Conor Bell
conorbell-bassoon.com

Creating a Reed Blank from GSP Cane

Quick Checklist- Starting from GSP cane:

1. Soak your cane for 4-8 hours in warm water
2. Score the tube with a razor blade
3. Cut in or reinforce the collar with a razor blade and/or diamond file
4. Use a straight edge to fold the cane
5. Add the first wire and tighten it down- 1-1.5mm behind the collar
6. Wrap the blank tightly with cotton twine
7. Soak in water for several minutes
8. Lubricate your forming mandrel with wax
9. Insert the forming mandrel into the reed—no twisting!
10. When it stops, squeeze the tube with your pliers
11. Repeat 10-11 until the reed is all the way down the mandrel
12. Let it dry for several days through 2 weeks

Detailed Walkthrough:

1. Soak the cane in warm/room temperature water for 4-8 hours. I find that soaking in boiling hot water, or for long periods of time it absorbs too much water and becomes too pliable, distorting its dimensions and losing some of its structural integrity. If you don't soak long enough, the cane won't be flexible enough and will be prone to cracking.
2. Score the tube! The cuts should just cut through the bark, not all the way through the cane (the bark is not very thick).
    a. The goal of scoring is to cut through the rigid bark, allowing the softer, more pliable "innards" to bend around the forming mandrel.
    b. If scoring with a razor blade, start with a cut down the middle (beginning at about the location of the first wire), then add a cuts halfway between the middle and each side, then halfway in between each of those cuts for a total of seven. This will make the tube bend evenly around the mandrel.
    c. Scoring tools with several blades to make multiple cuts at a time exist and are very helpful for creating good, straight score marks.
3. If your collar isn't already a sharp right angle, cut it in with a razor blade.
    a. Begin with a cut down across the collar line, then cut towards the tube from the blade. Continue cutting back and forth those two locations until they meet.
    b. Clean up the cut with a diamond file or sandpaper.
    c. The collar is your first line of defense to prevent cracks that begin in the tube from transferring into the blade.
4. There should be a scored line at the middle of the cane. If there isn't, measure and find the middle and score it lightly while it's on your easel.
    a. Then use your knife edge or a metal ruler on the inside of the fold to make sure it stays perfectly straight while you fold the two halves to meet.
5. Now we add the first wire, taking care to make sure it is making contact with the cane all the way around. Start with the wire on the far side of the cane, and each end around to the front, crossing over and returning to the back.

   a. Whichever end of the wire begins on top, should stay on top all the way around, then twist in that direction, that will keep the wire wrap nice and neat.
   b. Start the twist with your fingers, then use the pliers to get it very tight. Pull the knot away from the reed to take out the slack, then twist to tighten. A tight first wire is your second line of defense to prevent cracks that begin in the tube from transferring into the blade.
   c. The first wire should be 1-1.5mm behind the collar.
   d. It is possible to overtighten the wire at this point. A good way to check is that the wire should be tight enough that you cannot wiggle it with your fingers, but not so tight that it indents the cane.
6. Start just above the first wire and wrap cotton twine tightly all the way down the tube and tie it off. This will exert even pressure up and down the tube as it goes through the forming process.
7. Soak the reed long enough that the twine is fully wet, and the cane has had a chance to become saturated again, several minutes at least.
   a. I usually do steps 1-6 on my next piece of cane while the previous piece soaks.
8. To help the mandrel move smoothly up the tube, it should be lubricated. I rub my mandrel on a block of gulf wax to do this, although you could just as easily rub it on a candle or any other kind of wax.
9. Without squeezing the cane too much from the sides, insert the mandrel as far as it will go.
10. Then squeeze all around the tube from "the second wire spot" down, then push the mandrel a bit further. Repeat as necessary.
   a. Avoid squeezing in a continuous spiral, that encourages the blades to side-slip, as does twisting the blank or the mandrel during the process.
   b. Also avoid squeezing directly from the sides, this flexes the cane in the middle and encourages cracking in the spine.
   c. This is your best opportunity to make the tube seal completely and to have a perfectly round butt.
11. I like to let my reeds rest for one or two weeks before I finish the process. You're not just allowing the cane to dry, you're giving it time to stabilize in a brand new shape. This takes time, and reeds benefit from not rushing the process.

Quick Checklist, final steps after drying:

1. Remove the twine and first wire, open the reed back up
2. Lightly bevel with the sandpaper flat on the table from the butt to just past the collar.
3. Bevel a second time on the back third of the tube to create a slight gap when the reed is closed
4. With the forming mandrel inserted, add the third wire
5. Add the first wire
6. Add the second wire 8mm inclusive from the first wire
7. Wrap the reed in the manner of your choosing

Detailed Walkthrough

1. Remove and cut off the twine and first wire and gently open the reed back up. This allows us to make sure we do two important aspects of the blank formation process really well: beveling and adding the first wire.
   a. The goal of beveling is to take the pointed inner edges of the cane and make them flat so that the tube seals more completely and doesn't slip or leak. Most bassoonists bevel before

forming, this means they don't have to open the reed back up to do it. It also means, that they are always anticipating the necessary angle and amount of beveling that will be necessary. My method requires an extra step or two but means that we have two perfect semicircles that match up with one another.

   b. The first wire is the first point of contact for vibrations that begin in the blade as they transfer into the tube and on to the bocal. If it is too tight it can choke off these vibrations. If it contacts the cane unevenly, it will distort these vibrations. When initially putting on the first wire we want it to be very tight to prevent cracking. It's also very difficult to put it on perfectly evenly when you're also holding the cane together, edges lined up. It is much easier to put on when the third wire is already holding the cane together for you.
   c. Because the third wire is rounded out, it is much more forgiving to put on!

2. To make the two halves of the tube perfect semicircles, place the sandpaper flat on the table and lightly rub the reed back and forth on it, hitting both edges of the tube at the same time. I do this from the butt of the reed up through just past the collar, just until there's a nice, flat edge. (This doesn't take many strokes or much downward pressure)
3. Then I bevel again on the back third or so of the tube, a bit more aggressively. The goal here is to create a little bit of daylight when the reed is closed again and viewed from the side. This gap will be closed by the third wire and in turn will open the reed from the tip with the first wire acting as a fulcrum. This allows the tip to be very thing, but still supported by the internal forces of the reed.
4. Put the reed back on the forming mandrel and carefully line up the rails so that they're nice and symmetrical on both sides.
   a. Then hold it in place while you wrap the third wire around the reed and hand tighten it as much as possible.
   b. Then use the pliers to tighten it further, rotating the knot side to side will help take out the slack and also make the wire perfectly round, with even contact all the way around.
   c. The third wire should be 5mm from the butt
5. Now that the third wire is holding the reed together, the first wire can be more easily added. Again, make sure that it makes even contact with the cane, all the way around. The knot should be on the same side as the third wire. The first wire should be snug when the reed is soaked but able to be wiggled when the cane is dry. The first few rounds of soaking and drying will stretch the first wire to allow this, so it can be fairly tight now, just not excessively so.
   a. As before, the first wire should be 1-1.5mm below the collar
6. Add the second wire 8mm below the first (measuring from the top of the first wire to the bottom of the second wire) with the knot on the opposite side as the other two. The second wire should remain tight as the reed ages and will likely need to be tightened in the future (make sure that it isn't Duco-ed to your wrap!)
   a. The three wires should progress in tightness from the first wire (least tight) to the third wire (most tight).
   b. The three wires should also progress in roundness. If the third wire is perfectly round, and the first wire is an oval, the second should be halfway between the two.
   c. At this point you should snip the third wire's knot so that it is only a few twists high—enough to keep it snug, but not so much as to poke out of the wrapping.
7. Now wrap the reed however you choose, most people use string sealed with Duco cement, but there are many possibilities including: hot glue, heat shrink tubing, Duco alone, or even nothing at all (but only if you formed your tube *really* well).

Conor Bell
conorbell-bassoon.com

Final Dimensions:

3rd Wire- 5 mm from butt

1st Wire- 1-1.5mm from collar

2nd Wire- 8mm from the first (measuring bottom of the 2nd to top of 1st)

Clip the tip 27mm from the collar

Once wrapped, the reed should dry overnight at least (allowing the Duco to really set if that's what you use). From that point, it can be soaked for twenty minutes or so, then the tip can be clipped to start the finishing process. There's no rush though, once a reed in this stage it can rest safely for weeks, months or years.

Many bassoonists with busy schedules, either teaching, performing, or both, use breaks to form many blanks so that when they're in the middle of a season all they have to do is grab one from the box and clip it. If you go this route, I suggest making notes on the reed or the box it's stored in, including at least the date it was formed. You can also number your reeds and track their dimensions, how long they're used, how well they worked, what cane you used, what shape they were, etc. to hopefully be able to glean some insights as to what makes your best reeds so good.