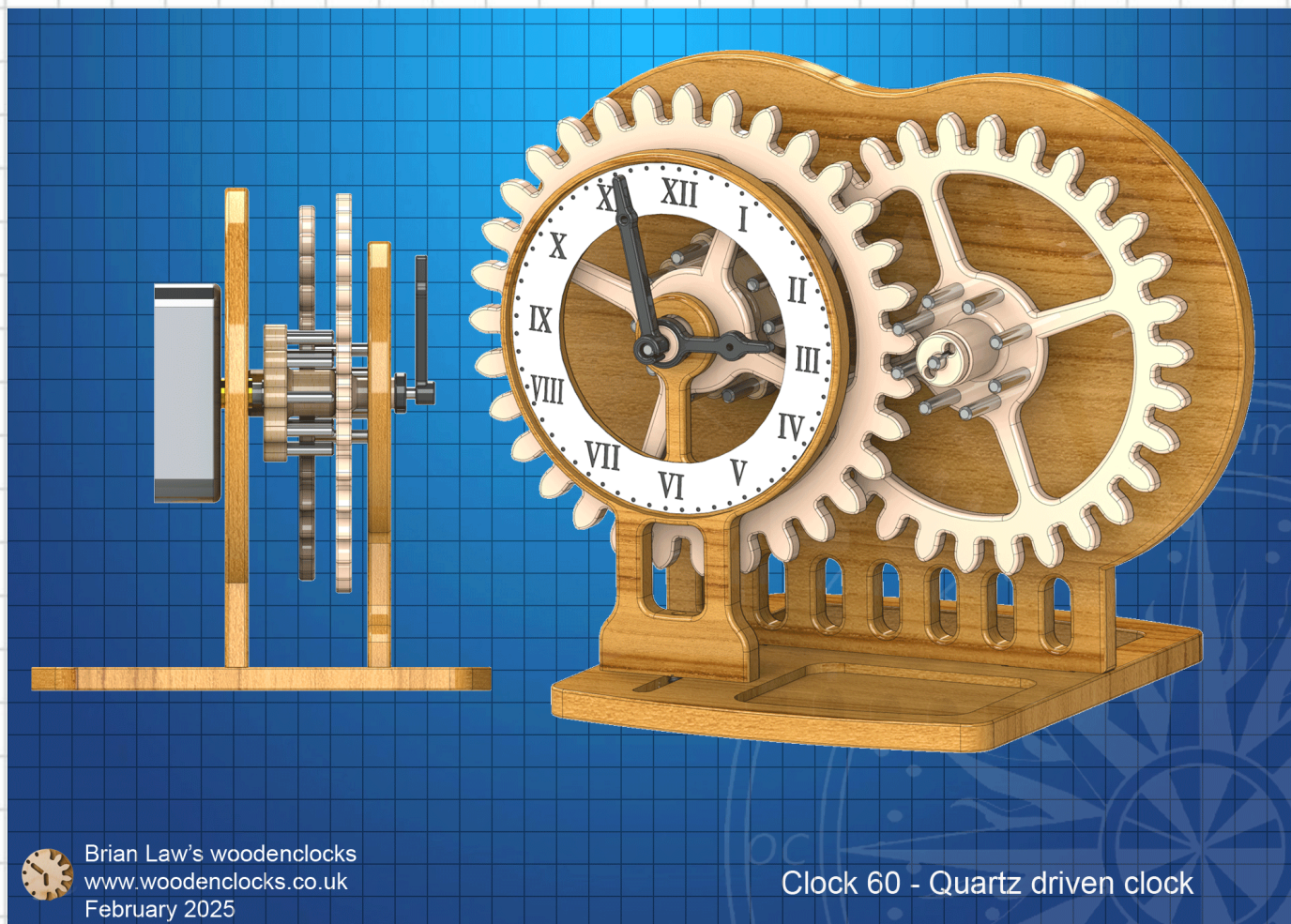


Clock 60 - Quartz Driven Clock

Construction instructions for Clock 60



Clock 60 is a development of clock 59, from which it borrowed the gearing and the High-Torque Quartz drive motor. It is both the smallest of my clocks, with its maximum dimensions of 165 mm x 128 mm (5in x 6.5in), and the easiest to make and build. The simple construction is aided by using the Quartz drive unit to supply the driving force to power the clock movement and give it the amazing run time accuracy amounting to a couple of seconds per month. A single AA battery is all that is needed to keep the clock running for several months before a replacement is needed. The construction this time requires only the use of the type two motor used in clock 59 which is the easiest to install and the most common type available for sale. To keep things as simple as possible I continue to use the paper-printed dial with Roman numerals on the chapter ring, printed on thin glossy cards and cut out with a knife and glued to the Dial support is a simple but very clean way to produce this item. If you choose to purchase the plans for this clock you will receive DXF files for CNC machining and STL files for 3D printing along with PDF files for hand-cutting all the components.

Clock 60 - Quartz Driven Clock

Construction instructions for Clock 60

Equipment

The following equipment is desirable:

CNC Router to cut out all of the Parts

Or 3D Printer using the STL files supplied.

Pedestal Drill or simple drill stand with work holding vice. There is a lot of holes to be drilled and cleaned up after CNC machining and fabrication so the drill is pretty much essential. It may be possible to get away with an ordinary electric drill in a stand but a work holding vice is still necessary.

Drill Bits in the following sizes, Ø3 mm, Ø3.1 mm, Ø3.2, Ø6 mm

Hand tools; all the normal things that are used in the workshop, Files, screwdrivers, hammer, pliers etc.

Consumables

PLA Filament

Sandpaper in various grades from rough to fine

Super Glue

Clock 60 - Quartz Driven Clock

Construction instructions for Clock 60

Materials

The choice of material to build the clocks from is a very personal one and is down to you to decide. I normally build with Hard Maple for the gears and Cherry for the Frame parts.

If 3 D Printing then it would be either ABS or PLA

For all the other parts:-

Ø3mm Drill Rod or Silver Steel 100mm Long for all the shafts and numerous pins.
Ø3 Dowel pins around 25 of them or cut from a longer piece of Ø3 steel or Brass rod.

1 AA Battery

No 4 wood screws 18 mm long

3mm plastic sheet for spacers and shaft retainer.

Various diameters of wooden dowel for the Bushes for the gears and spacers.

A quartz high torque Clock movement is needed to drive the clock similar to the one shown below



To drive the clock you need to purchase a Quartz clock movement from the internet.

It needs to be of the type shown here .

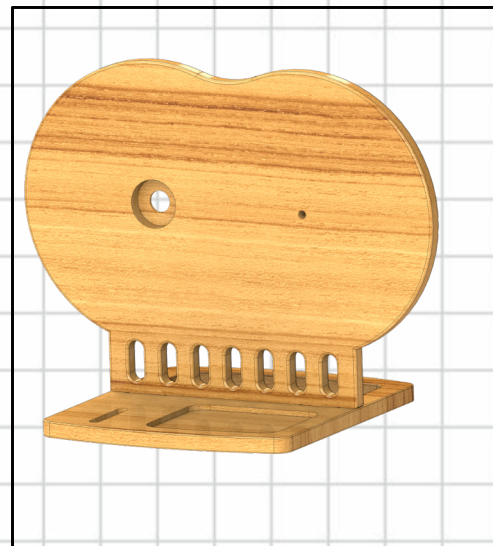
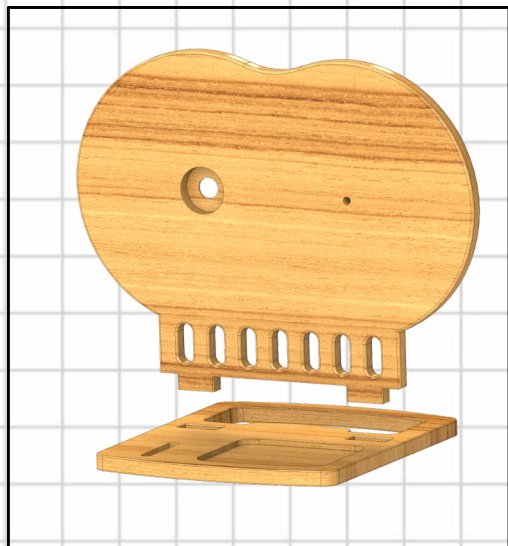
It needs to have a shaft length of around 17 mm and a Ø8mm thread length of around 6 mm.

It will come with at least one minute hand that you will modify, and a short nylon shaft protruding that the modified hand will fit on.

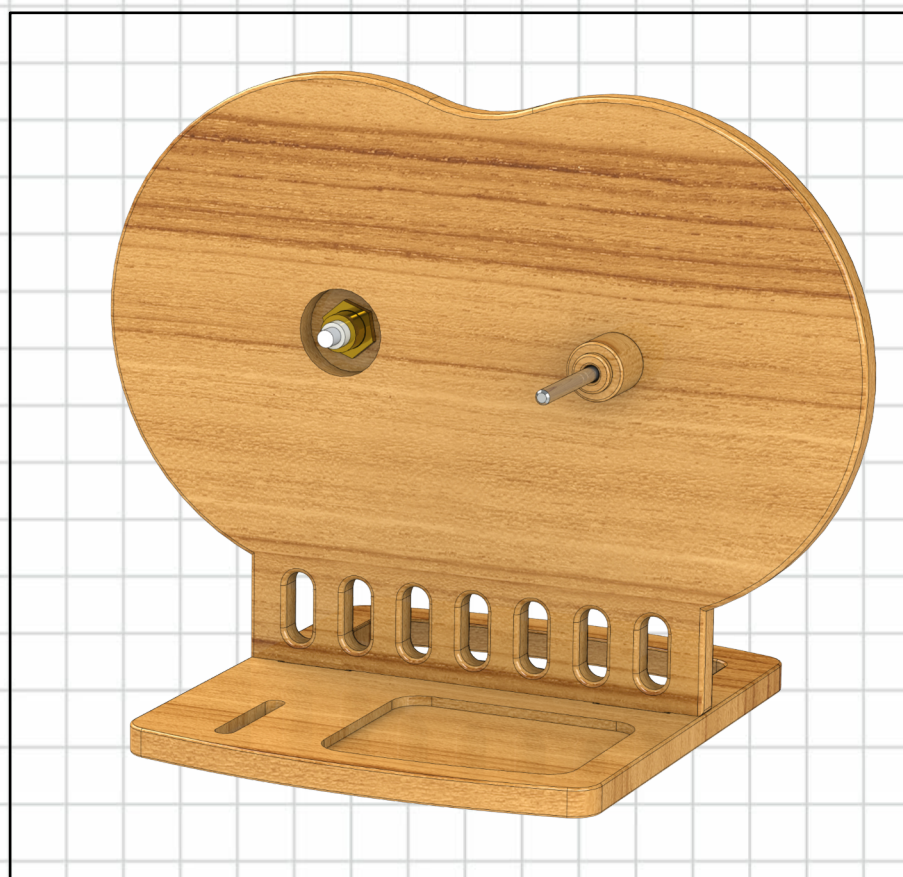
Clock 60 - Quartz Driven Clock

Construction instructions for Clock 60

Step 1 Assembling the Frame Parts



First task is to assemble all of the frame parts as shown in the picture above. The Back frame is the first slotted into the base and glued in position, make sure to use a set square to ensure the frame is Square to the base.



Now fit the Quartz motor in from the rear and secure with the 8 mm nut and washer.

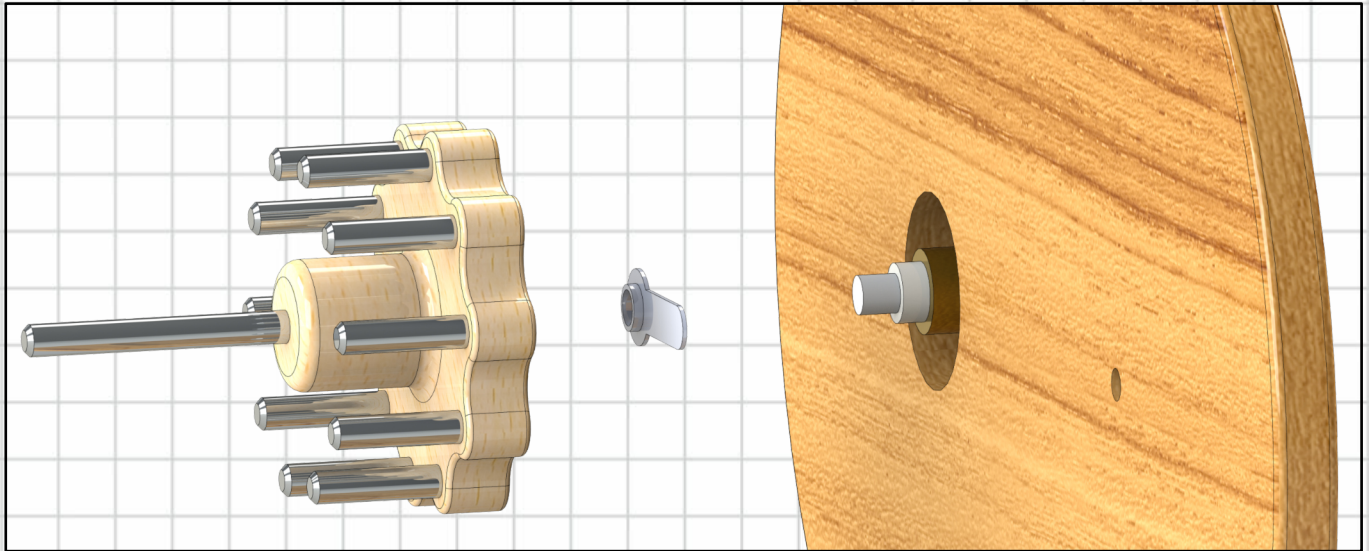
Next the 3 mm shaft is to be press fitted into the back frame and the Gear sleeve and the small spacer are fitted over the shaft as shown.

Clock 60 - Quartz Driven Clock

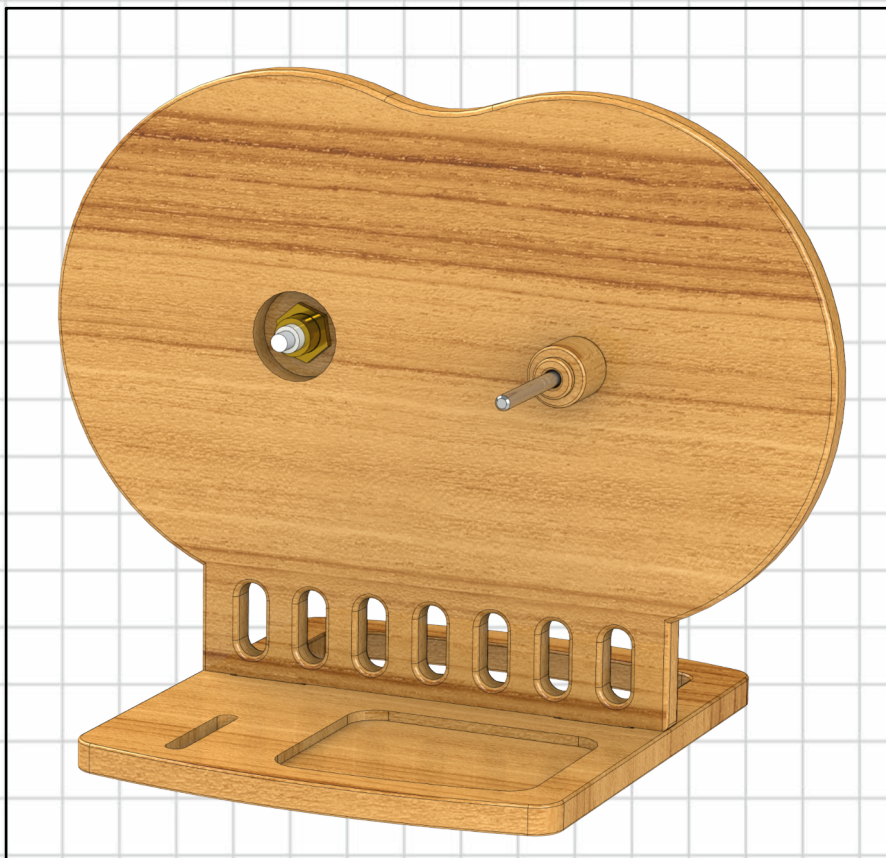
Construction instructions for Clock 60

Step 1 Assembling the Frame Parts

Step 2 Assembling the 10 toothed pinion



The cropped section of the Minute hand is super glued to the back of the 10 toothed Pinion gear in the position shown here so that the Pinion can now be pushed onto the end of the shaft protruding from the motor.

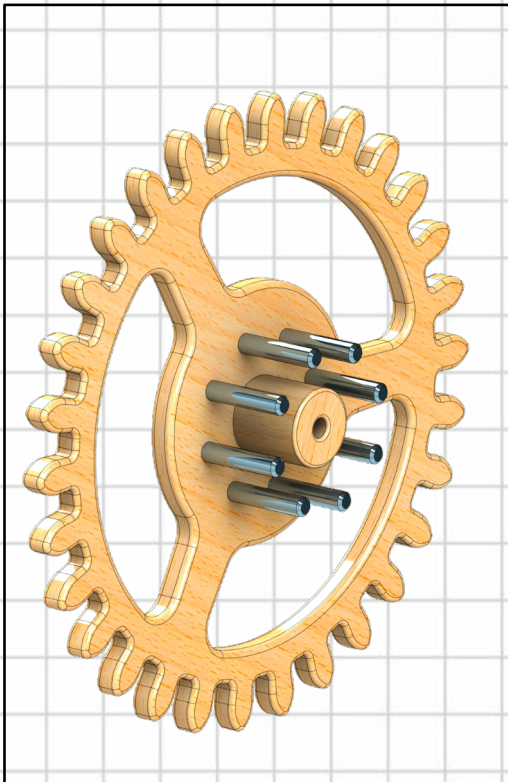
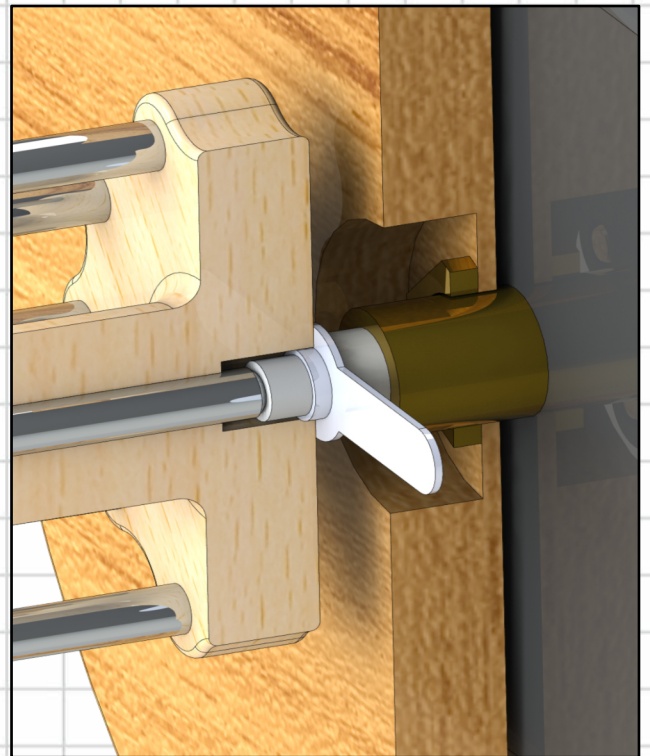
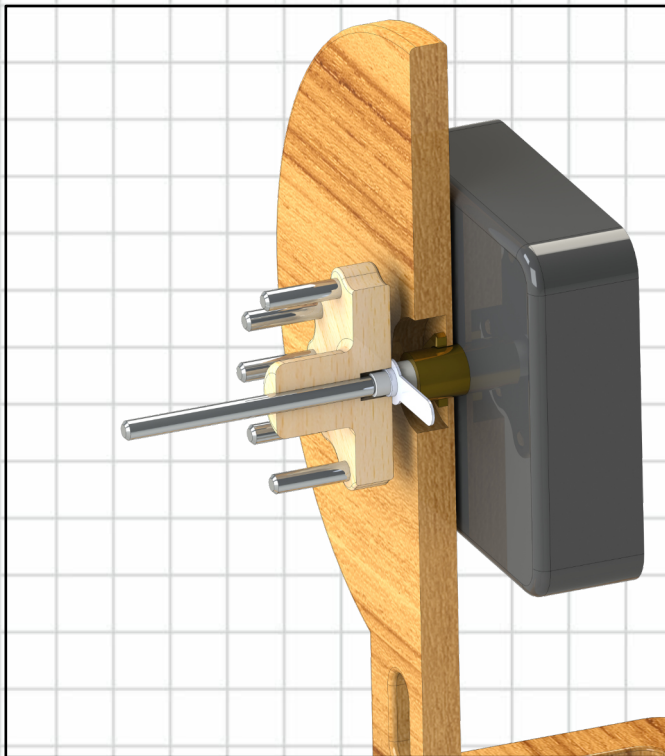


Now Press fit the Gear spacer shaft into the Back Frame and load the Gear Spacer and the 2mm spacer onto the shaft as shown

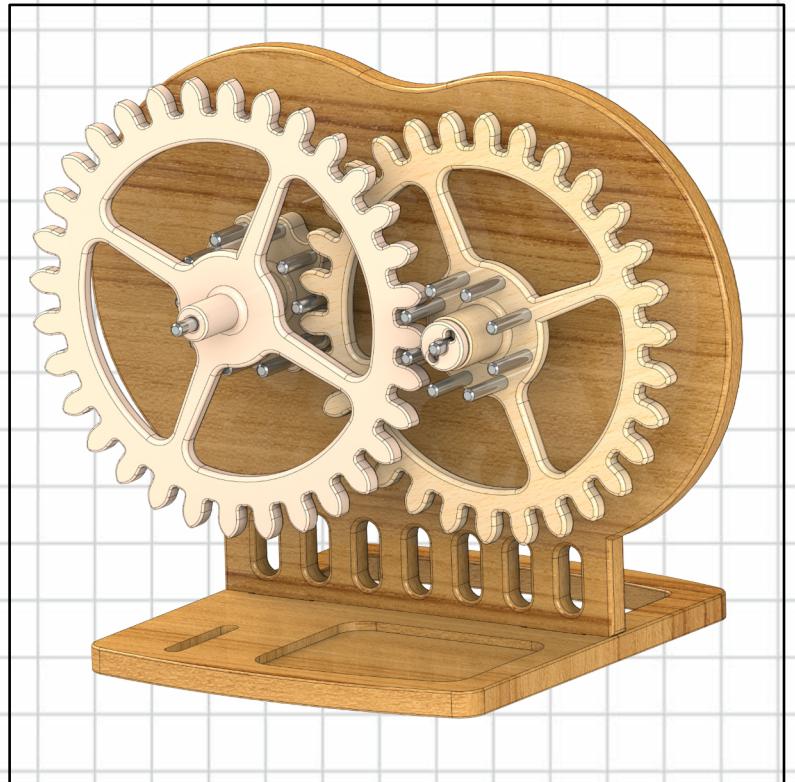
Clock 60 - Quartz Driven Clock

Construction instructions for Clock 60

Step 3 Assembling the the main gears



Press fit the Ø3mm dowel in 8 positions

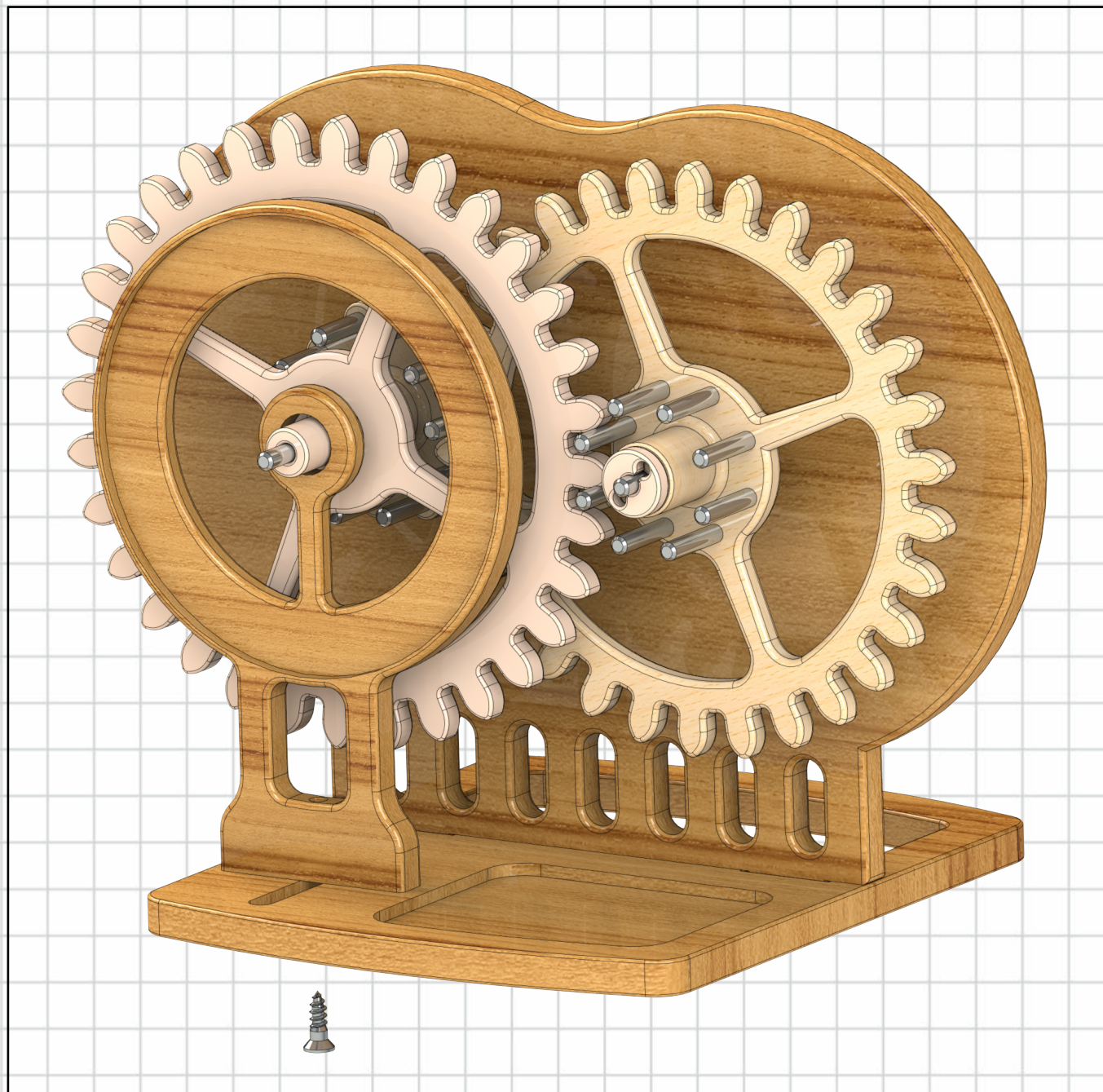


Fit the 30 toothed gear and the 32 toothed gear onto their shafts.

Clock 60 - Quartz Driven Clock

Construction instructions for Clock 60

Step 4 Fit the 32 toothed gear and the Dial.

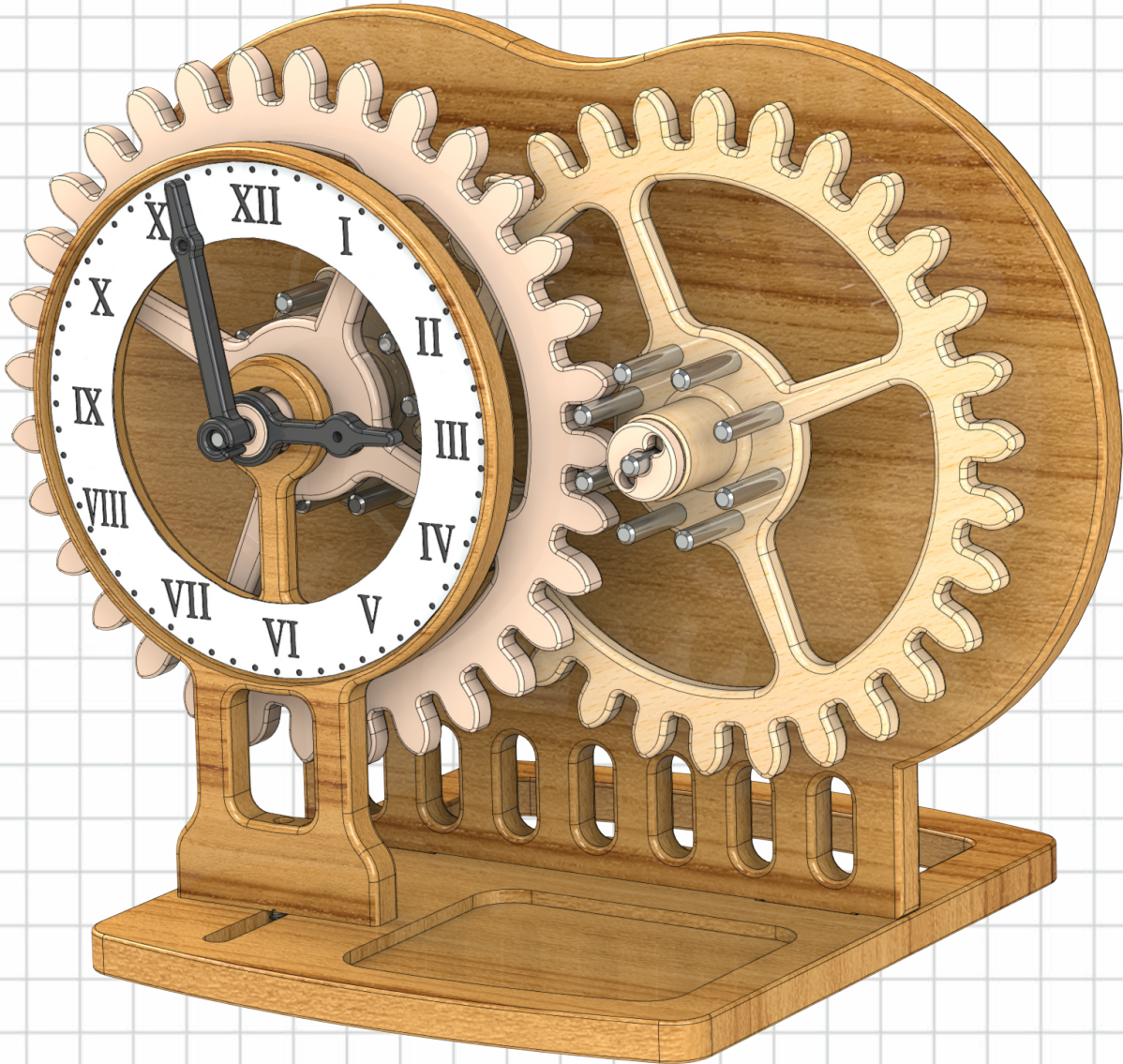


Slide the Dial Support so that it supports the Gear and engages with the pinions on to 10 too the gear, then secure with the 4mm diameter screw.

Clock 60 - Quartz Driven Clock

Construction instructions for Clock 60

Step5 Fit the printed dial and hands

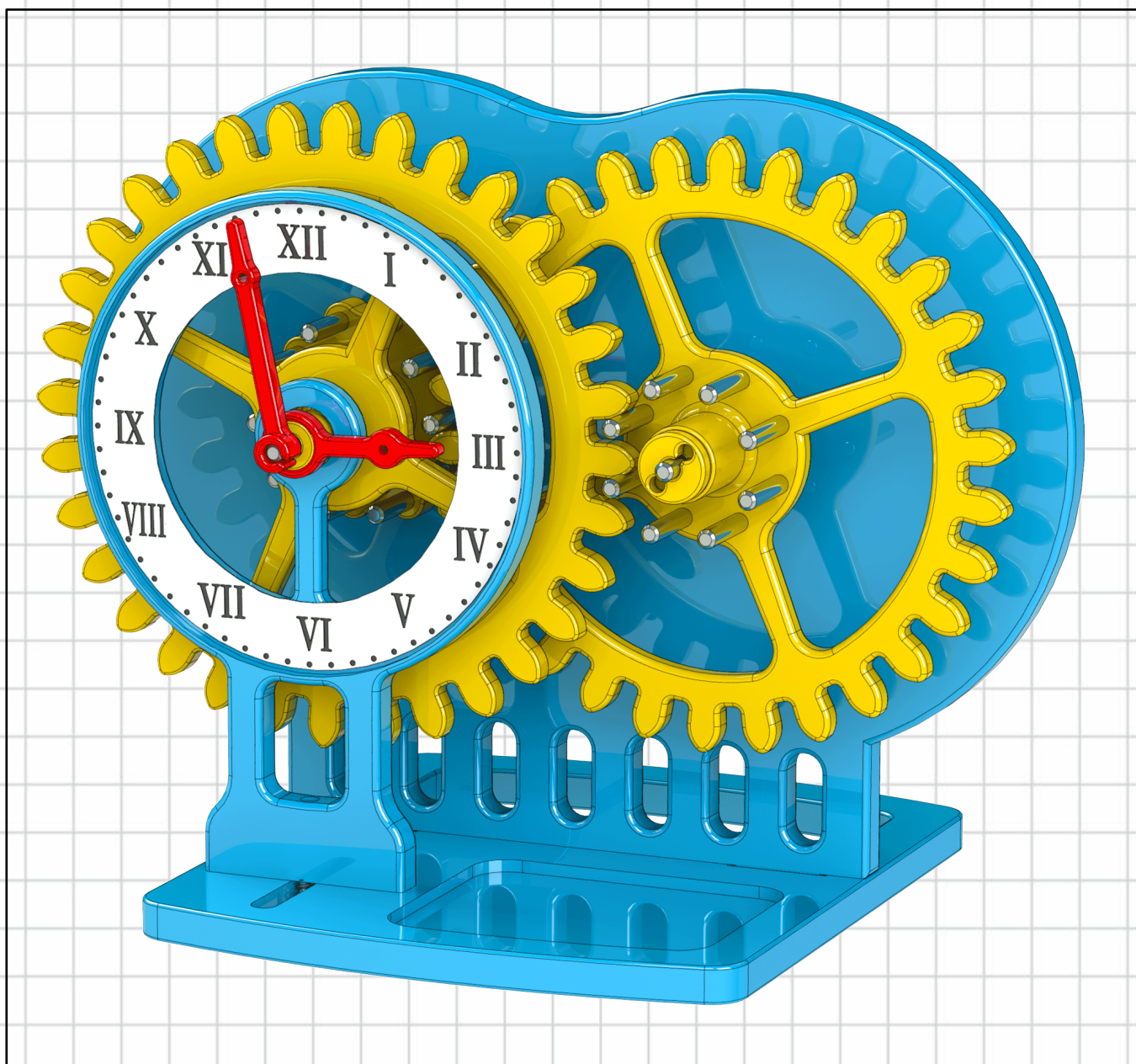


If you have not already done so cut out the dial and glue it to the inside of the dial frame. Attach the two hands and make sure to fit a AA battery into the Clock motor around the back of the clock.

That's it your clock should now be working.

Clock 60 - Quartz Driven Clock

Construction instructions for Clock 60



If you decide to make the parts on a 3D printer instead of CNC machining them , then this is what one of my prototypes looked like.