

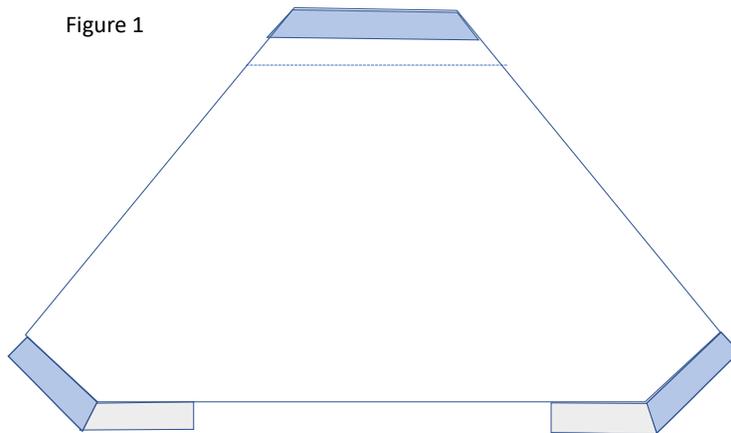
Jigs and Fixtures by Andrew Davis
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They say it is not unusual for a wise woodworker to spend 3.0 hours making a jig or fixture in order to complete a 0.03 hour cut or glue-up. My recent experience with jigs as problem solving tools took place this summer when I got to work trying to build a corner cabinet (mentioned at several FIG meetings earlier in the year). Jigs and fixtures are popular woodworking subjects, but the topic appears in many other professions, particularly in mechanical engineering or in discussions about mass production of almost anything.

According to www.nitc.ac.in* “the main purpose of a *fixture* is to locate and in some cases, hold a workpiece during either a machining operation or some other industrial process. A *jig* differs from a *fixture* in that it guides the tool to its correct position in addition to locating and supporting the workpiece. Wikipedia has a different spin: “A fixture differs from a *jig* in that when a fixture is used, the tool must move relative to the workpiece; a *jig* moves the piece while the tool remains stationary. So much for definitions. And how would that apply to a glue-up?

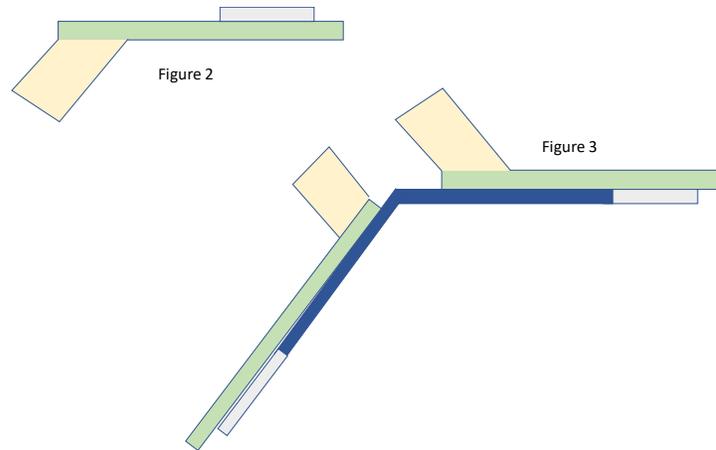
For EMGW members, I suspect jigs and fixtures are used for two purposes. One is to enable multiple parts to be made with the same dimensions and geometry. The other is to be able to do something you otherwise would not be able to do. This was my experience trying to glue-up a corner cabinet. You can see in the sketch in figure 1 (not drawn to scale or with any real accuracy) that I went with a 6-sided shape for the shelves and overall appearance. The cabinet is held together essentially by three vertical frames. The blue shaded elements have grooves routed to hold the shelves. The left and right front supports are made from two stiles, each of which has a 22.5-degree beveled edge. So, the problem is “how do you hold these two parts together while the glue dries?” I don’t have a biscuit joiner, but even if I did, the biscuits would help align the parts, but not apply the needed clamping pressure.

Figure 1



I found my solution in a 15-year-old article on corner cabinets that had a key tip on assembly. From scrap wood, I built eight fixtures shown in figure 2. Figure 3 illustrates how two fixtures

were clamped to the workpiece (in dark blue) and then a third clamp could apply pressure across the parallel yellow blocks while the glue set. Each clamping station required three clamps, but as any woodworker knows, you can never be too thin, have too much bandwidth, or own too many clamps.



Aside: I built the corner cabinet in two pieces, a top and a bottom, with the top supposed to be $\frac{3}{4}$ inch shorter front to back. My top turned out too big, so I had to cut $\frac{3}{4}$ inch off each shelf. As you can see from the dotted line in figure 1, by shortening a part that is not square, the dimension of the back changed and I had to cut, bevel, and route dados in a new rear stile.

My final result is a country-style, 76.5-inch-high, pine (what the customer wanted) corner cabinet with a simple oil finish, delivered last week of August in my daughter's kitchen.



*[http://www.nitc.ac.in/dept/me/jagadeesha/mev303/CHAPT INTRODUCTION TO JIGS AND%20FIXTURES.pdf](http://www.nitc.ac.in/dept/me/jagadeesha/mev303/CHAPT%20INTRODUCTION%20TO%20JIGS%20AND%20FIXTURES.pdf)