

# **Building Segmented Pen Blanks**

*By: Jim Boyd, Ron Sardo, Ron McIntire and Mike Vickery*

This document came together with the idea that turners interested in making segmented pens could get information on different styles, techniques and tools used to make segmented pens in one place. Four turners contributed to this article and have each made a mini tutorial on how they create a segmented blanks. Our hope is that the readers will take this information and use it to find their own style for crafting segmented pens.

Good luck and we look forward to seeing what designs you come up with.



## **Building a spider segmented pen**

***By: Jim Boyd***

This is an easy project that uses minimal jigs and has a fair to good WOW factor. The materials needed are 1 piece of maple 3/4"x3/4"x20-24" in length. Either length will be enough to make the pen but I added extra for spare segments and as a safety factor when cutting the miters. A few rubber bands for glue ups. You will also need a dyed black veneer strip approximately 1"x48". I used Titebond II glue for all of the glue ups. The only jig used in the entire process is a standard 45-degree miter sled. If you do not have a sled a good miter gage and stop block will do. For the spider I used a scroll saw and epoxy dyed with lampblack artist pigment. The pen kit is a Baron from Arizona Silhouette.

Start by ripping the maple board in half with the blade tilted at 45 degrees. I used some scrap for this project hence the picture shows four mitered pieces.



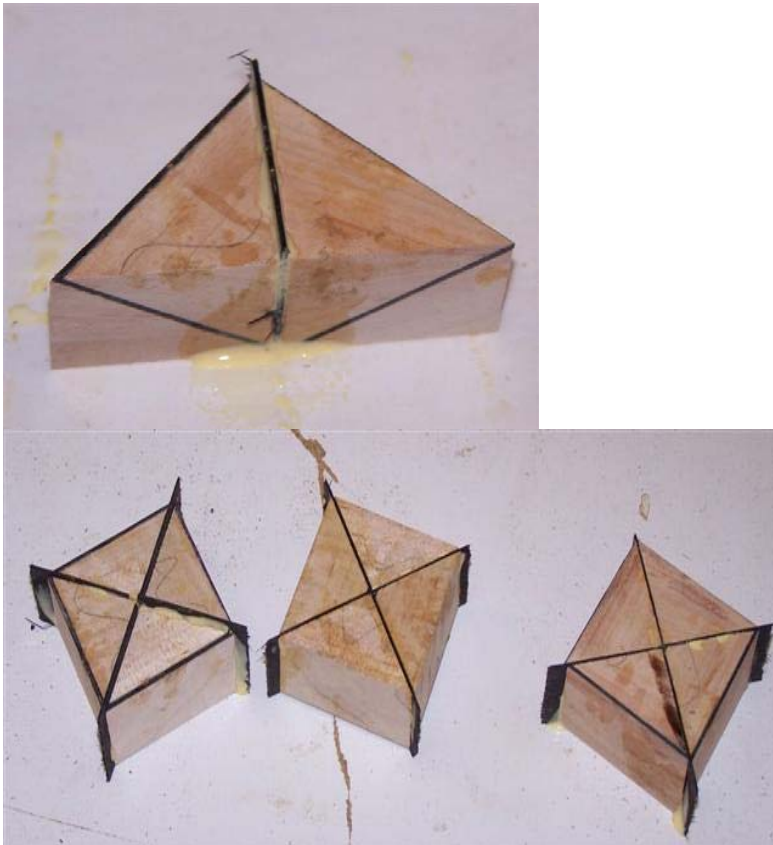
Next glue the mitered pieces together with a strip of black veneer sandwiched in the middle. Rubber bands make good clamps here and this is the only time they are used. A card scraper does a good job cleaning up the squeeze out after the glue dries.



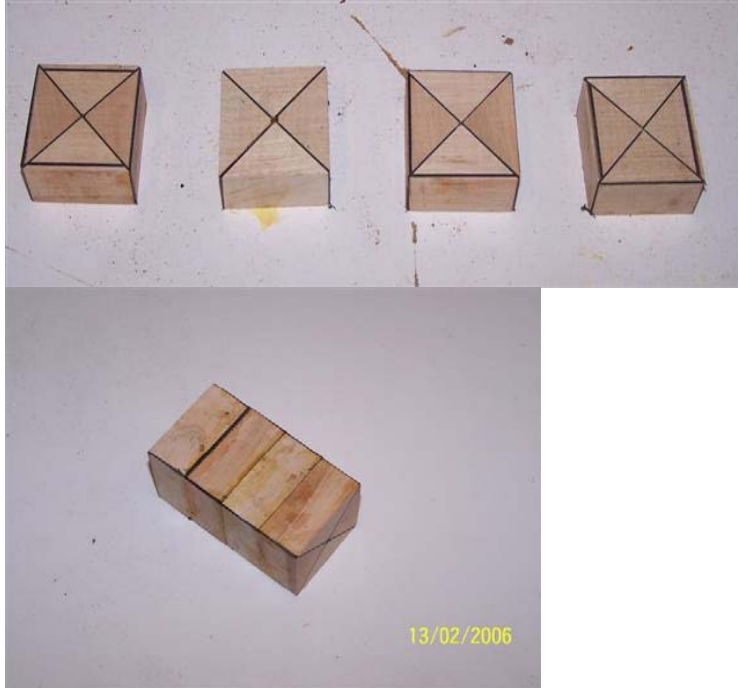
After the pieces are cleaned up the next step is cutting them to make squares. Make the first cut by trimming off one end at 45 degrees. Roll the piece 180 degrees and set to make a cut where the blade makes a point at the intersection of the last cut. I used double sided tape to attach a stop block so all of the pieces are the same. You will need to cut at least 12 pieces for a standard pen or 16 for a closed end pen.



Next glue-up these segments together and sandwich a piece of black veneer between each segment. Make sure all of the veneer is matching on each miter before gluing. After these half layers dry hand sand the long edge flat on a piece of sandpaper laid on a flat surface. Next glue to halves together with another piece of black veneer sandwiched in the middle.



Now you need to make the layers flat. Hand sand with a piece of sandpaper on a flat surface. Do this to the top and bottom of each layer. After the faces are flat you can glue them together making sure the veneer all goes the same direction from the top to the bottom. The finished pictures at the end show 2 ways to orient the corners, either aligning the corners or turning the 45 degrees. Drill and turn. There is a fair amount of waste involved in this part of the pen.



Now to make the spider cap. The spider is made by drilling two holes and scrolling the legs. Start with the smaller head hole first. I used a 5/32 drill. The body hole intersects with the head and if you drill it first the smaller drill will always walk into the larger hole leading to frustration. For the body hole I used a 9/32 drill and drilled it so it overlapped the head hole just a tad. Next pencil in some legs. Threading the scroll saw blade through the body cut on the leg marks. The completed spider looks like this.



Mix up some epoxy with the black artist pigment and fill in the spider. Be sure to put some tape

on the bottom to hold in the epoxy. To get the air bubbles out and to aid in making sure the legs get filled this is what I did. I taped the blank to my scroll saw and turned it on. The vibrations helped force the bubbles to the top.



To connect the spider to his web I made a scroll cut from the end of the blank to tail end of his body and filled with a piece of black veneer. All that is left is drill and turn. The finished pens will look like this.







## Tutorial for the “The Morning After”

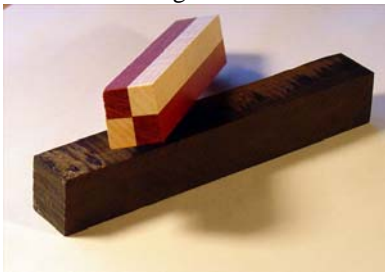
By: Ron McIntire of McKinneypens.com  
 Pictures taken by: Jeff Carrell of Bubbasville

Many pen turners have asked me about my segmented pen designs. I wrote this paper to help illustrate exactly how I go about creating these wonderful pens. In this example, we’ll look at how I create a design called The Morning After.

### *Supplies and Equipment*

The consumable supplies you’ll need to begin this project are:

Figure 1



- Two checkerboard blanks (*figure 1 shows Blood wood and Curly Maple*)
- One black blank (*see figure 1*)
- One pen kit
- 2 sets of tubes for the pen kit (1 for the pen, 1 for temporary use)
- Medium CA glue and optional accelerant
- Variety of sandpaper grits

I assume you have the following equipment in your shop:

- Miter saw
- Belt sander
- Mini lathe
- Drill press and bit(s) appropriate for your pen kit

I also assume you’ve created other pens and have some experience in this area.

Now that we’ve got the equipment and materials together, let’s make a pen!

### *Steps*

To begin with you will need to drill both the checkerboard blanks as well as the ebony blank as deep as your drill press will allow. It is critical that you drill the checkerboard blanks as close to center as possible. (*see figure 2*) Drill one end of each blank with the proper size drill bit for your kit choice.



Figure 2

Now take your drilled pen blanks with you to the miter saw. Before we cut, let’s take a quick look at a jig that I use. As you know it is extremely difficult to make small cuts on a miter saw.

Figure 3



After a lot of trial and error I have finally figured out a way to use my miter saw to make very small and consistent cuts without much of a waste factor. (*see figure 3*) I have taken a piece wood and clamped it to each side of my saw blade. The distance between the boards where the blade drops will only allow the blade to go through the gap. This is also known as a “zero clearance fence”.

For this particular design I have an 11.25-degree angle cut on the end of the wood to allow for the blade to travel at the angle I have chosen. I then have a second piece of wood that I have precut an 11.25-degree angle in the opposite direction clamped over the wood on the right side of the blade. This is what I call my “rest board” since the piece I am cutting will rest against the end of this piece of wood. Not only will the blank being cut rest against it but the 11.25-degree cut edge of the blank will actually rest inside the cut angle to help secure it during and after cutting. (*see figure 4*) When making these very small pieces on the miter saw, it is helpful to NOT bring the blade of the miter saw up while it is still in motion, rather turn off the power to the blade after the cut then move the blade up and out of the way. Otherwise you may be picking up very small wood scraps from all over the shop.



Figure 4



Figure 5

Now let’s start cutting! As I make my cuts I like to have a pen tube near me so that after I cut any particular piece I can slip it on the tube. Let’s go ahead and cut all of the ebony pieces first so that they are ready to be added to the puzzle when needed. (*see figure 5*) Be sure to cut these pieces at an 11.25-degree angle as well otherwise they won’t rest flush on the cut checkerboard pieces. *Don’t forget that you will need three pieces straight cut for the ends of the blank.*

At this time you should hopefully have no less than 10 slivers of the dark contrasting wood cut (three straight cut and seven at a 11.25 degree) and resting on your workbench next to the pen tubes. No pen tubes sitting there? Ok. I’m going to take a break while you go get them. You will find this very helpful when keeping your cuts in order.

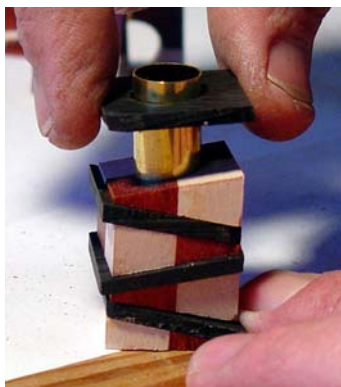


Figure 6

That was fast! Too fast! Now that we have our ebony cut, let’s go ahead and start cutting our checkerboard blanks.

Rest your checkerboard blank against the rest board and make your first cut. Insert this on your tube as your base and add a piece of the dark wood that is cut at an 11.25-degree angle. Flip the blank over and make another cut being careful that the cut end of the blank is resting at the end of your rest board. (*see figure 4*) Now stack this cut blank on your tube upside down. In other words, make sure that opposing colors are resting on each other. Continue this process until

you have the tube completely covered. (*see figure 6*)



Figure 7

Repeat this process with your second drilled blank and tube. (*see figure 7*) While cutting the blanks be sure to keep track of the depth of your drilled hole. You will have to drill again so be sure to leave enough drilled hole to guide your bit.

If everything went as planned you should now have two unglued puzzle-looking blanks sitting on your workbench ready to be glued. Now all you have to do is take your two puzzles apart and remake them, gluing as you go. I have a second set of tubes sitting there so that I can pull one piece off one tube and glue it together on the other tube. I find this a much faster and more efficient way to do it. So.....feel free to go find another set of tubes as I get the Medium CA and sandpaper ready for you.

I am in the habit of sanding all of my tubes with 120 grit sandpaper to help the CA bond to the tube.



Figure 8

As you take one piece of wood off the first tube go ahead and glue it to the wood on the second tube. As you do your gluing and stacking be sure that all the lines line up in your design. (*see figure 8 & 9*)

Note that I am doing my glue up on a pad of paper. When you are done gluing your blanks you will be able to tear the sheet of paper off the pad with

the blank glued to it. Then just tear the paper off the blank. I use this method whether I am building a segmented blank standing up on the tubes or laying on it side.



Figure 9



Figure 10

After I have my blank completely glued up I spray with an accelerant to speed the CA glue curing process up. (*see figure 10*) This way I can sand and turn the blank in a few minutes instead of having to wait until tomorrow. You'll find that after you make a segmented blank that you can't wait to see what the final pen looks like.



Once we have completed our first blank we will proceed on to the second blank building it the same way we did the first.



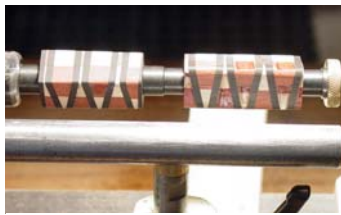
Figure 11

Now we use a belt sander to sand all the sides flat and remove sharp corners of our modified blanks. (*see figure 11 & 12*) This seems to help eliminate blowouts on the segmented blanks.



Figure 12

We are now ready to put our blanks on the lathe so that we can turn, sand and finish them.



Ready to turn



Play time



Ready to sand and finish

Now we just assemble the pen as we would any other kit.

That's it. Very easy and it makes a truly amazing pen. It's a fun design and easy enough to make so do some experimenting with this one.

Have fun and I would love to see what you come up with. Please send me pictures at [sales@mckinneypens.com](mailto:sales@mckinneypens.com) sometime.

Checker Board blanks can be purchased at <http://www.woodpenblanks.com/>

**Here are some examples of pens that I have made using this technique.**

These designs include The Morning After, The Grand Illusion, Surely you Jest, and Ace of Spades.





## Laminated Pens

*By Ron Sardo*

### Supplies:

Pen blanks

Veneer

Yellow Glue

Paper

Pencil

Slimline kit

### Tools:

Scroll Saw or Band Saw

Clamps



### Starting off:

On a sheet of paper trace the outline of your pen blank and cut out with a pair of scissors. Draw a pleasing curve inside the box. It's best not to make too tight of a curve until you are familiar with this process. A simple S curve is a good starter. With a pair of scissors cut along the curved line. This will be your template.



Transfer the image using your template onto the pen blank with a pencil.



### Scroll saw:

Not surprisingly working with curves is easier than using straight lines. No matter how you cut the blank, you will always get a matching pair. Besides, it's simpler to cut a curvy line than a perfectly straight line on a scroll saw. I used a No. 12 blade which gives a nice smooth cut in hardwoods.

### Veneer:

Cut a few strips of veneer a little longer than the size of your pen blanks. Be creative here, mix and match contrasting woods for a pleasing effect.



Dry run:

Gather your clamps, pen blanks and veneer. I use a spring clamp to keep the sections from slipping width wise and a smaller clamp across the endgrain which prevents the sections from slipping length wise

A quick note here, some veneers will crack if the curve is too tight. Soaking the veneer in water before glue up will help in most cases.

Glue up:

Apply glue to both halves. If you miss any surface, you may have a void in your blank. Once all surfaces have glue, arrange the blanks and clamp. You need to work quickly because you want to finish clamping before the glue starts to set.



When clamping you don't need herculean pressure, just even pressure. Too much pressure is as bad, if not worse than too little pressure, you don't want to squeeze all the glue out. Also, too much glue can be as bad as just a waste and messy. With practice you will learn to use the right amount of glue and clamp pressure.



The spring clamp helps prevent the two halves from slipping width wise while the bar clamp keeps the parts from slipping lengthwise. Once you get the big clamp in place you can remove the spring clamp and the bar clamp.

After about two hours you can unclamp and clean up any glue that has squeezed out. Place the template again on your blank and repeat the process.



There you go! Enjoy!



## 30 Degree Herringbone

By: Mike Vickery

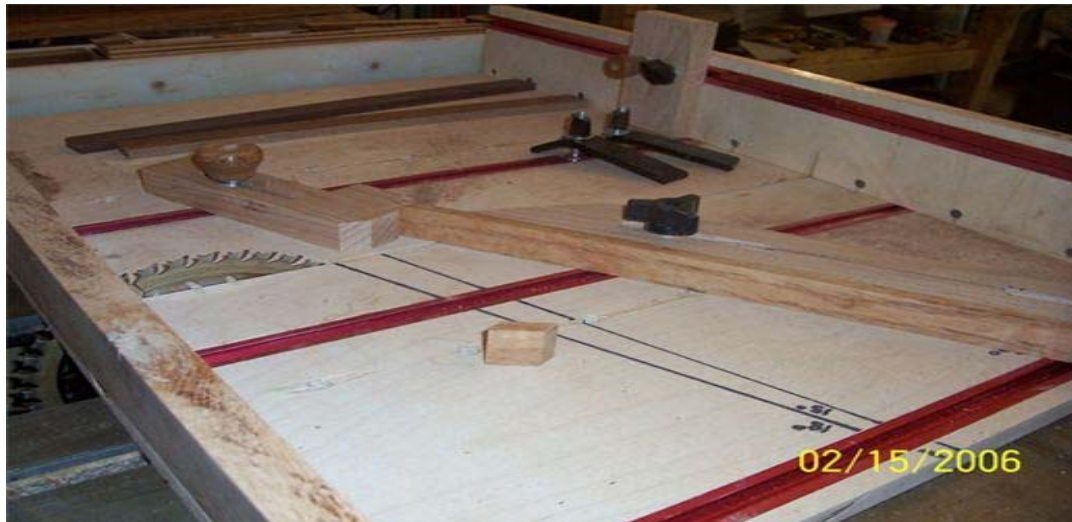
This is how I make my 30 degree herringbone pen blanks. The first step is to cut 3 small strips about 3/8ths of an inch wide and about 12 to 18 inches long from standard 7/8ths stock. In this case I am using three different woods Jatoba, Morado and Gonca Alves.

I use a thin strip cutting jig called a vacuum rip fence that I made loosely based on a design published by David Reed Smith. Since I am working with small stock I stick a scrap board to the side of the wood using double sided tape so that I can safely make the cut.

<http://www.davidreedsmith.com/Articles/VacuumRipFence/VacuumRipFence.htm#Vacuum%20Rip%20Fence>



Once the strips have been cut I use a miter sled that I made for making segmented bowls to cut the wood at a 30 degree angle.



You may use any method you prefer to cut an accurate angle. I personally feel that the miter sled is the safest and most accurate way to make this cut. There is some overlap when gluing the blank so your pieces needs to be about 1 1/4 inches long. If you are making a larger pen you will need to adjust the length accordingly. I set my stop block on the sled so that I can make this cut

quickly and repeatedly. In reality a discrepancy in length will not matter when gluing up the blank but the angle must be accurate.

Once all the wood pieces have been cut you can begin your glue up.



I begin the pattern by gluing the angled end of one of the pieces to the flat side of another piece using CA glue. Continue this pattern using alternating pieces of wood until you have something that looks like the picture bellow.



Once the blank has been completed all that is left is to trim the excess of the sides and ends and start turning. Your finished pen should look something like this.



Good luck and feel free to ask me any questions you may have.