30th Sept

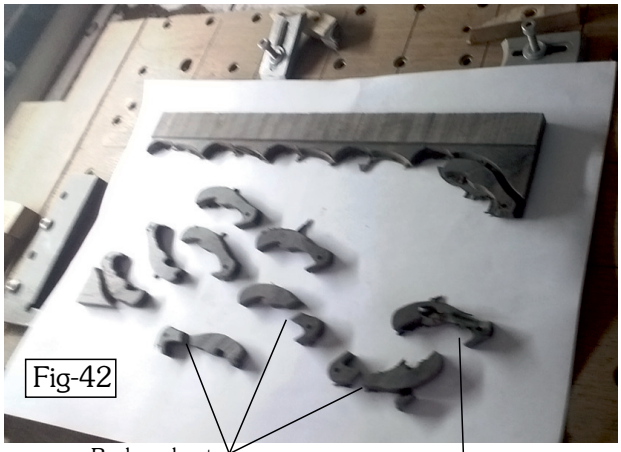
All seemed to be going well after I'd checked the proximity of the fly cutter to the clamps and finally pushed the [GO] button to skim the surface. I was quite pleased that the blank 'off the saw' was 7mm ± 0.2mm and the skimming produced a very good clean face. Doubts began to appear when drilling the pivot holes, some looked to be too close to the front edge and were increased when the first outline cuts didn't clean up the front edge.

Even with what I thought was careful positioning the blank was still about 1mm too far back. It was then interesting to see how CamBam had ordered the machining, starting at the left hand end, taking two cuts on the first two Pawls before starting on the 3rd and 4th, returning to the 1st two and so on. I wasn't too concerned when the first Pawl broke away but when the second not only broke away but also broke across the middle - - - - - - -

The upshot is that I now think that African Blackwood is not the best choice for this component. Yes. it's hard and will wear well but it seems it is also too brittle. Previously I've only used it in 'slab' form for the sides of boxes or knobs where, although open grained, is does take a very good finish when 'filled - sealed and waxed'.

Fig-42 shows the results of this mornings disaster and I'll now look at my stock of Beech to see if I can do a better job with that.

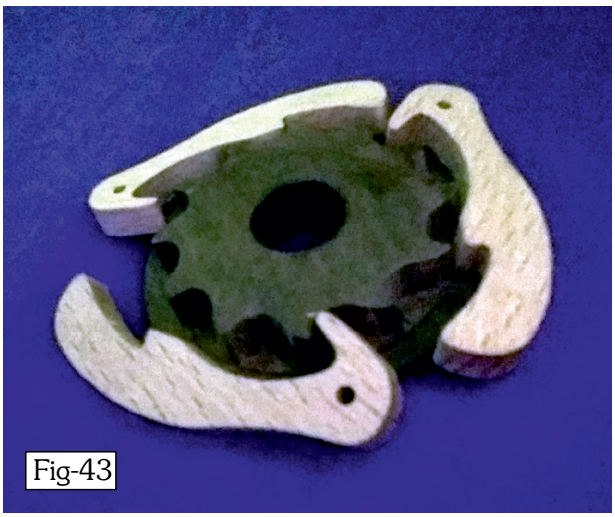
Not only that, I collected my Brass & Stainless Steel order and after a 20 minute drive home, found that they had supplied a length of 7mm Ø rather than 8mm !!



1st Oct

New layout sorted with just 6 Pawls and two Beech blanks created. I'd decided that I didn't need a 3mm cutter to cut out the rough outline so designed this batch to use a 1.5mm end-mill. Quickly found out that a 1mm cut at 300mm/min was too much since on the second pass the tool broke - at least that's the first breakage I've had. Changed the G-Code to have 0.5mm depth of cut and 150mm/min feed rate. Took a while to complete but I do have 6 Pawls in Beech which are useable. The second batch are now being machined.

The second Op. went without incident and all 12 Pawls are finished and Fig-43 shows 3 roughly in position around the Ratchet.

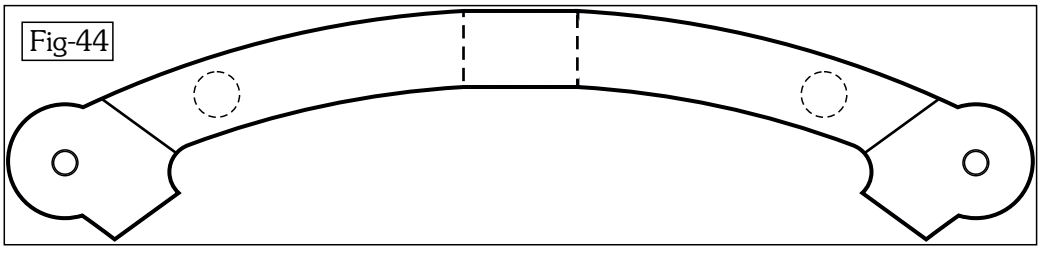


It will be a while before I have the part with the Pivot and retaining pins done as that is a 72 tooth Gear which has to be cut from a composite piece of Maple and I haven't yet even looked at how I'm going to create the blank, never mind cutting the teeth. Though neither should be onerous, just time consuming.

I have made a start on some other components to while away the time taken for the G-Code to run its course.

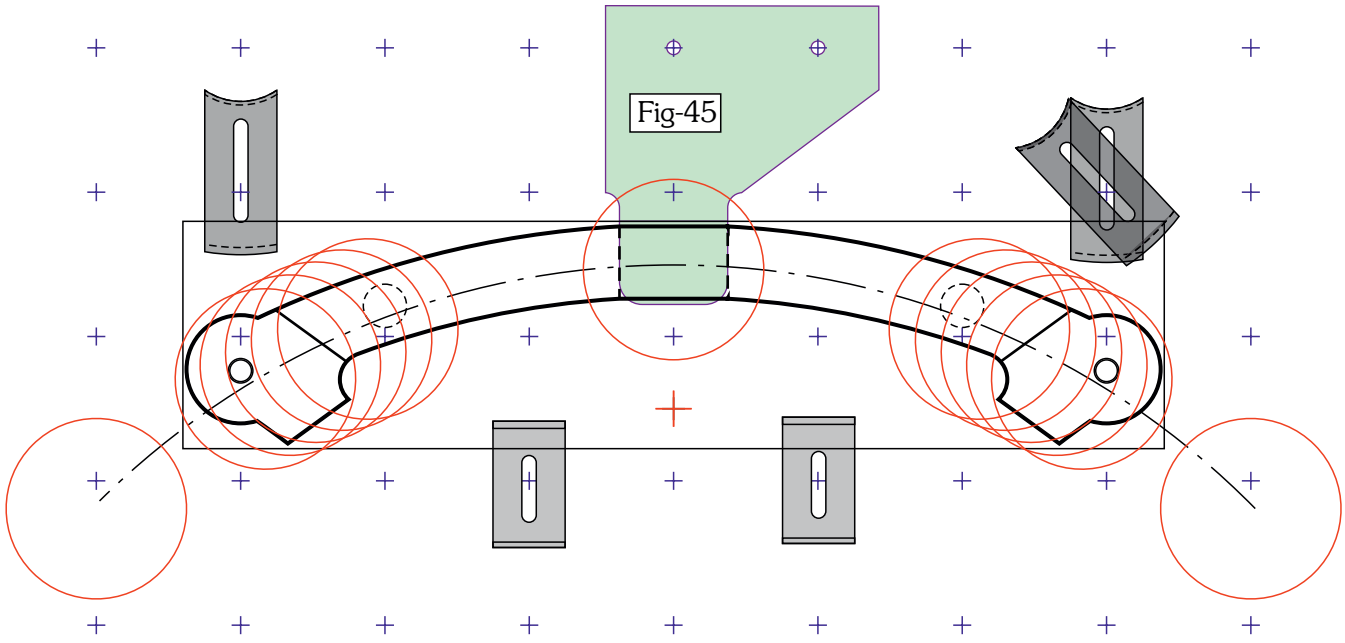
2nd Oct

A few days ago I prepared some Walnut blanks for the Frame Cross Piece which joins to the Frame Upright shown in Fig-33 - and promptly forgot about them - so today I looked at both how to hold them and skim the surface. The process in CorelDRAW! might be interesting so I'll try to explain my thinking. Fig-44 shows the component outline within the blank limits. The problem I have to address are how to clamp the blank to the table so that the surface can be 'skimmed' without the cutter colliding with clamps. I could, of course, drill & counterbore holes but that would be more wasteful of timber which could be used for other components.



To skim the surface I use a 'Fly Cutter' (Fig-12 on WIP-3) which cuts a swathe 50mm Ø so can cover the widest part in one pass. To do so I need to use an [Engrave] MOP which is a single curve.

The red circles on Fig-45 are the plot of where the cutter will sweep and the Grey blocks show where the clamps need to be positioned to avoid the cutter path but they could be turned to give a little more clearance. The Blue crosses show the position of the clamping threads in the table.



This part needs to be machined from both sides so although the centre joint is shown 'dashed' to indicate it is on the opposite side, I'll machine that first - along with the two circular recesses - and use that joint to re-position the blank to cut the end joints. That will be done by screwing a block (green - purple outline) to the table and cutting that to suit the joint, thus fixing the blank in both the X and Y axes.

It might even be best to leave the outline as a Second Op. so that I can skim the second face using the same clamping technique. .... hmmmm..... writing this W.I.P. does have the benefit that some things come to mind sooner through trying to communicate my thoughts. It may well be that I'd come to the same conclusion but only after starting work on a component and then having to change the methodology.

3rd Oct

I didn't bother with the second 'skim' since the first brought the blank thickness within 0.2mm of the target so this morning I got on with making the location jig for the Second Op.. Fig-46 The first attempt showed that I'd missed a setting in the parameters for the width of the location peg — I'd left it to cut [Outside] (the default) whereas it should have been set to cut [Inside] — there are so many settings so it is easy to miss one if you lose concentration for a moment or two. A ten second job to correct the G-Code but another half hour to cut another blank, drill the fixing holes and mount it on the table before starting to machine it again.

As expected, once I'd corrected the G-Code, the Location Jig was a perfect fit for the previously cut joint so it was a very simple matter to clamp the part machined [Frame B] component ready for the second side joints and holes to be machined and finally the outline cut out.

Fig-47 shows Frame [A] and [B] fitted together