29th Oct

Having done all the transfer of CorelDRAW! drawings of both sides of the Rear Frame 'C' strut to .DXF files I soon had the G-Code files ready and could let the Denford & Mach3 get on with machining them while I got on with other small items such as spacers on the lathe. I had to keep checking the Denford to change tooling of course but I was able to sort of multi-task.

All went well for the first strut but just after one pass cutting the outline of the second I was aware of a change in the sound - even though I don't make a point of listening to one machine doing its own thing whilst I'm working on another, the natural instinct is to be 'aware'. The change came about because the 3mm cutter - a cheap single flute TCT item - had broken off just below the shank :(ie. no cutting edge at all. This was a 1mm deep cut in wood so no real stress. Not having another 3mm router bit I had to re-jig the G-Code to use a 4mm.

The next problem arose when I left the Denford machining the last blank while I had a bite to eat. You can imagine my dismay when I got back in the workshop to see that the blank had moved about in the X axis due to being just a little narrower than the other three and not being held as firmly. (I became complacent!!) A piece of thin card soon sorted the clamping out but I had to guess at the precise lateral position and although I did complete the remaining operations I won't know if the strut can really be rescued until I come to fit it to the rest of the frame. Fig-95 shows the damaged strut at the bottom and compare it with a good strut at the top. If I can make it fit then I'll still have to 'bodge' an in-fill to repair the damage. The lesson learned is that I must also clamp in the X asis.


Fig-95

Other than that, I have the spacers made for the 32T to 60T gears (though not the 60T Gear yet) on the spindle which will also carry the hands. The hole in the spacer needs to be a good fit on the 6mm spindle to maintain concentricity so it was drilled out to 5.5mm and then Reamed to 6mm.

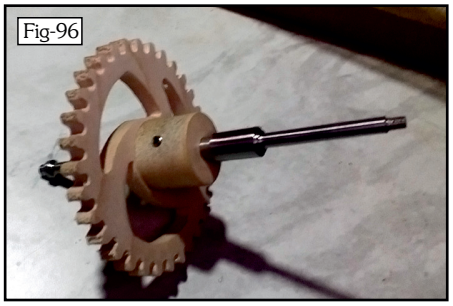
Fig-96

Because these spacers are made from Maple, I anticipated that even reaming them might leave them 'tight' due to wood fibres swelling so I put the reamer in the lathe head-stock so that I could re-ream from both sides - working the spacers by hand until I got a good press fit on the spindles - that way the wood fibres were cut from both directions thus minimizing any tear-out.

I still have to 'finish' the teeth on the gears but that is going to be an intensive 'hand-work' job for which I think I'll make a 'frazing stick' with 320g abrasive.

30th Oct

This morning I've completed the second side of the 'C' struts which gave me little time to work on the smaller parts which have to be done on the lathe but I did get the motion works spacer started before returning to the 'D' section of the Frame, specifically to machining the blanks to an even thickness. I've now realized - because I started to create the G-Code - that I've prepared the Front 'D' frame rather than the Rear. No big deal since both have to be done anyway but I was working on the Rear Frame, so I'll create the G-Code for both before getting back in the workshop to prepare the Rear 'D' blanks.

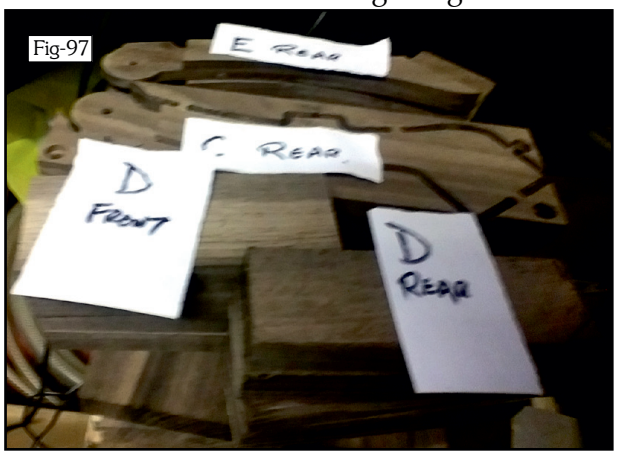

Fig-97

Not a brilliant photo' (Fig-97) but you c an see that the Frame 'C' strut has held together due to the wider & higher Holding Tabs and that the Rear 'D' blanks are taller than the Front 'D' blanks. The only difference between them (at this stage) is the width. The Front one has to take a larger bearing so is 42mm wide whereas the Rear is only 32mm. Ultimately the difference is also that the Front D Frame can have the joint and the bearing recess machined from the same side but the Rear D has to be turned over to cut the recess so I need to take care when selecting the position on the table. That difference made me realize my error.

A number of issues about work-holding came to light when creating the G-Code and it would probably have been better to leave the Walnut for the 'D' section of the Frame in one length rather than cut to individual blanks. Hindsight is a wonderful thing :(Tomorrow I'll have to see if I can machine the Frame D parts with just clamping in the Y axis as opposed to screwing them down.