

Bowed Apron Night Stands *by John George*

Overview

Over the last year I have been building a pair of Bowed Apron Night Stands made from cherry and figured cherry veneer with a secondary wood of soft maple. The design is original but I have tried to adhere to the Queen Anne style. The size of each night stand (20-3/4" W x 20-3/4" D x 28-1/2 H) was determined by the space requirements for my usual bedroom night stand paraphernalia, as well as space for several books and magazines.



Figure 1. Bowed Apron Night Stand

Design

I have made several Queen Anne style tables in the past. For the night stands I wanted to do something a little different. In my opinion, people seem to be fascinated with curves in furniture; maybe because the wood medium does not lend itself easily to curves. I like the idea of creating my own designs for furniture because it makes them uniquely mine, for better or worse.

I start my design by defining the physical limitations of the piece (i.e., length, width, height). These limitations are often dictated by the piece's function, location, and compatibility with other pieces of furniture in the room. Next I think about the features the piece needs to have to serve my needs. In this case, I needed a small drawer or two for storage and a shelf for some books or magazines. Then I consider the general style of the piece. In the case of the night stands, the decision had already been made that it would be in the Queen Anne style as I had recently completed a Queen Anne style chest-on-chest and designed a matching dresser for the bedroom.

Having decided on the general style, I then considered the various style identifying elements that I wanted to include on the piece. In this case, I wanted to include cabriole legs, a thumbnail edged top and shelf, large fluted corner posts, curved aprons, and full inset drawers. Other elements were “automatically” chosen once the identifying elements were picked or because of my personal design prejudices. An example of the former - the choice of cabriole legs meant that the bottoms of the aprons would be curved in some fashion so that there was a smooth flow from the bottom of the apron to the transition blocks of the cabriole legs. An example of a design prejudice is that if I include a drawer in a piece of furniture, it will use a center runner to guide the drawer rather than the sides of the case.

I design my furniture using a 2-D CAD software program called AutoCAD LT by Autodesk. This software allows me to play around with the design of a piece of furniture, identify design problems, work out details (though I do not usually go to the extent of working out the joinery), and prepare a materials list. Since the CAD drawings are to scale, I personally do not feel the need to make a model of my planned piece, though others might chose that as the next step. (See Appendix A CAD Drawing of Night Stand for full page view of schematics.)

Construction

The night stands were constructed using solid lumber with figured cherry veneer applied to the drawer fronts. The joints are a combination of router cut and chisel-mortiser cut mortises with table sawed tenons. Though woodworking machinery was used extensively in the construction of the night stands, most surfaces were finalized using hand tools. Multiple templates were used in creating the cabriole legs and transition pieces, top, shelf, aprons, and the profile on the bottom of the aprons.

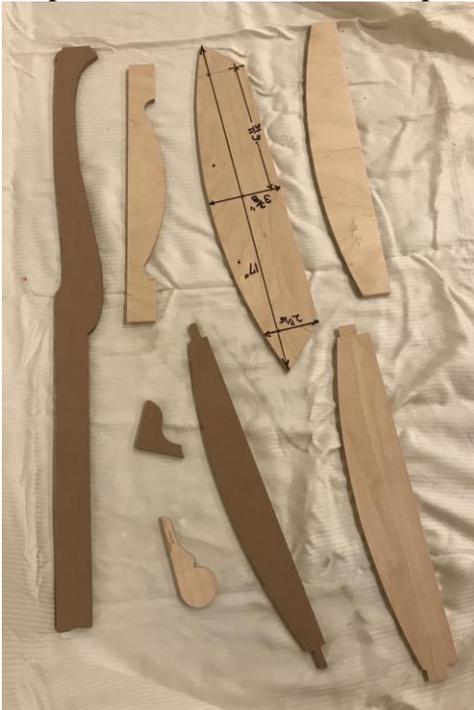


Figure 2. Layout of Various Templates

I use templates extensively in many of my furniture projects where curves are included. I make them from my CAD drawings. My CAD software allows me to control the scale of any printout. I simply print the appropriate section of my design drawing at full scale. Of course, having a maximum printer capability of a legal size piece of paper often means that I need to print the template out on multiple pieces of paper. When this is necessary, I simply add registration symbols (usually a circle with a crosshatch inscribed) on each of the parts of the multi-page printout. Then I cut out the parts of the template and glue them together using the registration symbols to align the parts. The completed template is then pasted to an appropriate backing (e.g., 1/4" MDF) and cut out with the bandsaw and finished with the spindle sander.

The case for the night stands consists of four sides (aprons) with full dust panels for the drawers to ride on and to attach the top. In order to take into consideration wood movement, the dust panels are not glued to the aprons. Rather, the dust panels are constructed so that the front edge of the panel serves as part of the front apron. They are not connected to the side aprons, and they sit (but are not glued) in a groove dadoed into the rear apron. Thus, the sides and back of the night stands can move independent of the dust panels. The top is mechanically fastened to the sides using two pocket screws to fix the location of the top and four cleats sitting in grooves in the aprons to hold the top to the table. The cleats are fastened to the top with screws through slotted holes.

Carving the cabriole legs for the night stands is, for me, the most difficult part of the project. As a woodworker, it is also one of the most fulfilling parts. Wood chips are flying; I'm working with chisels, rasps, files, sandpaper and spoke shaves; my favorite music is playing on the shop stereo (and there are no noisy machines drowning it out). All is good in the world! A discussion on carving cabriole legs is outside the scope of this article. However, if you would like to learn more about the "how to" on carving cabriole legs, a paper written by me for my 2010 presentation to the Eastern Massachusetts Guild of Woodworkers is available for the asking.

One of the challenges in constructing the night stands was creating the bowed aprons. The aprons are just a little too tall for the 12" capacity of my band saw, so cutting the curves for the apron needed to be done another way. I ended up creating the curves by milling the sides using my radial arm saw. Using the appropriate template, I marked the curve of the apron on the top and bottom edge of the 2" cherry apron blanks. Then, using a dado blade on my radial arm saw and a stop attached to the saw's fence, I raised the saw so that its cut would follow the waste side of the marked curve. This created a set of steps roughly following the curve marked on the blank. I then used a hand plane to fair the steps to the curve marked on the blanks.

The drawers on most woodworking projects I have had a chance to examine tend to be what I call a box within a box or, if you are really good, a (square) piston in a cylinder. The sides of the furniture case are used to guide the drawer during opening and closing. This approach, to do it well, is difficult and requires a good deal of accuracy. If the inner box, i.e., the drawer, is too tight, high humidity can make it difficult to open and close. In initially fitting the drawer, if it is too tight, the craftsman will need to shave the whole length of the sides of the drawer. For most of my projects, this one included, I use a center runner to guide the

drawer during opening and closing. This approach can be a little more work as a runner needs to be attached to the drawer bottom and a mating grooved guide needs to be incorporated into the drawer dust panels. The advantages of this approach are that the width of the drawer body can be sized smaller than the case opening thus facilitating the fitting of the drawer front. There is no need to shave the whole side of the drawer to fit the drawer and the smaller width assures that high humidity does not bind the drawer during opening or closing.



Figure 3. Drawer Runner and Grooved Guide

The drawers for the night stands are dovetailed, half-blind in the front and through in the back. I confess to using a Leigh dovetail jig to make the dovetails. After all, dovetails are just a good joint for holding a box together. I understand that to you hand-cut dovetail aficionados, using a router and a jig is akin to wood butchery so I will say no more.

The drawers for the night stands are veneered using a vacuum bag. This allows me to use a highly figured wood (difficult to find in solid boards) that “matches” for all the drawers. The face veneer, the cross banding, and the substrate are all cherry. When finished, this gives the look (or close enough) of a solid piece of wood. I did not apply any backing veneer to the backs of the drawer fronts. The substrates are thick and of the same material as the veneer and the fronts and backs are well sealed by several coats of polyurethane finish. After several years of exposure (on more than this project), warping does not seem to be a problem.

Frequently, to protect the veneer edges of a drawer front, a banding is applied. I picked a different approach for this project. All of the drawer edges have a quarter-round with a fillet routed into the front. This sets the veneer back from the edge. That, and the fact that the veneer is cross banded, should (fingers crossed) sufficiently protect the edge of the veneer from damage. So far, so good! Because of the bowed shape of the drawer front, routing the quarter-round into the side edges of the drawer front would not work. For the sides I needed to hand carve the quarter-round with fillet using a rabbet plane, files, and sand paper.

For the magazines and books I like to keep on my night stand, I added a shelf to the project. This presented some construction issues. I could not notch the legs to hold the shelf at the desired height as the cabriole legs were too thin at that height to safely accept the notches. Other shelf considerations were that I wanted it to look “light” and it needed to be able to expand and contract without causing wood movement/structural issues. I ended up solving my design issue by having the shelf look like it was “floating” between the legs. To accomplish this, the shelf sits fully within the footprint of the legs, i.e., the corners of the shelf do not come out to meet the legs. To further enhance the “floating” effect, the shelf is held up by four corner blocks that are doweled into the legs. The dowels are glued into the corner blocks, but are not glued into the dowel holes (3/8”) in the cabriole legs. This arrangement is not too different from the way many table tops are affixed to their cases. On the night stands the corner blocks and dowels act as the cleats screwed to the bottom of the table tops. The unglued ends of the dowels in the dowel holes of the night stand act like the lip of the table’s cleat sitting in the dado around the case. The thinking is that this would allow for the shelf’s wood movement.



Figure 4. Night Stand Shelf Attachment

Because of the complexity in gluing up the night stand cases, I decided to install the shelves after the cases were assembled. To make sure that the dowels and corner blocks were parallel to the floor and located along the diagonal between non-adjacent corners, a simple jig was created. The jig has a groove dadoed into the bottom that is just wide enough to accept the bottom of the cabriole legs. Attached at a right angle to the bottom of the jig is a board which holds a commercially available hand drilling jig (a.k.a. PortAlign). This arrangement assures that the drill bit is parallel to the floor. The groove in the bottom of the jig assures that the drill bit is aligned and centered along the diagonal between the non-adjacent legs. This jig allowed me to accurately drill the require dowel holes in the cabriole legs. To install the shelf, the corner blocks with dowels were inserted in the holes, the shelf was centered on the corner blocks, and the corner blocks were screwed into the bottom of the shelf.



Figure 5. Jig for Locating Shelf Holes in Legs

Finish

As the reader may have noticed from the pictures, the night stands' finish does not have much gloss. I like to finish my work with a semi-gloss film finish – usually water based polyurethane. This imparts a nice soft shine to the finished project. In fact, the night stands shown in the pictures have no finish. At the time I finished the construction of the night stands, home improvement projects trumped (I hate that word!) my furniture woodworking. If the reader will indulge me, I will tell you how I will finish the night stands; it's a process I have used many times on other furniture projects. The included photo is for the finish on the completed chest-on-chest that will share the bedroom with the night stands.



Figure 6. Chest-On-Chest Finish Intended for the Night Stand

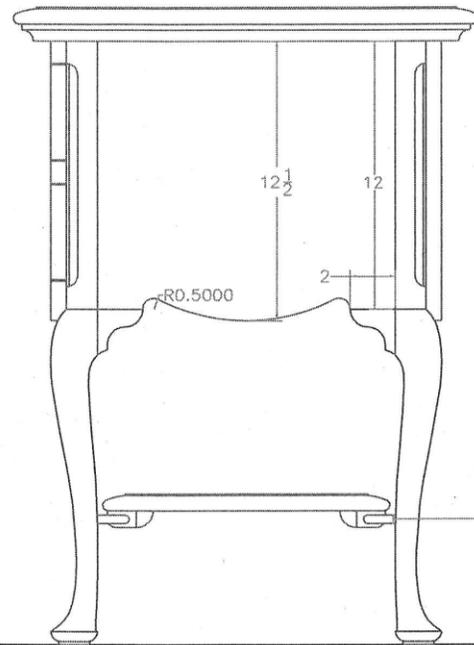
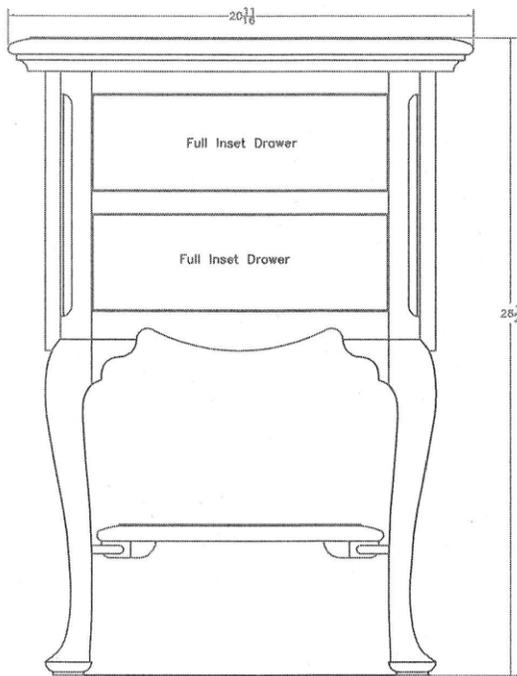
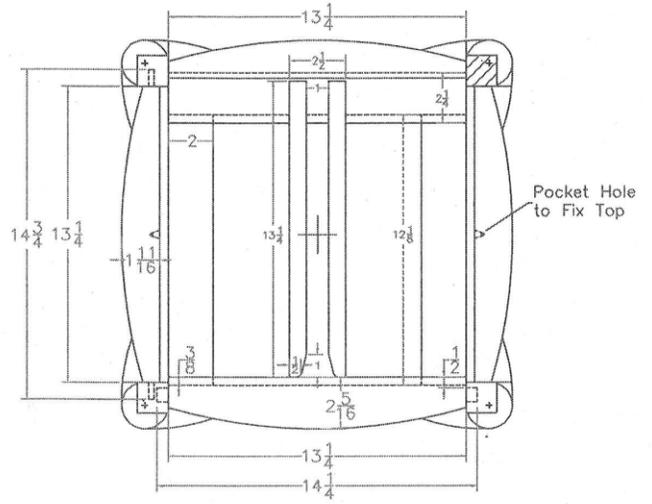
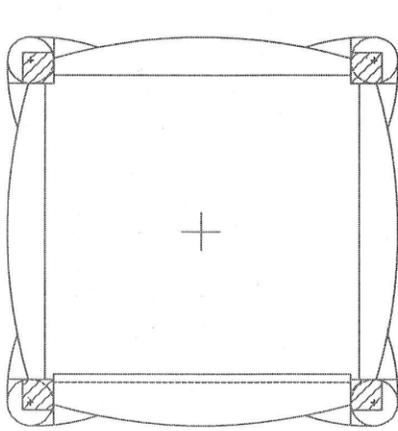
During construction and before assembly, I sand each piece to 150 grit and if it has a show face (e.g., top, sides, etc.) to 220 grit. [Note: From here out the discussion concerns just the show faces.] After completion of construction, I wet down all surfaces with a wet sponge to raise the wood grain. Because most of my projects are stained with water based dye (a.k.a. aniline dye), I need to raise the grain to the greatest extent possible beforehand so as to minimize the grain rising during the staining process. Next I sand again all surfaces with 220 grit. Then I apply a seal coat of shellac (Bulls Eye Seal Coat thinned with 50% alcohol). This minimizes blotching with cherry and creates a very smooth surface for finishing. After applying the shellac, everything is sanded to 320 grit.

The wood now has a glass like finish and I wish I could quit at this point. Alas, if I want the wood to have the desired color and to hold up to everyday use, I must continue. The next step is to apply the stain. I do this with a rag as compared to using a brush as it is easier to blend one stroke with another. Water based dyes tend to dry fast and thus can look streaky if not applied correctly. (This can easily be corrected after the fact by rubbing dye or water over the affected area with a rag.) The beauty of the dye is that (i) it soaks into the wood deeper than oil based stains, thus making it harder to accidentally rub through the color when rubbing out the finish in later steps and (ii) it is easier to control the final color – more dye equals a darker color. If the color is too dark, clear water will dilute the dye and lighten the color. Because of dye's ability to easily darken wood, you can use a rag (for better placement control) to easily darken sap wood to better match heart wood. The water based dye, when it dries, looks rather dull. Top coating alleviates this problem. To make the wood grain stand out a little better, using a rag, I rub on a coating of natural Watco Danish oil and let it dry until the smell disappears.

I spray on three coats of polyurethane. The first coat is a polyurethane sanding sealer. I rub this coat out with 320 grit sandpaper making sure that I use a flat backing block wherever I can. The piece is carefully vacuumed and then wiped with a Norton tack cloth (a spray of water on the cloth helps it pick-up dust). Next I spray on a first coat of the polyurethane top coating. (I use General Finish's Enduro Var semi-gloss water based polyurethane.) This coat is rubbed out with crocus cloth (a wet/dry sanding cloth that is about 800 grit), again making sure to use a flat backing block. Again the piece is vacuumed and tack clothed. A final coat of finish is sprayed on and again rubbed out as before. Often, I go one extra step with the top of my projects.

The top of a project I usually finish separate from the rest of the project. (The top is usually held on with just screws to allow for wood movement, so removing it and reinstalling it are not a problem.) I set the top up so that it is horizontal, and then I can apply extra heavy coats of finish without worrying about runs. After the last coat is applied, I wet sand the top using water, crocus cloth, and a flat backing block. This leaves a glass-like finish. Because the top is not perfectly flat (at least with my work), the wet sanding leaves glossy spots where the flat rubbing block and crocus cloth bridge the low spots. This can make the top look a little splotchy. I fix this problem by rubbing out the top a second time with a white non-woven sanding pad (The pad has almost no grit, maybe #0000.). My final step is to wax the project with a white pad or rag. This is done for looks, as the wax does not provide much protection.

Appendix A. CAD Drawing of Night Stand



Front

Side (2)

NOTE: Back Looks Like Side