

## **Making an inlay/segment insert using a scroll saw.**

### **Tools and material requirements:**

Scroll saw

Scroll saw blades depending on the pattern, I use Olson 2/0 crown tooth blades

Your item to accept the inlay

A ruler or set of calipers

A 3/32" drill bit

A #66 drill bit

Hand drill or drill press

Lathe

A faceplate with wood facing

Double-coated "lathe" tape

3M "Spraymount" spray adhesive to mount patterns

A choice of woods for the job, ~1/8" thick (while thickness is not critical, it is important to have all pieces the same thickness).

My inlay will fit a poplar scroll-sawn box I am making. The color is a greenish hue.

The insert disc is maple

I am going to do a penguin so have chosen the following:

-African blackwood for the basic black of the penguin

-Holly for the white front (I like to spray the holly with a sanding sealer to prevent it from getting dirty from the dust of the blackwood)

-Tulipwood for the feet

-A light color rosewood for the beak

-A round toothpick for the eye (or a piece of the holly – carved)

4 copies of the pattern

Double sided tape for the scrolling operation (a thin tape is preferred)

Carton sealing or bookbinding tape (used in scrolling, it acts a lubricant for the blade to prevent burning of the wood at the saw cut).

Carpenters glue

CA glue

### **Process:**

- 1) Turn a recess to accept the inlay. Use calipers, be precise and make the recess 1/8" in depth and 3 1/2" diameter. Make the wall taper just a bit to ease the entry of the disc
- 2) Mount your wood for the disc (maple) to the faceplate using double-coated lathe tape. Cut the disc to 3 1/2" diameter and give a slight undercut (to match the substrate).
- 3) Remove the disc. This is now ready for the pattern.
- 4) Before making multiple copies of your pattern apply several locator lines to aid in pattern alignment during the scrolling process then make 4 copies.
- 5) The first stage of scrolling will be to use the African blackwood and create the outline that will drop into the maple disc, but first we need to adjust the saw.

The idea is that we cut the pattern through two layers, the blackwood and the maple. If we cut straight, the blackwood piece would drop into and through the maple, but would be a loose fit due to the saw kerf. In the case of a 2/0 blade it is 0.011" and width is 0.024" (#2 is 0.013" x 0.026", #5 is 0.016" x 0.038"). To prevent this we will saw at a slight angle from vertical. The angle is determined by trial and error. Cut

several circular pieces from a double layer of 1/8" wood at several angles from vertical increasing by 1/2 degree increments. Check to see which of the angles allows the piece to drop into the substrate to the proper depth. That is the angle to set the blade and it will vary with different blades sizes.

- 6) Adjust the saw's blade angle to the chosen angle. In the case in point I found 3 1/2 degrees to be the right angle. This angle will be used throughout this project.
- 7) Determine where the penguin will be located on the disc. Central should be OK. Apply a pattern to the maple in this location using the spray adhesive (all you really need here is the locator lines)
- 8) Bond the blackwood to this area using a thin double-coated tape (alternatively you could use spray adhesive)  
Using the spray adhesive coat the back of the pattern and apply to the blackwood. And allow a few minutes to dry.
- 9) Using the 3/32 drill-bit drill the eyehole. Insert the toothpick, gluing it in place with CA glue. Cut off the excess.
- 10) Apply a piece of the packing or bookbinding tape to the back of the maple disc.
- 11) Using the #66 drill bit drill a small hole to enable the blade to enter.

Begin cutting the pattern. Go counterclockwise. I use a slow blade speed for the cutting of the African blackwood, it is very resinous and gums up blades quickly. The addition of a piece of clear packaging tape on the bottom of the maple will add lubrication and ease the blade's cutting.

When complete separate, remove the pattern from the blackwood (leave the pattern remnant on the maple disc) and discard the maple cutout. Glue the blackwood piece into the maple disc using CA glue or carpenter's glue.

- 12) Tape or glue the holly to the belly section within the blackwood. Apply the second copy of the pattern to the holly using the alignment lines to ensure it is in the exact position.

Using the #66 drill bit drill a small hole to enable the blade to enter.

Insert the blade

Begin cutting the pattern. Go counterclockwise. I found that if you leave the black outline on the left of the penguin the blackwood too narrow it is brittle and can break out. Cut a little wide of the line ie. make the white belly a little thinner at the left, and also at the bottom

When complete, separate, remove the pattern from the holly (leave the pattern remnant on the maple disc) and discard the blackwood cutout. Glue the holly piece into the blackwood outline using CA glue or carpenter's glue

- 13) Next are the feet. For this I chose tulipwood. Tape or glue the tulipwood in place. Apply the pattern being careful to align properly. You can remove the excess pattern if in your way

Using the #66 drill bit drill a small hole to enable the blade to enter.

Insert the blade

Begin cutting the pattern. Go counterclockwise.

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When complete separate, remove the pattern from the tulipwood (leave the pattern remnant on the maple disc) and discard the blackwood cutout. Glue the tulipwood piece into the blackwood outline using CA glue.

14) Next is the beak. For this I chose a light color rosewood. Tape or glue the wood in place. Apply the pattern being careful to align properly.

Using the #66 drill bit drill a small hole to enable the blade to enter.

Insert the blade (this step could be done at the same time as the feet if you wish).

Begin cutting the pattern. Go counterclockwise.

When complete, separate, remove the pattern from the rosewood and the remnants from the maple and discard the blackwood cutout. Glue the rosewood piece into the blackwood outline using CA glue.

The beak and feet can be done at the same time.

15) Your piece is now complete.

16) Check the underside to ensure no excess wood is protruding, if it is sand it off.

17) Glue the inlay into the box lid using carpenter's glue. If needed turn the or sand the insert smooth (often the pieces are not always an exact 1/8"). Before any sanding apply more sanding sealer to the holly to prevent staining from the blackwood sanding dust

If you wish, the disc could be smaller in diameter and a contrast ring added i.e. walnut. Size and pattern are flexible, my first penguin was on a 1 1/2" insert. Penguins are a current fad, anything could be used for this project. I chose this larger size for ease of demonstration.

Leaves work well too and could be further enhanced by splitting along the stem line and orienting the grain, similar to intarsia or inlay techniques.

A possible modification to this technique would be to permanently bond the two layers with carpenter's glue or CA, allow "drop-through" and after gluing in place remove the excess layer from the bottom using a sharp knife, chisel, or a flush cutting saw.

Have fun...

Bob Hewson  
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