thinner plywoods where beveled edges are too small to resist bending tensions and a layer of fiberglass cloth is needed on both sides to strengthen the joint.

YouTube videos: EMC Part 1-1 Testing Finger Joints, EMC Part 1-2, Tank Testing, EMC Part 1-4 Making Finger Joints, EMC Part 1-5 Epoxy Finger Joints

You Will Need

- ✓ Router
- ✓ Up-cut spiral router bit, 1/4" dia., 1/4" shaft
- ✓ 3/8" O.D. brass guide bushing
- ✓ Straight router bit, 3/8" dia. x 1-1/4" long cutter, 1/4" x 1-1/2" long shaft

item #11-143: <http://www.infinitytools.com/Straight/products/1053/>

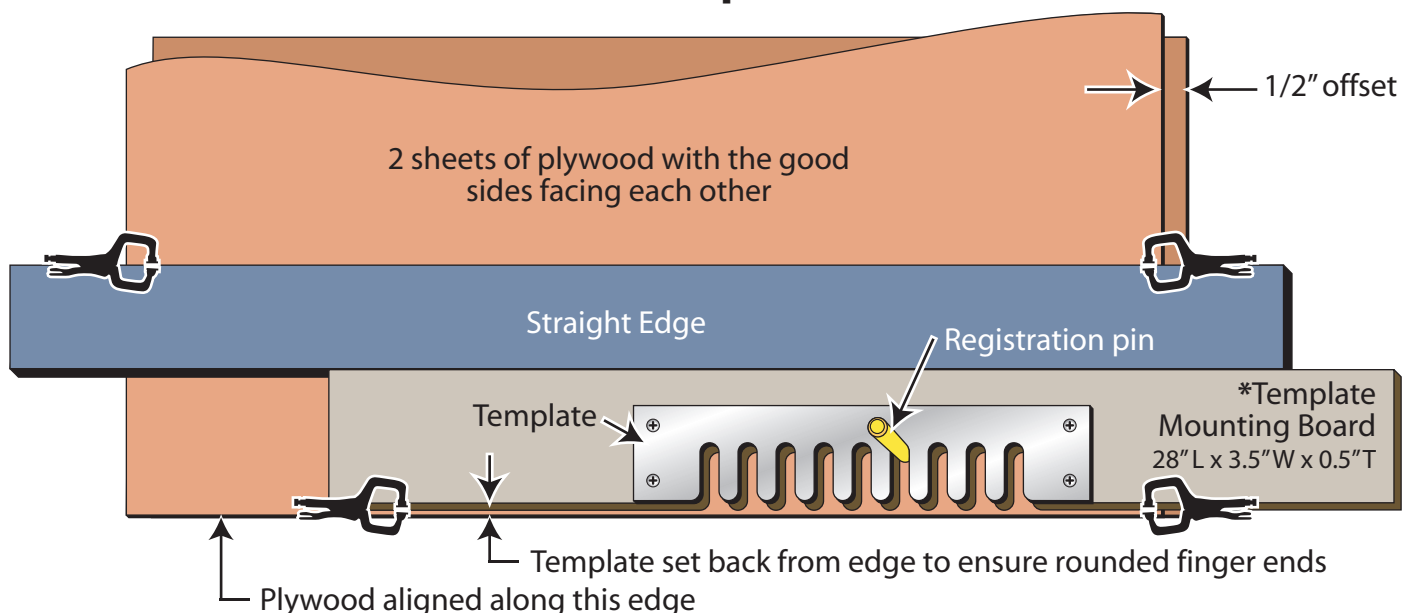


- ✓ Woodstock D2926 1/2" Dovetail Aluminum Template You can go to this website, enter your zip code and see if there is a dealer in your area you can buy or order one from. <http://www.woodstockint.com/1-2-Aluminum-Dovetail-Template/D2926/>


- ✓ straight edge to clamp all the way across the plywood
- ✓ template mounting board
- ✓ 1/2" dowel or pin for registration
- ✓ non-marring camps
- ✓ *6' aluminum bar (page 3)

*Any stiff and straight guide that is long enough to keep one side of the plywood pair in perfect alignment

Setup



*Template mounting board can be screwed to plywood so nothing moves

 Areas to clamp

revised 7-2-2011



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Cutting the Joint

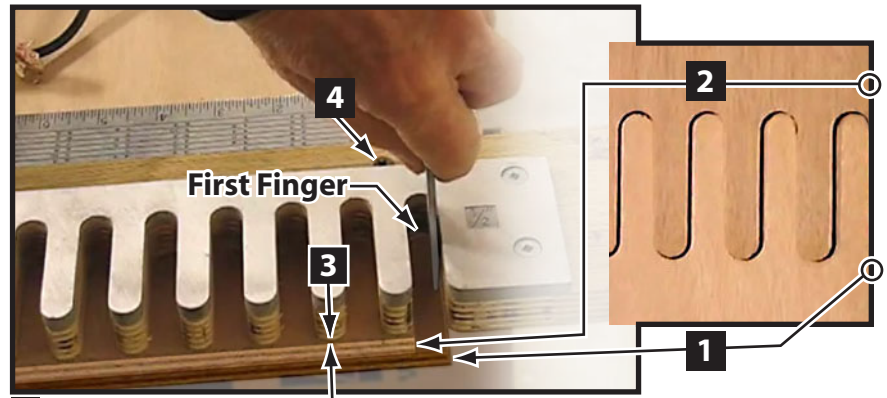
"wear your safety goggles"

Stack the plywood



Stack two sheets of plywood with the face sides together. Butt the ends and offset the sides by 1/2".

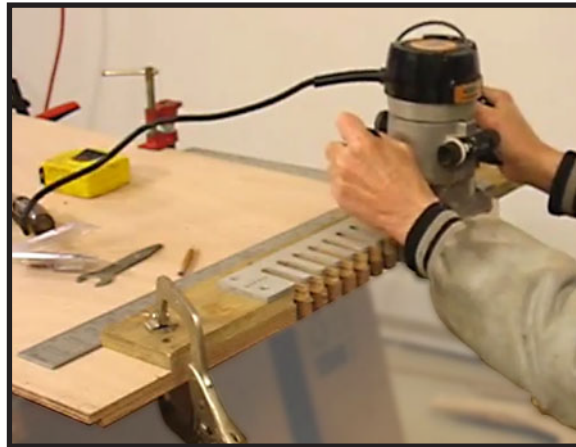
Offset the edge by 1/2"



- 1 The bottom sheet aligns with the right edge of the first finger.
- 2 The top sheet aligns with the left edge of the first finger.
- 3 The template is set back from the edges to ensure rounded ends.
- 4 Screw down the template to the plywood so nothing moves.

Up-Cut Spiral bit

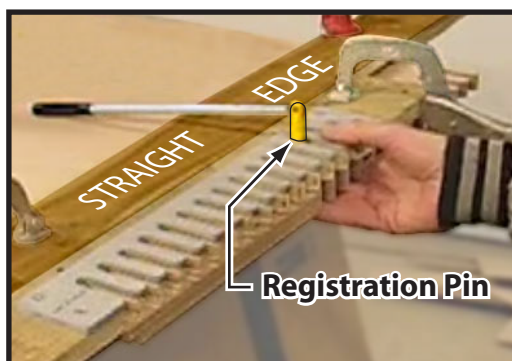
First use this 1/4" bit to open up the wood enough to finish with the final 3/8" straight bit. Make sure the router base is flat on the template before pulling the trigger. This exits the waste down.



3/8" Straight bit

Then use this bit to make a smooth, finished edge.

Register the template for the next cut



Use a 1/2" pin to register the template when you move it to cut the next series of "fingers".

Finish cutting the fingers





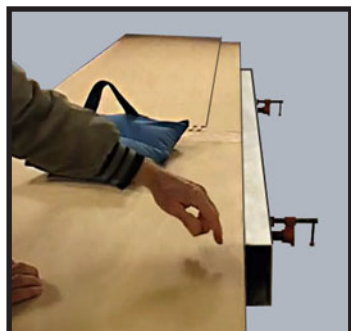
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Apply the Epoxy

"don't forget your respirator"

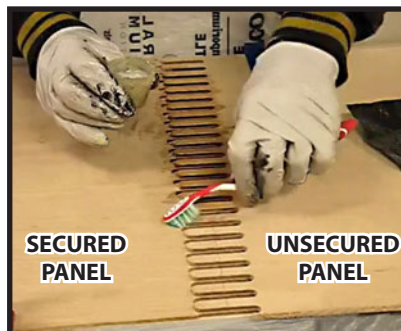
YouTube
Video Reference
EMC Part 1-5 Epoxy
Finger Joints

Use a strongback



I use a 6 ft. long aluminum bar, clamped to my table, as a strongback to ensure perfect alignment of the plywood being joined. Secure one panel of plywood to the table.

Epoxy the edges



Lift the unsecured section of plywood out and slightly offset to brush all the edges and the finger ends of the top piece. I use **System 3 Silvertip Gel Magic**.

Epoxy the ends



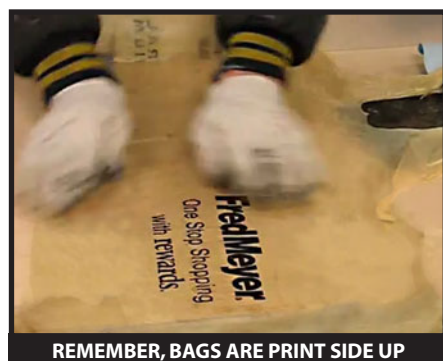
Fit the joint back together but slightly spread apart to apply epoxy to the finger ends of the secured plywood.

Fill the voids



Fit the joint together; liberally spread epoxy to fill any voids. Use a spreader to force more **Gel Magic** into the voids.

Cover with plastic



REMEMBER, BAGS ARE PRINT SIDE UP

I like to use cut open shopping bags because they act like "Peel Ply." They prevent epoxy from puddling underneath as with visqueen.

Clamps, weights and wait



I lay down a strongback of wood, clamp it to the table, and pile weights in the middle to hold it down. You can add plenty of weight because it won't squeeze the epoxy out like in a scarf joint.

Tips

- 1 You can clean the toothbrush by scraping it against a sharp edge to remove the epoxy. Dip in vinegar and repeat the scraping. Do this 4-5 times. Keep the cleaned toothbrush in a separate container with clean vinegar.
- 2 Wait to cover both sides of the joint with fiberglass cloth until after the lofting process so you use only what you need.
- 3 When using shopping bags to cover the epoxy, make sure you have the **print side up** or it will transfer to the plywood.