

24TH DEC

Having done all that I could to prepare for the festivities I found time to look at how I was going to make the hands. These are to be only 1mm thick for the majority of their length but the 'hubs' need to be 2mm so since they also have to be 200mm long and 20mm wide they present a number of problems. Mostly as regards holding the material.

For some reason beyond my ken, I thought to use the same methodology that I'd been using for the other components even though I knew that I would be using thin sheets of Walnut 60mm wide, 3mm (ish) thick and 430mm long. Actually the 3mm thick was after I'd removed the thicker centre part of the material I'd selected which was a remnant left after cutting other bits from the large Walnut plank. I forgot to take a photo' so Fig- 169 is a drawing of the cross section which came about because I first ripped the board on the table saw and finished the separation on the bandsaw. (I hate waste :))



All went well as far as skimming the surface was concerned and I was selective in the order in which I did the CNC machining, first taking out the main lengths of the hands to 1mm below the hubs, then cutting the axle holes before moving on to the outline which I knew might cause a problem even though I'd built in nearly 50 'holding tabs'.

The biggest problem came when I pushed my luck and decided that cutting the outline another 1/2mm deeper to make sure that it was cut though was wise - it wasn't !! - At this point I hadn't done some operations and was disappointed to find (after returning to the workshop - multi-tasking again!) that the blank had disintegrated.



I did recover two of the four - and fortunately one Hour Hand and one Minute Hand so I do have a pair. They needed quite a bit of 'fettling' and I had to resort to my Jewellers Piercing saw to cut the 'spring' slots but ultimately I did get them fitted to the first assembly in time to show the current state of the Clock to those who are intended as the recipients during a Family Zoom meeting tomorrow.

25TH DEC

I hadn't intended to be in the workshop today but since I had done all the festive food preparation last evening and the fact that I don't have youngsters demanding attention, there wasn't a lot to do before actually starting cooking so I found myself reviewing the options, and indeed 'getting my hands dirty'!

I already had a second 'sheet' of Walnut prepared because I needed another two pair of hands but using the same method of holding was obviously not going to produce a better result.

Why I hadn't previously thought about using double-sided adhesive tape I don't know but it suddenly made the most sense. I needed to prepare a sub-base using the surfacing fly-cutter and make sure that the Walnut had a clean flat surface which just meant a quick rub on the finisher. In Fig-171 you can see the double-sided tape on the walnut and the prepared sub-base in the background. Fig-172 has the Walnut affixed ready for machining.



I didn't need to modify any of the G-Code so by just changing the cutter and adjusting the 'Z' height, I could cut the second set of hands.

This time I did get the spring slots cut with a 0.8mm Ø burr before cutting the outline, it was only when I came to do the finish outline cut that I had a problem. Since I didn't use a full coverage of double sided tape - ostensibly

because that would make the removal of the finished hands, without damaging them, more difficult (but primarily because I'm a cheapskate and DS Tape is relatively expensive - and can't be reused!). The end result is that one of the Minute hands had lifted away from the sub-base and the stresses of the final cut - albeit only 0.3mm wide - was greater than the 1mm thick Walnut could stand so it broke away at the junction of the stem and the pentagon counter-weight. (Fig-173)

This means I still need to make two Minute Hands and one Hour Hand but I still have two smaller thin Walnut off-cuts, though they are only 210mm long which is a little tighter than I would like but holding them with DS Tape will get them done I'm sure.

26TH DEC

The two off-cuts needed only a short time on the linisher to get a flat, smooth, surface which could take the DS Tape but I still took all day to finish off the last hands.



Fig-174



The centre holes are machined as an 'friction interference' fit of 0.2mm on the spindles and the 'spring slots' are intended to allow easy fitting and the means to re-adjust the time by simply moving the hands.

27TH DEC

Now I have the hands fitted to the first 'mock' assembly, the Dial needs to be attached but as yet I haven't made the stand-off pads. They have been left until I can be sure just how much the 'stand-off' can be. They were designed at 6mm and measuring the clearance between the Frame and the Dial that may be a little too much so I'll reduce it to 5mm. Unlike 'normal' clock hands which are usually made from thin brass sheet which can be bent, Walnut won't take kindly to that treatment :)

The Pads are another example of a component that is made much easier by having a CNC option. They needed to be 'face-grain' so a set of simple 20mm Ø circles drawn at the appropriate place in CorelDRAW! produced a .DXF file and ultimately G-Code which cut superb 20mm x 10mm Maple Buttons which were easy to mount on the 4 jaw chuck (Fig-152 - WIP-30) for 2nd & 3rd operations. I'm particularly pleased with the fact that once I'd 'sized' the first tenon to fit the recess I could simply 'dial in' to the same settings on the lathe and get the same press fit in all the others. In the foreground of Fig-175 there is the 20mm Ø button as it came off the Denford and in the background are the two (marginally) different finished Dial Pads. They are only different because the two Pads at the top line up with the threaded inserts so need to have a clearance recess for them.



Fig-175

28TH DEC

Now the Dial Pads are in place it becomes very obvious that I haven't made the Signature Plate that covers the Bottom Spacer Thread Insert, so today I've been working on that. It is customary to mark clocks with a full signature or at least a monogram. In my case I mark all of my work - usually with a simple 5mm Ø copper disk into which I've stamped my Silversmith's Sponsor Mark. Due to the limitations of size (2mm high) my mark is a monogram in a simple pentagon. Fig-176 is an endoscope screen grab of the punch but the original version is a



Fig-176

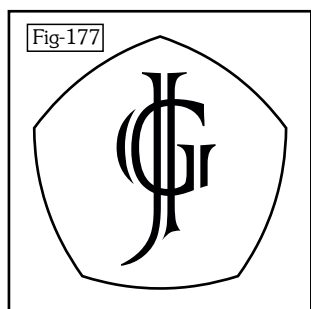


Fig-177

'fancy' monogram in a Reuleaux Pentagon (Fig-177). After a number of tests I've discovered that unfortunately that can't be cut into wood - even close grained Maple - and still retain all the detail, smaller than about 2" high so I've settled on the compromise of a 'filled' version which will finish at 20mm high on a 25mm Pentagon.

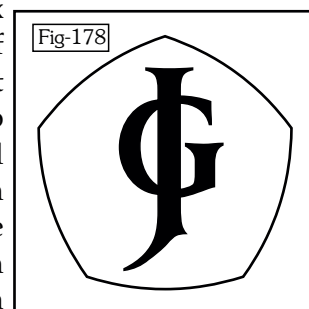


Fig-178