

Instructions for building a transform fault demonstration box.

Materials needed:

Cloth: sturdy light-blue cloth (preferably cloth that doesn't unravel along cut edges), 10" x 36"

Plywood for overlay: one 10" x 10" piece $\frac{3}{8}$ " to $\frac{1}{2}$ " thick

Masonite: $\frac{1}{4}$ " thick, six 10" x 10" squares (or five $\frac{1}{4}$ " for box and one $\frac{3}{16}$ " for the underlay)

Triangular (or square) wood pieces: four $9\frac{3}{4}$ " long pieces to brace inside corners

and four short pieces, 1 to 1.5" long, to help support the top

Quarter round molding: $\frac{1}{4}$ ", four 10" long pieces

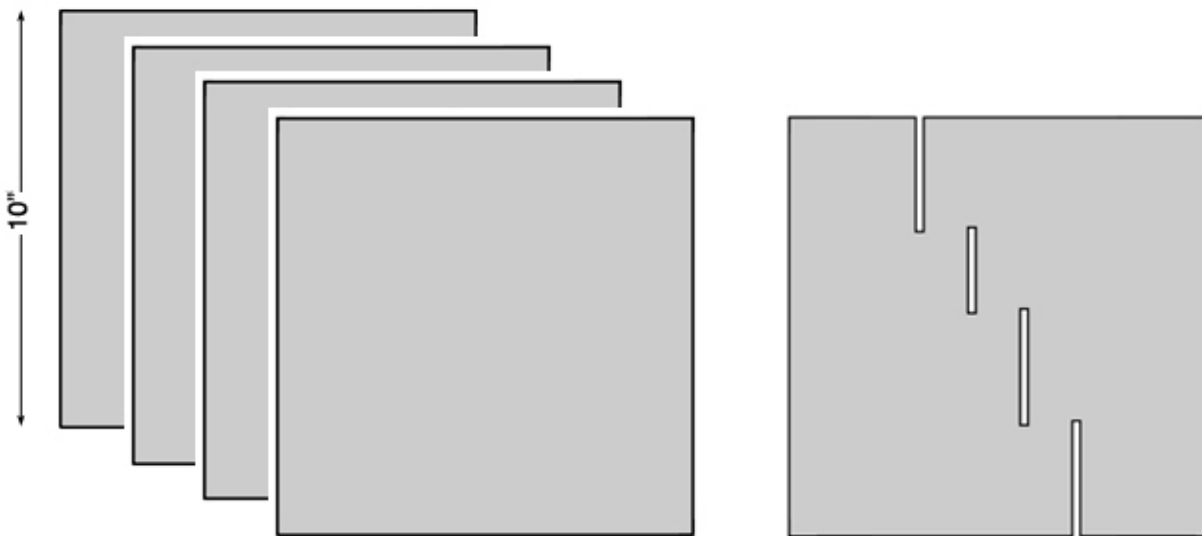
Weights (sand? beebees? fishing weights?)

Fasteners, etc: screws, glue, paint and/or varnish

Construct the box:

Cut out five 10" x 10", $\frac{1}{4}$ " thick masonite squares: four sides plus top. (Bottom stays open.)

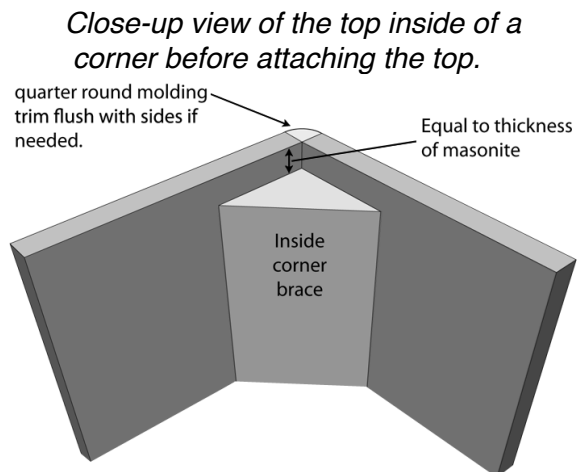
Cut out $\frac{1}{4}$ " slots in the box top, carefully following the pattern*.

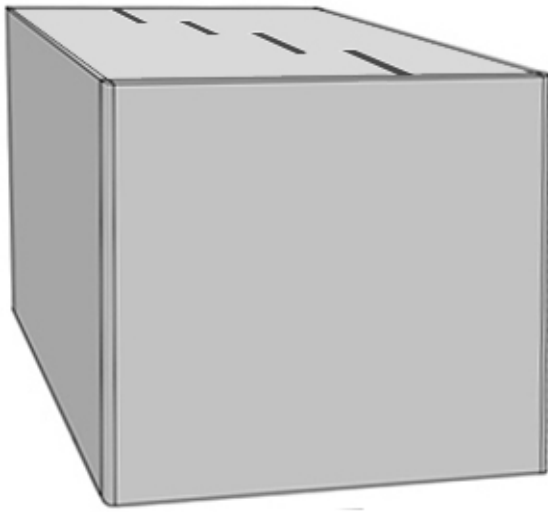


Glue (and screw for extra durability) sides together using bracing inside the corners. The inside braces should be aligned so their tops are the thickness of the masonite below the top edge.

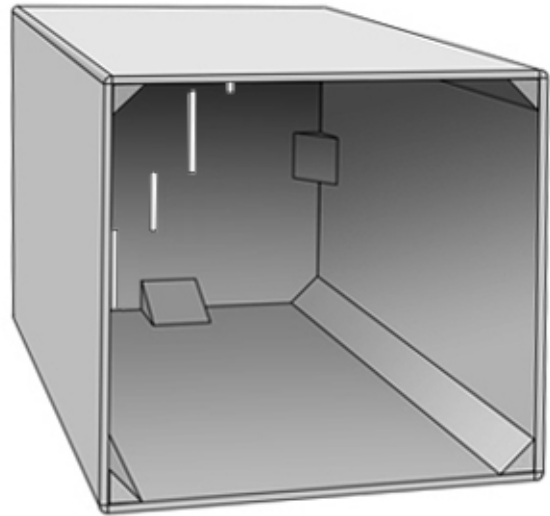
Glue top piece down onto the top of the internal braces. Turn the box over and glue short brace pieces under the top (see figure below).

Use quarter round molding to cover outsides of corners.





Completed Box: side view

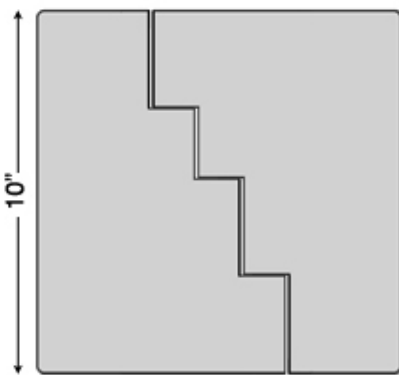


bottom view

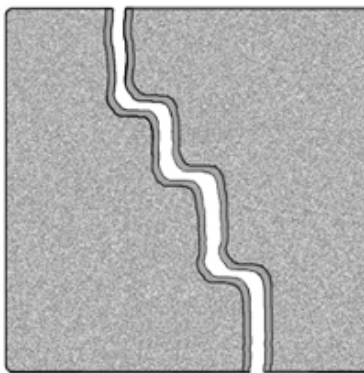
Prepare the overlay and underlay pieces.

Carefully following the patterns*, cut out the underlay from masonite and overlay from plywood. (The overlay pieces represent the drifting continents.)

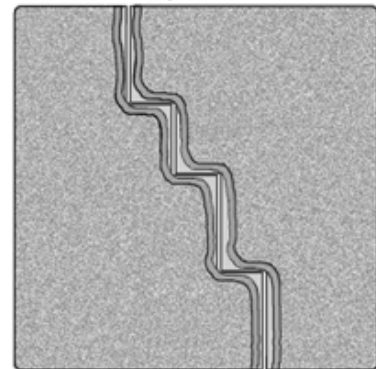
A. Underlay pieces



Overlay pieces



B. Overlay stacked onto underlay showing their geometric relationships

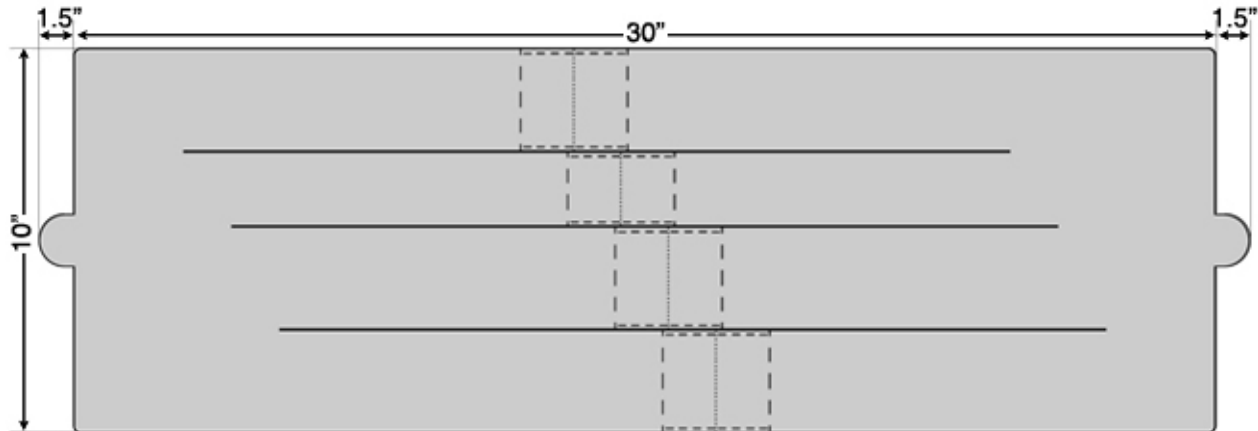


(Note that the shape of the breakup line between the continents is approximately followed by the stairstep pattern of the oceanic spreading centers and transform faults.)

Paint or varnish the box and the overlay and underlay pieces.

Prepare the cloth:

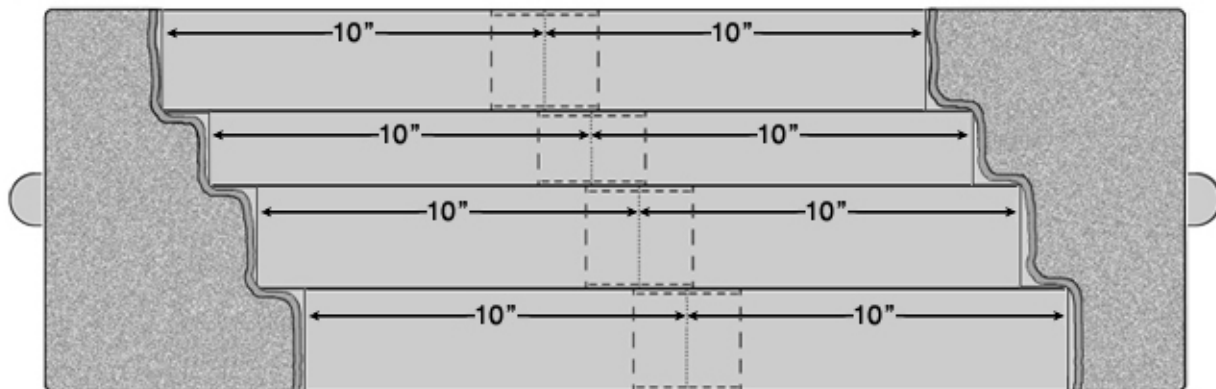
Cut out the cloth strip carefully following the provided pattern*. Cut the interior lines and mark the pocket centers and stitch lines on the cloth.



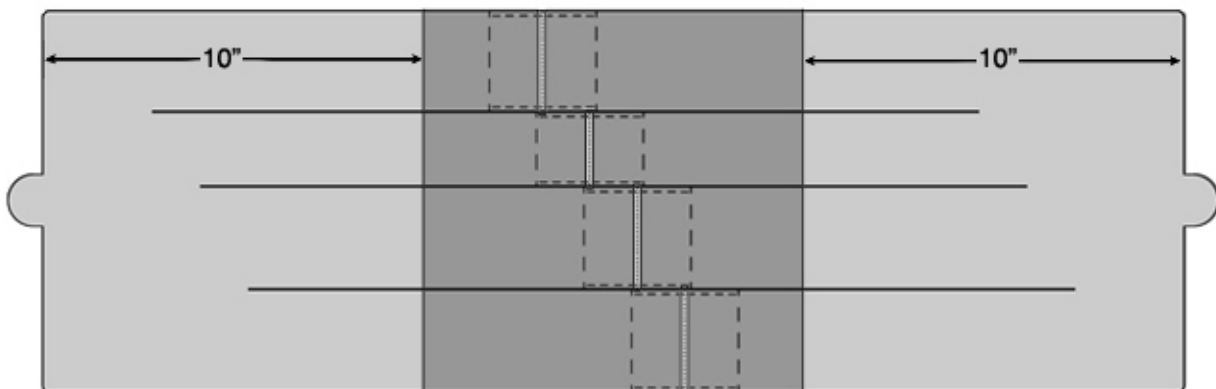
The cloth (ocean) piece.

If needed, treat the cut edges of the cloth so that they won't unravel.

*The next two figures show the relationships among the cloth piece, the overlay and underlay pieces, and the slots in the box top. They must all coincide in order for the model to work. If you wish to change any of these patterns, you must change them all.

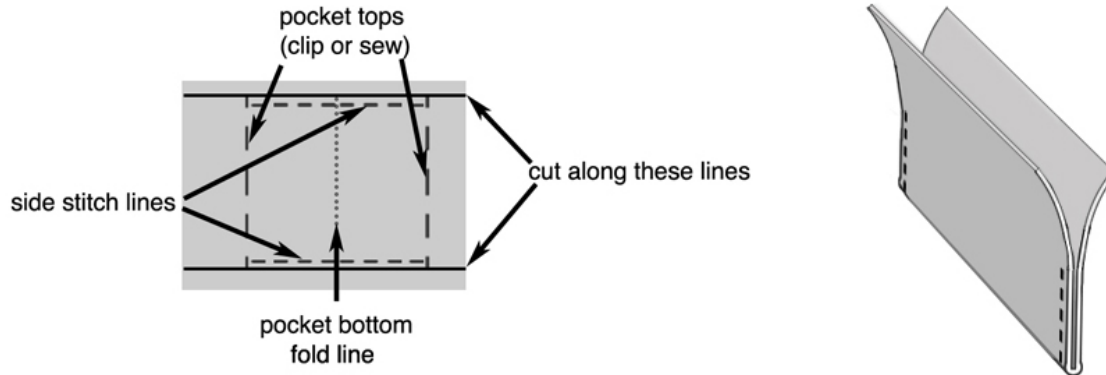


The cloth piece, showing its relationship to the overlay and underlay pieces.



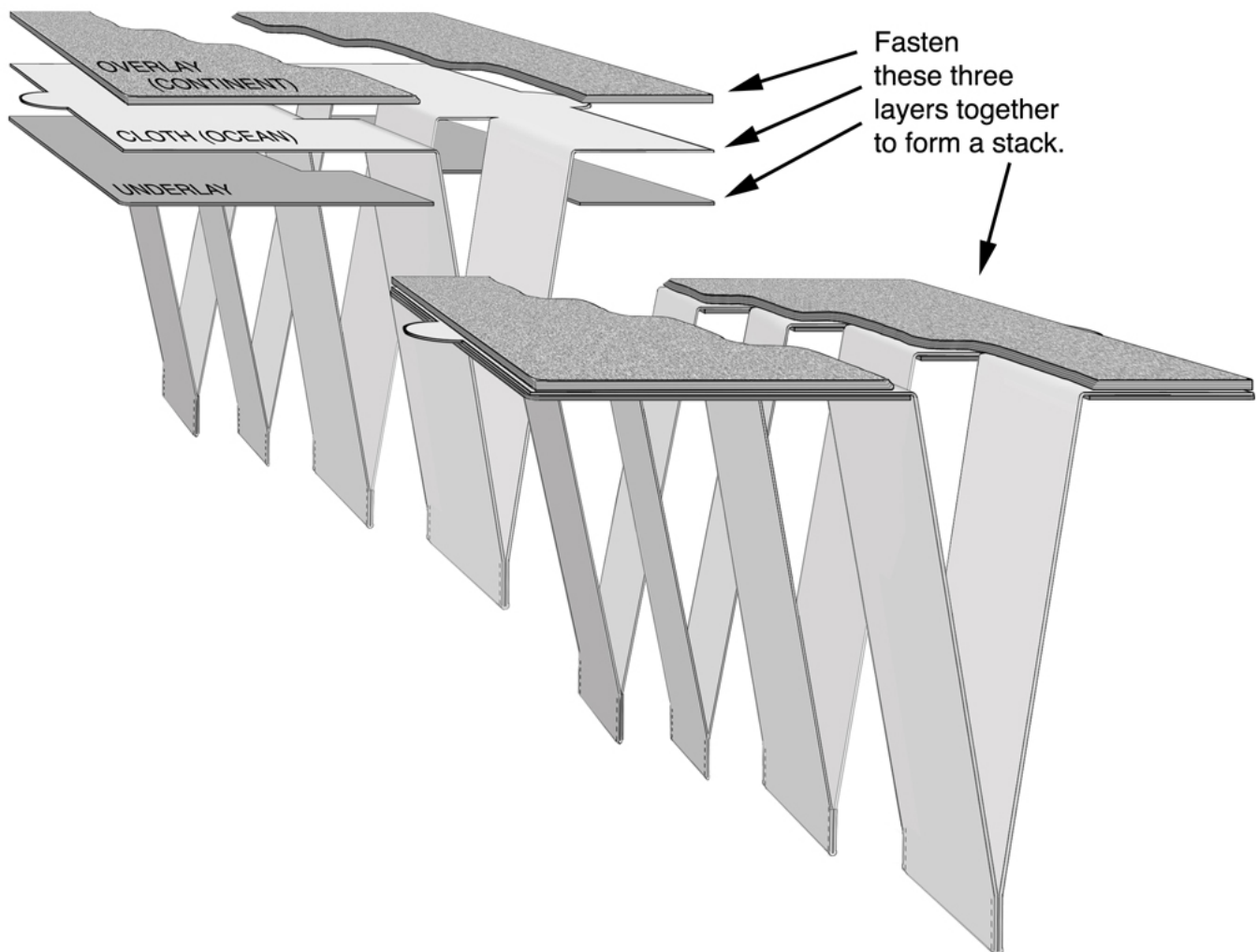
The cloth piece, showing the relationship between its pocket centers and the slots in the box top

For each of the four strips, fold the pocket at its bottom and sew up the side stitches. Don't sew the pocket tops yet.

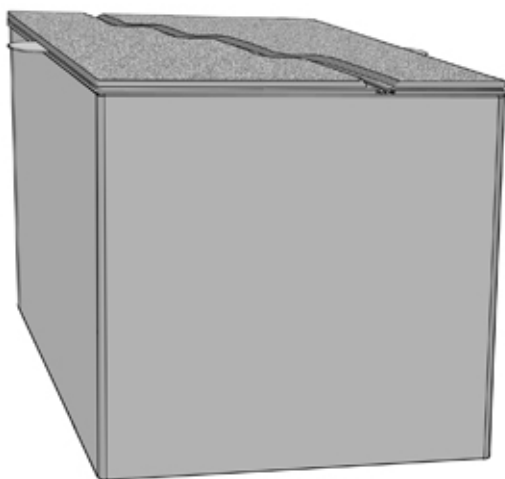


Construct the upper (moving) pieces.

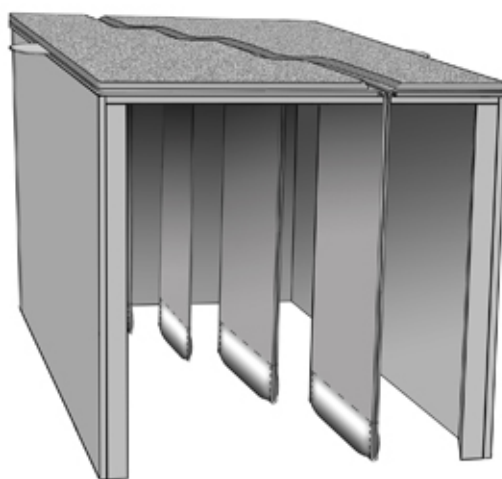
At each end of the cloth piece, make a sandwich by gluing and screwing together the underlay, the cloth, and the overlay.



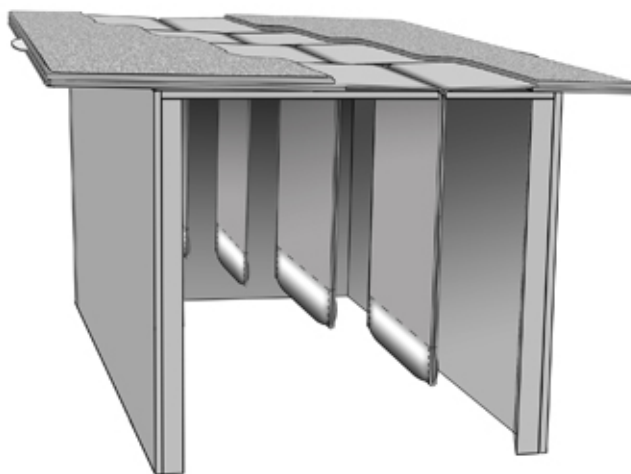
Feed the empty pockets down through the slots in the box top, then, working through the open box bottom (definitely awkward), fill the pockets with weight and sew (or clip or safety pin) them closed.



Finished model



*Finished model with
front left off for viewing*



Enjoy!



Invented from thin air and wacko imaginations by T. Atwater and C. Anderson (about 1995).