



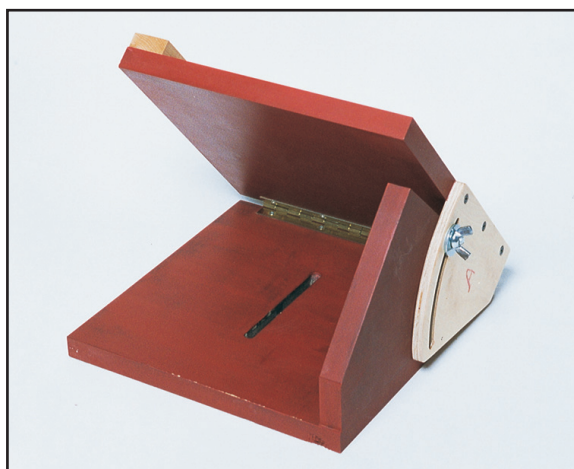
From the Original Woodworker's Notebook

By
Ronald Woodhull

VERTICAL MITER FIXTURE

A NOTE ON SAFETY

Safety is the responsibility of all woodworkers. Do not attempt any project or procedure without all safety devices intact. Any deviations in stock dimensions and/or any change in project will affect the end result of any project. When circumstances require the use of different materials, alter project dimensions as required. Read all instructions for any project before starting the project.



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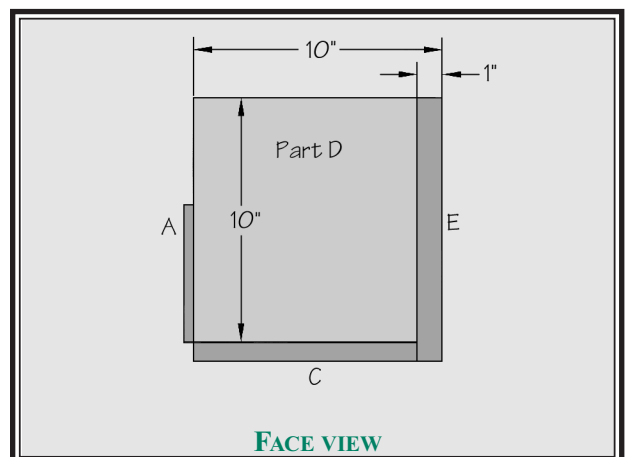
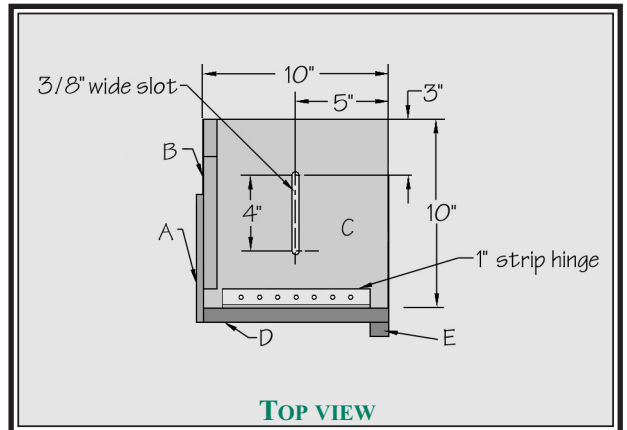
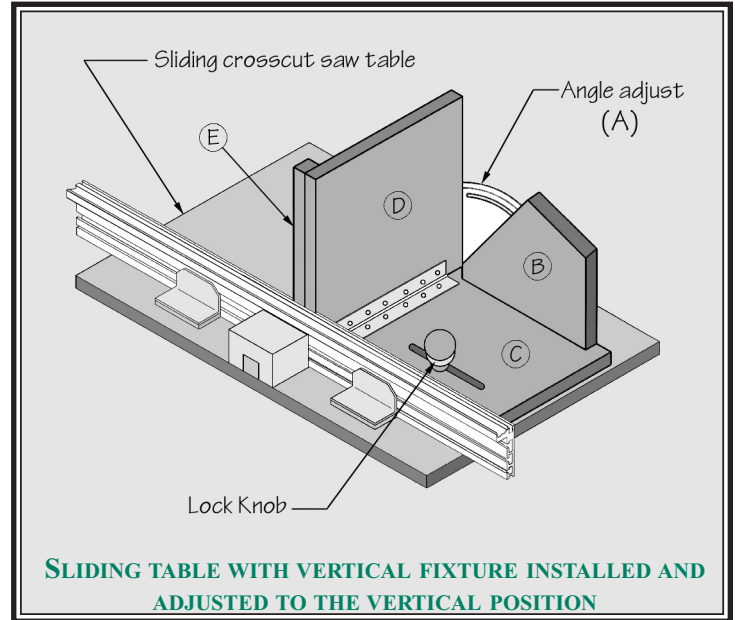
Sliding Saw Table Accessory

Needing a way to accurately cut the miters on the six inch wide boards for the *Place Mat Chest* described in this book, I came up with the VERTICAL MITER FIXTURE. I am sure it is not original. The only thing that separates it from an ordinary vertical tenon jig for any table saw is that it rides in the sliding saw table. I believe that this makes it much easier to use and more accurate.

As I began the project I was going to make a simple fixed 45 degree fixture, but decided that I might also want to make tenons or raised panels with the fixture. The fixture that resulted can be moved nearer to or further away from the saw blade as well as changing to any angle between zero and forty five degrees from the vertical position.

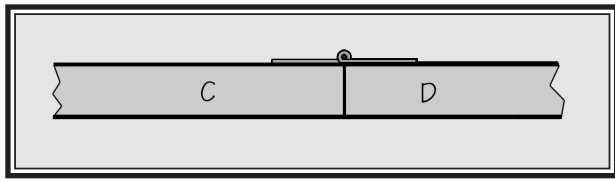
Construction

To begin construction cut two pieces of $\frac{3}{4}$ " MDF or plywood 10" x 10" and label them "C" and "D". Cut the $\frac{3}{8}$ " wide slot in the piece labeled "C". Cutting the slot is easily accomplished on the router table. I started by drilling a $\frac{3}{8}$ " diameter hole at each end of the slot. I set my router fence to be 5" from the center of a $\frac{1}{4}$ " router bit. Position part "C" over the first hole and cut to the second hole. Use infeed and outfeed stops to limit the cuts. Move fence $\frac{1}{16}$ " to the left and repeat the cut. Move the fence $\frac{1}{8}$ " to the right and make the last cut by moving from the last hole to the first, cutting on the fence side of the cutter.



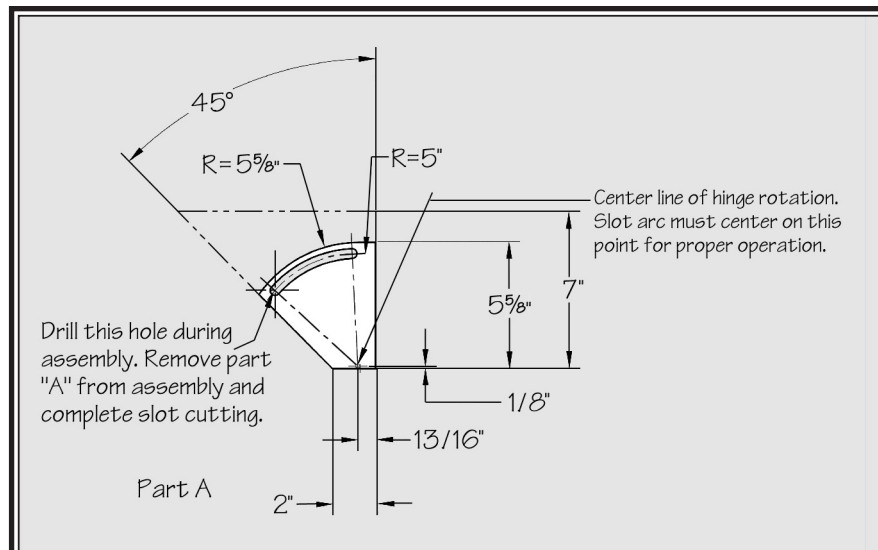
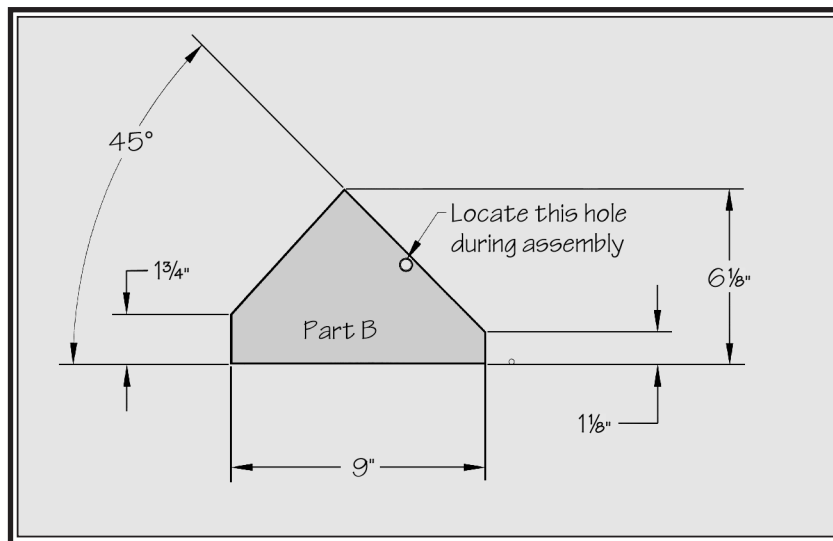
Cut a piece of 2" strip hinge to a length of 8". Attach hinge to part "C" and "D", located 1" in from each end. The edges of parts "C" and "D" must be flush and the hinge located as shown with the two boards lying flat and the sides against a straight edge.

From a third piece of $\frac{3}{4}$ " plywood cut part "B" as shown in the drawing. Do not drill the hole at this point. We will get to that later during assembly.



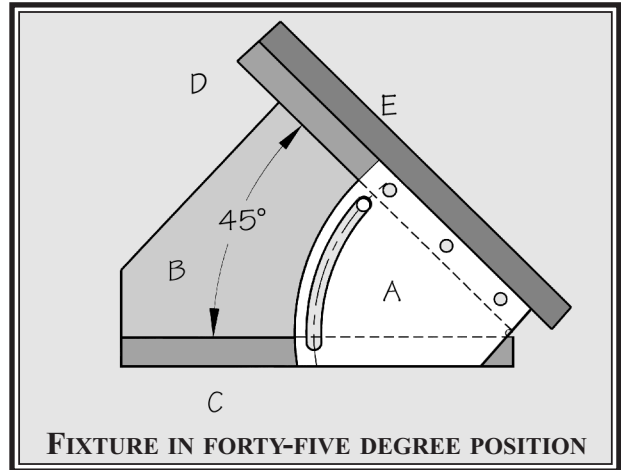
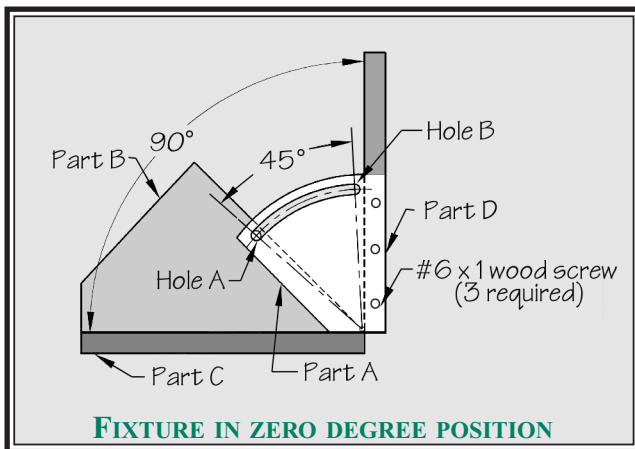
Dry fit part "B" to part "C" and secure with at least two screws, one at each end. The outside face of part "B" must align with the edge of part "C" and be located 1" from part "D".

Using an accurate 45 degree triangle align part "D" to 45 degrees from "C". At this point part "D" should be resting on part "B". If it is not, remove the two screws and relocate part "B" until part "D" rests on it. Glue and screw part "B" to part "C". Do not use the original screw holes if part "B" was moved.



From $\frac{3}{8}$ " plywood cut part "A". Cut first to the phantom lines as shown on the drawing. Do not cut the slot in part "A" at this time. Install part "A" on part "D" with 3 screws as shown. Edge of part "A" and face of part "D" must line up as shown, and the lower surface of part "A" must be even with the bottom of "D". With a square or an accurate triangle align part "D" with part "C" at a 90 degree angle, and clamp part "A" to part "B". Make sure your clamp will not interfere with drilling HOLE A. The dimensions are shown on the drawing on the previous page to locate the pivot center of the hinge. If your hinge is larger or smaller than $\frac{3}{16}$ " diameter at the hinge pin adjust the dimensions by that amount. With a compass draw a 5" arc with the hinge pivot as the center. Locate HOLE A on that arc and $\frac{1}{2}$ " in from the edge of part "A". Drill a $\frac{5}{16}$ " diameter hole through part "A" and part "B".

Loosen the clamp and collapse part "D" to the 45 degree position, (resting on part "B"). Using the hole in part "B" as a guide, locate the hole in part A. Drill HOLE B through part "A".



Remove the three screws attaching part "A" to part "D". With a compass draw two arcs on part "A", from the pivot center, connecting the tangent of the two drilled holes together. With a jig saw or coping saw cut the slot in part "A". Finish cut top edge of part "A" as shown on drawing. Re-install part "A" on part "D" with glue and screws.

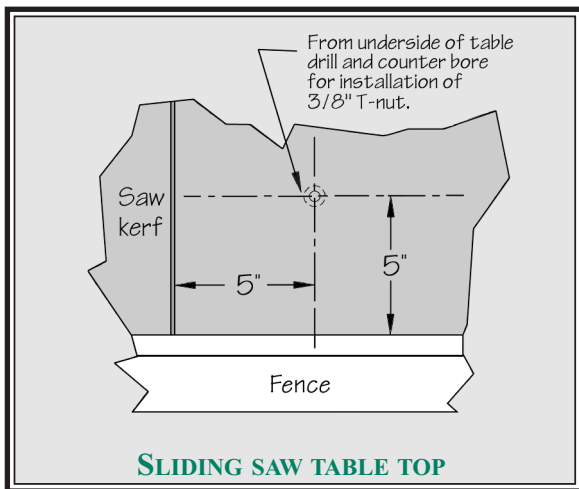
Install a $\frac{5}{16}$ " x $1\frac{1}{2}$ " carriage bolt through part "B" and part "A". Add a $\frac{5}{16}$ " fender washer and a wing nut for the angle lock. The fixture should automatically set for zero and forty five degrees. Other angles should be set using a protractor.

Cut a strip of $\frac{3}{4}$ " hardwood to the length shown on the drawing for part "E". (See drawing on page 2).

Final assembly

Set the fixture to the zero degree position. Position fixture on the sliding saw table so that the edge of part "C" is against the back fence (nearest to the operator). The face of part "D" should be square to the fence. Use a square long enough to span the full 10" face.

Install the stop fence, part "E", on part "D" making sure that it is square with the top of the sliding saw table.



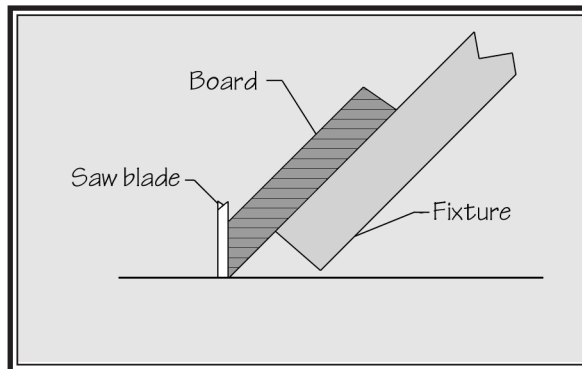
From underside of sliding saw table, drill and counterbore for installation of $\frac{3}{8}$ " T-nut as shown above.

Install a $\frac{3}{8}$ " T-nut in the bottom side of the sliding saw table top. The counter bore should be deep enough that the T-nut cannot contact the table saw top. Purchase or make a $\frac{3}{8}$ " threaded knob. The threaded shaft length cannot exceed $1\frac{1}{2}$ " in length from the bottom of the knob. The knob in conjunction with a $\frac{3}{8}$ " fender washer will be used to lock the fixture in place.

Application

To make a miter such as that used on the sides of the *Placemat Chest*:

- Use sliding table to cut the boards to their proper length.
- Set the vertical fixture angle to 45 degrees and tighten the wing nut.
- Mount vertical fixture on the sliding saw table, against the table fence and with the lock knob loosely installed.
- Move fixture as far to the right as it will go and tighten lock knob.
- This part requires a little trial and error and is best done with a scrap board. Install board to be mitered on the fixture. The bottom edge of the board must be down on the saw table and the near edge against the stop fence. Clamp the board in place.



- Loosen the lock knob and move the fixture to the left to a position where the saw blade will cut the board to within $\frac{1}{64}$ " of the total width. We do not want to shorten the board length.

- When the proper location for the fixture is established install a stop on the fence where it just contacts the stop fence. Be sure that your stop is raised high enough so that the saw blade won't cut it.
- This setting will work for all boards of the same thickness.
- The procedure is the same for each board. First move the fixture to the right to set the board height then back to the stop for cutting.
- The small amount of flat on the miter ($\frac{1}{64}$ ") will disappear when the box is sanded.

MATERIAL REQUIREMENTS

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>QTY</u>	<u>SIZE</u>	<u>MATERIAL</u>
A	Angle Adjuster	1	$\frac{3}{8}$ x 7 x 7	Baltic birch plywood
B	Miter Stop	1	$\frac{3}{4}$ x $6\frac{1}{8}$ x 9	Plywood or M.D.F.
C	Base Plate	1	$\frac{3}{4}$ x 10 x 10	Plywood or M.D.F.
D	Vertical Plate	1	$\frac{3}{4}$ x 10 x 10	Plywood or M.D.F.
E	Stop Fence	1	$\frac{3}{4}$ x 1 x $10\frac{7}{8}$	Hardwood
	Strip Hinge	1	2" x 8" long	
	Carriage Bolt	1	$\frac{5}{16}$ x $1\frac{1}{2}$	
	Carriage Bolt	1	$\frac{3}{8}$ x $1\frac{1}{2}$	
	T-nut	1	$\frac{3}{8}$ to fit knob	
	Fender Washer	1	$\frac{5}{16}$	
	Fender Washer	1	$\frac{3}{8}$	
	Wing Nut	1	$\frac{5}{16}$	
	Threaded Knob	1	$\frac{3}{8}$ to fit T-nut	