A Butterfly Dining Room Table With Two Pair of Wings (Leaves)

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It all started with Jerry Work's "Getting the Most From the Festool Domino Machine" (http://web.mac.com/glwork/The_Dovetail_Joint/Manuals_files/Festool%20Domino%20Manual%20Release%201.2.pdf). In it Jerry described the construction of a Butterfly Leaf table, and indicated how by using a number of simple construction techniques, and applying the Domino machine to its construction, this stunning table could be fashioned. I used this as a starting point for the dining room table I created for my son.

After doing some extensive research on the internet, I stumbled upon a commercial offering of a Butterfly Leaf table with more than one leaf, and challenged myself to figure out how I could design a table in which the butterfly leaves are stowed in separate compartments of the frame, but can be joined together after being deployed.

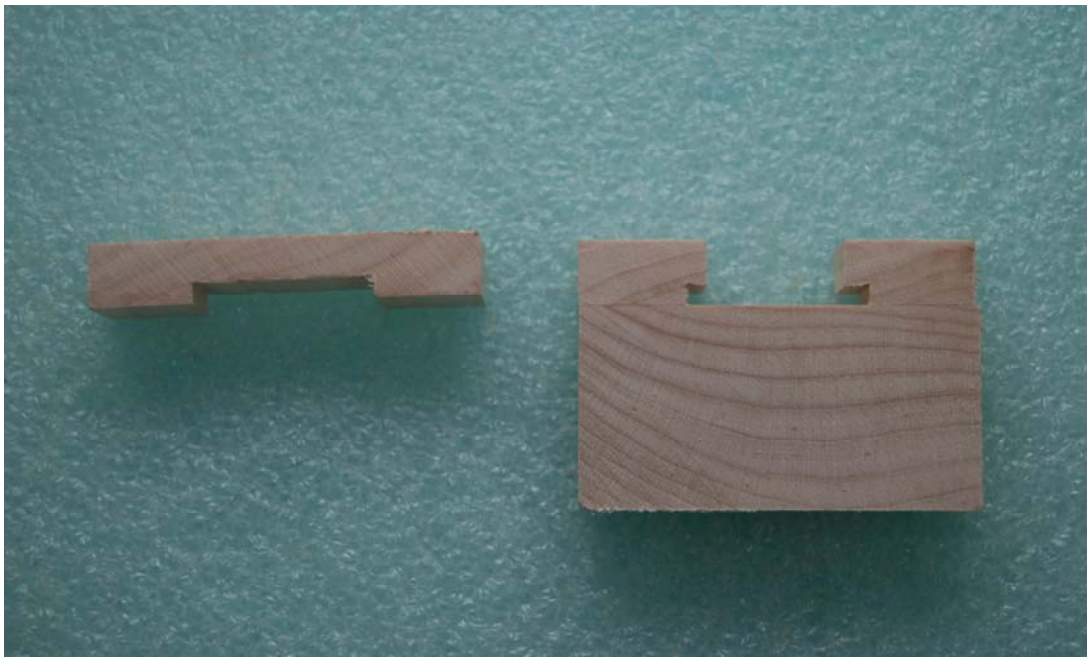
After identifying a design that seemed to be workable, the materials were purchased and after allowing the boards to adjust to the shop environment, construction began. Sapele was chosen as the wood for the table top as well as for the legs. The skirt was made from Lacewood. Hard maple was used for the frame and the shop built sliding mechanism.

I followed Jerry's recipe for using the guide rails and the MFK700 to cut dovetail slots for the table skirts to slide into:

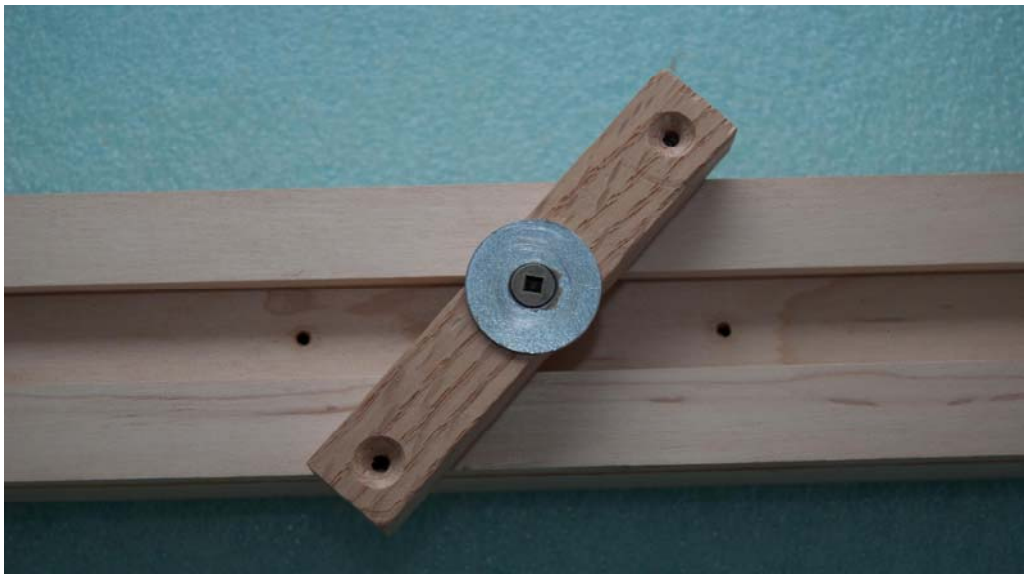
The MFK700 was also used as a horizontal router to put male dovetails on the skirts. Note that the wooden wedge is my micro-height adjustment mechanism for getting the male dovetails just 'right'.

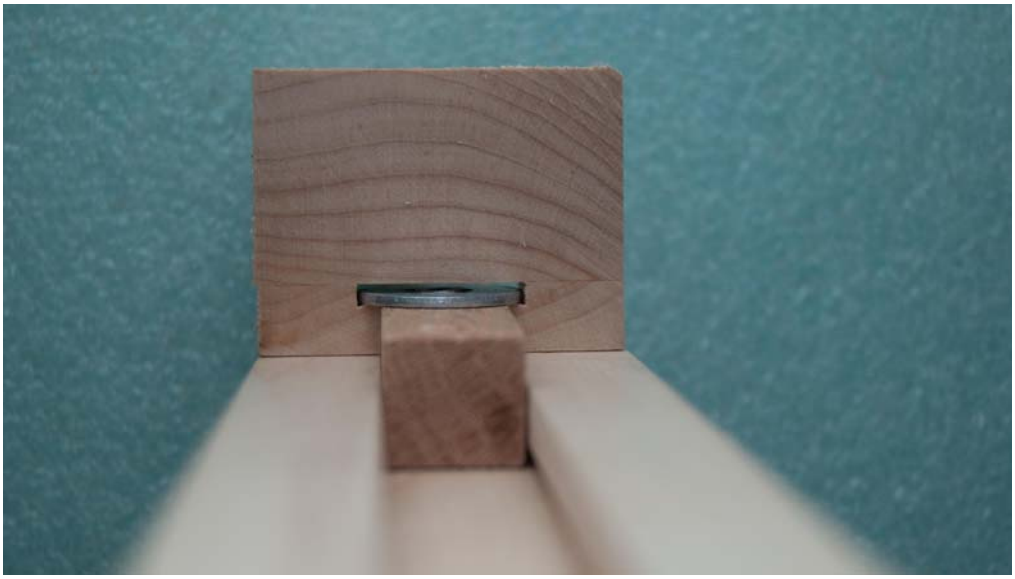
Here we see the skirt and table top together after machining:

Fine Woodworking published an article in July/August 1987 by Jeremiah de Rham entitled "Extension Tables, Their design and construction" in which a number of shop made sliding mechanisms were described. I decided to use the Block/Washer T-system described there, but used a different method of fabrication from the ones suggested. I machined a shallow channel in a long strip represented by the piece on the left, and then glued it to the main body of the slide piece and a dado was cut to form the notch in which the washer rides.

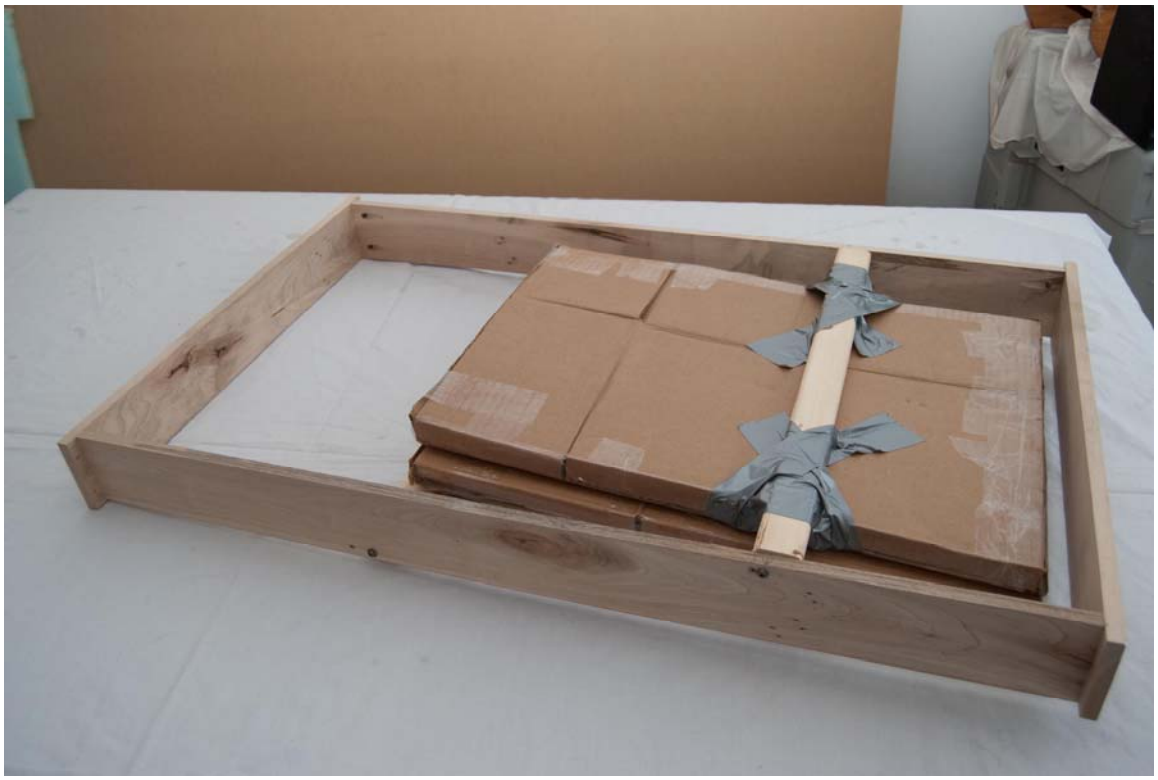


The washer is attached to a block that is fastened to one piece of the slide, and rides in the other half of the slide.





A mock-up of the butterfly deployment mechanism was hogged together in order to identify the locations of the pivot and support points needed in the frame.



The frame was assembled with dovetails at the locations of the points indicated by the mock-up. I was just a little bit surprised (and disappointed) when I found out that one set of support locations was off by about a half an inch! As you can see, those dovetails are not being used, and the support is actually mounted to the bottom of the frame. The wooden support for the leaves swivels on a metal rod, and is attached to the leaves within a dovetail type channel formed by the two blocks on either side of it screwed into the leaf. Both leaves are able to slide toward the center of the frame after they are deployed.

Keyhole slots were made on the sides of the frame to allow these blocks to be placed there when one of the leaves is deployed. These blocks support a skirt associated with the leaf so that the bare frame is covered. Since the grain direction of the skirt is perpendicular to that of the leaf, its width will not vary with seasonal changes while that of the leaf does vary.

The skirt piece sits on these supports below. It is held in place by the deployed leaf.

The legs were fashioned as two assemblies; one for each end of the table. Each leg is fastened to the supporting structure with twelve 10mm x 50mm dominos.

Each leg assembly is fastened to its table top with 22 pocket hole screws.

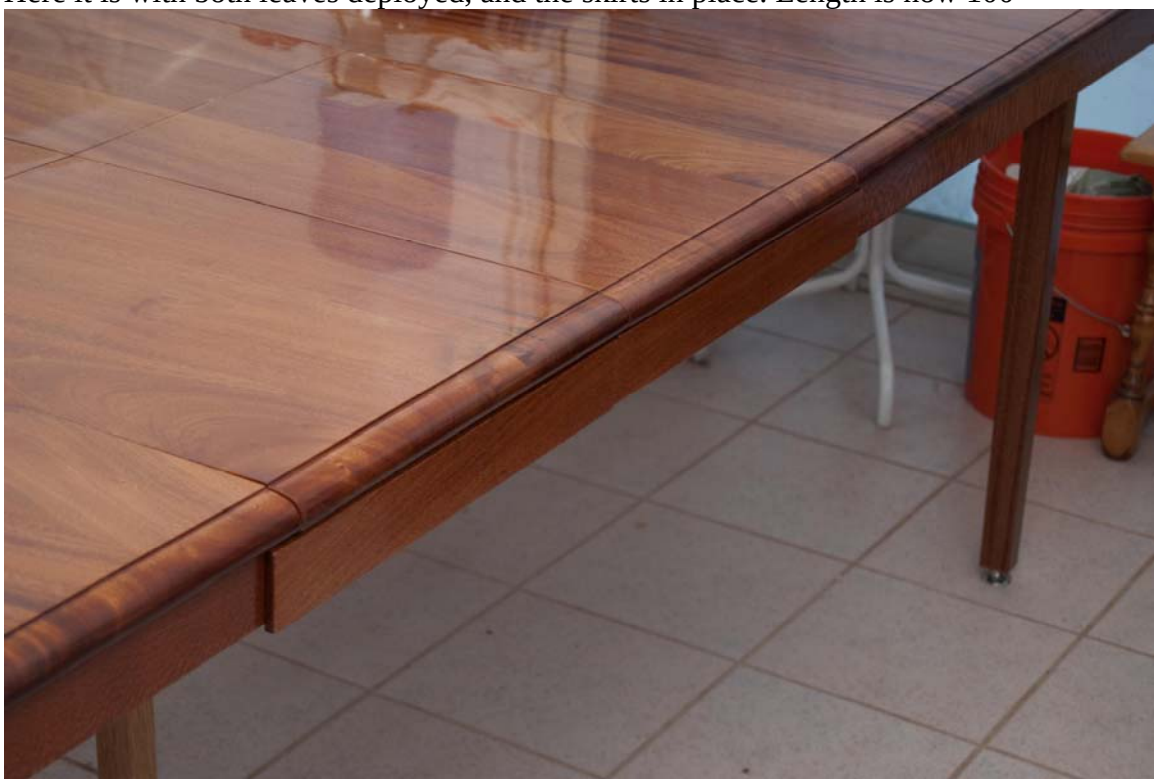
As these pictures will show, I wasn't positively sure everything would be supported adequately without a fifth leg, so I made a temporary one and fastened it to the center of the frame. The table appears to be quite rigid, even without the extra appendage, but until it has had a little more service experience, I won't be removing it.

Here is the table with all leaves stowed. The width is 42" and the length is 68" when closed. The table edge was sculpted with a few router passes, and smoothed with sanding blocks shaped to the contour. (Next time I will invoke the Festool solution to sanding custom profiles.) I brought out the grain with an oil finish and sealed it with shellac. The finish used on the table top is Behlens Rock Hard Tabletop finish, applied as directed by Per and Bob Swenson. (I want to thank them both for talking me through the rescue operations that were required to repair surface flaws caused by my carelessness.)

There was a bit of a delay in finishing this project, as I broke my hip in early January of this year. That event gave the finish a lot more time to cure before polishing began, so it definitely was rock-hard by the time I got to polishing it.

Here is the table with one leaf deployed. The length is now 84”.

Here it is with both leaves deployed, and the skirts in place. Length is now 100”



The length is now 100”, and it easily fills the room up.