Quite a productive day today - how much that is down to the extra light in the workshop is debatable! - I got the Main Drive Gears and Ratchets finish sanded/sealed/MC waxed and polished. It never ceases to amaze me how good it feels to handle nicely polished hardwoods, the Ratchets are made from African Leadwood and the finish feels like silk. Not that the end user will get to handle the 50mm Ø face now it is glued to the Winding Drum. Equally with the Hard Maple Main Drive Gear although there is enough surface area to handle, it's not something that would be expected to be touched but there is a certain satisfaction in knowing that it could be.

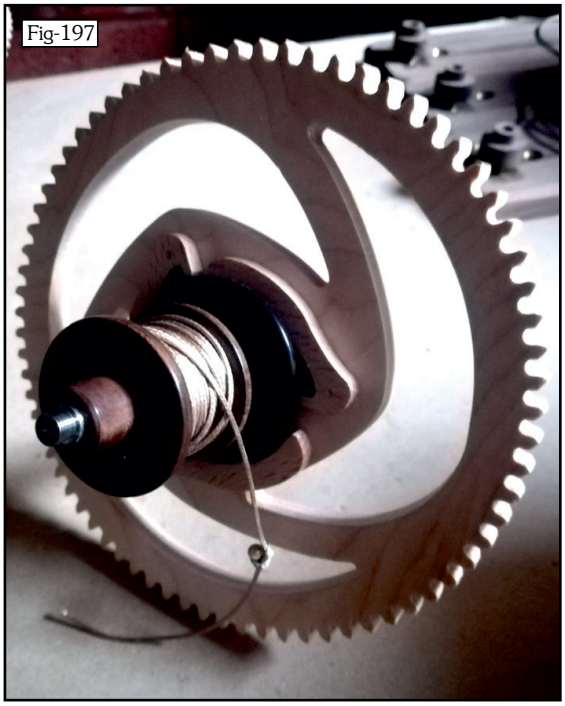
Fig-197

Regrettably it's difficult to show the polished finish in a photo, though there is just a hint of a highlight on the rim of the Ratchet in Fig-197.

Now that I have the Drive Spindle assembled I've proved that the Ratchet & Pawl system really does work.

I next turned my attention to the First Train Spindle (this carries the Hands) and was somewhat miffed to find that one of the four which I'd glued up yesterday had the 60T Gear set at about 3° out of square :(The only solution was to saw through the spacer, re-cut the recess on both the 60T & 32T gears then make a new spacer. Fortunately I didn't have to re-make the Gears!

Once I'd re-made and glued this pair of gears - making very sure that they were running parallel - I had to leave them for the glue to cure so turned my attention back to the Main Drive Spindle. I said some time back that I wasn't sure whether I should buy a commercial Winding Handle or make one from scratch.

Part of the reason for this indecision was the fact that they were available at about £8.50 but also that it is quite a complex item. So, I looked again at the commercial product to both check the cost but also to re-evaluate the design. I soon discovered that the price today is nearly £14 - no brainer! - so I set about designing my own.

The 'norm' is to machine a square on the end of the spindle (Fig-198) but that does cause a problem when you don't have access to a square broach to cut the mating square in a 'Key'. However, thinking outside-the-box, there is no reason that the drive has to be square, it could be two flats (Fig-199). Yes, a square would keep the key in place but a matching slot can easily be milled in a round bar.

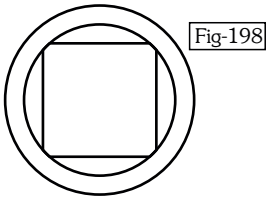
Fig-198

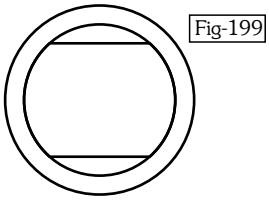
Fig-199

One problem might be that there would be a tendency for the key to slip off the spindle. A solution would be to put a 'sleeve' over the slotted round bar. A further issue might be the 'thin' prongs left after the slot had been milled. I think I've solved all these concerns, along with some others that I didn't foresee until I set about drawing both a SketchUp model (Fig-200) & a CorelDRAW! technical drawing (Fig-201). I wanted the 'Knob' to be captive but 'loose' so I had to make a small change from my original design which had the Spindle (116) as a simple 6mm Ø peg with an M4 thread on the bottom which would also act as a clamp for the Arm (114) - to incorporate a hexagon collar for a spanner. On further consideration I may well Drill & Tap the Arm so that the thread on the Spindle goes through it.

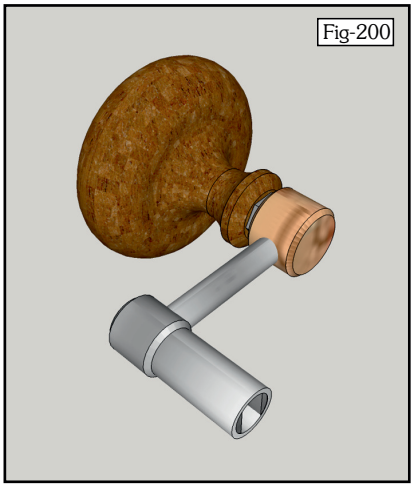
Fig-200

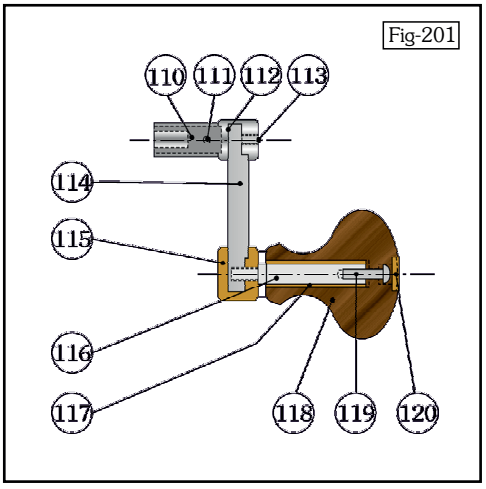

Fig-201

Since I don't have any 10mm A/F Hexagon Stainless Steel 'on-the-shelf' I'll have to visit a local metals warehouse tomorrow.

To get around the 'thin' pegs I'll make the slot 5mm wide rather than 6mm.

19th Jan

No real work done on the clock today, Stainless Steel Hexagon bar bought along with similar Brass which I also needed to make the Vertical Adjuster Screws, other than that, all I got done was the small modification to the Winding Handle drawings - 'Life' just got in the way :)

20th Jan


Fig-202

A long day in the workshop but I only got a prototype of the Winding Handle part made. I still have to finish the base of the 'Knob', fully insert the 'pronged' part and pin it in place and make the brass plug for the centre of the knob.

Making the prototype has brought some issues to the fore and the next three will be marginally modified. Specifically, the knob has a brass sleeve which is a straight through tube but I now see that it would be better to make it blind so that the fixing does not rely upon a thin sliver of Walnut to retain the Knob on the Spindle. This becomes possible because the Sleeve can be affixed to the Walnut Knob with CA glue.

21st to 23rd Jan

The Winding Handles have all been completed, again with small - practical -modifications. The original design had a 'pin' holding the slotted insert in place but I do not have any small taper pins so I changed that to an M3 grub screw. I also decided to drill & tap both ends of the Arm rather than rely on a simple 'clamping' against a milled flat.

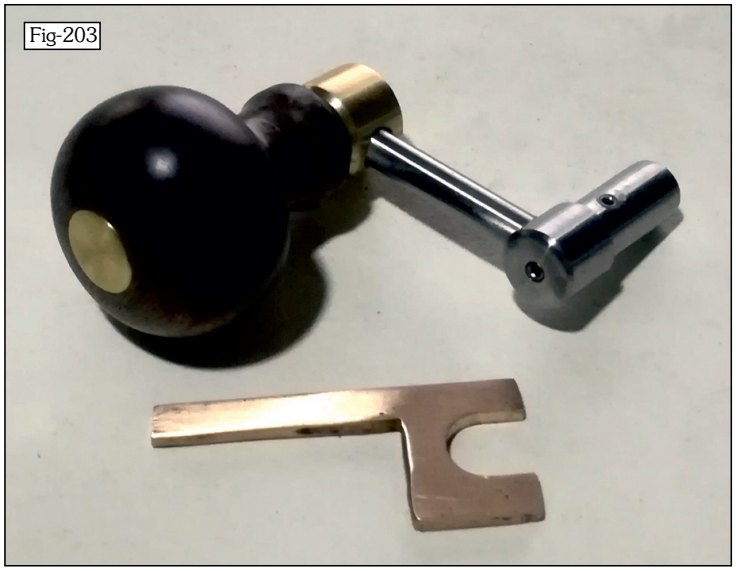
Fig-203

The Brass incerts proved to be simple and they are glued in place making the Knob 'captive' on its spindle so it is free to rotate but I had to make a thin 10mm A/F spanner to tighten the Knob Spindle to the Brass base.

With 10 components, the Winding Handle is probably the most complex part of the whole clock so no wonder it took be the best part of three days to make the four. Far too much of the time was spent in tapping the Arm – Stainless Steel is much more difficult to work than EN1a and fortunately I didn't break any taps! I did break 3 Carbide drills and even a 4mm end mill though. :(

24th Jan

With the completion of three more brass Vertical Adjustment Screws today (now I have the Brass hexagon bar) I think all the components, other than the Weight, are complete so I can't put off applying the finish to the main frames any longer. The faces had already been sanded to 320g but I hadn't done anything to the edges so running those against a flap-wheel, some hand sanding where I couldn't get the flap-wheel in, before a coat of Sanding Sealer followed by a de-nib with 1000g and a final MC Wax, has made them ready for gluing up with the Dial stand-offs and Spacer Brace.