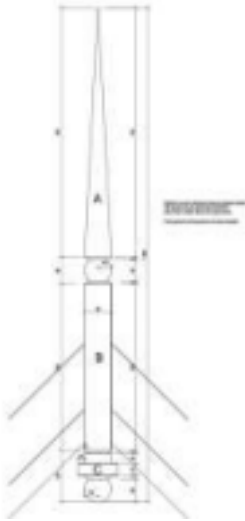


Helping out a friend.....a tale of fiddly finials

Just before Christmas, I had a phone call from a friend of a friend of a friend who heard that I have a lathe and do a bit of bodging and would I consider making a couple of architectural finials for the house he was renovating up north. I must say I was a bit taken back, but having done a couple of small ones before, I said, "Send me the plans and I'll see what I can do".



Just after Christmas, I got an email with an architect's drawing and measurements.

I must say, I was a bit taken back because my lathe was an ancient Axminster 950 and I didn't think I could make the finial in one piece. Furthermore the bit at the bottom had a square collar which was larger in dimensions than the middle and a pointy section at the top.

I got back to Andy and said that I'd have a go, but it would have to be in three sections and as I had never done anything like that before and it was to survive the English weather, I couldn't guarantee that it wouldn't end up like the famous Church Spire Chesterfield!

I was given the option to cop out, but I decided to have a go, and this is how it went.....

First of all.....

I drew the exact dimensions on several joined-up pieces of metric graph paper to work out what I needed to order from a local timber merchant and to check that the longest spiky bit (A) would fit on the lathe.

To this I added enough waste wood at both ends to form tenons for holding, as well as an extra 10 cm for a tenon (X) to fit into a mortice in one end of the middle piece (B). To the middle section I once again added extra at one end for holding, and to create a tenon (Y) to go into the flat bit of C, figuring out that the 10 cm tenon from A (X) would fit in to the mortice at one end of B, and that I would cut a mortice in C into which the tenon at the bottom of B (Y) would fit. (With me so far?)

So for these bits, I needed two pieces of planed sapele cut to 1000mm by 81mm square (allowing for minor errors)..... This would do for the spiky bit (A) and two pieces 700mm long, again by 81mm square for the middle bit (B)

As far as the bottom end was concerned (C), this needed to be 120mm square and they don't normally have sapele planks more than 100mm thick, at least at the timber yard I went to.

The solution was to machine down to 60mm and glue two thicknesses up to size, giving me a 400mm by 120mm square piece which I would then cut in half to give me two blanks and more than enough extra for holding tenons.

Just in case I've lost you, the diagram (also sent as a supplementary PDF file) shows the construction of the finial with black bits showing the tenons.

x



When I came to pay my jaw dropped, I didn't realise prepared timber was so expensive, but then somebody else was going to be paying! I crossed my fingers that things would turn out right first time round, Having collected the timber, I had to decide the order in which to make the individual bits and how I would hold them on the lathe.



Section B first.....why?

Well.....I thought the easiest bit to do would be B seeing that all I had to do was mark it out, turn a tenon at one end (Y) and a mortice at the other.

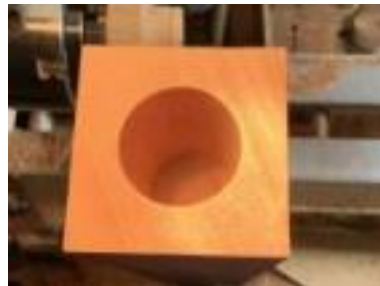
The most challenging bit was to create the 100mm deep mortice. I reckoned the diameter of both tenons should be 46 mm, enough to be chunky and strong between A and B and not too wide between B and C so as not to compromise the sphere at the bottom of C.

I set my adjustable Forstner bit to this diameter and held it in a morse tapered Jacobs chuck.

I marked centres at both ends, turned a longish tenon at one end between centres to match my Gripper jaws hoping that I could hold the timber to drill the hole on the lathe with the Forstner in the tailstock. Predictably this was a total failure! Despite slow revs, the length of the timber allowed too much sideways movement, the hole became bigger than intended and I quickly gave up.

A lot of head scratching followed and then I remembered Good Turns Engineering in Redditch, a wonderful, friendly and extremely helpful outfit run by a chap called Andy (another one!) who had helped me to engineer one or two bespoke bits for my lathe before. A chat on the phone and he said, "Why don't you come over and we'll have a look". And so I did....what lovely people!

Result?...problem solved! He used one of his enormous metal drilling machines and my Forstner bit to drill out the mortices, clamping the timber vertically to his massive engineering drill base as shown in the next 3 photos. I was a happy man!



I got the timbers home, created a friction chuck to fit the hole I had just had made in the Bs and mounted the timber on the lathe. It was to remain square so all I had to do now was chamfer the shoulders around the hole and, using a 10mm square router cutter, create the small groove feature at the tenon end as per diagram. This was done off the lathe, after several test runs on an off-cut to ensure the grooves joined up on all four sides. I left the tenon (Y) for turning down to 46mm later. Finally I sanded for a good finish.



Section A

Now for the spiky bit! It has a fat end and a thin end. Both ends were marked up with centres. I cut a tenon (X) to fit my Gripper jaws at one end and a small sacrificial bit at the thin end for the tail stock live centre.

Next the whole lot was turned down to 81mm diameter as per architect's drawing, and then carefully marked out using the diagram on the graph paper as a story board. The tapered portion of

the finial was marked out in such a way as to give 10mm increments of diameter of the spike, ie at 70, 60, 50, 40, 30, 20 and 10mm.



For each diameter, callipers were set and a parting tool used to cut down to the appropriate diameter **but to the RH of the pencil line only**. Why this ?...will be clarified in a moment. Using a roughing spindle gouge, the shape was roughed out leaving enough space to mark the **left hand corner** of the parting cut with a pencil so that when it came to doing finishing cuts with spindle and skew, this was the diameter down to which each section of the wood was finished, leaving a smooth taper.



Now for the sphere...

First I went back to the headstock end, which held the Gripper jaw fitting tenon (X) and, using the previously made markings, turned a small length down to 46mm, which would be at the base of the sphere, the size I needed to fit into the mortice in B. This would give me more room to manoeuvre when cutting the sphere

I next cut an 81mm diameter template out of cardboard and used this to fashion the shape of a sphere, using a spindle gouge and small skew, between the bottom of the spike and the tenon (X) As mentioned earlier the bottom end of the sphere was 46mm to match the mortice in C. I then reduced the diameter of the rest of the 100mm long tenon (X) to 46mm leaving the Gripper jaw diameter to be removed later prior to assembly. Note that I had gone back to using a step drive at the head end for this using the previous centre.



Section C

Taking the 120mm squared blank I first mounted it between centres, grain parallel to the lathe bed, and cut a tenon to fit my Gripper jaws. Using this tenon to hold the blank I cut a 46mm diameter hole, with my adjustable Forstner bit held in the Morse tapered Jacobs chuck in the tailstock. This time it worked perfectly as the blank was short and didn't wobble.

I reversed the blank and using the same friction chuck I used to drive section B with tailstock support, I turned down to 81mm with spindle gouge and skew (the diameter of the sphere) and cardboard template, leaving the square lip as per diagram.



Section C marked out



Section C finished

The final part was to turn and sand both tenons X and Y to fit their respective mortices snugly and trim them to length. Note that I had yet to remove the waste tailstock nubs at the pointed end of the spiky bit A.

First finial successful! The result was more than pleasing!



Now I had to do it all over again with an eagle eye to ensure the second finial was near identical to the first.

Eventually job done!

The Glueing up Well...this was another cause for brainstorming. Seeing as they were to spend their lives out in the open, high up on a roof, I chose Polyurethane (PU) glue which would also expand in the joints filling any gaps. But then this expansion could risk pushing the joints apart. The lathe was too short to accommodate the whole finial and prevent this I decided to try our long kitchen table, two blocks of wood clamped at each end and use a Quick Grip in expansion mode.



Seeing as PU glue swells and creeps everywhere while curing, I protected the vulnerable areas around the joins with masking tape and the table with lots of newspaper. Before glueing, grooves were cut in the tenons to allow surplus glue to escape. This was now a one way ticket...any error and it would be impossible to separate the pieces which incidentally I numbered for joint compatibility earlier.

To help curing the glue was applied to the tenons and the mortices, sprayed with a little water before everything was put together and clamped up. The result.....fairly pleasing really...note the waste at the end of each spike. This was cut off and tip hand sanded and finished.



Relief grooves for glue



The story doesn't end here....Andy had given me a delivery date of the end of February. The finials were ready on February 5th. I rang him up with the good news and he said, "Can you send them up before next Monday...the scaffolding is coming down then." It was Tuesday afternoon!

Did he know special delivery would cost almost £80? "No bother....they're paying!" came the answer. So off they went by Parcel Post and were delivered the next day. He was very pleased - more than I was when I saw how they had been fitted on the gable end of the roof!



Sadly they were just stuck on like an ornament instead of being integrated into the roof timbers' tiles and lead work! Not what I would have chosen!

Ah well! C'est la vie!

Postscript

I learnt so much.....patience is essential and thorough planning vital. A step by step approach, thinking twice or even three times about the next move ensured that any pitfalls were foreseen and avoided.

Finally.....Apologies for all the (A)s (B)s (X)s and (Y)s but when I read some write-ups about "how to do" I often lose the plot so I thought these markers would help the reader follow the story.